

A303 Amesbury to Berwick Down

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

Ground Investigation - Phase 7b Factual Report

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FACTUAL REPORT A303 AMESBURY TO BERWICK DOWN PHASE 7B GI

Highways England

JFR1451
Factual Report
A303 Amesbury to Berwick
Down Phase 7B GI
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REPORT

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1 INTRODUCTION

1.1 Project Summary

1.1.1 RPS Consulting UK & Ireland (RPS) were commissioned by Highways England, referred to herein as “the Client”, to provide factual geotechnical and geo-environmental information as part of the A303 Amesbury to Berwick Down road and tunnelling scheme located between Amesbury and Berwick Down (herein referred to as “the site”). Highways England appointed AmW (a joint venture of AECOM, Mace and WSP) as the Technical Partner for the development of the design (herein referred to as “the Designers”).

1.1.2 This report describes the investigation undertaken and presents the factual findings.

1.2 Report Structure

1.2.1 Following on from this section the report is structured as follows:

- Section 2: Site Location and Geology
- Section 3: Ground Investigation
- Section 4: References

2 SITE LOCATION AND GEOLOGY

2.1 Site Location and Description

- 2.1.1 The site is located along a 13km stretch of the proposed dualling of the A303 (to comprise a twin-bore tunnel, deep retaining walls, green bridges, a viaduct and a number of interchanges / junctions) between Solstice Park at Amesbury in the east and Berwick Down in the west.
- 2.1.2 The Phase 7B works are to be located along the A303 route between 405809E, 140726N to the west of the scheme and 415893E, 142200N to the east, and is immediately south of the Stonehenge World Heritage Site. An overview of the Phase 7b works area is presented in Drawing HE551506-AMW-HGT-SW_ML_M00_Z-DR-CE-0309.

2.2 Geology

- 2.2.1 The published British Geological Survey (BGS) geological maps of the area, available on the BGS Geology Viewer ([REDACTED]), indicates the site is underlain by the geological sequence described in Table 2-1 below.

Table 2-1 BGS Descriptions of Mapped Geology at the Site

Geological Group	Geological Formation	BGS Description
Superficial Deposit	Alluvium	Soft to firm consolidated, compressible silty clay, but can contain layers of silt, sand, peat and gravel
Superficial Deposit	Head	Poorly sorted and poorly stratified, angular rock debris and/or clayey hillwash and soil creep
White Chalk Subgroup	Newhaven Chalk Formation	Soft to medium hard, smooth white chalks with numerous marl seams and flint bands, including abundant Zoophycos flints (notably at levels near the base). The formation is known to contain distinct phosphatic chalks of limited lateral extent.
	Seaford Chalk Formation	Firm white chalk with conspicuous semi-continuous nodular and tabular flint seams. Hardgrounds and thin marls are known from the lowest beds. Some flint nodules are large to very large.

3 GROUND INVESTIGATION

3.1 Introduction

- 3.1.1 The scope of the ground investigation is set out in Highways England's NEC4 Engineering and Construction Short Contract (ECSC), document ref: *HE551506-HE-VGT-SW_ZZ_ZZ_ZZ-CD-GS-6000454, dated June 2020*. The works were undertaken in general accordance with ICE Specification Schedules 1 to 5, document ref: *HE551506-AMW-VGT-SW_ZZ_ZZ_ZZ-CD-GS-6000455, P01, S0 WIP, dated June 2020*. Owing to the site setting within and around a World Heritage Site (WHS), the GI works were also undertaken in accordance with the Site Specific Written Scheme of Investigation (SSWSI) to mitigate any impact on archaeological resources, document ref: *HE551506-AMW-HER-SW_GN_000_Z-RP-EN-6000485, P02, A4, dated 10 August 2020*.
- 3.1.2 Any variation to the scope of the GI including exploratory hole techniques and in-situ testing were agreed and instructed by Highways England. The programme of works was dependent on access dates agreed between the Client and respective landowners (and tenants) through licence agreements. Where exploratory hole locations were located on National Trust owned land, submission of proposed works and techniques had to be agreed and signed off by National Trust with a review of the SSWSI.
- 3.1.3 The investigation was set in the context of relevant UK legislation and associated regulatory guidance relating to the investigation of geotechnical ground conditions, contaminated land and controlled waters. This included:
- BS10175:2011 Code of Practice for Investigation of Potentially Contaminated Sites (BSI, 2011);
 - BS 5930:2015 Code of Practice for Site Investigations (BSI, 2015); and
 - Eurocode 7: Geotechnical Design Part 2: Ground Investigation and Testing (Eurocode 7).

3.2 Fieldwork

- 3.2.1 The fieldwork was undertaken during the period 17th August to 25th November 2020 and track matting removal completed on 7th December 2020. The fieldwork comprised the following:
- Forty-two boreholes utilising a multi-purpose drill rig (dynamic sampler and rotary techniques) – includes four cores obtained through trial pits excavated for archaeology purposes;
 - Five boreholes utilising a cable percussive drill rig;
 - Twenty-seven mechanically excavated trial pits;
 - Twenty-one hand excavated trial pits; and
 - Well development and groundwater sampling of five wells (with the exception of one well that was dry).
- 3.2.2 In addition to the above exploratory holes, a programme of in-situ testing and geophysical surveys were undertaken as part of the ground investigation. Further details on the exploratory holes and testing is included in the remainder of this Section.
- 3.2.3 The ground level and co-ordinates at each exploratory hole were established by RPS using a Leica Viva GS07 SmartRover which provides data to an accuracy of +/- 10mm (as tied to OS Archive Network). Co-ordinates and levels (metres Above Ordnance Datum (mAOD)) of the exploratory hole locations are shown on the logs within *Appendix A*.

- 3.2.4 In accordance with the SSWSI, temporary ground protection measures were placed at each exploratory hole location, to protect and preserve the archaeological and heritage resource of the Site. Black rubber mats were placed beneath all exploratory hole equipment including site vehicles, rigs and compressors.
- 3.2.5 At exploratory hole locations on National Trust owned land (within the WHS), temporary aluminium trackways were erected from the entrance of field locations to the exploratory positions and accommodated for, in general, a 15 m x 15 m drilling pad and passing places. The trackways were placed for the following GI locations under ecological and archaeological supervision: R71908, R71910, CP72307, CP72310, R71905, R71916, R71917, R71918 and R71919.
- 3.2.6 Where exploratory hole locations must be moved from the original scheduled coordinates (in Schedule 2), typically due to access constraints, ecological restrictions or presence of underground services, new coordinates were instructed by Highways England upon approval from the Investigation Supervisor, Archaeological Clerk of Works and Historic England/National Trust. Any position requiring more than a 5 m clearance from the original coordinate were reviewed by the Archaeological Clerk of Works and proposed coordinates submitted to National Trust/Historic England for approval.
- 3.2.7 A number of exploratory hole locations were subject to technical variations from the original scope of works (as set out in Schedule 2). Variations typically comprised additional or alternative in-situ testing based on encountered ground conditions and/or access restrictions to specific rig types. In areas where geo-archaeological significance were anticipated (i.e. thick colluvial deposits), the exploratory technique was adapted to obtain both geotechnical and geo-archaeologically significant data.
- 3.2.8 A full list of variations to the original scope of works is included in **Table 3-2** and Table 3-3 below.
- 3.2.9 RPS adopted a permit to work system for every exploratory location, encompassing the completed PAS128 surveys, ecological and archaeological watching briefs for commencement of the main drilling/excavation works.

Utility Avoidance Surveys

- 3.2.10 Prior to breaking ground RPS undertook a PAS128 (Category B) survey at each location to check for the presence of buried utilities. This survey comprised site reconnaissance, a review of available up-to-date utility records obtained by RPS and those provided by the Client, and a detection survey using a ground penetrating radar (GPR) and an electro-magnetic locator. The ground penetrating radar and electro-magnetic locator were undertaken on a minimum 5m x 5m (boreholes) or 10m x 10m (trial pits) grid centred on the exploratory hole co-ordinates provided by the Client. Additionally, a Cable Avoidance Tool (CAT) and signal generator were used prior to breaking ground at each exploratory hole.
- 3.2.11 At each exploratory hole location (with the exception of the mechanically-excavated trial pits) a service inspection pit was hand excavated to a depth of 1.20m to confirm the absence of buried utilities. A RPS geo-environmental consultant supervised the excavation of all hand dug inspection pits. Drilling or testing commenced from the base of the hand dug inspection pits.
- 3.2.12 Additionally the following were demarcated by utility providers/contractors and agents:
- Esso pipeline by Fisher German; and
 - Fibre optic and BT lines by Instalcom and BT.

Archaeological Watching Briefs

- 3.2.13 In accordance with the SSWSI, an archaeological watching brief was completed at each exploratory location by a fully trained competent archaeologist from Wessex Archaeology.

- 3.2.14 For mechanically excavated trial pits, the watching brief comprised supervision of the upper superficial deposits (using a toothless ditching bucket) and subsequent sieving of the soils for evidence of reworked flint and / or artefacts.
- 3.2.15 Ahead of each drilling position (i.e. hand dug service inspection pits) and hand excavated trial pits, the archaeological watching brief comprised a hand dug starter pit to the upper layers of colluvium (if encountered) or chalk. Similarly the topsoil is sieved for finds. The starter pits are in general 0.50 m x 0.50 m in size. The service inspection pits and hand excavated trial pits are then continued through the archaeological starter pit to depth.
- 3.2.16 Any finds were bagged and labelled before going being taken back to the compound to be analysed. Only after clearance from the attending archaeologist may the service inspection pit continue and drilling commence.

Exploratory Hole Techniques

- 3.2.17 Exploratory holes that were undertaken are summarised in *Table 3-1*.

Rotary Coring Boreholes

- 3.2.18 All rotary cored boreholes were drilled with a multipurpose track-mounted rig (Beretta T41) or lorry-mounted rig (Commachio 450) with the exception of BH72401 which was drilled using a Commachio 602 (multipurpose track-mounted rig) for both dynamic sampling and rotary coring. For all rotary coring, downhole wireline Geobore-S was used.
- 3.2.19 Dynamic sampling techniques were utilised to recover fully lined samples through non-hard strata (within BH72401 and attempted in CP72308), with wireline core recovery system utilised to recover continuous cores through hard strata.
- 3.2.20 Specific hole and sample diameters are included on the borehole logs in *Appendix A*.
- 3.2.21 The rotary cores were extracted horizontally from the sampler and core barrel. The semi-rigid liners were sealed at each end to retain moisture before being transported to the logging shed at the main site compound. All dynamic samples and core were retained in sequence in labelled, wooden core boxes.
- 3.2.22 Four exploratory positions were identified in areas of geo-archaeological importance (i.e. thick colluvial deposits). The Client instructed RPS to drill four additional holes to collect samples for Optically Stimulated Luminescence (OSL) dating. The cores were recovered in black plastic core liners to ensure no light reached the sample and were sealed immediately once recovered. The cores were taken by the attending Geo-archaeologist (Wessex Archaeology) for testing at a specialist laboratory. The four boreholes drilled for OSL dating purposes were instructed at trial pit positions. To allow accurate excavations of non-disturbed materials, each borehole was placed 1 m north of the scheduled trial pit coordinates.
- 3.2.23 Prior to logging, photographs of all core (with the exception of the OSL cores) were taken and are presented in *Appendix B*.
- 3.2.24 Further details of the Rotary Boreholes are included in *Table 3.1* and the Exploratory Hole Logs in *Appendix A*.

Cable Percussive Boreholes

- 3.2.25 Five cable percussive boreholes were advanced using a Dando 4000 cable percussive boring rig forming boreholes of a nominal 150mm diameter.
- 3.2.26 Further details of the Cable Percussion Boreholes are included in *Table 3.1* and the Exploratory Logs in *Appendix A*.

- 3.2.27 A geo-environmental consultant from RPS was in attendance during the drilling works to log the soil arisings and collect representative soil samples for environmental and geotechnical laboratory testing. The samples were retained in sealed plastic bags and airtight containers to retain moisture content.

Mechanically Excavated Trial Pits

- 3.2.28 Twenty-seven trial pits were excavated with a JCB 3CX wheeled excavator using a 0.6m wide bucket.
- 3.2.29 A geo-environmental consultant from RPS was in attendance during the excavation works to log the soil arisings and collect representative soil samples for environmental and geotechnical laboratory testing. The samples were retained in sealed plastic bags and airtight containers to retain moisture content.
- 3.2.30 On completion, the trial pits were backfilled with arisings and compacted in reverse sequence with the excavator bucket.
- 3.2.31 Further details of the trial pits are included in *Table 3.1* and the Exploratory Logs in *Appendix A*.

Hand Dug Trial Pits

- 3.2.32 Twenty-one hand dug trial pits were excavated across the Site, including six at exploratory locations off Countess Roundabout (STPES1-6) to determine the presence of historical hydrocarbon contamination. Ten hand dug pits were for infiltration testing purposes only and are discussed under 'Infiltration Pits' below.
- 3.2.33 A geo-environmental consultant from RPS was in attendance during the excavation works to log the soil arisings and collect representative soil samples for environmental laboratory testing. The samples were retained in glass jars and airtight containers to retain moisture content.
- 3.2.34 STP72601, STP72602, STP72201 and STP72202 were changed to hand dug pits based on target depth and access constraints for a JCB or similar.
- 3.2.35 Further details of the trial pits are included in *Table 3.1* and the Exploratory Logs in *Appendix A*.
- 3.2.36 Ten infiltration Pits (Hand Excavated Trial Pits) were excavated for infiltration testing to inform the drainage design within targeted areas of the scheme (TP-A, B, C, D, E, F, G, H, J and K).
- 3.2.37 A geo-environmental consultant from RPS was in attendance during the excavation works to log the soil arisings and collect representative soil samples for environmental laboratory testing. The samples were retained in glass jars and airtight containers to retain moisture content.
- 3.2.38 The infiltration tests were undertaken by a geo-environmental consultant from RPS, in accordance with BRE Digest 365 and repeated three times in all pits with the exception of one due to very low infiltration rates. The test depths were instructed by The Designers.
- 3.2.39 Further details of the infiltration trial pits are included in *Table 3.1* and the Exploratory Logs in *Appendix A*.

Table 3-1 Summary of Exploratory Hole Locations

Exploratory Hole Reference	Exploratory Hole Type	Rig Type	As Built Co-ordinates (*Access not available to location during post construction survey)		Final Depth (mbGL)	Monitoring Installation(s)	Specified Testing (Note: As per Client's Schedule 2 document Ref: 1MC10-BBV-GT-SCH-N001-100001 or site engineer instruction)
			Easting (m)	Northing (m)			
CP72307	Cable Percussion	Dando 4000	414920.08	142119.91	5.10	50mm standpipe	Standard Penetration Tests
CP72310	Cable Percussion	Dando 4000	414920.92	142121.00	15.00	50mm standpipe	Standard Penetration Tests Rising Head Test
CP72602	Cable Percussion	Dando 4000	415886.05	142190.42	12.00	-	Standard Penetration Tests
CP72308A	Cable Percussion	Dando 4000	415352.47	141955.20	6.00	50mm standpipe	-
CPES1	Cable Percussion	Dando 4000	415591.00	142134.00	15.00	50mm standpipe	-
BH72401	Dynamic Sampling with Rotary Coring Follow-on	Commachio 602	415118.20	142038.50	30.00	-	Standard Penetration Tests Falling Head Permeability
BH72503	Dynamic Sampling with Rotary Coring Follow-on	Commachio 450	415372.00	141991.00	30.10	-	Standard Penetration Tests
R70701	Rotary Coring	Beretta T41	407267.29	141410.71	20.20	-	-
R70702	Rotary Coring	Beretta T41	407237.80	141451.30	20.00	-	-
R70105	Rotary Coring	Beretta T41	406060.97	140783.15	10.00	-	Downhole Geophysical Logging
R70106	Rotary Coring	Beretta T41	406105.92	140834.77	10.00	-	Falling Head Permeability
R70107	Rotary Coring	Beretta T41	406139.90	140898.99	10.00	-	Downhole Geophysical Logging
R70108	Rotary Coring	Beretta T41	406236.88	140872.05	10.00	-	-
R70109	Rotary Coring	Beretta T41	406280.84	140932.19	10.00	-	Falling Head Permeability Downhole Geophysical Logging
R70110	Rotary Coring	Beretta T41	406326.84	141015.96	10.30	-	-
R70111	Rotary Coring	Beretta T41	406408.04	140967.90	15.00	-	Downhole Geophysical Logging
R70112	Rotary Coring	Beretta T41	406437.94	141031.94	15.40	-	Falling Head Permeability
R70113	Rotary Coring	Beretta T41	406470.89	141117.93	15.50	-	Downhole Geophysical Logging
R70114	Rotary Coring	Beretta T41	406576.17	141065.12	15.00	-	-
R70115	Rotary Coring	Beretta T41	406601.89	141139.32	15.50	-	Falling Head Permeability Downhole Geophysical Logging
R70116	Rotary Coring	Beretta T41	406735.11	141173.21	15.30	-	-
R70117	Rotary Coring	Beretta T41	406759.10	141240.16	10.00	-	Downhole Geophysical Logging
R70301	Rotary Coring	Beretta T41	406955.04	141345.95	15.00	-	-
R70302	Rotary Coring	Beretta T41	407157.00	141395.99	15.00	-	-
R71203	Rotary Coring	Beretta T41	409292.64	141250.46	15.70	-	Downhole Geophysical Logging
R71210	Rotary Coring	Beretta T41	409483.63	141312.05	15.80	-	Falling Head Permeability
R71905	Rotary Coring	Commachio 450	412040.59	141895.04	52.00	50mm standpipe	High Pressure Dilatometer Packer Test Downhole Geophysical Logging
R71908	Rotary Coring	Commachio 450	413033.33	142068.35	71.50	-	-
R71910	Rotary Coring	Beretta T41	413229.53	142067.75	70.00	-	-
R71912	Rotary Coring	Commachio 450	413624.83	142104.93	59.50	-	-
R71914	Rotary Coring	Commachio 450	413903.86	142122.74	42.25	-	-
R71915	Rotary Coring	Commachio 450	414051.97	142066.06	37.00	50mm standpipe	Packer Test Downhole Geophysical Logging
R72001	Rotary Coring	Commachio 450	414065.33	142132.58	45.25	-	Falling Head Permeability
R72004	Rotary Coring	Beretta T41	414226.47	142124.11	45.00	-	Falling Head Permeability
R72005	Rotary Coring	Commachio 450	414269.07	142118.98	61.00	-	Falling Head Permeability Downhole Geophysical Logging
R72006	Rotary Coring	Commachio 450	414313.77	142148.64	45.00	-	Falling Head Permeability

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Exploratory Hole Reference	Exploratory Hole Type	Rig Type	As Built Co-ordinates (*Access not available to location during post construction survey)		Final Depth (mbGL)	Monitoring Installation(s)	Specified Testing (Note: As per Client's Schedule 2 document Ref: 1MC10-BBV-GT-SCH-N001-100001 or site engineer instruction)
			Easting (m)	Northing (m)			
R72101	Rotary Coring	Beretta T4	414506.87	142153.90	11.00	-	Downhole Geophysical Logging
R72102	Rotary Coring	Commachio 450	414599.91	142153.05	10.00	-	Downhole Geophysical Logging
R71916	Rotary Coring	Commachio 450	411898.66	141782.07	60	-	Downhole Geophysical Logging High Pressure Dilatometer Packer Test
R71917	Rotary Coring	Commachio 450	412110.31	141828.71	61	-	Downhole Geophysical Logging High Pressure Dilatometer Packer Test
R71918	Rotary Coring	Commachio 450	412648.01	141929.98	61	-	Downhole Geophysical Logging High Pressure Dilatometer
R71919	Rotary Coring	Commachio 450	412869.00	142029.74	60	-	Downhole Geophysical Logging High Pressure Dilatometer
CP72308	Rotary Coring	Beretta T41	415352.14	141957.49	5.20	-	Standard Penetration Tests
STP70501	Rotary Coring	Beretta T41	406702.83	141796.55	5.00	-	Recovered in black liners for OSL Dating
STP70503	Rotary Coring	Beretta T41	406758.78	141653.79	5.00	-	Recovered in black liners for OSL Dating
STP70404	Rotary Coring	Beretta T41	407292.00	141356.99	5.00	-	Recovered in black liners for OSL Dating
DTP70704	Rotary Coring	Beretta T41	407263.99	141376.01	5.00	-	Recovered in black liners for OSL Dating
STP70103	Mechanically Excavated Trial Pit	JCB 3CX	405926.26	140746.60	3.50	N/A	-
STP70104	Mechanically Excavated Trial Pit	JCB 3CX	405975.77	140812.76	3.50	N/A	-
STP70118	Mechanically Excavated Trial Pit	JCB 3CX	406795.96	141299.99	3.50	N/A	-
STP70401	Mechanically Excavated Trial Pit	JCB 3CX	406812.06	141454.99	3.20	N/A	Infiltration test Plate Load test
STP70402	Mechanically Excavated Trial Pit	JCB 3CX	407047.00	141532.00	3.40	N/A	-
STP70403	Mechanically Excavated Trial Pit	JCB 3CX	406919.00	141219.99	3.50	N/A	Plate Load test
STP70404	Mechanically Excavated Trial Pit	JCB 3CX	407290.00	141356.99	3.50	N/A	-
STP70501	Mechanically Excavated Trial Pit	JCB 3CX	406702.83	141796.55	3.80	N/A	-
STP70502	Mechanically Excavated Trial Pit	JCB 3CX	406669.64	141696.96	3.50	N/A	-
STP70503	Mechanically Excavated Trial Pit	JCB 3CX	406758.78	141653.79	3.50	N/A	-
STP70504	Mechanically Excavated Trial Pit	JCB 3CX	406722.80	141539.25	3.50	N/A	-
STP70505	Mechanically Excavated Trial Pit	JCB 3CX	406837.03	141566.54	3.20	N/A	Plate Load test
STP70506	Mechanically Excavated Trial Pit	JCB 3CX	406902.99	141817.00	3.50	N/A	-
STP70507	Mechanically Excavated Trial Pit	JCB 3CX	406887.00	141765.99	3.50	N/A	-
STP70508	Mechanically Excavated Trial Pit	JCB 3CX	406934.99	141701.02	3.50	N/A	-
STP70509	Mechanically Excavated Trial Pit	JCB 3CX	406967.22	141609.73	3.50	N/A	Plate Load test
STP70601	Mechanically Excavated Trial Pit	JCB 3CX	407038.00	141231.01	3.30	N/A	-
STP70602	Mechanically Excavated Trial Pit	JCB 3CX	407195.60	141258.52	3.50	N/A	Plate Load test
STP71601	Mechanically Excavated Trial Pit	JCB 3CX	408807.52	141123.25	3.50	N/A	-
STP72202A	Mechanically Excavated Trial Pit	JCB 3CX	414819.33	142119.95	3.50	N/A	-
DTP70301	Mechanically Excavated Trial Pit	JCB 3CX	406857.99	141337.99	3.60	N/A	Plate Load test
DTP70302	Mechanically Excavated Trial Pit	JCB 3CX	406934.00	141291.98	3.50	N/A	Plate Load test
DTP70303	Mechanically Excavated Trial Pit	JCB 3CX	407081.99	141434.97	3.90	N/A	Plate Load test
DTP70701	Mechanically Excavated Trial Pit	JCB 3CX	407234.00	141490.00	4.10	N/A	-
DTP70702	Mechanically Excavated Trial Pit	JCB 3CX	407242.98	141450.99	3.80	N/A	Plate Load test
DTP70703	Mechanically Excavated Trial Pit	JCB 3CX	407275.00	141416.00	4.20	N/A	Plate Load test
DTP70704	Mechanically Excavated Trial Pit	JCB 3CX	407263.99	141376.01	4.00	N/A	-
STP72201	Hand Dug Pit	Hand Tools	414805.40	142080.83	1.20	N/A	-

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Exploratory Hole Reference	Exploratory Hole Type	Rig Type	As Built Co-ordinates (*Access not available to location during post construction survey)		Final Depth (mbGL)	Monitoring Installation(s)	Specified Testing (Note: As per Client's Schedule 2 document Ref: 1MC10-BBV-GT-SCH-N001-100001 or site engineer instruction)
			Easting (m)	Northing (m)			
STP72202	Hand Dug Pit	Hand Tools	414836.00	142114.00	1.20	N/A	-
STP72601	Hand Dug Pit	Hand Tools	415859.59	142157.32	1.20	N/A	-
STP72602	Hand Dug Pit	Hand Tools	415892.63	142191.46	1.20	N/A	Plate Load test
STPES1	Hand Dug Pit	Hand Tools	415329.02	142064.46	0.50	N/A	-
STPES2	Hand Dug Pit	Hand Tools	415332.35	142066.63	1.20	N/A	-
STPES3	Hand Dug Pit	Hand Tools	415335.08	142068.47	1.20	N/A	-
STPES4	Hand Dug Pit	Hand Tools	415334.00	142067.38	1.20	N/A	-
STPES5	Hand Dug Pit	Hand Tools	415338.77	142071.29	1.20	N/A	-
STPES6	Hand Dug Pit	Hand Tools	415330.18	142064.59	1.20	N/A	-
WS72401	Hand Dug Pit	Hand Tools	415049.00	142049.00	0.3	N/A	-
TP-A	Hand Dug Pit	Hand Tools	409696.58	144603.02	1.10	N/A	Infiltration Test
TP-B	Hand Dug Pit	Hand Tools	409709.07	144483.90	1.00	N/A	Infiltration Test
TP-C	Hand Dug Pit	Hand Tools	409819.12	144587.71	1.10	N/A	Infiltration Test
TP-D	Hand Dug Pit	Hand Tools	417632.00	141810.99	0.80	N/A	Infiltration Test
TP-E	Hand Dug Pit	Hand Tools	417709.99	141872.99	0.80	N/A	Infiltration Test
TP-F	Hand Dug Pit	Hand Tools	417718.40	141902.08	0.80	N/A	Infiltration Test
TP-G	Hand Dug Pit	Hand Tools	417897.30	141946.26	1.40	N/A	Infiltration Test
TP-H	Hand Dug Pit	Hand Tools	418076.17	141975.87	0.60	N/A	Infiltration Test
TP-J	Hand Dug Pit	Hand Tools	418241.97	142003.13	1.20	N/A	Infiltration Test
TP-K	Hand Dug Pit	Hand Tools	418447.72	142035.17	1.20	N/A	Infiltration Test

Table 3-2 Summary of Changes made by the Client from the Original Schedule 2 (scope of works)

Exploratory Hole Reference	Change Type
R70701	Additional borehole
R70702	Additional borehole
STP72202A	Additional trial pit
STP70501	Additional borehole for core to be retrieved in black liners for OSL Dating
STP70503	Additional borehole for core to be retrieved in black liners for OSL Dating
STP70404	Additional borehole for core to be retrieved in black liners for OSL Dating
DTP70704	Additional borehole for core to be retrieved in black liners for OSL Dating
R71916	Additional borehole
R71917	Additional borehole
R71918	Additional borehole
R71919	Additional borehole
WS72401	Aborted at 0.3m below ground level (obstruction)
R70303	Descoped
CP72601	Descoped

Table 3-3 Summary of Changes from Original Schedule 2 (locations)

Exploratory Hole Reference	Reason for change	Actual borehole information
R71908	Avoidance of utility	Location moved ~3m
R72001	Shallow void on GPR	Location moved ~4.5m. Permeability test.
R72005	Presence of FO cable	RPS surveyor agreed new location. Permeability test.
R72006	Presence of FO cable	RPS surveyor agreed new location. Permeability test.
R71915	Avoidance of hedge and utility	Location moved ~ 3m
STP72202	No access for JCB under tree cover	Hand dug pit
BH72401	Avoidance of utilities	Moved to position of original WS72401
BH72503	Avoidance of utilities	Location moved ~ 15m
STPES1	Avoidance of utilities	Location moved ~ 1.5m towards A303
STPES2	Avoidance of utilities	Location moved ~ 1.5m towards A303
STPES3	Avoidance of utilities	Location moved ~ 1.5m towards A303
STPES4	Avoidance of utilities	Location moved ~ 1.5m towards A303
STPES5	Avoidance of utilities	Location moved ~ 1.5m towards A303
STPES6	Avoidance of utilities	Location moved ~ 1.5m towards A303
R71912	GPR Anomaly	Location moved ~ 4m
R71203	Avoidance of utilities and hedge	Location moved ~10m
R71210	Avoidance of utilities and hedge	Location moved ~ 10m
CP72308	Avoidance of utilities	Location moved into central track
STP72201	Avoidance of utilities	Instalcom/BT agreed new location
STP72601	Avoidance of utilities	Hand dug pit, location moved into grass verge
STP72602	Avoidance of utilities and access for JCB	Hand dug pit, location agreed by Instalcom
CP72602	Avoidance of utilities	Location moved into grass verge
CPES1	No access for CP Rig	Client agreed new location
R71919	Too steep for Commachio 405	Location moved ~ 60 m up slope
TP-F	Too overgrown for access	Location moved into new land parcel by Client

Exploratory Hole Reference	Reason for change	Actual borehole information
TP-A	Original coordinates in road	Location moved into field

In Situ Testing

Standard Penetration Tests

- 3.2.40 Standard penetration tests (SPT) were carried out in selected boreholes as per the scope of works.
- 3.2.41 SPTs were undertaken in general accordance with BS EN ISO 22476-3:2005+A1:2011.
- 3.2.42 A split barrel or a solid cone was used depending upon the materials encountered. The SPT 'N' value was taken as the number of blows to penetrate the 300mm test drive following a 150mm seating drive. Where low penetration was recorded the seating, drive was terminated at 25 blows and the test drive completed after a further 50 blows. Uncorrected 'N' values are presented on the borehole logs in *Appendix A*.
- 3.2.43 Copies of the SPT Hammer Energy Test Reports are included in *Appendix H*.

Variable Head Testing

- 3.2.44 Variable Head Tests (Falling Head Tests) were carried out within ten boreholes and rising head tests within one borehole, as detailed in *Table 3.1* The tests were undertaken in general accordance with the procedures given in BS EN ISO 22282-2 (2012). Tests were carried out at depths specified by the Client and performed three times in each borehole. The tests were undertaken by an RPS geo-environmental consultant and the results are presented in *Appendix E*.
- 3.2.45 The variable head test method was designed to be generally suitable for K (hydraulic conductivity) values between 10^{-6} m/s and 10^{-9} m/s. Before starting the test, the water level was measured in the annular space after stabilisation. The water level in the borehole or monitoring well was changed by adding water. The measurements of the water level began immediately from the start of the test. The measurement intervals were defined by the rate of response. The tests were ended on instruction from the Client.
- 3.2.46 Both barometric pressure and atmospheric pressure data loggers or a dip-tape were utilised to record the test.
- 3.2.47 A full presentation of variable head testing undertaken and installations is included within *Appendix E*.

Downhole Geophysical Surveys

- 3.2.48 On completion of drilling, down-hole geophysical surveys were undertaken in boreholes as detailed in *Table 3.1*.
- 3.2.49 Downhole televiewer surveys were undertaken in seventeen boreholes. Testing was undertaken prior to backfilling or the installation of monitoring standpipes. The surveys were undertaken on behalf of RPS by *European Geophysical Surveys* and the results are presented in *Appendix C*.

High Pressure Dilatometer Testing

- 3.2.50 Pressuremeter tests were carried out in exploratory hole positions R71905, R71916, R71917, R71918 and R71919 as detailed in *Table 3-1*, using a high pressure dilatometer (HPD). The testing was carried out in general accordance with BS EN ISO 22476-5 (2012). Tests were carried out at depths specified by the Client.
- 3.2.51 Five HPD tests were undertaken in R71905, R71916 and R71917, and three HPD tests in R71918 and R71919.

- 3.2.52 The tests were undertaken on behalf of RPS by Cambridge In-Situ and the results are presented in their report, *ref: P1200116*, and presented in *Appendix C*.

Packer Testing

- 3.2.53 A double packer test was performed in exploratory position R71915 on behalf of RPS by *Marriot Geotechnical Drilling*, a single packer within R71905 and R71917 and two single packer tests were undertaken within R71916, as detailed in *Table 3-1*. The testing was carried out in general accordance with BS EN ISO 22282-3:2012. Tests were carried out at depths specified by the Designer. The packer test within R71915 at 26m below ground level with a 3m response zone failed to reach the first test pressure. The results of the packer tests are presented in *Appendix C*.

Plate Load Testing

- 3.2.54 Eleven Plate Load Tests (PLT) were undertaken on behalf of RPS by sub-contractors *GEO Site & Testing Services Ltd (GSTL)* and the results are presented in their report, reference *49268* in *Appendix C*. The works were carried out in general accordance with the specified standards, specifically: BS 1377 Part 9: 1990.

Infiltration Testing

- 3.2.55 One Infiltration Test was commenced within trial pit STP70401 and infiltration tests were performed in ten hand excavated pits, in general accordance with BRE Digest 365. The results are presented in *Appendix D*.
- 3.2.56 The test pits were excavated to depths as indicated in records included in *Appendix D*. Clean water was added from a large capacity bowser/tanker for the infiltration test and clean water use only jerry cans were used for the hand dug infiltration pits and the water level monitored as it infiltrated into the soil. The infiltration rate is calculated from the time taken for the water to fall between the effective 75% and 25% water depth.

Logging

General

- 3.2.57 The logging of soils and rock was carried out by an RPS geo-environmental engineer in general accordance with BS5930:2015 and logging of the Chalk was carried out in accordance with Ciria Publication C574. The exploratory hole logs and a list of abbreviations (key) are presented in *Appendix A*. In addition, specialist Chalk logging reviews were undertaken by Prof Rory Mortimore on 20th August and 15th October 2020 to ensure consistency of logging on this project.
- 3.2.58 Detailed descriptions of the samples and cores from boreholes are given in the exploratory hole logs, *Appendix A*, along with details of sampling, in situ testing, groundwater ingress and relevant comments on drilling techniques. Prior to logging of the rotary cored boreholes, photographs of the core were taken and are presented in *Appendix B*.
- 3.2.59 Mechanically excavated trial pits, hand dug trial pits and infiltration test pits were logged in-situ from ground level to a depth of approximately 1.20 mbgl and logged thereafter from the excavated material brought to the surface. Detailed descriptions are given in the trial pit logs, *Appendix A*, along with details of sampling and in-situ testing, groundwater ingress and relevant comments on stability and ease of excavation. Photographs of the trial pit profile and soil arisings were taken and are presented in *Appendix B*.
- 3.2.60 Environmental soil samples were analysed for Volatile Organic Compounds (VOCs) using a MiniRAE 2000 Portable Photo Ionisation Detector (PID) with a 10.6eV gas discharge lamp. The results of this analysis are presented on the exploratory hole logs.

Weathering Description and Classification

- 3.2.61 Factual weathering descriptions have been included within the exploratory hole logs in accordance with BS5930:2015 and Ciria Publication C574. However, these should be treated with caution to

reflect the effects that drilling disturbance has had on the weathering characteristics identifiable from the samples collected.

Sample Handling (Waxing, Transportation and Storage)

- 3.2.62 The rock core retrieved was placed inside core boxes and transported to the compound on a daily basis. At the compound the core liner was split into two halves using a hook blade. The core was logged and sub-samples collected at depth intervals instructed by the Client.
- 3.2.63 The sub-sampled cores were appropriately preserved using aluminium foil, wax and cling film in accordance with the ICE Specification.
- 3.2.64 Relevant samples scheduled for geotechnical testing by the Designer were subsequently distributed to *Geolabs Limited* for testing under a Chain of Custody.
- 3.2.65 Environmental soil samples collected for chemical analysis were dispatched daily to the laboratories of *ALS Environmental*, under a Chain of Custody. The samples were scheduled for chemical analysis by the Designer.

Monitoring Installation Details

- 3.2.66 Groundwater monitoring standpipes were installed in selected boreholes as instructed by the Designer. Monitoring standpipes consisted of 50mm internal diameter plain pipe together with a slotted pipe (of the same diameter) set in a granular filter medium and sealed above. Each installation was protected at the surface by a lockable, stopcock cover, set in concrete. Installation details are summarised in *Table 3-4* below and on the relevant borehole logs in *Appendix A*.

Table 3-4 Summary of Groundwater Monitoring Installations

Exploratory Hole Reference	As Built Co-ordinates <small>(*Access not available to location during post construction survey)</small>		Type of Installation	Standpipe Response Zone (mbGL)	Installation Cover
	Easting (m)	Northing (m)			
CP72307	414920.08	142119.91	50mm standpipe	0.50 – 1.50	Upright
CP72308A	415352.47	141955.20	50mm standpipe	1.75 - 4.75	Flush
CP72310	414920.92	142121.00	50mm standpipe	6.00 - 14.50	Upright
R71905	412040.58	141895.06	50mm standpipe	13.50 – 49.00	Flush
R71915	414051.97	142066.06	50mm standpipe	9.50 – 35.50	Upright
CPES1	415591	142134	50mm standpipe	5.50 – 14.50	Flush

3.3 Groundwater Monitoring

- 3.3.1 In line with Schedule 2, a programme of well development and groundwater sampling within borehole installations was commenced following their construction. Well development was undertaken within the selected wells, as presented in *Table 3.4*. Each well was purged between a period of 3 to 6 hours to ensure the groundwater runs clear and is free of sediment prior to sampling.
- 3.3.2 One round of groundwater sampling was undertaken post construction of the wells, immediately after well development. Well development and sampling took place from 17th November 2020 to 7th December 2020 as detailed in *Table 3-5*.

Table 3-5 Summary of Borehole Development and Sampling

Exploratory Hole Reference	Development date	Sampling date	Rising Head Test date	Analysis Suites	Comment
CP72307	N/A	N/A	N/A	N/A	Dry
CP72308A	19/11/20	19/11/20	N/A	Suite F, Additional Suite F, Suite F2	-
CP72310	25/11/20	25/11/20	04/12/20	Suite F, Additional Suite F, Suite F2	-
R71905	17/11/20 & 02/12/20	02/12/20	N/A	Suite F, Additional Suite F, Suite F2	-
R71915	30/11/20	30/11/20	N/A	Suite F, Additional Suite F, Suite F2	-
CPES1	04/12/20 & 07/12/20	07/12/20	N/A	Suite F, Additional Suite F, Suite F2	-

3.3.3 The well development method consisted in abstracting groundwater at varying depth with foot valve and high flow Waterra tubing. Details for each borehole developed and sampled is provided in *Table 3-6* below.

Table 3-6 Details of Borehole Development

Exploratory Hole Reference	Water level (btoc/bgl)	Total depth (btoc/bgl)	Water column height (m)	3 well volume incl. gravel pack (litres)	Volume abstracted (litres)	Pumping rate (litres per minute)	Water appearance at end of development
CP72308A	0.91 bgl	4.27 bgl	3.36	44	500	4-5	Milky
CP72310	4.60 btoc	14.70 btoc	10.10	131	350	4-5	Milky
R71905	28.71 btoc	49.51 btoc	20.8	270	250 & 905	4-5	Milky
R71915	25.60 btoc	35.70 btoc	10.10	131	780	4-5	Milky
CPES1	0.61 bgl	13.80 bgl	13.19	171	1080	4-5	Milky

- btoc (below top of casing) or bgl (below ground level)
- well volume assume 50mm standpipe and 150mm borehole diameter. Porosity of the gravel pack is assumed at 0.15.

3.3.4 All samples taken following development were sent to the ALS laboratory for analysis except for the samples taken from R71905 on 17/11/20 for which 3 well volume couldn't be realized due to pump breakage. The subsequent R71905 well development and sampling undertaken on 02/12/20 was successful.

3.3.5 Rising head tests were undertaken in CP72310 on the 4th December 2020, details provide in *Table 3-7*. Water levels were recorded at 5 seconds intervals using Schlumberger pressure logger during the entire duration of the test. Barometric pressure was recorded at 1 minute intervals. The results of the water level change from base rest level identified at 4.425 btoc during the tests are provided in *Appendix E*. During the rising head tests, barometric pressure was recorded.

Table 3-7 Details of rising head test

Test No.	Test Type	Slug insertion time	Slug Removal time	Slug length (mbtoc)	Slug depth (mbtoc)	Recovery time (seconds)
1	Rising	13:53	13:57	1.92	8.0	30
2:1	Rising	14:18	14:20	3.22	10.0	40
2:2	Rising	14:21	14:24	3.22	10.0	30
3:1	Rising	14:44	14:46	3.22	10.0	40

REPORT

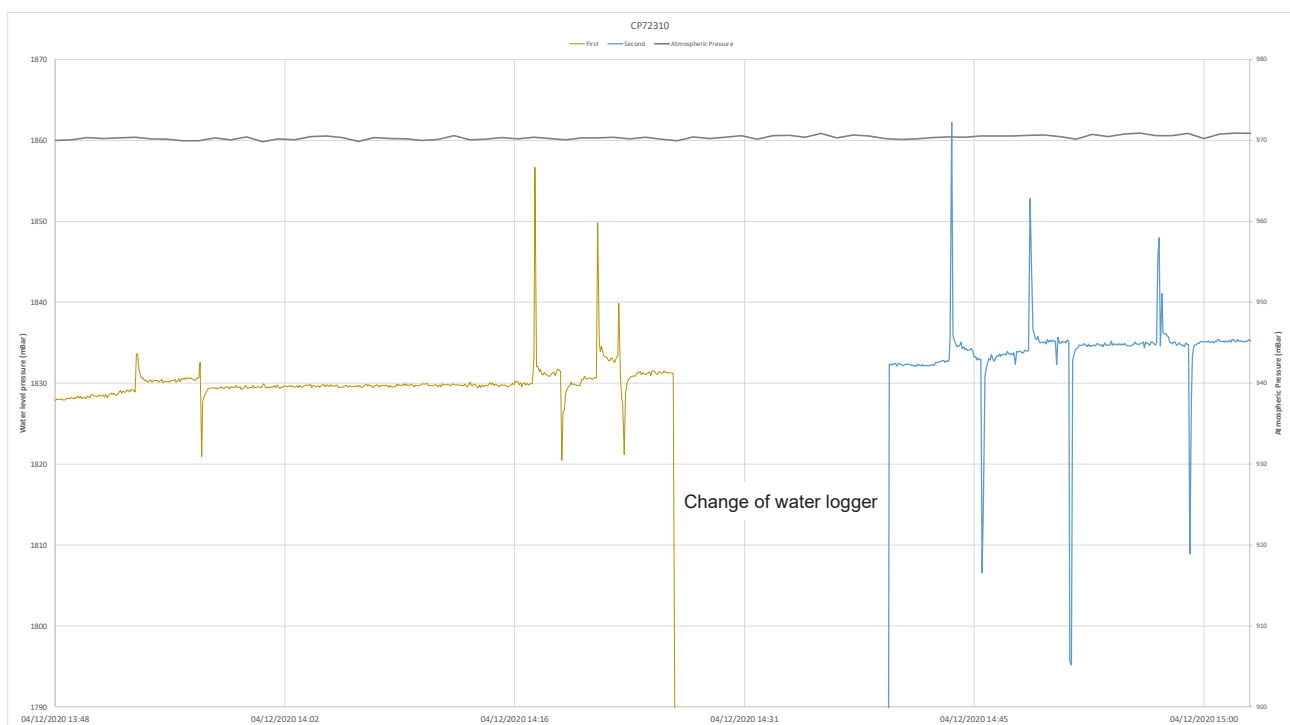
Test No.	Test Type	Slug insertion time	Slug Removal time	Slug length (mbtoc)	Slug depth (mbtoc)	Recovery time (seconds)
3:2	Rising	14:49	14:52	3.22	10.0	50
3.3	Rising	14:57	14:59	3.22	10.0	50

btoc (below top of casing) or bgl (below ground level); Test 3:1 and Test 3:2 used a new datalogger.

3.2 The high productivity of chalk means the full “expected” head changes have not been observed. This is exacerbated by the fact the borehole is slotted over the entire saturated depth and it was not possible to insert / remove the slug “instantaneously” relative to the speed groundwater levels recovered.

3.3 Figure 1 shows the pressure measured by the first and second water pressure logger and atmospheric pressure during the durations of the rising head tests.

Figure 1 CP72310 rising head test results



3.4 Geotechnical Laboratory Testing

3.4.1 A schedule of laboratory tests was prepared by the Designer, with selected tests being carried out in accordance with BS1377:1990, BRE (2005), ISRM (2007), unless stated otherwise.

3.4.2 The results of the analysis of all Geotechnical Laboratory Testing are presented in *Appendix F*. The type of test and numbers per test are summarised in Table 3.8 below.

Table 3-8: Summary of Geotechnical Laboratory Testing

Geotechnical Tests	Number of Tests Completed
Saturation Moisture Content of Chalk	236
Mass Loss of Ignition	2
Chalk Crushing Value	24

Geotechnical Tests	Number of Tests Completed
Moisture Condition Value	1
Slake-Durability Index	25
Water Content of a rock sample	26
Uniaxial Compressive Strength of rock materials	82
Uniaxial Compressive Strength of rock materials with Young's Modulus and Poisson's Ratio	17
Oedometer test	1
Consolidated Undrained Triaxial test with measurement of pore water pressure	1
Point Load Strength on rock	79
Shear Strength by Direct Shear on rock sample	10
Indirect Tensile Strength by the Brazil Test	12
Cerchar Abrasivity	10
Atterberg Limits	36
Water Content of a soil samples	1
Particle Size Distribution	4
Particle Size Distribution with Sedimentation	9
Particle Density	1
Density Determination using Buoyancy Techniques	1
BRE SD1 – Suite A Greenfield Site	10
BRE SD1 – Suite C Brownfield Site	2

3.5 Environmental Laboratory Testing

- 3.5.1 Environmental soil samples were dispatched to *ALS Laboratories*, with chemical analysis instructed by the Designer on all samples.
- 3.5.2 Further groundwater samples collected as part of the well development programme were dispatched to *ALS laboratories* for analysis as show in *Table 3-5* above.
- 3.5.3 The results of the analysis of all Environmental Laboratory Testing are presented in *Appendix G*. The numbers of soil analyses tested are summarised in *Table 3-9* below.

Table 3-9 Summary of Environmental Laboratory Testing

Environmental Testing Suite	Number of Tests Completed
Alkalinity	30
Fraction Organic Carbon (FOC)	30
Metals	93
O,p ¹ -DDD (TDE)	19
pH	91
Polyaromatic Hydrocarbons (PAHs)	115
Pesticides	20
Petroleum Hydrocarbons	61
SVOCs	23
Total Organic Carbon	97

REPORT

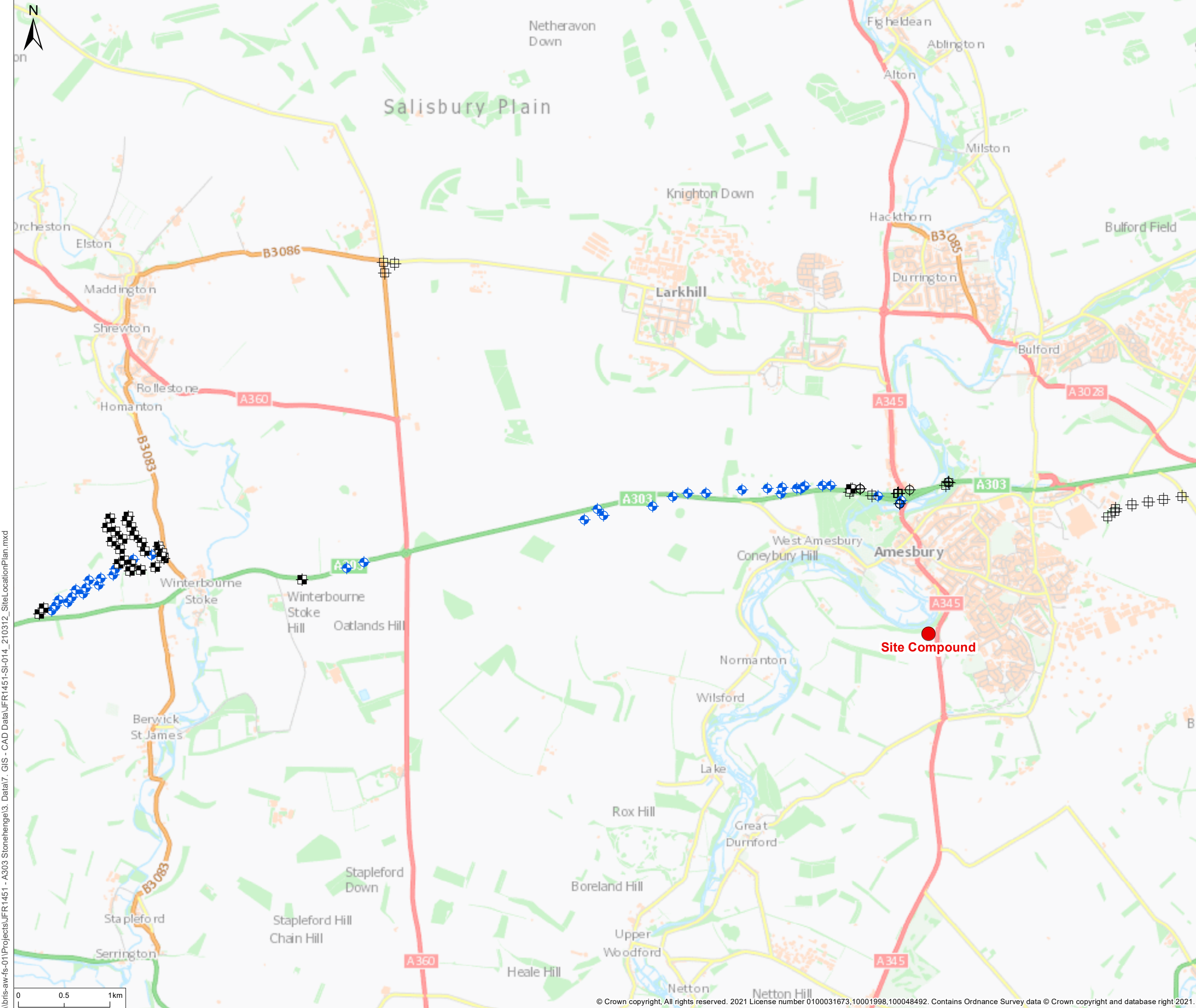
Environmental Testing Suite	Number of Tests Completed
SVOC TIC	23
VOC TIC	23
VOCs	23
WAC	7
Water Soluble Sulphate as SO ₄ 2:1 Extract	92

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- Legend**
- Site Compound
 - ◆ Rotary Coring Borehole (38)
 - ⊕ Cable Percussion Borehole (5)
 - ⊞ Inspection Pit (21)
 - ⊞ Trial Pit (27)
- As Built Investigation Locations**

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Rev	Description	By	CB	Date

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Client Highways England
 Project A303 Stage 7B GI
 Title Site Location Plan

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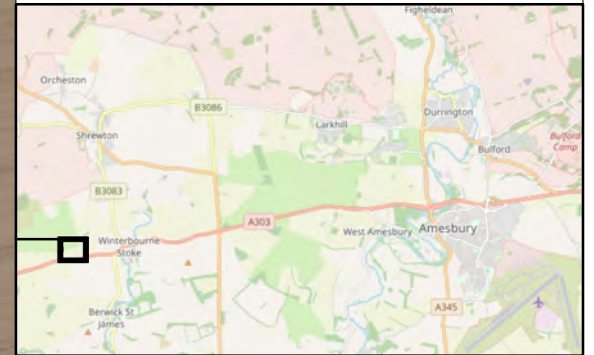
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Legend

- Rotary Coring Borehole
- Trial Pit



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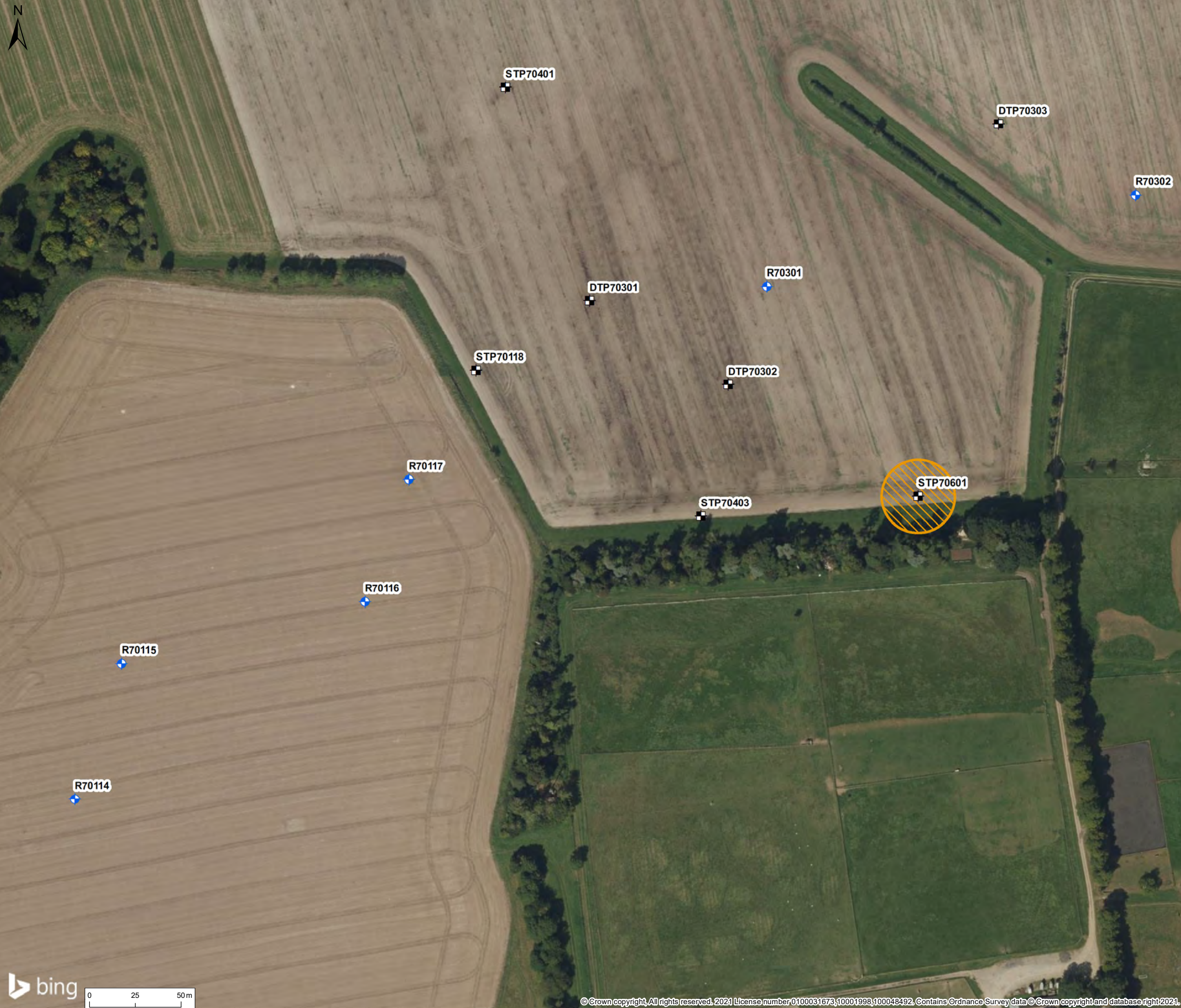
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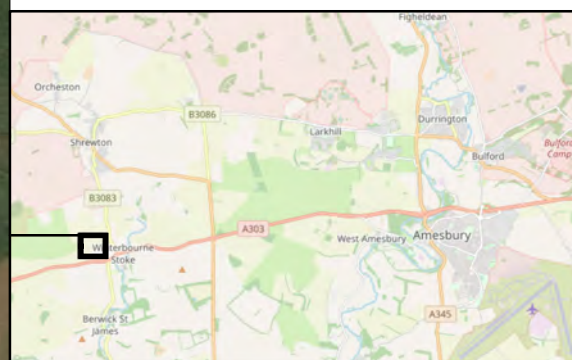
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- Legend**
-  Position Restricted Due to Proximity of Century Link Fibre Optic Cable
 -  Rotary Coring Borehole
 -  Trial Pit



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 Project **A303 Stage 7B GI**
 Title **Proposed Investigation Locations**

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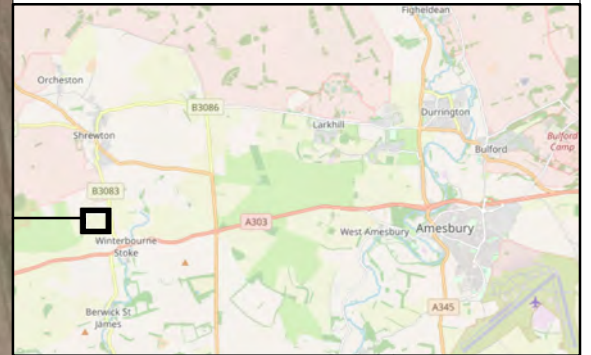
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Legend

■ Trial Pit



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Legend

- Rotary Coring Borehole
- Trial Pit



Rev	Description	By	CB	Date



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Client Highways England

Project A303 Stage 7B GI

Title Proposed Investigation Locations

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Project Number JFR1451 Scale @ A3 1:2,000 Date Created MAR 2021

Drawing Number **JFR1451-SI-004** Rev -

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Legend

 Trial Pit



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Project **A303 Stage 7B GI**

Title **Proposed Investigation Locations**

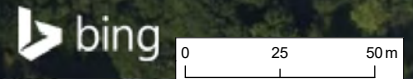
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Project Number **JFR1451** Scale @ **A3** Date Created **MAR 2021**

Drawing Number **JFR1451-SI-005** Rev **-**

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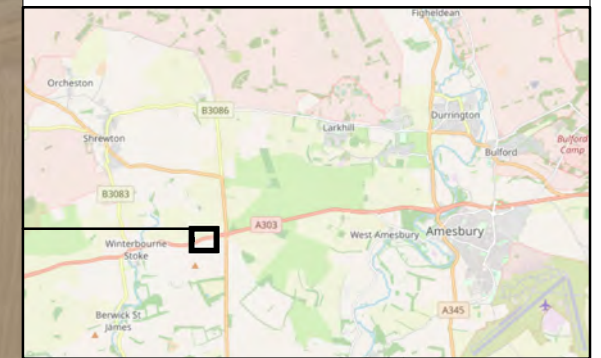
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- Rotary Coring Borehole



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Drawing Number	Rev
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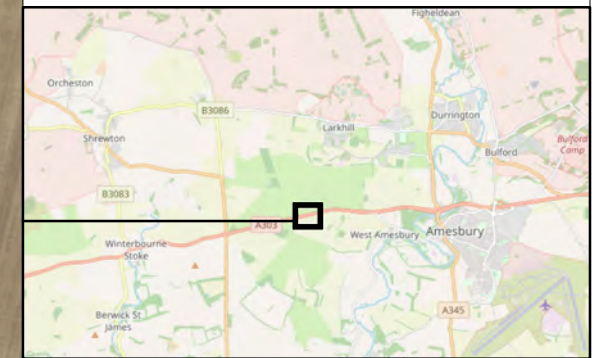
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-  Rotary Coring Borehole



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Project A303 Stage 7B GI

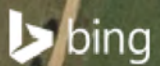
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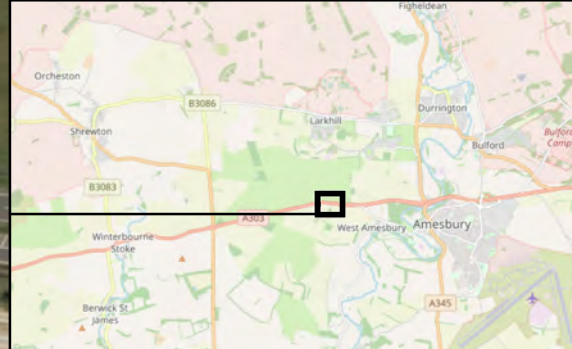
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Legend
 ◆ Rotary Coring Borehole



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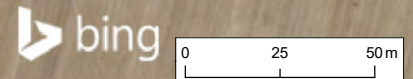
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 Title **Proposed Investigation Locations**

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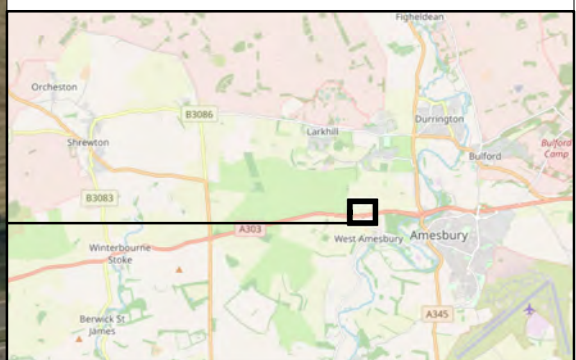
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 ♦ Rotary Coring Borehole



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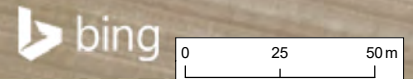
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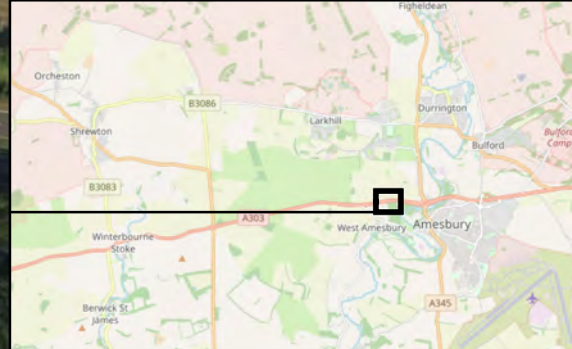
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Project A303 Stage 7B GI

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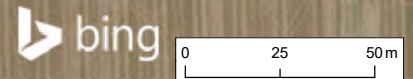
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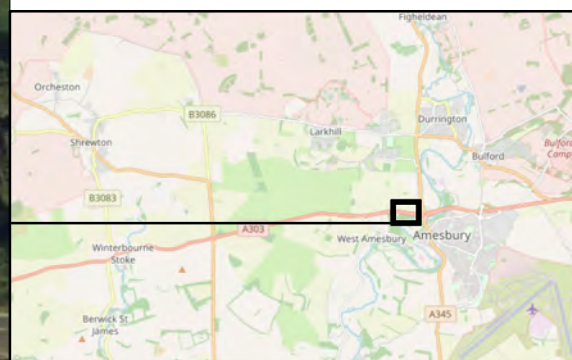


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- Legend**
-  Position Restricted Due to Proximity of Century Link Fibre Optic Cable
 -  Inspection Pit
 -  Dynamic Sampling with Rotary Coring Follow-on
 -  Cable Percussion Borehole
 -  Rotary Coring Borehole
 -  Trial Pit



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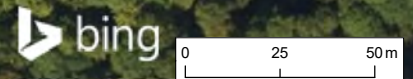
Project **A303 Stage 7B GI**

Title **Proposed Investigation Locations**

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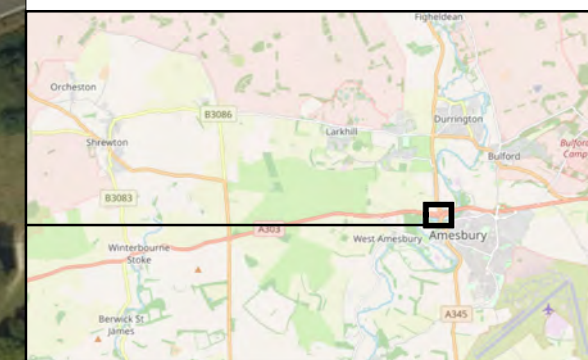
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- Legend**
- Inspection Pit
 - Dynamic Sampling with Rotary Coring Follow-on
 - Cable Percussion Borehole
 - Rotary Coring Borehole



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Drawing Number		Rev
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

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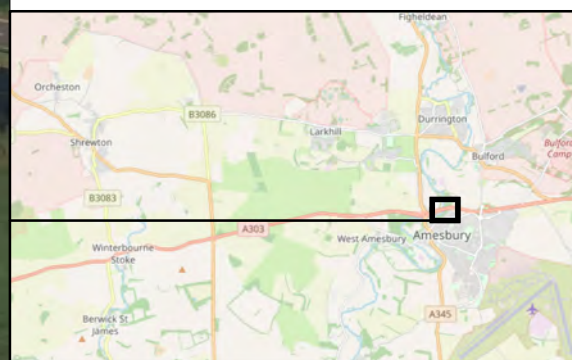
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-  Position Restricted Due to Proximity of Century Link Fibre Optic Cable
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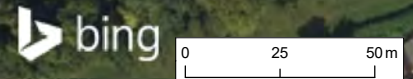
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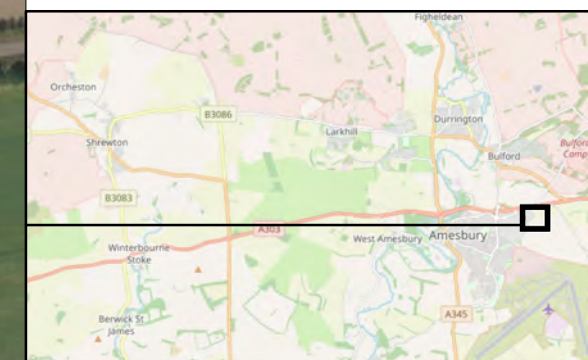




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⊕ Inspection Pit



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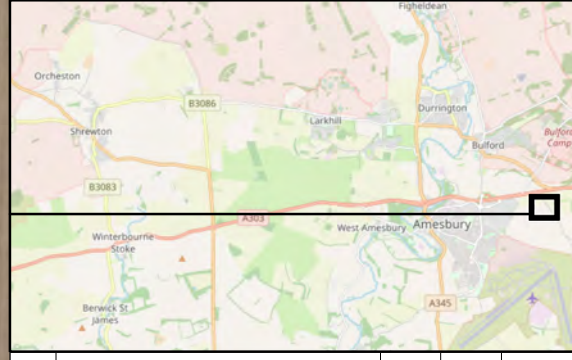
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Project **A303 Stage 7B GI**

Title **Proposed Investigation Locations**

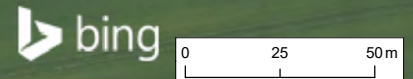
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APPENDICES

APPENDIX A

EXPLORATORY HOLE LOGS



Contract Name: A303 Stonehenge			Client: RPS Planning & Development			Borehole ID: BH72401		
Contract Number: JFR1451	Start Date: 16/09/2020	End Date: 24/09/2020	Checked By: GR	Status: FINAL	Sheet 1 of 3			
Rotary Core Drilling Log		Easting: 415118.2	Northing: 142038.5	Ground Level: 71.20mOD	Plant Used: Comacchio 602	Logged By: AG	Scale: 1:50	

Weather: Sunny Termination: Target depth achieved SPT Hammer: AR935 Energy Ratio: 63.5%

Samples & Core Recovery				Strata Details						Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
PID 0.0ppm	ES				71.00	0.20		Vegetation over soft to firm dark brown slightly sandy silty CLAY with frequent rootlets and rare roots (up to 7mm diameter).			
PID 0.0ppm	ES					(1.00)		TOPSOIL			
PID 0.0ppm	ES							MADE GROUND			
PID 0.0ppm	ES				70.00	1.20		MADE GROUND	1		
		SPT(S) 1.20m, 50 (25 for 125mm/50 for 120mm)			69.80	1.40		Soft off-white mottled orange slightly sandy very gravelly SILT. Gravel is round to subangular fine to coarse chalk with occasional black angular flint gravel.			
1.40 - 2.20	ES		62 N/A N/A		69.50	1.70		MADE GROUND			
					69.44	1.76		MADE GROUND			
						(0.64)		Assumed Zone of Core Loss (Probably due to SPT test) NO RECOVERY	2		
								Dark brown subangular to subrounded medium to coarse flint GRAVEL.			
								MADE GROUND			
					68.80	2.40		MADE GROUND			
					68.49	2.71		MADE GROUND			
2.20 - 3.70	ES		29 N/A N/A			(0.99)		Soft off-white mottled orange slightly sandy very gravelly SILT. Gravel is off-white round to subangular fine to coarse very weak medium density chalk with occasional dark angular flint gravel. Sand is fine to coarse.	3		
								MADE GROUND			
					67.50	3.70		MADE GROUND			
		SPT(S) 3.70m, 50 (25 for 10mm/50 for 15mm)	7 N/A N/A		67.35	3.85		MADE GROUND			
								Assumed Zone of Core Loss NO RECOVERY	4		
								Dark brown fine to coarse subangular to subrounded flint GRAVEL with occasionally pockets of mottled orange slightly sandy slightly silty clay. Sand is fine to coarse. Occasional dark brown organic material (Reworked Alluvium).			
								MADE GROUND			
								Assumed Zone of Core Loss (probably due to SPT tests) NO RECOVERY	5		
3.70 - 5.20	ES		0 N/A N/A			(2.15)		MADE GROUND			
		SPT(S) 5.20m, 50 (25 for 20mm/50 for 35mm)	0 N/A N/A		65.20	6.00		Soft light greenish brown slightly sandy slightly gravelly CLAY.	6		
					65.00	6.20		Gravel is rounded to subrounded fine to medium chalk and coarse flint. Sand is fine to coarse.			
								ALLUVIUM			
								Soft light brown slightly gravelly silty CHALK. Gravel comprises off-white subangular to subrounded fine to medium medium density chalk and subangular medium to coarse black rinded flint. (Reworked chalk)	7		
								SEAFOURD CHALK FORMATION			
								Assumed Zone of Core Loss NO RECOVERY			
					63.63	7.57		Non intact drilling disturbed: Recovered as slightly silty gravel with chalk cobbles. Gravel is subrounded to subangular fine to coarse very weak medium density off white chalk.			
		SPT(S) 7.25m, 50 (8,15/50 for 95mm)	60 14 14		63.31	7.89		SEAFOURD CHALK FORMATION	8		
					63.20	8.00		SEAFOURD CHALK FORMATION			
								Very weak medium to high density off-white generally unstained CHALK.			
								SEAFOURD CHALK FORMATION			
								Assumed Zone of Core Loss (assumed to be due to falling head test undertaken) NO RECOVERY	9		
		SPT(C) 8.75m, 50 (25 for 75mm/50 for 105mm)	0 0 0			(1.50)		MADE GROUND			
					61.70	9.50		Very weak medium to high density off-white unstained CHALK.			
					61.50	9.70		SEAFOURD CHALK FORMATION	10		

Start & End of Shift Observations					Installation					Remarks:				
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)					
17-09-2020	08:00	0.00	0.00							1. Hand dug inspection pit undertaken between ground level and 1.20mbgl.				
17-09-2020	16:30	1.20	0.00							2. falling head test undertaken at 8mbgl.				
22-09-2020	08:00	1.20	0.00							3. No groundwater encountered				
22-09-2020	17:00	8.00	7.25	8.00						4. Borehole backfilled with bentonite on completion.				
23-09-2020	08:00	8.00	7.25											
23-09-2020	17:00	20.70	20.70	10.00										
24-09-2020	08:00	20.70	20.70	10.00										
Flush Information					Borehole Diameter		Casing Diameter		Water Strikes					
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
1.40	30.00	Air/Mist	100%-100%	White	30.00	146	1.00	203				0		No groundwater encountered
Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %. NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).														
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018														



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: BH72401	
Contract Number: JFR1451	Start Date: 16/09/2020	End Date: 24/09/2020	Checked By: GR	Status: FINAL	Sheet 2 of 3	
Rotary Core Drilling Log		Easting: 415118.2	Northing: 142038.5	Ground Level: 71.20mOD	Plant Used: Comacchio 602	Logged By: AG
		Termination: Target depth achieved			SPT Hammer: AR935 Energy Ratio: 63.5%	

Weather: Sunny

Samples & Core Recovery				Strata Details						Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
9.50 - 10.50	D3 D	SPT(C) 13.00m, 50 (25 for 125mm/50 for 105mm)	20 0 0		60.15	(1.35)		Between 9.50m and 9.70m: Non intact chalk and flint band recovered as creamy white subrounded to rounded medium to coarse very weak medium density chalk gravel with light grey rinded nodular flint cobble. Matrix of light brown silt. Assumed Zone of Core Loss NO RECOVERY	11		
10.50 - 11.50			45 0 0			(0.77)		Very weak medium to high density off-white unstained CHALK. Fracture set 1 subhorizontal closely to widely spaced typically open (<1mm). No infill with fine black specks. High angle joint set 2 widely to very widely spaced typically open (<1mm) no infill with fine black specks. Rare subvertical fractures. Nodular flint bands medium to widely spaced. Fine light grey subhorizontal frequently interwoven bands of marl laminae closely to medium spaced and occasional orange staining. (CIRIA grade B2/B3) SEAFORD CHALK FORMATION Assumed Zone of Core Loss NO RECOVERY			
11.50 - 12.00			70 0 0			(1.18)		Between 12.00m and 13.00m: Limited recovery			
12.00 - 12.50			0 0 0			13.00		Extremely to very weak medium to high density thinly to thickly bedded off-white unstained CHALK. Fracture set 1 is subhorizontal to 20° closely to widely spaced typically open (<1mm). No infill with fine black specks. Fracture set 2 is 30° to subvertical typically open (<1mm) no infill with fine black specks. Nodular flint bands medium to widely spaced. Fine light grey subhorizontal frequently interwoven bands of marl laminae closely to medium spaced and occasional orange staining. (CIRIA grade B1/B3) SEAFORD CHALK FORMATION			
12.50 - 13.00	D	13.00m, 50 (25 for 125mm/50 for 105mm)	0 0 0		58.20	13.00		Between 13.00m and 13.10m: light grey rinded nodular flint cobble. At 13.43m orange staining occasionally dark orange diffuse filaments (<10mm). Between 13.5m and 14.00m: AZCL At 14.60m orange staining occurring as occasional fine (<1mm) orangish-red filaments and patches (<10mm). Between 14.72m and 15.01m: Non intact chalk recovered as subangular fine to coarse gravel with occasional cobble. Gravel is creamy white very weak medium density unstained chalk with frequent black specks. Residual bedding fractures set 1 Subhorizontal to 80 degrees closely spaced open no infill with black specks. Between 15.55m and 15.60m: Assumed Zone of Core Loss	13		
13.00 - 13.50			100 56 0			14.00 - 14.50		0 0 0			100 0 0	15
13.50 - 14.00	D CD	13.00m, 50 (25 for 125mm/50 for 105mm)	0 0 0		58.20	15.55		Between 15.75m and 15.90m: NI chalk recovered as creamy white angular fine to medium gravel of very weak medium density chalk with multiple high angle joint sets and occasional orange staining (assumed sponges). At 15.88m orange staining occurring as curved thin (<1mm) filaments with elliptical form (assumed sponge). Between 16.60m and 16.65m orange staining occurring as diffuse orange patches and orangish-red filaments. Occasionally orangish-red apparently infilled flattened tubes and layers (assumed sponge). Infilled burrows with gravel sized (<10mm) thin (<2mm) prismatic shell fragments (possible inoceramid). Between 17.16m and 17.26m: Band of black rinded nodular flint cobbles (>100mm thick). Between 17.26m and 18.50m AZCL	14		
14.00 - 14.50			100 0 0			14.50 - 15.55		100 68 26			15.55 - 17.00	97 51 39	16
14.50 - 15.55	C6 CD	13.00m, 50 (25 for 125mm/50 for 105mm)	100 68 26		58.20	17.00		At 18.96m orange staining occurring as subhorizontal elongate (50mm) narrow (up to 5mm) ellipse (possible sponge). Between 19.02m and 19.10m orange staining occurring as diffuse patches on core and fracture surfaces (possible sponges). Between 19.55m and 19.70m AZCL	15		
15.55 - 17.00			97 51 39			17.00 - 18.50		17 11 11			17
17.00 - 18.50	C7 CD	13.00m, 50 (25 for 125mm/50 for 105mm)	17 11 11		58.20	18.50		At 18.96m orange staining occurring as subhorizontal elongate (50mm) narrow (up to 5mm) ellipse (possible sponge). Between 19.02m and 19.10m orange staining occurring as diffuse patches on core and fracture surfaces (possible sponges). Between 19.55m and 19.70m AZCL	17		
17.00 - 18.50			17 11 11			18.50 - 19.20		100 74 57			18.50 - 19.20	70 0 0	18
18.50 - 19.20	C9 CD	13.00m, 50 (25 for 125mm/50 for 105mm)	100 74 57		58.20	19.20		Between 19.55m and 19.70m AZCL	19		
19.20 - 19.70			70 0 0			19.70 - 20.20		50			19.70 - 20.20	50	19
19.70 - 20.20			50			20					

Start & End of Shift Observations					Installation					Remarks:				
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)					
24-09-2020	17:00	30.00	20.70	10.00						1. Hand dug inspection pit undertaken between ground level and 1.20mbgl. 2. falling head test undertaken at 8mbgl. 3. No groundwater encountered 4. Borehole backfilled with bentonite on completion.				
Flush Information										Water Strikes				
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
					30.00	146	1.00	203				0		No groundwater encountered
Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %.												NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).		
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018														



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: BH72401	
Contract Number: JFR1451	Start Date: 16/09/2020	End Date: 24/09/2020	Checked By: GR	Status: FINAL	Sheet 3 of 3	
Rotary Core Drilling Log		Easting: 415118.2	Northing: 142038.5	Ground Level: 71.20mOD	Plant Used: Comacchio 602	Logged By: AG
		Termination: Target depth achieved			SPT Hammer: AR935 Energy Ratio: 63.5%	
					Scale: 1:50	

Weather: Sunny

Samples & Core Recovery				Strata Details						Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
20.20 - 20.70	CD	SPT(S) 20.70m, 100 (25 for 133mm/100 for 150mm)	84 56 56					Between 19.95m and 20.20m AZCL Between 20.2m and 20.30m AZCL Between 20.40m and 20.52m Frequent orange staining occurring as diffuse patches randomly orientated filaments associated with stained surface and occasional dark areas with creamy white patches of unstained chalk (possible sponge bed) Between 20.70m and 20.80m AZCL	21		
20.70 - 21.50	CD	SPT(S) 21.50m, 100 (13,12/100 for 175mm)	90 64 39					At 21.01m light grey subhorizontal interwoven marl laminae. At 21.11m light grey subhorizontal interwoven marl laminae. At 21.17m orange staining occurring as fine gravel sized (<5mm) diffuse patches. At 21.18m light grey subhorizontal interwoven marl laminae.	22		
21.50 - 23.00	CD C13 CD	SPT(S) 22.30m, 100 (25 for 0mm/100 for 75mm)	97 59 42					At 21.85m: Gravel sized (<5mm) orange nodules with dark reddish-orange core. At 22.10m: rounded fine to coarse rinded nodular flint gravel. Between 22.30m and 22.65m NI chalk recovered as coarse gravel and cobbles. Chalk is very weak medium density creamy white and unstained. Between 22.65m and 22.70m: flint band recovered as black angular fine to medium rinded nodular flint gravel.	23		
23.00 - 24.00	CD	SPT(S) 23.00m, 50 (25 for 80mm/50 for 75mm)	100 52 36	NI 70 1560		(14.40)		Between 23.34m and 23.37m: nodular rinded flint recovered as black angular medium to coarse gravel. Between 23.50m and 23.61m light grey subhorizontal marl laminae. At 23.58m Occasional orange staining (up to 10mm). Reddish-orange nodule thin (up to 5mm) and black rinded tabular flint on joint surface.	24		
24.00 - 25.50	CD C17 CD	SPT(S) 24.00m, 50 (25 for 75mm/50 for 75mm)	89 51 39					Between 24.92m and 25.04m fine light grey subhorizontal occasionally interwoven marl laminae. At 24.93m dark orangish-red staining as subhorizontal thin (up to 3mm) band associated with marl band. At 25.10m fine light grey subhorizontal marl laminae. At 25.14m rinded nodular flint cobble (80mm x 30mm). Between 25.33m and 25.50m AZCL	25		
25.50 - 27.00	CD C18 CD CD	SPT(S) 25.50m, 100 (25 for 100mm/100 for 100mm)	100 73 41					At 25.87m light grey fine subhorizontal interwoven marl laminae. At 26.12m: band of fine to coarse nodular flint gravel. At 26.16m light grey fine subhorizontal interwoven marl laminae. At 26.17m light grey fine subhorizontal occasionally interwoven marl laminae. Between 26.45m and 26.54m Band of black rinded nodular flint cobbles in chalk silt matrix. (>100mm thick). At 26.56m light grey fine subhorizontal occasionally interwoven marl laminae. At 26.75m light grey fine subhorizontal occasionally interwoven marl laminae. Between 26.78m and 26.83m: Tabular rinded nodular flint cobble (90mm x 60mm) flat (up to 30mm thick) in a chalk silt matrix.	26		
27.00 - 28.50	CD C21 CD	SPT(S) 27.00m, 100 (25 for 100mm/100 for 100mm)	100 51 43		43.80	27.40		Very weak medium density thinly to medium bedded off-white CHALK. Fractures are subhorizontal closely to medium spaced open no infill with black specks and light grey marl patches (CIRIA Grade B2/B3) SEAFORD CHALK FORMATION Between 27.45m and 27.50m: orange staining occurring as filaments (<10mm) and patches of diffuse staining. Between 27.97m and 28.17m fine light grey subhorizontal marl laminae. At 28.39m: semicircular (25mm x 10mm) thin (<1mm) shell (inoceramid).	27		
28.50 - 30.00	CD C22 C CD	SPT(S) 28.50m, 81 (25 for 81mm/81 for 81mm)	81 72 63	40 300 1200		(2.60)		At 28.76m fine light grey subhorizontal marl laminae. At 28.91m: fine light grey subhorizontal marl laminae. Between 28.91m and 29.05m orange staining occurring as light orange and occasional dark orange diffuse spots. Between 29.72m and 30.00m AZCL	28		
					41.20	30.00		End of Borehole at 30.00m	30		

Start & End of Shift Observations					Installation					Remarks:				
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)					
										1. Hand dug inspection pit undertaken between ground level and 1.20mbgl. 2. falling head test undertaken at 8mbgl. 3. No groundwater encountered 4. Borehole backfilled with bentonite on completion.				
Flush Information										Water Strikes				
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
					30.00	146	1.00	203				0		No groundwater encountered
Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %.														
NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).														
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018														



Contract Name: A303 Stonehenge			Client: RPS Planning & Development			Borehole ID: BH72503		
Contract Number: JFR1451	Start Date: 17/09/2020	End Date: 24/09/2020	Checked By: GR	Status: FINAL		Sheet 1 of 5		
Rotary Core Drilling Log		Easting: 415372.0	Northing: 141991.0	Ground Level: 70.72mOD	Plant Used: Comacchio 450	Logged By: BB	Scale: 1:50	

Weather: Sunny Termination: Target depth achieved SPT Hammer: EQU1642 Energy Ratio: 70.49%

Samples & Core Recovery					Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
	ES				70.62	0.10		Soft dark brown and black mottled CLAY. Frequent roots < 5mm diameter.			
	ES				70.42	0.30		TOPSOIL			
	ES							Structureless CHALK composed of off-white gravelly SILT. Gravel is angular fine to medium very weak low density chalk and occasional flint. (CIRIA Grade Dm)			
	ES					(1.35)		SEAFORD CHALK FORMATION			
		SPT(C) 1.20m, N=36 (1,3/5,8,10,13)						Structureless CHALK composed of silty fine to coarse GRAVEL. Clasts are very weak low density off-white chalk with occasional flint cobbles. (CIRIA Grade Dc)			
		SPT(S) 1.65m, N=18 (5,6/4,6,7,1)			69.07	1.65		SEAFORD CHALK FORMATION			
1.60 - 3.10			0 0 0					Assumed Zone of Core Loss NO RECOVERY			
		SPT(S) 3.10m, N=14 (2,4/2,3,4,5)									
3.10 - 4.60			0 0 0			(4.45)					
		SPT(S) 4.60m, N=4 (3,2/1,1,1,1)									
4.60 - 6.10	CD1		0 0 0								
		SPT(S) 6.10m, N=7 (2,2/1,2,1,3)			64.62	6.10		Limited Recovery: Structureless CHALK composed of silty sandy subangular medium to coarse GRAVEL with occasional orange staining. Occasional bands of flints (CIRIA Grade Dc)			
6.10 - 7.60			46 6 0					SEAFORD CHALK FORMATION			
								Between 6.10m and 6.90m: Assumed Zone of Core Loss (SPT (C) Test).			
								At 6.90m: Orange staining			
								Between 6.90m-7.42m: Non intact.			
								Between 7.50m-7.60m: Non intact.			
		SPT(S) 7.60m, N=10 (3,2/2,2,3,3)									
7.60 - 9.10			53 9 9								
								Between 8.34m-8.98m: Non intact.			
		SPT(S) 9.10m, N=14 (2,1/1,4,4,5)									
9.10 - 10.60	CD		67 0 0								
								Between 8.93m-9.10m: Very weak, medium density white chalk.			
								Between 9.10m-10.00m: Non intact. (SPT (C) Test)			

Start & End of Shift Observations					Installation					Remarks:	
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)		
17-09-2020	08:00									1. Hand dug inspection pit undertaken from ground level to 1.20mbgl.	
17-09-2020	16:30	1.65	1.20							2. Borehole Backfilled with bentonite on completion.	
18-09-2020	07:30	1.65	1.10								
18-09-2020	16:00	1.65	1.10								
21-09-2020	07:30	1.65	1.10								
21-09-2020	16:00	1.65	1.10								
22-09-2020	07:30	1.65	1.10	1.50							
Flush Information					Borehole Diameter		Casing Diameter				
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)			
1.20	1.60	Air/Mist	100%-100%	white	30.10	146	6.10	175			
1.60	3.10	Air/Mist	100%-100%	yellow							
3.10	4.60	Air/Mist	100%-100%	yellow							
4.60	6.10	Air/Mist	100%-100%	yellow							

Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %. NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: BH72503	
Contract Number: JFR1451	Start Date: 17/09/2020	End Date: 24/09/2020	Checked By: GR	Status: FINAL	Sheet 2 of 5	
Rotary Core Drilling Log		Easting: 415372.0	Northing: 141991.0	Ground Level: 70.72mOD	Plant Used: Comacchio 450	Logged By: BB
		Termination: Target depth achieved			SPT Hammer: EQU1642 Energy Ratio: 70.49%	

Weather: Sunny

Samples & Core Recovery				Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation
10.60 - 12.10	CD2	SPT(S) 10.60m, N=15 (2,2/3,4,4,4)	47 0 0		56.42	(8.20)		<p>Between 10.00m-11.40m: Assumed Zone of Core Loss.</p> <p>Between 11.40m-12.10m: Non intact.</p> <p>Between 11.60m-11.72m: Orange staining.</p>	11	
12.10 - 13.60		SPT(S) 12.10m, N=25 (4,6/5,7,7,6)	30 5 0					<p>Between 12.18m-12.56m: Non intact (SPT (C) Test).</p> <p>Between 12.56m-13.60m: Assumed Zone of Core Loss.</p>	12	
13.60 - 15.10		SPT(S) 13.60m, 50 (7,12/50 for 225mm)	93 54 0					<p>Between 13.60m-14.10m: Non intact (SPT (C) Test).</p> <p>Between 14.18m-14.30m: Non intact.</p> <p>Very weak low density white CHALK. Joint set 1: subhorizontal to 20° closely spaced with black specks. Joint set 2: 30°-70° medium spaced with black specks. Joint set 3: 80° to subvertical closely spaced. (CIRIA Grade A3) SEAFORD CHALK FORMATION</p>	14	
15.10 - 16.60		SPT(C) 15.10m, N=49 (3,13/15,15,10,9)	100 76 19	NI 50 700		(2.30)		<p>Between 15.10m-15.62m: Non intact (SPT (C) test).</p> <p>Between 16.01m-16.07m: Non intact.</p> <p>Between 16.15m-16.19m: Non intact.</p> <p>Between 16.38m-16.41m: Non intact.</p> <p>Between 16.47m-16.52m: Non intact.</p>	15	
16.60 - 18.10		SPT(C) 16.60m, N=100 (5,11/21,27,33,19)	93 56 47		54.12	16.60		<p>Very weak low density white CHALK with occasional orange staining. Joint set 1, subhorizontal to 20° closely spaced with black specks and silt veneer. Joint set 2, 50-70° with black specks. Joint set 3, 80-90° with black specks. (CIRIA Grade A3) SEAFORD CHALK FORMATION</p> <p>Between 16.72m-16.83m: Medium subangular flint fragment.</p> <p>Between 16.73m-16.84m: Non intact.</p> <p>Between 17.63m-18.28m: Non intact.</p>	16	
18.10 - 19.60		SPT(C) 18.10m, N=61 (7,7/15,15,19,12)	93 46 36	NI 130 860		(4.50)		<p>Between 18.52m-18.71m: Non intact.</p> <p>Between 18.91m-20.07m: Non intact.</p>	17	
	CD3 CD4	SPT(C) 19.60m, 100 (9,16/100 for 270mm)						<p>Between 19.60m-19.71m: Non intact (SPT (C) Test).</p>	18	

Start & End of Shift Observations					Installation					Remarks:	
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)		
22-09-2020	16:30	9.55	6.10	4.00						1. Hand dug inspection pit undertaken from ground level to 1.20m bgl.	
23-09-2020	07:30	9.55	6.10	2.50						2. Borehole Backfilled with bentonite on completion.	
23-09-2020	17:00	27.46	6.10	4.00							
24-09-2020	07:30	27.46	6.10	4.00							
24-09-2020	17:30	0.00									

Water Strikes					
Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks

Flush Information					Borehole Diameter		Casing Diameter	
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
6.10	7.60	Air/Mist	100%-100%	white	30.10	146	6.10	175
7.60	9.10	Air/Mist	100%-100%	white				
9.10	10.60	Air/Mist	100%-100%	white				
10.60	12.10	Air/Mist	100%-100%	white				

Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %. NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).

RPS RC Template Issue Number: 2 Issue Date: 02/01/2018



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: BH72503	
Contract Number: JFR1451	Start Date: 17/09/2020	End Date: 24/09/2020	Checked By: GR	Status: FINAL	Sheet 3 of 5	
Rotary Core Drilling Log		Easting: 415372.0	Northing: 141991.0	Ground Level: 70.72mOD	Plant Used: Comacchio 450	Logged By: BB
		Termination: Target depth achieved			SPT Hammer: EQU1642 Energy Ratio: 70.49%	
				Scale: 1:50		

Weather: Sunny

Samples & Core Recovery				Strata Details						Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
19.60 - 21.10	CD5 CD6	SPT(C) 21.10m, 100 (25 for 125mm/100 for 270mm)	100 69 50		49.62	21.10		<p>Between 20.00m-20.07m: Non intact.</p> <p>Between 20.20m-20.40m: Non intact.</p> <p>Between 20.23m-20.28m: Non intact.</p> <p>Between 20.67m-20.71m: Non intact.</p>	21		
21.10 - 22.60	CD7	SPT(C) 22.60m, 100 (25 for 140mm/100 for 140mm)	87 54 38					<p>Very weak medium density white CHALK with frequent grey marls and orange staining. Joint set 1 subhorizontal to 10° medium to widely spaced (50,800,5200) clean white with black specks, grey surfaces and frequent orange staining. Joint set 2 orientated 40 to 70°, widely spaced (300,1500,1900). Joint set 3 subvertical widely spaced clean. (CIRIA Grade A1/A2)</p> <p>SEAFORD CHALK FORMATION</p> <p>Between 21.20m-21.25m: Coarse rinded sheet flint.</p> <p>Between 21.25m-21.52m: Non intact.</p> <p>Between 21.26m-21.35m: Coarse flint fragment.</p> <p>Between 21.45m-21.56m: Fine to medium gravel sized flint fragments.</p> <p>Between 21.66m-21.76m: Orange staining.</p> <p>At 22.00m: Coarse gravel rinded flint</p> <p>Between 22.10m-30.10m: Regular thin marl bands with increased thickness and frequency from 28.00m.</p> <p>At 22.15m: Cylindrical fossil fragment 5mm in diameter.</p> <p>Between 22.28m-22.38m: Non intact.</p> <p>Between 22.65m-22.95m: Fine to coarse gravel flint fragments.</p> <p>Between 22.65m-23.00m: Non intact. (SPT (C) test)</p> <p>Between 23.07m-23.14m: Thin subhorizontal marl band</p> <p>At 23.40m: Fine to coarse flint fragments.</p> <p>Between 23.50m-23.52m: Thin (1mm) grey marl band.</p> <p>Between 23.80m-23.95m: subrounded medium flint gravel.</p>	22		
22.60 - 24.10	C1	SPT(C) 24.10m, 100 (25 for 145mm/100 for 215mm)	93 54 34					<p>Between 24.15m-24.44m: Non intact (SPT (C) test).</p> <p>At 24.62m: Orangish red staining.</p> <p>Between 24.90m-25.00m: Coarse flint gravel fragment.</p>	23		
24.10 - 25.60	CD8	SPT(C) 25.60m, 100 (25 for 100mm/100 for 220mm)	93 68 63	NI 60 490		(7.20)		<p>Between 25.36m-25.58m: Non intact.</p> <p>Between 25.40m-25.47m: Rounded flint with orange staining.</p> <p>Between 25.62m-25.90m: Non intact (SPT (C) Test).</p> <p>Between 26.10m-26.20m: elongate rinded tabular flint (10mm diameter) .</p> <p>At 26.70m: rounded fine flint gravel (approx 2mm in diameter.)</p> <p>At 26.90m: Medium flint gravel fragments.</p>	24		
25.60 - 27.10	C2 C4	SPT(C) 27.10m, 100 (25 for 145mm/100 for 215mm)	100 56 43					<p>Between 27.15m-27.48m: Non intact (SPT (C) Test).</p> <p>At 27.20m: fine gravel to cobble sized flint fragments.</p> <p>At 27.65m: Medium rinded flint gravel.</p>	25		
27.10 - 28.60	C3	SPT(C) 28.60m, 100 (7,14/100 for 175mm)	93 69 56		42.42	28.30		<p>Very weak low to high density white and yellowish CHALK with frequent orangish red stains and frequent thin marl bands. Joint set 1: subhorizontal to 10° medium spaced clean white with black speckles, grey surfaces and frequent orange staining. Joint set 2 orientated 40 to 70°, widely spaced. Joint set 3 orientated subvertical widely spaced clean . (CIRIA Grade A2)</p> <p>SEAFORD CHALK FORMATION</p> <p>Between 28.70m-28.92m: Non intact (SPT (C) test).</p> <p>At 29.10m: Inoceramid fragment (7mm thick).</p> <p>Between 29.40m-29.50m: Grey marl band.</p> <p>At 29.60m: Rounded and subangular medium flint gravel.</p> <p>Between 29.80m-30.02m: Orange staining.</p>	26		
28.60 - 30.10	C5		93 67 50	NI 140 630		(1.80)			27		
Start & End of Shift Observations				Installation				Remarks:			
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)	1. Hand dug inspection pit undertaken from ground level to 1.20mbgl. 2. Borehole Backfilled with bentonite on completion.	
										Water Strikes	
Strike (m)		Casing (m)		Sealed (m)		Time (mins)		Rose to (m)		Remarks	
Flush Information				Borehole Diameter				Casing Diameter			
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %.		
12.10	13.60	Air/Mist	100%-100%	white	30.10	146	6.10	175	NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).		
13.60	15.10	Air/Mist	100%-100%	white							
15.10	16.60	Air/Mist	100%-100%	white							
16.60	18.10	Air/Mist	100%-100%	white							



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: BH72503	
Contract Number: JFR1451	Start Date: 17/09/2020	End Date: 24/09/2020	Checked By: GR	Status: FINAL	Sheet 4 of 5	
Rotary Core Drilling Log		Easting: 415372.0	Northing: 141991.0	Ground Level: 70.72mOD	Plant Used: Comacchio 450	Logged By: BB
		Termination: Target depth achieved			SPT Hammer: EQU1642 Energy Ratio: 70.49%	

Weather: Sunny

Samples & Core Recovery					Strata Details					Groundwater		
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description			Water Strike	Backfill/Installation
					40.62	30.10		At 29.93m: <i>Tabular flint fragments.</i>				
								End of Borehole at 30.10m				
											31	
											32	
											33	
											34	
											35	
											36	
											37	
											38	
											39	
											40	

Start & End of Shift Observations					Installation					Remarks:	
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)	1. Hand dug inspection pit undertaken from ground level to 1.20mbgl. 2. Borehole Backfilled with bentonite on completion.	
										Water Strikes	
Strike (m)		Casing (m)		Sealed (m)		Time (mins)		Rose to (m)		Remarks	
Flush Information					Borehole Diameter		Casing Diameter				
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)			
18.10	19.60	Air/Mist	100%-100%	white	30.10	146	6.10	175			
19.60	21.10	Air/Mist	100%-100%	white							
21.10	22.60	Air/Mist	100%-100%	white							
22.60	24.10	Air/Mist	100%-100%	white							
Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %.											
NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).											
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018											



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: CP72307	
Contract Number: JFR1451	Start Date: 16/10/2020	End Date: 16/10/2020	Checked By: GR	Status: FINAL	Sheet 1 of 1	
Cable Percussion Borehole Log		Easting: 414920.1	Northing: 142119.9	Ground Level: 73.15mOD	Plant Used: Dando 4000	Logged By: PB Scale: 1:50

Weather: Sunny Termination: Refusal on hard strata. SPT Hammer: AR366 Energy Ratio: 65%

Samples & In Situ Testing				Strata Details				Groundwater	
Depths	Type/Ref	SPT	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation
0.00 - 0.20 0.10	B D			72.95	0.20		Firm dark brown slightly gravelly silty CLAY. Gravel is subangular fine to coarse flint and occasional chalk. Frequent rootlets and roots (up to 6mm thick). (MADE GROUND)		
0.40 - 0.90 0.50	B D				(0.70)		Firm brown slightly gravelly sandy CLAY with low subangular flint cobble content (up to 110mm x 90mm). Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse flint and chalk.		
0.90 - 1.20 1.00	B D			72.25	0.90				
1.20 - 1.65	D	SPT(S) 1.20m, N=21 (2,4/4,6,4,7)			(0.60)		POSSIBLE COLLUVIUM		
1.65 - 2.20	B			71.65	1.50		Medium dense light greenish brown slightly gravelly silty fine to coarse SAND with low subangular flint cobble content (up to 100mm x 70mm). Gravel is subangular to subrounded fine to coarse flint and chalk.		
2.20 - 2.65	D	SPT(S) 2.20m, N=10 (2,2/2,2,3,3)					CHALK recovered as off-white and orangish brown slightly sandy gravelly silt. Gravel is subangular fine to coarse chalk and rare angular coarse flint.		
2.65 - 3.20	B						SEAFORD CHALK FORMATION		
3.20 - 3.65	D	SPT(S) 3.20m, N=10 (2,2/2,3,2,3)			(3.60)				
3.65 - 4.20	B								
4.20 - 4.65 4.20 - 4.65	B D	SPT(S) 4.20m, N=16 (3,5/3,5,4,4)							
4.65 - 5.10	D	SPT(S) 4.65m, N=17 (3,4/5,4,4,4)		68.05	5.10				
							End of Borehole at 5.10m		

Start & End of Shift Observations				Installation				Remarks:									
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)	1. Hand dug inspection pit undertaken from ground level to 1.20mbgl. 2. 50mm standpipe installed with a response zone between 0.5m and 1.5m below ground level.							
16-10-2020	08:00	0.00			Pipe 1	0.00	0.90	PLAIN	50								
16-10-2020	11:30	5.10	1.50		Pipe 1	0.90	1.20	SLOTTED	50								
										Water Strikes							
Chiselling				Borehole Diameter				Casing Diameter				Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
From (m)	To (m)	Duration	Remarks	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	5.10	1.50		0			Dry	
				1.20	300	1.50	150										
				5.10	150												
RPS CP Template Issue Number: 1 Issue Date: 13/09/2017																	



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: CP72308	
Contract Number: JFR1451	Start Date: 13/10/2020	End Date: 14/10/2020	Checked By: GR	Status: FINAL	Sheet 1 of 1	
Rotary Core Drilling Log		Easting: 415352.1	Northing: 141957.5	Ground Level: 69.98mOD	Plant Used: Beretta T41	Logged By: PB
Weather: Fine		Termination: Poor sample recovery.			SPT Hammer: EQU2117 Energy Ratio: 67.66%	

Samples & Core Recovery				Strata Details						Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
PID 25.1ppm	D	SPT(S) 1.20m, N=26 (9,9/6,10,6,4)	36 N/A N/A		69.83	0.15		Black TARMACADAM.	1		
	ES				69.68	0.30		MADE GROUND			
PID 4.6ppm	LB				69.58	0.40		Dark grey slightly sandy angular fine to coarse GRAVEL of siltstone with rare fragments of brick and tarmacadam. Strong hydrocarbon odour.			
PID 0.7ppm	D				69.48	0.50		MADE GROUND			
	ES				69.18	0.80		Grey CONCRETE.			
PID 0.1ppm	ES				68.78	1.20		MADE GROUND			
	LB							Light and dark grey slightly sandy silty angular to subangular fine to coarse flint GRAVEL.			
1.20 - 1.75	ES							MADE GROUND			
	LB							Greyish white slightly sandy silty subangular fine to coarse chalk and rare flint GRAVEL.			
1.75 - 2.20								MADE GROUND			
		SPT(S) 2.20m, N=1 (2,1/1,0,0,0)	0 N/A N/A		67.78	2.20		Soft brownish grey slightly sandy gravelly CLAY with low subrounded flint cobble content (up to 90mm x 70mm). Sand is fine to coarse. Gravel is subangular to rounded fine to coarse chalk and occasional flint.	2		
2.20 - 3.20	U-NR				67.33	2.65		ALLUVIUM	3		
		SPT(S) 3.20m, N=4 (1,2/2,1,0,1)	0 N/A N/A			(1.85)		Limited recovery: assumed to be off-white slightly sandy gravelly SILT based on flush returns.			
3.20 - 4.20	U-NR							ALLUVIUM	4		
		SPT(S) 4.20m, N=8 (2,1/2,2,2,2)	0 N/A N/A		65.48	4.50		Limited recovery: assumed to be dark brown clayey amorphous PEAT based on flush returns.			
4.20 - 5.20								ALLUVIUM	5		
					64.78	5.20		Limited recovery: assumed to be soft bluish green very sandy CLAY based on flush returns.			
								NO RECOVERY	6		
								No recovery: assumed to be greyish brown silty sandy flint GRAVEL based on flush returns.			
								SEAFORD CHALK FORMATION	7		
									8		
									9		
									10		
								End of Borehole at 5.20m			

Start & End of Shift Observations					Installation					Remarks:				
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)					
14-10-2020	08:00	0.00								1. Hand dug inspection pit undertaken from ground level to 1.20mbgl.				
14-10-2020	17:15	5.20	4.50	4.70						2. Borehole backfilled with bentonite on completion.				
Flush Information					Borehole Diameter		Casing Diameter		Water Strikes					
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
1.20	4.20	AIR MIST	100%-100%	Brown	1.20	300	4.50	175	2.95	2.65		20	2.39	
					4.50	175								
					5.20	84								

Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %. NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: CP72308A	
Contract Number: JFR1451	Start Date: 21/10/2020	End Date: 22/10/2020	Checked By: GR	Status: FINAL	Sheet 1 of 1	
Cable Percussion Borehole Log		Easting: 415352.5	Northing: 141955.2	Ground Level: 69.91mOD	Plant Used: Dando 4000	Logged By: PB
		Termination: Target depth achieved			Scale: 1:50	

Weather: Rain/Fine

Samples & In Situ Testing				Strata Details				Groundwater	
Depths	Type/Ref	SPT	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation
0.20	D		PID 0.20m, 25.1ppm	69.76	0.15	[Cross-hatch]	Black TARMACADAM.		
0.20	ES			69.61	0.30	[Cross-hatch]	MADE GROUND		
0.45	D		PID 0.45m, 4.6ppm	69.51	0.40	[Cross-hatch]	Dark grey slightly sandy angular fine to coarse siltstone GRAVEL with rare fragments of brick and tarmacadam		
0.45	ES			69.41	0.50	[Cross-hatch]	MADE GROUND		
0.60	D		PID 0.60m, 0.7ppm	69.11	0.80	[Cross-hatch]	grey CONCRETE.		
0.60	ES					[Cross-hatch]	MADE GROUND		
1.00	D		PID 1.00m, 0.1ppm		(0.60)	[Cross-hatch]	Grey slightly sandy silty angular and subangular fine to coarse flint GRAVEL.	1	
1.00	ES					[Cross-hatch]	MADE GROUND		
1.70 - 2.15	U-NR			68.51	1.40	[Cross-hatch]	Light grey slightly sandy silty subangular fine to coarse chalk and rare flint GRAVEL.		
				68.21	1.70	[Cross-hatch]	MADE GROUND		
2.10 - 2.55	U-NR				(0.65)	[Cross-hatch]	Soft brownish grey slightly sandy gravelly CLAY with a low subrounded flint cobble content. Sand is fine to coarse. Gravel is subangular to rounded fine to coarse chalk and occasional flint.	2	
				67.56	2.35	[Cross-hatch]	ALLUVIUM		
				67.21	2.70	[Cross-hatch]	Soft off-white slightly sandy gravelly SILT. Gravel is subrounded and rounded fine and medium chalk.		
						[Cross-hatch]	ALLUVIUM		
3.50 - 4.00	B				(2.00)	[Cross-hatch]	Dark brown amorphous PEAT.	3	
						[Cross-hatch]	ALLUVIUM		
						[Cross-hatch]	Soft bluish green very sandy CLAY locally very clayey sand. Sand is fine and medium.		
						[Cross-hatch]	ALLUVIUM		
						[Cross-hatch]	Greyish brown slightly silty sandy subangular fine to coarse flint GRAVEL.	4	
						[Cross-hatch]	GRANULAR RIVER TERRACE DEPOSITS		
5.00 - 5.50	B			65.21	4.70	[Cross-hatch]	CHALK recovered as white slightly sandy silty gravel. Gravel is subangular fine to coarse extremely weak to very weak low to medium density chalk with rare dark grey angular medium and coarse flint.	5	
					(1.30)	[Cross-hatch]	SEAFORD CHALK FORMATION		
				63.91	6.00	[Cross-hatch]	End of Borehole at 6.00m	6	
						[Cross-hatch]		7	
						[Cross-hatch]		8	
						[Cross-hatch]		9	
						[Cross-hatch]		10	

Start & End of Shift Observations					Installation				Remarks:						
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)						
21-10-2020	08:00	0.00			Pipe 1	1.70	2.00	PLAIN	50	1. Hand dug inspection pit undertaken from ground level to 1.20mbgl. 2. 50mm standpipe installed with a response zone between 1.75m and 4.75m below ground level.					
21-10-2020	16:00	1.20			Pipe 1	2.00	4.20	SLOTTED	50						
22-10-2020	08:00	1.20		0.80	Pipe 1	4.20	4.70	PLAIN	50						
22-10-2020	16:00	6.00	6.00	0.80	Pipe 1										
Chiselling					Borehole Diameter				Casing Diameter				Water Strikes		
From (m)	To (m)	Duration	Remarks		Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks	
					6.00	150	6.00	150	3.00	2.90		20	1.20		



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: CP72310	
Contract Number: JFR1451	Start Date: 19/10/2020	End Date: 22/10/2020	Checked By: GR	Status: FINAL	Sheet 1 of 2	
Cable Percussion Borehole Log		Easting: 414920.9	Northing: 142121.0	Ground Level: 73.17mOD	Plant Used: Dando 4000	Logged By: PB
		Termination: Target depth achieved			SPT Hammer: AR366 Energy Ratio: 65%	

Weather: Overcast

Samples & In Situ Testing				Strata Details					Groundwater	
Depths	Type/Ref	SPT	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
0.20 - 0.30 0.30	D1 D			72.57	0.60		Firm dark brown slightly gravelly silty CLAY with frequent rootlets. Gravel is subangular fine to coarse flint and occasional extremely weak low density chalk. MADE GROUND <i>Between 0.30 m and 0.60 m: Occasional boulder sized fragments of brown geotextile.</i>			
0.70 0.70 - 1.20	D B2				0.60					
1.10 1.20 - 1.65	D D3	SPT(S) 1.20m, N=20 (3,3/3,5,6,6)		71.67	1.50		Medium dense light greenish brown slightly gravelly silty fine to coarse SAND with a low subangular flint cobble content. Gravel is subangular and subrounded fine to coarse flint and occasional extremely weak low density chalk. POSSIBLE COLLUVIUM	1		
1.65 - 2.20	B4						CHALK recovered as off-white and light orangish brown slightly sandy gravelly silt and locally very silty gravel. Gravel is subangular fine to coarse extremely weak low density chalk and rare angular and subangular medium and coarse flint. SEAFORD CHALK FORMATION	2		
2.20 - 2.65	D5	SPT(S) 2.20m, N=21 (4,4/4,5,6,6)						3		
2.65 - 3.20	B6									
3.20 - 3.65	UT7		Ublow=30, 100% Recovery					4		
3.70 - 4.20	B8									
4.20 - 4.65	D9	SPT(S) 4.20m, N=5 (3,2/1,1,2,1)						5		
4.70 - 5.20	B10									
5.20 - 5.65 5.20 - 5.70	U- NR11 B12		Ublow=20, 0% Recovery					6		
6.00 6.00 - 6.45	U UT13		Ublow=30, 100% Recovery		(8.50)					
6.50 - 7.00	B14							7		
7.00 - 7.45	D15	SPT(S) 7.00m, N=12 (2,2/2,3,3,4)								
7.50 7.50 - 8.00	B B16							8		
8.00 - 8.45	D17	SPT(S) 8.00m, N=18 (4,5/5,4,5,4)								
8.50 - 9.00	B18							9		
9.00 - 9.45	D19	SPT(S) 9.00m, N=18 (2,2/2,4,5,7)								
10.00 - 10.50	B20			63.17	10.00			10		

Start & End of Shift Observations					Installation					Remarks:							
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)								
19-10-2020	08:00	0.00	0.00		1	0.00	6.00	PLAIN	50	1. Hand dug inspection pit undertaken from ground level to 1.20mbgl. 2. Borehole installed upon completion with response zone between 6.00 m bgl and 14.50 m bgl. 3. Rising Head Test undertaken							
19-10-2020	17:00	6.45	1.50		1	6.00	14.50	SLOTTED	50								
20-10-2020	08:00	6.45	1.50		1	14.50	15.00	PLAIN	50								
20-10-2020	17:00	15.00	14.50	7.60													
21-10-2020	08:00	15.00	14.50	5.60													
21-10-2020	13:30	15.00	0.00														
										Water Strikes							
										Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks		
										7.50	7.40		20	6.10	Slow inflow		
Chiselling				Borehole Diameter				Casing Diameter									
From (m)	To (m)	Duration	Remarks	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)								
				15.00	150	14.50	150										



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: CP72310	
Contract Number: JFR1451	Start Date: 19/10/2020	End Date: 22/10/2020	Checked By: GR	Status: FINAL	Sheet 2 of 2	
Cable Percussion Borehole Log		Easting: 414920.9	Northing: 142121.0	Ground Level: 73.17mOD	Plant Used: Dando 4000	Logged By: PB
		Termination: Target depth achieved			SPT Hammer: AR366 Energy Ratio: 65%	
Weather: Overcast						Scale: 1:50

Samples & In Situ Testing				Strata Details				Groundwater	
Depths	Type/Ref	SPT	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation
11.00 - 11.50	B21						CHALK recovered as off-white slightly sandy slightly silty gravel. Gravel is subangular fine to coarse extremely weak to very weak low to medium density chalk and rare dark grey angular medium and coarse flint. Rare orangish brown staining. SEAFORD CHALK FORMATION	11	
12.00 - 12.45	D22	SPT(S) 12.00m, N=16 (3,4/4,4,4,4)			(3.50)			12	
13.50	B			59.67	13.50		CHALK recovered as white slightly sandy slightly silty gravel with a low dark grey subangular flint cobble content. Gravel is angular and subangular fine to coarse extremely weak to very weak low to medium density chalk and dark grey angular medium and coarse flint. SEAFORD CHALK FORMATION	14	
13.50 - 14.00	B23				(1.50)				
14.50 - 14.80	D24	SPT(S) 14.50m, 50 (8,13/50 for 150mm)		58.17	15.00		End of Borehole at 15.00m	15	
								16	
								17	
								18	
								19	
								20	

Start & End of Shift Observations				Installation				Remarks:																							
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)	1. Hand dug inspection pit undertaken from ground level to 1.20mbgl. 2. Borehole installed upon completion with response zone between 6.00 m bgl and 14.50 m bgl. 3. Rising Head Test undertaken																					
					1	0.00	6.00	PLAIN	50	<table border="1"> <thead> <tr> <th colspan="6">Water Strikes</th> </tr> <tr> <th>Strike (m)</th> <th>Casing (m)</th> <th>Sealed (m)</th> <th>Time (mins)</th> <th>Rose to (m)</th> <th>Remarks</th> </tr> </thead> <tbody> <tr> <td>7.50</td> <td>7.40</td> <td></td> <td>20</td> <td>6.10</td> <td>Slow inflow</td> </tr> </tbody> </table>				Water Strikes						Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks	7.50	7.40		20	6.10	Slow inflow
Water Strikes																															
Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks																										
7.50	7.40		20	6.10	Slow inflow																										
					1	6.00	14.50	SLOTTED	50																						
					1	14.50	15.00	PLAIN	50																						
Chiselling				Borehole Diameter				Casing Diameter																							
From (m)	To (m)	Duration	Remarks	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)																						
				15.00	150	14.50	150																								
RPS CP Template Issue Number: 1 Issue Date: 13/09/2017																															



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: CP72602	
Contract Number: JFR1451	Start Date: 30/09/2020	End Date: 01/10/2020	Checked By: GR	Status: FINAL	Sheet 1 of 2	
Cable Percussion Borehole Log		Easting: 415886.0	Northing: 142190.4	Ground Level: 72.83mOD	Plant Used: Dando 4000	Logged By: MW/PB
		Termination: Target depth achieved			SPT Hammer: AR366 Energy Ratio: 65%	

Weather: Sunny

Samples & In Situ Testing				Strata Details				Groundwater	
Depths	Type/Ref	SPT	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation
0.20 - 0.70	B			72.43	(0.40)		Soft dark brown gravelly sandy SILT with medium chalk and flint cobble content. Gravel is subangular to subrounded fine to coarse chalk.		
					(0.50)		TOPSOIL		
0.90 - 1.20	B			71.93	0.90		Soft dark reddish brown SILT and fine to coarse SAND.		
					(0.30)		ALLUVIUM		
1.20 - 1.65	D	SPT(S) 1.20m, N=29 (4,6/4,5,10,10)		71.63	1.20		Soft to firm predominantly white and grey slightly gravelly SILT. Gravels are subangular to subrounded fine to coarse rinded flint (30mm x 40mm x30mm).	1	
					(1.20)		ALLUVIUM		
1.65 - 2.10	D	SPT(S) 1.65m, N=36 (2,5/9,9,9,9)			(2.30)		Firm to stiff predominantly white and grey slightly sandy slightly gravelly clayey SILT. Gravels are subangular to subrounded fine to coarse rinded flint (30mm x 40mm x30mm). Silt is of chalk	2	
					(2.30)		ALLUVIUM		
2.50 - 2.95	D	SPT(S) 2.50m, N=13 (2,3/3,3,3,4)							
3.00	U		Ublow=40, 100% Recovery					3	
3.00 - 3.45	UT								
3.50 - 3.95	D	SPT(S) 3.50m, N=11 (15,10/4,2,2,3)		69.33	3.50		Dark brown and black slightly sandy angular to subangular fine to coarse GRAVEL of mixed lithologies with occasional flint cobble. Sand is fine to medium. Slight hydrocarbon odour.	4	
					(1.50)		GRANULAR RIVER TERRACE DEPOSITS		
4.50 - 4.95	D	SPT(S) 4.50m, N=11 (1,1/2,2,4,3)							
5.00 - 5.45	U-NR			67.83	5.00		Brown and grey silty subangular to subrounded fine to coarse rinded flint GRAVEL with medium cobble content. Cobbles are subangular of flint.	5	
					(1.00)		GRANULAR RIVER TERRACE DEPOSITS		
5.00 - 5.50	B								
6.00 - 6.50	B	SPT(C) 6.00m, N=21 (5,4/5,5,6,5)		66.83	6.00		Medium dense black white and grey slightly sandy silty subangular to subrounded fine to coarse GRAVEL of rinded flint with low to medium cobble content. Cobbles are subangular of flint.	6	
							GRANULAR RIVER TERRACE DEPOSITS		
7.50 - 8.00	B	SPT(C) 7.50m, N=7 (2,3/1,2,2,2)			(3.30)			7	
							Below 7.50m: Becoming Loose.		
9.00 - 9.50	B	SPT(C) 9.00m, N=6 (2,2/2,2,1,1)		63.53	9.30		CHALK recovered as white slightly sandy gravel. Gravel is angular to subangular fine to coarse extremely weak to very weak low to medium density chalk with occasional dark grey angular to subangular fine to coarse flint. Occasional	9	
								10	

Start & End of Shift Observations					Installation					Remarks:					
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)						
30-09-2020	08:00	0.00								1. Hand dug inspection pit undertaken from ground level to 1.20mbgl. 2. Cable percussive drilled from 1.20mbgl to 12.00mbgl. 3. Borehole backfilled with bentonite on completion.					
30-09-2020	16:00	8.00	7.50	4.20											
01-10-2020	08:00	8.00	7.50	4.20											
01-10-2020	16:00	12.00	11.50	6.00											
Chiselling					Borehole Diameter				Casing Diameter		Water Strikes				
From (m)	To (m)	Duration	Remarks	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
				11.50	150	11.50	150	4.30	1.50	4.50	20	4.20			



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: CP72602	
Contract Number: JFR1451	Start Date: 30/09/2020	End Date: 01/10/2020	Checked By: GR	Status: FINAL	Sheet 2 of 2	
Easting: 415886.0	Northing: 142190.4	Ground Level: 72.83mOD	Plant Used: Dando 4000	Logged By: MW/PB	Scale: 1:50	

Weather: Sunny Termination: Target depth achieved SPT Hammer: AR366 Energy Ratio: 65%

Samples & In Situ Testing				Strata Details				Groundwater	
Depths	Type/Ref	SPT	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation
10.50 - 10.95	D	SPT(S) 10.50m, N=4 (2,1/1,1,1,1)			(2.70)		orangish brown staining throughout. SEAFORD CHALK FORMATION	11	
11.55 - 12.00	D	SPT(S) 11.55m, N=11 (2,2/2,2,3,4)		60.83	12.00		End of Borehole at 12.00m	12	
								13	
								14	
								15	
								16	
								17	
								18	
								19	
								20	

Start & End of Shift Observations					Installation					Remarks:								
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)	1. Hand dug inspection pit undertaken from ground level to 1.20mbgl. 2. Cable percussive drilled from 1.20mbgl to 12.00mbgl. 3. Borehole backfilled with bentonite on completion.								
										Water Strikes								
Chiselling					Borehole Diameter				Casing Diameter				Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
From (m)	To (m)	Duration	Remarks		Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	4.30	1.50	4.50	20	4.20			
					11.50	150	11.50	150										
RPS CP Template Issue Number: 1 Issue Date: 13/09/2017																		



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: CPES1	
Contract Number: JFR1451	Start Date: 03/12/2020	End Date: 03/12/2020	Checked By: GR	Status: FINAL	Sheet 1 of 2	
Cable Percussion Borehole Log		Easting: 415591.0	Northing: 142134.0	Ground Level: 75.00mOD	Plant Used: Dando 4000	Logged By: RDL
		Termination: Target depth achieved			Scale: 1:50	

Weather: Drizzle

Samples & In Situ Testing				Strata Details				Groundwater	
Depths	Type/Ref	SPT	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation
0.00	ES		PID 0.00m, 0.0ppm	74.80	0.20		Grass over dark brown sandy clayey SILT. Abundant roots (4mm) and rootlets. TOPSOIL		
0.30	ES		PID 0.30m, 0.0ppm		(0.40)				
0.50	ES		PID 0.50m, 0.0ppm	74.40	0.60		Firm dark brown slightly sandy gravelly CLAY. Gravel is angular to subrounded fine to coarse flint and red ceramic. (Possible Made Ground) MADE GROUND		
1.00	ES						Soft light brown slightly gravelly clayey SILT. Gravel if angular fine to coarse flint and chalk. ALLUVIUM	1	
1.50	ES				(2.40)				
2.00	ES							2	
2.50	ES								
3.00	ES			72.00	3.00		CHALK Non intact recovered as very soft gravelly silt. Gravel is angular fine to coarse flint and very weak low to medium density chalk. SEAFORD CHALK FORMATION	3	
3.50	ES							4	
								5	
					(12.00)			6	
								7	
								8	
								9	
								10	

Start & End of Shift Observations					Installation					Remarks:					
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)						
03-12-2020	08:00	0.00	0.00		1	0.00	5.50	PLAIN	50	1. Hand dug inspection pit undertaken from ground level to 1.20mbgl. 2. Cable percussive drilled from 1.20mbgl to 12.00mbgl. 3. 50mm standpipe installed with a response zone between 5.5m and 14.5m below ground level.					
03-12-2020	13:00	15.00	15.00		1	5.50	14.50	SLOTTED	50						
Chiselling					Borehole Diameter				Casing Diameter				Water Strikes		
From (m)	To (m)	Duration	Remarks		Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks	
					15.00	150	15.00	150							



Contract Name:
A303 Stonehenge

Client:
RPS Planning & Development

Borehole ID:
CPES1

Contract Number:
JFR1451

Start Date:
03/12/2020

End Date:
03/12/2020

Checked By:
GR

Status:
FINAL

Sheet 2 of 2

Cable Percussion
Borehole Log

Easting:
415591.0

Northing:
142134.0

Ground Level:
75.00mOD

Plant Used:
Dando 4000

Logged By:
RDL

Scale:
1:50

Weather: Drizzle

Termination: Target depth achieved

Samples & In Situ Testing				Strata Details				Groundwater	
Depths	Type/Ref	SPT	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation

Samples & In Situ Testing				Strata Details				Groundwater	
Depths	Type/Ref	SPT	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation
				60.00	15.00		Between 12.00m and 15.00m possible occasional flint bands on medium to high density chalk.		
							End of Borehole at 15.00m		

Start & End of Shift Observations					Installation					Remarks:																						
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)	1. Hand dug inspection pit undertaken from ground level to 1.20mbgl. 2. Cable percussive drilled from 1.20mbgl to 12.00mbgl. 3. 50mm standpipe installed with a response zone between 5.5m and 14.5m below ground level.																						
					1	0.00	5.50	PLAIN	50	<table border="1"> <thead> <tr> <th colspan="6">Water Strikes</th> </tr> <tr> <th>Strike (m)</th> <th>Casing (m)</th> <th>Sealed (m)</th> <th>Time (mins)</th> <th>Rose to (m)</th> <th>Remarks</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>					Water Strikes						Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks						
Water Strikes																																
Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks																											
					1	5.50	14.50	SLOTTED	50																							
Chiselling			Borehole Diameter			Casing Diameter																										
From (m)	To (m)	Duration	Remarks	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)																									
				15.00	150	15.00	150																									
RPS CP Template Issue Number: 1 Issue Date: 13/09/2017																																



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R70105	
Contract Number: JFR1451	Start Date: 23/09/2020	End Date: 23/09/2020	Checked By: GR	Status: FINAL	Sheet 1 of 2	
Rotary Core Drilling Log		Easting: 406061.0	Northing: 140783.2	Ground Level: 127.62mOD	Plant Used: Beretta T41	Logged By: SB/MW
		Termination: Target depth achieved.			Scale: 1:50	

Weather: Showers

Samples & Core Recovery					Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
PID 0.0ppm	ES					(0.30)		Soft dark brown gravelly clayey SILT with frequent rootlets. Gravel is subangular and subrounded fine chalk.			
PID 0.0ppm	ES				127.32	0.30		Gravel is subangular and subrounded fine chalk.			
PID 0.0ppm	ES				127.22	0.40		TOPSOIL			
					127.02	0.60		Structureless CHALK composed of white occasionally orange stained sandy gravelly SILT. Gravel is subrounded to subangular medium to coarse chalk. (CIRIA Grade Dm)			
PID 0.0ppm	ES				126.42	1.20		SEAFORD CHALK FORMATION	1		
					126.02	1.60		Structureless CHALK composed of white and light grey sandy gravelly SILT. Gravel is subrounded and subangular medium to coarse chalk. Rare orange staining. (CIRIA Grade Dm)			
1.20 - 2.50	D		100 N/A N/A					SEAFORD CHALK FORMATION	2		
				NI 60 1240		(1.30)		Structureless CHALK composed of white sandy gravelly SILT. Gravel is angular to subangular medium to coarse flint and chalk. Flint content increasing below 1.10m bgl. (CIRIA Grade Dm)			
					124.72	2.90		SEAFORD CHALK FORMATION	3		
2.50 - 4.00			93 N/A N/A					Structureless CHALK composed of silty subrounded to rounded fine to coarse GRAVEL. Clasts are very weak low density white with occasional specks and marl colouration. Localised orange staining and black rimmed flint. Matrix is light brown silt. (CIRIA Grade Dc)	4		
								SEAFORD CHALK FORMATION			
								Very weak to weak low density white CHALK with occasional black angular fine to coarse flint gravel. Fractures are 40° closely to widely spaced infilled (>3mm) with silt with frequent black specks and marl staining. (CIRIA Grade C1/C3)	5		
4.00 - 5.50			80 N/A N/A					SEAFORD CHALK FORMATION			
								Between 1.60m and 1.64m: rare black rimmed angular coarse nodular flint gravel (up to 30mm x 50mm).			
								Between 2.50m and 2.60m: NI band of black angular rimmed flint.			
								Very weak to weak low occasionally medium density white with frequent black specks and occasional orange stained CHALK with rare marl seams. Joint set 1 subhorizontal closely to medium spaced open infilled (>3mm) with silt. with frequent black specks and marl staining. Joint set 2 orientated 30° to subvertical closely to widely spaced open infilled (>3mm) with silt, with frequent black specks and marl staining. (CIRIA Grade C2/C3)	6		
5.50 - 6.25	D		100 N/A N/A					SEAFORD CHALK FORMATION			
				NI 190 1360		(7.10)		Between 3.90m and 4.00m: assumed zone of core loss.	7		
								Between 4.90m and 5.60m: NI recovered as off-white with black specks subangular fine to coarse chalk gravel and rare bivalves (30mm x 20mm).			
								Between 4.92m and 5.34m: NI recovered as angular to subangular fine to coarse gravels of white chalk with black specks and occasional marl wisps and localised flint bands.			
								Between 5.20m and 5.50m: assumed zone of core loss.			
								Between 5.75m and 6.20m: NI recovered as off-white with black specks subangular fine to coarse chalk gravel and rare bivalves (30mm x 20mm).			
								Between 6.69m and 7.20m: NI recovered as off-white with black specks subangular fine to coarse chalk gravel and 2 bivalves (30mm x 20mm).			
7.00 - 8.50	CD D		80 N/A N/A					Between 7.94m and 8.20m: NI recovered as angular to subangular fine to coarse chalk with occasional angular fine to coarse rimmed flint.	8		
								Between 8.30m and 8.50m: assumed zone of core loss.			
								Between 8.50m and 8.90m: localised orange staining (sponge beds).			
8.50 - 9.25			100 N/A N/A						9		
9.25 - 10.00	CD CD		100 N/A N/A						10		

Start & End of Shift Observations					Installation					Remarks:				
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)					
23-09-2020	08:00									1. Inspection pit hand dug to 1.20mbgl. 2. Within the Chalk units there are very thin to thin zones of Non Intact Drilling Disturbance that are generally very closely to widely spaced. Within these zones material is recovered as silts and gravels. 3. Downhole Geophysics undertaken on completion of drilling. 4. Borehole Backfilled with bentonite on completion.				
23-09-2020	16:30	10.00	0.00											
Flush Information					Borehole Diameter		Casing Diameter		Water Strikes					
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
1.20	2.50	Air/Mist	100%-100%	white	10.00	146						0		No groundwater encountered.
2.50	4.00	Air/Mist	100%-100%	white										
4.00	5.50	Air/Mist	100%-100%	white										
5.50	6.25	Air/Mist	100%-100%	white										

Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %. NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).

RPS RC Template Issue Number: 2 Issue Date: 02/01/2018



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R70105	
Contract Number: JFR1451	Start Date: 23/09/2020	End Date: 23/09/2020	Checked By: GR	Status: FINAL	Sheet 2 of 2	
Easting: 406061.0	Northing: 140783.2	Ground Level: 127.62mOD	Plant Used: Beretta T41	Logged By: SB/MW	Scale: 1:50	

Weather: Showers Termination: Target depth achieved.

Samples & Core Recovery					Strata Details					Groundwater		
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description			Water Strike	Backfill/Installation
								End of Borehole at 10.00m				
											11	
											12	
											13	
											14	
											15	
											16	
											17	
											18	
											19	
											20	

Start & End of Shift Observations					Installation					Remarks:					
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)	1. Inspection pit hand dug to 1.20mbgl. 2. Within the Chalk units there are very thin to thin zones of Non Intact Drilling Disturbance that are generally very closely to widely spaced. Within these zones material is recovered as silts and gravels. 3. Downhole Geophysics undertaken on completion of drilling. 4. Borehole Backfilled with bentonite on completion.					
										Water Strikes					
										Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
													0		No groundwater encountered.
Flush Information					Borehole Diameter		Casing Diameter								
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)							
6.25	7.00	Air/Mist	100%-100%	white	10.00	146									
7.00	8.50	Air/Mist	100%-100%	white											
8.50	9.25	Air/Mist	100%-100%	white											
9.25	10.00	Air/Mist	100%-100%	white											
Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %. NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).															
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018															



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R70106	
Contract Number: JFR1451	Start Date: 23/09/2020	End Date: 25/09/2020	Checked By: GR	Status: FINAL	Sheet 1 of 2	
Rotary Core Drilling Log		Easting: 406105.9	Northing: 140834.8	Ground Level: 127.60mOD	Plant Used: Beretta T41	Logged By: BC/BB
		Termination: Target depth achieved.			Scale: 1:50	

Weather: Showers

Samples & Core Recovery					Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
PID 0.0ppm	ES					(0.30)		Firm dark brown sandy SILT with occasional subangular and subrounded fine to coarse chalk gravel and occasional rootlets. (TOPSOIL)			
PID 0.0ppm	LB1				127.30	0.30					
PID 0.0ppm	ES				127.00	0.60					
	LB2							TOPSOIL			
PID 0.0ppm	ES				126.14	1.46		Structureless CHALK composed of off-white gravelly silty SAND with a low cobble content. Cobbles and gravel are weak medium density subangular to subrounded fine to coarse chalk. (CIRIA grade Dm)	1		
1.20 - 2.50			100 36 0					SEAFORD CHALK FORMATION Structureless CHALK composed of sandy subangular to subrounded fine to coarse GRAVEL with a high cobble content (<100mm). Clasts are weak medium density white. (CIRIA grade Dc)	2		
2.50 - 4.00	CD D		97 64 27	NI 110 210		(4.04)		SEAFORD CHALK FORMATION <i>Between 1.20m and 1.46m: NI</i> Very weak high density white with rare orange staining CHALK. Joint set 1: subhorizontal to 30° closely spaced (70/110/210) clean, no infill open. Joint set 2: 45° widely spaced clean no infill open. Joint set 3: 70° to subvertical very closely spaced clean. no infill All with frequent black specks and rare silt smear infill and rare orange staining. (CIRIA Grade A3)	3		
4.00 - 5.50	AMAL D CD		97 53 10					SEAFORD CHALK FORMATION <i>At 1.82m: rare bivalve shells.</i> <i>Between 1.96m and 2.11m: NI</i> <i>Between 2.27m and 2.50m: NI</i> <i>At 2.50m: Angular coarse flint gravel.</i> <i>Between 2.50m and 2.58m: AZCL</i> <i>Between 2.58m and 2.66m: NI</i> <i>Between 3.28m and 3.36m: NI</i> <i>Between 3.75m and 4.00m: NI</i> <i>Between 4.00m and 4.03m: AZCL</i> <i>Between 4.03m and 4.18m: NI</i> <i>At 4.35m: angular coarse flint gravel.</i> <i>Between 4.40m and 4.50m: AZCL</i> <i>Between 4.77m and 4.83m: reddish orange staining.</i>	4		
5.50 - 7.00	D		97 74 55		122.10	5.50		Very weak high density white with rare orange mottling CHALK. Rare very thin beds of grey marl. Joint set 1: subhorizontal to 20° closely spaced (40/160/290) clean open (<3mm). Joint set 2: 45 to 60° widely spaced (300/700/1750) clean open (predominantly <3mm). Joint set 3: 70° to subvertical very closely spaced clean. (CIRIA Grade A1/A3)	6		
7.00 - 8.50	C CD		97 46 34	NI 160 290		(4.50)		SEAFORD CHALK FORMATION <i>Between 6.40m and 6.50m: Angular coarse flint gravel.</i> <i>Between 6.93m and 7.07m: NI</i> <i>At 7.70m: Angular coarse flint gravel.</i>	7		
8.50 - 10.00	D		100 83 29					<i>Between 8.40m and 8.50m: Non intact. orange stains, filaments / sponge bed.</i> <i>Between 8.50m and 8.56m: AZCL</i> <i>At 8.55m: flint cobble. Non intact recovered as angular fine flint gravel.</i> <i>Between 8.80m and 8.85m: NI</i> <i>Between 9.40m and 9.50m: occasional thin grey marl bands.</i>	9		
					117.60	10.00			10		

Start & End of Shift Observations					Installation					Remarks:				
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)					
23-09-2020	14:45									1. Inspection pit hand dug to 1.20mbgl.				
23-09-2020	16:30	1.20	0.00							2. Falling Head Test undertaken at 7m below ground level.				
24-09-2020	08:00	1.20	0.00							3. Borehole Backfilled with bentonite on completion.				
24-09-2020	16:30	7.00	2.00	5.40										
25-09-2020	08:00	7.00	2.00											
25-09-2020	15:15	0.00												
Flush Information					Borehole Diameter		Casing Diameter		Water Strikes					
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
1.20	2.50	Air/Mist	100%-100%	white	7.00	146	2.00	175				0		No groundwater encountered.
2.50	4.00	Air/Mist	100%-100%	white	10.00	146	10.00	175						
4.00	5.50	Air/Mist	100%-100%	white										
5.50	7.00	Air/Mist	100%-100%	white										

Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %. NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R70106	
Contract Number: JFR1451	Start Date: 23/09/2020	End Date: 25/09/2020	Checked By: GR	Status: FINAL	Sheet 2 of 2	
Easting: 406105.9	Northing: 140834.8	Ground Level: 127.60mOD	Plant Used: Beretta T41	Logged By: BC/BB	Scale: 1:50	

Weather: Showers Termination: Target depth achieved.

Samples & Core Recovery					Strata Details					Groundwater		
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description			Water Strike	Backfill/Installation
								End of Borehole at 10.00m				
											11	
											12	
											13	
											14	
											15	
											16	
											17	
											18	
											19	
											20	

Start & End of Shift Observations					Installation					Remarks:																		
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)	1. Inspection pit hand dug to 1.20mbgl. 2. Falling Head Test undertaken at 7m below ground level. 3. Borehole Backfilled with bentonite on completion.																		
										<table border="1"> <thead> <tr> <th colspan="5">Water Strikes</th> </tr> <tr> <th>Strike (m)</th> <th>Casing (m)</th> <th>Sealed (m)</th> <th>Time (mins)</th> <th>Rose to (m)</th> <th>Remarks</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td>0</td> <td></td> <td>No groundwater encountered.</td> </tr> </tbody> </table>		Water Strikes					Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks				0		No groundwater encountered.
Water Strikes																												
Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks																							
			0		No groundwater encountered.																							
Flush Information					Borehole Diameter		Casing Diameter																					
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)																				
7.00	8.50	Air/Mist	100%-100%	white	7.00	146	2.00	175																				
8.50	10.00	Air/Mist	100%-100%	white	10.00	146	10.00	175																				
Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %.																												
NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).																												
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018																												



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R70107	
Contract Number: JFR1451	Start Date: 25/09/2020	End Date: 28/09/2020	Checked By: GR	Status: FINAL	Sheet 1 of 2	
Rotary Core Drilling Log		Easting: 406139.9	Northing: 140899.0	Ground Level: 126.29mOD	Plant Used: Beretta T41	Logged By: BB/AG
		Termination: Target depth achieved.			Scale: 1:50	

Weather: Sunny

Samples & Core Recovery				Strata Details						Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
PID 0.0ppm	ES					(0.30)		Firm dark brown and light brown sandy SILT with frequent subangular and subrounded medium flint and chalk gravel and frequent rootlets.			
PID 0.0ppm	ES					0.30		TOPSOIL			
PID 0.0ppm	ES					(0.90)		Structureless CHALK composed of white gravelly sandy SILT with rare rootlets. Gravel is subangular to subrounded fine to medium chalk. (CIRIA Grade Dm)			
PID 0.0ppm	ES					1.20		SEAFORD CHALK FORMATION <i>Below 0.50m gravel is medium to coarse chalk and flint. Below 1.00m occasional cobbles of flint and chalk.</i>	1		
1.20 - 2.50	D1 D		100 51 0			(2.22)		Structureless CHALK composed of slightly sandy silty subangular coarse GRAVEL. Clasts are very weak high density white with black specks and rare orange stains. Rare angular flint. (CIRIA Grade Dc)	2		
2.50 - 4.00			100 46 0			3.42		Very weak medium to high density unstained off-white CHALK. Joint set 1 is subhorizontal to 20° extremely closely to very closely spaced open (<3mm) no infill with black specks. Joint set 2 is 30° to subvertical closely to medium spaced open clean. Medium to widely spaced nodular rinded flint bands frequently recovered as subangular to angular fine to coarse gravel. Occasional orange staining. Rare shell fragments towards base and rare light grey marl bands. (CIRIA Grade A4/A5)	3		
4.00 - 5.50	C2 C		90 53 33			(6.58)		SEAFORD CHALK FORMATION <i>Between 3.42m and 3.48m marl band with orangish red stains. Between 3.85m and 4.36m Non Intact Between 4.00m and 4.16m rounded fine to medium flint gravel. Between 4.90m and 5.00m orange stains. Between 5.18m and 5.33m Non Intact Between 5.33m and 5.50m: Assumed Zone of Core Loss</i>	4		
5.50 - 7.00	CD		100 72 28					SEAFORD CHALK FORMATION <i>Between 5.70m and 5.85m orange stains. Between 6.44m and 6.62m occasional orange stains.</i>	5		
7.00 - 8.50			96 49 32					SEAFORD CHALK FORMATION <i>Between 6.73m and 7.00m Non-Intact – possibly drilling disturbed Between 7.17m and 7.23m coarse gravel sized fragment of flint At 7.50m subrounded coarse flint gravel. Between 7.84m and 7.90m Non-Intact – possibly drilling disturbed flint At 7.85m rounded nodular flint cobble. Between 8.02m and 8.42m Non-Intact – possibly drilling disturbed</i>	6		
8.50 - 10.00	C4 CD D		76 34 15					SEAFORD CHALK FORMATION <i>Between 8.42m and 8.50m Assumed Zone of Core Loss Between 8.50m and 8.85m Assumed Zone of Core Loss Between 9.68m and 9.84m Non-Intact – possibly drilling disturbed recovered as subangular coarse chalk gravel. Between 9.84m and 10.00m Non-Intact – possibly drilling disturbed flint</i>	7		
						116.29			8		
						10.00			9		
									10		

Start & End of Shift Observations					Installation					Remarks:
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)	
25-09-2020	10:45									1. Inspection pit hand dug to 1.20mbgl.
25-09-2020	15:30	5.50	2.00							2. Downhole Geophysics undertaken on completion of drilling.
28-09-2020	08:00		2.00							3. Borehole Backfilled with bentonite on completion.
28-09-2020	17:00	10.00		0.00						
Flush Information					Borehole Diameter		Casing Diameter			
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)		
1.20	2.50	Air/Mist	100%-100%	white	10.00	146	2.20	175		
2.50	4.00	Air/Mist	100%-100%	white						
4.00	5.50	Air/Mist	100%-100%	white						
5.50	7.00	AIR	100%-100%	white						
Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %. NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).										
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018										



Contract Name: A303 Stonehenge			Client: RPS Planning & Development			Borehole ID: R70107		
Contract Number: JFR1451	Start Date: 25/09/2020	End Date: 28/09/2020	Checked By: GR	Status: FINAL		Sheet 2 of 2		
Rotary Core Drilling Log		Easting: 406139.9	Northing: 140899.0	Ground Level: 126.29mOD	Plant Used: Beretta T41	Logged By: BB/AG	Scale: 1:50	

Weather: Sunny Termination: Target depth achieved.

Samples & Core Recovery					Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
								band recovered as angular to subangular coarse flint gravel in chalk silt matrix.			
								End of Borehole at 10.00m			
									11		
									12		
									13		
									14		
									15		
									16		
									17		
									18		
									19		
									20		

Start & End of Shift Observations					Installation					Remarks:	
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)	1. Inspection pit hand dug to 1.20mbgl. 2. Downhole Geophysics undertaken on completion of drilling. 3. Borehole Backfilled with bentonite on completion.	
										Water Strikes	
Strike (m)		Casing (m)		Sealed (m)		Time (mins)		Rose (to m)		Remarks	
Flush Information					Borehole Diameter		Casing Diameter				
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)			
7.00	8.50	AIR	100%-100%	white	10.00	146	2.20	175	Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %.		
8.50	10.00	AIR	100%-100%	white	NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).						
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018											



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R70108	
Contract Number: JFR1451	Start Date: 28/09/2020	End Date: 29/09/2020	Checked By: GR	Status: FINAL	Sheet 1 of 2	
Rotary Core Drilling Log		Easting: 406236.9	Northing: 140872.0	Ground Level: 127.26mOD	Plant Used: Hand tools	Logged By: SB
		Termination: Target depth achieved.			Scale: 1:50	

Weather: Sunny

Samples & Core Recovery					Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
PID 0.0ppm	ES					(0.30)		Soft light and dark brown mottled SILT with frequent rootlets.			
PID 0.0ppm	ES				126.96	0.30		Occasional subangular and subrounded coarse flint and chalk gravel.			
PID 0.0ppm	ES				126.76	0.50		TOPSOIL			
PID 0.0ppm	ES				126.06	1.20		Soft to firm dark brown and white mottled silty CLAY with occasional subangular and subrounded fine to medium chalk and flint gravel. POSSIBLE COLLUVIUM	1		
1.20 - 2.50	D		77 0 0		125.14	2.12		Structureless CHALK composed of white and light grey gravelly sandy SILT. Gravel is subangular medium to coarse very weak chalk with frequent orange staining and frequent flints. (CIRIA Grade Dm) SEAFORD CHALK FORMATION	2		
2.50 - 4.00			63 0 0					Structureless CHALK composed of slightly silty sandy subangular to subrounded fine to coarse GRAVEL. Clasts are very weak low to medium density off-white chalk frequently discoloured light orange with black specks. Residual / remnant bedding fractures and high angle joint sets. Occasional subangular to subrounded coarse gravel of rinded nodular flint. (CIRIA Grade Dc) SEAFORD CHALK FORMATION <i>At 1.40m flint as subangular to subrounded gravel. Gravel of rinded nodular flint.</i>	3		
4.00 - 4.75			100 61 14					Very weak medium to high density thinly to medium bedded unstained off-white CHALK. Bedding fracture set 1: subhorizontal to 15° close to medium spaced open (<1mm), no infill with frequent black specks. Fracture set 2: 30 to 60° closely to widely spaced open (<1mm) no infill with frequent black specks, Fracture Set 3: 75° to subvertical typically close to medium spaced but locally extremely close to closely spaced, open (<1mm), no infill with frequent black specks. Widely spaced rinded flint cobbles. (CIRIA Grade A2/A3) SEAFORD CHALK FORMATION	4		
4.75 - 5.50			100 50 24					<i>Between 2.65m and 3.18m NI chalk. close to extremely close fracturing by high angle joint sets and bedding fractures in multiple orientations resulting in chalk recovered as medium to coarse gravel. Gravel of angular to subangular clasts with surface commonly discoloured orange and frequent black specks.</i> <i>Between 3.32m and 3.40m AZCL</i> <i>At 4.93m flint recovered as subangular medium gravel of rounded nodular flint.</i>	5		
5.50 - 7.00	C2 CD		97 40 32	NI 90 1460		(7.88)		<i>Between 5.67m and 5.73m medium (80mm wide, up to 50mm thick) rinded nodular and angular flint gravel.</i> <i>Between 5.94m and 5.95m light grey marl band with interwoven fine laminae.</i> <i>At 6.04m light grey marl band <10mm.</i> <i>At 6.10m light grey marl band <1mm fine laminae.</i> <i>Between 6.13m and 6.15m light grey marl band with interwoven fine laminae.</i> <i>Between 6.17m and 6.50m hard ground - very weak high density creamy white chalk with occasional orange staining.</i> <i>At 6.20m orange staining patch >5mm.</i> <i>At 6.21m orange staining with patches <5mm.</i> <i>At 6.30m orange staining with patch <5mm.</i> <i>Between 7.00 and 7.70m NI chalk recovered as fine to coarse gravel. Gravel clasts of angular to subangular very weak low to medium density unstained creamy white chalk with pronounced high angle remnant joint set.</i>	6		
7.00 - 8.50			100 10 0					<i>Between 7.70m and 7.72m flint as angular medium to coarse gravel.</i> <i>Between 7.73m and 7.90m NI chalk recovered as fine to coarse gravel. Gravel clasts of angular to subangular very weak low to medium density unstained creamy white chalk with pronounced high angle remnant joint set.</i>	7		
8.50 - 10.00	CCD C4 CD		87 39 39						8		
					117.26	10.00			9		
									10		

Start & End of Shift Observations					Installation					Remarks:	
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)		
28-09-2020	08:00									1. Inspection pit hand dug to 1.20mbgl.	
28-09-2020	17:00	8.50	2.00							2. Borehole Backfilled with bentonite on completion.	
29-09-2020	08:00	8.50	2.00								
29-09-2020	17:00	0.00									
Flush Information					Borehole Diameter		Casing Diameter				
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)			
1.20	2.50	Air/Mist	100%-100%	white	8.50	146	2.00	175			
2.50	4.00	Air/Mist	100%-100%	white	10.00	146					
4.00	4.75	Air/Mist	100%-100%	white							
4.75	5.50	Air/Mist	100%-100%	white							

Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %. NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R70109	
Contract Number: JFR1451	Start Date: 29/09/2020	End Date: 16/10/2020	Checked By: GR	Status: FINAL	Sheet 1 of 2	
Rotary Core Drilling Log		Easting: 406280.8	Northing: 140932.2	Ground Level: 125.82mOD	Plant Used: Beretta T41	Logged By: SB/BB
		Termination: Target depth achieved.			Scale: 1:50	

Weather: Sunny

Samples & Core Recovery					Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
1.20 - 2.30	ES				125.37	(0.45)		1			
	ES					0.45					
2.30 - 3.80	ES				124.37	(1.00)		2			
	D					1.45					
3.80 - 5.30	D		100 38 0		NI 180 550	(3.85)		3			
	C2 CD		87 62 0								
5.30 - 6.80	D				120.52	5.30		4			
	CD		66 35 15								
6.80 - 8.30	D				NI 50 1230	(4.70)		5			
	C5 CD		97 37 13								
8.30 - 9.00	C7 CD		66 36 19		115.82	10.00		6			
9.00 - 10.00	D9		100 54 28						7		

Start & End of Shift Observations					Installation					Remarks:				
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)					
29-09-2020	08:00	0.00	0.00							1. Inspection pit hand dug to 1.20m bgl.				
29-09-2020	17:00	9.00	2.00							2. Falling Head Test undertaken at 8.77m below ground level.				
30-09-2020	08:00	9.00	2.00							3. Downhole Geophysics undertaken on completion of drilling.				
30-09-2020	17:00	10.00	0.00							4. Borehole Backfilled with bentonite on completion.				
Flush Information					Borehole Diameter		Casing Diameter		Water Strikes					
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
1.20	10.00	Air/Mist	100%-100%	White	10.00	146	2.00	175						

Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %. NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).



Contract Name: A303 Stonehenge			Client: RPS Planning & Development			Borehole ID: R70109		
Contract Number: JFR1451	Start Date: 29/09/2020	End Date: 16/10/2020	Checked By: GR	Status: FINAL	Sheet 2 of 2			
Rotary Core Drilling Log		Easting: 406280.8	Northing: 140932.2	Ground Level: 125.82mOD	Plant Used: Beretta T41	Logged By: SB/BB	Scale: 1:50	

Weather: Sunny Termination: Target depth achieved.

Samples & Core Recovery					Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
								<p><i>Non-intact – possibly drilling disturbed chalk recovered as creamy white slightly sandy subangular medium to coarse very weak medium density subangular chalk gravel. Frequent black specks and with occasional cream (<5mm) shell fragments.</i></p> <p><i>Between 9.68m and 9.90m: very closely spaced, fine light grey subhorizontal marl laminae with occasional orange staining occurring as patches (<10mm).</i></p> <p><i>Between 9.77m and 9.81m: Non-intact – possibly drilling disturbed recovered as slightly sandy gravelly silt. Gravel is subangular fine to coarse chalk.</i></p> <p>End of Borehole at 10.00m</p>	11		
									12		
									13		
									14		
									15		
									16		
									17		
									18		
									19		
									20		

Start & End of Shift Observations					Installation					Remarks:	
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)	1. Inspection pit hand dug to 1.20m bgl. 2. Falling Head Test undertaken at 8.77m below ground level. 3. Downhole Geophysics undertaken on completion of drilling. 4. Borehole Backfilled with bentonite on completion.	
										Water Strikes Strike (m) | Casing (m) | Sealed (m) | Time (mins) | Rose to (m) | Remarks	
Flush Information					Borehole Diameter		Casing Diameter				
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %.		
					10.00	146	2.00	175	NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).		
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018											



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R70110	
Contract Number: JFR1451	Start Date: 05/10/2020	End Date: 05/10/2020	Checked By: GR	Status: FINAL	Sheet 1 of 2	
Rotary Core Drilling Log		Easting: 406326.8	Northing: 141016.0	Ground Level: 121.78mOD	Plant Used: Beretta T41	Logged By: PB/MW
		Termination: Target depth achieved.			Scale: 1:50	

Weather: Showers

Samples & Core Recovery					Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
1.20 - 2.30	LB1				121.43	(0.35)		Firm dark brown slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse flint and chalk. Frequent rootlets throughout (up to 4mm thick).			
	LB2				120.58	(0.85)		TOPSOIL			
2.30 - 3.80			91 0 0		118.68	1.20		Structureless CHALK composed of slightly sandy silty subangular to subrounded fine to coarse GRAVEL. Clasts are off-white with rare subangular to angular medium to coarse flint gravel. (CIRIA grade Dc)	1		
								SEAFORD CHALK FORMATION			
3.80 - 5.30	D3		100 11 0		116.14	(1.90)		Structureless CHALK composed of silty subangular to subrounded predominantly medium to coarse GRAVEL with a medium cobble content. Clasts are very weak low density white with frequent black specks. Cobbles are weak medium density white with frequent black specks. Silt matrix is light brown. (CIRIA grade Dc)	2		
								SEAFORD CHALK FORMATION			
5.30 - 6.80	D		100 25 6		116.14	3.10		Structureless CHALK composed of slightly silty angular to subangular fine to coarse GRAVEL with a low to medium subangular cobble content. Clasts are very weak medium density white with frequent black specks and occasional angular flint and orange staining. Silt matrix is predominantly white. (CIRIA grade Dc)	3		
								SEAFORD CHALK FORMATION			
6.80 - 8.30	D		97 22 0	NI 310 2500	116.14	(2.54)		Between 3.20m and 3.30m: black angular coarse nodular flint fragments (35mm to 40mm).	4		
								Between 3.80m and 4.10m: localised light orange staining.			
8.30 - 9.80	D7 D		97 10 6		116.14	5.64		Between 3.97m and 5.69m: Non-Intact - possibly drilling disturbed	5		
								Between 4.40m and 4.60m: localised light orange staining.			
	C0				116.14	(4.66)		Between 5.15m and 5.30m: localised light orange staining.	6		
								Very weak medium density white CHALK with frequent black specks and occasional bands of black angular flint with intermittent localised light orange staining. Fracture set 1: 5° very closely to closely spaced, open with silt veneer. Fracture set 2: 30 to 40° widely to very widely spaced with silt veneer. Fracture set 3 orientated 55 to 80° medium spaced open with silt veneer infill. (CIRIA Grade B1/B4)			
	C9				116.14	(4.66)		Between 5.79m and 6.20m: Non-Intact - possibly drilling disturbed	7		
								Between 6.98m and 7.40m: Non Intact recovered as slightly silty angular to subangular fine to coarse gravel with occasional angular nodular flint fragments up to 35mm.			
					116.14	(4.66)		Between 8.25m and 8.30m: Assumed Zone of Core Loss	8		
								Between 8.50m and 8.54m Non-Intact - possibly drilling disturbed			
					116.14	(4.66)		Between 8.54m and 8.60m: black angular coarse nodular flint gravel fragments up to 35 to 40mm	9		
								Between 8.60m and 9.02m: Non-Intact - possibly drilling disturbed			
					116.14	(4.66)		Between 9.02m and 9.10m: black angular coarse nodular flint gravel fragments up to 35 to 40mm	10		
								Between 9.75m and 9.80m: Assumed Zone of Core Loss			

Start & End of Shift Observations					Installation					Remarks:				
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)					
05-10-2020	08:00	0.00	0.00							1. Inspection pit hand dug to 1.20mbgl.				
05-10-2020	17:30	10.30	0.00							2. Borehole Backfilled with bentonite on completion.				
Flush Information					Borehole Diameter		Casing Diameter		Water Strikes					
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
1.20	2.30	Air/Mist	100%-100%	white	10.30	146	2.00	175						
2.30	3.80	Air/Mist	100%-100%	white										
3.80	5.30	Air/Mist	100%-100%	white										
5.30	6.80	Air/Mist	100%-100%	white										

Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %. NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R70110	
Contract Number: JFR1451	Start Date: 05/10/2020	End Date: 05/10/2020	Checked By: GR	Status: FINAL	Sheet 2 of 2	
Easting: 406326.8	Northing: 141016.0	Ground Level: 121.78mOD	Plant Used: Beretta T41	Logged By: PB/MW	Scale: 1:50	

Weather: Showers Termination: Target depth achieved.

Samples & Core Recovery				Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation
9.80 - 10.30	D		100 22 0		111.48	10.30		Between 9.90m and 10.10m: localised light orange staining. Between 10.00m and 10.10m: black angular coarse nodular flint gravel fragments up to 35 to 40mm Between 10.10m and 10.30m : Non-Intact – possibly drilling disturbed End of Borehole at 10.30m		
									11	
									12	
									13	
									14	
									15	
									16	
									17	
									18	
									19	
									20	

Start & End of Shift Observations					Installation					Remarks:	
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)	1. Inspection pit hand dug to 1.20mbgl. 2. Borehole Backfilled with bentonite on completion.	
										Water Strikes	
Strike (m)		Casing (m)		Sealed (m)		Time (mins)		Rose to (m)		Remarks	
Flush Information					Borehole Diameter		Casing Diameter				
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)			
6.80	8.30	Air/Mist	100%-100%	white	10.30	146	2.00	175			
8.30	9.80	Air/Mist	100%-100%	white							
9.80	10.30	Air/Mist	100%-100%	white							
Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %.											
NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).											
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018											



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R70111	
Contract Number: JFR1451	Start Date: 30/09/2020	End Date: 01/10/2020	Checked By: GR	Status: FINAL	Sheet 1 of 4	
Rotary Core Drilling Log		Easting: 406408.0	Northing: 140967.9	Ground Level: 124.87mOD	Plant Used: Beretta T41	Logged By: MW
		Termination: Target depth achieved.			Scale: 1:50	

Weather: Showers+Sunny

Samples & Core Recovery					Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
1.20 - 2.30	D13		100 34 0		124.47	(0.40) 0.40		Dark brown gravelly sandy SILT with a medium chalk and flint cobble content. Gravel is weak subangular to subrounded fine to coarse white chalk. Sand is fine to coarse.			
2.30 - 3.80	CD		80 27 0		123.36	(1.11) 1.51		TOPSOIL Structureless CHALK composed of slightly silty subangular to rounded mainly medium to coarse GRAVEL with medium subrounded cobble content. Clasts are very weak low density white with frequent black specks. Cobbles are weak medium density with black specks. Silt matrix is uncompact light brown. (CIRIA grade Dc) SEAFORD CHALK FORMATION Structureless CHALK composed of slightly silty angular to subangular medium to coarse GRAVEL with a medium angular to subangular cobble content. Clasts are white. Occasional black subangular fine to coarse rinded flints with occasional light orange staining. (CIRIA grade Dc) SEAFORD CHALK FORMATION <i>Between 1.81m and 2.22m chalk gravel as white medium density fine to coarse chalk with black specks and orange staining.</i> <i>Between 1.81m and 3.90m Non Intact possible drilling induced.</i> <i>Between 2.22m and 2.50m Non Intact possible drilling disturbed with black specks and orange staining.</i> <i>Between 3.12m and 3.40m Non Intact possible drilling disturbed with black specks and orange staining.</i>	1		
3.80 - 5.30	D		100 48 16		120.97	3.90		Very weak to weak medium density white with frequent black specks CHALK with occasional flint and marl seams. Localised areas of light orange staining. Fracture set 1 is subhorizontal to 10° very closely to medium spaced infilled (up to 5mm) with a veneer of silt or comminuted chalk with frequent black specks. Fracture set 2 is 10 to 45° very close to widely spaced, infilled (2 to 5mm) with a veneer of silt or comminuted chalk with black specks and occasional marl seams and orange staining. Fracture set 3 is 80° to subvertical closely to very widely spaced, infilled (up to 3mm) with a veneer of silt or comminuted chalk with black specks. (CIRIA Grade C2/C4) SEAFORD CHALK FORMATION <i>Between 4.07m and 4.90m Non Intact possible drilling disturbed with black specks and orange staining.</i> <i>Between 5.10m and 5.30m Non Intact possible drilling disturbed with black specks and orange staining.</i> <i>Between 5.68m and 5.79m: recovered as slightly silty angular to subangular fine to coarse gravel of very weak medium density white chalk with frequent black specks with occasional orangish brown surface staining. Matrix is white.</i> <i>Between 5.93m and 6.80m Non Intact possible drilling disturbed with black specks and orange staining.</i> <i>Between 6.10m and 6.60m: Frequent orange staining (sponge beds).</i>	4		
5.30 - 6.80	CD C4 CD		100 38 21			(11.10)		SEAFORD CHALK FORMATION <i>Between 7.05m and 7.40m Non Intact possible drilling disturbed</i>	5		
6.80 - 8.30	D		67 31 0	NI 160 1530				<i>Between 9.05m and 9.17m Non Intact recovered as slightly silty angular to subangular medium to coarse black rinded flint with high cobble content. Gravel is predominantly medium nodular rinded flint (90mm average).</i>	6		
8.30 - 9.05			0 0 0						7		
9.05 - 9.80	CD		73 0 0					<i>Between 9.85m and 9.90m rare shell fragments between 2mm and 4mm.</i>	8		
									9		
									10		

Start & End of Shift Observations					Installation					Remarks:				
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)					
30-09-2020	08:00									1. Inspection pit hand dug to 1.20mbgl.				
30-09-2020	17:45	1.20	0.00							2. Downhole Geophysics undertaken on completion of drilling.				
01-10-2020	08:00	1.20	0.00							3. Borehole Backfilled with bentonite on completion.				
01-10-2020	17:30	15.00	0.00											
Flush Information					Borehole Diameter		Casing Diameter		Water Strikes					
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
1.20	2.30	Air/Mist	100%-100%	white	15.00	146	2.00	175						
2.30	3.80	Air/Mist	100%-100%	white										
3.80	5.30	Air/Mist	100%-100%	white										
5.30	6.80	Air/Mist	100%-100%	white										

Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %. NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R70111	
Contract Number: JFR1451	Start Date: 30/09/2020	End Date: 01/10/2020	Checked By: GR	Status: FINAL	Sheet 2 of 4	
Rotary Core Drilling Log		Easting: 406408.0	Northing: 140967.9	Ground Level: 124.87mOD	Plant Used: Beretta T41	Logged By: MW
		Termination: Target depth achieved.			Scale: 1:50	

Weather: Showers+Sunny

Termination: Target depth achieved.

Samples & Core Recovery				Strata Details						Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
9.80 - 10.55	C7 CD		100 33 19					Between 9.95m and 10.18m Non Intact possible drilling disturbed with black specks and orange staining.	11		
10.55 - 11.30			100 23 23					Between 10.85m and 11.25m Non Intact possible drilling disturbed with black specks and orange staining.			
11.30 - 12.05	CD AMAL 9+10 CD CD		100 67 19						12		
12.05 - 12.80	C11 CD		89 45 0						13		
12.80 - 14.30			100 89 N/A								
14.30 - 15.00	D		100 53 0		109.87	15.00			14		
								End of Borehole at 15.00m	15		
									16		
									17		
									18		
									19		
									20		

Start & End of Shift Observations					Installation					Remarks:					
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)	1. Inspection pit hand dug to 1.20mbgl. 2. Downhole Geophysics undertaken on completion of drilling. 3. Borehole Backfilled with bentonite on completion.					
										Water Strikes					
Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks										
Flush Information					Borehole Diameter		Casing Diameter								
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %.						
6.80	8.30	Air/Mist	100%-100%	white	15.00	146	2.00	175	NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).						
8.30	9.05	Air/Mist	100%-100%	white											
9.05	9.80	Air/Mist	100%-100%	white											
9.80	10.55	Air/Mist	100%-100%	white											
RPS RC Template												Issue Number: 2		Issue Date: 02/01/2018	



Contract Name: A303 Stonehenge			Client: RPS Planning & Development			Borehole ID: R70111		
Contract Number: JFR1451	Start Date: 30/09/2020	End Date: 01/10/2020	Checked By: GR	Status: FINAL		Sheet 4 of 4		
Rotary Core Drilling Log		Easting: 406408.0	Northing: 140967.9	Ground Level: 124.87mOD	Plant Used: Beretta T41	Logged By: MW	Scale: 1:50	

Weather: Showers+Sunny Termination: Target depth achieved.

Samples & Core Recovery				Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation
31										
32										
33										
34										
35										
36										
37										
38										
39										
40										

Start & End of Shift Observations					Installation					Remarks:								
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)	1. Inspection pit hand dug to 1.20mbgl. 2. Downhole Geophysics undertaken on completion of drilling. 3. Borehole Backfilled with bentonite on completion.								
										Water Strikes								
										Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks			
Flush Information					Borehole Diameter				Casing Diameter									
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %. NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).							
14.30	15.00	Air/Mist	100%-100%	white	15.00	146	2.00	175	RPS RC Template Issue Number: 2 Issue Date: 02/01/2018									



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R70112	
Contract Number: JFR1451	Start Date: 05/10/2020	End Date: 06/10/2020	Checked By: GR	Status: FINAL	Sheet 2 of 3	
Rotary Core Drilling Log		Easting: 406437.9	Northing: 141031.9	Ground Level: 122.46mOD	Plant Used: Beretta T41	Logged By: MW
		Termination: Target depth achieved.			Scale: 1:50	

Weather: Showers

Samples & Core Recovery				Strata Details						Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
9.80 - 11.30	CD C9 C		93 75 53					<i>sized rinded nodular flint.</i> Between 7.68m and 7.71m: orange staining as subhorizontal thin curved filaments and occasional <5mm spots (sponge). Between 7.81m and 7.90m Non-Intact – possibly drilling disturbed. Chalk recovered as slightly silty slightly sandy gravel with patches of orange staining and orange nodules of coarse sand size. Between 8.00m and 8.08m: orange staining as occasional up to 5mm diffuse spots. Between 8.20m and 8.30m Assumed Zone of Core Loss At 8.34m: orange staining as occasional (up to 30mm) elliptic structure (sponge) and fine light grey subhorizontal wispy marl laminae. At 8.37m: black rinded nodular flint gravel (up to 40mm). Between 8.37m and 8.52m Non-Intact – possibly drilling disturbed. Chalk with flint recovered as creamy white silty subangular to subrounded fine to medium chalk and black angular fine to medium flint gravel. Between 8.68m and 8.80m: Non-Intact – possibly drilling disturbed recovered as creamy white silty subangular to subrounded fine to medium chalk and black angular fine to medium flint gravel. Nodular flint with flat ribbed thin (<1mm thick) inoceramid shell and shell fragments (up to 20mm) and orange staining as diffuse irregular filaments (sponge). Between 9.15m and 9.19m orange staining as occasional filaments and elliptical structures (sponge), inoceramid shell fragments. At 9.44m orange staining as <5mm spots. At 9.60m orange staining as subvertical (<5mm length) filaments. Between 9.63m and 9.73m medium nodular flint gravel and chalk recovered as silty fine to coarse gravel. Between 9.90m and 10.00m Non-Intact – possibly drilling disturbed. Chalk with flint recovered as creamy white very silty fine to coarse flint gravel with elongated rinded nodular flint cobbles (up to 80mm). Gravel of subangular medium density chalk with frequent black specks on surfaces and orange staining and inoceramid shell fragments.	11		
11.30 - 12.05			100 67 32						12		
12.05 - 12.80	C		100 68 67	100 1310 2000		(8.26)			13		
12.80 - 14.30	C11 CD		100 60 41						14		
14.30 - 15.40	C12 CD		100 81 52						15		
	CD				107.06	15.40		End of Borehole at 15.40m	16		
									17		
									18		
									19		
									20		

Start & End of Shift Observations					Installation					Remarks:	
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)		
										1. Inspection pit hand dug to 1.20mbgl. 2. Falling Head Test undertaken at 12m below ground level. 3. Borehole Backfilled with bentonite on completion.	
Water Strikes											
Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks						
Flush Information					Borehole Diameter		Casing Diameter				
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)			
6.80	8.30	Air/Mist	100%-100%	white	6.80	146	2.00	175			
8.30	9.80	Air/Mist	100%-100%	white	15.40	146					
9.80	11.30	Air/Mist	100%-100%	white							
11.30	12.05	Air/Mist	100%-100%	white							

Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %. NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).

RPS RC Template Issue Number: 2 Issue Date: 02/01/2018



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R70113	
Contract Number: JFR1451	Start Date: 01/10/2020	End Date: 02/10/2020	Checked By: GR	Status: FINAL	Sheet 1 of 3	
Rotary Core Drilling Log		Easting: 406470.9	Northing: 141117.9	Ground Level: 118.03mOD	Plant Used: Beretta T41	Logged By: SB/MW
Weather: Sunny+Rain			Termination: Target depth achieved.			

Samples & Core Recovery				Strata Details						Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
PID 0.2ppm	ES				117.68	(0.35)		Soft to firm dark brown slightly gravelly silty CLAY with frequent rootlets. Gravel is subangular to angular medium flint.			
PID 0.1ppm	ES					0.35		TOPSOIL			
PID 0.0ppm	ES					(0.75)		Structureless CHALK composed of slightly silty angular and subangular fine to coarse GRAVEL. Clasts are white with frequent orange staining. Frequent angular and subangular fine to coarse flint gravel. (CIRIA Grade Dc)			
PID 0.0ppm	ES				116.93	1.10		SEAFORD CHALK FORMATION		1	
1.20 - 2.30	D		100 0 0					CHALK Non intact recovered as white slightly silty angular to subangular fine to coarse gravel with low cobble content. Gravel and cobbles are very weak to weak medium density with frequent black specks and orange staining. Occasional nodular rinded flint cobbles (up to 80mm).		2	
2.30 - 3.80	D		43 0 0			(4.37)		SEAFORD CHALK FORMATION <i>Between 1.20m and 1.40m: NIDD black specks with occasional orange staining (sponge beds).</i> <i>Between 1.53m and 1.57m: NIDD black specks with occasional orange staining (sponge beds).</i> <i>Between 1.87m and 2.30m: NIDD black specks with occasional orange staining (sponge beds).</i> <i>Between 2.30m and 2.53m: with angular medium gravel sized flint fragments.</i> <i>Between 2.53m and 2.80m: NIDD with natural fractures identified in matrix.</i> <i>Between 2.80m and 3.80m: Limited Recovery NIDD</i>		3	
3.80 - 4.55	D		73 0 0					<i>Between 3.80m and 4.18m: NI chalk recovered as angular to subangular medium to coarse gravel with occasional orange staining.</i>		4	
4.55 - 5.30	D		100 0 0					<i>Between 4.60m and 4.70m: with angular fine to medium gravel sized flint fragments.</i> <i>Between 4.70m and 5.40m: NIDD</i>		5	
5.30 - 6.80	C CD		97 25 15		112.56	5.47		Very weak medium density white CHALK with frequent black specks, light orange and light brown staining and occasional rounded medium flint gravel. Fractures are subhorizontal to 45° predominantly medium to widely spaced and infilled with less than 3mm of silt and comminuted chalk, with frequent black specks and localised orange staining. Widely to very widely spaced bands of angular rinded nodular flint gravel and cobbles (up to 70mm) (CIRIA Grade B1/B2)		6	
6.80 - 8.30	D C CD		100 28 0					SEAFORD CHALK FORMATION <i>Between 5.89m and 5.95m: with angular cobble sized flint fragments (80mm).</i> <i>Between 5.95m and 6.75m: NIDD</i> <i>Between 7.02m and 7.21m: NIDD</i>		7	
8.30 - 9.80	D		70 13 0					<i>Between 7.96m and 7.99m: Structureless CHALK composed of slightly sandy silty angular to subangular fine to coarse GRAVEL with low subangular cobble content. Clasts are weak medium density white with black specks and orange staining. Matrix is off-white.</i>		8	
										9	
										10	

Start & End of Shift Observations					Installation					Remarks:					
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)						
01-10-2020	08:00									1. Inspection pit hand dug to 1.20mbgl.					
01-10-2020	17:30	1.20	0.00							2. Downhole Geophysics undertaken on completion of drilling.					
02-10-2020	08:00	1.20	0.00							3. Borehole Backfilled with bentonite on completion.					
02-10-2020	14:30	15.50	0.00												
Flush Information					Borehole Diameter		Casing Diameter		Water Strikes						
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks	
1.20	2.30	Air/Mist	100%-100%	white	15.50	146	2.00	175							
2.30	3.80	Air/Mist	100%-100%	white											
3.80	4.55	Air/Mist	100%-100%	white											
4.55	5.30	Air/Mist	100%-100%	white											

Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %.
NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).

RPS RC Template Issue Number: 2 Issue Date: 02/01/2018



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R70113	
Contract Number: JFR1451	Start Date: 01/10/2020	End Date: 02/10/2020	Checked By: GR	Status: FINAL	Sheet 2 of 3	
Rotary Core Drilling Log		Easting: 406470.9	Northing: 141117.9	Ground Level: 118.03mOD	Plant Used: Beretta T41	Logged By: SB/MW
Weather: Sunny+Rain			Termination: Target depth achieved.			Scale: 1:50

Samples & Core Recovery				Strata Details						Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
9.80 - 10.55	D		100 32 13					Between 10.07m and 10.18m: with angular cobble sized flint fragments (70mm) Between 10.15m and 10.92m: NIDD			
10.55 - 11.30			100 40 13						11		
11.30 - 12.80	C D		93 16 0					Between 11.60m and 11.67m: Structureless CHALK composed of slightly sandy silty angular to subangular fine to coarse GRAVEL with low subangular cobble content. Clasts are weak medium density white with black specks and orange staining. Matrix is off-white.	12		
				40 400 1480		(10.03)		Between 12.80m and 13.00m: frequent orange staining			
12.80 - 14.30	CD		100 25 17					Between 13.23m and 13.42m: Structureless CHALK composed of slightly sandy silty angular to subangular fine to coarse GRAVEL with low subangular cobble content. Clasts are weak medium density white with black specks and orange staining. Matrix is off-white. With frequent angular coarse flint gravel and cobbles (60 to 70mm). Between 13.56m and 14.50m: NIDD	13		
								Between 14.50m and 14.66m: flint gravel	14		
14.30 - 15.50	C CD CD CD		100 43 39						15		
					102.53	15.50		End of Borehole at 15.50m	16		
									17		
									18		
									19		
									20		

Start & End of Shift Observations					Installation					Remarks:					
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)						
										1. Inspection pit hand dug to 1.20mbgl. 2. Downhole Geophysics undertaken on completion of drilling. 3. Borehole Backfilled with bentonite on completion.					
										Water Strikes					
Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks										
Flush Information					Borehole Diameter		Casing Diameter								
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)							
5.30	6.80	Air/Mist	100%-100%	white	15.50	146	2.00	175	Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %.						
6.80	8.30	Air/Mist	100%-100%	white	NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).										
8.30	9.80	Air/Mist	100%-100%	white											
9.80	10.55	Air/Mist	100%-100%	white											
RPS RC Template												Issue Number: 2		Issue Date: 02/01/2018	



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R70114	
Contract Number: JFR1451	Start Date: 07/10/2020	End Date: 07/10/2020	Checked By: GR	Status: FINAL	Sheet 1 of 2	
Rotary Core Drilling Log		Easting: 406576.2	Northing: 141065.1	Ground Level: 121.82mOD	Plant Used: Beretta T41	Logged By: AG
		Termination: Target depth achieved.			Scale: 1:50	

Weather: Fine

Samples & Core Recovery					Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
1.20 - 2.50	D				121.52	(0.30)		Firm dark brown slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse flint and chalk. Frequent roots and rootlets (up to 5mm dia) TOPSOIL			
	D					0.30					
2.50 - 4.00	D				120.08	(1.44)		Structureless CHALK composed of slightly sandy silty subangular fine to coarse GRAVEL with low subangular flint cobble content (up to 130mm x 90mm). Clasts are white, locally off white and stained. Rare angular to subangular medium to coarse flint gravel. (CIRIA Grade Dc) SEAFORD CHALK FORMATION	1		
	CD		95 12 12			1.74					
4.00 - 5.50	D				118.49	(1.59)		Very weak medium density off-white CHALK. Fracture set 1 is subhorizontal to 20° closely spaced open (<3mm) with light brown veneer and black specks and occasional orange staining. Fracture set 2 is 50° to 65° closely to medium spaced open (<3mm) with light brown veneer and black specks. Fracture set 3 is subvertical open (<3mm) with light brown veneer and black specks (CIRIA grade B3) SEAFORD CHALK FORMATION	2		
	CD		100 19 8			3.33					
5.50 - 7.00	D				NI 560 2000	(9.21)		Between 3.14m and 3.20m fine light grey subhorizontal wavy marl laminae. Very weak medium density off-white CHALK. Fracture set 1 subhorizontal typically medium spaced open with no infill. Fracture set 2 subvertical widely spaced no infill. Widely spaced flint bands typically rinded nodular flint. Frequent orange staining typically as gravel sized diffuse patches. Rare shell fragments and rare marl laminae. (CIRIA Grade A2) SEAFORD CHALK FORMATION	3		
	CD		100 39 36								
7.00 - 8.50	D				NI 560 2000	(9.21)		Between 3.45m and 3.72m NI chalk with extremely to very closely spaced remnant fractures recovered as creamy white gravel. Gravel is subangular to subrounded fine to coarse creamy white medium density chalk with pronounced bedding and high angle fracture sets with frequent black specks and occasional orange staining. At 3.73m orange staining occurring as thin 's' shaped filament. Between 4.45m and 4.50m orange staining occurring as diffuse patches. Between 4.56m and 4.72m NI chalk recovered as creamy white subangular fine to coarse medium to high density gravel. Pronounced high angle subvertical joint set with black specks and occasional orange staining. Between 4.63m and 4.70m orange staining occurring as diffuse patches. Between 4.72m and 4.83m NIDD chalk with flint recovered as creamy white slightly silty subangular fine to medium chalk with occasional angular medium flint gravel. At 4.75m band of fine to coarse nodular rinded flint (up to 40mm). Between 5.47m and 5.50m AZCL. Between 5.65m and 5.67m subhorizontal shell fragment (up to 20mm long and 2mm thick). Between 5.66m and 5.70m orange staining occurring as (<4mm) spots. At 6.30m orange staining as diffuse 30mm long filament.	4		
	CD		100 58 46								
8.50 - 10.00	D				NI 560 2000	(9.21)		Between 8.35m and 8.50m AZCL. Between 8.54m and 8.86m fine light grey wavy subhorizontal marl laminae. Between 8.63m and 8.67m black medium rinded flint gravel.	5		
	CD		90 69 69								
8.50 - 10.00	D				NI 560 2000	(9.21)		Between 9.15m and 9.40m: orange staining as diffuse patches. At 9.40m: light brown round coarse rinded flint gravel (40mm x 30mm x 20mm). Between 9.64m and 10.00m AZCL.	6		
	CD		76 69 50								
	C								7		
	C								8		
	C								9		
	C								10		

Start & End of Shift Observations					Installation					Remarks:				
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)					
07-10-2020	08:00	0.00	0.00							1. Inspection pit hand dug to 1.20m bgl. 2. Within the Chalk units there are very thin to thin zones of Non Intact Drilling Disturbance that are generally very closely to widely spaced. Within these zones material is recovered as silts and gravels. Further detail description of these zones are included on the Handwritten Engineers Field Logs. 3. Borehole Backfilled with bentonite on completion.				
07-10-2020	17:00	15.00	2.00											
Flush Information					Borehole Diameter		Casing Diameter		Water Strikes					
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
1.20	15.00	Air/Mist	100%-100%	White	15.00	146	2.00	175						
Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %. NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).														
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018														



Contract Name: A303 Stonehenge			Client: RPS Planning & Development			Borehole ID: R70114		
Contract Number: JFR1451	Start Date: 07/10/2020	End Date: 07/10/2020	Checked By: GR	Status: FINAL	Sheet 2 of 2			
Rotary Core Drilling Log		Easting: 406576.2	Northing: 141065.1	Ground Level: 121.82mOD	Plant Used: Beretta T41	Logged By: AG	Scale: 1:50	

Weather: Fine Termination: Target depth achieved.

Samples & Core Recovery				Strata Details						Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
10.00 - 10.75	CD		92 80 69					At 10.04m dark orange staining as diffuse (up to 5mm) subhorizontal filaments. At 10.08m dark orange staining as diffuse (up to 5mm) subhorizontal filaments. At 10.25m dark orange staining as diffuse patch (30mm x 20mm) on fracture surface.			
10.75 - 11.50			65 16 16					Between 10.48m and 10.55m NIDD chalk recovered as creamy white subrounded coarse gravel of medium density unstained chalk. At 10.58m dark orange staining as (up to 10mm) subhorizontal filament and (<5mm) patch. At 10.64m dark orange staining as <5mm patch. Between 10.70m and 10.75m AZCL Between 10.75m and 10.77m nodular rinded flint cobble non intact recovered as coarse gravel. Between 11.24m and 11.50m AZCL	11		
11.50 - 13.00	D		97 31 19		109.28	12.54			12		
13.00 - 14.50	CD		100 59 37	NI 70 75		(2.46)		Weak medium to high density white CHALK. Fracture set 1 subhorizontal widely spaced clean no infill. Fracture set 2 subvertical medium to widely spaced typically open with occasionally grey clay infill. Frequent medium spaced typically elongate or rounded nodular flints. Frequent orange staining occurring as diffuse patches, diffuse filaments, shell fragments and medium spaced fine light grey thinly laminated marl. (CIRIA Grade A1/A2) SEAFORD CHALK FORMATION Between 12.85m and 12.89m: fine light grey wispy interwoven marl laminae. Between 12.95m and 13.00m AZCL At 13.28m rounded coarse rinded flint gravel. Between 13.50m and 13.56m: Dark orange subhorizontal staining along marl band (possible sponge bed) and up to 5mm faint diffuse light orange spots. Between 13.54m and 13.56m fine light grey interwoven marl laminae. Between 13.58m and 13.70m NI chalk formed by conjugate infilled high angle joints with evidence of grey clay infill as partial veneer. At 13.92m black rinded nodular flint gravel (30mm x 50mm x 20mm). Between 14.14m and 14.80m orange staining as faint diffuse orange spots (up to 5mm). At 14.18m fine dark grey subhorizontal marl laminae. At 14.20m: orange staining as 5mm wide subhorizontal light orange band (100mm long). Between 14.29m and 14.32m shell band comprising typically subhorizontal fragments of up to 2mm slightly curved grey up to 80mm long inoceramid with occasional orange staining. Between 14.37m and 14.50m chalk cobble. At 14.60m orange staining as up to 5mm spots. At 14.80m (50mm long and up to 2mm thickness) curved subhorizontal shell fragment (possible inoceramid). Between 14.82m and 14.86m vertical 80mm long 20mm x 20mm wide rinded nodular flint cobble.	13		
14.50 - 15.00	CD		100 82 72		106.82	15.00		End of Borehole at 15.00m	14		
									15		
									16		
									17		
									18		
									19		
									20		

Start & End of Shift Observations					Installation					Remarks:	
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)	1. Inspection pit hand dug to 1.20mbgl. 2. Within the Chalk units there are very thin to thin zones of Non Intact Drilling Disturbance that are generally very closely to widely spaced. Within these zones material is recovered as silts and gravels. Further detail description of these zones are included on the Handwritten Engineers Field Logs. 3. Borehole Backfilled with bentonite on completion.	
										Water Strikes	
Strike (m)		Casing (m)		Sealed (m)		Time (mins)		Rose to (m)		Remarks	
Flush Information					Borehole Diameter				Casing Diameter		
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %.		
					15.00	146	2.00	175	NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).		
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018											



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R70115	
Contract Number: JFR1451	Start Date: 08/10/2020	End Date: 16/10/2020	Checked By: GR	Status: FINAL	Sheet 1 of 3	
Rotary Core Drilling Log		Easting: 406601.9	Northing: 141139.3	Ground Level: 119.28mOD	Plant Used: Beretta T41	Logged By: BC/MW
		Termination: Target depth achieved.			Scale: 1:50	

Weather: Showers

Samples & Core Recovery				Strata Details						Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAO)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
PID 0.0ppm	D					0.25		Dark brown slightly sandy silty slightly clayey GRAVEL with occasional rootlets and flint cobbles. Gravel is subangular to subrounded fine to coarse chalk.			
PID 0.0ppm	ES				118.93	0.35		TOPSOIL			
PID 0.0ppm	D					(1.45)		Structureless CHALK composed of slightly silty subangular to rounded fine to coarse GRAVEL with low to medium cobble content. Clasts are very weak to weak medium density creamy white with rare black specks and orange staining. Matrix is white with a band of nodular flint gravel and cobbles (up to 70mm). (CIRIA grade Dc)			
PID 0.0ppm	ES							SEAFORD CHALK FORMATION			
1.20 - 2.50	D		96 27 0		117.48	1.80		CHALK: Non intact recovered as creamy white angular to subangular fine to coarse weak medium density gravel with black specks and orange staining.			
	ES							SEAFORD CHALK FORMATION			
2.50 - 4.00	D		93 53 0					Between 1.85m and 2.25m Non Intact recovered as slightly silty angular to subangular fine to coarse gravel with low to medium cobble content. Clasts are weak to medium density white with black specks and occasional orange staining. Matrix is off-white localised light grey.			
	ES							Between 2.35m and 2.50m AZCL			
4.00 - 5.50	D		97 21 0			(5.20)		Between 2.70m and 3.10m Non Intact recovered as slightly silty angular to subangular fine to coarse gravel with low to medium cobble content. Clasts are weak to medium density white with black specks and occasional orange staining. Matrix is off-white localised light grey. Possible drilling induced.			
	ES							Between 3.44m and 4.10m Non Intact recovered as slightly silty angular to subangular fine to coarse gravel with low to medium cobble content. Clasts are weak to medium density white with black specks and occasional orange staining. Matrix is off-white localised light grey. Possible drilling induced.			
5.50 - 6.25	D		80 0 0					Between 4.80m and 4.86m flint bands			
	ES							Between 4.86m and 5.45m Non Intact drilling induced			
6.25 - 7.00	D		80 21 0					Between 5.10m and 6.10m Non Intact drilling induced			
	ES							Between 5.45m and 5.50m AZCL			
7.00 - 8.50	D		97 34 11		112.28	7.00		Very weak medium density white with frequent black specks CHALK with medium spaced angular to subangular medium nodular rinded flint gravel. Occasional localised orange staining (sponge beds). Fracture set 1 is subhorizontal to 10° closely to widely spaced clean or infilled with silt veneer or comminuted chalk with frequent black specks. Fracture set 2 orientated 30 to 45° medium to widely spaced clean or silt veneer with occasional comminuted chalk many black specks and occasional orange staining (sponge beds). Fracture set 3 orientated 50 to 85° closely to widely spaced clean occasional silt infill with frequent black specks and occasional orange staining. (CIRIA Grade A1/A3)			
	ES							SEAFORD CHALK FORMATION			
8.50 - 10.00	D		100 35 8					Between 8.10m and 8.45m Non Intact drilling induced			
	ES							Between 8.65m and 8.87m Non Intact recovered as slightly silty subangular fine to coarse gravel of chalk with low cobble content.			

Start & End of Shift Observations				Installation				Remarks:					
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)				
08-10-2020	08:00	0.00	0.00							1. Inspection pit hand dug to 1.20m bgl. 2. Falling Head Test undertaken at 14m below ground level. 3. Downhole Geophysics undertaken on completion of drilling. 4. Borehole Backfilled with bentonite on completion.			
08-10-2020	18:10	15.50	2.00										
Flush Information				Borehole Diameter				Casing Diameter					
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)					
1.20	2.50	Air/Mist	100%-100%	white	15.50	146	2.00	175					
2.50	4.00	Air/Mist	100%-100%	white								Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %.	
4.00	5.50	Air/Mist	100%-100%	white								NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).	
5.50	6.25	Air/Mist	100%-100%	white								RPS RC Template Issue Number: 2 Issue Date: 02/01/2018	



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R70115	
Contract Number: JFR1451	Start Date: 08/10/2020	End Date: 16/10/2020	Checked By: GR	Status: FINAL	Sheet 2 of 3	
Rotary Core Drilling Log		Easting: 406601.9	Northing: 141139.3	Ground Level: 119.28mOD	Plant Used: Beretta T41	Logged By: BC/MW
Weather: Showers			Termination: Target depth achieved.			Scale: 1:50

Samples & Core Recovery				Strata Details						Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
10.00 - 11.50	C		100 57 30					At 10.20m becoming very weak to weak. Between 10.30m and 10.43m : Frequent orange staining (50mm x 30mm). Between 10.80m and 11.00m Non Intact drilling induced Between 11.24m and 11.76m NIDD	11		
11.50 - 13.00			100 22 10			(8.50)		Between 12.04m and 12.21m NIDD At 12.56m: NI recovered as slightly silty subangular fine to coarse gravel of chalk with low cobble content.	12		
13.00 - 14.00	D C		45 26 26					Between 13.20m and 13.45m flint recovered as angular to subangular nodular flint fragments up to 80mm.	13		
14.00 - 15.50	D		100 14 0					Between 14.30m and 14.40m flint recovered as angular to subangular nodular flint up to 70mm. Between 14.44m and 15.20m Non Intact recovered as slightly silty angular to subangular fine to coarse gravel with low to medium cobble content. Clasts are weak medium density white with black specks with occasional orange staining. Matrix is off white occasional localised light grey.	14 15		
								End of Borehole at 15.50m	16		
									17		
									18		
									19		
									20		

Start & End of Shift Observations					Installation					Remarks:						
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)	1. Inspection pit hand dug to 1.20m bgl. 2. Falling Head Test undertaken at 14m below ground level. 3. Downhole Geophysics undertaken on completion of drilling. 4. Borehole Backfilled with bentonite on completion.						
										Water Strikes						
Strike (m)		Casing (m)		Sealed (m)		Time (mins)		Rose to (m)		Remarks						
Flush Information					Borehole Diameter				Casing Diameter							
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %.							
6.25	7.00	Air/Mist	100%-100%	white	15.50	146	2.00	175	NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).							
7.00	8.50	Air/Mist	100%-100%	white							RPS RC Template Issue Number: 2 Issue Date: 02/01/2018					
8.50	10.00	Air/Mist	100%-100%	white												
10.00	11.50	Air/Mist	100%-100%	white												



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R70115	
Contract Number: JFR1451	Start Date: 08/10/2020	End Date: 16/10/2020	Checked By: GR	Status: FINAL	Sheet 3 of 3	
Rotary Core Drilling Log	Easting: 406601.9	Northing: 141139.3	Ground Level: 119.28mOD	Plant Used: Beretta T41	Logged By: BC/MW	Scale: 1:50

Weather: Showers Termination: Target depth achieved.

Samples & Core Recovery					Strata Details					Groundwater		
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description			Water Strike	Backfill/Installation
21												
22												
23												
24												
25												
26												
27												
28												
29												
30												

Start & End of Shift Observations					Installation					Remarks:																		
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)	1. Inspection pit hand dug to 1.20mbgl. 2. Falling Head Test undertaken at 14m below ground level. 3. Downhole Geophysics undertaken on completion of drilling. 4. Borehole Backfilled with bentonite on completion.																		
										<table border="1"> <thead> <tr> <th colspan="5">Water Strikes</th> </tr> <tr> <th>Strike (m)</th> <th>Casing (m)</th> <th>Sealed (m)</th> <th>Time (mins)</th> <th>Rose to (m)</th> <th>Remarks</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		Water Strikes					Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks						
Water Strikes																												
Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks																							
Flush Information					Borehole Diameter		Casing Diameter																					
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %.																			
11.50	13.00	Air/Mist	100%-100%	white	15.50	146	2.00	175	NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).																			
13.00	14.00	Air/Mist	100%-100%	white																								
14.00	15.50	Air/Mist	100%-100%	white																								
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018																												



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R70116	
Contract Number: JFR1451	Start Date: 12/10/2020	End Date: 13/10/2020	Checked By: GR	Status: FINAL	Sheet 1 of 2	
Rotary Core Drilling Log		Easting: 406735.1	Northing: 141173.2	Ground Level: 114.38mOD	Plant Used: Beretta T41	Logged By: PB/MW
Weather: Fine		Termination: Target depth achieved.				Scale: 1:50

Samples & Core Recovery					Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
1.20 - 2.30	D		95 0 0		114.08	(0.30) 0.30		Soft dark brown slightly gravelly silty CLAY. Gravel is subangular to subrounded fine to coarse flint and chalk. Occasional rootlets and roots (up to 5mm thick) TOPSOIL			
	D					(0.90)		Structureless CHALK composed of slightly sandy silty subangular fine to coarse GRAVEL. with rare angular to subangular medium to coarse flints. Clasts are white locally off-white and stained orangish brown. (CIRIA Grade Dc)	1		
	D				113.18	1.20		SEAFORD CHALK FORMATION			
	D				112.70	(0.48) 1.68		Structureless CHALK composed of slightly silty subangular to subrounded fine to coarse GRAVEL with low subangular cobble content. Clasts are very weak and weak low and medium density off-white with rare black specks and light orange staining. Matrix is cream and light grey / brown. Band of rinded nodular flint cobbles (up to 70mm). (CIRIA grade Dc)	2		
	D					(3.32)		SEAFORD CHALK FORMATION Non intact CHALK recovered as white angular and subangular fine to coarse weak medium density gravel with occasional black specks and orange staining. SEAFORD CHALK FORMATION <i>Between 1.80m and 2.25m: Non-Intact – possibly drilling disturbed</i> <i>Between 2.25m and 2.30m: Assumed Zone of Core Loss</i> <i>Between 2.40m and 2.45m: angular flint cobbles (up to 80mm).</i> <i>Between 2.45m and 3.98m: Non Intact chalk recovered as slightly silty angular to subangular fine to coarse gravel with low subangular cobble content.</i>	3		
	D		10 0 0					<i>Between 3.98m and 5.00m: multiple residual fractures:</i>	4		
3.80 - 5.30	D3 D		100 79 0		109.38	5.00		Very weak medium density white with frequent black specks CHALK with occasional flint cobbles, orange staining and marl laminae. Fracture set 1: subhorizontal to 35° closely to very widely spaced open (>3mm) with veneer of silt or comminuted chalk infill with frequent black specks and occasional orange staining. Fracture Set 2: 70° to 80° closely to widely spaced open (>3mm) with veneer of silt or comminuted chalk infill with frequent black specks and occasional orange staining. (CIRIA Grade C1/C3)	5		
5.30 - 6.80	C11 D		73 20 10					SEAFORD CHALK FORMATION <i>Between 6.08m and 6.28m: Non-Intact – possibly drilling disturbed</i> <i>Between 6.46m and 6.53m with angular to subangular rinded nodular flint (up to 80mm).</i> <i>Between 6.53m and 7.12m: Non Intact chalk recovered as slightly silty angular to subangular fine to coarse gravel.</i>	6		
6.80 - 8.30	D D							<i>Between 7.13m and 8.30m: Non Intact chalk recovered as slightly silty angular to subangular fine to coarse gravel with medium cobble content.</i>	7		
8.30 - 9.80	C6 CD		100 0 0					<i>Between 8.80m and 8.90m: with angular to subangular flint cobbles (up to 112mm).</i> <i>Between 9.27m and 9.35m: band of angular to subangular flint cobbles (up to 100mm).</i> <i>Between 9.50m and 9.70m: Non-Intact – possibly drilling disturbed</i> <i>Between 9.70m and 9.80m: Assumed Zone of Core Loss</i> <i>Between 9.80m and 10.30m: Non-Intact – possibly drilling disturbed</i>	8 9		
			93 23 0						10		

Start & End of Shift Observations					Installation					Remarks:					
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)						
12-10-2020	10:00	0.00	0.00							1. Inspection pit hand dug to 1.20mbgl.					
12-10-2020	17:45	15.30	2.00							2. Borehole Backfilled with bentonite on completion.					
13-10-2020	08:00	15.30	2.00												
Flush Information					Borehole Diameter		Casing Diameter		Water Strikes						
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks	
1.20	15.30	Air/Mist	100%-100%	White	15.30	146	2.00	175							
Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %. NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).															
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018															



Contract Name: A303 Stonehenge			Client: RPS Planning & Development			Borehole ID: R70116		
Contract Number: JFR1451	Start Date: 12/10/2020	End Date: 13/10/2020	Checked By: GR	Status: FINAL		Sheet 2 of 2		
Rotary Core Drilling Log		Easting: 406735.1	Northing: 141173.2	Ground Level: 114.38mOD	Plant Used: Beretta T41	Logged By: PB/MW	Scale: 1:50	

Weather: Fine Termination: Target depth achieved.

Samples & Core Recovery				Strata Details						Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
9.80 - 11.30	D		100 28 0					Between 10.64m and 10.73m: angular to subangular medium flint gravel fragments.	11		
11.30 - 12.80	AMAL 12+13 C12		93 43 8					Between 11.46m and 11.59m: Non-Intact – possibly drilling disturbed Between 11.95m and 12.30m: Non-Intact – possibly drilling disturbed	12		
12.80 - 14.30	D C9 CD		86 37 33	NI 340 4500		(10.30)		Between 12.43m and 12.70m: Non intact chalk recovered as angular to subangular fine to coarse gravel with black specks and occasional light orange staining. Between 12.70m and 12.80m: Assumed Zone of Core Loss Between 13.36m and 13.59m: angular to subangular flint cobble fragments (up to 80mm). Between 13.70m and 14.00m: Non-Intact – possibly drilling disturbed Between 14.00m and 14.30m: Assumed Zone of Core Loss	13 14		
14.30 - 15.30	D		100 21 0		99.08	15.30		Between 14.87m and 14.92m: flint cobble recovered as angular to subangular gravel sized fragments. Between 15.03m and 15.08m: band of interwoven light grey marl laminae. Between 15.09m and 15.30m: Non-Intact – possibly drilling disturbed	15		
								End of Borehole at 15.30m	16 17 18 19 20		

Start & End of Shift Observations					Installation					Remarks:					
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)	1. Inspection pit hand dug to 1.20mbgl. 2. Borehole Backfilled with bentonite on completion.					
										Water Strikes					
Strike (m)		Casing (m)		Sealed (m)		Time (mins)		Rose to (m)		Remarks					
Flush Information					Borehole Diameter				Casing Diameter						
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %.				
					15.30	146	2.00	175	NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).						
RPS RC Template												Issue Number: 2		Issue Date: 02/01/2018	



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R70117	
Contract Number: JFR1451	Start Date: 09/10/2020	End Date: 09/10/2020	Checked By: GR	Status: FINAL	Sheet 1 of 2	
Rotary Core Drilling Log		Easting: 406759.1	Northing: 141240.2	Ground Level: 108.00mOD	Plant Used: Beretta T41	Logged By: MW
		Termination: Target depth achieved.			Scale: 1:50	

Weather: Sunny

Samples & Core Recovery				Strata Details						Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
1.20 - 2.50	D				107.40	0.60		Dark brown very silty slightly sandy subangular to subrounded fine to coarse GRAVEL of flint and chalk. with occasional rinded flint cobbles and occasional rootlets. TOPSOIL	1		
	D					1.00		Structureless CHALK composed of silty rounded to subrounded fine to coarse GRAVEL. Clasts are very weak medium density and white with occasional black specks. Matrix is white and light brown silt. (CIRIA grade Dc) SEAFORD CHALK FORMATION			
2.50 - 4.00	D		80 0 0		106.40	1.60		Structureless CHALK composed of slightly silty angular to subangular medium to coarse GRAVEL with low to medium cobble content. Clasts are white. Occasional subangular coarse rinded nodular flint gravel (up to 60mm). (CIRIA Grade Dc) SEAFORD CHALK FORMATION	2		
	D		97 24 0			5.00		Structureless CHALK composed of slightly silty angular to subangular medium to coarse GRAVEL with low to medium cobble content. Clasts are white. Occasional subangular coarse rinded nodular flint gravel (up to 60mm). (CIRIA Grade Dc) SEAFORD CHALK FORMATION			
4.00 - 5.50	D				101.40	6.60		Very weak medium density white with frequent black specks CHALK with occasional flints and orange staining and marl seams. Fracture set 1: subhorizontal to 10° closely to widely spaced with silt veneer with frequent black specks and light orange staining. Fracture set 2: 35 to 80° medium to widely spaced with silt veneer with frequent black specks and light orange staining. (CIRIA Grade A1/A3) SEAFORD CHALK FORMATION	7		
	D		100 43 0			6.60		Very weak medium density white with frequent black specks CHALK with occasional flints and orange staining and marl seams. Fracture set 1: subhorizontal to 10° closely to widely spaced with silt veneer with frequent black specks and light orange staining. Fracture set 2: 35 to 80° medium to widely spaced with silt veneer with frequent black specks and light orange staining. (CIRIA Grade A1/A3) SEAFORD CHALK FORMATION			
5.50 - 7.00	C4 CD		97 23 10		101.40	6.60		Very weak medium density white with frequent black specks CHALK with occasional flints and orange staining and marl seams. Fracture set 1: subhorizontal to 10° closely to widely spaced with silt veneer with frequent black specks and light orange staining. Fracture set 2: 35 to 80° medium to widely spaced with silt veneer with frequent black specks and light orange staining. (CIRIA Grade A1/A3) SEAFORD CHALK FORMATION	6		
	C C7 CD		100 63 29			6.60		Very weak medium density white with frequent black specks CHALK with occasional flints and orange staining and marl seams. Fracture set 1: subhorizontal to 10° closely to widely spaced with silt veneer with frequent black specks and light orange staining. Fracture set 2: 35 to 80° medium to widely spaced with silt veneer with frequent black specks and light orange staining. (CIRIA Grade A1/A3) SEAFORD CHALK FORMATION			
7.00 - 7.75	D		53 0 0		98.00	10.00		Very weak medium density white with frequent black specks CHALK with occasional flints and orange staining and marl seams. Fracture set 1: subhorizontal to 10° closely to widely spaced with silt veneer with frequent black specks and light orange staining. Fracture set 2: 35 to 80° medium to widely spaced with silt veneer with frequent black specks and light orange staining. (CIRIA Grade A1/A3) SEAFORD CHALK FORMATION	9		
7.75 - 8.50	D		100 21 0			10.00		Very weak medium density white with frequent black specks CHALK with occasional flints and orange staining and marl seams. Fracture set 1: subhorizontal to 10° closely to widely spaced with silt veneer with frequent black specks and light orange staining. Fracture set 2: 35 to 80° medium to widely spaced with silt veneer with frequent black specks and light orange staining. (CIRIA Grade A1/A3) SEAFORD CHALK FORMATION			
8.50 - 10.00	C C7 CD		100 63 29		98.00	10.00		Very weak medium density white with frequent black specks CHALK with occasional flints and orange staining and marl seams. Fracture set 1: subhorizontal to 10° closely to widely spaced with silt veneer with frequent black specks and light orange staining. Fracture set 2: 35 to 80° medium to widely spaced with silt veneer with frequent black specks and light orange staining. (CIRIA Grade A1/A3) SEAFORD CHALK FORMATION	10		

Start & End of Shift Observations					Installation					Remarks:		
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)			
09-10-2020	08:00	0.00	0.00							1. Inspection pit hand dug to 1.20mbgl.		
09-10-2020	14:00	10.00	2.00							2. Downhole Geophysics undertaken on completion of drilling.		
										3. Borehole Backfilled with bentonite on completion.		
Flush Information					Borehole Diameter		Casing Diameter					
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)				
1.20	2.50	Air/Mist	100%-100%	white	10.00	146	2.00	175				
2.50	4.00	Air/Mist	100%-100%	white								
4.00	5.50	Air/Mist	100%-100%	white								
5.50	7.00	Air/Mist	100%-100%	white								

Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %. NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R70117	
Contract Number: JFR1451	Start Date: 09/10/2020	End Date: 09/10/2020	Checked By: GR	Status: FINAL	Sheet 2 of 2	
Rotary Core Drilling Log	Easting: 406759.1	Northing: 141240.2	Ground Level: 108.00mOD	Plant Used: Beretta T41	Logged By: MW	Scale: 1:50

Weather: Sunny Termination: Target depth achieved.

Samples & Core Recovery					Strata Details					Groundwater		
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description			Water Strike	Backfill/Installation
								End of Borehole at 10.00m				
											11	
											12	
											13	
											14	
											15	
											16	
											17	
											18	
											19	
											20	

Start & End of Shift Observations					Installation					Remarks:	
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)	1. Inspection pit hand dug to 1.20mbgl. 2. Downhole Geophysics undertaken on completion of drilling. 3. Borehole Backfilled with bentonite on completion.	
										Water Strikes	
Strike (m)		Casing (m)		Sealed (m)		Time (mins)		Rose to (m)		Remarks	
Flush Information					Borehole Diameter		Casing Diameter				
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)			
7.00	7.75	Air/Mist	100%-100%	white	10.00	146	2.00	175			
7.75	8.50	Air/Mist	100%-100%	white							
8.50	10.00	Air/Mist	100%-100%	white							
Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %.											
NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).											
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018											



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R70301	
Contract Number: JFR1451	Start Date: 11/09/2020	End Date: 14/09/2020	Checked By: GR	Status: FINAL	Sheet 1 of 3	
Rotary Core Drilling Log		Easting: 406955.0	Northing: 141346.0	Ground Level: 82.70mOD	Plant Used: Beretta T41	Logged By: LD/AG
		Termination: Target depth achieved.			Scale: 1:50	

Weather: Sunny

Termination: Target depth achieved.

Samples & Core Recovery				Strata Details						Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
PID 0.0ppm	D					(0.50)		Crops over soft brown slightly sandy slightly gravelly silty CLAY with occasional rootlets. Gravel is subangular fine to coarse chalk and flint.			
PID 0.0ppm	ES					0.50		TOPSOIL			
PID 0.0ppm	D					(0.70)		Soft light brown slightly gravelly sandy SILT. Gravel is subangular to subrounded fine to coarse chalk and flint.			
PID 0.0ppm	ES					1.20		POSSIBLE COLLUVIUM	1		
1.20 - 2.50			0 N/A N/A			(1.30)		Assumed Zone of Core Loss NO RECOVERY			
2.50 - 3.25			80 0 0		80.20	2.50		Structureless CHALK composed of silty subangular medium to coarse GRAVEL. Clasts are very weak medium density white chalk. Occasional rounded flint cobble. (CIRIA Grade Dc)			
3.25 - 4.00	D		100 0 0			(1.93)		SEAFORD CHALK FORMATION <i>Between 2.50m and 3.05m: Non Intact - possibly drilling induced chalk and flint band recovered as medium to coarse gravel. Chalk gravel is subangular very weak medium density chalk. Flint gravel is angular rinded with rare rounded flint cobble (60mm thick and full core diameter).</i>			
4.00 - 5.50	D		93 8 0		78.27	4.43		<i>Between 3.05m and 3.25m: Assumed Zone of Core Loss Between 3.78m and 4.00m: Assumed Zone of Core Loss Between 4.00m and 4.30m: Non Intact - possibly drilling induced chalk recovered as subangular to subrounded fine to coarse very weak medium density gravel. Between 4.30m and 4.56m: Non Intact - possibly drilling induced recovered as black angular medium to coarse rinded flint gravel.</i>			
5.50 - 7.00	C CD		50 13 0	NI 70 760		(2.57)		<i>Very weak medium to high density unstained off-white CHALK. Fractures are subhorizontal to 45° closely to widely spaced partially open with black specks. Widely spaced flint bands comprising nodular rinded flint cobbles recovered as angular coarse gravel. (CIRIA grade B2)</i> SEAFORD CHALK FORMATION <i>Between 4.56m and 5.40m: Non Intact - possibly drilling induced chalk recovered as cream silty sandy subangular to subrounded fine to coarse very weak medium density gravel with occasional chalk cobbles. Between 5.40m to 5.50m: Assumed Zone of Core Loss Between 5.75m and 5.77m: fine light grey interwoven marl laminae.</i>			
7.00 - 8.50	C CD		93 30 20		75.70	7.00		<i>Weak high density thinly to thickly bedded unstained off-white CHALK. Fracture set 1: subhorizontal to 20° closely to widely spaced typically open (<1mm) no infill with black specks on surfaces. Fracture Set 2: 40° to 60° closely to widely spaced typically open (<1mm) locally infilled with comminuted chalk with black specks. Fracture Set 3: Subvertical no infill. Closely spaced thin (typically <5mm) light grey subhorizontal marl bands and marl laminae, typically in medium spaced zones. Medium spaced bands of flint. Occasional orange staining. (CIRIA grade B1/B2)</i> SEAFORD CHALK FORMATION			
8.50 - 10.00	CD CD		97 48 10			(4.50)		<i>Between 7.30m and 7.62m: Non Intact chalk recovered as subangular fine to coarse very weak medium density cream chalk formed by extremely to very closely spaced conjugate subvertical curved subparallel joints with black specks on surfaces (between flints). At 7.50m: localised patches of orange staining. At 7.74m: Localised patches of orange staining. Between 8.01m and 8.20m: Non Intact - possibly drilling induced chalk recovered as angular coarse gravel and cobbles. Between 8.20m and 8.50m: Assumed Zone of Core Loss Between 8.50m and 8.64m: Rinded nodular flint cobbles. At 8.66m: light grey subhorizontal <5mm thick marl band. At 8.69m: light grey subhorizontal <5mm thick marl band. Between 8.98m and 9.03m: Non Intact - possibly drilling induced flint and</i>			

Start & End of Shift Observations					Installation					Remarks:
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)	
11-09-2020	08:00	0.00	0.00							1. Hand dug inspection pit undertaken from ground level to 1.20mbgl. 2. Borehole Backfilled with bentonite on completion.
11-09-2020	14:00	1.20	0.00							
14-09-2020	08:00	1.20	0.00							
14-09-2020	17:00	15.00	2.00							
Flush Information					Borehole Diameter		Casing Diameter			
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)		
1.20	2.50		100%-100%	white	15.00	146	2.00	175		
2.50	3.25		100%-100%	white						
3.25	4.00		100%-100%	white						
4.00	5.50		100%-100%	white						

Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %.

NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).

RPS RC Template Issue Number: 2 Issue Date: 02/01/2018



Contract Name: A303 Stonehenge			Client: RPS Planning & Development			Borehole ID: R70301		
Contract Number: JFR1451	Start Date: 11/09/2020	End Date: 14/09/2020	Checked By: GR	Status: FINAL	Sheet 2 of 3			
Rotary Core Drilling Log		Easting: 406955.0	Northing: 141346.0	Ground Level: 82.70mOD	Plant Used: Beretta T41	Logged By: LD/AG	Scale: 1:50	

Weather: Sunny Termination: Target depth achieved.

Samples & Core Recovery				Strata Details						Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
10.00 - 11.50	C CD		93 46 30		71.20	11.50		<p>chalk recovered as silty angular fine to coarse gravel.</p> <p>At 9.14m: light grey subhorizontal <5mm thick marl band.</p> <p>Between 9.21m and 9.70m: Non Intact - possibly drilling induced chalk recovered as slightly silty angular to subangular fine to coarse very weak medium density cream chalk and cobbles.</p> <p>At 9.44m: light grey subhorizontal. <5mm thick marl band.</p> <p>At 9.63m: light grey subhorizontal. <5mm thick marl band.</p> <p>Between 10.18m and 10.82m: Non Intact - possibly drilling induced flint band recovered as angular coarse gravel (within Non Intact - possibly drilling induced chalk).</p> <p>At 10.95m: <2mm thick dark reddish brown colouration.</p> <p>At 11.19m: Coarse rinded nodular flint gravel.</p> <p>Between 11.32m and 11.50m: Assumed Zone of Core Loss</p>	11		
11.50 - 13.00	C CD		97 62 34					<p>Weak medium to high density unstained off white CHALK.</p> <p>Fracture set 1: subhorizontal to 15° widely spaced typically open no infill. Fracture set 2: 40° to 60° pen (<1mm) with no infill and occasional subvertical fracture typically open (<1mm) with no infill. Medium to widely spaced bands of closely spaced light grey subhorizontal wispy marl typically up to 10mm thickness. Medium spaced bands of rinded nodular flint gravel and cobbles and localised orange staining.</p> <p>SEAFORD CHALK FORMATION</p> <p>At 11.64m: Orange stained suspected fossil structure, (50mm long, 10mm wide and 2mm thick). Very weak and brittle.</p> <p>Between 11.90m and 13.41m: intermittent Non Intact - possibly drilling induced flint bands recovered as coarse rinded nodular flint gravel.</p>	12		
13.00 - 14.50	C CD		100 72 42	520 800 1000		(3.50)		<p>At 13.78m: Coarse rinded nodular flint gravel.</p> <p>At 13.80m: rounded nodular flint cobble.</p> <p>At 13.93m: rounded nodular flint cobble.</p> <p>Between 14.05m and 15.00m: Non Intact - possibly drilling induced. Chalk recovered as subangular to subrounded coarse very weak medium to high density gravel and cobbles. Flint recovered as angular to subrounded coarse nodular rinded gravel.</p> <p>At 14.31m (50mm x 20mm x 10mm) rounded rinded flint.</p>	13		
14.50 - 15.00	C CD		100 18 0						14		
	D				67.70	15.00		End of Borehole at 15.00m	15		
									16		
									17		
									18		
									19		
									20		

Start & End of Shift Observations					Installation					Remarks:							
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)	1. Hand dug inspection pit undertaken from ground level to 1.20mbgl. 2. Borehole Backfilled with bentonite on completion.							
										Water Strikes							
Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks												
Flush Information					Borehole Diameter				Casing Diameter								
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %.								
5.50	7.00		100%-100%	white	15.00	146	2.00	175	NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).								
7.00	8.50		100%-100%	white													
8.50	10.00		100%-100%	white													
10.00	11.50		100%-100%	white													
										RPS RC Template Issue Number: 2 Issue Date: 02/01/2018							



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R70301	
Contract Number: JFR1451	Start Date: 11/09/2020	End Date: 14/09/2020	Checked By: GR	Status: FINAL	Sheet 3 of 3	
Rotary Core Drilling Log	Easting: 406955.0	Northing: 141346.0	Ground Level: 82.70mOD	Plant Used: Beretta T41	Logged By: LD/AG	Scale: 1:50

Weather: Sunny Termination: Target depth achieved.

Samples & Core Recovery					Strata Details					Groundwater		
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description			Water Strike	Backfill/Installation
21												
22												
23												
24												
25												
26												
27												
28												
29												
30												

Start & End of Shift Observations					Installation					Remarks:	
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)	1. Hand dug inspection pit undertaken from ground level to 1.20mbgl. 2. Borehole Backfilled with bentonite on completion.	
										Water Strikes	
Strike (m)		Casing (m)		Sealed (m)		Time (mins)		Rose to (m)		Remarks	
Flush Information					Borehole Diameter		Casing Diameter				
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)			
11.50	13.00		100%-100%	white	15.00	146	2.00	175			
13.00	14.50		100%-100%	white							
14.50	15.00		100%-100%	white							
Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %. NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).											
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018											



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R70302	
Contract Number: JFR1451	Start Date: 10/09/2020	End Date: 10/09/2020	Checked By: GR	Status: FINAL	Sheet 1 of 4	
Rotary Core Drilling Log		Easting: 407157.0	Northing: 141396.0	Ground Level: 77.30mOD	Plant Used: Beretta T41	Logged By: AG/RL
Weather: Sunny		Termination: Target depth achieved.				Scale: 1:50

Samples & Core Recovery					Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
1.20 - 2.50	D				76.95	(0.35) 0.35		Crops over soft brown slightly sandy slightly gravelly silty CLAY with occasional rootlets. Gravel is subangular fine to coarse chalk and flint. TOPSOIL Structureless CHALK composed of off-white gravelly SILT. Gravel is subangular fine to coarse very weak medium density cream orange stained chalk. (CIRIA Grade Dm) SEAFORD CHALK FORMATION			
	ES		74 0 0			(3.07)		At 1.60m: cream rounded coarse nodular flint with black specks and orange staining. At 2.10m: nodular flint band recovered as angular coarse gravel with black speckled surface.			
2.50 - 4.00	D		70 8 0		73.88	3.42		Very weak medium strength off-white CHALK with single 25° fracture infilled with comminuted chalk and with black specks. (CIRIA Grade C1) SEAFORD CHALK FORMATION			
4.00 - 5.50	D		90 0 0		73.15	4.15		Between 4.00m and 4.15m: NIDD Chalk recovered as creamy white subrounded medium to coarse weak medium density gravel. Structureless CHALK composed of off-white with occasional orange staining sandy to gravelly SILT. Gravel is subrounded coarse weak, medium to high density, off-white chalk. Occasional flint. (CIRIA Grade Dm) SEAFORD CHALK FORMATION			
						(1.35)		At 4.24m: tabular coarse (30mm thick) rinded flint gravel with black specks. Between 4.95m and 5.20m: patches of orange staining.			
5.50 - 7.00	D		70 0 0		71.80	5.50		Structureless CHALK composed of silty subrounded fine to coarse GRAVEL. Clasts are of weak, medium density off-white chalk. (CIRIA Grade Dc) SEAFORD CHALK FORMATION			
						(2.04)		Between 5.80m and 5.88m: nodular black rinded flint cobble (80mm). Between 6.35m and 6.42m: rounded nodular flint cobble.			
7.00 - 8.50	C CD		93 5 0		69.76	7.54		Very weak to weak medium to high density off-white CHALK with occasional light grey wispy marl laminae. Fractures are 60° widely spaced clean with frequent black specks (CIRIA Grade A1) SEAFORD CHALK FORMATION			
	D					(2.46)		Between 7.60m and 7.70m: AZCL. Between 7.70m and 7.80m: NIDD recovered as tabular fine to coarse flint gravel. Between 8.02m and 8.50m: bands of rounded rare angular medium flint gravel. Between 8.35m and 8.42m: occasional orange staining Between 8.50m and 8.62m: flint band recovered as angular coarse gravel and cobbles. At 9.03m: nodular rinded flint cobble with angular coarse flint gravel. At 9.38m: nodular rinded flint cobble recovered as angular coarse gravel. Between 9.65m and 10.10m: AZCL.			
8.50 - 10.00	D		73 4 0	NI 1110 1110	67.30	10.00					

Start & End of Shift Observations					Installation					Remarks:				
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)					
10-09-2020	08:00	0.00	0.00							1. Inspection pit hand dug to 1.20m bgl. 2. No groundwater encountered. 3. Borehole backfilled with bentonite on completion.				
10-09-2020	16:30	15.00	2.00											
Flush Information					Borehole Diameter		Casing Diameter		Water Strikes					
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
1.20	2.50		100%-100%	white	15.00	146	2.00	175						
2.50	3.25		100%-100%	white										
3.25	4.00		100%-100%	white										
4.00	5.50		100%-100%	white										
Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %. NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).														
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018														



Contract Name: A303 Stonehenge			Client: RPS Planning & Development			Borehole ID: R70302		
Contract Number: JFR1451	Start Date: 10/09/2020	End Date: 10/09/2020	Checked By: GR	Status: FINAL		Sheet 2 of 4		
Rotary Core Drilling Log		Easting: 407157.0	Northing: 141396.0	Ground Level: 77.30mOD	Plant Used: Beretta T41	Logged By: AG/RL	Scale: 1:50	

Weather: Sunny Termination: Target depth achieved.

Samples & Core Recovery					Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
10.00 - 11.50	D		72 0 0			(3.00)		Non Intact Drilling Disturbed CHALK recovered as off-white slightly silty becoming very silty angular medium to coarse gravel. Occasional black angular fine to coarse flint gravel. Occasional pockets of orange staining. SEAFORD CHALK FORMATION <i>Between 10.00m and 10.75m: Limited Recovery.</i> <i>Between 10.50m and 10.75m: AZCL.</i> <i>Between 10.85m and 10.95m: black rimmed nodular flint cobble and angular coarse flint gravel.</i> <i>Between 11.08m and 11.13m: grey rimmed nodular flint cobbles.</i> <i>Between 11.30m and 11.35m: chalk cobble with fine wispy marl laminae and round fine to coarse nodular flint gravel.</i> <i>Between 11.50m and 11.70m: AZCL.</i>	11		
11.50 - 13.00	D		83 12 7					<i>At 12.48m: nodular flint cobble and angular fine to medium flint gravel.</i>	12		
13.00 - 14.50	CD		95 47 20	NI 140 280	64.30	13.00		<i>Between 12.92m and 13.22m: with light grey, wispy subhorizontal marl laminae.</i> Weak medium to high density white with black specks CHALK. Fractures are subhorizontal and 40 to 50 ° very closely to medium spaced clean with black specks and rare orange staining or veneer of light grey marl. (CIRIA Grade A2/A4) SEAFORD CHALK FORMATION <i>Between 13.45m and 13.50m: wispy dark orangish brown staining.</i> <i>Between 13.50m and 13.55m: NI.</i> <i>Between 13.90m and 14.00m: wispy dark orangish brown staining.</i> <i>Between 14.00m and 14.30m: impersistent light grey marl bands.</i>	13		
14.50 - 15.00	C CD		100 60 20		62.30	15.00		End of Borehole at 15.00m	14		
									15		
									16		
									17		
									18		
									19		
									20		

Start & End of Shift Observations					Installation					Remarks:									
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)										
										1. Inspection pit hand dug to 1.20m bgl. 2. No groundwater encountered. 3. Borehole backfilled with bentonite on completion.									
										Water Strikes									
										Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks				
										Borehole Diameter		Casing Diameter							
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)											
5.50	7.00		100%-100%	white	15.00	146	2.00	175	Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %.										
7.00	7.75		100%-100%	white							NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).								
7.75	8.50		100%-100%	white							RPS RC Template Issue Number: 2 Issue Date: 02/01/2018								
8.50	10.00		100%-100%	white															



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R70302	
Contract Number: JFR1451	Start Date: 10/09/2020	End Date: 10/09/2020	Checked By: GR	Status: FINAL	Sheet 3 of 4	
Rotary Core Drilling Log	Easting: 407157.0	Northing: 141396.0	Ground Level: 77.30mOD	Plant Used: Beretta T41	Logged By: AG/RL	Scale: 1:50

Weather: Sunny Termination: Target depth achieved.

Samples & Core Recovery				Strata Details				Groundwater		
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation
21										
22										
23										
24										
25										
26										
27										
28										
29										
30										

Start & End of Shift Observations					Installation					Remarks:																		
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)	1. Inspection pit hand dug to 1.20m bgl. 2. No groundwater encountered. 3. Borehole backfilled with bentonite on completion.																		
										<table border="1"> <thead> <tr> <th colspan="5">Water Strikes</th> </tr> <tr> <th>Strike (m)</th> <th>Casing (m)</th> <th>Sealed (m)</th> <th>Time (mins)</th> <th>Rose (to m)</th> <th>Remarks</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		Water Strikes					Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose (to m)	Remarks						
Water Strikes																												
Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose (to m)	Remarks																							
Flush Information					Borehole Diameter		Casing Diameter																					
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %.																			
10.00	10.75		100%-100%	white	15.00	146	2.00	175	NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).																			
10.75	11.50		100%-100%	white																								
11.50	13.00		100%-100%	white																								
13.00	14.50		100%-100%	white																								
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018																												



Contract Name: A303 Stonehenge			Client: RPS Planning & Development			Borehole ID: R70302		
Contract Number: JFR1451	Start Date: 10/09/2020	End Date: 10/09/2020	Checked By: GR	Status: FINAL		Sheet 4 of 4		
Rotary Core Drilling Log		Easting: 407157.0	Northing: 141396.0	Ground Level: 77.30mOD	Plant Used: Beretta T41	Logged By: AG/RL	Scale: 1:50	

Weather: Sunny Termination: Target depth achieved.

Samples & Core Recovery					Strata Details					Groundwater		
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description			Water Strike	Backfill/Installation
31												
32												
33												
34												
35												
36												
37												
38												
39												
40												

Start & End of Shift Observations					Installation					Remarks:		
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)	1. Inspection pit hand dug to 1.20m bgl. 2. No groundwater encountered. 3. Borehole backfilled with bentonite on completion.		
										Water Strikes		
Strike (m)		Casing (m)		Sealed (m)		Time (mins)		Rose (to m)		Remarks		
Flush Information					Borehole Diameter		Casing Diameter					
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)				
14.50	15.00		100%-100%	white	15.00	146	2.00	175	Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %.			
NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).												
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018												



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R70701	
Contract Number: JFR1451	Start Date: 07/09/2020	End Date: 08/09/2020	Checked By: GR	Status: FINAL	Sheet 1 of 3	
Rotary Core Drilling Log		Easting: 407267.3	Northing: 141410.7	Ground Level: 77.52mOD	Plant Used: Comacchio 305	Logged By: LD/BB
		Termination: Target depth achieved.			Scale: 1:50	

Weather: Sunny

Samples & Core Recovery					Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAO)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
PID 0.2ppm					77.17	(0.35)		Crops over soft dark brown slightly sandy slightly gravelly silty CLAY. Gravel is subangular fine to coarse extremely weak low density white chalk and occasional flint. Sand is fine to coarse.			
PID 2.0ppm					76.32	(1.20)		TOPSOIL Structureless CHALK composed of white gravelly SILT with a medium subangular flint cobble content. Gravel is subangular fine to coarse extremely weak low density white chalk and occasional flint with occasional orange staining. (CIRIA Grade Dm)	1		
1.20 - 2.50			62 49 0		75.02	(1.30)		SEAFORD CHALK FORMATION <i>At 0.60m becoming silty gravel.</i> Structureless CHALK composed of silty subangular to rounded fine to coarse GRAVEL with low subangular cobble content. Clasts are very weak low to very high density chalk white with occasional black specks and orange stains. Medium spaced bands of rounded coarse gravel to cobbles size flint. (CIRIA Grade Dc)	2		
2.50 - 3.25			0 0 0			(1.13)		SEAFORD CHALK FORMATION <i>Between 1.20m and 1.69m AZCL</i> <i>Between 1.68m and 1.87m NI recovered as cobbles of nodular rinded flint.</i> <i>Between 2.20m and 2.35m NI recovered as cobbles of nodular rinded flint.</i> Assumed Zone of Core Loss NO RECOVERY	3		
3.25 - 4.00			43 13 0		73.89	3.63		Structureless CHALK composed of silty subangular to rounded fine to coarse GRAVEL with low subangular cobble content. Clasts are very weak low to very high density white with occasional black specks and orange staining chalk. Medium spaced bands of rounded coarse gravel to cobble size flint. (CIRIA Grade Dc)	4		
4.00 - 5.50	AMAL C CD		95 33 9		72.02	5.50		SEAFORD CHALK FORMATION <i>Between 3.75m and 3.90m NI recovered as cobbles of nodular rinded flint.</i> <i>Between 4.00m and 4.07m AZCL</i> <i>Between 4.07m and 4.21m orange stains and inoceramid shell fragments.</i> <i>Between 4.20m and 4.40m coarse gravel fragment of nodular rinded flint.</i> <i>Between 4.71m and 4.87m medium gravel of nodular rinded flint fragments.</i> <i>At 5.20m medium gravel of nodular rinded flint.</i>	5		
5.50 - 7.00			50 5 0		71.27	6.25		Assumed Zone of Core Loss NO RECOVERY	6		
7.00 - 7.75			0 0 0		70.52	7.00		Structureless CHALK composed of silty subangular to rounded fine to coarse GRAVEL with rare subangular cobble content. Clasts are very weak low to very high density white with occasional black specks and orange staining. Medium spaced bands of rounded coarse gravel to cobble sized flint. (CIRIA Grade Dc)	7		
7.75 - 8.50	D		75 27 0		69.58	7.94		SEAFORD CHALK FORMATION <i>Between 6.85m and 7.00m medium gravel of nodular rinded flint fragments.</i> Assumed Zone of Core Loss NO RECOVERY <i>Between 7.75m and 7.80m coarse gravel of nodular rinded flint fragments.</i>	8		
8.50 - 9.25			40 0 0			(2.64)		Structureless CHALK composed of silty subangular to rounded fine to coarse GRAVEL with rare subangular cobble content. Clasts are very weak low to very high density white with occasional black specks and orange staining. Medium spaced bands of rounded coarse gravel to cobble sized flint. (CIRIA Grade Dc)	9		
9.25 - 10.00	C CD		85 36 28					SEAFORD CHALK FORMATION <i>Between 8.26m and 8.32m: Angular coarse gravel of nodular rinded flint with occasional medium gravel fragments.</i> <i>Between 8.50m and 8.95m AZCL</i> <i>Between 8.96m and 9.04m: medium gravel of nodular rinded flint.</i> <i>Between 9.17m and 9.25m: Angular medium gravel of nodular rinded flint.</i> <i>Between 9.25m and 9.31m: AZCL</i> <i>Between 9.52m and 9.83m NI</i>	10		

Start & End of Shift Observations					Installation					Remarks:				
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)					
07-09-2020	08:00									1. Inspection pit hand dug to 1.20mbgl.				
07-09-2020	16:30	16.00	2.00	15.00						2. Borehole Backfilled with bentonite on completion.				
08-09-2020	08:00	16.00	2.00	15.20										
08-09-2020	14:00	20.20	0.00	0.00										
Flush Information					Borehole Diameter		Casing Diameter		Water Strikes					
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
1.20	2.50		100%-100%	white	20.20	146	2.00	175	10.50	2.00		20	10.30	Medium
2.50	3.25		100%-100%	white										
3.25	4.00		100%-100%	white										
4.00	5.50		100%-100%	white										

Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %.
NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R70701	
Contract Number: JFR1451	Start Date: 07/09/2020	End Date: 08/09/2020	Checked By: GR	Status: FINAL	Sheet 2 of 3	
Rotary Core Drilling Log		Easting: 407267.3	Northing: 141410.7	Ground Level: 77.52mOD	Plant Used: Comacchio 305	Logged By: LD/BB
		Termination: Target depth achieved.			Scale: 1:50	

Weather: Sunny

Samples & Core Recovery					Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
10.00 - 10.50			96 0 0		66.94	10.58		Between 9.92m and 10.50m NI Between 10.27m and 10.50m: coarse gravel and cobbles of nodular rinded flint locally non intact recovered as fragments.			
10.50 - 11.50			97 24 16					Very weak high density white with rare orange stains CHALK. Fracture set 1 is subhorizontal to 40° closely spaced clean surfaces white with black specks. Fracture set 2 is 60° to subvertical closely spaced clean surfaces white with black specks. (CIRIA grade A3) SEAFORD CHALK FORMATION	11		
11.50 - 13.00	C CD		93 55 7	NI 140 700		(2.42)		Between 10.66m and 11.32m NI Between 10.86m and 10.95m coarse gravel of nodular rinded flint fragments. Between 11.02m and 11.10m cobble of nodular rinded flint. At 11.15m coarse gravel of nodular rinded flint. At 11.40m marl band (20mm thick). Between 11.40m and 11.50m NI Between 11.42m and 11.50m coarse gravel of nodular rinded flint fragment.	12		
13.00 - 14.50	CD CD CD		87 79 53		64.52	13.00		Between 11.50m and 11.61m AZCL Between 11.61m and 11.7m NI Between 12.07m and 12.49m NI At 12.10m cobble of nodular rinded flint fragment. At 12.50m coarse gravel of nodular rinded flint fragment. Between 12.80m and 13.15m NI Between 12.86m and 12.90m coarse gravel of nodular rinded flint.	13		
14.50 - 16.00	C CD		97 54 38					Very weak to weak high density white with occasional orangish red staining CHALK. Fracture set 1 is subhorizontal to 20° closely spaced clean white grey surfaces with black specks. Fracture Set 2 is 60° to subvertical widely spaced clean with black specks. (CIRIA grade A3) SEAFORD CHALK FORMATION	14		
16.00 - 17.50	CD		93 87 47	NI 310 2000		(7.20)		Between 13.00m and 13.15m coarse gravel of nodular rinded flint fragments. Between 13.96m and 14.04m marl band (40mm thick) and orange red stains. Between 14.23m and 14.30m NI At 14.40m inoceramid shell fragment. Between 14.50m and 14.56m AZCL Between 14.56m and 14.70m NI At 14.70m medium gravel of nodular rinded flint. Between 14.87m and 14.98m NI Between 14.90m and 15.00m coarse gravel of nodular rinded flint fragments. Between 15.15m and 15.24m NI Between 15.15m and 15.25m medium to coarse gravel of nodular rinded flint fragments. Between 15.30m and 15.35m: tabular flint cobble. At 15.45m inoceramid shell fragments (3mm thick) and 2mm diameter clasts. At 15.54m orange stain (possible sponge). Between 15.64m and 15.72m thin lamination of marl. Between 15.80m and 15.90m coarse gravel of nodular rinded flint fragments. Between 15.87m and 16.06m NI	15		
17.50 - 19.00	CD		97 81 55					Between 16.48m and 16.53m coarse gravel of nodular flint fragments. Between 16.61m and 16.63m sheet flint coarse gravel At 16.80m coarse gravel of flint fragments. At 17.00m coarse gravel of sheet rinded flint. Between 17.18m and 17.20m medium gravel of sheet rinded flint fragments. Between 17.39m and 17.45m NI Between 17.45m and 17.56m AZCL	16		
19.00 - 20.20	C		93 93 53					At 17.88m inoceramid shell fragment. Between 18.45m and 18.62m NI Between 18.55m and 18.65m coarse gravel of nodular rinded flint fragments. Between 19.00m and 19.06m AZCL At 19.20m inoceramid shell fragment Between 19.50m and 20.20m stained marl band (up to 20mm thick). At 19.70m bivalve shell fragment.	17		
									18		
									19		
									20		

Start & End of Shift Observations					Installation					Remarks:				
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)					
										1. Inspection pit hand dug to 1.20m bgl. 2. Borehole Backfilled with bentonite on completion.				
Flush Information					Borehole Diameter		Casing Diameter		Water Strikes					
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
5.50	7.00		100%-100%	white	20.20	146	2.00	175	10.50	2.00		20	10.30	Medium
7.00	7.75		100%-100%	white										
7.75	8.50		100%-100%	white										
8.50	9.25		100%-100%	white										

Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %. NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).

RPS RC Template Issue Number: 2 Issue Date: 02/01/2018



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R70702	
Contract Number: JFR1451	Start Date: 08/09/2020	End Date: 09/09/2020	Checked By: GR	Status: FINAL	Sheet 1 of 2	
Rotary Core Drilling Log		Easting: 407237.8	Northing: 141451.3	Ground Level: 80.91mOD	Plant Used: Beretta T41	Logged By: AG
Weather: Sunny		Termination: Target depth achieved.				Scale: 1:50

Samples & Core Recovery					Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
					80.71	0.20	TOPSOIL	Very weak medium to high density off white CHALK. Fractures are subhorizontal to 30° closely to medium spaced partially open clean with black speckling. (CIRIA grade A2/A3)			
1.20 - 2.50	C		81 68 64	200 250 450		(2.30)		SEAFORD CHALK FORMATION <i>Between 1.20m and 2.00m: occasional darker grey subhorizontal lenses and laminae presumed greater marl content with occasional <30mm shell fragments.</i>	1		
2.50 - 4.00			40 0 0		78.41	2.50		Non Intact Drilling Disturbed. Off-white CHALK recovered as angular coarse gravel and cobbles of flint and angular fine to coarse very weak medium density chalk with occasional subangular flint cobbles.	3		
4.00 - 4.75	D		67 0 0			(3.75)		SEAFORD CHALK FORMATION	4		
4.75 - 5.50			0 0 0						5		
5.50 - 6.25			0 0 0						6		
6.25 - 7.00	D		80 0 0		74.66	6.25		Non Intact Drilling Disturbed. CHALK recovered as slightly sandy silty subangular to subrounded fine to coarse GRAVEL of very weak medium dense chalk.			
7.00 - 7.75			0 0 0		NIDD	73.91	(0.75)	Assumed Zone of Core Loss NO RECOVERY	7		
7.75 - 8.50	D		93 0 0		73.16 73.01	7.75 7.90		Non Intact Drilling Disturbed. CHALK recovered as rounded fine to coarse nodular flint gravel and cobbles.	8		
8.50 - 9.25			0 0 0			72.49	(0.52)	SEAFORD CHALK FORMATION Non Intact Drilling Disturbed. CHALK recovered as angular coarse gravel and cobbles of flint and off-white angular fine to coarse very weak medium density chalk with occasional subangular flint cobbles.			
9.25 - 10.00	D		87 0 0			71.56	(0.85)	SEAFORD CHALK FORMATION <i>At 8.02m: Coarse gravel sized (40mm x 40mm x 20mm) rinded hollowed flint with evidence of burrow.</i> <i>At 8.25m: fine gravel sized light orange translucent shell fragment (2mm) with radial structure.</i>	9		
								Assumed Zone of Core Loss NO RECOVERY			
								Non Intact Drilling Disturbed. CHALK recovered as coarse gravel and cobbles of flint and off-white angular fine to coarse	10		

Start & End of Shift Observations					Installation					Remarks:				
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)					
08-09-2020	14:00	0.00								1. Inspection pit hand dug to 1.20mbgl.				
08-09-2020	16:30	2.50	2.00							2. Borehole Backfilled with bentonite on completion.				
09-09-2020	08:00	2.50	2.00											
09-09-2020	16:40	0.00												
Flush Information					Borehole Diameter		Casing Diameter		Water Strikes					
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
1.20	2.50	Air/Mist	100%-100%	white	2.50	146	2.00	175	10.75	2.00	20.00	20	10.50	Slow
2.50	4.00		100%-100%	white										
4.00	4.75		100%-100%	white										
4.75	5.50		100%-100%	white										

Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %. NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R70702	
Contract Number: JFR1451	Start Date: 08/09/2020	End Date: 09/09/2020	Checked By: GR	Status: FINAL	Sheet 2 of 2	
Rotary Core Drilling Log		Easting: 407237.8	Northing: 141451.3	Ground Level: 80.91mOD	Plant Used: Beretta T41	Logged By: AG
		Termination: Target depth achieved.			Scale: 1:50	

Weather: Sunny

Termination: Target depth achieved.

Samples & Core Recovery					Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAO)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
10.00 - 10.75	C		93 17 0		70.76	10.15		very weak medium density chalk with occasional subangular flint cobbles. SEAFORD CHALK FORMATION			
10.75 - 11.50			100 23 0			(1.35)		Very soft light grey silty CLAY. SEAFORD CHALK FORMATION			
11.50 - 13.00			93 16 0		69.41	11.50		Very weak medium to high density off-white generally unstained CHALK. No fracture or joint sets. Occasional fine wavy light grey marl laminae with occasional patches of orange staining (up to 5mm). (CIRIA Grade A1) SEAFORD CHALK FORMATION			
13.00 - 14.50			93 22 0					Between 10.82m and 11.05m: single chalk cobble with surfaces showing fine black specks. At 11.05m: Banded nodular flint cobble with a light grey finely fissured orange stained rind (100mm x 50mm x 50mm).			
14.50 - 16.00	C CD		97 34 12	NI 20 2620		(8.50)		Very weak to weak low density off-white CHALK with closely spaced light grey marl laminae. Fracture set 1: subhorizontal to 50° very closely to closely spaced typically with frequent black specks and occasional light and dark orange staining. Fracture set 2: 40° to subvertical medium to very widely spaced. Typically with black specks and marl staining. (CIRIA Grade A2) SEAFORD CHALK FORMATION			
16.00 - 17.50	C CD C CD		100 56 11					Between 11.50m and 11.75m: band of black rinded flint. Between 12.76m and 13.57m: frequent laminae of interwoven light grey marl.			
17.50 - 19.00			100 70 12					Between 13.6m and 14.4m: NI recovered as angular fine to coarse flint gravel.			
19.00 - 20.00	C		100 100 30					Between 14.50m and 14.80m: NI recovered as angular fine to coarse flint gravel.			
					60.91	20.00		End of Borehole at 20.00m			

Start & End of Shift Observations					Installation					Remarks:				
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)					
										1. Inspection pit hand dug to 1.20m bgl. 2. Borehole Backfilled with bentonite on completion.				
Flush Information										Water Strikes				
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
5.50	20.00		100%-100%	white	2.50	146	2.00	175	10.75	2.00	20.00	20	10.50	Slow
Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %.														
NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).														
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018														



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R71203	
Contract Number: JFR1451	Start Date: 17/09/2020	End Date: 18/09/2020	Checked By: GR	Status: FINAL	Sheet 1 of 3	
Rotary Core Drilling Log		Easting: 409292.6	Northing: 141250.5	Ground Level: 109.37mOD	Plant Used: Beretta T41	Logged By: SB/MW
		Termination: Target depth achieved.			Scale: 1:50	

Weather: Sunny

Samples & Core Recovery				Strata Details						Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
PID 0.0ppm	ES					(0.30)	XXXX	Soft light brown clayey SILT with occasional subangular to subrounded medium to coarse gravel and occasional rootlets. (TOPSOIL)			
PID 0.0ppm	ES					0.30	XXXX				
PID 0.0ppm	ES					(0.90)		TOPSOIL			
PID 0.0ppm	ES					1.20		Structureless CHALK composed of white and light grey very gravelly SILT. Gravel is angular fine to medium chalk. Rare rootlets. (CIRIA Grade Dm)	1		
						1.42		SEAFORD CHALK FORMATION			
1.20 - 2.50			100 21 0					Structureless CHALK composed of silty angular to subrounded fine to coarse GRAVEL with a medium subrounded cobble content. Clasts are very weak low density white with frequent black specks. Matrix is uncompact white silt. Occasional angular flint gravel. (CIRIA Grade Dc)	2		
								SEAFORD CHALK FORMATION			
2.50 - 4.00			93 9 0			(4.18)		Extremely weak low density white with black specks CHALK with occasional flint and light orange staining. Predominantly non-intact drilling disturbed and recovered as angular fine to coarse gravel with black specks and occasional angular fine to coarse rinded flint gravel. Fractures are subhorizontal to 85° medium to widely spaced clean or infilled (> 3mm) with white silt. (CIRIA Grade C1/C2)	3		
								SEAFORD CHALK FORMATION			
								Between 1.42m and 1.72m: Non intact drilling disturbed with vertical fractures identified in matrix.			
								Between 2.12m and 3.00m: Non intact recovered as slightly silty angular and subangular fine to coarse gravel of cream chalk with frequent black specks and occasional angular flints.			
								Between 3.00m and 3.56m: Non intact drilling disturbed.			
								Between 3.56m and 3.61m: Band of angular coarse rinded flint gravel (30-45mm)	4		
4.00 - 5.50			100 28 13					Between 3.61m and 4.12m: Non intact drilling disturbed.			
								Between 3.90m and 4.00m: Assumed zone of core loss.	5		
5.50 - 7.00	C CD		100 41 15		103.77	5.60		Extremely weak to very weak medium density white with occasional black specks CHALK. Fracture set 1 is subhorizontal closely to medium spaced open infilled (greater than 3mm) with white silt. Fracture set 2 (45° to subvertical) is closely to widely spaced open infilled (greater than 3mm) with white silt. (CIRIA Grade C 2/C3)	6		
								SEAFORD CHALK FORMATION			
7.00 - 8.50	C CD		97 19 0						7		
									8		
8.50 - 10.00	C CD		97 23 13						9		
									10		

Start & End of Shift Observations					Installation					Remarks:
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)	
18-09-2020	08:00	0.00								1. Hand dug inspection pit undertaken from ground level to 1.20 mbgl. 2. Downhole Geophysics undertaken on completion of drilling. 3. No groundwater encountered. 4. Borehole Backfilled with bentonite on completion.
18-09-2020	11:40	0.00								
18-09-2020	14:45	8.50	2.00							
18-09-2020	15:40	8.50	2.00							
18-09-2020	16:00	15.70	2.00							
Flush Information					Borehole Diameter		Casing Diameter		Water Strikes	
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Strike (m)	Casing (m)
1.20	2.50		100%-100%	white	15.70	146	2.00	175	0	
2.50	4.00		100%-100%	white						
4.00	5.50		100%-100%	white						
5.50	7.00		100%-100%	white						
Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %. NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).										
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018										



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R71203	
Contract Number: JFR1451	Start Date: 17/09/2020	End Date: 18/09/2020	Checked By: GR	Status: FINAL	Sheet 2 of 3	
Rotary Core Drilling Log		Easting: 409292.6	Northing: 141250.5	Ground Level: 109.37mOD	Plant Used: Beretta T41	Logged By: SB/MW
Weather: Sunny		Termination: Target depth achieved.				Scale: 1:50

Samples & Core Recovery				Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation
10.00 - 11.50	D		97 33 0					Between 9.95m and 10.00m: Assumed zone of core loss.		
11.50 - 13.00			23 5 0	NI 240 3960		(10.10)		Between 11.45m and 11.50m: Assumed zone of core loss. Between 11.65m and 11.80m: angular and subangular black rinded flint cobbles.		
13.00 - 13.75	D		100 0 0					Between 13.00m and 13.17m: Band of angular and subangular rinded flint cobbles.		
13.75 - 14.50			100 21 0					Between 13.70m and 13.75m: Non intact drilling disturbed. Between 13.78m and 14.69m: Band of angular fine to coarse rinded flint gravel.		
14.50 - 15.70	C CD C CD CD		100 67 41		93.67	15.70		Between 14.88m and 15.70m: Localised bands of light orangish staining and sponge beds.		
End of Borehole at 15.70m										

Start & End of Shift Observations					Installation					Remarks:	
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)	1. Hand dug inspection pit undertaken from ground level to 1.20 m bgl. 2. Downhole Geophysics undertaken on completion of drilling. 3. No groundwater encountered. 4. Borehole Backfilled with bentonite on completion.	
										Water Strikes	
Strike (m)		Casing (m)		Sealed (m)		Time (mins)		Rose (m)		Remarks	
						0				No groundwater encountered.	
Flush Information					Borehole Diameter		Casing Diameter				
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)			
7.00	8.50		100%-100%	white	15.70	146	2.00	175			
8.50	10.00		100%-100%	white							
10.00	11.50		100%-100%	white							
11.50	13.00		100%-100%	white							
Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %.											
NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).											
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018											



Contract Name: A303 Stonehenge			Client: RPS Planning & Development			Borehole ID: R71203		
Contract Number: JFR1451	Start Date: 17/09/2020	End Date: 18/09/2020	Checked By: GR	Status: FINAL		Sheet 3 of 3		
Rotary Core Drilling Log		Easting: 409292.6	Northing: 141250.5	Ground Level: 109.37mOD	Plant Used: Beretta T41	Logged By: SB/MW	Scale: 1:50	

Weather: Sunny Termination: Target depth achieved.

Samples & Core Recovery					Strata Details					Groundwater		
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description			Water Strike	Backfill/Installation
21												
22												
23												
24												
25												
26												
27												
28												
29												
30												

Start & End of Shift Observations					Installation					Remarks:		
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)	1. Hand dug inspection pit undertaken from ground level to 1.20 m bgl. 2. Downhole Geophysics undertaken on completion of drilling. 3. No groundwater encountered. 4. Borehole Backfilled with bentonite on completion.		
										Water Strikes		
Strike (m)		Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks						
				0		No groundwater encountered.						
Flush Information					Borehole Diameter		Casing Diameter					
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)				
13.00	13.75		100%-100%	white	15.70	146	2.00	175	Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %.			
13.75	14.50		100%-100%	white	NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).							
14.50	15.70		100%-100%	white	RPS RC Template Issue Number: 2 Issue Date: 02/01/2018							



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R71210	
Contract Number: JFR1451	Start Date: 21/09/2020	End Date: 22/09/2020	Checked By: GR	Status: FINAL	Sheet 1 of 4	
Rotary Core Drilling Log		Easting: 409483.6	Northing: 141312.0	Ground Level: 109.74mOD	Plant Used: Beretta T41	Logged By: MW
		Termination: Target depth achieved.			Scale: 1:50	

Weather: Sunny

Samples & Core Recovery				Strata Details						Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
1.20 - 2.50	D		69 0 0		109.19	0.55		Light brown gravelly silty CLAY Gravel is subangular to subrounded fine to medium chalk with rare chalk and flint cobbles. POSSIBLE COLLUVIUM Structureless CHALK composed of silty subangular medium to coarse GRAVEL with medium cobble content. Clasts are very weak low density white with black specks. Cobbles are weak medium density with occasional black specks. matrix is uncompact off white to light brown chalk. Occasional flint (CIRIA grade Dc) SEAFORD CHALK FORMATION <i>Below 0.8m: rare orange staining.</i>	1		
2.50 - 3.25	D		27 0 0			(3.88)		<i>Between 2.10m and 2.50m Assumed Zone of Core Loss</i>	2		
3.25 - 4.00	D		100 0 0					<i>Between 2.70m and 3.25m Assumed Zone of Core Loss</i>	3		
4.00 - 5.50	D		100 7 0	60 60 1200	105.31	4.43		Weak medium density white with frequent black specks CHALK. Fractures are subhorizontal to 45° closely to widely spaced, open, infilled with more than 2mm silt angular fine to medium gravel and occasional black angular rinded flint with frequent black specks. (CIRIA Grade C1/C3) SEAFORD CHALK FORMATION <i>Between 4.52m and 4.60m Non Intact possibly drilling disturbed. Between 5.25m and 5.80m Non Intact Drilling Disturbed. Chalk recovered as white subangular to subrounded fine to coarse weak medium dense gravel with occasional angular flint gravel and cobble (up to 70mm).</i>	5		
5.50 - 6.00			100 26 0			(1.37)		<i>Between 4.52m and 4.60m Non Intact possibly drilling disturbed. Between 5.25m and 5.80m Non Intact Drilling Disturbed. Chalk recovered as white subangular to subrounded fine to coarse weak medium dense gravel with occasional angular flint gravel and cobble (up to 70mm).</i>	6		
6.00 - 7.00	D		100 60 0		103.94	5.80		Weak medium density white with frequent black specks white CHALK with occasional light orange staining. Fractures set 1 is subhorizontal closely spaced open with silt veneer infill. Fracture Set 2 is 25 to 45° very closely to widely spaced open with silt veneer infill. (CIRIA Grade C3) SEAFORD CHALK FORMATION <i>Between 6.08m and 6.13m flint band - black rinded angular fine to coarse flint. Between 6.13m and 7.31m Non Intact possibly drilling disturbed</i>	7		
7.00 - 8.50	CD		70 38 11	NI 100 500		(7.20)		<i>Between 7.99m and 8.08m flint band - black rinded angular fine to coarse flint. Between 8.05m and 8.50m Assumed Zone of Core Loss</i>	8		
8.50 - 9.25	CD		80 43 0					<i>Between 8.82m and 8.98m Non Intact recovered as white angular to subangular fine to coarse gravel. Between 8.98m and 9.05m band of angular rinded flint gravel (<50mm). Between 9.10m and 9.25m Assumed Zone of Core Loss</i>	9		
9.25 - 10.00			100 90 0						10		

Start & End of Shift Observations					Installation					Remarks:		
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)			
21-09-2020	12:20									1. Inspection pit hand dug to 1.20 m bgl. 2. Falling Head Test undertaken at 5.93 m bgl. 3. No groundwater encountered. 4. Borehole backfilled with bentonite on completion.		
21-09-2020	16:00	6.00	2.00									
22-09-2020	08:00	6.00	2.00									
22-09-2020	16:30	15.80	2.00									
Flush Information					Borehole Diameter		Casing Diameter					
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)				
1.20	2.50	Air/Mist	100%-100%	white	15.80	146	2.00	175				
2.50	3.25	Air/Mist	100%-100%	white							Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %.	
3.25	4.00	Air/Mist	100%-100%	white							NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).	
4.00	5.50	Air/Mist	100%-100%	white							RPS RC Template Issue Number: 2 Issue Date: 02/01/2018	



Contract Name: A303 Stonehenge			Client: RPS Planning & Development			Borehole ID: R71210		
Contract Number: JFR1451	Start Date: 21/09/2020	End Date: 22/09/2020	Checked By: GR	Status: FINAL	Sheet 2 of 4			
Rotary Core Drilling Log		Easting: 409483.6	Northing: 141312.0	Ground Level: 109.74mOD	Plant Used: Beretta T41	Logged By: MW	Scale: 1:50	

Weather: Sunny Termination: Target depth achieved.

Samples & Core Recovery					Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
10.00 - 11.50	CD		80 40 30					Between 10.26m and 10.39m Non Intact possibly drilling disturbed recovered as white angular to subangular fine to coarse gravel with occasional coarse gravel sized flint fragments (30mm to 40mm).			
								Between 10.85m and 10.87m Non Intact recovered as white angular to subangular fine to coarse gravel with occasional nodular rinded flint (up to 35mm).	11		
								Between 10.96m and 11.20m Non Intact recovered as white angular to subangular fine to coarse gravel with occasional nodular rinded flint (up to 35mm).			
11.50 - 12.25	CD		100 90 60					Between 11.30m and 11.50m Assumed Zone of Core Loss Between 11.50m and 11.60m Non Intact recovered as angular to subangular fine to coarse white chalk with occasional nodular rinded flint (30 to 40mm).			
								Between 11.94m and 11.99m: Non Intact recovered as slightly silty angular to subangular fine to coarse gravel of white chalk. Frequent black specks.	12		
								Between 12.10m and 12.30m Non Intact possibly drilling disturbed			
12.25 - 13.00			100 50 25					Between 12.40m and 12.66m Non Intact possibly drilling disturbed			
								Between 12.70m and 13.00m Non Intact possibly drilling disturbed			
13.00 - 14.50	C CD		93 56 35		96.74	13.00		Weak medium density white CHALK with occasional light orange staining. Fractures are subhorizontal closely to medium spaced open with silt veneer infill. (CIRIA Grade C3) SEAFORD CHALK FORMATION	13		
								Between 13.62m and 13.95m Non Intact recovered as subangular fine to coarse gravel of white chalk with occasional black specks.			
	CD			NI 270 300		(2.80)		Between 14.00m and 14.60m localised orange staining.	14		
								Between 14.23m and 14.36m Non Intact possibly drilling disturbed			
								Between 14.40m and 14.50m Assumed Zone of Core Loss			
14.50 - 15.80	CD C		100 75 75					Between 15.15m and 15.20m band of angular coarse rinded flint gravel (30mm and 50mm).	15		
								Between 15.20m and 15.43m Non Intact possibly drilling disturbed			
					93.94	15.80		End of Borehole at 15.80m	16		
									17		
									18		
									19		
									20		

Start & End of Shift Observations					Installation					Remarks:
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)	
										1. Inspection pit hand dug to 1.20 m bgl. 2. Falling Head Test undertaken at 5.93 m bgl. 3. No groundwater encountered. 4. Borehole backfilled with bentonite on completion.
Water Strikes										
Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks					
Flush Information					Borehole Diameter		Casing Diameter			
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)		
5.50	6.00	Air/Mist	100%-100%	white	15.80	146	2.00	175		
6.00	7.00	Air/Mist	100%-100%	white						
7.00	8.50	Air/Mist	100%-100%	white						
8.50	9.25	Air/Mist	100%-100%	white						

Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %. NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R71210	
Contract Number: JFR1451	Start Date: 21/09/2020	End Date: 22/09/2020	Checked By: GR	Status: FINAL	Sheet 3 of 4	
Easting: 409483.6	Northing: 141312.0	Ground Level: 109.74mOD	Plant Used: Beretta T41	Logged By: MW	Scale: 1:50	

Weather: Sunny Termination: Target depth achieved.

Samples & Core Recovery					Strata Details					Groundwater		
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description			Water Strike	Backfill/Installation
21												
22												
23												
24												
25												
26												
27												
28												
29												
30												

Start & End of Shift Observations					Installation					Remarks:	
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)	1. Inspection pit hand dug to 1.20 m bgl. 2. Falling Head Test undertaken at 5.93 m bgl. 3. No groundwater encountered. 4. Borehole backfilled with bentonite on completion.	
										Water Strikes	
Strike (m)		Casing (m)		Sealed (m)		Time (mins)		Rose to (m)		Remarks	
Flush Information					Borehole Diameter		Casing Diameter				
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)			
9.25	10.00	Air/Mist	100%-100%	white	15.80	146	2.00	175			
10.00	11.50	Air/Mist	100%-100%	white							
11.50	12.25	Air/Mist	100%-100%	white							
12.25	13.00	Air/Mist	100%-100%	white							
Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %.											
NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).											
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018											



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R71905	
Contract Number: JFR1451	Start Date: 25/09/2020	End Date: 14/10/2020	Checked By: GR	Status: FINAL	Sheet 1 of 6	
Rotary Core Drilling Log		Easting: 412040.6	Northing: 141895.0	Ground Level: 99.03mOD	Plant Used: Comacchio 450	Logged By: BB
		Termination: Target depth achieved.			Scale: 1:50	

Weather: Sunny+Showers

Termination: Target depth achieved.

Samples & Core Recovery					Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
PID 0.0ppm	ES					(0.30)		Soft dark brown and brown mottled SILT with frequent rootlets. Occasional subangular and subrounded fine chalk gravel.			
PID 0.0ppm	ES					0.30		TOPSOIL			
PID 0.0ppm	ES					(1.07)		Structureless CHALK composed of white and light grey gravelly sandy SILT. Gravel is subangular fine to coarse very weak chalk with frequent orange staining. (CIRIA grade Dm)	1		
PID 0.0ppm	ES					1.37		NEWHAVEN CHALK FORMATION			
1.20 - 1.80			100 37 23					Between 1.20m and 1.37m: NI Extremely weak to very weak low to medium density white CHALK. Fracture Set 1: subhorizontal to 30° very closely to medium spaced predominantly clean with black specks and rare orange staining. Fracture Set 2: 40 to 60° closely to medium spaced open infilled with silt and sand and fine gravel of subangular chalk. Fracture Set 3: 70° to subvertical closely spaced no infill. (CIRIA Grade A3/A4)	2		
1.80 - 2.55			100 11 0					NEWHAVEN CHALK FORMATION			
2.55 - 3.30			100 80 15					Between 1.78m and 2.00m: NI At 1.90m: medium nodular flint gravel Between 2.10m and 2.55m: NI At 2.30m: possible shell fragment. At 2.40m: nodular flint cobble.	3		
3.30 - 4.80			100 70 31					Between 3.30m and 3.39m: NI Between 3.65m and 3.90m: orange staining.	4		
4.80 - 6.30			100 75 49			(7.93)		At 4.40m: Tabular flint cobble. Between 5.40m and 5.50m: nodular flint cobble.	5		
6.30 - 7.80			100 77 59					Between 7.80m and 8.10m: NI At 8.00m: sponge 6mm diameter.	6		
7.80 - 9.30			98 63 34					At 8.25m: inoceramid shell. At 8.30m: coarse gravel sized tabular flint fragments. At 8.40m: coarse gravel sized tabular flint fragments.	7		
						89.73		Between 7.80m and 8.10m: NI At 8.00m: sponge 6mm diameter. At 8.25m: inoceramid shell. At 8.30m: coarse gravel sized tabular flint fragments. At 8.40m: coarse gravel sized tabular flint fragments.	8		
						9.30		Between 9.20m and 9.30m: Occasional orange staining and shell fragments.	9		
						(0.38)		Firm to stiff yellowish brown gravelly silty CLAY. Gravel is subangular medium chalk with frequent reddish orange staining.			
						89.35		SEAFORD CHALK FORMATION	10		

Start & End of Shift Observations					Installation					Remarks:
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)	
25-09-2020	08:00					0.00	14.00	PLAIN	50	1. Inspection pit hand dug to 1.20m bgl. 2. Packer tests undertaken between 33.30 and 35.0m bgl. 3. HPD tests undertaken at 14.62m, 22.41m, 28.00m, 32.80m, 41.25m bgl. 4. Downhole geophysics undertaken on completion. 5. 50mm standpipe installed, response zone 13.50-49.00m bgl.
25-09-2020	15:30	11.55	1.80		Pipe 1					
28-09-2020	07:30	11.55	1.80		Pipe 1	14.00	49.00	SLOTTED	50	
28-09-2020	16:00	16.80	1.80							
29-09-2020	07:30	16.80	1.80							
29-09-2020	16:30	27.00	1.80							
30-09-2020	07:30	27.00	1.80							

Flush Information					Borehole Diameter		Casing Diameter	
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)
1.20	1.80	Air/Mist	100%-100%	white	11.55	146	1.80	175
1.80	2.55	Air/Mist	100%-100%	white	13.80	146		
2.55	3.30	Air/Mist	100%-100%	white	16.80	99		
3.30	4.80	Air/Mist	100%-100%	white	24.30	99		

Water Strikes					
Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks

Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %. NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).

RPS RC Template Issue Number: 2 Issue Date: 02/01/2018



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R71905	
Contract Number: JFR1451	Start Date: 25/09/2020	End Date: 14/10/2020	Checked By: GR	Status: FINAL	Sheet 2 of 6	
Rotary Core Drilling Log		Easting: 412040.6	Northing: 141895.0	Ground Level: 99.03mOD	Plant Used: Comacchio 450	Logged By: BB
		Termination: Target depth achieved.			Scale: 1:50	

Weather: Sunny+Showers

Termination: Target depth achieved.

Samples & Core Recovery					Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
9.30 - 10.80	D		63 45 7	NI 90 200		(1.52)		Very weak low density white CHALK with frequent black fine sand. Fracture Set 1 is subhorizontal to 20° closely spaced clean. Fracture Set 2 is 35 to 60° closely spaced clean. Fracture Set 3 is 70° to subvertical closely spaced clean. (CIRIA grade A3) SEAFORD CHALK FORMATION <i>Between 10.13m and 10.31m: NI</i> <i>At 10.30m: recovered as gravel sized rinded flint fragments.</i> <i>Between 10.31m and 10.80m: AZCL</i> <i>At 10.45m: orange staining.</i> <i>Between 10.80m and 10.91m: NI</i> <i>At 11.10m: Becoming orangish red.</i>	11		
10.80 - 11.55	D		97 59 28		87.83	11.20					
11.55 - 12.30	C CD CD		76 44 36			(2.60)		Very weak high density white CHALK with frequent black fine sand stains. Fracture Set 1 is 30 to 50° closely spaced clean with rare silt veneer in open fractures. Fracture Set 2 is 70 to 80° widely spaced no infill. (CIRIA grade A3) SEAFORD CHALK FORMATION <i>Between 11.52m and 11.55m AZCL</i> <i>Between 11.55m and 11.69m NI</i> <i>Between 11.99m and 12.11m NI</i> <i>Between 12.11m and 12.30m AZCL</i> <i>At 12.20m medium gravel sized flint fragments.</i> <i>Between 12.30m and 12.37m NI</i> <i>At 12.45m orange staining.</i>	12		
12.30 - 13.80			100 63 48					<i>At 13.10m sponge orange stains.</i> <i>Between 13.35m and 13.55m fine to coarse gravel sized nodular flint.</i> <i>Between 13.37m and 13.80m NI</i>	13		
				NI 100 200	85.23	13.80		Assumed Zone of Core Loss (due to in situ HPD test) NO RECOVERY	14		
13.80 - 16.80	C CD		45 32 26			(1.80)			15		
					83.43	15.60		Very weak high density white CHALK with frequent black fine sand stains. Fracture Set 1 orientated 30 to 50° closely spaced clean with rare silt veneer in open fractures. Fracture Set 2 subvertical (70 to 80°) widely spaced no infill. (CIRIA grade A3) SEAFORD CHALK FORMATION	16		
16.80 - 18.30	D		83 66 31		82.23	16.80		Very weak to weak high to very high density white CHALK with rare orange stains and frequent fossils. Fracture Set 1 is subhorizontal to 10° medium spaced predominantly no infill clean with occasional silt veneer. Fracture Set 2 is 30 to 60° widely spaced clean with very black specks. Fracture Set 3 is 70 to 80° medium spaced clean with rare silt veneer. (CIRIA grade A2) SEAFORD CHALK FORMATION <i>Between 16.80m and 17.07m AZCL</i> <i>Between 17.07m and 17.17m NI and medium to coarse rinded flint gravels.</i> <i>At 17.65m localised orange staining.</i> <i>At 18.00m cobble sized rinded flint fragments.</i> <i>Between 18.45m and 18.50m NI</i> <i>Between 18.45m and 18.55m cobble sized flint fragments.</i> <i>At 18.62m inoceramid fragments (20mm in diameter).</i> <i>At 18.80m inoceramid sponge.</i>	17		
18.30 - 19.05	C CD		69 48 27	NI 470 600		(3.73)			18		
19.05 - 19.80	C CD CD		100 97 60						19		
								<i>Between 19.80m and 19.88m NI</i>	20		

Start & End of Shift Observations					Installation					Remarks:	
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)		
30-09-2020	17:40	30.00	1.80		Pipe	0.00	14.00	PLAIN	50	1. Inspection pit hand dug to 1.20m bgl. 2. Packer tests undertaken between 33.30 and 35.0m bgl. 3. HPD tests undertaken at 14.62m, 22.41m, 28.00m, 32.80m, 41.25m bgl. 4. Downhole geophysics undertaken on completion. 5. 50mm standpipe installed, response zone 13.50-49.00m bgl.	
01-10-2020	07:30	30.00	1.80	1							
01-10-2020	17:45	35.00	1.80		Pipe	14.00	49.00	SLOTTED	50		
02-10-2020	07:30	35.00	1.80								
02-10-2020	14:30	52.00	1.80	39.50	1						
05-10-2020	07:30	52.00	1.80	39.50							
05-10-2020	13:00	52.00	0.00	39.50							
Flush Information					Borehole Diameter		Casing Diameter				
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)			
4.80	6.30	Air/Mist	100%-100%	white	11.55	146	1.80	175			
6.30	7.80	Air/Mist	100%-100%	white	13.80	146					
7.80	9.30	Air/Mist	100%-100%	white	16.80	99					
9.30	10.80	Air/Mist	50%-50%	white	24.30	99					

Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %. NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).

RPS RC Template Issue Number: 2 Issue Date: 02/01/2018



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R71905	
Contract Number: JFR1451	Start Date: 25/09/2020	End Date: 14/10/2020	Checked By: GR	Status: FINAL	Sheet 3 of 6	
Rotary Core Drilling Log		Easting: 412040.6	Northing: 141895.0	Ground Level: 99.03mOD	Plant Used: Comacchio 450	Logged By: BB
		Termination: Target depth achieved.			Scale: 1:50	

Weather: Sunny+Showers

Samples & Core Recovery				Strata Details						Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
19.80 - 21.30	C CD		65 50 42		78.50 78.27	20.53 20.76		At 19.95m fine to medium flint gravels. At 20.26m inoceramid shell fragments. At 20.46m sponge Very weak to weak high to very high density yellowish brown CHALK with frequent sponge beds and fossil fragments. Fracture Set 1 subhorizontal to 10° closely spaced. Fracture Set 2 is 50° to subvertical medium spaced no infill. (CIRIA Grade A3) SEAFORD CHALK FORMATION Assumed Zone of Core Loss (due to in situ HPD test) NO RECOVERY	21		
21.30 - 24.30			43 21 9	NI 100 200		(2.24)			22		
	D				76.03	23.00		Very weak to weak high to very high density yellowish brown CHALK with frequent sponge beds and fossil fragments. Fracture Set 1 subhorizontal to 10° closely spaced. Fracture Set 2 is 50° to subvertical medium spaced no infill. (CIRIA Grade A3) SEAFORD CHALK FORMATION	23		
	C CD					(1.30)		Between 23.00m and 23.33m NI Between 23.57m and 23.64m NI Between 23.99m and 24.25m NI	24		
24.30 - 25.80	C		99 91 71		74.73	24.30		Very weak high density white CHALK moderately spaced marl laminae and rare orange staining. Fracture Set 1 is subhorizontal to 30° medium spaced no infill. Fracture Set 2 is 40 to 70° medium spaced no infill. Fracture Set 3 is 80° to subvertical widely spaced no infill. (CIRIA Grade A2) SEAFORD CHALK FORMATION	25		
	C CD					(2.30)		Between 24.40m and 24.55m orange stains. Between 24.97m and 25.04m NI Between 25.48m and 25.73m thin (1m) distinct marl bands. At 25.58m orange stains. Between 25.80m and 25.94m NI	26		
25.80 - 27.00	C CD		73 53 35		72.43	26.60		At 26.15m orange stains (30mm). Between 26.35m and 26.47m orange stains. Assumed Zone of Core Loss (due to in situ HPD test) NO RECOVERY	27		
						(2.55)			28		
27.00 - 30.00	CD		22 10 5		69.88	29.15		Very weak very high density white CHALK with occasional orange stains. Fracture Set 1 subhorizontal to 30° closely spaced typically no infill with rare silt infill. Fracture Set 2 is 40 to 60° widely spaced no infill. Fracture Set 3 is 70° to subvertical closely spaced no infill. (CIRIA grade A2/A3) SEAFORD CHALK FORMATION	29		
	C								30		

Start & End of Shift Observations					Installation					Remarks:
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)	
14-10-2020	07:30	52.00	0.00		Pipe 1	0.00	14.00	PLAIN	50	1. Inspection pit hand dug to 1.20m bgl. 2. Packer tests undertaken between 33.30 and 35.0m bgl. 3. HPD tests undertaken at 14.62m, 22.41m, 28.00m, 32.80m, 41.25m bgl. 4. Downhole geophysics undertaken on completion. 5. 50mm standpipe installed, response zone 13.50-49.00m bgl.
14-10-2020	11:00	52.00			Pipe 1	14.00	49.00	SLOTTED	50	
Water Strikes										
Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks					
Flush Information					Borehole Diameter		Casing Diameter			
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)		
10.80	11.55	Air/Mist	0%-0%	No return	11.55	146	1.80	175		
11.55	12.30	Air/Mist	10%-10%	white	13.80	146				
12.30	13.80	Air/Mist	10%-10%	white	16.80	99				
13.80	16.80	WATER	10%-10%	white	24.30	99				

Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %. NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R71905	
Contract Number: JFR1451	Start Date: 25/09/2020	End Date: 14/10/2020	Checked By: GR	Status: FINAL	Sheet 4 of 6	
Rotary Core Drilling Log		Easting: 412040.6	Northing: 141895.0	Ground Level: 99.03mOD	Plant Used: Comacchio 450	Logged By: BB
		Termination: Target depth achieved.			Scale: 1:50	

Weather: Sunny+Showers

Termination: Target depth achieved.

Samples & Core Recovery					Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
30.00 - 31.00	C		100 92 89					Between 29.32m and 29.56m NI Between 29.68m and 29.88m NI Between 29.82m and 30.50m: frequent orange staining and filaments. At 29.98m inocermaid fragments.			
31.00 - 34.00	C CD		31 19 5					Between 30.74m and 30.94m NI Between 30.75m and 30.94m medium to coarse gravel sized flint fragments. Flints are thinly rimmed (1mm) and fingered. Between 31.00m and 34.00m: Limited Recovery due to in situ HPD test	31		
34.00 - 35.00	C C		98 83 67		NI 240 600			Between 33.09m and 33.19m NIDD (in-situ HPD test) Between 33.18m and 33.24m NI Between 33.25m and 33.30m shell fragment and marl band. Between 33.74m and 34.02m NIDD (packer test)	32 33		
35.00 - 36.50	C CD		92 63 55					At 34.25m orange stains. At 34.35m coarse gravel to cobble fingered flint fragment. Between 34.38m to 34.80 thin marl bands. At 34.70m orange stains. Between 35.00m and 35.12m AZCL Between 35.10m and 35.20m coarse gravel sized flint fragments. Between 35.12m and 35.20m NI Between 35.60m and 35.80m coarse gravel flint fragment.	34 35		
36.50 - 38.00	CD C C CD		96 80 72					Between 36.50m and 36.57m AZCL At 36.80m orange stains and lineaments.	36 37		
38.00 - 39.50	CD		67 28 20					Between 38.10m and 38.35m cobble sized rimmed black nodular flint recovered as NI Between 38.11m and 38.49m NI Between 38.59m and 38.72m NI	38		
39.50 - 40.00			0 0 0					Between 39.50m and 40.00m AZCL	39		
									40		

Start & End of Shift Observations					Installation					Remarks:				
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)					
					Pipe 1	0.00	14.00	PLAIN	50	1. Inspection pit hand dug to 1.20m bgl. 2. Packer tests undertaken between 33.30 and 35.0m bgl. 3. HPD tests undertaken at 14.62m, 22.41m, 28.00m, 32.80m, 41.25m bgl. 4. Downhole geophysics undertaken on completion. 5. 50mm standpipe installed, response zone 13.50-49.00m bgl.				
					Pipe 1	14.00	49.00	SLOTTED	50					
Flush Information					Borehole Diameter		Casing Diameter		Water Strikes					
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
16.80	18.30	Air/Mist	10%-10%	white	11.55	146	1.80	175						
18.30	19.05	Air/Mist	10%-10%	white	13.80	146								
19.05	19.80	Air/Mist	10%-10%	white	16.80	99								
19.80	21.30	Air/Mist	10%-10%	white	24.30	99								

Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %.

NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).

RPS RC Template Issue Number: 2 Issue Date: 02/01/2018



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R71905	
Contract Number: JFR1451	Start Date: 25/09/2020	End Date: 14/10/2020	Checked By: GR	Status: FINAL	Sheet 5 of 6	
Rotary Core Drilling Log		Easting: 412040.6	Northing: 141895.0	Ground Level: 99.03mOD	Plant Used: Comacchio 450	Logged By: BB
		Termination: Target depth achieved.			Scale: 1:50	

Weather: Sunny+Showers

Termination: Target depth achieved.

Samples & Core Recovery					Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
40.00 - 41.50	C CD CD		66 41 14					At 40.09m marl band (1mm) thick. Between 40.20m and 40.88m NI Between 40.68m and 40.75m NI Between 40.80m and 40.90m limited recovery of black nodular fine to medium gravel sized flint fragments. Between 41.00m and 41.75m AZCL (presumed due to in-situ HPD test)	41		
41.50 - 43.00	C C CD		84 79 66					At 42.07m thin (2mm) marl band. At 42.10m thin (2mm) marl band.	42		
43.00 - 44.50	CD CD CD		97 88 75					Between 43.00m and 43.07m NI with black fine to medium nodular flint fragment. Between 43.00m and 44.05m: occasional orange staining. At 44.12m sponge.	43 44		
44.50 - 46.00	C CD		100 86 81	NI 200 200		(22.85)		Between 44.43m and 44.50m cobble of rinded black flint (70mm). Between 44.50m and 44.90m sparse orange stains. Between 45.23m and 45.37m coarse gravel and coarse gravel fragments of nodular rinded flint.	45		
46.00 - 47.50	C C		100 85 74					At 46.15m: gravel sized patches of orange staining (20mm x 60mm) Between 46.39m and 46.50m NI with medium to coarse gravel fragments of nodular rinded flint. Between 46.40m and 46.50m NI At 46.63m sheet flint finger. At 46.72m orange stains. At 46.96m fine to medium gravel of flint fragments.	46 47		
47.50 - 49.00	C C		100 91 87					Between 47.50m and 47.70m occasional medium gravel of rinded nodular flint. At 47.73m thin marl band at 25deg. At 47.86m orange stains. At 48.00m orange stains. At 48.10m thin (3mm) marl band. At 48.22m thin marl band. At 48.26m thin marl band. Between 48.35m and 48.44m NI Between 48.37m and 48.45m medium gravel to cobble fragment of nodular rinded flint. At 48.60m (1mm) marl band. At 48.75m thin (3mm) marl band. Between 48.90m and 48.95m orange stains.	48		
49.00 - 50.50	CD C		95 89 79					Between 48.94m and 49.00m NI Between 48.95m and 49.00m: angular medium to coarse fragments of flint occasionally rinded. Between 49.00m and 49.08m AZCL Between 49.33m and 49.35m wispy marl bands and stains. At 49.58m medium gravel of nodular flint.	49		
									50		

Start & End of Shift Observations					Installation					Remarks:				
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)					
					Pipe 1	0.00	14.00	PLAIN	50	1. Inspection pit hand dug to 1.20m bgl. 2. Packer tests undertaken between 33.30 and 35.0m bgl. 3. HPD tests undertaken at 14.62m, 22.41m, 28.00m, 32.80m, 41.25m bgl. 4. Downhole geophysics undertaken on completion. 5. 50mm standpipe installed, response zone 13.50-49.00m bgl.				
					Pipe 1	14.00	49.00	SLOTTED	50					
Flush Information					Borehole Diameter		Casing Diameter		Water Strikes					
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
21.30	24.30	WATER	0%-0%	No return	11.55	146	1.80	175						
24.30	27.00	Air/Mist	0%-0%	No return	13.80	146								
27.00	30.00	WATER	0%-0%	No return	16.80	99								
30.00	31.00	Air/Mist	0%-0%	No return	24.30	99								

Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %. NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R71905	
Contract Number: JFR1451	Start Date: 25/09/2020	End Date: 14/10/2020	Checked By: GR	Status: FINAL	Sheet 6 of 6	
Easting: 412040.6	Northing: 141895.0	Ground Level: 99.03mOD	Plant Used: Comacchio 450	Logged By: BB	Scale: 1:50	

Weather: Sunny+Showers Termination: Target depth achieved.

Samples & Core Recovery				Strata Details				Groundwater		
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation
50.50 - 52.00	CD		94 81 76		47.03	52.00		Between 50.18m and 50.25m coarse gravel of nodular rinded flint.	51	
	CD			Between 50.43m and 50.45m thin (1mm) distinct marl band.						
								Between 51.69m and 51.80m cobble of nodular rinded flint (70 to 100mm).	52	
								End of Borehole at 52.00m	53	
									54	
									55	
									56	
									57	
									58	
									59	
									60	

Start & End of Shift Observations					Installation					Remarks:	
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)	1. Inspection pit hand dug to 1.20m bgl. 2. Packer tests undertaken between 33.30 and 35.0m bgl. 3. HPD tests undertaken at 14.62m, 22.41m, 28.00m, 32.80m, 41.25m bgl. 4. Downhole geophysics undertaken on completion. 5. 50mm standpipe installed, response zone 13.50-49.00m bgl.	
					Pipe 1	0.00	14.00	PLAIN	50		
					Pipe 1	14.00	49.00	SLOTTED	50		
										Water Strikes	
Strike (m)		Casing (m)		Sealed (m)		Time (mins)		Rose (to m)		Remarks	
Flush Information					Borehole Diameter		Casing Diameter				
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)			
31.00	34.00	WATER	0%-0%	No return	11.55	146	1.80	175			
34.00	40.00	Air/Mist	0%-0%	No return	13.80	146					
40.00	43.00	WATER	0%-0%	No return	16.80	99					
43.00	52.00	Air/Mist	0%-0%	No return	24.30	99					
Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %.											
NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).											
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018											



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R71908	
Contract Number: JFR1451	Start Date: 17/08/2020	End Date: 20/08/2020	Checked By: GR	Status: FINAL	Sheet 1 of 8	
Rotary Core Drilling Log		Easting: 413033.3	Northing: 142068.4	Ground Level: 104.08mOD	Plant Used: Comacchio 450	Logged By: LW/AG
Weather: Sunny+Rain		Termination: Target depth achieved.				Scale: 1:50

Samples & Core Recovery				Strata Details						Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
1.20 - 2.50	ES1 ES B1 ES2 ES3		77 6 0		103.58	(0.50)	[Pattern]	Grass over structureless CHALK recovered as off-white slightly sandy silty subangular fine to medium GRAVEL of weak low density chalk. (CIRIA Grade Dc possibly reworked) SEAFORD CHALK FORMATION	1		
	(0.85)										
2.50 - 4.00	ES4 B3		87 1 0		102.73	1.35	[Pattern]	Structureless CHALK composed of off-white slightly gravelly SILT. Gravel is subangular to subrounded fine to coarse very weak low density chalk with rare angular medium to coarse flint. Flint becoming abundant at 1.20m. (CIRIA Grade Dm) SEAFORD CHALK FORMATION <i>Between 1.20-1.35m Flint cobbles are nodular and angular and tabular (up to 120mm).</i>	2		
	(2.65)										
4.00 - 5.50	B5 D1		93 27 7		100.08	4.00	[Pattern]	Very weak medium density white CHALK. Fracture set 1 is subhorizontal to 20° medium spaced no infill with occasional veneer of white silt and very rare brown staining. Fracture set 2 is 40-80° medium spaced no infill with frequent black speckling on joint surfaces with no infill. (CIRIA Grade A2) SEAFORD CHALK FORMATION <i>Between 4.20-4.30m fossil shell fragments (2-3mm). Between 4.77-4.94m Rare filamentous orangish brown staining and 2-3mm fossil shell fragments. Between 5.15-5.40m Rare filamentous orangish brown staining and 2-3mm fossil shell fragments.</i>	4		
5.50 - 7.00	D2 D3		80 0 0		NI 200 600	(9.00)	[Pattern]	<i>Between 5.50-7.00m: Occasional black specks. Undulating surfaces in gravel (possible joint surfaces).</i> <i>At 6.80m 45mm diameter rounded sponge flint.</i>	6		
7.00 - 8.50	C1		100 39 33				[Pattern]	<i>Between 8.04-8.60m Occasional orangish brown staining.</i>	8		
8.50 - 10.00	D4		53 21 7				[Pattern]	<i>Between 8.62-8.70m Frequent grey and black angular fine to coarse gravel sized flint fragments. Between 9.06-9.20m Rare grey to black angular fine to coarse flint fragments. Between 9.40-10.00m No recovery.</i>	9		
									10		

Start & End of Shift Observations					Installation					Remarks:	
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)		
17-08-2020	07:00									1. Inspection pit hand dug to 1.20mbgl.	
17-08-2020	17:00	1.20	1.10							2. Borehole Backfilled with bentonite on completion.	
18-08-2020	08:00	1.20	1.10								
18-08-2020	17:00	46.00	1.10								
19-08-2020	07:30	46.00	1.10								
19-08-2020	17:00	68.00	1.10								
21-08-2020	07:30	68.00	1.10								
Flush Information					Borehole Diameter		Casing Diameter				
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)			
1.20	2.50		100%-100%	white	71.50	146	1.10	175	Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %.		
2.50	4.00		100%-100%	white					NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).		
4.00	5.50		100%-100%	white					RPS RC Template Issue Number: 2 Issue Date: 02/01/2018		
5.50	7.00		100%-100%	white							



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R71908	
Contract Number: JFR1451	Start Date: 17/08/2020	End Date: 20/08/2020	Checked By: GR	Status: FINAL	Sheet 2 of 8	
Rotary Core Drilling Log		Easting: 413033.3	Northing: 142068.4	Ground Level: 104.08mOD	Plant Used: Comacchio 450	Logged By: LW/AG
Weather: Sunny+Rain			Termination: Target depth achieved.			Scale: 1:50

Samples & Core Recovery					Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
10.00 - 11.50	CD1		93 22 13					Between 11.00-11.10m Occasional greyish brown staining on joint surfaces. Between 11.00-11.45m Frequent orangish brown filamentous staining up to 50mm in length.	11		
11.50 - 13.00			100 27 27					12			
13.00 - 14.50	CD2		100 61 38		91.08	13.00		Very weak to weak medium density white with frequent black speckled CHALK. Fractures are 10 to 30° closely to medium spaced no infill. (CIRIA Grade A3) SEAFORD CHALK FORMATION At 13.10m Rounded coarse nodular flint gravel At 13.20m Light grey marl veneer on fracture surface At 13.25m Subangular and subrounded coarse nodular flint gravel At 13.80m light grey marl bed as angle of 10°.	13		
14.50 - 16.00	CD3		100 94 86	100 140 520		(3.00)		At 14.30m Subhorizontal light grey (1mm) marl bed. At 14.35m Rare 3mm shell fragments	14		
16.00 - 17.50	CD4		73 60 34					Weak high density off-white CHALK. Fractures are subhorizontal to 70° medium spaced open with infill (up to 6mm) of comminuted chalk, locally stained grey and brown with localised veins of orange staining. (CIRIA Grade C2) SEAFORD CHALK FORMATION Between 16.00-16.40m Assumed zone of core loss. Between 16.40-16.70m Non intact recovered as angular fine to coarse gravel and cobble sized (<100mm) fragments. Between 16.80-16.90m Incipient fracture 80° closed Between 17.00-17.05m Incipient fracture 70° closed. Between 17.10-17.15m Incipient fractures 20° to 80° closed	16		
17.50 - 18.00			90 26 26					NI 120 600	(3.00)	Between 17.50-17.60m Band of black angular coarse flint gravel	17
17.50 - 19.00	C3		93 N/A N/A					At 18.10m Occasional shell fragments. Between 18.10-18.25m Non intact zone recovered as angular fine to coarse gravel with frequent black specks on relict fracture surfaces. Between 18.20-18.25m Band of black angular coarse flint gravel in matrix of soft cream chalk silt. Between 18.30-18.50m Incipient fracture subvertical closed.	18		
19.00 - 20.50			100 91 81					NI 40 60	85.08	19.00	Between 18.85-19.0m Assumed zone of core loss. Very weak medium density off-white CHALK. Fracture Set 1 is subhorizontal medium to widely spaced clean with rare black specks. Fracture Set 2 is 10 - 40° very closely to closely spaced clean, locally infilled with less than 3mm of comminuted chalk with black speckles. (CIRIA Grade A2 / B3-4)	19
									20		

Start & End of Shift Observations					Installation					Remarks:	
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)		
21-08-2020	18:00	71.50								1. Inspection pit hand dug to 1.20mbgl. 2. Borehole Backfilled with bentonite on completion.	
Water Strikes											
Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks						
Flush Information					Borehole Diameter		Casing Diameter				
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)			
7.00	8.50		100%-100%	white	71.50	146	1.10	175	Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %.		
8.50	10.00		100%-100%	white	NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).						
10.00	11.50		100%-100%	white	RPS RC Template Issue Number: 2 Issue Date: 02/01/2018						
11.50	13.00		100%-100%	white							



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R71908	
Contract Number: JFR1451	Start Date: 17/08/2020	End Date: 20/08/2020	Checked By: GR	Status: FINAL	Sheet 3 of 8	
Rotary Core Drilling Log		Easting: 413033.3	Northing: 142068.4	Ground Level: 104.08mOD	Plant Used: Comacchio 450	Logged By: LW/AG
Weather: Sunny+Rain		Termination: Target depth achieved.				Scale: 1:50

Samples & Core Recovery					Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
	C4							SEAFORD CHALK FORMATION			
20.50 - 22.00	CD5		93 78 67					Between 20.62m and 20.70m: orange fine filamentous staining on core surface and on basal joint.	21		
								Between 21.64-21.72m Occasional spots and filamentous orange staining on core surface.			
								Between 21.91-22.0m Assumed zone of core loss.	22		
22.00 - 23.50	CD		87 37 32					Between 22.48-23.12m Non intact.			
								At 22.62m Band of black angular nodular rinded flint gravel and cobbles.			
								At 22.90m Flint band.	23		
								Between 23.21-23.25m Non intact.			
23.50 - 25.00	C5		100 82 76	NI 140 480		(9.00)		Between 23.57-24.65m 2mm of comminuted chalk below bedding fracture.			
								At 23.68m: Rounded coarse flint gravel.	24		
								Between 23.85-23.90m Nodular flint cobble (80x80x50mm) and gravel sized fragments.			
								Between 24.77-24.90m Non intact.	25		
25.00 - 26.50			93 41 30					Between 25.37-25.66m Non intact zone containing flint band. Flint recovered as angular medium to coarse gravel.			
								Between 25.82-25.95m Non intact recovered as chalk silt.	26		
								Between 26.08-26.20m Non intact recovered as chalk silt.			
								Between 26.38-26.50m Assumed zone of Core Loss.			
26.50 - 28.00	C CCD7 CD6 C6		87 66 66					Between 27.42-27.60m Non intact chalk recovered as angular coarse gravel and cobbles of very weak medium density chalk.	27		
								Between 27.72-27.78 Non intact chalk recovered beneath discontinuity as fine to coarse gravel in chalk silt matrix.			
								Between 27.78-28.00m Assumed zone of core loss.	28		
28.00 - 29.50	C8 C7		100 89 83		76.08	28.00		Very weak medium density white off-white CHALK. Fracture Set 1: subhorizontal to 40° closely spaced clean with black speckles and rare orangish red staining. Fracture Set 2: 70° to 80° widely spaced clean with rare orange staining. (CIRIA Grade A3)			
								SEAFORD CHALK FORMATION	29		
								At 28.40m Inoceramind fossil within fracture joint set 1.			
								Between 28.50-28.60m Flint band.			
	C8 CD7 C9 C8							Between 29.86-29.90m Flint band.	30		

Start & End of Shift Observations					Installation					Remarks:				
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)					
										1. Inspection pit hand dug to 1.20m bgl. 2. Borehole Backfilled with bentonite on completion.				
Flush Information										Water Strikes				
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
13.00	14.50		100%-100%	white	71.50	146	1.10	175						
14.50	16.00		100%-100%	white										
16.00	17.50		100%-100%	white										
17.50	19.00		100%-100%	white										

Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %. NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R71908	
Contract Number: JFR1451	Start Date: 17/08/2020	End Date: 20/08/2020	Checked By: GR	Status: FINAL	Sheet 4 of 8	
Rotary Core Drilling Log		Easting: 413033.3	Northing: 142068.4	Ground Level: 104.08mOD	Plant Used: Comacchio 450	Logged By: LW/AG
Weather: Sunny+Rain		Termination: Target depth achieved.				Scale: 1:50

Samples & Core Recovery				Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation
29.50 - 31.00			93 67 60					Between 30.03-30.13m Flint band.		
31.00 - 32.50	C10 C9		100 79 79					Between 31.00-31.50m Orange staining. Between 31.57-31.70m Flint band. Between 31.57-32.50m: Becoming higher density chalk.	31	
32.50 - 34.00	C11 C10		100 85 76	NI 200 370		(9.00)			32	
34.00 - 35.50	C12 C11		100 74 71					Between 34.13-34.23m Flint band.	33	
35.50 - 37.00	C10 CD8		93 96 82					Between 35.50-36.20m Rare orange staining. Between 35.76-35.78m Flint band.	34	
37.00 - 38.50	C14 C13 C15 C14		100 73 66	NI 20 37	67.08	37.00		Very weak medium dense off-white CHALK. Fracture Set 1: subhorizontal to 50° medium spaced typically clean with occasional grey silt and black speckles. (CIRIA Grade A2) SEAFORD CHALK FORMATION Between 37.10-37.30m Flint band. Between 37.70-37.72m Marl band.	35	
38.50 - 40.00	C16 C15		53 86 83			(3.00)			36	
					64.08	40.00			37	
									38	
									39	
									40	

Start & End of Shift Observations					Installation					Remarks:				
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)					
										1. Inspection pit hand dug to 1.20mbgl. 2. Borehole Backfilled with bentonite on completion.				
Flush Information										Water Strikes				
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
19.00	20.50		100%-100%	white	71.50	146	1.10	175						
20.50	71.50		0%-0%	No return										

Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %. NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R71908	
Contract Number: JFR1451	Start Date: 17/08/2020	End Date: 20/08/2020	Checked By: GR	Status: FINAL	Sheet 5 of 8	
Rotary Core Drilling Log		Easting: 413033.3	Northing: 142068.4	Ground Level: 104.08mOD	Plant Used: Comacchio 450	Logged By: LW/AG
Weather: Sunny+Rain		Termination: Target depth achieved.				Scale: 1:50

Samples & Core Recovery				Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation
40.00 - 40.75			0 0 0					Assumed Zone of Core Loss NO RECOVERY <i>Between 40.00-42.00m No recovery.</i>		
40.75 - 41.50			0 0 0	AZNR		(2.00)			41	
41.50 - 42.00			0 0 0							
42.00 - 43.00	CD11		110 48 32		62.08	42.00		Very weak medium dense to dense off-white CHALK. Fracture Set 1 is subhorizontal to 10° closely spaced clean. Fracture Set 2 is 20 to 55°, medium to very widely spaced open clean or infilled with up to 3mm of silt. rare black speckles and orange staining (CIRIA Grade A3/B3) SEAFORD CHALK FORMATION	42	
43.00 - 44.50	C17 C16		87 63 18					<i>Between 43.30-43.40m Angular medium flint gravel and cobbles.</i> <i>At 43.65m Flint band.</i>	43 44	
44.50 - 46.00	CD12 C12		73 72 61	NI 600 650		(5.50)			45 46	
46.00 - 47.50	CD13		87 57 46					<i>Between 46.40-46.60m Orange staining.</i> <i>At 46.45m angular fine flint gravel</i> <i>At 46.70m Angular medium flint gravel.</i>	47	
47.50 - 48.25	C18 C17		100 100 100		56.58	47.50		Very weak medium density white CHALK. Fractures are subhorizontal to 50° medium to widely spaced clean rarely infilled with up to 3mm of grey silt with occasional black speckles and orange staining and a veneer of white silt. Occasional inoceramid filling. (CIRIA Grade A1/A2) SEAFORD CHALK FORMATION	48	
48.25 - 49.00	C18 C20 C		100 89 89					<i>Between 47.63-47.73m Flint band.</i> <i>Between 47.77m and 47.87m Flint band.</i> <i>At 48.15m: Silt band inclined between 5° and 10°.</i> <i>At 48.64m: Silt band inclined between 5° and 10°.</i>	49	
49.00 - 50.50	C21 C19		93 76 64						50	

Start & End of Shift Observations					Installation					Remarks:					
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)						
										1. Inspection pit hand dug to 1.20mbgl. 2. Borehole Backfilled with bentonite on completion.					
										Water Strikes					
Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks										
Flush Information					Borehole Diameter				Casing Diameter						
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)					
					71.50	146	1.10	175							
Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %.												NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).			
RPS RC Template												Issue Number: 2 Issue Date: 02/01/2018			



Contract Name: A303 Stonehenge			Client: RPS Planning & Development			Borehole ID: R71908		
Contract Number: JFR1451	Start Date: 17/08/2020	End Date: 20/08/2020	Checked By: GR	Status: FINAL		Sheet 6 of 8		
Rotary Core Drilling Log		Easting: 413033.3	Northing: 142068.4	Ground Level: 104.08mOD	Plant Used: Comacchio 450	Logged By: LW/AG	Scale: 1:50	

Weather: Sunny+Rain Termination: Target depth achieved.

Samples & Core Recovery				Strata Details						Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
50.50 - 52.00	C22 C20		93 54 26					At 50.65m: <i>Rinded flint cobble.</i> Between 50.90m and 51.10m: <i>Band of angular medium flint gravel.</i> At 51.13m: <i>Silt band inclined between 5° and 10°.</i>	51		
52.00 - 53.00	CD9		80 39 39	NI 90 108		(6.95)		At 51.91m: <i>Silt band inclined between 5° and 10°.</i> Between 52.05m and 52.10m: <i>Band of angular medium flint gravel.</i> Between 52.36m and 52.54m: <i>Low density chalk band with rare inoceramids.</i>	52		
53.00 - 53.50	C23 C21		100 94 74					Between 53.00m and 53.05m: <i>Band of angular medium flint gravel.</i> At 53.08m: <i>Silt band.</i> At 53.35m: <i>Silt band.</i>	53		
53.50 - 55.00	C24 C22		100 83 57		49.63	54.45			54		
55.00 - 56.50	C15 CD10		93 87 81					Very weak to weak medium to low density greyish white CHALK. Fracture Set 1 is 60-70° closely to widely spaced clean with occasional grey and black specks. Fracture Set 2 is subhorizontal to 20° medium to widely spaced, open clean with rare orange staining and grey marl laminae. (CIRIA Grade A1/A3) SEAFORD CHALK FORMATION Between 54.45m and 54.60m: <i>Band of angular medium and coarse flint gravel.</i> Between 54.45m and 61.75m: <i>Frequent greyish brown marks alongside marl bands (up to 100mm thick) and occasional embedded flints</i> Between 55.00m and 55.10m: <i>Band of angular medium and coarse flint gravel.</i>	55		
56.50 - 58.00	C23 C26 C24		93 82 81	NI 20 50		(10.30)		Between 56.50m and 56.60m: <i>Band of angular medium and coarse flint gravel.</i> Between 57.00m and 57.70m: <i>Band of angular medium and coarse flint gravel.</i>	56 57		
58.00 - 59.50	CCD1 8 CD11		100 71 59					Between 58.70m and 58.83m: <i>Extremely weak low density chalk.</i> Between 58.83m and 58.95m: <i>AZCL</i>	58 59		
	C25							Between 59.50m and 59.60m: <i>Band of angular medium and coarse flint gravel.</i>	60		

Start & End of Shift Observations					Installation					Remarks:	
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)	1. Inspection pit hand dug to 1.20mbgl. 2. Borehole Backfilled with bentonite on completion.	
										Water Strikes	
Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks						
Flush Information					Borehole Diameter		Casing Diameter				
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %.		
					71.50	146	1.10	175	NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).		
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018											



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R71908	
Contract Number: JFR1451	Start Date: 17/08/2020	End Date: 20/08/2020	Checked By: GR	Status: FINAL	Sheet 7 of 8	
Rotary Core Drilling Log		Easting: 413033.3	Northing: 142068.4	Ground Level: 104.08mOD	Plant Used: Comacchio 450	Logged By: LW/AG
		Termination: Target depth achieved.			Scale: 1:50	

Weather: Sunny+Rain

Termination: Target depth achieved.

Samples & Core Recovery					Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
59.50 - 61.00	C28 C26		87 58 55					Between 60.12m and 60.24m Medium to coarse flint gravel within grey marl band. At 60.28m: Flint cobble.			
61.00 - 61.75	C17 CD12		107 46 46					Between 60.72m and 60.77m Medium to coarse flint gravel within grey marl band. Between 61.40m and 61.50m Medium to coarse flint gravel.	61		
61.75 - 62.50	C18 D5		87 77 68					Between 61.75m and 64.75m: Frequent horizontal marl bands up to 20mm thick.	62		
62.50 - 63.50	CD13		110 94 63	NI 60 200				Between 62.70m and 62.75m Flint band. At 63.42m Shell	63		
63.50 - 64.00			80 72 24						64		
64.00 - 64.75	C27		107 73 73					Between 64.34m and 64.49m Flint band.			
64.75 - 65.50	C28 CD14		93 82 56	NI 350 670	39.33	64.75		Weak medium density off-white CHALK. Fracture Set 1 is subhorizontal to 10° closely to medium spaced no infill. Fracture Set 2 is 60-70° closely spaced no infill. (CIRIA Grade A3)	65		
65.50 - 67.00			93 N/A N/A			(2.25)		SEAFORD CHALK FORMATION Between 64.75m and 64.80m Greyish green wavy marl bands. Between 64.90m and 64.96m: Orange elliptical staining. Between 65.17m and 65.23m Non intact: recovered as comminuted chalk. At 65.33m Fractured black angular coarse rinded flint gravel (>20mm) Between 65.43m and 65.48m Thin subhorizontal grey marl band. Between 65.50m and 65.73m Greyish green marl band with orange staining (resulting from sponges). At 65.80m 20mm rounded rinded flint At 65.93m Elongated tabular thin (<2mm) shell fragment (30mm). Between 66.27m and 66.36m Non intact recovered as angular coarse flint gravel with flint cobble. At 66.42m: subrounded fine to coarse flint gravel. Between 66.44m and 66.50m Non intact recovered as angular coarse flint gravel.	66		
67.00 - 68.00	C31		100 N/A N/A	NI 290 350	37.08	67.00		At 66.92m: 100mm thick greyish green wispy subhorizontal marl bed. Weak medium density off-white with occasional orange staining CHALK with closely to medium spaced marl laminae. Fractures are subhorizontal, closely to medium spaced no infill. (CIRIA Grade A3/A2)	67		
68.00 - 68.50	C32		100 N/A N/A					SEAFORD CHALK FORMATION Between 67.04m and 67.07m Thin (1-2mm) shell fragments following fine marl partings. At 67.75m: 2mm thick light grey-green marl band sinusoidal with amplitude <1mm.	68		
68.50 - 70.00	C33		100 N/A N/A			(3.00)		Between 67.30 and 67.35m: Thin (<1mm) light grey green marl parting with thin subhorizontal plate shell fragment and orange staining at top. Between 67.35m and 67.37m Sinusoidal light greyish green marl band up to fracture on lower surface Between 67.60m and 67.71m Non intact chalk and flint recovered as black angular fine to coarse rinded flint gravel in silty chalk matrix. Between 67.78m and 67.82m Thin wispy marl partings and occasional shell fragments. At 67.84m Orange staining. Between 67.88m and 67.92m Light greyish green marl bands, sinusoidal. Between 67.94m and 68.00m: Assumed zone of core loss. At 68.07m 5-10mm light greyish green sinusoidal marl band.	69		
					34.08	70.00			70		

Start & End of Shift Observations					Installation					Remarks:	
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)		
										1. Inspection pit hand dug to 1.20mbgl. 2. Borehole Backfilled with bentonite on completion.	
Water Strikes											
Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks						
Flush Information					Borehole Diameter				Casing Diameter		
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)			
					71.50	146	1.10	175	Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %. NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).		
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018											



Contract Name: A303 Stonehenge			Client: RPS Planning & Development			Borehole ID: R71908		
Contract Number: JFR1451	Start Date: 17/08/2020	End Date: 20/08/2020	Checked By: GR	Status: FINAL		Sheet 8 of 8		
Rotary Core Drilling Log		Easting: 413033.3	Northing: 142068.4	Ground Level: 104.08mOD	Plant Used: Comacchio 450	Logged By: LW/AG	Scale: 1:50	

Weather: Sunny+Rain Termination: Target depth achieved.

Samples & Core Recovery					Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
70.00 - 71.50	CD21		100 N/A N/A	NI 340 550	32.58	71.50		<p>Between 68.30m and 68.39m: rounded rinded black flint cobble (70mm). Chalk is grey in colour on either side of bedding fracture.</p> <p>Between 68.45m and 68.47m Light greyish green marl with localised filamentous staining.</p> <p>Between 68.47m and 68.50m Assumed zone of core loss</p> <p>Between 68.50m and 68.57m: Non intact rinded black flint cobble.</p> <p>Between 68.60m and 68.61m light grey marl band.</p> <p>Between 66.62 and 68.63m: Thin subhorizontal orange stained band and wispy grey marl.</p> <p>Between 68.85m and 69.97m interbedded light grey wispy marl band and cream chalk band.</p> <p>Between 68.96m and 69.00m: Tabular thin walled (1mm) shell on subhorizontal fracture surface and orange stained shell fragment beneath.</p> <p>Between 69.05m and 69.10m Thin wispy marl band <5mm thick.</p> <p>Between 69.90m and 69.96m Light grey marl band interbedded with cream chalk</p> <p>Weak medium density off white CHALK with closely spaced marl laminae and flint bands. Fracture Set 1 is subhorizontal, medium spaced open. Fracture Set 2 is subhorizontal closely spaced clean no infill. (CIRIA Grade A2/A3)</p> <p>SEAFORD CHALK FORMATION</p> <p>Between 70.00m and 70.18m Frequent thin (<10mm) wavy light grey marl bands and occasional filamentous orange staining at base.</p> <p>Between 70.18m and 70.22m Non intact chalk along thin (<5mm) black tabular rinded flint. Chalk recovered as coarse sand and gravel in chalk silt matrix.</p> <p>At 70.56m: angular coarse nodular flint gravel (60mm)</p> <p>Between 70.73m and 70.77m 10mm wispy marl bands separated by cream chalk.</p> <p>Between 71.04m and 71.12m Non intact chalk and flint recovered as angular fine to coarse flint and chalk gravel.</p> <p>Between 71.14m and 71.50m Frequent orange staining.</p> <p>At 71.40m: coarse black rinded flint gravel (50mm).</p> <p>End of Borehole at 71.50m</p>	71		
									72		
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Start & End of Shift Observations					Installation					Remarks:	
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)	1. Inspection pit hand dug to 1.20mbgl. 2. Borehole Backfilled with bentonite on completion.	
										Water Strikes	
Strike (m)		Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks					
Flush Information					Borehole Diameter		Casing Diameter				
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)			
					71.50	146	1.10	175	Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %.		
NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).											
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018											



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R71910	
Contract Number: JFR1451	Start Date: 17/08/2020	End Date: 25/08/2020	Checked By: GR	Status: FINAL	Sheet 1 of 9	
Rotary Core Drilling Log		Easting: 413229.5	Northing: 142067.8	Ground Level: 108.77mOD	Plant Used: Comacchio 305	Logged By: LW/GJ/AG/BB
		Termination: Target depth achieved.			Scale: 1:50	

Weather: Sunny

Termination: Target depth achieved.

Samples & Core Recovery					Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
					108.42	(0.35)		Greyish brown very silty sandy subangular to subrounded fine to coarse GRAVEL of very weak low density chalk and rare flint (Reworked Archaeological pit)			
						0.35		TOPSOIL			
					107.57	(0.85)		Structureless CHALK composed of very silty angular and subangular fine to coarse GRAVEL. Clasts are off-white of very weak low density chalk. (CIRIA Grade Dc)	1		
						1.20		Very weak medium density white CHALK with rare orangish brown discoloration on joint surfaces. Fractures are subhorizontal to 70°, medium spaced, with occasional veneer of white or orangish brown silt. (CIRIA Grade A2)	2		
1.20 - 2.50	D		100 0 0	NI	106.47	2.30		Assumed Zone of Core Loss			
					106.27	2.50		NO RECOVERY			
						(1.10)		Very weak high density white CHALK with rare brown discoloration and rare flint gravel inclusions. Fractures are subhorizontal to 56° closely spaced clean or with rare white silt infill. (CIRIA Grade A3)	3		
2.50 - 4.00	D		100 3 0			(1.50)		Very weak high density white CHALK with rare brown discoloration and rare flint gravel inclusions. Fractures are subhorizontal to 56° closely spaced clean or with rare white silt infill. (CIRIA Grade A3)			
								At 3.60 m bgl: Flint cobble within zone of non intact core.			
					104.77	4.00		Very weak high density white CHALK. Fracture Set 1 is subhorizontal to 45° closely spaced open clean or with rare white silt infill and black specks. Fracture Set 2 is 50° to subvertical closely spaced open clean or with rare white silt infill or veneer of white clay. (CIRIA Grade A3/B3)	4		
4.00 - 5.50	D		100 27 15					Very weak high density white CHALK. Fracture Set 1 is subhorizontal to 45° closely spaced open clean or with rare white silt infill and black specks. Fracture Set 2 is 50° to subvertical closely spaced open clean or with rare white silt infill or veneer of white clay. (CIRIA Grade A3/B3)	5		
						(4.50)		Very weak high density white CHALK. Fracture Set 1 is subhorizontal to 45° closely spaced open clean or with rare white silt infill and black specks. Fracture Set 2 is 50° to subvertical closely spaced open clean or with rare white silt infill or veneer of white clay. (CIRIA Grade A3/B3)	6		
5.50 - 7.00	D		80 27 35					Very weak high density white CHALK. Fracture Set 1 is subhorizontal to 45° closely spaced open clean or with rare white silt infill and black specks. Fracture Set 2 is 50° to subvertical closely spaced open clean or with rare white silt infill or veneer of white clay. (CIRIA Grade A3/B3)	7		
								Very weak high density white CHALK. Fracture Set 1 is subhorizontal to 45° closely spaced open clean or with rare white silt infill and black specks. Fracture Set 2 is 50° to subvertical closely spaced open clean or with rare white silt infill or veneer of white clay. (CIRIA Grade A3/B3)	8		
7.00 - 8.50	D		100 37 30					Very weak high density white CHALK. Fracture Set 1 is subhorizontal to 45° closely spaced open clean or with rare white silt infill and black specks. Fracture Set 2 is 50° to subvertical closely spaced open clean or with rare white silt infill or veneer of white clay. (CIRIA Grade A3/B3)	9		
					100.27	8.50		Very weak medium density off-white CHALK. Fractures are subhorizontal (0-5°) closely spaced open clean. (CIRIA Grade A3/B3)			
						(3.00)		Very weak medium density off-white CHALK. Fractures are subhorizontal (0-5°) closely spaced open clean. (CIRIA Grade A3/B3)	9		
8.50 - 10.00	D		100 60 25					Very weak medium density off-white CHALK. Fractures are subhorizontal (0-5°) closely spaced open clean. (CIRIA Grade A3/B3)			
								Very weak medium density off-white CHALK. Fractures are subhorizontal (0-5°) closely spaced open clean. (CIRIA Grade A3/B3)	10		
								Very weak medium density off-white CHALK. Fractures are subhorizontal (0-5°) closely spaced open clean. (CIRIA Grade A3/B3)			
								Very weak medium density off-white CHALK. Fractures are subhorizontal (0-5°) closely spaced open clean. (CIRIA Grade A3/B3)			
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								Very weak medium density off-white CHALK. Fractures are subhorizontal (0-5°) closely spaced open clean. (CIRIA Grade A3/B3)			



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R71910	
Contract Number: JFR1451	Start Date: 17/08/2020	End Date: 25/08/2020	Checked By: GR	Status: FINAL	Sheet 2 of 9	
Rotary Core Drilling Log		Easting: 413229.5	Northing: 142067.8	Ground Level: 108.77mOD	Plant Used: Comacchio 305	Logged By: LW/GJ/AG/BB
Weather: Sunny		Termination: Target depth achieved.				Scale: 1:50

Samples & Core Recovery					Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
10.00 - 11.50	C CD		100 74 55		97.27	11.50		Between 9.90-10.00 m bgl: Single nodular flint cobble (flint band).	11		
11.50 - 13.00	C1 CD		100 25 18					Very weak medium density-off white CHALK. Fractures are 5-40° closely spaced open typically with white clay or silt veneer. and rare black specks (CIRIA Grade B3) SEAFORD CHALK FORMATION Between 11.50-11.65 m bgl: Non-intact.	12		
	C2 CD							Between 12.70-12.72 m bgl: Non-intact.			
								At 12.90 m bgl: Orange filamentous staining of chalk.			
								Between 12.95-13.00 m bgl: Black angular gravel sized fragments of flint.			
13.00 - 14.50	CD CD3		100 55 45			(4.50)		At 13.50 mbgl: Flints.	13		
								Between 14.10-14.25 m bgl: Bands of flints.	14		
								Between 14.50-14.93 m bgl: Rare angular flint gravel.			
14.50 - 16.00	CD5 CD4		100 52 31					Between 15.35-15.55 m bgl: Rare filamentous orange staining.	15		
16.00 - 17.50	D1		100 65 24		92.77	16.00		Very weak medium density off-white CHALK. Fracture Set 1 is subhorizontal (0-5°) closely spaced open clean with occasional infilling (<3mm) of cream chalk silt veneer and rare black specks. Fracture Set 2 is 45-70° closely spaced open clean or infilled with a less than 3mm white silt or clay veneer with rare black specks and localised light orange staining. (CIRIA Grade A3/B3) SEAFORD CHALK FORMATION At 16.12 m bgl: Light grey thin flat shell fragment (<1mm) and black flint fragments.	16		
								Between 16.24-16.44 m bgl: Non-intact chalk.			
								Between 16.44-16.50 m bgl: Assumed zone of core loss.			
								Between 16.51-16.55m bgl: Wavy, orangish grey sand sized partings. Presumed phosphatic band.			
17.50 - 19.00	C6 C		100 79 65					At 18.40 m bgl: Occasional angular coarse flint gravel.	17		
19.00 - 20.50	C8		100 78 68		89.77	19.00		Very weak medium density off-white CHALK. Fracture Set 1 subhorizontal to 10° closely to medium spaced no infill and open with black speckled surface and frequent grey clay veneer infilling and localised orange staining. Fracture Set 2 is 60° to subvertical moderately spaced no infill generally clean. (CIRIA Grade A2/B2) SEAFORD CHALK FORMATION	18		
									19		
									20		

Start & End of Shift Observations					Installation					Remarks:				
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)					
20-08-2020	17:00	44.50	0.00							1. Inspection pit hand dug to 1.20mbgl.				
20-08-2020	17:05	44.50		40.00						2. Borehole Backfilled with bentonite on completion.				
21-08-2020	08:00	47.50	0.00	40.00										
21-08-2020	17:00	56.50	2.00	40.00										
24-08-2020	08:00	56.50	2.00	41.00										
24-08-2020	17:00	70.00												
Flush Information					Borehole Diameter		Casing Diameter		Water Strikes					
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
7.00	8.50		100%-100%	white	70.00	146	2.00	175	40.00	2.00		0		Possibly flush level rather than groundwater strike
8.50	10.00		100%-100%	white										
10.00	11.50		100%-100%	white										
11.50	13.00		100%-100%	white										
Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %. NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).														
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018														



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R71910	
Contract Number: JFR1451	Start Date: 17/08/2020	End Date: 25/08/2020	Checked By: GR	Status: FINAL	Sheet 3 of 9	
Rotary Core Drilling Log		Easting: 413229.5	Northing: 142067.8	Ground Level: 108.77mOD	Plant Used: Comacchio 305	Logged By: LW/GJ/AG/BB
Weather: Sunny		Termination: Target depth achieved.				Scale: 1:50

Samples & Core Recovery				Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation
20.50 - 22.00	C9		100 80 66					At 19.12 m bgl: Nodular flint band recovered as grey rinded very angular coarse gravel (>30mm). At 19.18 m bgl: Distinct section of a 'U' shaped shell (approximately 50 mm wide and 2mm thick). At 19.49 m bgl: rounded light grey rinded flint (50mm) below discontinuity. At 19.70 m bgl: Orange subhorizontal thin filamentous staining. At 20.20m: Flint and shell band between discontinuities. NIDD Black, tabular flint cobble recovered as fine rinded stained gravel. Tabular thin (<2mm) shell across core with frequent shell fragments. Includes thick walled shell fragments (5mm) with vertical internal structure. Between 20.70-20.73 m bgl: chalk greyer in colour (assumed due to finely disseminated marl) with some orange staining at top. Fine wavy light grey marl partings at base. Bedding fracture associated with lowest marl parting. Between 20.73 and 20.78m: Cream, slightly denser chalk with frequent flecked orange staining. Discrete, fine, light grey, wavy marl partings at base. Basal partings marks bedding fracture. At 21.34 m bgl: Discrete, light grey, marl bands. At 21.40 m bgl: Bedding fracture along fine light grey subhorizontal wavy marl parting. At 21.76 m bgl: Single round flint gravel fragment. Between 21.90-21.92 m bgl: Fine light grey subhorizontal wavy marl partings.	21	
22.00 - 23.50	C6 C7 C		100 89 78						22 23	
23.50 - 25.00	C8		100 75 57						24	
25.00 - 26.50	C9		100 93 47						25 26	
26.50 - 28.00	C C10		87 84 84					Between 26.55-26.57 m bgl: Rare orangish red stains with shell bands.	27	
28.00 - 29.50	C0 C5 C0 C13		100 89 51					Between 28.41-28.48 m bgl: Non-intact recovered as coarse chalk gravel in chalk silt matrix with a black rounded flint gravel fragment (40mmx35mm). Between 28.55-28.61 m bgl: Non-intact chalk recovered as coarse sand to coarse gravel sized fragments with black rounded flint cobble (100x50x60mm) and angular flint gravel. Between 29.02-29.04 m bgl: Non-intact chalk recovered as sand and silt. Between 29.50-29.58 m bgl: Assumed zone of core loss. Between 29.71-29.76 m bgl: Thin (2mm) subhorizontal (30-90mm length) tabular shell fragments.	28 29 30	

Start & End of Shift Observations					Installation					Remarks:				
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)					
										1. Inspection pit hand dug to 1.20mbgl. 2. Borehole Backfilled with bentonite on completion.				
Flush Information										Water Strikes				
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
13.00	14.50		100%-100%	white	70.00	146	2.00	175	40.00	2.00		0		Possibly flush level rather than groundwater strike
14.50	16.00		100%-100%	white										
16.00	17.50		100%-100%	white										
17.50	19.00		100%-100%	white										

Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %. NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R71910	
Contract Number: JFR1451	Start Date: 17/08/2020	End Date: 25/08/2020	Checked By: GR	Status: FINAL	Sheet 4 of 9	
Rotary Core Drilling Log		Easting: 413229.5	Northing: 142067.8	Ground Level: 108.77mOD	Plant Used: Comacchio 305	Logged By: LW/GJ/AG/BB
		Termination: Target depth achieved.			Scale: 1:50	

Weather: Sunny

Samples & Core Recovery				Strata Details						Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
29.50 - 31.00	C14		93 93 82					Between 30.47-30.68 m bgl: Occasional dark grey thin subhorizontal wavy marl partings with occasional orange staining as linear bands (3mm) following marl partings. Between 30.90-30.97 m bgl: Occasionally dark grey subhorizontal wavy marl partings.	31		
31.00 - 32.50			97 84 73					Between 32.12-32.06 m bgl: Occasional light grey subhorizontal wavy marl partings with occasional orange staining. Between 32.14-32.20 m bgl: Non-intact chalk recovered as angular fine to coarse gravel. At 32.55 m bgl: Presumed drilling induced fracture along marl band with some thin tabular shell fragments.	32		
32.50 - 34.00	C C15		100 80 69					Between 33.68-33.81 m bgl: Non-intact rounded flint cobble (>100mm) recovered as angular fine to coarse flint gravel sized fragments. Between 33.81-34.00 m bgl: Non-intact recovered as angular chalk cobbles and angular fine to coarse gravel. Between 34.09-34.12 m bgl: Thin (1mm) subhorizontal tabular shell fragment (10-20mm) with occasional orange staining. Between 34.12-34.19 m bgl: Non-intact flint and chalk. Black rounded nodular flint cobble recovered as angular fine to coarse gravel with coarse chalk gravel (flint band). Between 34.42-34.44 m bgl: Localised orange staining.	33		
34.00 - 35.50	C16		100 91 91	NI 150 600		(36.90)		At 34.88 m bgl: Subhorizontal linear (<20mm) orange staining. Between 35.24-35.31 m bgl: Non-intact flint recovered as black angular flint cobble (80x50x60mm) and angular fine and medium flint gravel.	34		
35.50 - 37.00	C17		100 56 34					At 36.24 m bgl: Thin light grey subhorizontal marl partings with localised linear filaments of orange staining. At 36.45 m bgl: Light grey subhorizontal thin (1mm) marl band.	35		
37.00 - 38.50	C0 CD6		97 61 55					Between 37.25-38.20 m bgl: Occasional light grey subhorizontal fine wavy marl bands. Between 37.33-37.73 m bgl: Flint band recovered as black angular coarse gravel. Between 38.24-38.32 m bgl: Non-intact chalk recovered as angular fine and medium gravel. Between 38.32-38.50 m bgl: Assumed zone of core loss. Between 38.56-38.58 m bgl: Non intact recovered as angular medium and coarse flint and chalk gravel.	36		
38.50 - 40.00	CD7		67 59 41					Between 39.12-39.14 m bgl: Non-intact recovered as angular cobble of flint and angular medium flint gravel.	37		
									40		

Start & End of Shift Observations					Installation					Remarks:				
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)					
										1. Inspection pit hand dug to 1.20mbgl. 2. Borehole Backfilled with bentonite on completion.				
Flush Information										Water Strikes				
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
19.00	20.50		100%-100%	white	70.00	146	2.00	175	40.00	2.00		0		Possibly flush level rather than groundwater strike
20.50	22.00		100%-100%	white										
22.00	23.50		100%-100%	white										
23.50	25.00		100%-100%	white										

Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %. NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018



Contract Name: A303 Stonehenge			Client: RPS Planning & Development			Borehole ID: R71910		
Contract Number: JFR1451	Start Date: 17/08/2020	End Date: 25/08/2020	Checked By: GR	Status: FINAL		Sheet 5 of 9		
Rotary Core Drilling Log		Easting: 413229.5	Northing: 142067.8	Ground Level: 108.77mOD	Plant Used: Comacchio 305	Logged By: LW/GJ/AG/BB	Scale: 1:50	

Weather: Sunny Termination: Target depth achieved.

Samples & Core Recovery				Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation
40.00 - 40.75	CD9		100 100 100							
40.75 - 41.50	C C19		100 94 94					At 40.60 m bgl: Rare sponge beds.	41	
41.50 - 43.00	C0 CD10 C0 C20		97 78 67					Between 41.50-42.00 m bgl: Non-intact recovered as angular cobbles and coarse gravel of flint.	42	
43.00 - 44.50	C0 C21		67 67 60					42.80 m bgl: Rare sponge beds. Between 43.00m and 45.25m: Limited Recovery Between 43.40-43.70 m bgl: Rare very thin marl bands.	43 44	
44.50 - 45.25	C0 C22		67 52 44						45	
45.25 - 46.00			100 71 71						46	
46.00 - 47.50	C0 C23		0 29 23					At 46.00 m bgl: Occasional angular coarse flint gravel.	47	
47.50 - 49.00	CD11		100 59 59						48	
49.00 - 50.50			100 21 15						49	
									50	

Start & End of Shift Observations					Installation					Remarks:				
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)					
										1. Inspection pit hand dug to 1.20mbgl. 2. Borehole Backfilled with bentonite on completion.				
Flush Information										Water Strikes				
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
25.00	26.50		0%-0%	No return	70.00	146	2.00	175	40.00	2.00		0		Possibly flush level rather than groundwater strike
26.50	28.00		0%-0%	No return										
28.00	29.50		0%-0%	No return										
29.50	31.00		0%-0%	No return										

Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %. NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R71910	
Contract Number: JFR1451	Start Date: 17/08/2020	End Date: 25/08/2020	Checked By: GR	Status: FINAL	Sheet 6 of 9	
Rotary Core Drilling Log		Easting: 413229.5	Northing: 142067.8	Ground Level: 108.77mOD	Plant Used: Comacchio 305	Logged By: LW/GJ/AG/BB
		Termination: Target depth achieved.			Scale: 1:50	

Weather: Sunny

Samples & Core Recovery				Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation
50.50 - 52.00	CD12 C		100 93 81		52.87	55.90		At 51.10 m bgl: Non-intact recovered as angular coarse flint gravel.	51	
	CD13 C0 C24							Between 50.50-51.70 m bgl: Thin marl bands.		
52.00 - 53.50	C25 C0 C26		100 94 94		52.87	55.90		At 51.60 m bgl: Non-intact recovered as angular coarse flint gravel.	52	
	CD14							Between 52.20-52.35 m bgl: Non-intact recovered as angular medium flint gravel associated with sponge beds.		
53.50 - 55.00	C		93 79 79		52.87	55.90		Between 53.50-53.70 m bgl: Non-intact recovered as flint cobbles.	54	
	C0									
55.00 - 56.50	C27 C0 C28 C		80 56 49		52.87	55.90		At 55.30 m bgl: Non-intact recovered as flint cobble.	55	
	C29									
56.50 - 58.00	CD15 C30		100 93 88		52.87	55.90		At 56.65 m bgl: Angular medium gravel sized flints. Between 56.80-57.00 m bgl: Very thin subhorizontal marl bands.	56	
	C0							Very weak to weak high density white with occasional orange staining CHALK. Fractures are subhorizontal to 30° medium spaced open generally clean occasionally infilled with fine chalk and flint gravel with orange stains and very fine black speckles. (CIRIA Grade A2/B2) SEAFORD CHALK FORMATION		
58.00 - 59.50	C0 C31 C0 C32		100 87 66	NI 200 600	52.87	55.90	(8.10)	At 57.44 m bgl: Angular coarse flint gravel.	57	
	CD16							Between 57.80-57.90 m bgl: rare orange stains and burrows with dark red to orange infilling.		
	C0 C33				52.87	55.90		Between 58.15-58.32 m bgl: Angular coarse flint gravel.	58	
	CD17							At 59.00 m bgl: Angular coarse flint gravel. At 59.10 m bgl: Angular coarse flint gravel.		
									59	
									60	

Start & End of Shift Observations					Installation					Remarks:				
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)					
										1. Inspection pit hand dug to 1.20mbgl. 2. Borehole Backfilled with bentonite on completion.				
Flush Information										Water Strikes				
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
31.00	32.50		0%-0%	No return	70.00	146	2.00	175	40.00	2.00		0		Possibly flush level rather than groundwater strike
32.50	34.00		0%-0%	No return										
34.00	35.50		0%-0%	No return										
35.50	37.00		0%-0%	No return										

Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %.
NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).

RPS RC Template Issue Number: 2 Issue Date: 02/01/2018



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R71910	
Contract Number: JFR1451	Start Date: 17/08/2020	End Date: 25/08/2020	Checked By: GR	Status: FINAL	Sheet 7 of 9	
Rotary Core Drilling Log		Easting: 413229.5	Northing: 142067.8	Ground Level: 108.77mOD	Plant Used: Comacchio 305	Logged By: LW/GJ/AG/BB
		Termination: Target depth achieved.			Scale: 1:50	

Weather: Sunny

Samples & Core Recovery				Strata Details				Groundwater		
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation
59.50 - 61.00	C34		100 51 45					Between 60.25-60.40 m bgl: Band of coarse flint gravel.		
61.00 - 62.50	C35		100 75 55					From 62.20-62.25 m bgl: Angular coarse flint gravel.		
62.50 - 64.00	CD18		97 82 69					At 62.50 m bgl: Angular coarse flint gravel.		
64.00 - 65.50	C36		7 0 0		44.77	64.00		Assumed Zone of Core Loss (flint jamming in catcher box) NO RECOVERY		
65.50 - 66.25			13 0 0			(4.00)				
66.25 - 67.00			0 0 0							
67.00 - 67.50			20 0 0							
67.50 - 68.00			0 0 0							
68.00 - 68.50	CD19		100 100 76		40.77	68.00		Very weak high density white with occasional orange staining CHALK. Fractures are subhorizontal to 30° medium spaced open generally clean occasionally infilled with fine chalk and flint gravel with orange stains and very fine black speckles. (CIRIA Grade A2/B2) SEAFORD CHALK FORMATION		
68.50 - 70.00	CD20			NI 200 600		(2.00)		Between 68.60-68.75 m bgl: Flint band.		
	C37		100 67 45					Between 69.20-69.30 m bgl: Flint band.		
	C38							Between 69.55-69.65 m bgl: Flint band.		
					38.77	70.00				

Start & End of Shift Observations					Installation					Remarks:				
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)					
										1. Inspection pit hand dug to 1.20mbgl. 2. Borehole Backfilled with bentonite on completion.				
Flush Information										Water Strikes				
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
37.00	38.50		0%-0%	No return	70.00	146	2.00	175	40.00	2.00		0		Possibly flush level rather than groundwater strike
38.50	40.00		0%-0%	No return										
40.00	40.75		0%-0%	No return										
40.75	41.50		0%-0%	No return										

Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %. NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R71912	
Contract Number: JFR1451	Start Date: 07/09/2020	End Date: 09/09/2020	Checked By: GR	Status: FINAL	Sheet 1 of 6	
Rotary Core Drilling Log		Easting: 413624.8	Northing: 142104.9	Ground Level: 106.90mOD	Plant Used: Comacchio 450	Logged By: SB/BB/AG
		Termination: Target depth achieved.			Scale: 1:50	

Weather: Sunny

Termination: Target depth achieved.

Samples & Core Recovery					Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
					106.60	(0.30)		Light brown sandy gravelly SILT with occasional rootlets and low chalk and flint cobble content. Gravel is angular and subangular medium chalk. Sand is fine to coarse.			
						0.30		TOPSOIL			
					105.70	(0.90)		Structureless CHALK composed of white and light grey slightly gravelly SILT. Gravel is angular and subangular medium chalk. (CIRIA Grade Dm)	1		
						1.20		SEAFORD CHALK FORMATION <i>Between 0.3m and 0.7m: occasional rootlets.</i>			
1.20 - 2.50			100 78 46					Very weak low density white CHALK with rare orange staining and rare greyish brown marl laminae. Fracture Set 1 subhorizontal to 40° closely spaced clean with frequent black specks and occasional orange stains. Fracture Set 2: 60° to subvertical widely spaced clean with frequent black specks and rare orange staining. Occasional nodular rinded flint bands. (CIRIA Grade A3)	2		
								SEAFORD CHALK FORMATION <i>Between 1.20m and 1.35m: NI</i> <i>At 1.50m: shell fragment</i> <i>At 1.60m: Occasional orange staining.</i> <i>Between 2.10m and 2.23m: NI</i> <i>At 2.20m: angular coarse flint gravel.</i> <i>Between 2.65m and 2.87m: NI</i> <i>Between 2.96m and 3.01m: NI</i> <i>At 3.00m: Angular coarse flint gravel.</i> <i>Between 3.21m and 3.34m: NI</i>			
2.50 - 4.00			93 13 0					<i>Between 3.52m and 3.76m: NI</i> <i>Between 3.60m and 3.75m: occasional angular coarse flint gravel.</i>	3		
								<i>Between 4.80m and 5.10m: Occasional orange staining.</i>	4		
4.00 - 5.50			100 69 51					<i>Between 5.15m and 5.31m: NI</i> <i>At 5.20m: Angular coarse flint gravel.</i>	5		
								<i>At 6.00m: Angular coarse flint gravel.</i> <i>Between 6.14m and 6.52m: NI</i> <i>At 6.30m: Angular coarse flint gravel.</i> <i>Between 6.30m and 6.50m: Frequent orange staining.</i>	6		
5.50 - 7.00	CD		62 37 22	NI 250 600		(8.80)			7		
								<i>Between 7.59m and 7.75m: NI</i> <i>Between 7.60m and 7.75m: with orangish red staining and red angular coarse flint gravel.</i>	8		
7.00 - 7.75	CD		100 60 56					<i>Between 8.05m and 8.12m: NI</i> <i>Between 8.23m and 8.32m: NI</i>	9		
7.75 - 8.50	CD		100 47 40						10		
8.50 - 10.00	CD		100 75 50								
					96.90	10.00					

Start & End of Shift Observations					Installation					Remarks:
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)	
07-09-2020	07:30									1. Inspection pit hand dug to 1.20m bgl. 2. Within the Chalk units from 40m there are very thin to thin zones of Non Intact Drilling Disturbance that are generally very closely to widely spaced. Within these zones material is recovered as silts and gravels. 3. Borehole Backfilled with bentonite on completion.
07-09-2020	17:30	31.00	1.10							
08-09-2020	07:30	31.00	1.10							
08-09-2020	16:00	59.50	1.10							
09-09-2020	07:30	59.50	1.10	40.70						
09-09-2020	16:00	0.00								
Flush Information					Borehole Diameter		Casing Diameter			
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)		
1.20	2.50		100%-100%	white	59.50	146	1.10	175		
2.50	4.00		100%-100%	white						
4.00	5.50		100%-100%	white						
5.50	7.00		100%-100%	white						
Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %. NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).										
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018										



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R71912	
Contract Number: JFR1451	Start Date: 07/09/2020	End Date: 09/09/2020	Checked By: GR	Status: FINAL	Sheet 2 of 6	
Rotary Core Drilling Log		Easting: 413624.8	Northing: 142104.9	Ground Level: 106.90mOD	Plant Used: Comacchio 450	Logged By: SB/BB/AG
		Termination: Target depth achieved.			Scale: 1:50	

Weather: Sunny

Termination: Target depth achieved.

Samples & Core Recovery					Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
10.00 - 11.50	CD		93 65 65					Very weak medium density white CHALK with rare orange staining and rare greyish brown marl laminae. Fracture Set 1 subhorizontal to 40° closely spaced clean with frequent black specks and occasional orange staining. Fracture Set 2: 60° to subvertical widely spaced clean with frequent black specks and rare orange staining. Occasional nodular rinded flint bands. Rare thin light grey marl laminae. Rare bands of orange staining occurring as filaments and diffuse patches. Occasional fossils including sponges and inoceramid shell fragment. (CIRIA Grade A3) SEAFORD CHALK FORMATION <i>At 10.00m: shell fragment.</i> <i>Between 10.11m and 10.25m: Frequent patches of orange staining.</i> <i>Between 11.38m and 11.40m: localised orange staining as curved filaments with frequent fine to medium gravel sized (up to 20mm) tabular cream shell fragments.</i> <i>Between 11.40m and 11.50m: single black rinded flint. cobble</i> <i>At 11.68m: Rare orange staining in diffuse patches.</i> <i>Between 12.30m and 12.47m: Rare orange staining as patches or filaments.</i>	11		
11.50 - 13.00	C		100 90 69					<i>Between 13.00m and 13.03m: tabular coarse nodular rinded flint gravel.</i> <i>At 13.05m: Medium gravel sized patches of diffuse orange staining.</i> <i>At 13.25m: Suspected silicified sponge with textured orange staining (c. 20mm x20mm cone shaped).</i>	12		
13.00 - 14.50	CD		93 56 46					<i>Between 14.20m and 14.35m: Frequent orange staining and on fracture surfaces. Occurs as diffuse patches and randomly orientated curved filament.</i> <i>Between 14.35m and 14.50m: AZCL</i> <i>Between 14.72m and 14.80m: black rinded nodular flint recovered as cobbles and angular fine to coarse gravel.</i> <i>Between 15.15m and 15.36m: occasional fine subhorizontal wispy light grey marl laminae with rounded coarse (<50mm) rinded flint gravel and occasional orange staining.</i>	13		
14.50 - 16.00	C		100 83 72	NI 250 790		(9.00)		<i>At 16.30m: elongate (90mm x 10mm x 30mm) fully rinded (light grey) nodular flint cobble and occasional patches of orange staining (up to 10mm).</i>	14		
16.00 - 17.50	CD		100 75 71					<i>Between 17.46m and 17.50m: AZCL</i> <i>Between 17.60m and 17.85m: Coarse gravel sized patches of orange staining formed by randomly orientated filaments (presumed sponge) with occasional fine wispy light grey marl laminae.</i> <i>At 18.31m: hollow rounded elongate tabular coarse flint gravel (50mm x 10mm)</i>	15		
17.50 - 19.00	C		100 96 86						16		
19.00 - 20.50	C		100 99 93		87.90	19.00		Very weak medium to high density unstained off-white CHALK. Fracture Set 1 subhorizontal medium spaced open with no infill and frequent black specks. Fracture Set 2: 25° to 60° generally open (0 to 1mm) with black specks and no infill. Occasional orange staining (sponge beds) and shell fragments. (CIRIA Grade B2) SEAFORD CHALK FORMATION	17		
									18		
									19		
									20		

Start & End of Shift Observations					Installation					Remarks:				
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)					
										1. Inspection pit hand dug to 1.20m bgl. 2. Within the Chalk units from 40m there are very thin to thin zones of Non Intact Drilling Disturbance that are generally very closely to widely spaced. Within these zones material is recovered as silts and gravels. 3. Borehole Backfilled with bentonite on completion.				
Flush Information										Water Strikes				
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
7.00	7.75		100%-100%	white	59.50	146	1.10	175						
7.75	8.50		100%-100%	white										
8.50	10.00		100%-100%	white										
10.00	11.50		100%-100%	white										

Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %.

NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).

RPS RC Template Issue Number: 2 Issue Date: 02/01/2018



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R71912	
Contract Number: JFR1451	Start Date: 07/09/2020	End Date: 09/09/2020	Checked By: GR	Status: FINAL	Sheet 3 of 6	
Rotary Core Drilling Log		Easting: 413624.8	Northing: 142104.9	Ground Level: 106.90mOD	Plant Used: Comacchio 450	Logged By: SB/BB/AG
Weather: Sunny		Termination: Target depth achieved.				Scale: 1:50

Samples & Core Recovery				Strata Details						Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
20.50 - 22.00	C		100 91 86			(3.30)		Between 19.80m and 19.87m: dark orange staining occurring as 70mm x 30mm patch of curved randomly orientated orange filaments. At 20.14m: light grey fine interwoven filaments of marl. Between 20.48m and 23.00m: Frequent orange staining typically occurring as irregular diffuse gravel sized patches (>10mm x 10mm). Between 21.20m and 21.30m: content of fine gravel sized (up to 5mm) shell fragments. Between 21.45m and 21.52m: orange staining occurring as 50mm subhorizontal filament and 30mm x 30mm patch of ovals. Between 21.50m and 21.72m: between two fractures NIDD chalk recovered as creamy white angular to subangular fine to coarse chalk gravel. At 21.73m: on fracture surface medium gravel sized (up to 20mm) thin (<1mm) cream shell fragments (inoceramid). At 21.75m: fine light grey marl laminae. Between 22.23m and 22.29m: NIDD chalk recovered as angular medium and coarse gravel of extremely weak medium density chalk. Grey marl surface and intense fine black specks on all surfaces evident (disturbed marl bands). Between 22.29m and 22.31m: light grey fine subhorizontal marl laminae (exposed on fracture surface). Extremely weak medium density off-white CHALK. Fractures are 25 to 55° medium spaced generally open with no infill. Orange staining as moderate sized diffuse patches. Flints absent. (CIRIA Grade B2) SEAFORD CHALK FORMATION Between 22.75m and 22.80m: AZCL Between 22.98m and 23.00m: inoceramid prismatic thin (<2mm) shell fragment on fracture surface (70mm x 30mm). Very weak medium to high density unstained off-white CHALK. Fracture Set 1: subhorizontal medium spaced open with no infill and black specks. Fracture Set 2: 25° to 60° generally open (0 to 1mm) with black specks and no infill. Occasional orange staining (sponge beds) and shell fragment. (CIRIA Grade B2) SEAFORD CHALK FORMATION Between 23.62m and 23.74m: Non intact flint band recovered as silty black angular medium to coarse flint and subrounded to rounded fine to coarse chalk gravel. Between 24.15m and 24.40m: orange staining occurring as diffuse patches. Between 25.13m and 25.14m: chalk between very closely spaced bedding fracture. Between 25.40m and 25.43m chalk around flint recovered as comminuted chalk. At 25.43m: Band of black angular fine to medium rinded nodular flint. At 25.74m: shell band (50mm thick) cream planar inoceramid shell fragments (up to 30mm) at irregular orientations. Between 26.35m and 26.50m: AZCL Between 26.50m and 26.53m: orange staining as subhorizontal thin (2mm) filaments. Between 26.83m and 26.91m: Non intact recovered as silty sandy angular fine to coarse chalk gravel. At 26.96m: Black angular fine rinded nodular flint gravel. At 27.14m: elongate coarse rinded nodular flint gravel (<30mm). Between 27.45m and 27.48m: orange staining as orange and dark red filaments with variable orientations. Between 27.63m and 27.74m: NIDD chalk recovered as silty gravel of angular chalk. Between 27.83m and 27.97m: fine wispy light grey marl laminae occasionally exposed on fracture surfaces with orange staining. Very weak to weak low to medium density white CHALK with rare orange staining and rare subhorizontal marl laminae. Fracture Set 1: subhorizontal to 20° medium spaced no infill with black specks. Fracture Set 2: 30-60° widely spaced no infill. Fracture Set 3: 70° to subvertical no infill with frequent black specks. (CIRIA Grade A2) SEAFORD CHALK FORMATION At 28.30m: shell fragment. At 29.20m: Frequent orange staining.	21		
22.00 - 23.50	CD		100 81 64		84.60	22.30			22		
23.50 - 25.00	C		100 95 63	60 460 600					23		
25.00 - 26.50	C0 C		93 85 73			(4.80)			24		
26.50 - 28.00	C CD		100 80 69						25		
28.00 - 29.50	C C		100 88 75		78.90	28.00			26		
									27		
									28		
									29		
									30		

Start & End of Shift Observations				Installation				Remarks:				
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)			
										1. Inspection pit hand dug to 1.20m bgl. 2. Within the Chalk units from 40m there are very thin to thin zones of Non Intact Drilling Disturbance that are generally very closely to widely spaced. Within these zones material is recovered as silts and gravels. 3. Borehole Backfilled with bentonite on completion.		
Water Strikes										Remarks		
Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose (m)								
Flush Information					Borehole Diameter		Casing Diameter					
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)				
11.50	13.00		100%-100%	white	59.50	146	1.10	175				
13.00	14.50		100%-100%	white								
14.50	16.00		100%-100%	white								
16.00	17.50		100%-100%	white								

Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %. NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R71912	
Contract Number: JFR1451	Start Date: 07/09/2020	End Date: 09/09/2020	Checked By: GR	Status: FINAL	Sheet 4 of 6	
Rotary Core Drilling Log		Easting: 413624.8	Northing: 142104.9	Ground Level: 106.90mOD	Plant Used: Comacchio 450	Logged By: SB/BB/AG
		Termination: Target depth achieved.			Scale: 1:50	

Weather: Sunny

Samples & Core Recovery				Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation
29.50 - 31.00	C		100 67 59					At 30.20m: shell fragment. Between 30.43m and 30.65m: NI.		
31.00 - 32.50	C		87 55 29					At 31.40m: flint cobble. Between 31.40m and 31.55m: angular fine to coarse flint gravel. Between 31.42m and 31.53m: NI Between 31.60m and 31.70m: orange staining. Between 31.72m and 31.86m: AZCL Between 32.10m and 32.16m: NI Between 32.27m and 32.41m: NI At 32.30m: angular coarse flint gravel. Between 32.50m and 32.54m: NI Between 32.50m and 33.00m: Rare angular fine to coarse flint gravel. Between 32.65m and 32.92m: NI		
32.50 - 34.00	C		100 69 54					Between 33.00m and 33.07m: NI At 33.30m: orange stains and marl bands. Between 33.80m and 33.82m: NI At 33.95m: thin light grey marl band. Between 34.15m and 34.18m: NI		
34.00 - 35.50	C		100 78 42	NI 240 540		(12.00)		At 34.38m: orange staining and shell fragment Between 34.50m and 34.58m: NI At 34.60m: angular flint cobble. Between 34.68m and 34.72m: NI Between 34.82m and 34.93m: NI		
35.50 - 37.00	C		100 84 65					Between 35.74m and 35.79m: NI At 36.00m: Angular fine flint gravel. Between 36.40m and 36.80m: Occasional orange staining. Between 36.81m and 36.92m: NI Between 36.96m and 37.00m: AZCL Between 37.00m and 37.10m: Angular fine to coarse flint gravel. Between 37.07m and 37.10m: NI		
37.00 - 38.50	C		100 87 83					At 38.07m: orange staining. Between 38.47m and 38.50m: AZCL		
38.50 - 40.00	CD C		100 85 55					Between 38.90m and 39.02m: NI Between 38.90m and 39.10m: Angular coarse gravel and cobble of flint. Between 39.10m and 39.11m: NI Between 39.70m and 39.80m: Non intact recovered as angular coarse flint gravel.		
					66.90	40.00				

Start & End of Shift Observations					Installation					Remarks:
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)	
										1. Inspection pit hand dug to 1.20m bgl. 2. Within the Chalk units from 40m there are very thin to thin zones of Non Intact Drilling Disturbance that are generally very closely to widely spaced. Within these zones material is recovered as silts and gravels. 3. Borehole Backfilled with bentonite on completion.
Water Strikes										
Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks					
Flush Information					Borehole Diameter		Casing Diameter			
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)		
17.50	19.00		100%-100%	white	59.50	146	1.10	175	Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %.	
19.00	20.50		100%-100%	white	NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).					
20.50	22.00		100%-100%	white						
22.00	23.50		100%-100%	white						



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R71912	
Contract Number: JFR1451	Start Date: 07/09/2020	End Date: 09/09/2020	Checked By: GR	Status: FINAL	Sheet 5 of 6	
Rotary Core Drilling Log		Easting: 413624.8	Northing: 142104.9	Ground Level: 106.90mOD	Plant Used: Comacchio 450	Logged By: SB/BB/AG
		Termination: Target depth achieved.			Scale: 1:50	

Weather: Sunny

Samples & Core Recovery					Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
40.00 - 41.50	C CD		100 73 58					Very weak medium to high density off-white CHALK. Fracture Set 1: subhorizontal to 20° medium spaced open (<3mm) with occasional infill of comminuted chalk. Fracture Set 2: 60-70° widely spaced typically open with no infilling and frequent black specks and orange staining. Frequent flint bands including continuous thin subvertical tabular flints from 42.90m to 44.29m resulting in disturbed chalk throughout. Occasional orange staining as filaments or diffuse parched (sponge beds) and occasional shell fragment (inoceramids). (CIRIA Grade B2)	41		
41.50 - 43.00	CD C		100 93 82			(4.50)		SEAFORD CHALK FORMATION Between 40.08m and 40.18m: NIDD recovered as creamy white angular to subangular fine to coarse extremely weak medium density chalk gravel. Between 40.30m and 40.34m: black tabular nodular rinded flint cobble with orange staining. Between 40.38m and 40.42m: frequent oval orange staining (5mm x 10mm) Between 41.29m and 41.32m: Band of orange and orangish brown staining (up to 60mm thick). At 41.43m: Black tabular elongate fine to coarse rinded nodular flint gravel. Between 41.46m and 41.50m: AZCL Between 41.55m and 41.60m: subvertical elongate (80mm x 40mm) tabular (up to 10mm) rinded and orange stained flint cobble. Between 42.22m and 42.25m: orange staining as subhorizontal thin (up to 2mm) filaments in chalk. Between 42.27m and 42.34m: shell fragments including (>40mm x 30mm) thick (8mm) presumed inoceramid shell with pronounced dark orangish red stained thin (up to 1mm) filaments in rare sandy chalk matrix. At 42.40m: thin band (up to 1mm) of elongate fine flint gravel. Between 42.90m and 43.00m: NIDD flint and chalk recovered as angular and elongate fine to coarse gravel with occasional chalk cobble.	42		
43.00 - 44.50	C CD		100 29 21					Between 44.03m and 44.09m: NIDD flint recovered as angular fine to medium flint gravel in comminuted chalk matrix.	44		
44.50 - 46.00	C		100 65 52		62.40	44.50		Between 44.39m and 44.43m: NIDD chalk recovered as angular coarse gravel.	45		
46.00 - 47.50	D		100 35 25	NI 700 750		(4.50)		Very weak medium to high density off-white CHALK. Fracture Set 1 is subhorizontal to 15° medium to widely spaced partially open typically no infill with black specks and orange stained surface. Fracture Set 2: 35 to 40° and Fracture Set 3: 75° to subvertical. Sets 2 and 3 with some evidence of subvertical shearing. Medium to widely spaced nodular rinded flint bands. Occasional bands of orange staining presumed sponge beds. (CIRIA Grade A1/A2)	46		
47.50 - 49.00	C		100 65 47					Between 45.79m and 45.90m: NIDD recovered as silty sandy fine to coarse gravel of chalk and rinded nodular flint with low chalk cobble content. Between 45.90m and 46.00m: AZCL Between 46.36m and 46.57m: NI chalk. Intensely fractured chalk with subvertical to subhorizontal occasionally striated fractures with black speckled surfaces. Chalk recovered as cream angular to subangular fine to coarse very weak low to medium density chalk gravel. Between 47.30m and 47.45m: patches (up to 10mm) of diffuse orange staining. Between 48.00m and 48.45m: Frequent orange staining as diffuse patches and occasional fine filaments (presumed sponge bed). Between 48.68m and 48.73m: Black rinded nodular flint cobble.	47		
49.00 - 50.50	C		73 61 55		57.90	49.00		Very weak medium to high density off-white CHALK. Fracture Set 1 is subhorizontal to 15° widely spaced partially open locally infilled with less than 3mm of comminuted chalk with black speckled surfaces. Fracture Set 2: 70° to subvertical medium spaced partially open. Medium spaced nodular flint bands with occasional orange staining and fine light grey marl laminae. (CIRIA Grade B1 to B2)	49		

Start & End of Shift Observations					Installation					Remarks:
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)	
										1. Inspection pit hand dug to 1.20m bgl. 2. Within the Chalk units from 40m there are very thin to thin zones of Non Intact Drilling Disturbance that are generally very closely to widely spaced. Within these zones material is recovered as silts and gravels. 3. Borehole Backfilled with bentonite on completion.
Water Strikes										
Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks					
Flush Information					Borehole Diameter		Casing Diameter			
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)		
23.50	25.00		100%-100%	white	59.50	146	1.10	175		
25.00	26.50		100%-100%	white						
26.50	28.00		100%-100%	white						
28.00	29.50		100%-100%	white						

Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %. NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018



Contract Name: A303 Stonehenge			Client: RPS Planning & Development			Borehole ID: R71912		
Contract Number: JFR1451	Start Date: 07/09/2020	End Date: 09/09/2020	Checked By: GR	Status: FINAL	Sheet 6 of 6			
Rotary Core Drilling Log		Easting: 413624.8	Northing: 142104.9	Ground Level: 106.90mOD	Plant Used: Comacchio 450	Logged By: SB/BB/AG	Scale: 1:50	

Weather: Sunny Termination: Target depth achieved.

Samples & Core Recovery					Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
50.50 - 52.00	C CD		73 34 30			(7.60)		SEAFORD CHALK FORMATION <i>Between 49.59m and 49.66m: Black rinded nodular flint cobble.</i> <i>Between 50.32m and 50.55m: AZCL</i>	51		
								<i>Between 50.72m and 50.82m: NIDD chalk recovered as silty fine to coarse angular to subangular extremely weak medium density chalk gravel.</i> <i>Between 50.95m and 51.05m: NIDD nodular rinded flint cobble recovered as angular medium to coarse gravel. Chalk recovered as silty sandy medium to coarse gravel with low cobble content. Gravel of angular to subangular very weak medium density creamy chalk.</i> <i>Between 51.55m and 52.00m: AZCL</i>			
52.00 - 52.75	C		107 45 45					<i>Between 52.34m and 52.44m: rinded nodular flint cobble (50 to 100mm) and angular flint gravel in comminuted chalk matrix.</i> <i>Between 52.62m and 52.63m: fine light grey wispy marl lamina with occasional fine gravel sized orange staining patches (up to 3mm).</i>	52		
52.75 - 53.50	C		93 41 32					<i>Between 53.25m and 53.50m: occasional fine light grey wispy subhorizontal marl laminae and occasional orange staining occurring as gravel sized patches (2mm to 20mm).</i> <i>Between 53.50m and 53.70m: NIDD chalk recovered as subrounded to rounded cobbles of extremely weak low density creamy white chalk.</i> <i>At 53.70m: fine light grey wispy subhorizontal marl laminae.</i>	53		
53.50 - 55.00	C CD		100 79 79					<i>Between 54.25m and 54.89m: occasional orange staining occurring as (<5mm) curved filaments or diffuse patches.</i> <i>At 54.89m: Gravel sized rounded rinded flint.</i> <i>At 54.94m: Rounded coarse nodular flint (30mm x 40mm).</i>	54		
								<i>At 55.48m: Fine to coarse nodular rinded flint gravel.</i> <i>Between 55.50m and 55.63m: NIDD chalk recovered as silty sandy angular to subangular weak medium density creamy white chalk gravel.</i> <i>At 55.98m: rinded nodular flint cobble.</i> <i>Between 55.98m and 56.05m: NIDD chalk recovered as silty sandy angular to subangular fine to coarse weak medium density creamy white chalk gravel.</i>			
55.00 - 56.50	C		67 43 35					<i>Between 56.05m and 56.50m: AZCL</i> <i>Between 56.50m and 56.65m: cream (up to 20mm x 20mm) tabular subhorizontal thin (<2mm) shell fragments (inoceramid).</i>	55		
56.50 - 58.00	C CD		100 84 84			(2.90)		Very weak medium to high density unstained off-white CHALK. Fractures are subhorizontal to 20° medium to widely spaced clean or partially open no infill frequently with black speckled surface occasionally on shell horizon. Widely spaced nodular flint bands. Occasional areas of orange staining and silty chalk with (up to 100mm) planar shell fragments (inoceramids). (CIRIA Grade A1/A2)	57		
								SEAFORD CHALK FORMATION <i>At 57.08m: nodular rinded flint cobble (up to 80mm).</i> <i>Between 57.20m and 57.30m: Frequent orange staining occurring as bands (up to 5mm width) and isolated patches.</i> <i>Between 57.65m and 57.69m: NIDD chalk recovered as silty angular fine to coarse gravel.</i> <i>Between 57.92m and 58.00m: NIDD chalk recovered as silty sandy angular to subangular fine to coarse extremely weak low to medium density gravel.</i> <i>Between 58.03m and 58.50m: gravel sized (5mm to 40mm) thin (up to 5mm) tabular shell fragments in variable orientations includes 30mm x 400mm inoceramid shell at 58.05m. With occasional fine gravel sized patches of orange staining.</i> <i>Between 58.79m and 58.95m: NIDD flint and chalk recovered as angular to subangular medium to coarse chalk and flint gravel in comminuted chalk matrix.</i>			
58.00 - 59.50	C		100 87 87					<i>Between 58.79m and 58.95m: NIDD flint and chalk recovered as angular to subangular medium to coarse chalk and flint gravel in comminuted chalk matrix.</i>	58		
								End of Borehole at 59.50m	59		
									60		

Start & End of Shift Observations					Installation					Remarks:
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)	
										1. Inspection pit hand dug to 1.20mbgl. 2. Within the Chalk units from 40m there are very thin to thin zones of Non Intact Drilling Disturbance that are generally very closely to widely spaced. Within these zones material is recovered as silts and gravels. 3. Borehole Backfilled with bentonite on completion.
Water Strikes										
Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks					
Flush Information					Borehole Diameter		Casing Diameter			
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)		
29.50	31.00		100%-100%	white	59.50	146	1.10	175		
31.00	59.50	Air/Mist	100%-100%	white						

Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %. NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R71914	
Contract Number: JFR1451	Start Date: 09/09/2020	End Date: 15/09/2020	Checked By: GR	Status: FINAL	Sheet 1 of 5	
Rotary Core Drilling Log		Easting: 413903.9	Northing: 142122.7	Ground Level: 98.90mOD	Plant Used: Comacchio 450	Logged By: SB/MW
		Termination: Target depth achieved.			Scale: 1:50	

Weather: Sunny

Samples & Core Recovery				Strata Details						Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
PID 0.0ppm						(0.30)		Soft light brown sandy gravelly CLAY. Gravel is subangular to subrounded medium chalk.			
PID 0.2ppm					98.60	0.30		TOPSOIL			
PID 0.1ppm								Structureless CHALK composed of silty angular to subangular fine to coarse GRAVEL with a medium subangular cobble content. Clasts are weak low to medium density white chalk and occasional rounded flint. Matrix is white. (CIRIA Grade Dc) SEAFORD CHALK FORMATION	1		
1.20 - 2.50			100 0 0			(3.10)			2		
2.50 - 4.00			100 0 0		95.50	3.40		Very weak low density off-white and dark orange stained CHALK with occasional shell fossils (coral/sponge) and brown marl laminae. Fractures are subhorizontal to 15° closely to medium spaced very tight with no infill and frequent black specks and occasional orange staining. (CIRIA Grade A2/A3) SEAFORD CHALK FORMATION	4		
4.00 - 5.50			100 18 0			(1.76)		<i>Between 3.80m and 4.20m: Non Intact possibly drilling disturbed.</i>			
5.50 - 7.00	C CD		100 66 16	NI 160 210	93.74	5.16		<i>Between 4.86m and 5.10m: 1no. subvertical fracture with occasional black specks and orange staining.</i>	5		
7.00 - 8.50	C CD C CD		100 82 6	60 300 700	91.90	7.00		Very weak low to medium density off-white with occasional orange staining CHALK with medium spaced lenses of brown marl. Fracture Set 1 is subhorizontal to 10° medium spaced no infill with frequent black specks and occasional orange staining. Fracture Set 2 is 45° medium spaced clean no infill. (CIRIA Grade A2) SEAFORD CHALK FORMATION	6		
8.50 - 10.00	CD		100 100 37			(4.50)		<i>At 6.50m: frequent black specks with orange staining.</i> <i>Between 6.67m and 7.00m: Non Intact possibly drilling disturbed.</i> <i>At 7.10m black rinded flint cobbl.</i> <i>Between 7.15m and 7.35m: Non Intact possibly drilling disturbed.</i> <i>Between 7.70m and 7.92m: Non Intact possibly drilling disturbed.</i>	7		
								<i>At 9.16m: band of orange discolouration.</i>	8		
									9		
									10		

Start & End of Shift Observations					Installation					Remarks:	
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)		
09-09-2020	16:00									1. Hand dug inspection pit undertaken from ground level to 1.20mbgl.	
09-09-2020	16:30	1.20	0.00	0.00						2. Borehole Backfilled with bentonite on completion.	
10-09-2020	07:45	1.20	0.00	0.00							
10-09-2020	16:30	1.20	0.00	0.00							
11-09-2020	08:00	1.20	0.00	0.00							
11-09-2020	15:00	23.50	1.10	1.10							
14-09-2020	08:00	23.50	1.10	1.10							
Flush Information					Borehole Diameter		Casing Diameter				
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)			
1.20	2.50	Air/Mist	100%-100%	white	41.50	146	1.10	175			
2.50	4.00	Air/Mist	100%-100%	white			15.00	150			
4.00	5.50	Air/Mist	100%-100%	white							
5.50	7.00	Air/Mist	100%-100%	white							
Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %.											
NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).											
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018											



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R71914	
Contract Number: JFR1451	Start Date: 09/09/2020	End Date: 15/09/2020	Checked By: GR	Status: FINAL	Sheet 2 of 5	
Rotary Core Drilling Log		Easting: 413903.9	Northing: 142122.7	Ground Level: 98.90mOD	Plant Used: Comacchio 450	Logged By: SB/MW
		Termination: Target depth achieved.			Scale: 1:50	

Weather: Sunny

Termination: Target depth achieved.

Samples & Core Recovery					Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
10.00 - 11.50	C0 C C0 C CD CD C CD		100 100 64		87.40	11.50		Between 10.13m and 10.43m: extremely weak chalk. Between 10.50m and 10.67m: lenses of orange discolouration (sponge beds).	11		
11.50 - 13.00	CD C CD D		93 70 35					Very weak to weak medium density off-white CHALK with orange staining (Sponge beds) and occasional marl laminae and black rinded flint cobbles. Fracture Set 1 is subhorizontal to 30° closely to medium spaced no infill. Fracture Set 2 is 35° to subvertical very closely to widely spaced no infill. (CIRIA Grade A3) SEAFORD CHALK FORMATION	12		
13.00 - 14.50	C D		87 73 18			(6.00)		Between 12.90m and 13.00m: Assumed Zone of Core Loss Between 13.66m and 14.20m: Non Intact possibly drilling disturbed. Between 14.20m and 14.50m: Assumed Zone of Core Loss	13 14		
14.50 - 16.00	C CD		100 93 66	NI 160 300				Between 15.10m and 15.20m: orange staining (sponge beds) Between 15.80m and 15.85m: Non Intact possibly drilling disturbed.	15 16		
16.00 - 17.50	CD C CD		93 80 50					Between 17.01m and 17.10m: flint band.	17		
17.50 - 19.00	C CD		100 93 14		81.40	17.50		Between 17.40m and 17.50m: Assumed Zone of Core Loss Very weak medium density cream CHALK with orange staining (sponge beds) and occasional marl laminations and bands of black rinded flint gravel. Fracture Set 1 is subhorizontal to 10° closely to medium spaced with frequent black specks and orange staining and occasional bands of rinded black flint gravel. Fracture Set 2 is 35° to subvertical widely spaced no infill with frequent black specks orange staining and occasional bands of black rinded flint gravel. (CIRIA Grade A2/A3) SEAFORD CHALK FORMATION	18		
19.00 - 20.50	C CD C		93 66 32					Between 18.20m and 18.23m: band of orange staining (sponge beds). Between 19.20m and 19.21m: band of black fine to coarse rinded flint gravel. At 19.78m: bivalve shells.	19 20		

Start & End of Shift Observations				Installation				Remarks:			
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)		
14-09-2020	17:00	41.50	15.00							1. Hand dug inspection pit undertaken from ground level to 1.20mbgl. 2. Borehole Backfilled with bentonite on completion.	
Water Strikes											
Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks						
Flush Information					Borehole Diameter		Casing Diameter				
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)			
7.00	8.50	Air/Mist	100%-100%	white	41.50	146	1.10	175			
8.50	10.00	Air/Mist	50%-50%	white			15.00	150			
10.00	11.50	Air/Mist	0%-0%	No return							
11.50	13.00	Air/Mist	0%-0%	No return							
Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %. NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).											
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018											



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R71914	
Contract Number: JFR1451	Start Date: 09/09/2020	End Date: 15/09/2020	Checked By: GR	Status: FINAL	Sheet 3 of 5	
Rotary Core Drilling Log		Easting: 413903.9	Northing: 142122.7	Ground Level: 98.90mOD	Plant Used: Comacchio 450	Logged By: SB/MW
Weather: Sunny		Termination: Target depth achieved.				Scale: 1:50

Samples & Core Recovery				Strata Details						Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
20.50 - 22.00			60 20 0					Between 20.02m and 20.10m Non Intact possibly drilling disturbed recovered as chalk clasts.			
								From 20.50m to 23.50m: Limited Recovery	21		
22.00 - 23.50			60 30 0			(7.50)		Between 21.80m and 22.00m band of black rinded gravel sized flint.	22		
								Between 23.00m and 23.40m band of black angular rinded flint.	23		
23.50 - 25.00	CD		100 20 6					Between 23.50m and 23.82m band of black angular rinded flint.	24		
								Between 24.70m and 24.85m Non Intact possibly drilling disturbed.	25		
25.00 - 26.50	C CD C		100 66 52		73.90	25.00		Very weak medium occasionally high density off-white with occasional black specks and orange staining (sponge beds) CHALK and occasional laminae of light grey marl and occasional bands of black angular to subangular fine to coarse flint gravel. Fracture Set 1 is subhorizontal closely to medium spaced no infill. Fracture Set 2 is 45-50° closely spaced clean no infill with isolated pocket of orange staining. (CIRIA Grade A2/A3) SEAFORD CHALK FORMATION	26		
								Between 25.00m and 26.10m: band of black angular fine to coarse rinded flint gravel.	27		
26.50 - 28.00	C CD C C CD C CD		100 86 53	NI 260 290					28		
								Between 27.80m and 27.90m: band of black angular fine to coarse rinded flint.	29		
28.00 - 29.50	C CD CD		93 55 41		70.90	28.00		Very weak to weak medium occasionally high density off-white with orange staining CHALK with occasional bands of black rinded flint gravel. Fracture Set 1 is subhorizontal to 45° closely to medium spaced clean no infill. (CIRIA Grade A2/A3) SEAFORD CHALK FORMATION	30		
								At 29.35m: Non Intact possibly drilling disturbed recovered as angular to subangular fine to coarse chalk gravel.			

Start & End of Shift Observations					Installation					Remarks:	
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)		
										1. Hand dug inspection pit undertaken from ground level to 1.20mbgl. 2. Borehole Backfilled with bentonite on completion.	
Water Strikes										Remarks	
Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)							
Flush Information					Borehole Diameter		Casing Diameter				
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)			
13.00	14.50	Air/Mist	0%-0%	No return	41.50	146	1.10	175			
14.50	16.00	Air/Mist	0%-0%	No return			15.00	150			
16.00	17.50	Air/Mist	0%-0%	No return							
17.50	19.00	Air/Mist	0%-0%	No return							

Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %. NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R71914	
Contract Number: JFR1451	Start Date: 09/09/2020	End Date: 15/09/2020	Checked By: GR	Status: FINAL	Sheet 4 of 5	
Rotary Core Drilling Log		Easting: 413903.9	Northing: 142122.7	Ground Level: 98.90mOD	Plant Used: Comacchio 450	Logged By: SB/MW
		Termination: Target depth achieved.			Scale: 1:50	

Weather: Sunny

Samples & Core Recovery				Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation
29.50 - 31.00	CD		93 70 54					Between 30.40m and 30.50m: black rinded flint cobble.		
31.00 - 32.50	CD		100 46 33					Between 30.85m and 30.90m: Non Intact possibly drilling disturbed recovered as angular to subangular fine to coarse gravel of white chalk.	31	
	C							Between 30.90m and 31.00m: Assumed Zone of Core Loss		
32.50 - 34.00	CD		100 47 22	NI 280 420		(7.50)		Between 31.20m and 31.26m: Non Intact possibly drilling disturbed recovered as angular to subangular fine to coarse white chalk.		
	CD							Between 31.90m and 32.50m: localised area of orange staining (sponge beds)	32	
34.00 - 35.50	CD		93 44 26							
	C									
35.50 - 37.00	CD		100 66 36		63.40	35.50		Between 35.40m and 35.50m: Assumed Zone of Core Loss		
	C							Very weak to weak medium occasionally high density off-white CHALK with orange staining and localised flint bands. Fractures are subhorizontal (0-5°) very closely to medium spaced clean no infill. (CIRIA Grade A2/A4) SEAFORD CHALK FORMATION	36	
37.00 - 38.50	CD		100 77 52	NI 210 300		(6.75)				
	C							Between 38.20m and 38.40m: NI recovered as angular fine to coarse flint gravel.	37	
38.50 - 40.00	CD		93 59 42					Between 38.50m and 38.60m: Non Intact recovered as angular fine to coarse flint gravel.		
	C							Between 38.80m and 39.32m: localised light and dark orange staining (sponge beds).	39	
	C							Between 39.51m and 39.56m: Non Intact recovered as angular fine to coarse flint.		
								Between 39.80m and 39.85m: occasional marl whisps and black specks.	40	

Start & End of Shift Observations					Installation					Remarks:	
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)		
										1. Hand dug inspection pit undertaken from ground level to 1.20mbgl. 2. Borehole Backfilled with bentonite on completion.	
										Water Strikes	
Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks						
Flush Information					Borehole Diameter		Casing Diameter				
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)			
19.00	20.50	Air/Mist	0%-0%	No return	41.50	146	1.10	175			
20.50	22.00	Air/Mist	0%-0%	No return			15.00	150			
22.00	23.50	Air/Mist	0%-0%	No return							
23.50	25.00	Air/Mist	100%-100%	white							
Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %.											
NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).											
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018											



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R71914	
Contract Number: JFR1451	Start Date: 09/09/2020	End Date: 15/09/2020	Checked By: GR	Status: FINAL	Sheet 5 of 5	
Rotary Core Drilling Log		Easting: 413903.9	Northing: 142122.7	Ground Level: 98.90mOD	Plant Used: Comacchio 450	Logged By: SB/MW
		Termination: Target depth achieved.			Scale: 1:50	

Weather: Sunny

Samples & Core Recovery				Strata Details				Groundwater		
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation
40.00 - 41.50	CD CD		87 50 26					<p>Between 39.90m and 40.00m: Assumed Zone of Core Loss</p> <p>Between 40.00m and 40.05m: Non Intact recovered as angular and subangular fine to coarse flint gravel.</p> <p>Between 40.77m and 40.90m: Non Intact possibly drilling disturbed recovered as subangular fine to coarse chalk gravel.</p>	41	
41.50 - 42.25	CD C CD CD		100 100 70		56.65	42.25		<p>Between 41.50m and 42.25m: localised orange staining of sponge bands and marl discolouration.</p> <p>End of Borehole at 42.25m</p>	42	
									43	
									44	
									45	
									46	
									47	
									48	
									49	
									50	

Start & End of Shift Observations					Installation					Remarks:	
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)	1. Hand dug inspection pit undertaken from ground level to 1.20mbgl. 2. Borehole Backfilled with bentonite on completion.	
										Water Strikes	
Strike (m)		Casing (m)		Sealed (m)		Time (mins)		Rose to (m)		Remarks	
Flush Information					Borehole Diameter		Casing Diameter				
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)			
25.00	26.50	Air/Mist	100%-100%	white	41.50	146	1.10	175			
26.50	41.50	Air/Mist	0%-0%	No return			15.00	150			
Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %.											
NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).											
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018											



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R71915	
Contract Number: JFR1451	Start Date: 01/09/2020	End Date: 12/10/2020	Checked By: GR	Status: FINAL	Sheet 1 of 4	
Rotary Core Drilling Log		Easting: 414052.0	Northing: 142066.1	Ground Level: 94.62mOD	Plant Used: Comacchio 450	Logged By: BB
		Termination: Target depth achieved.			Scale: 1:50	

Weather: Sunny

Samples & Core Recovery				Strata Details						Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
PID 0.1ppm	D					(0.30)	3	Reworked through archaeological pit. Grass over soft to firm brown and occasional white slightly gravelly to gravelly silty CLAY with occasional rootlets. Gravel is subangular to subrounded extremely weak low density white fine to coarse chalk and occasional flint.			
PID 0.0ppm	ES				94.32	0.30	3				
PID 0.0ppm	D						3				
PID 0.0ppm	ES						3				
PID 0.0ppm	D					(1.55)	1	Structureless CHALK recovered as soft off white slightly sandy very gravelly SILT. Gravel is subangular to subrounded fine to coarse extremely weak low density chalk with frequent orange staining are rare flint. (CIRIA Grade Dm)			
	ES						1				
1.20 - 2.50	CD		92 46 42		92.77	1.85	2	SEAFORD CHALK FORMATION <i>Between 1.20m and 1.50m AZCL</i> <i>Between 1.50m and 2.04m NI.</i>			
							2	Very weak medium density white with rare light brown staining CHALK. Fractures are subhorizontal to 80° extremely closely to very closely spaced no infill locally stained light brown. (CIRIA Grade A4)			
				NI 30 50		(1.55)	3	SEAFORD CHALK FORMATION <i>Between 2.30m and 2.35m NI.</i> <i>Between 2.40m and 2.50m NI.</i> <i>Between 2.50m and 2.80m AZCL.</i> <i>Between 2.80m and 2.93m NI.</i> <i>Between 3.03m and 3.49m NI.</i>			
2.50 - 4.00	C		73 31 15		91.22	3.40	4				
	CD						4	Very weak medium to high density white with rare black specks CHALK with rare light grey marl laminae and orange staining. Fractures are subhorizontal to 20° and 70° to subvertical extremely to closely spaced no infill. (CIRIA Grade A4/A5)			
				NI 95 200		(2.50)	5	SEAFORD CHALK FORMATION <i>Between 3.68m and 3.76m NI.</i> <i>Between 3.82m and 4.00m NI.</i> <i>Between 4.36m and 4.44m NI.</i> <i>Between 4.94m and 5.00m NI.</i> <i>Between 5.13m and 5.55m NI.</i>			
4.00 - 5.50			100 81 0				5				
							6	<i>At 5.50m rare subangular nodular flint gravel.</i> <i>Between 5.65m and 5.67m NI.</i> <i>Between 5.79m and 5.83m NI.</i>			
5.50 - 7.00	C		100 78 66		88.72	5.90	6	Very weak to weak medium density white with light brown specks CHALK. Fractures are 10° to subvertical locally intersecting extremely closely to medium spaced no infill. (CIRIA Grade A2/A5)			
	CD			NI 170 550		(1.55)	7	SEAFORD CHALK FORMATION <i>Between 6.15m and 6.20m: wispy dark orangish brown staining and 70 degree striated light grey marl band.</i> <i>At 6.30m: dark grey shell fragment (10mm).</i> <i>Between 6.82m and 7.00m NI.</i>			
							7				
7.00 - 8.50	C		100 83 62		87.17	7.45	8	Very weak medium density white with black specks and rare orange staining CHALK. Fractures are 5 to 80° very closely to medium spaced no infill. (CIRIA Grade A2/A4)			
	CD			NI 260 420		(2.55)	9	SEAFORD CHALK FORMATION <i>Between 7.96m and 8.01m NI.</i> <i>Between 8.10m and 8.20m: dark orangish brown stained 1mm thick silt layer.</i> <i>Between 8.30m and 8.41m NI.</i> <i>Between 9.30m and 9.40m: dark orangish brown wispy staining.</i> <i>Between 9.62m and 9.78m NI.</i> <i>Between 9.70m and 9.85m low density NI.</i> <i>Between 9.83m and 10.00m AZCL.</i>			
8.50 - 10.00			100 67 58		84.62	10.00	10				

Start & End of Shift Observations					Installation					Remarks:	
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)		
01-09-2020	15:30	0.00	0.00		Pipe	0.00	10.00	PLAIN	50	1. Inspection pit hand dug to 1.20 m bgl. 2. Downhole Geophysics undertaken on completion of drilling. 3. Double packer undertaken at 26.00 m bgl. 4. No groundwater encountered. 5. 50mm standpipe installed with a response zone between 9.5m and 35.5m below ground level.	
01-09-2020	17:00	1.20	0.00		1						
02-09-2020	08:00	1.20	0.00	1.20	Pipe	10.00	35.00	SLOTTED	50		
02-09-2020	17:00	34.00	1.10		1						
03-09-2020	08:00	34.00	1.10	27.40	Pipe	35.00	35.70	PLAIN	50		
03-09-2020	17:00	34.00	1.10	27.00	1					Water Strikes	
04-09-2020	07:30	34.00	1.10	27.00						0	No groundwater encountered
Flush Information					Borehole Diameter		Casing Diameter				
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)			
0.00	37.00	AIR	100%-100%	white	37.00	146	1.10	175			
1.20	2.50		100%-100%	white							
2.50	4.00		100%-100%	white							
4.00	5.50		100%-100%	white							

Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %. NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R71915	
Contract Number: JFR1451	Start Date: 01/09/2020	End Date: 12/10/2020	Checked By: GR	Status: FINAL	Sheet 2 of 4	
Rotary Core Drilling Log		Easting: 414052.0	Northing: 142066.1	Ground Level: 94.62mOD	Plant Used: Comacchio 450	Logged By: BB
		Termination: Target depth achieved.			Scale: 1:50	

Weather: Sunny

Samples & Core Recovery					Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
10.00 - 11.50	C CD D		100 65 51					Very weak low density white occasional orange stained CHALK. Fracture set 1: subhorizontal to 40° medium spaced open with black specks. Fracture Set 2: 50° to subvertical medium spaced typically clean with black specks. Both sets infilled (<3mm) with silt and subangular fine to medium chalk gravel. (CIRIA Grade B3) SEAFORD CHALK FORMATION <i>Between 10.15m and 10.17m NI.</i> <i>At 10.30m with inoceramus shell fragments (3mm thickness).</i> <i>Between 10.32m and 10.34m NI.</i> <i>Between 10.95m and 11.05m NI.</i> <i>At 11.35m: with rare angular fine to coarse flint gravel</i> <i>Between 11.50m and 11.52m AZCL.</i>	11		
11.50 - 13.00	C CD		100 41 23	NI 170 250		(3.65)		<i>Between 11.76m and 11.83m NI.</i> <i>Between 12.02m and 12.06m NI.</i> <i>Between 12.16m and 12.24m NI.</i> <i>Between 12.41m and 12.55m NI.</i> <i>Between 12.60m and 12.75m orange staining.</i> <i>Between 12.65m and 12.67m NI.</i>	12		
13.00 - 14.50	C		100 52 41		80.97	13.65		Very weak medium density white with occasional orange staining CHALK. Fracture Set 1 is subhorizontal to 50° very closely to widely spaced no infill with black specks. Fracture Set 2 is 60° to subvertical closely spaced no infill typically striated with black brown staining and black specks. (CIRIA Grade A3) SEAFORD CHALK FORMATION <i>Between 13.65m and 13.80m Inoceramus shell fragments with black specks.</i> <i>Between 13.70m and 13.78m NI.</i> <i>Between 14.16m and 14.23m NI.</i>	14		
14.50 - 16.00	C CD CD		100 75 73					<i>At 15.16m medium gravel.</i> <i>Between 15.29m and 15.40m orange stained zone.</i> <i>At 15.30m Inoceramus shell.</i> <i>Between 15.46m and 15.51m NI.</i> <i>Between 15.68m and 15.74m NI.</i>	15		
16.00 - 17.50	C CD C		100 63 46	NI 30 670		(5.35)		<i>Between 16.27m and 16.35m NI.</i> <i>Between 16.45m and 16.52m NI.</i>	16		
17.50 - 19.00	CD C		100 51 42					<i>Between 17.26m and 17.30m NI.</i> <i>Between 18.20m and 19.00m: Recovered as silty subangular medium to coarse gravel of very weak low density chalk.</i> <i>Between 18.52m and 19.00m NI.</i>	17		
19.00 - 20.50	C CD		100 65 57		75.62	19.00		Very weak medium density with high density bands white with rare orange staining CHALK. Fracture set 1 is subhorizontal to 40° closely to medium spaced no infill with black specks and rare orange staining. Fracture Set 2 is 60° to subvertical widely spaced open with brown staining and frequent striations and black specks. (CIRIA Grade A2/A3) SEAFORD CHALK FORMATION	18		
									19		
									20		

Start & End of Shift Observations					Installation					Remarks:				
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)					
04-09-2020	14:00	37.00	0.00		Pipe 1	0.00	10.00	PLAIN	50	1. Inspection pit hand dug to 1.20 m bgl. 2. Downhole Geophysics undertaken on completion of drilling. 3. Double packer undertaken at 26.00 m bgl. 4. No groundwater encountered. 5. 50mm standpipe installed with a response zone between 9.5m and 35.5m below ground level.				
16-09-2020	08:00	37.00	0.00	32.00	Pipe 1	10.00	35.00	SLOTTED	50					
16-09-2020	16:35	37.00	0.00	32.00	Pipe 1	35.00	35.70	PLAIN	50					
Flush Information					Borehole Diameter		Casing Diameter		Water Strikes					
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
5.50	7.00		100%-100%	white	37.00	146	1.10	175				0		No groundwater encountered
7.00	8.50		100%-100%	white										
8.50	10.00		100%-100%	white										
10.00	37.00		100%-100%	white										

Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %. NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).

RPS RC Template Issue Number: 2 Issue Date: 02/01/2018



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R71915	
Contract Number: JFR1451	Start Date: 01/09/2020	End Date: 12/10/2020	Checked By: GR	Status: FINAL	Sheet 3 of 4	
Rotary Core Drilling Log		Easting: 414052.0	Northing: 142066.1	Ground Level: 94.62mOD	Plant Used: Comacchio 450	Logged By: BB
		Termination: Target depth achieved.			Scale: 1:50	

Weather: Sunny

Samples & Core Recovery					Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
20.50 - 22.00	C		100 82 81					Between 19.00m and 19.18m AZCL. Between 19.65m and 19.76m NI. At 20.00m angular medium flint gravel. At 20.13m 1mm Inoceramus band. Between 20.25m and 20.38m NI. Between 21.30m and 21.50m: Rare orange staining. Between 21.73m and 22.00m NI.	21		
22.00 - 23.50	C		87 49 31					Between 22.05 and 23.34m with rare flint cobbles. Between 22.35m and 22.53m AZCL. Between 22.53m and 22.63m NI. Between 22.95m and 23.20m thin mark band.	22 23		
23.50 - 25.00	C CD C		83 48 35	NI 170 990		(9.00)		Between 23.90m and 23.98m NI with coarse gravel. Between 24.77m and 25.00m AZCL. Between 25.00m and 25.20m: Angular medium to coarse flint gravel.	24 25		
25.00 - 26.50	C CD		100 72 53					Between 26.15m and 26.26m AZCL. Between 26.40m and 26.46m NI. At 26.54m orange stained.	26		
26.50 - 28.00	C		100 75 54					Between 26.95m and 27.30m orange staining. Between 27.24m and 27.41m NI. Between 27.25m and 27.60m: band of angular medium flint gravel Between 27.49m and 27.58m NI.	27		
28.00 - 29.50	C		93 56 56		66.62	28.00		Very weak medium density with bands of low density white with rare orange stains CHALK. Fracture Set 1 is subhorizontal to 40° widely spaced no infill with black specks. Fracture Set 2 is 60° to subvertical closely to widely spaced clean with black specks and occasional orange staining. (CIRIA Grade A2/A3) SEAFORD CHALK FORMATION Between 28.60m and 28.70m orange staining. Between 28.70m and 28.79m NI. Between 28.94m and 29.37m NI. Between 29.00m and 29.10m coarse flints. Between 29.37m and 29.50m AZCL. Between 29.77m and 29.88m NI. Between 29.80m and 30.05m : angular flint cobbles and coarse gravel.	28 29		
									30		

Start & End of Shift Observations					Installation					Remarks:																						
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)																							
					Pipe 1	0.00	10.00	PLAIN	50	1. Inspection pit hand dug to 1.20 m bgl. 2. Downhole Geophysics undertaken on completion of drilling. 3. Double packer undertaken at 26.00 m bgl. 4. No groundwater encountered. 5. 50mm standpipe installed with a response zone between 9.5m and 35.5m below ground level.																						
					Pipe 1	10.00	35.00	SLOTTED	50																							
					Pipe 1	35.00	35.70	PLAIN	50																							
										<table border="1"> <thead> <tr> <th colspan="5">Water Strikes</th> <th colspan="2">Remarks</th> </tr> <tr> <th>Strike (m)</th> <th>Casing (m)</th> <th>Sealed (m)</th> <th>Time (mins)</th> <th>Rose to (m)</th> <th colspan="2"></th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td>0</td> <td></td> <td colspan="2">No groundwater encountered</td> </tr> </tbody> </table>		Water Strikes					Remarks		Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)						0		No groundwater encountered	
Water Strikes					Remarks																											
Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)																												
			0		No groundwater encountered																											
Flush Information					Borehole Diameter		Casing Diameter																									
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)																								
					37.00	146	1.10	175																								

Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %. NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).

RPS RC Template Issue Number: 2 Issue Date: 02/01/2018



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R71915	
Contract Number: JFR1451	Start Date: 01/09/2020	End Date: 12/10/2020	Checked By: GR	Status: FINAL	Sheet 4 of 4	
Rotary Core Drilling Log		Easting: 414052.0	Northing: 142066.1	Ground Level: 94.62mOD	Plant Used: Comacchio 450	Logged By: BB
		Termination: Target depth achieved.			Scale: 1:50	

Weather: Sunny

Samples & Core Recovery				Strata Details				Groundwater		
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation
29.50 - 31.00	CD		100 69 54					Between 30.27m and 30.30m NI. Between 30.42m and 30.59m NI. Between 30.43m and 30.55m angular cobble and coarse flint gravel Between 30.71m and 30.76m NI.	31	
31.00 - 32.50	C		100 83 69					Between 31.08m and 31.26m angular fine to medium flint gravel. Between 31.10m and 31.30m NI. Between 31.30m and 31.40m sparse thin marl bands.	32	
32.50 - 34.00	C		100 88 55	NI 140 1710		(9.00)		At 32.80m Rare angular fine flint gravel Between 33.00m and 33.60m rare marl bands with frequent orange staining.	33	
34.00 - 35.50			83 45 27					Between 33.83m and 33.90m NI. Between 33.90m and 34.00m angular medium flint gravel Between 33.90m and 34.15m AZCL.	34	
35.50 - 36.25	CD		100 60 53					Between 34.70m and 35.60m Frequent orange staining.	35	
36.25 - 37.00	CD		100 40 32		57.62	37.00		Between 36.18m and 36.55m NI. Between 36.55m and 36.65m: angular coarse flint gravel	36	
								End of Borehole at 37.00m	37	
									38	
									39	
									40	

Start & End of Shift Observations					Installation					Remarks:	
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)		
					Pipe 1	0.00	10.00	PLAIN	50	1. Inspection pit hand dug to 1.20 m bgl. 2. Downhole Geophysics undertaken on completion of drilling. 3. Double packer undertaken at 26.00 m bgl. 4. No groundwater encountered. 5. 50mm standpipe installed with a response zone between 9.5m and 35.5m below ground level.	
					Pipe 1	10.00	35.00	SLOTTED	50		
					Pipe 1	35.00	35.70	PLAIN	50		
					Water Strikes						
					Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks	
								0		No groundwater encountered	
Flush Information					Borehole Diameter		Casing Diameter				
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)			
					37.00	146	1.10	175			
Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %.											
NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).											
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018											



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R71916	
Contract Number: JFR1451	Start Date: 16/10/2020	End Date: 28/10/2020	Checked By: GR	Status: FINAL	Sheet 1 of 7	
Rotary Core Drilling Log		Easting: 411898.7	Northing: 141782.1	Ground Level: 99.37mOD	Plant Used: Comacchio 450	Logged By: ARG/BB/GR
		Termination: Target depth achieved.			Scale: 1:50	

Weather: Sunny+Cloudy

Samples & Core Recovery					Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water	Backfill/Installation	
PID 2.1ppm	ES				99.07	(0.30)		Dark brown silty GRAVEL with a medium chalk cobble content and occasional off white suspected asbestos-cement tile fragments. Gravel is subangular to subrounded fine to coarse chalk.			
	D					0.30		MADE GROUND			
1.20 - 2.50	D				97.54	(1.53)		Structureless CHALK composed of slightly sandy subangular and subrounded fine to coarse gravel. Clasts are very weak medium density white with occasional black specks and rare orangish red concretions. Matrix is white silt and sand. (CIRIA grade Dc)			
			83 49 0			1.83		SEAFORD CHALK FORMATION Between 0.30m and 1.20m: High cobble content. Between 1.20m and 1.42m: AZCL.			
2.50 - 4.00	D				95.87	(1.67)		Very weak medium density white CHALK. Fractures are subhorizontal to 70° closely to very closely spaced clean. (CIRIA grade A3 /A4)			
			100 77 19			3.50		SEAFORD CHALK FORMATION Between 2.23m and 2.50m: Non intact recovered as slightly sandy subangular fine to coarse gravel with occasional black specks and rare orangish-red concretions Between 2.62m and 2.69m: Non Intact			
4.00 - 5.50					92.17	(3.70)		Very weak high density white CHALK with occasional orange staining. Fractures are subhorizontal to 40° and 60° to subvertical closely spaced clean with occasional black specks and orange staining. (CIRIA grade A3)			
			99 69 11			7.20		SEAFORD CHALK FORMATION Between 3.88m and 3.96m: Non Intact Between 4.00m and 4.15m: Non Intact Between 4.22m and 4.48m: Non Intact			
5.50 - 7.00					92.17	(1.67)		Between 5.20m and 5.50m: Frequent orange staining with light grey potential phosphatic nodules or sponge remnants.			
			96 80 61			7.20		Between 5.70m and 5.85m: Rare tabular inoceramid shell fragments and light grey discolouration.			
7.00 - 8.50					92.17	(1.67)		Between 6.00m and 6.10m: Rare tabular inoceramid shell fragments and light grey discolouration.			
			100 47 43			7.20		Between 7.00m and 7.30m: Non Intact Drilling Disturbed, recovered as silty angular fine to coarse chalk gravel.			
8.50 - 10.00					92.17	(2.80)		Weak medium density white with rare black specks CHALK. Fractures are subhorizontal to 20° and subvertical closely spaced, clean locally infilled with up to 10mm of comminuted chalk and angular and subangular fine gravel with frequent black specks and rare orange staining. (CIRIA Grade A3)			
			100 30 21			10.00		SEAFORD CHALK FORMATION Between 8.10m and 8.50m: Non Intact Drilling Disturbed, recovered as silty angular fine to coarse chalk gravel. Between 8.50m and 8.70m: Non Intact Drilling Disturbed, recovered as silty angular fine to coarse chalk gravel.			
	C				89.37	10.00					

Start & End of Shift Observations					Installation					Remarks:						
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)							
19-10-2020	07:30	0.00								1. Hand dig inspection pit undertaken from ground level to 1.20mbgl.						
19-10-2020	17:00	1.20	0.00							2. Rotary drilling 1.20m to 60.00m.						
20-10-2020	13:00	1.20	0.00							3. Packier test undertaken between 27.5-29.0m below ground level.						
20-10-2020	17:30	1.20	0.00							4. High Pressure Dilatometer tests (Sn _o) undertaken at the following depth centers below ground level: 15.00m, 21.00m, 27.00m, 33.00m, 39.00m.						
21-10-2020	11:30	1.20	1.20							5. Downhole Geophysics undertaken on completion of drilling.						
21-10-2020	17:00	16.50	1.20							6. Borehole Backfilled with bentonite on completion.						
22-10-2020	10:00	16.50	1.20													
Flush Information					Borehole Diameter				Casing Diameter		Water Strikes					
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
1.20	14.00	Air/Mist	-		14.00	146	1.20	175			0.00			0		No groundwater encountered
					16.50	99										
					20.00	146										
					22.50	99										

Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %. NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R71916	
Contract Number: JFR1451	Start Date: 16/10/2020	End Date: 28/10/2020	Checked By: GR	Status: FINAL	Sheet 2 of 7	
Rotary Core Drilling Log		Easting: 411898.7	Northing: 141782.1	Ground Level: 99.37mOD	Plant Used: Comacchio 450	Logged By: ARG/BB/GR
		Weather: Sunny+Cloudy			Termination: Target depth achieved.	

Samples & Core Recovery					Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
10.00 - 11.50	C		100 73 66					Very weak high density white with rare orange staining CHALK. Fracture set 1 is subhorizontal to 30° closely spaced closed clean and rarely infilled with silt and comminuted chalk. Fracture set 2 is 40° to 60° closely to widely spaced closed and clean. Fracture set 3 is 70° to subvertical medium to widely spaced closed and clean. (CIRIA grade A3) SEAFORD CHALK FORMATION <u>At 10.50m: Frequent orange staining.</u> <u>At 10.52m: 1mm thick marl band.</u> <u>Between 10.85m and 10.98m: Angular coarse flint gravel and gravel fragments.</u> <u>Between 10.85m and 11.02m: Non Intact</u> <u>Between 11.05m and 11.10m: Frequent orange staining.</u> <u>Between 11.50m and 12.03m: Non Intact</u> <u>Between 11.50m and 13.00m: LIMITED RECOVERY: Likely resulting from coarse rinded flint gravel.</u> <u>At 11.85m: Subangular coarse gravel of nodular rinded flint.</u> <u>Between 11.90m and 12.04m: Frequent orange staining.</u> <u>Between 12.20m and 12.40m: Non Intact</u> <u>At 12.40m: Nodular rinded flint cobble.</u> <u>Between 12.40m and 13.00m: AZCL</u>	11		
11.50 - 13.00			58 21 7					<u>Between 13.10m and 13.22m: Non Intact</u> <u>Between 13.12m and 13.23m: Tabular coarse flint gravel fragment.</u> <u>Between 13.28m and 13.34m: Frequent orange staining.</u> <u>At 13.62m: Tabular coarse flint gravel fragment.</u> <u>Between 13.90m and 13.95: Tabular coarse flint gravel fragment.</u> <u>Between 13.95m and 14.78m: AZCL</u> <u>Between 14.00m and 16.50m: LIMITED RECOVERY: Likely due to in-situ HPD testing.</u> <u>Between 14.78m and 14.94m: Non Intact</u> <u>At 15.25m: Angular medium gravel fragment of nodular flint.</u> <u>Between 15.26m and 15.41m: Non Intact</u> <u>Between 15.84m and 15.90m: Non Intact</u> <u>Between 16.12m and 16.21m: Non Intact</u> <u>Between 16.38m and 16.50m: Non Intact</u>	12		
13.00 - 14.00			93 69 42	NI 40 1560		(6.50)		<u>Between 16.50m and 16.54m: Non Intact</u> <u>Between 17.50m and 19.00m: Limited Recovery.</u> <u>Between 17.65m and 17.86m: AZCL</u> <u>Between 17.85m and 18.00m: Angular coarse gravel sized fragments of nodular rinded flint.</u> <u>Between 17.86m and 18.04m: Angular medium gravel sized fragments of nodular rinded flint.</u> <u>Between 17.88m and 18.04m: Non Intact</u> <u>At 18.50m: 4mm thick marl band.</u>	13		
14.00 - 16.50			69 42 26					<u>Between 19.88m and 21.23m: AZCL</u>	14		
16.50 - 17.50	C CD		100 82 55		82.87	16.50			15		
17.50 - 19.00	CD		67 52 47			(7.00)			16		
19.00 - 20.00	C CD		85 59 44						17		
									18		
									19		
									20		

Start & End of Shift Observations					Installation					Remarks:				
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)					
22-10-2020	17:00	25.00	1.20							1. Hand dig inspection pit undertaken from ground level to 1.20m bgl.				
23-10-2020	11:00	25.00	1.20							2. Rotary drilling 1.20m to 60.00m.				
23-10-2020	13:00	28.50	1.20							3. Packer test undertaken between 27.5-29.0m below ground level.				
26-10-2020	10:30	28.50	1.20							4. High Pressure Dilatometer tests (Snø) undertaken at the following depth centers below ground level: 15.00m, 21.00m, 27.00m, 33.00m, 39.00m.				
26-10-2020	14:00	34.50	1.20							5. Downhole Geophysics undertaken on completion of drilling.				
27-10-2020	09:00	34.50	1.20							6. Borehole Backfilled with bentonite on completion.				
27-10-2020	17:00	46.00	1.20	38.25										
Flush Information					Borehole Diameter		Casing Diameter		Water Strikes					
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
14.00	16.50	WATER	-		14.00	146			0.00			0		No groundwater encountered
16.50	22.50	Air/Mist	-		16.50	99	1.20	175						
20.00	22.50	WATER	-		20.00	146								
					22.50	99								

Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %. NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R71916	
Contract Number: JFR1451	Start Date: 16/10/2020	End Date: 28/10/2020	Checked By: GR	Status: FINAL	Sheet 4 of 7	
Rotary Core Drilling Log		Easting: 411898.7	Northing: 141782.1	Ground Level: 99.37mOD	Plant Used: Comacchio 450	Logged By: ARG/BB/GR
Weather: Sunny+Cloudy			Termination: Target depth achieved.			

Samples & Core Recovery					Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
29.50 - 31.00	CD		96 75 54		68.37	31.00		Weak to very weak medium high density creamy white CHALK with medium to widely spaced bands of black angular fine to coarse flint gravel and medium spaced patches of orange staining. Fractures are subhorizontal closely to widely spaced clean no infill (CIRIA Grade A1/A3) SEAFORD CHALK FORMATION <i>Between 31.14m and 31.18m: Fracture is 40° with potentially striated surface. Light orange staining as diffuse patches.</i> <i>Between 31.21m and 31.25m Rinded tabular flint cobble along fracture surface.</i> <i>Between 31.52m and 31.58m: Orange staining.</i> <i>Between 31.60m and 31.88m Black rinded nodular flint recovered as fine to coarse gravel in a creamy white gravelly silt.</i> <i>Between 31.88m and 32.00m: AZCL.</i> <i>Between 32.00m and 32.5m: Weak high density creamy white chalk with closely to widely spaced bands of orange staining and possible sponge beds and widely spaced flints. Occasional thin laminae of light grey marl.</i> <i>Between 32.28m and 32.35m: Patches of orange staining.</i> <i>Between 32.50m and 34.50m: LIMITED RECOVERY: Likely due to in-situ HPD testing.</i>	31		
31.00 - 32.00	CD		88 45 24	150 200 790		(1.52)			32		
32.00 - 34.50	CD		21 18 10		66.85	32.52		33			
34.50 - 35.50	C		100 79 79					34			
35.50 - 37.00	C		98 95 79	70 340 960		(6.90)		35			
37.00 - 38.10	C		100 86 64					36			
38.10 - 40.50	CD		63 43 25		59.95	39.42		37			
								38			
								39			
								40			

Start & End of Shift Observations					Installation					Remarks:	
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)		
										1. Hand dig inspection pit undertaken from ground level to 1.20mbgl. 2. Rotary drilling 1.20m to 60.00m. 3. Packier test undertaken between 27.5-29.0m below ground level. 4. High Pressure Dilatometer tests (Sn.) undertaken at the following depth centers below ground level: 15.00m, 21.00m, 27.00m, 33.00m, 39.00m. 5. Downhole Geophysics undertaken on completion of drilling. 6. Borehole Backfilled with bentonite on completion.	
										Water Strikes	
Strike (m)		Casing (m)		Sealed (m)		Time (mins)		Rose to (m)		Remarks	
0.00						0				No groundwater encountered	
Flush Information					Borehole Diameter		Casing Diameter				
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)			
32.00	34.50	WATER	-		14.00	146	1.20	175			
34.50	38.00	Air/Mist	-		16.50	99					
38.00	40.50	WATER	-		20.00	146					
					22.50	99					

Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %. NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R71916	
Contract Number: JFR1451	Start Date: 16/10/2020	End Date: 28/10/2020	Checked By: GR	Status: FINAL	Sheet 5 of 7	
Rotary Core Drilling Log		Easting: 411898.7	Northing: 141782.1	Ground Level: 99.37mOD	Plant Used: Comacchio 450	Logged By: ARG/BB/GR
		Weather: Sunny+Cloudy			Termination: Target depth achieved.	

Weather: Sunny+Cloudy Termination: Target depth achieved.

Samples & Core Recovery					Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
40.50 - 41.50	CD		100 57 43					Flint bands closely to widely spaced. (CIRIA grade A1) SEAFORD CHALK FORMATION <i>Between 39.60m and 40.50m: AZCL.</i> <i>Between 40.70m and 40.74m: Tabular flint cobble.</i> <i>Between 41.10m and 41.50m: Localised orange staining.</i>	41		
41.50 - 43.00	C		100 73 17					<i>Between 41.60m and 41.64m: NIDD, angular flint cobble in silty chalk gravel matrix.</i> <i>Between 41.80m and 41.95m: NIDD angular coarse nodular flint gravel in matrix of silty chalk gravel.</i>	42		
43.00 - 44.50			100 63 29			(6.58)		<i>Between 42.46m and 42.60m: Non Intact recovered as chalk gravel. Angular to subangular clasts of weak to weak medium density white chalk with rare black specks.</i>	43		
44.50 - 46.00			93 29 15					<i>Between 44.30m and 44.40m: Non Intact recovered as chalk gravel. Clasts of angular to subangular weak medium density with rare black specks and orange staining.</i> <i>From 44.64 to 44.70: Subvertical fracture with silt veneer.</i> <i>From 45.03 to 45.06m: NIDD.</i> <i>From 45.23m to 45.36m: NIDD.</i>	44 45		
46.00 - 47.50			100 89 74		53.37	46.00		Very weak medium density white CHALK with occasional marl bands and orange staining. Fractures are subhorizontal to 40° closely to medium spaced clean. (CIRIA grade A2) SEAFORD CHALK FORMATION <i>At 46.13m: Marl band.</i> <i>Between 46.82m and 46.89m: Non Intact</i> <i>Between 46.86m and 46.92m: Angular coarse nodular flint gravel.</i> <i>Between 47.15m and 47.84m: Non Intact</i>	46		
47.50 - 49.00			91 87 56	NI 200 320		(6.00)		<i>Between 47.50m to 48.00m: Occasional orange staining and marl bands up to 10mm thick.</i> <i>Between 48.15m and 48.24m: Angular coarse nodular flint gravel.</i> <i>Between 48.18m and 48.28m: Non Intact</i> <i>Between 48.48m and 48.55m: Non Intact</i>	47 48		
49.00 - 50.50			100 97 75					<i>Between 48.90m and 49.00m: AZCL.</i> <i>At 49.20m: Angular coarse nodular flint gravel.</i> <i>At 49.85m: Angular coarse nodular flint gravel.</i>	49 50		

Start & End of Shift Observations					Installation					Remarks:				
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)					
										1. Hand dug inspection pit undertaken from ground level to 1.20mbgl. 2. Rotary drilling 1.20m to 60.00m. 3. Packier test undertaken between 27.5-29.0m below ground level. 4. High Pressure Dilatometer tests (Snø) undertaken at the following depth centers below ground level: 15.00m, 21.00m, 27.00m, 33.00m, 39.00m. 5. Downhole Geophysics undertaken on completion of drilling. 6. Borehole Backfilled with bentonite on completion.				
Flush Information										Water Strikes				
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
40.50	60.00	Air/Mist	-		14.00	146	1.20	175	0.00			0		No groundwater encountered
Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %.														
NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).														
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018														



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R71916	
Contract Number: JFR1451	Start Date: 16/10/2020	End Date: 28/10/2020	Checked By: GR	Status: FINAL	Sheet 6 of 7	
Rotary Core Drilling Log	Easting: 411898.7	Northing: 141782.1	Ground Level: 99.37mOD	Plant Used: Comacchio 450	Logged By: ARG/BB/GR	Scale: 1:50

Weather: Sunny+Cloudy Termination: Target depth achieved.

Samples & Core Recovery				Strata Details						Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
50.50 - 52.00			79 79 68		47.37	52.00		At 50.10m: 5mm thick marl band. At 50.35m: Angular medium nodular flint gravel fragment. Between 50.43m and 51.00m: Occasional orange staining. At 50.57m: 1mm thick marl band. Between 51.11m and 51.23m: Angular medium to coarse flint gravel and fragments. Between 51.63m and 51.70m: Tabular flint cobble. Between 51.70m and 54.00m: AZCL.	51		
52.00 - 53.50			100 98 81					Very weak medium density white CHALK with rare orange staining. Fractures are subhorizontal to 30° closely to widely spaced rarely on bands of light grey marl. (CIRIA grade A2) SEAFORD CHALK FORMATION At 52.14m: Angular medium flint gravel fragment. At 52.66m: 1mm wispy marl band. Between 52.78m and 52.85m: Angular medium and coarse flint gravel fragments.	52		
53.50 - 55.00			93 90 90					At 53.26m: Angular medium flint gravel fragments. At 53.36m: Angular coarse flint gravel fragments. Between 54.12m and 54.24m: Orange staining. Between 54.26m and 54.85m: Frequent 1mm marl band.	53		
55.00 - 56.50			98 95 73	NI 150 690		(8.14)		Between 55.00m and 55.10m: Orange staining. Between 55.14m and 55.20m: Occasional 1mm marl bands. At 55.45m: Angular fine and medium flint gravel fragments. Between 55.70m and 55.82m: Rare shell fragment. At 55.78m: 2mm thick marl band.	54		
56.50 - 58.00			76 74 67					Between 56.40m and 56.50m: Orange staining. Between 56.60m and 56.67m: Non Intact At 57.70m: Rare shell fragment. Between 57.74m and 57.80m: Non Intact At 57.75m: Angular medium flint gravel. Between 57.80m and 58.00m: AZCL. Between 58.08m and 58.10m: 5mm thick marl bands.	55		
58.00 - 59.50			92 92 89					Between 58.74m and 58.79m: Occasional 1mm marl bands.	56		
59.50 - 60.00			100 100 100					At 59.35m: Angular coarse flint gravel. Between 59.37m and 59.50m: AZCL. At 59.77m: Tabular rounded flint cobble. Between 59.77m and 59.83m: 50° fracture with 10mm sheet flint infill.	57		
									58		
									59		
									60		

Start & End of Shift Observations					Installation					Remarks:						
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)							
										1. Hand dig inspection pit undertaken from ground level to 1.20mbgl. 2. Rotary drilling 1.20m to 60.00m. 3. Packler test undertaken between 27.5-29.0m below ground level. 4. High Pressure Dilatometer tests (Snø) undertaken at the following depth centers below ground level: 15.00m, 21.00m, 27.00m, 33.00m, 39.00m. 5. Downhole Geophysics undertaken on completion of drilling. 6. Borehole Backfilled with bentonite on completion.						
Flush Information					Borehole Diameter				Casing Diameter		Water Strikes					
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
					14.00	146			1.20	175	0.00			0		No groundwater encountered
					16.50	99										
					20.00	146										
					22.50	99										

Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %. NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).
 RPS RC Template Issue Number: 2 Issue Date: 02/01/2018



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R71916	
Contract Number: JFR1451	Start Date: 16/10/2020	End Date: 28/10/2020	Checked By: GR	Status: FINAL	Sheet 7 of 7	
Rotary Core Drilling Log	Easting: 411898.7	Northing: 141782.1	Ground Level: 99.37mOD	Plant Used: Comacchio 450	Logged By: ARG/BB/GR	Scale: 1:50

Weather: Sunny+Cloudy Termination: Target depth achieved.

Samples & Core Recovery					Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
					39.23	60.14		End of Borehole at 60.00m			
									61		
									62		
									63		
									64		
									65		
									66		
									67		
									68		
									69		
									70		

Start & End of Shift Observations					Installation					Remarks:																		
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)	1. Hand dug inspection pit undertaken from ground level to 1.20mbgl. 2. Rotary drilling 1.20m to 60.00m. 3. Packier test undertaken between 27.5-29.0m below ground level. 4. High Pressure Dilatometer tests (Sn.) undertaken at the following depth centers below ground level: 15.00m, 21.00m, 27.00m, 33.00m, 39.00m. 5. Downhole Geophysics undertaken on completion of drilling. 6. Borehole Backfilled with bentonite on completion.																		
										<table border="1"> <thead> <tr> <th colspan="5">Water Strikes</th> </tr> <tr> <th>Strike (m)</th> <th>Casing (m)</th> <th>Sealed (m)</th> <th>Time (mins)</th> <th>Rose to (m)</th> <th>Remarks</th> </tr> </thead> <tbody> <tr> <td>0.00</td> <td></td> <td></td> <td>0</td> <td></td> <td>No groundwater encountered</td> </tr> </tbody> </table>		Water Strikes					Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks	0.00			0		No groundwater encountered
Water Strikes																												
Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks																							
0.00			0		No groundwater encountered																							
Flush Information					Borehole Diameter		Casing Diameter																					
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)																				
					14.00	146	1.20	175	Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %.																			
					16.50	99			NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).																			
					20.00	146			RPS RC Template Issue Number: 2 Issue Date: 02/01/2018																			
					22.50	99																						



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R71917	
Contract Number: JFR1451	Start Date: 28/10/2020	End Date: 04/11/2020	Checked By: GR	Status: FINAL	Sheet 1 of 7	
Rotary Core Drilling Log		Easting: 412110.3	Northing: 141828.7	Ground Level: 94.57mOD	Plant Used: Comacchio 450	Logged By: PB/MW
		Termination: Target depth achieved.			Scale: 1:50	

Weather: Variable

Samples & Core Recovery					Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
PID 0.0ppm	D ES				94.37	0.20		Turf over soft dark brown slightly gravelly silty CLAY. Gravel is angular to subangular fine to coarse flint and occasional chalk. Frequent roots (up to 5mm thick) and rootlets.			
PID 0.0ppm	D ES					(1.00)		TOPSOIL			
PID 0.0ppm					93.37	1.20		Structureless CHALK composed of off white slightly sandy silty gravel of subangular to angular fine to coarse chalk with rare angular medium to coarse flint. (CIRIA grade Dc)	1		
1.20 - 2.50	D		73 0 0			(1.60)		CHALK: NIDD recovered as angular to subangular fine to coarse gravel with medium subrounded cobble content. Clasts are weak medium density white with light brown / orange staining and rare black specks.	2		
2.50 - 4.00	D		93 0 0		91.77	2.80		CHALK: NI recovered as angular to subangular occasional subrounded fine to coarse gravel with medium subangular and subrounded cobble content. Clasts are weak medium density white with black specks and orange staining.	3		
4.00 - 5.50	D		60 8 0			(4.90)		CHALK: NI recovered as angular to subangular occasional subrounded fine to coarse gravel with medium subangular and subrounded cobble content. Clasts are weak medium density white with black specks and orange staining.	4		
5.50 - 6.25	D		100 35 0					CHALK: NI recovered as angular to subangular occasional subrounded fine to coarse gravel with medium subangular and subrounded cobble content. Clasts are weak medium density white with black specks and orange staining.	5		
6.25 - 7.00	D		93 28 16					CHALK: NI recovered as angular to subangular occasional subrounded fine to coarse gravel with medium subangular and subrounded cobble content. Clasts are weak medium density white with black specks and orange staining.	6		
7.00 - 8.50	D		93 21 0		86.87	7.70		CHALK: NI recovered as angular to subangular occasional subrounded fine to coarse gravel with medium subangular and subrounded cobble content. Clasts are weak medium density white with black specks and orange staining.	7		
8.50 - 10.00	D		100 14 0					CHALK: NI recovered as angular to subangular occasional subrounded fine to coarse gravel with medium subangular and subrounded cobble content. Clasts are weak medium density white with black specks and orange staining.	8		
								CHALK: NI recovered as angular to subangular occasional subrounded fine to coarse gravel with medium subangular and subrounded cobble content. Clasts are weak medium density white with black specks and orange staining.	9		
								CHALK: NI recovered as angular to subangular occasional subrounded fine to coarse gravel with medium subangular and subrounded cobble content. Clasts are weak medium density white with black specks and orange staining.	10		

Start & End of Shift Observations					Installation					Remarks:				
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)					
28-10-2020	13:30	0.00	0.00							1. Hand dig inspection pit undertaken from ground level to 1.20m bgl.				
28-10-2020	16:30	1.20	1.20							2. Packer tests undertaken between 23.5m-25.0m below ground level.				
29-10-2020	08:00	1.20	1.20							3. High Pressure Dilatometer tests (5m) undertaken at the following depth centers below ground level: 14.50m, 21.00m, 27.00m, 33.00m, 39.00m.				
29-10-2020	16:30	20.00	1.20							4. Downhole Geophysics undertaken on completion of drilling.				
30-10-2020	08:00	20.00	1.20							5. Borehole Backfilled with bentonite on completion.				
30-10-2020	14:30	25.00	1.20											
02-11-2020	08:00	25.00	1.20											
Flush Information					Borehole Diameter		Casing Diameter		Water Strikes					
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
1.20	14.00	Air/Mist	20%-100%	White	14.00	146	1.20	175				0		No groundwater encountered.
					16.50	99								
					20.00	146								
					22.50	99								

Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %. NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).

RPS RC Template Issue Number: 2 Issue Date: 02/01/2018



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R71917	
Contract Number: JFR1451	Start Date: 28/10/2020	End Date: 04/11/2020	Checked By: GR	Status: FINAL	Sheet 2 of 7	
Rotary Core Drilling Log		Easting: 412110.3	Northing: 141828.7	Ground Level: 94.57mOD	Plant Used: Comacchio 450	Logged By: PB/MW
		Termination: Target depth achieved.			Scale: 1:50	

Weather: Variable

Samples & Core Recovery					Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
10.00 - 11.50	D		83 29 9			(5.30)		Between 10.00m and 10.20m: NI recovered as angular rinded flint cobble (130mm) Between 10.67m and 10.75m: NI recovered as slightly silty angular to subangular fine to coarse chalk gravel with black specks. Between 11.00m and 11.13m: NIDD.	11		
11.50 - 13.00	C CD		80 48 23					Between 12.05m and 12.10m: NI recovered as subangular to subrounded fine to coarse chalk gravel. Clasts are weak medium density with black specks.	12		
13.00 - 14.00	D		100 28 0		81.57	13.00		Weak medium occasionally high density off white CHALK with frequent black specks and occasional orange staining and rare shell fragments (5mm to 8mm) and fine to medium sand content (pink). NEWHAVEN CHALK FORMATION Between 13.35m and 14.00m: Becoming very sandy.	13		
14.00 - 16.50	D CD		100 0 0		80.57	14.00		CHALK: NIDD (probably due to in situ HPD test) recovered as: structureless CHALK composed of slightly gravelly sandy silt. Gravel is subrounded and rounded fine to coarse very weak low density locally pinkish white chalk. Sand is fine to medium with isolated lenses of more consolidated fine sand. Occasional orange staining and lenses of white comminuted chalk (10mm x 10mm). NEWHAVEN CHALK FORMATION At 14.00m: Suspected phosphatic chalk.	14 15		
16.50 - 17.50	C		100 100 74					Weak low to medium density off mottled light grey slightly pink hue sandy CHALK with frequent black specks. Sand is fine to medium. Fractures are subhorizontal to 40° very closely to widely spaced open (<3mm) with silt veneer. (CIRIA grade B1/B4) NEWHAVEN CHALK FORMATION Between 16.33m and 16.50m: NIDD. At 16.50m: Pink hue to chalk with brown staining and occasional orange staining (possible sponge beds).	16 17		
17.50 - 19.00	C		87 N/A N/A	20 900 3160		(7.16)			18		
19.00 - 20.00	C CD		100 36 10					Between 19.50m and 19.80m: NIDD (including lower part of remnant fracture). Between 19.80m and 20.20m: NIDD.	19 20		

Start & End of Shift Observations					Installation					Remarks:				
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)					
02-11-2020	16:30	38.00	1.20							1. Hand dug inspection pit undertaken from ground level to 1.20m bgl.				
03-11-2020	08:00	38.00	1.20							2. Packer tests undertaken between 23.5m-25.0m below ground level.				
03-11-2020	16:30	58.00	1.20							3. High Pressure Dilatometer tests (5m) undertaken at the following depth centers below ground level: 14.50m, 21.00m, 27.00m, 33.00m, 39.00m.				
04-11-2020	08:00	58.00	1.20							4. Downhole Geophysics undertaken on completion of drilling.				
04-11-2020	16:30	61.00	1.20							5. Borehole Backfilled with bentonite on completion.				
10-11-2020	08:00	61.00	1.20											
10-11-2020	10:30	61.00												
Flush Information					Borehole Diameter		Casing Diameter		Water Strikes					
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
14.00	16.50	WATER	0%	No return	14.00	146	14.00	146				0		No groundwater encountered.
16.50	20.00	Air/Mist	0%	No return	16.50	99	20.00	146						
20.00	22.50	WATER	0%	No return	20.00	99	22.50	99						

Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %. NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R71917	
Contract Number: JFR1451	Start Date: 28/10/2020	End Date: 04/11/2020	Checked By: GR	Status: FINAL	Sheet 3 of 7	
Rotary Core Drilling Log		Easting: 412110.3	Northing: 141828.7	Ground Level: 94.57mOD	Plant Used: Comacchio 450	Logged By: PB/MW
Weather: Variable		Termination: Target depth achieved.				Scale: 1:50

Samples & Core Recovery					Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
20.00 - 22.50	CD		52 24 5					<p>Between 20.00m and 22.50m: Limited Recovery probably due to in situ HPD test</p> <p>Between 20.20m and 20.97m: Frequent dark/light grey mottling (10mm x 50mm) and occasional orange staining increasing with depth.</p> <p>Between 20.97m and 21.30m: NIDD.</p>	21		
22.50 - 23.50	C		100 47 35		71.61	22.96		Very weak medium density off white with pink hue and black specks CHALK with occasional orange staining and marl banding. Fracture set 1 orientated subhorizontal to 40° widely spaced open with silt veneer. (CIRIA grade B1/B2)	23		
23.50 - 25.00	C CD		93 21 12	NI 480 1970		(3.04)		<p>NEWHAVEN CHALK FORMATION</p> <p>Between 23.00m and 23.70m: frequent staining.</p> <p>Between 23.80m and 24.20m: NIDD (probably due to in situ packer test)</p> <p>Between 23.90m and 24.10m: subangular fine to coarse rinded flint gravels and cobbles (up to 70mm).</p> <p>Between 23.90m and 24.90m: subangular fine to coarse rinded flint gravel and cobbles (up to 70mm).</p> <p>Between 24.39m and 24.90m: NIDD (probably due to in situ packer test).</p>	24		
25.00 - 26.00	C		100 60 45					Between 25.00m and 25.37m: NIDD (probably due to in situ packer test).	25		
26.00 - 28.50	D		52 0 0		68.57	26.00		CHALK: NIDD (probably due to in situ HPD test) recovered as structureless CHALK composed of slightly sandy silty subangular to subrounded fine to coarse gravel with low cobble content. Clasts are very weak and weak low to medium density off white with localised light grey mottling black specks and orange staining.	26		
						(1.30)		NEWHAVEN CHALK FORMATION	27		
					67.27	27.30		At 27.10m: angular fine to medium rinded flint gravel and cobbles (up to 75mm).			
						(1.20)		AZCL (probably due to in situ HPD test)	28		
								NO RECOVERY			
28.50 - 29.50	C CD		100 80 15		66.07	28.50		Very weak medium density off-white occasional light grey with frequent black specks CHALK and occasional angular fine to medium flints and rare marl seams and orange staining. Fractures are subhorizontal to 45° closely to widely spaced infilled with veneer of up to 2mm of grey silt, with frequent black specks and occasionally orange stained (CIRIA grade B1/B2)	29		
								SEAFORD CHALK FORMATION	30		
								At 29.70m: Localised orange staining (30mm x 40mm).			
								Between 29.74m and 30.00m: fragments of angular fine rinded flint gravel			

Start & End of Shift Observations					Installation					Remarks:				
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)					
										1. Hand dug inspection pit undertaken from ground level to 1.20mbgl. 2. Packer tests undertaken between 23.5m-25.0m below ground level. 3. High Pressure Dilatometer tests (5m) undertaken at the following depth centers below ground level: 14.50m, 21.00m, 27.00m, 33.00m, 39.00m. 4. Downhole Geophysics undertaken on completion of drilling. 5. Borehole Backfilled with bentonite on completion.				
Flush Information					Borehole Diameter		Casing Diameter		Water Strikes					
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
22.50	26.00	Air/Mist	0%	No return	14.00	146						0		No groundwater encountered.
26.00	28.50	WATER	0%	No return	16.50	99	1.20	175						
28.50	32.00	Air/Mist	0%	No return	20.00	146								
					22.50	99								

Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %. NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).

RPS RC Template Issue Number: 2 Issue Date: 02/01/2018



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R71917	
Contract Number: JFR1451	Start Date: 28/10/2020	End Date: 04/11/2020	Checked By: GR	Status: FINAL	Sheet 4 of 7	
Rotary Core Drilling Log		Easting: 412110.3	Northing: 141828.7	Ground Level: 94.57mOD	Plant Used: Comacchio 450	Logged By: PB/MW
Weather: Variable		Termination: Target depth achieved.				Scale: 1:50

Samples & Core Recovery					Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
29.50 - 31.00	C		100 37 15					(up to 15mm). At 30.37m: extremely close to closely spaced light grey wispy marls (1 to 3mm thick laminae).			
31.00 - 32.00	C CD		100 47 30	370 500 930		(4.20)		Between 31.68m and 31.78m: angular fine to coarse rinded flint gravel and cobble sized fragments (up to 95mm). Between 31.80m to 38.00m: Localised orange staining (30mm x 40mm). Between 32.00m and 34.50m: Limited Recovery			
32.00 - 34.50	D		52 28 0		61.87	32.70 (0.60)		Between 32.50m and 32.57m: angular rinded flint (up to 95mm). CHALK: NIDD (probably due to in situ HPD test) recovered as Structureless CHALK composed of cream slightly sandy silt. NEWHAVEN CHALK FORMATION Between 32.70m and 33.30m: structureless chalk. Assumed Zone of Core Loss AZCL (probably due to in situ HPD test)			
34.50 - 35.50	D		100 18 0		60.07	34.50		NO RECOVERY			
35.50 - 37.00	CD		100 40 8					Very weak medium density off-white with black specks and orange staining CHALK with occasional thin laminae and wisps of light grey marl and very closely to widely spaced beds of angular and subangular fine to medium rinded flint gravel. Fracture Set 1 (34.50m to 43.00m) is subhorizontal closely to widely spaced with black specks and open with light grey or orange staining. Locally infilled with up to 6mm of red marl. Fracture Set 2 (43.00m to 61.00m) is subhorizontal to 45° medium to very widely spaced with black speckling open clean or with light grey or red/brown staining. (CIRIA Grade B1/B2)			
37.00 - 38.00	C		100 60 34	NI 500 2450				NEWHAVEN CHALK FORMATION Between 34.50m and 34.75m: structureless chalk and coarse flint gravel and cobble sized Between 35.00m and 35.07m: with angular fine to coarse flint gravel and cobble sized fragments (up to 80mm). Between 35.76m and 35.79m: with angular fine to medium flint gravel fragments (up to 75mm). Between 36.42m and 36.52m: angular fine to medium flint gravel fragments - remnant sheet flint (15mm thick). Between 37.20m and 37.25m: angular fine to coarse flint gravel sized flint fragments.			
38.00 - 39.00	C CD		90 15 10					Between 37.80m and 37.84m: Localised lenses of orange staining (30mm x 30mm). At 37.84m: Angular medium and coarse gravel and cobble sized flint fragments. Between 38.00m and 38.10m: Angular coarse gravel sized flint			
38.00 - 40.50			36 6 0					From 39.00m to 40.50m: Limited recovery probably due to in situ HPD test.			

Start & End of Shift Observations					Installation					Remarks:				
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)					
										1. Hand dig inspection pit undertaken from ground level to 1.20mbgl. 2. Packer tests undertaken between 23.5m-25.0m below ground level. 3. High Pressure Dilatometer tests (5m) undertaken at the following depth centers below ground level: 14.50m, 21.00m, 27.00m, 33.00m, 39.00m. 4. Downhole Geophysics undertaken on completion of drilling. 5. Borehole Backfilled with bentonite on completion.				
Flush Information										Water Strikes				
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
32.00	34.50	WATER	0%	No return	14.00	146						0		No groundwater encountered.
34.50	38.00	Air/Mist	0%	No return	16.50	99	1.20	175						
38.00	40.50	WATER	0%	No return	20.00	146								
					22.50	99								

Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %. NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R71917	
Contract Number: JFR1451	Start Date: 28/10/2020	End Date: 04/11/2020	Checked By: GR	Status: FINAL	Sheet 5 of 7	
Rotary Core Drilling Log		Easting: 412110.3	Northing: 141828.7	Ground Level: 94.57mOD	Plant Used: Comacchio 450	Logged By: PB/MW
Weather: Variable		Termination: Target depth achieved.				Scale: 1:50

Samples & Core Recovery				Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation
39.00 - 40.50	D		51 N/A N/A							
40.50 - 41.50	D		100 63 49					Between 41.36m and 41.70m: Frequent orange staining (possible sponge beds).	41	
41.50 - 43.00			100 63 49					Between 42.60m and 42.75m: Angular fine to coarse gravel and cobble sized flint fragments.	42	
43.00 - 44.50	C		100 43 27					Between 43.00m and 43.05m: frequent orange staining. Between 43.27m and 43.30m: Angular fine to coarse gravel and cobble sized flint fragments. Between 43.45m and 43.49m: Angular fine to coarse gravel and cobble sized flint fragments.	43	
44.50 - 46.00	C		100 53 32			(26.50)		Between 44.70m and 44.95m: Angular fine to coarse gravel and cobble sized flint fragments. At 45.50m: bivalve shell fragment (5mm x 10mm).	45	
46.00 - 47.50	CD		67 37 27					Between 46.00m and 46.30m: Angular fine to coarse gravel and cobble sized flint fragments. Between 46.00m and 47.50m: Limited Recovery	46	
47.50 - 49.00	C		100 62 47					Between 48.47m and 48.53m: Angular fine to coarse gravel and cobble sized flint fragments.	48	
49.00 - 50.50			100 56 35					Between 49.72m and 49.82m: angular and subangular fine to coarse flint gravel and cobble sized fragments	49	
									50	

Start & End of Shift Observations					Installation					Remarks:				
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)					
										1. Hand dug inspection pit undertaken from ground level to 1.20mbgl. 2. Packer tests undertaken between 23.5m-25.0m below ground level. 3. High Pressure Dilatometer tests (5m) undertaken at the following depth centers below ground level: 14.50m, 21.00m, 27.00m, 33.00m, 39.00m. 4. Downhole Geophysics undertaken on completion of drilling. 5. Borehole Backfilled with bentonite on completion.				
Flush Information					Borehole Diameter		Casing Diameter		Water Strikes					
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
40.50	61.00	Air/Mist	0%	No return	14.00	146	1.20	175				0		No groundwater encountered.
					16.50	99								
					20.00	146								
					22.50	99								
Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %. NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).											RPS RC Template Issue Number: 2 Issue Date: 02/01/2018			



Contract Name: A303 Stonehenge			Client: RPS Planning & Development			Borehole ID: R71917		
Contract Number: JFR1451	Start Date: 28/10/2020	End Date: 04/11/2020	Checked By: GR	Status: FINAL		Sheet 6 of 7		
Rotary Core Drilling Log		Easting: 412110.3	Northing: 141828.7	Ground Level: 94.57mOD	Plant Used: Comacchio 450	Logged By: PB/MW	Scale: 1:50	

Weather: Variable Termination: Target depth achieved.

Samples & Core Recovery				Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation
50.50 - 52.00	C		100 51 22					Between 50.69m and 50.80m: Angular and subangular fine and medium gravel sized flint fragments. Between 51.33m and 51.50m: Angular fine to coarse gravel sized flint fragments.	51	
52.00 - 53.50	CD		100 39 29					Between 52.53m and 52.84m: frequent thin laminae and wisps of light grey marl. At 52.84m: Angular fine gravel to cobble sized flint fragment. Between 53.30m and 53.50m: Light brown / orange staining (50mm x 40mm lenses).	52 53	
53.50 - 55.00	C		100 47 38					Between 54.59m and 55.00m: Frequent thin laminae and wisps of light grey marl with occasional shell fragments and increase in chalk density.	54	
55.00 - 56.50	C		100 76 46	NI 300 2800				Between 55.00m and 55.98m: isolated pockets of angular medium to coarse rinded flint gravel (up to 60mm). Between 55.46m and 55.56m: Becoming high density Between 55.58m and 58.00m: frequent thin laminae and wisps of interwoven light grey marl. Below 56.00m: matrix becoming slightly darker (increased marl content).	55 56	
56.50 - 58.00	C		73 73 67						57	
58.00 - 59.50	CD		100 28 15					Between 59.10m and 59.17m: subangular to subrounded medium and coarse rinded flint gravel. Between 59.30m and 59.44m: subangular to subrounded medium and coarse rinded flint gravel.	58 59	
									60	

Start & End of Shift Observations				Installation				Remarks:																				
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)	1. Hand dug inspection pit undertaken from ground level to 1.20mbgl. 2. Packer tests undertaken between 23.5m-25.0m below ground level. 3. High Pressure Dilatometer tests (5m) undertaken at the following depth centers below ground level: 14.50m, 21.00m, 27.00m, 33.00m, 39.00m. 4. Downhole Geophysics undertaken on completion of drilling. 5. Borehole Backfilled with bentonite on completion.																		
								<table border="1"> <thead> <tr> <th colspan="5">Water Strikes</th> </tr> <tr> <th>Strike (m)</th> <th>Casing (m)</th> <th>Sealed (m)</th> <th>Time (mins)</th> <th>Rose to (m)</th> <th>Remarks</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td>0</td> <td></td> <td>No groundwater encountered.</td> </tr> </tbody> </table>				Water Strikes					Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks				0		No groundwater encountered.
Water Strikes																												
Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks																							
			0		No groundwater encountered.																							
Flush Information				Borehole Diameter		Casing Diameter																						
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)																				
					14.00	146	1.20	175	Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %.																			
					16.50	99			NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).																			
					20.00	146			RPS RC Template Issue Number: 2 Issue Date: 02/01/2018																			
					22.50	99																						



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R71917	
Contract Number: JFR1451	Start Date: 28/10/2020	End Date: 04/11/2020	Checked By: GR	Status: FINAL	Sheet 7 of 7	
Rotary Core Drilling Log	Easting: 412110.3	Northing: 141828.7	Ground Level: 94.57mOD	Plant Used: Comacchio 450	Logged By: PB/MW	Scale: 1:50

Weather: Variable Termination: Target depth achieved.

Samples & Core Recovery					Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
59.50 - 61.00			100 49 47		33.57	61.00		Between 60.55m and 60.70m: subangular to subrounded medium rinded flint (up to 65mm). At 60.95m: Frequent orange staining (possible sponge beds). End of Borehole at 61.00m	61		
									62		
									63		
									64		
									65		
									66		
									67		
									68		
									69		
									70		

Start & End of Shift Observations					Installation					Remarks:	
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)	1. Hand dug inspection pit undertaken from ground level to 1.20mbgl. 2. Packer tests undertaken between 23.5m-25.0m below ground level. 3. High Pressure Dilatometer tests (5m) undertaken at the following depth centers below ground level: 14.50m, 21.00m, 27.00m, 33.00m, 39.00m. 4. Downhole Geophysics undertaken on completion of drilling. 5. Borehole Backfilled with bentonite on completion.	
										Water Strikes Strike (m) | Casing (m) | Sealed (m) | Time (mins) | Rose to (m) | Remarks 0 | | | | | No groundwater encountered.	
Flush Information					Borehole Diameter		Casing Diameter				
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %.		
					14.00	146	1.20	175	NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).		
					16.50	99			RPS RC Template Issue Number: 2 Issue Date: 02/01/2018		
					20.00	146					
					22.50	99					



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R71918	
Contract Number: JFR1451	Start Date: 16/11/2020	End Date: 20/11/2020	Checked By: GR	Status: FINAL	Sheet 1 of 7	
Rotary Core Drilling Log		Easting: 412648.0	Northing: 141930.0	Ground Level: 89.50mOD	Plant Used: Comacchio 450	Logged By: LD/MW
		Termination: Target depth achieved.			Scale: 1:50	

Weather: Cloudy

Termination: Target depth achieved.

Samples & Core Recovery					Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
					89.20	(0.30) 0.30		Soft brown slightly sandy gravelly CLAY. Gravel is subangular fine to coarse chalk and flint. TOPSOIL			
					88.30	(0.90) 1.20		Structureless CHALK composed of clayey subangular fine to coarse GRAVEL with rare flints. Clasts are extremely weak low density white. (CIRIA Grade Dc) NEWHAVEN CHALK FORMATION	1		
						(3.55)		Assumed Zone of Core Loss (presumed to be chalk - not recovered due to flint jamming in core barrel) NO RECOVERY	2		
4.75 - 5.50	D		13 0 0		84.75	4.75 (0.92)		Limited recovery: CHALK Non Intact recovered as creamy white silty subangular fine to coarse gravel of very weak low to medium density white chalk with occasional light brown / orange staining. NEWHAVEN CHALK FORMATION <i>Between 4.75m and 4.85m subangular medium flint gravel and rinded flint cobble (up to 90mm).</i> <i>At 4.85m rinded flint (95mm x 80mm).</i> <i>Between 4.85m and 5.50m Assumed Zone of Core Loss</i> <i>Below 5.60m black specks on clasts increasing with depth.</i>	5		
5.50 - 7.00	D		60 0 0		83.83	5.67 (3.03)		Limited Recovery: CHALK Non Intact recovered as creamy white subangular fine to coarse gravel of weak low to medium density white chalk with frequent black specks and occasional subangular medium rinded flint gravel and cobbles (up to 95mm). NEWHAVEN CHALK FORMATION <i>Between 6.40m and 7.00m Assumed Zone of Core Loss</i>	6		
7.00 - 7.75	D		100 0 0					<i>Between 7.20m and 7.35m zone of frequent orange staining in Non Intact matrix.</i> <i>Between 7.60m and 7.75m rinded flint (70mm).</i>	7		
7.75 - 8.50	D		100 0 0						8		
8.50 - 10.00	C5 CD		93 23 13		80.80	8.70		Very weak medium density creamy white with rare black specks CHALK with rare orange staining with depth. Fractures are 45° to subvertical medium to widely spaced open with orange staining (CIRIA grade C1/C2) NEWHAVEN CHALK FORMATION <i>Between 8.84m and 8.87m Non Intact recovered as creamy white angular fine to coarse gravel.</i> <i>Between 9.35m and 9.58m subvertical stepped striated fracture.</i> <i>Between 9.55m and 10.23m NIDD</i>	9		
									10		

Start & End of Shift Observations					Installation					Remarks:				
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)					
12-11-2020	15:00	0.00								1. Hand dug inspection pit undertaken from ground level to 1.20mbgl.				
12-11-2020	15:30	1.20								2. High Pressure Dilatometer tests (3no.) undertaken at the following depth centers below ground level: 18.00m, 28.00m, 38.00m.				
13-11-2020	08:00	1.20	1.20							3. Downhole Geophysics undertaken on completion of drilling.				
13-11-2020	14:00	16.00	1.20							4. Borehole Backfilled with bentonite on completion.				
16-11-2020	10:00	16.00	1.20											
16-11-2020	15:00	34.00	1.20											
17-11-2020	09:00	34.00	1.20	30.00										
Flush Information					Borehole Diameter		Casing Diameter		Water Strikes					
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
1.20	16.00	Air/Mist	50%	white	17.00	146	1.20	175				0		No groundwater encountered.
					19.50	99								
					27.20	146								
					29.50	99								
Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %.														
NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).														
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018														



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R71918	
Contract Number: JFR1451	Start Date: 16/11/2020	End Date: 20/11/2020	Checked By: GR	Status: FINAL	Sheet 2 of 7	
Rotary Core Drilling Log		Easting: 412648.0	Northing: 141930.0	Ground Level: 89.50mOD	Plant Used: Comacchio 450	Logged By: LD/MW
		Termination: Target depth achieved.			Scale: 1:50	

Weather: Cloudy

Samples & Core Recovery					Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
10.00 - 11.50	D6 D		100 0 0								
11.50 - 13.00	D		100 20 0					Between 11.70m and 11.89m NIDD			
13.00 - 14.50	D		100 0 0					Between 12.49m and 12.94m NIDD			
14.50 - 16.00	D9 D		93 0 0	NI 450 1180		(10.95)		Between 13.23m and 13.45 NIDD			
16.00 - 17.00	D10 D		100 9 0					Between 14.50m and 19.65m NIDD CHALK recovered as slightly silty angular to subangular fine to coarse gravel with low cobble content. Clasts are very weak medium density creamy white with black specks with occasional orange staining.			
17.00 - 19.50			73 17 0					Between 15.65m and 15.75m rinded flint cobbles (up to 90mm).			
					69.85	19.65		Between 17.14m and 17.19m angular rinded flint (up to 20mm).			
								Between 17.50m and 17.58m localised orange staining (20mm x 30mm).			
								Between 19.50m and 19.65m angular fine to medium rinded flint gravel (up to 20mm).			
								Very weak medium density creamy white with frequent black specks CHALK with occasional flint bands and rare marl			

Start & End of Shift Observations					Installation					Remarks:
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)	
17-11-2020	16:15	47.50	1.20	42.00						1. Hand dug inspection pit undertaken from ground level to 1.20m bgl. 2. High Pressure Dilatometer tests (3no.) undertaken at the following depth centers below ground level: 18.00m, 28.00m, 38.00m. 3. Downhole Geophysics undertaken on completion of drilling. 4. Borehole Backfilled with bentonite on completion.
18-11-2020	09:00	47.50	1.20	22.40						
18-11-2020	14:00	61.00	1.20	27.00						
25-11-2020	08:00	61.00	1.20	22.40						
25-11-2020	17:15	61.00								
Flush Information					Borehole Diameter		Casing Diameter		Water Strikes	
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Strike (m)	Casing (m)
16.00	17.00	Air/Mist	50%	white	17.00	146				
17.00	19.50	WATER	50%	white	19.50	99	1.20	175		
19.50	27.20	Air/Mist	0%	no return	27.20	146			0	
					29.50	99				
Remarks: No groundwater encountered.										
Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %. NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).										
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018										



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R71918	
Contract Number: JFR1451	Start Date: 16/11/2020	End Date: 20/11/2020	Checked By: GR	Status: FINAL	Sheet 3 of 7	
Rotary Core Drilling Log		Easting: 412648.0	Northing: 141930.0	Ground Level: 89.50mOD	Plant Used: Comacchio 450	Logged By: LD/MW
		Termination: Target depth achieved.			Scale: 1:50	

Weather: Cloudy

Samples & Core Recovery				Strata Details					Groundwater		
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
19.50 - 20.50	D11 D		90 16 0			(14.20)		laminae and orange staining. Fracture set 1 is subhorizontal to 50° medium to very widely spaced open clean with occasional orange staining. Fracture set 2 is 80° to subvertical open clean with occasional orange staining (CIRIA C1/C2) SEAFORD CHALK FORMATION <i>Between 20.15m and 20.25m angular fine to coarse rinded flint gravel (up to 25mm).</i> <i>Between 20.50m and 21.10m angular to subrounded fine to coarse flint gravel and occasional cobbles (up to 112mm).</i>	21		
20.50 - 22.00			73 11 0					<i>Between 22.23m and 22.40m angular to subangular fine to medium rinded flint gravel and cobbles (up to 80mm).</i>			22
22.00 - 23.50			80 27 0					<i>Between 22.80m and 23.42m NIDD</i>			
23.50 - 24.25	D D		100 68 0				<i>Between 23.98m and 24.15m angular to subangular fine to medium rinded flint gravels and cobbles (up to 80mm).</i> <i>Between 24.25m and 26.50m Limited recovery</i> <i>Between 24.34m and 24.43m angular to subangular fine to medium rinded flint gravel and cobbles (up to 85mm).</i>	24			
24.25 - 25.00			67 21 0				NI 1300 4000				
25.00 - 26.50	C14 C C15 C		100 58 36					<i>Between 24.25m and 25.00m NIDD</i>	26		
26.50 - 27.20	CD		100 20 0								<i>Between 26.94m and 27.06m angular to subangular rinded flint (100mm).</i> <i>Between 27.10m and 27.25m angular gravel sized fragments of rinded flint.</i> <i>Between 27.20m and 29.50m Limited recovery due to in-situ HPD testing.</i>
27.20 - 29.50	C16 CD		57 22 7						<i>Non Intact Drilling Disturbed recovered as subrounded to rounded fine to coarse CHALK gravel. Clasts are very weak low to medium density creamy white with black specks (possible excessive flush).</i>		28
										<i>Between 29.50m and 29.65m angular gravel sized fragments of rinded flint.</i>		29
											30

Start & End of Shift Observations					Installation					Remarks:
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)	
										1. Hand dug inspection pit undertaken from ground level to 1.20mbgl. 2. High Pressure Dilatometer tests (3no.) undertaken at the following depth centers below ground level: 18.00m, 28.00m, 38.00m. 3. Downhole Geophysics undertaken on completion of drilling. 4. Borehole Backfilled with bentonite on completion.
Water Strikes										
Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose (m)	Remarks					
			0		No groundwater encountered.					
Flush Information					Borehole Diameter		Casing Diameter			
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)		
27.20	29.50	WATER	0%	no return	17.00	146				
29.50	34.00	Air/Mist	50%	white	19.50	99	1.20	175		
					27.20	146				
					29.50	99				

Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %.
NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).

RPS RC Template Issue Number: 2 Issue Date: 02/01/2018



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R71918	
Contract Number: JFR1451	Start Date: 16/11/2020	End Date: 20/11/2020	Checked By: GR	Status: FINAL	Sheet 4 of 7	
Rotary Core Drilling Log		Easting: 412648.0	Northing: 141930.0	Ground Level: 89.50mOD	Plant Used: Comacchio 450	Logged By: LD/MW
		Termination: Target depth achieved.			Scale: 1:50	

Weather: Cloudy

Samples & Core Recovery				Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation
29.50 - 31.00	C17 C C		67 31 16					Between 30.16m and 30.20m frequent thin interwoven laminae and wisps of light grey marl. Between 30.60m and 30.80m localised orange staining (30mm x 10mm). Between 31.00m and 31.30m frequent orange staining (40mm x 20mm). From 31.40m occasional shell fragments.	31	
31.00 - 32.50	C19 CD		80 40 8						32	
32.50 - 33.25	C20 CD CD		100 93 80						33	
33.25 - 34.00	CD		100 32 15					Between 33.17m and 33.38m nodular rinded flint (cobble up to 120mm) with localised orange staining in matrix. Between 33.64m and 33.72m subrounded rinded flint cobble (up to 80mm - 110mm).	34	
34.00 - 35.50	C22 C		100 35 19		55.65	33.85		Very weak medium density thickly to very thickly bedded creamy white with frequent black specks CHALK with occasional rinded flint gravel and cobbles and with increasing thin laminae and wisps of light grey marl and orange staining. Occasional shell fragments predominantly 20mm to 30mm. Fracture set 1 is subhorizontal to 25° closely to very widely spaced open with occasional brown staining and marl bedding. Fracture set 2 is 45° closely to very widely spaced open with brown staining or silt infill. (CIRIA grade B1/B3) SEAFORD CHALK FORMATION Between 33.85m and 34.00m frequent thin interwoven laminae and wisps of marl. Between 34.08m and 34.16m tabular black flint full diameter and 6mm thick at 40° dip. Between 35.83m and 35.90m subrounded rinded flint cobbles (70mm to 85mm).	35	
35.50 - 37.00	C23 C C		100 72 61						36	
37.00 - 39.50			52 1 0					Between 37.86m and 37.90m fine to medium flint gravel fragments. Between 37.90m and 38.30m NIDD. Between 38.30m and 39.50m AZCL.	38	
39.50 - 40.00	C25 C		100 72 40					Between 39.50m and 39.60m angular flint cobbles (up to 80mm).	39	
									40	

Start & End of Shift Observations					Installation					Remarks:				
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)					
										1. Hand dug inspection pit undertaken from ground level to 1.20mbgl. 2. High Pressure Dilatometer tests (3no.) undertaken at the following depth centers below ground level: 18.00m, 28.00m, 38.00m. 3. Downhole Geophysics undertaken on completion of drilling. 4. Borehole Backfilled with bentonite on completion.				
Flush Information										Water Strikes				
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
34.00	37.00	Air/Mist	50%	white	17.00	146	1.20	175				0		No groundwater encountered.
37.00	39.50	WATER	50%	white	19.50	99								
39.50	47.50	Air/Mist	50%	white	27.20	146								
					29.50	99								

Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %.
NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R71918	
Contract Number: JFR1451	Start Date: 16/11/2020	End Date: 20/11/2020	Checked By: GR	Status: FINAL	Sheet 5 of 7	
Rotary Core Drilling Log		Easting: 412648.0	Northing: 141930.0	Ground Level: 89.50mOD	Plant Used: Comacchio 450	Logged By: LD/MW
		Termination: Target depth achieved.			Scale: 1:50	

Weather: Cloudy

Samples & Core Recovery					Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
40.00 - 41.50	C		100 53 37					<p>Between 40.85m and 46.00m frequent thin interwoven laminae and wisps of marl with occasional orange staining and sized subangular flint cobbles (up to 80mm).</p> <p>Between 41.10m and 41.18m subrounded flint cobble (120mm).</p> <p>Between 41.20m and 41.25m occasional orange staining (15mm x 20mm) and shell fragment (10mm x 5mm).</p>	41		
41.50 - 43.00	C		100 71 54					Between 42.04m and 42.10m subrounded medium gravel sized flint fragments.	42		
43.00 - 44.50	C28 C		100 71 56					Between 44.14m and 44.20m thin laminae and wisps of light grey marl.	44		
44.50 - 46.00	C29 C		100 73 45	160 1140 3340		(27.15)			45		
46.00 - 47.50	C		100 68 31					Between 47.05m and 47.25m angular fine to coarse flint gravel.	47		
47.50 - 49.00	C		100 57 43					Between 47.60m and 47.66m angular to fine flint gravel	48		
49.00 - 50.50	CD		100 60 33					<p>Between 48.95m and 49.00m angular fine to coarse flint gravel.</p> <p>Between 49.28m and 49.29m black silt (1mm).</p> <p>Between 49.46m and 49.48m tabular flint cobble.</p> <p>Between 49.55m and 49.65m rounded and coarse medium flint gravel (up to 60mm).</p> <p>At 49.80m bivalve fragments.</p>	49		
									50		

Start & End of Shift Observations					Installation					Remarks:				
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)					
										1. Hand dug inspection pit undertaken from ground level to 1.20mbgl. 2. High Pressure Dilatometer tests (3no.) undertaken at the following depth centers below ground level: 18.00m, 28.00m, 38.00m. 3. Downhole Geophysics undertaken on completion of drilling. 4. Borehole Backfilled with bentonite on completion.				
Flush Information										Water Strikes				
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
47.50	61.00	Air/Mist	50%	white	17.00	146	1.20	175				0		No groundwater encountered.
					19.50	99								
					27.20	146								
					29.50	99								
Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %.										NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).				
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018														



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R71918	
Contract Number: JFR1451	Start Date: 16/11/2020	End Date: 20/11/2020	Checked By: GR	Status: FINAL	Sheet 6 of 7	
Rotary Core Drilling Log		Easting: 412648.0	Northing: 141930.0	Ground Level: 89.50mOD	Plant Used: Comacchio 450	Logged By: LD/MW
Weather: Cloudy		Termination: Target depth achieved.				Scale: 1:50

Samples & Core Recovery				Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation
50.50 - 52.00	C		100 56 20					Between 50.15m and 50.22m rounded medium rinded flint gravel. Between 50.30m and 50.35m light orange staining (40mm x 30mm). Between 51.10m and 51.32m frequent cross bedded thin laminae and wisps of light grey marl.	51	
52.00 - 53.50	C		100 64 55					Between 53.18m and 53.30m rounded medium to coarse flint gravel (up to 60mm). Between 53.50m and 53.70m frequent cross bedded thin laminae and wisps of marl.	52	
53.50 - 55.00	CD		100 65 33					Between 54.09m and 54.12m marl band.	53	
55.00 - 56.50	CD		100 71 39					Between 55.60m and 55.62m band of tabular fine to coarse flint gravel (full core diameter) Between 56.20m and 56.27m rounded fine to coarse flint gravel. Between 56.35m and 56.50m frequent cross bedding of thin laminae and wisps of light grey marl. Between 56.50m and 56.64m NIDD	54	
56.50 - 58.00	C		100 76 43					Between 57.12m and 58.00m frequent cross bedded thin light grey laminae and wisps of marl.	55	
58.00 - 59.50			100 55 34					Between 58.16m and 58.27m NIDD Between 59.88m and 59.05m frequent cross bedded thin light grey laminae. Between 59.67m and 59.73m: frequent dark and light orange interwoven thin laminae <1mm thickness.	56	
									57	
									58	
									59	
									60	

Start & End of Shift Observations					Installation					Remarks:					
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)						
										1. Hand dug inspection pit undertaken from ground level to 1.20mbgl. 2. High Pressure Dilatometer tests (3no.) undertaken at the following depth centers below ground level: 18.00m, 28.00m, 38.00m. 3. Downhole Geophysics undertaken on completion of drilling. 4. Borehole Backfilled with bentonite on completion.					
Flush Information										Water Strikes					
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)		Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose (m)	Remarks
					17.00	146	1.20	175					0		No groundwater encountered.
					19.50	99									
					27.20	146									
					29.50	99									

Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %. NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R71918	
Contract Number: JFR1451	Start Date: 16/11/2020	End Date: 20/11/2020	Checked By: GR	Status: FINAL	Sheet 7 of 7	
Easting: 412648.0	Northing: 141930.0	Ground Level: 89.50mOD	Plant Used: Comacchio 450	Logged By: LD/MW	Scale: 1:50	

Weather: Cloudy Termination: Target depth achieved.

Samples & Core Recovery					Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
59.50 - 61.00			100 87 52		28.50	61.00		Between 60.62m and 60.73m NIDD	61		
								End of Borehole at 61.00m	61		
									62		
									63		
									64		
									65		
									66		
									67		
									68		
									69		
									70		

Start & End of Shift Observations					Installation					Remarks:																		
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)	1. Hand dug inspection pit undertaken from ground level to 1.20m bgl. 2. High Pressure Dilatometer tests (3no.) undertaken at the following depth centers below ground level: 18.00m, 28.00m, 38.00m. 3. Downhole Geophysics undertaken on completion of drilling. 4. Borehole Backfilled with bentonite on completion.																		
										<table border="1"> <thead> <tr> <th colspan="5">Water Strikes</th> </tr> <tr> <th>Strike (m)</th> <th>Casing (m)</th> <th>Sealed (m)</th> <th>Time (mins)</th> <th>Rose to (m)</th> <th>Remarks</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td>0</td> <td></td> <td>No groundwater encountered.</td> </tr> </tbody> </table>		Water Strikes					Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks				0		No groundwater encountered.
Water Strikes																												
Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks																							
			0		No groundwater encountered.																							
Flush Information					Borehole Diameter		Casing Diameter																					
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)																				
					17.00	146	1.20	175	Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %.																			
					19.50	99			NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).																			
					27.20	146			RPS RC Template Issue Number: 2 Issue Date: 02/01/2018																			
					29.50	99																						



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R71919	
Contract Number: JFR1451	Start Date: 18/11/2020	End Date: 27/11/2020	Checked By: GR	Status: FINAL	Sheet 1 of 7	
Rotary Core Drilling Log		Easting: 412869.0	Northing: 142029.7	Ground Level: 93.02mOD	Plant Used: Comacchio 450	Logged By: MW
		Termination: Target depth achieved.			Scale: 1:50	

Weather: Cloudy+Variable+Drizzle+Fine

Samples & Core Recovery					Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
1.20 - 2.50			77 13 0		92.82	0.20		Soft brown slightly sandy gravelly clayey SILT with occasional rootlets. Gravel is subangular fine to coarse chalk and flint. TOPSOIL			
						(1.00)		Structureless CHALK composed of silty angular fine to coarse gravel. Clasts are extremely weak low density white chalk with frequent orange staining. Matrix is off white. Becoming clayey with depth and light yellowish orange staining. (CIRIA Grade Dc)	1		
2.50 - 4.00			73 53 0		91.82	1.20		SEAFORD CHALK FORMATION			
						(2.80)		CHALK: Non Intact Recovered as angular fine to coarse gravel of very weak to weak medium density chalk with occasional black specks and occasional orange staining with predominantly medium to widely spaced bands of angular fine to coarse rinded flint gravel and occasional cobble sized rinded flint. SEAFORD CHALK FORMATION	2		
4.00 - 4.75			120 43 0					Between 2.70m and 2.80m: 2 subangular and subrounded rinded flint cobbles.			
										Between 2.87m and 2.97m: Fracture 80 degrees undulating striated clean	3
4.75 - 5.50	CD		80 27 16					Very weak low to medium density white to creamy white CHALK with frequent wisps and laminae of light grey marl and orange staining. Fracture set 1 is subhorizontal widely spaced infilled with up to 3mm of white silt and occasional orange staining. Fracture set 2 80° to subvertical closely to widely spaced clean with occasional orange staining. (CIRIA grade B1)			
										SEAFORD CHALK FORMATION	4
5.50 - 7.00			100 41 19					Between 5.30m and 5.36m: Localised areas of orange staining (possible sponge beds) (30mm x 30mm)			
										Between 5.74m and 5.78m: Band of thin laminae and wisps of cross bedded marl.	5
7.00 - 8.50	CD CD		100 61 27					Between 6.35m and 6.50m: Band of angular to subangular fine to medium rinded flint gravel.			
										Between 7.00m and 7.10m: Band of angular to subangular fine to coarse rinded flint gravel and occasional cobble.	6
8.50 - 10.00			90 37 0					Very weak low to medium density occasionally alternating bands of high density creamy white CHALK with frequent black specks and occasional localised orange staining. Fracture set 1 is subhorizontal to 50° medium to widely spaced clean with occasional orange or dark brown staining. Fracture set 2 is 80° to subvertical medium to widely spaced clean (CIRIA grade A1/A2)			
										SEAFORD CHALK FORMATION	7
								Between 8.04m and 8.07m: Localised dark orange staining (20mm x 30mm)			
								Between 8.74m and 8.84m Non Intact recovered as gravel of very weak low to medium density chalk black specks with occasional staining.			
										8	
										9	
										10	

Start & End of Shift Observations					Installation					Remarks:						
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)							
18-11-2020	14:30									1. Hand dug inspection pit undertaken from ground level to 1.20mbgl. 2. High Pressure Dilatometer tests (3no.) undertaken at the following depth centers below ground level: 22.00m, 33.00m, 44.00m. 3. Downhole Geophysics undertaken on completion of drilling. 4. Borehole Backfilled with bentonite on completion.						
18-11-2020	16:30	1.20	0.00													
19-11-2020	07:30	1.20	0.00													
19-11-2020	16:30	31.00	1.20	25.70												
20-11-2020	07:30	31.00	1.20	25.10												
20-11-2020	14:30	45.50	1.20	25.90												
23-11-2020	07:30	45.50	1.20	25.90												
Flush Information					Borehole Diameter				Casing Diameter		Water Strikes					
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
1.20	2.50	Air/Mist	60%-60%	white	21.00	146					29.50	1.20		20	25.70	Slow
2.50	43.00	Air/Mist	60%-60%	white	23.50	99	1.20	175								
					32.00	146										
					34.50	99										

Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %. NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R71919	
Contract Number: JFR1451	Start Date: 18/11/2020	End Date: 27/11/2020	Checked By: GR	Status: FINAL	Sheet 2 of 7	
Rotary Core Drilling Log		Easting: 412869.0	Northing: 142029.7	Ground Level: 93.02mOD	Plant Used: Comacchio 450	Logged By: MW
		Termination: Target depth achieved.			Scale: 1:50	

Weather: Cloudy+Variable+Drizzle+Fine

Samples & Core Recovery				Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation
10.00 - 11.50			100 59 8						11	
11.50 - 13.00			100 98 48	NI 200 1740		(6.15)		Between 11.30m and 11.35m: Localised orange staining. Between 11.60m and 11.65m: Localised orange staining.	12	
13.00 - 14.50			100 49 20		79.37	13.65		Very weak low to medium density occasionally alternating bands of high density thinly to thickly bedded creamy white CHALK with frequent black specks and occasional localised orange staining. Occasional inoceramid shell fragments predominantly 3mm x 40mm with increasing interwoven wisps and laminae of light grey marl with depth. Fracture set 1 is subhorizontal to 40° closely to widely spaced with occasional orange or light brown staining. Bedding fractures filled with more than 3mm of light grey marl. Fracture set 2 is 45° to subvertical widely spaced with orange or brown staining. (CIRIA grade C1/C3)	14	
14.50 - 16.00	D C4 CD		100 44 29					SEAFORD CHALK FORMATION Between 14.07m and 14.17m: Subangular to subrounded fine to medium rinded flint gravel Between 15.15m and 15.20m: Localised dark orange staining (20mm x 30mm) Between 15.24m and 15.30m: Band of thin marl laminae and orange staining with occasional thick marl laminae (5mm to 20mm)	15	
16.00 - 17.50	D D		93 16 0					Between 16.55m and 16.60m: Band of angular and subangular fine to coarse rinded flint gravel	16	
17.50 - 19.00			93 55 14						17	
19.00 - 20.50	CD C6 CD		93 23 10						18	
									19	
									20	

Start & End of Shift Observations					Installation					Remarks:					
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)						
23-11-2020	16:00	60.00	1.20	25.90						1. Hand dug inspection pit undertaken from ground level to 1.20mbgl. 2. High Pressure Dilatometer tests (3no.) undertaken at the following depth centers below ground level: 22.00m, 33.00m, 44.00m. 3. Downhole Geophysics undertaken on completion of drilling. 4. Borehole Backfilled with bentonite on completion.					
										Water Strikes					
Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks										
29.50	1.20		20	25.70	Slow										
Flush Information					Borehole Diameter				Casing Diameter						
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)					
					21.00	146	1.20	175							
					23.50	99									
					32.00	146									
					34.50	99									
Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %.											NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).				
RPS RC Template											Issue Number: 2 Issue Date: 02/01/2018				



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R71919	
Contract Number: JFR1451	Start Date: 18/11/2020	End Date: 27/11/2020	Checked By: GR	Status: FINAL	Sheet 3 of 7	
Rotary Core Drilling Log		Easting: 412869.0	Northing: 142029.7	Ground Level: 93.02mOD	Plant Used: Comacchio 450	Logged By: MW
		Termination: Target depth achieved.			Scale: 1:50	

Weather: Cloudy+Variable+Drizzle+Fine Termination: Target depth achieved.

Samples & Core Recovery				Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation
20.50 - 21.00	C7 C		120 80 52							
21.00 - 23.50	D		44 10 0					Between 21.00m and 21.32m: Non Intact: recovered as white slightly gravelly sandy silt. Gravel is angular and subangular fine to coarse chalk. Between 21.00m and 23.50m: Limited Recovery		
23.50 - 25.00	C9 C		100 43 13					Between 24.12m and 24.20m: Subrounded rinded flint cobble (up to 68mm) with occasional areas of orange staining (sponge beds).		
25.00 - 26.50	C		100 10 0							
26.50 - 28.00	C		93 67 59					From 26.70m occasional high density chalk.		
28.00 - 29.50	C12 C		100 47 29							
	C13 C									

Start & End of Shift Observations					Installation					Remarks:					
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)	1. Hand dug inspection pit undertaken from ground level to 1.20mbgl. 2. High Pressure Dilatometer tests (3no.) undertaken at the following depth centers below ground level: 22.00m, 33.00m, 44.00m. 3. Downhole Geophysics undertaken on completion of drilling. 4. Borehole Backfilled with bentonite on completion.					
										Water Strikes					
Strike (m)		Casing (m)		Sealed (m)		Time (mins)		Rose to (m)		Remarks					
29.50		1.20				20		25.70		Slow					
Flush Information					Borehole Diameter				Casing Diameter						
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)					
					21.00	146	1.20	175							
					23.50	99									
					32.00	146									
					34.50	99									
Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %.												NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).			
RPS RC Template												Issue Number: 2 Issue Date: 02/01/2018			



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R71919	
Contract Number: JFR1451	Start Date: 18/11/2020	End Date: 27/11/2020	Checked By: GR	Status: FINAL	Sheet 4 of 7	
Rotary Core Drilling Log		Easting: 412869.0	Northing: 142029.7	Ground Level: 93.02mOD	Plant Used: Comacchio 450	Logged By: MW
		Termination: Target depth achieved.			Scale: 1:50	

Weather: Cloudy+Variable+Drizzle+Fine

Samples & Core Recovery				Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation
29.50 - 31.00	D		100 60 45						31	
31.00 - 32.00			60 0 0							
32.00 - 34.50	D		60 5 0					Between 32.00m and 34.50m: Non Intact: recovered as white slightly gravelly sandy silt. Gravel is angular and subangular fine to coarse chalk. Between 32.00m and 34.50m: Limited Recovery.	32	
							Between 32.45m and 32.54m: Angular fine to medium rinded flint gravel.			
34.50 - 35.50	C16 CD		100 26 17	NI 180 4140		(46.35)			35	
										Between 35.40m and 35.50m: Localised orange staining (sponge beds) 20mm x 30mm
35.50 - 37.00	C17 CD		100 59 51						36	
37.00 - 38.50	C		100 65 34					Between 37.63m and 37.68m: Subangular fine to medium rinded flint gravel.	38	
						Between 38.50m and 38.70m Non Intact recovered as silty angular fine to coarse gravel.				
38.50 - 40.00	C19 C		100 37 36					Between 38.85m and 38.88m: Subangular fine to medium rinded flint gravel.	39	

Start & End of Shift Observations					Installation					Remarks:					
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)	1. Hand dug inspection pit undertaken from ground level to 1.20mbgl. 2. High Pressure Dilatometer tests (3no.) undertaken at the following depth centers below ground level: 22.00m, 33.00m, 44.00m. 3. Downhole Geophysics undertaken on completion of drilling. 4. Borehole Backfilled with bentonite on completion.					
										Water Strikes					
Strike (m)		Casing (m)		Sealed (m)		Time (mins)		Rose to (m)		Remarks					
29.50		1.20				20		25.70		Slow					
Flush Information					Borehole Diameter				Casing Diameter						
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)							
					21.00	146	1.20	175	Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %.						
					23.50	99			NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).						
					32.00	146			RPS RC Template Issue Number: 2 Issue Date: 02/01/2018						
					34.50	99									



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R71919	
Contract Number: JFR1451	Start Date: 18/11/2020	End Date: 27/11/2020	Checked By: GR	Status: FINAL	Sheet 5 of 7	
Rotary Core Drilling Log		Easting: 412869.0	Northing: 142029.7	Ground Level: 93.02mOD	Plant Used: Comacchio 450	Logged By: MW
		Termination: Target depth achieved.			Scale: 1:50	

Weather: Cloudy+Variable+Drizzle+Fine

Samples & Core Recovery					Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
40.00 - 41.50	C		100 57 37					Between 40.84m and 40.98m: Band of angular fine to coarse rinded flint gravel and occasional cobble.	41		
41.50 - 43.00	C21 C		100 67 40					Between 42.50m and 43.00m: Localised light orange staining (40mm x 50mm).	42		
43.00 - 45.50	D		86 0 0					Between 43.00m and 45.16m: Non intact: recovered as slightly sandy silty subangular and angular fine to coarse very weak low to medium density chalk gravel.	43		
45.50 - 46.00	CD		80 80 60						44		
46.00 - 47.50	C24 C		100 80 73						45		
47.50 - 49.00	C25 CD		100 44 10					Below 48.12m: Becoming thickly interbedded with thin beds of light grey marl. Between 48.27m and 48.50m: Subangular fine to medium sized subangular rinded flint gravel.	46		
49.00 - 50.50	C		93 55 27						47		
									48		
									49		
									50		

Start & End of Shift Observations					Installation					Remarks:					
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)						
										1. Hand dug inspection pit undertaken from ground level to 1.20m bgl. 2. High Pressure Dilatometer tests (3no.) undertaken at the following depth centers below ground level: 22.00m, 33.00m, 44.00m. 3. Downhole Geophysics undertaken on completion of drilling. 4. Borehole Backfilled with bentonite on completion.					
Flush Information										Borehole Diameter			Casing Diameter		
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)					
43.00	60.00	Air/Mist	10%-10%	white	21.00	146	23.50	99	1.20	175					
											Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %.				
											NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).				
											RPS RC Template Issue Number: 2 Issue Date: 02/01/2018				

Water Strikes					
Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
29.50	1.20		20	25.70	Slow



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R71919	
Contract Number: JFR1451	Start Date: 18/11/2020	End Date: 27/11/2020	Checked By: GR	Status: FINAL	Sheet 6 of 7	
Rotary Core Drilling Log		Easting: 412869.0	Northing: 142029.7	Ground Level: 93.02mOD	Plant Used: Comacchio 450	Logged By: MW
		Weather: Cloudy+Variable+Drizzle+Fine			Termination: Target depth achieved.	
		Scale: 1:50				

Weather: Cloudy+Variable+Drizzle+Fine Termination: Target depth achieved.

Samples & Core Recovery				Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation
50.50 - 52.00	C		100 61 51						51	
52.00 - 53.50	C28 CD		100 43 28					Between 53.01m and 53.06m: Shell fragment (2mm x 10mm x 30mm). Between 53.20m and 53.50m: Localised dark orange staining.	52 53	
53.50 - 55.00	C		100 71 29					Between 54.68m and 54.72m: Tabular coarse flint gravel	54	
55.00 - 56.50			100 73 37						55 56	
56.50 - 58.00			100 58 27						57	
58.00 - 59.50			100 52 25					Between 59.15m and 60.00m: Frequent laminae and wisps of light grey marl.	58 59	
59.50 - 60.00			100 80 30		33.02	60.00			60	

Start & End of Shift Observations					Installation					Remarks:					
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)	1. Hand dug inspection pit undertaken from ground level to 1.20mbgl. 2. High Pressure Dilatometer tests (3no.) undertaken at the following depth centers below ground level: 22.00m, 33.00m, 44.00m. 3. Downhole Geophysics undertaken on completion of drilling. 4. Borehole Backfilled with bentonite on completion.					
										Water Strikes					
Strike (m)		Casing (m)		Sealed (m)		Time (mins)		Rose to (m)		Remarks					
29.50		1.20				20		25.70		Slow					
Flush Information					Borehole Diameter				Casing Diameter						
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)							
					21.00	146	1.20	175	Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %.						
					23.50	99			NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).						
					32.00	146			RPS RC Template Issue Number: 2 Issue Date: 02/01/2018						
					34.50	99									



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R71919	
Contract Number: JFR1451	Start Date: 18/11/2020	End Date: 27/11/2020	Checked By: GR	Status: FINAL	Sheet 7 of 7	
Rotary Core Drilling Log	Easting: 412869.0	Northing: 142029.7	Ground Level: 93.02mOD	Plant Used: Comacchio 450	Logged By: MW	Scale: 1:50

Weather: Cloudy+Variable+Drizzle+Fine Termination: Target depth achieved.

Samples & Core Recovery						Strata Details				Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description		Water Strike	Backfill/Installation
								End of Borehole at 60.00m			
										61	
										62	
										63	
										64	
										65	
										66	
										67	
										68	
										69	
										70	

Start & End of Shift Observations					Installation					Remarks:																			
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)	1. Hand dug inspection pit undertaken from ground level to 1.20mbgl. 2. High Pressure Dilatometer tests (3no.) undertaken at the following depth centers below ground level: 22.00m, 33.00m, 44.00m. 3. Downhole Geophysics undertaken on completion of drilling. 4. Borehole Backfilled with bentonite on completion.																			
										<table border="1"> <thead> <tr> <th colspan="6">Water Strikes</th> </tr> <tr> <th>Strike (m)</th> <th>Casing (m)</th> <th>Sealed (m)</th> <th>Time (mins)</th> <th>Rose to (m)</th> <th>Remarks</th> </tr> </thead> <tbody> <tr> <td>29.50</td> <td>1.20</td> <td></td> <td>20</td> <td>25.70</td> <td>Slow</td> </tr> </tbody> </table>		Water Strikes						Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks	29.50	1.20		20	25.70	Slow
Water Strikes																													
Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks																								
29.50	1.20		20	25.70	Slow																								
Flush Information					Borehole Diameter		Casing Diameter																						
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %.																				
					21.00	146	1.20	175	NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).																				
					23.50	99			RPS RC Template Issue Number: 2 Issue Date: 02/01/2018																				
					32.00	146																							
					34.50	99																							



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R72001	
Contract Number: JFR1451	Start Date: 26/08/2020	End Date: 01/09/2020	Checked By: GR	Status: FINAL	Sheet 1 of 5	
Rotary Core Drilling Log		Easting: 414065.2	Northing: 142132.6	Ground Level: 94.61mOD	Plant Used: Comacchio 450	Logged By: LD/MW
		Termination: Target depth achieved.			Scale: 1:50	

Weather: Sunny+Rain

Samples & Core Recovery				Strata Details						Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
94.31						(0.30) 0.30		Crops over firm greyish brown sandy gravelly CLAY. Gravel is subangular to subrounded fine to coarse chalk. Occasional rootlets (<1mm). TOPSOIL			
93.11	CD D		100 12 0	NI 20 90		(1.20) 1.50		Structureless CHALK composed of silty angular to subangular medium to coarse GRAVEL. Clasts are very weak medium density chalk with frequent black specks. Locally dark brown staining. (CIRIA Grade Dc) SEAFORD CHALK FORMATION	1		
91.91	CD		100 35 0			(1.20) 2.70		Very weak low and medium density white with black specks CHALK. Fractures are subhorizontal to 75° closely spaced no infill with black specks and occasional orange staining. (CIRIA Grade A3) SEAFORD CHALK FORMATION	2		
2.50 - 4.00								2.45m to 2.50m subrounded rounded nodular flint cobble. Between 2.50m and 2.55m flint band recovered as subangular fine and medium gravel. Between 2.55m and 2.70m: dark orangish brown staining.	3		
4.00 - 5.50	CD		87 25 8					Very weak to weak medium density locally low density white with black specks CHALK. Fractures are 10-40° extremely close to closely spaced no infill. (CIRIA Grade A4/A5) SEAFORD CHALK FORMATION At 2.70m 2 x 20deg conjugate fractures. At 3.05m subangular tabular coarse gravel sized rounded nodular flint.	4		
5.50 - 7.00	CD		100 33 79	NI 150 300		(10.00)		Between 4.20m and 4.25m subrounded tabular rounded nodular flint cobble. Between 4.45m and 4.70m subvertical fracture with black specks. Between 4.60m and 4.65m rounded nodular flint band recovered as angular fine and medium gravel. From 5.50m rare black specks. Between 5.64m and 5.73m angular coarse gravel sized nodular flint recovered as silty gravel.	5		
7.00 - 8.50	CD		93 66 50					Between 6.20m and 6.40m: dark orangish brown staining.	6		
8.50 - 10.00	C D		93 39 31					Between 7.40m and 7.50m: dark orangish brown staining. Between 8.28m and 8.30m flint band recovered as silty angular coarse gravel. Between 8.50m and 10.00m moderate drilling induced fractures.	7		
								Between 8.50m and 10.00m moderate drilling induced fractures.	8		
								Between 9.70m and 9.77m: dark orangish brown staining.	9		
									10		

Start & End of Shift Observations				Installation				Remarks:					
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)				
26-08-2020	00:00	0.00								1. Inspection pit hand dug to 1.20m bgl. 2. Within the Chalk units there are very thin to thin zones of Non Intact Drilling Disturbance that are generally very closely to widely spaced. Within these zones material is recovered as silts and gravels. 3. Falling Head Tests undertaken at 17.5 m bgl were aborted. 4. Borehole Backfilled with bentonite on completion.			
26-08-2020	17:00	17.50	1.10										
27-08-2020	07:30	17.50	1.10										
27-08-2020	17:00	45.20	1.10										
28-08-2020	08:00	45.20	1.10	17.50									
28-08-2020	14:30	45.20	1.10										
01-09-2020	08:00	45.20	1.10										
Flush Information				Borehole Diameter				Casing Diameter					
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)					
1.20	2.50		100%-100%	white	45.20	146	1.10	175					
2.50	4.00		100%-100%	white									
4.00	5.50		100%-100%	white									
5.50	7.00		100%-100%	white									

Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %. NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R72001	
Contract Number: JFR1451	Start Date: 26/08/2020	End Date: 01/09/2020	Checked By: GR	Status: FINAL	Sheet 2 of 5	
Rotary Core Drilling Log		Easting: 414065.2	Northing: 142132.6	Ground Level: 94.61mOD	Plant Used: Comacchio 450	Logged By: LD/MW
		Termination: Target depth achieved.			Scale: 1:50	

Weather: Sunny+Rain

Samples & Core Recovery				Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation
10.00 - 11.50	CD		73 19 25		81.91	12.70		<p>Between 10.00-10.40 m bgl: Assumed zone of core loss.</p> <p>Between 10.40-11.20 m bgl: Non-intact drilling disturbed.</p> <p>At 11.05 m bgl: Singular angular medium flint gravel.</p> <p>Between 11.50-11.60 m bgl: Non-intact drilling disturbed.</p>	11	
11.50 - 12.25			107 64 44						12	
12.25 - 13.00	CD		93 60 60							
13.00 - 14.50	CD		100 65 60			(1.80)		<p>Very weak medium to high density white CHALK with occasional orangish brown staining, occasional marl bands and fossiliferous content. Fracture Set 1 is subhorizontal closely to medium spaced infilled with occasional white silt and rare brown staining. Fracture Set 2 is 40 to 80° medium spaced sometimes polished with frequent black speckling on joint surfaces with rare infill. (CIRIA Grade C2/C3)</p> <p>SEAFORD CHALK FORMATION</p> <p>Between 12.74-12.84 m bgl: Two 2-3 mm light grey marl bands bisected by orange stained fossil (10mm).</p> <p>Between 13.00-13.08 m bgl: Multiple 1mm indistinct light grey undulating marl bands and light grey fossiliferous shell fragments.</p> <p>At 13.68 m bgl: Black angular medium flint gravel fragment.</p> <p>Between 13.76-13.82 m bgl: Frequent orangish brown filamentous staining up to 50mm in length.</p>	13	
14.50 - 16.00	CD		97 67 70					<p>Very weak medium density white CHALK with occasional orangish brown staining. Fracture set 1 is subhorizontal medium spaced with occasional infill of comminuted white chalk and rare brown staining. Fracture set 2 is 40-80° medium spaced sometimes polished with frequent black speckling on fracture surfaces with rare infill. (CIRIA Grade C2)</p> <p>SEAFORD CHALK FORMATION</p> <p>Between 14.50-14.60 m bgl: Assumed zone of core loss.</p> <p>At 14.60 m bgl: light brown rounded medium flint gravel fragment.</p> <p>Between 14.60-14.80 m bgl: Occasional orangish brown staining.</p> <p>At 14.70 m bgl: Distinct fine linear orange staining band with occasional oval structures (presumed sponge bed).</p> <p>At 14.97 m bgl: black angular medium flint gravel fragment.</p> <p>Between 15.11-15.27 m bgl: Non-intact drilling disturbed.</p> <p>At 15.67 m bgl: Nodular medium light brown rinded black flint within joint.</p> <p>Between 16.18-16.77 m bgl: Multiple 1-3 mm light grey undulating marl bands becoming very faint from 16.5m. Grey fossils at 16.32 m.</p> <p>Between 16.81-16.84 m bgl: black tabular medium and coarse flint gravel.</p> <p>Between 16.94-16.97 m bgl: Three 2-3 mm light grey marl bands with orange stained fossil (10mm).</p> <p>Between 17.20-17.35 m bgl: 150mm section of high density chalk.</p> <p>At 17.30 m bgl: 20mm Orange stained fossiliferous fragment.</p>	14	
16.00 - 17.50	CD		93 70 70						15	
17.50 - 19.00	C		100 0 0						16	
19.00 - 20.50	CD		93 39 32			(6.00)		<p>Between 19.00-19.10 m bgl: Assumed zone of core loss.</p> <p>At 19.40 m bgl: Inoceramid fossil.</p> <p>Between 19.60-20.00 m bgl: Occasional black angular to nodular medium and coarse flint inclusions.</p> <p>Between 19.60-20.18 m bgl: Non-intact drilling disturbed - Vertical joint</p>	17	
									18	
									19	
									20	

Start & End of Shift Observations				Installation					Remarks:	
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)	
01-09-2020	11:30	45.20	0.00							1. Inspection pit hand dug to 1.20mbgl. 2. Within the Chalk units there are very thin to thin zones of Non Intact Drilling Disturbance that are generally very closely to widely spaced. Within these zones material is recovered as silts and gravels. 3. Falling Head Tests undertaken at 17.5 m bgl were aborted. 4. Borehole Backfilled with bentonite on completion.
Water Strikes										
Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks					
Flush Information					Borehole Diameter		Casing Diameter			
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)		
7.00	8.50		100%-100%	white	45.20	146	1.10	175	Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %.	
8.50	10.00		100%-100%	white					NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).	
10.00	11.50		100%-100%	white						
11.50	12.25		100%-100%	white						
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018										



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R72001	
Contract Number: JFR1451	Start Date: 26/08/2020	End Date: 01/09/2020	Checked By: GR	Status: FINAL	Sheet 3 of 5	
Rotary Core Drilling Log		Easting: 414065.2	Northing: 142132.6	Ground Level: 94.61mOD	Plant Used: Comacchio 450	Logged By: LD/MW
		Termination: Target depth achieved.			Scale: 1:50	

Weather: Sunny+Rain

Samples & Core Recovery					Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
20.50 - 22.00	CD		100 77 77		74.11	20.50		and flint present. Between 20.40-20.45 m bgl: Non-intact drilling disturbed. Between 20.45-20.50 m bgl: Very faint indistinct 5 mm bands of creamy light grey marl. Weak medium density white CHALK with occasional orangish brown staining. Fracture set 1 is subhorizontal close to medium spaced with infill of comminuted white silt and rare brown staining. Fracture set 2 is 40-80° medium spaced occasionally widely spaced sometimes polished with frequent black speckling on joint surfaces with rare infill. (CIRIA Grade C2/C3)	21		
22.00 - 23.50	CD		87 63 66			(4.50)		SEAFORD CHALK FORMATION Between 21.09-21.17 m bgl: Three 5 mm indistinct very light grey undulating marl bands orientated at 28 degrees parallel to adjacent joint. Between 21.14-21.20 m bgl: Occasional angular fine to medium black flint inclusions. Drilling disturbed. At 21.47 m bgl: Indistinct non pervasive marl band. At 21.95 m bgl: 2mm marl band. Between 22.00-22.26 m bgl: Assumed zone of core loss. Between 22.26m and 22.69m: Frequent indistinct very light grey marl bands with single dark orangish brown stained sponge bed (5mm). At 22.79 m bgl: Occasional angular fine to medium black flint inclusions. Drilling disturbed.	22 23		
23.50 - 24.25	CD		107 55 37					Between 23.93-24.22 m bgl: Assumed zone of core loss due to flint gravel.	24		
24.25 - 25.00	CD		93 61 47					Between 24.22-24.32 m bgl: Cobble of black rinded white/grey nodular flint gravel. Non-intact drilling disturbed due to flint gravel Between 24.39-24.41 m bgl: Distinct and planar marl band. Between 24.72-24.85 m bgl: Non-intact drilling disturbed - flint gravel present.	25		
25.00 - 26.50	C		100 93 90	NI 270 600	69.61	25.00		Very weak to weak medium density white CHALK with rare orangish brown staining. Fractures are subhorizontal medium to widely spaced with occasional comminuted white silt and rare brown staining. (CIRIA Grade C1/C2) SEAFORD CHALK FORMATION Between 25.00-25.04 m bgl: Assumed zone of core loss. Between 25.19-25.26 m bgl: Two 10mm very indistinct very light grey marl bands. At 25.75 m bgl: Rounded coarse nodular black rinded white flint and shark tooth. Between 25.80m and 26.36m: Frequent very indistinct light grey marl bands. Between 26.00-26.09 m bgl: Assumed zone of core loss. Due to flint gravel. Gravel of fine o coarse angular back rinded white flints (est flint cobble). At 26.17 m bgl: 2.3mm phosphatic nodule (light brown) At 26.20 m bgl: Fossil c. 40mm (probable Inocermit). Between 26.34m and 26.52m: Frequent indistinct very light grey marl bands with two distinct (1mm thick) meandering light grey marl bands with adjacent orangish brown staining. Between 26.40-26.45 m bgl: Angular coarse black flint clast. Local chalk drilling disturbed. At 26.64 m bgl: Fossil c. 40mm (probable Inocermit). At 26.84 m bgl: Medium to coarse nodular black rinded white flint gravel inclusion.	26 27		
26.50 - 28.00	C		100 94 99			(3.00)		At 27.04 m bgl: Two 1mm distinct planar to undulating light grey marl bands with dark orange stained sponge bed Between 27.25-27.50 m bgl: Approximately 45 degree inclined 2mm undulating distinct light grey marl band with two 10mm dark orangish brown sponge beds and occasional very light grey stained inclusions.	28		
28.00 - 29.50	CD		100 61 56		66.61	28.00		Very weak medium to high density white CHALK with occasional orangish brown staining. Fracture set 1 is subhorizontal close to medium spaced infilled (>3mm) with comminuted white chalk and very rare brown staining. Fracture is 2 40-80° medium spaced occasionally widely spaced sometimes polished with frequent black speckling on joint surfaces with rare infill. (CIRIA Grade C2/C3)	29		
	C							SEAFORD CHALK FORMATION Between 28.00-28.15 m bgl: Angular black flint cobble and angular flint gravel. Between 28.15-29.50 m bgl: Frequent non pervasive very indistinCt non	30		

Start & End of Shift Observations					Installation					Remarks:	
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)		
										1. Inspection pit hand dug to 1.20mbgl. 2. Within the Chalk units there are very thin to thin zones of Non Intact Drilling Disturbance that are generally very closely to widely spaced. Within these zones material is recovered as silts and gravels. 3. Falling Head Tests undertaken at 17.5 m bgl were aborted. 4. Borehole Backfilled with bentonite on completion.	
Water Strikes											
Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks						
Flush Information					Borehole Diameter		Casing Diameter				
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)			
12.25	13.00		100%-100%	white	45.20	146	1.10	175			
13.00	14.50		100%-100%	white							
14.50	16.00		100%-100%	white							
16.00	17.50		100%-100%	white							
Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %. NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).											
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018											



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R72001	
Contract Number: JFR1451	Start Date: 26/08/2020	End Date: 01/09/2020	Checked By: GR	Status: FINAL	Sheet 4 of 5	
Rotary Core Drilling Log		Easting: 414065.2	Northing: 142132.6	Ground Level: 94.61mOD	Plant Used: Comacchio 450	Logged By: LD/MW
Weather: Sunny+Rain		Termination: Target depth achieved.				Scale: 1:50

Samples & Core Recovery				Strata Details						Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
29.50 - 31.00	C		100 85 71					<p>pervasive marl bands (typically 1-2mm). With occasional sub vertical light grey marl inclusion (perpendicular to indistinct marl bands).</p> <p>Between 29.20-29.30 m bgl: Orange brown stained sponge beds.</p> <p>Between 29.50-31.00 m: Indistinct non pervasive light grey marl bands (Up to 20mm in thickness).</p> <p>Between 29.56-29.99 m bgl: Frequent orangish brown staining (occasionally pervasive through core).</p> <p>Between 29.95-29.99 m bgl: 3mm shell fragments.</p> <p>Between 30.18-30.20 m bgl: Nodular black rimmed white flint cobble.</p> <p>At 30.37 m bgl: Two 2-3 mm light grey meandering marl bands</p> <p>Between 31.00-31.50 m bgl: Indistinct non pervasive very light grey marl bands (Up to 20mm in thickness). Occasional subvertical 2-3mm light grey marl bands.</p>	31		
31.00 - 32.50	CD		93 43 41			(4.50)		<p>Between 31.50m and 32.07m: Non-intact drilling disturbed recovered as angular black flint cobble and frequent angular fine to coarse flint gravel sized fragments.</p> <p>Between 32.07-32.17 m bgl: Assumed zone of core loss.</p>	32		
32.50 - 34.00	C		100 98 98		62.11	32.50		<p>At 32.40 m bgl: 1mm distinct light grey marl band.</p> <p>Between 32.40-32.50 m bgl: Non-intact drilling disturbed.</p> <p>Very weak medium density white CHALK with frequent indistinct very light grey marl bands (up to 20mm) and very rare orangish brown staining. Fracture Set 1 is subhorizontal medium spaced and frequently infilled (>3mm) with comminuted white chalk. Fracture Set 2 is (40-80°) and is medium to widely spaced occasionally polished with frequent black speckling on joint surfaces with rare infill. (CIRIA Grade C2)</p> <p>SEAFORD CHALK FORMATION</p> <p>Between 32.90-32.97 m bgl: Nodular black rimmed white flint cobble.</p> <p>Between 34.00-35.50 m bgl: Medium to high density.</p>	33		
34.00 - 35.50			93 72 74	NI 460 1500				<p>Between 34.20-34.23 m bgl: Dark orangish brown 35mm sponge.</p>	35		
35.50 - 37.00			93 61 59		59.11	35.50		<p>Between 35.45-35.50 m bgl: Nodular black rimmed white flint cobble.</p> <p>Very weak medium density white CHALK with rare orangish brown staining. Fractures are subhorizontal medium spaced infilled (<3mm) frequently surfaced by comminuted white chalk. (CIRIA Grade B2)</p> <p>SEAFORD CHALK FORMATION</p> <p>Between 36.24-36.55 m bgl: Non-intact drilling disturbed black whinned white nodular flint cobble and gravel. Adjoining chalk is frequently orange stained.</p>	36		
37.00 - 38.50	C		100 82 77		58.11	36.50		<p>Very weak high density white CHALK with frequent indistinct very light grey marl laminae and frequent orange brown staining. Fracture set 1 is subhorizontal medium spaced infilled (<3mm) frequently with infill of comminuted white chalk. Fracture Set 2 is 40-80° medium spaced occasionally widely spaced sometimes polished with frequent black speckling on joint surfaces with rare infill. (CIRIA Grade B2)</p> <p>SEAFORD CHALK FORMATION</p> <p>At 36.68 m bgl: 35mm bivalve fossil.</p> <p>Between 36.71-36.81 m bgl: Non-intact drilling disturbed black rimmed white nodular flint cobble and gravel.</p> <p>At 37.00 m bgl: Becoming dense chalk.</p> <p>Between 37.93-38.15 m bgl: Non-intact drilling disturbed.</p> <p>At 38.3 m bgl: Nodular black rimmed white and brown flint cobble.</p>	37		
38.50 - 40.00	CD		100 81 77	NI 220 360		(4.80)		<p>1mm distinct light grey marl band.</p> <p>Between 39.17-39.19 m bgl: recovered as black rimmed white nodular flint cobble and gravel.</p>	39		
	C								40		

Start & End of Shift Observations					Installation					Remarks:
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)	
										1. Inspection pit hand dug to 1.20mbgl. 2. Within the Chalk units there are very thin to thin zones of Non Intact Drilling Disturbance that are generally very closely to widely spaced. Within these zones material is recovered as silts and gravels. 3. Falling Head Tests undertaken at 17.5 m bgl were aborted. 4. Borehole Backfilled with bentonite on completion.
Water Strikes										
Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks					
Flush Information					Borehole Diameter		Casing Diameter			
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)		
17.50	19.00		100%-100%	white	45.20	146	1.10	175		
19.00	20.50		100%-100%	white						
20.50	45.20		100%-100%	white						
Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %. NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).										
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018										



Contract Name: A303 Stonehenge			Client: RPS Planning & Development			Borehole ID: R72001		
Contract Number: JFR1451	Start Date: 26/08/2020	End Date: 01/09/2020	Checked By: GR	Status: FINAL	Sheet 5 of 5			
Rotary Core Drilling Log		Easting: 414065.2	Northing: 142132.6	Ground Level: 94.61mOD	Plant Used: Comacchio 450	Logged By: LD/MW	Scale: 1:50	

Weather: Sunny+Rain Termination: Target depth achieved.

Samples & Core Recovery					Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
40.00 - 41.50	C		100 85 84		53.31	41.30		<p>Between 40.30-41.30 m bgl: Occasional dark orangish brown 10-30mm stains (apparent sponge beds).</p> <p>Between 40.62-40.70 m bgl: recovered as black rhinded white nodular flint cobble and gravel.</p> <p>Between 40.90-40.93 m bgl: recovered as black rhinded white nodular flint gravel.</p>	41		
41.50 - 43.00	CD		100 79 71	30 200 1000		(2.55)		<p>Very weak medium density white CHALK with frequent indistinct very light grey marl laminae and occasional orangish brown staining. Fracture Set 1 is subhorizontal medium spaced infilled (<3mm) frequently surfaced by comminuted white chalk (80,200,460). Fracture Set 2 is 40-80° widely spaced occasionally polished with frequent black speckling on joint surfaces with rare infill. (CIRIA Grade B2)</p> <p>SEAFORD CHALK FORMATION</p> <p>Between 42.30-42.35m: Non-intact drilling disturbed black rhinded white nodular flint fine gravel.</p> <p>Between 42.44-42.47m: Oval dark orange 30mm stains (sponge beds)</p> <p>Between 42.76-42.81m: Light orange brown staining is pervasive.</p> <p>At 42.92: 2mm marl band (distinct and undulating).</p> <p>Between 42.95-42.98: Non-intact drilling disturbed black rhinded white nodular flint cobble and gravel.</p> <p>At 43.00m: Becoming dense chalk.</p> <p>Between 43.00-43.70m: Frequent indistinct light grey marl inclusions with occasional distinct 1mm thick undulating light grey marl bands</p> <p>Between 43.62-43.65m: Assumed zone of core loss, recovered as gravel chippings of angular fine to medium flint.</p>	42		
43.00 - 44.50	C		87 57 61		50.76	43.85		<p>Very weak dense white CHALK with rare to occasional brown staining. Fractures are subhorizontal medium spaced and frequently infilled with comminuted white chalk. (CIRIA grade B2)</p> <p>SEAFORD CHALK FORMATION</p> <p>Between 44.04-45.20m: Significant orange staining typically occurring as orange patches.</p>	43		
44.50 - 45.25	CD		100 100 100	NI 110 490	50.11	44.50		<p>Weak medium to high density off-white orange stained CHALK. Fractures are subhorizontal to 10° medium spaced no infill. (CIRIA Grade A2)</p> <p>SEAFORD CHALK FORMATION</p> <p>Between 44.68-44.73m: Gravel sized (50mm) flint recovered as dark brown angular medium to coarse gravel.</p> <p>Between 45.12-45.20m: Fine light grey wavy filamentous marl bands occasionally interwoven.</p>	44		
					49.36	45.25		<p>End of Borehole at 45.25m</p>	45		
									46		
									47		
									48		
									49		
									50		

Start & End of Shift Observations					Installation					Remarks:		
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)	1. Inspection pit hand dug to 1.20mbgl. 2. Within the Chalk units there are very thin to thin zones of Non Intact Drilling Disturbance that are generally very closely to widely spaced. Within these zones material is recovered as silts and gravels. 3. Falling Head Tests undertaken at 17.5 m bgl were aborted. 4. Borehole Backfilled with bentonite on completion.		
										Water Strikes		
Strike (m)		Casing (m)		Sealed (m)		Time (mins)		Rose (to m)		Remarks		
Flush Information					Borehole Diameter				Casing Diameter			
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %. NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).	
					45.20	146	1.10	175	RPS RC Template Issue Number: 2 Issue Date: 02/01/2018			



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R72004	
Contract Number: JFR1451	Start Date: 26/08/2020	End Date: 02/09/2020	Checked By: GR	Status: FINAL	Sheet 1 of 5	
Rotary Core Drilling Log		Easting: 414226.5	Northing: 142124.1	Ground Level: 85.49mOD	Plant Used: Beretta T41	Logged By: BB
		Termination: Target depth achieved.			Scale: 1:50	

Weather: Sunny+Stormy+Rain+Variable Termination: Target depth achieved.

Samples & Core Recovery					Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
1.20 - 2.50	D ES D ES D ES				84.94	(0.55)		Crops over soft brown and occasionally white slightly gravelly sandy CLAY with frequent rootlets. Gravel is subangular white fine to coarse extremely weak low density white and off white chalk.			
					84.49	(0.45)		TOPSOIL			
		D ES			84.29	1.00		Soft grey and brown slightly sandy gravelly SILT. Gravel is subangular to subrounded fine to coarse, extremely weak low density off white and white chalk and rare flint.	1		
						84.29	1.20		POSSIBLE COLLUVIUM		
2.50 - 3.25			8 0 0			(2.80)		Structureless CHALK composed of soft greyish white and light brown slightly sandy very gravelly SILT. Gravel is subangular to subrounded fine to coarse extremely weak low density off white and white chalk and occasional flint. (CIRIA Grade Dm)			
3.25 - 4.00			0 0 0					SEAFORD CHALK FORMATION Assumed Zone of Core Loss (AZCL) NO RECOVERY <i>Between 1.20m and 4.00m: Assumed zone of core loss</i>			
4.00 - 4.75			80 0 0		81.49	4.00		Very weak low density white with frequent orange staining CHALK. Fracture Set 1 is subhorizontal to 70° closely spaced, stepped or undulating, rough, no infill with orange staining and rare black specks. Fracture Set 2 is 70° to subvertical widely spaced no infill with frequent orange staining and black speckling. (CIRIA Grade A3)	4		
4.75 - 5.50			100 80 45					SEAFORD CHALK FORMATION <i>From 4.00m to 4.83m: NI</i> <i>From 4.50m to 4.70m: Angular medium flint gravel and rare cobble.</i>	5		
5.50 - 7.00	C CD1		97 75 73					<i>From 5.42m-5.50m: NI</i>	6		
7.00 - 8.50	CD2		87 31 0	NI 110 210		(7.50)		<i>From 6.86m to 6.94m: NI</i> <i>From 6.94m to 7.16m: AZCL</i> <i>From 7.16m to 7.45m: NI</i>	7		
8.50 - 10.00	C CD3 CD4		97 75 39					<i>From 7.87m to 8.35m: NI</i> <i>At 8.10m: Angular medium flint gravel</i> <i>From 8.83m to 8.90m: angular flint cobble</i>	8		
								<i>From 8.90m to 9.10m: NI</i> <i>At 9.10m: Angular medium flint gravel</i> <i>At 9.30m: Very thin marl bands</i>	9		
									10		

Start & End of Shift Observations					Installation					Remarks:				
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)					
26-08-2020	08:00									1. Hand dug inspection pit undertaken from ground level to 1.20 m bgl.				
26-08-2020	17:00	2.50	2.00							2. Falling Head Tests completed at 7.87 m bgl. 3. No groundwater encountered. 4. Borehole backfilled on completion.				
27-08-2020	08:00	2.50	2.00											
27-08-2020	17:00	7.87	2.00											
28-08-2020	08:00	7.87	2.00											
28-08-2020	17:00	20.50	2.00											
01-09-2020	07:55	20.50	2.00											
Flush Information					Borehole Diameter		Casing Diameter		Water Strikes					
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
1.20	45.00	AIR MIST	100%-100%	white	45.00	146	2.00	175				0		Dry

Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %. NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R72004	
Contract Number: JFR1451	Start Date: 26/08/2020	End Date: 02/09/2020	Checked By: GR	Status: FINAL	Sheet 2 of 5	
Rotary Core Drilling Log		Easting: 414226.5	Northing: 142124.1	Ground Level: 85.49mOD	Plant Used: Beretta T41	Logged By: BB
		Termination: Target depth achieved.			Scale: 1:50	

Weather: Sunny+Stormy+Rain+Variable

Termination: Target depth achieved.

Samples & Core Recovery					Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
10.00 - 11.50	C CD5		80 51 41		73.99	11.50		From 10.00m to 10.26m: AZCL	11		
11.50 - 12.25			0 0 0		73.24	(0.75)		Assumed Zone of Core Loss (AZCL) NO RECOVERY	12		
12.25 - 13.00			100 31 15					Very weak low density white with frequent orange staining CHALK. Fracture Set 1 is subhorizontal to 70° very closely to closely spaced, no infill with orange staining and rare black specks. Fracture Set 2 is 70° to subvertical widely spaced no infill with frequent orange staining and black speckling. (CIRIA Grade A3) SEAFORD CHALK FORMATION	13		
13.00 - 14.50	C CD6 C CD7 C CD8		100 84 43					Between 13.28m and 13.30m: Angular medium flint gravel At 13.66m: Angular medium flint gravel Between 13.80m and 13.90m: Orange sponge fossils. At 14.20m: Very thin marl band. At 14.40m: Angular medium flint gravel	14		
14.50 - 16.00	C CD9 C CD10 C CD11 C CD12		100 92 81	NI 10 340		(5.25)		Between 14.83m and 14.90m: Angular coarse flint gravel At 14.95m: Suspected phosphatic chalk nodule At 15.10m: Very thin marl band	15		
16.00 - 17.50	CD13		100 57 31					From 17.12m to 17.20m: Angular flint cobble	16		
17.50 - 19.00	C C1 C CD14		97 71 59		67.99	17.50		Very weak high density white with orange staining CHALK. Fracture Set 1 is subhorizontal to 50° closely spaced no infill with black speckles and orange staining. Fracture Set 2 is 60° to subvertical medium spaced generally no infill with rare clay veneer or black speckles. (CIRIA Grade A3/B3) SEAFORD CHALK FORMATION At 17.80m: Rare thin wispy marl bands. At 17.85m: Frequent orange staining. Between 18.60m and 18.70m: band of angular coarse flint gravel. Between 18.80m and 19.00m: AZCL	18		
19.00 - 20.50	C C2		93 68 52					Between 19.50m and 19.55m: Band of angular medium flint gravel. Between 19.70m and 19.80m: Rare thin wispy marl bands.	19		
									20		

Start & End of Shift Observations					Installation					Remarks:				
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)					
01-09-2020	17:10	40.00	2.00	39.00						1. Hand dug inspection pit undertaken from ground level to 1.20 m bgl.				
02-09-2020	08:00	40.00	2.00	31.00						2. Falling Head Tests completed at 7.87 m bgl. 3. No groundwater encountered. 4. Borehole backfilled on completion.				
02-09-2020	17:00	40.00												
Flush Information					Borehole Diameter		Casing Diameter		Water Strikes					
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
					45.00	146	2.00	175				0		Dry
Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %. NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).														
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018														



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R72004	
Contract Number: JFR1451	Start Date: 26/08/2020	End Date: 02/09/2020	Checked By: GR	Status: FINAL	Sheet 3 of 5	
Rotary Core Drilling Log		Easting: 414226.5	Northing: 142124.1	Ground Level: 85.49mOD	Plant Used: Beretta T41	Logged By: BB
		Termination: Target depth achieved.			Scale: 1:50	

Weather: Sunny+Stormy+Rain+Variable Termination: Target depth achieved.

Samples & Core Recovery				Strata Details						Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
20.50 - 22.00	CD15		40 31 15					Between 20.43m and 20.50m: AZCL At 20.90m: Angular medium flint gravel Between 20.93m and 21.00m: NI Between 21.15m and 22.00m: AZCL	21		
22.00 - 22.75	CD16		100 39 39	NI 160 990		(7.50)		At 22.10m: Angular flint cobble. At 22.30m: Angular coarse flint gravel	22		
22.75 - 23.50	CD17		100 52 36					At 23.40m: Angular medium flint gravel At 23.60m: Rare thin wispy marl bands	23		
23.50 - 25.00	C CD18		83 71 53					Between 24.20 and 24.35m: Band of angular medium flint gravel. Between 24.75m and 25.00: AZCL	24		
25.00 - 26.50	C CD19		100 89 72		60.49	25.00		Very weak medium density white with occasional orange stains CHALK. Fracture Set 1 is subhorizontal to 30° closely to medium spaced generally no infill with black specks and with rare gravel, chalk and silt infill. Fracture Set 2 is 60° to subvertical medium to widely spaced predominantly no infill, locally infilled with less than 1mm of silt striated with black speckles. (CIRIA Grade A2) SEAFORD CHALK FORMATION At 25.35m: Angular flint cobble. Between 25.50m and 25.68m: Frequent orange staining. At 25.85m: Angular flint cobble. At 26.30m: Occasional orange staining.	25		
26.50 - 28.00	C C3		97 89 71					At 27.40m: Angular coarse flint gravel. At 27.60m: Occasional orange staining. At 27.80m: Occasional orange staining.	26		
28.00 - 29.50	CD20 C C4 C CD22		93 88 88					At 28.50m: Angular medium flint gravel. Between 29.20m and 29.22m: Frequent orange staining. Between 29.70m and 29.90m: Frequent orange staining.	27		
									28		
									29		
									30		

Start & End of Shift Observations				Installation				Remarks:			
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)	1. Hand dug inspection pit undertaken from ground level to 1.20 m bgl. 2. Falling Head Tests completed at 7.87 m bgl. 3. No groundwater encountered. 4. Borehole backfilled on completion.	
										Water Strikes	
Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks		0				
Flush Information				Borehole Diameter		Casing Diameter					
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %.		
					45.00	146	2.00	175	NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).		
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018											



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R72004	
Contract Number: JFR1451	Start Date: 26/08/2020	End Date: 02/09/2020	Checked By: GR	Status: FINAL	Sheet 4 of 5	
Rotary Core Drilling Log		Easting: 414226.5	Northing: 142124.1	Ground Level: 85.49mOD	Plant Used: Beretta T41	Logged By: BB
		Termination: Target depth achieved.			Scale: 1:50	

Weather: Sunny+Stormy+Rain+Variable Termination: Target depth achieved.

Samples & Core Recovery				Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation
29.50 - 31.00	CD23 C		100 84 83					Between 29.90m and 30.10m: Band of angular fine to medium gravel. Between 30.10m and 30.25m: Frequent thin wispy marl bands orange staining and shell fragments.		
	C C5							At 31.45m: Angular medium flint gravel.		
31.00 - 32.50	C C6		100 91 81					Between 31.65m and 32.15m: Orange staining with occasional phosphatic nodules.		
	C7 C							Between 32.40m and 32.50m: Frequent orange staining. At 32.50m: Angular fine flint gravel.		
32.50 - 34.00	CD25		97 81 73	NI 20 770		(12.00)		Between 33.45m and 33.50m: Frequent orange staining.		
	CD26							Between 33.85m and 33.95m: frequent orange staining. At 34.00m: Angular coarse flint gravel.		
34.00 - 35.50	CD27 C		100 100 89					At 34.25m: Angular medium flint gravel. At 34.35m: Rare shell fragments. At 34.70m: Angular medium flint gravel.		
	CD28 C C8							Between 35.35m and 35.40m: Frequent orange staining.		
35.50 - 37.00			100 93 84					At 36.00m: Angular fine flint gravel.		
37.00 - 38.50			100 85 67		48.49	37.00		Weak medium density white with rare orange staining CHALK. Fractures are subhorizontal medium spaced clean or infilled (up to 3mm) with comminuted chalk. (CIRIA grade B2) SEAFORD CHALK FORMATION Between 37.75m bgl-37.85m bgl: frequent orange staining.		
								Between 38.25m bgl-38.40m bgl: frequent orange staining. Between 38.40m bgl-38.45m bgl: black subangular coarse flint gravel.		
38.50 - 40.00			97 80 70	60 270 700		(3.00)		Between 38.70m bgl-38.73m bgl: wisps of light grey marl up to 2mm thick. At 39.02m bgl: wisps of light grey marl. Between 39.20m bgl-39.25m bgl: frequent orange sponges (up to 50mm) and shells. At 39.55m bgl: frequent orange sponges (< 1mm). Between 39.70m bgl-39.73m bgl: black angular flint cobble. At 39.80m bgl: rare wisps of light grey marl.		
					45.49	40.00				

Start & End of Shift Observations					Installation					Remarks:	
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)		
										1. Hand dug inspection pit undertaken from ground level to 1.20 m bgl. 2. Falling Head Tests completed at 7.87 m bgl. 3. No groundwater encountered. 4. Borehole backfilled on completion.	
Water Strikes											
Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks						
			0		Dry						
Flush Information					Borehole Diameter		Casing Diameter				
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)			
					45.00	146	2.00	175	Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %.		
NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).											
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018											



Contract Name: A303 Stonehenge			Client: RPS Planning & Development			Borehole ID: R72004		
Contract Number: JFR1451	Start Date: 26/08/2020	End Date: 02/09/2020	Checked By: GR	Status: FINAL		Sheet 5 of 5		
Rotary Core Drilling Log		Easting: 414226.5	Northing: 142124.1	Ground Level: 85.49mOD	Plant Used: Beretta T41	Logged By: BB	Scale: 1:50	

Weather: Sunny+Stormy+Rain+Variable Termination: Target depth achieved.

Samples & Core Recovery				Strata Details						Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
40.00 - 41.50	CD29 C CD30		95 89 73					At 39.90m bgl: black nodular flint cobble. Weak high to medium density white with rare orange staining CHALK. Fractures are subhorizontal to 20° closely rarely medium spaced no infill with occasional black specks. (CIRIA Grade A3) SEAFORD CHALK FORMATION At 40.17m: Angular medium flint gravel. At 40.40m: Angular fine flint gravel. At 40.50m: Frequent inoceramid shell fragments. Between 41.00m and 41.09m: NI Between 41.00m and 41.15m: Occasional inoceramid shell fragments At 41.05m: Angular fine flint gravel Between 41.40m and 41.43m: Band of inoceramid shell fragments. Between 41.50m and 41.54m: AZCL At 41.70m: Angular medium flint gravel. Between 41.70m and 41.85m: Occasional inoceramid shell fragments. Between 41.90m and 41.94m: Thin horizontal marl bands.	41		
41.50 - 43.00	C C9 C C10		100 97 87	NI 140 650		(5.00)		Between 42.24 and 42.40m: Frequent thin wispy marl bands.	42		
43.00 - 44.50	CD31 C CD32		95 84 79					Between 43.00m and 43.04m: AZCL Between 43.18m and 43.29m: Thin marl bands. Between 43.47m and 43.63m: Angular flint cobble.	43		
44.50 - 45.00	CD33		100 0 0		40.49	45.00		At 44.10m: Angular medium flint gravel. Between 44.22m and 44.26m: Thin marl bands. At 44.30m: Angular fine flint gravel. Between 44.35m and 44.44m: Fracture 70 degrees undulating striated clean Between 44.47m and 44.50m: AZCL	44		
								End of Borehole at 45.00m	45		
									46		
									47		
									48		
									49		
									50		

Start & End of Shift Observations					Installation					Remarks:				
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)	1. Hand dug inspection pit undertaken from ground level to 1.20 m bgl. 2. Falling Head Tests completed at 7.87 m bgl. 3. No groundwater encountered. 4. Borehole backfilled on completion.				
										Water Strikes				
Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks					Dry				
										0				
Flush Information					Borehole Diameter				Casing Diameter					
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)						
					45.00	146	2.00	175	Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %.					
										NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).				
										RPS RC Template Issue Number: 2 Issue Date: 02/01/2018				



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R72005	
Contract Number: JFR1451	Start Date: 05/10/2020	End Date: 12/10/2020	Checked By: GR	Status: FINAL	Sheet 1 of 7	
Rotary Core Drilling Log		Easting: 414269.1	Northing: 142119.0	Ground Level: 84.01mOD	Plant Used: Comacchio 450	Logged By: BB
		Termination: Target depth achieved.			Scale: 1:50	

Weather: Drizzle

Samples & Core Recovery					Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
PID 0.0ppm	ES				83.91	0.10		Soft brown silty CLAY with rootlets. TOPSOIL			
PID 0.0ppm	ES					(0.69)		Soft brown silty gravelly CLAY. Gravel is subrounded to subangular, predominantly subrounded fine to medium chalk. POSSIBLE COLLUVIUM			
PID 0.0ppm	ES				83.22	0.79		Structureless CHALK composed of clayey silty subangular fine to medium GRAVEL. Clasts are very weak low density white. Matrix is light brown and white. (CIRIA Grade Dc)			
PID 0.0ppm	ES				82.81	1.20		SEAFORD CHALK FORMATION			
1.20 - 2.50	D		100 0 0			(1.99)		Structureless CHALK composed of slightly sandy silty subangular to subrounded fine to coarse GRAVEL with low cobble content. Clasts are very weak low to medium density off-white with rare black specks and orange staining (possible sponge bed). Cobbles are weak medium density white with occasional black specks. Matrix is light brown becoming paler after 1.80, with band of angular fine to medium nodular flint gravel. (CIRIA grade Dc) SEAFORD CHALK FORMATION			
2.50 - 4.00	D		70 0 0		80.82	3.19		Non Intact CHALK recovered as angular and subangular fine to coarse weak medium density gravel with occasional angular to subangular fine to medium nodular flint. with occasional localised orange staining (30mm x 30mm). SEAFORD CHALK FORMATION			
4.00 - 4.75	D		100 0 0								
4.75 - 5.50	D		73 0 0			(4.41)		Between 4.09m and 6.25m: NIDD Between 5.10m and 5.20m: concentration of orange staining (sponge beds).			
5.50 - 6.25	D		100 21 0								
6.25 - 7.00	D		100 24 0					Between 6.61m and 6.74m: Suspected structureless chalk			
7.00 - 8.50	D		100 24 0		76.41	7.60		Between 7.10m and 7.12m: Non Intact recovered as angular nodular flint cobble fragments (up to 70mm). Between 7.26m and 7.57m: suspected structureless chalk			
8.50 - 10.00	C C D		83 54 32					Very weak to weak low to medium density white CHALK with frequent black specks and occasional orange staining marl seams and widely spaced flint bands. Fracture set 1: subhorizontal to 10° closely to widely spaced with silt veneer, with frequent black specks. Fracture set 2: 80° to subvertical with silt veneer with occasional black specks and orange staining. (CIRIA grade B1/B3) SEAFORD CHALK FORMATION			
								Between 9.12m and 9.19m: NI recovered as angular nodular flint cobble fragments (up to 80mm).			

Start & End of Shift Observations					Installation					Remarks:	
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)		
05-10-2020	13:00	0.00	0.00							1. Inspection pit hand dug to 1.20 m bgl. 2. Falling Head Tests undertaken at 11.50 m bgl. 3. Downhole Geophysics performed at the base of the borehole upon completion of drilling. 4. Borehole backfilled with bentonite on completion.	
05-10-2020	17:30	11.50	1.10								
07-10-2020	08:00	11.50	1.10								
07-10-2020	17:00	61.00	1.10	16.50							
08-10-2020	08:00	61.00	1.10								
08-10-2020	13:00	61.00	1.10								
Flush Information					Borehole Diameter		Casing Diameter				
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)			
1.20	2.50	Air/Mist	100%-100%	white	61.00	146	1.10	175			
2.50	4.00	Air/Mist	100%-100%	white							
4.00	4.75	Air/Mist	100%-100%	white							
4.75	5.50	Air/Mist	100%-100%	white							
Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %.											
NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).											
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018											



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R72005	
Contract Number: JFR1451	Start Date: 05/10/2020	End Date: 12/10/2020	Checked By: GR	Status: FINAL	Sheet 2 of 7	
Rotary Core Drilling Log		Easting: 414269.1	Northing: 142119.0	Ground Level: 84.01mOD	Plant Used: Comacchio 450	Logged By: BB
		Termination: Target depth achieved.			Scale: 1:50	

Weather: Drizzle

Samples & Core Recovery				Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation
10.00 - 11.50	D		100 7 0					Between 10.00m and 10.10m: NI recovered as angular nodular flint cobble fragments (up to 80mm). Between 10.50m and 10.51m: NI recovered as slightly silty subangular fine to coarse gravel with frequent black specks and occasional orange staining. Between 10.70m and 10.73m: NI recovered as angular to subangular fine to coarse gravel with frequent angular rimmed nodular flint cobbles (up to 70mm).	11	
11.50 - 13.00	C CD		100 43 19		160 980 2300	(7.90)			12	
13.00 - 14.50	C CD		100 73 39						13	
14.50 - 16.00	C		100 52 52		68.51	15.50			14	
16.00 - 17.50	C		55 49 38					Very weak low to predominantly medium density off-white with black specks and orange staining CHALK with occasional marl seams and closely to widely spaced flint bands. Fracture set 1: subhorizontal to 10° closely to widely spaced with silt veneer with black specks and orange staining. Fracture set 2: 35° to subvertical medium to very widely spaced predominantly silt veneer with black specks and orange staining (20mm x 30mm). (CIRIA grade B3) SEAFORD CHALK FORMATION Below 15.50m: occasionally high density chalk. Between 16.70m and 16.80m: NI. Between 16.95m and 17.30m: NI fragmented rimmed angular and subangular fine to coarse flint gravel (up to 20mm).	15	
17.50 - 19.00	C CD		100 60 47					Between 18.06m and 18.27m: NI recovered as silty angular fine to coarse gravel. Between 18.85m and 19.00m: localised orange staining (45mm x 30mm) rare marl seams (up to 2mm). Between 19.55m and 19.98m: NI recovered as gravel and cobble sized fragments of flint.	16	
	CD								17	
									18	
									19	
									20	

Start & End of Shift Observations				Installation				Remarks:			
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)		
										1. Inspection pit hand dug to 1.20 m bgl. 2. Falling Head Tests undertaken at 11.50 m bgl. 3. Downhole Geophysics performed at the base of the borehole upon completion of drilling. 4. Borehole backfilled with bentonite on completion.	
Water Strikes											
Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks						
Flush Information				Borehole Diameter				Casing Diameter			
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)			
5.50	6.25	Air/Mist	100%-100%	white	61.00	146	1.10	175	Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %.		
6.25	7.00	Air/Mist	100%-100%	white	NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).						
7.00	8.50	Air/Mist	100%-100%	white							
8.50	10.00	Air/Mist	100%-100%	white							
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018											



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R72005	
Contract Number: JFR1451	Start Date: 05/10/2020	End Date: 12/10/2020	Checked By: GR	Status: FINAL	Sheet 3 of 7	
Rotary Core Drilling Log		Easting: 414269.1	Northing: 142119.0	Ground Level: 84.01mOD	Plant Used: Comacchio 450	Logged By: BB
		Termination: Target depth achieved.			Scale: 1:50	

Weather: Drizzle

Samples & Core Recovery				Strata Details						Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
19.00 - 21.50	C		100 57 37					Between 20.10m and 20.30m: NIDD			
20.50 - 22.00			100 35 31					Between 21.00m and 21.81m: NI angular to subangular fine to coarse chalk gravel with low cobble content. Cobbles are subangular chalk.	21		
22.00 - 23.50			100 51 37					Between 22.00m and 22.09m: NI angular to subangular fine to medium flint fragments (up to 20mm) and occasional localised orange staining.	22		
23.50 - 25.00	C CD		100 36 33			(20.50)		Between 23.62m and 23.66m: NI angular fine to medium flint fragments (up to 20mm) and occasional localised orange staining. Between 23.72m and 23.77m: NI angular fine to medium flint gravel fragments (up to 15mm) and occasional localised orange staining. Between 23.87m and 24.50m NIDD recovered as angular fine to medium flint gravel fragments (up to 10mm).	23		
25.00 - 26.50	C		100 N/A N/A	100 660 3770					24		
26.50 - 28.00	CD		100 28 23					Between 26.36m and 26.90m: NIDD recovered as angular fine to medium flint gravel fragments (up to 15mm) and one flint cobble. At 26.55m: medium density. Between 26.78m and 26.90m: NIDD recovered as angular fine to medium flint gravel fragments (up to 15mm).	25		
28.00 - 29.50	D		100 38 24					Between 26.78m and 26.90m: NIDD recovered as angular fine to medium flint gravel fragments (up to 15mm). Between 27.50m and 27.84m: NI recovered as angular and subangular fine to coarse flint gravel and cobble fragments.	26		
								Between 28.39m and 28.40m: localised orange staining (30mm x 20mm). Between 28.48m and 28.58m: NIDD	27		
								Between 29.59m and 29.69m: NIDD with occasional marl bands.	28		
								Between 29.84m and 29.90m: NI with angular fine to medium fragments of	29		
									30		

Start & End of Shift Observations					Installation					Remarks:
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)	
										1. Inspection pit hand dug to 1.20 m bgl. 2. Falling Head Tests undertaken at 11.50 m bgl. 3. Downhole Geophysics performed at the base of the borehole upon completion of drilling. 4. Borehole backfilled with bentonite on completion.
Water Strikes										
Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose (m)	Remarks					
Flush Information					Borehole Diameter		Casing Diameter			
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)		
10.00	11.50	Air/Mist	100%-100%	white	61.00	146	1.10	175	Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %. NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).	
11.50	61.00	Air/Mist	10%-10%	white						
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018										



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R72005	
Contract Number: JFR1451	Start Date: 05/10/2020	End Date: 12/10/2020	Checked By: GR	Status: FINAL	Sheet 4 of 7	
Rotary Core Drilling Log		Easting: 414269.1	Northing: 142119.0	Ground Level: 84.01mOD	Plant Used: Comacchio 450	Logged By: BB
		Termination: Target depth achieved.			Scale: 1:50	

Weather: Drizzle

Samples & Core Recovery				Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation
29.50 - 31.00	C CD		100 49 35					flint gravel (up to 20mm). Between 30.40m and 30.65m: subrounded rinded flint boulder (up to 250mm) with dark orange staining.	31	
31.00 - 32.50	C		100 75 47					Between 32.25m and 32.30m: angular and subangular fine to coarse rinded flint gravel (up to 60mm). Between 32.34m and 32.27m: NIDD	32	
32.50 - 34.00	C		100 47 11					Between 32.80m and 32.88m: angular and subangular rinded flint cobbles. Between 33.47m and 33.53m: NI recovered as subangular to subrounded fine to coarse gravel of comminuted chalk.	33	
34.00 - 35.50	C		93 56 43					Between 34.00m and 34.30m: NIDD orange staining. Between 34.30m and 34.35m: angular and subangular rinded flint cobbles (up to 80mm) and interwoven marl seams. Between 34.64m and 34.68m: NIDD	34	
35.50 - 37.00	C CD		100 65 44		48.01	36.00		Between 35.35m and 35.40m: flint cobble (up to 90mm). Between 35.68m and 35.75m: flint cobble (up to 70mm). Very weak medium occasional high density white / cream CHALK with occasional black specks and orange staining with occasional light grey marl seams and medium to very widely spaced flint bands. Fracture set 1 is subhorizontal to 10° medium to widely spaced with silt veneer, with black specks and orange staining. Fracture set 2: 30 to 45° very widely spaced with silt veneer, with black specks with orange staining. (CIRIA grade B1/B2)	35	
37.00 - 38.50	CD		100 55 53					SEAFORD CHALK FORMATION Between 36.35m and 36.44m: NI recovered as angular to subrounded fine to coarse gravel of comminuted chalk. Below 37.32m: medium density and matrix becomes whiter. Between 37.67m and 37.73m: light grey marl bands (3mm). Between 38.15m and 38.18m: angular flint cobble fragments (up to 60mm). Between 38.27m and 38.44m: NIDD Between 38.50m and 38.65m: NI	36	
38.50 - 40.00	CD		100 77 56					At 39.20m: creamy white to white. At 39.30m: orange staining. Between 39.48m and 39.55m: angular fine to coarse flint gravel (up to 60mm).	37	
									38	
									39	
									40	

Start & End of Shift Observations					Installation					Remarks:
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)	
										1. Inspection pit hand dug to 1.20 m bgl. 2. Falling Head Tests undertaken at 11.50 m bgl. 3. Downhole Geophysics performed at the base of the borehole upon completion of drilling. 4. Borehole backfilled with bentonite on completion.
Water Strikes										
Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks					
Flush Information					Borehole Diameter		Casing Diameter			
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)		
					61.00	146	1.10	175		
Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %. NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).										
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018										



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R72005	
Contract Number: JFR1451	Start Date: 05/10/2020	End Date: 12/10/2020	Checked By: GR	Status: FINAL	Sheet 5 of 7	
Rotary Core Drilling Log		Easting: 414269.1	Northing: 142119.0	Ground Level: 84.01mOD	Plant Used: Comacchio 450	Logged By: BB
		Termination: Target depth achieved.			Scale: 1:50	

Weather: Drizzle

Samples & Core Recovery				Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation
40.00 - 41.50	C CD		90 47 40					At 40.10m: band of angular fine to medium flint gravel fragments (up to 20mm). Between 40.86m and 40.95m: NI subangular fine to medium gravel of comminuted chalk. Between 41.08m and 41.15m: very closely spaced marl bands. Between 41.30m and 41.40m: NI subangular fine to medium gravel of comminuted chalk and occasional flint cobble (70mm). Between 41.80m and 42.30m: Frequent orange staining (sponge beds) and bivalves. Between 42.30m and 42.58m: NI angular to subangular rounded nodular flint cobble (fragments up to 70mm). Between 43.19m and 43.22m: orange staining (20mm x 30mm). Between 43.33m and 43.75m: localised marl laminae and orange staining. At 44.24m: orange staining. Between 44.41m and 44.45m: band of angular fine and medium flint gravel and cobble fragments (up to 70mm). At 44.86m: marl band (5mm). At 46.54m: nodular rounded flint cobble (70mm).	41	
41.50 - 43.00	C		100 75 73						42	
43.00 - 44.50	C		100 85 80	280 500 7230		(11.00)			43	
44.50 - 46.00	C CD		100 84 73						44	
46.00 - 47.50	CD		100 51 36		37.01	47.00			45	
47.50 - 49.00	C		93 50 33					Very weak low to medium density off-white CHALK with occasional black specks and orange staining, frequent light grey marl laminae with medium to very widely spaced flint bands and occasional shell fragments. Fracture set 1: subhorizontal 10° medium to widely spaced predominantly open and clean or locally infilled with white silt, with black specks and orange staining. Fracture set 2 20 to 85° widely spaced, clean with black specks and orange staining. (CIRIA grade C1/C2) SEAFORD CHALK FORMATION Between 47.05m and 47.12m: flint band - NI recovered as fragments of angular to subrounded fine to coarse gravel and cobbles (up to 70mm). Between 47.50m and 47.68m: flint band - fragments are angular to subrounded fine to coarse gravel (up to 60mm). Between 47.95m and 48.10m: multiple interwoven marl laminae (1mm to 3mm width) and shell fragments very closely spaced. Chalk is darker. Between 48.55m and 48.58m: marl band (4mm and 5mm) and orange staining. Between 48.63m and 48.90m: marl band (4mm and 5mm) zone of multiple marl laminae closely spaced. Between 49.21m and 49.37m: band of nodular flint cobbles (up to 110mm). Between 49.66m and 49.87m: band - of nodular flint cobbles (up to 100mm) and orange staining.	46	
49.00 - 50.50	C		100 64 53						47	
									48	
									49	
									50	

Start & End of Shift Observations					Installation					Remarks:	
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)		
										1. Inspection pit hand dug to 1.20 m bgl. 2. Falling Head Tests undertaken at 11.50 m bgl. 3. Downhole Geophysics performed at the base of the borehole upon completion of drilling. 4. Borehole backfilled with bentonite on completion.	
Water Strikes											
Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks						
Flush Information					Borehole Diameter		Casing Diameter				
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)			
					61.00	146	1.10	175	Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %. NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).		
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018											



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R72005	
Contract Number: JFR1451	Start Date: 05/10/2020	End Date: 12/10/2020	Checked By: GR	Status: FINAL	Sheet 6 of 7	
Rotary Core Drilling Log		Easting: 414269.1	Northing: 142119.0	Ground Level: 84.01mOD	Plant Used: Comacchio 450	Logged By: BB
		Termination: Target depth achieved.			Scale: 1:50	

Weather: Drizzle

Termination: Target depth achieved.

Samples & Core Recovery					Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
	C							Between 49.89m and 50.06m: zone of multiple interwoven marl laminae closely spaced. Between 50.06m and 50.30m: isolated laminae of marl (10mm x 5mm).			
50.50 - 52.00	C		100 47 29					Between 50.63m and 50.98m: zone of multiple interwoven marl laminae very closely spaced. Between 51.08m and 51.22m: band of nodular flint cobbles (up to 75mm). At 51.30m: tabular fine flint gravel (5mm).	51		
52.00 - 53.50	C		100 84 53	280 600 3380		(8.00)		Between 52.00m and 52.10m: flint bands - nodular flint cobbles (up to 80mm) with orange staining. Between 52.17m and 52.97m: zone of closely spaced marl bands / laminae and interwoven wisps and occasional burrows. Between 53.07m and 53.14m: band of flint cobbles (up to 70mm).	52 53		
53.50 - 55.00	C		100 73 51					Between 53.38m and 53.41m: tabular fine to coarse flint gravel (up to 25mm). Between 53.50m and 54.37m: zone of closely spaced marl bands / laminae and interwoven wisps and occasional burrows.	54		
55.00 - 56.50	C		100 57 32		29.01	55.00		Between 54.37m and 54.44m: pyrite lenses (up to 60mm). Between 54.44m and 54.80m: zone of closely spaced marl bands / laminae and interwoven wisps and occasional burrows. Between 54.80m and 54.86m: band of nodular flint cobbles.	55		
56.50 - 58.00	C		100 68 49			(6.00)		Very weak low to medium density occasionally high density off-white occasionally light grey CHALK with black specks with occasional orange staining and very closely to medium spaced flint bands, occasional shell fragments (inoceramid / bivalves). Fractures set 1 is subhorizontal widely to very widely spaced light brown clay infill, black specks and orange staining. (CIRIA grade C1) SEAFORD CHALK FORMATION Between 55.00m and 61.00m: wispy marl bands / laminae very closely to closely spaced with closely to medium spaced bands of angular and subangular fine to medium flint gravel fragments. Between 55.50m and 55.58m: NIDD Between 56.00m and 56.10m: angular and subangular flint gravel and cobble fragments (up to 70mm). Between 56.15m and 56.19m: angular and subangular flint gravel and cobble fragments (up to 70mm). Flint bands closely to medium spaced. Between 56.23m and 56.28m: angular and subangular flint gravel and cobble fragments (up to 70mm). Flint bands closely to medium spaced. Between 56.38m and 56.43m: angular and subangular flint gravel and cobble fragments (up to 70mm). Flint bands closely to medium spaced. Between 56.78m and 56.84m: angular and subangular flint gravel and cobble fragments (up to 70mm). Flint bands closely to medium spaced. Between 56.95m and 56.98m: angular and subangular flint gravel and cobble fragments (up to 70mm). Flint bands closely to medium spaced. Between 57.27m and 57.30m: angular and subangular flint gravel and cobble fragments (up to 70mm). Flint bands closely to medium spaced. Between 57.67m and 57.74m: angular and subangular flint gravel and cobble fragments (up to 70mm). Flint bands closely to medium spaced. Between 58.00m and 58.10m: angular and subangular flint gravel and cobble fragments (up to 70mm). Flint bands closely to medium spaced. Between 58.27m and 58.30m: angular and subangular flint gravel and cobble fragments (up to 70mm). Flint bands closely to medium spaced.	56 57 58		
58.00 - 59.50	C CD		93 69 39					Between 58.80m and 58.97m: angular and subangular flint gravel and cobble fragments (up to 70mm). Flint bands closely to medium spaced. Between 59.17m and 59.25m: angular and subangular flint gravel and cobble fragments (up to 70mm). Flint bands closely to medium spaced.	59		
	CD								60		

Start & End of Shift Observations					Installation					Remarks:	
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)		
										1. Inspection pit hand dug to 1.20 m bgl. 2. Falling Head Tests undertaken at 11.50 m bgl. 3. Downhole Geophysics performed at the base of the borehole upon completion of drilling. 4. Borehole backfilled with bentonite on completion.	
Water Strikes											
Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks						
Flush Information					Borehole Diameter				Casing Diameter		
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)			
					61.00	146	1.10	175			
Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %. NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).											
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018											



Contract Name: A303 Stonehenge			Client: RPS Planning & Development			Borehole ID: R72005		
Contract Number: JFR1451	Start Date: 05/10/2020	End Date: 12/10/2020	Checked By: GR	Status: FINAL		Sheet 7 of 7		
Rotary Core Drilling Log		Easting: 414269.1	Northing: 142119.0	Ground Level: 84.01mOD	Plant Used: Comacchio 450	Logged By: BB	Scale: 1:50	

Weather: Drizzle Termination: Target depth achieved.

Samples & Core Recovery					Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
59.50 - 61.00			100 62 36		23.01	61.00		<p>Between 60.07m and 60.13m: angular and subangular flint gravel and cobble fragments (up to 70mm). Flint bands closely to medium spaced.</p> <p>Between 60.64m and 60.66m: angular and subangular flint gravel and cobble fragments (up to 70mm). Flint bands closely to medium spaced.</p> <p>Between 60.95m and 61.00m: angular and subangular flint gravel and cobble fragments (up to 70mm). Flint bands closely to medium spaced.</p> <p>End of Borehole at 61.00m</p>			
									61		
									62		
									63		
									64		
									65		
									66		
									67		
									68		
									69		
									70		

Start & End of Shift Observations					Installation					Remarks:	
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)	1. Inspection pit hand dug to 1.20 m bgl. 2. Falling Head Tests undertaken at 11.50 m bgl. 3. Downhole Geophysics performed at the base of the borehole upon completion of drilling. 4. Borehole backfilled with bentonite on completion.	
										Water Strikes	
Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks						
Flush Information					Borehole Diameter		Casing Diameter				
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)			
					61.00	146	1.10	175	Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %.		
NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).											
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018											



Contract Name: A303 Stonehenge			Client: RPS Planning & Development			Borehole ID: R72006		
Contract Number: JFR1451	Start Date: 09/10/2020	End Date: 13/10/2020	Checked By: GR	Status: FINAL	Sheet 1 of 7			
Rotary Core Drilling Log		Easting: 414313.8	Northing: 142148.6	Ground Level: 84.66mOD	Plant Used: Comachio 450	Logged By: AG	Scale: 1:50	

Weather: Fine Termination: Target depth achieved.

Samples & Core Recovery				Strata Details						Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
PID 0.0ppm	ES					84.43	0.23	Soft to very soft light brown gravelly silty CLAY. Gravel is subangular with occasionally angular fine to medium chalk and flint (broken) nodules.			
PID 0.0ppm	ES						(0.97)	TOPSOIL			
PID 0.0ppm	ES							Structureless CHALK composed of clayey silty subangular to subrounded fine to coarse GRAVEL. Clasts are very weak and weak low density white chalk. Matrix is white. Rare angular fine to medium flint nodules/fragments. (CIRIA Grade Dc)	1		
PID 0.1ppm	ES					83.46	1.20	SEAFORD CHALK FORMATION			
1.20 - 2.50	D		100 N/A N/A					Structureless CHALK composed of silty subangular to subrounded fine to coarse GRAVEL. Clasts are extremely weak to very weak medium density white. Matrix is white. Occasional remnant fracture sets and fine back specks/ orange staining on some fracture surfaces. (CIRIA grade Dc)	2		
	D						(2.20)	SEAFORD CHALK FORMATION			
2.50 - 4.00	D		100 30 30					Between 1.20m and 1.60m: Highly fractured with subvertical high angle and bedding fractures sets, open (0 to 2mm) with light brown clay infill with occasional marl laminae.	3		
	D							Between 1.60m and 2.02m: high angle and bedding fractures sets with partial veneer of light grey/brown clay.			
	D							Between 1.62m and 1.70m: Occasional orange staining as fine subhorizontal laminae and diffuse patches (up to 5mm).			
4.00 - 5.50	CD		87 15 8	NI 400 800	81.26	3.40		Extremely weak to very weak medium density thinly to medium bedded off-white CHALK. Fracture set 1: subhorizontal to 20° closely to medium spaced partially open (<3mm) with frequent black specks, no infill. Fracture set 2: 50 to 65° medium to widely spaced partially open (0 to 1mm) with frequent black specks, no infill. Subvertical fractures partially open with black specks, no infill. Medium spaced flint bands typically recovered as angular medium black rinded flint gravel. (CIRIA grade B2/B3)	4		
	CD						(2.26)	SEAFORD CHALK FORMATION			
	CD							Between 3.45m and 3.55m: Occasional orange staining as diffuse patches (up to 5mm).	5		
	CD							At 3.50m: fine to coarse gravel sized (up to 30mm) flat subhorizontal thin (<1mm) cream shell fragments on fracture surface.			
	CD							At 4.60m: Shell band			
	CD							Between 4.92m and 5.15m: NI chalk with remnant high angle fractures.			
5.50 - 6.25	CD		100 60 19		79.00	5.66		Very weak medium density closely to widely bedded off-white unstained CHALK. Fracture set 1: subhorizontal to 20° closely to medium spaced (occasionally widely) partially open (0 to 1mm) no infill with frequent black specks. Fracture Set 2: 40 to 60° widely spaced partially open (0 to 1mm) no infill with rare black specks and occasional orange staining. Rare flint gravel and occasional orange staining typically as subhorizontal filaments and occasional fine light grey marl bands (CIRIA grade B2/B3)	6		
	CD							SEAFORD CHALK FORMATION			
6.25 - 7.00	CD		100 87 69	NI 200 800			(2.84)	Between 6.92m and 6.98m: fine light grey subhorizontal marl laminae.	7		
	CD							At 6.93m: orange staining as (up to 10mm) filaments.			
	CD							Between 7.30m and 7.32m: orange staining as faint diffuse undulating band (up to 10mm wide).			
	CD							Between 7.52m and 7.54m: orange staining as fine filaments (up to 5mm).			
	CD							At 7.71m: orange staining as fine filaments (up to 5mm).			
7.00 - 8.50	CD		100 84 66					Between 8.15m and 8.32m: very closely spaced fine light grey subhorizontal undulating marl laminae.	8		
	CD							At 8.33m: thin (<3mm) narrow (up to 10mm) elongate (>80mm) flat tabular flint cobble.			
8.50 - 9.50	AMAL CD		80 40 64		76.16	8.50		Extremely weak to very weak medium density medium bedded off-white unstained CHALK. Fracture set 1: subhorizontal to 10° medium spaced with occasional black specks. Fracture set 2: 30° to 70° closely spaced partially open (0 to 1mm) with fine black specks, no infill. Frequent orange staining as medium spaced bands and occasional fine light grey interwoven marl bands. (CIRIA Grade A2)	9		
	CD						(1.50)	SEAFORD CHALK FORMATION			
9.50 - 10.00	D		80 12 0		74.66	10.00		Between 8.82m and 8.86m: orange staining as distinct band of fine elliptic patches.	10		

Start & End of Shift Observations					Installation					Remarks:	
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)		
08-10-2020	14:00									1. Hand dug inspection pit undertaken from ground level to 1.20m bgl.	
08-10-2020	17:00	9.50	2.00	9.30						2. Falling Head Tests undertaken at 9.60m bgl.	
09-10-2020	07:30	9.50	2.00	9.30						3. Borehole backfilled on completion.	
09-10-2020	15:30	14.50	2.00	9.30							
12-10-2020	07:30	14.50	2.00								
12-10-2020	17:30	33.00	2.00	16.60							
13-10-2020	07:30	33.00	2.00	16.60							
Flush Information					Borehole Diameter		Casing Diameter				
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)			
1.20	2.50	Air/Mist	20%-20%	white	45.00	146	2.00	175			
2.50	4.00	Air/Mist	0%-0%	No return							
4.00	5.50	Air/Mist	50%-50%	white							
5.50	6.25	Air/Mist	50%-50%	white							
Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %.											
NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).											
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018											



Contract Name: A303 Stonehenge			Client: RPS Planning & Development			Borehole ID: R72006		
Contract Number: JFR1451	Start Date: 09/10/2020	End Date: 13/10/2020	Checked By: GR	Status: FINAL	Sheet 2 of 7			
Rotary Core Drilling Log		Easting: 414313.8	Northing: 142148.6	Ground Level: 84.66mOD	Plant Used: Comachio 450	Logged By: AG	Scale: 1:50	

Weather: Fine Termination: Target depth achieved.

Samples & Core Recovery				Strata Details						Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
10.00 - 11.50	CD C C CD		100 69 64			(2.40)		<p>At 8.98m: orange staining as diffuse filaments / patches.</p> <p>Between 8.98m and 9.15m: NI recovered as slightly silty subangular to subrounded fine to coarse low to medium density creamy white gravel with frequent black specks and occasional orange staining with occasional remnant fractures with partial light grey clay surface veneer.</p> <p>Between 9.18m and 9.24m: fine light grey subhorizontal and wavy interwoven marl laminae with occasional diffuse orange staining.</p> <p>At 9.25m: orange staining as fine dark curved laminae. (possible sponge bed)</p> <p>Between 9.28m and 9.60m: AZCL</p> <p>Between 9.72m and 9.95m: NI recovered as subangular fine to coarse low to medium density gravel with occasional cobbles and black specks on all fracture surfaces. Multiple closely spaced fracture sets.</p> <p>At 9.95m: fine grey wavy marl laminae with filaments of orange staining (up to 10mm).</p>	11		
11.50 - 13.00	CD C CD CD		93 68 59		72.26	12.40		<p>Very weak to weak medium density closely to medium bedded off-white unstained CHALK with widely spaced rinded flint nodules and occasional closely spaced marl laminae.</p> <p>Fracture set 1 is subhorizontal to 20° medium to widely spaced open (<1mm) and no infill. Fracture Set 2 is 75° to subvertical partially open no infill with frequent black specks. (CIRIA Grade A1/A2)</p> <p>SEAFORD CHALK FORMATION</p> <p>Between 10.85m and 11.06m: fine subhorizontal light grey wispy closely spaced marl laminae with diffuse orange staining and occasional gravel sized shell fragments.</p> <p>At 12.31m: Rounded rinded flint cobble.</p> <p>At 12.35m: Rounded rinded flint nodule.</p>	12		
13.00 - 14.50	CD CD C CD		87 46 33			(2.90)		<p>Very weak to weak medium density closely to medium bedded off-white unstained CHALK with medium to widely spaced nodular flint gravel and cobbles and occasional orange staining and rare fine light grey laminae. Fracture set 1: subhorizontal to 25° closely to medium spaced clean or partially open (up to 1mm) with local infill of a veneer of grey silt with frequent black specks. Fracture Set 2: 50 to 60° widely spaced clean or partially open (up to 1mm) no infill. (CIRIA Grade A1/B1)</p> <p>SEAFORD CHALK FORMATION</p>	14		
14.50 - 16.00	CD CD		100 65 51	NI 160 1090		69.36		<p>At 12.55m: Occasional orange staining.</p> <p>At 12.70m: subangular medium black rinded nodular flint gravel.</p> <p>Between 12.87m and 13.00m: AZCL</p> <p>Between 13.80m and 13.86m: subangular medium black rinded nodular flint gravel.</p> <p>At 14.12m: fine light grey silty marl laminae.</p> <p>Between 14.35m and 14.50m: AZCL</p> <p>At 14.85m: orange staining as fine filaments on fracture surfaces.</p>	15		
16.00 - 17.50	CD CD C CD		100 75 71					<p>Very weak to weak medium to high density medium to widely bedded off-white unstained CHALK. Fracture set 1: subhorizontal to 20° closely to widely spaced partially open, locally with a veneer of grey silt infill of comminuted chalk and with frequent black specks. Fracture Set 2 is 30° to 60° medium to widely spaced clean or partially open with no infill and frequent black specks. Widely spaced bands of nodular flint cobbles occasionally recovered as gravel. Frequent orange staining as fine filaments (possible sponge beds) and diffuse patches/ filaments. Rare bands of very closely spaced fine grey marl laminae and fine gravel sized tabular shell fragments. (CIRIA Grade B1/B3)</p> <p>SEAFORD CHALK FORMATION</p>	16		
17.50 - 19.00	C C CD		87 53 41					<p>At 15.33m: fine grey marl laminae.</p> <p>At 15.38m: orange staining as fine gravel sized ellipses.</p> <p>Between 15.51m and 15.64m: black rinded nodular flint in silty angular fine to medium chalk gravel.</p> <p>At 16.11m: fine light grey subhorizontal marl laminae.</p> <p>At 16.19m: fine light grey subhorizontal marl laminae.</p> <p>At 16.21m: fine light grey subhorizontal marl laminae on fracture surfaces with orange staining.</p> <p>At 16.25m: orange staining as diffuse patches.</p> <p>Between 17.59m and 17.63m: rinded black nodular flint cobble recovered as angular medium to coarse gravel sized fragments.</p>	17		
19.00 - 20.50	CD		100 59 27					<p>Between 19.47m and 19.51m: Black angular medium rinded nodular flint gravel.</p> <p>Between 19.85m and 20.20m: Occasional patches of orange staining.</p>	19		
									20		

Start & End of Shift Observations					Installation					Remarks:
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)	
13-10-2020	14:30	45.00	2.00	16.60						1. Hand dug inspection pit undertaken from ground level to 1.20m bgl. 2. Falling Head Tests undertaken at 9.60m bgl. 3. Borehole backfilled on completion.
Water Strikes										
Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks					
20.50	2.00		20	16.60	Fast					
Flush Information					Borehole Diameter		Casing Diameter			
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)		
6.25	7.00	Air/Mist	50%-50%	white	45.00	146	2.00	175		
7.00	8.50	Air/Mist	50%-50%	white						
8.50	9.50	Air/Mist	50%-50%	white						
9.50	10.00	Air/Mist	100%-100%	white						

Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %. NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R72006	
Contract Number: JFR1451	Start Date: 09/10/2020	End Date: 13/10/2020	Checked By: GR	Status: FINAL	Sheet 3 of 7	
Rotary Core Drilling Log		Easting: 414313.8	Northing: 142148.6	Ground Level: 84.66mOD	Plant Used: Comachio 450	Logged By: AG
Weather: Fine		Termination: Target depth achieved.				Scale: 1:50

Samples & Core Recovery				Strata Details						Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
	CD										
20.50 - 22.00	C		100 83 75					Between 20.50m and 20.56m :AZCL At 20.63m: orange staining as diffuse patches. Between 20.63m and 20.66m: fine light grey subhorizontal marl laminae with orange staining. At 20.78m: fine light grey subhorizontal marl laminae. At 21.03m: fine light grey subhorizontal marl laminae. Between 21.23m and 21.32m: Angular medium to coarse black rinded nodular flint gravel in chalk silt matrix. At 21.47m: fine light grey subhorizontal marl laminae. Between 21.60m and 21.75m: occasional orange staining as patches or subhorizontal filaments. At 21.65m: thin (up to 2mm) tabular shell fragments.	21		
22.00 - 23.50	C CD		100 89 71					Between 22.30m and 22.33m: orange staining as faint diffuse patches. Between 22.44m and 22.47m: orange staining as band of irregular filaments. Between 23.20m and 23.23m: orange staining as faint diffuse thin filaments. Between 23.48m and 23.50m: AZCL Between 23.58m and 23.64m: orange staining as fine filaments and diffuse patches. At 24.52m: orange staining as patches of irregular filaments.	22 23		
23.50 - 25.00	CD		100 81 69			(12.70)		Between 24.95m and 25.00m: AZCL Between 25.06m and 25.12m: Subangular medium rinded nodular flint gravel. At 25.21m: rare patches of orange staining (up to 5mm). At 25.24m: thin (up to 2mm) tabular shell fragment. At 25.35m: Occasional orange staining as filaments or diffuse patches. Between 25.95m and 26.00m: Subangular medium black rinded nodular flint gravel. At 26.07m: thin tabular shell fragments. Between 26.23m and 26.35m: orange staining as diffuse patches. Between 26.40m and 26.50m: AZCL Between 26.50m and 28.00m: Limited Recovery	24		
25.00 - 26.50	C CD		93 59 46					Between 27.40m and 28.75m: AZCL	25 26		
26.50 - 28.00	CD		60 45 24					Limited Recovery. Non intact recovered as angular cobble and coarse gravel size fragments of white CHALK and rare flint. SEAFORD CHALK FORMATION	27		
28.00 - 28.75			0 N/A N/A		56.66	28.00			28		
28.75 - 29.50			36 N/A N/A						29		
29.50 - 30.25			0 N/A N/A						30		

Start & End of Shift Observations				Installation				Remarks:					
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)				
										1. Hand dug inspection pit undertaken from ground level to 1.20m bgl. 2. Falling Head Tests undertaken at 9.60m bgl. 3. Borehole backfilled on completion.			
Flush Information										Borehole Diameter		Casing Diameter	
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)					
10.00	11.50	Air/Mist	50%-50%	white	45.00	146	2.00	175					
11.50	13.00	Air/Mist	50%-50%	white									
13.00	14.50	Air/Mist	50%-50%	white									
14.50	16.00	Air/Mist	20%-20%	white									

Water Strikes					
Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
20.50	2.00		20	16.60	Fast

Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %. NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R72006	
Contract Number: JFR1451	Start Date: 09/10/2020	End Date: 13/10/2020	Checked By: GR	Status: FINAL	Sheet 4 of 7	
Rotary Core Drilling Log		Easting: 414313.8	Northing: 142148.6	Ground Level: 84.66mOD	Plant Used: Comachio 450	Logged By: AG
		Termination: Target depth achieved.			Scale: 1:50	

Weather: Fine

Samples & Core Recovery					Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
30.25 - 31.00			35 0 0								
31.00 - 31.75	D		93 0 0			(5.00)					
31.75 - 32.50			0 N/A N/A								
32.50 - 33.00			0 N/A N/A								
33.00 - 34.00	D		70 0 0		51.66	33.00		Very weak medium density off-white CHALK. Fractures are subvertical no infill. Medium spaced flint bands recovered as angular fine to coarse gravel with occasional fine grey marl laminae with orange staining. (CIRIA Grade A1) SEAFORD CHALK FORMATION			
34.00 - 34.50	C CD		100 74 60			(2.50)					
34.50 - 35.50			100 43 35								
35.50 - 37.00	CD C CD		90 71 71	NI 250 800	49.16	35.50		Between 35.36m and 35.40m: fine light grey subhorizontal interwoven marl laminae with occasional patches of orange staining. Very weak to weak medium to high density off white unstained CHALK. Fractures Set 1 is subhorizontal to 15° medium to widely spaced partially open (0 to 1mm), no infill with fine black specks and occasional orange staining. Rare fractures 35° to 70° partially open no infill. Medium to widely spaced flint bands often recovered as gravel. Medium spaced orange staining typically curved filaments and diffuse patches. fine grey and green-grey subhorizontal wispy marl laminae and thicker marl bands at irregular intervals, Rare shell fragments. (CIRIA grade B1/B2) SEAFORD CHALK FORMATION			
37.00 - 38.50	C C CD		93 88 84			(4.50)		At 35.65m: fine light grey subhorizontal marl laminae. At 35.85m: fine light grey subhorizontal interwoven marl laminae. At 36.00m: gravel sized fragments of cream tabular shell with occasional rounded fine (up to 5mm) flint gravel. Between 36.13m and 36.17m: light grey marl bands (up to 1mm). At 36.26m: fine light grey subhorizontal marl laminae with patches of orange staining. At 36.35m: light grey marl bands (up to 1mm thick) on fracture surface. Between 36.44m and 36.54m: orange staining as thin (up to 1mm) subvertical filaments. At 36.61m: rounded coarse rinded flint. gravel Between 37.15m and 37.20m: Subangular medium black rinded nodular flint gravel in chalk silt matrix. At 37.22m: Light grey marl band on fracture surface. At 37.64m: fine light grey subhorizontal wavy marl laminae. At 37.68m: subangular fine black rinded nodular flint gravel. Between 37.80m and 37.82m: orange staining as thin irregular subhorizontal filaments. Between 38.04m and 38.09m: orange staining as gravel sized (up to 30mm) diffuse patches. Between 38.40m and 38.50m :AZCL At 38.56m: filaments of orange staining. At 38.75m: orange staining as diffuse subhorizontal filaments. At 39.00m: rounded fine rinded flint gravel. Between 39.20m and 39.25m: orange staining as diffuse patches. Between 39.55m and 39.59m thin (up to 2mm) greyish green subhorizontal marl band with occasional fine light grey subhorizontal			
38.50 - 40.00	C		93 82 77								
					44.66	40.00					

Start & End of Shift Observations					Installation					Remarks:				
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)					
										1. Hand dug inspection pit undertaken from ground level to 1.20m bgl. 2. Falling Head Tests undertaken at 9.60m bgl. 3. Borehole backfilled on completion.				
Flush Information										Water Strikes				
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose (to m)	Remarks
16.00	17.50	Air/Mist	20%-20%	white	45.00	146	2.00	175	20.50	2.00		20	16.60	Fast
17.50	19.00	Air/Mist	20%-20%	white										
19.00	20.50	Air/Mist	20%-20%	white										
20.50	22.00	Air/Mist	20%-20%	white										

Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %. NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R72006	
Contract Number: JFR1451	Start Date: 09/10/2020	End Date: 13/10/2020	Checked By: GR	Status: FINAL	Sheet 5 of 7	
Rotary Core Drilling Log		Easting: 414313.8	Northing: 142148.6	Ground Level: 84.66mOD	Plant Used: Comachio 450	Logged By: AG
Weather: Fine		Termination: Target depth achieved.				Scale: 1:50

Samples & Core Recovery					Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
40.00 - 41.50	C		93 71 71			(3.00)		<p><i>wavy marl laminae and orange staining.</i> <i>At 39.79m: orange staining as filament (sponge).</i> <i>At 39.83m: shear surface on chalk.</i> <i>Between 39.90m and 40.00m: AZCL</i></p> <p>Very weak medium density off white CHALK. Medium to widely spaced flint bands recovered as fine to medium nodular flint gravel and cobbles. Widely spaced bands of fine light grey subhorizontal lamina. Frequent orange staining as patches or filaments. Medium spaced shell bands comprising fragments of cream planar subhorizontal inceramid shells. (CIRIA Grade A1)</p> <p>SEAFORD CHALK FORMATION <i>Between 40.55m and 40.60m: extremely closely spaced shell bands.</i> <i>At 40.62m: fine light grey subhorizontal marl laminae.</i> <i>Between 40.65m and 40.68m: interwoven fine light grey subhorizontal wavy marl laminae.</i> <i>Between 40.73m and 40.79m: angular medium black rinded flint gravel.</i> <i>Between 40.90m and 40.94m: subangular fine to medium rinded nodular flint gravel.</i> <i>Between 41.01m and 41.04m: band of shell fragments.</i> <i>At 41.18m: Patches of orange staining.</i> <i>Between 41.21m and 41.24m: multiple fine light grey wavy subhorizontal marl laminae.</i> <i>Between 41.40m and 41.50m: AZCL</i> <i>Between 41.50m and 41.57m: occasional orange staining as fine subvertical laminae and thick tabular subhorizontal shell fragment.</i> <i>Between 42.07m and 42.11m: rounded fine rinded nodular flint gravel with occasional subhorizontal tabular shell fragments and patches of dark orange staining.</i> <i>Between 42.17m and 42.27m: orange staining as faint diffuse patches.</i> <i>At 42.67m: fine light grey interwoven subhorizontal marl laminae.</i> <i>Between 42.71m and 42.73m: fine interwoven subhorizontal marl laminae.</i> <i>Between 42.95m and 43.00m: AZCL</i></p>	41		
41.50 - 43.00	C CD		95 81 67		41.66			<p><i>Between 43.00m and 43.02m: fine light grey subhorizontal wavy interwoven marl laminae.</i> <i>At 43.12m: orange staining as horizontal band (30mm).</i> <i>At 43.15m: fine light grey wavy marl laminae.</i> <i>Between 43.22m and 43.25m: fine light grey wavy occasional interwoven marl laminae.</i> <i>Between 43.29m and 43.41m: fine light grey wavy interwoven marl laminae.</i> <i>Between 43.45m and 43.48m: rounded fine rinded flint gravel.</i> <i>Between 43.78m and 43.80m: fine light grey wavy occasional interwoven marl laminae.</i> <i>Between 43.80m and 43.84m: tabular fine flint gravel with subhorizontal diffuse bands of orange staining and occasional fine light grey marl laminae.</i> <i>Between 43.96m and 44.05m: orange staining as diffuse patches with occasional fine gravel sized (up to 5mm) tabular shell fragments.</i> <i>Between 44.15m and 44.20m: light grey marl band (up to 5mm) with fine light grey marl laminae.</i> <i>Between 44.54m and 44.56m: fine gravel sized fragments of cream tabular shell.</i> <i>Between 44.56m and 44.60m: fine light grey subhorizontal wavy occasionally interwoven marl laminae.</i> <i>Between 44.65m and 44.67m: fine light grey subhorizontal wavy occasionally interwoven marl laminae.</i> <i>Between 44.78m and 44.84m: orange staining as fine filaments.</i> <i>Between 44.94m and 45.00m: Black rinded nodular flint cobble (80mm).</i></p> <p>End of Borehole at 45.00m</p>	42		
43.00 - 44.50	C		100 83 70			(2.00)		<p>Very weak to weak medium to high density medium bedded off-white unstained CHALK. Fractures are subhorizontal to 20° very closely to medium spaced partially open with light grey discoloration and black specks, no infill. Closely to medium spaced fine light grey subhorizontal wavy / interwoven marl laminae. Medium to widely spaced flint bands. Occasional orange staining and tabular incocerimid shell bands. (CIRIA Grade A2/A4)</p> <p>SEAFORD CHALK FORMATION</p>	43		
44.50 - 45.00	C		100 100 88		39.66	45.00			44		
									45		
									46		
									47		
									48		
									49		
									50		

Start & End of Shift Observations					Installation					Remarks:	
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)		
										1. Hand dug inspection pit undertaken from ground level to 1.20m bgl. 2. Falling Head Tests undertaken at 9.60m bgl. 3. Borehole backfilled on completion.	
										Water Strikes	
		Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks				
		20.50	2.00		20	16.60	Fast				
Flush Information					Borehole Diameter		Casing Diameter				
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)			
22.00	23.50	Air/Mist	20%-20%	white	45.00	146	2.00	175			
23.50	25.00	Air/Mist	20%-20%	white							
25.00	26.50	Air/Mist	20%-20%	white							
26.50	28.00	Air/Mist	20%-20%	white							

Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %. NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R72101	
Contract Number: JFR1451	Start Date: 03/09/2020	End Date: 08/09/2020	Checked By: GR	Status: FINAL	Sheet 1 of 2	
Rotary Core Drilling Log		Easting: 414506.9	Northing: 142153.9	Ground Level: 85.63mOD	Plant Used: Comacchio 450	Logged By: AG/AA
Weather: Variable		Termination: Target depth achieved.				Scale: 1:50

Samples & Core Recovery					Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
PID 0.0ppm	D					(0.30)		Reworked through archeological pit: Grass over soft to firm greyish brown slightly sandy slightly gravelly to gravelly CLAY with occasional rootlets. Gravel is subangular fine to coarse chalk and occasional flint. Low subangular flint cobble content. TOPSOIL Structureless CHALK composed of subangular fine to coarse GRAVEL. Clasts are extremely weak low density white with occasional orange staining on chalk surfaces. Occasional angular flint gravel (CIRIA Grade Dc) SEAFORD CHALK FORMATION Very weak medium density very thinly to medium bedded off-white CHALK. Fracture set 1 is subhorizontal to 20° closely to medium spaced, open no infill and with frequent black specks. Fracture Set 2 is 55° to subvertical medium spaced and infilled <3mm). (CIRIA grade B2) SEAFORD CHALK FORMATION Between 1.20m and 1.47m: NIDD recovered as cream rarely orange stained sandy subangular fine to coarse chalk gravel. Between 1.75m and 2.00m: NIDD chalk with orange-stained black tabular flint cobble on high angle joint surface. At 1.85m: Thin (<2mm) dark reddish brown subhorizontal laminations with orange staining. Between 2.16m and 2.30m: NIDD chalk Between 2.30m and 2.48m: NIDD chalk and rinded flint recovered as angular fine to coarse gravel in cream silt matrix. At 2.70m: orange filaments (<1mm) and patches of staining. At 3.01m: Nodular rinded flint cobbles (70mm x 60mm x 50mm). Between 3.01m and 3.17m: NIDD chalk recovered as angular medium to coarse gravel in a chalk silt matrix. At 3.27m: reddish brown and orange staining as linear patches and filaments. Between 3.80m and 3.90m: NIDD chalk recovered as coarse sand to angular medium gravel with rare cobble. Between 4.09m and 4.22m: NIDD chalk and flint recovered as angular fine to coarse gravel. Between 4.48m and 4.70m: Frequent orange staining as patches and fine reddish brown filaments. Frequent black specks on surfaces. Thin (<1mm) laminae of subhorizontal shell fragments (<10mm). Between 4.77m and 4.87m: NIDD chalk recovered as angular fine to coarse gravel. At 4.96m: fractured nodular flint cobble. Between 4.96m and 5.15m: NIDD chalk recovered as angular coarse gravel. Between 5.15m and 5.20m: nodular flint cobble (full diameter, 60mm thick). Between 5.20m and 5.30m: AZCL Very weak to weak medium to high density thinly to thickly bedded off-white CHALK with occasional orange staining and light grey marl laminae. Fractures are subhorizontal to 65° closely to widely spaced (NI/100/980) typically with marl laminations, open (<3mm) clean. (CIRIA Grade B1/B3) SEAFORD CHALK FORMATION Between 5.30m and 5.48m: NIDD chalk and flint. Chalk recovered as angular medium to coarse gravel and cobble. Occasional angular medium to coarse flint gravel fragments. Between 5.58m and 6.12m: rare light grey wispy subhorizontal marl laminae with occasional orange staining as fine filaments. Between 6.32m and 6.42m: flint band recovered as angular medium to coarse nodular and rinded flint gravel. Between 6.42m and 6.63m: NIDD chalk recovered as angular medium to coarse gravel and cobble. Between 6.75m and 6.80m: AZCL Between 6.90m and 6.93m: Non intact flint band recovered as tabular flint gravel fragments in silty chalk matrix. At 7.12m: thin light grey interwoven wispy marl laminae. At 7.29m: polished semicircular tabular orange cream fracture surface with white patches. Shells (6mm x 6mm) and localised patches of orange staining. Between 7.31m and 7.37m: orange staining with occasional shell fragments. Between 7.52m and 7.56m: flint band - nodular black rinded flint recovered as angular medium gravel. Between 7.68m and 7.90m: occasional subhorizontal light grey wispy marl laminae. At 9.55m: frequent shell fragments. Between 9.60m and 9.75m: NI fractures sets are subhorizontal and vertical.			
PID 0.0ppm	ES				85.33	0.30					
PID 0.0ppm	D					(0.90)					
PID 0.0ppm	ES										
PID 0.0ppm	D				84.43	1.20					
	ES										
1.20 - 2.30	D		100 36 36								
2.30 - 3.80	CD		100 69 55	NI 210 440		(4.10)					
3.80 - 5.30	D		93 47 14								
5.30 - 6.80	CD		100 52 31		80.33	5.30					
6.80 - 8.30	C		100 87 57	NI 100 940		(4.50)					
8.30 - 9.80	CD		100 94 31								
					75.83	9.80					

Start & End of Shift Observations					Installation					Remarks:				
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)					
03-09-2020	08:00									1. Inspection pit hand dug to 1.20 m bgl. 2. Downhole Geophysics performed upon completion of drilling. 3. Borehole backfilled with bentonite on completion.				
03-09-2020	17:00	11.00	2.00											
Flush Information					Borehole Diameter		Casing Diameter		Water Strikes					
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
1.20	2.30		100%-100%	white	11.00	146	2.00	175						
2.30	3.80		100%-100%	white										
3.80	5.30		100%-100%	white										
5.30	11.00		100%-100%	white										

Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %. NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).
 RPS RC Template Issue Number: 2 Issue Date: 02/01/2018



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R72101	
Contract Number: JFR1451	Start Date: 03/09/2020	End Date: 08/09/2020	Checked By: GR	Status: FINAL	Sheet 2 of 2	
Rotary Core Drilling Log		Easting: 414506.9	Northing: 142153.9	Ground Level: 85.63mOD	Plant Used: Comacchio 450	Logged By: AG/AA
Weather: Variable			Termination: Target depth achieved.			Scale: 1:50

Weather: Variable Termination: Target depth achieved.

Samples & Core Recovery					Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
9.80 - 11.00	C C CD		100 75 17	NI 200 220	74.63	11.00		Extremely weak medium to high density white CHALK with occasional black specks and orange staining, marl seams and shell fragments. Fractures are subhorizontal to 50° very closely to medium spaced (50/400/400) (CIRIA Grade B2/B4) SEAFORD CHALK FORMATION <i>Between 10.30m and 10.60m: Becoming extremely weak.</i> <i>Below 10.40m: orange staining.</i>	11		
								End of Borehole at 11.00m	12		
									13		
									14		
									15		
									16		
									17		
									18		
									19		
									20		

Start & End of Shift Observations					Installation					Remarks:	
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)	1. Inspection pit hand dug to 1.20 m bgl. 2. Downhole Geophysics performed upon completion of drilling. 3. Borehole backfilled with bentonite on completion.	
										Water Strikes	
Strike (m)		Casing (m)		Sealed (m)		Time (mins)		Rose to (m)		Remarks	
Flush Information					Borehole Diameter		Casing Diameter				
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)			
					11.00	146	2.00	175			
Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %. NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).											
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018											



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R72102	
Contract Number: JFR1451	Start Date: 01/09/2020	End Date: 08/09/2020	Checked By: GR	Status: FINAL	Sheet 1 of 2	
Rotary Core Drilling Log		Easting: 414599.9	Northing: 142153.0	Ground Level: 91.24mOD	Plant Used: Comacchio 450	Logged By: ARG
		Termination: Target depth achieved.			Scale: 1:50	

Weather: Sunny

Samples & Core Recovery					Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation	
1.20 - 2.50	D1 ES C2 D2 ES D3 ES D4 ES				90.94	(0.30) 0.30		Reworked as a result of archaeological pit. Soft to firm brown and occasionally white slightly gravelly silty CLAY with occasional rootlets. Gravel is off-white subangular to subrounded fine to coarse extremely weak low density chalk with rare flints.			
	CD5 D5				90.04	(0.90) 1.20		TOPSOIL Structureless CHALK composed of off-white slightly sandy very gravelly SILT. Gravel is subangular to subrounded fine to coarse extremely weak low density off-white and white chalk. (CIRIA grade Dm) SEAFORD CHALK FORMATION Very weak medium density cream unstained CHALK. Fracture Set 1 is subhorizontal to 45° closely to medium spaced partially open clean no infill. Fracture Set 2 is 60° to subvertical open no infill. (CIRIA grade A2/A3) SEAFORD CHALK FORMATION			
2.50 - 4.00	CC01 CD1	100 39 28	100 47 43	NI 140 580		(8.80)		Between 1.20 - 1.39 m bgl: Non intact chalk and flint recovered as black angular rinded flint. Chalk recovered as coarse sand and fine to medium gravel in a cream chalk silt matrix.			
								Between 1.50-1.85 m bgl: Non intact chalk recovered as angular coarse sand and angular coarse gravel in cream chalk matrix. At 2.16 m bgl: Orange staining. At 2.25 m bgl: Orange staining. Between 2.25-2.50 m bgl: Non intact chalk recovered as angular coarse grey stained gravel (50mmx20mmx20mm) with a striated shear surface. Between 2.50m and 2.58m: Assumed zone of core loss. Between 2.58-2.73 m bgl: Non-intact drilling disturbed recovered as angular coarse chalk gravel in a sand and silt matrix. At 2.95 m bgl: Rounded rinded light grey flint cobble (50x200mm). Between 2.95-3.15 m bgl: Non-intact drilling disturbed recovered as angular medium and coarse chalk gravel in chalk silt matrix. Between 3.83-4.00 m bgl: Non-intact drilling disturbed chalk recovered as medium and coarse gravel with occasional orange staining and shell fragments. Between 4.00-4.30 m bgl: Non-intact drilling disturbed recovered as coarse sand and angular fine and medium gravel of chalk. Between 4.45-4.50 m bgl: Non-intact drilling disturbed recovered as angular fine to coarse chalk gravel. Between 4.61-4.93 m bgl: Non-intact drilling disturbed recovered as coarse sand and angular fine to coarse chalk gravel. At 5.00 m bgl: Frequent orange laminae. Between 5.30-5.48 m bgl: Distinct orange stained laminae and patches. Between 5.48-5.50 m bgl: Angular flint cobbles and orange staining (flint hand) Between 5.50-5.53 m bgl: Non-intact drilling disturbed recovered as black angular medium and coarse rinded flint gravel. Between 5.58-5.62 m bgl: Orange stained patches. Between 6.03-6.04 m bgl: Thin light grey marl filaments. At 6.26m: Rounded fossil remnant (possibly echinoid). Between 6.77-6.83 m bgl: Frequent orange stained filaments and patches. Between 7.00-7.05 m bgl: Non-intact drilling disturbed recovered as angular medium and coarse chalk gravel. Between 8.00-8.05 m bgl: Non-intact black rinded nodular flint cobble and angular fine and medium flint gravel in chalk silt matrix. At 8.48 m bgl: Gravel sized (<20mm) areas of dark orange and red staining. Between 9.00-9.25 m bgl: Non-intact drilling disturbed recovered as angular coarse flint and chalk gravel. At 9.25 m bgl: Rare orange staining. Between 9.25m and 10.00m: Assumed zone of core loss.			
4.00 - 5.50											
5.50 - 7.00	CC02 CD2										
7.00 - 8.50	C1										
8.50 - 10.00	CD6 D6 CD3										
					81.24	10.00					

Start & End of Shift Observations					Installation					Remarks:				
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)					
01-09-2020	11:30	0.00								1. Hand dug inspection pit undertaken from ground level to 1.20 m bgl.				
01-09-2020	15:30	10.00	1.10							2. Downhole geophysics undertaken upon completion of drilling. 3. Borehole backfilled with bentonite on completion.				
Flush Information										Water Strikes				
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose (to m)	Remarks
1.20	2.50		100%-100%	white	10.00	146	1.10	175				0		Dry
2.50	4.00		100%-100%	white										
4.00	5.50		100%-100%	white										
5.50	7.00		100%-100%	white										

Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %. NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).

RPS RC Template Issue Number: 2 Issue Date: 02/01/2018



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Borehole ID: R70110	
Contract Number: JFR1451	Start Date: 05/10/2020	End Date: 05/10/2020	Checked By: GR	Status: FINAL	Sheet 2 of 2	
Easting: 406326.8	Northing: 141016.0	Ground Level: 121.78mOD	Plant Used: Beretta T41	Logged By: PB/MW	Scale: 1:50	

Weather: Showers Termination: Target depth achieved.

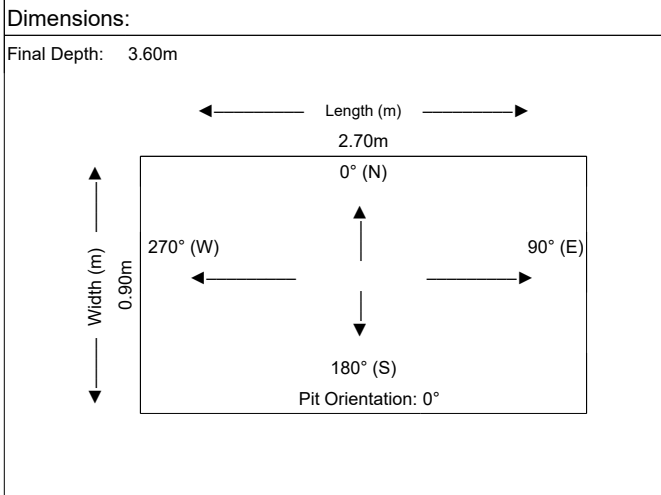
Samples & Core Recovery				Strata Details					Groundwater	
Depths	Type/Ref	SPT	TCR/SCR/RQD	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/Installation
9.80 - 10.30	D		100 22 0		111.48	10.30		Between 9.90m and 10.10m: localised light orange staining. Between 10.00m and 10.10m: black angular coarse nodular flint gravel fragments up to 35 to 40mm Between 10.10m and 10.30m : Non-Intact – possibly drilling disturbed End of Borehole at 10.30m		
									11	
									12	
									13	
									14	
									15	
									16	
									17	
									18	
									19	
									20	

Start & End of Shift Observations					Installation					Remarks:	
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)	1. Inspection pit hand dug to 1.20mbgl. 2. Borehole Backfilled with bentonite on completion.	
										Water Strikes	
Strike (m)		Casing (m)		Sealed (m)		Time (mins)		Rose to (m)		Remarks	
Flush Information					Borehole Diameter		Casing Diameter				
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)			
6.80	8.30	Air/Mist	100%-100%	white	10.30	146	2.00	175			
8.30	9.80	Air/Mist	100%-100%	white							
9.80	10.30	Air/Mist	100%-100%	white							
Fracture spacing reported in mm as minimum, average and maximum values. TCR, SCR and RQD reported in %.											
NDP = No Determination Possible. Numbers in descriptions relate to bedding spacing (min/avg/max).											
RPS RC Template Issue Number: 2 Issue Date: 02/01/2018											



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Trial Pit ID: DTP70301	
Contract Number: JFR1451	Start Date: 21/09/2020	End Date: 22/09/2020	Checked By: GR	Status: FINAL	Sheet 1 of 1	
Easting: 406858.0		Northing: 141338.0		Ground Level: 90.09mOD	Plant Used: JCB 3CX	Logged By: AA
Weather: Sunny		Hole Termination: Refusal on hard strata.			Stability: Stable	

Samples & In Situ Testing				Strata Details				Water	Backfill
Depths	Type/Ref	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description			
0.00	B					Grass over soft dark brown sandy gravelly SILT with low subangular flint cobble content. Gravel is angular to subrounded fine to coarse of mixed lithologies.			
0.00	D		89.84	0.25					
0.30	B	PID 0.00m, 0.1ppm		(0.35)					
0.30	D								
0.50	B	PID 0.30m, 0.0ppm	89.49	0.60		Soft light brown sandy very gravelly SILT. Gravel is angular to subrounded fine to coarse of flint and chalk.			
0.50	B5					POSSIBLE COLLUVIUM			
0.50	D			(0.50)					
0.50	D6								
0.60	B	PID 0.50m, 0.0ppm	88.99	1.10		Structureless CHALK composed of off white sandy silty angular to subrounded fine to coarse weak low density chalk GRAVEL with a medium subrounded weak low density chalk and flint cobble content. Occasional black specks. Matrix is light brown and off white. (CIRIA Grade Dc)	1		
0.90	B	PID 0.60m, 0.0ppm				SEAFORD CHALK FORMATION			
1.00	B	PID 0.90m, 0.0ppm				Weak low to medium density white with black specks CHALK recovered as sandy silty subangular to subrounded fine to coarse weak low to medium density gravel with a medium subangular to subrounded weak low to medium density chalk cobble and low subangular to subrounded flint cobble content. Occasional orange staining. Fractures are evident across pit walls. (CIRIA Grade Dc)	2		
1.00	B9					SEAFORD CHALK FORMATION			
1.00	D	PID 1.00m, 0.0ppm				At 1.90 m bgl: Flint band. From 2.00 m bgl: Becoming medium dense.	3		
2.00	B								
2.00	D			(2.50)					
3.00	B								
3.00	D		86.49	3.60		End of Trial Pit at 3.60m	4		
							5		
							6		
							7		



General Remarks:

1. Exploratory hole position CAT scanned and service plans inspected prior to excavation. 2. No groundwater encountered. 3. Plate Load test undertaken at 0.50 m bgl. 4. Trial pit backfilled with arisings upon completion.

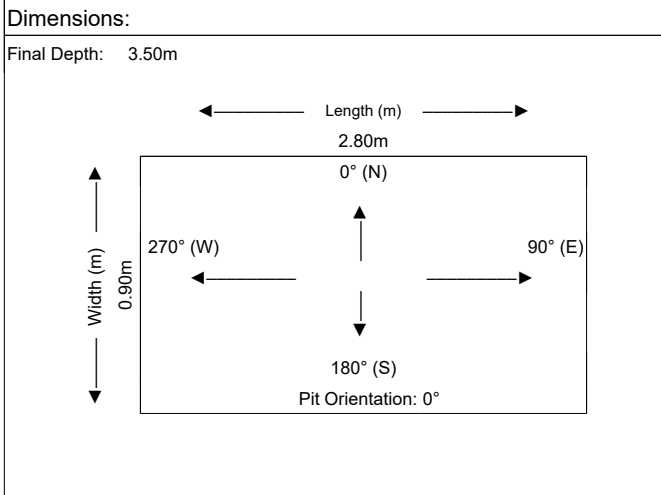
Water Strikes	
Strike (m)	Remarks
	No groundwater encountered

RPS TP Template Issue Number: 1 Issue Date: 13/09/2017



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Trial Pit ID: DTP70302	
Contract Number: JFR1451	Start Date: 18/09/2020	End Date: 22/09/2020	Checked By: LRW	Status: FINAL	Sheet 1 of 1	
Easting: 406934.0		Northing: 141292.0		Ground Level: 89.35mOD	Plant Used: JCB 3CX	Logged By: AA
Weather: Sunny		Hole Termination: Refusal on hard strata.			Stability: Stable	

Samples & In Situ Testing				Strata Details				Water	Backfill
Depths	Type/Ref	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description			
0.00	B					Grass over dark brown sandy gravelly silty CLAY with a low subangular flint cobble content. Gravel is angular to subangular fine to coarse of mixed lithology.			
0.00	D		89.10	0.25					
0.30	B	PID 0.00m, 0.0ppm							
0.30	D		88.95	0.40					
0.50	B	PID 0.30m, 0.0ppm				TOPSOIL			
0.50	D					Soft light brown sandy very gravelly SILT. Gravel is subangular to subrounded fine to coarse flint and chalk.			
0.50	D6					POSSIBLE COLLUVIUM			
0.55	B	PID 0.50m, 0.0ppm				Structureless CHALK composed of white silty sandy angular to subangular fine to coarse very weak low density chalk GRAVEL with frequent black specks and occasional orange staining.	1		
0.80	B	PID 0.55m, 0.0ppm							
1.00	B	PID 0.80m, 0.0ppm				Medium subangular to subrounded weak low density chalk cobble content with occasional black specks and a low subrounded to rounded flint cobble content. Matrix is white. (CIRIA Grade Dc)			
1.00	B9					SEAFORD CHALK FORMATION			
1.00	D	PID 1.00m, 0.0ppm				<i>Between 0.40 m and 3.50 m: Rubbly appearance - highly fractured.</i>	2		
2.00	B			(3.10)		<i>At 1.40 m: Horizontal fractures (approx. 10 to 30mm aperture). Becoming structured chalk with depth.</i>			
2.00	B11								
2.00	D	PID 2.00m, 0.0ppm							
3.00	B						3		
3.00	B13	PID 3.00m, 0.0ppm							
			85.85	3.50		End of Trial Pit at 3.50m	4		
							5		
							6		
							7		



General Remarks:

- Exploratory hole position CAT scanned and service plans inspected prior to excavation.
- No groundwater encountered.
- Plate Load test undertaken at 0.50 m bgl. on 18/09/20 Trial pit backfilled with arisings upon completion.
- Trial pit re-excavated to 3.50 m bgl on 22/09/20 and backfilled with arisings on completion.

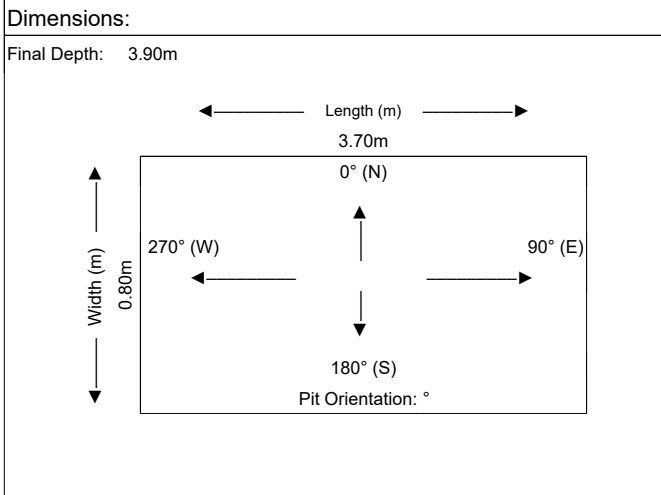
Water Strikes	
Strike (m)	Remarks
	No groundwater encountered

RPS TP Template Issue Number: 1 Issue Date: 13/09/2017



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Trial Pit ID: DTP70303	
Contract Number: JFR1451	Start Date: 15/09/2020	End Date: 15/09/2020	Checked By: LRW	Status: FINAL	Sheet 1 of 1	
Easting: 407082.0		Northing: 141435.0		Ground Level: 78.94mOD	Plant Used: JCB 3CX	Logged By: AA
Weather: Sunny		Hole Termination: Refusal on hard strata			Stability: Stable	

Samples & In Situ Testing				Strata Details				Water	Backfill
Depths	Type/Ref	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description			
0.00	B					Crops over dark brown very gravelly SAND with a low angular to subangular flint and chalk cobble content. Gravel is angular to subangular fine to coarse flint and chalk.			
0.00	D			(0.45)					
0.30	B	PID 0.00m, 0.0ppm	78.49	0.45		TOPSOIL			
0.30	D4					Light brown very gravelly SAND. Gravel is angular to subrounded fine to coarse chalk and flint.			
0.50	B	PID 0.30m, 0.0ppm	78.29	0.65					
0.50	D					POSSIBLE COLLUVIUM			
0.55	B	PID 0.50m, 0.0ppm				Structureless CHALK composed of white sandy silty medium to coarse weak low to medium density chalk GRAVEL with occasional black specks and a medium angular to rounded flint cobble content. Matrix is white. (CIRIA Grade Dc)	1		
0.55	D								
0.85	B	PID 0.55m, 0.0ppm				SEAFORD CHALK FORMATION			
0.85	D								
1.00	B	PID 0.85m, 0.0ppm							
1.00	B11								
1.00	D	PID 1.00m, 0.0ppm							
2.00	B						2		
2.00	D	PID 2.00m, 0.0ppm		(3.25)					
3.00	B						3		
3.00	D	PID 3.00m, 0.0ppm							
			75.04	3.90		End of Trial Pit at 3.90m	4		
							5		
							6		
							7		



General Remarks:

1. Exploratory hole position CAT scanned and service plans inspected prior to excavation. 2. No groundwater encountered. 3. Plate Load test undertaken at 0.60 m bgl. 4. Trial pit backfilled with arisings upon completion.

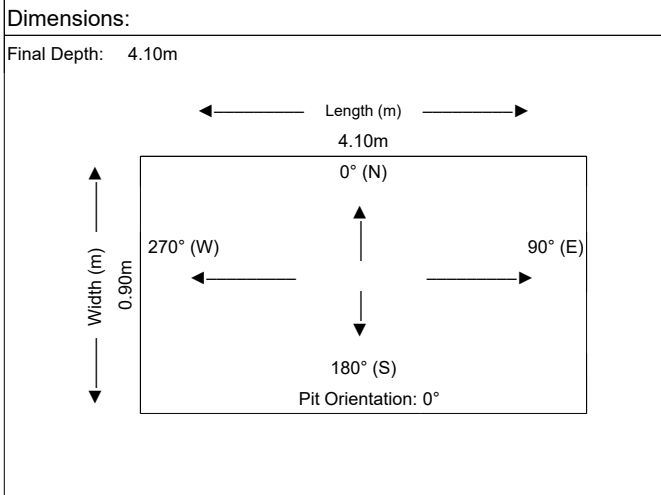
Water Strikes	
Strike (m)	Remarks
	No groundwater encountered

RPS TP Template Issue Number: 1 Issue Date: 13/09/2017



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Trial Pit ID: DTP70701	
Contract Number: JFR1451	Start Date: 23/09/2020	End Date: 23/09/2020	Checked By: LRW	Status: FINAL	Sheet 1 of 1	
Easting: 407234.0		Northing: 141490.0		Ground Level: 84.12mOD	Plant Used: JCB 3CX	Logged By: AA
Weather: Sunny		Hole Termination: Refusal on hard strata.			Stability: Stable	

Samples & In Situ Testing				Strata Details				Water	Backfill
Depths	Type/Ref	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description			
0.00	B					Grass over soft dark brown sandy silty GRAVEL. Gravel is angular to subrounded fine to coarse of mixed lithologies.			
0.00	D			(0.40)					
0.00	ES					TOPSOIL			
0.30	B	PID 0.00m, 0.0ppm	83.72	0.40		Soft light brown sandy very gravelly SILT. Gravel is subangular to subrounded fine to coarse flint and chalk.			
0.30	D					POSSIBLE COLLUVIUM			
0.30	ES		83.52	0.60		Structureless CHALK composed of white silty angular to subrounded fine to coarse weak low to medium density chalk and occasional nodular and tabular flint GRAVEL with a medium angular to subrounded weak low to medium density chalk cobble content. Frequent black specks and occasional orange staining. Matrix is white. (CIRIA Grade Dc)	1		
0.50	B	PID 0.30m, 0.0ppm							
0.50	D								
0.50	D6								
0.50	ES								
1.00	B	PID 0.50m, 0.0ppm							
1.00	B7								
1.00	D								
1.00	ES	PID 1.00m, 0.0ppm				SEAFORD CHALK FORMATION <i>Between 0.60 and 4.10 m: Increasing cobble content with depth.</i>			
2.00	B						2		
2.00	B9								
2.00	D	PID 2.00m, 0.0ppm		(3.50)					
3.00	B						3		
3.00	B11								
3.00	D	PID 3.00m, 0.0ppm							
			80.02	4.10		End of Trial Pit at 4.10m	4		
							5		
							6		
							7		



General Remarks:

1. Exploratory hole position CAT scanned and service plans inspected prior to excavation. 2. No groundwater encountered. 3. Trial pit backfilled with arisings upon completion.

Water Strikes	
Strike (m)	Remarks
	No groundwater encountered

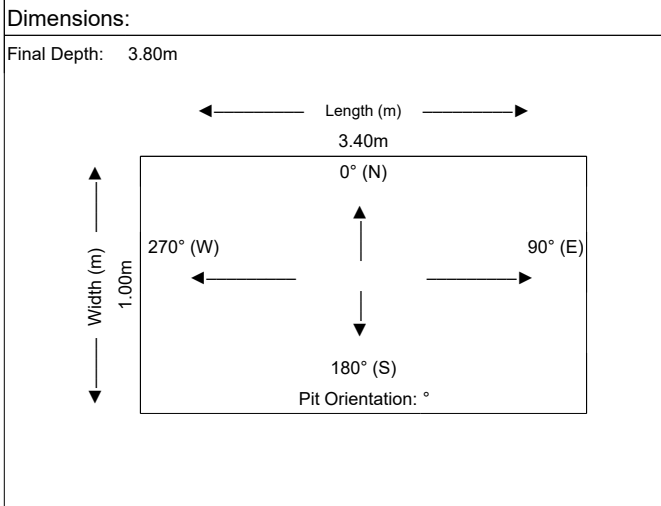
RPS TP Template Issue Number: 1 Issue Date: 13/09/2017



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Trial Pit ID: DTP70702	
Contract Number: JFR1451	Start Date: 15/09/2020	End Date: 17/09/2020	Checked By: LRW	Status: FINAL	Sheet 1 of 1	
Easting: 407243.0	Northing: 141451.0	Ground Level: 80.97mOD	Plant Used: JCB 3CX	Logged By: AA	Scale: 1:50	

Weather: Sunny Hole Termination: Refusal on hard strata. Stability: Stable

Samples & In Situ Testing			Strata Details				Water	Backfill
Depths	Type/Ref	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description		
0.00	B					Crops over soft dark brown very gravelly SAND with a medium angular flint cobble content. Gravel is angular to subrounded fine to coarse flint and chalk.		
0.00	D		80.72	0.25				
0.00	ES					TOPSOIL		
0.30	B	PID 0.00m, 0.0ppm						
0.30	D		80.47	0.50		Light brown very gravelly SAND with a low angular flint cobble content. Gravel is angular to subrounded fine to coarse chalk and flint.		
0.30	ES							
0.50	B	PID 0.30m, 0.0ppm				POSSIBLE COLLUVIUM		
0.50	D							
0.50	D6					Structureless CHALK composed of white slightly sandy silty subangular to rounded medium to coarse weak low density chalk GRAVEL with frequent black specs and orange staining and a low angular weak low density chalk cobble content. Matrix is white. (CIRIA Grade Dc)		
0.50	ES							
0.70	B	PID 0.50m, 0.0ppm				SEAFORD CHALK FORMATION		
0.70	D							
1.00	B							
1.00	B7							
1.00	D							
1.00	ES							
2.00	B	PID 1.00m, 0.0ppm						
2.00	B9							
2.00	D			(3.30)				
3.00	B							
3.00	B11							
3.00	D							
3.80	B		77.17	3.80		End of Trial Pit at 3.80m		
3.80	D							



General Remarks:

1. Exploratory hole position CAT scanned and service plans inspected prior to excavation. 2. No groundwater encountered. 3. Plate Load test undertaken at 0.60 m bgl on 15/09/2020 and trial pit backfilled. 4. Trial pit re-excavated to target depth on 17/09/2020. 5. Trial pit backfilled with arisings upon completion.

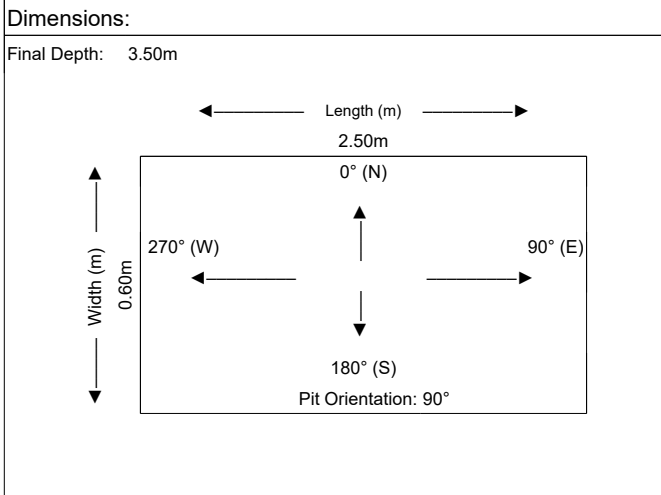
Water Strikes	
Strike (m)	Remarks
	No groundwater encountered

RPS TP Template Issue Number: 1 Issue Date: 13/09/2017



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Trial Pit ID: STP70103	
Contract Number: JFR1451	Start Date: 01/10/2020	End Date: 01/10/2020	Checked By: GR	Status: FINAL	Sheet 1 of 1	
Easting: 405926.3	Northing: 140746.6	Ground Level: 127.94mOD	Plant Used: JCB 3CX	Logged By: AA	Scale: 1:50	
Weather: Sunny		Hole Termination: Target depth achieved.			Stability: Stable	

Samples & In Situ Testing				Strata Details				Water	Backfill
Depths	Type/Ref	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description			
0.00	B		127.44	0.50		Grass over dark brown gravelly silty CLAY. Gravel is subangular to subrounded fine to coarse chalk and flint.	1		
0.00	D								
0.30	B	PID 0.00m, 0.0ppm							
0.30	D								
0.50	B	PID 0.30m, 0.0ppm							
0.50	D	PID 0.50m, 0.0ppm							
1.00	B		124.44	3.50		Structureless CHALK composed of white silty subangular fine to coarse weak medium density to dense chalk GRAVEL with a medium subangular weak medium density chalk and occasional flint cobble content. Cobbles are tabular and nodular. (CIRIA Grade Dc)	2		
1.00	D								
		PID 1.00m, 0.0ppm							
2.00	B		124.44	3.50		SEAFORD CHALK FORMATION <i>Between 0.50 m and 3.50 m: Highly fractured strata.</i> <i>Below 1.00 m: Increasing density with depth.</i> <i>At 1.10 m: Flint band with a low flint cobble and boulder content.</i>	3		
2.00	D								
		PID 2.00m, 0.0ppm							
3.00	B		124.44	3.50		<i>From 1.80 m: Becoming structured chalk. Fracture in pit wall at 1.80 mbgl with 30mm aperture.</i> <i>At 2.00 m: Flint band with a low flint cobble and boulder content.</i>	4		
3.00	D								
		PID 3.00m, 0.0ppm							
End of Trial Pit at 3.50m							5		
End of Trial Pit at 3.50m							6		
End of Trial Pit at 3.50m							7		



General Remarks:

1. Exploratory hole position CAT scanned and service plans inspected prior to excavation. 2. No groundwater encountered. 3. Trial pit backfilled with arisings upon completion.

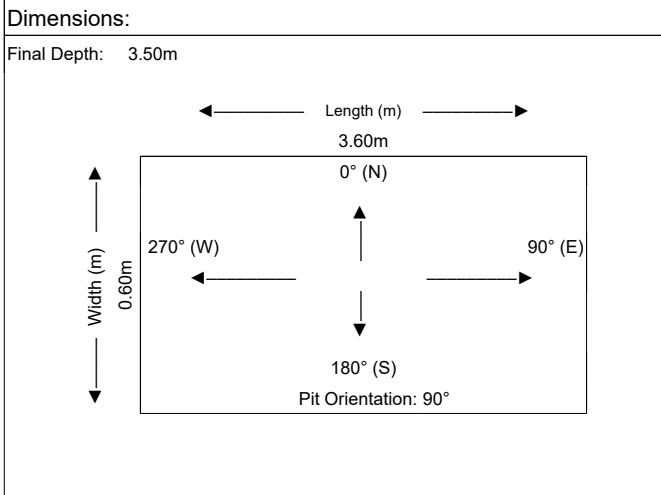
Water Strikes	
Strike (m)	Remarks
	No groundwater encountered

RPS TP Template Issue Number: 1 Issue Date: 13/09/2017



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Trial Pit ID: STP70104	
Contract Number: JFR1451	Start Date: 01/10/2020	End Date: 01/10/2020	Checked By: LRW	Status: FINAL	Sheet 1 of 1	
Easting: 405975.8		Northing: 140812.8		Ground Level: 127.81mOD	Plant Used: JCB 3CX	Logged By: AA
Weather: Sunny		Hole Termination: Target depth achieved.			Stability: Stable	

Samples & In Situ Testing				Strata Details				Water	Backfill
Depths	Type/Ref	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description			
0.00	B					Grass over dark brown sandy gravelly SILT. Gravel is subangular to subrounded fine to coarse chalk and flint.			
0.00	D		127.56	0.25		TOPSOIL			
0.30	B	PID 0.00m, 0.0ppm				Light brown gravelly SILT. Gravel is subangular to subrounded fine to coarse chalk and flint.			
0.30	D		127.31	0.50		POSSIBLE COLLUVIUM			
0.50	B	PID 0.30m, 0.0ppm				Structureless CHALK composed of light brown silty subangular fine to coarse low density weak chalk GRAVEL with a low weak low density chalk and flint cobble content. Matrix is light brown. (CIRIA Grade Dc)			
0.50	D	PID 0.50m, 0.0ppm	127.01	0.80		SEAFORD CHALK FORMATION	1		
1.00	B					Weak medium density white CHALK recovered as subangular to subrounded fine to coarse weak medium density chalk and flint gravel with a low weak medium density chalk cobble content. (CIRIA Grade Dc)			
1.00	D	PID 1.00m, 0.0ppm				SEAFORD CHALK FORMATION			
2.00	B					At 1.10 m: Root and rootlets and flint bands.			
2.00	D	PID 2.00m, 0.0ppm		(2.70)		SEAFORD CHALK FORMATION	2		
						Below 2.50 m: Becoming damp.			
3.00	B						3		
3.00	D	PID 3.00m, 0.0ppm							
			124.31	3.50		End of Trial Pit at 3.50m	4		
							5		
							6		
							7		



General Remarks:

1. Exploratory hole position CAT scanned and service plans inspected prior to excavation. 2. No groundwater encountered. 3. Trial pit backfilled with arisings upon completion.

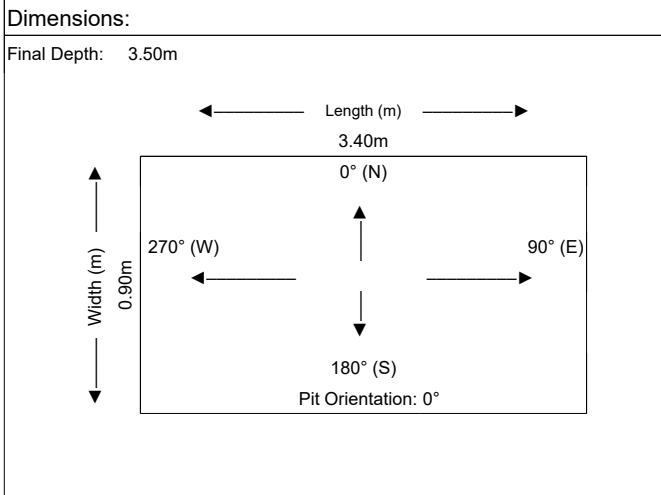
Water Strikes	
Strike (m)	Remarks
	No groundwater encountered

RPS TP Template Issue Number: 1 Issue Date: 13/09/2017



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Trial Pit ID: STP70118	
Contract Number: JFR1451	Start Date: 25/09/2020	End Date: 25/09/2020	Checked By: GR	Status: FINAL	Sheet 1 of 1	
Easting: 406796.0		Northing: 141300.0		Ground Level: 98.88mOD	Plant Used: JCB 3CX	Logged By: AA
Weather: Overcast		Hole Termination: Target depth achieved.			Stability: Stable	

Samples & In Situ Testing				Strata Details				Water	Backfill
Depths	Type/Ref	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description			
0.00	B					Crops over soft dark brown sandy gravelly SILT. Gravel is subangular to subrounded fine to coarse of mixed lithology.			
0.00	D		98.73	0.15					
0.00	ES								
0.30	B	PID 0.00m, 0.0ppm	98.48	0.40					
0.30	D								
0.30	ES					TOPSOIL			
0.50	B	PID 0.30m, 0.0ppm				Soft light brown sandy gravelly SILT. Gravel is subangular to subrounded fine to coarse of flint and chalk.			
0.50	D								
0.50	D6								
0.50	ES								
1.00	B	PID 0.50m, 0.0ppm				POSSIBLE COLLUVIUM			
1.00	D					Structureless CHALK composed of silty angular to subrounded fine to coarse GRAVEL with a medium angular to subrounded chalk and nodular and rounded flint cobble and boulder content Clasts are weak low density white chalk with occasional black specks. Occasional flint gravel. (CIRIA Grade Dc)			
1.00	D8					SEAFORD CHALK FORMATION			
1.00	ES	PID 1.00m, 0.0ppm				<i>Below 1.80 m: Becoming medium dense and more consolidated.</i> <i>At 1.90 m: Flint band.</i>			
2.00	B								
2.00	D			(3.10)					
2.00	ES	PID 2.00m, 0.0ppm							
3.00	B								
3.00	D								
3.00	D12								
3.00	ES	PID 3.00m, 0.0ppm	95.38	3.50					
End of Trial Pit at 3.50m									



General Remarks:

1. Exploratory hole position CAT scanned and service plans inspected prior to excavation. 2. No groundwater encountered. 3. Trial pit backfilled with arisings upon completion.

Water Strikes	
Strike (m)	Remarks
	No groundwater encountered

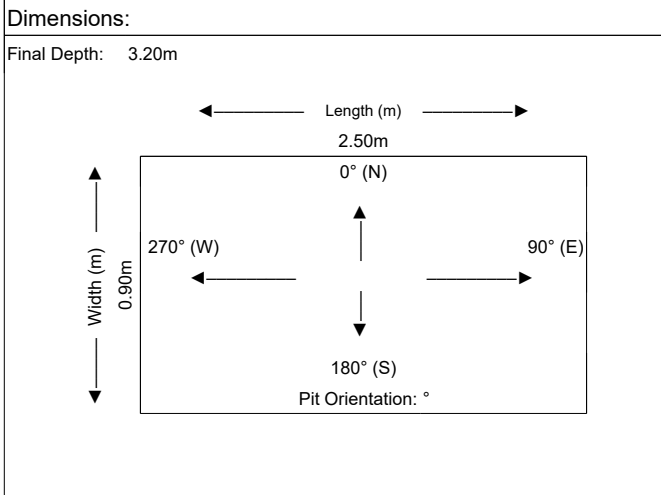
RPS TP Template Issue Number: 1 Issue Date: 13/09/2017



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Trial Pit ID: STP70401	
Contract Number: JFR1451	Start Date: 30/09/2020	End Date: 01/10/2020	Checked By: LRW	Status: FINAL	Sheet 1 of 1	
Easting: 406812.1		Northing: 141455.0		Ground Level: 87.57mOD	Plant Used: JCB 3CX	Logged By: AA
						Scale: 1:50

Weather: Sunny
 Hole Termination: Terminated at 3.20 m bgl due to instability of pit walls following infiltration test.
 Stability: Stable. Local instability during re-excitation on 01/10/2020 following infiltration test in pit walls from 2.50 m depth.

Samples & In Situ Testing				Strata Details				Water	Backfill
Depths	Type/Ref	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description			
0.00	B					Grass over dark brown sandy gravelly silty CLAY. Gravel is subangular to subrounded fine to coarse of chalk and flint.			
0.00	D		87.32	0.25		TOPSOIL			
0.30	B	PID 0.00m, 0.0ppm							
0.30	D		87.07	0.50		POSSIBLE COLLUVIUM			
0.30	D4								
0.50	B	PID 0.30m, 0.0ppm				Light brown sandy gravelly SILT. Gravel is subangular to subrounded fine to coarse of chalk and flint.			
0.50	D					Structureless CHALK composed of white silty subangular to subrounded fine to coarse weak low density chalk and occasional rinded and nodular flint GRAVEL with frequent black specks and occasional orange staining. A medium weak low density chalk cobble content. Matrix is white. (CIRIA Grade Dc)	1		
0.55	B	PID 0.50m, 0.0ppm							
0.80	B	PID 0.55m, 0.0ppm		(1.00)					
1.00	B	PID 0.80m, 0.0ppm							
		PID 1.00m, 0.0ppm	86.07	1.50		SEAFORD CHALK FORMATION			
						Weak low to medium density white black specks CHALK recovered as slightly silty chalk gravel with occasional orange staining. A low flint and weak low density chalk cobble content. (CIRIA Grade B5)	2		
2.00	B								
2.00	D	PID 2.00m, 0.0ppm		(1.70)		SEAFORD CHALK FORMATION			
						<i>Between 1.50 m and 3.20 m. Chalk appears fractured.</i>			
3.00	B	PID 3.00m, 0.0ppm	84.37	3.20		End of Trial Pit at 3.20m	3		
							4		
							5		
							6		
							7		



General Remarks:

1. Exploratory hole position CAT scanned and service plans inspected prior to excavation. 2. No groundwater encountered. 3. Trial pit backfilled with arisings upon completion. 4. Plate load test at 0.5m. 5. Infiltration test completed at 3.00 m bgl. No groundwater encountered. Trial pit backfilled following infiltration tests and re-excavated to target depth and reinstated on 01/10/2020.

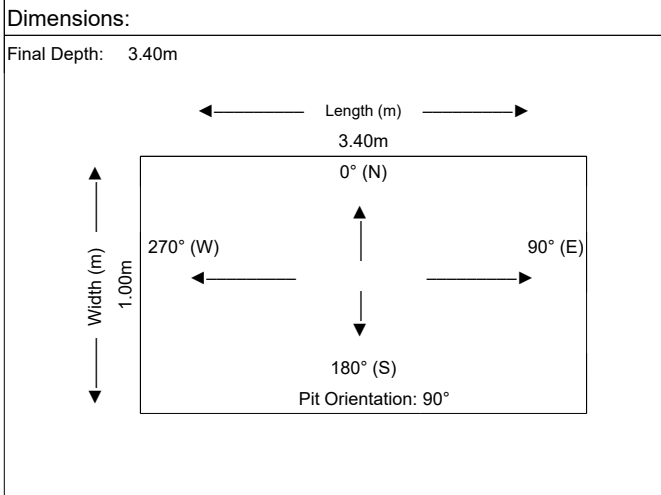
Water Strikes	
Strike (m)	Remarks
	No groundwater encountered

RPS TP Template Issue Number: 1 Issue Date: 13/09/2017



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Trial Pit ID: STP70402	
Contract Number: JFR1451	Start Date: 17/09/2020	End Date: 17/09/2020	Checked By: LRW	Status: FINAL	Sheet 1 of 1	
Easting: 407047.0		Northing: 141532.0		Ground Level: 84.78mOD	Plant Used: JCB 3CX	Logged By: AA
Weather: Sunny		Hole Termination: Terminated due to refusal on hard strata			Stability: Stable throughout	

Samples & In Situ Testing				Strata Details				Water	Backfill
Depths	Type/Ref	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description			
0.00	B					Grass over dark brown sandy gravelly SILT with a low cobble content. Gravel is angular to subrounded fine to coarse of flint and chalk.			
0.00	D		84.58	0.20					
0.00	ES		84.43	0.35					
0.30	B	PID 0.00m, 0.0ppm				TOPSOIL			
0.30	D								
0.30	ES								
0.50	B	PID 0.30m, 0.0ppm				Light brown gravelly silty SAND. Gravel is angular to subrounded fine to coarse flint and chalk.			
0.50	D					POSSIBLE COLLUVIUM			
0.50	ES								
1.00	B	PID 0.50m, 0.0ppm				Structureless CHALK composed of white sandy silty subangular to subrounded medium to coarse weak low to medium density chalk GRAVEL with occasional black specks and orange staining. A medium weak medium density chalk cobble content with occasional black specks. Matrix is white. (CIRIA Grade Dc)	1		
1.00	D					SEAFORD CHALK FORMATION			
1.00	ES	PID 1.00m, 0.0ppm				<i>Between 1.10m and 1.40m : Chalk fractured throughout. Aperture width between 1-5mm and dipping approximately 80 degrees, spaced at 200mm apart. Frequent horizontal and vertical fractures.</i>			
2.00	B			(3.05)			2		
2.00	D								
2.00	ES	PID 2.00m, 0.0ppm							
3.00	B						3		
3.00	D								
3.00	ES	PID 3.00m, 0.0ppm	81.38	3.40		End of Trial Pit at 3.40m			



General Remarks:

1. Exploratory hole position CAT scanned and service plans inspected prior to excavation. 2. No groundwater encountered. 3. Trial pit backfilled with arisings upon completion.

Water Strikes	
Strike (m)	Remarks
	No groundwater encountered

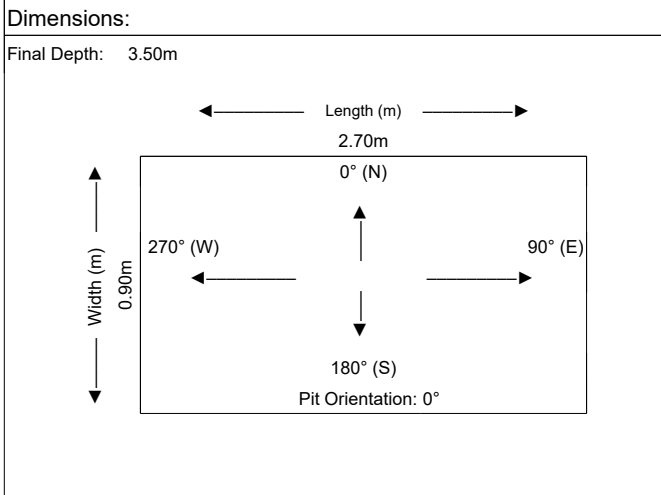
RPS TP Template Issue Number: 1 Issue Date: 13/09/2017



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Trial Pit ID: STP70403	
Contract Number: JFR1451	Start Date: 21/09/2020	End Date: 21/09/2020	Checked By: LRW	Status: FINAL	Sheet 1 of 1	
Easting: 406919.0		Northing: 141220.0		Ground Level: 100.08mOD	Plant Used: JCB 3CX	Logged By: AA
Weather: Sunny		Hole Termination: Refusal on hard strata.			Stability: Stable	

Scale: 1:50

Samples & In Situ Testing				Strata Details				Water	Backfill
Depths	Type/Ref	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description			
0.00	B					Grass over dark brown sandy gravelly silty CLAY with a low flint cobble content. Gravel is fine to coarse angular to subrounded of mixed lithologies.			
0.00	D		99.88	0.20					
0.30	B	PID 0.00m, 0.1ppm	99.73	0.35		TOPSOIL			
0.30	D					Light brown sandy very gravelly SILT. Gravel is fine to coarse subangular to subrounded of flint and chalk.			
0.30	D4					POSSIBLE COLLUVIUM			
0.50	B	PID 0.30m, 0.0ppm				Very weak low density white black specks CHALK non intact recovered as sandy silty angular to subangular fine to coarse chalk gravel with occasional orange staining. A low weak low density chalk and subrounded to rounded flint cobble content. Appears fractured and rubbly on the pit face.	1		
0.50	B5					SEAFORD CHALK FORMATION			
0.50	D					<i>At 1.15 m: Possible bedding surfaces.</i>			
0.55	B	PID 0.50m, 0.0ppm				<i>At 1.40 m: Horizontal fractures.</i>	2		
0.80	B	PID 0.55m, 0.0ppm				<i>Below 1.40 m: More structured.</i>			
1.00	B	PID 0.80m, 0.0ppm				<i>At 1.50 m: Horizontal fractures and flint band.</i>			
1.00	D	PID 1.00m, 0.0ppm							
				(3.15)					
						<i>Below 3.50 m: Medium dense.</i>	3		
			96.58	3.50		End of Trial Pit at 3.50m			
							4		
							5		
							6		
							7		



General Remarks:

1. Exploratory hole position CAT scanned and service plans inspected prior to excavation. 2. No groundwater encountered. 3. Plate Load test undertaken at 0.50 m bgl. 4. Trial pit backfilled with arisings upon completion.

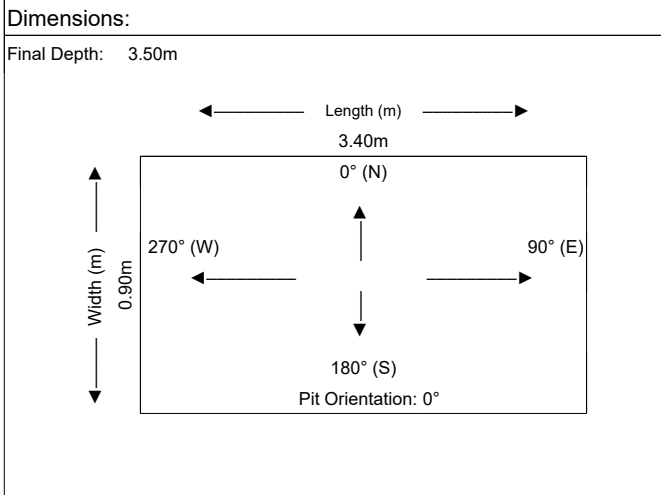
Water Strikes	
Strike (m)	Remarks
	No groundwater encountered

RPS TP Template Issue Number: 1 Issue Date: 13/09/2017



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Trial Pit ID: STP70404	
Contract Number: JFR1451	Start Date: 24/09/2020	End Date: 24/09/2020	Checked By: LRW	Status: FINAL	Sheet 1 of 1	
Easting: 407292.0		Northing: 141357.0		Ground Level: 75.68mOD	Plant Used: JCB 3CX	Logged By: AA
Weather: Sunny		Hole Termination: Target depth achieved.			Stability: Stable	

Samples & In Situ Testing				Strata Details				Water	Backfill
Depths	Type/Ref	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description			
0.00	B					Crops over soft dark brown sandy gravelly SILT. Gravel is subangular to subrounded fine to coarse of mixed lithology.			
0.00	D		75.43	0.25		TOPSOIL			
0.00	ES					Soft light brown sandy gravelly SILT. Gravel is subangular to subrounded fine to coarse of flint and chalk.			
0.30	B	PID 0.00m, 0.0ppm		(0.40)		POSSIBLE COLLUVIUM			
0.30	D					Light brown sandy very silty subangular to subrounded fine to coarse chalk and flint GRAVEL with a low to medium chalk and low subrounded flint cobble content.	1		
0.30	ES		75.03	0.65		POSSIBLE COLLUVIUM			
0.50	B	PID 0.30m, 0.0ppm				Structureless CHALK composed of white silty angular to subrounded fine to coarse weak low to medium density chalk GRAVEL. A low subrounded flint cobble content. Matrix is white. (CIRIA Grade Dc)			
0.50	D			(0.70)		SEAFORD CHALK FORMATION	2		
0.50	B5								
0.50	D								
0.50	D6								
0.50	ES								
1.00	B	PID 0.50m, 0.0ppm	74.33	1.35					
1.00	D								
1.00	ES								
		PID 1.00m, 0.0ppm							
2.00	B								
2.00	B9								
2.00	D								
2.00	ES			(2.15)					
		PID 2.00m, 0.0ppm							
3.00	B								
3.00	B11								
3.00	D								
3.00	ES								
		PID 3.00m, 0.0ppm	72.18	3.50					
End of Trial Pit at 3.50m									



General Remarks:

1. Exploratory hole position CAT scanned and service plans inspected prior to excavation. 2. No groundwater encountered. 3. Trial pit backfilled with arisings upon completion. 4. A Borehole was drilled to a depth of 5m below ground level at the location of the trial pit in advance of the trial pit excavation. Samples were taken away for Geoarchaeological assessment and were not logged.

Water Strikes	
Strike (m)	Remarks
	No groundwater encountered

RPS TP Template Issue Number: 1 Issue Date: 13/09/2017



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Trial Pit ID: STP70501	
Contract Number: JFR1451	Start Date: 28/09/2020	End Date: 28/09/2020	Checked By: LRW	Status: FINAL	Sheet 1 of 1	
Easting: 406702.8		Northing: 141796.6		Ground Level: 81.87mOD	Plant Used: JCB 3CX	Logged By: AA
		Hole Termination: Target depth achieved.			Stability: Stable	

Weather: Sunny

Samples & In Situ Testing				Strata Details				Water	Backfill
Depths	Type/Ref	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description			
0.00	B					Grass over dark brown gravelly SILT. Gravel is subangular to subrounded fine to coarse of mixed lithologies.			
0.00	D					Light brown gravelly SILT. Gravel is fine to coarse subangular to subrounded of chalk and flint.			
0.00	ES		81.62	0.25		TOPSOIL			
0.30	B	PID 0.00m, 0.0ppm		(0.40)		Weak low density white CHALK recovered as silty subangular to subrounded fine to coarse chalk gravel with a low subrounded flint cobble content. (CIRIA Grade Dc)			
0.30	D					SEAFOORD CHALK FORMATION			
0.30	ES		81.22	0.65		POSSIBLE COLLUVIUM			
0.50	B	PID 0.30m, 0.0ppm							
0.50	B5								
0.50	D								
0.50	ES								
1.00	B	PID 0.50m, 0.0ppm							
1.00	D								
1.00	ES								
		PID 1.00m, 0.0ppm							
2.00	B								
2.00	B10								
2.00	D			(3.15)		Below 1.90 m: Becoming white with rare flint cobbles and frequent black specks and occasional orange staining.			
2.00	ES								
		PID 2.00m, 0.0ppm							
3.00	B								
3.00	B11								
3.00	D								
		PID 3.00m, 0.0ppm							
			78.07	3.80		End of Trial Pit at 3.80m			

Dimensions: Final Depth: 3.80m 		General Remarks: 1. Exploratory hole position CAT scanned and service plans inspected prior to excavation. 2. No groundwater encountered. 3. Trial pit backfilled with arisings upon completion. 4. A Borehole was drilled to a depth of 5m below ground level at the location of the trial pit in advance of the trial pit excavation. Samples where taken away for Geoarcheological assessment and were not logged.	
		Water Strikes	
Strike (m)	Remarks		
	No groundwater encountered		
RPS TP Template Issue Number: 1 Issue Date: 13/09/2017			



Contract Name: A303 Stonehenge	Client: RPS Planning & Development			Trial Pit ID: STP70502		
	Contract Number: JFR1451	Start Date: 24/09/2020	End Date: 24/09/2020	Checked By: GR	Status: FINAL	
Easting: 406669.6		Northing: 141697.0	Ground Level: 87.55mOD	Plant Used: JCB 3CX	Logged By: AA`	Scale: 1:50
Weather: Sunny		Hole Termination: Target depth achieved.		Stability: Stable		

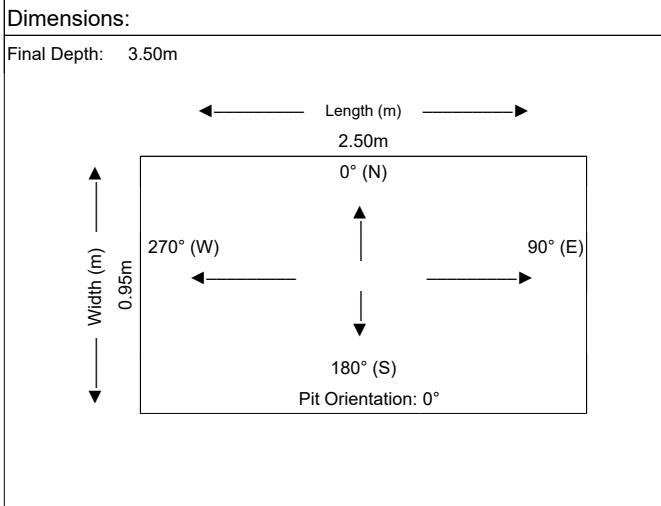
Samples & In Situ Testing				Strata Details				Water	Backfill
Depths	Type/Ref	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description			
0.00	B		87.45	0.10		Crops over soft dark brown sandy gravelly SILT. Gravel is subangular to subrounded fine to coarse chalk and flint.			
0.00	D		87.35	0.20		TOPSOIL			
0.30	B	PID 0.00m, 0.0ppm							
0.30	D								
0.50	B	PID 0.30m, 0.0ppm							
0.50	D								
		PID 0.50m, 0.0ppm							
1.00	B					POSSIBLE COLLUVIUM	1		
1.00	D					Structureless CHALK composed of silty angular to subrounded fine to coarse weak low to medium density white chalk and occasional flint GRAVEL with occasional black specks and orange staining and a medium nodular and rinded flint and weak low density chalk cobble and boulder content. Matrix is white. (CIRIA Grade Dc)			
		PID 1.00m, 0.0ppm							
2.00	B			(3.30)			2		
2.00	D					SEAFORD CHALK FORMATION			
		PID 2.00m, 0.0ppm							
3.00	B						3		
3.00	D								
		PID 3.00m, 0.0ppm							
			84.05	3.50		End of Trial Pit at 3.50m			
							4		
							5		
							6		
							7		

Dimensions: Final Depth: 3.50m 		General Remarks: 1. Exploratory hole position CAT scanned and service plans inspected prior to excavation. 2. No groundwater encountered. 3. Trial pit backfilled with arisings upon completion.	
		Water Strikes	
Strike (m)	Remarks		
	No groundwater encountered		
RPS TP Template Issue Number: 1 Issue Date: 13/09/2017			



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Trial Pit ID: STP70503	
Contract Number: JFR1451	Start Date: 28/09/2020	End Date: 28/09/2020	Checked By: LRW	Status: FINAL	Sheet 1 of 1	
Easting: 406758.8		Northing: 141653.8		Ground Level: 81.26mOD	Plant Used: JCB 3CX	Logged By: AA
Weather: Overcast		Hole Termination: Target depth achieved.			Stability: Stable	

Samples & In Situ Testing				Strata Details				Water	Backfill
Depths	Type/Ref	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description			
0.00	B					Grass over dark brown gravelly silty CLAY. Gravel is subangular to subrounded fine to coarse of mixed lithology.			
0.00	D		81.01	0.25		TOPSOIL			
0.00	ES	PID 0.00m, 0.0ppm		(0.45)		Light brown very gravelly SILT. Gravel is fine to coarse subangular to subrounded chalk and flint.			
0.30	B					POSSIBLE COLLUVIUM			
0.30	D		80.56	0.70		Structureless CHALK composed of off white silty subangular to subrounded fine to coarse weak low density chalk and occasional nodular and rinded flint GRAVEL with a medium subangular to subrounded nodular and rinded flint and weak low density chalk cobble and boulder content (up to 300mm). Matrix is off-white. (CIRIA Grade Dc)	1		
0.30	ES	PID 0.30m, 0.0ppm		(0.75)		SEAFORD CHALK FORMATION <i>Between 1.40 m and 1.45 m: Flint band.</i>			
0.50	B					Structureless CHALK composed of white silty subangular to subrounded fine to coarse weak low to medium density chalk GRAVEL with frequent black specks and occasional orange staining. A medium subangular to subrounded weak low to medium density chalk and low subrounded flint cobble content. Matrix is white. (CIRIA Grade Dc)	2		
0.50	B5					SEAFORD CHALK FORMATION <i>From 1.45 m: Becoming white. Frequent black specks identified on chalk gravel with occasional orange staining.</i>			
0.50	D		79.81	1.45		<i>Below 2.00 m: Becoming medium dense chalk gravel, cobbles and boulders with rare flint gravel, cobbles and boulders. Becoming less weathered with depth.</i>			
0.50	D6					End of Trial Pit at 3.50m	3		
0.50	ES	PID 0.50m, 0.0ppm		(2.05)					
1.00	B						4		
1.00	B7								
1.00	D						5		
1.00	ES	PID 1.00m, 0.0ppm							
2.00	B						6		
2.00	B9								
2.00	D						7		
2.00	ES	PID 2.00m, 0.0ppm							
3.00	B								
3.00	D		77.76	3.50					
3.00	ES	PID 3.00m, 0.0ppm							



General Remarks:

1. Exploratory hole position CAT scanned and service plans inspected prior to excavation. 2. No groundwater encountered. 3. Trial pit backfilled with arisings upon completion. 4. A Borehole was drilled to a depth of 5m below ground level at the location of the trial pit in advance of the trial pit excavation. Samples were taken away for Geoarchaeological assessment. and were not logged.

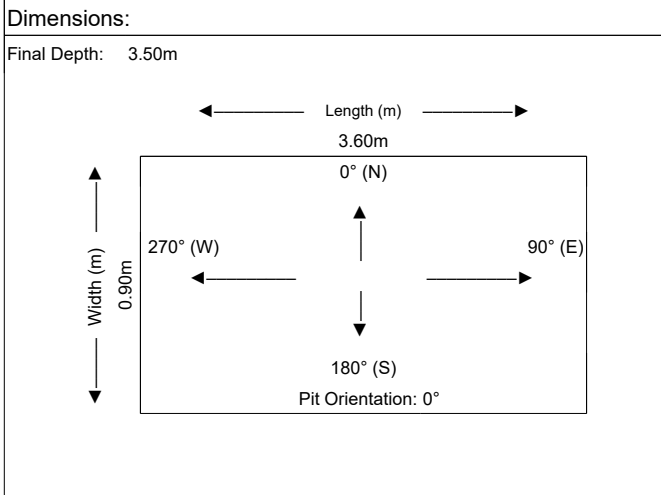
Water Strikes	
Strike (m)	Remarks
	No groundwater encountered

RPS TP Template Issue Number: 1 Issue Date: 13/09/2017



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Trial Pit ID: STP70504	
Contract Number: JFR1451	Start Date: 28/09/2020	End Date: 28/09/2020	Checked By: LRW	Status: FINAL	Sheet 1 of 1	
Easting: 406722.8		Northing: 141539.2		Ground Level: 87.83mOD	Plant Used: JCB 3CX	Logged By: AA
Weather: Sunny		Hole Termination: Target depth achieved.			Stability: Stable	

Samples & In Situ Testing				Strata Details				Water	Backfill
Depths	Type/Ref	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description			
0.00	B		87.73	0.10		Crops over soft dark brown sandy gravelly SILT. Gravel is sub-angular to sub-rounded fine to coarse chalk and flint.			
0.00	D		87.63	0.20		TOPSOIL			
0.00	ES					Soft light brown sandy gravelly SILT. Gravel is subangular to subrounded fine to coarse of flint and chalk.			
0.30	B	PID 0.00m, 0.0ppm				POSSIBLE COLLUVIUM			
0.30	D					Structureless CHALK composed of white silty angular to subrounded fine to coarse weak low density chalk and occasional flint GRAVEL with occasional black specks and orange staining. A medium weak low density chalk and low nodular and rinded flint cobble and boulder content. Matrix is white. (CIRIA Grade Dc)			
0.30	ES					SEAFORD CHALK FORMATION			
0.50	B	PID 0.30m, 0.0ppm							
0.50	B6								
0.50	D								
1.00	B	PID 0.50m, 0.0ppm							
1.00	B7								
1.00	D	PID 1.00m, 0.0ppm							
2.00	B			(3.30)					
2.00	B9								
2.00	D	PID 2.00m, 0.0ppm							
3.00	B								
3.00	D	PID 3.00m, 0.0ppm							
			84.33	3.50		End of Trial Pit at 3.50m			



General Remarks:

1. Exploratory hole position CAT scanned and service plans inspected prior to excavation. 2. No groundwater encountered. 3. Trial pit backfilled with arisings upon completion.

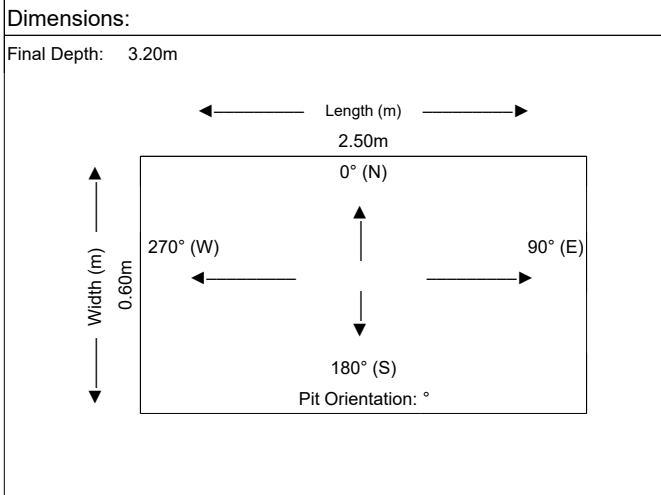
Water Strikes	
Strike (m)	Remarks
	No groundwater encountered

RPS TP Template Issue Number: 1 Issue Date: 13/09/2017



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Trial Pit ID: STP70505	
Contract Number: JFR1451	Start Date: 21/09/2020	End Date: 21/09/2020	Checked By: GR	Status: FINAL	Sheet 1 of 1	
Easting: 406837.0		Northing: 141566.5		Ground Level: 82.07mOD	Plant Used: JCB 3CX	Logged By: AA
Weather: Sunny		Hole Termination: Refusal on hard strata.			Stability: Stable	

Samples & In Situ Testing				Strata Details				Water	Backfill
Depths	Type/Ref	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description			
0.00	B		81.97	0.10		Grass over dark brown gravelly SILT. Gravel is angular to subrounded fine to coarse flint and chalk.			
0.00	D		81.82	0.25		TOPSOIL			
0.30	B	PID 0.00m, 0.0ppm				Soft off white gravelly silty CLAY. Gravel is angular to subrounded fine to coarse chalk and flint.			
0.30	D			(0.85)		POSSIBLE COLLUVIUM			
0.50	B	PID 0.30m, 0.0ppm				Structureless CHALK composed of light brown very silty angular to subangular fine to coarse weak low density chalk GRAVEL with a low nodular and rinded flint cobble content. Matrix is light brown silt. (CIRIA Grade Dc)	1		
0.50	D		80.97	1.10		SEAFORD CHALK FORMATION			
0.55	B	PID 0.50m, 0.0ppm				Structureless CHALK composed of white silty angular to subrounded fine to coarse weak medium density chalk and rare flint GRAVEL with frequent black specks and occasional orange staining. A low nodular and rinded flint cobble content. Matrix is white. (CIRIA Grade Dc)	2		
0.55	D					SEAFORD CHALK FORMATION			
0.80	B	PID 0.55m, 0.0ppm							
0.80	D								
1.00	B	PID 0.80m, 0.0ppm							
1.00	D								
		PID 1.00m, 0.0ppm							
2.00	B								
2.00	D			(2.10)					
		PID 2.00m, 0.0ppm							
3.00	B								
3.00	D		78.87	3.20		Below 3.00 m: Dense.	3		
		PID 3.00m, 0.0ppm				End of Trial Pit at 3.20m			
							4		
							5		
							6		
							7		



General Remarks:

- Exploratory hole position CAT scanned and service plans inspected prior to excavation.
- No groundwater encountered.
- Plate Load test undertaken at 0.50 m bgl.
- Trial pit backfilled with arisings upon completion.

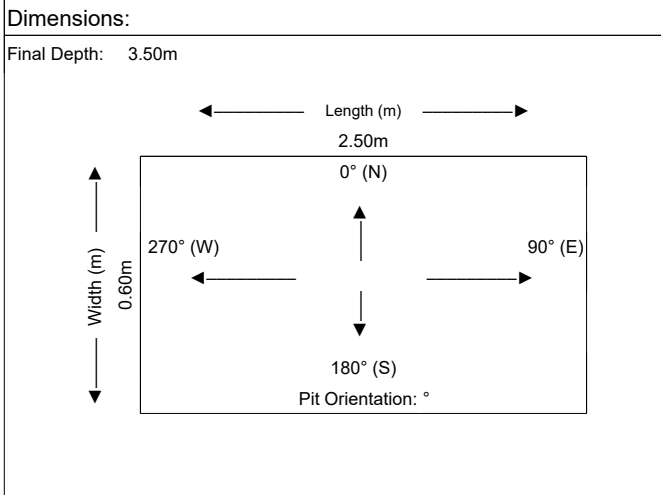
Water Strikes	
Strike (m)	Remarks
	No groundwater encountered

RPS TP Template Issue Number: 1 Issue Date: 13/09/2017



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Trial Pit ID: STP70506	
Contract Number: JFR1451	Start Date: 09/09/2020	End Date: 09/09/2020	Checked By: GR	Status: FINAL	Sheet 1 of 1	
Easting: 406903.0		Northing: 141817.0		Ground Level: 91.49mOD	Plant Used: JCB3CX	Logged By: A.A
Weather: Fair		Hole Termination: Target depth achieved			Stability: Pit remained stable	

Samples & In Situ Testing				Strata Details			Water	Backfill
Depths	Type/Ref	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description		
0.00	B1					Crops over soft dark brown gravelly very sandy CLAY with a low flint cobble content. Gravel is angular to subangular fine to coarse flint and chalk. Sand is fine.		
0.00	D1			(0.40)				
0.00	ES1							
0.30	B2	PID 0.00m, 0.0ppm	91.09	0.40		TOPSOIL		
0.30	D2							
0.30	ES2					Structureless CHALK composed of white sandy slightly silty subangular fine to coarse very weak to weak medium density chalk GRAVEL with rare black specks and orange staining. A low nodular and rinded flint cobble content. Matrix is light brown. (CIRIA Grade Dc)		
0.50	B3	PID 0.30m, 0.0ppm		(0.70)				
0.50	D3							
0.50	ES3							
1.00	B4	PID 0.50m, 0.1ppm	90.39	1.10		SEAFORD CHALK FORMATION		
1.00	D4							
1.00	ES4					<i>Below 1.00 m: High flint cobble content</i>		
		PID 1.00m, 0.0ppm						
2.00	B							
2.00	D5	PID 2.00m, 0.0ppm		(2.40)		SEAFORD CHALK FORMATION		
3.00	B							
3.00	D6	PID 3.00m, 0.0ppm						
			87.99	3.50		End of Trial Pit at 3.50m		



General Remarks:

1. Exploratory hole position CAT scanned and service plans inspected prior to excavation. 2. No groundwater encountered. 3. Trial pit backfilled with arisings upon completion.

Water Strikes	
Strike (m)	Remarks
	No groundwater encountered.

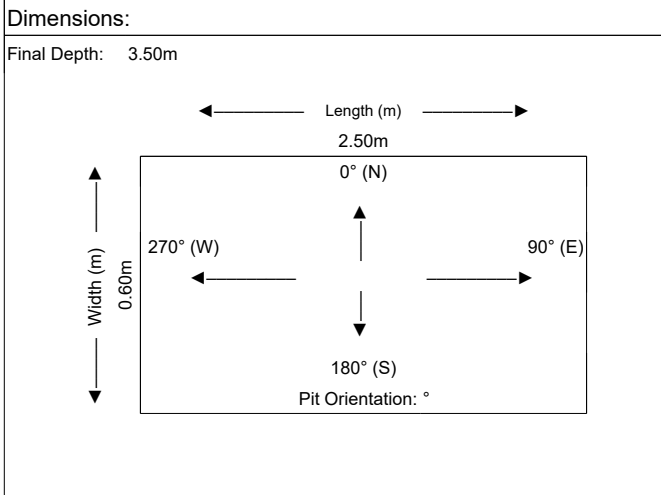
RPS TP Template Issue Number: 1 Issue Date: 13/09/2017



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Trial Pit ID: STP70507	
Contract Number: JFR1451	Start Date: 10/09/2020	End Date: 10/09/2020	Checked By: GR	Status: FINAL	Sheet 1 of 1	
Easting: 406887.0	Northing: 141766.0	Ground Level: 87.57mOD	Plant Used: JCB3CX	Logged By: A.A	Scale: 1:50	

Weather: Sunny Hole Termination: Target depth achieved. Stability: Stable

Samples & In Situ Testing				Strata Details				Water	Backfill
Depths	Type/Ref	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description			
0.00	B		87.22	(0.35)		Light brown sandy angular to subrounded fine to coarse GRAVEL of flint and chalk with a medium cobble content.	1		
0.00	D					HEAD			
0.00	ES1	PID 0.00m, 0.0ppm							
0.30	B								
0.30	D								
0.30	ES2	PID 0.30m, 0.0ppm							
0.50	B								
0.50	D								
0.50	ES3	PID 0.50m, 0.0ppm			(1.45)				Structureless CHALK composed of very silty sandy subangular to rounded medium to coarse white weak low to medium density chalk GRAVEL with frequent black specks. A low flint cobble content and a high rounded weak low to medium density chalk cobble content. (CIRIA grade Dc)
1.00	B								
1.00	D								
1.00	ES4	PID 1.00m, 0.0ppm				SEAFORD CHALK FORMATION <i>From 0.70-1.80m : Gravel strata becoming less weathered and silty.</i>			
2.00	B		85.77	1.80		CHALK recovered as white sandy silty angular to rounded medium to coarse low to medium density gravel with medium tabular and nodular flint cobble content.	2		
2.00	D								
2.00	ES5	PID 2.00m, 0.0ppm							
3.00	B		84.07	(1.70)			3		
3.00	D								
3.00	ES6	PID 3.00m, 0.0ppm							
				3.50	End of Trial Pit at 3.50m				



General Remarks:

1. Exploratory hole position CAT scanned and service plans inspected prior to excavation. 2. No groundwater encountered. 3. Trial pit backfilled with arisings upon completion.

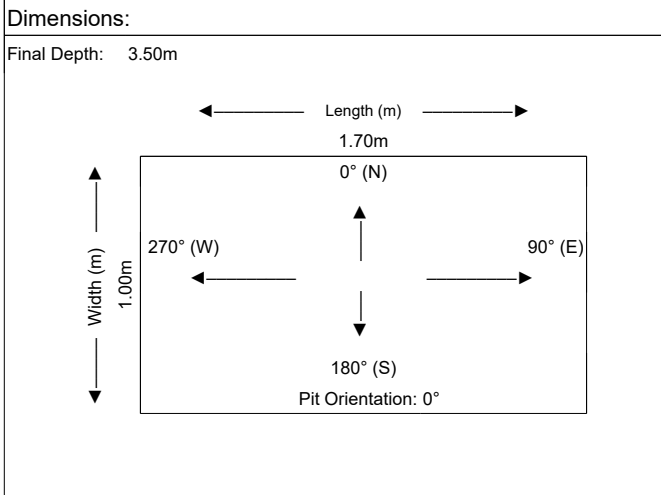
Water Strikes	
Strike (m)	Remarks

RPS TP Template Issue Number: 1 Issue Date: 13/09/2017



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Trial Pit ID: STP70508	
Contract Number: JFR1451	Start Date: 11/09/2020	End Date: 11/09/2020	Checked By: GR	Status: FINAL	Sheet 1 of 1	
Easting: 406935.0		Northing: 141701.0		Ground Level: 87.02mOD	Plant Used: JCB3X	Logged By: A.A
Weather: Dry & Sunny		Hole Termination: Target depth reached.			Stability: Pit remained stable.	

Samples & In Situ Testing				Strata Details				Water	Backfill
Depths	Type/Ref	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description			
0.00	B					Crops over light brown gravelly medium SAND. Gravel is subangular to subrounded fine to coarse chalk and flint with occasional rootlets.			
0.00	B1			(0.35)					
0.00	D								
0.00	D1		86.67	0.35					
0.00	ES1			(0.30)		TOPSOIL			
0.30	B2	PID 0.00m, 0.0ppm	86.37	0.65		Between 0-1.5m: Occasional roots.			
0.30	D2					Light brown medium to coarse SAND. Gravel is fine to coarse subrounded of chalk and occasional flint with a low cobble content.			
0.30	ES2					POSSIBLE COLLUVIUM			
0.50	B3	PID 0.30m, 0.0ppm				Structureless CHALK composed of slightly silty gravelly SAND.			
0.50	D3					Gravel is subangular to rounded, medium to coarse weak to medium density, white with a medium subangular to subrounded chalk and flint cobble content. (CIRIA grade Dm)			
0.50	ES3					SEAFORD CHALK FORMATION			
1.00	B4	PID 0.50m, 0.0ppm				At 1.2m: Chalk becoming more compact and less weathered.			
1.00	D					At 1.7m: Pocket of silty chalk with occasional black speckling.			
1.00	D4								
1.00	ES4	PID 1.00m, 0.0ppm							
2.00	B								
2.00	D	PID 2.00m, 0.0ppm		(2.85)					
						At 2.3m: Horizontal fracture 100-300 mm wide noted in northern face of pit. Becoming structured chalk with depth.			
3.00	B								
3.00	B5								
3.00	D	PID 3.00m, 0.0ppm	83.52	3.50					
						End of Trial Pit at 3.50m			



General Remarks:

1. Exploratory hole position CAT scanned and service plans inspected prior to excavation. 2. No groundwater encountered. 3. Trial pit backfilled with arisings upon completion.

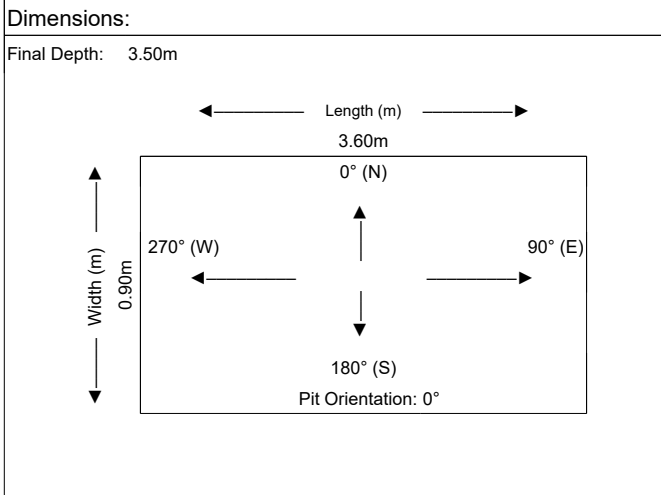
Water Strikes	
Strike (m)	Remarks

RPS TP Template Issue Number: 1 Issue Date: 13/09/2017



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Trial Pit ID: STP70509	
Contract Number: JFR1451	Start Date: 30/09/2020	End Date: 30/09/2020	Checked By: GR	Status: FINAL	Sheet 1 of 1	
Easting: 406967.2		Northing: 141609.7		Ground Level: 83.29mOD	Plant Used: JCB 3CX	Logged By: AA
Weather: Sunny		Hole Termination: Target depth achieved.			Stability: Stable	

Samples & In Situ Testing				Strata Details				Water	Backfill
Depths	Type/Ref	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description			
0.00	B					Grass over dark brown sandy silty GRAVEL. Gravel is subangular to subrounded fine to coarse of mixed lithology.			
0.00	D		83.09	0.20					
0.30	B	PID 0.00m, 0.0ppm	82.99	0.30		TOPSOIL			
0.30	D								
0.50	B	PID 0.30m, 0.0ppm				Light brown sandy gravelly SILT. Gravel is subangular to subrounded fine to coarse of chalk and flint. Sand is fine to coarse.			
0.50	B5					POSSIBLE COLLUVIUM			
0.50	D								
0.55	B	PID 0.50m, 0.0ppm				Structureless CHALK composed of silty angular fine to coarse GRAVEL with a high cobble content. Clasts are weak low to medium density white chalk with frequent black specks on fracture surfaces. Occasional nodular rinded flint cobbles. (CIRIA Grade Dc)			
0.80	B	PID 0.55m, 0.0ppm							
1.00	B	PID 0.80m, 0.0ppm							
1.00	D	PID 1.00m, 0.0ppm				SEAFORD CHALK FORMATION <i>Below 0.60m structured chalk. Fractured with orange staining.</i>			
2.00	B			(3.20)					
2.00	B11								
2.00	D	PID 2.00m, 0.0ppm				<i>At 2.00m: fracture with approximate 30mm aperture.</i>			
3.00	B								
3.00	D	PID 3.00m, 0.0ppm							
			79.79	3.50		End of Trial Pit at 3.50m			



General Remarks:

1. Exploratory hole position CAT scanned and service plans inspected prior to excavation. 2. No groundwater encountered. 3. Trial pit backfilled with arisings upon completion. 4. Plate load test at 0.5m.

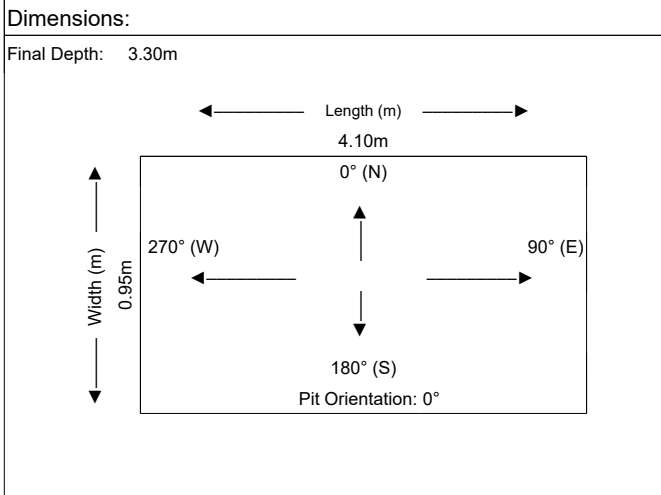
Water Strikes	
Strike (m)	Remarks

RPS TP Template Issue Number: 1 Issue Date: 13/09/2017



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Trial Pit ID: STP70601	
Contract Number: JFR1451	Start Date: 23/09/2020	End Date: 23/09/2020	Checked By: GR	Status: FINAL	Sheet 1 of 1	
Easting: 407038.0		Northing: 141231.0		Ground Level: 92.71mOD	Plant Used: JCB 3CX	Logged By: AA
Weather: Sunny		Hole Termination: Refusal on hard strata.			Stability: Stable	

Samples & In Situ Testing				Strata Details				Water	Backfill
Depths	Type/Ref	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description			
0.00	B2					Grass over dark brown very silty sandy angular to subangular, fine to coarse GRAVEL of flint and chalk. Low flint cobble content. Sand is fine to coarse			
0.00	D3		92.41	(0.30)					
0.00	ES1			0.30		TOPSOIL			
0.30	B5	PID 0.00m, 0.0ppm		(0.40)					
0.30	D6								
0.30	ES4		92.01	0.70		Weak low density off white CHALK. Recovered as silty angular to subrounded fine to coarse chalk gravel with occasional orange staining and black specks and a medium cobble content of angular and tabular flint and chalk.			
0.50	B8	PID 0.30m, 0.0ppm				SEAFORD CHALK FORMATION			
0.50	D9								
0.50	ES7								
1.00	D11	PID 0.50m, 0.1ppm							
1.00	ES10	PID 1.00m, 0.0ppm				Weak low to medium density white CHALK. Recovered as silty angular, fine to coarse gravel and cobbles. Gravel is weak low to medium density chalk with frequent back specks and occasional orange staining.			
						SEAFORD CHALK FORMATION			
2.00	B12			(2.60)		<i>Between 1.00m and 2.00m: occasional fossils.</i>			
2.00	D13	PID 2.00m, 0.0ppm				<i>At 1.40m: flint band</i>			
3.00	B15								
3.00	D14	PID 3.00m, 0.0ppm	89.41	3.30		End of Trial Pit at 3.30m			



General Remarks:

1. Exploratory hole position CAT scanned and service plans inspected prior to excavation. 2. No groundwater encountered. 3. Trial pit backfilled with arisings upon completion.

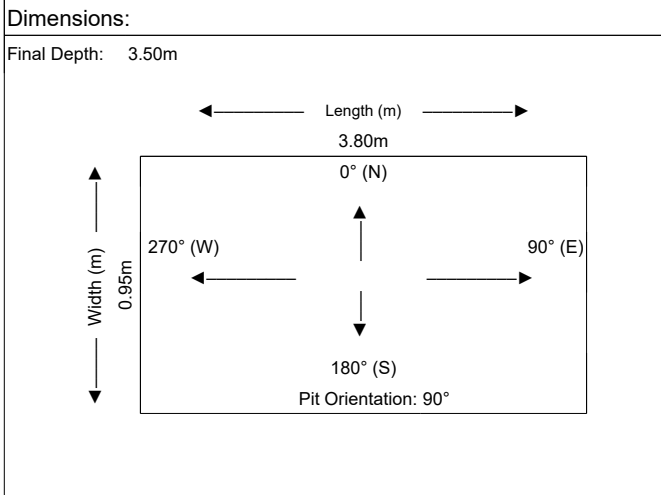
Water Strikes	
Strike (m)	Remarks

RPS TP Template Issue Number: 1 Issue Date: 13/09/2017



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Trial Pit ID: STP70602	
Contract Number: JFR1451	Start Date: 06/10/2020	End Date: 06/10/2020	Checked By: GR	Status: FINAL	Sheet 1 of 1	
Easting: 407195.6		Northing: 141258.5		Ground Level: 84.09mOD	Plant Used: JCB 3CX	Logged By: AA
Weather: Showers		Hole Termination: Target depth achieved.			Stability: Stable	

Samples & In Situ Testing				Strata Details				Water	Backfill
Depths	Type/Ref	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description			
0.00	B		83.94	0.15		Grass over dark brown gravelly sandy silty CLAY. Gravel is sub-angular to sub-rounded fine to coarse of chalk and flint. Sand is fine to coarse.			
0.00	D		83.79	0.30					
0.00	ES	PID 0.00m, 0.0ppm							
0.30	B								
0.30	D								
0.30	ES	PID 0.30m, 0.0ppm		(0.90)		TOPSOIL Light brown very silty sandy subangular to subrounded fine to coarse flint and chalk GRAVEL with medium subrounded flint cobble content.			
0.50	B								
0.50	D								
0.50	ES	PID 0.50m, 0.0ppm	82.89	1.20		POSSIBLE COLLUVIUM Structureless CHALK composed of silty subangular to subrounded fine to coarse GRAVEL with a low subangular to subrounded chalk and nodular and rinded flint cobble content. Clasts are weak and low density white with occasional black specks. Matrix is light brown. Occasional nodular rinded flint gravel. (CIRIA Grade Dc)			
0.90	B								
0.90	D								
0.90	ES	PID 0.90m, 0.0ppm				SEAFORD CHALK FORMATION CHALK recovered as white silty gravel with medium cobble and boulder content (up to 400mm). Gravel is white angular to subrounded fine to coarse weak low density white with occasional black specks chalk and occasional flints. Cobbles and boulders are weak and low density. Fracture surfaces notable on recovered material.			
2.00	B								
2.00	D								
2.00	ES	PID 2.00m, 0.0ppm		(2.30)					
3.00	B								
3.00	D								
3.00	ES	PID 3.00m, 0.0ppm	80.59	3.50		SEAFORD CHALK FORMATION End of Trial Pit at 3.50m			



General Remarks:

1. Exploratory hole position CAT scanned and service plans inspected prior to excavation.
2. No groundwater encountered.
3. Trial pit backfilled with arisings upon completion.
4. Plate load test at 0.6m.

Water Strikes	
Strike (m)	Remarks

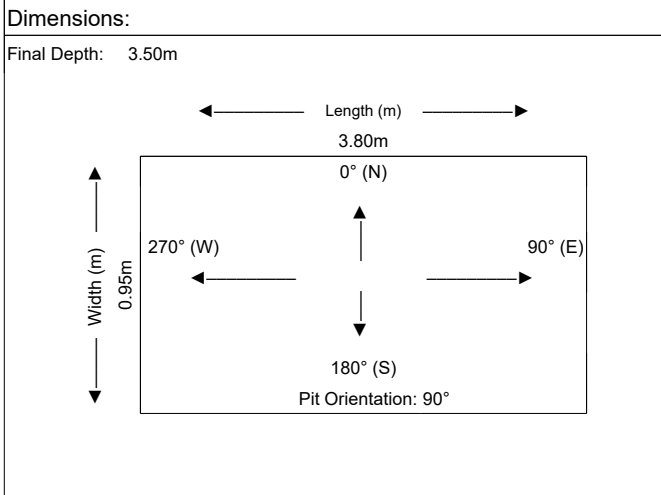
RPS TP Template Issue Number: 1 Issue Date: 13/09/2017



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Trial Pit ID: STP71601	
Contract Number: JFR1451	Start Date: 07/10/2020	End Date: 07/10/2020	Checked By: LRW	Status: FINAL	Sheet 1 of 1	
Easting: 408807.5	Northing: 141123.2	Ground Level: 104.89mOD	Plant Used: JCB 3CX	Logged By: AA	Scale: 1:50	

Weather: Dry Hole Termination: Target depth achieved. Stability: Stable

Samples & In Situ Testing				Strata Details				Water	Backfill
Depths	Type/Ref	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description			
0.00	B					Grass over dark brown gravelly sandy SILT. Gravel is subangular to subrounded fine to coarse of mixed lithology.			
0.00	D		104.74	0.15 (0.30)					
0.30	B	PID 0.00m, 1.1ppm							
0.30	D		104.44	0.45					
0.50	B	PID 0.30m, 0.8ppm							
0.50	D								
		PID 0.50m, 0.6ppm							
1.00	B								
1.00	D								
		PID 1.00m, 0.9ppm							
2.00	B								
2.00	D								
		PID 2.00m, 0.0ppm							
3.00	B								
3.00	D								
		PID 3.00m, 0.0ppm							
			101.39	3.50					
End of Trial Pit at 3.50m									



General Remarks:

1. Exploratory hole position CAT scanned and service plans inspected prior to excavation. 2. No groundwater encountered. 3. Trial pit backfilled with arisings upon completion.

Water Strikes	
Strike (m)	Remarks

RPS TP Template Issue Number: 1 Issue Date: 13/09/2017

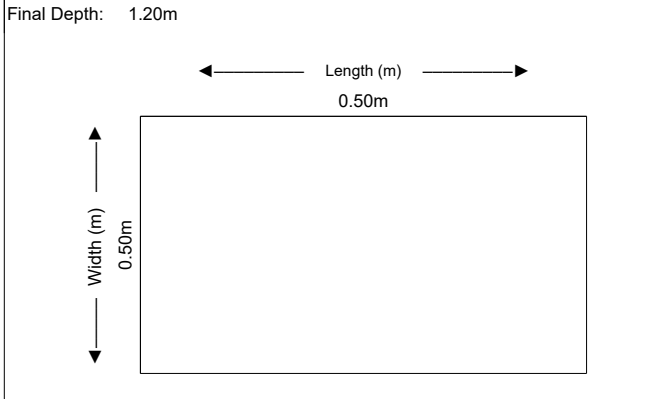


Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Trial Pit ID: STP72201	
Contract Number: JFR1451	Start Date: 07/10/2020	End Date: 07/10/2020	Checked By: LRW	Status: FINAL	Sheet 1 of 1	
Easting: 414805.4	Northing: 142080.8	Ground Level: 75.46mOD	Plant Used: Hand tools	Logged By: LD	Scale: 1:50	

Weather: Dry Hole Termination: Target depth achieved.

Samples & In Situ Testing			Strata Details				Water	Backfill
Depths	Type/Ref	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description		
0.00 - 0.10	D							
0.00 - 0.10	ES		75.26	0.20		Soft black slightly sandy slightly gravelly silty CLAY with frequent rootlets. Gravel is subrounded fine to coarse chalk and rare flint with rare cobble sized fragments of textiles and gravel sized fragments of litter (foil pockets).		
0.30 - 0.35	D	PID 0.00m, 0.0ppm	75.08	0.38				
0.30 - 0.35	ES			(0.32)		MADE GROUND		
0.50	D	PID 0.35m, 0.0ppm		0.70				
0.50	ES		74.76	(0.50)		Soft white and brown slightly sandy slightly gravelly silty CLAY. Gravel is subangular to subrounded fine to coarse chalk and rare flint. Low rounded flint cobble content.		
0.50 - 0.70	B	PID 0.50m, 0.0ppm		1.20		POSSIBLE COLLUVIUM		
0.90 - 1.10	B					Structureless CHALK recovered as white slightly gravelly sandy SILT. Gravel is subrounded fine to coarse chalk with occasional orange staining. (CIRIA Grade Dm)		
1.00	D	PID 1.00m, 0.0ppm	74.26			SEAFORD CHALK FORMATION		
1.00	ES					Structureless CHALK composed of white slightly gravelly SILT. Gravel is subrounded fine to coarse chalk and angular to subangular fine to coarse flint. (CIRIA Grade Dm)		
						SEAFORD CHALK FORMATION <i>At 1.0m medium angular flint cobble and boulder content.</i>		
						End of Inspection Pit at 1.20m		

Dimensions: **General Remarks:**



1. Exploratory hole position CAT scanned and service plans inspected prior to excavation.
2. Inspection pit hand excavated to 1.20 metres below ground level (m bgl).
3. No groundwater encountered.
4. Pit remained open and stable.
5. Inspection pit backfilled with arisings upon completion.

Water Strikes	
Strike (m)	Remarks

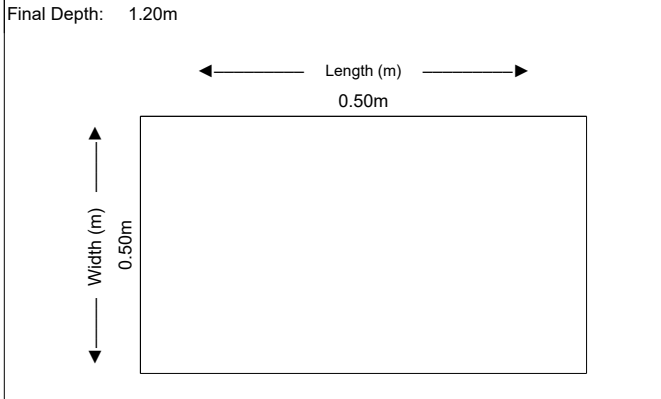


Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Trial Pit ID: STP72202	
Contract Number: JFR1451	Start Date: 05/10/2020	End Date: 05/10/2020	Checked By: LRW	Status: FINAL	Sheet 1 of 1	
Easting: 414836.0	Northing: 142114.0	Ground Level: 77.67mOD	Plant Used: Hand tools	Logged By: AA	Scale: 1:50	

Weather: Showers Hole Termination: Target depth achieved

Samples & In Situ Testing				Strata Details				Water	Backfill
Depths	Type/Ref	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description			
0.00	B					Vegetation over soft dark brown gravelly sandy CLAY. Gravel is subangular to subrounded fine to coarse chalk and flint. Occasional tree roots and flint cobble.			
0.00	D								
0.00	ES								
0.30	B	PID 0.00m, 0.1ppm							
0.30	D								
0.30	ES		77.07	0.60		TOPSOIL <i>Below 0.50m very gravelly.</i>			
0.50	B	PID 0.30m, 0.1ppm							
0.50	D								
0.50	ES								
1.00	B	PID 0.50m, 0.1ppm							
1.00	D		76.47	1.20					
1.00	ES								
		PID 1.00m, 0.1ppm				MADE GROUND End of Inspection Pit at 1.20m			

Dimensions: **General Remarks:**



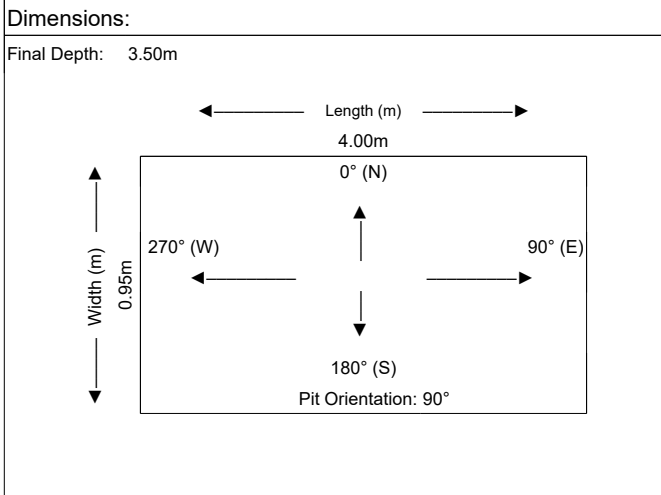
1. Exploratory hole position CAT scanned and service plans inspected prior to excavation.
2. Inspection pit hand excavated to 1.20 metres below ground level (m bgl).
3. No groundwater encountered.
4. Pit remained open and stable.
5. Inspection pit backfilled with arisings upon completion.

Water Strikes	
Strike (m)	Remarks



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Trial Pit ID: STP72202A	
Contract Number: JFR1451	Start Date: 02/10/2020	End Date: 02/10/2020	Checked By: GR	Status: FINAL	Sheet 1 of 1	
Easting: 414819.3		Northing: 142120.0		Ground Level: 78.72mOD	Plant Used: JCB 3CX	Logged By: AA
Weather: Rain		Hole Termination: Target depth achieved			Stability: Stable	

Samples & In Situ Testing				Strata Details				Water	Backfill
Depths	Type/Ref	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description			
0.00	B		78.57	0.15		Grass over soft dark brown slightly sandy gravelly SILT. Gravel is subangular to subrounded fine to coarse chalk and flint.	1		
0.00	D					TOPSOIL			
0.00	ES					Soft light brown sandy gravelly clayey SILT. Gravel is subangular to subrounded fine to coarse chalk and flint.			
0.30	B	PID 0.00m, 0.0ppm	77.92	(0.65)		MADE GROUND	1		
0.30	D					<i>Between 0.65 and 0.80m: At western end of pit soft gravelly silt with occasional fragments of brick and porcelain.</i>			
0.30	ES					Firm light brown sandy gravelly SILT with medium cobble and boulder content (up to 300mm). Gravel is rounded to subangular fine to coarse chalk and flint. Cobbles and boulders are of compacted silt chalk and flint.			
0.50	B	PID 0.30m, 0.2ppm	76.62	0.80		MADE GROUND	2		
0.50	B5								
0.50	D								
0.50	ES		75.22	(1.30)		MADE GROUND	3		
1.00	B	PID 0.50m, 0.3ppm							
1.00	B7								
1.00	D		75.22	(1.40)		MADE GROUND	3		
1.00	ES								
1.00	ES	PID 1.00m, 0.0ppm							
1.50	ES	PID 1.50m, 0.0ppm	76.62	2.10		MADE GROUND	2		
2.00	B								
2.00	D								
2.00	ES	PID 2.00m, 0.0ppm	75.22	(1.40)		MADE GROUND	3		
3.00	B								
3.00	B11								
3.00	D		75.22	3.50		MADE GROUND	3		
3.00	ES								
3.00	ES	PID 3.00m, 0.0ppm							
3.50	ES	PID 3.50m, 0.0ppm	75.22	3.50		MADE GROUND	3		
3.50	ES								
3.50	ES	PID 3.50m, 0.0ppm							
End of Trial Pit at 3.50m							4		
							5		
							6		
							7		



General Remarks:

1. Exploratory hole position CAT scanned and service plans inspected prior to excavation.
2. No groundwater encountered.
3. Trial pit backfilled with arisings upon completion.
4. Unsuitable for hand shear vane test due to gravel and cobble content.

Water Strikes	
Strike (m)	Remarks

RPS TP Template Issue Number: 1 Issue Date: 13/09/2017

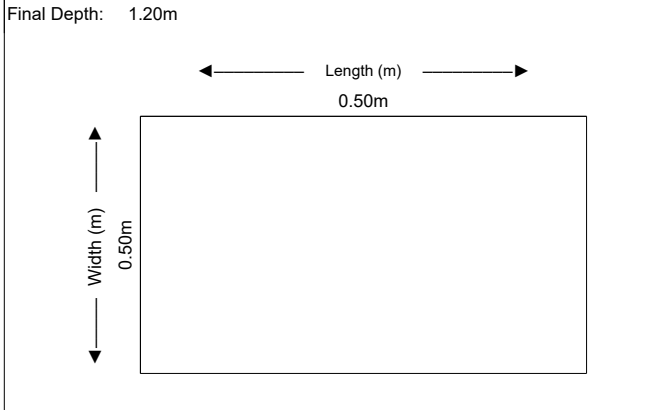


Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Trial Pit ID: STP72601	
Contract Number: JFR1451	Start Date: 07/10/2020	End Date: 07/10/2020	Checked By: GR	Status: FINAL	Sheet 1 of 1	
Easting: 415859.6	Northing: 142157.3	Ground Level: 74.22mOD	Plant Used: Hand tools	Logged By: LD	Scale: 1:50	

Weather: Dry Hole Termination: Target depth achieved.

Samples & In Situ Testing			Strata Details				Water	Backfill
Depths	Type/Ref	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description		
0.00 - 0.10	D							
0.00 - 0.10	ES							
0.00 - 0.20	B		73.95	0.27		Soft dark brown and white slightly gravelly silty CLAY. Gravel is subangular to subrounded fine to coarse chalk and flint.		
0.30	D	PID 0.10m, 0.0ppm	73.80	0.42		TOPSOIL		
0.30	ES							
0.50	D	PID 0.30m, 0.0ppm				Soft brown slightly gravelly silty CLAY. Gravel is subangular to subrounded fine to coarse chalk with occasional gravel sized pockets of organic matter.		
0.50	ES					MADE GROUND		
0.50 - 0.70	B			(0.78)				
1.00	D	PID 0.50m, 0.0ppm				Firm white gravelly clayey SILT. Gravel is subangular to subrounded fine to coarse flint and chalk with a medium subangular chalk and flint cobble and boulder content. Rare gravel sized fragments of brick and possible limestone.		
1.00	ES		73.02	1.20		MADE GROUND		
1.00 - 1.20	B	PID 1.00m, 0.0ppm				End of Inspection Pit at 1.20m		

Dimensions: **General Remarks:**



1. Exploratory hole position CAT scanned and service plans inspected prior to excavation.
2. Inspection pit hand excavated to 1.20 metres below ground level (m bgl).
3. No groundwater encountered.
4. Pit remained open and stable.
5. Inspection pit backfilled with arisings upon completion.

Water Strikes	
Strike (m)	Remarks

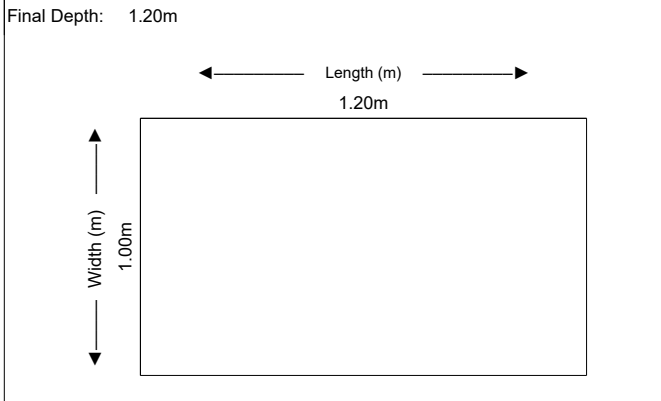


Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Trial Pit ID: STP72602	
Contract Number: JFR1451	Start Date: 06/10/2020	End Date: 06/10/2020	Checked By: GR	Status: FINAL	Sheet 1 of 1	
Easting: 415892.6		Northing: 142191.5	Ground Level: 73.00mOD	Plant Used: Hand tools	Logged By: LD	Scale: 1:50

Weather: Showers Hole Termination: Target depth achieved

Samples & In Situ Testing			Strata Details				Water	Backfill
Depths	Type/Ref	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description		
0.00 - 0.10	D		72.90	0.10		Grass over soft dark brownish black slightly gravelly sandy		
0.00 - 0.10	ES					CLAY with frequent roots and possible rare gravel sized		
0.30 - 0.40	D	PID 0.10m, 0.0ppm	72.70	0.30		fragments of plastic and ceramic. Gravel is subangular to		
0.30 - 0.40	ES					subrounded fine to coarse flint.		
0.40 - 0.50	B		72.48	0.52		MADE GROUND		
0.50	D	PID 0.40m, 0.0ppm		(0.33)		Soft brown and white slightly sandy slightly gravelly clayey SILT		
0.50	ES		72.15	0.85		with occasional rootlets. Gravel is subangular fine to coarse		
0.65	D			(0.35)		chalk with occasional orange staining and rare flint.		
0.65	ES					POSSIBLE COLLUVIUM		
0.65 - 1.00	B		71.80	1.20		Soft light orange and white mottled slightly gravelly clayey SILT		
1.00	D	PID 0.65m, 0.0ppm				with a low subangular flint boulder content (200 to 300mm).		
1.00	ES	PID 1.00m, 0.0ppm				Gravel is subangular fine to coarse flint and white chalk.		
						POSSIBLE COLLUVIUM		
						Reddish orange slightly sandy clayey GRAVEL. Gravel is		
						subangular fine to coarse flint, fine to medium chalk and rare		
						quartzite.		
						POSSIBLE COLLUVIUM		
						Structureless chalk composed of firm white gravelly SILT.		
						Gravel is subangular to subrounded fine to coarse chalk and		
						rare flint. (CIRIA Grade Dm)		
						SEAFORD CHALK FORMATION		
						End of Inspection Pit at 1.20m		

Dimensions:



General Remarks:

1. Exploratory hole position CAT scanned and service plans inspected prior to excavation. 2. Inspection pit hand excavated to 1.20 metres below ground level (m bgl). 3. No groundwater encountered. 4. Inspection pit backfilled with arisings upon completion. 5. Plate load test undertaken at 0.5m.

Water Strikes	
Strike (m)	Remarks

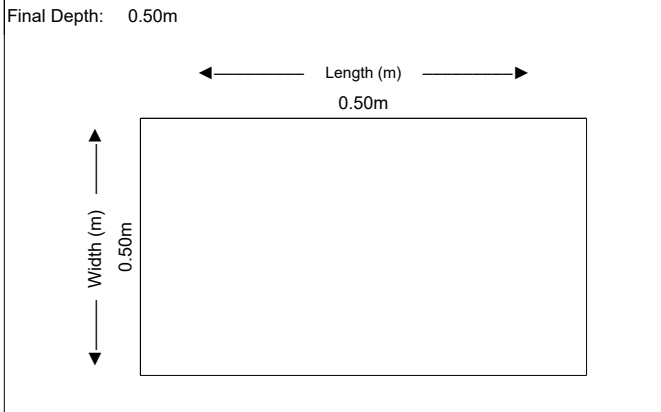


Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Trial Pit ID: STPES1	
Contract Number: JFR1451	Start Date: 06/10/2020	End Date: 06/10/2020	Checked By: GR	Status: FINAL	Sheet 1 of 1	
Easting: 415329.0	Northing: 142064.5	Ground Level: 71.06mOD	Plant Used: Hand tools	Logged By: LD	Scale: 1:50	

Weather: Showers Hole Termination: Terminated due to dense ground.

Samples & In Situ Testing				Strata Details				Water	Backfill
Depths	Type/Ref	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description			
0.00 - 0.10	ES	PID 0.00m, 0.0ppm	70.86	0.20		Grass over soft dark brown slightly gravelly sandy CLAY with frequent rootlets. Gravel is subangular fine to coarse chalk with occasional orange staining and flint.			
0.30	ES	PID 0.30m, 0.0ppm	70.76	0.30		TOPSOIL			
0.50	ES	PID 0.50m, 0.0ppm	70.56	0.50		Soft light brown and white slightly sandy slightly gravelly clayey SILT. Gravel is subangular fine to coarse chalk and flint. MADE GROUND Soft to firm white very gravelly SILT with a low subangular flint cobble content. Gravel is subangular fine to medium chalk and fine to coarse flint. Occasional orange staining on chalk. MADE GROUND <i>At 0.45m band of flint gravel coated in black bitumen.</i> End of Inspection Pit at 0.50m	1		
							2		
							3		
							4		
							5		
							6		
							7		

Dimensions: General Remarks:



1. Exploratory hole position CAT scanned and service plans inspected prior to excavation. 2. Inspection pit hand excavated to 0.50 metres below ground level (m bgl). 3. No groundwater encountered. 4. Inspection pit backfilled with arisings upon completion.

Water Strikes	
Strike (m)	Remarks

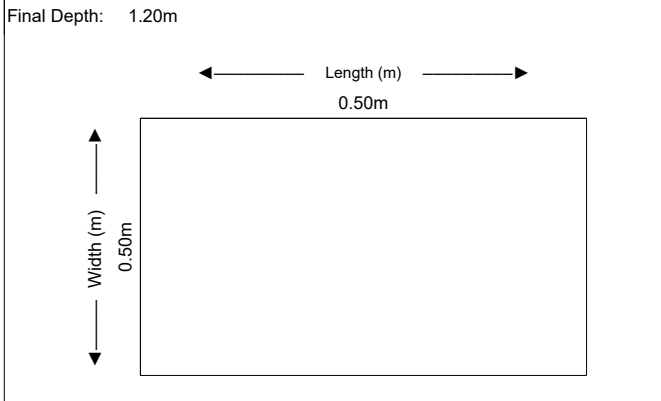


Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Trial Pit ID: STPES2	
Contract Number: JFR1451	Start Date: 06/10/2020	End Date: 06/10/2020	Checked By: GR	Status: FINAL	Sheet 1 of 1	
Easting: 415332.4	Northing: 142066.6	Ground Level: 71.03mOD	Plant Used: Hand tools	Logged By: LD	Scale: 1:50	

Weather: Shower Hole Termination: Target depth achieved.

Samples & In Situ Testing			Strata Details				Water	Backfill
Depths	Type/Ref	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description		
0.00 - 0.10	ES	PID 0.00m, 0.0ppm	70.82	0.21	[Cross-hatch pattern]	Soft dark brown slightly sandy slightly gravelly clayey SILT. Gravel is subangular fine to coarse chalk and flint. Rare fragments of metal.	1	[Diagonal hatch pattern]
0.30	ES	PID 0.30m, 0.0ppm	70.77	0.46		MADE GROUND		
0.50	ES	PID 0.50m, 0.0ppm	70.63	0.44	[Cross-hatch pattern]	Grey and white silty subangular fine to coarse chalk GRAVEL.	2	
1.00	ES	PID 1.00m, 0.0ppm	70.57	0.90		MADE GROUND		
			70.13	0.30	[Cross-hatch pattern]	Soft brown slightly sandy slightly gravelly SILT with rare decomposed wood fragments, gravel sized fragments of glass and occasional gravel to cobble sized sandy pockets. Gravel is subangular fine to coarse chalk, flint and possible quartzite.	3	
			69.83	1.20		MADE GROUND		
						Grey and white silty subangular fine to coarse chalk GRAVEL.	4	
						MADE GROUND	5	
						Soft dark brown slightly sandy very gravelly clayey SILT with a low subangular flint cobble content. Gravel is subangular fine to coarse chalk and flint with occasional gravel sized fragments of brick and fine gravel sized fragments of tile. Rare cobble to boulder sized pockets of greenish yellow and brown gravelly silt (between 0.70m and 0.90m). Rare gravel sized fragments of possible coke.	6	
						MADE GROUND	7	
						Soft white gravelly silty CLAY. Gravel is subangular fine to coarse chalk. (POSSIBLE MADE GROUND)		
						MADE GROUND		
						<i>Between 0.95m and 1.05m possible band of black coke with strong possible organic odour.</i>		
						End of Inspection Pit at 1.20m		

Dimensions:



General Remarks:

1. Exploratory hole position CAT scanned and service plans inspected prior to excavation. 2. Inspection pit hand excavated to 1.20 metres below ground level (m bgl). 3. No groundwater encountered. 4. Inspection pit backfilled with arisings upon completion.

Water Strikes	
Strike (m)	Remarks

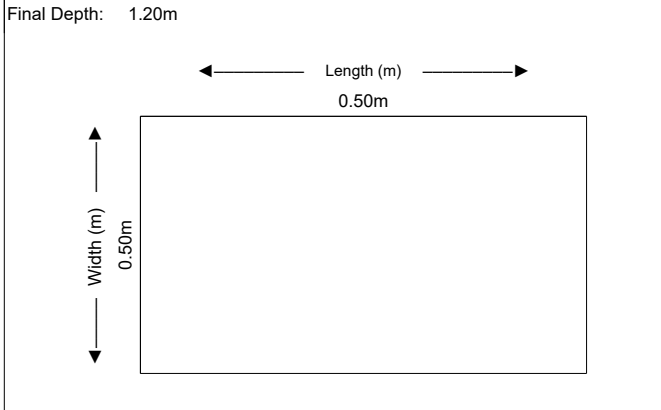


Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Trial Pit ID: STPES3	
Contract Number: JFR1451	Start Date: 07/10/2020	End Date: 07/10/2020	Checked By: GR	Status: FINAL	Sheet 1 of 1	
Easting: 415335.1	Northing: 142068.5	Ground Level: 71.06mOD	Plant Used: Hand tools	Logged By: LD	Scale: 1:50	

Weather: Dry Hole Termination: Target depth achieved.

Samples & In Situ Testing			Strata Details				Water	Backfill
Depths	Type/Ref	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description		
0.00 - 0.10	D					Soft dark brown slightly sandy gravelly CLAY. Gravel is subangular to rounded fine to coarse flint and fine to medium chalk. Occasional gravel sized fragments of brick, glass, textiles and foil packets (litter).		
0.00 - 0.10	ES	PID 0.00m, 0.0ppm		(0.60)				
0.30	D					MADE GROUND		
0.30	ES	PID 0.30m, 0.0ppm	70.46	0.60				
0.30 - 0.40	B					Soft brown slightly gravelly sandy CLAY with rare gravel sized fragments of brick and glass. Gravel is subangular fine to coarse chalk and flint with occasional orangish staining.		
0.65	D	PID 0.65m, 0.0ppm	70.11	0.95				
0.65	ES					MADE GROUND		
1.00	D					Structureless chalk composed of soft white and brown slightly sandy gravelly silty CLAY. Gravel is subangular fine to coarse chalk and flint with a low subangular flint cobble content. (CIRIA grade Dm) SEAFORD CHALK FORMATION End of Inspection Pit at 1.20m		
1.00	ES	PID 1.00m, 0.0ppm	69.86	1.20				
1.10	B							

Dimensions: **General Remarks:**



1. Exploratory hole position CAT scanned and service plans inspected prior to excavation.
2. Inspection pit hand excavated to 1.20 metres below ground level (m bgl).
3. Encountered yellow electric cable warning sign at 0.38m - extended pit slightly south.
4. No groundwater encountered.
5. Pit remained open and stable.
6. Inspection pit backfilled with arisings upon completion.

Water Strikes	
Strike (m)	Remarks

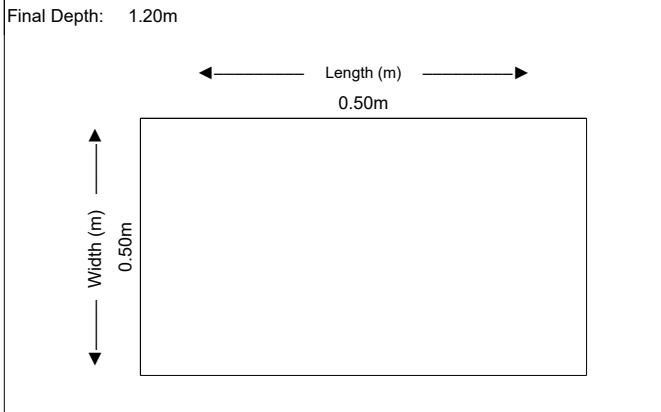


Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Trial Pit ID: STPES4	
Contract Number: JFR1451	Start Date: 08/10/2020	End Date: 08/10/2020	Checked By: GR	Status: FINAL	Sheet 1 of 1	
Easting: 415334.0	Northing: 142067.4	Ground Level: 71.05mOD	Plant Used: Hand tools	Logged By: PB	Scale: 1:50	

Weather: Dry Hole Termination: Target depth achieved.

Samples & In Situ Testing			Strata Details				Water	Backfill
Depths	Type/Ref	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description		
0.00	ES					Turf over firm dark brown slightly sandy slightly gravelly CLAY.		
0.30	ES	PID 0.00m, 0.0ppm	70.80	0.25		Gravel is angular to subrounded fine to coarse flint and rare chalk. Frequent rootlets and roots (up to 6mm thick). (MADE GROUND)		
0.50	ES	PID 0.30m, 0.0ppm	70.65	0.40				
	ES	PID 0.50m, 0.0ppm	70.45	0.60		TOPSOIL		
1.00	ES	PID 1.00m, 0.0ppm	69.85	1.20		Firm dark greyish brown and brownish white slightly sandy gravelly CLAY. Gravel is angular to subrounded fine to coarse flint and chalk. (MADE GROUND)	1	
						MADE GROUND		
						Reddish brown and dark grey slightly silty sandy angular and subangular fine to coarse flint, rare concrete and rare tarmacadam GRAVEL with low angular and subangular flint and rare concrete cobble content (up to 140mm x 110mm). (MADE GROUND)	2	
						MADE GROUND		
						Brownish white and white slightly sandy clayey angular and subangular fine to coarse chalk and rare flint GRAVEL with low subangular flint cobble content (up to 105mm x 80mm). Frequent pockets of soft dark brown silty clay throughout (up to 15mm x 15mm). (MADE GROUND)	3	
						MADE GROUND		
						End of Inspection Pit at 1.20m	3	
							4	
							5	
							6	
							7	

Dimensions: **General Remarks:**



1. Exploratory hole position CAT scanned and service plans inspected prior to excavation.
2. Inspection pit hand excavated to 1.20 metres below ground level (m bgl).
3. No groundwater encountered.
4. Pit remained open and stable.
5. Inspection pit backfilled with arisings upon completion.

Water Strikes	
Strike (m)	Remarks

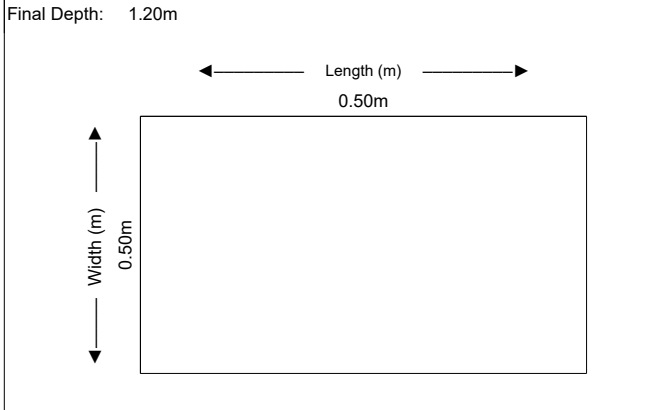


Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Trial Pit ID: STPES5	
Contract Number: JFR1451	Start Date: 08/10/2020	End Date: 08/10/2020	Checked By: GR	Status: FINAL	Sheet 1 of 1	
Easting: 415338.8	Northing: 142071.3	Ground Level: 71.12mOD	Plant Used: Hand tools	Logged By: PB	Scale: 1:50	

Weather: Dry Hole Termination: Target depth achieved.

Samples & In Situ Testing			Strata Details				Water	Backfill
Depths	Type/Ref	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description		
0.00	ES					Turf over firm dark brown slightly sandy slightly gravelly CLAY.		
0.30	ES	PID 0.00m, 0.0ppm		(0.40)		Gravel is angular to subrounded fine to coarse flint, occasional chalk with rare gravel sized fragments of plastic and metal (up to 60mm). Frequent rootlets. (MADE GROUND)		
0.50	ES	PID 0.30m, 0.0ppm	70.72	0.40		MADE GROUND		
	ES	PID 0.50m, 0.0ppm		(0.35)				
			70.37	0.75		Firm greyish brown slightly sandy very gravelly CLAY with low angular and subangular flint and occasional concrete cobble content (up to 155mm x 105mm). Gravel is angular to subrounded fine to coarse flint, chalk and rare brick with rare fragments of metal (up to 60mm). (MADE GROUND)	1	
1.00	ES	PID 1.00m, 0.0ppm	69.92	1.20		MADE GROUND		
				(0.45)		Soft locally firm reddish brown and light brown mottled slightly gravelly sandy CLAY. Gravel is rounded to subangular fine to coarse chalk and flint. (POSSIBLE MADE GROUND)	2	
						MADE GROUND		
						End of Inspection Pit at 1.20m		
							3	
							4	
							5	
							6	
							7	

Dimensions: **General Remarks:**



1. Exploratory hole position CAT scanned and service plans inspected prior to excavation.
2. Inspection pit hand excavated to 1.20 metres below ground level (m bgl).
3. No groundwater encountered.
4. Pit remained open and stable.
5. Inspection pit backfilled with arisings upon completion.

Water Strikes	
Strike (m)	Remarks

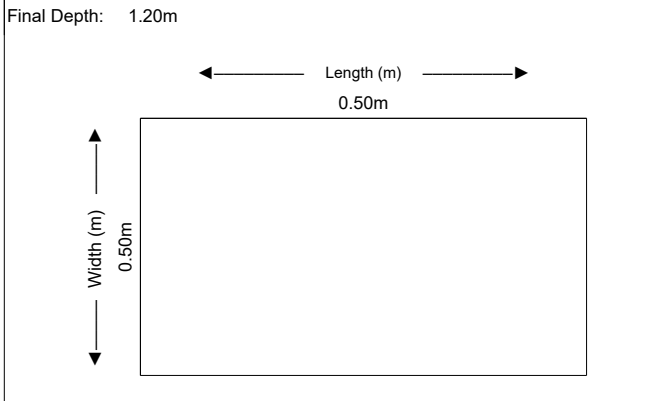


Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Trial Pit ID: STPES6	
Contract Number: JFR1451	Start Date: 08/10/2020	End Date: 08/10/2020	Checked By: GR	Status: FINAL	Sheet 1 of 1	
Easting: 415330.2	Northing: 142064.6	Ground Level: 71.01mOD	Plant Used: Hand tools	Logged By: PB	Scale: 1:50	

Weather: Dry Hole Termination: Target depth achieved.

Samples & In Situ Testing			Strata Details					Water	Backfill
Depths	Type/Ref	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description			
0.00	ES	PID 0.00m, 0.0ppm		(0.55)	[Cross-hatch pattern]	Turf over firm locally soft dark brown slightly sandy slightly gravelly CLAY with low angular concrete cobble content (up to 130mm x 100mm). Gravel is angular to subrounded fine to coarse flint and occasional chalk. Frequent rootlets. (MADE GROUND)	1	[Cross-hatch pattern]	
0.30	ES	PID 0.30m, 0.0ppm	70.46	0.55					
0.50	ES	PID 0.50m, 0.0ppm		(0.65)	[Cross-hatch pattern]	MADE GROUND Brownish white and white slightly sandy clayey angular and subangular fine to coarse chalk and rare flint GRAVEL with frequent pockets of soft dark brown silty clay (up to 15mm x 15mm). (POSSIBLE MADE GROUND)	2	[Cross-hatch pattern]	
1.00	ES	PID 1.00m, 0.0ppm	69.81	1.20					
							End of Inspection Pit at 1.20m	3	
								4	
								5	
								6	
								7	

Dimensions:



General Remarks:

1. Exploratory hole position CAT scanned and service plans inspected prior to excavation.
2. Inspection pit hand excavated to 1.20 metres below ground level (m bgl).
3. No groundwater encountered.
4. Pit remained open and stable.
5. Inspection pit backfilled with arisings upon completion.

Water Strikes	
Strike (m)	Remarks



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Trial Pit ID: TP-A	
Contract Number: JFR1451	Start Date: 04/11/2020	End Date: 04/11/2020	Checked By: LD	Status: FINAL	Sheet 1 of 1	
Easting: 409696.6	Northing: 144603.0	Ground Level: 116.29mOD	Plant Used: Hand Tools	Logged By: BC	Scale: 1:50	

Weather: Dry Hole Termination: Target depth achieved

Samples & In Situ Testing			Strata Details				Water	Backfill
Depths	Type/Ref	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description		
0.15 - 0.20	ES	PID 0.15m, 0.0ppm	116.14 116.09	0.20		Soft dark brown sandy gravelly SILT with occasional rootlets and a medium subangular and subrounded chalk cobble content. Gravel is subangular and subrounded fine to coarse extremely weak low density white chalk.		
0.60 - 0.70	ES	PID 0.60m, 0.0ppm		(0.90)		TOPSOIL		
1.10	ES	PID 1.10m, 0.0ppm	115.19	1.10		Light brown sandy silty subangular and subrounded fine to coarse extremely weak low density white chalk GRAVEL with a high subangular and subrounded chalk cobble content. POSSIBLE COLLUVIUM Structureless CHALK composed of sandy silty GRAVEL with a high subangular and subrounded chalk cobble content. Clasts are extremely weak low density subangular to subrounded medium to coarse white chalk with occasional flint and orange staining. Matrix is white. (CIRIA Grade Dc) SEAFORD CHALK FORMATION	1	
						End of Inspection Pit at 1.10m	2	
							3	
							4	
							5	
							6	
							7	

Dimensions: Final Depth: 1.10m 		General Remarks: 1. Exploratory hole position CAT scanned and service plans inspected prior to excavation. 2. Infiltration pit hand dug to 1.10 metres below ground level (m bgl). 3. No groundwater encountered. 4. Pit remained open and stable. 5. 3 no. infiltration tests undertaken at the base of pit. 6 Infiltration pit backfilled with arisings upon completion.	
		Water Strikes	
Strike (m)	Remarks		
	No groundwater encountered		
HBSI IP Template Issue Number: 1R Issue Date: 21/07/2016			

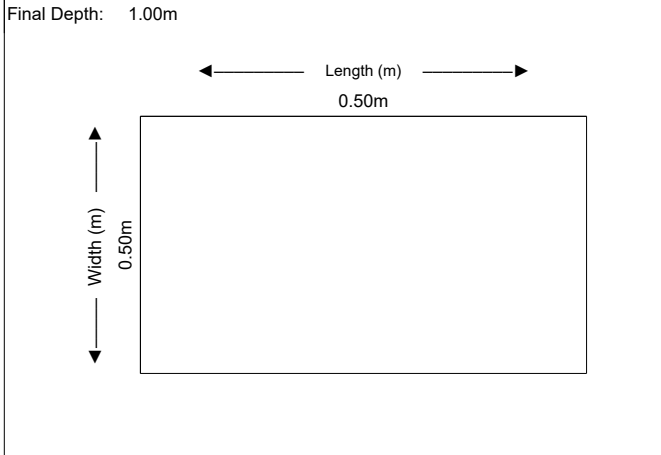


Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Trial Pit ID: TP-B	
Contract Number: JFR1451	Start Date: 29/10/2020	End Date: 30/10/2020	Checked By: LD	Status: FINAL	Sheet 1 of 1	
Easting: 409709.1	Northing: 144483.9	Ground Level: 113.01mOD	Plant Used: Hand tools	Logged By: RDL	Scale: 1:50	

Weather: Dry Hole Termination: Target depth achieved

Samples & In Situ Testing				Strata Details				Water	Backfill
Depths	Type/Ref	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description			
0.30	ES		112.81	0.20		Soft to firm dark brown slightly sandy slightly gravelly CLAY with frequent roots and rootlets. Gravel is angular and subangular fine to coarse flint.	1		
0.50	ES	PID 0.30m, 0.0ppm		(0.45)		TOPSOIL			
	ES	PID 0.50m, 0.0ppm	112.36	0.65		Soft to firm light brown gravelly silty CLAY. Gravel is angular and subangular fine to coarse chalk and flint.			
1.00	ES	PID 1.00m, 0.0ppm	112.01	1.00		Structureless CHALK composed of sandy slightly clayey angular and subangular fine to coarse GRAVEL. Clasts are very weak low and medium density white with rare light orangish brown staining. Matrix is white. (CIRIA Grade Dc) SEAFORD CHALK FORMATION	2		
						End of Inspection Pit at 1.00m	3		
							4		
							5		
							6		
							7		

Dimensions: **General Remarks:**



1. Exploratory hole position CAT scanned and service plans inspected prior to excavation.
2. Infiltration pit hand dug to 1.00 metres below ground level (m bgl).
3. No groundwater encountered.
4. Pit remained open and stable.
5. 3 no. infiltration tests undertaken at base of pit on 30/10/2020.
6. Infiltration pit backfilled with arisings upon completion.

Water Strikes	
Strike (m)	Remarks
	No groundwater encountered

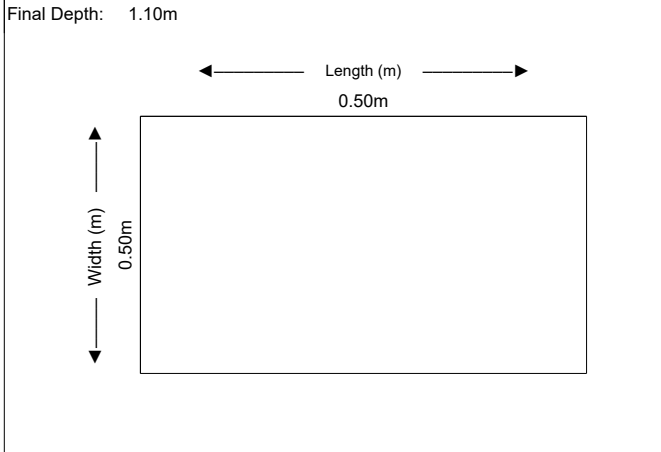


Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Trial Pit ID: TP-C	
Contract Number: JFR1451	Start Date: 29/10/2020	End Date: 04/11/2020	Checked By: LD	Status: FINAL	Sheet 1 of 1	
Easting: 409819.1	Northing: 144587.7	Ground Level: 112.38mOD	Plant Used: Hand tools	Logged By: RDL	Scale: 1:50	

Weather: Dry Hole Termination: Target depth achieved

Samples & In Situ Testing			Strata Details				Water	Backfill
Depths	Type/Ref	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description		
0.30	ES	PID 0.30m, 0.1ppm	112.18	0.20 (0.30)		Soft to firm dark brown slightly sandy slightly gravelly CLAY with frequent roots and rootlets. Gravel is angular and subangular fine to coarse flint.	1	
0.60	ES	PID 0.60m, 0.0ppm	111.88	0.50 (0.60)		Soft to firm light brown gravelly silty CLAY. Gravel is angular and subangular fine to coarse chalk and flint. POSSIBLE COLLUVIUM		
1.10	ES	PID 1.10m, 0.0ppm	111.28	1.10		Structureless CHALK composed of sandy slightly clayey angular and subangular fine to coarse GRAVEL. Clasts are very weak low and medium density white with rare light orangish brown staining. Matrix is white. (CIRIA Grade Dc) SEAFORD CHALK FORMATION End of Inspection Pit at 1.10m		
							2	
							3	
							4	
							5	
							6	
							7	

Dimensions: General Remarks:



1. Exploratory hole position CAT scanned and service plans inspected prior to excavation.
2. Infiltration pit hand dug to 1.10 metres below ground level (m bgl).
3. No groundwater encountered.
4. Pit remained open and stable.
5. 3 no. infiltration tests undertaken at base of pit on 04/11/2020.
6. Infiltration pit backfilled with arisings upon completion.

Water Strikes	
Strike (m)	Remarks
	No groundwater encountered

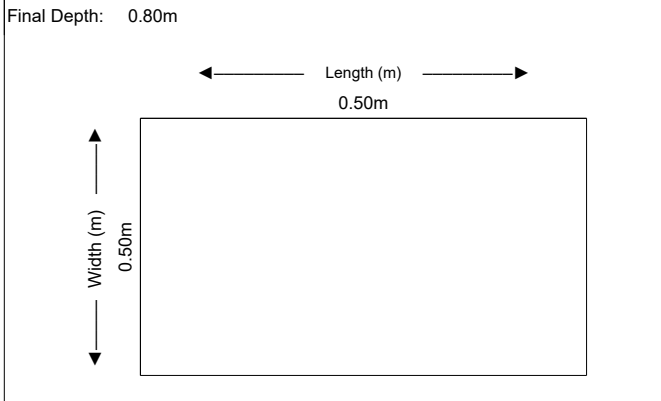


Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Trial Pit ID: TP-D	
Contract Number: JFR1451	Start Date: 02/11/2020	End Date: 02/11/2020	Checked By: LD	Status: FINAL	Sheet 1 of 1	
Easting: 417632.0	Northing: 141811.0	Ground Level: 94.41mOD	Plant Used: Hand tools	Logged By: PB	Scale: 1:50	

Weather: Dry Hole Termination: Target depth achieved

Samples & In Situ Testing			Strata Details					Water	Backfill
Depths	Type/Ref	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description			
0.20	ES	PID 0.20m, 0.0ppm	94.01	(0.40)		Grass over firm dark brown slightly gravelly silty CLAY with frequent rootlets. Gravel is angular and subangular fine to coarse flint and occasional chalk.	1		
0.45	ES	PID 0.45m, 0.0ppm		(0.40)		TOPSOIL			
0.80	ES	PID 0.80m, 0.0ppm	93.61	0.80		Structureless CHALK composed of slightly sandy silty GRAVEL. Clasts are extremely weak low density angular and subangular fine to coarse off white chalk and rare angular medium and coarse flint. Matrix is off white. (CIRIA Grade Dc) SEAFORD CHALK FORMATION			
							End of Inspection Pit at 0.80m		
							2		
							3		
							4		
							5		
							6		
							7		

Dimensions:



General Remarks:

1. Exploratory hole position CAT scanned and service plans inspected prior to excavation.
2. Infiltration pit hand dug to 0.80 metres below ground level (m bgl).
3. No groundwater encountered.
4. Pit remained open and stable.
5. 3 no. infiltration tests undertaken at base of pit.
6. Infiltration pit backfilled with arisings upon completion.

Water Strikes	
Strike (m)	Remarks
	No groundwater encountered

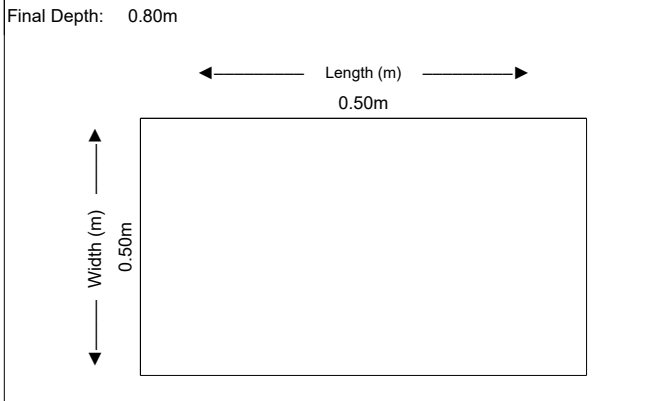


Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Trial Pit ID: TP-E	
Contract Number: JFR1451	Start Date: 02/11/2020	End Date: 02/11/2020	Checked By: LD	Status: FINAL	Sheet 1 of 1	
Easting: 417710.0	Northing: 141873.0	Ground Level: 96.99mOD	Plant Used: Hand tools	Logged By: PB	Scale: 1:50	

Weather: Dry Hole Termination: Target depth achieved

Samples & In Situ Testing			Strata Details					Water	Backfill
Depths	Type/Ref	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description			
0.30	ES			(0.35)		Grass over firm dark brown slightly sandy slightly gravelly	1		
0.40	ES	PID 0.30m, 0.0ppm PID 0.40m, 0.0ppm	96.64	0.35		CLAY. Gravel is angular and subangular fine to coarse flint and chalk.			
				(0.45)		TOPSOIL			
0.80	ES	PID 0.80m, 0.0ppm	96.19	0.80		Structureless CHALK composed of slightly sandy silty GRAVEL. Clasts are extremely weak low density angular fine to coarse off white chalk and rare angular medium and coarse flint. Locally stained orangish brown. Matrix is off white. (CIRIA Grade Dc) SEAFORD CHALK FORMATION End of Inspection Pit at 0.80m	2		
							3		
							4		
							5		
							6		
							7		

Dimensions:



General Remarks:

1. Exploratory hole position CAT scanned and service plans inspected prior to excavation. 2. Infiltration pit hand dug to 0.80 metres below ground level (m bgl). 3. No groundwater encountered. 4. 3 no. infiltration tests undertaken at base of pit. 5. Infiltration pit backfilled with arisings upon completion.

Water Strikes	
Strike (m)	Remarks
	No groundwater encountered

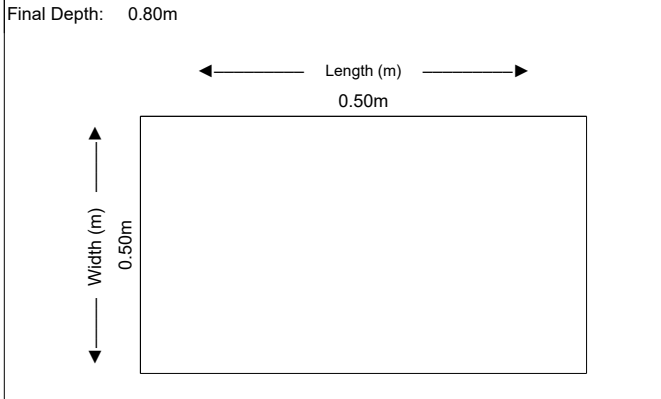


Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Trial Pit ID: TP-F	
Contract Number: JFR1451	Start Date: 12/11/2020	End Date: 12/11/2020	Checked By: LD	Status: FINAL	Sheet 1 of 1	
Easting: 417718.4		Northing: 141902.1	Ground Level: 98.24mOD	Plant Used: Hand Tools	Logged By: RDL	Scale: 1:50

Weather: Sunny Hole Termination: Target depth achieved

Samples & In Situ Testing			Strata Details					Water	Backfill
Depths	Type/Ref	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description			
0.40	ES	PID 0.40m, 0.2ppm	97.94	(0.30)		Grass over firm dark greyish brown slightly sandy silty CLAY with frequent rootlets.	1		
			97.74	0.30		TOPSOIL			
0.80	ES	PID 0.80m, 0.0ppm	97.44	0.50		Firm dark brown slightly sandy slightly gravelly silty CLAY, Gravel is angular to subrounded fine and medium flint and chalk with rare gravel sized fragments of concrete.			
				(0.30)		MADE GROUND	2		
				0.80		Structureless CHALK composed of slightly sandy silty GRAVEL. Clasts are extremely weak low density angular fine to coarse white chalk and rare fine and medium flint. Matrix is white. (CIRIA GRADE Dc) SEAFORD CHALK FORMATION			
						End of Inspection Pit at 0.80m	3		
							4		
							5		
							6		
							7		

Dimensions: **General Remarks:**



1. Exploratory hole position CAT scanned and service plans inspected prior to excavation.
2. Infiltration pit hand dug to 0.80 metres below ground level (m bgl).
3. No groundwater encountered.
4. Pit remained open and stable.
5. 3 no. infiltration tests undertaken at base of pit.
6. Infiltration pit backfilled with arisings upon completion.

Water Strikes	
Strike (m)	Remarks
	No groundwater encountered



Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Trial Pit ID: TP-G	
Contract Number: JFR1451	Start Date: 03/11/2020	End Date: 03/11/2020	Checked By: LD	Status: FINAL	Sheet 1 of 1	
Easting: 417897.3		Northing: 141946.3		Ground Level: 100.42mOD	Plant Used: Hand tools	Logged By: PB
Inspection Pit Log				Scale: 1:50		

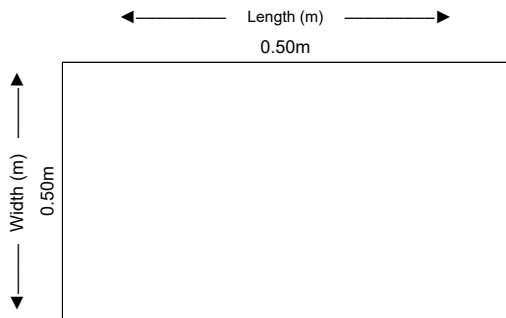
Weather: Dry with cloudy spells

Hole Termination: Target depth achieved

Samples & In Situ Testing				Strata Details				Water	Backfill
Depths	Type/Ref	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description			
0.40	ES	PID 0.40m, 0.0ppm	100.12	(0.30) 0.30		Firm dark brown slightly sandy slightly gravelly CLAY with frequent rootlets. Gravel is angular and subangular fine to coarse flint and occasional chalk. Rare fragments of plastic (up to 60mm).	1		
0.70	ES	PID 0.70m, 0.0ppm		(1.10)		MADE GROUND Structureless CHALK composed of slightly sandy silty GRAVEL. Clasts are extremely weak low density angular fine to coarse off white chalk and rare angular medium to coarse flint. Matrix is off white. (CIRIA Grade Dc)			
1.40	ES	PID 1.40m, 0.0ppm	99.02	1.40		SEAFORD CHALK FORMATION End of Inspection Pit at 1.40m			
							2		
							3		
							4		
							5		
							6		
							7		

Dimensions:

Final Depth: 1.40m



General Remarks:

1. Exploratory hole position CAT scanned and service plans inspected prior to excavation.
2. Infiltration pit hand dug to 1.40 metres below ground level (m bgl).
3. No groundwater encountered.
4. Pit remained open and stable.
5. 3 no. infiltration tests undertaken at base of pit.
6. Infiltration pit backfilled with arisings upon completion.

Water Strikes	
Strike (m)	Remarks
	No groundwater encountered

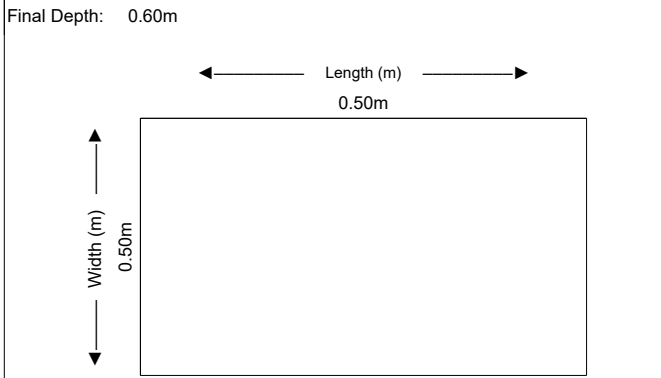


Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Trial Pit ID: TP-H	
Contract Number: JFR1451	Start Date: 03/11/2020	End Date: 06/11/2020	Checked By: LD	Status: FINAL	Sheet 1 of 1	
Easting: 418076.2		Northing: 141975.9		Ground Level: 109.06mOD	Plant Used: Hand tools	Logged By: PB
Scale: 1:50						

Weather: Dry with cloudy spells Hole Termination: Target depth achieved

Samples & In Situ Testing				Strata Details				Water	Backfill
Depths	Type/Ref	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description			
0.20	ES	PID 0.20m, 0.0ppm	108.76	(0.30)		Firm dark brown slightly sandy gravelly CLAY with frequent rootlets. Gravel is angular and subangular fine to coarse flint and occasional chalk.			
0.60	ES	PID 0.60m, 0.0ppm	108.46	0.30 (0.30) 0.60		Structureless CHALK composed of slightly sandy silty GRAVEL. Clasts are extremely weak low density angular fine to coarse off white chalk and rare angular fine to coarse flint. Matrix is off white. (CIRIA Grade Dc) SEAFORD CHALK FORMATION End of Inspection Pit at 0.60m	1		
							2		
							3		
							4		
							5		
							6		
							7		

Dimensions:



General Remarks:

1. Exploratory hole position CAT scanned and service plans inspected prior to excavation.
2. Infiltration pit hand dug to 0.60 metres below ground level (m bgl).
3. No groundwater encountered.
4. Pit remained open and stable.
5. 2 no. infiltration tests undertaken at base of pit on 03/11/2020. Third test could not be undertaken on 03/11/2020 due to 2 no. tests exceeding 3 hours each. RPS instructed by AECOM to undertake a third test on 06/11/2020. Pit was backfilled 03/11/2020 and re-opened on 06/11/2020.
6. Infiltration pit backfilled with arisings upon completion.

Water Strikes	
Strike (m)	Remarks
	No groundwater encountered

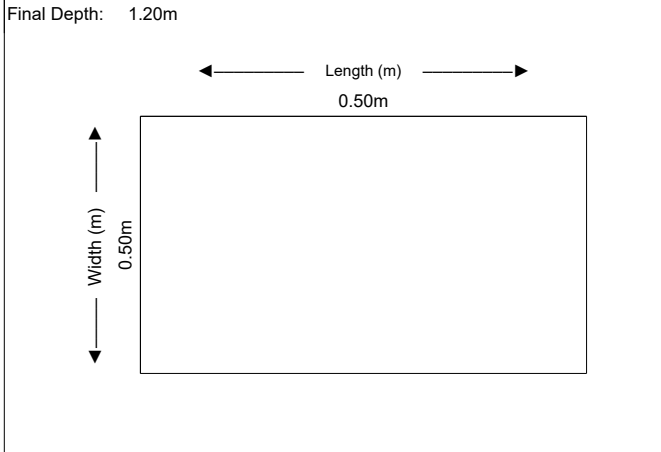


Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Trial Pit ID: TP-J	
Contract Number: JFR1451	Start Date: 05/11/2020	End Date: 06/11/2020	Checked By: LD	Status: FINAL	Sheet 1 of 1	
Easting: 418242.0	Northing: 142003.1	Ground Level: 116.78mOD	Plant Used: Hand Tools	Logged By: PB	Scale: 1:50	

Weather: Overcast Hole Termination: Target depth achieved

Samples & In Situ Testing				Strata Details				Water	Backfill
Depths	Type/Ref	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description			
0.40	ES	PID 0.40m, 0.0ppm	116.43	(0.35)		Grass over firm dark brown slightly sandy slightly gravelly CLAY with frequent rootlets. Gravel is angular and subangular fine to coarse flint and occasional chalk.	1		
0.70	ES	PID 0.70m, 0.0ppm	116.08	(0.35)		TOPSOIL			
1.20	ES	PID 1.20m, 0.0ppm	115.58	(0.50)		Structureless CHALK composed of light greyish brown slightly gravelly sandy SILT. Gravel is subangular fine to coarse extremely weak low density off white chalk and rare angular medium and coarse flint. (CIRIA Grade Dm) SEAFORD CHALK FORMATION	2		
						Structureless CHALK composed of slightly sandy silty GRAVEL with a low subangular flint cobble content. Clasts are extremely weak low density off white angular fine to coarse chalk and rare subangular medium to coarse flint. Matrix is off white. (CIRIA Grade Dc) SEAFORD CHALK FORMATION End of Inspection Pit at 1.20m			
							3		
							4		
							5		
							6		
							7		

Dimensions: General Remarks:



1. Exploratory hole position CAT scanned and service plans inspected prior to excavation.
2. Infiltration pit hand dug to target depth of 0.70 metres below ground level (m bgl) on 05/11/2020. RPS instructed by AECOM to increase target depth to 1.20 m bgl on 06/11/2020 due to Test 1 exceeding 4 hours.
3. No groundwater encountered.
4. Pit remained open and stable.
5. 1 no. infiltration test undertaken on 05/11/2020. A second or third attempt could not be achieved on 05/11/2020 due to Test 1 exceeding 4 hours. RPS instructed by AECOM to backfill and re-open pit on 06/11/2020. 2 no. tests were undertaken on 06/11/2020.
6. Infiltration pit backfilled with arisings upon completion.

Water Strikes	
Strike (m)	Remarks
	No groundwater encountered

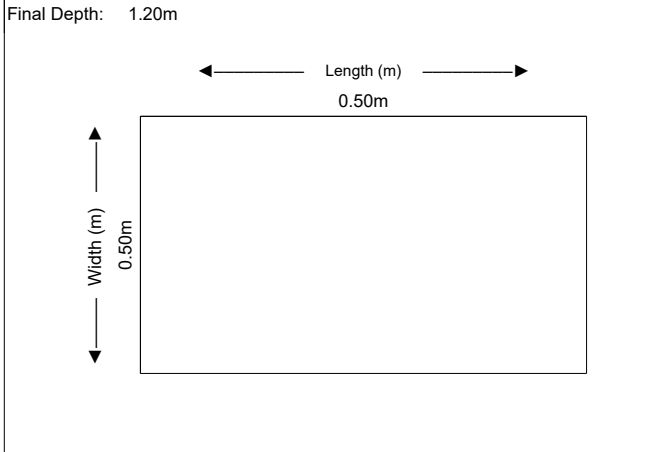


Contract Name: A303 Stonehenge		Client: RPS Planning & Development			Trial Pit ID: TP-K	
Contract Number: JFR1451	Start Date: 05/11/2020	End Date: 06/11/2020	Checked By: LD	Status: FINAL	Sheet 1 of 1	
Easting: 418447.7	Northing: 142035.2	Ground Level: 127.53mOD	Plant Used: Hand Tools	Logged By: PB	Scale: 1:50	

Weather: Dry Hole Termination: Target depth achieved

Samples & In Situ Testing				Strata Details				Water	Backfill
Depths	Type/Ref	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description			
0.35	ES			(0.45)		Grass over firm dark brown slightly sandy slightly gravelly CLAY with frequent rootlets. Gravel is angular and subangular fine to coarse flint and occasional chalk.			
0.50	ES	PID 0.35m, 0.0ppm	127.08	0.45		TOPSOIL			
0.70	ES	PID 0.50m, 0.0ppm	126.83	0.70		Structureless CHALK composed of light greyish brown slightly gravelly sandy SILT. Gravel is subangular fine to coarse extremely weak low density off white chalk and rare angular medium and coarse flint. (CIRIA Grade Dm)			
		PID 0.70m, 0.0ppm		(0.50)		SEAFORD CHALK FORMATION	1		
1.20	ES	PID 1.20m, 0.0ppm	126.33	1.20		Structureless CHALK composed of slightly sandy silty GRAVEL with a low subangular flint cobble content. Clasts are extremely weak low density angular fine to coarse off white chalk and rare angular and subangular medium and coarse flint. Matrix is off white. (CIRIA Grade Dc)			
						SEAFORD CHALK FORMATION	2		
						End of Inspection Pit at 1.20m			
							3		
							4		
							5		
							6		
							7		

Dimensions: **General Remarks:**



1. Exploratory hole position CAT scanned and service plans inspected prior to excavation.
2. Infiltration pit hand dug to target depth 0.70 metres below ground level (m bgl) on 05/11/2020. RPS instructed by AECOM to increase target depth to 1.20 m bgl on 06/11/2020 after Test 1 exceeded 5 hours at 0.70 m bgl.
3. No groundwater encountered.
4. Pit remained open and stable.
5. 1 no. infiltration test undertaken at 0.70 m bgl on 05/11/2020 and a further 3 no. tests were undertaken on 06/11/2020 at 1.20 m bgl. Infiltration pit backfilled and re-opened on 06/11/2020 for the additional tests.
6. Infiltration pit backfilled with arisings upon completion.

Water Strikes	
Strike (m)	Remarks
	No groundwater encountered

APPENDIX B

PHOTOGRAPHS (CORE AND TRIAL PITS)

APPENDIX C

**SUBCONTRACTOR REPORTS:
DOWNHOLE GEOPHYSICS (EUROPEAN
GEOPHYSICAL SURVEYS)
HIGH PRESSURE DILATOMETER (CAMBRIDGE
IN-SITU),
PLATE LOAD TESTS (GEO SITE AND TESTING
SERVICES LTD)
PACKER TESTS (MARRIOTT GEOTECHNICAL
DRILLING)**

SUB APPENDIX C.1

DOWNHOLE GEOPHYSICS

European Geophysical Surveys



EUROPEAN GEOPHYSICAL SERVICES LTD

Client: **RPS Group**

Log Type:

Borehole: **R70105**

FIELD LOG

FIELD LOG (SUBJECT TO FINAL QA CHANGES)

Location: **Stonehenge**

Area:

Grid Ref:

Elevation:

Drilled Depth: (m)

Date:

28th September 2020

Logged Depth: (m)

8.0

Recorded By:

C. Clinton

Logging Datum:

Ground level

Remarks:

Logged Interval: (m)

1 - 8

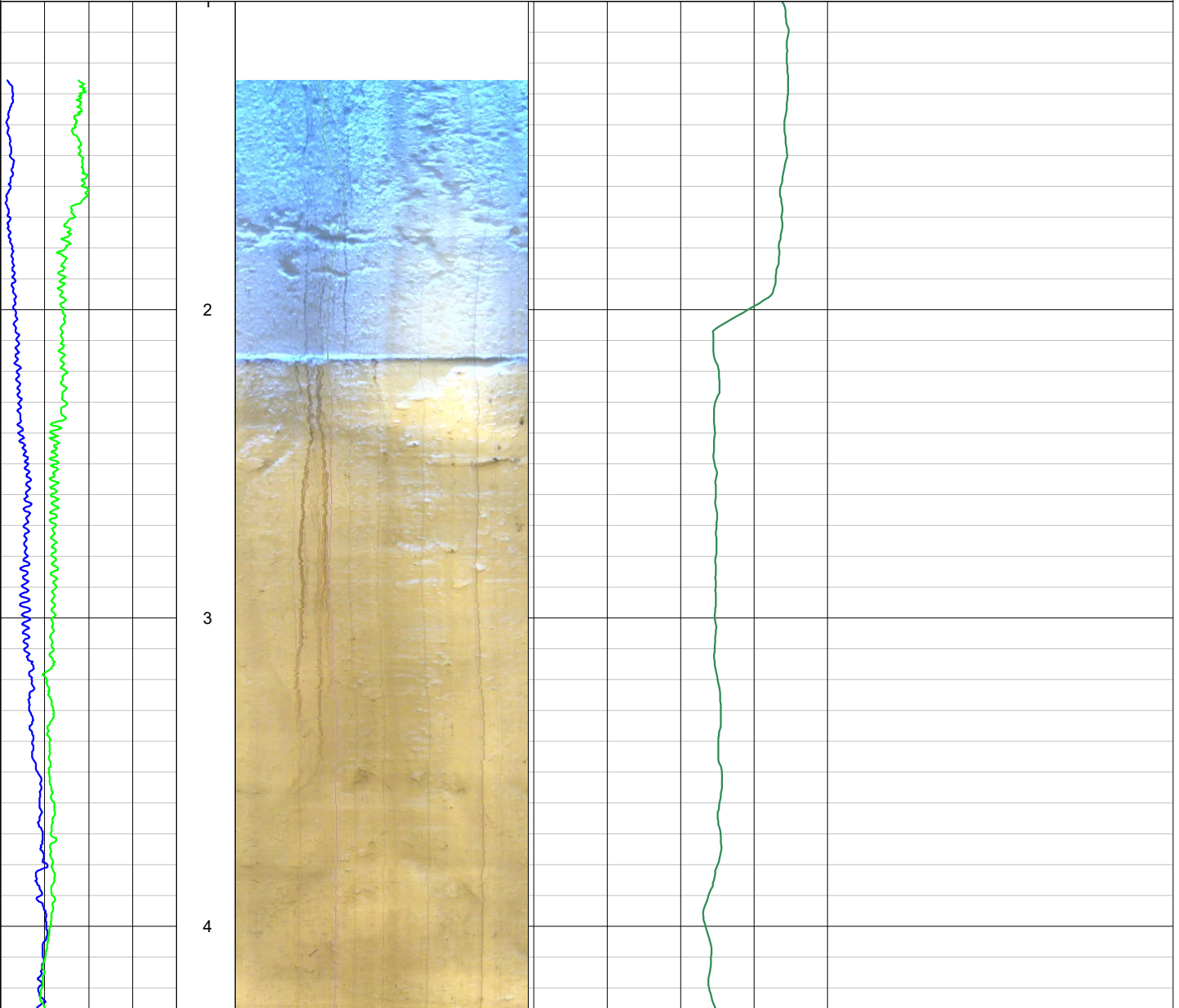
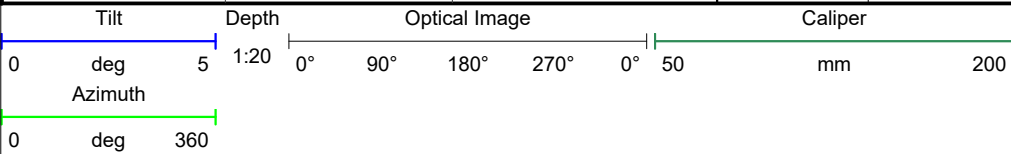
Fluid Level: (m)

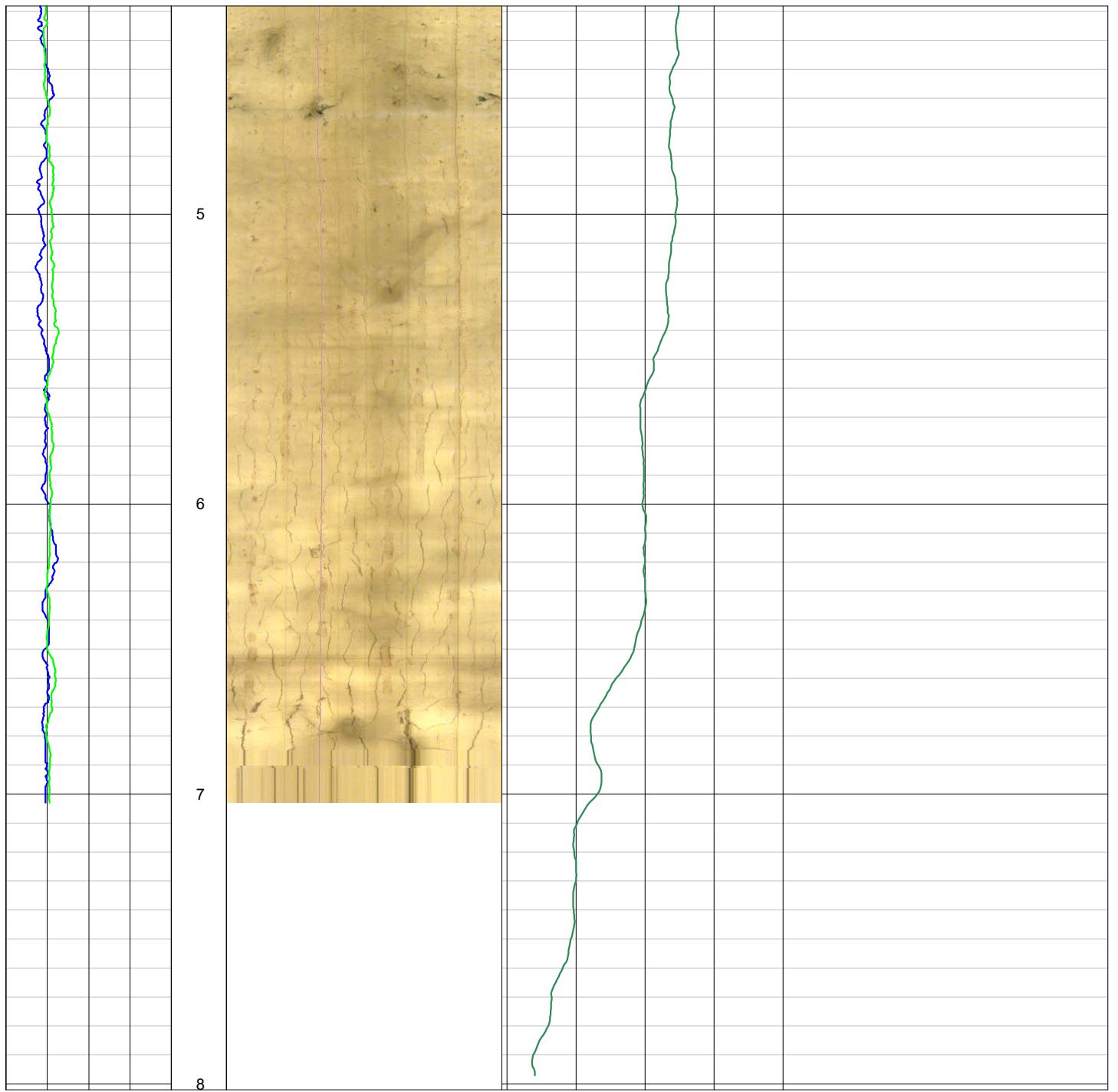
DRY

BOREHOLE RECORD

CASING RECORD

Bit: (mm)	From: (m)	To: (m)	Type	Size: (mm)	From: (m)	To: (m)
			Non	-	-	-







EUROPEAN GEOPHYSICAL SERVICES LTD

Client: **RPS Group**

Log Type:

Borehole: **R70107**

Field Log

FIELD LOG (SUBJECT TO FINAL QA CHANGES)

Location: **Stonehenge**

Area:

Grid Ref:

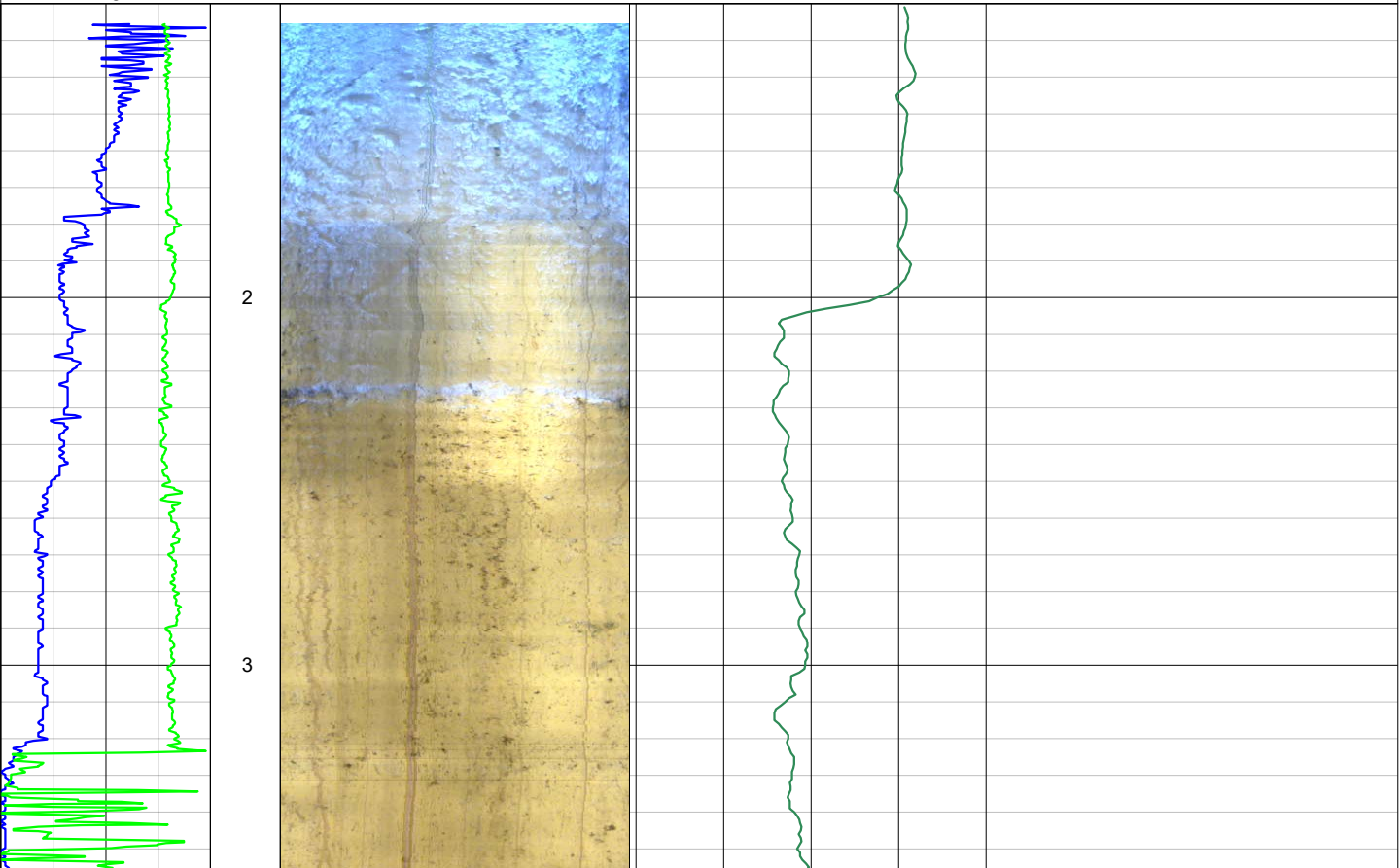
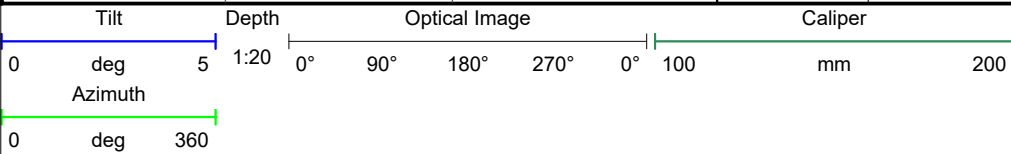
Elevation:

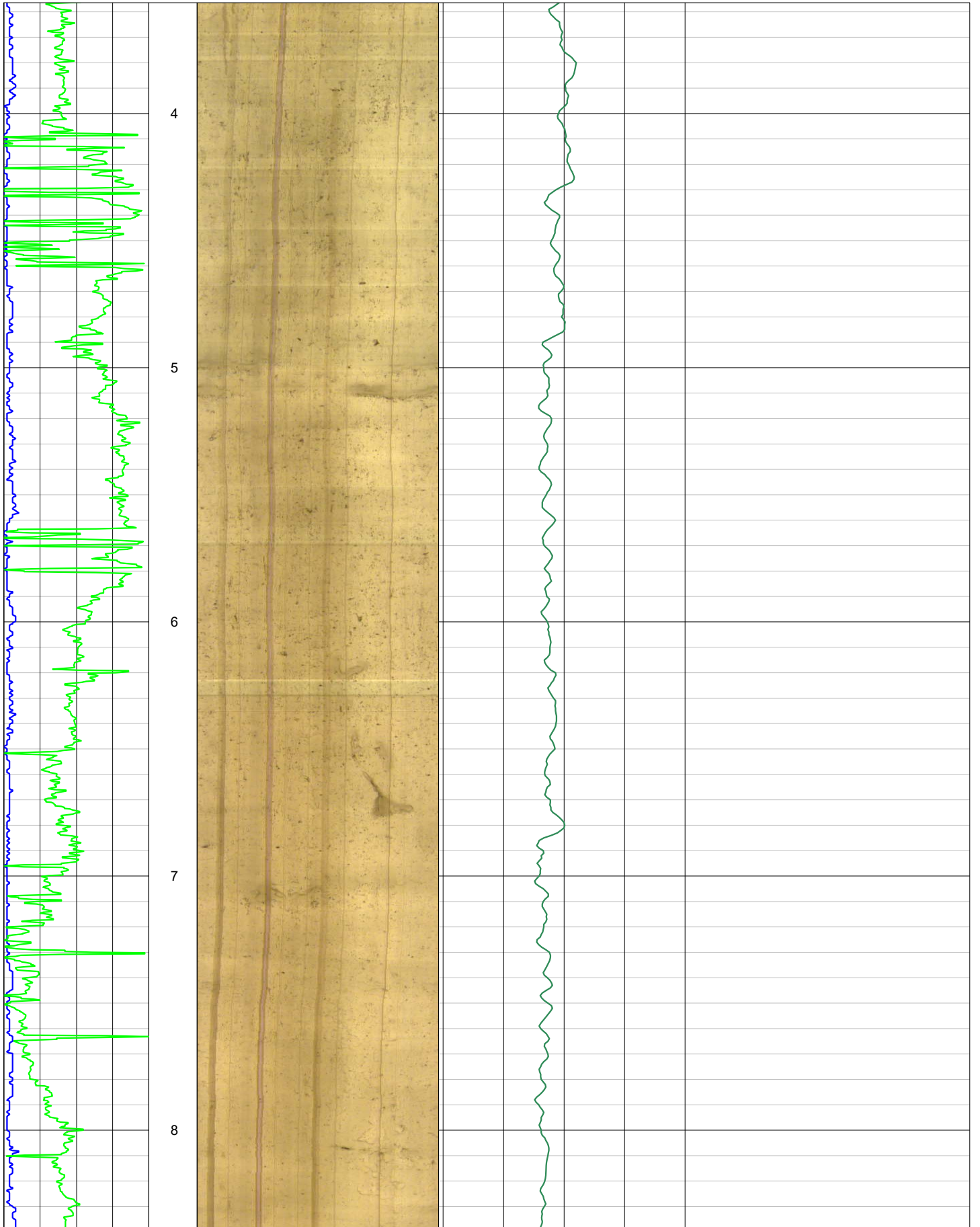
Drilled Depth: (m)		Date:	6th October 2020
Logged Depth: (m)	9.2	Recorded By:	C. Clinton
Logging Datum:	Ground Level	Remarks:	
Logged Interval: (m)	1.2 - 9.2		
Fluid Level: (m)	DRY		

BOREHOLE RECORD

CASING RECORD

Bit: (mm)	From: (m)	To: (m)	Type	Size: (mm)	From: (m)	To: (m)







EUROPEAN GEOPHYSICAL SERVICES LTD

Client: **RPS Group**

Log Type:

Borehole: **R70109**

Field Log

FIELD LOG (SUBJECT TO FINAL QA CHANGES)

Location: **Stonehenge**

Area:

Grid Ref:

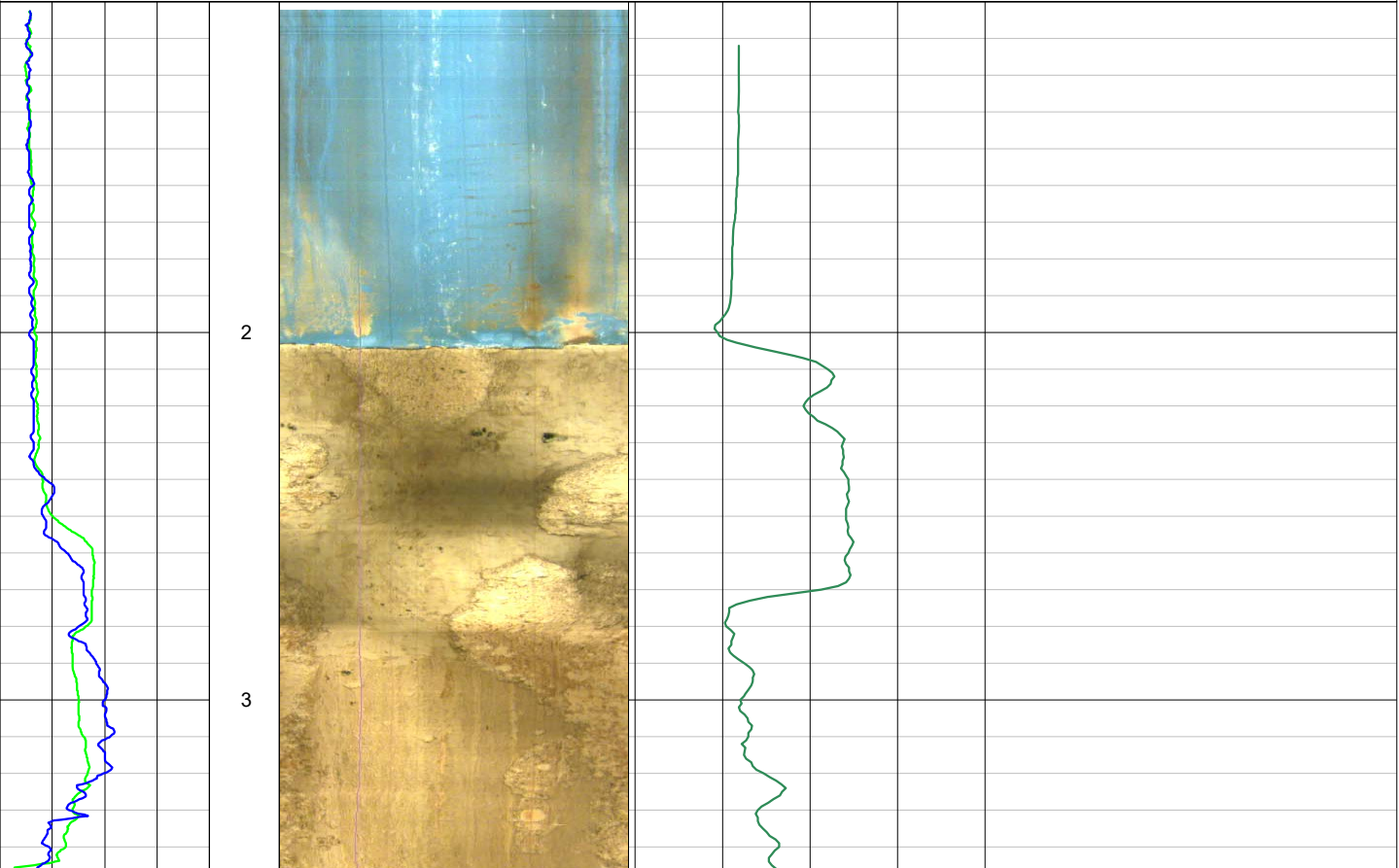
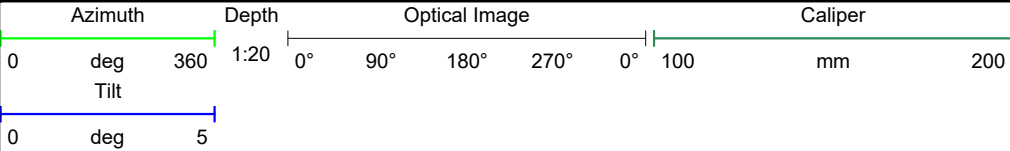
Elevation:

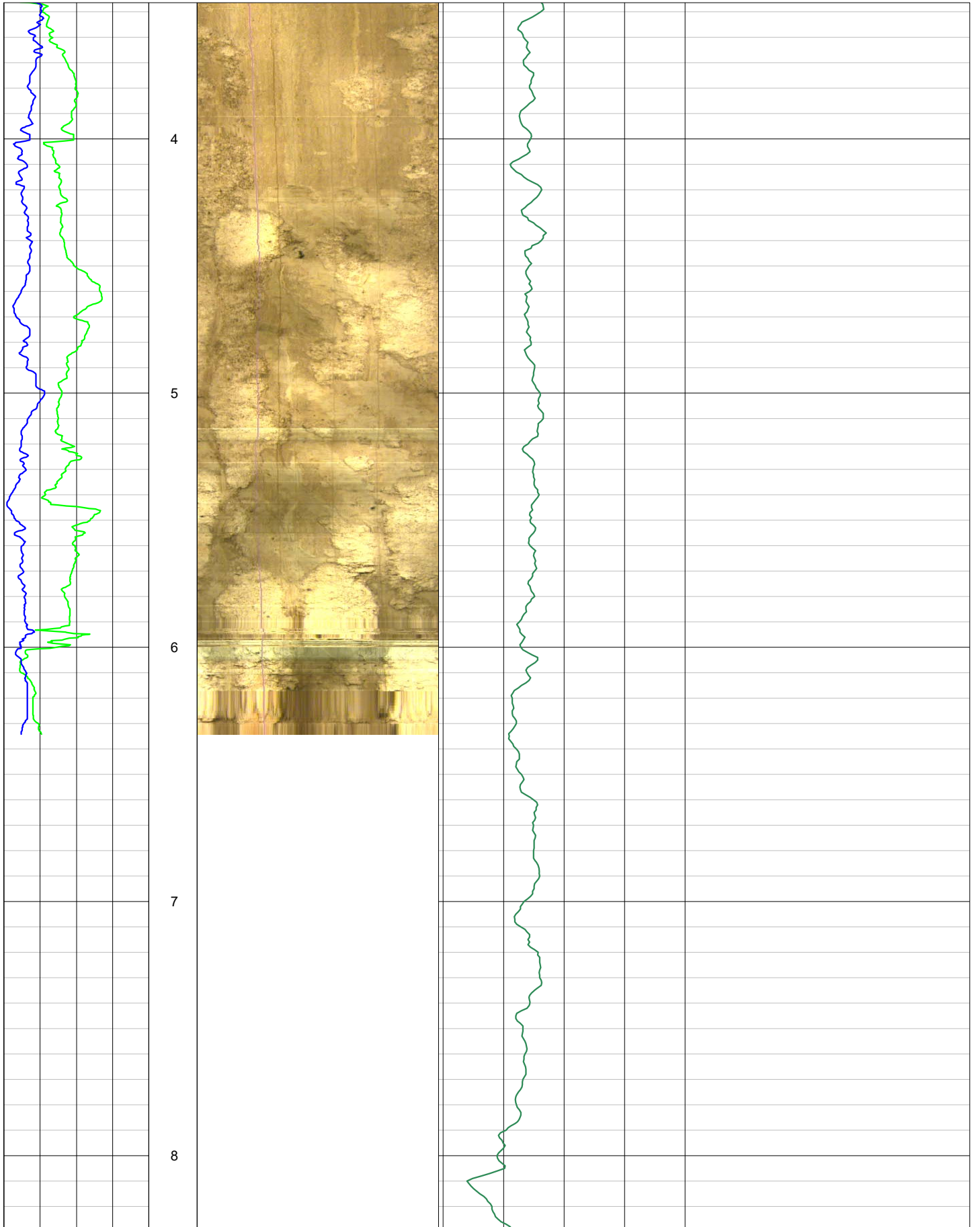
Drilled Depth: (m)		Date:	12th October 2020
Logged Depth: (m)	8.6	Recorded By:	C. Clinton
Logging Datum:	Ground Level	Remarks:	
Logged Interval: (m)	1.1 - 8.6		
Fluid Level: (m)	DRY		

BOREHOLE RECORD

CASING RECORD

Bit: (mm)	From: (m)	To: (m)	Type	Size: (mm)	From: (m)	To: (m)
130	0	8.6	Plastic	130	0.13	2.0







EUROPEAN GEOPHYSICAL SERVICES LTD

Client: **RPS Group**

Log Type:

Borehole: **R70111**

Field Log

FIELD LOG (SUBJECT TO FINAL QA CHANGES)

Location: **Stonehenge**

Area:

Grid Ref:

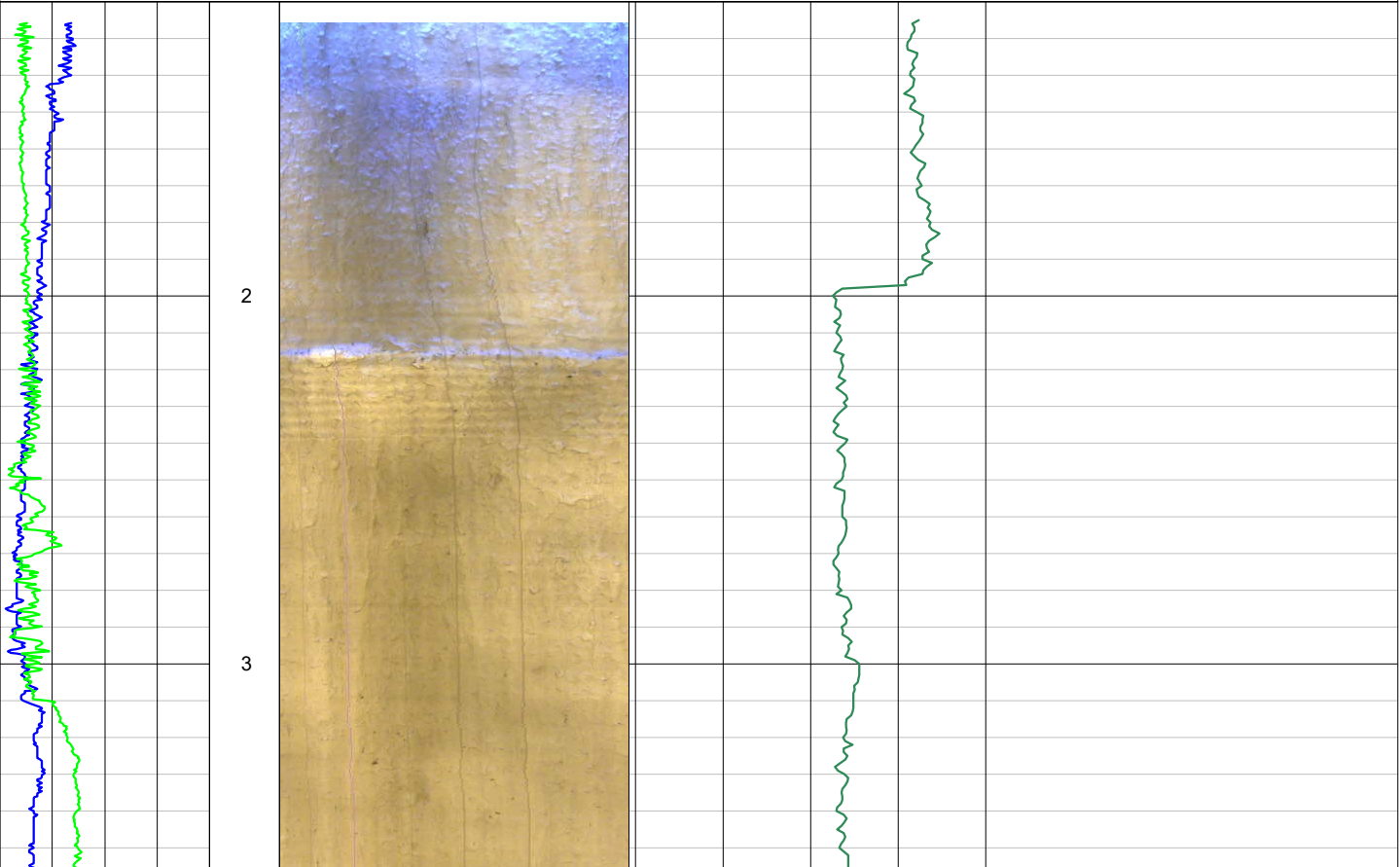
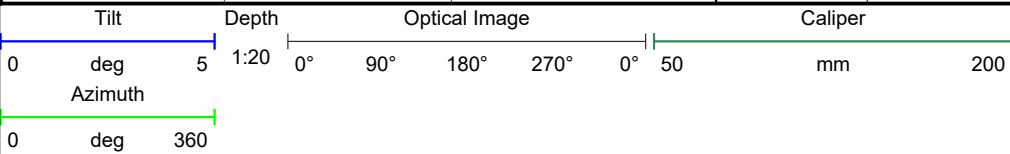
Elevation:

Drilled Depth: (m)		Date:	6th October 2020
Logged Depth: (m)	12.0	Recorded By:	C. Clinton
Logging Datum:	Ground Level	Remarks:	
Logged Interval: (m)	1.2 - 12.0		
Fluid Level: (m)	DRY		

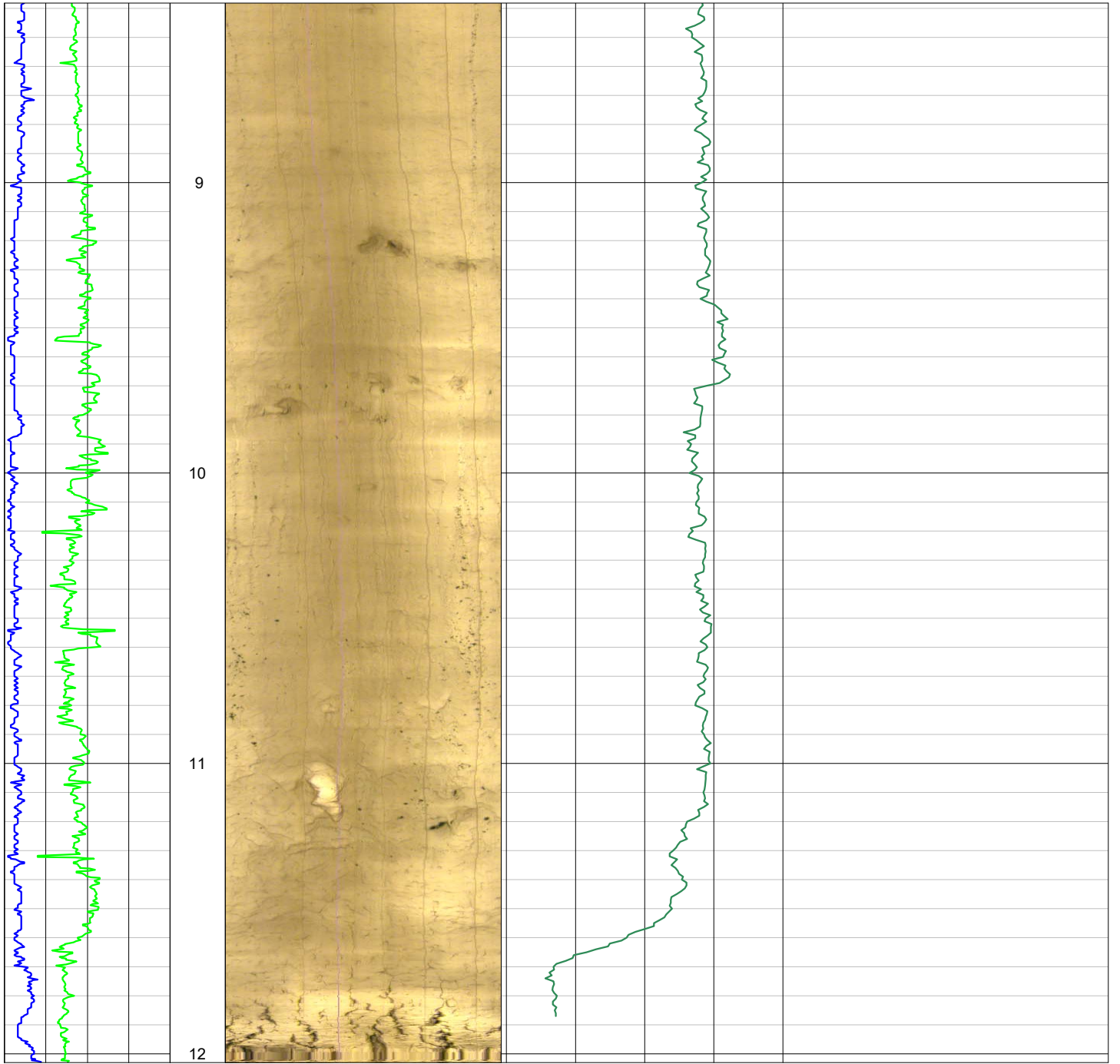
BOREHOLE RECORD

CASING RECORD

Bit: (mm)	From: (m)	To: (m)	Type	Size: (mm)	From: (m)	To: (m)









EUROPEAN GEOPHYSICAL SERVICES LTD

Client: **RPS Group**

Log Type:

Borehole: **R70113**

Field Log

FIELD LOG (SUBJECT TO FINAL QA CHANGES)

Location: **Stonehenge**

Area:

Grid Ref:

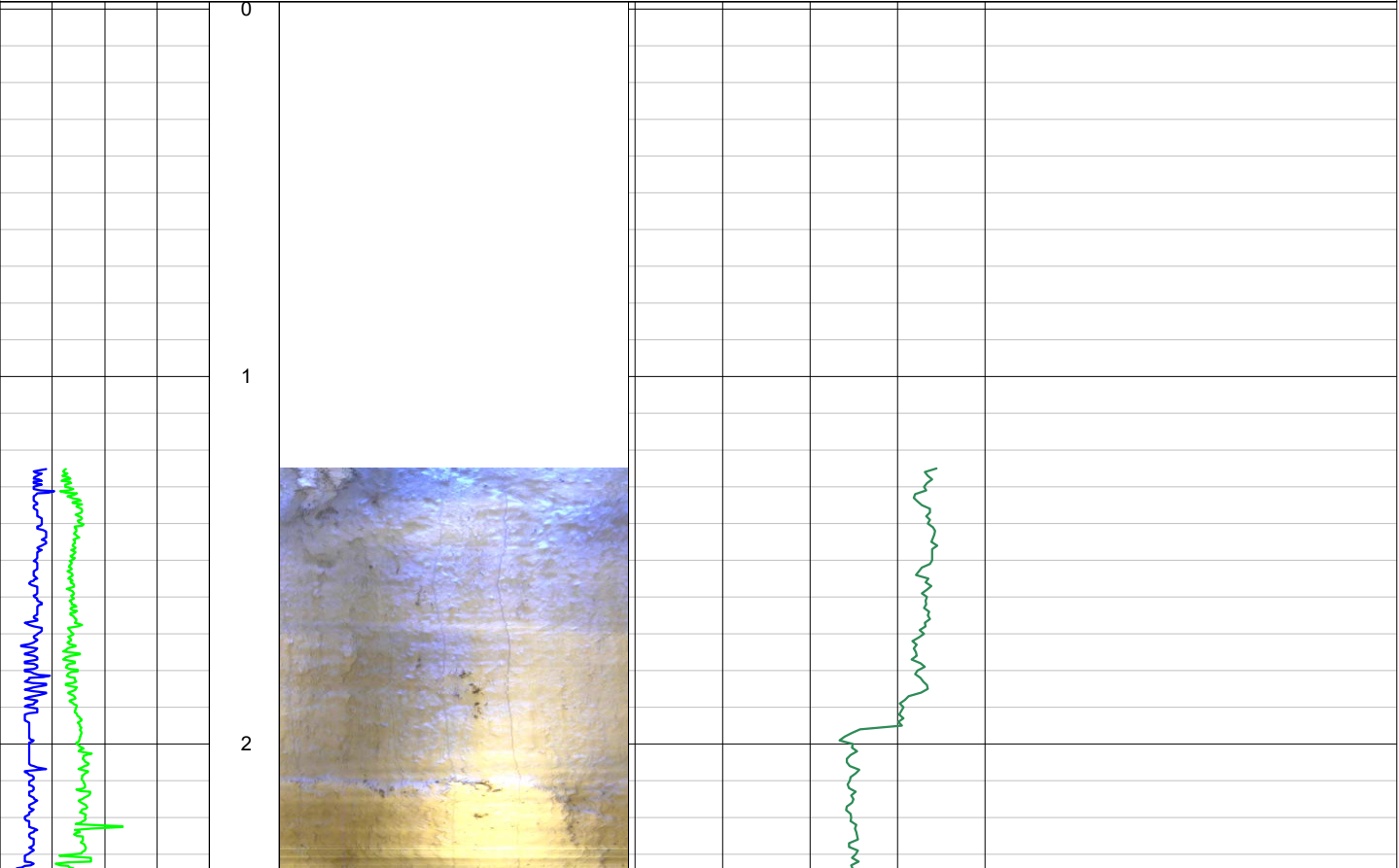
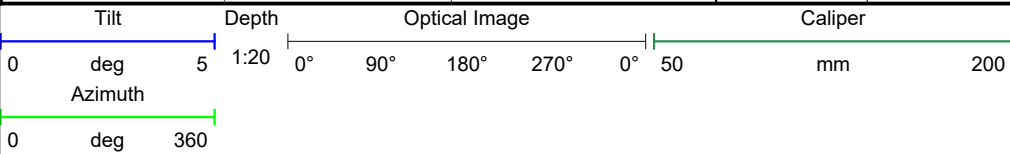
Elevation:

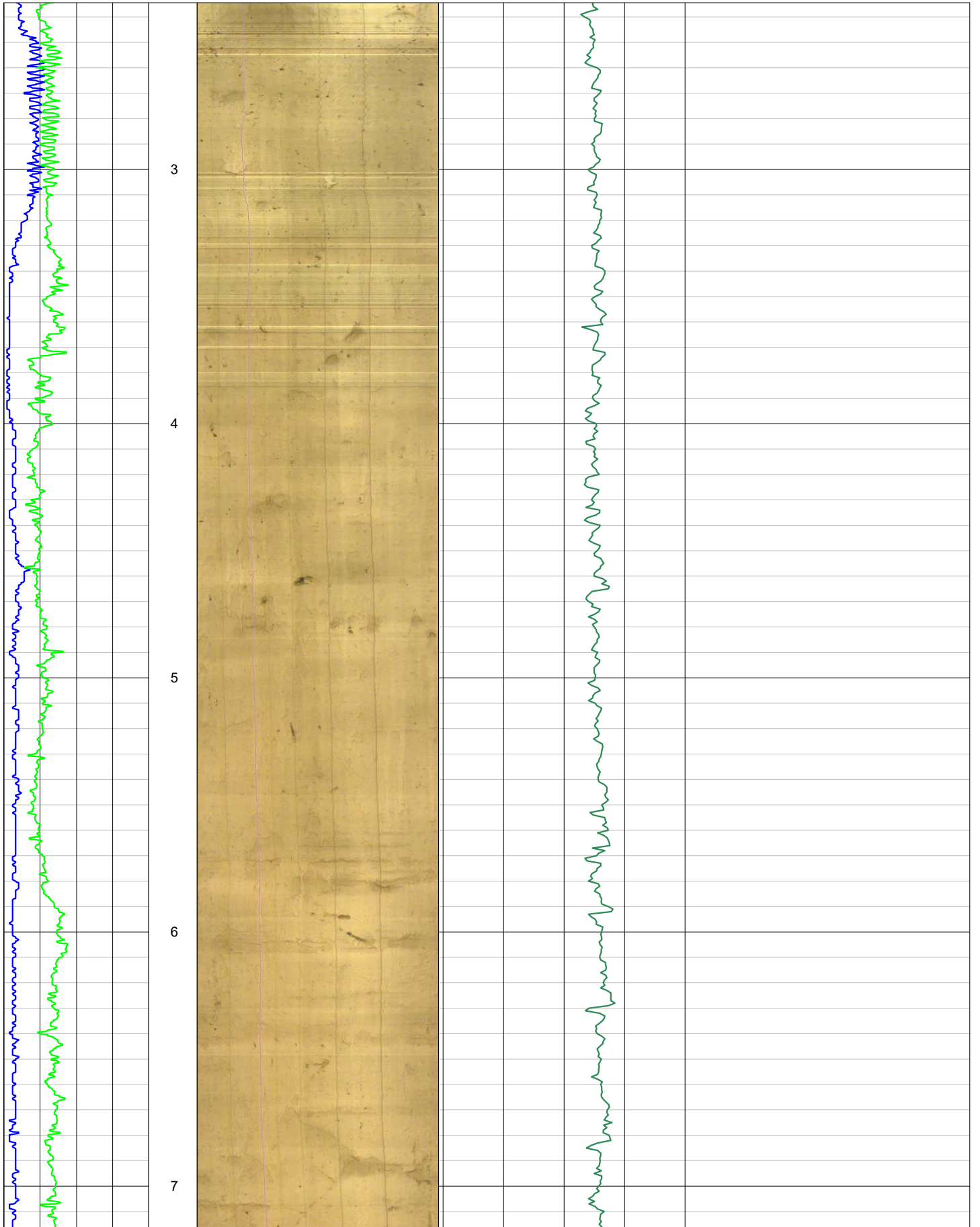
Drilled Depth: (m)		Date:	6th October 2020
Logged Depth: (m)	10.8	Recorded By:	C. Clinton
Logging Datum:	Ground Level	Remarks:	
Logged Interval: (m)	1.2 - 10.8		
Fluid Level: (m)	DRY		

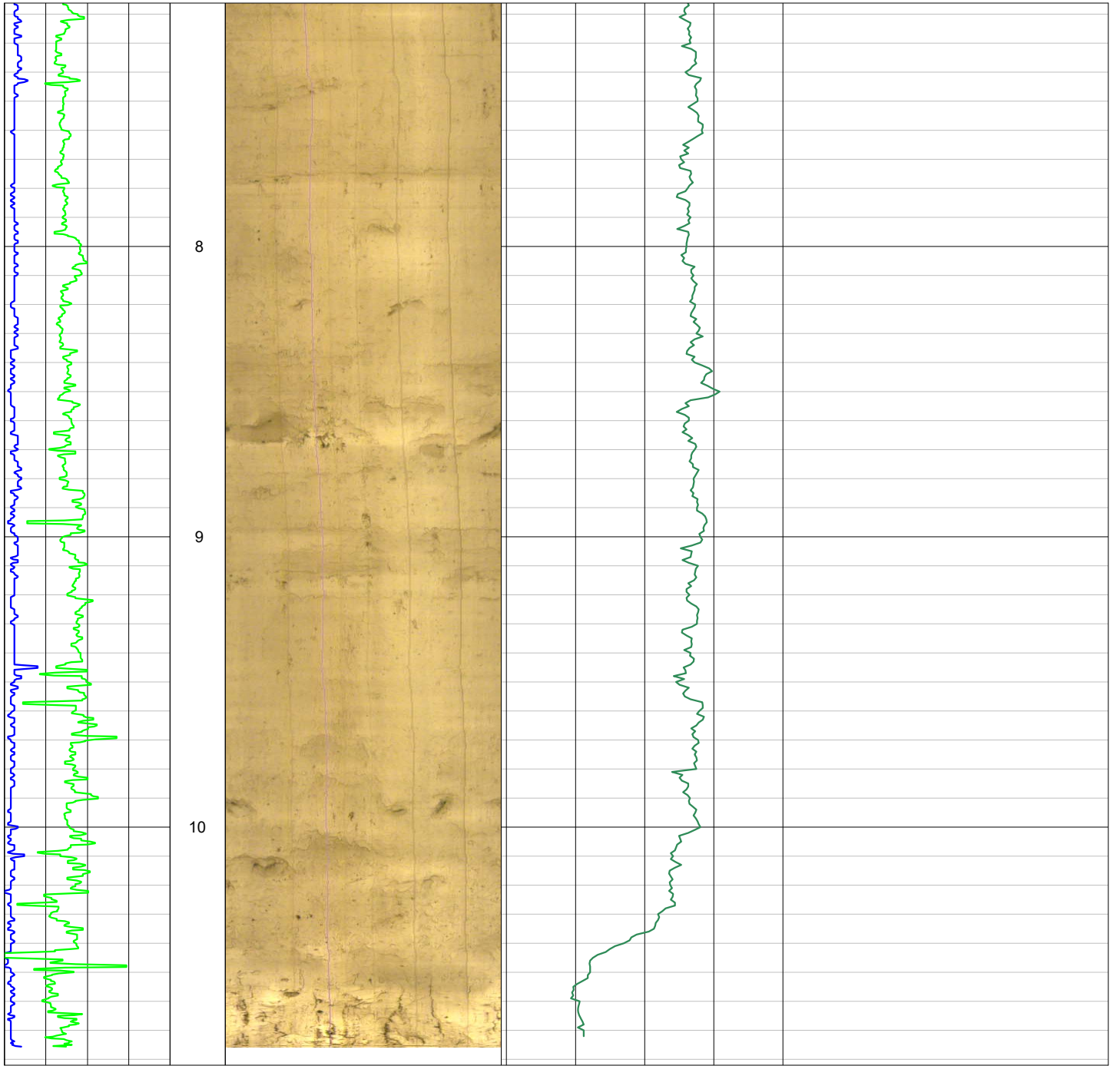
BOREHOLE RECORD

CASING RECORD

Bit: (mm)	From: (m)	To: (m)	Type	Size: (mm)	From: (m)	To: (m)









EUROPEAN GEOPHYSICAL SERVICES LTD

Client: **RPS Group**

Log Type:

Borehole: **R70115**

Field Log

FIELD LOG (SUBJECT TO FINAL QA CHANGES)

Location: **Stonehenge**

Area:

Grid Ref:

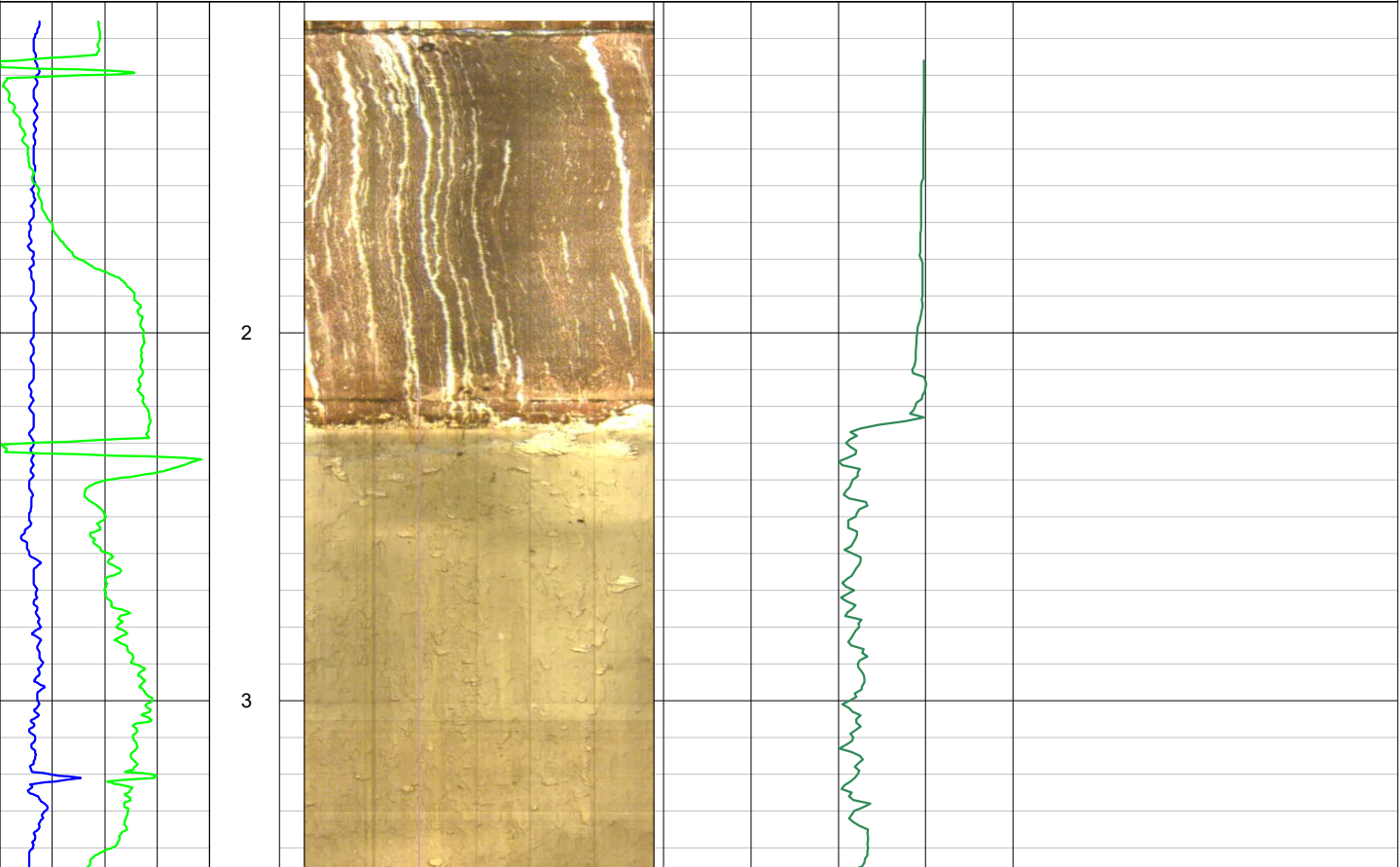
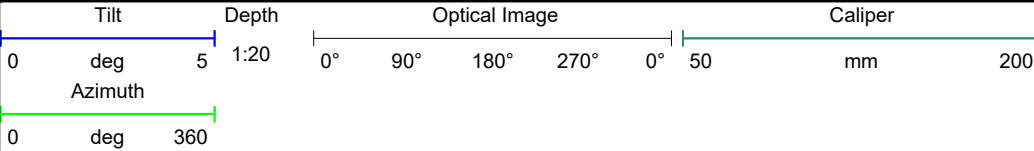
Elevation:

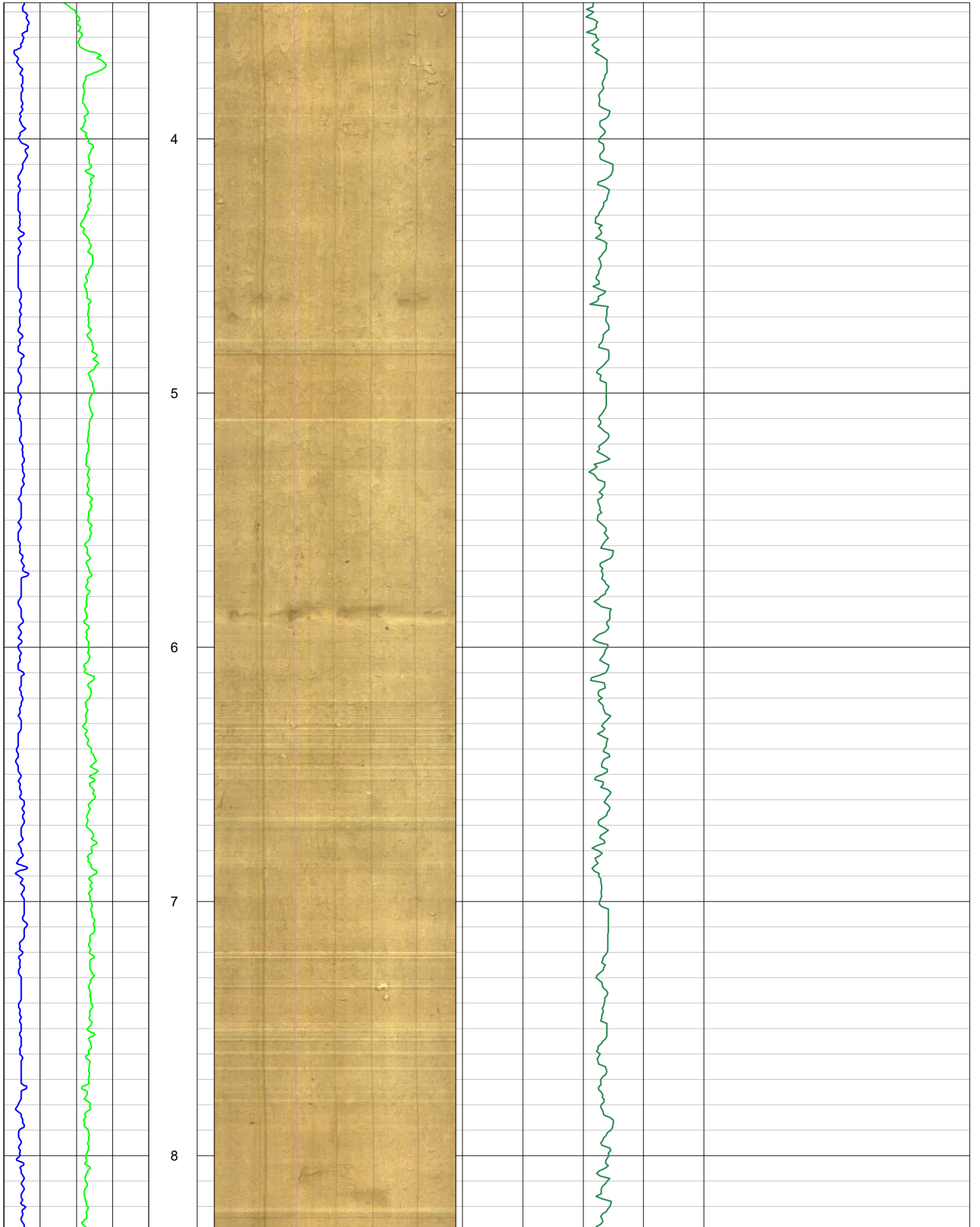
Drilled Depth: (m)		Date:	12th October 2020
Logged Depth: (m)	13.5	Recorded By:	C. Clinton
Logging Datum:	Ground Level	Remarks:	
Logged Interval: (m)	1.1 - 13.5		
Fluid Level: (m)	Dry		

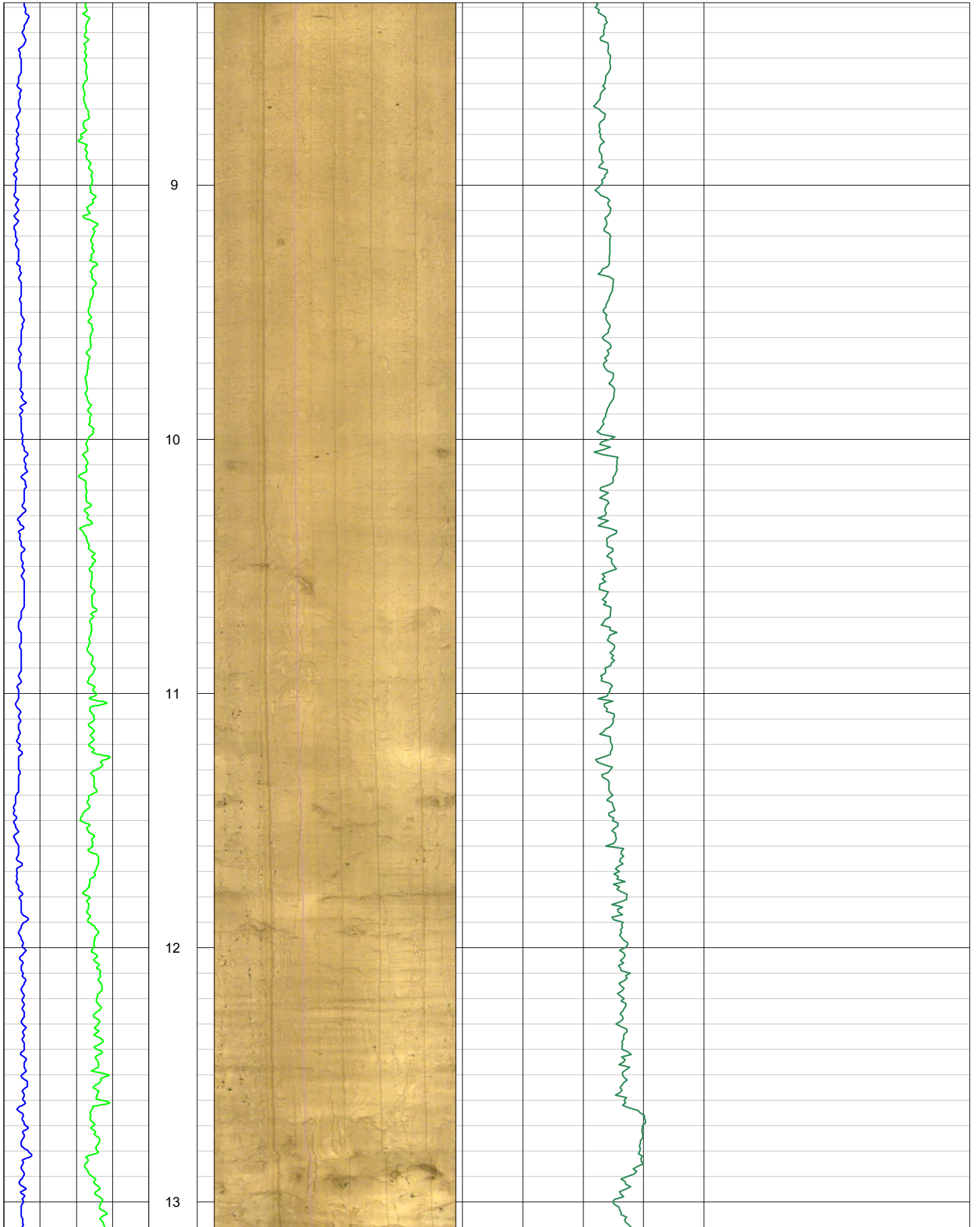
BOREHOLE RECORD

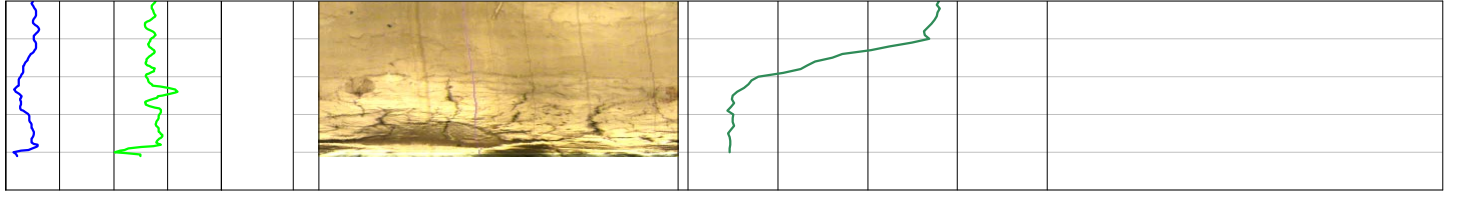
CASING RECORD

Bit: (mm)	From: (m)	To: (m)	Type	Size: (mm)	From: (m)	To: (m)
150	0	13.5	Steel	180	-0.1	~1











EUROPEAN GEOPHYSICAL SERVICES LTD

Client: **RPS Group**

Log Type:

Borehole: **R70117**

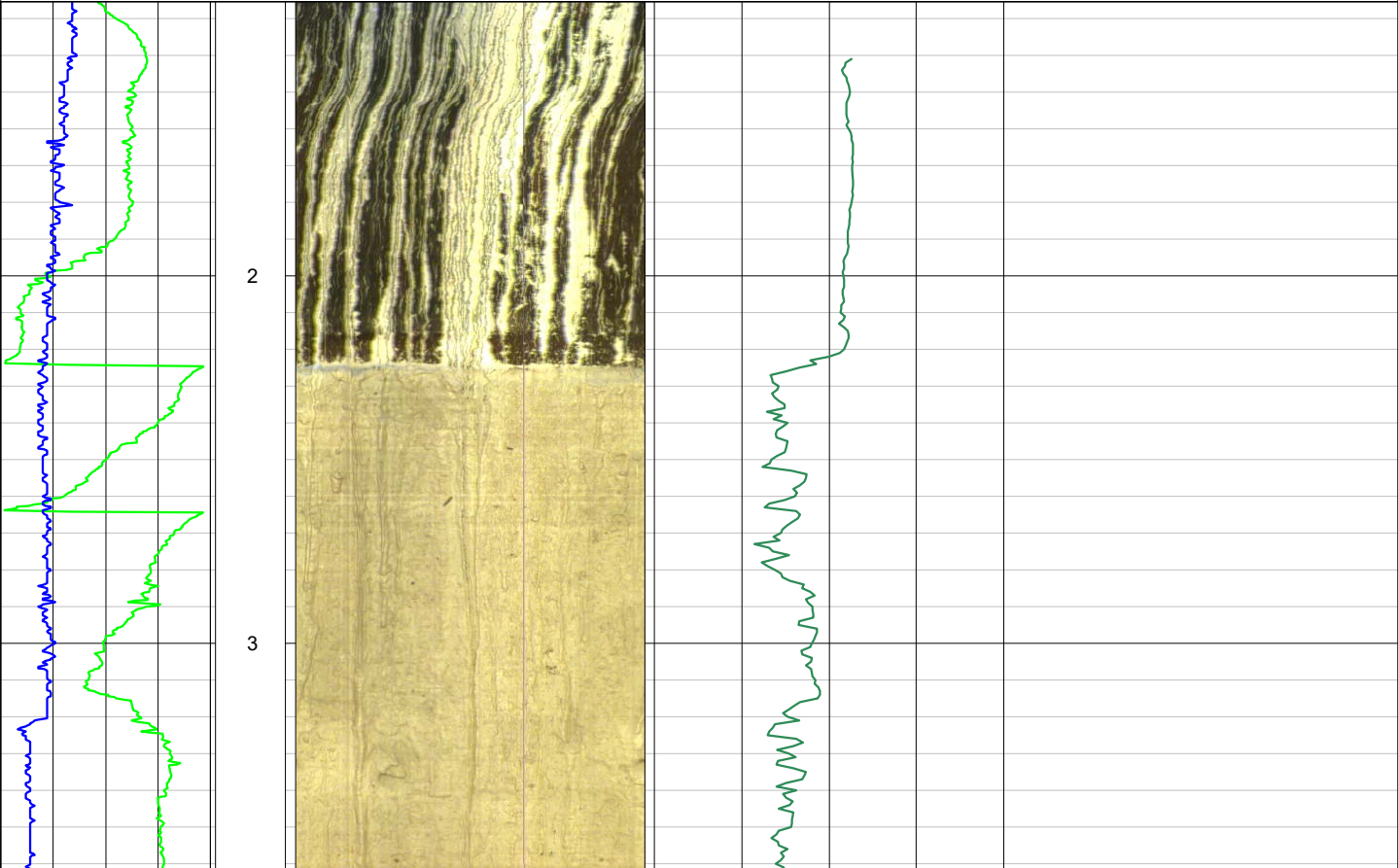
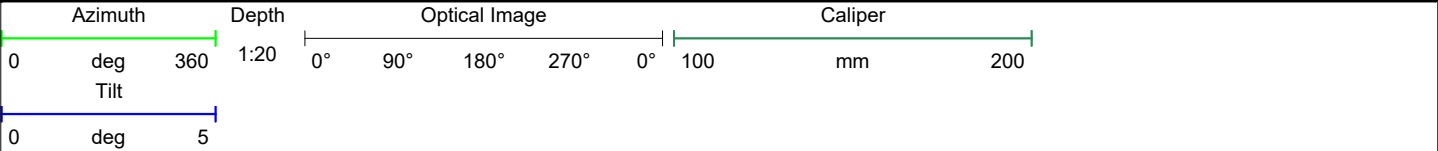
Field Log

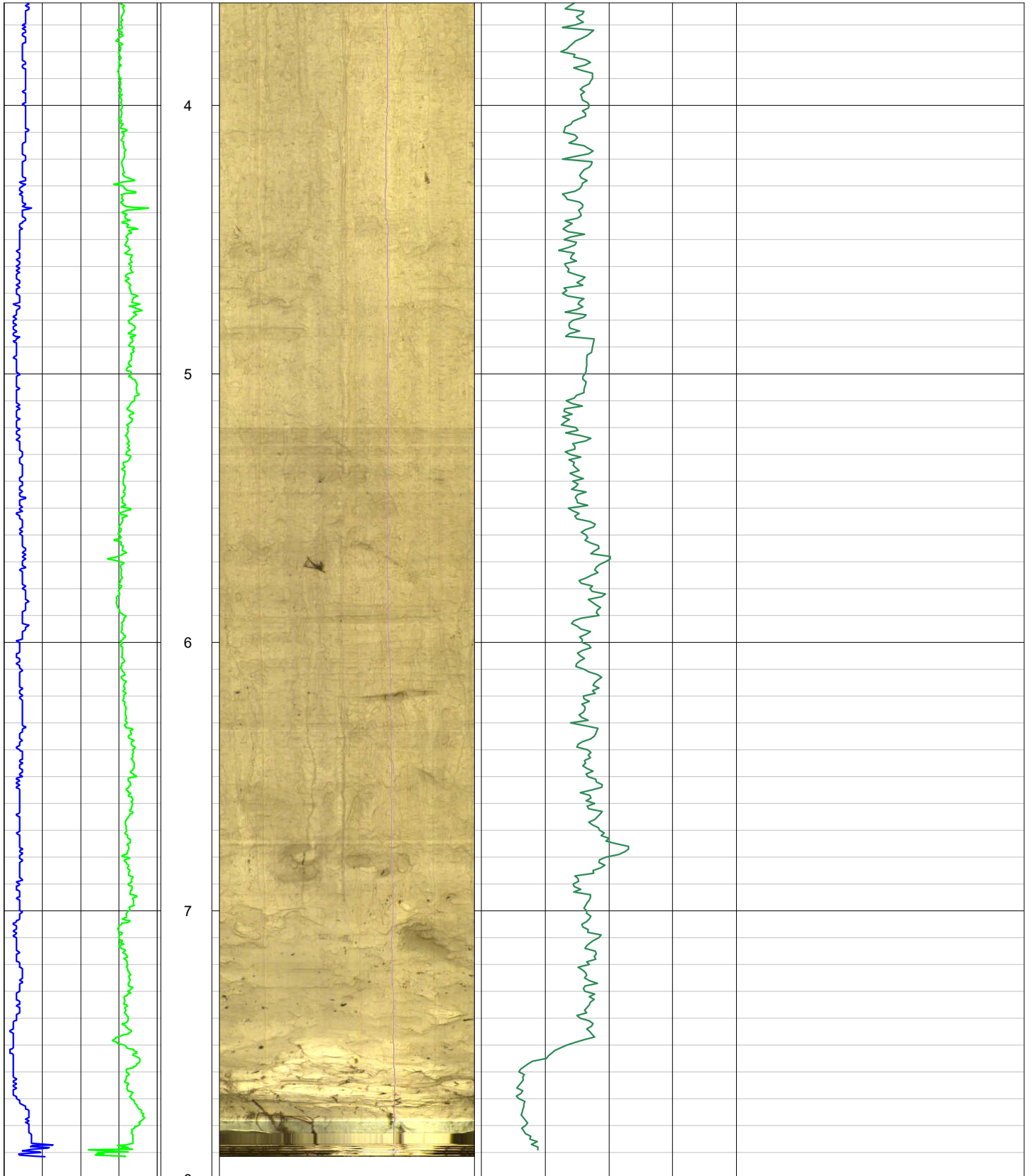
FIELD LOG (SUBJECT TO FINAL QA CHANGES)

Location: **Stonehenge** Area: Grid Ref: Elevation:

Drilled Depth: (m)		Date:	12th October 2020
Logged Depth: (m)	7.9	Recorded By:	C. Clinton
Logging Datum:	Ground Level	Remarks:	
Logged Interval: (m)	1.2 - 7.9		
Fluid Level: (m)	Dry		

BOREHOLE RECORD			CASING RECORD			
Bit: (mm)	From: (m)	To: (m)	Type	Size: (mm)	From: (m)	To: (m)
150	0	7.9	Steel	180	-0.1	2.2







EUROPEAN GEOPHYSICAL SERVICES LTD

Client: **RPS Group**

Log Type:

Borehole: **R71203**

FIELD LOG

FIELD LOG (SUBJECT TO FINAL QA CHANGES)

Location: **Stonehenge**

Area:

Grid Ref:

Elevation:

Drilled Depth: (m)

Date:

23rd September 2020

Logged Depth: (m)

15

Recorded By:

C. Clinton

Logging Datum:

Ground level

Remarks:

Logged Interval: (m)

1.2 - 15.0

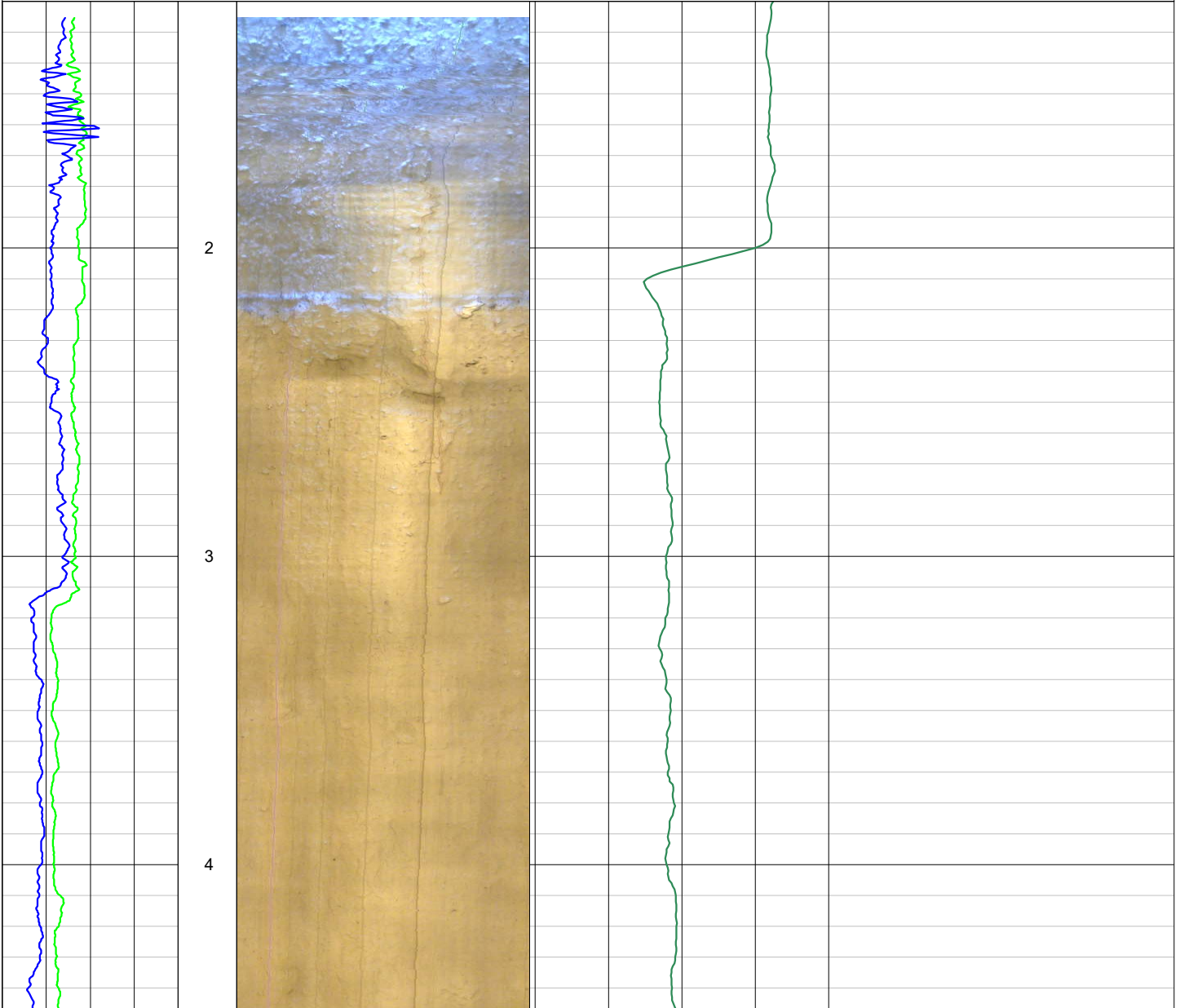
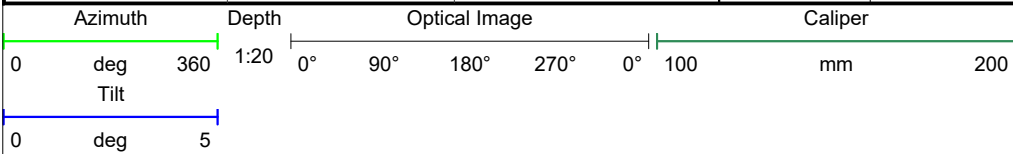
Fluid Level: (m)

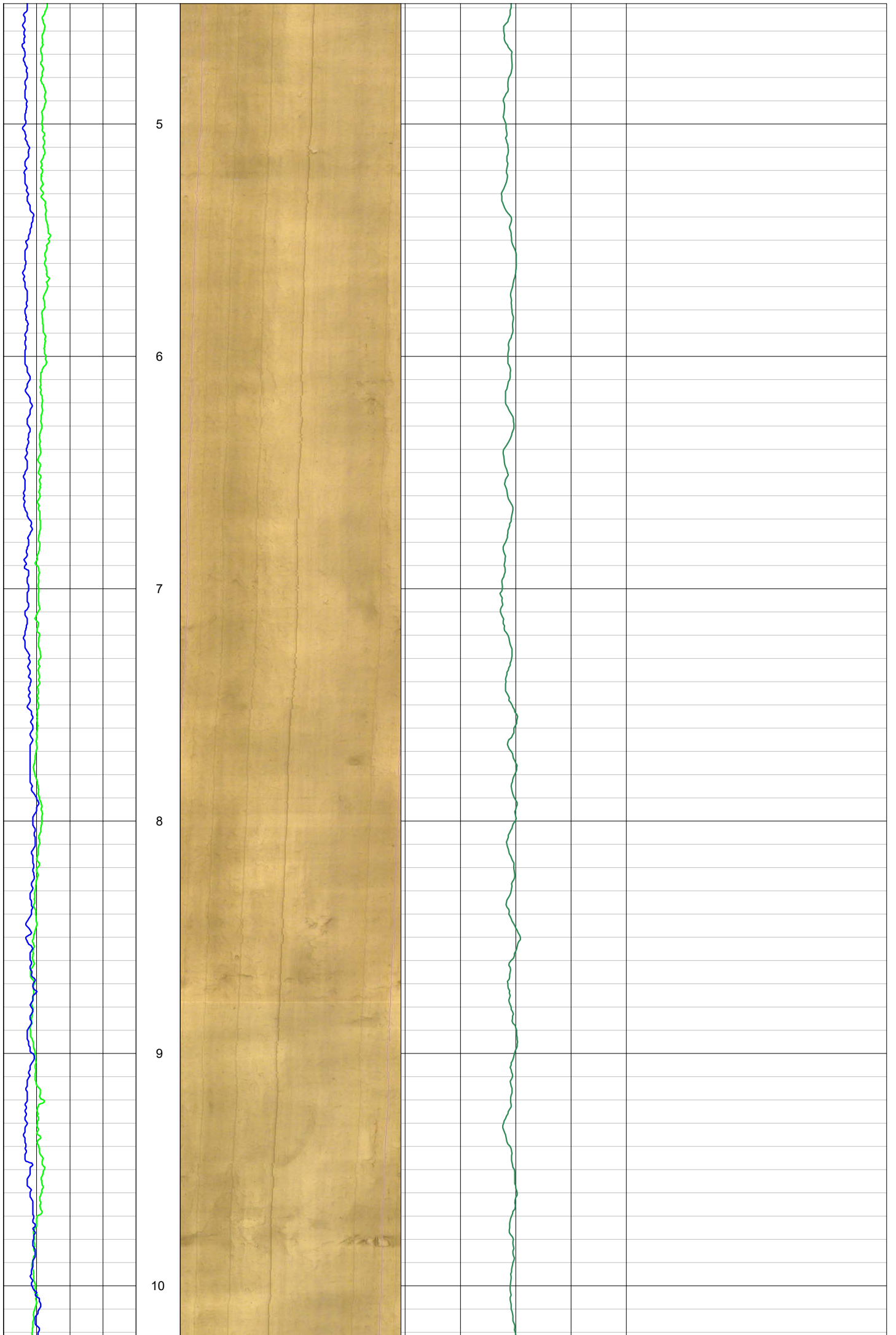
DRY

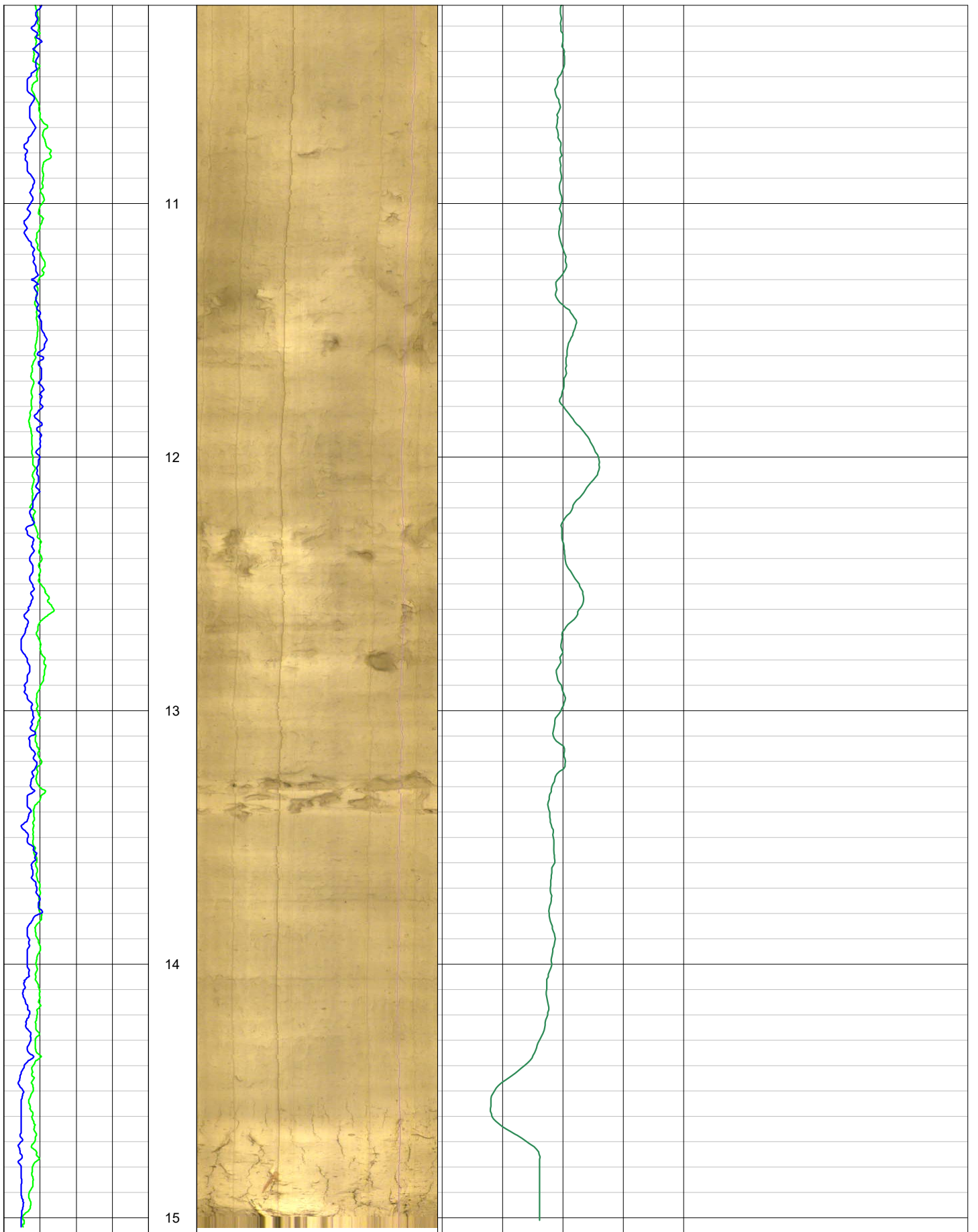
BOREHOLE RECORD

CASING RECORD

Bit: (mm)	From: (m)	To: (m)	Type	Size: (mm)	From: (m)	To: (m)
156	0.0		Non	-	-	-









EUROPEAN GEOPHYSICAL SERVICES LTD

Client: **RPS Group**

Log Type:

Borehole: **R71905**

Field Log

FIELD LOG (SUBJECT TO FINAL QA CHANGES)

Location: **Stonehenge**

Area:

Grid Ref:

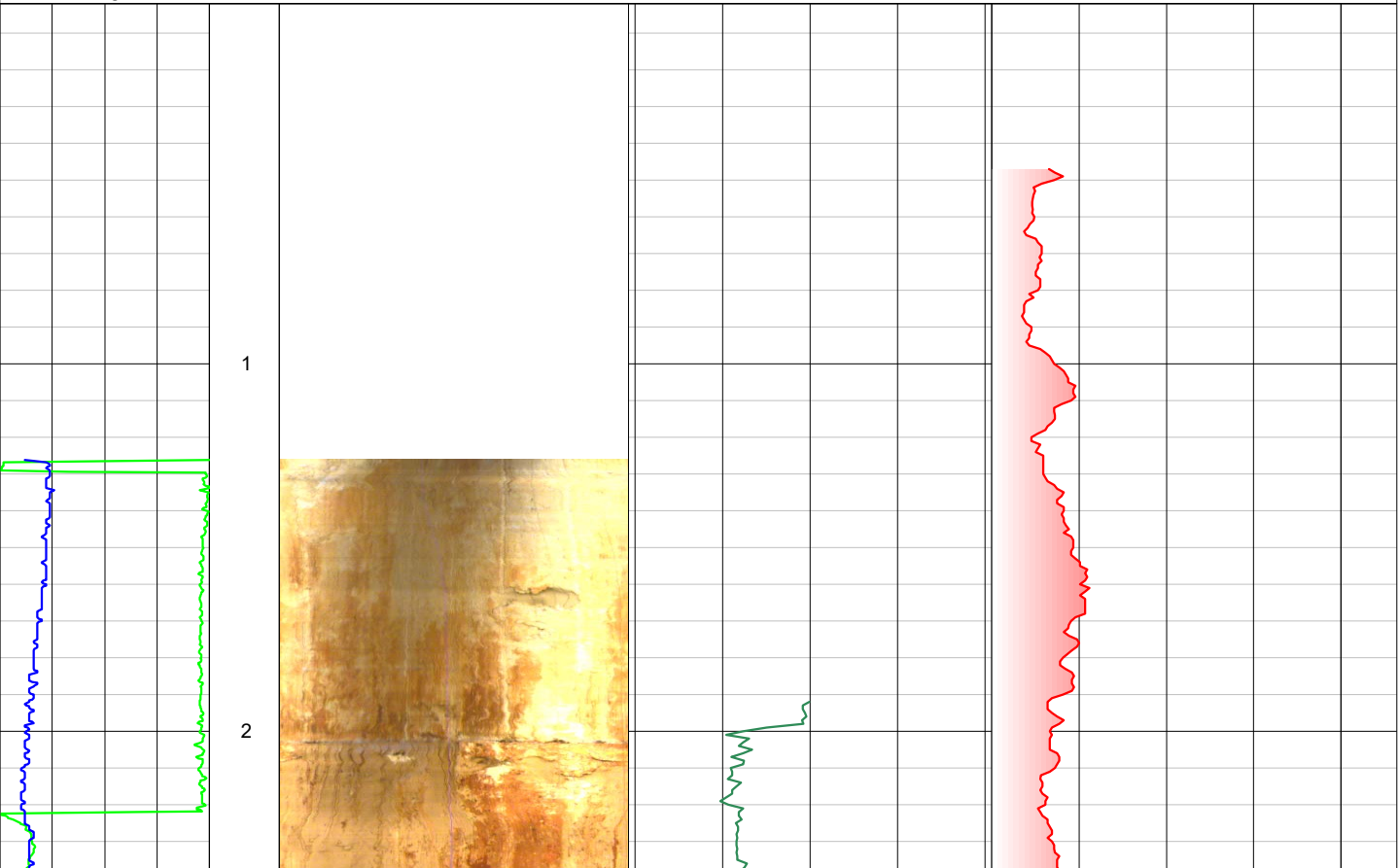
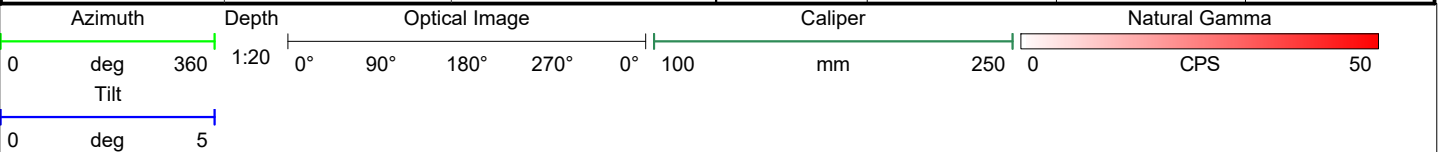
Elevation:

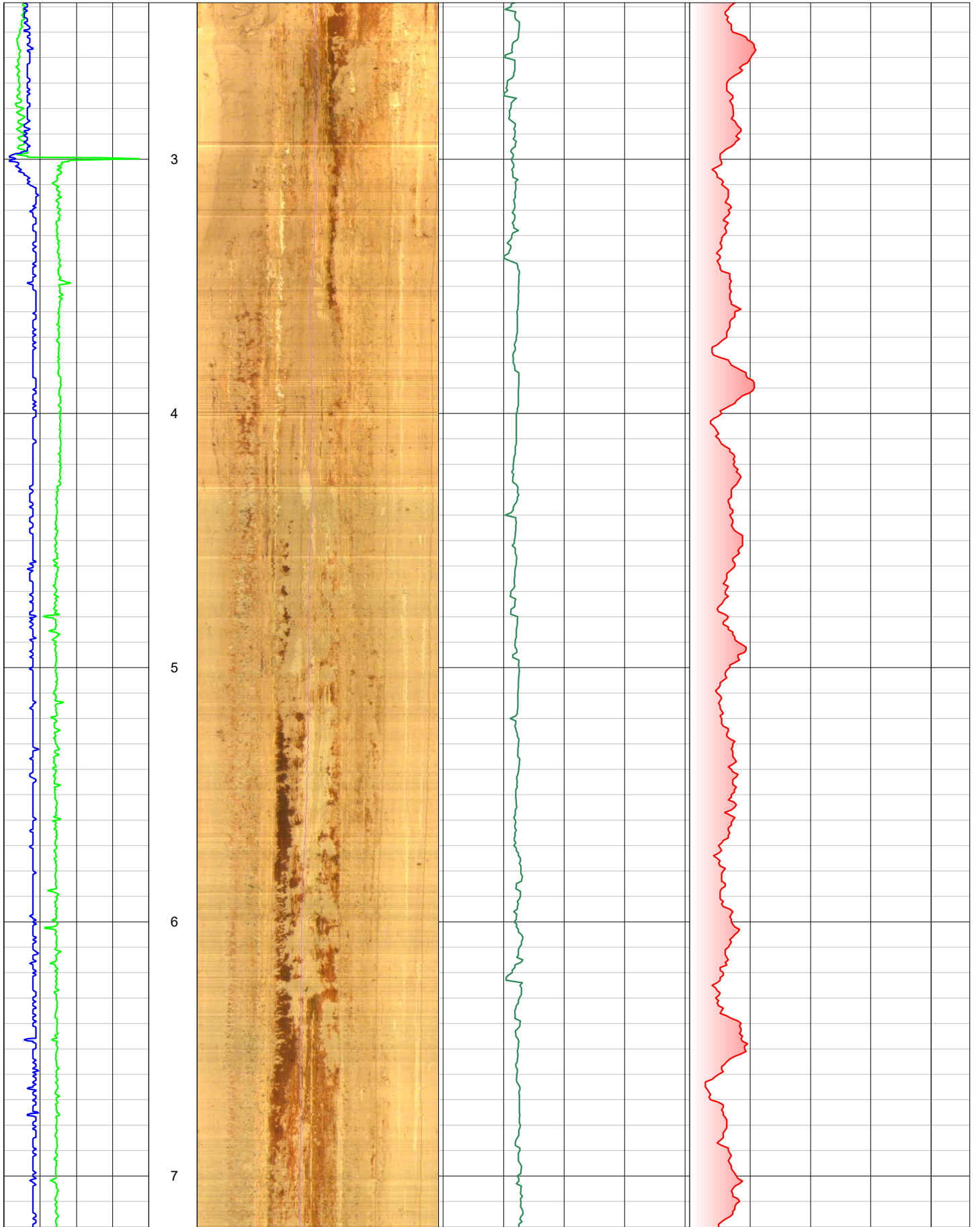
Drilled Depth: (m)		Date:	7th October 2020
Logged Depth: (m)	52.0	Recorded By:	C. Clinton
Logging Datum:	Ground Level	Remarks:	
Logged Interval: (m)	1.2 - 52.0		
Fluid Level: (m)	32.2		

BOREHOLE RECORD

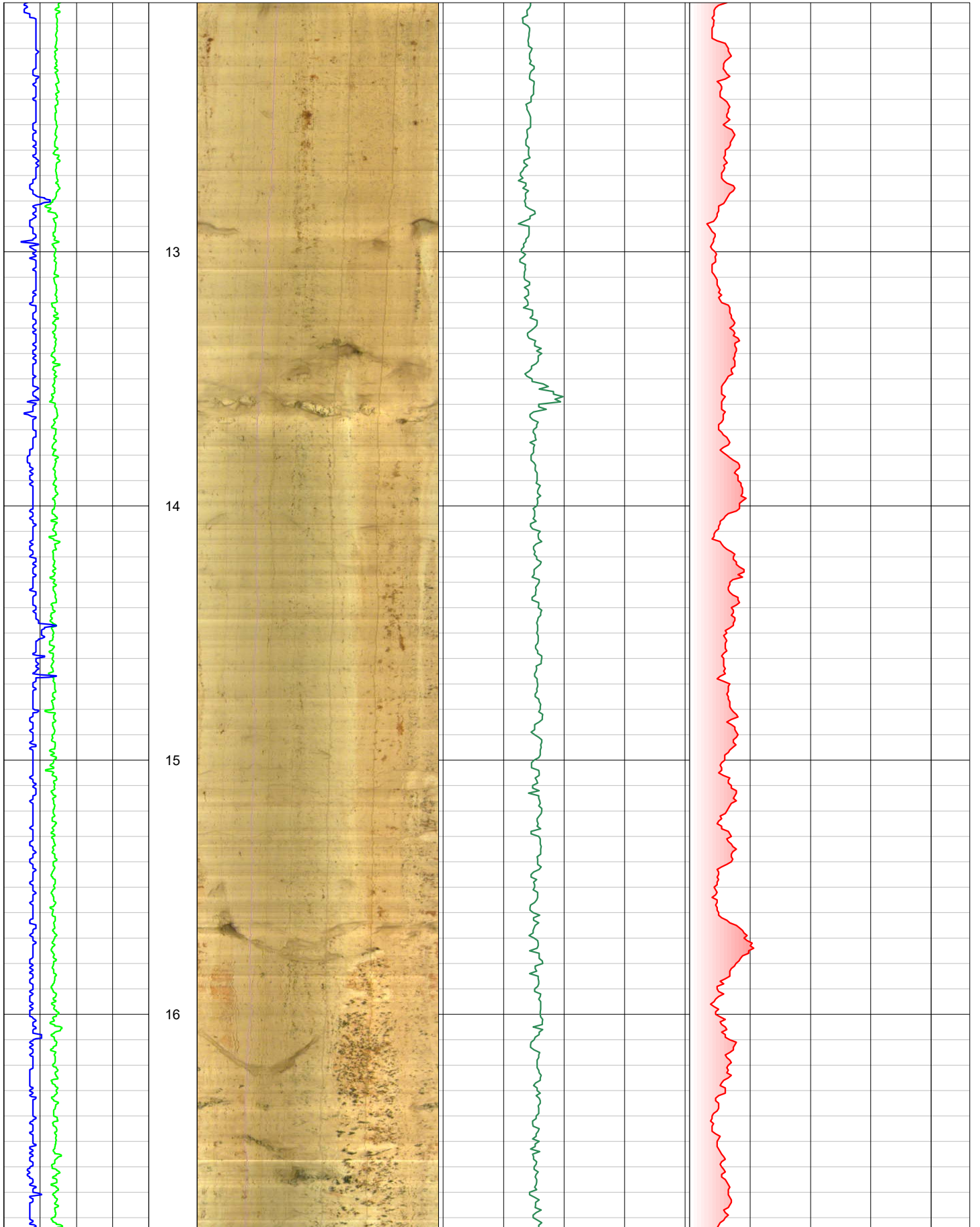
CASING RECORD

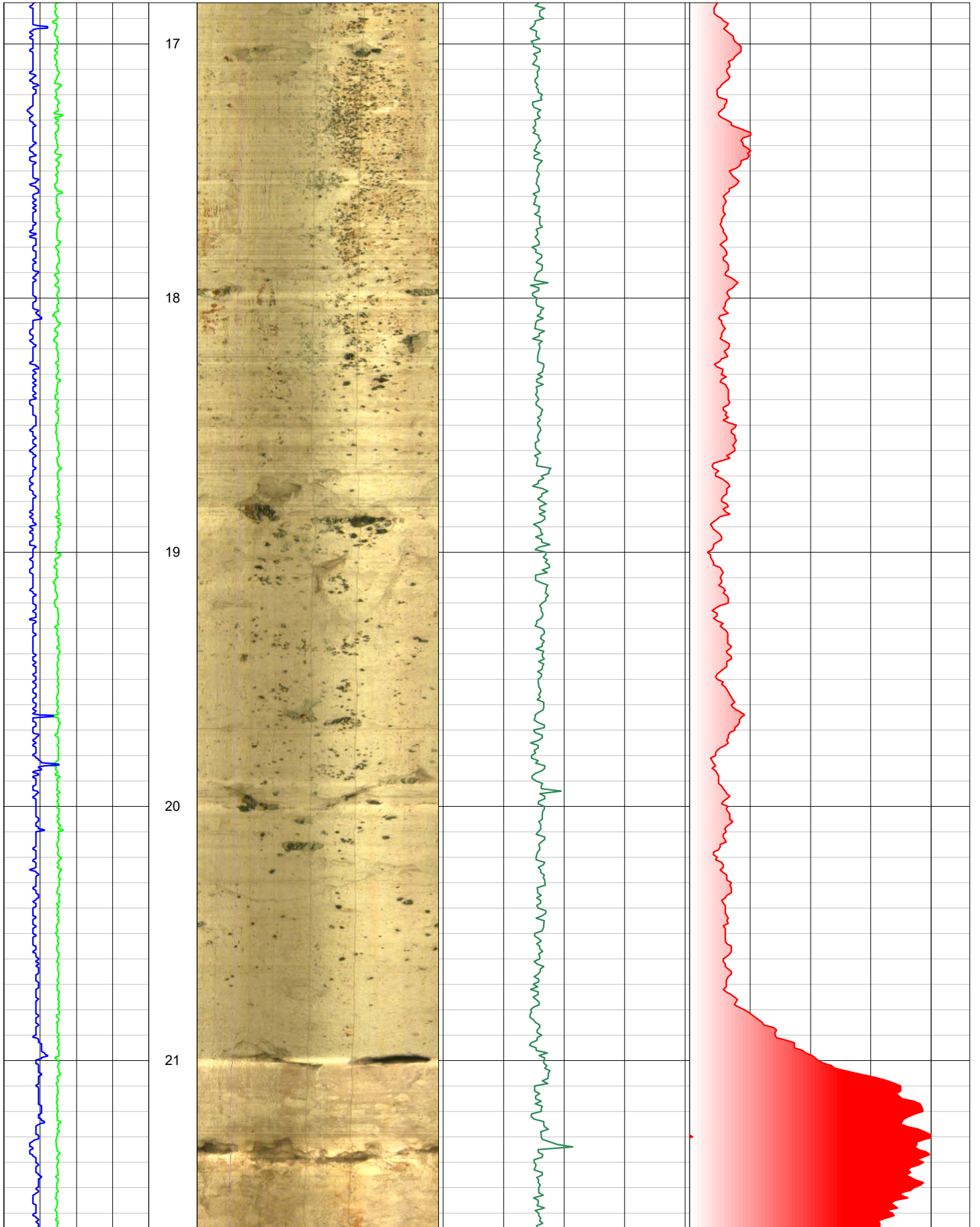
Bit: (mm)	From: (m)	To: (m)	Type	Size: (mm)	From: (m)	To: (m)

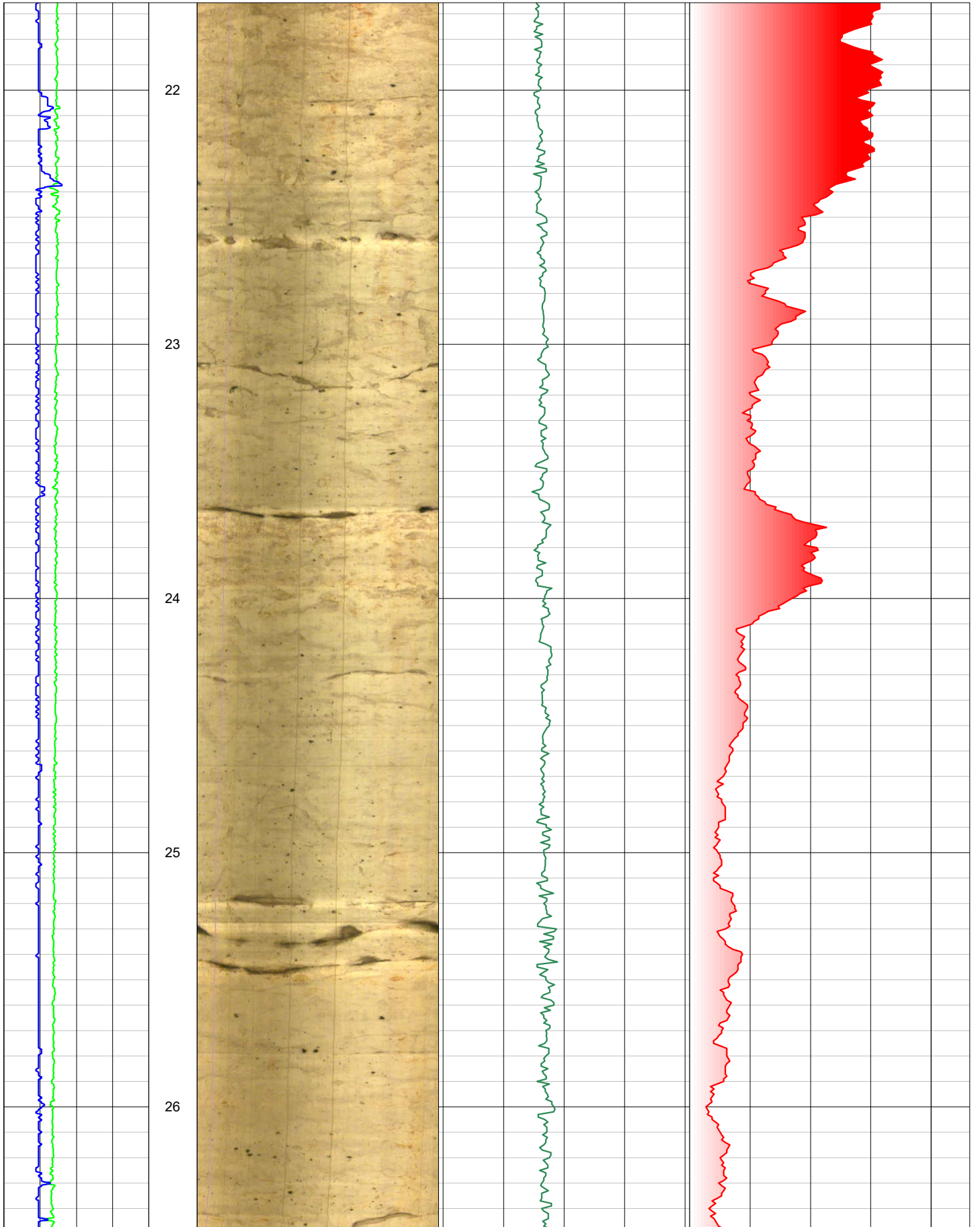


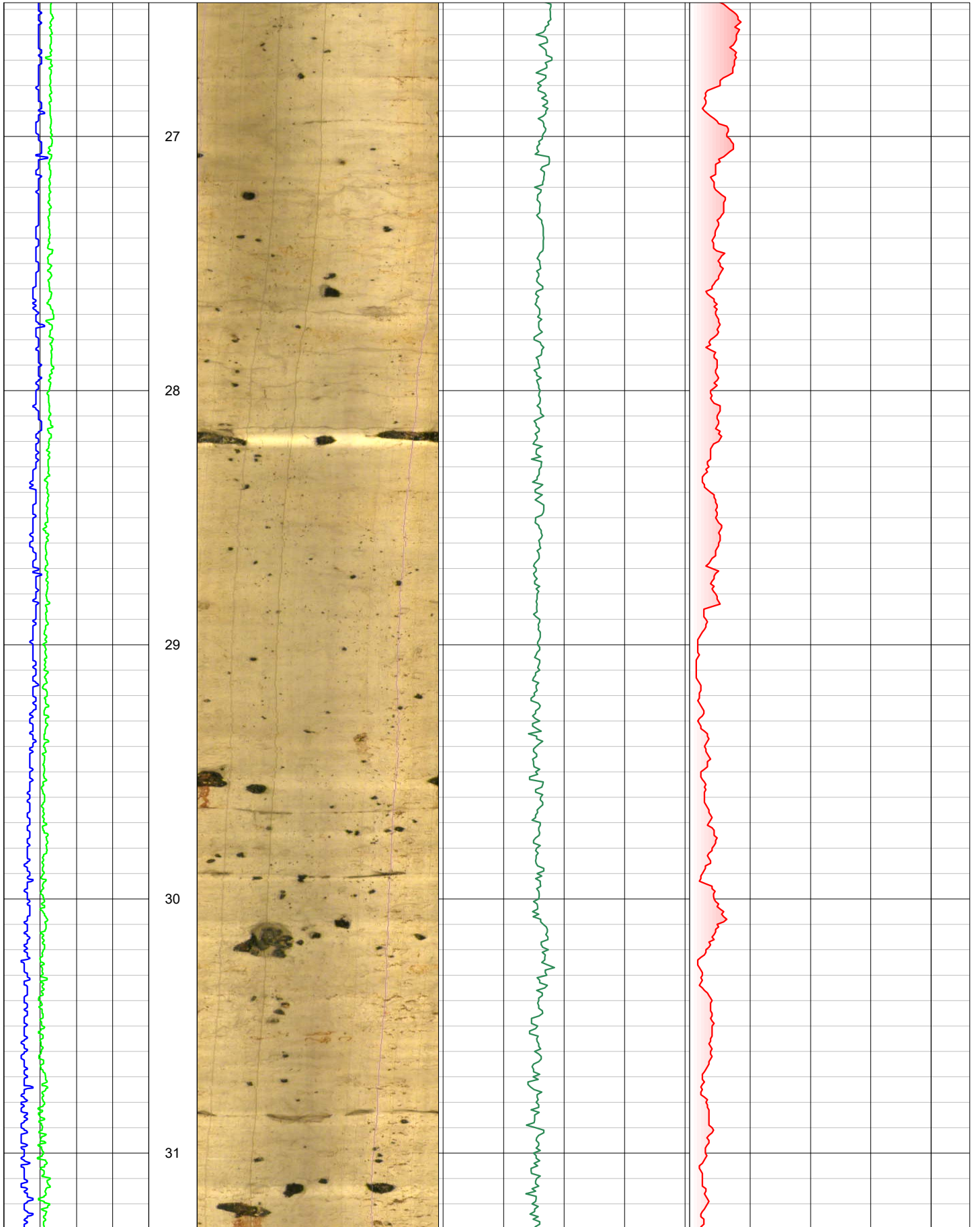


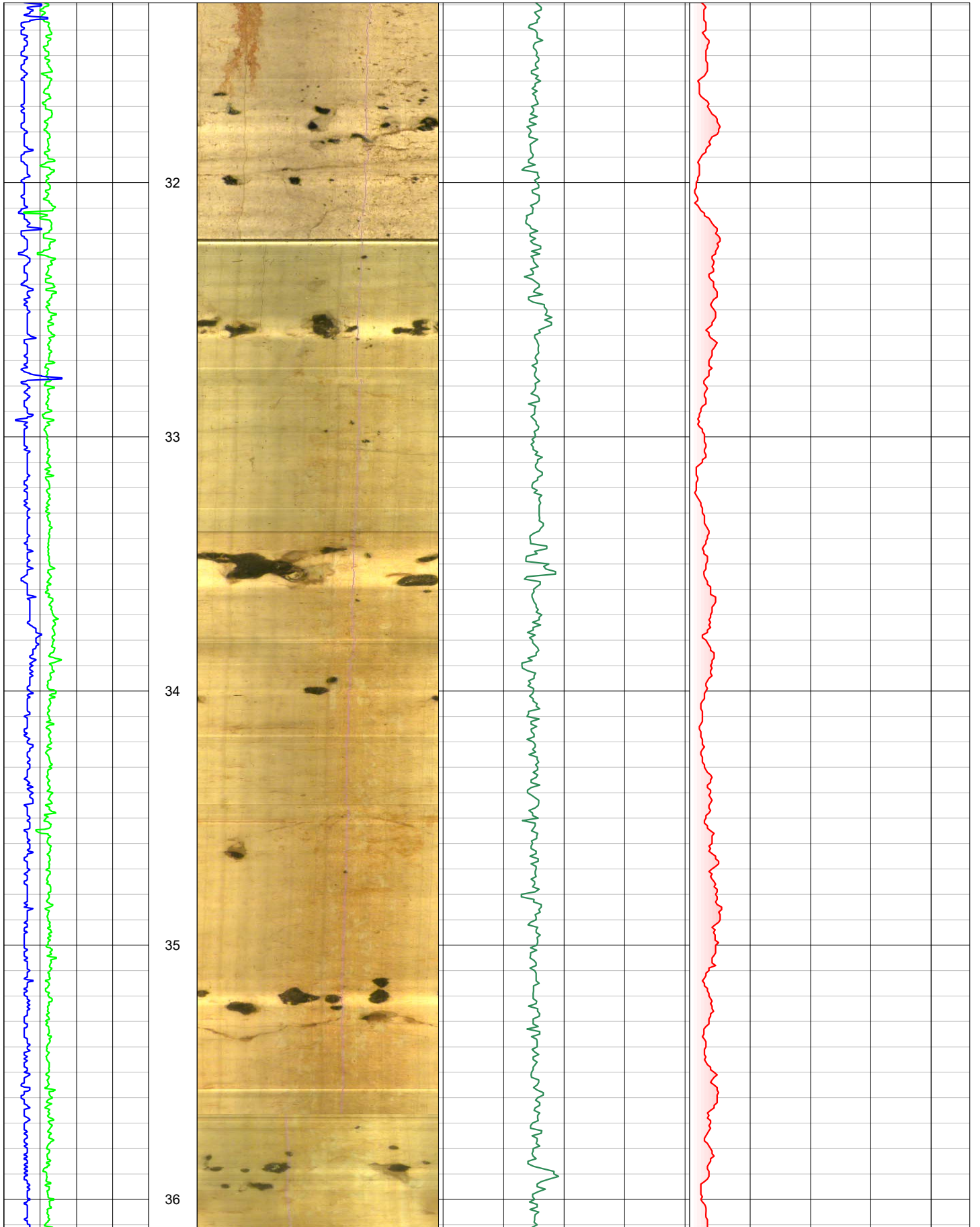


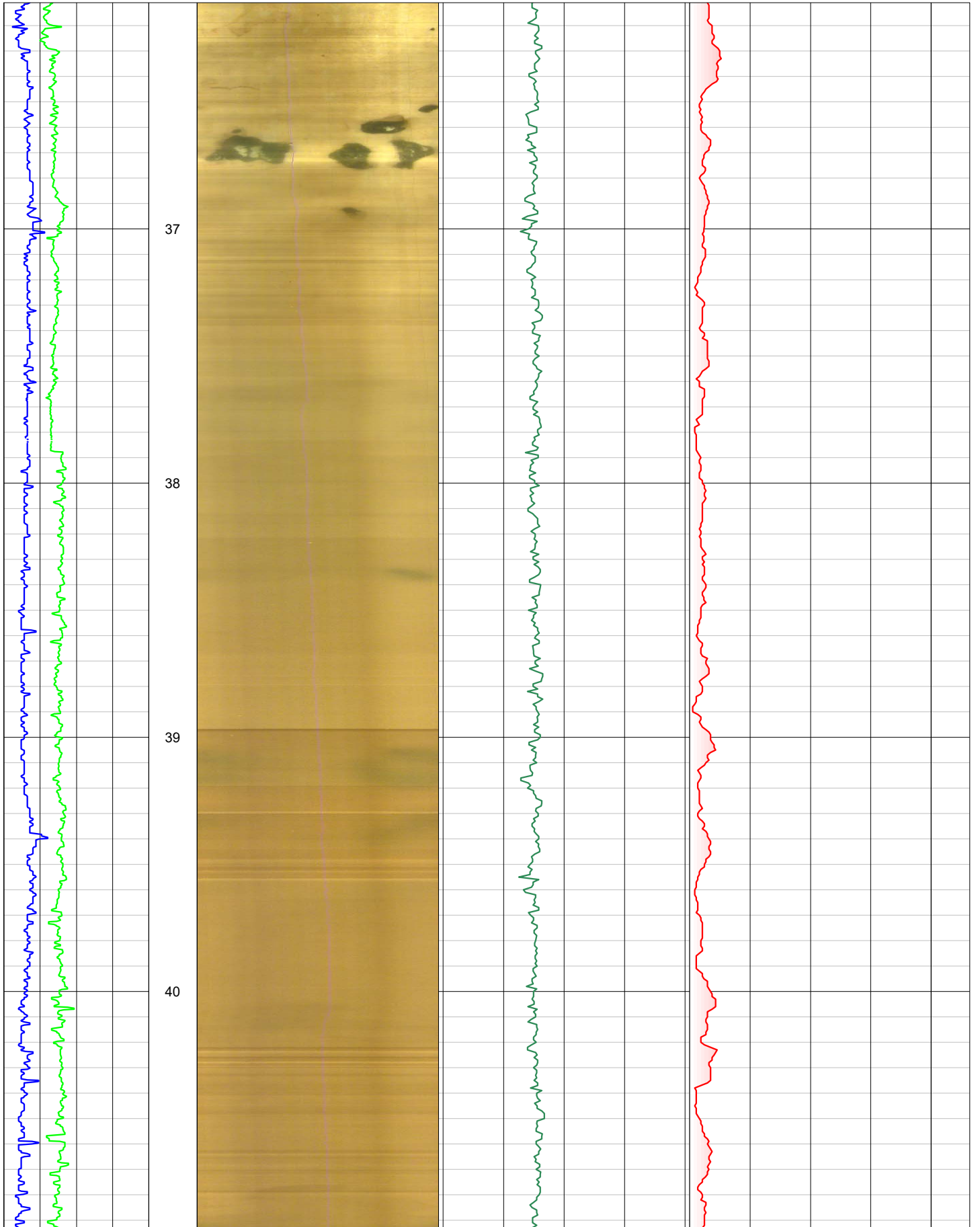


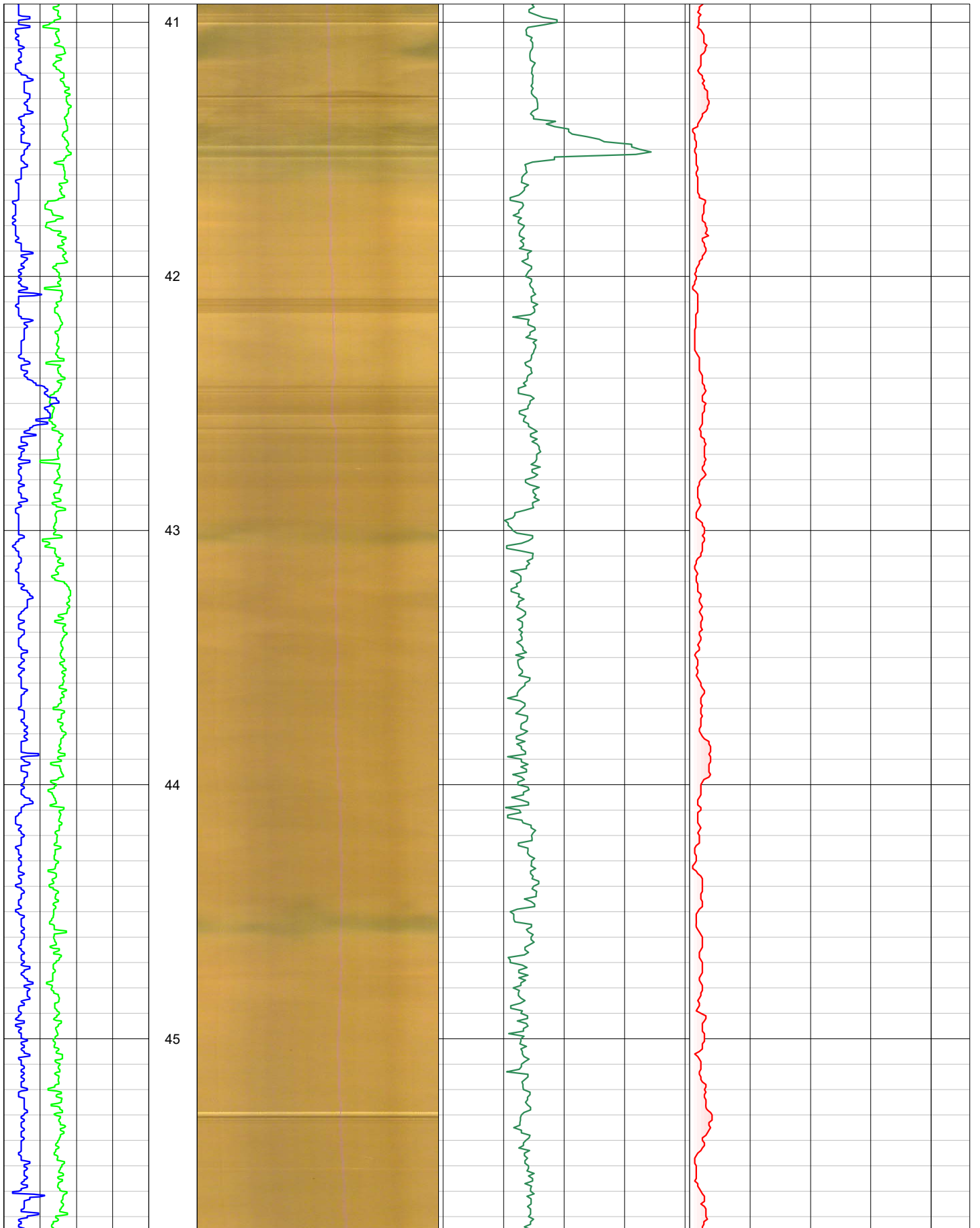


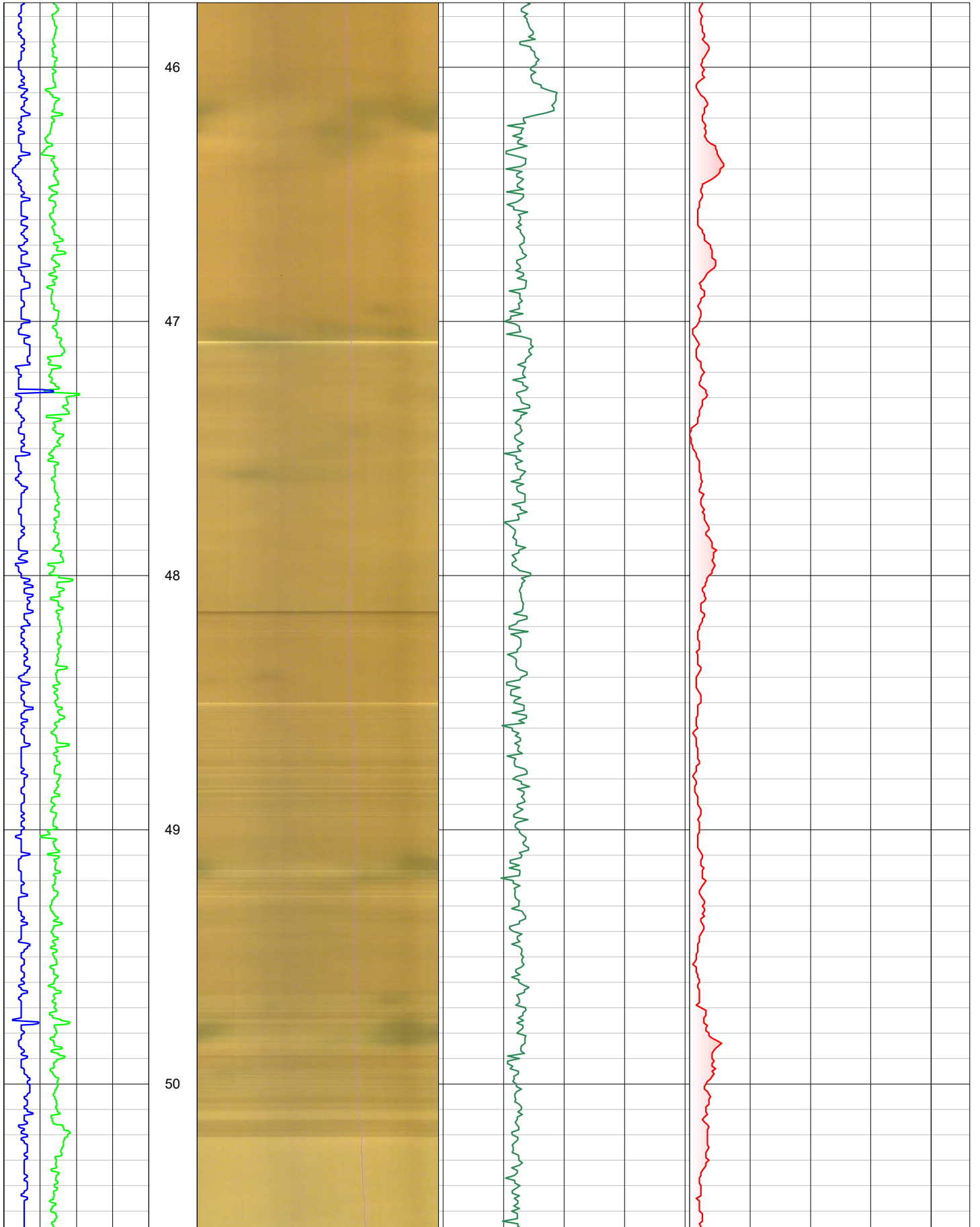


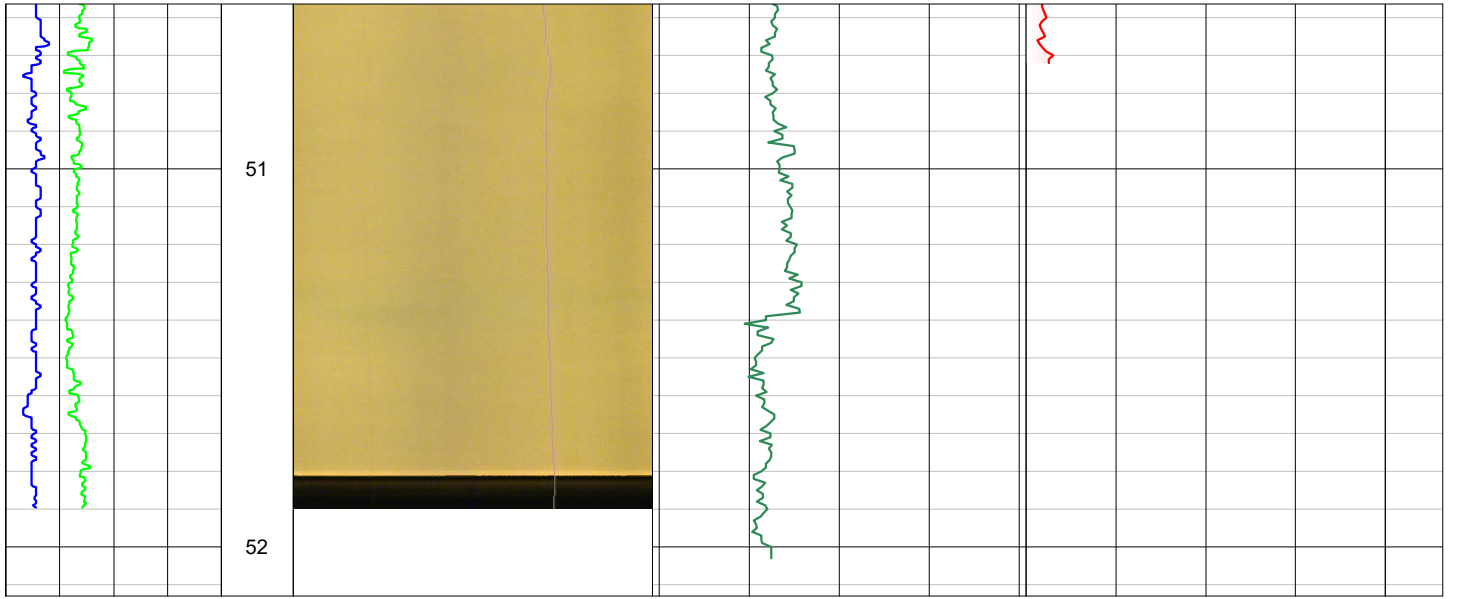














EUROPEAN GEOPHYSICAL SERVICES LTD

Client: **RPS Group**

Log Type:

Borehole: **R71915**

FIELD LOG

FIELD LOG (SUBJECT TO FINAL QA CHANGES)

Location: **Stonehenge**

Area:

Grid Ref:

Elevation:

Drilled Depth: (m)

Date:

23rd September 2020

Logged Depth: (m)

35.6

Recorded By:

C. Clinton

Logging Datum:

Ground level

Remarks:

Logged Interval: (m)

1 - 35.6

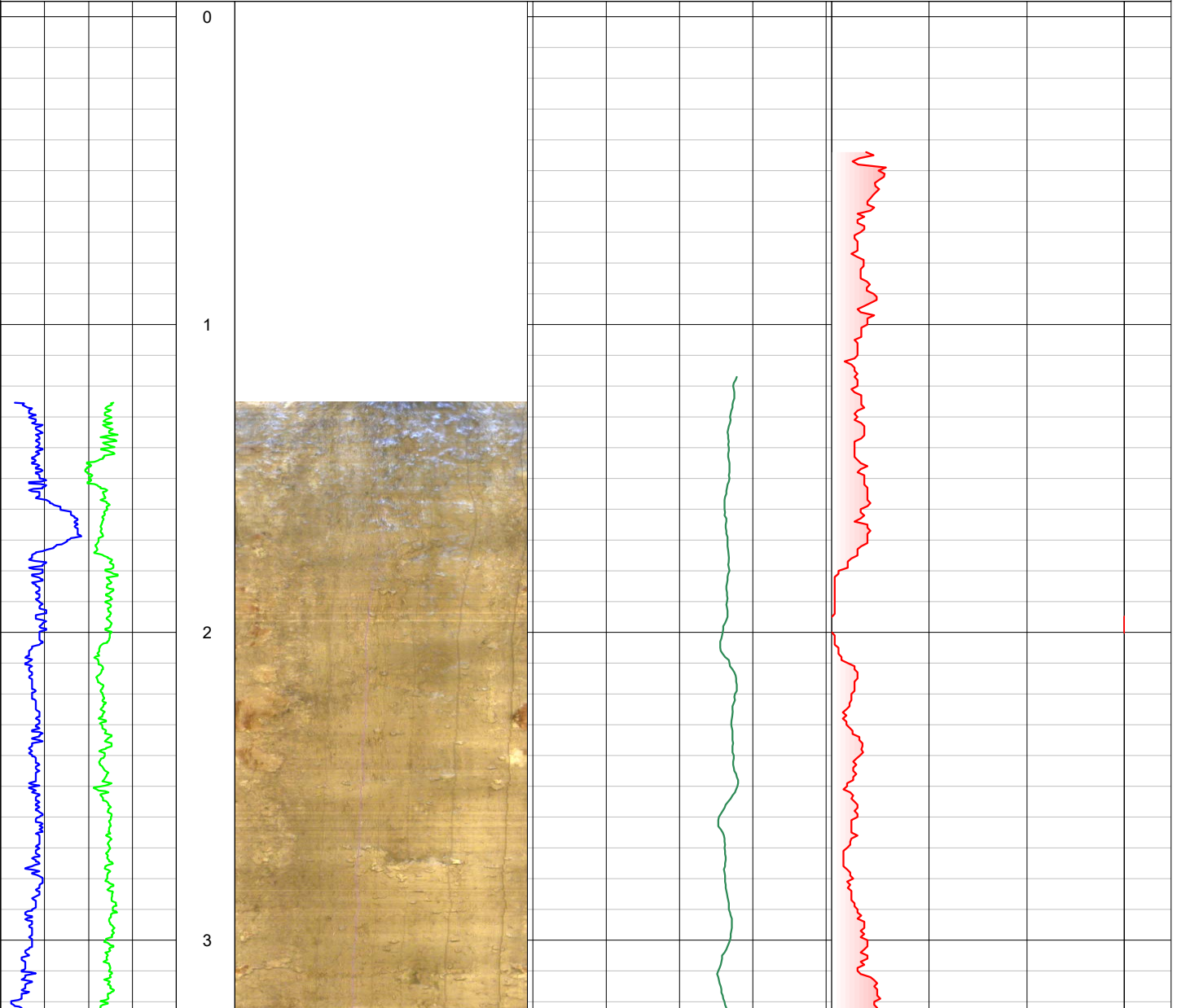
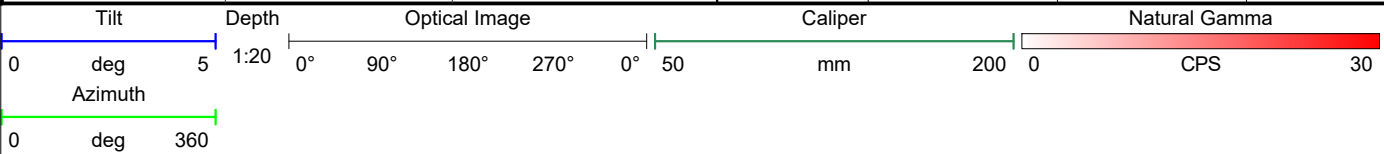
Fluid Level: (m)

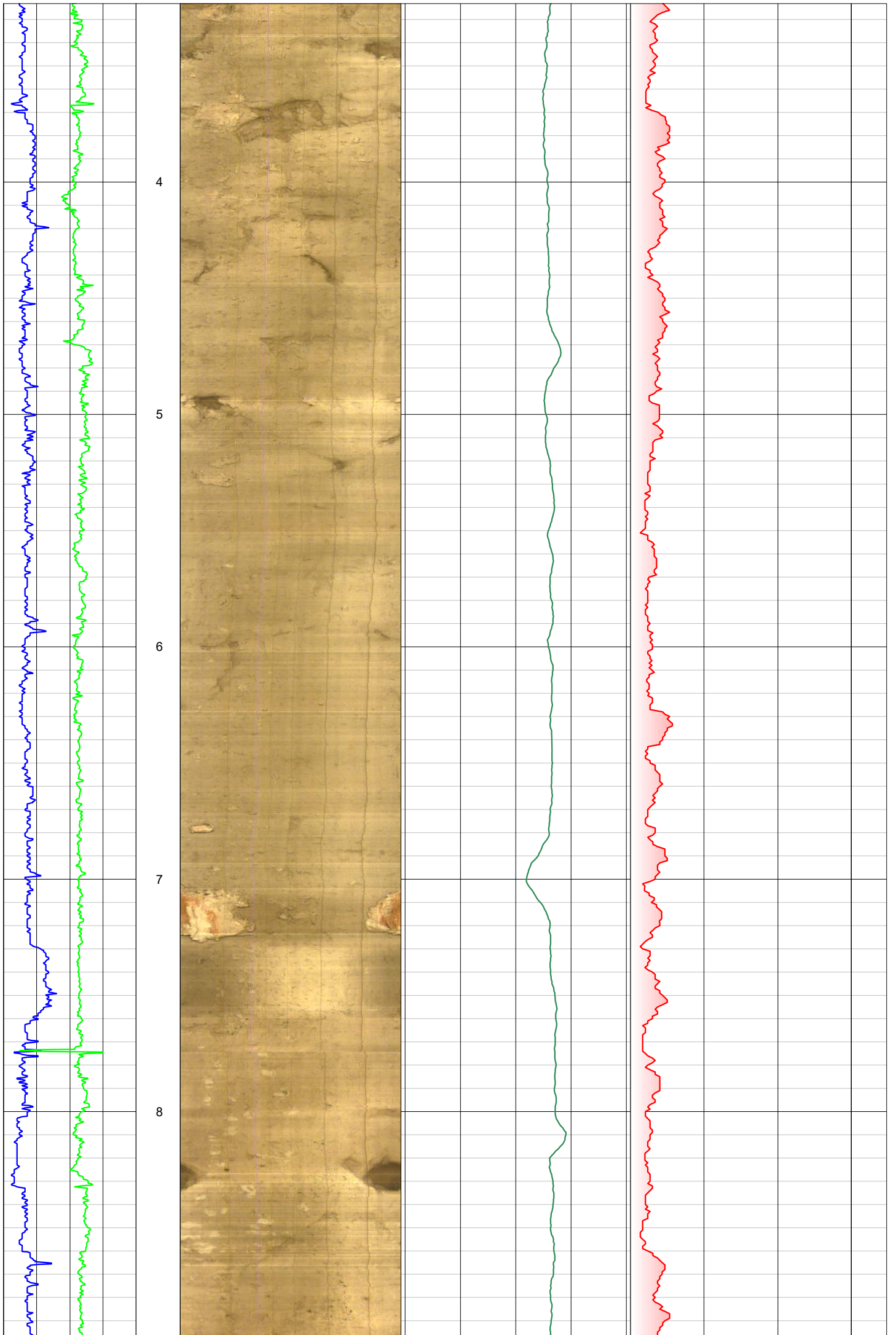
27.2

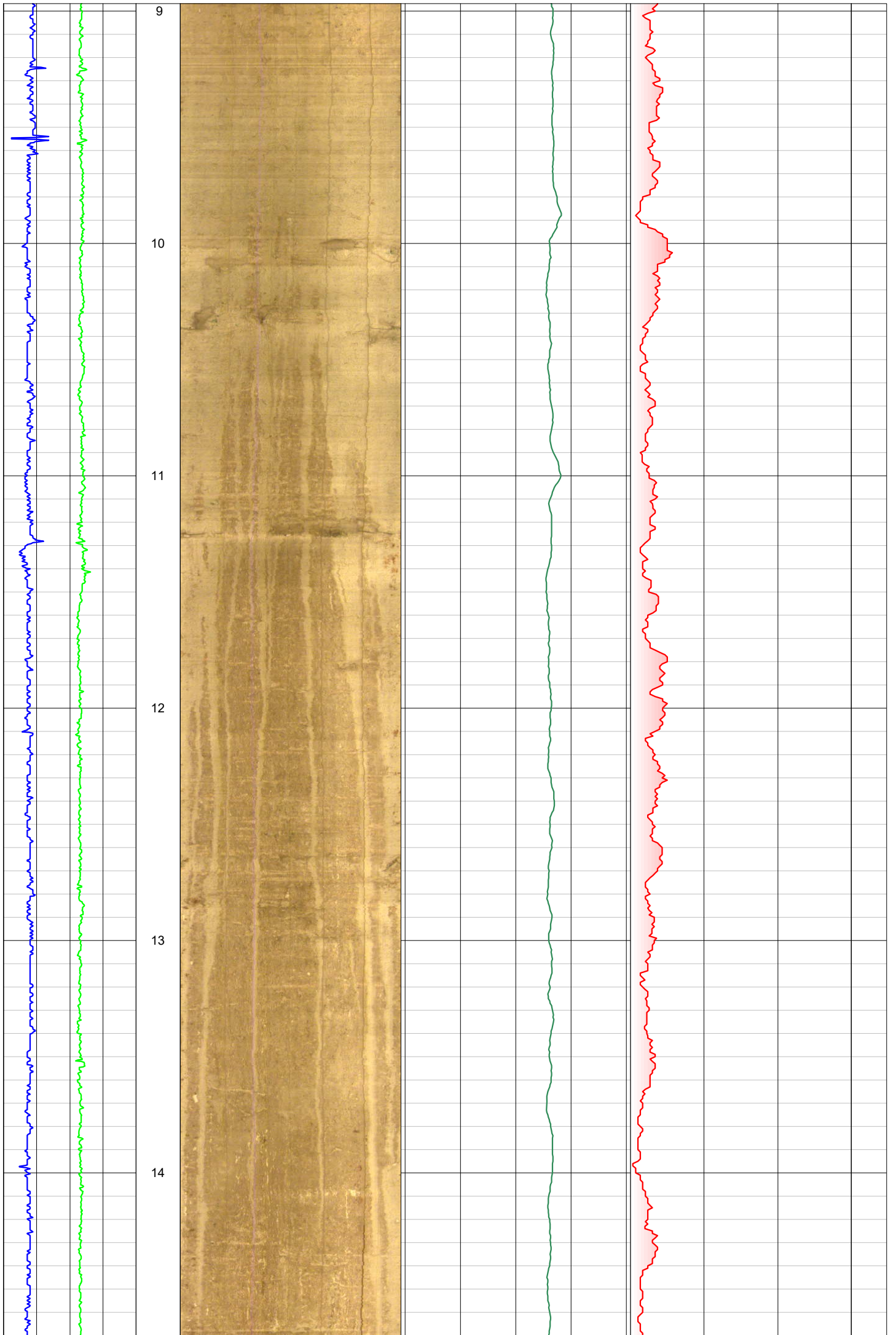
BOREHOLE RECORD

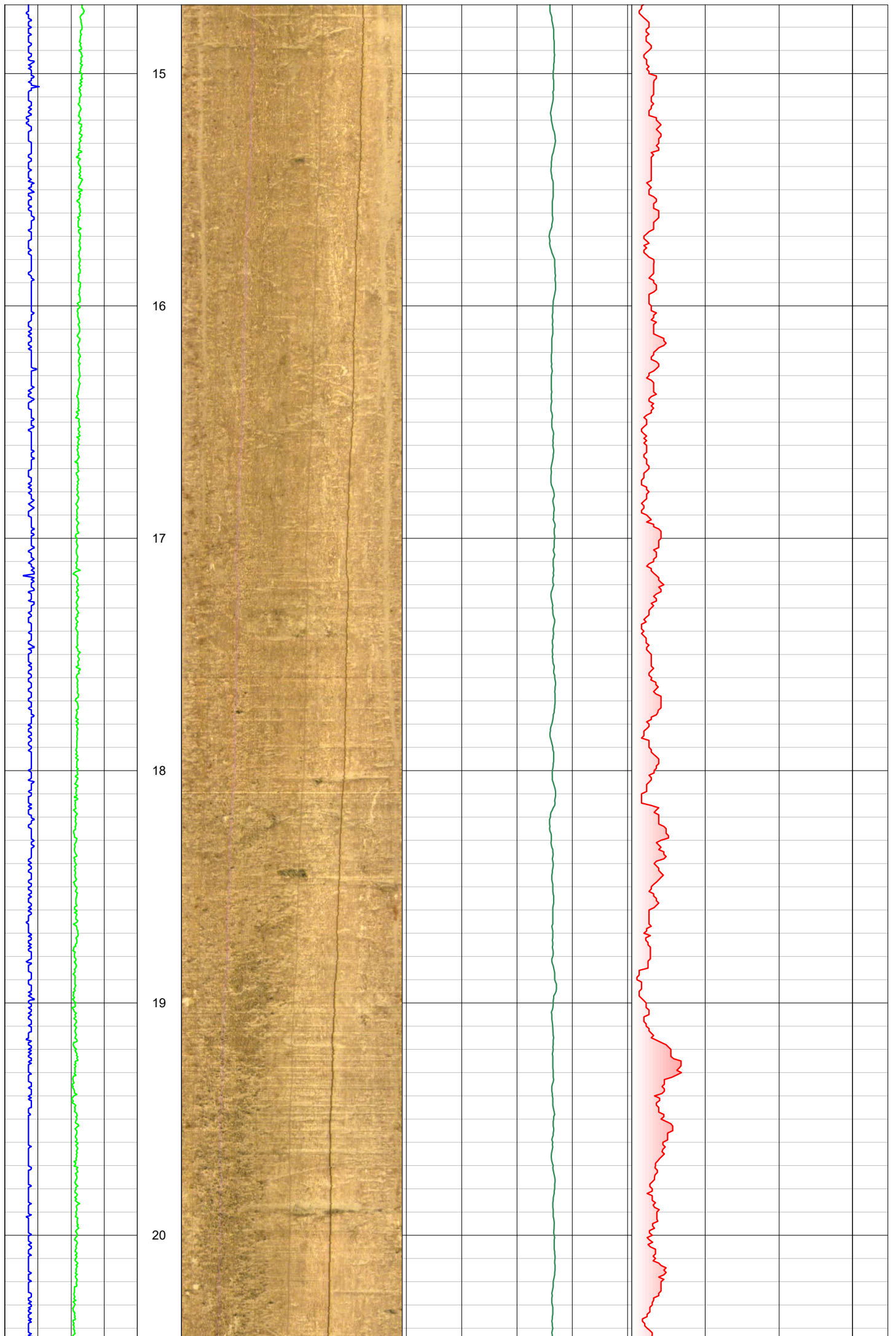
CASING RECORD

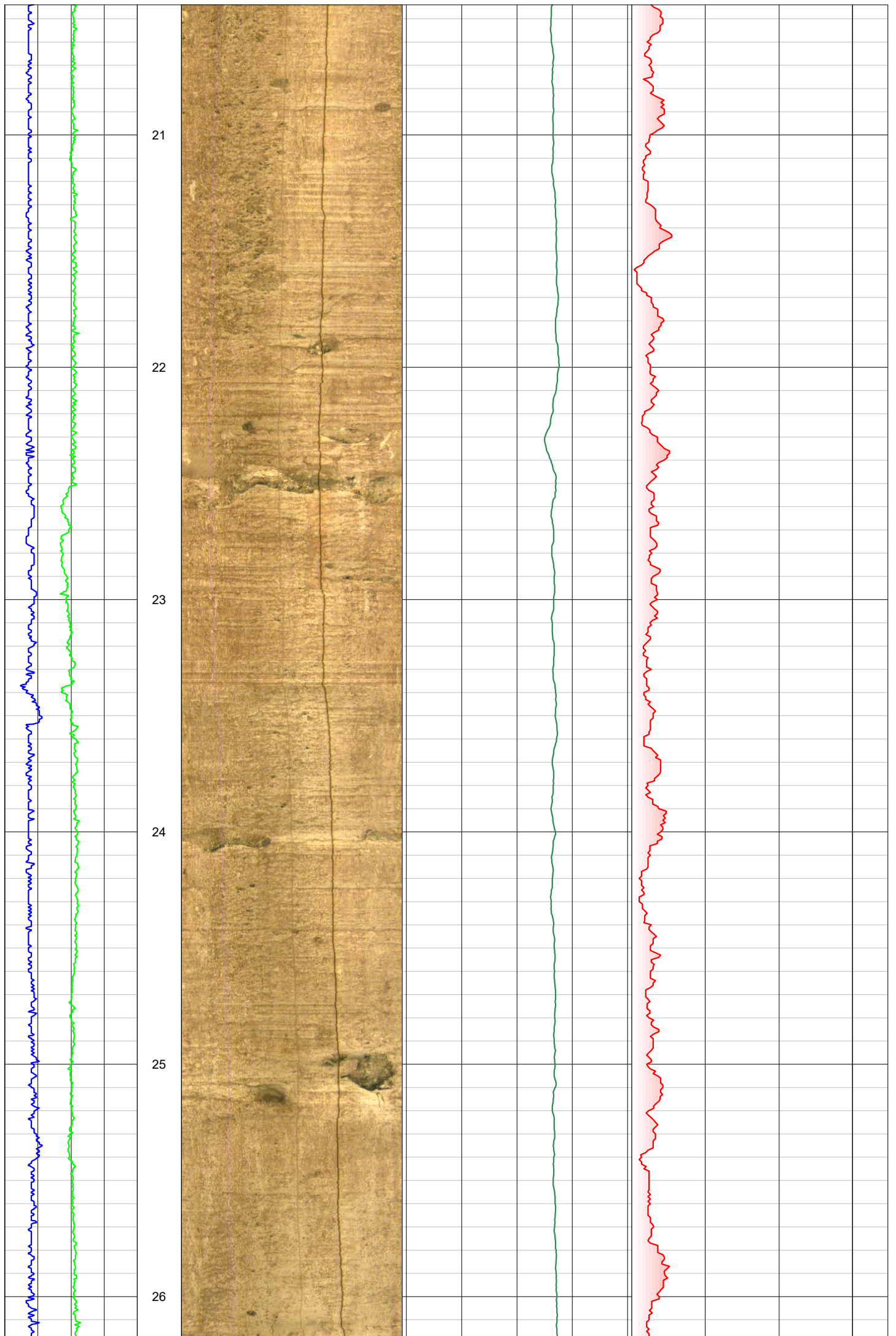
Bit: (mm)	From: (m)	To: (m)	Type	Size: (mm)	From: (m)	To: (m)
156	0.0		Non	-	-	-

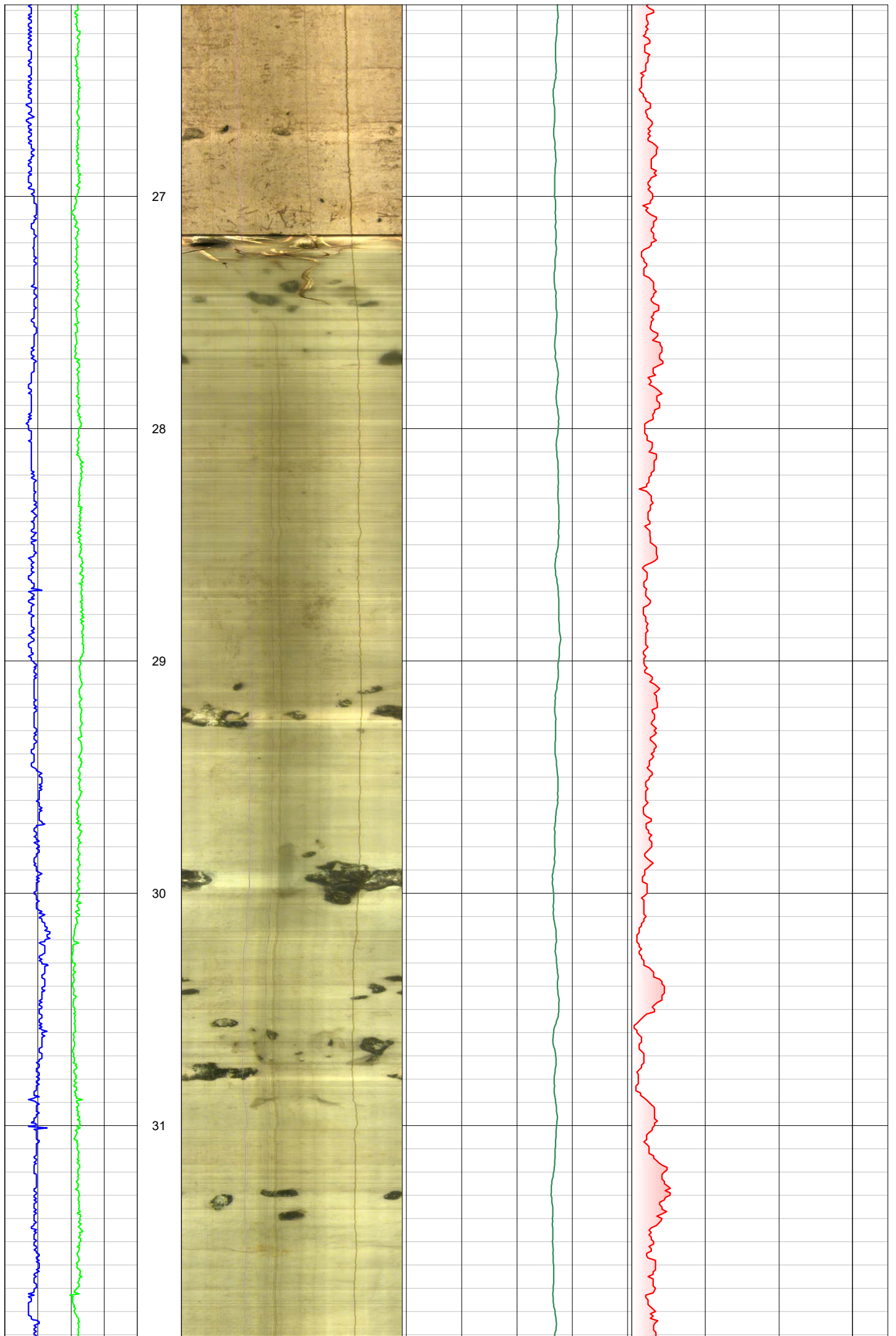


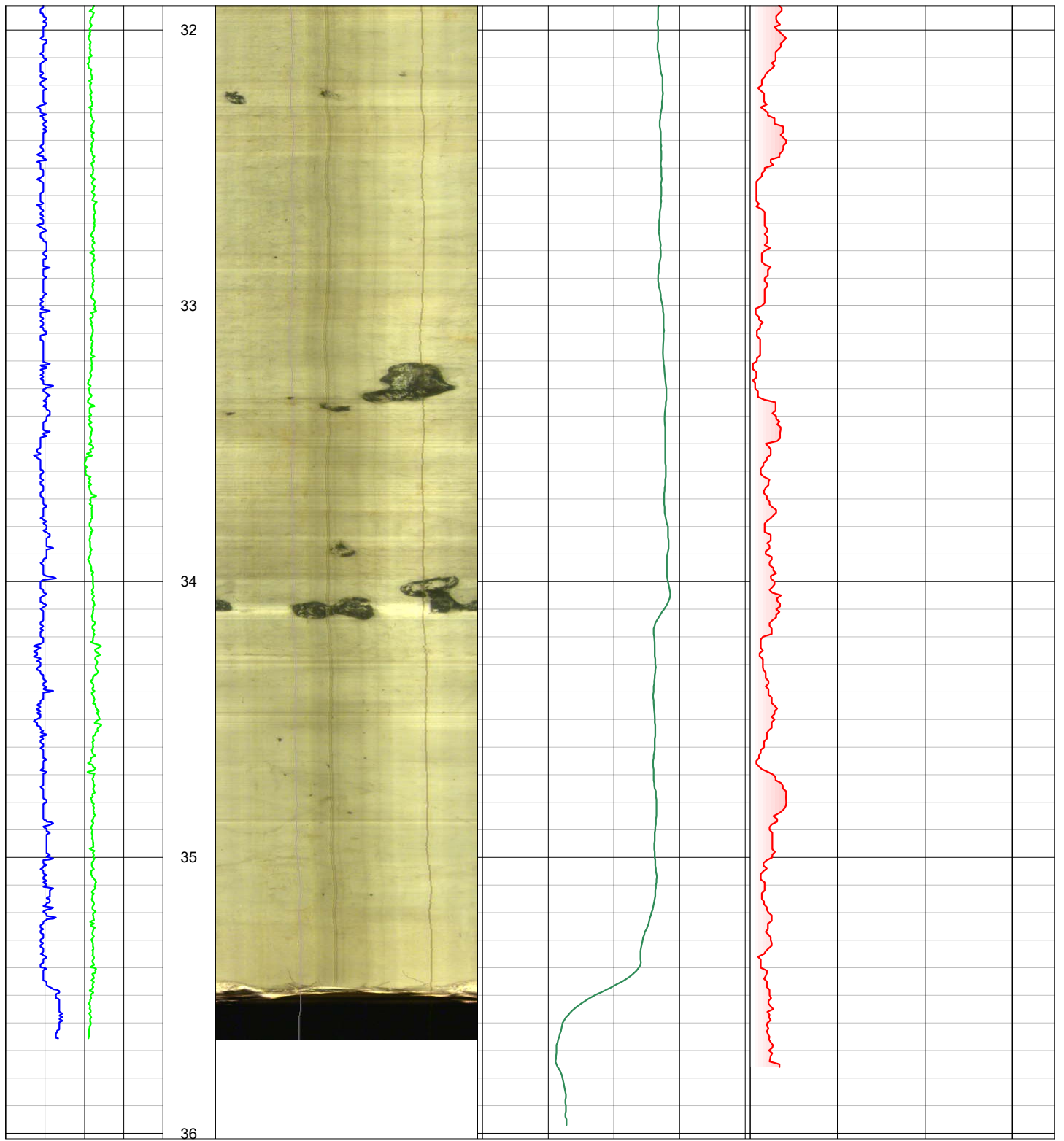














EUROPEAN GEOPHYSICAL SERVICES LTD

Client: **RPS Group**

Log Type:

Borehole: **R71916**

Field Log

FIELD LOG (SUBJECT TO FINAL QA CHANGES)

Location: **A303**

Area: **Stonehenge**

Grid Ref:

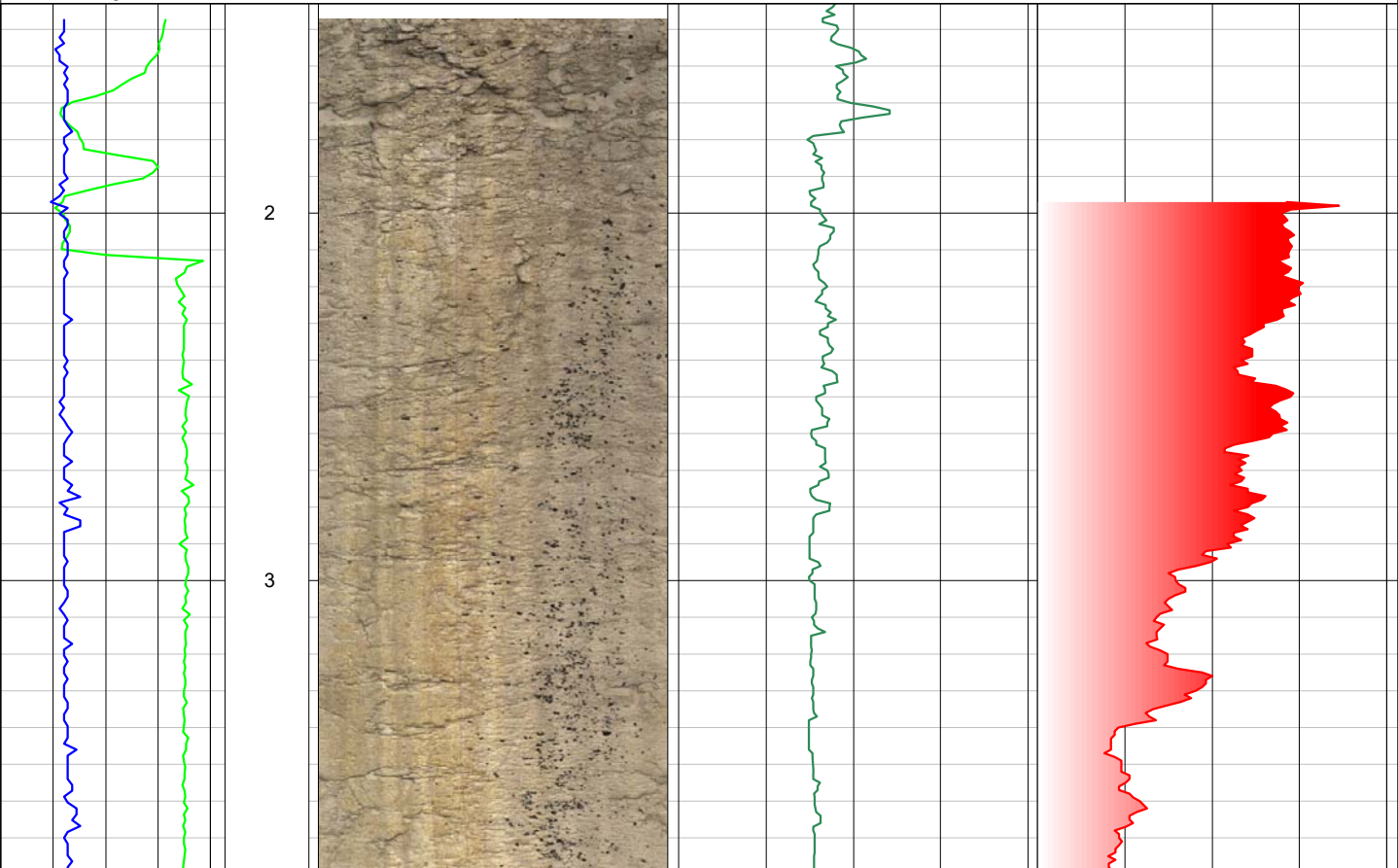
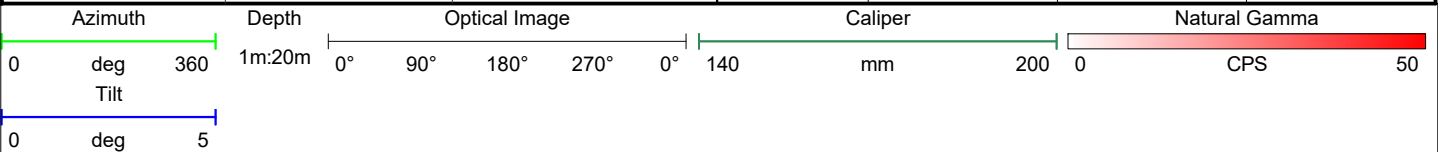
Elevation:

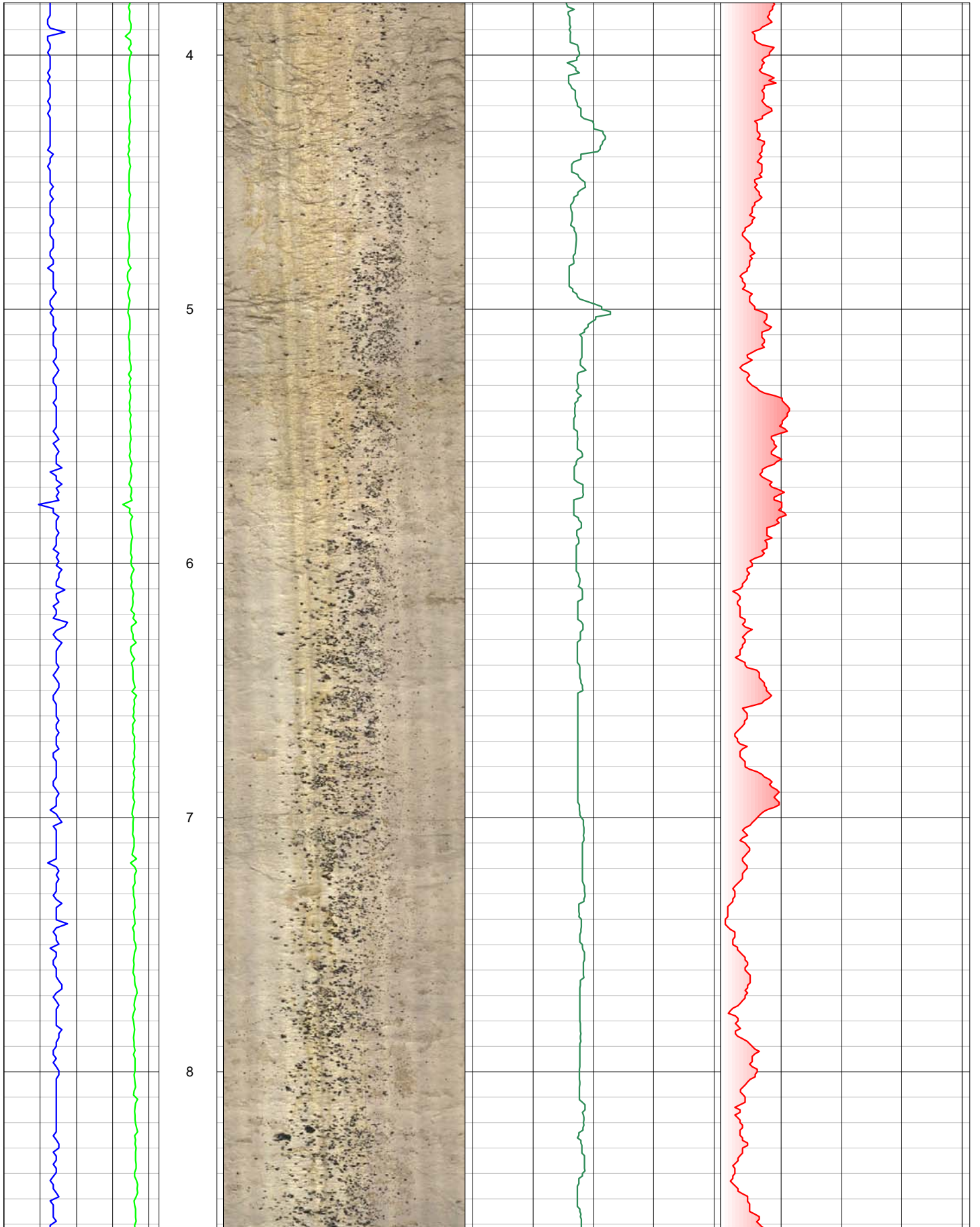
Drilled Depth: (m)	60.0	Date:	09.11.2020
Logged Depth: (m)	60.0	Recorded By:	C. Clinton
Logging Datum:	Ground Level	Remarks:	
Logged Interval: (m)	1.1 - 60.0		
Fluid Level: (m)	32.0		

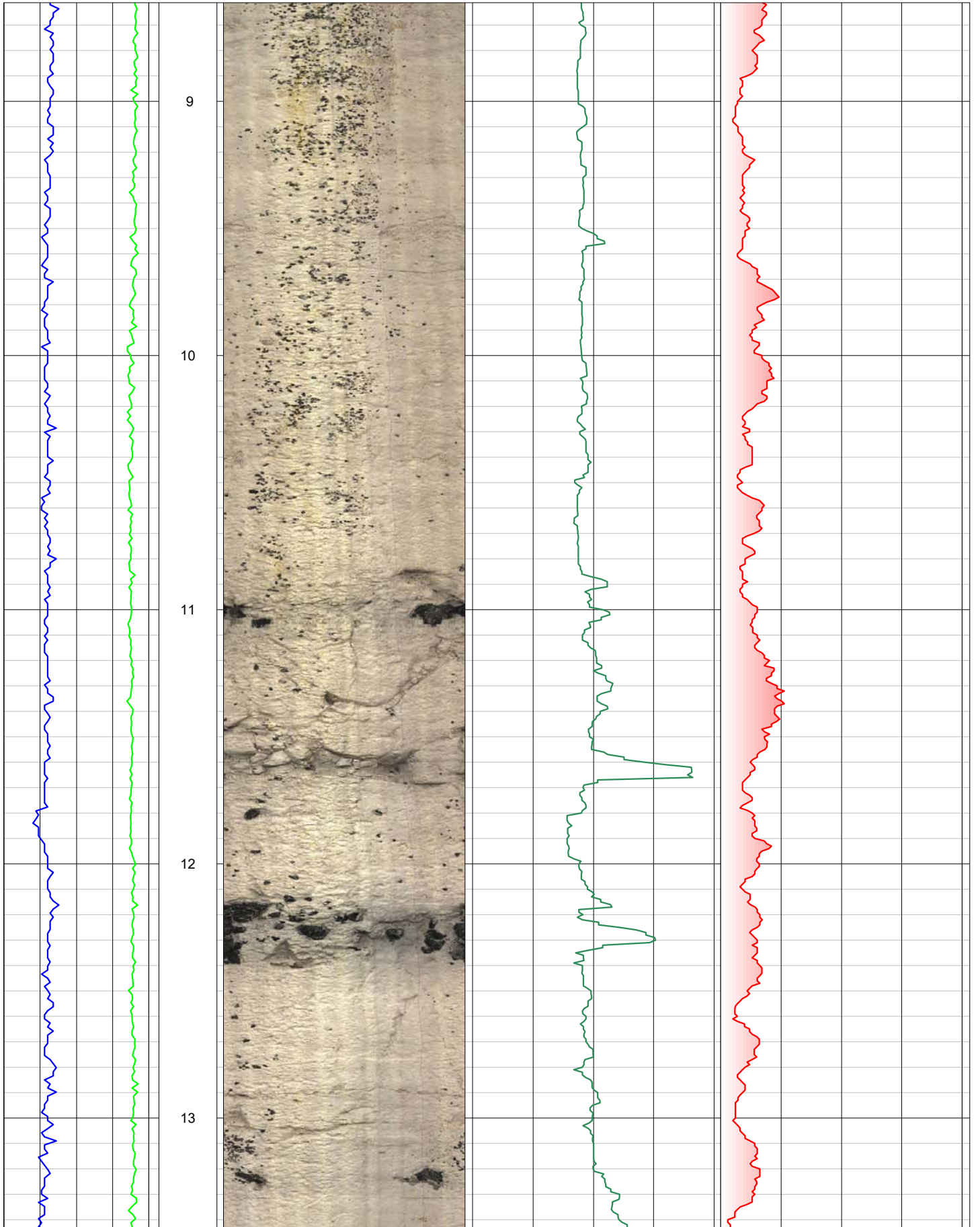
BOREHOLE RECORD

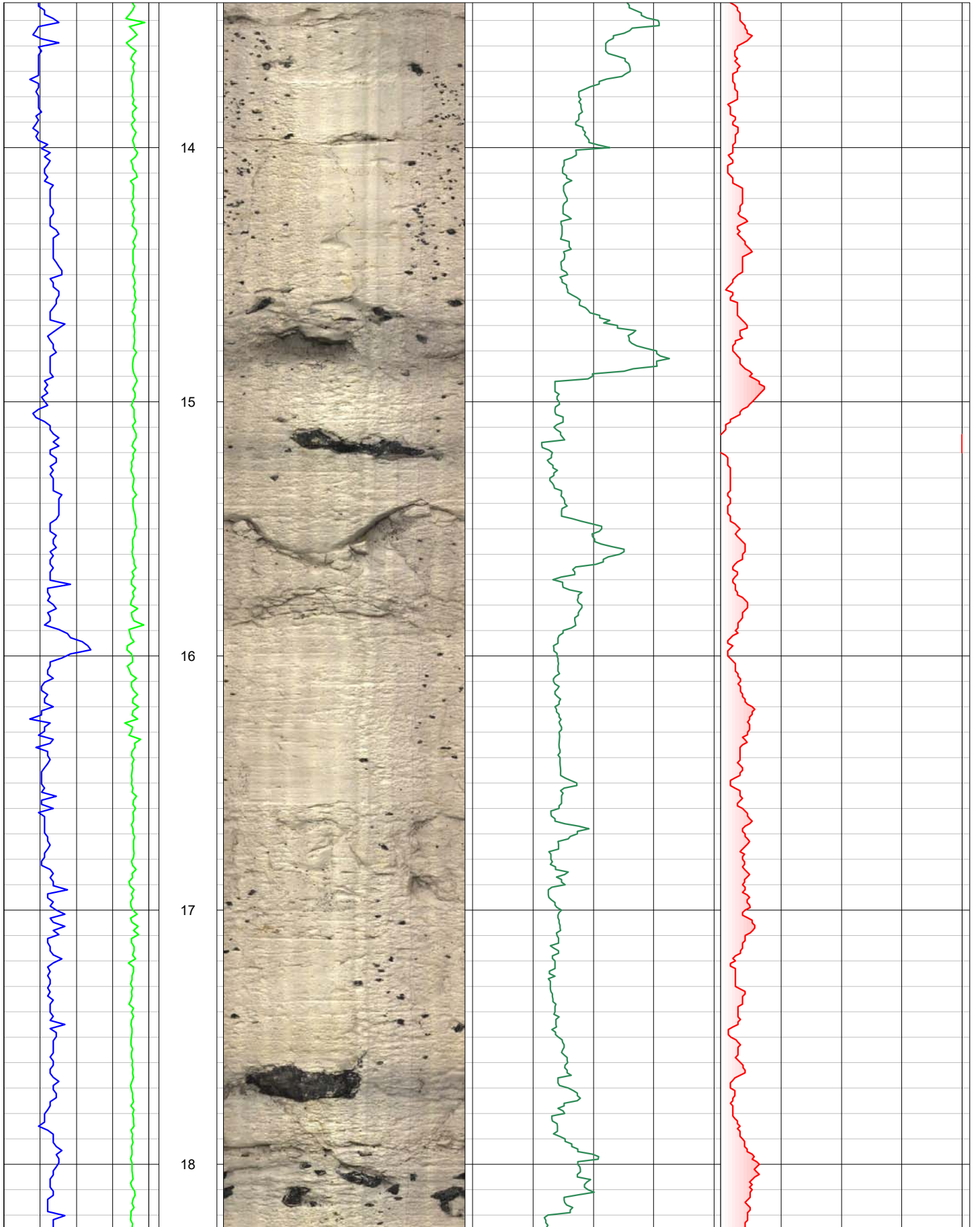
CASING RECORD

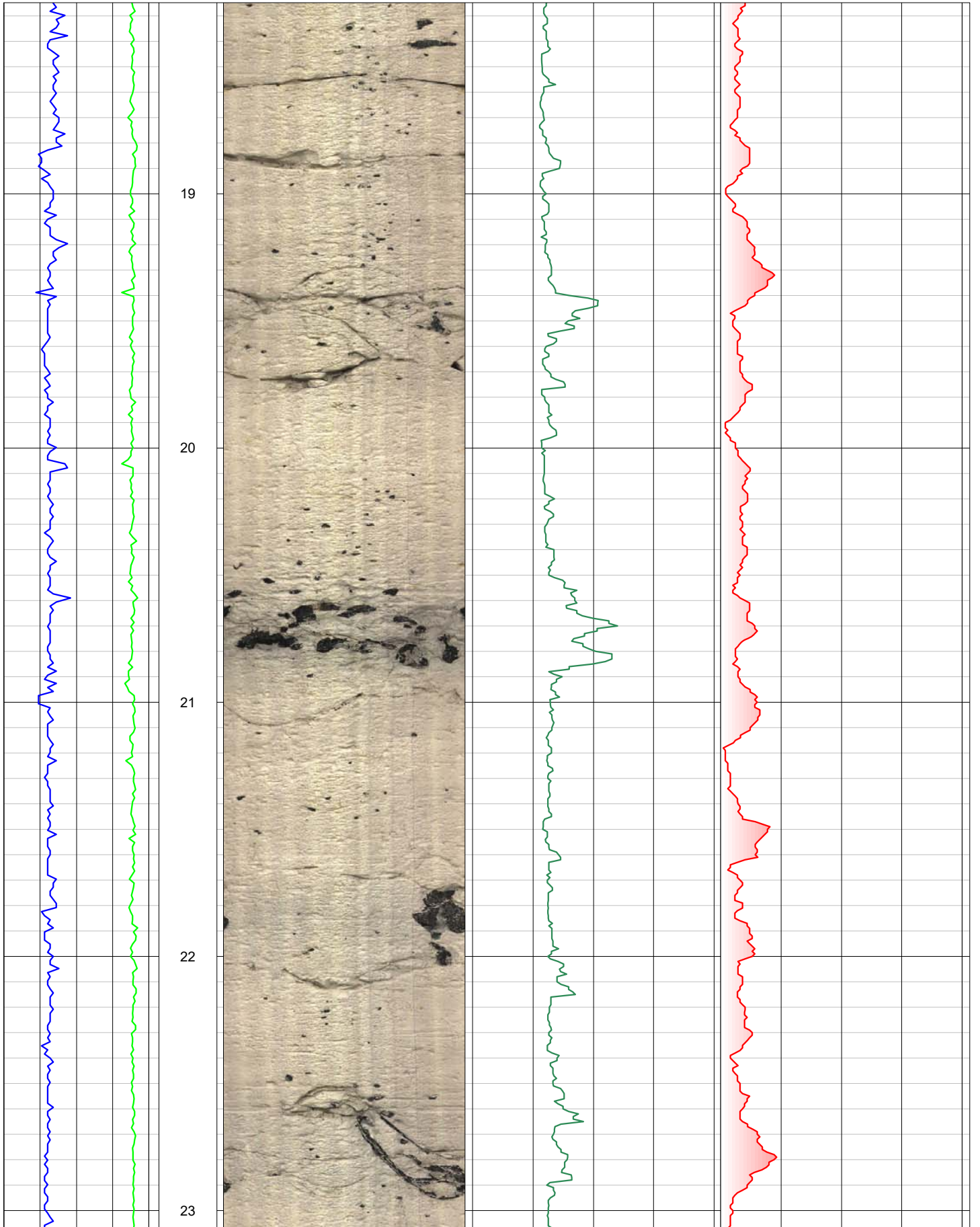
Bit: (mm)	From: (m)	To: (m)	Type	Size: (mm)	From: (m)	To: (m)
150	0.0	60.0	Steel	180	0.0	~1.0

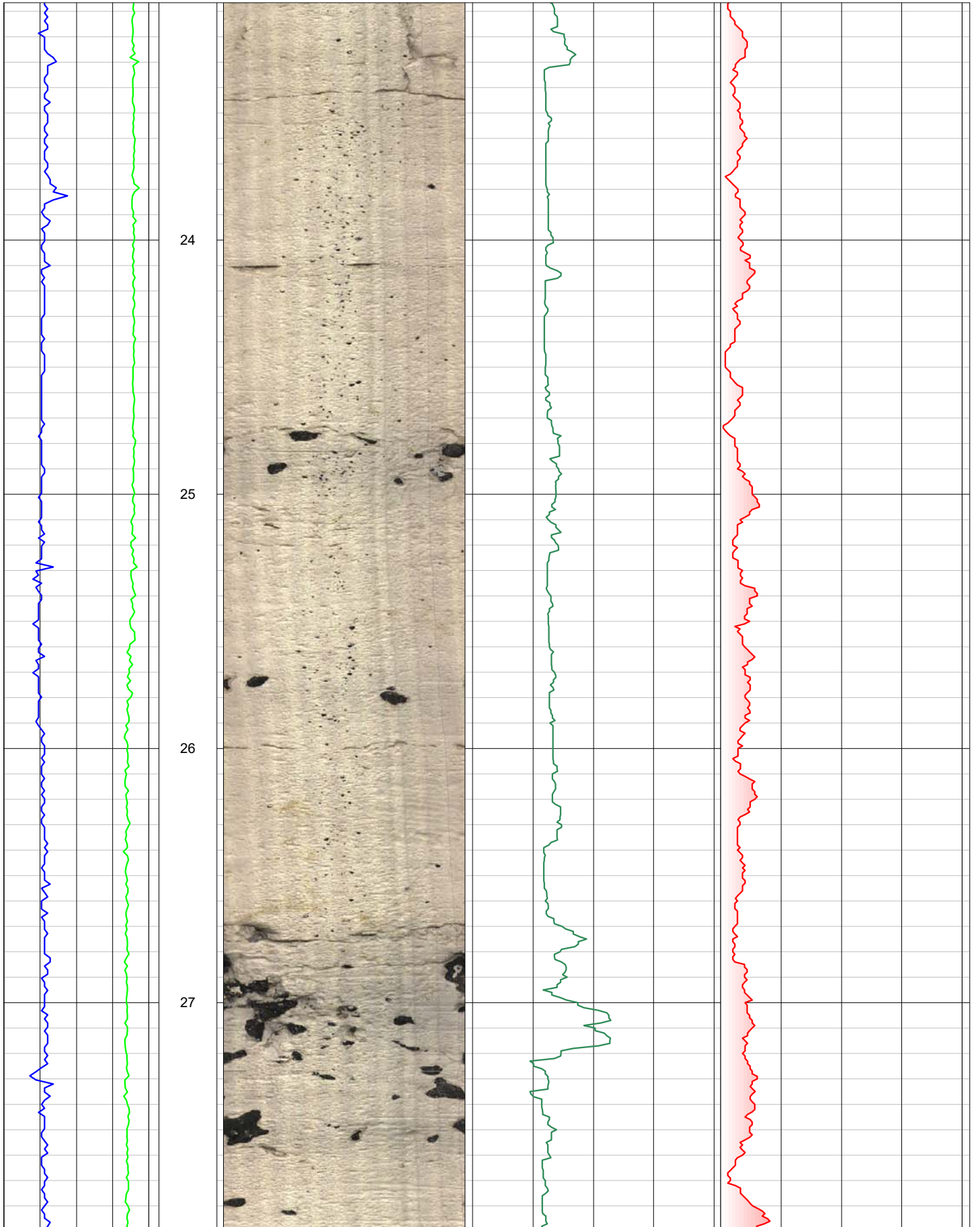


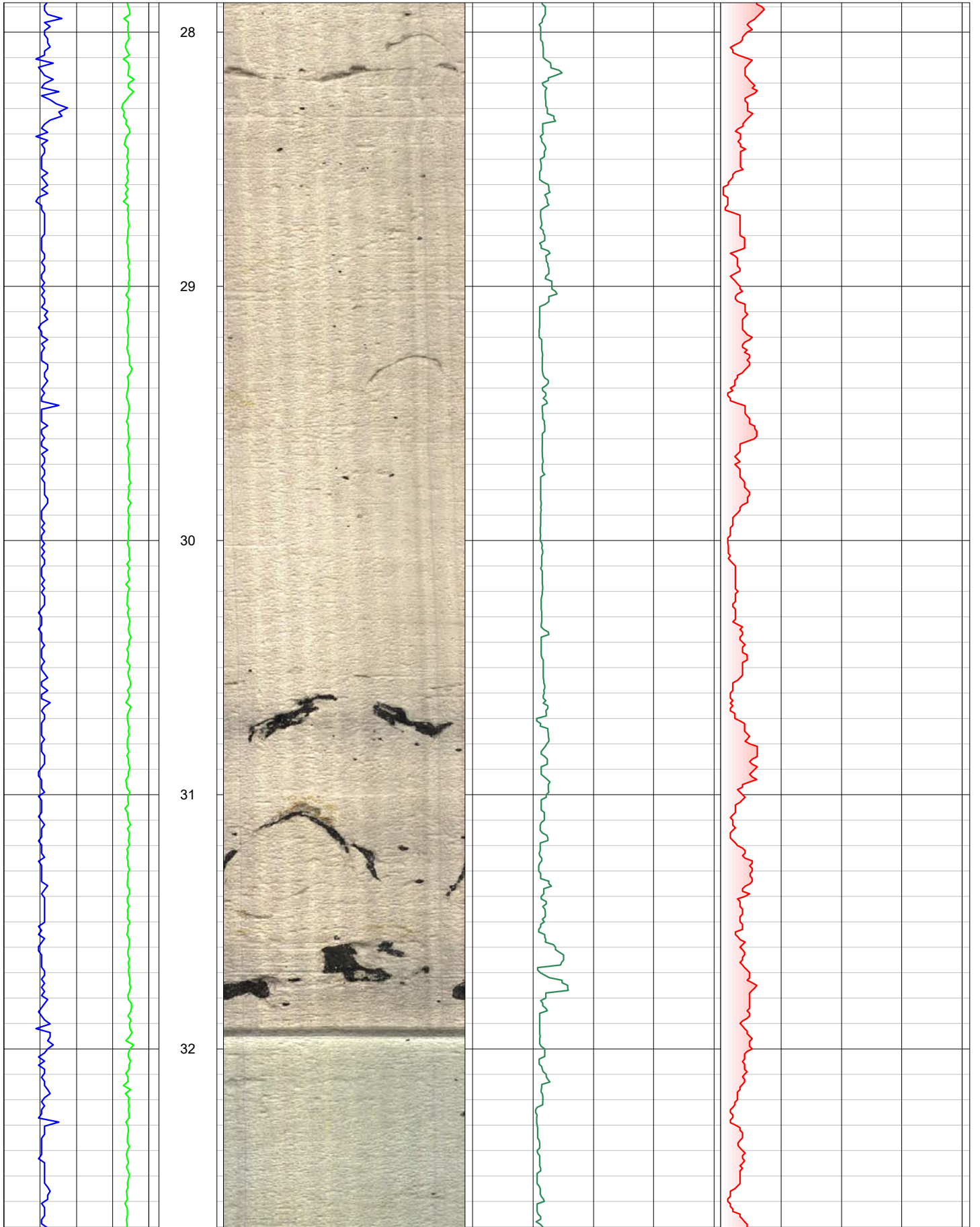


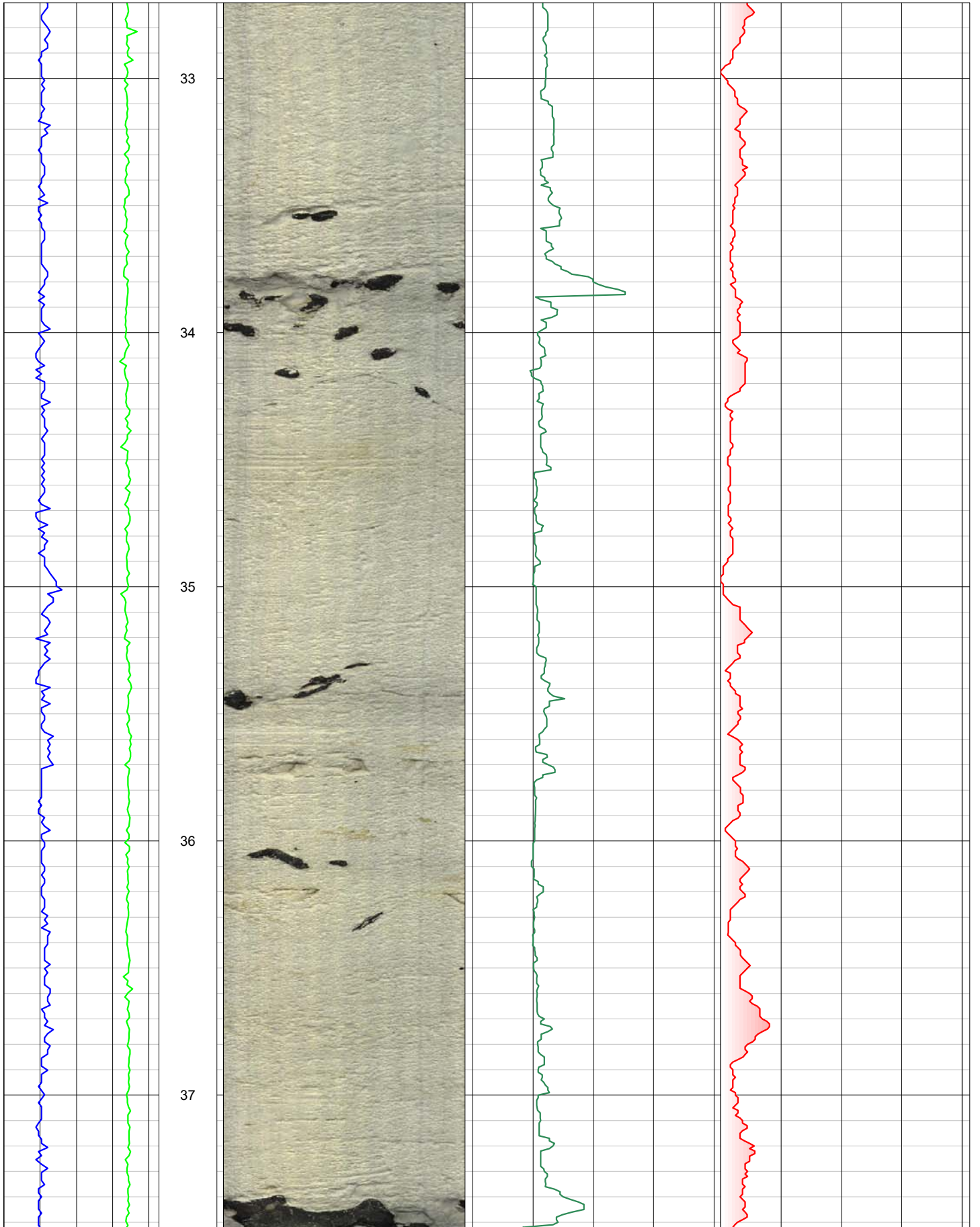


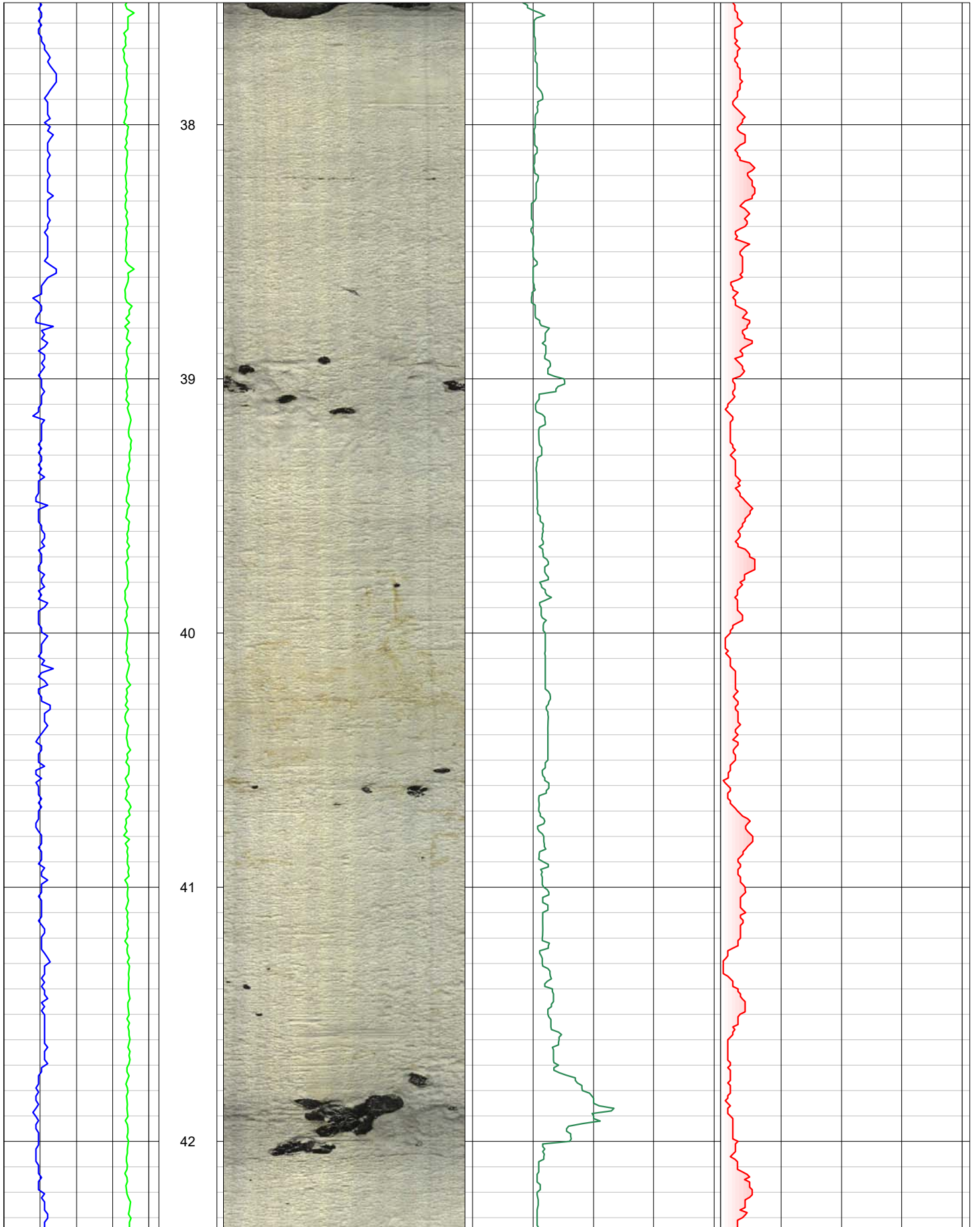


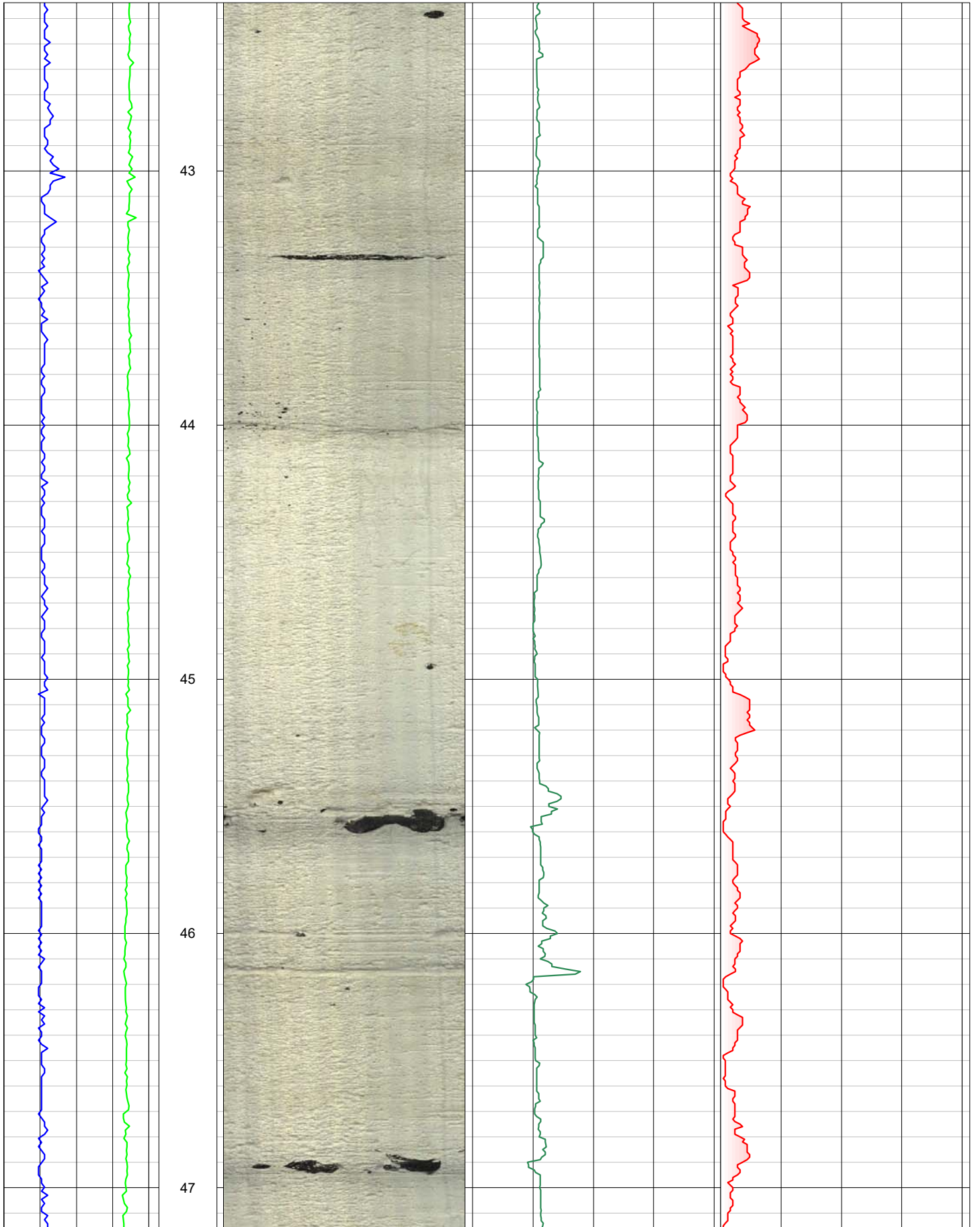


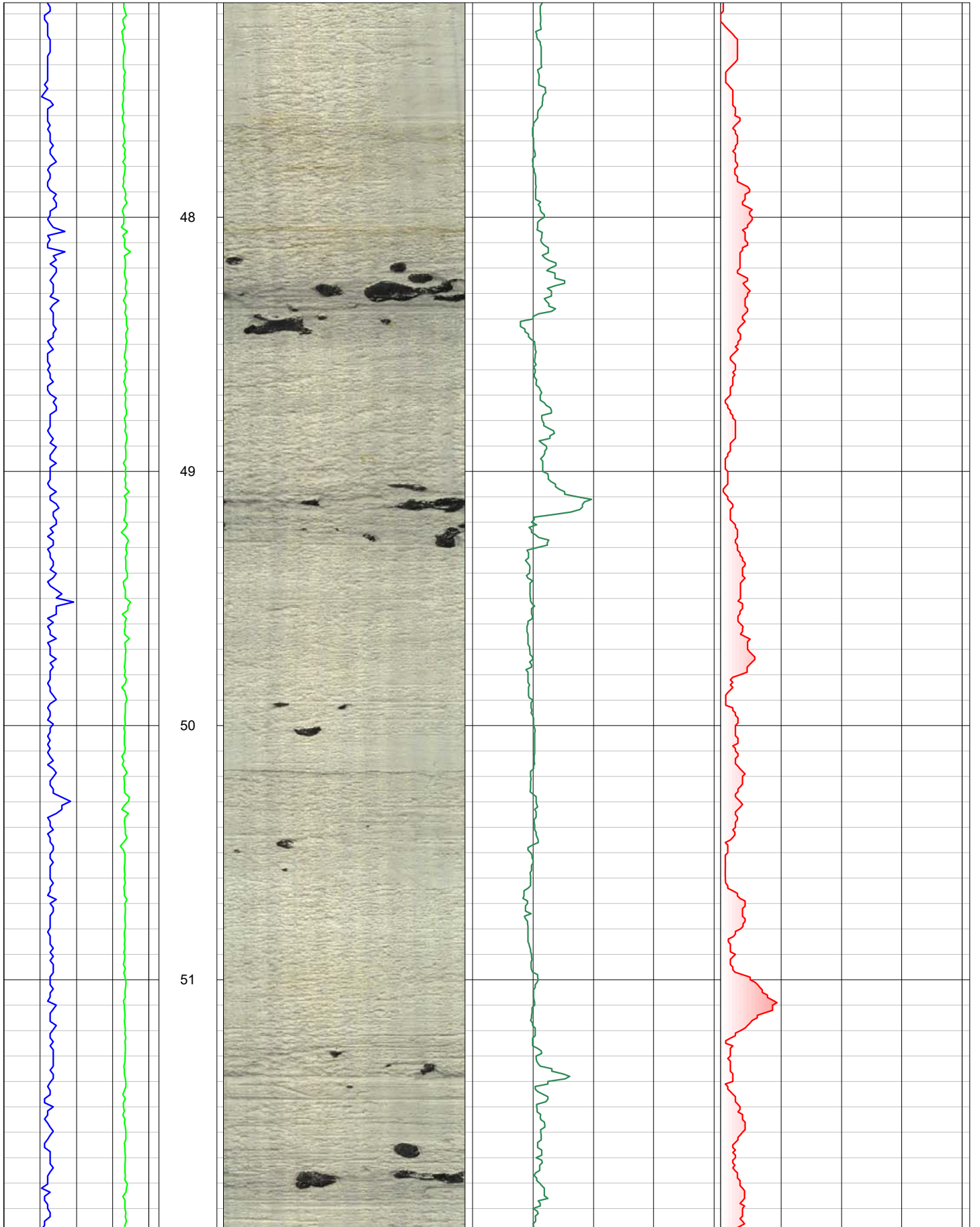


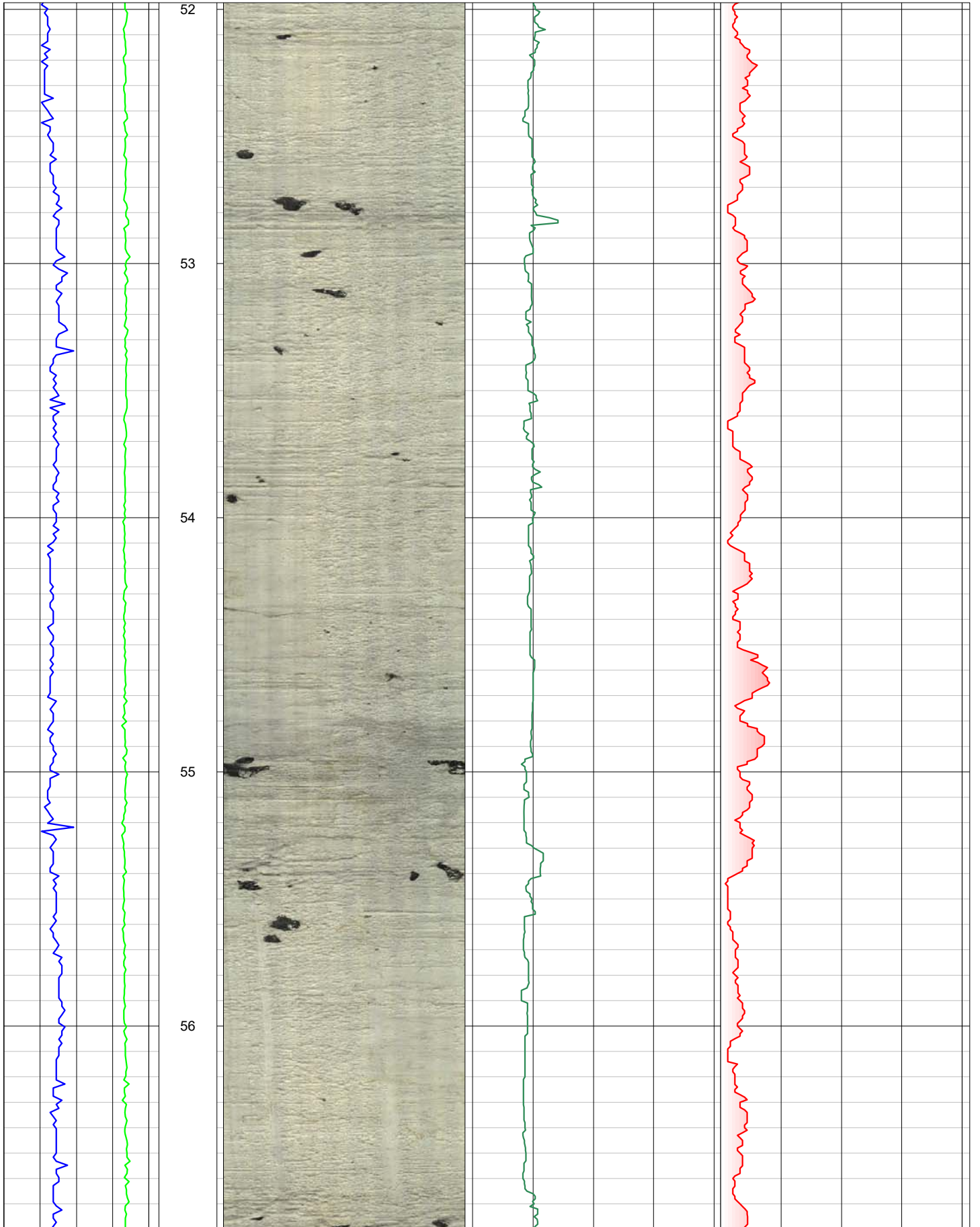


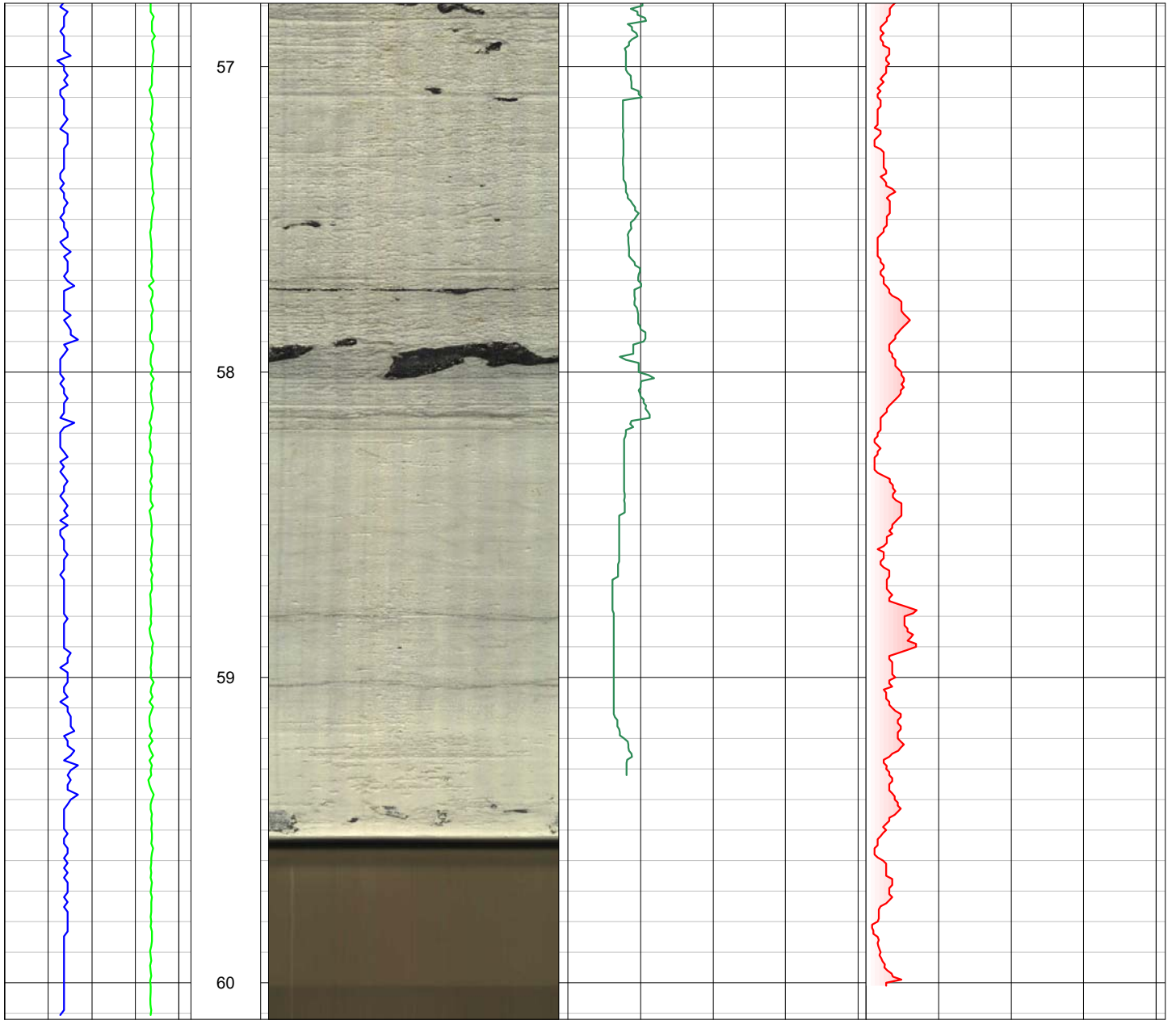














EUROPEAN GEOPHYSICAL SERVICES LTD

Client: **RPS Group**

Log Type:

Borehole: **R71917**

Field Log

FIELD LOG (SUBJECT TO FINAL QA CHANGES)

Location: **A303**

Area: **Stonehenge**

Grid Ref:

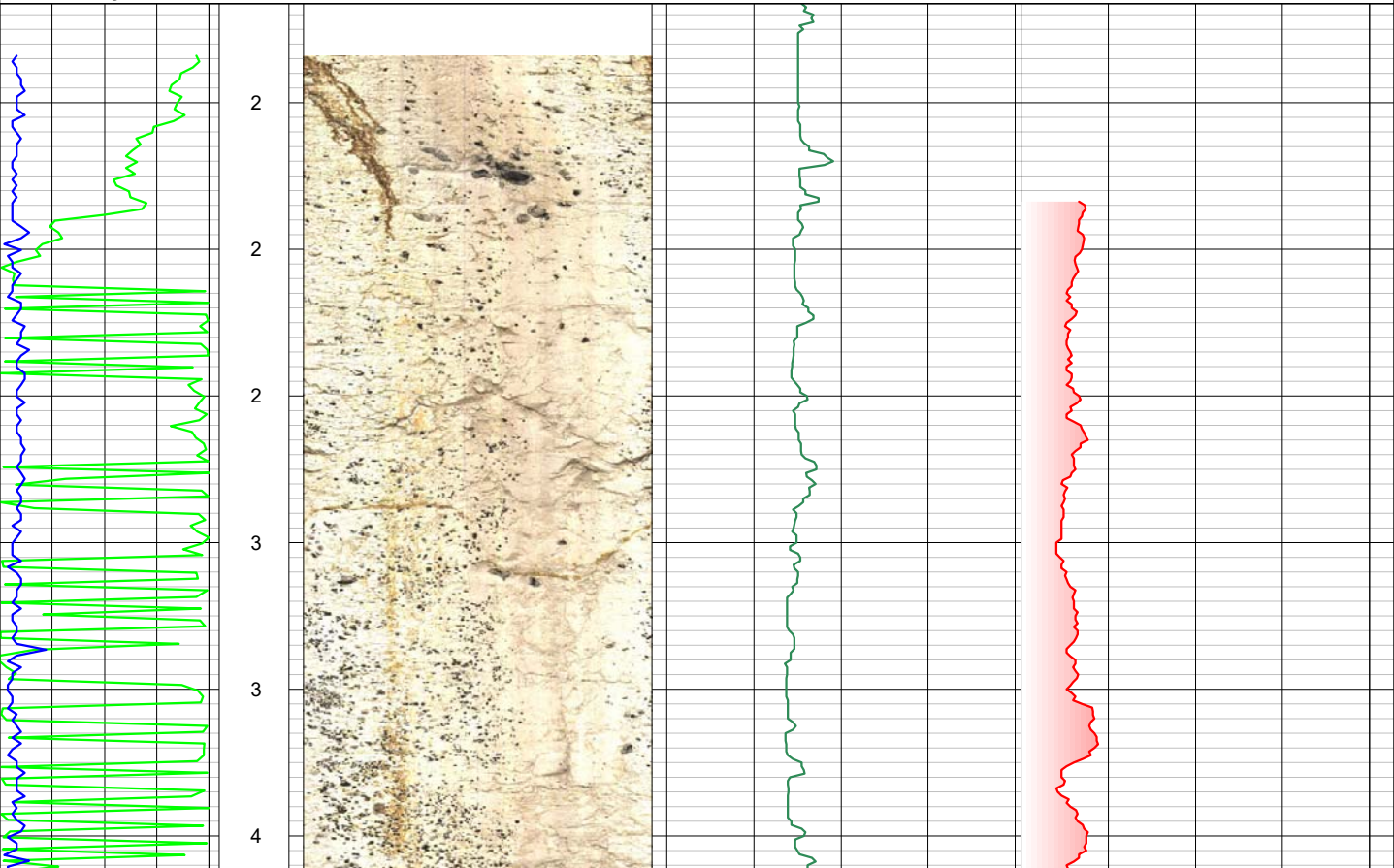
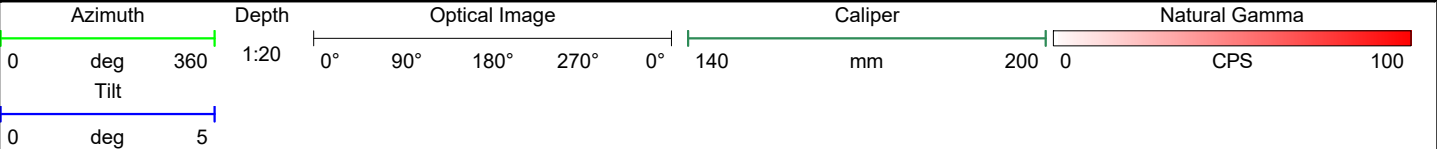
Elevation:

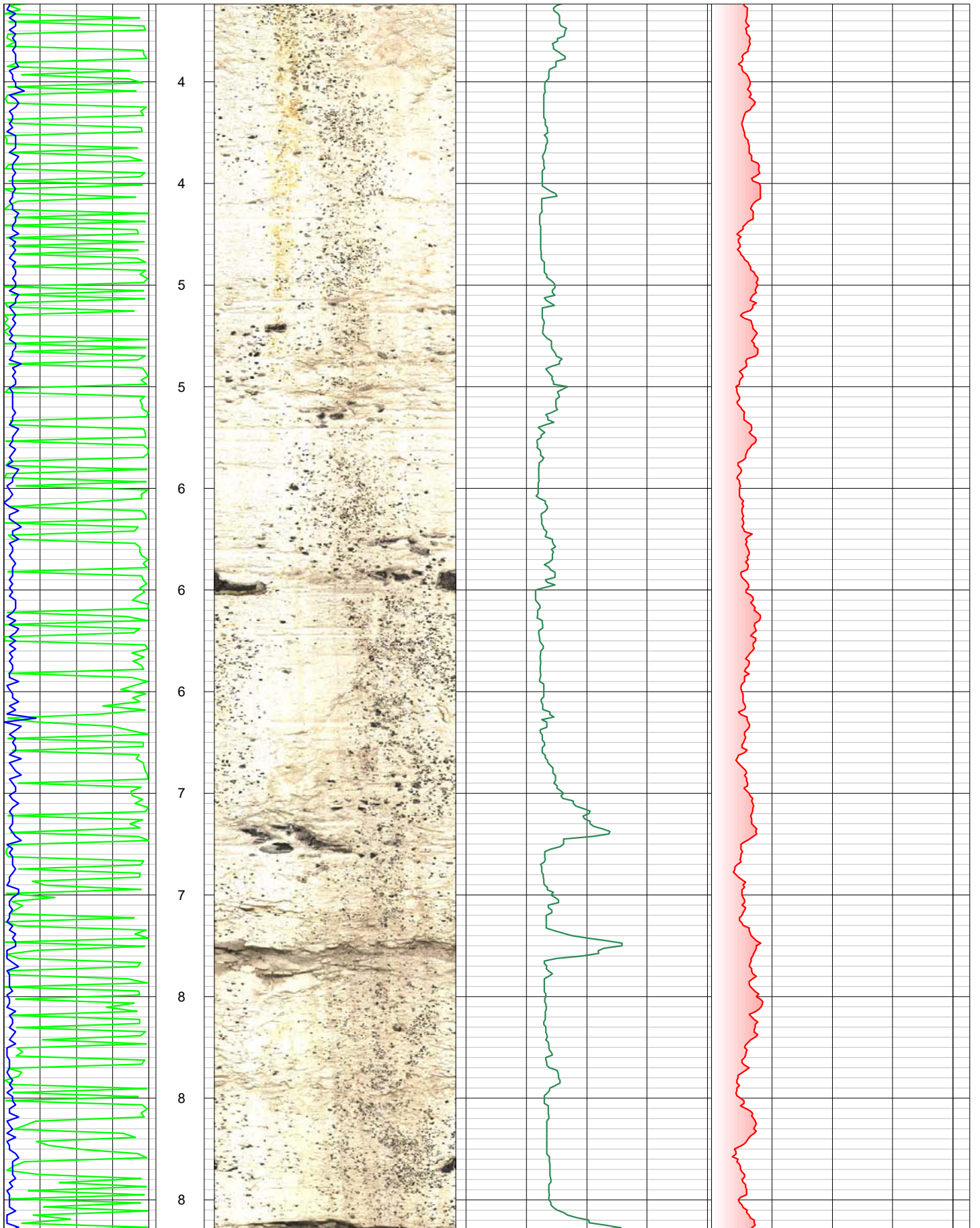
Drilled Depth: (m)	60.0	Date:	09.11.2020
Logged Depth: (m)	61.0	Recorded By:	C. Clinton
Logging Datum:	Ground Level	Remarks:	
Logged Interval: (m)	1.1 - 61.0		
Fluid Level: (m)	27.0		

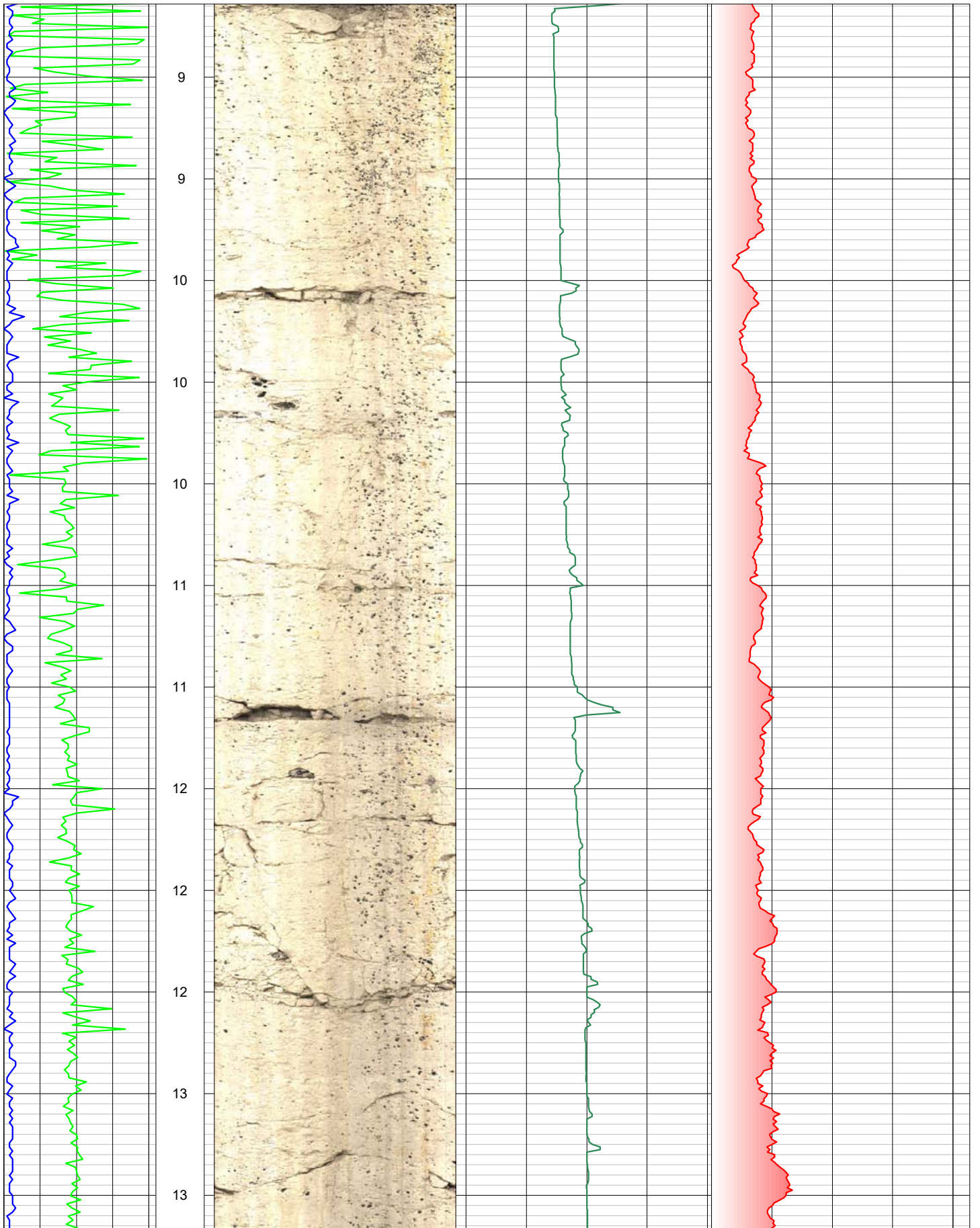
BOREHOLE RECORD

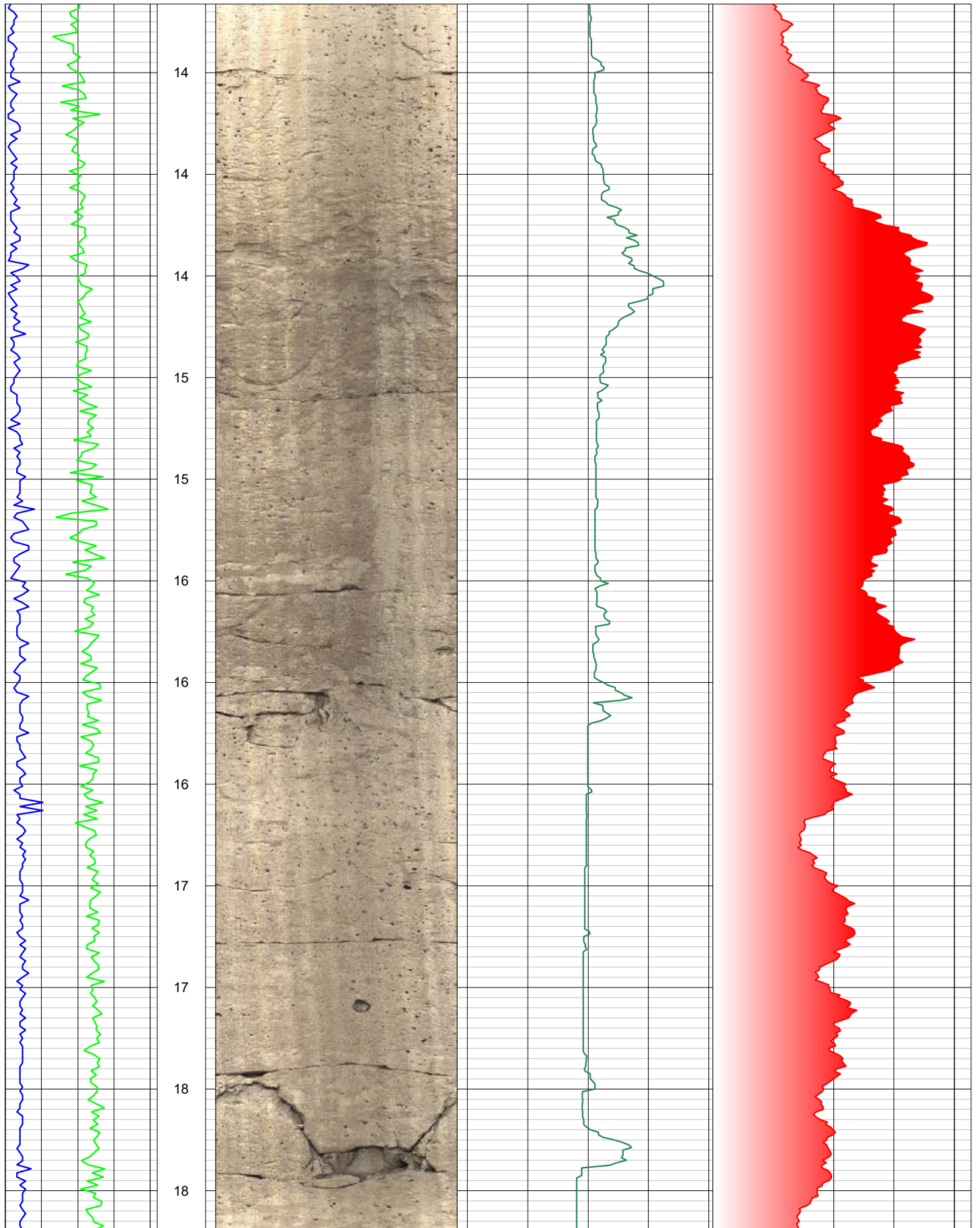
CASING RECORD

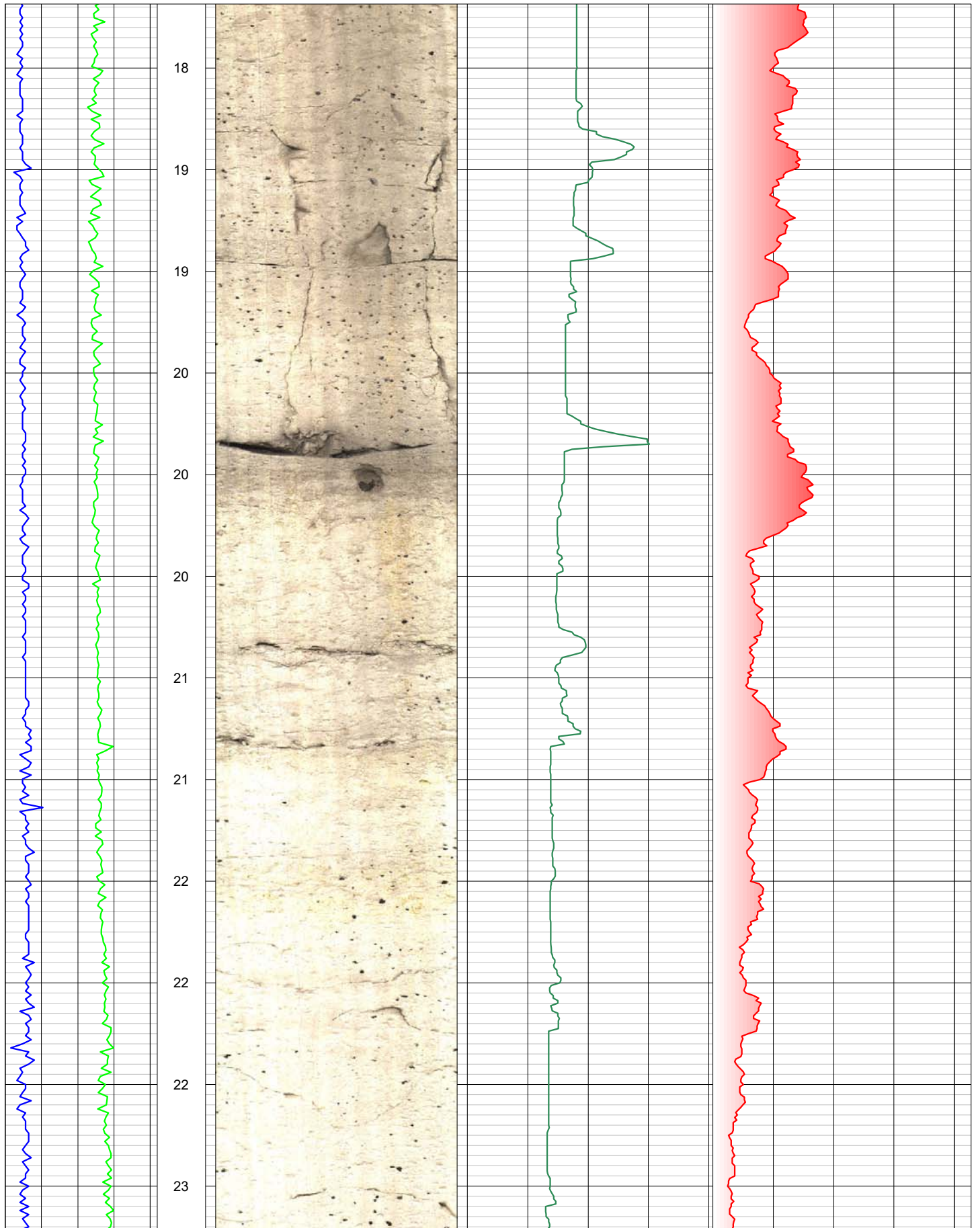
Bit: (mm)	From: (m)	To: (m)	Type	Size: (mm)	From: (m)	To: (m)
150	0.0	61.0	Steel	180	0.0	~1.0

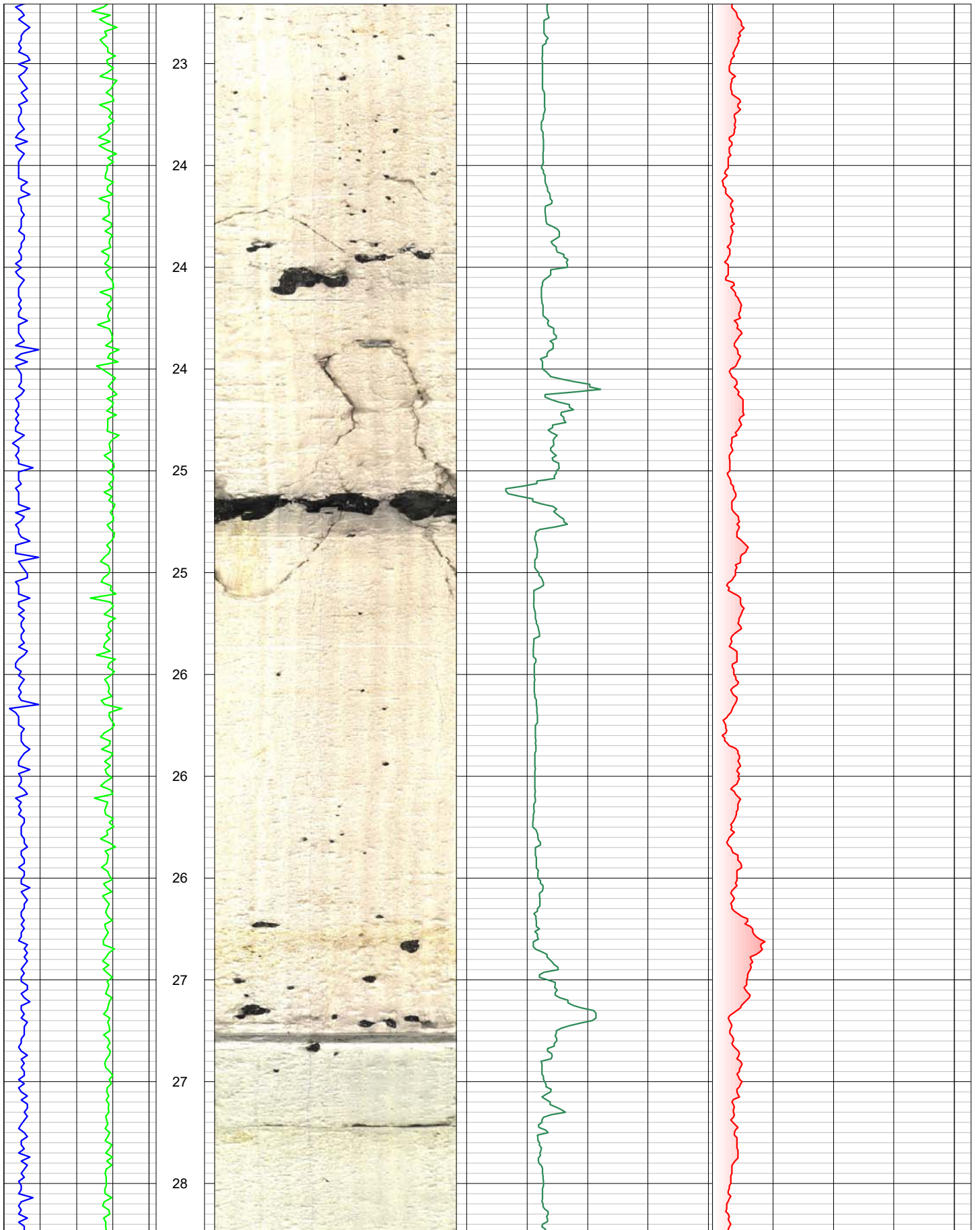


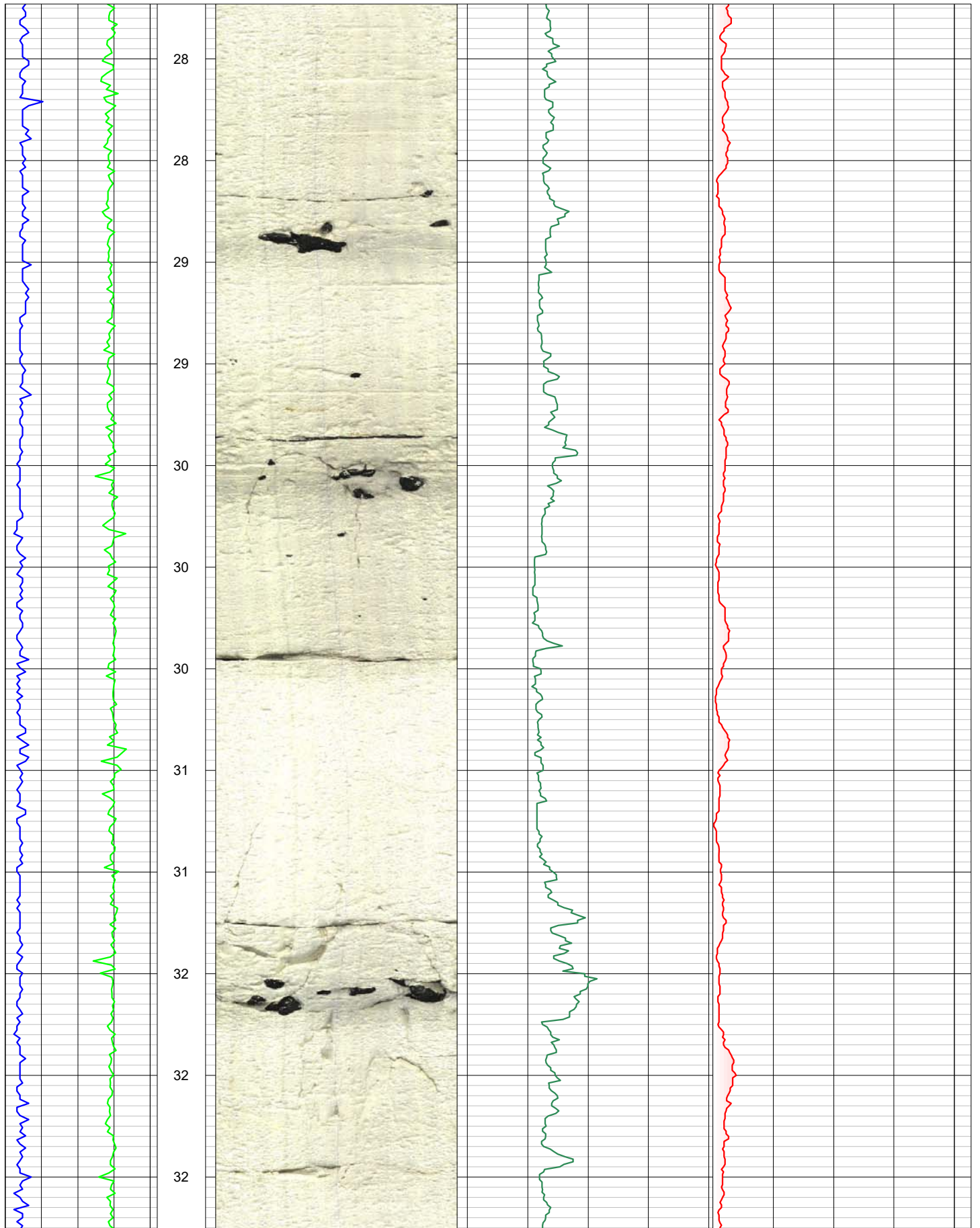


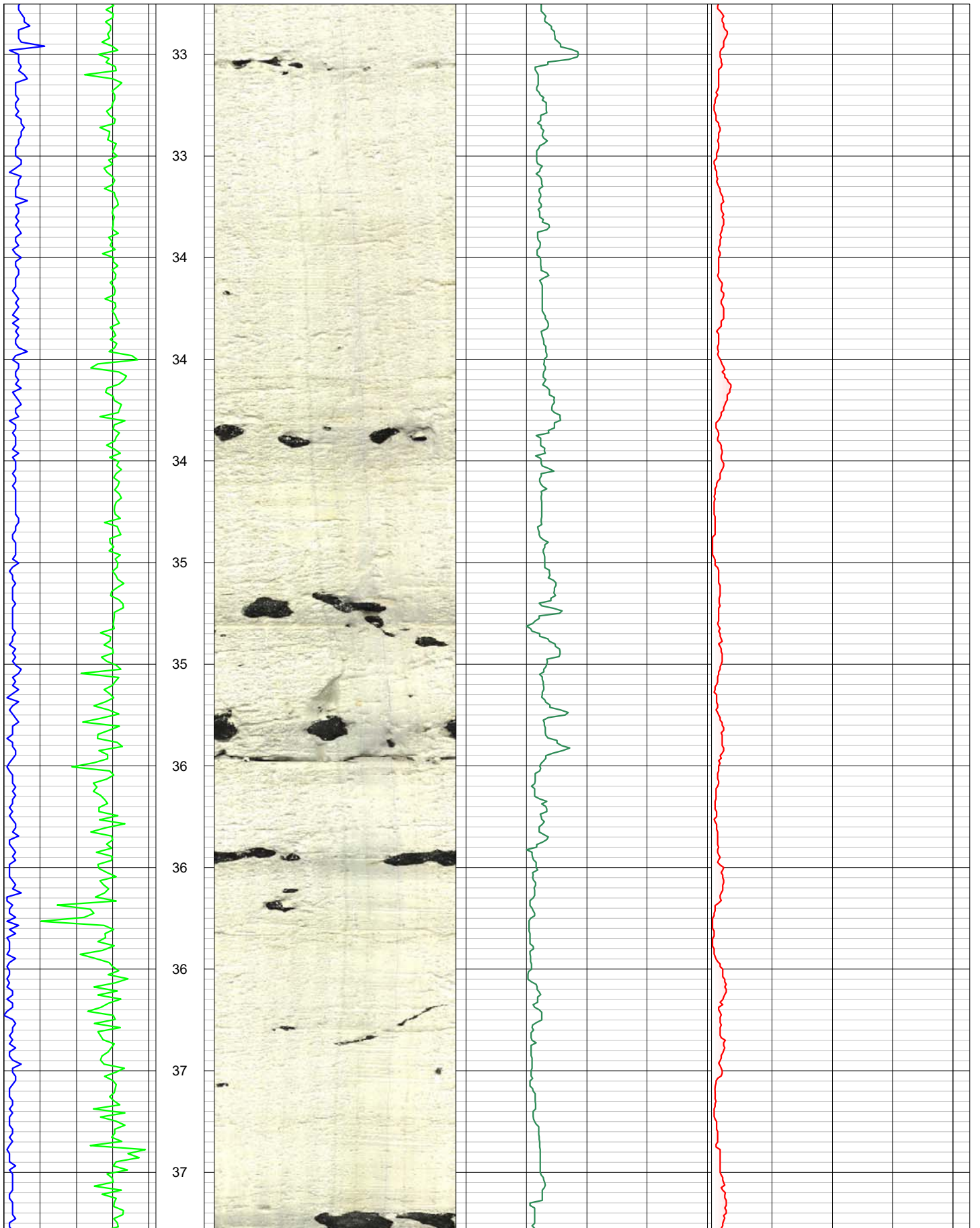


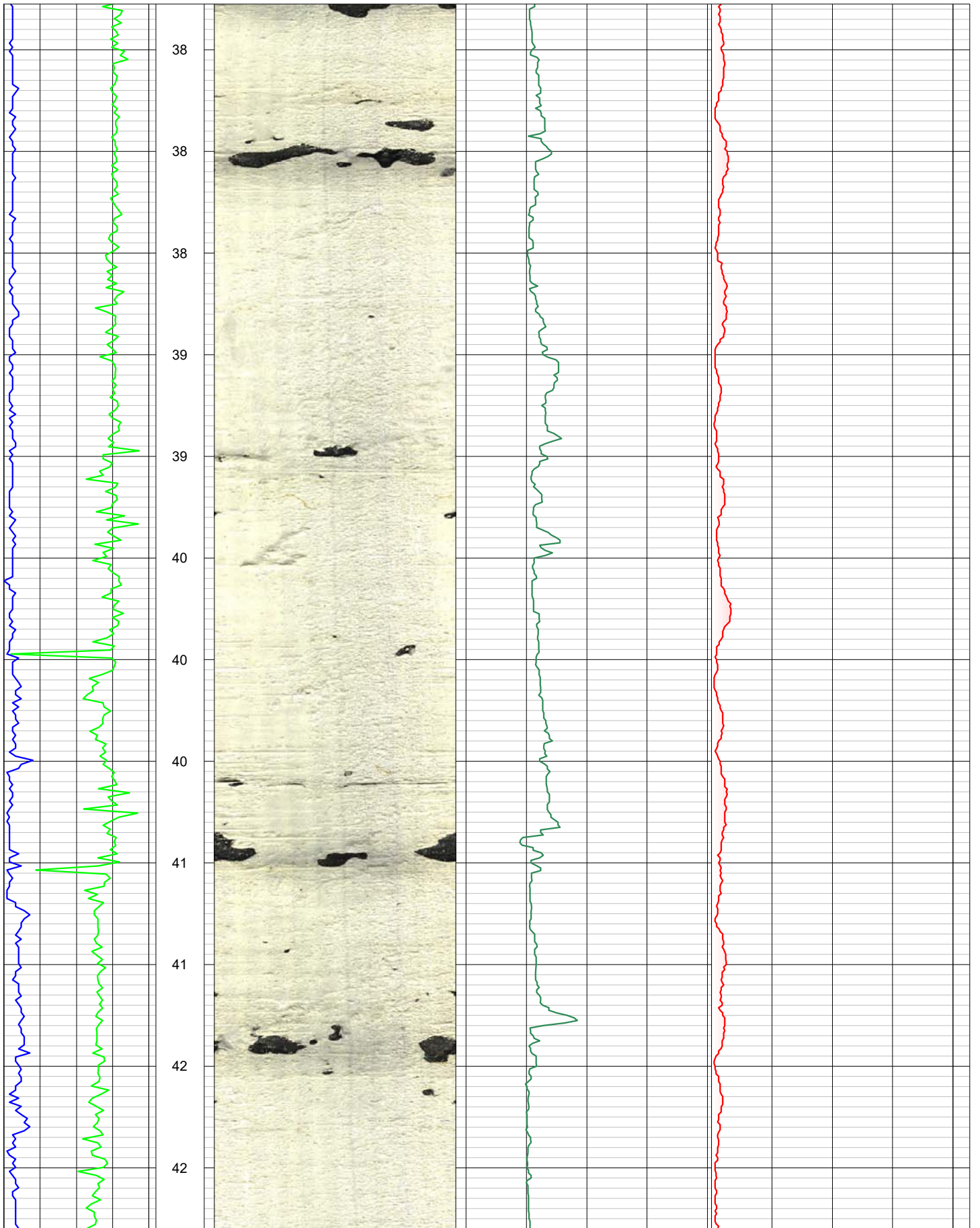


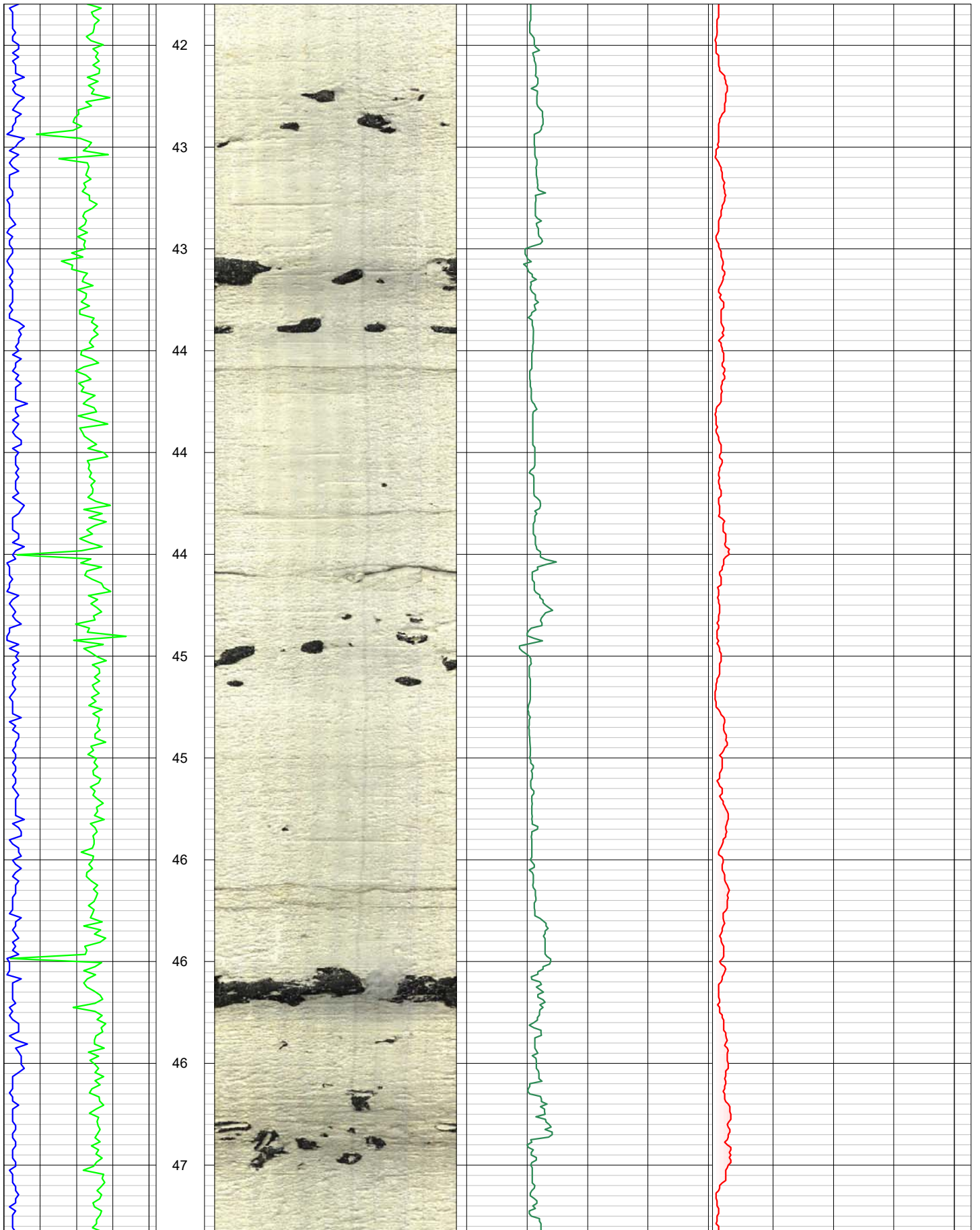


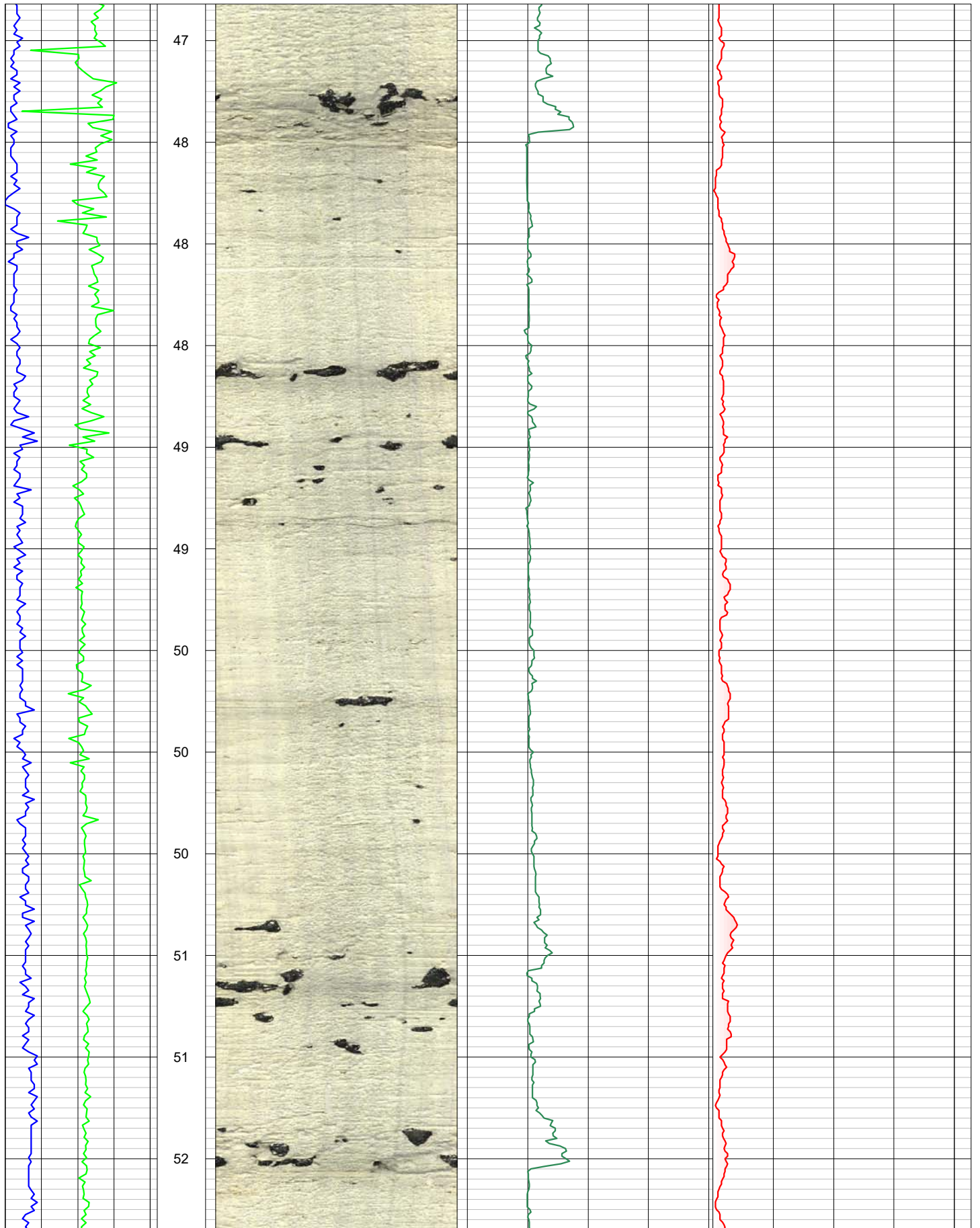


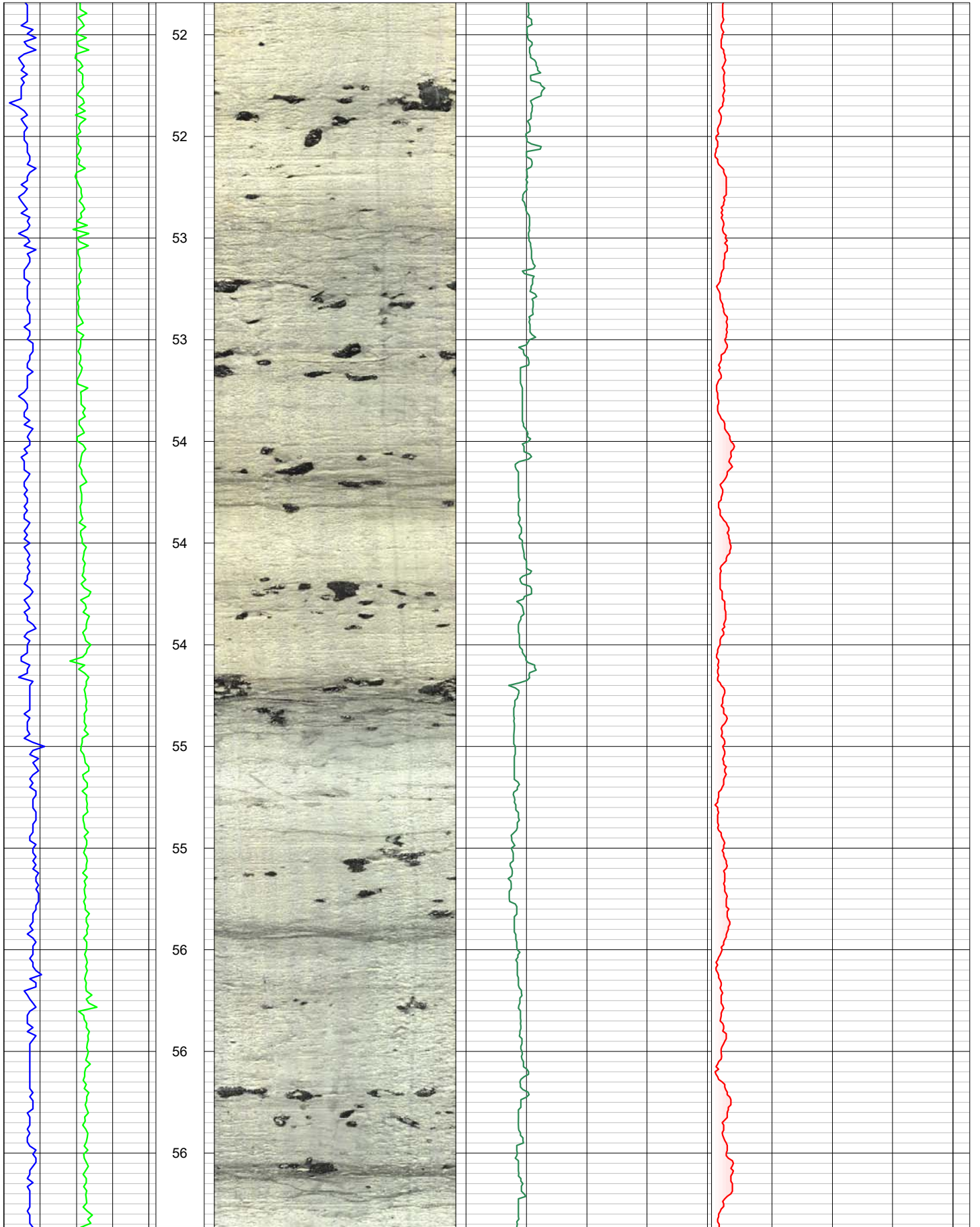


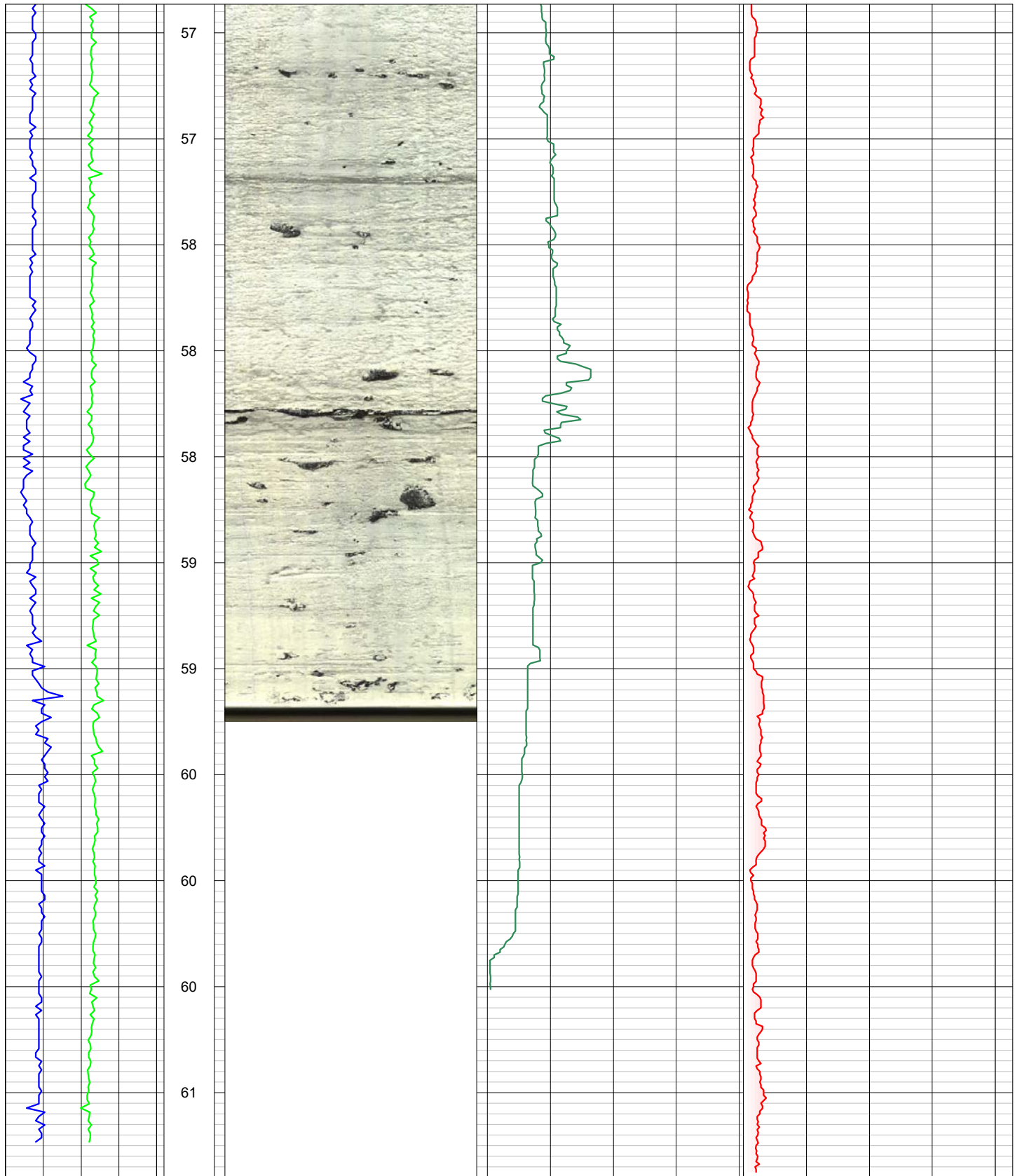














EUROPEAN GEOPHYSICAL SERVICES LTD

Client: **RPS Group**

Log Type:

Borehole: **R71918**

Field Log

FIELD LOG (SUBJECT TO FINAL QA CHANGES)

Location: **A303**

Area: **Stonehenge**

Grid Ref:

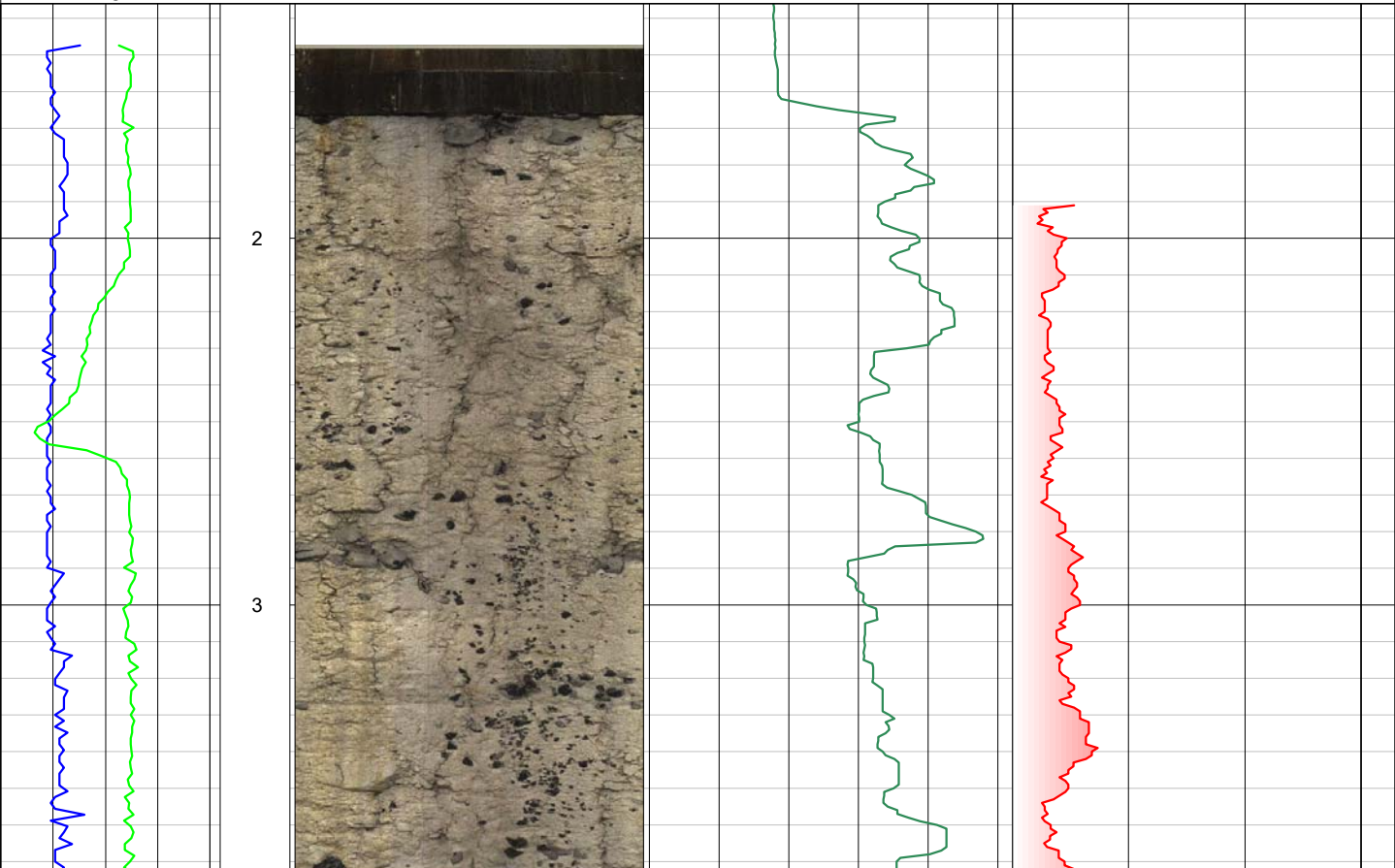
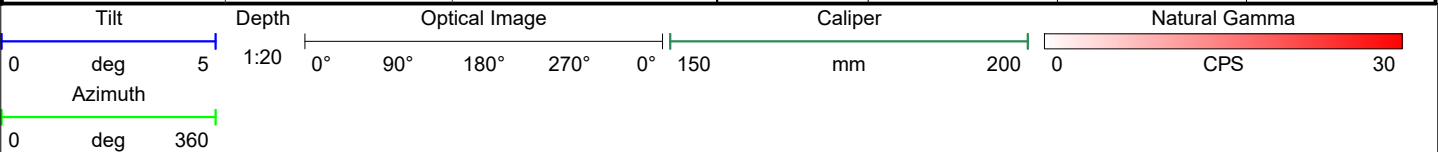
Elevation:

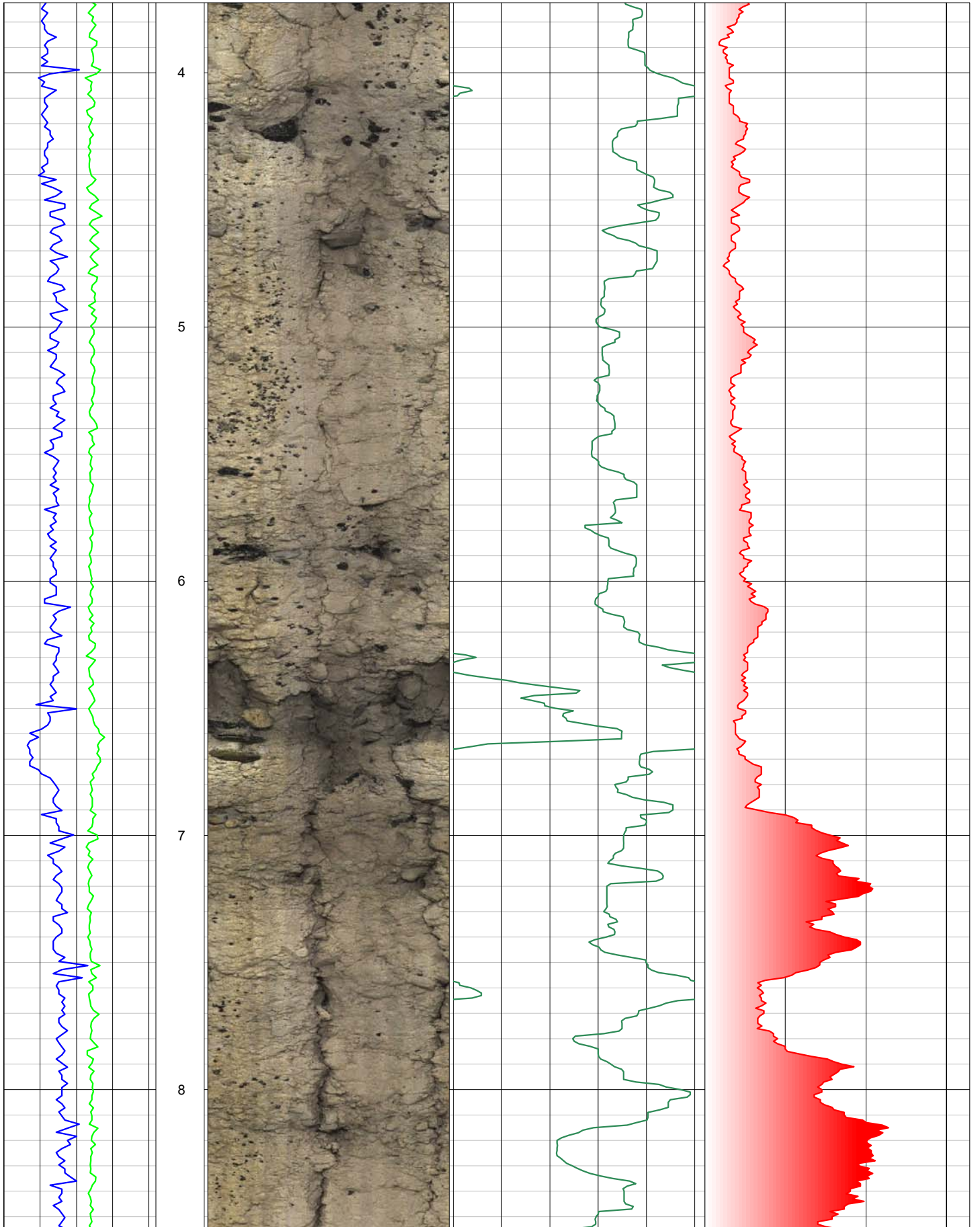
Drilled Depth: (m)	60.0	Date:	24.11.2020
Logged Depth: (m)	60.8	Recorded By:	C. Clinton
Logging Datum:	Ground Level	Remarks:	
Logged Interval: (m)	1.4 - 60.8		
Fluid Level: (m)	21.3		

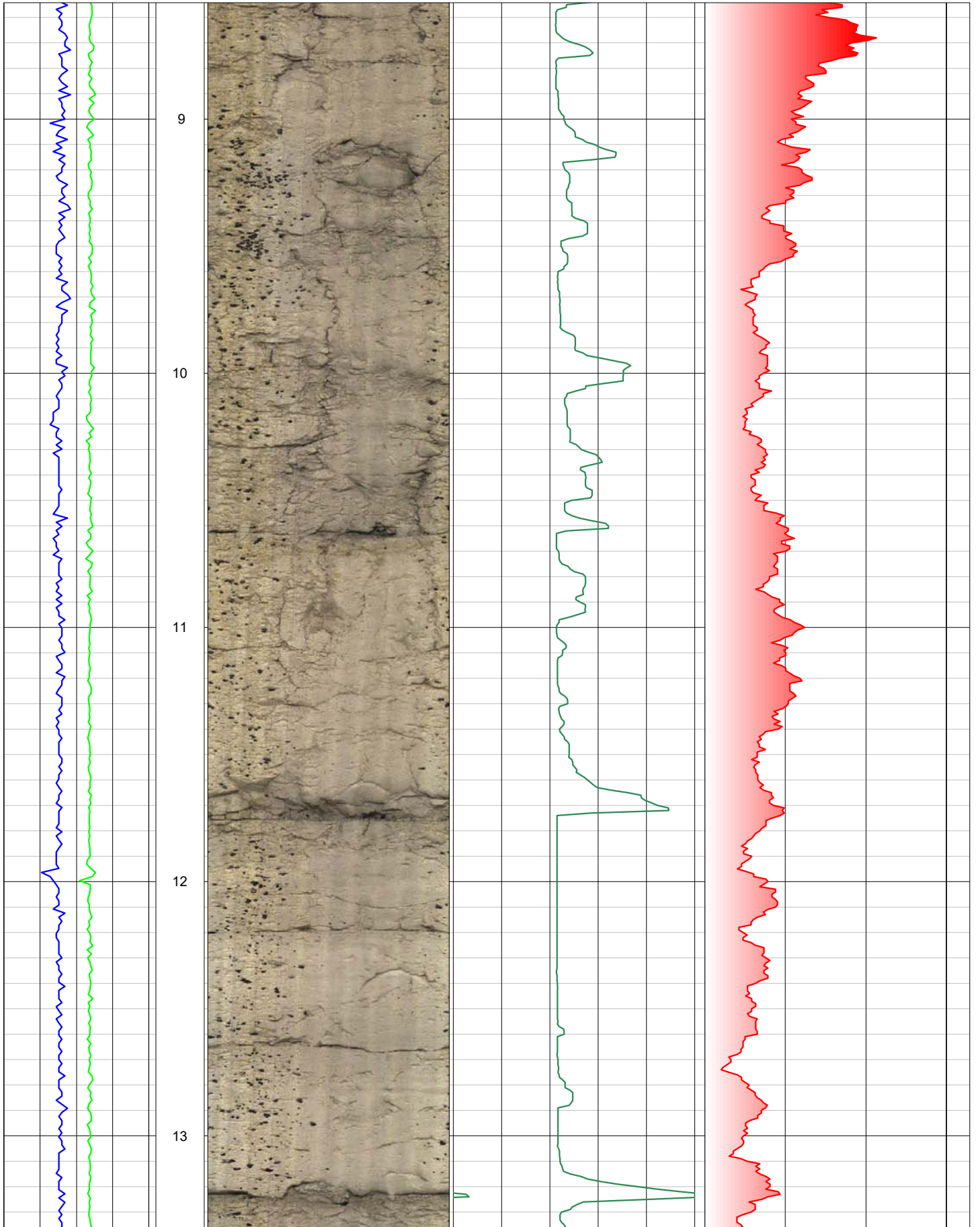
BOREHOLE RECORD

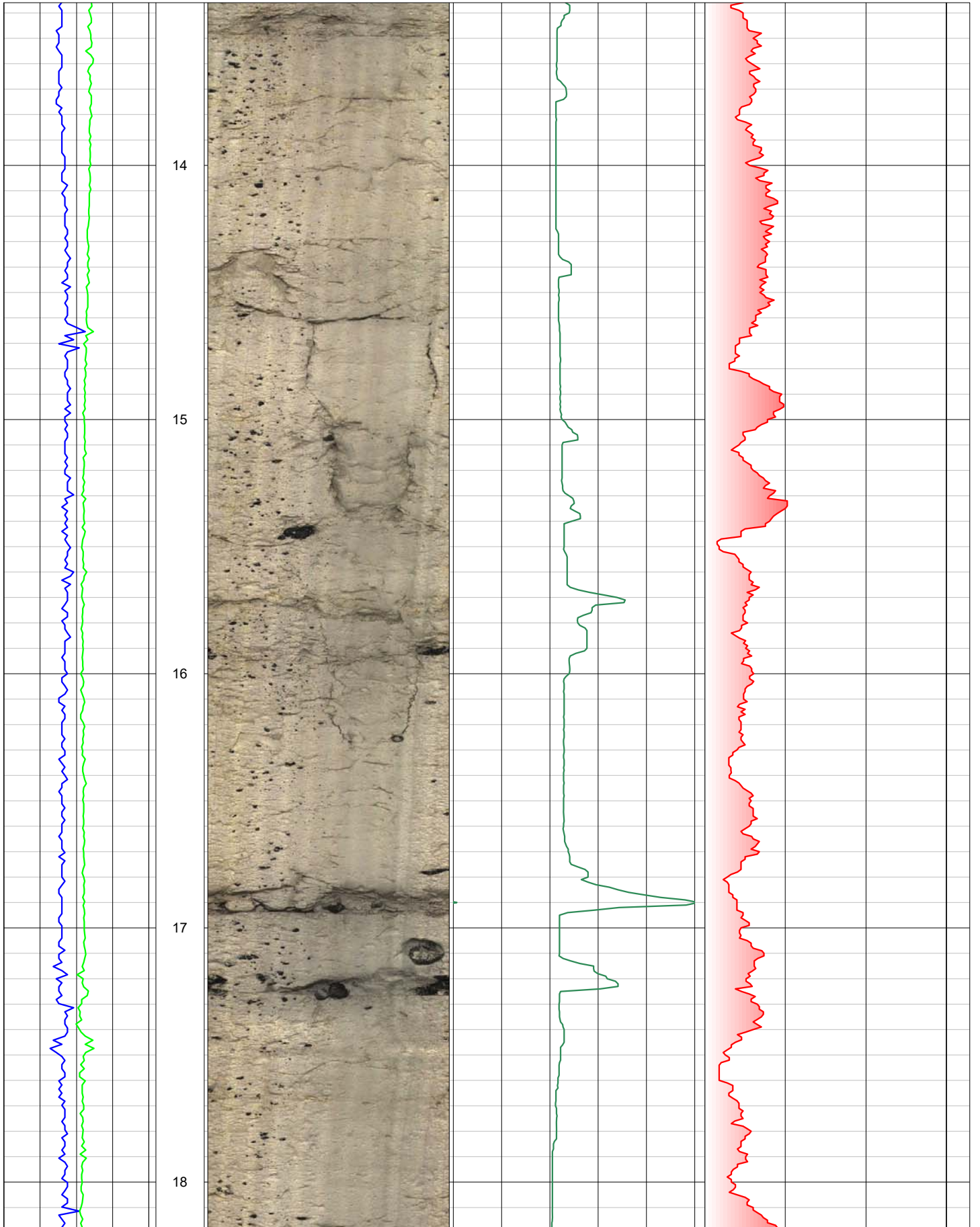
CASING RECORD

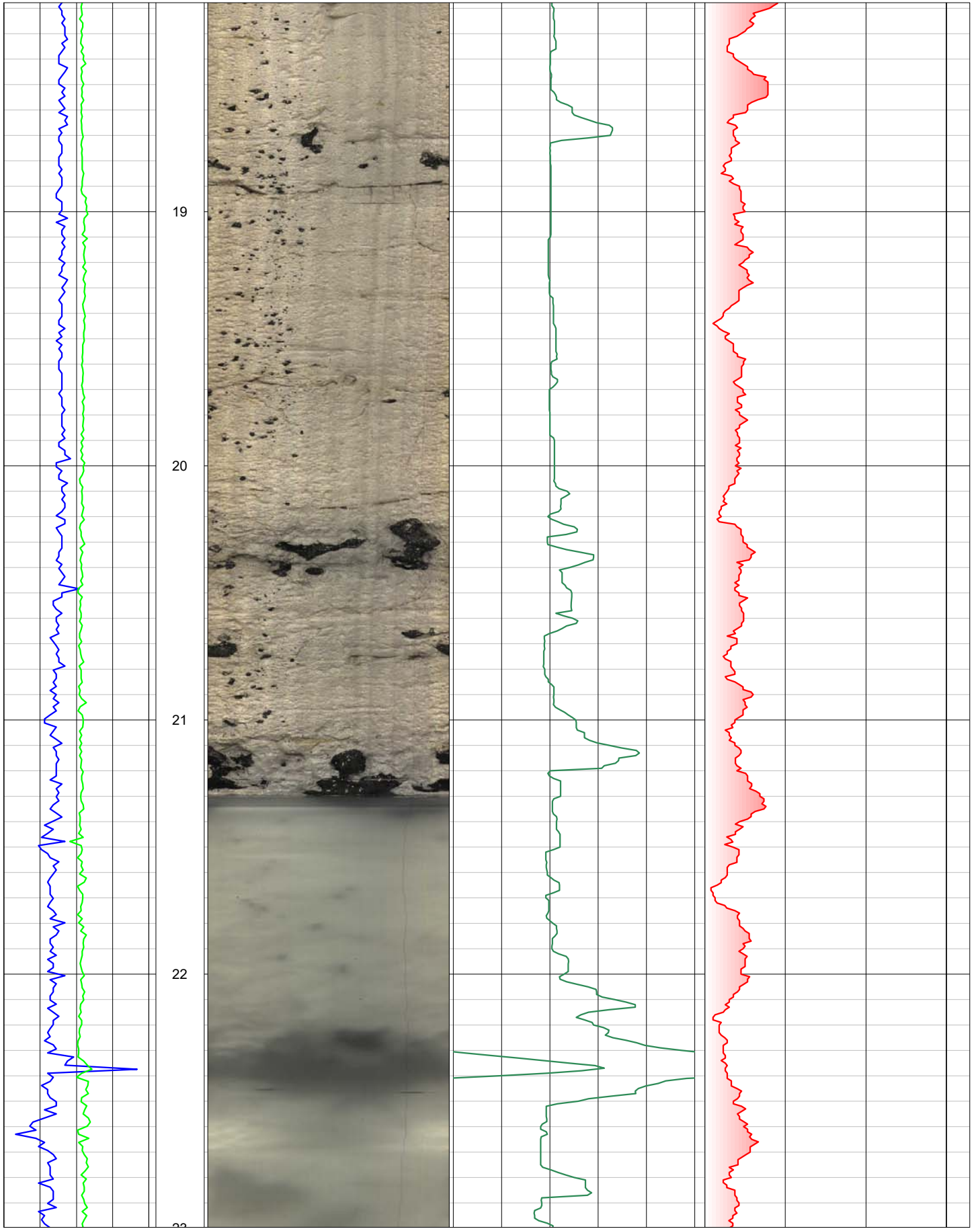
Bit: (mm)	From: (m)	To: (m)	Type	Size: (mm)	From: (m)	To: (m)
150	0.5	60.8	Steel	170	0.5	1.7

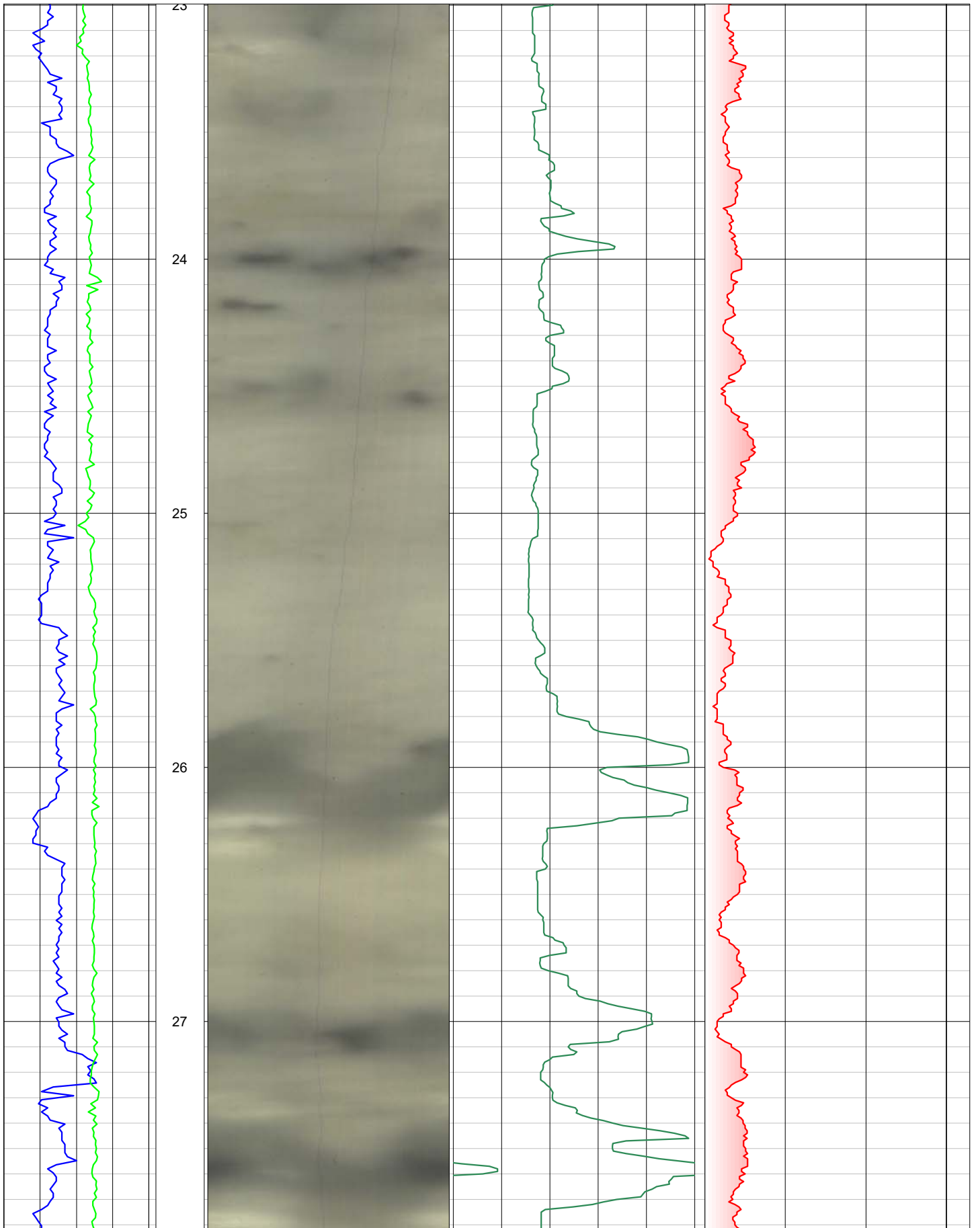


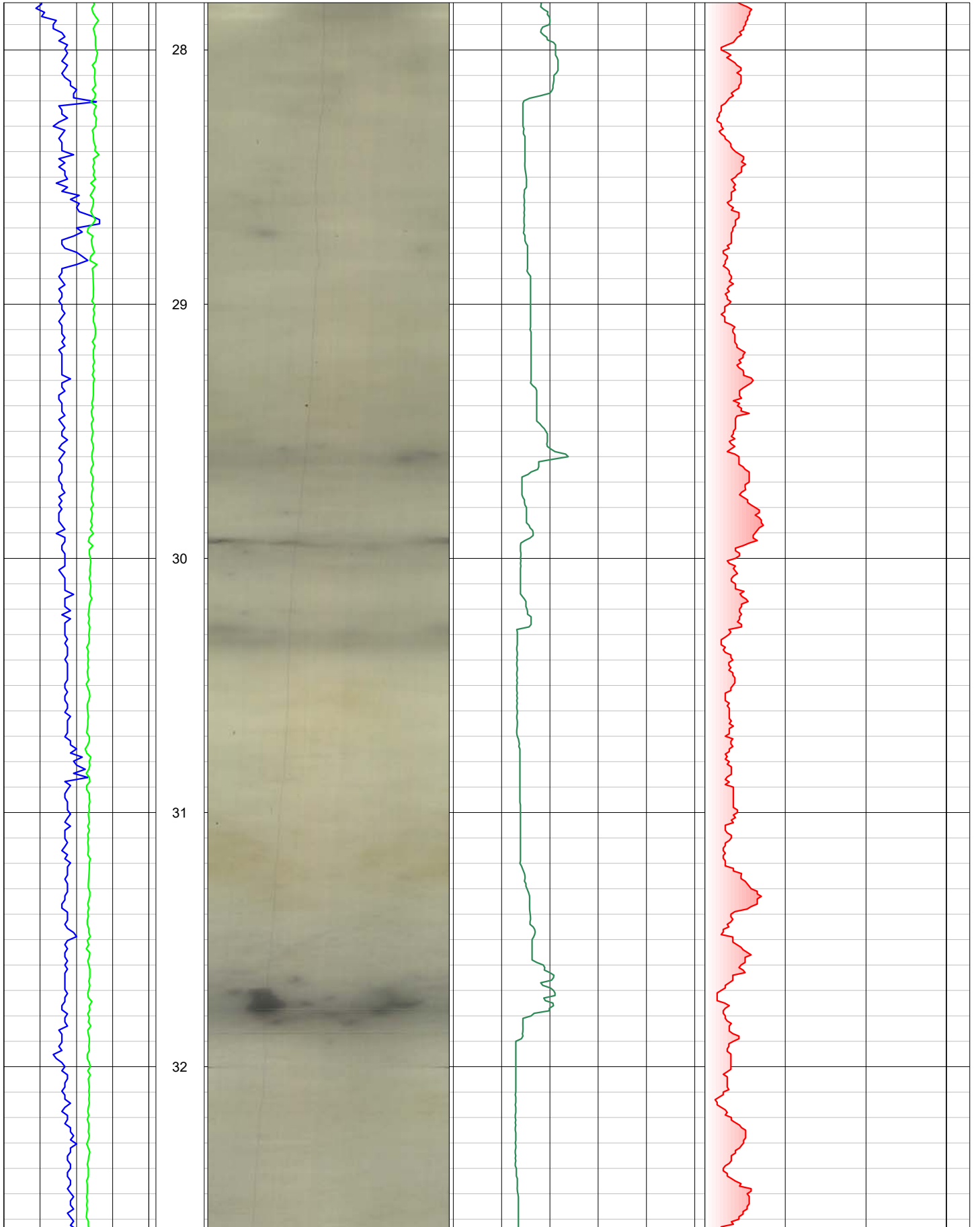


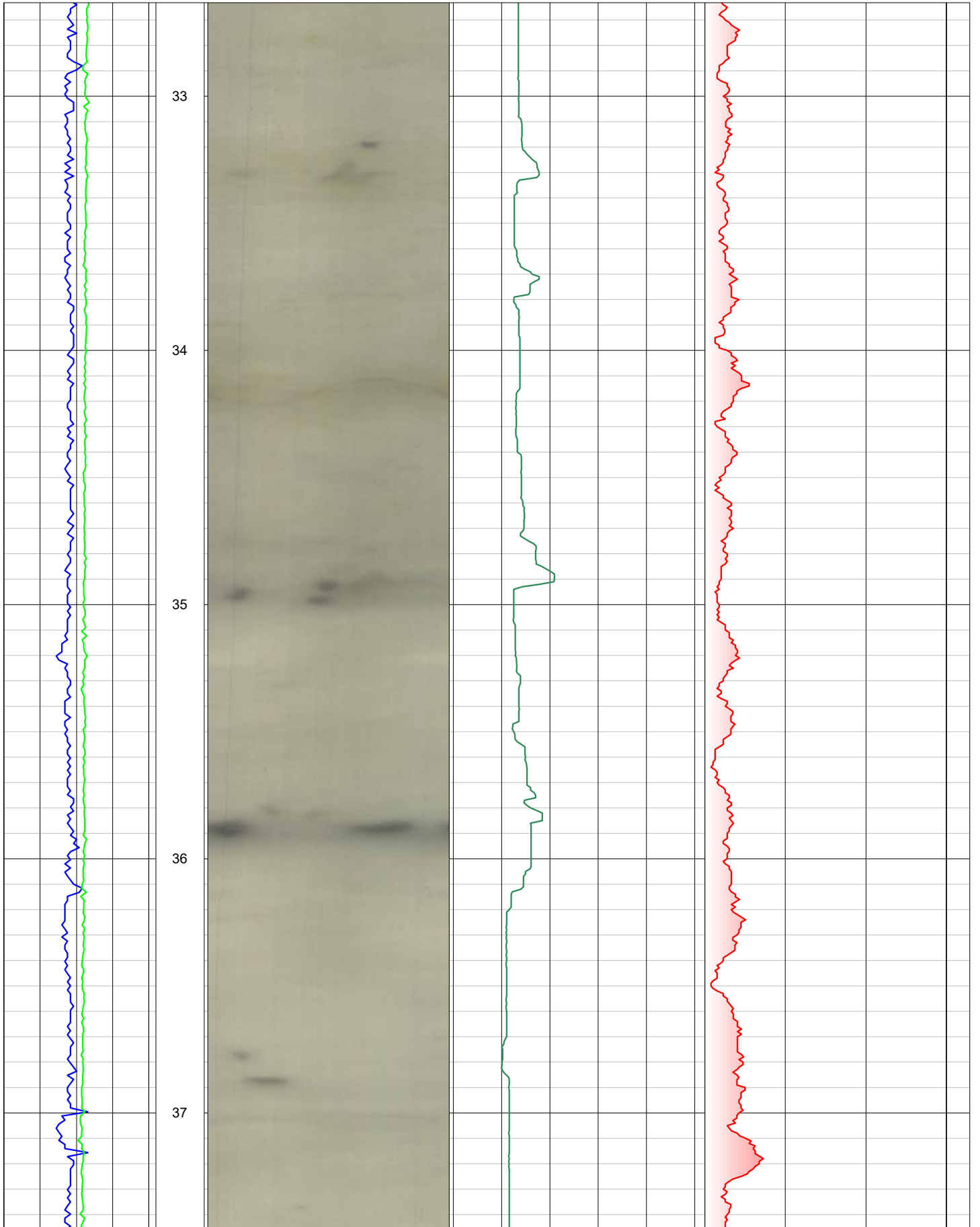


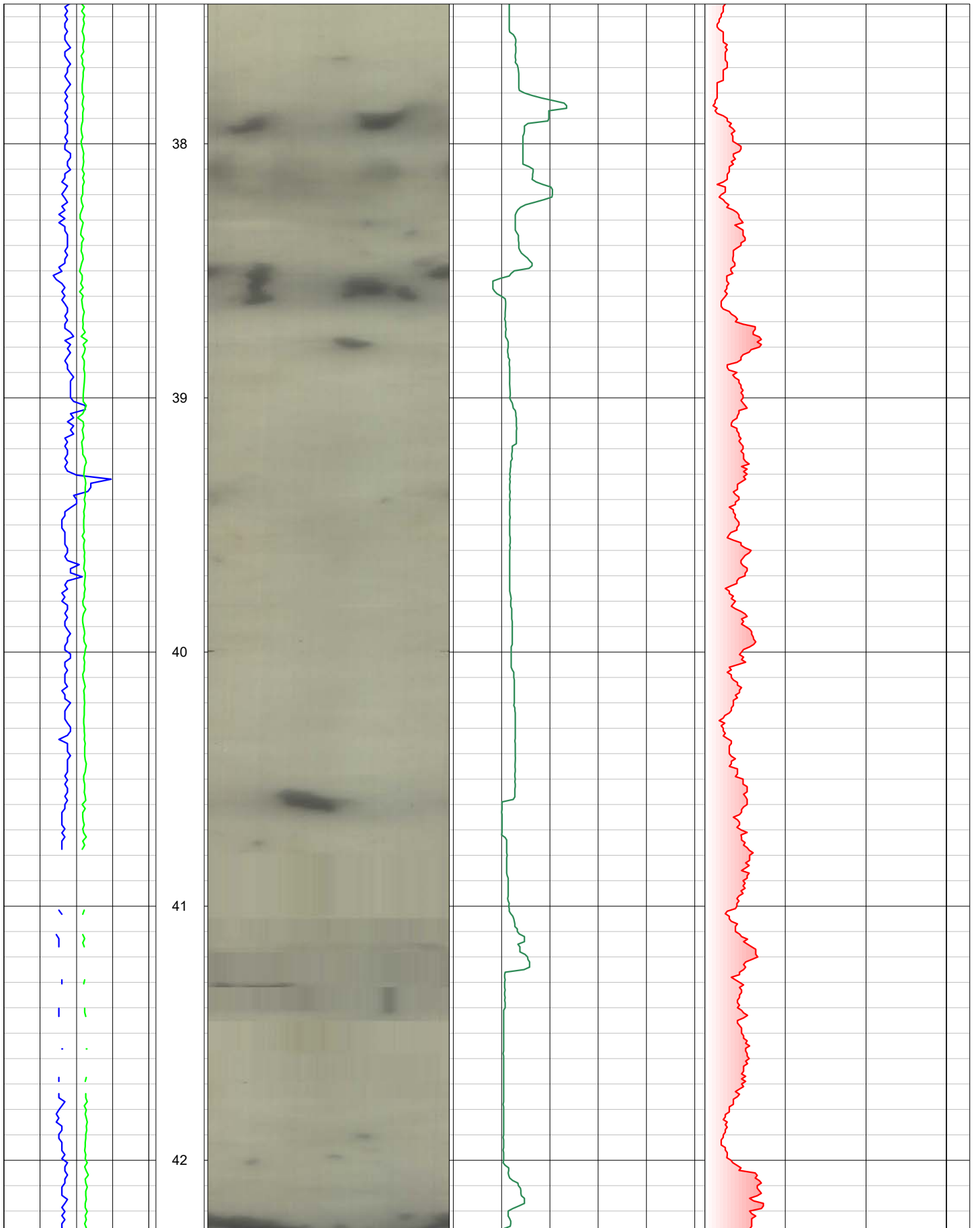


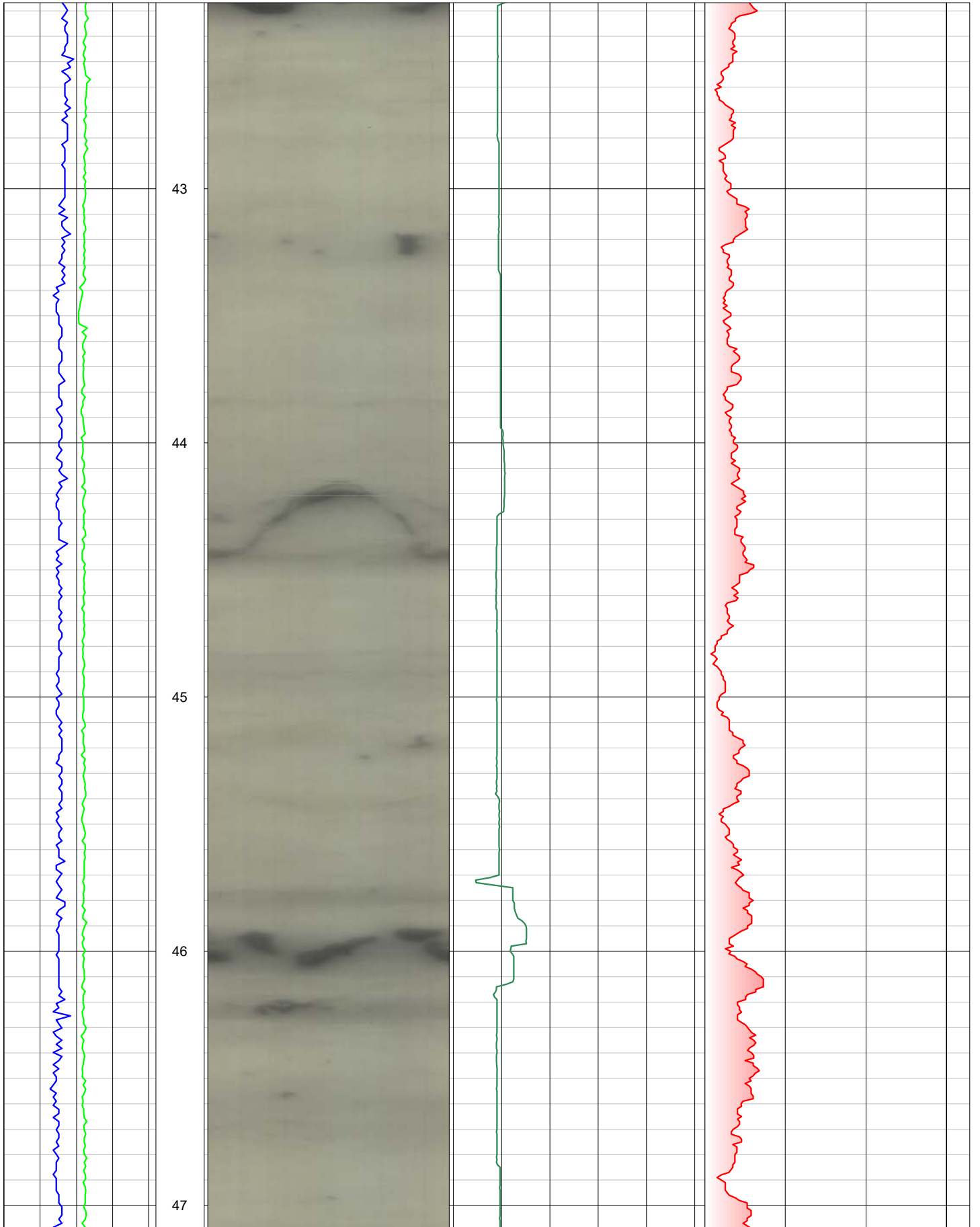


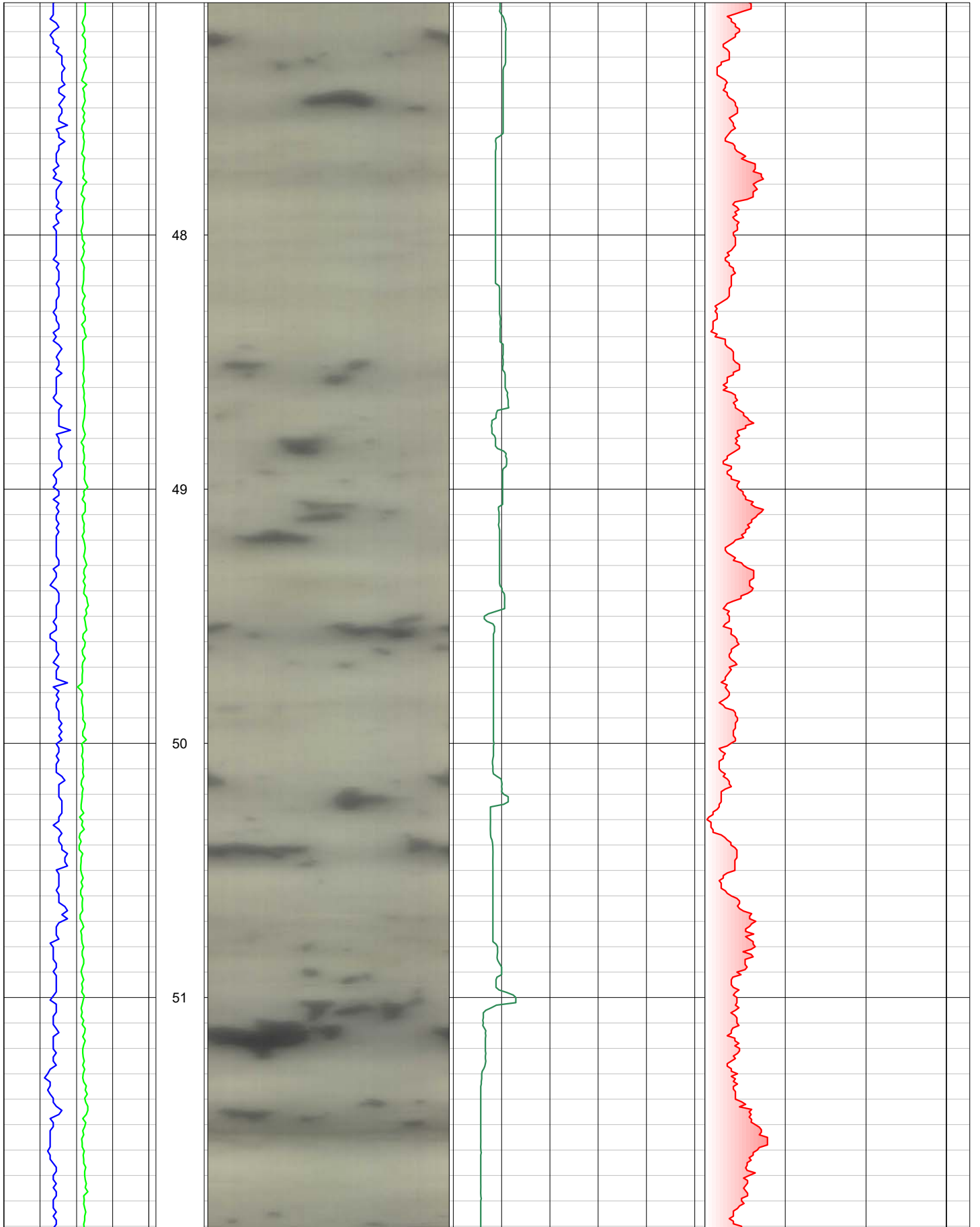


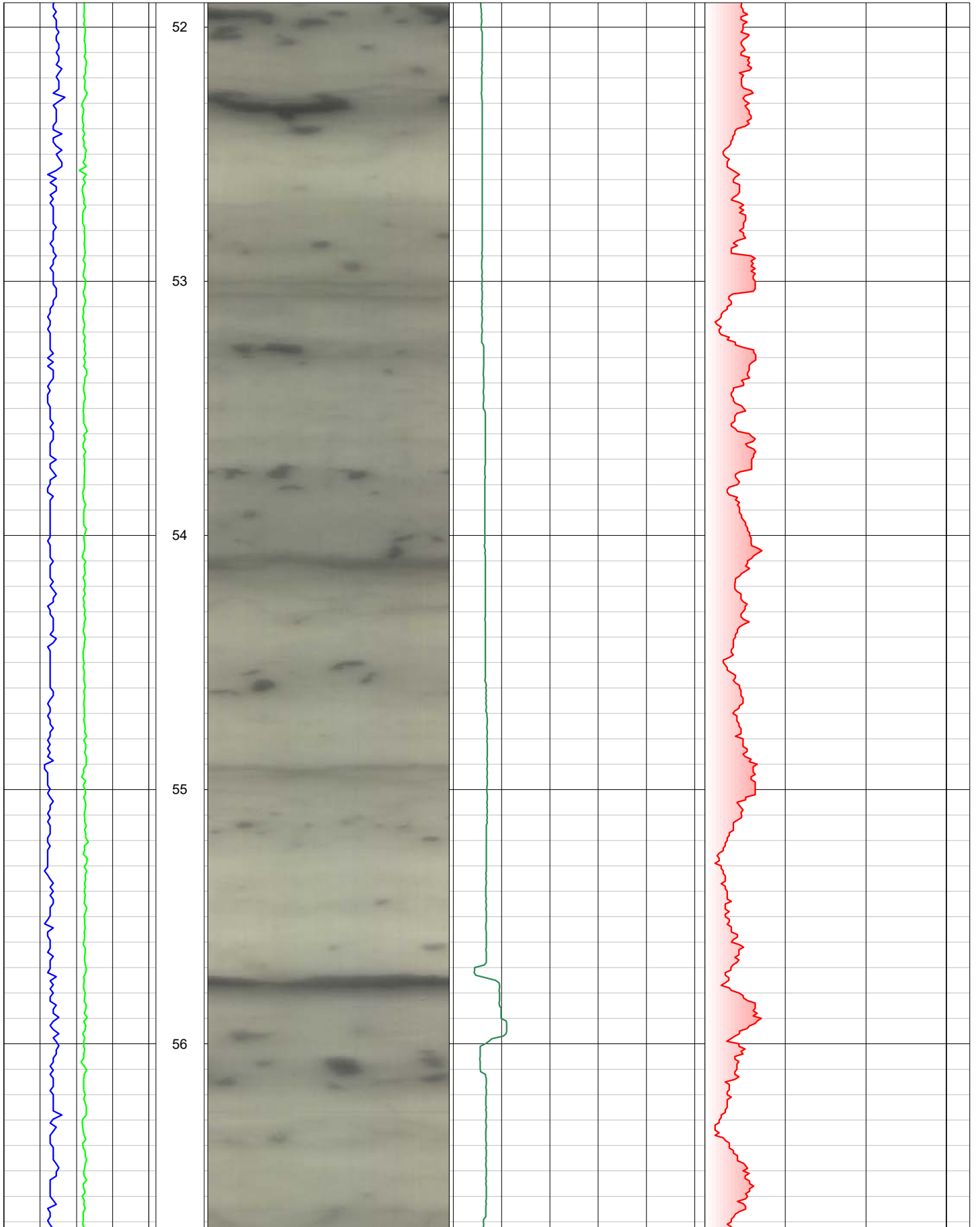


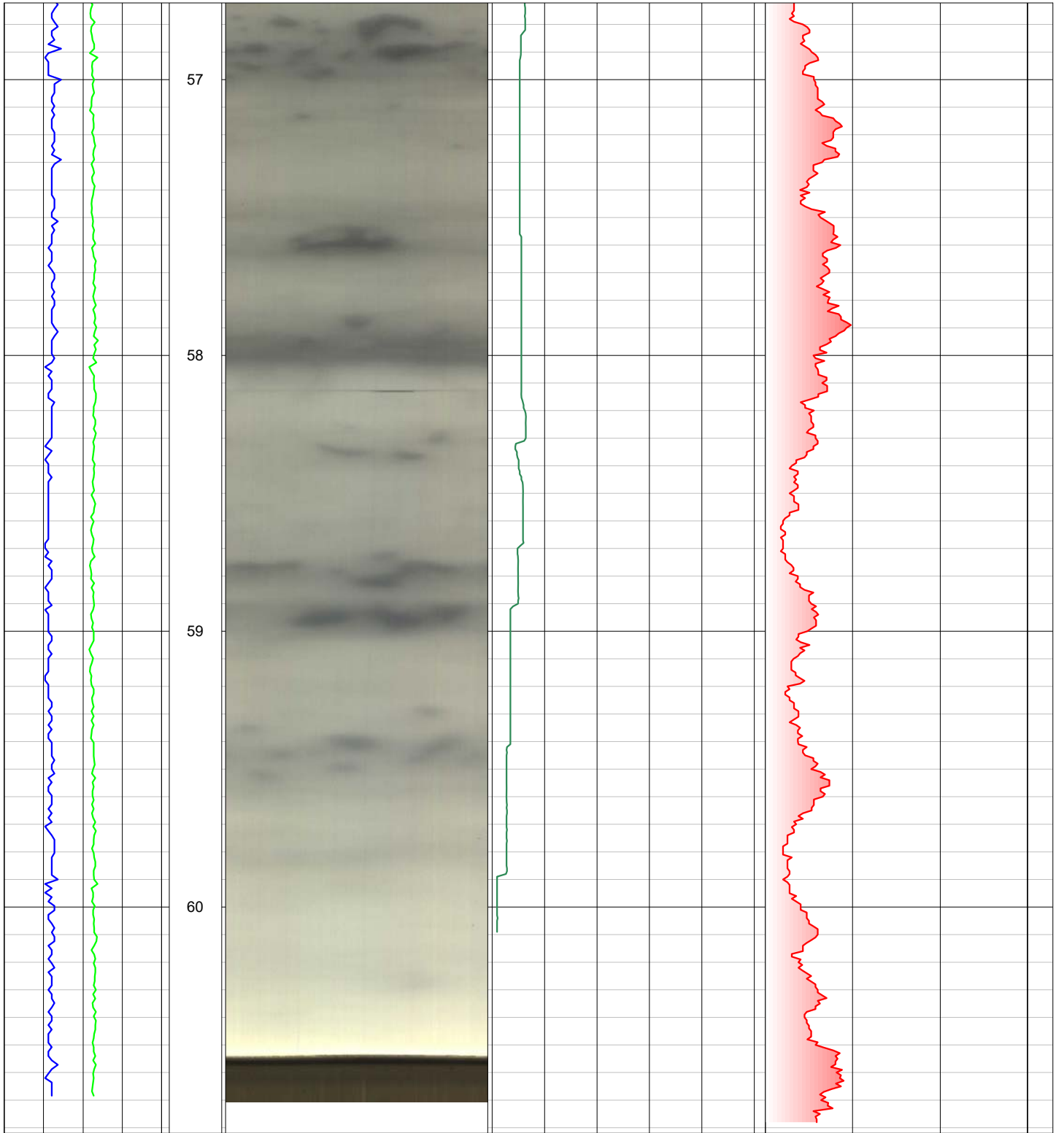














EUROPEAN GEOPHYSICAL SERVICES LTD

Client: **RPS Group**

Log Type:

Borehole: **R71919**

Field Log

FIELD LOG (SUBJECT TO FINAL QA CHANGES)

Location: **A303**

Area: **Stonehenge**

Grid Ref:

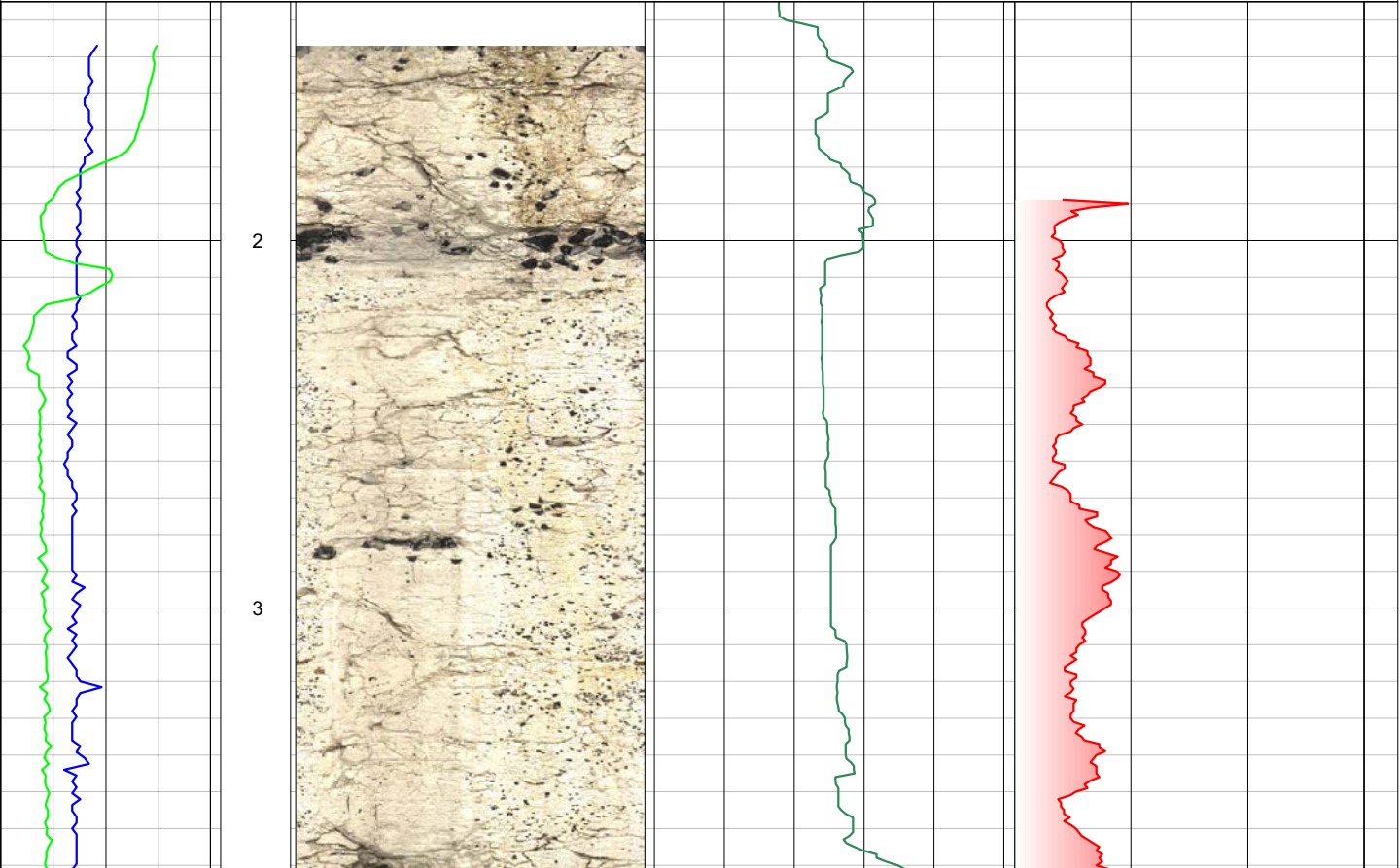
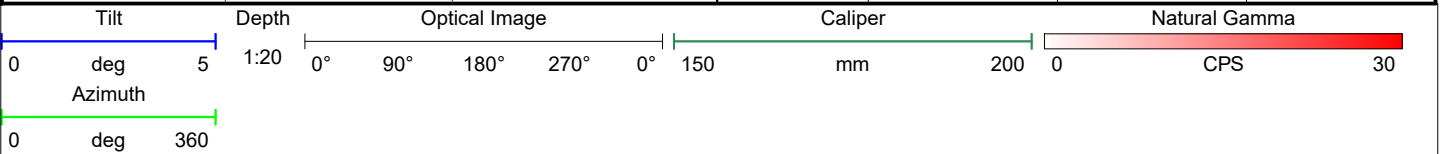
Elevation:

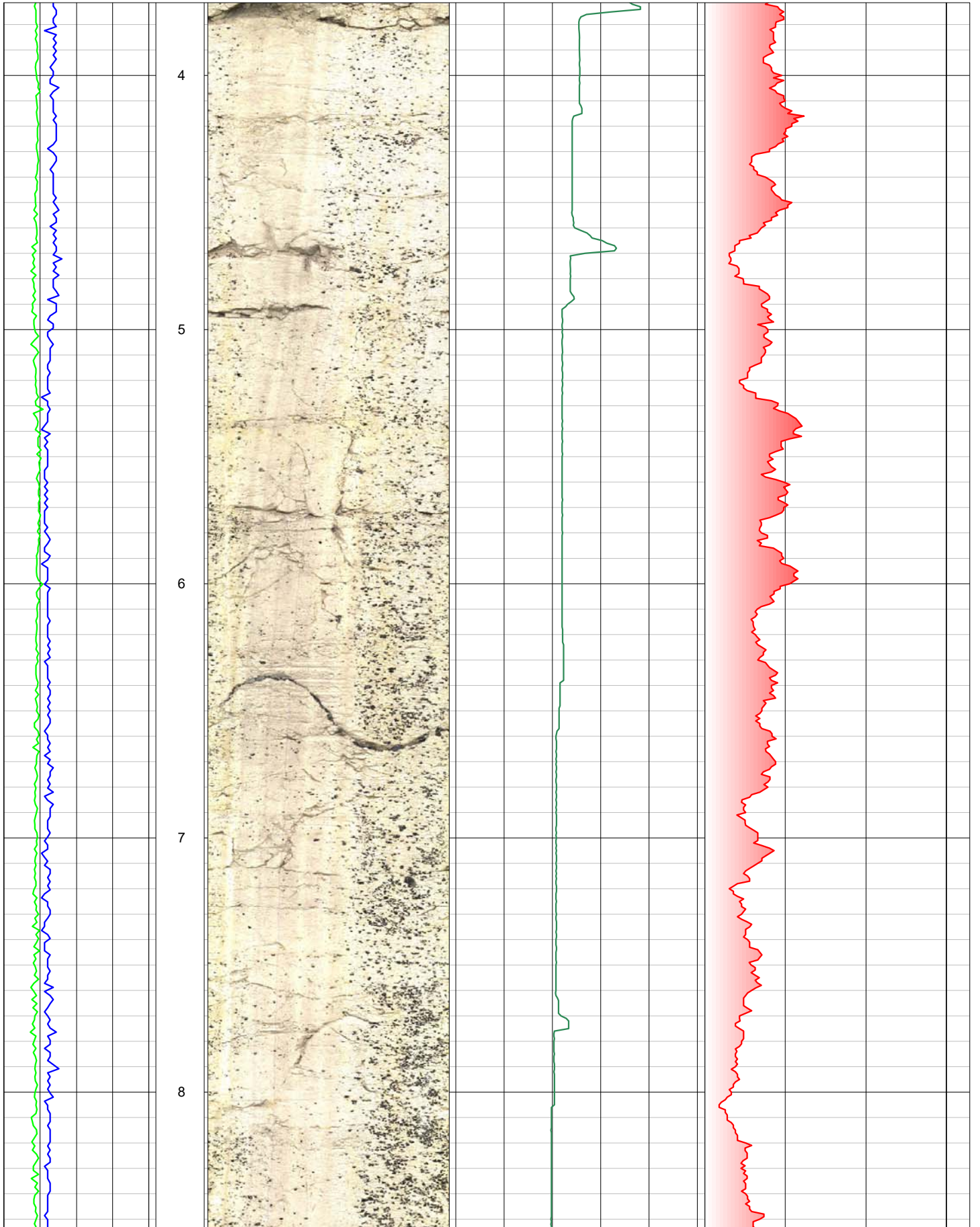
Drilled Depth: (m)	60.0	Date:	24.11.2020
Logged Depth: (m)	60.0	Recorded By:	C. Clinton
Logging Datum:	Ground Level	Remarks:	
Logged Interval: (m)	1.5 - 60.0		
Fluid Level: (m)	24.7		

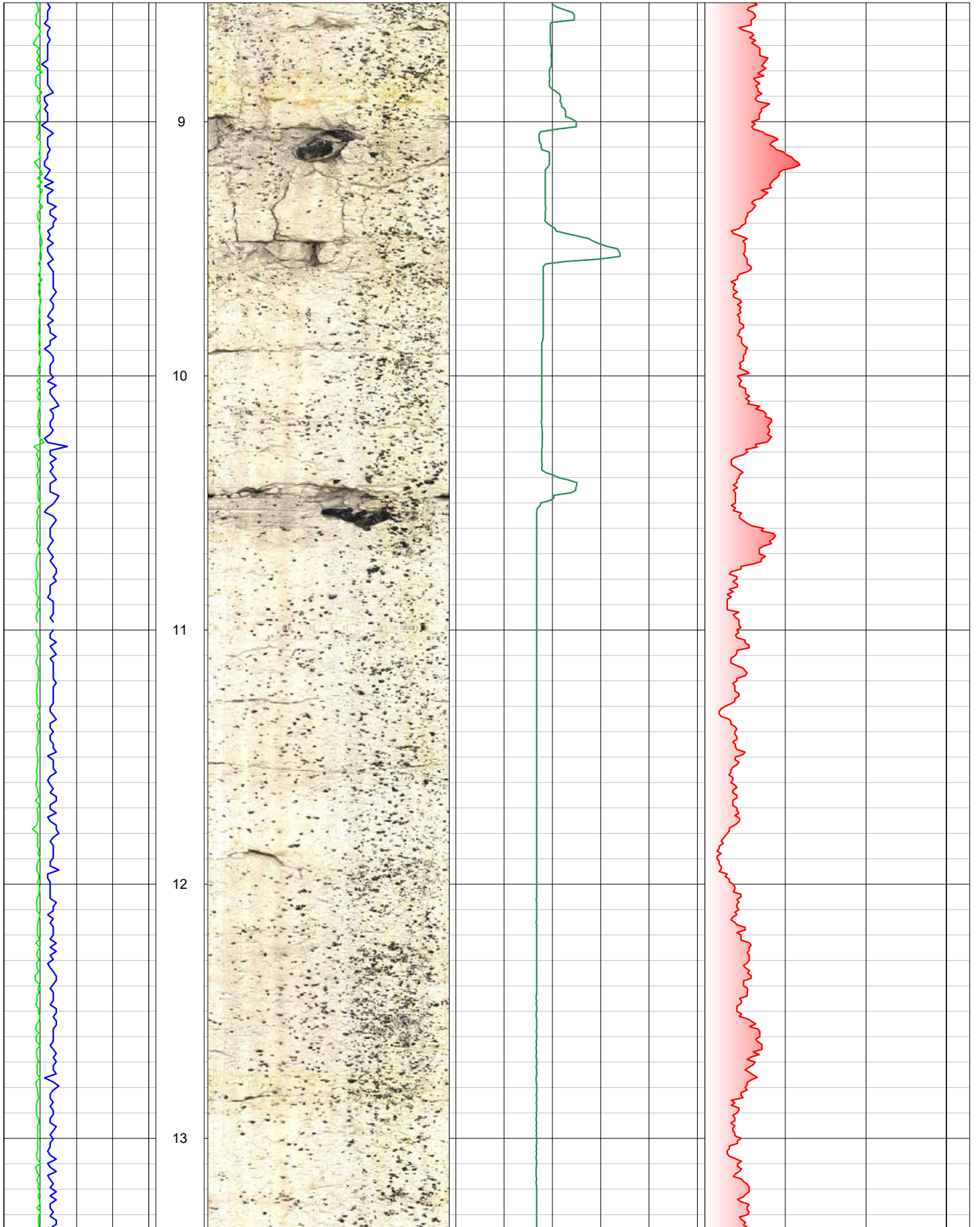
BOREHOLE RECORD

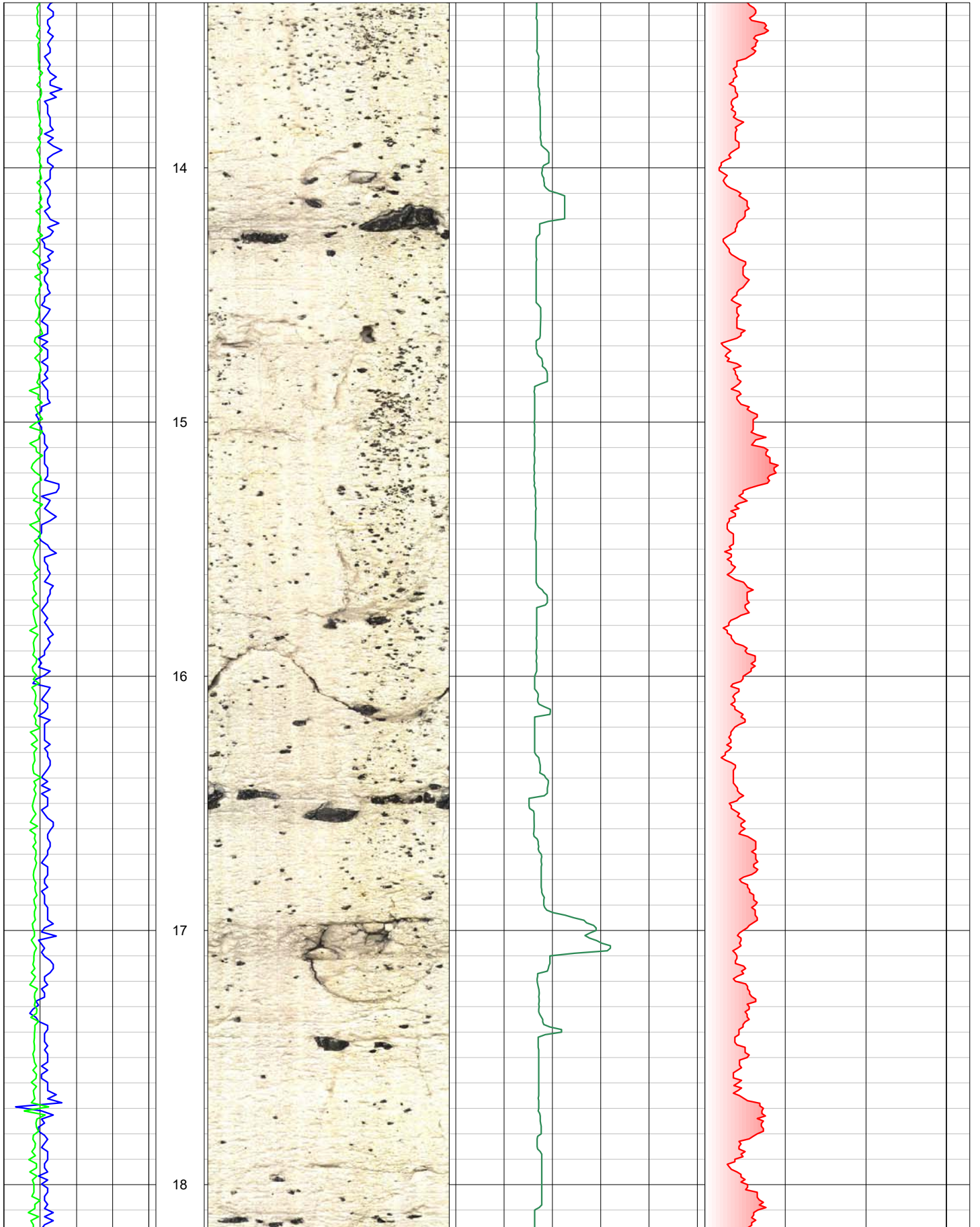
CASING RECORD

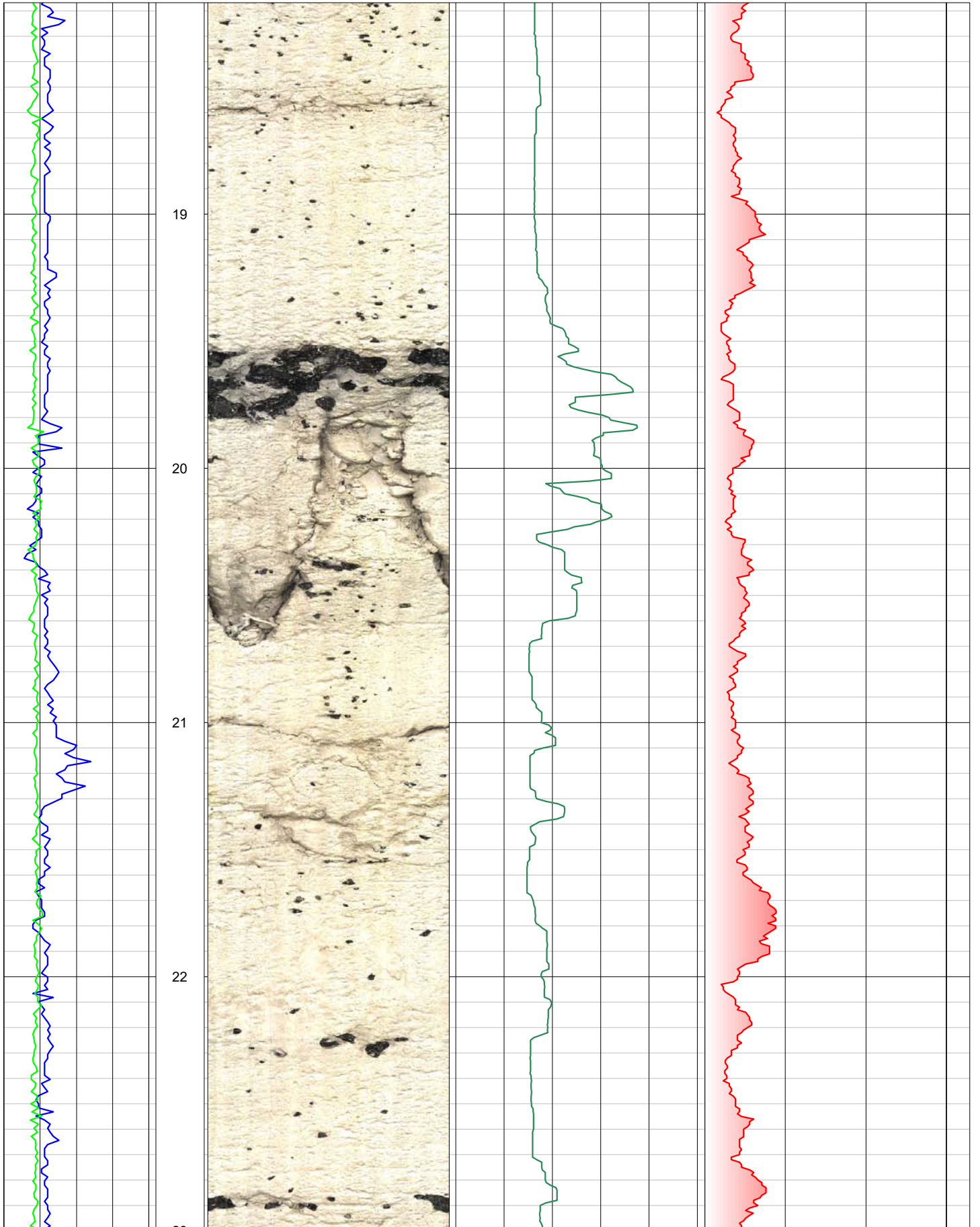
Bit: (mm)	From: (m)	To: (m)	Type	Size: (mm)	From: (m)	To: (m)
167	0	60.0	Steel	170	0.3	60.0

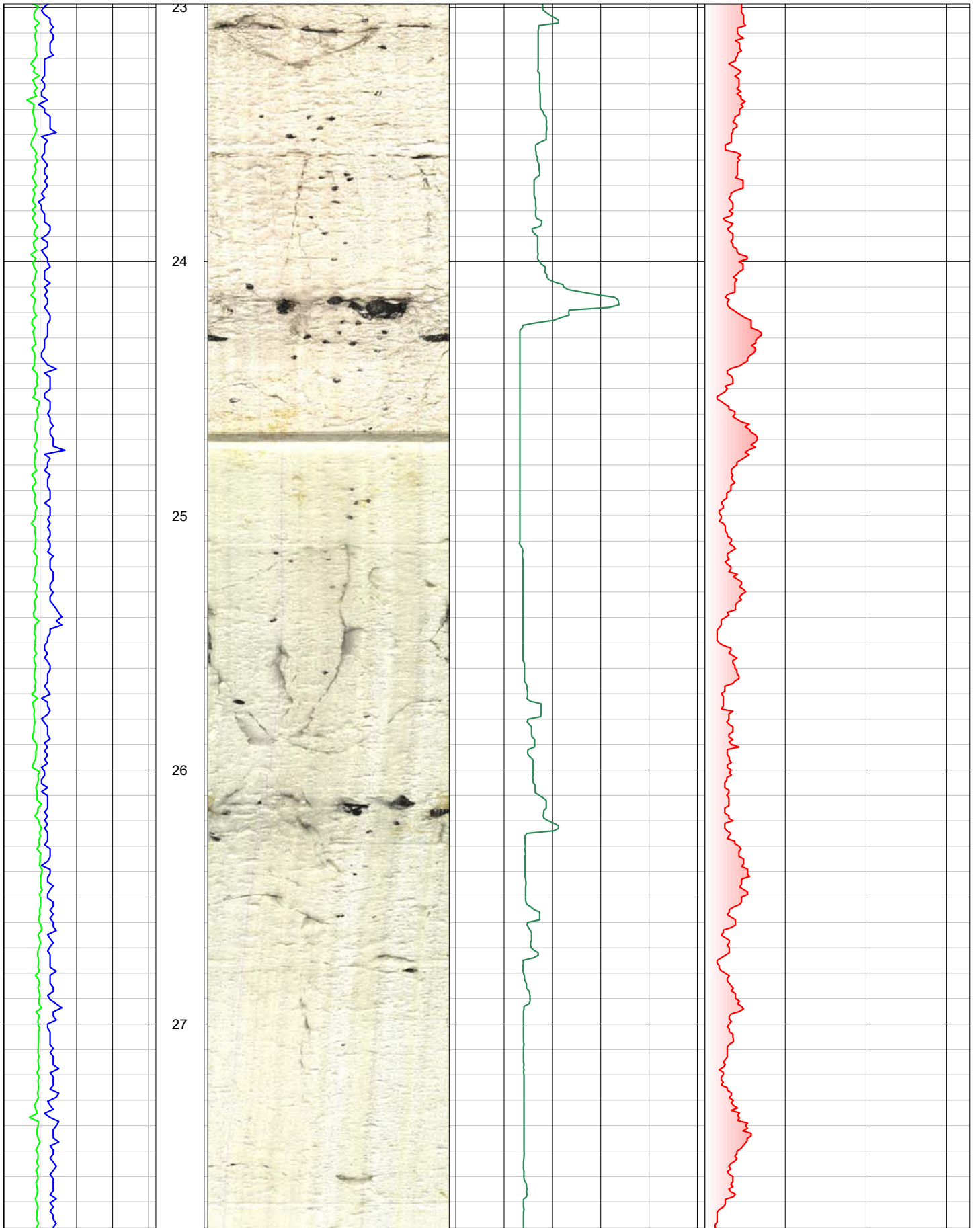


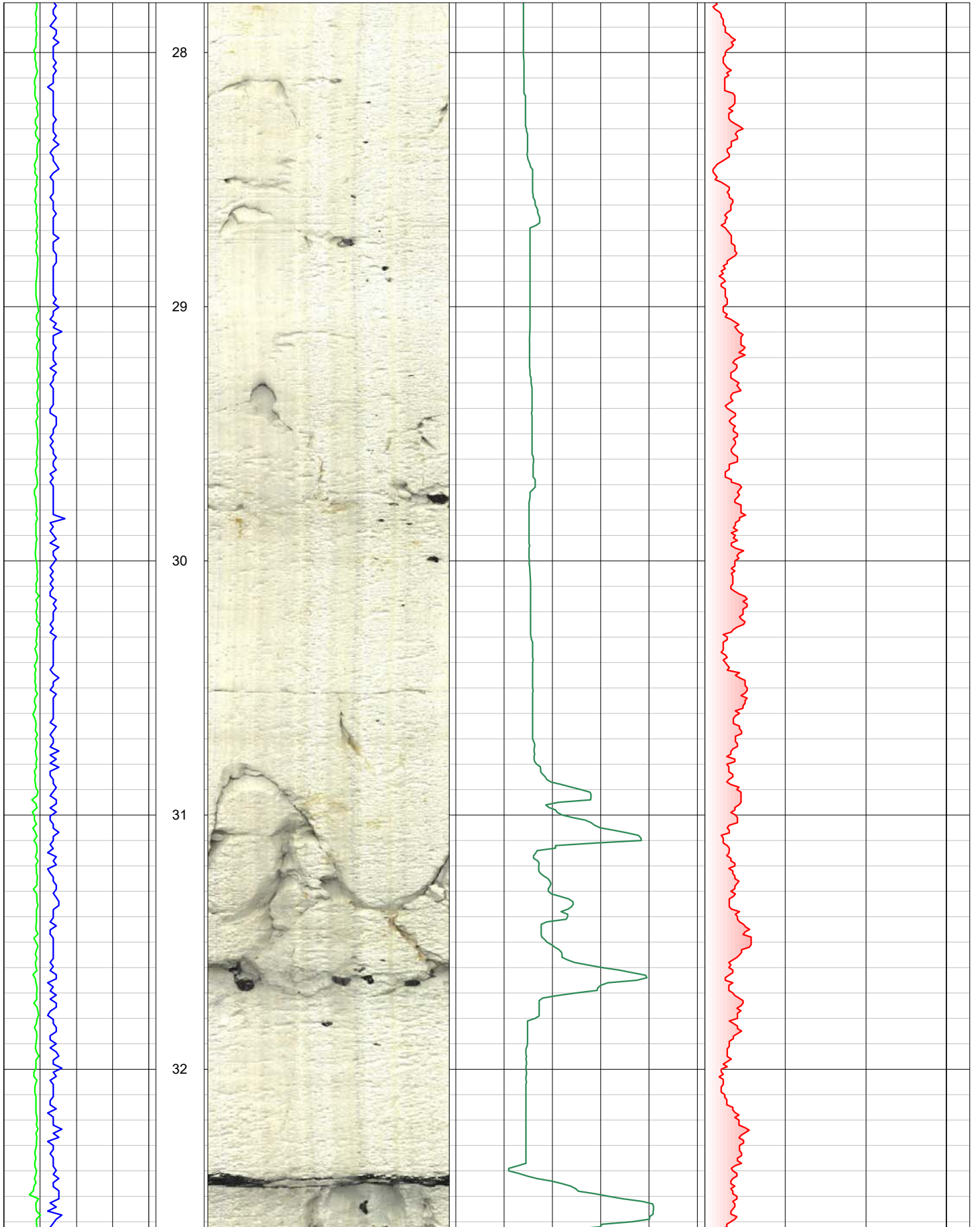


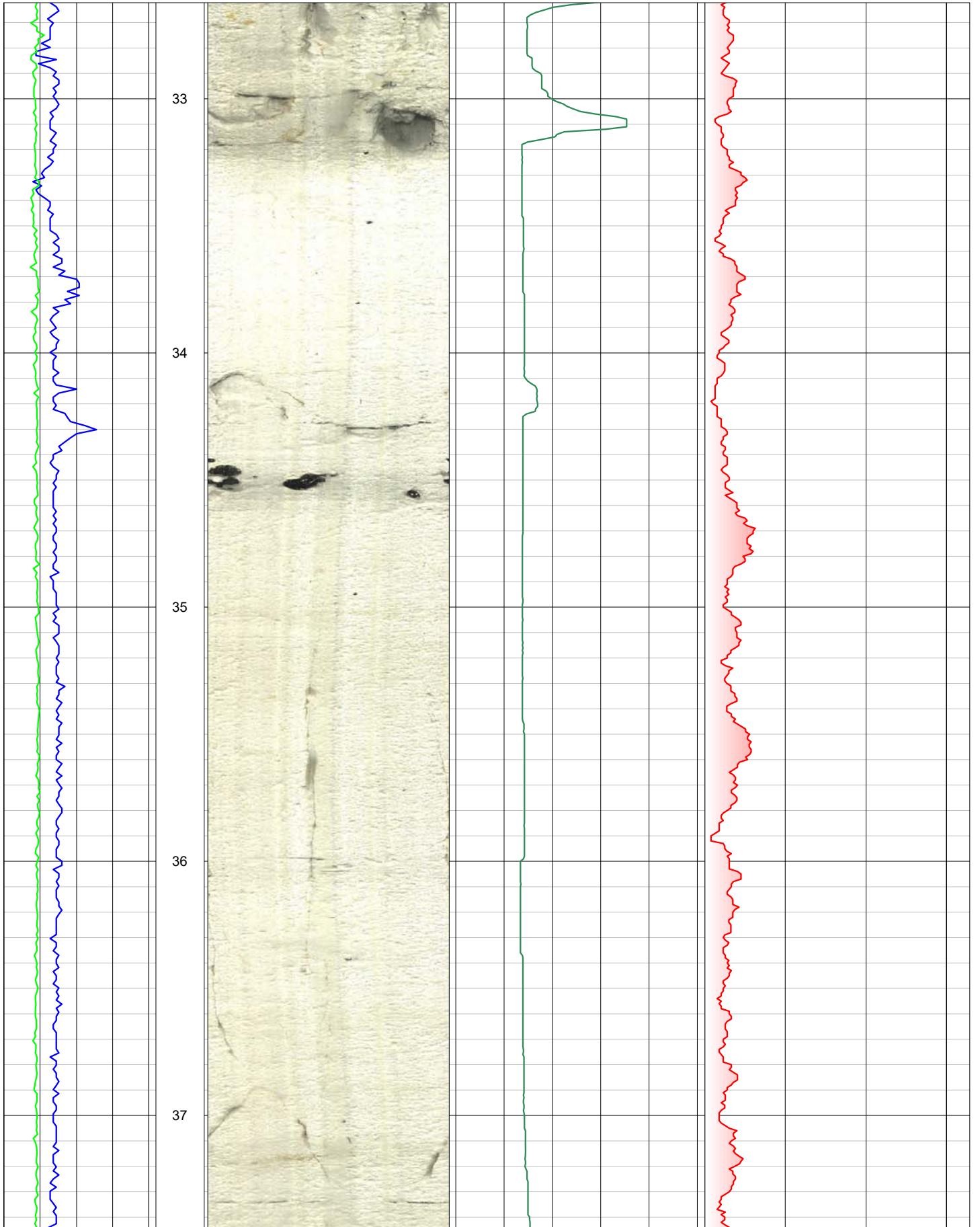


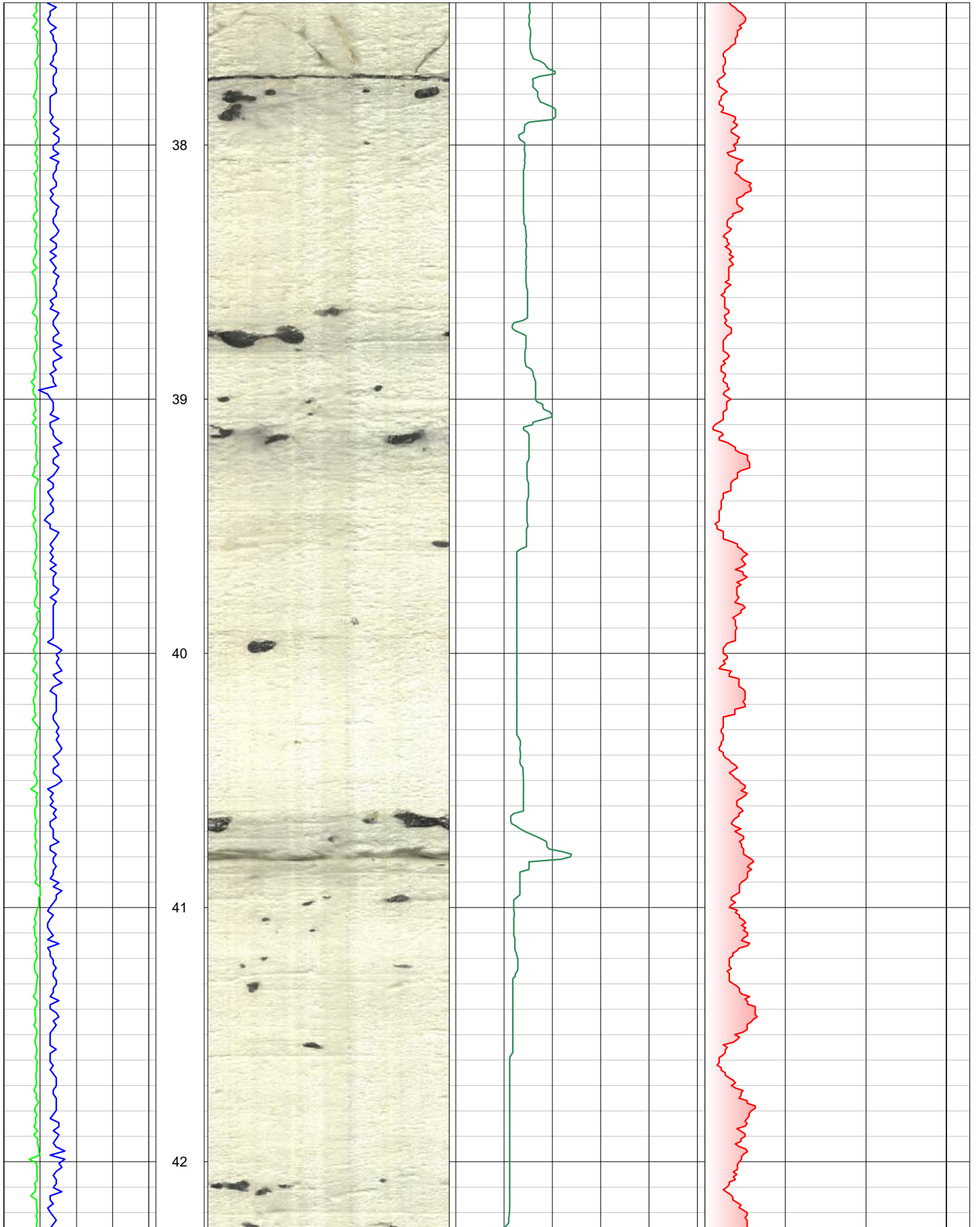


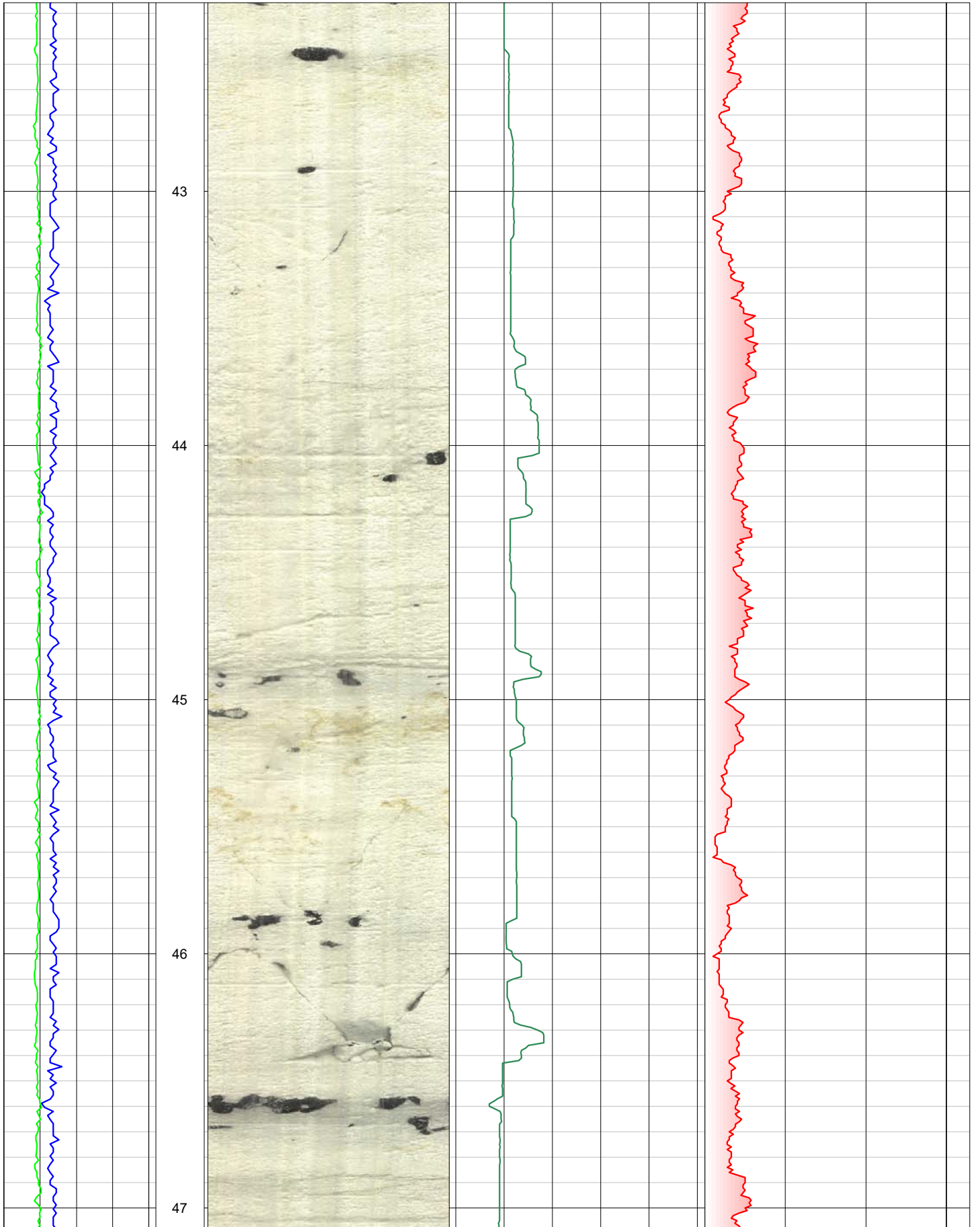


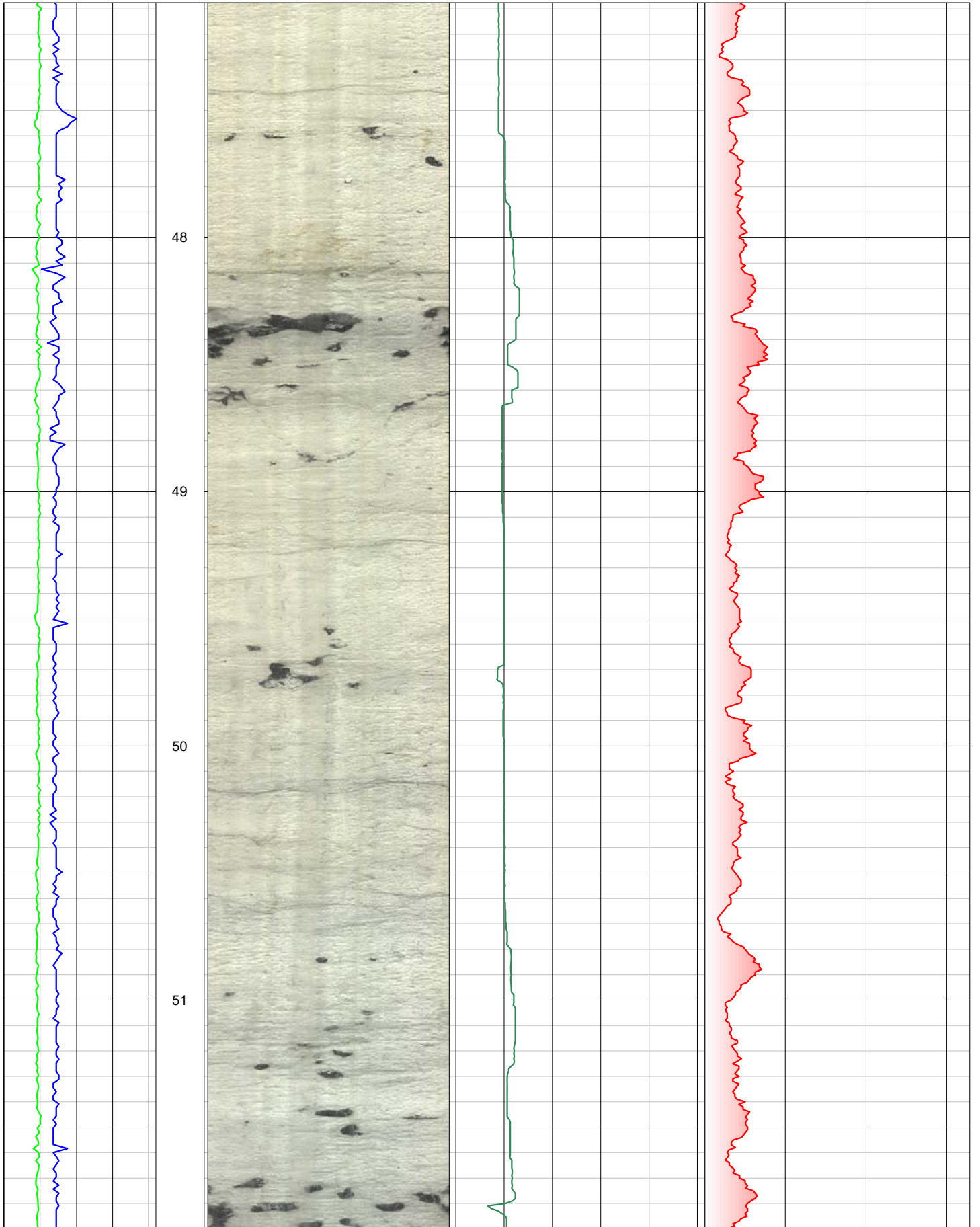


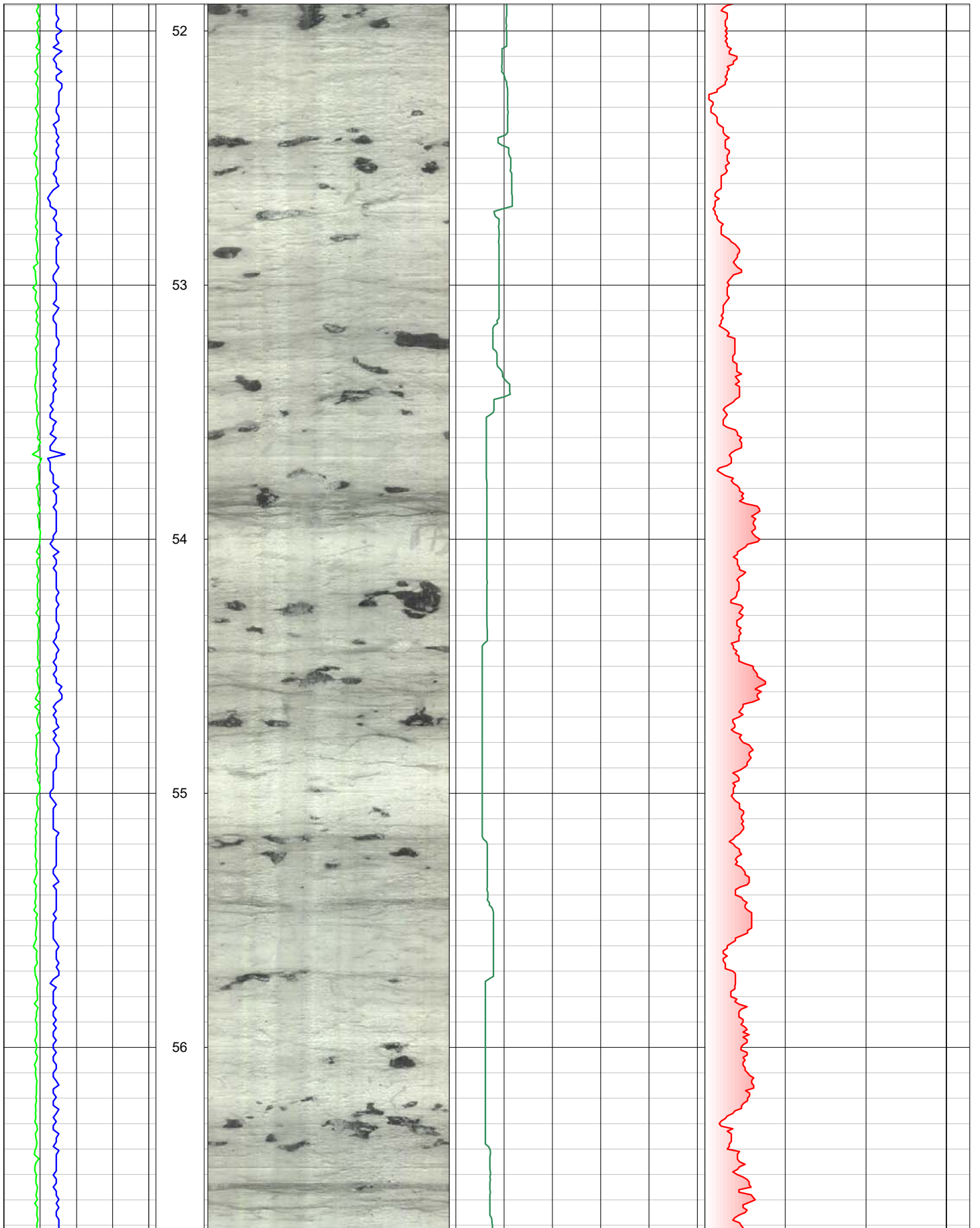


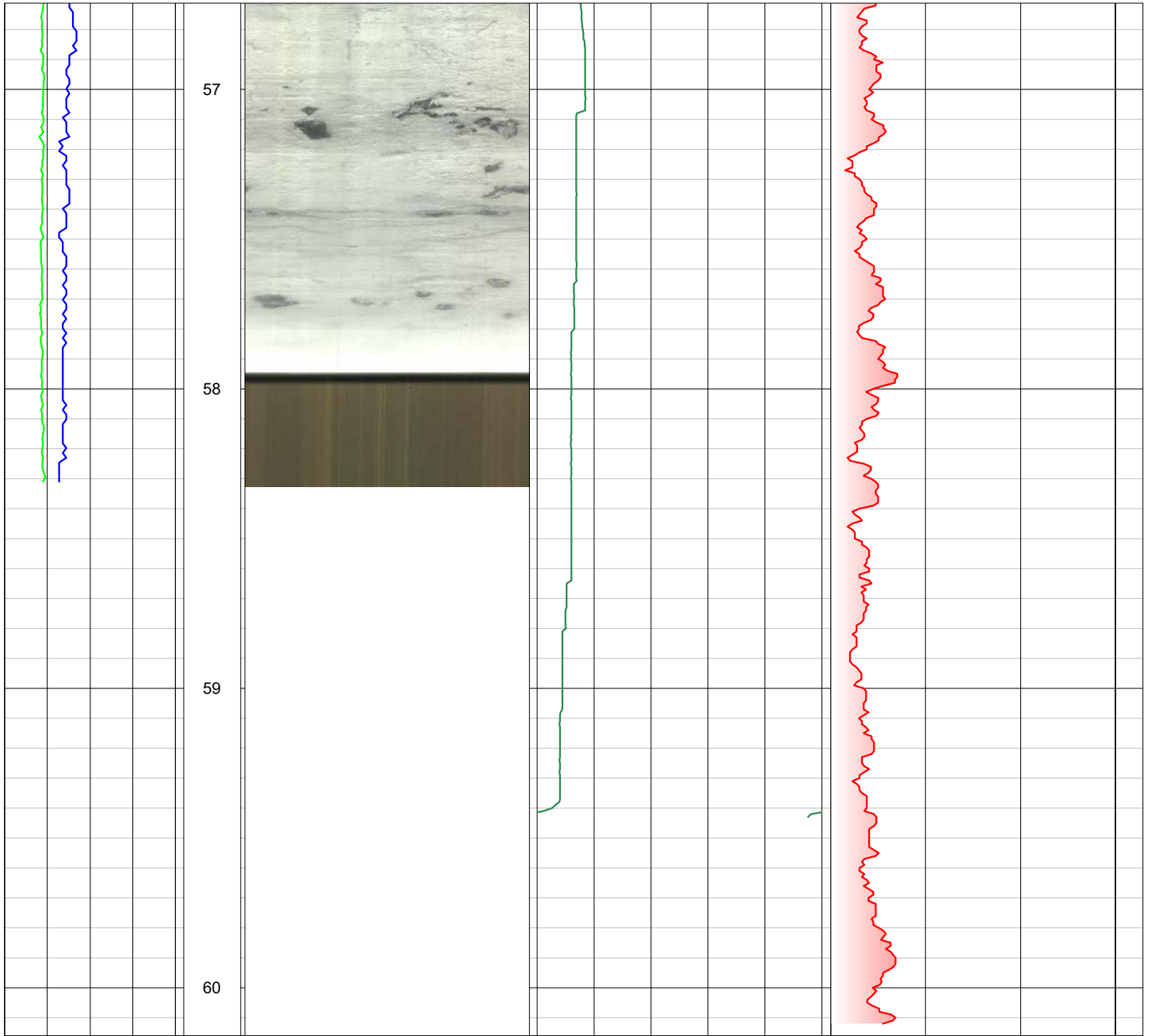














EUROPEAN GEOPHYSICAL SERVICES LTD

Client: **RPS Group**

Log Type:

Borehole: **R72005**

Field Log

FIELD LOG (SUBJECT TO FINAL QA CHANGES)

Location: **Stonehenge**

Area:

Grid Ref:

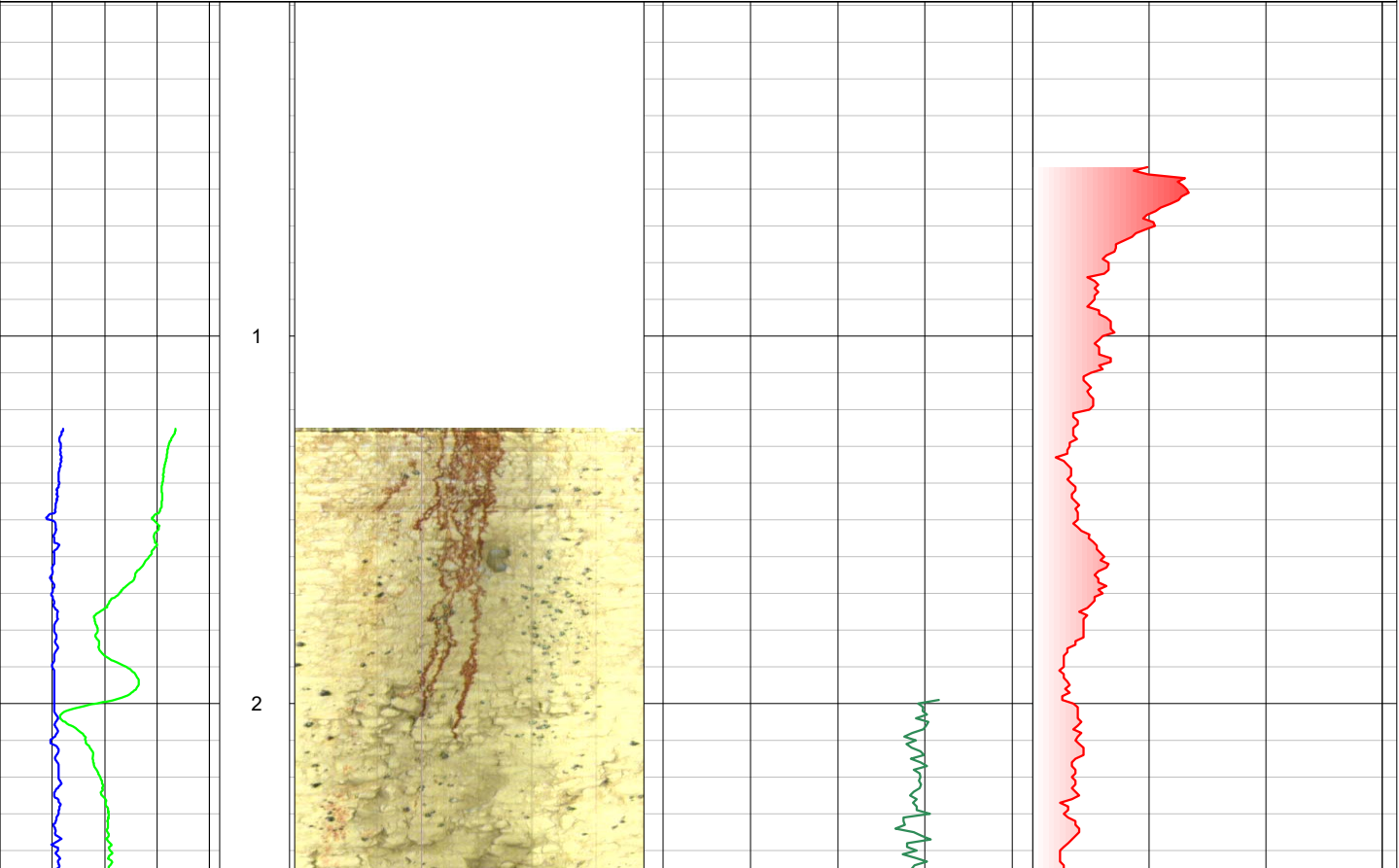
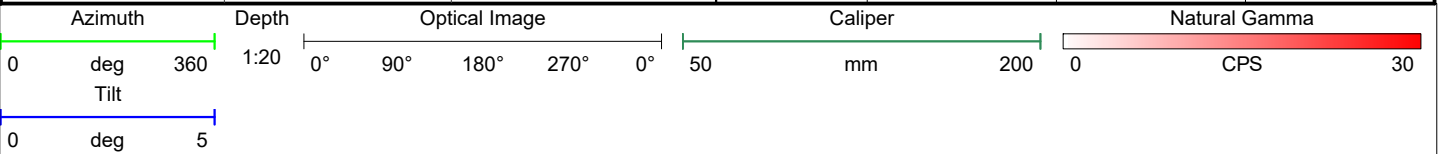
Elevation:

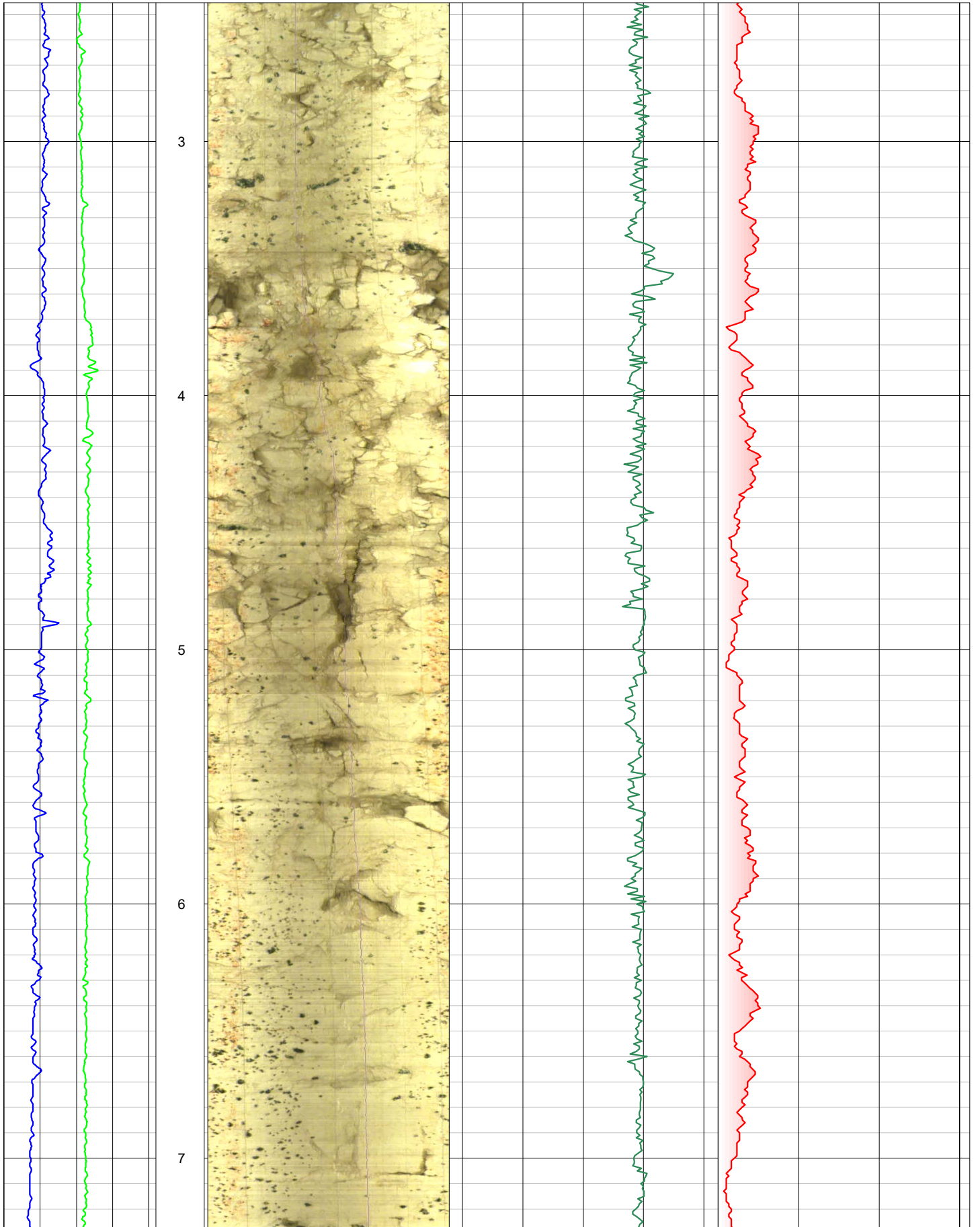
Drilled Depth: (m)		Date:	12th October 2020
Logged Depth: (m)	61.0	Recorded By:	C. Clinton
Logging Datum:	Ground Level	Remarks:	
Logged Interval: (m)	0.41 - 61.0		
Fluid Level: (m)	15.9		

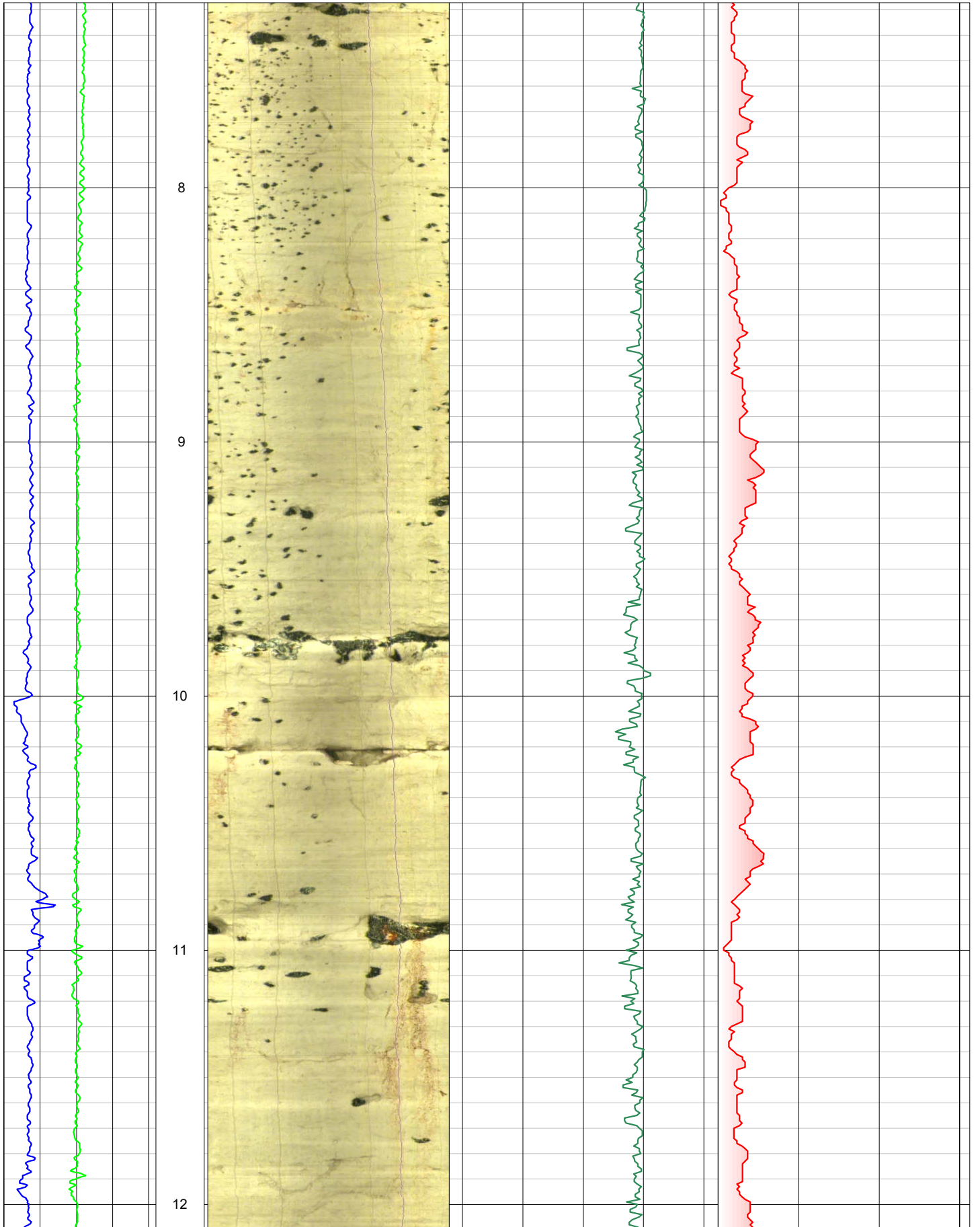
BOREHOLE RECORD

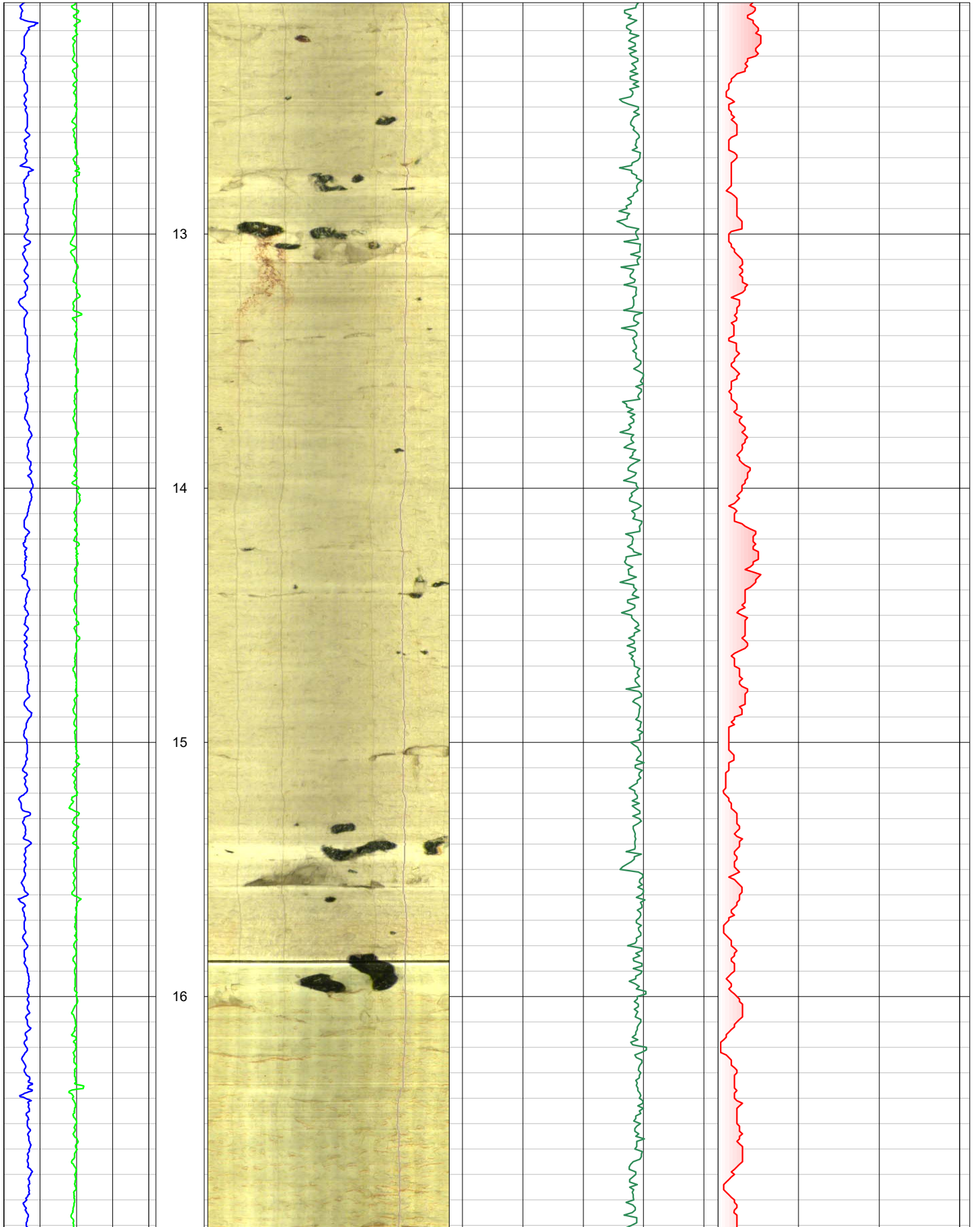
CASING RECORD

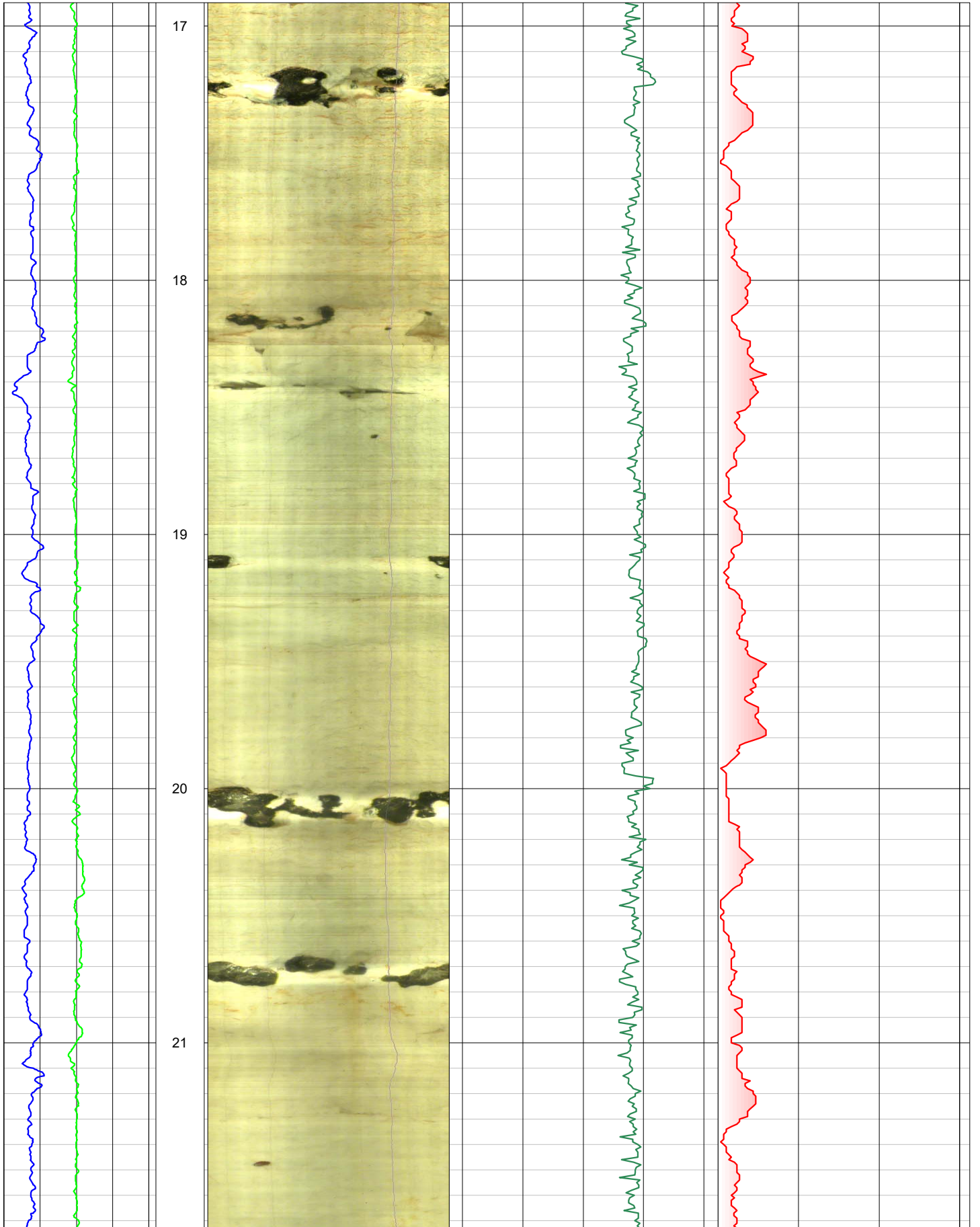
Bit: (mm)	From: (m)	To: (m)	Type	Size: (mm)	From: (m)	To: (m)
150	0	61.0	Steel	180	0	~1

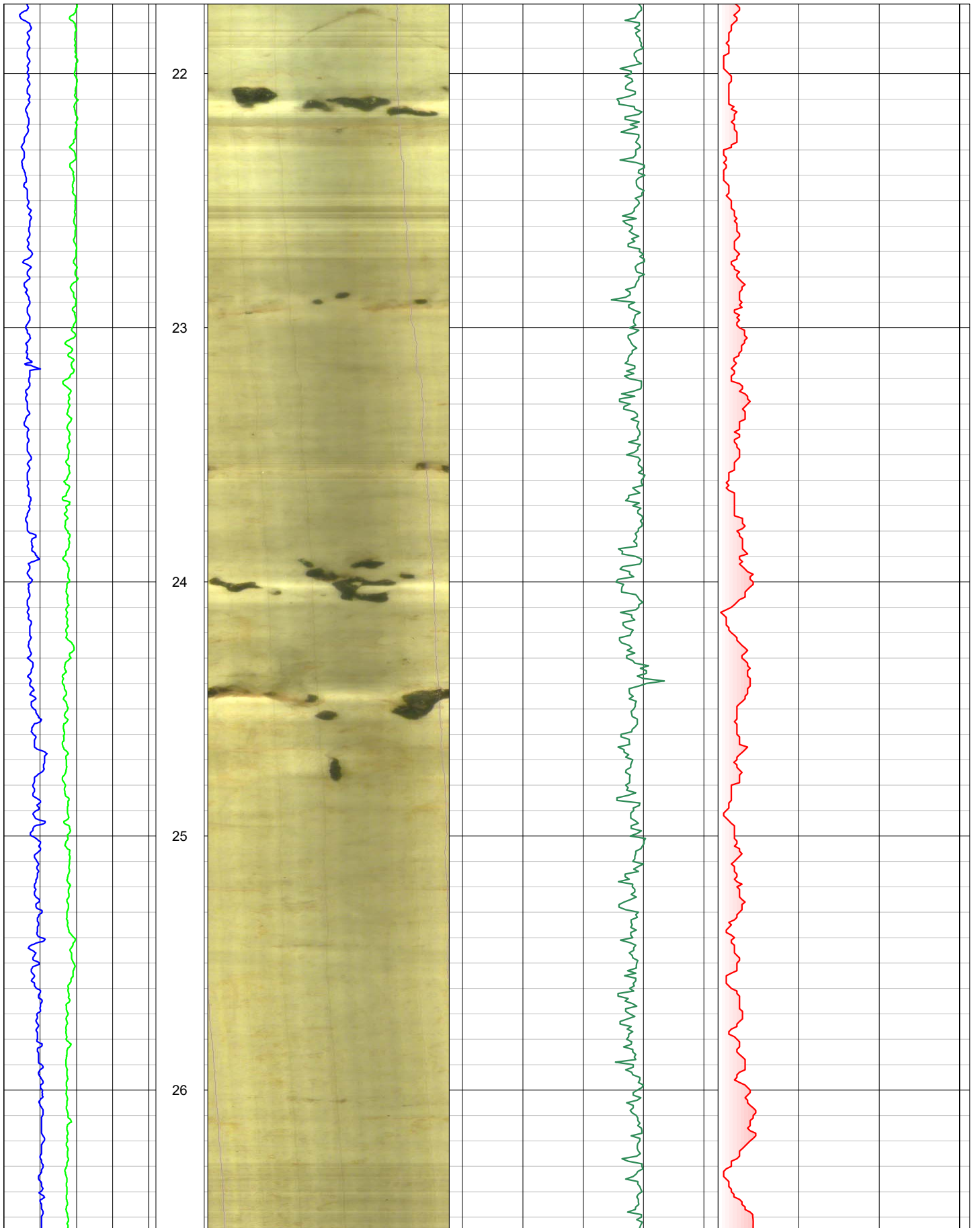


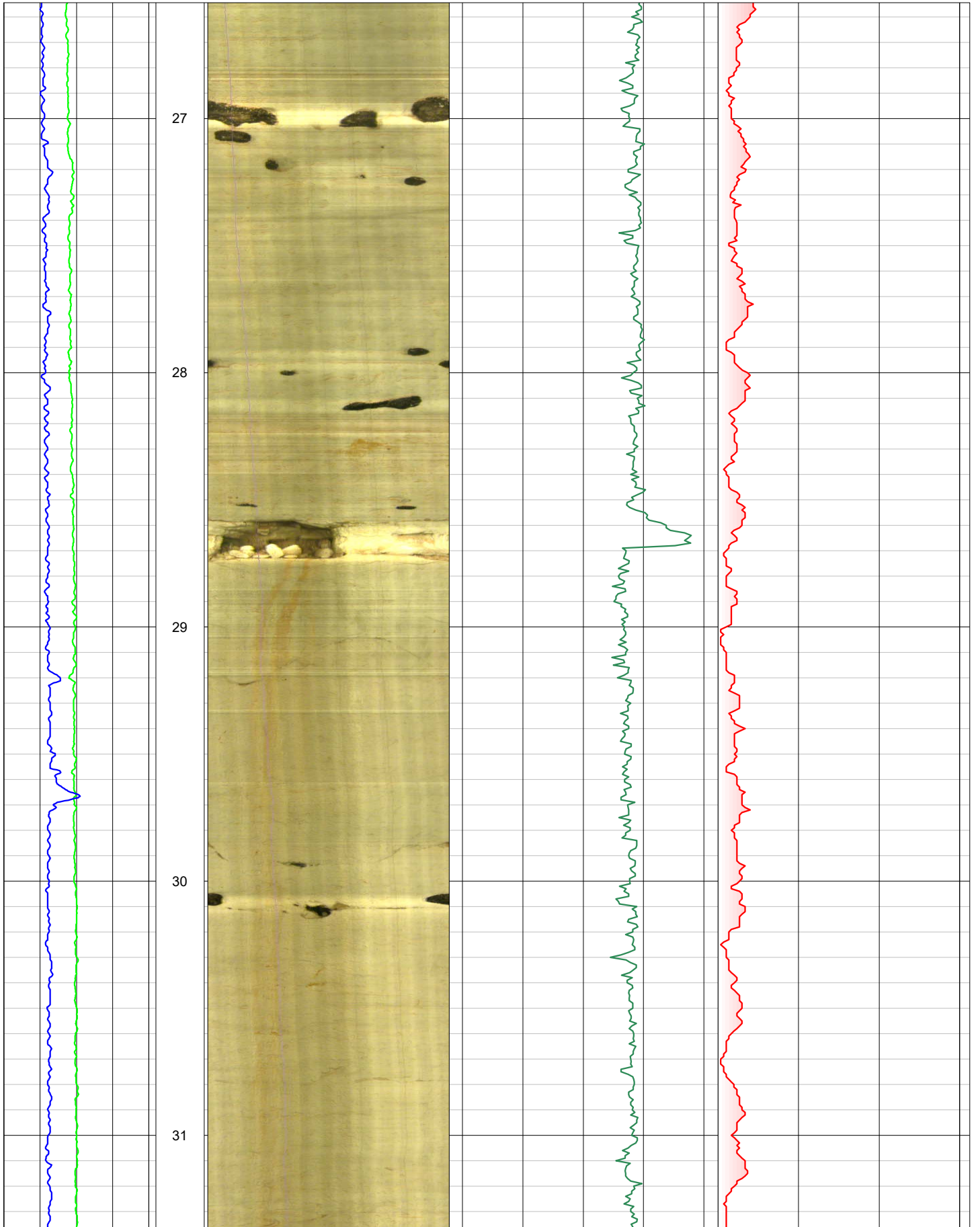


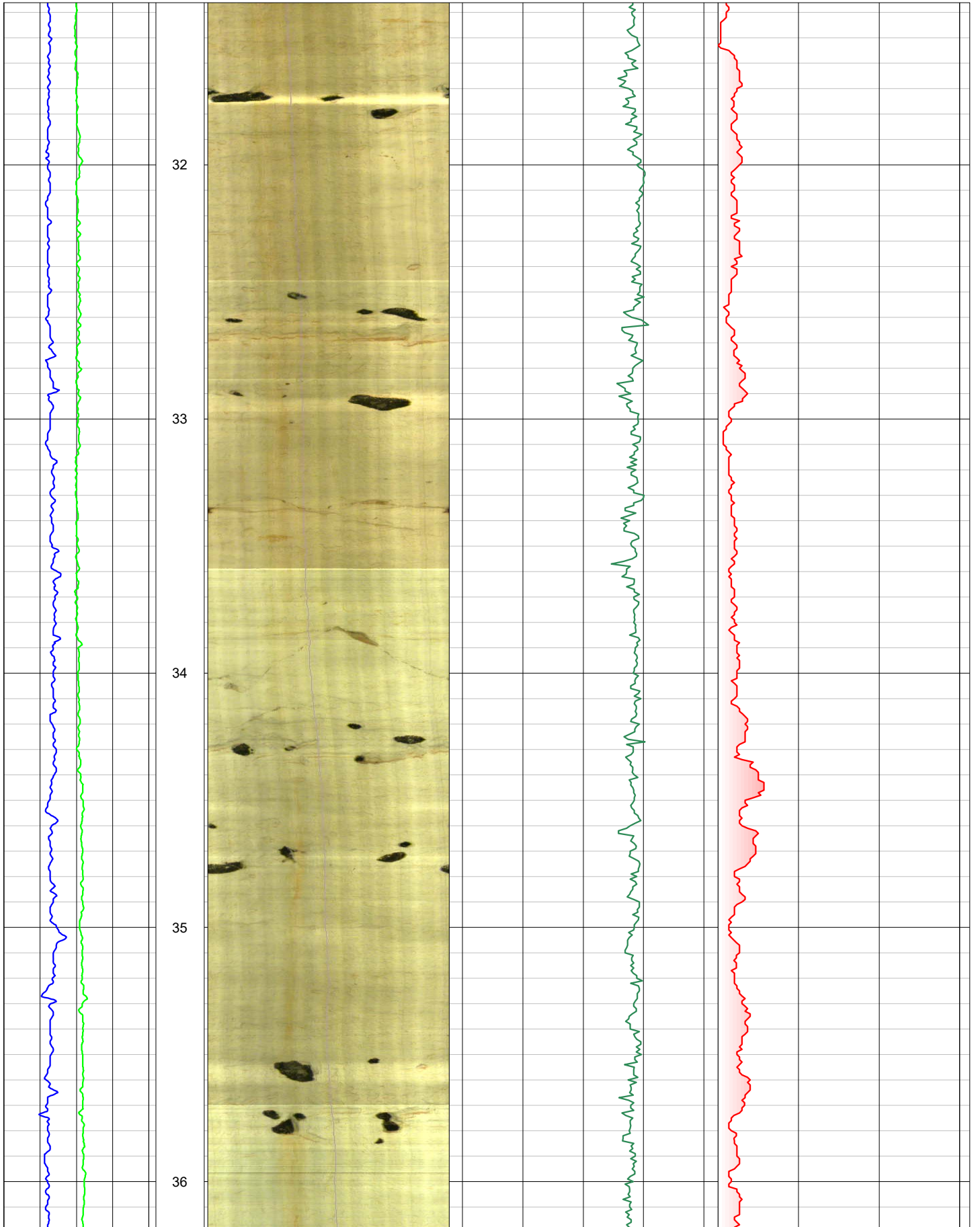


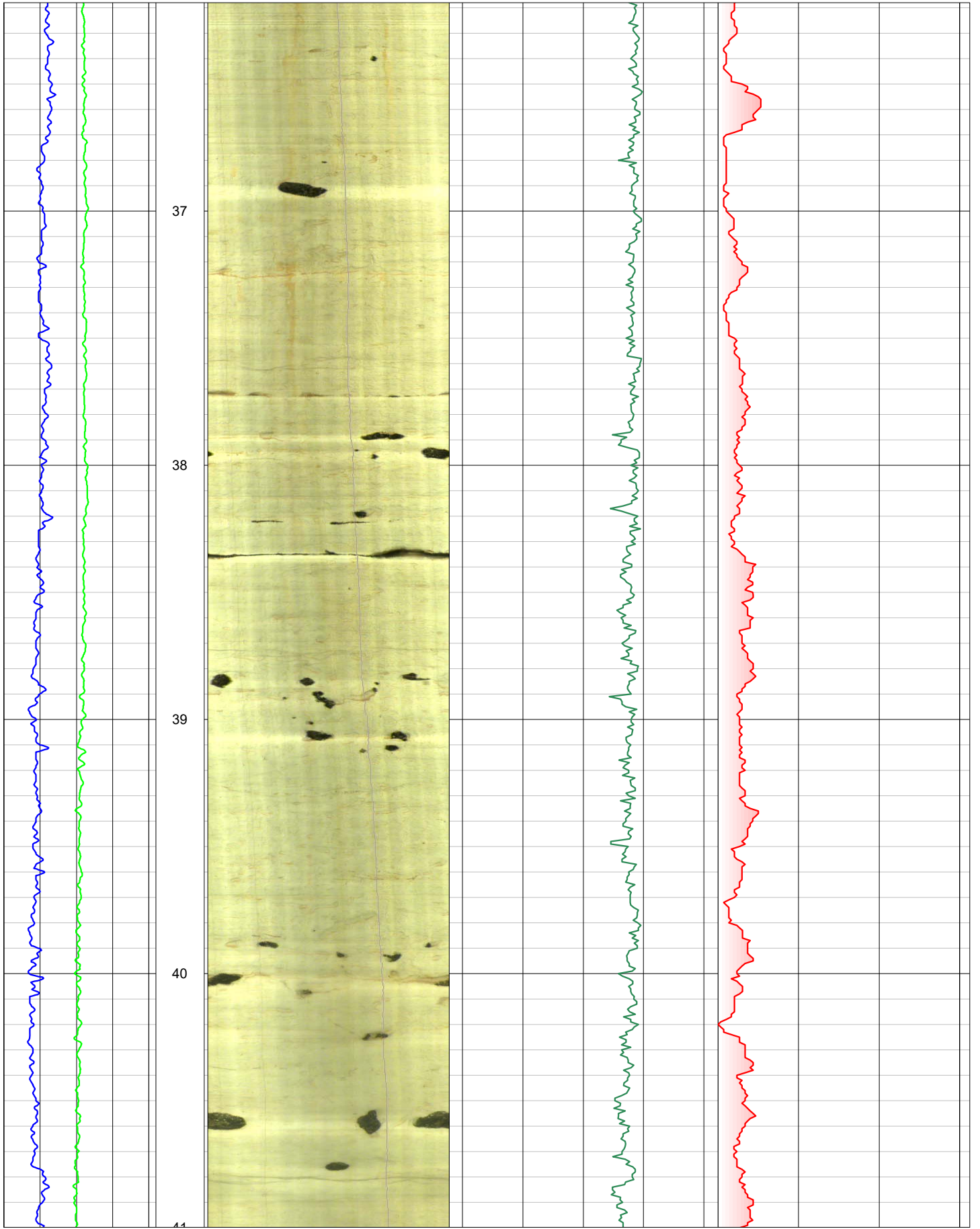


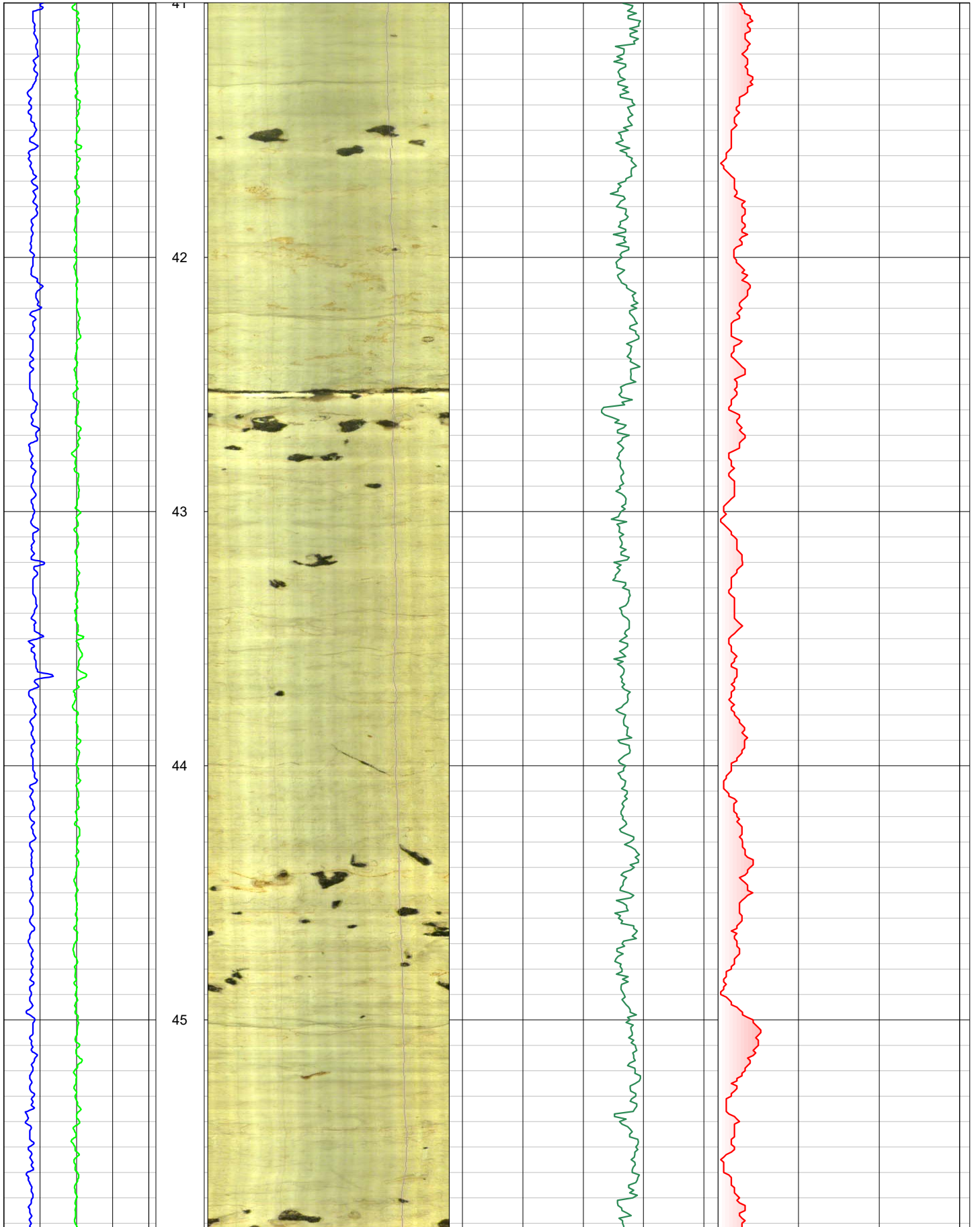


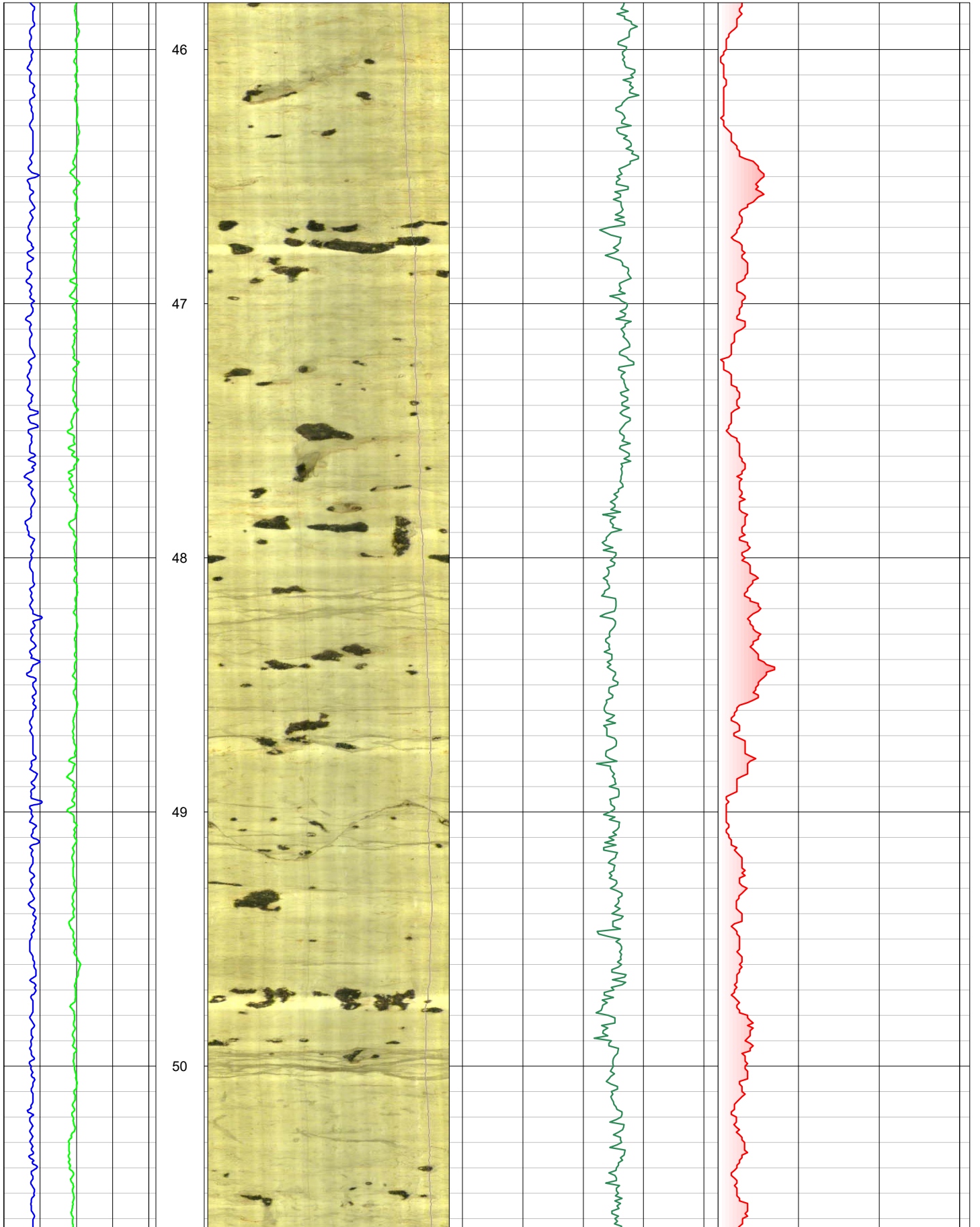


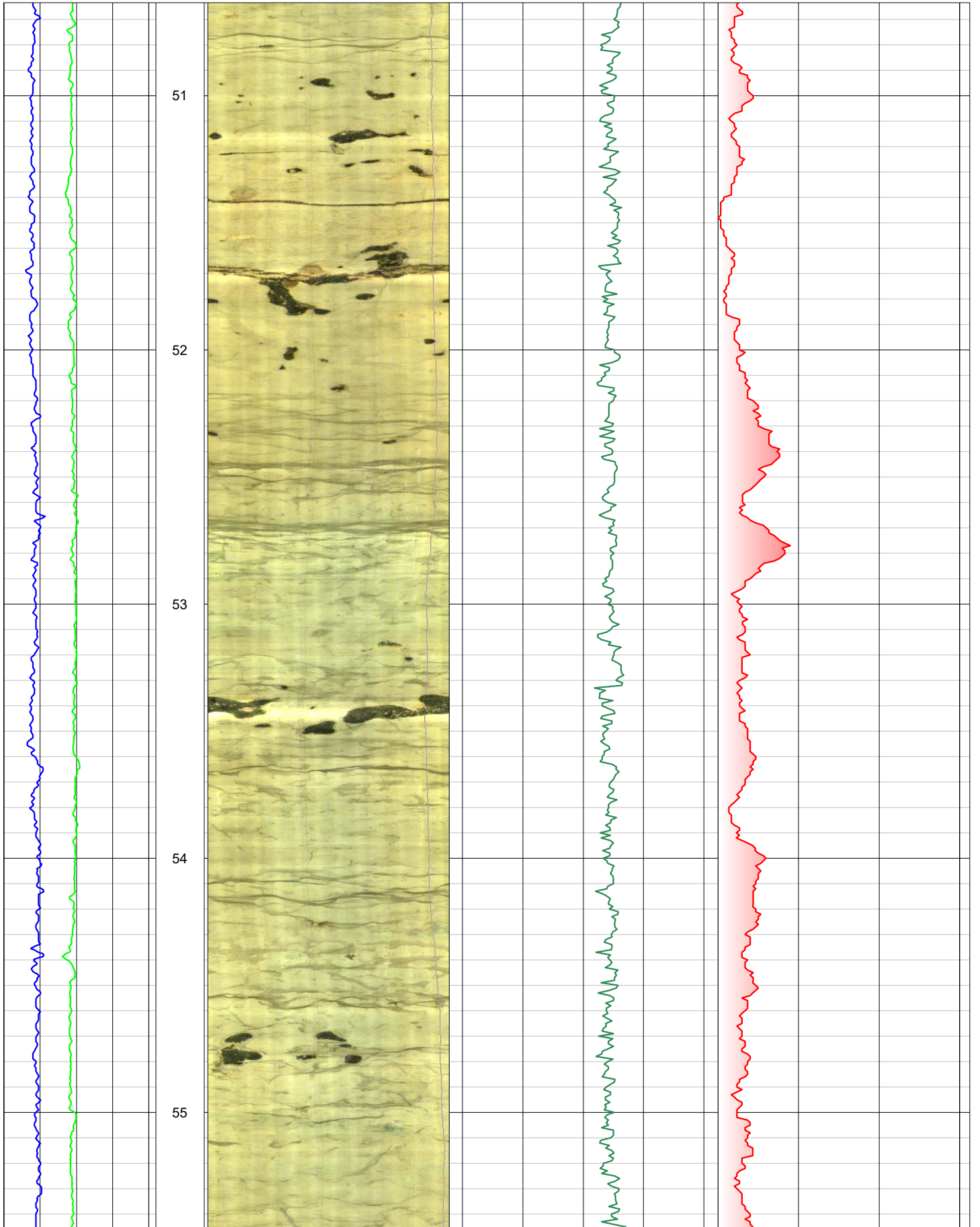


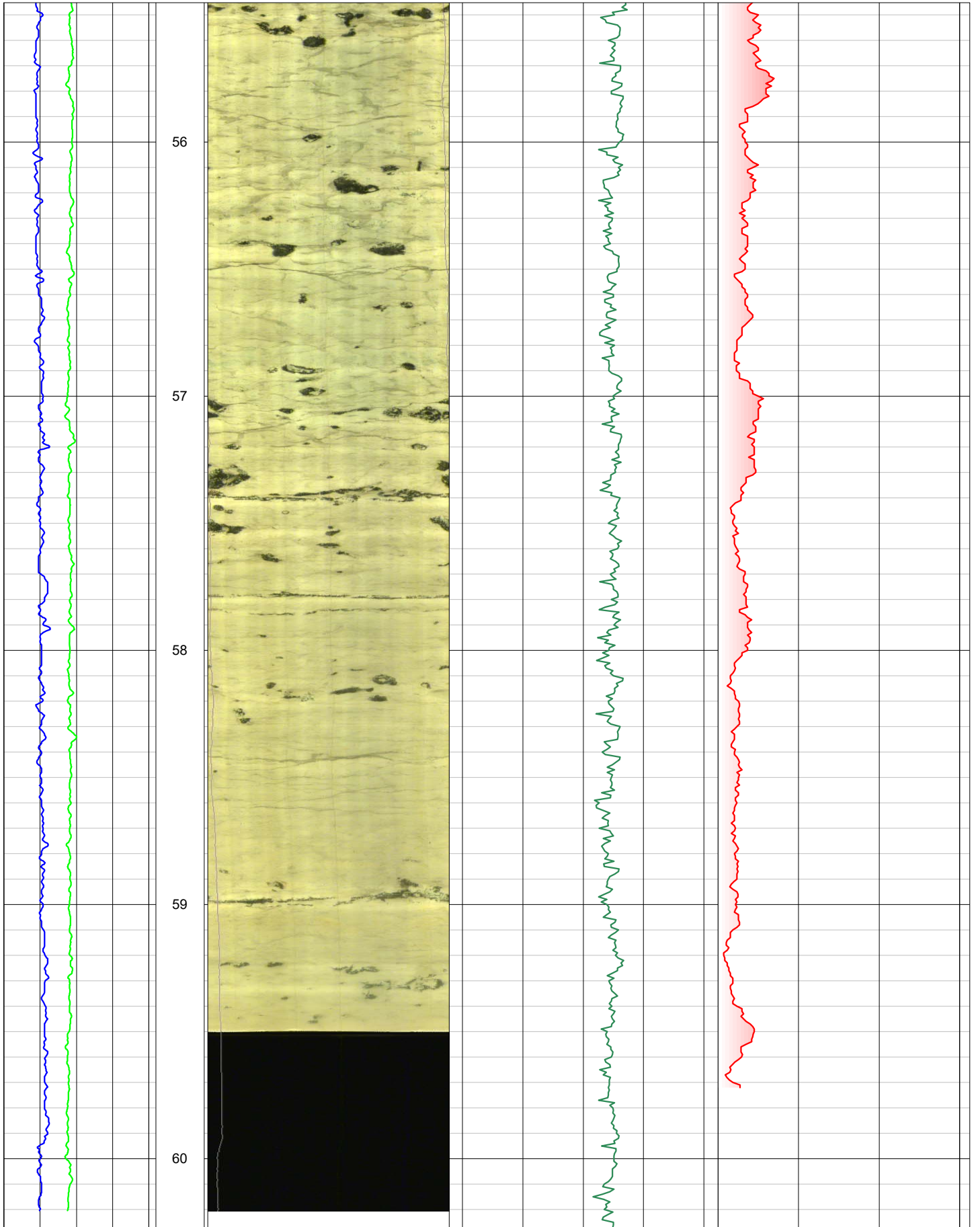


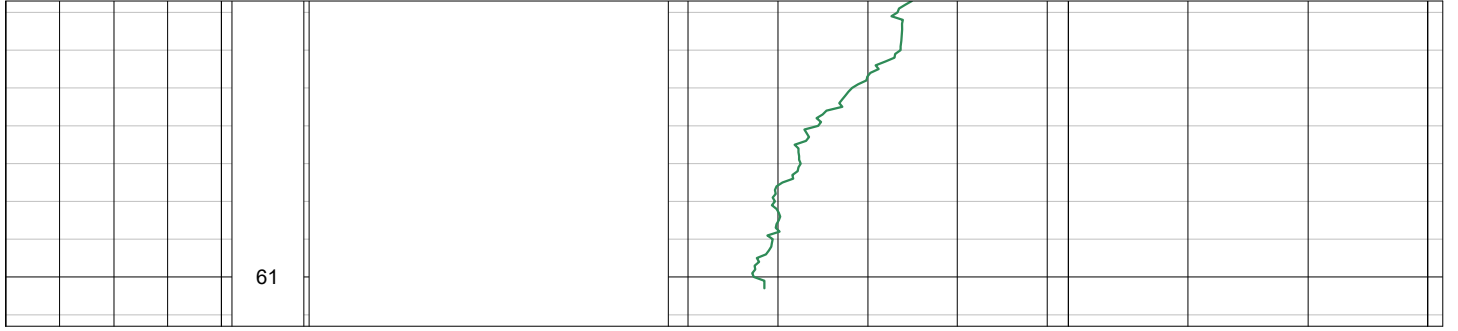














EUROPEAN GEOPHYSICAL SERVICES LTD

Client: **RPS Group**

Log Type:

Borehole: **R72101**

FIELD LOG

FIELD LOG (SUBJECT TO FINAL QA CHANGES)

Location: **Stonehenge**

Area:

Grid Ref:

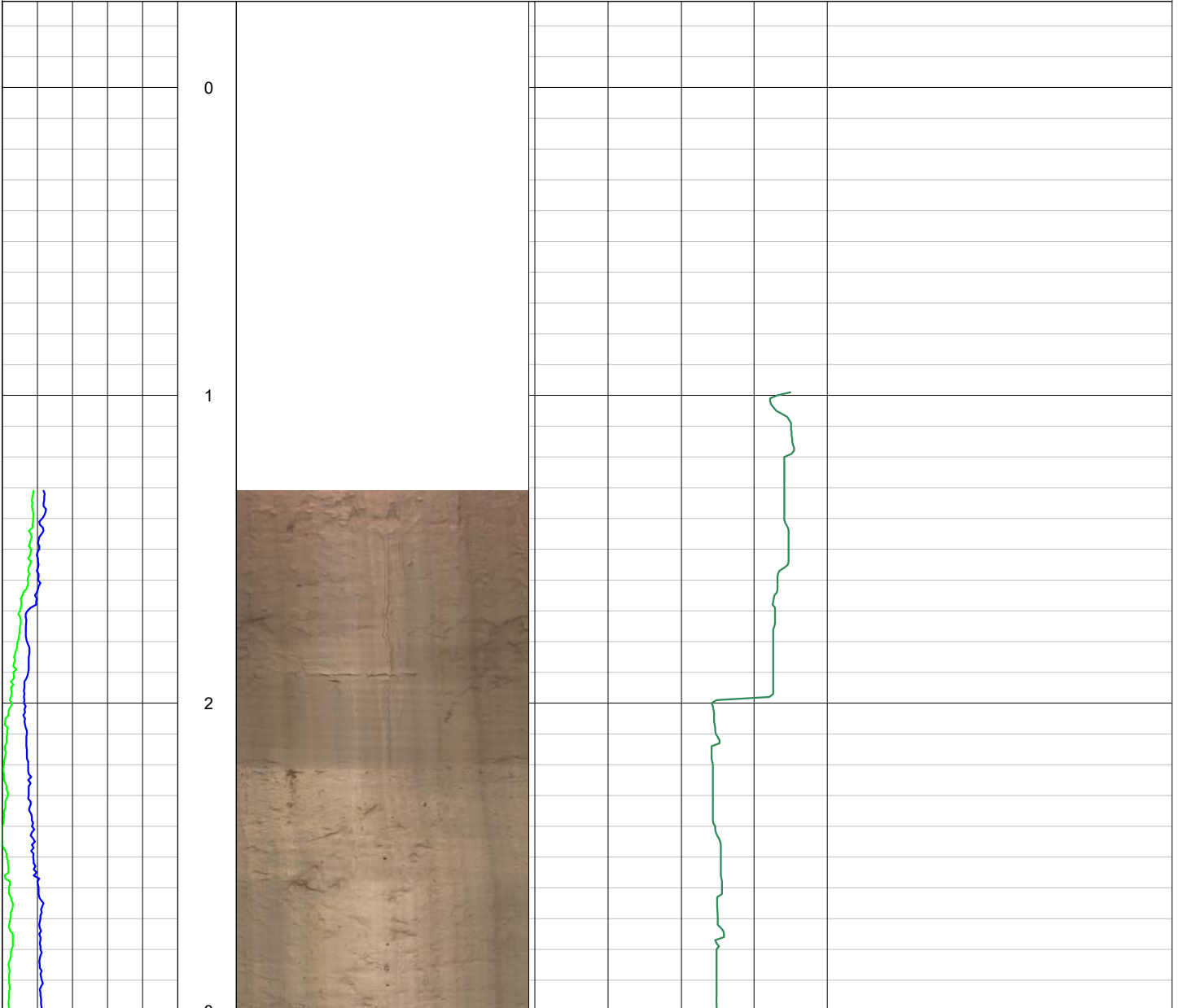
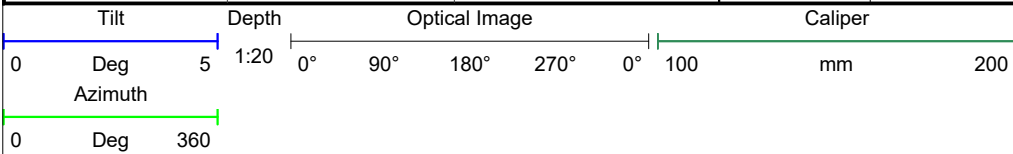
Elevation:

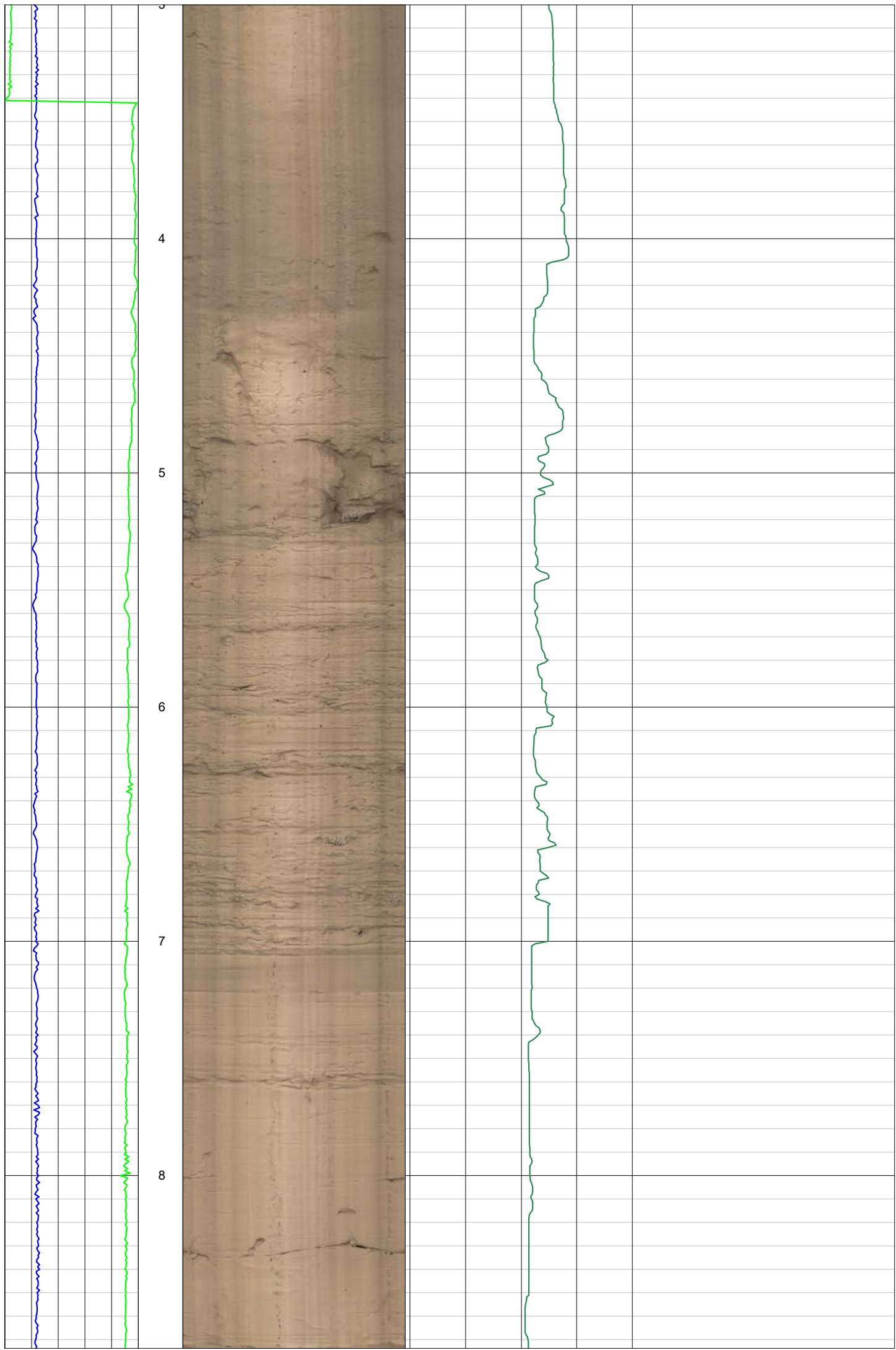
Drilled Depth: (m)	10	Date:	8th September 2020
Logged Depth: (m)	9.8	Recorded By:	M. Hand
Logging Datum:	Ground level	Remarks:	
Logged Interval: (m)	1 - 9.8		
Fluid Level: (m)	DRY		

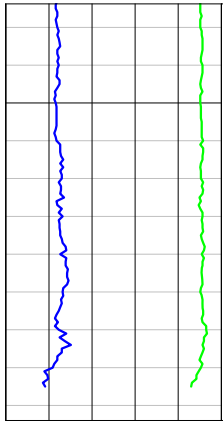
BOREHOLE RECORD

CASING RECORD

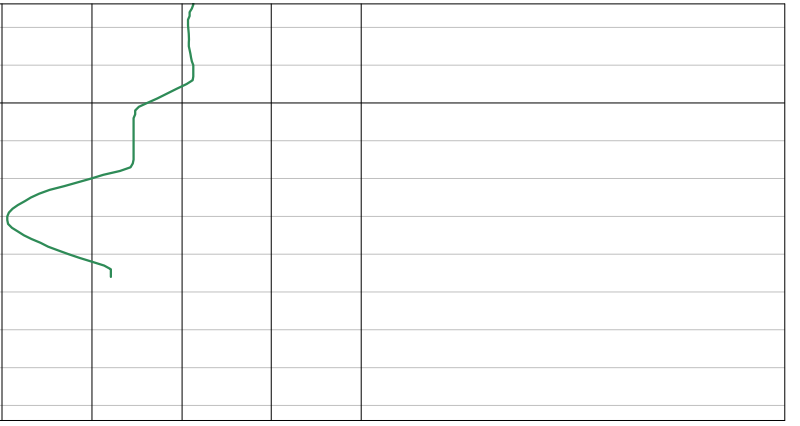
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			N/A			







9





EUROPEAN GEOPHYSICAL SERVICES LTD

Client: **RPS Group**

Log Type:

Borehole: **R72102**

FIELD LOG

FIELD LOG (SUBJECT TO FINAL QA CHANGES)

Location: **Stonehenge**

Area:

Grid Ref:

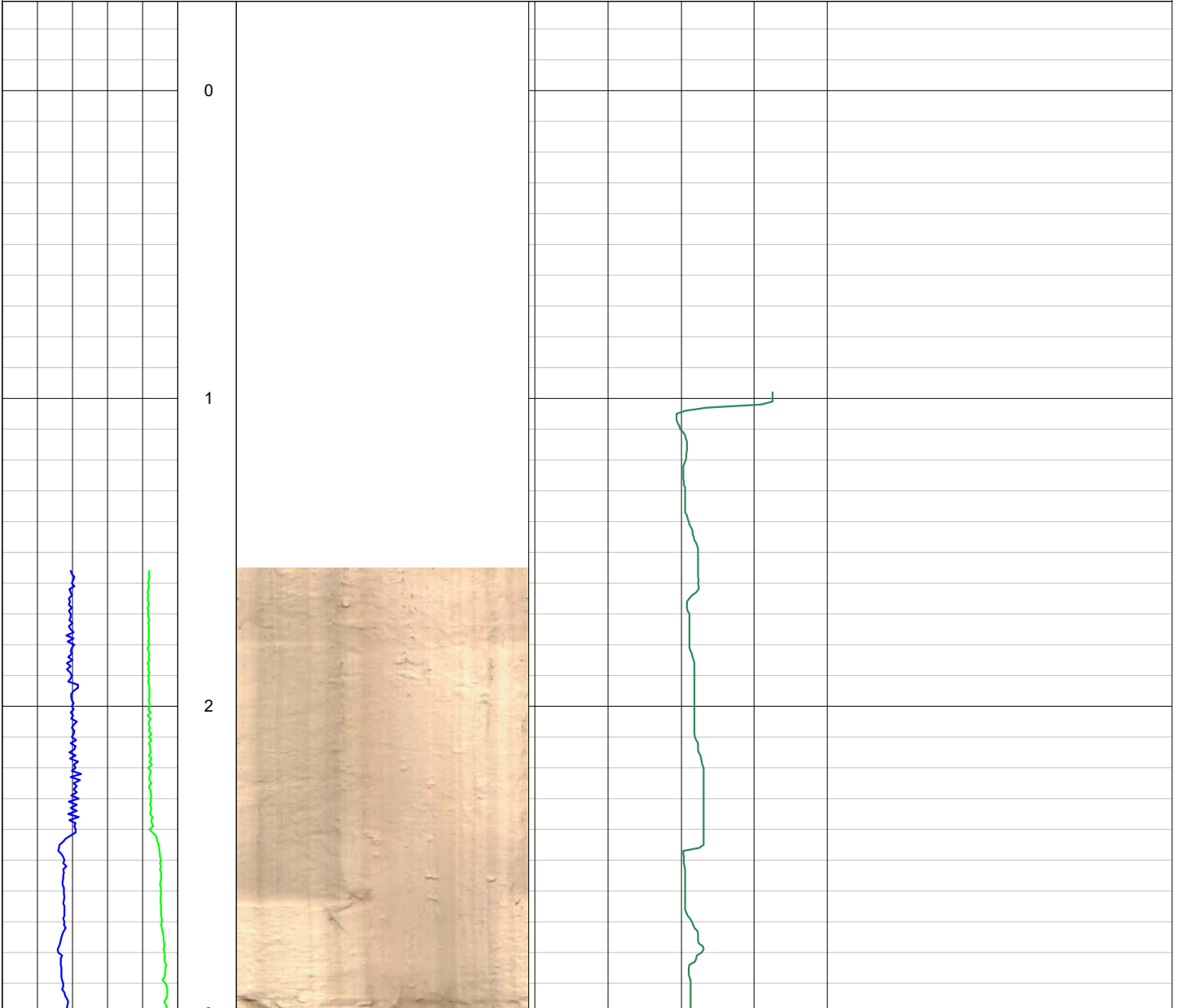
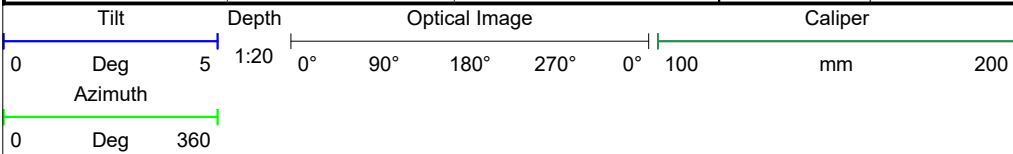
Elevation:

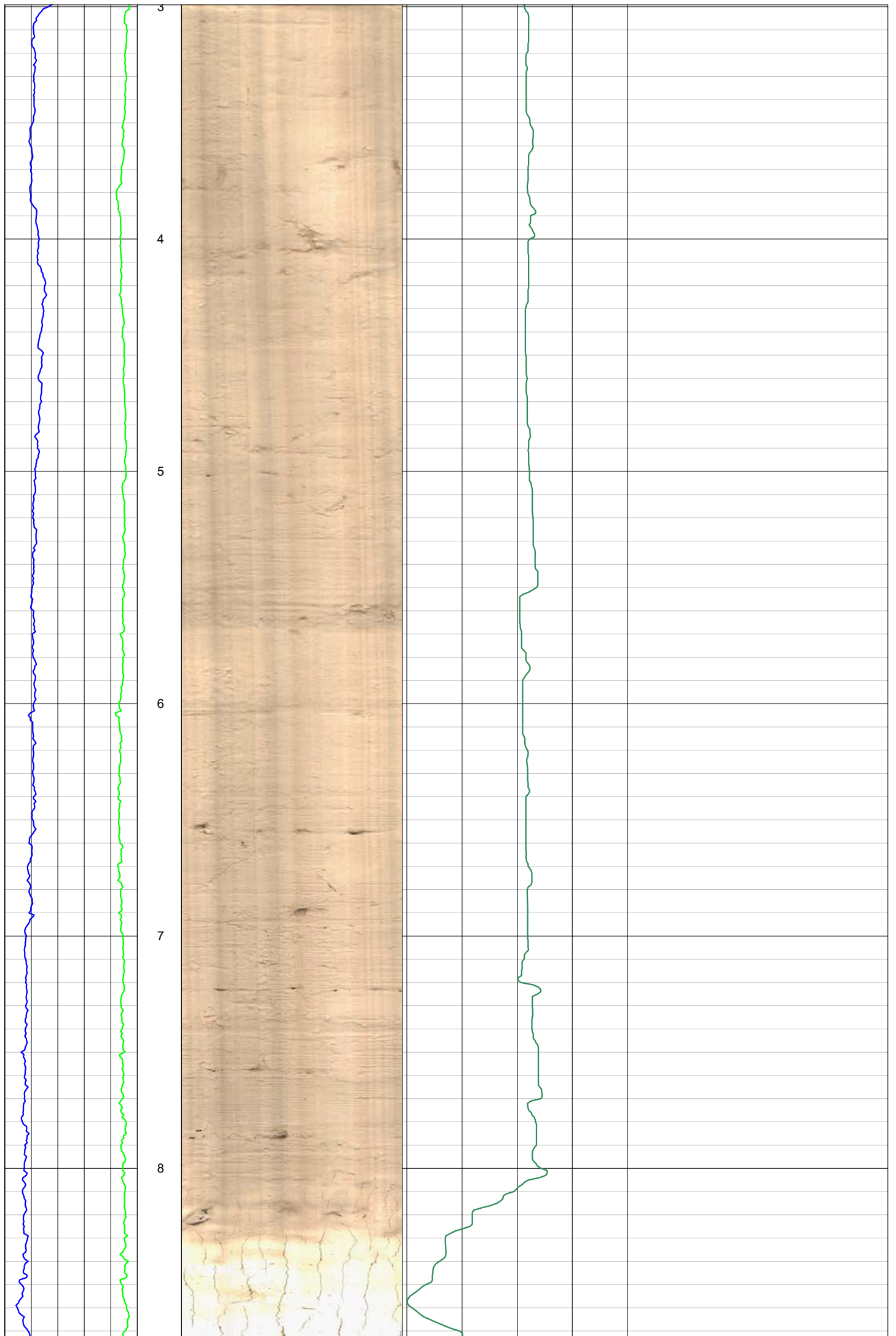
Drilled Depth: (m)	10	Date:	8th September 2020
Logged Depth: (m)	9	Recorded By:	M. Hand
Logging Datum:	Ground level	Remarks:	
Logged Interval: (m)	1 - 9		
Fluid Level: (m)	DRY		

BOREHOLE RECORD

CASING RECORD

Bit: (mm)	From: (m)	To: (m)	Type	Size: (mm)	From: (m)	To: (m)
150	1	10	N/A			





SUB APPENDIX C.2

HIGH PRESSURE DILATOMETER TESTING

Cambridge In-Situ

Project: A303 Amesbury to Berwick Down

Pressuremeter Testing Factual Report

Client: RPS

Contract No.: P1200116

Issue	Date	Description	Prepared	Checked	Approved
01	18/12/2020	Draft	JH	RC	RC
02	18/01/2021	Final – not comments received	JH	RC	RC

Date: 18th January 2021

Our Ref: P1200116

RPS

20 Western Avenue

Milton Park

Abingdon

Oxfordshire

OX14 4SH

Hastings Innovation Centre

Highfield Drive

St Leonards on Sea

East Sussex

TN38 9UH

Attention: Lauren Davies

**Pressuremeter testing at
A303 Amesbury to Berwick Down**

We have pleasure in providing a digital copy of our report for the above project.

We hope that you are satisfied with the performance of our staff, equipment and reporting on this project. If you should have any queries about any aspect of the works carried out, please do not hesitate to contact us. We look forward to being of service to you in the future.

Yours faithfully,

In Situ Site Investigation Limited



Darren Ward

Director

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ABBREVIATIONS

Pressuremeter types	
HPD	High pressure dilatometer
SBP	Self boring pressuremeter
DPM	Driven pressuremeter

In situ horizontal stress (σ_{ho})	
p_o	Cavity reference pressure
σ_{ho} (M&R)	In situ horizontal stress from Marsland & Randolph (1977) analysis (where $P_{yield} = P_L - S_u$)
σ_{ho} (LO)	In situ horizontal stress from lift-off analysis (SBP)
σ_{ho} (H&W)	In situ horizontal stress from unloading curve (Houlsby & Withers, 1988; DPM)
σ_{ho} (CM)	In situ horizontal stress from curve modelling (Whittle, 1999; SBP)

Undrained shear strength (kPa)	
S_u (loading)	Shear strength from loading curve, via Gibson & Anderson (1961) analysis
S_u (M&R)	Shear strength from Marsland & Randolph (1977) analysis (where $S_u = P_{yield} - P_L$)
S_u (unloading)	Shear strength from unloading curve, via Jefferies (1988) analysis (DPM & SBP)
S_u (H&W)	Shear strength from unloading curve, via Houlsby & Withers (1988) analysis (DPM)
P_L	Limit pressure via Gibson & Anderson (1961) analysis
P_L (H&W)	Limit pressure via Houlsby & Withers (1988) analysis (DPM)

Shear modulus parameters	
G_i	Initial shear modulus (MPa) derived from steep linear section of loading path, prior to yield
G_{ur}	Shear modulus (MPa) derived from unload-reload loop
ϵ_c	Cavity strain range over the unload-reload loop
β	Exponent of elasticity, after Bolton & Whittle (1999), where 1 is linear elastic
α	Shear stress constant (MPa), after Bolton & Whittle (1999)

Other	
P_{max}	Maximum test pressure reached prior to instrument unloading (MPa)
P_{yield}	Pressure at which material yield is assessed, defined as end of linear loading curve

1.0 INTRODUCTION

1.1 Site Details

At the request of RPS, In Situ Site Investigation Ltd (In Situ S.I.) carried out pressuremeter testing at the A303 Stonehenge site. The testing was required to gather geotechnical information for the improvement of the existing A303 roadway.

The pressuremeter testing was attempted in five boreholes. The fieldwork was carried out from 28th September to 20th November 2020.

This report presents the factual records of the pressuremeter testing, together with an interpretation of the test results to derive material parameters. Further specific details relating to the ground investigation, i.e. borehole locations and exploratory hole logs, are provided in the RPS report.

2.0 FIELDWORK

2.1 General

Twenty one pressuremeter tests were carried out in five boreholes constructed using a rotary drilling rig operated by RPS. The tests were carried out using a high pressure dilatometer (HPD). The testing was carried out in general accordance with BS EN ISO 22476-5 (2012) and BS 5930 (2020). The test depths were scheduled by the Client. A summary table of the tests is presented below.

Table 2.1. Summary of pressuremeter tests.

Borehole Reference	Test Reference	Date	Test Depth (mbgl)	Probe	Operator	Remarks
R71905	T01	28/09/2020	14.62	CI HPD	E Stockwell	
	T02	29/09/2020	22.41	CI HPD	E Stockwell	
	T03	30/09/2020	28.00	CI HPD	E Stockwell	
	T04	01/10/2020	32.80	CI HPD	E Stockwell	
	T05	02/10/2020	41.25	CI HPD	E Stockwell	
R71916	T01	21/10/2020	15.00	CI HPD	S Pearce	
	T02	22/10/2020	21.00	CI HPD	S Pearce	
	T03	23/10/2020	27.00	CI HPD	S Pearce	
	T04	27/10/2020	33.00	CI HPD	S Pearce	
	T05	27/10/2020	39.00	CI HPD	S Pearce	
R71917	T01	29/10/2020	14.60	CI HPD	S Pearce	
	T02	30/10/2020	21.00	CI HPD	S Pearce	
	T03	02/11/2020	27.00	CI HPD	S Pearce	
	T04	03/11/2020	33.00	CI HPD	S Pearce	
	T05	04/11/2020	39.00	CI HPD	S Pearce	
R71918	T01	16/11/2020	18.00	CI HPD	S Pearce	
	T02	16/11/2020	28.00	CI HPD	S Pearce	
	T03	17/11/2020	38.00	CI HPD	S Pearce	

Borehole Reference	Test Reference	Date	Test Depth (mbgl)	Probe	Operator	Remarks
R71919	T01	19/11/2020	22.00	CI HPD	S Pearce	
	T02	20/11/2020	33.00	CI HPD	S Pearce	
	T03	20/11/2020	44.00	CI HPD	S Pearce	

2.2 High Pressure Dilatometer (HPD)

The HPD is a cylindrical 95mm diameter probe which is inserted into a cored 99 to 101mm diameter test pocket, drilled using a T6-H or T6-101 core barrel. The HPD is therefore termed a pre-bored type instrument. The probe, approximately 1.5m in length, has a central section which is covered by a rubber membrane. Pressure applied to the inside of the instrument, via compressed air, forces the membrane to expand against the test pocket wall. The radial displacement of the inside boundary of the membrane is measured at six points equally distributed around the centre of the expanding section, by free moving arms. This displacement, and the pressure necessary to cause the movement, is continuously monitored by transducers contained within the instrument. The HPD is linked to the ground surface via a combined pressure hose and electrical power/communication umbilical cable which connects the instrument to the pressure source and readout unit.

Analogue to digital conversion of the displacement and pressure transducers is carried out within the pressuremeter electronics package. The pressuremeter output comprises a multiplexed signal which connects through the pressuremeter interface unit to the USB port of a laptop computer. Software, supplied by Cambridge Insitu, is used to record the data, convert the received signals to engineering units (using the pressure and displacement transducer calibrations) and display these in real time on the laptop computer during testing to allow control of the test by the operator. Plotting these readings of displacement against pressure produces a loading curve for the material being tested. A number of mathematical analyses are applied to translate this loading curve into material strength and stiffness parameters.

The testing on this project was undertaken using a probe manufactured by Cambridge Insitu. Details of the instrument are provided below. Corrections measured for membrane stiffness (essentially resistance to inflation in air) were carried out during the testing program

Table 2.2. Instrument details.

Instrument	Diameter (mm)	Pressure Capacity (MPa)	Displacement Measurement	ID & Serial No.
HPD	95	20	6 arms at 60° 3 opposite pairs	CI HPD (Wally)

2.3 HPD Testing Procedure

The borehole was constructed using a rotary drilling rig by conventional rotary coring at nominal 116mm diameter, using water flush, to approximately 1.5m above the scheduled pressuremeter test depth. A 2 to 3m long section was then drilling using a T6-H core barrel to provide a test pocket of nominal diameter 99mm. The HPD was inserted into the test pocket as soon as practicably possible using 2 $\frac{3}{8}$ API drill rods, lowered in via the drilling rig winch.

The pressuremeter tests were carried out in a stress-controlled manner using a manually operated gas control box to pressurise the HPD at an appropriate rate for the ground conditions. During the tests a number of unload-reload loops were performed. Before carrying out the loops, a short holding period was maintained to allow reduction of creep on the ground. The loading was continued until either the ground had failed, maximum arm displacement had occurred, or if at lower pressure, expansion around the probe was uneven, such that in the opinion of the operator, continuation of the loading would result in risk of damage to the probe. Upon unloading and deflation of the membrane, the instrument was withdrawn from the tested section and recovered back to the ground surface. The borehole was then advanced to the next specified test depth and the sequence repeated, until the testing program was completed.

3.0 TEST INTERPRETATION

3.1 Introduction

The pressure / cavity strain curve has been analysed to determine various material parameters, as appropriate, including:

Cavity reference pressure	p_o
Initial shear modulus	G_i
Yield	P_{yield}
Unload-reload shear modulus	G_{ur}
Undrained shear strength	s_u
Limit Pressure	P_L

The analysis methodologies used have followed the industry accepted practice for interpretation of pressuremeter tests (e.g. Clarke, 1996; Mair & Wood, 1987). The nature of the material tested can result in some limitations in the application and appropriateness of the interpretation methods. Any such limitations, if present, are discussed below and should be considered when selecting material parameters for engineering design purposes.

3.2 Description of Material Tested

The borehole record has been cross referenced with the test to provide an indication of the geology at the test depth (see Appendix A). The encountered ground conditions were CHALK bedrock. For more details refer to the RPS report.

3.3 Cavity Reference Pressure

The act of drilling into undisturbed ground relieves the in situ horizontal stress, which is then effectively restored as the instrument membrane is initially pressurised. During this initial loading, a linear pressure / displacement response is anticipated as the pressure is increased and then exceeds the cavity reference pressure. With the HPD instrument, the direct correlation between the cavity reference pressure and in situ horizontal stress is problematic and should be treated with caution. This is due to the large potential for disturbance during test pocket formation and probable relaxation or stress relief of the ground following drilling of the open test pocket.

Marsland and Randolph (1977) proposed that in the vicinity of in situ horizontal stress, soil behaves elastically and therefore the initial loading curve is linear. This elastic behaviour will cease when the undrained shear strength of the soil in the cavity wall is reached, and hence the loading curve will then begin to curve away from linearity. The point at which the loading curve becomes non linear (or the onset of yield, P_{yield}), represents the in situ horizontal stress plus the undrained shear strength at this point:

$$P_{yield} = \sigma_{ho} + s_u.$$

The tests performed at the site were in CHALK rock. However, the analysis method used to determine the undrained shear strength assumes the material is a perfectly elastic prior to failure and perfectly plastic post failure. For a rock this analysis may not be valid as the material may behave as a brittle material and fail in tension, or in triaxial compression, depending on the strength of the material and in situ stress conditions.

3.4 Shear Modulus

A pressuremeter test, in an elastic, perfectly plastic material, imparts a pure shear failure, hence it is normal to report shear modulus in preference to an elastic modulus. Shear modulus is determined from the initial loading curve, and from unload reload loops, performed at intervals during the test progression. The relationship used to determine shear modulus (G) is below, where ϵ_c is the cavity strain range:

$$G = \frac{1}{2} \frac{dp}{d\epsilon_c}$$

Haberfield and Johnson (1993) have suggested that the unload-reload modulus is the most reliable parameter from a pressuremeter test in rock. It is noted that the nature and spacing of fissures in the rock mass will affect the result. Widely spaced fissures may result in the test giving the intact modulus of the rock, rather than a mass modulus, and / or open fissures may be closed as the test progresses and give a modulus which is higher than the mass modulus.

Note is made that often in clays and sands some hysteresis is generally evident, and it is possible to determine a secant shear modulus from the reloading portion of an unload reload loop. A high degree of consistency is often possible when plotting secant shear modulus results from individual tests. This may be further extended to a series of tests in a geological formation by normalising via undrained shear strength, or in situ stress. The various plots for both initial loading shear modulus (G_i) and the shear modulus derived from unload reload loops (G_{ur}) are presented graphically in the test results.

Individual unload reload loops can also be analysed to determine small strain stiffness parameters. This is achieved by taking a secant modulus from the base of the loop, to the individual points on the reloading curve. Plotting the cavity strain range against modulus, gives an indication of how stiffness varies with strain. Further, a Bolton and Whittle (1999) analysis can be performed to investigate the non linear elastic / plastic behaviour.

The secant modulus (G) can be converted to an undrained elastic (Youngs) modulus (E_u) by use of the following relationship:

$$E_u = 2.G(1 + \nu) \quad \text{Where } \nu = \text{Poisson's ratio (assumed 0.5)}$$

Plots of calculated secant modulus values at varying shear strain % are provided within the analysis results. It is noted that any user of this analysis should satisfy themselves that it is appropriate to the material tested.

3.5 Strength

Undrained shear strength has been determined using Gibson and Anderson (1961) for the loading portion of the test curve. This is the generally accepted method for the determination of strength and are based on the assumption of an elastic - perfectly plastic material. The analysis of Gibson and Anderson (1961) also provides a Limit Pressure (P_L). This is a limiting pressure defined as the pressure at which the change in volume (ΔV) divided by the current volume (V) is equal to one. While this is not achieved in practice, it can be determined by extrapolation. Note is also made that the definition of P_L is different to that associated with a Ménard Limit Pressure, and the two should not be interchanged.

3.6 Summary of Results

A summary table of the analysis results is presented in Appendix A, followed by the individual full graphical analyses for the tests completed.

4.0 REFERENCES

Bolton, M.D. & Whittle, R.W. (1999) A non-linear elastic/perfectly plastic analysis for plane strain undrained expansion tests. *Géotechnique*, Vol. 49, No. 1, pp. 133-141.

BS EN ISO 22476-5 (2012) Geotechnical investigation and testing - Field testing. Part 5: Flexible dilatometer test. British Standards Institution.

BS 5930 (2020) Code of practice for site investigations. British Standards Institution.

Clarke, B.G. (1996) Pressuremeters in geotechnical design. London: Blackie Academic and Professional.

Gibson, R.E. & Anderson, W.F. (1961) In situ measurement of soil properties with the pressuremeter. *Civil Engineering and Public Works Review*, Vol. 56, No. 658 May, pp. 615-618.

Haberfield, C. M. and Johnston, I.W. (1993) Factors influencing the interpretation of pressuremeter tests in soft rock, Proc. Symp. on Geotechnical Engineering of Hard Soils — Soft Rocks, Athens, Vol. 1, Balkema, Rotterdam, pp. 525-532.

Mair, R.J. & Wood, D.M. (1987) Pressuremeter testing: methods and interpretation. CIRIA Ground Engineering Report: In-situ Testing. London.

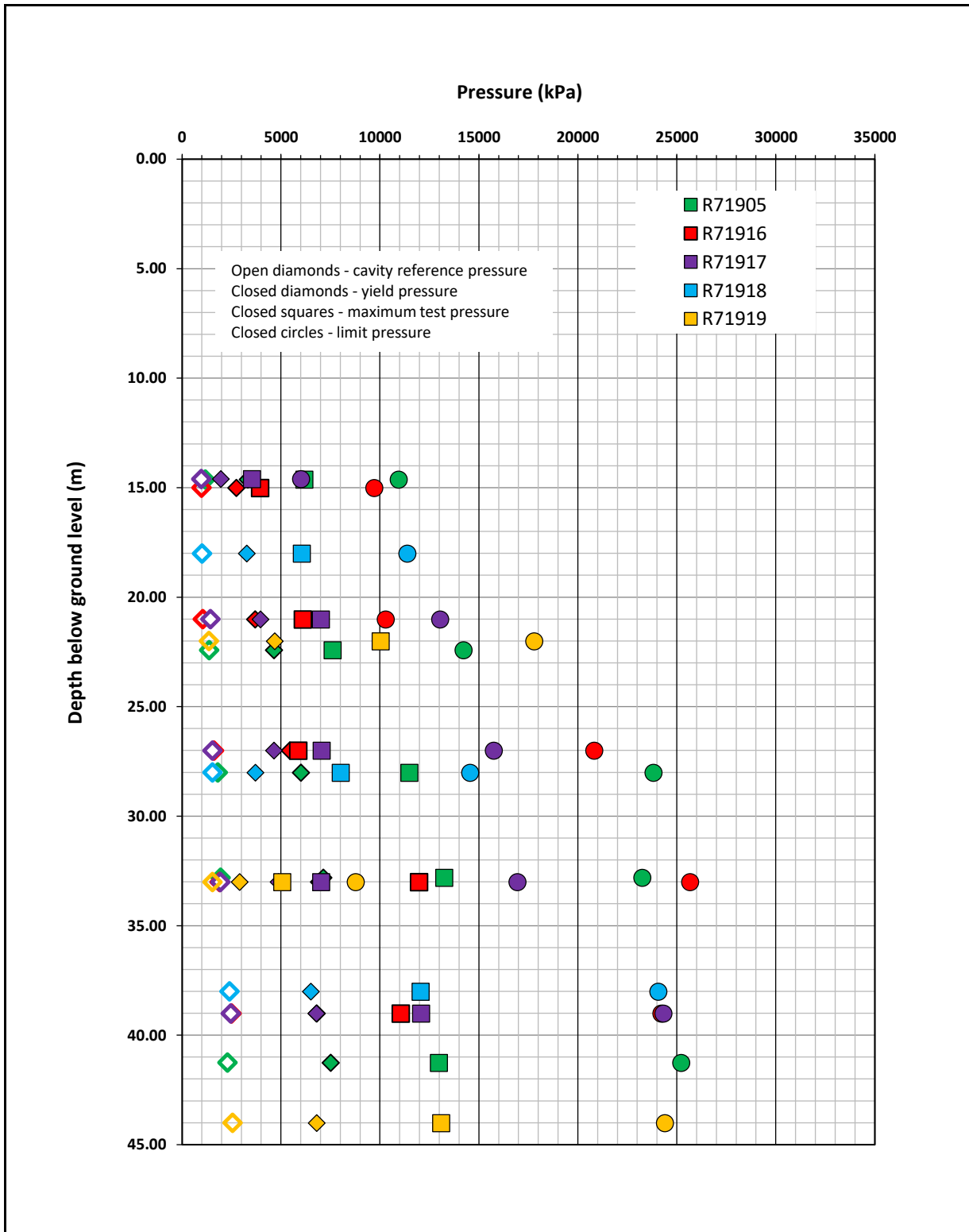
Marsland, A. & Randolph, M.F. (1977) Comparison of the results from pressuremeter tests and large in situ plate tests in London Clay. *Géotechnique*, Vol. 27, No. 2, pp. 217-243.

APPENDIX A

Test Data Analysis

Description	Figure / Table No.
Pressuremeter Shear Modulus & Undrained Shear Strength Plot	1
Pressuremeter Cavity Reference Pressure, Yield & Limit Pressure Plot	2
Pressuremeter Test Analysis	
R71905	T01 – T05
R71916	T01 – T05
R71917	T01 – T05
R71918	T01 – T03
R71919	T01 – T03

Pressuremeter Cavity Reference Pressure, Yield, Limit & Max Pressure Plot



Project	A303 Amesbury to Berwick Down	Figure No.	2
Client	RPS		
Project No.	P1200116		

Pressuremeter Results Summary

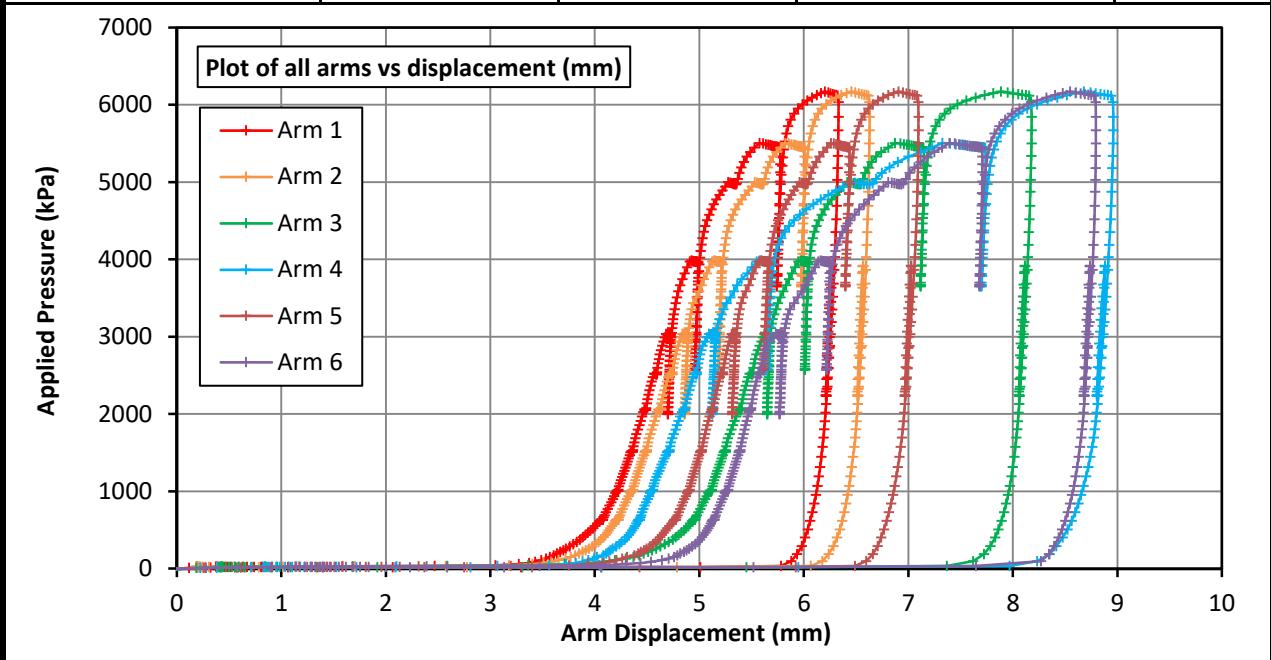
Test	Depth (m)	Material description from borehole log	Max. test pressure (MPa)	P _o (kPa)	Undrained strength			G _i (MPa)	Loop No.	G _{ur} (MPa)	ε _c (%)	Non linear stiffness		Secant shear modulus G (MPa)		
					S _{u (M&R)} (kPa)	S _u (kPa)	P _L (kPa)					α (MPa)	β	Shear strain		
														0.1%	0.01%	0.001%
R71905																
1	14.62	Assumed Zone of No Recovery.	6172	1170	2140	1959	10925	115.4	1	856	0.043	272.725	0.857	733	1019	1416
									2	967	0.052	289.762	0.847	834	1187	1689
									3	1012	0.043	268.902	0.841	809	1168	1686
									4	777	0.113	199.066	0.815	712	1090	1667
2	22.41	Very weak high to very high density yellowish brown CHALK.	7593	1373	3267	3267	14210	155.3	1	930	0.038	243.547	0.838	746	1083	1573
									2	997	0.030	237.336	0.829	771	1141	1690
									3	1061	0.050	187.589	0.783	838	1379	2272
									4	868	0.110	143.795	0.758	766	1338	2337
3	28.00	Very weak high density white CHALK moderately spaced marl laminae and rare orange staining.	11469	1800	4200	4083	23800	352.1	1	1443	0.027	517.932	0.879	1197	1583	2092
									2	1650	0.039	518.226	0.855	1409	1967	2745
									3	1815	0.063	542.681	0.841	1629	2350	3391
									4	1583	0.077	552.698	0.856	1491	2075	2889
									5	1294	0.111	435.953	0.844	1281	1834	2626
4	32.80	Very weak high density white CHALK moderately spaced marl laminae and rare orange staining.	13235	1950	5180	3928	23239	310.9	1	1109	0.012	337.433	0.872	817	1098	1475
									2	1642	0.023	704.360	0.902	1381	1729	2164
									3	1813	0.033	659.806	0.879	1526	2018	2669
									4	1080	0.135	249.456	0.791	1056	1709	2764
5	41.25	Very weak very high density white CHALK with occasional orange stains.	12958	2290	5210	5000	25200	191.4	1	1194	0.028	94.019	0.707	713	1402	2755
									2	1387	0.045	241.207	0.783	1077	1774	2921
									3	1403	0.065	335.869	0.812	1233	1901	2932
									4	1160	0.129	298.373	0.809	1119	1738	2700

Project No.	Client	Project
P1200116	RPS	A303 Amesbury to Berwick Down
Table No.		
R71905		

Pressuremeter Test Overview High Pressure Dilatometer (HPD)



Test Date	28/09/2020	Test No.	1
Borehole	R71905	Test Depth (m)	14.62
Coordinates (m)	412040.6 (E)	141895 (N)	Elevation (m) 99.03



Material description from borehole log:
Assumed Zone of No Recovery.

Test pocket conditions:

Total core recovery:	45 %	Test pocket depth range:	
Solid core recovery:	32 %	From:	13.80 m to: 16.80 m
Rock quality designation:	26 %	Flush:	Water

Test comment:
The test pocket was good with arms lifting off between 4.5 to 5.5mm. The po was estimated to be at 1170kPa, with the following loading section being relatively long. Material yield is interpreted at 3310kPa with the test taken to a pressure of 6172kPa. The displacement-pressure response was reasonably consistent on all arms through the test, with some variation in expansion. Analysis of three unload-reload loops provides increasing modulus values from 857 to 1012MPa, whilst a loop on the unload section provides a modulus of 777MPa. Derived undrained shear strength analysis provides values of 1959 to 2140kPa.

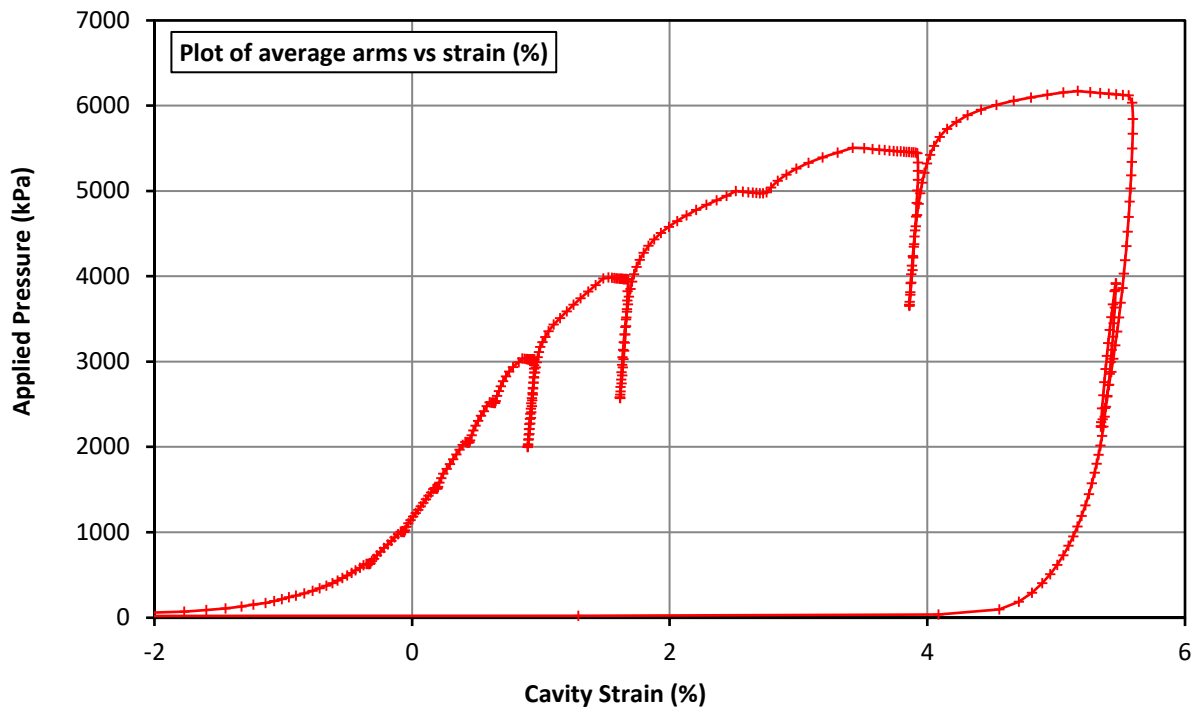
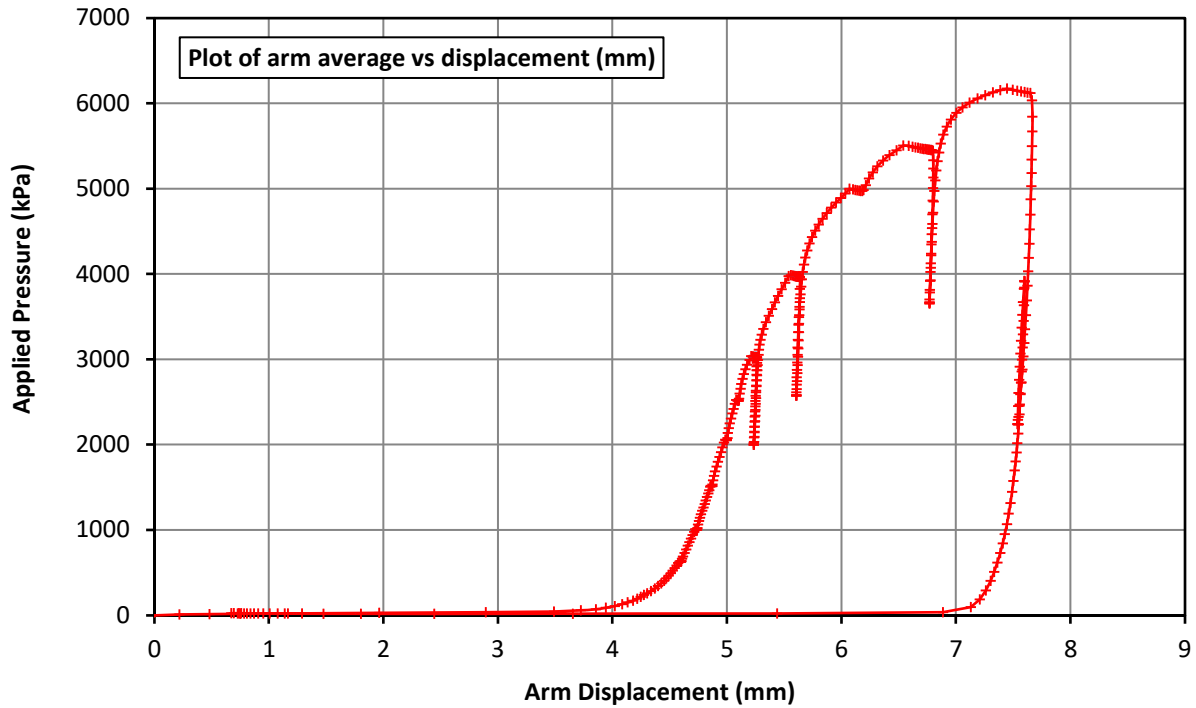
Test details:		Instrument:		Wally	
Drilling method:	Rotary coring		mV	mV/mm	mV
Casing depth:	13.50 m	Arm 1:	-2010.5	146.5	TPC A: -1609.6
Water level:	- m	Arm 2:	-2656.5	139.0	TPC B: -2058.5
		Arm 3:	-2304.7	146.3	
Test time:		Arm 4:	-2044.0	140.5	
Start (probe in):	14:40 hrs	Arm 5:	-2324.9	139.9	
Finish (probe out):	15:52 hrs	Arm 6:	-2045.6	126.0	

Project	A303 Amesbury to Berwick Down	Figure No.	R71905 T01 - 01
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test Overview



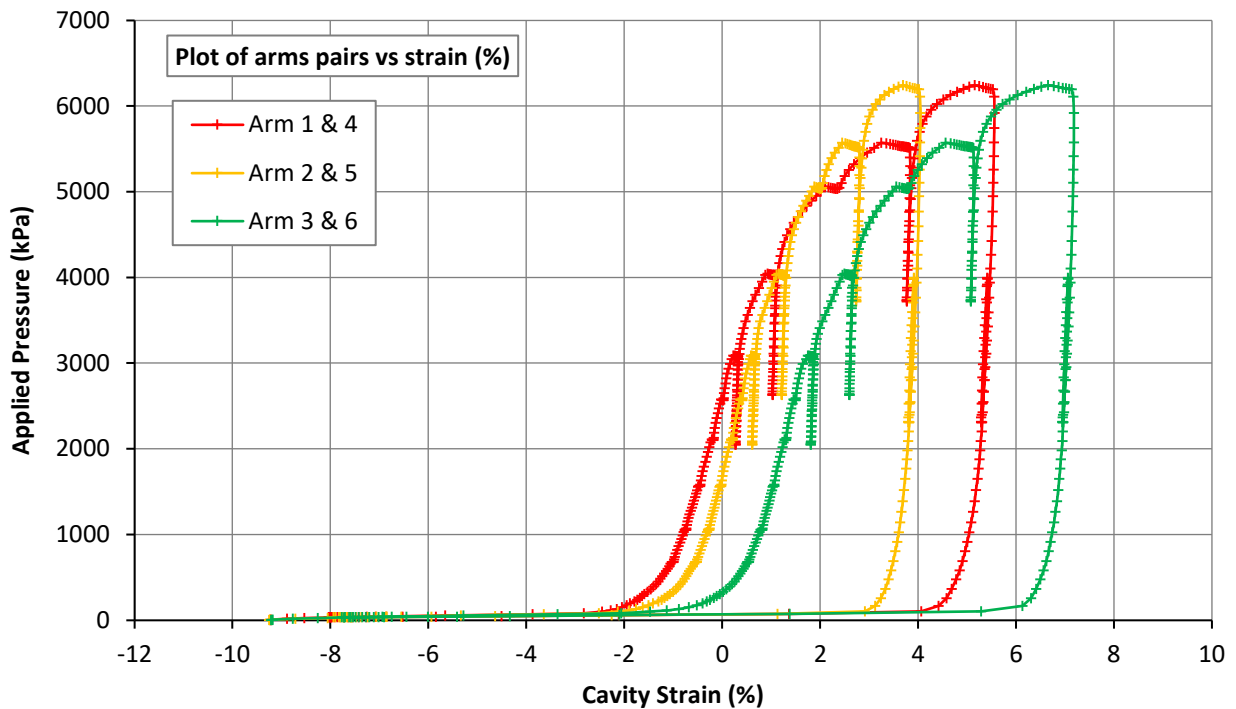
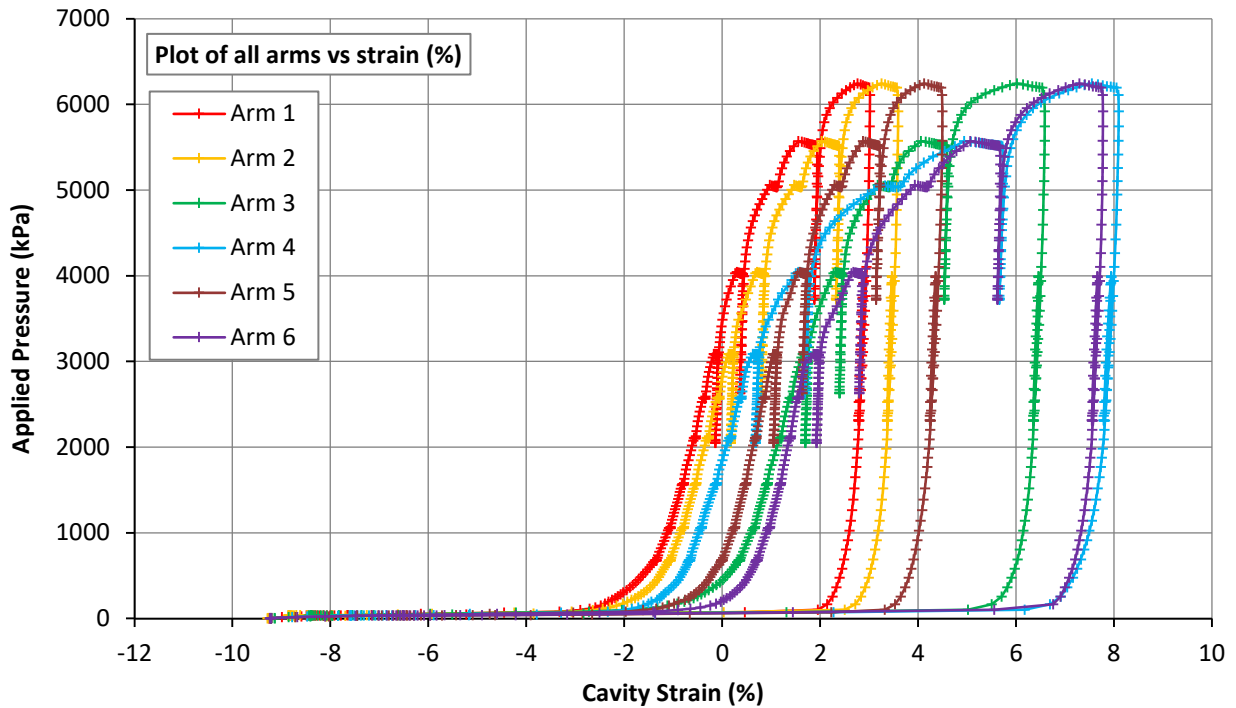
Test Date	28/09/2020	Test No.	1
Borehole	R71905	Test Depth (m)	14.62



Project	A303 Amesbury to Berwick Down	Figure No.	R71905 T01 - 02
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test - Arm Displacement vs Strain (%)

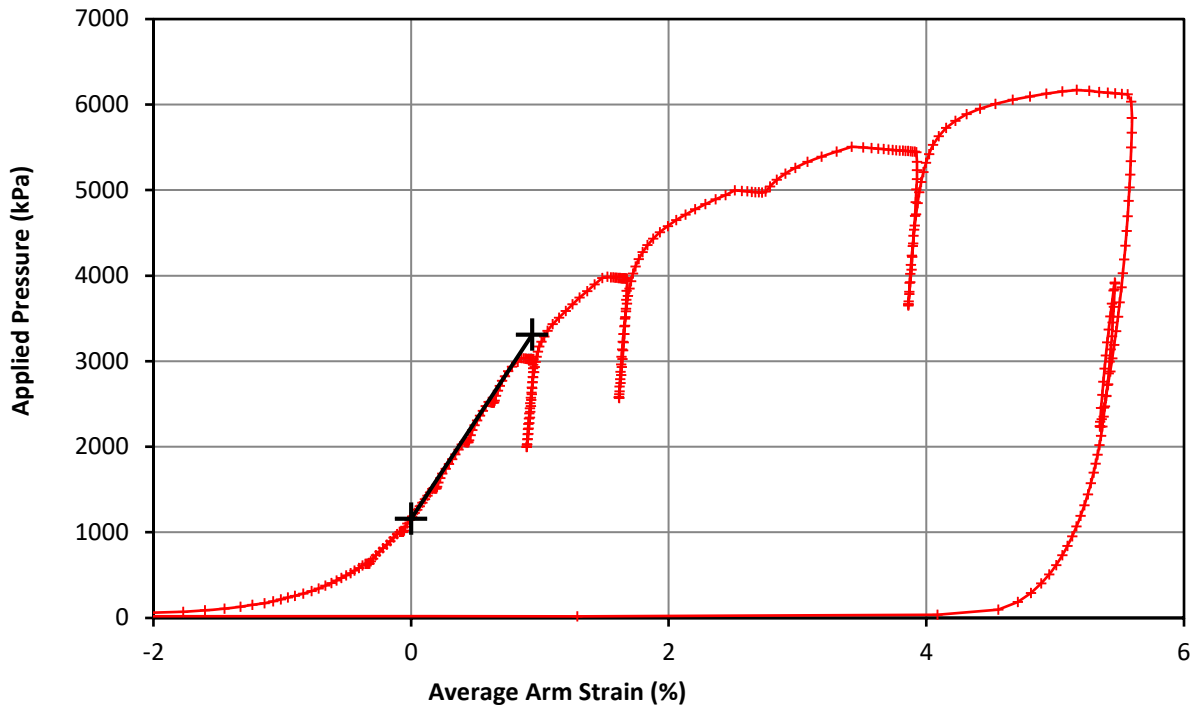
Test Date	28/09/2020	Test No.	1
Borehole	R71905	Test Depth (m)	14.62



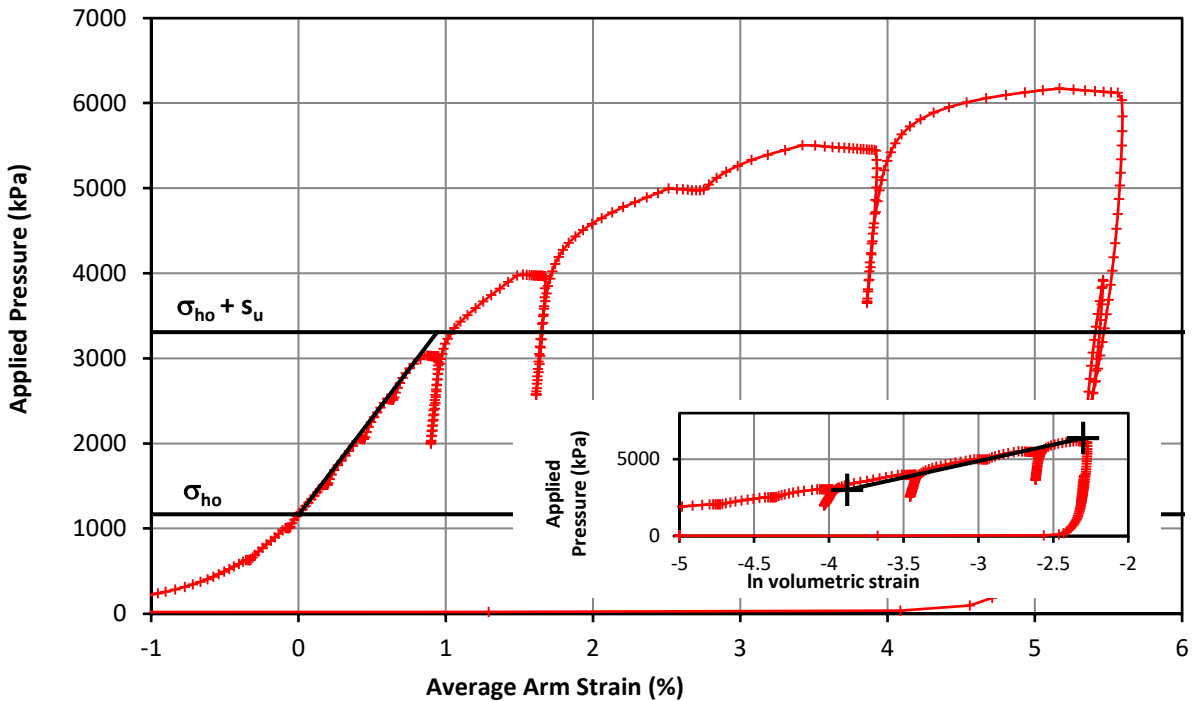
Project	A303 Amesbury to Berwick Down	Figure No.	R71905 T01 - 03
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test Initial Modulus & In Situ Horizontal Stress

Test Date	28/09/2020	Test No.	1
Borehole	R71905	Test Depth (m)	14.62



Initial Modulus	Shear Modulus	115.4 MPa
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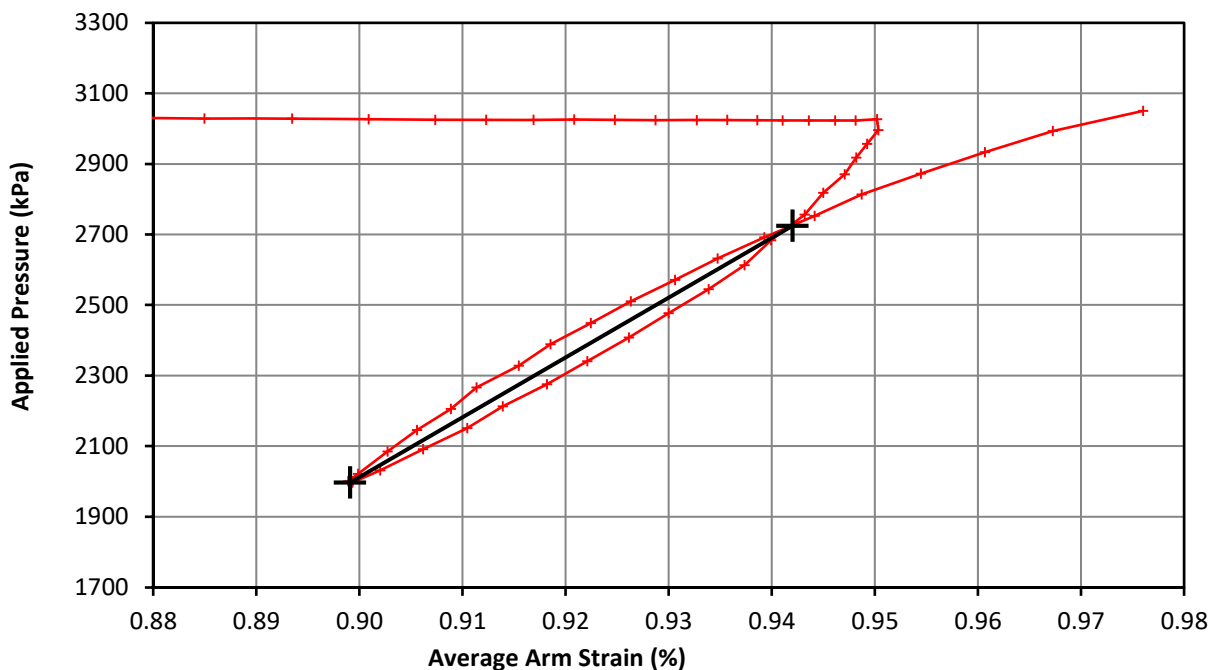
Marsland & Randolph	In situ horizontal stress	1170 kPa
	Undrained Strength	2140 kPa

Project	A303 Amesbury to Berwick Down	Figure No.	R71905 T01 - 04
Client	RPS Ltd		
Project No.	P1200116		

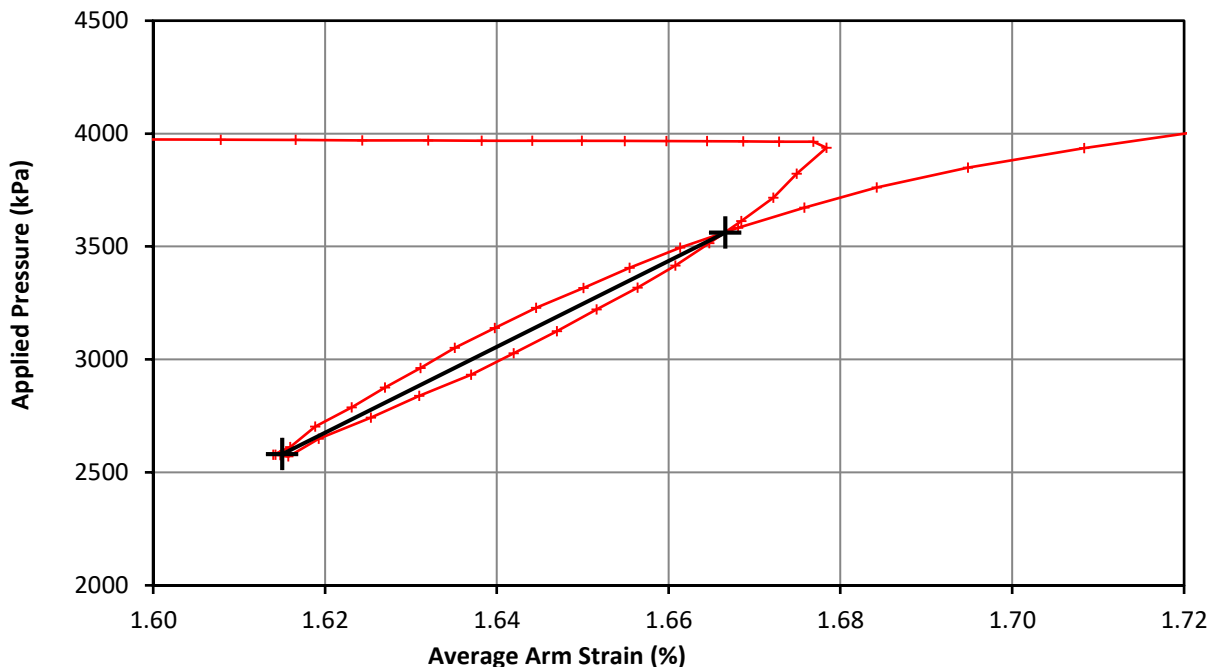
Pressuremeter Test Unload Reload Loop



Test Date	28/09/2020	Test No.	1
Borehole	R71905	Test Depth (m)	14.62



Loop 1	Shear Modulus	856.5 MPa
	Cavity Strain Range	0.043 %



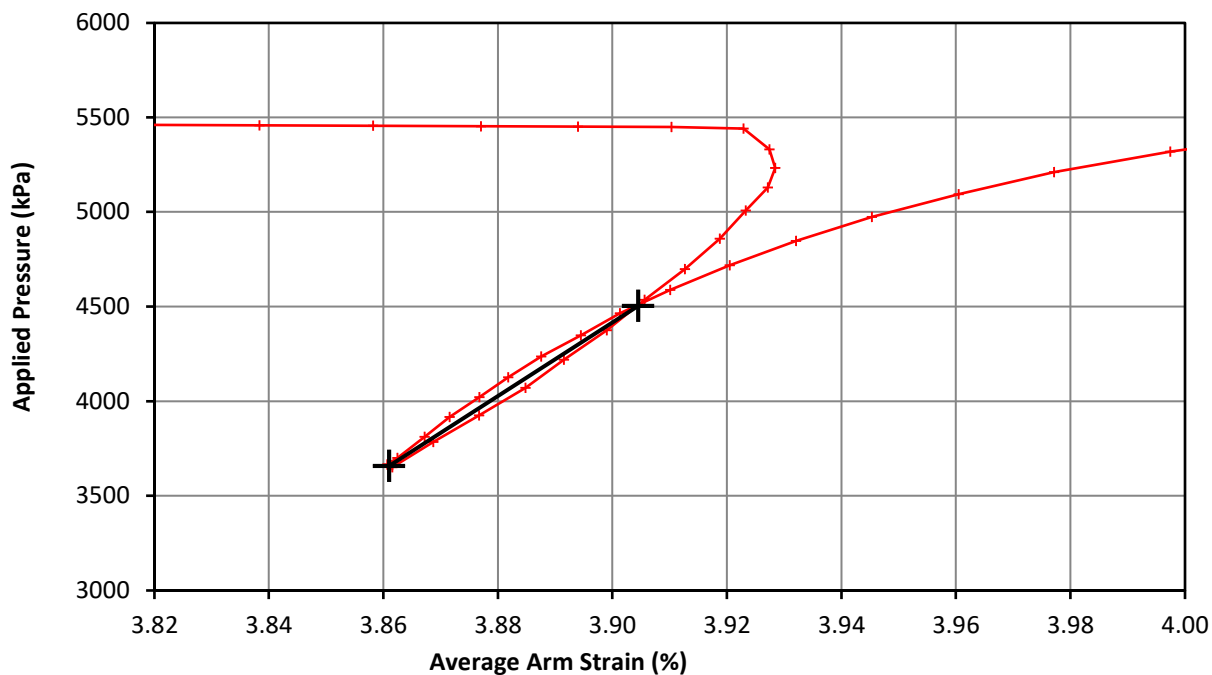
Loop 2	Shear Modulus	967.4 MPa
	Cavity Strain Range	0.052 %

Project	A303 Amesbury to Berwick Down	Figure No.	R71905 T01 - 05
Client	RPS Ltd		
Project No.	P1200116		

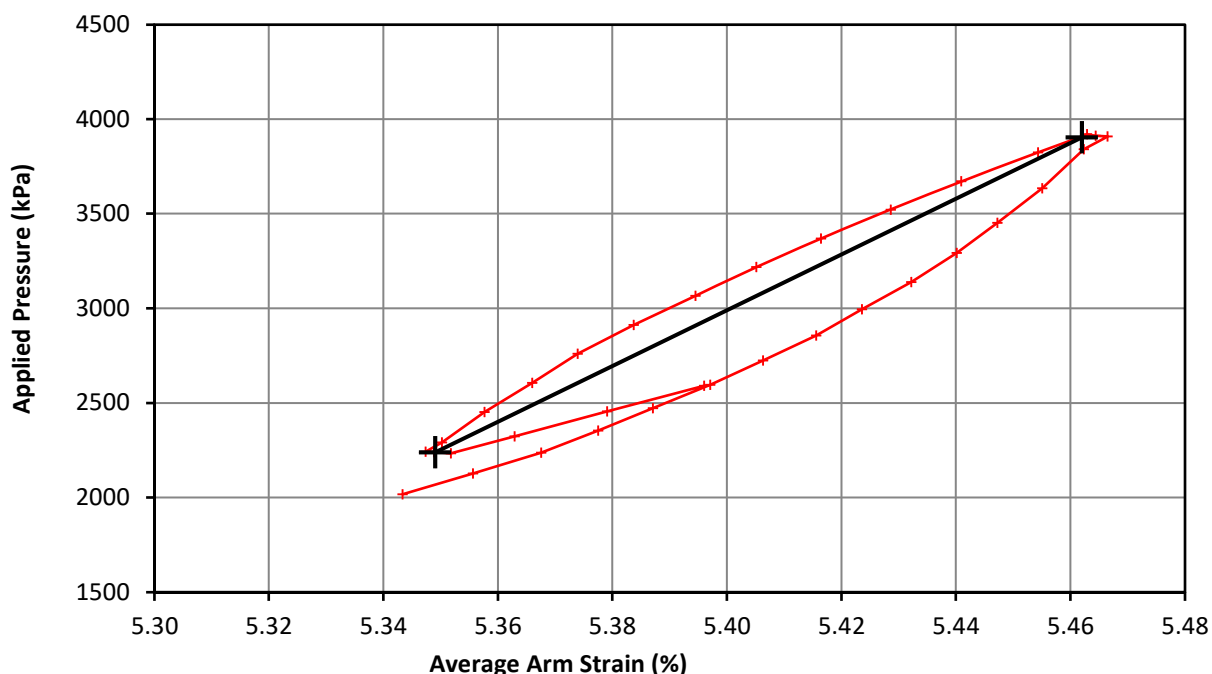
Pressuremeter Test Unload Reload Loop



Test Date	28/09/2020	Test No.	1
Borehole	R71905	Test Depth (m)	14.62



Loop 3	Shear Modulus	1011.6 MPa
	Cavity Strain Range	0.043 %



Loop 4	Shear Modulus	777.0 MPa
	Cavity Strain Range	0.113 %

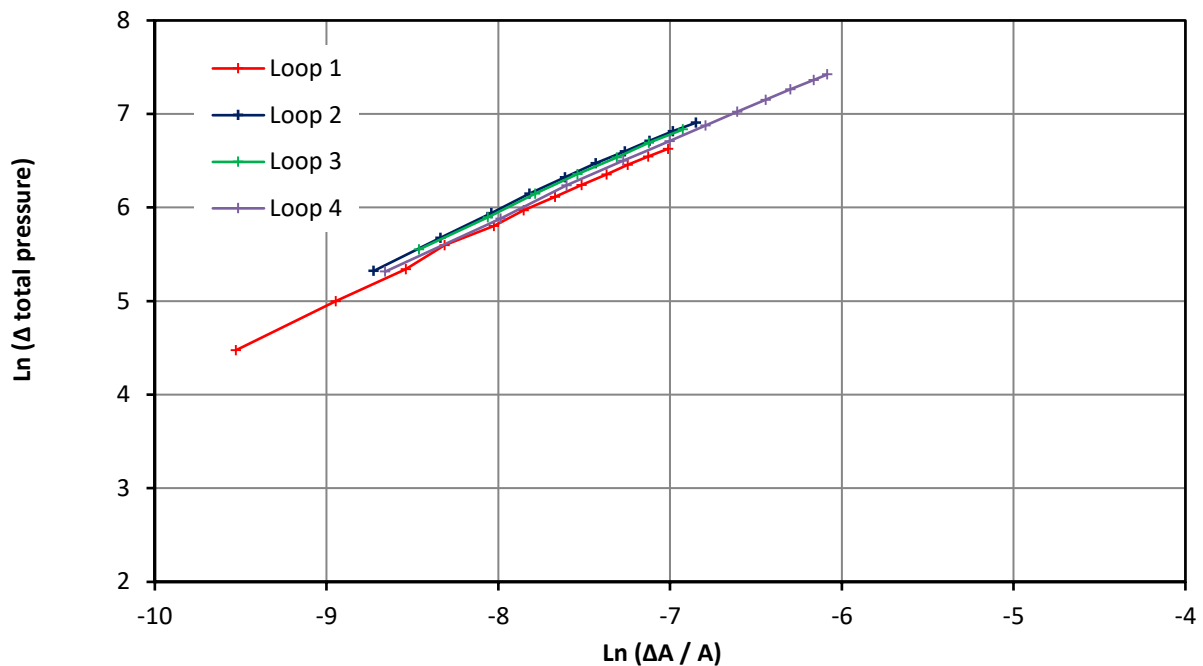
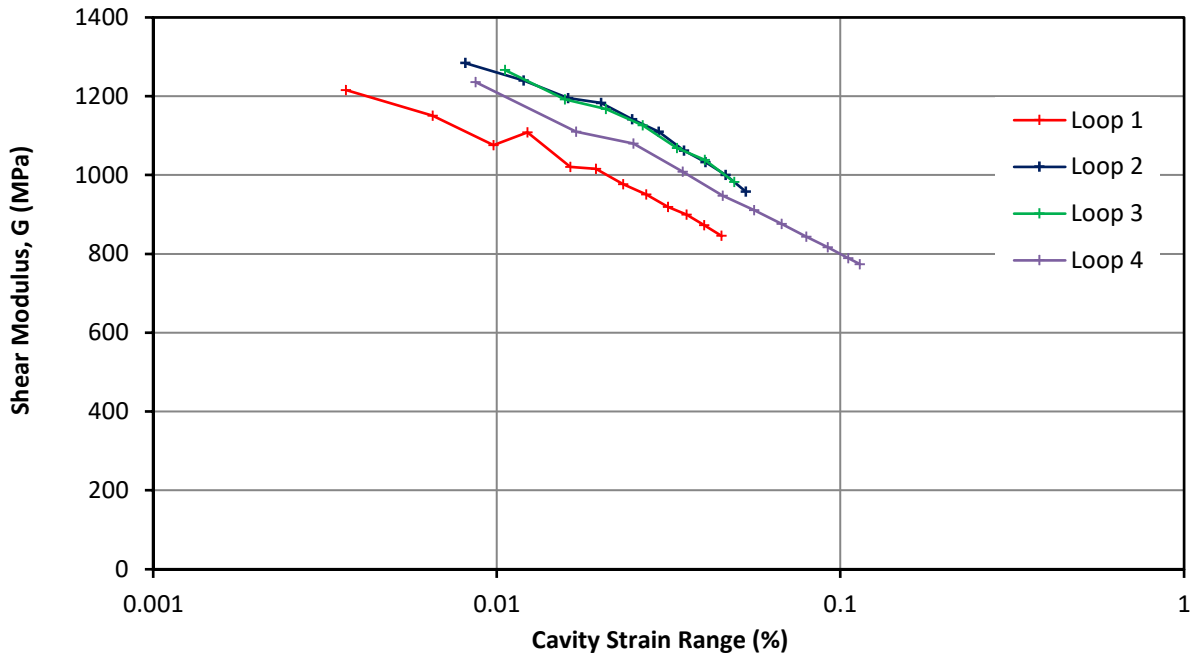
Project	A303 Amesbury to Berwick Down	Figure No.	R71905 T01 - 06
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Analysis

Small Strain Stiffness and Bolton and Whittle (1999)



Test Date	28/09/2020	Test No.	1
Borehole	R71905	Test Depth (m)	14.62



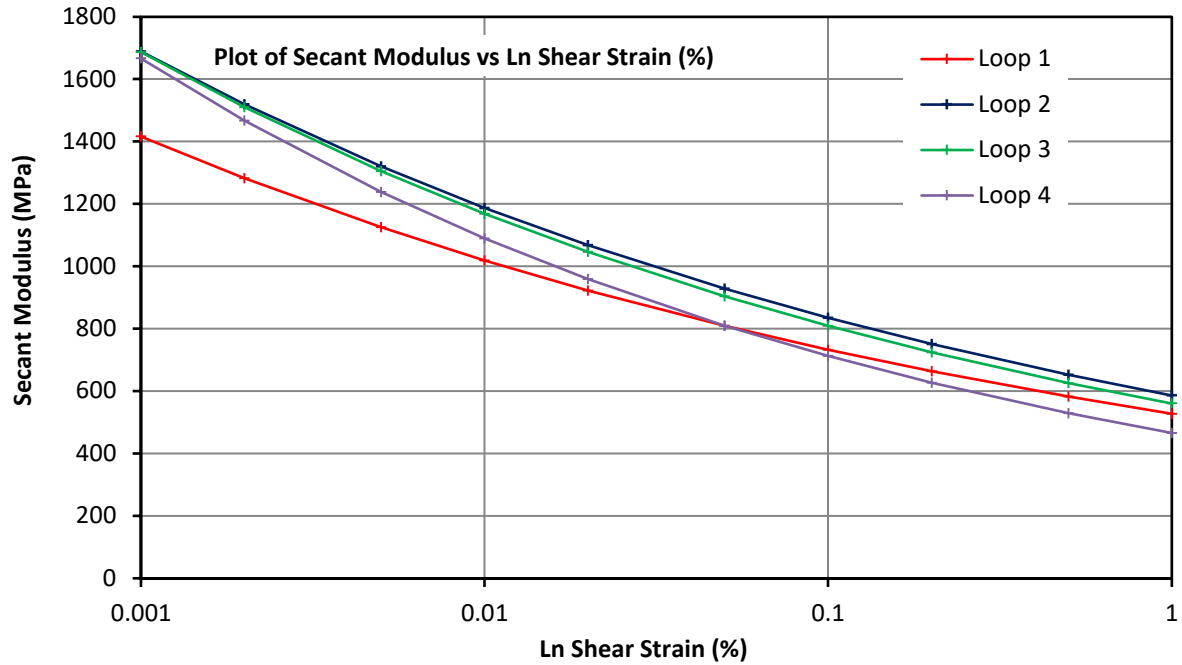
Loop 1		Loop 2		Loop 3		Loop 4	
Gradient(β)	Intercept	Gradient(β)	Intercept	Gradient(β)	Intercept	Gradient(β)	Intercept
0.857	318.260 (MPa)	0.847	342.148 (MPa)	0.841	319.922 (MPa)	0.815	244.125 (MPa)

Project	A303 Amesbury to Berwick Down	Figure No.	R71905 T01 - 07
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Analysis

Secant Modulus - Shear Strain (%)

Test Date	28/09/2020	Test No.	1
Borehole	R71905	Test Depth (m)	14.62

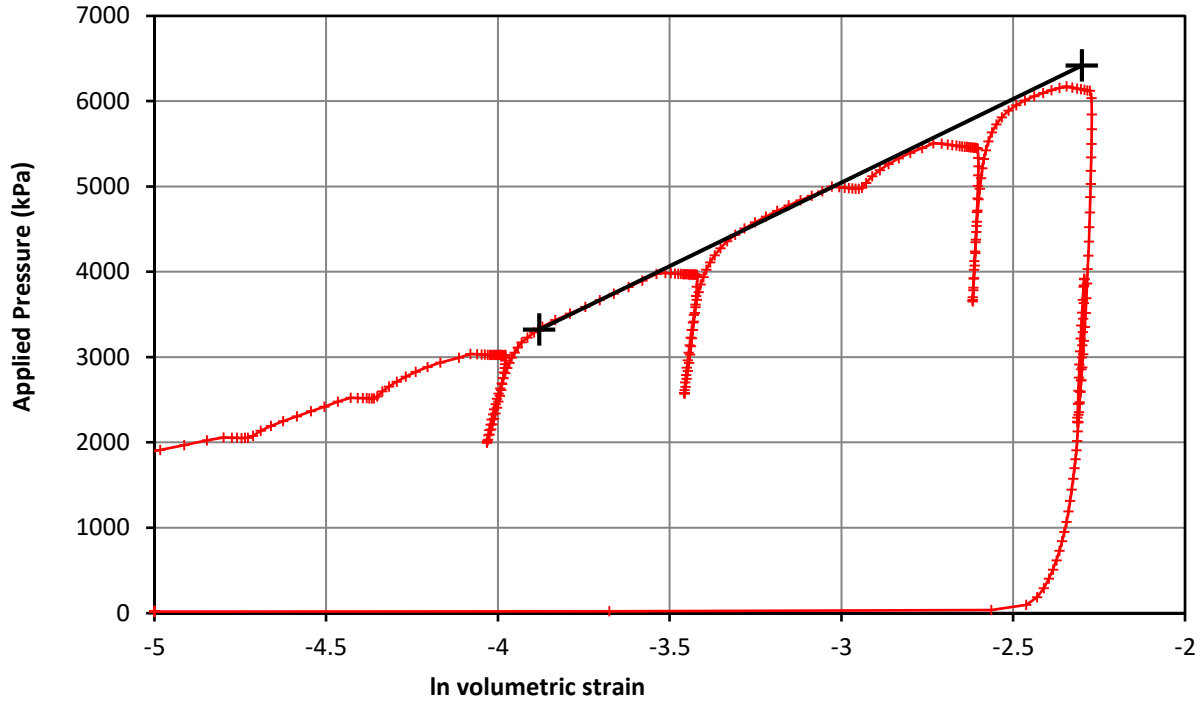


Shear Strain	Loop 1	Loop 2	Loop 3	Loop 4
0.001%	1416	1689	1686	1667
0.002%	1282	1519	1510	1467
0.005%	1125	1320	1305	1238
0.010%	1019	1187	1168	1090
0.020%	922	1068	1046	959
0.050%	809	928	904	810
0.100%	733	834	809	712
0.200%	664	750	724	627
0.500%	582	652	626	529
1.000%	527	586	560	466

Project	A303 Amesbury to Berwick Down	Figure No.	R71905 T01 - 08
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test - Strength

Test Date	28/09/2020	Test No.	1
Borehole	R71905	Test Depth (m)	14.62



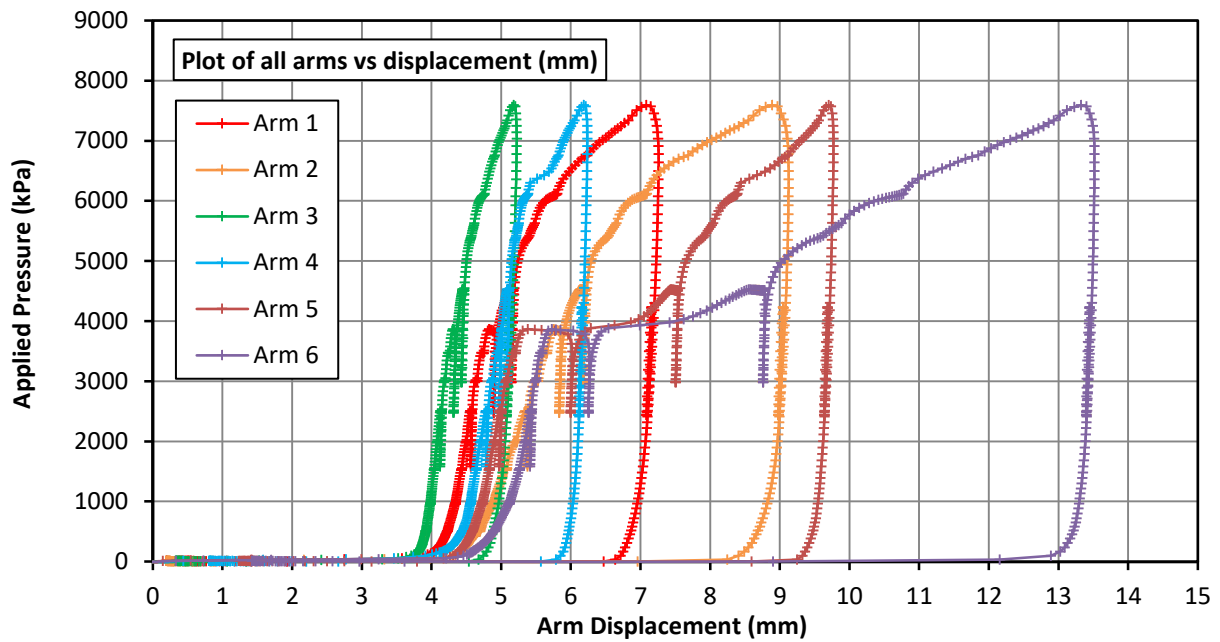
Strength	Undrained Shear	1959 kPa
	Limit Pressure	10925 kPa

Project	A303 Amesbury to Berwick Down	Figure No.	R71905 T01 - 09
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test Overview High Pressure Dilatometer (HPD)



Test Date	29/09/2020	Test No.	2
Borehole	R71905	Test Depth (m)	22.41
Coordinates (m)	412040.6 (E)	141895 (N)	Elevation (m) 99.03



Material description from borehole log:

Very weak high to very high density yellowish brown CHALK.

Test pocket conditions:

Total core recovery:	43 %	Test pocket depth range:	
Solid core recovery:	21 %	From:	21.30 m to: 24.30 m
Rock quality designation:	9 %	Flush:	Water

Test comment:

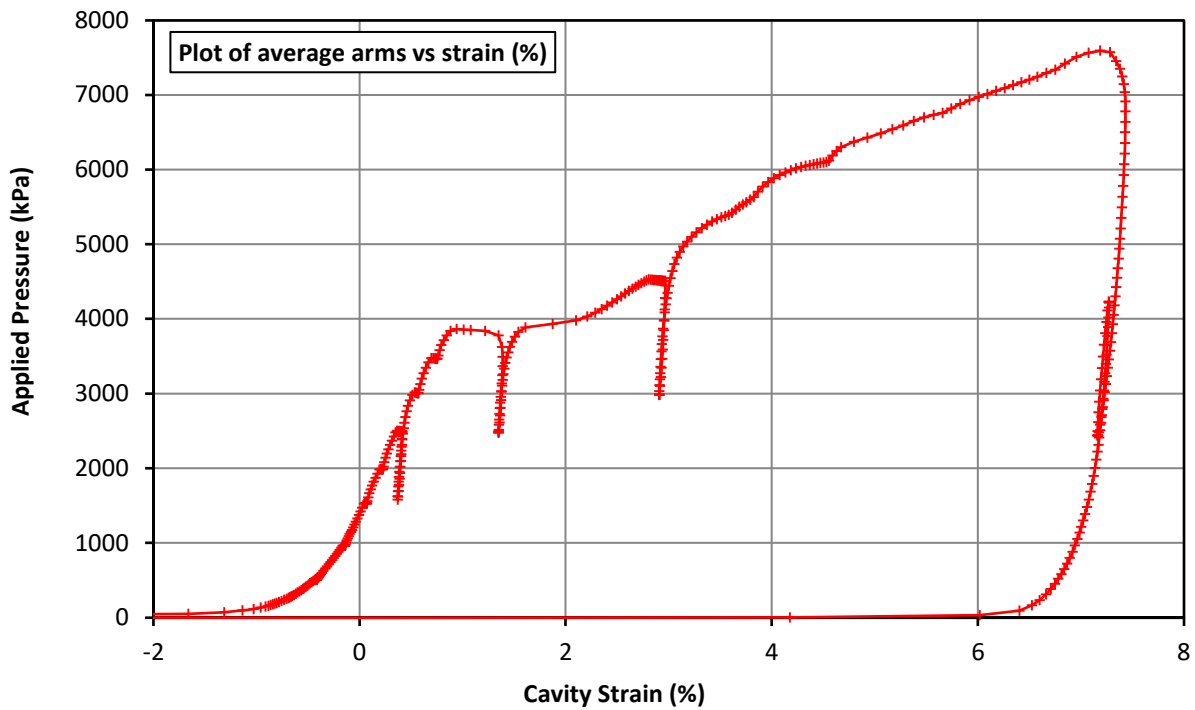
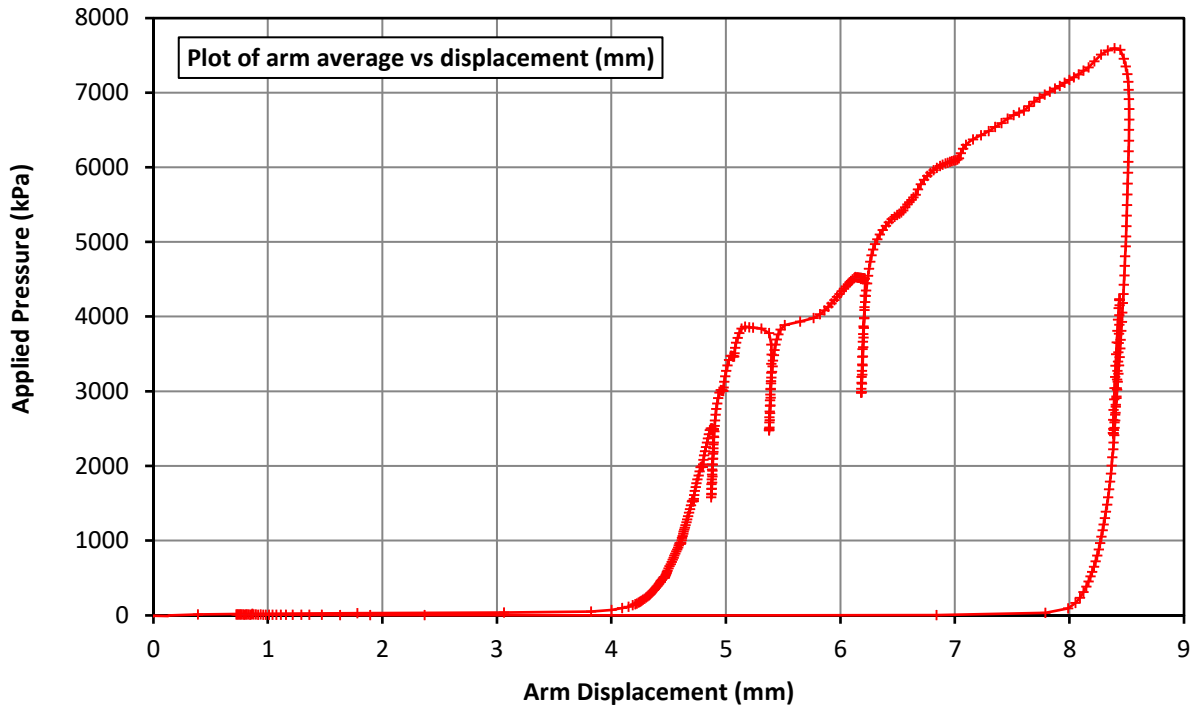
The test pocket was reasonable with arms lifting off between 4.0 to 5.5mm. The p_0 was estimated to be at 1373kPa, with the following loading section being linear until fracture movement occurred at 3865kPa, seen on arms 5 & 6. Material yield is interpreted at 4640kPa from arms 1 to 4. The test was taken to a pressure of 7593kPa. The displacement-pressure response was variable with greater expansion on arms 5 & 6 due to the fracture failure. Analysis of three unload-reload loops provides increasing modulus values from 930 to 1062MPa, with a loop on the unload section providing a modulus of 868MPa. Derived undrained shear strength analysis provides a value of 3267kPa.

Test details:		Instrument:		Wally			
Drilling method:	Rotary coring		mV	mV/mm	mV	mV/MPa	
Casing depth:	21.00 m	Arm 1:	-2015.5	146.5	TPC A:	-1605.6	109.0
Water level:	- m	Arm 2:	-2660.3	139.0	TPC B:	-2056.2	109.1
		Arm 3:	-2287.3	146.3			
Test time:		Arm 4:	-2051.6	140.5			
Start (probe in):	12:29 hrs	Arm 5:	-2327.0	139.9			
Finish (probe out):	13:55 hrs	Arm 6:	-2046.5	126.0			

Project	A303 Amesbury to Berwick Down	Figure No.	R71905 T02 - 01
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test Overview

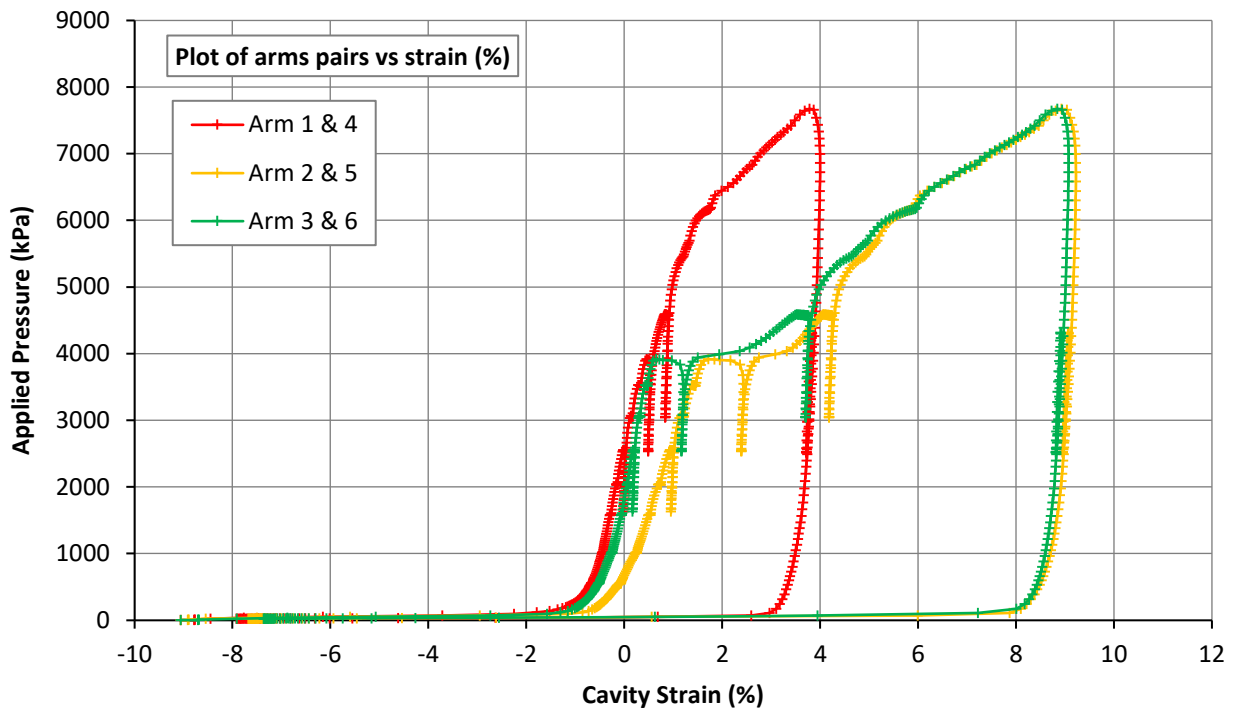
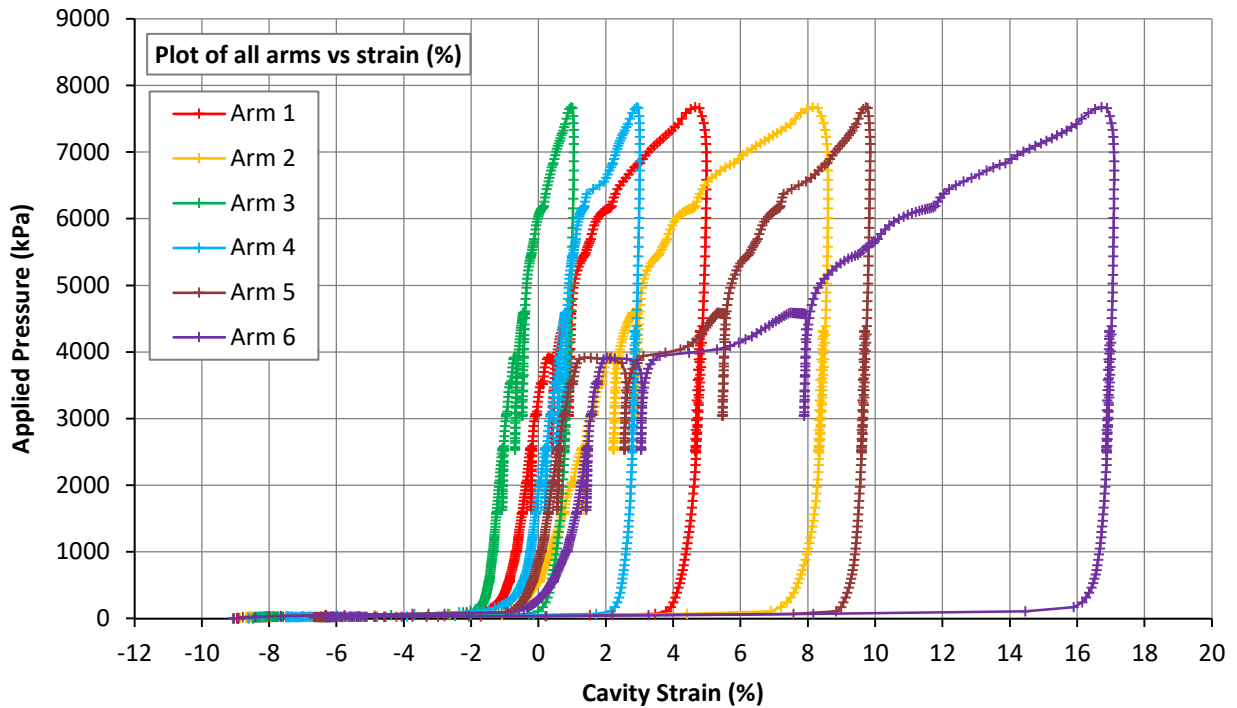
Test Date	29/09/2020	Test No.	2
Borehole	R71905	Test Depth (m)	22.41



Project	A303 Amesbury to Berwick Down	Figure No.	R71905 T02 - 02
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test - Arm Displacement vs Strain (%)

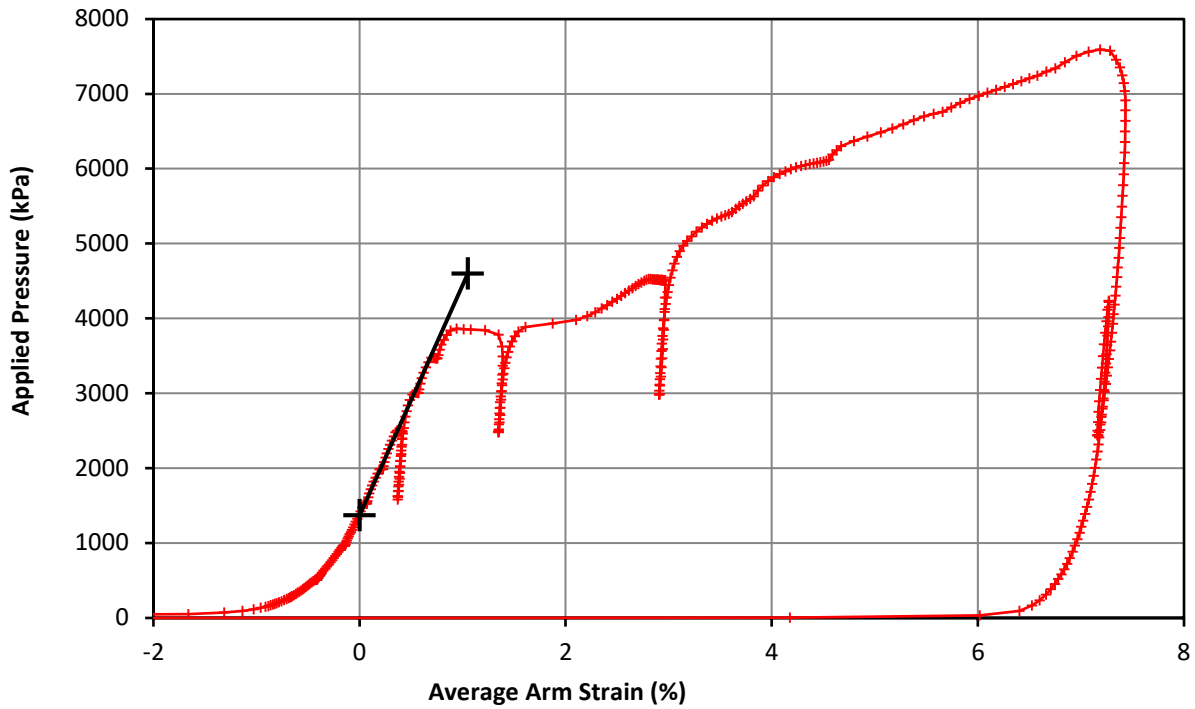
Test Date	29/09/2020	Test No.	2
Borehole	R71905	Test Depth (m)	22.41



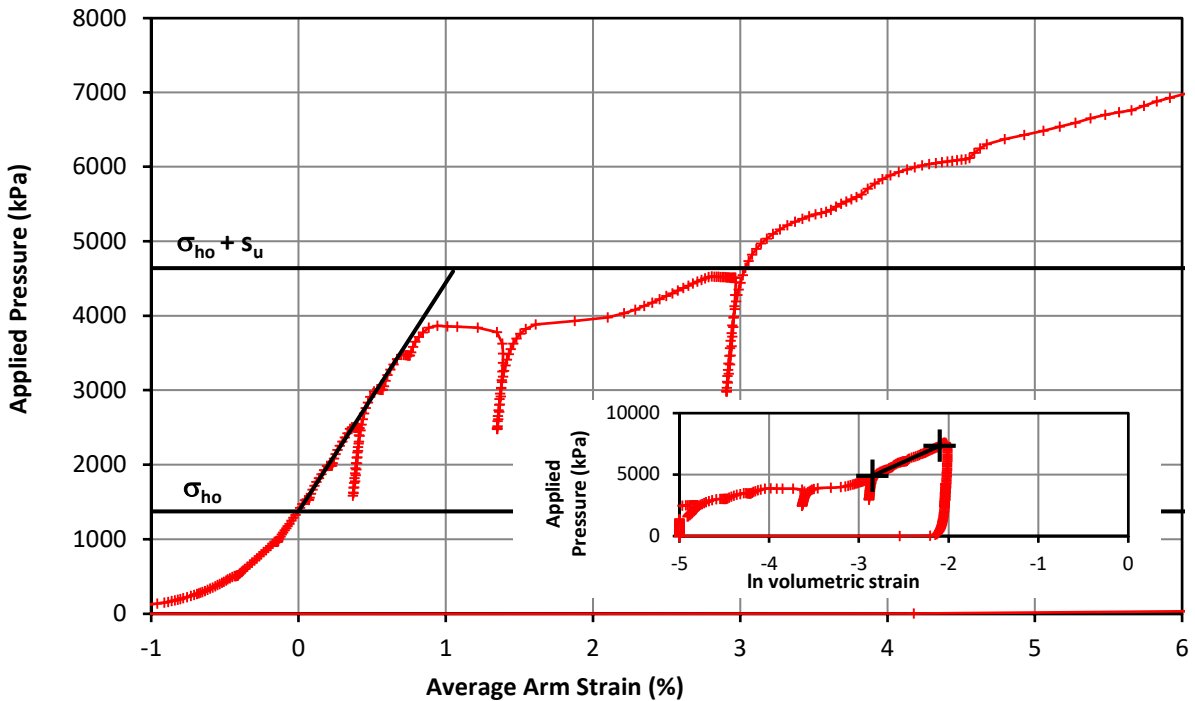
Project	A303 Amesbury to Berwick Down	Figure No.	R71905 T02 - 03
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test Initial Modulus & In Situ Horizontal Stress

Test Date	29/09/2020	Test No.	2
Borehole	R71905	Test Depth (m)	22.41



Initial Modulus	Shear Modulus	155.3 MPa
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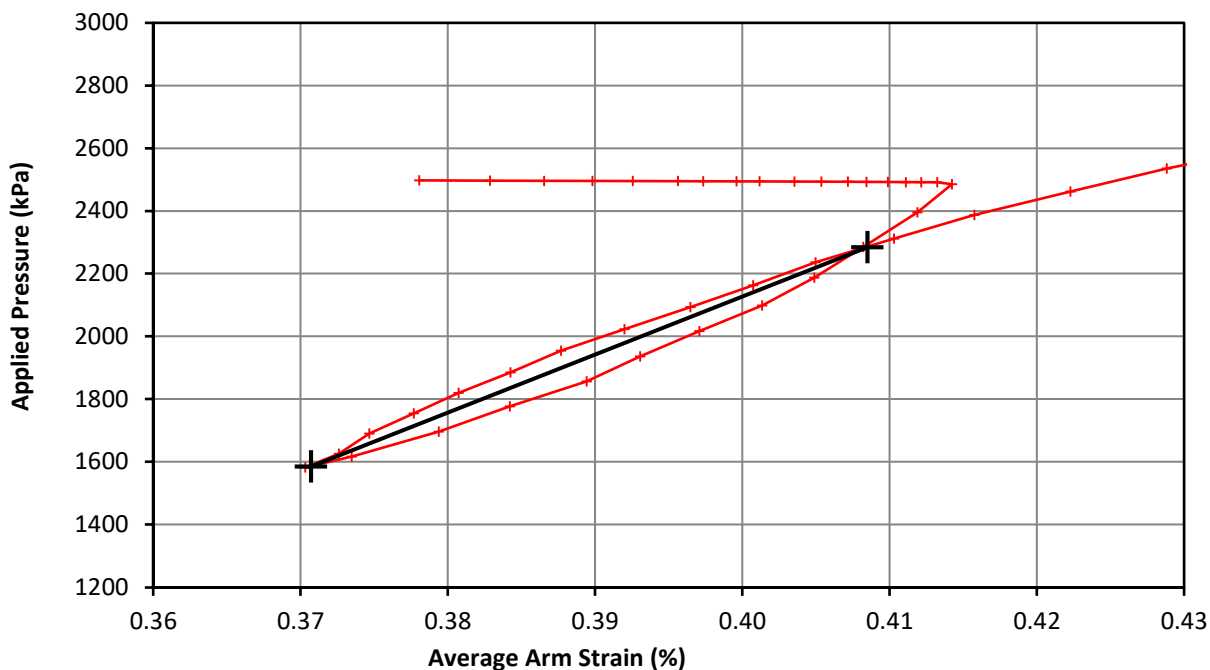
Marsland & Randolph	In situ horizontal stress	1373 kPa
	Undrained Strength	3267 kPa

Project	A303 Amesbury to Berwick Down	Figure No.	R71905 T02 - 04
Client	RPS Ltd		
Project No.	P1200116		

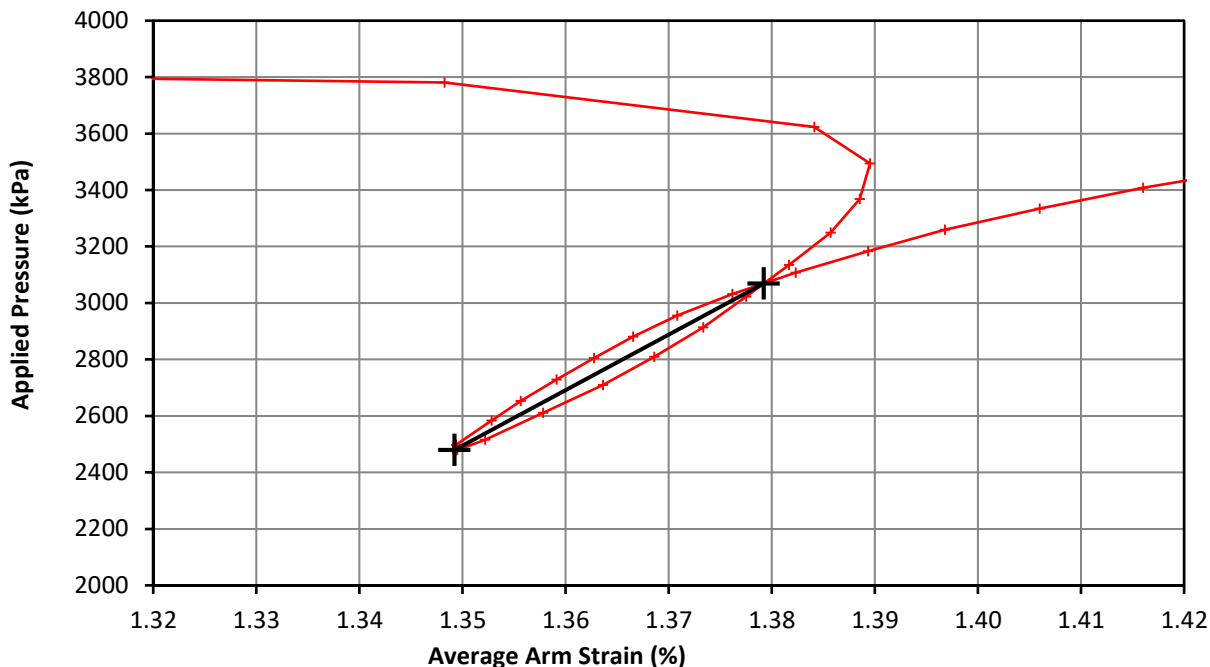
Pressuremeter Test Unload Reload Loop



Test Date	29/09/2020	Test No.	2
Borehole	R71905	Test Depth (m)	22.41



Loop 1	Shear Modulus	929.7 MPa
	Cavity Strain Range	0.038 %



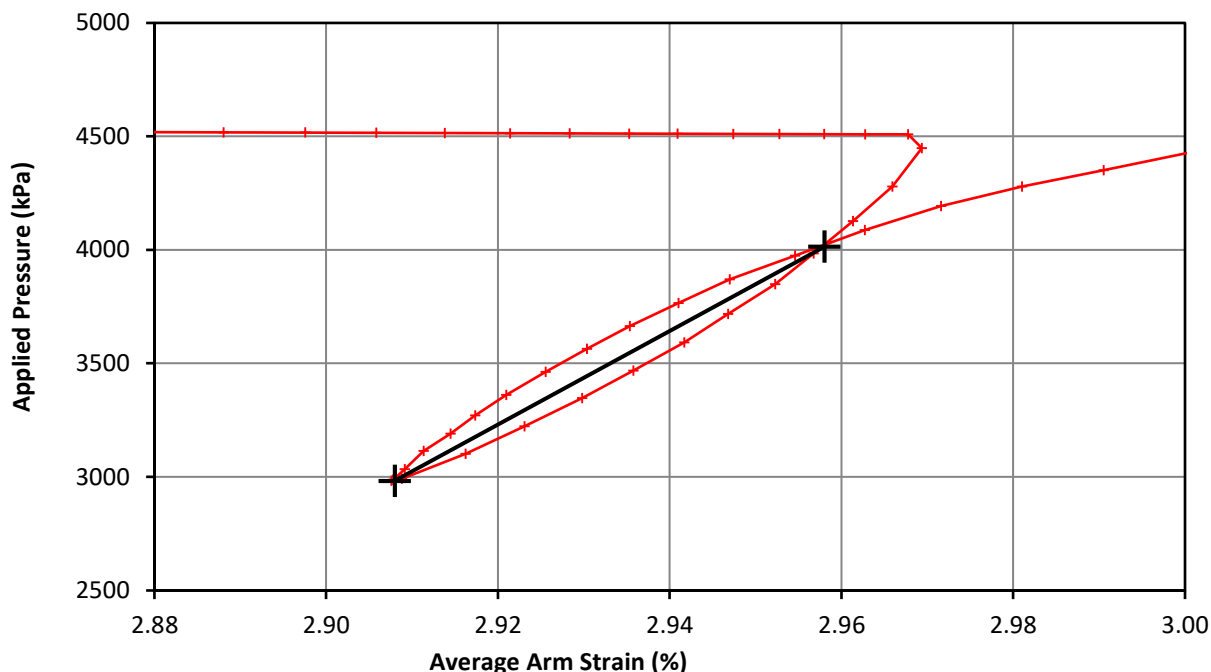
Loop 2	Shear Modulus	996.9 MPa
	Cavity Strain Range	0.030 %

Project	A303 Amesbury to Berwick Down	Figure No.	R71905 T02 - 05
Client	RPS Ltd		
Project No.	P1200116		

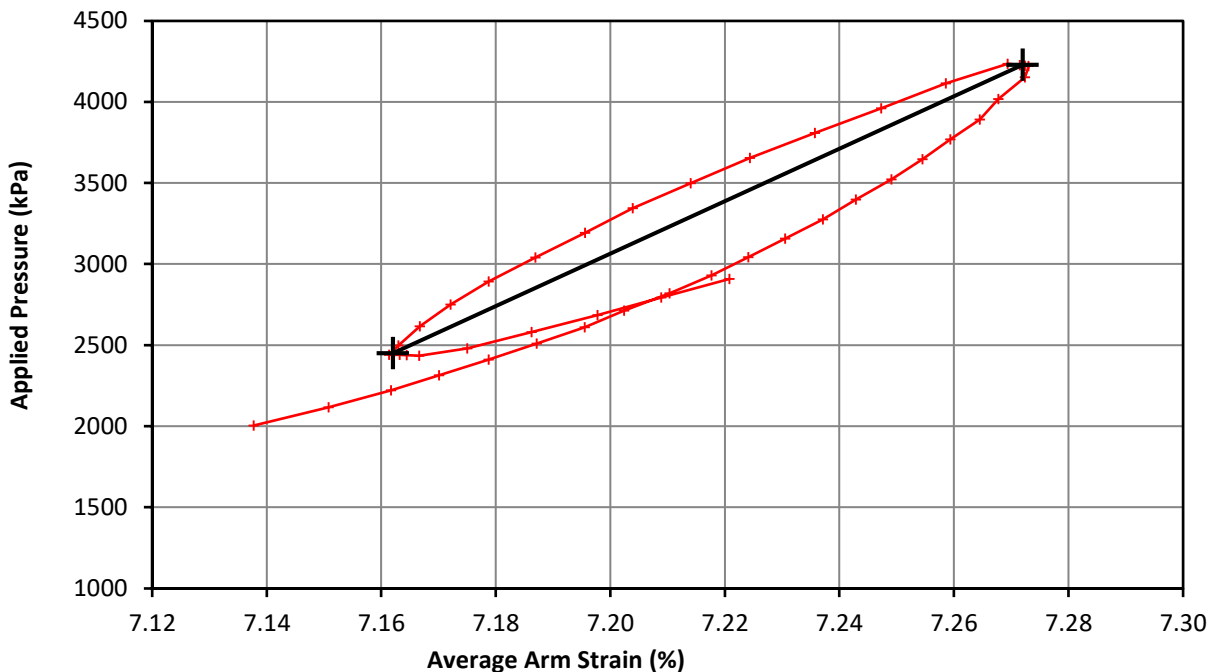
Pressuremeter Test Unload Reload Loop



Test Date	29/09/2020	Test No.	2
Borehole	R71905	Test Depth (m)	22.41



Loop 3	Shear Modulus	1061.5 MPa
	Cavity Strain Range	0.050 %



Loop 4	Shear Modulus	867.9 MPa
	Cavity Strain Range	0.110 %

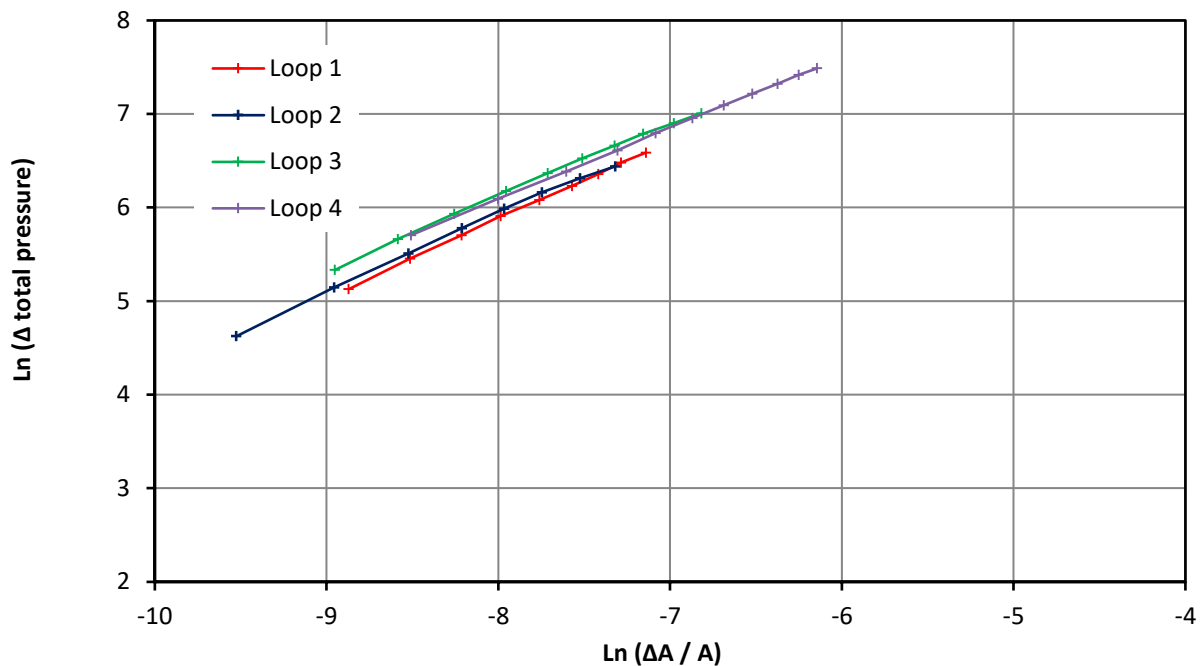
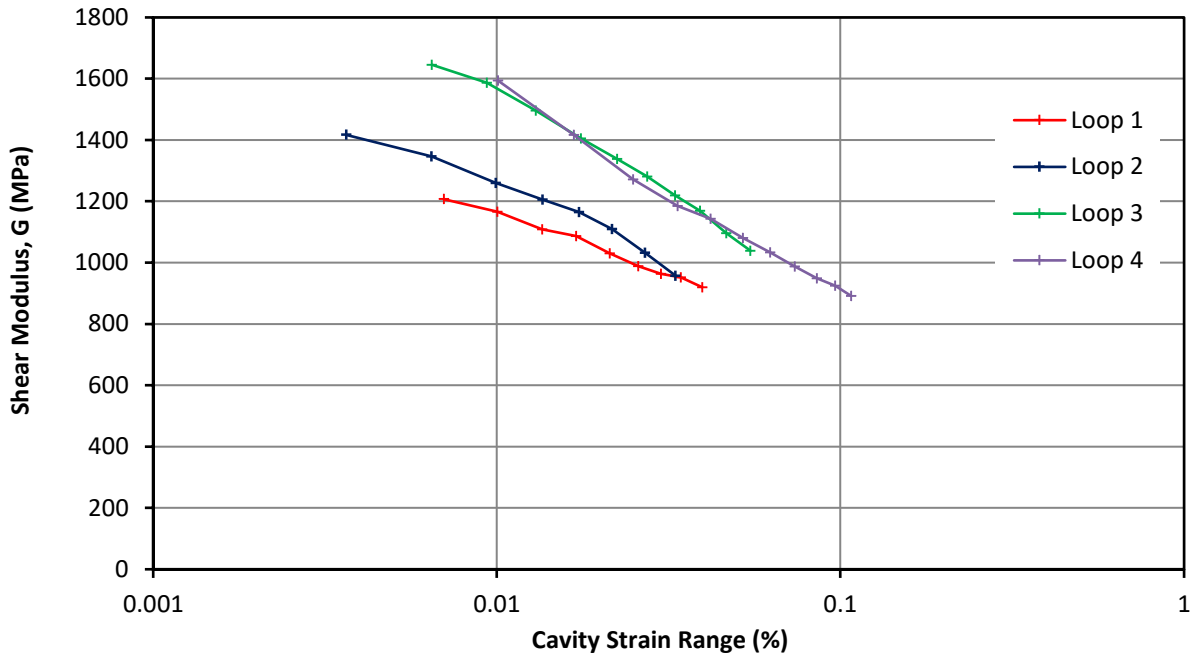
Project	A303 Amesbury to Berwick Down	Figure No.	R71905 T02 - 06
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Analysis

Small Strain Stiffness and Bolton and Whittle (1999)



Test Date	29/09/2020	Test No.	2
Borehole	R71905	Test Depth (m)	22.41



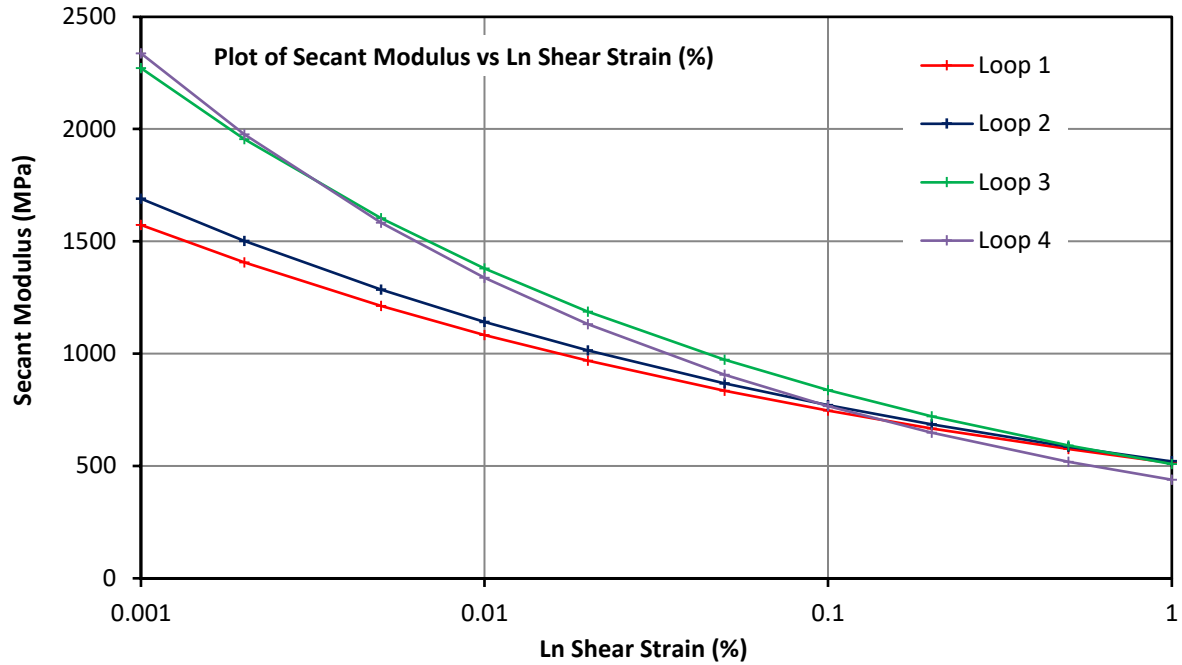
Loop 1		Loop 2		Loop 3		Loop 4	
Gradient(β)	Intercept	Gradient(β)	Intercept	Gradient(β)	Intercept	Gradient(β)	Intercept
0.838	290.636 (MPa)	0.829	286.123 (MPa)	0.783	239.462 (MPa)	0.758	189.751 (MPa)

Project	A303 Amesbury to Berwick Down	Figure No.	R71905 T02 - 07
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Analysis
 Secant Modulus - Shear Strain (%)



Test Date	29/09/2020	Test No.	2
Borehole	R71905	Test Depth (m)	22.41

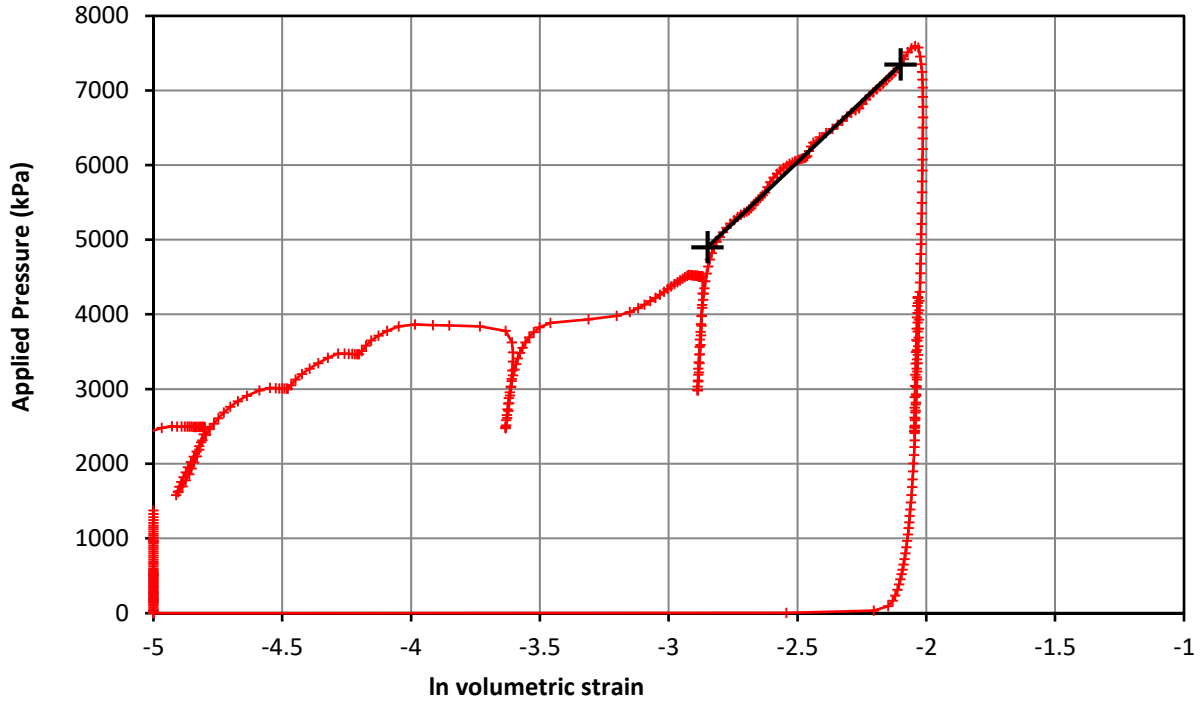


Shear Strain	Loop 1	Loop 2	Loop 3	Loop 4
0.001%	1573	1690	2272	2337
0.002%	1406	1502	1955	1976
0.005%	1212	1284	1603	1583
0.010%	1083	1141	1379	1338
0.020%	968	1014	1187	1131
0.050%	834	867	973	906
0.100%	746	771	838	766
0.200%	667	685	721	648
0.500%	575	586	591	519
1.000%	514	520	509	439

Project	A303 Amesbury to Berwick Down	Figure No.	R71905 T02 - 08
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test - Strength

Test Date	29/09/2020	Test No.	2
Borehole	R71905	Test Depth (m)	22.41



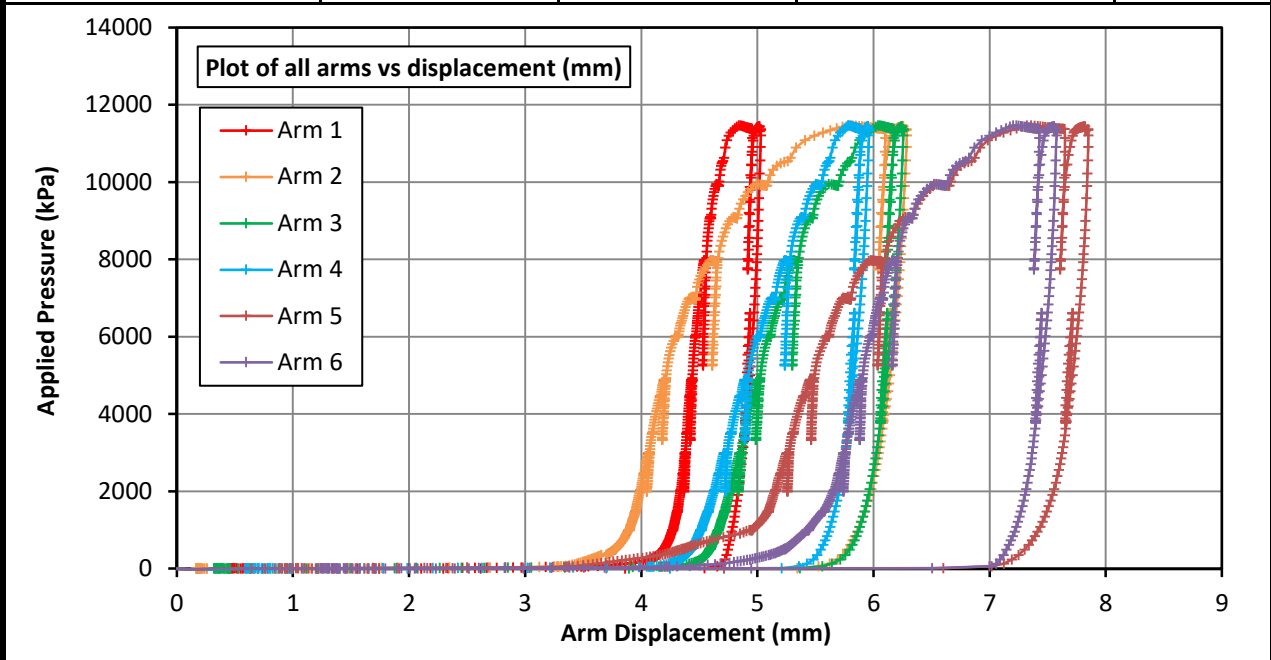
Strength	Undrained Shear	3267 kPa
	Limit Pressure	14210 kPa

Project	A303 Amesbury to Berwick Down	Figure No.	R71905 T02 - 09
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test Overview High Pressure Dilatometer (HPD)



Test Date	30/09/2020	Test No.	3	
Borehole	R71905	Test Depth (m)	28.00	
Coordinates (m)	412040.6 (E)	141895 (N)	Elevation (m)	99.03



Material description from borehole log:
Very weak high density white CHALK moderately spaced marl laminae and rare orange staining.

Test pocket conditions:

Total core recovery:	22 %	Test pocket depth range:	
Solid core recovery:	10 %	From:	27.00 m to: 30.00 m
Rock quality designation:	5 %	Flush:	Water

Test comment:
The test pocket was reasonable with arms lifting off between 4.0 to 5.5mm. The p_0 was estimated to be at 1800kPa, with the following loading section being long. Material yield was interpreted at 6000kPa and the test was taken to a high pressure of 11469kPa. The displacement-pressure response was reasonably consistent, with greater expansion on arms 2, 5 & 6. Analysis of three unload-reload loops provides increasing modulus values from 1443 to 1816MPa, whilst two loops on the unload section provide modulus values of 1294 to 1583MPa. Derived undrained shear strength analysis provides values of 4083 to 4200kPa.

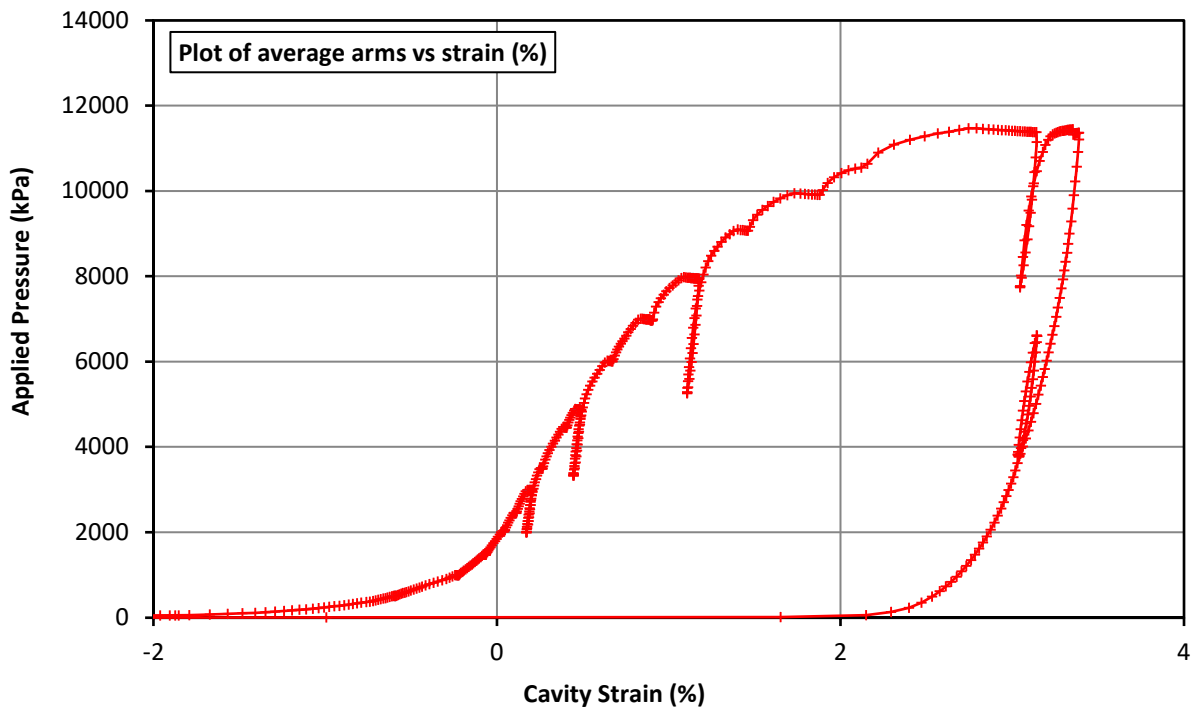
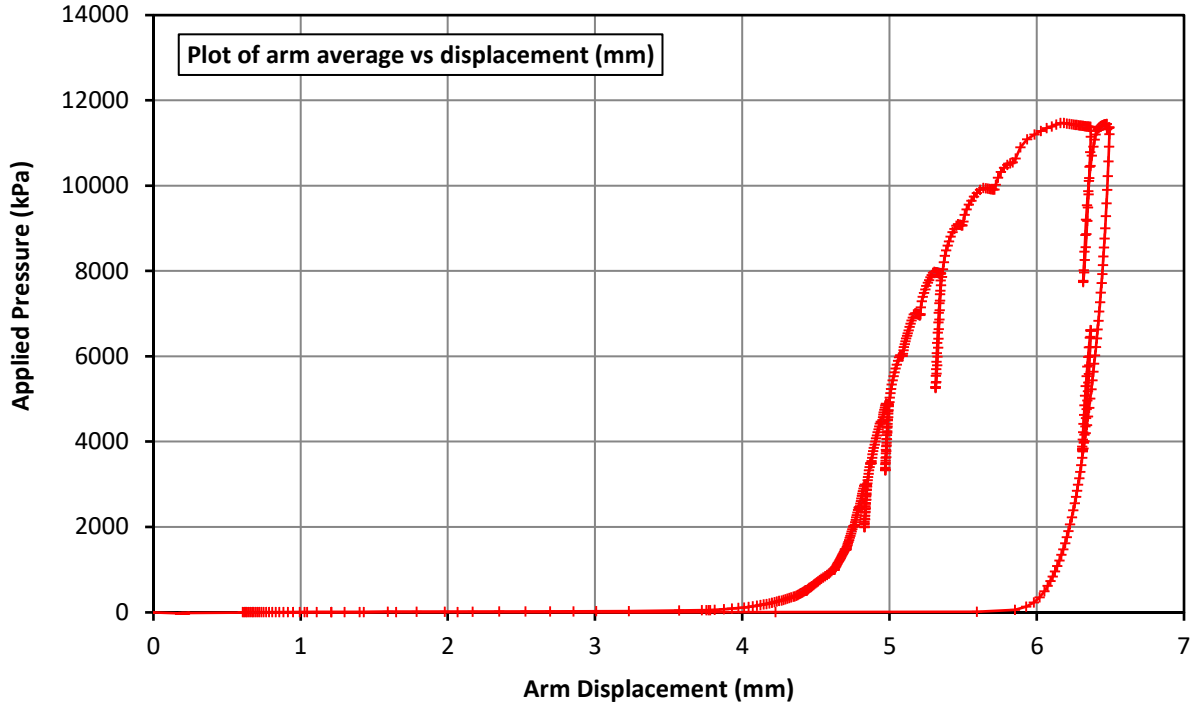
Test details:		Instrument:		Wally	
Drilling method:	Rotary coring		mV	mV/mm	mV
Casing depth:	27.00 m	Arm 1:	-2001.6	146.5	TPC A: -1607.4
Water level:	- m	Arm 2:	-2657.8	139.0	TPC B: -2056.2
		Arm 3:	-2278.4	146.3	
Test time:		Arm 4:	-2018.9	140.5	
Start (probe in):	10:16 hrs	Arm 5:	-2302.2	139.9	
Finish (probe out):	12:06 hrs	Arm 6:	-2036.8	126.0	

Project	A303 Amesbury to Berwick Down	Figure No.	R71905 T03 - 01
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test Overview



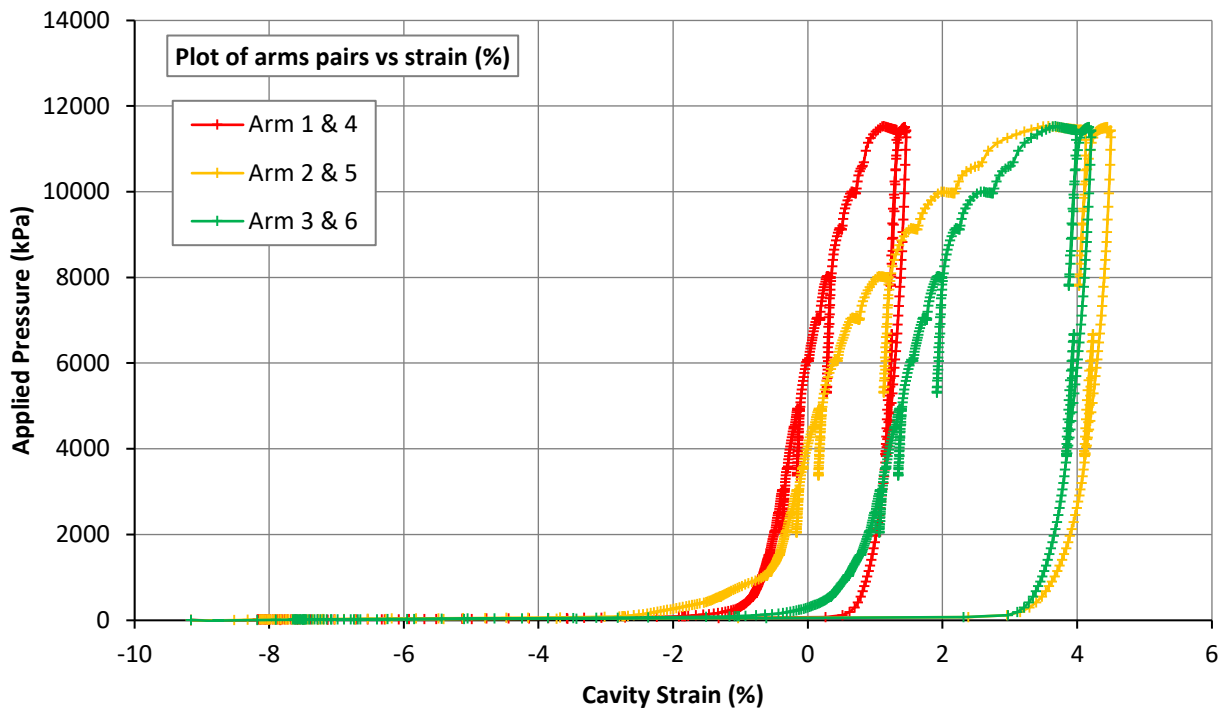
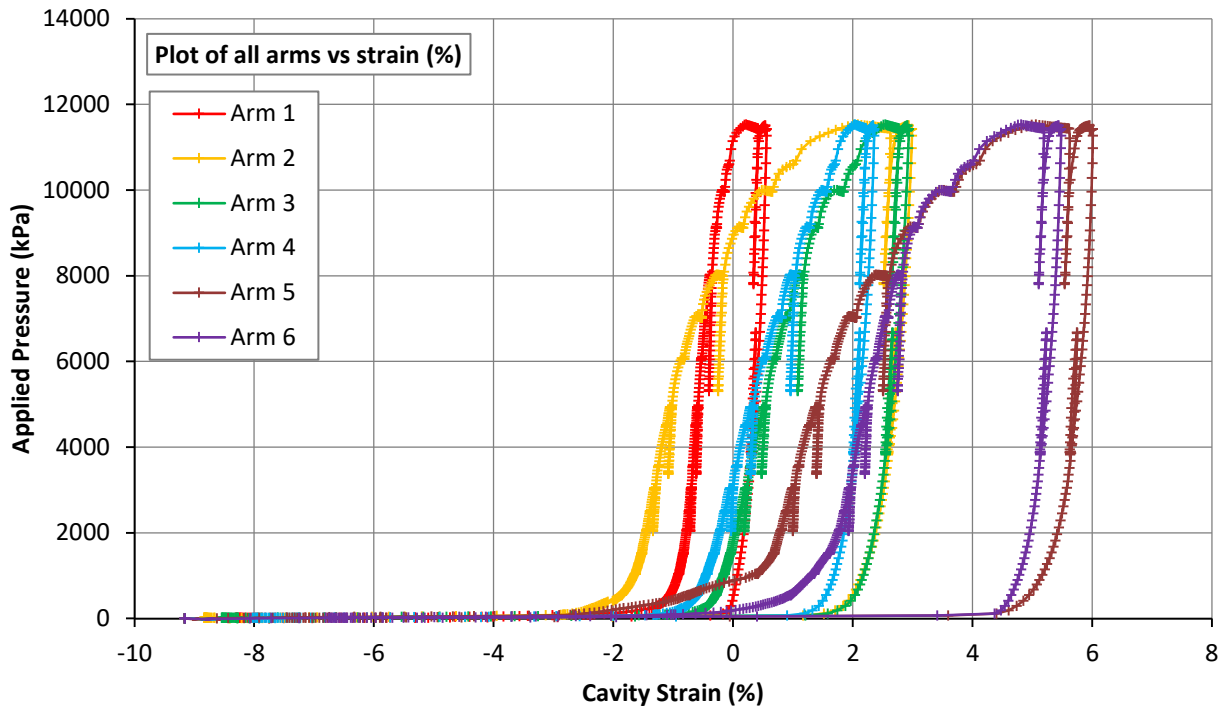
Test Date	30/09/2020	Test No.	3
Borehole	R71905	Test Depth (m)	28.00



Project	A303 Amesbury to Berwick Down	Figure No.	R71905 T03 - 02
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test - Arm Displacement vs Strain (%)

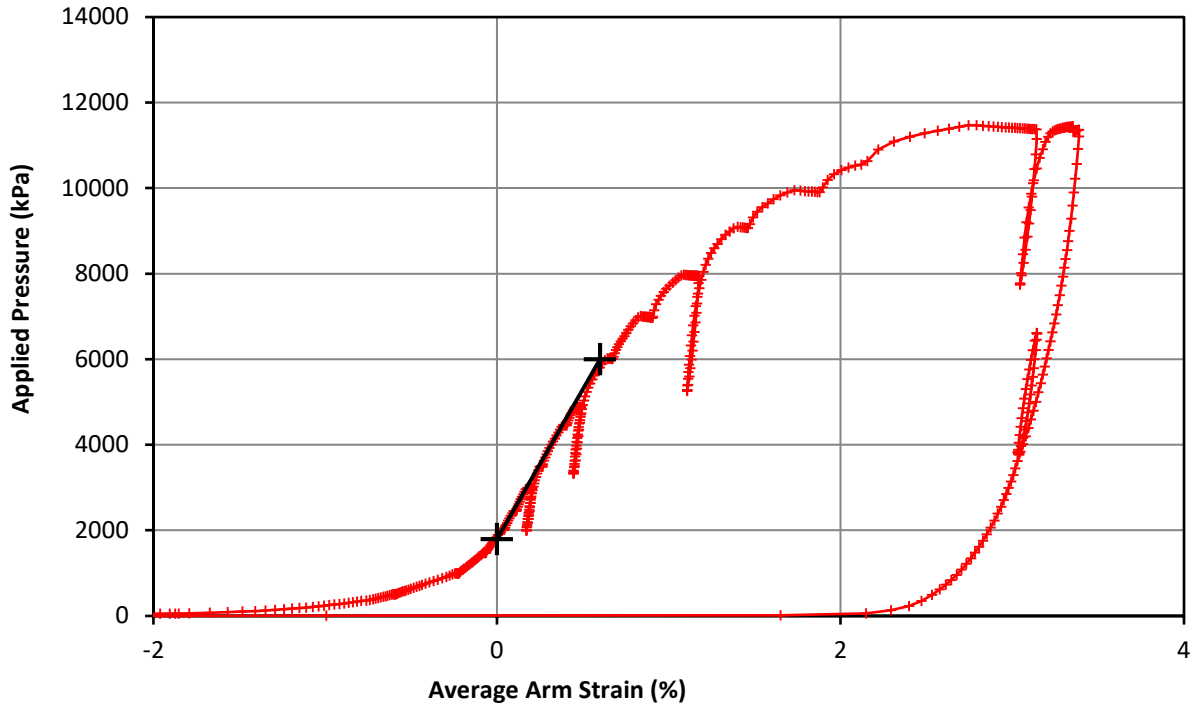
Test Date	30/09/2020	Test No.	3
Borehole	R71905	Test Depth (m)	28.00



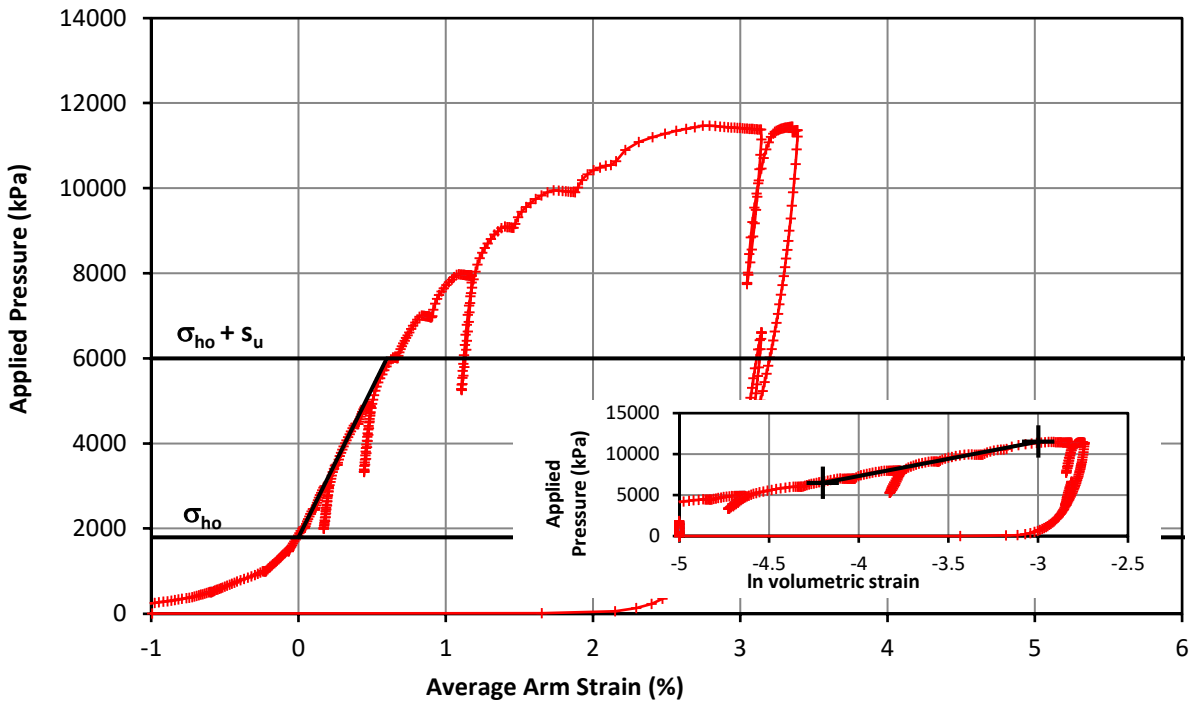
Project	A303 Amesbury to Berwick Down	Figure No.	R71905 T03 - 03
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test Initial Modulus & In Situ Horizontal Stress

Test Date	30/09/2020	Test No.	3
Borehole	R71905	Test Depth (m)	28.00



Initial Modulus	Shear Modulus	352.1 MPa
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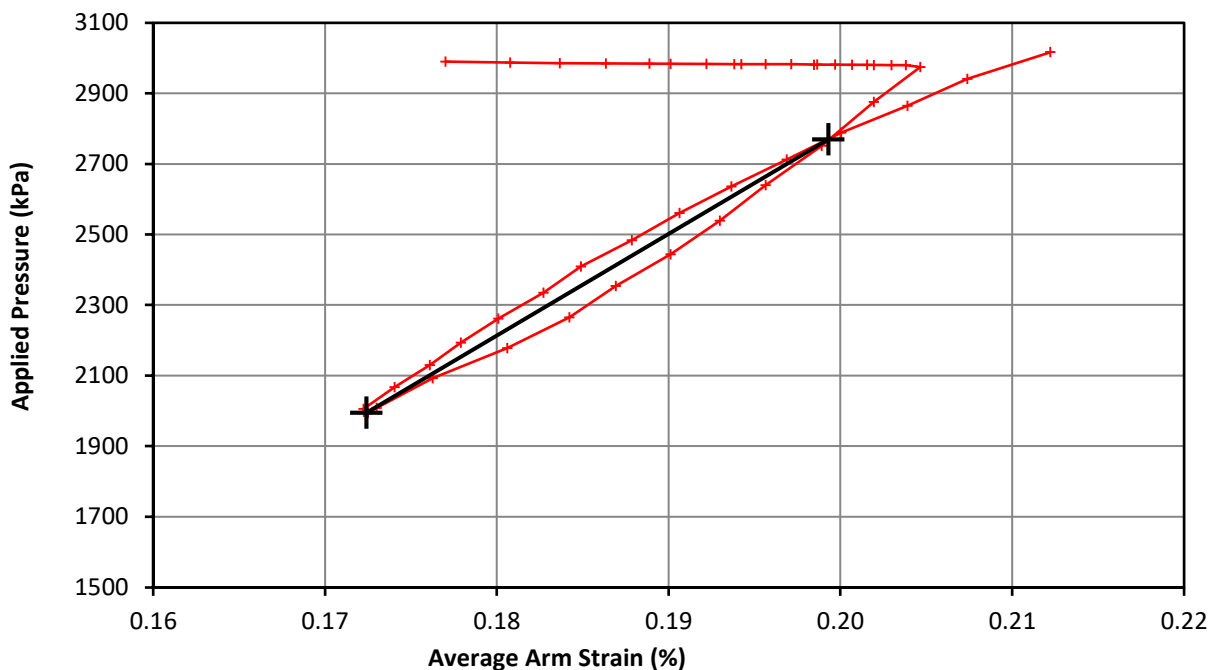
Marsland & Randolph	In situ horizontal stress	1800 kPa
	Undrained Strength	4200 kPa

Project	A303 Amesbury to Berwick Down	Figure No.	R71905 T03 - 04
Client	RPS Ltd		
Project No.	P1200116		

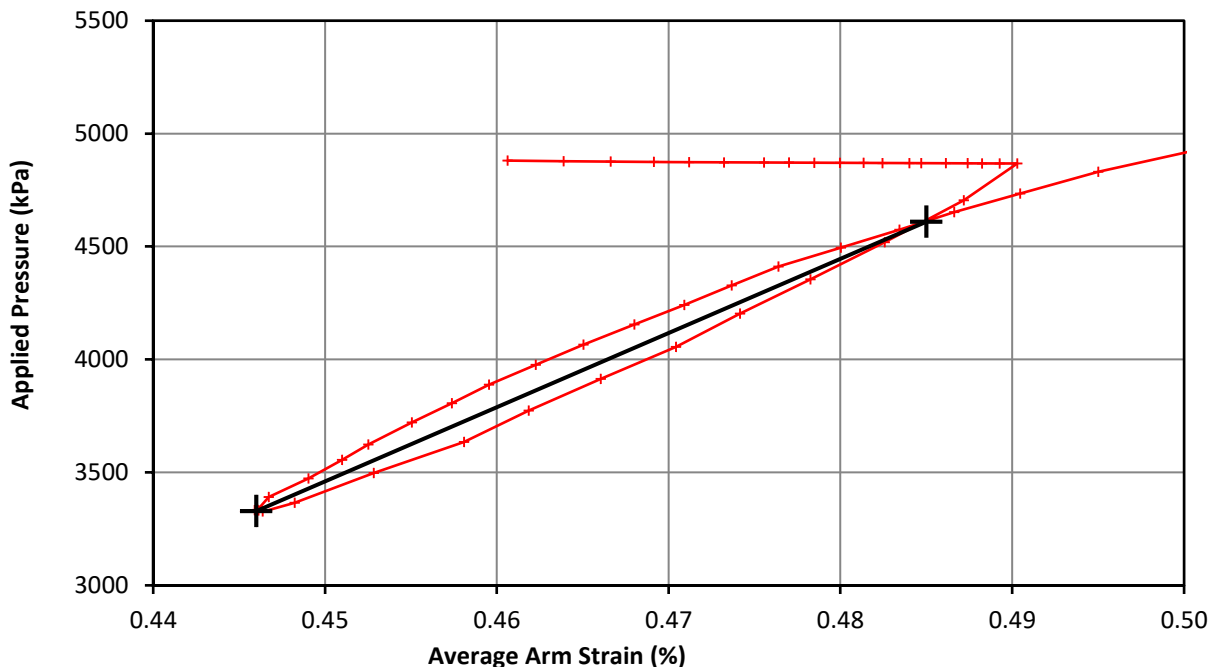
Pressuremeter Test Unload Reload Loop



Test Date	30/09/2020	Test No.	3
Borehole	R71905	Test Depth (m)	28.00



Loop 1	Shear Modulus	1443.4 MPa
	Cavity Strain Range	0.027 %



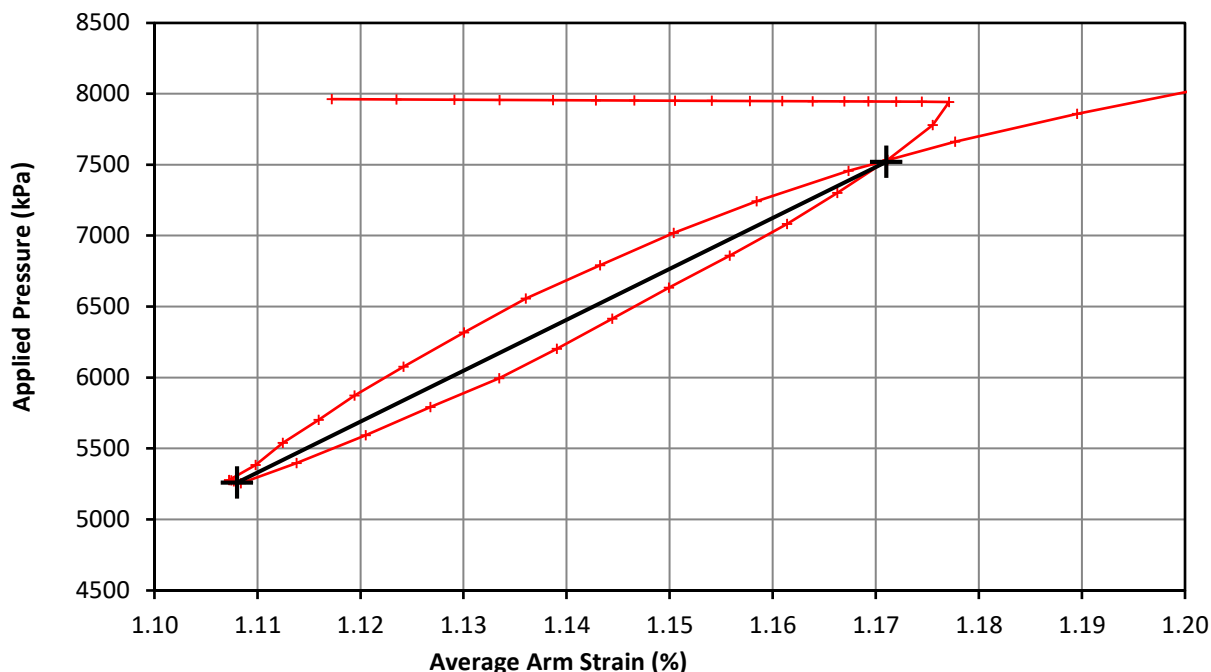
Loop 2	Shear Modulus	1650.3 MPa
	Cavity Strain Range	0.039 %

Project	A303 Amesbury to Berwick Down	Figure No.	R71905 T03 - 05
Client	RPS Ltd		
Project No.	P1200116		

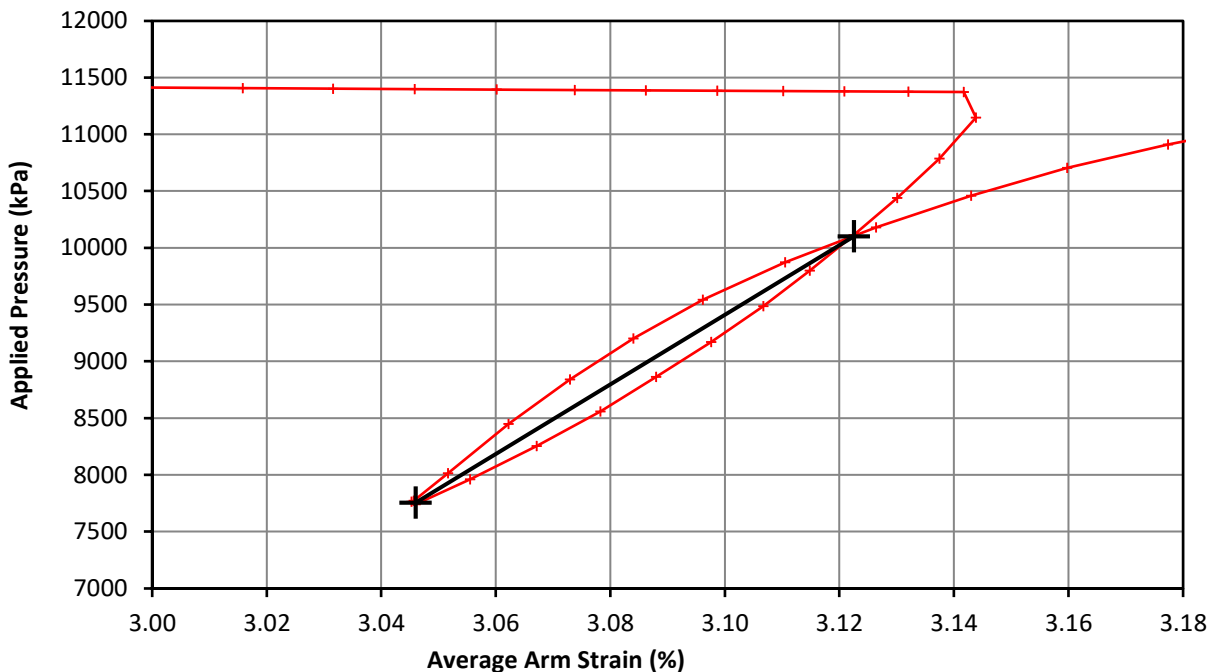
Pressuremeter Test Unload Reload Loop



Test Date	30/09/2020	Test No.	3
Borehole	R71905	Test Depth (m)	28.00



Loop 3	Shear Modulus	1815.5 MPa
	Cavity Strain Range	0.063 %



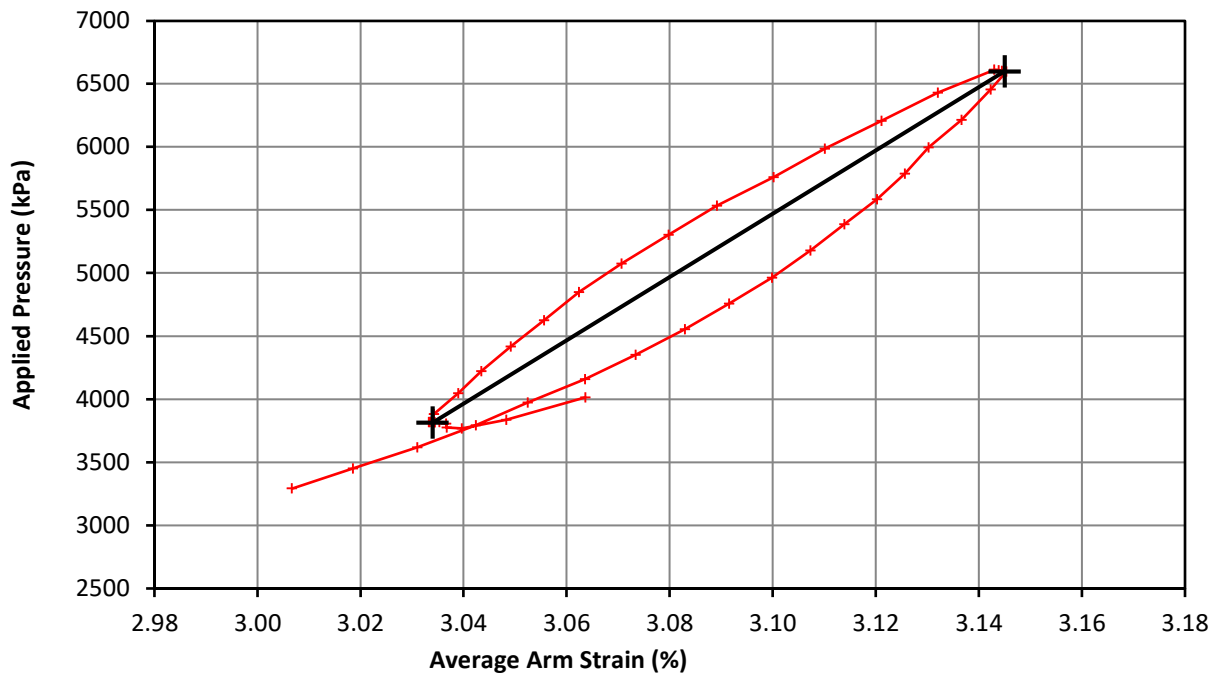
Loop 4	Shear Modulus	1582.6 MPa
	Cavity Strain Range	0.077 %

Project	A303 Amesbury to Berwick Down	Figure No.	R71905 T03 - 06
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test Unload Reload Loop



Test Date	30/09/2020	Test No.	3
Borehole	R71905	Test Depth (m)	28.00



Loop 5	Shear Modulus	1294.0	MPa
	Cavity Strain Range	0.111	%

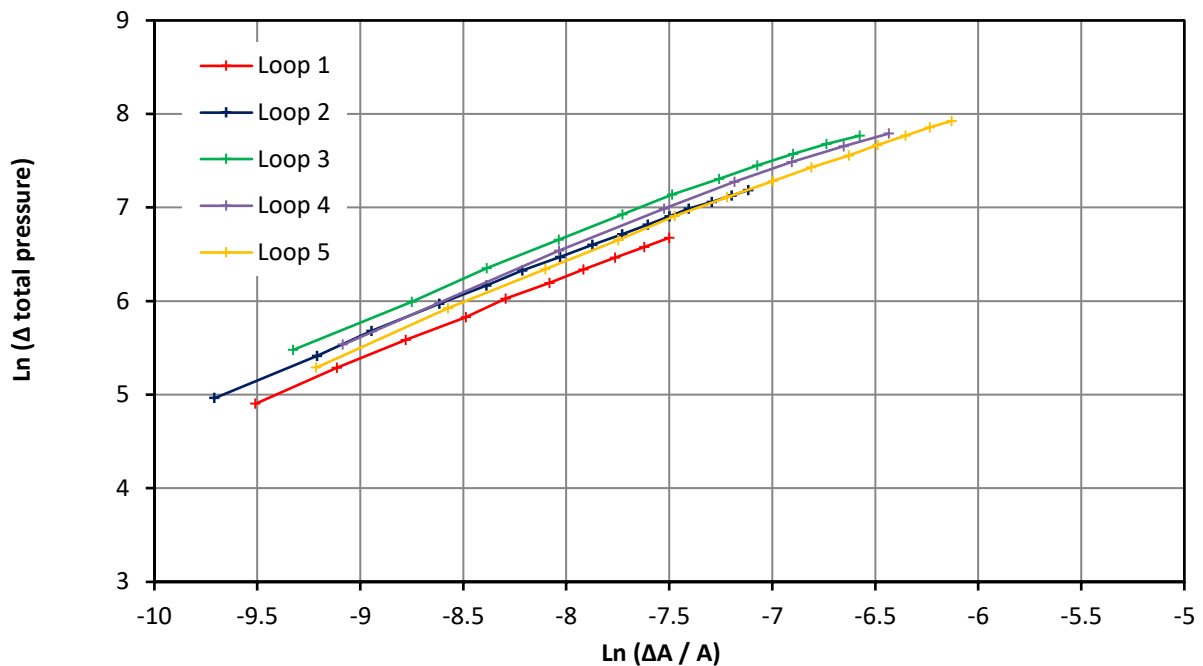
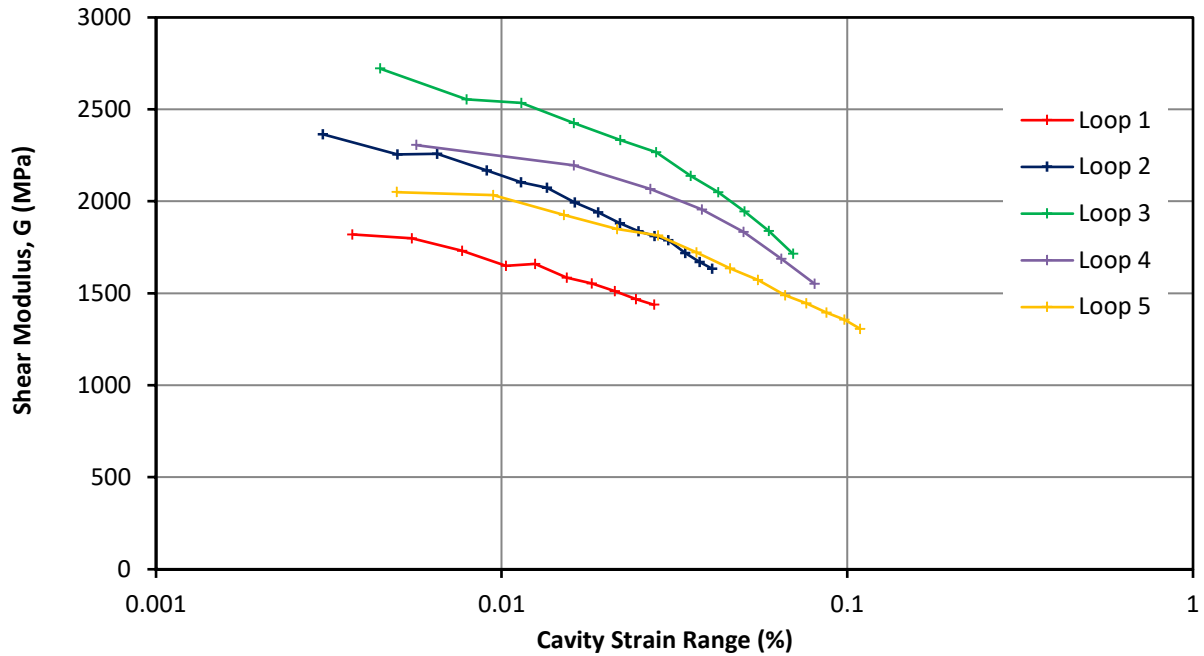
Project	A303 Amesbury to Berwick Down	Figure No.	R71905 T03 - 07
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Analysis

Small Strain Stiffness and Bolton and Whittle (1999)



Test Date	30/09/2020	Test No.	3
Borehole	R71905	Test Depth (m)	28.00



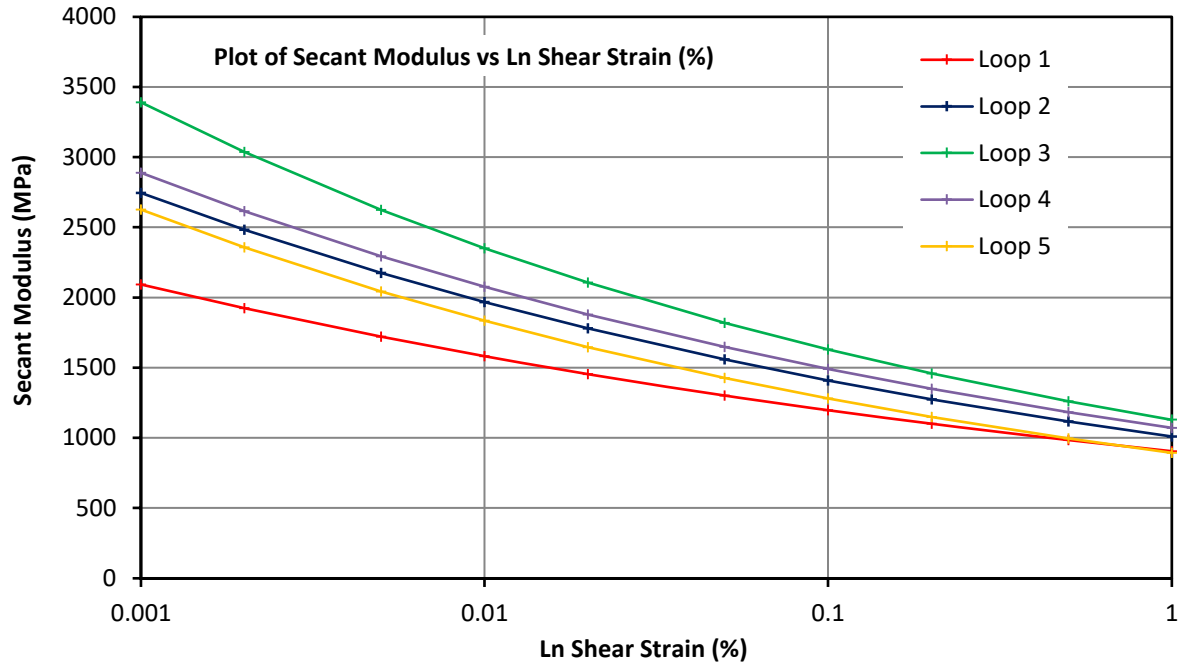
Loop 1		Loop 2		Loop 3		Loop 4		Loop 5	
Gradient(β)	Intercept	Gradient(β)	Intercept	Gradient(β)	Intercept	Gradient(β)	Intercept	Gradient(β)	Intercept
0.879	589.410 (MPa)	0.855	605.979 (MPa)	0.841	645.395 (MPa)	0.856	645.413 (MPa)	0.844	516.522 (MPa)

Project	A303 Amesbury to Berwick Down	Figure No.	R71905 T03 - 08
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Analysis

Secant Modulus - Shear Strain (%)

Test Date	30/09/2020	Test No.	3
Borehole	R71905	Test Depth (m)	28.00

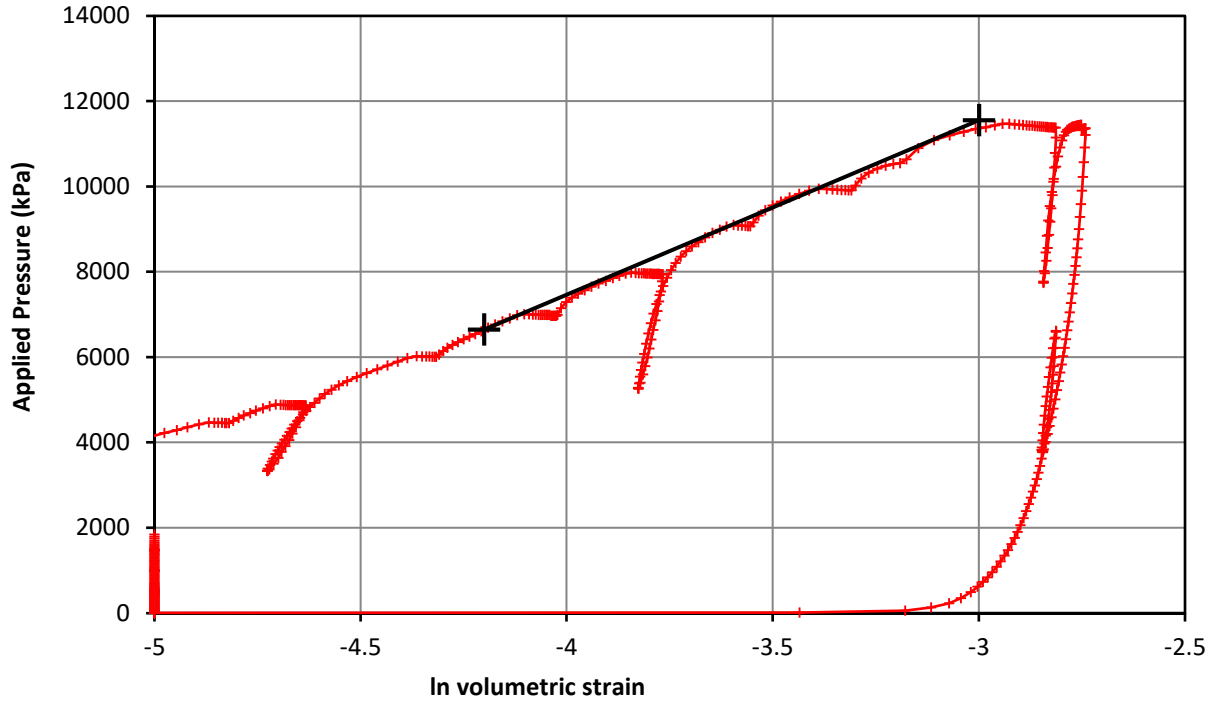


Shear Strain	Loop 1	Loop 2	Loop 3	Loop 4	Loop 5
0.001%	2092	2745	3391	2889	2626
0.002%	1924	2483	3037	2615	2357
0.005%	1721	2174	2625	2293	2043
0.010%	1583	1967	2350	2075	1834
0.020%	1455	1779	2105	1879	1646
0.050%	1302	1558	1819	1647	1427
0.100%	1197	1409	1629	1491	1281
0.200%	1100	1275	1459	1350	1149
0.500%	985	1116	1261	1183	996
1.000%	905	1010	1129	1071	894

Project	A303 Amesbury to Berwick Down	Figure No.	R71905 T03 - 09
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test - Strength

Test Date	30/09/2020	Test No.	3
Borehole	R71905	Test Depth (m)	28.00

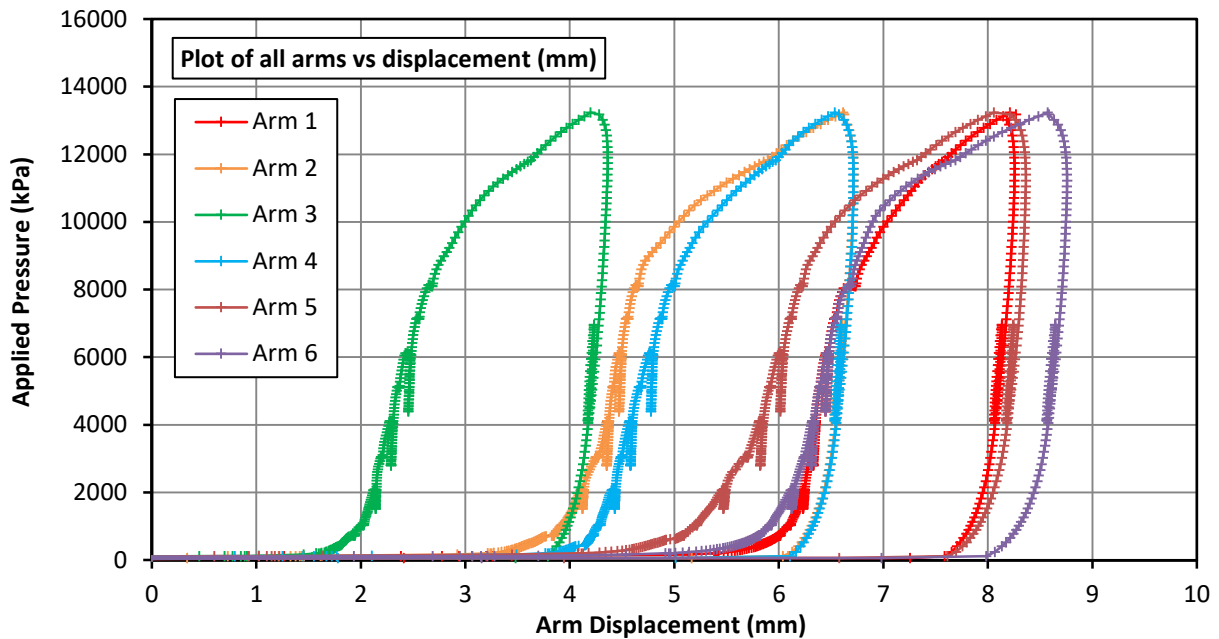


Strength	Undrained Shear	4083 kPa
	Limit Pressure	23800 kPa

Project	A303 Amesbury to Berwick Down	Figure No.	R71905 T03 - 10
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test Overview High Pressure Dilatometer (HPD)

Test Date	01/10/2020	Test No.	4	
Borehole	R71905	Test Depth (m)	32.80	
Coordinates (m)	412040.6 (E)	141895 (N)	Elevation (m)	99.03



Material description from borehole log:

Very weak high density white CHALK moderately spaced marl laminae and rare orange staining.

Test pocket conditions:

Total core recovery:	31 %	Test pocket depth range:	
Solid core recovery:	19 %	From:	31.00 m to: 34.00 m
Rock quality designation:	5 %	Flush:	Water

Test comment:

The test pocket was slightly oversize with arms lifting off between 2.0 to 6.5mm. Some disturbance and possible debris is indicated by the initial arm behaviour on arms 5, 6 & 1. The p_0 was estimated to be at 1950kPa, with the following loading section being relatively long. Material yield is interpreted at 7130kPa with the test taken to a high pressure of 13235kPa. The displacement-pressure response was reasonably consistent on all arms through the test, albeit with variable expansion especially post-yield. Analysis of three unload-reload loops provides increasing modulus values from 1109 to 1813MPa, whilst a loop on the unload section provides a modulus of 1080MPa. Derived undrained shear strength analysis provides values of 3928 to 5180kPa.

Test details:

Instrument: Wally

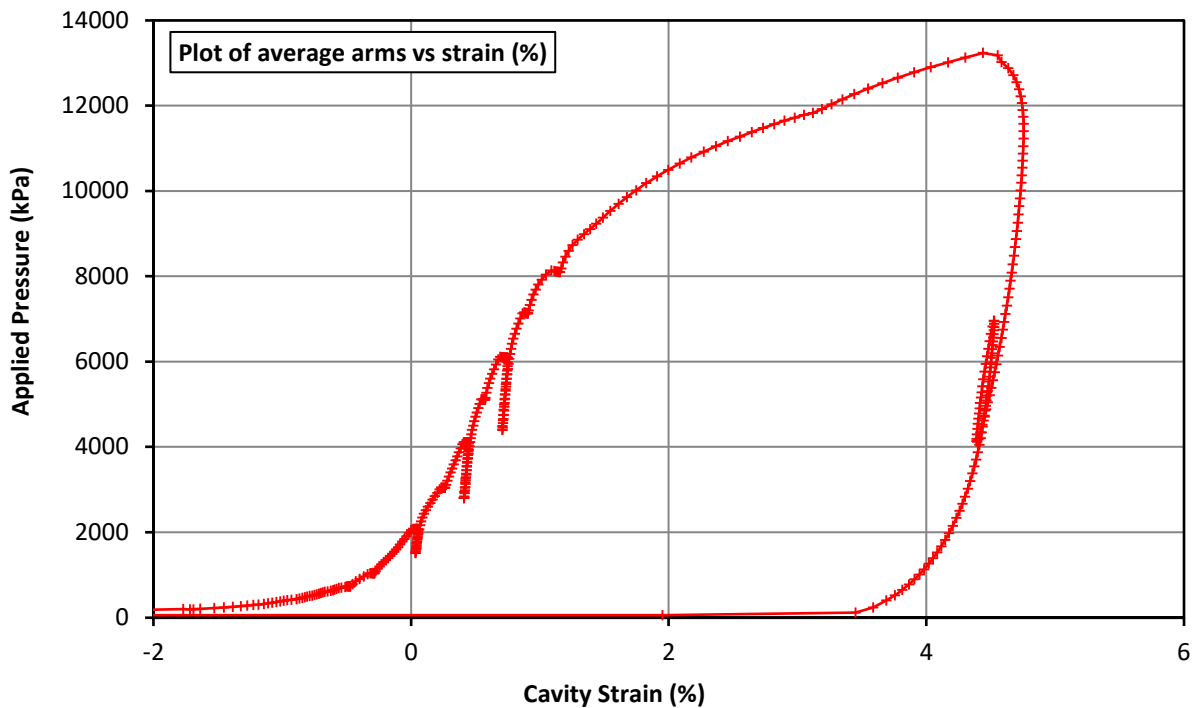
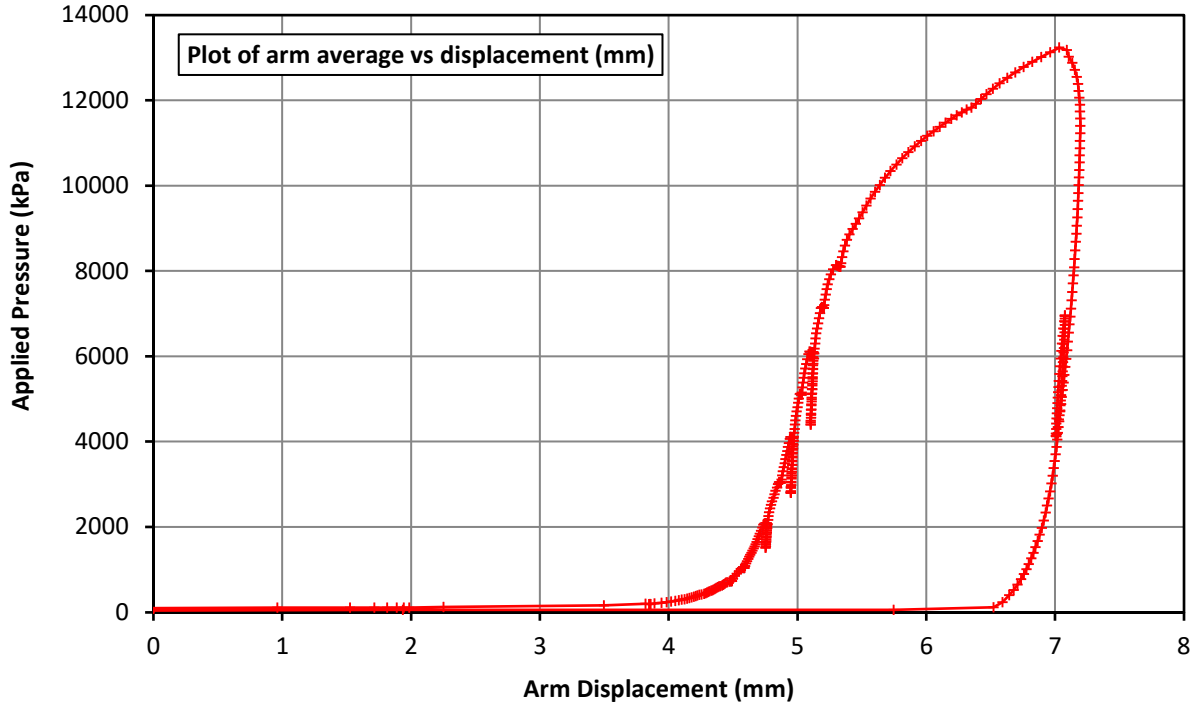
	Rotary coring	mV	mV/mm	mV	mV/MPa
Drilling method:	Rotary coring				
Casing depth:	31.00 m	Arm 1: -1959.4	146.5	TPC A: -1605.5	109.0
Water level:	- m	Arm 2: -2577.0	139.0	TPC B: -2054.1	109.1
		Arm 3: -2093.3	146.3		
Test time:		Arm 4: -1883.5	140.5		
Start (probe in):	10:50 hrs	Arm 5: -2251.2	139.9		
Finish (probe out):	12:16 hrs	Arm 6: -1955.9	126.0		

Project	A303 Amesbury to Berwick Down	Figure No.	R71905 T04 - 01
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test Overview



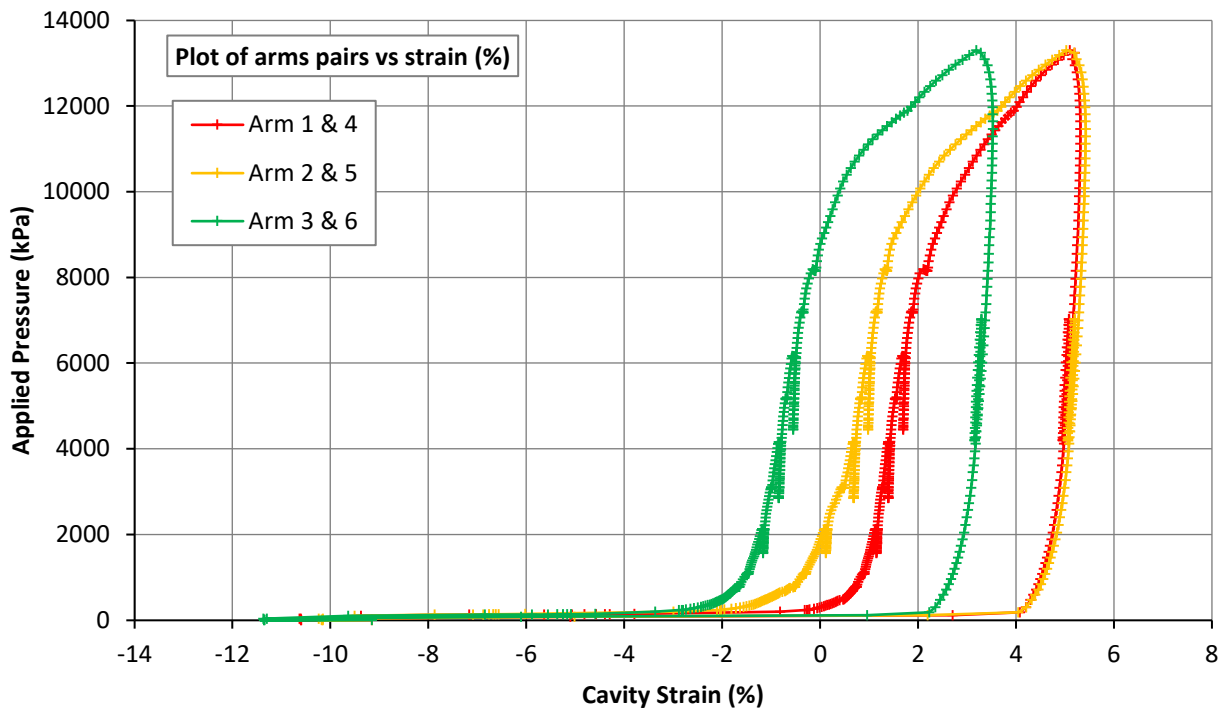
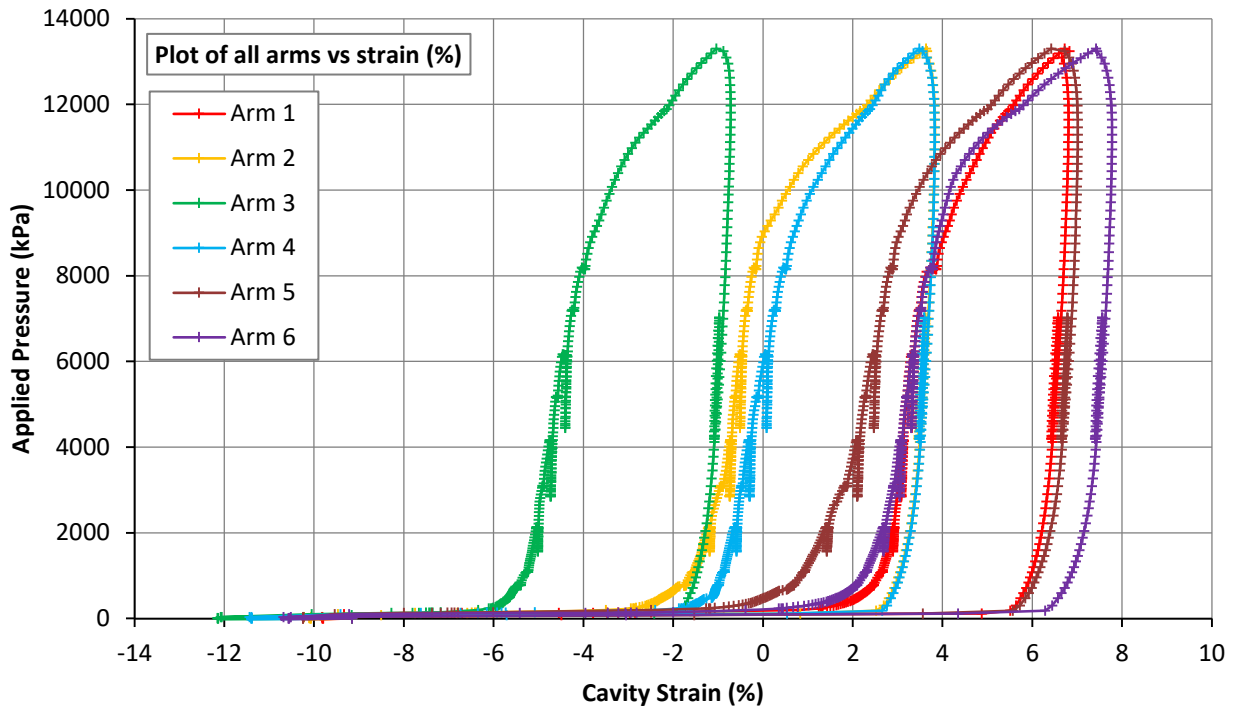
Test Date	01/10/2020	Test No.	4
Borehole	R71905	Test Depth (m)	32.80



Project	A303 Amesbury to Berwick Down	Figure No.	R71905 T04 - 02
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test - Arm Displacement vs Strain (%)

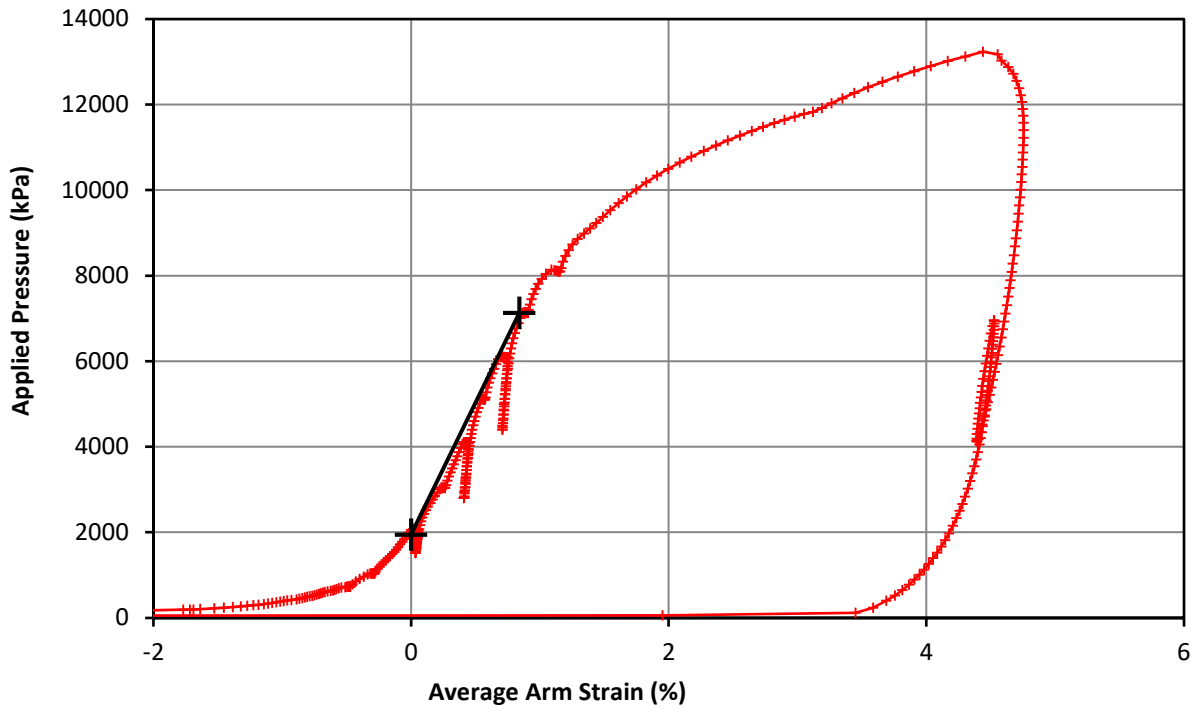
Test Date	01/10/2020	Test No.	4
Borehole	R71905	Test Depth (m)	32.80



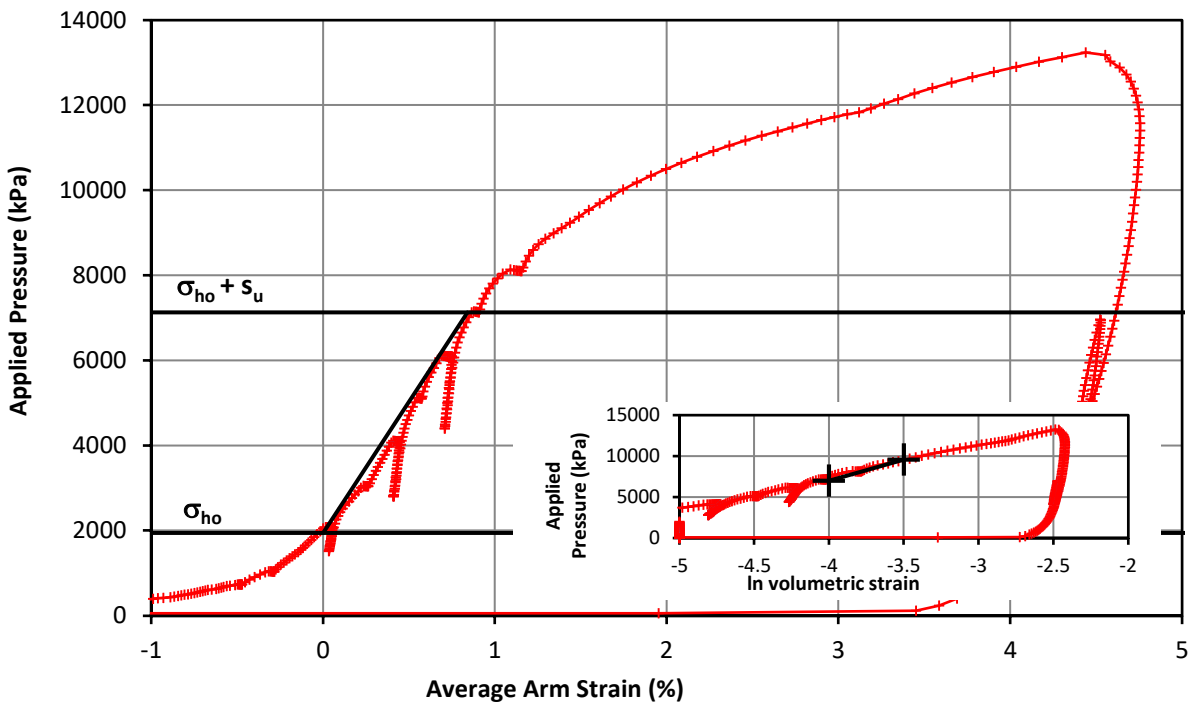
Project	A303 Amesbury to Berwick Down	Figure No.	R71905 T04 - 03
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test Initial Modulus & In Situ Horizontal Stress

Test Date	01/10/2020	Test No.	4
Borehole	R71905	Test Depth (m)	32.80



Initial Modulus	Shear Modulus	310.9 MPa
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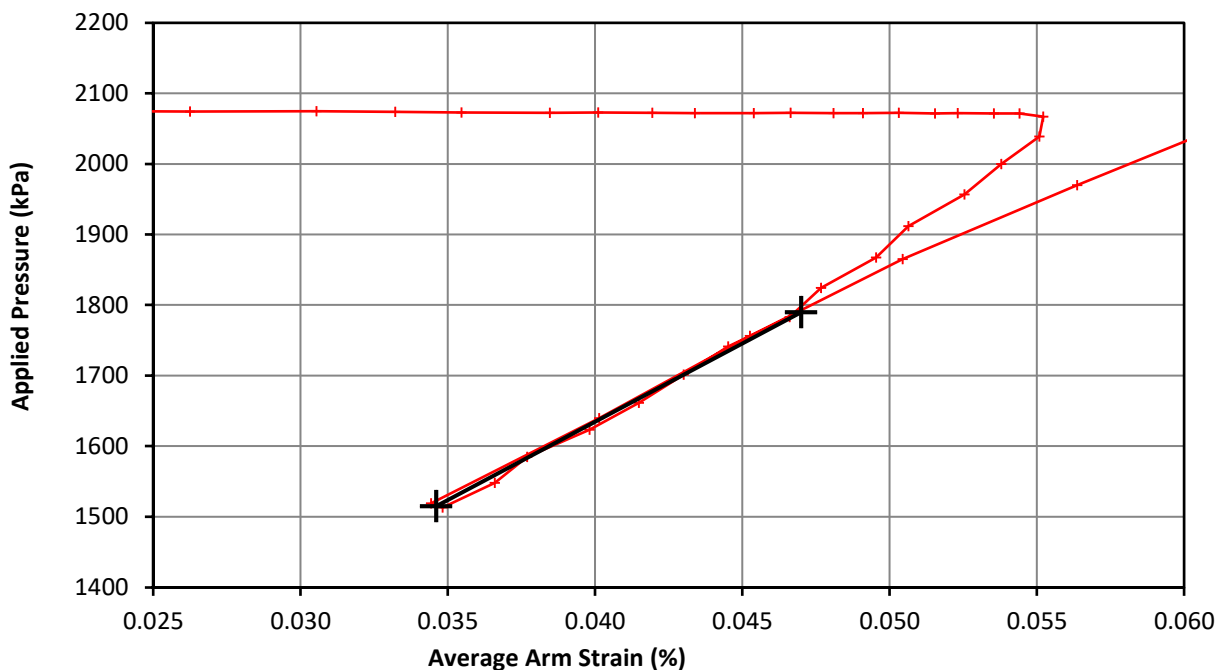
Marsland & Randolph	In situ horizontal stress	1950 kPa
	Undrained Strength	5180 kPa

Project	A303 Amesbury to Berwick Down	Figure No.	R71905 T04 - 04
Client	RPS Ltd		
Project No.	P1200116		

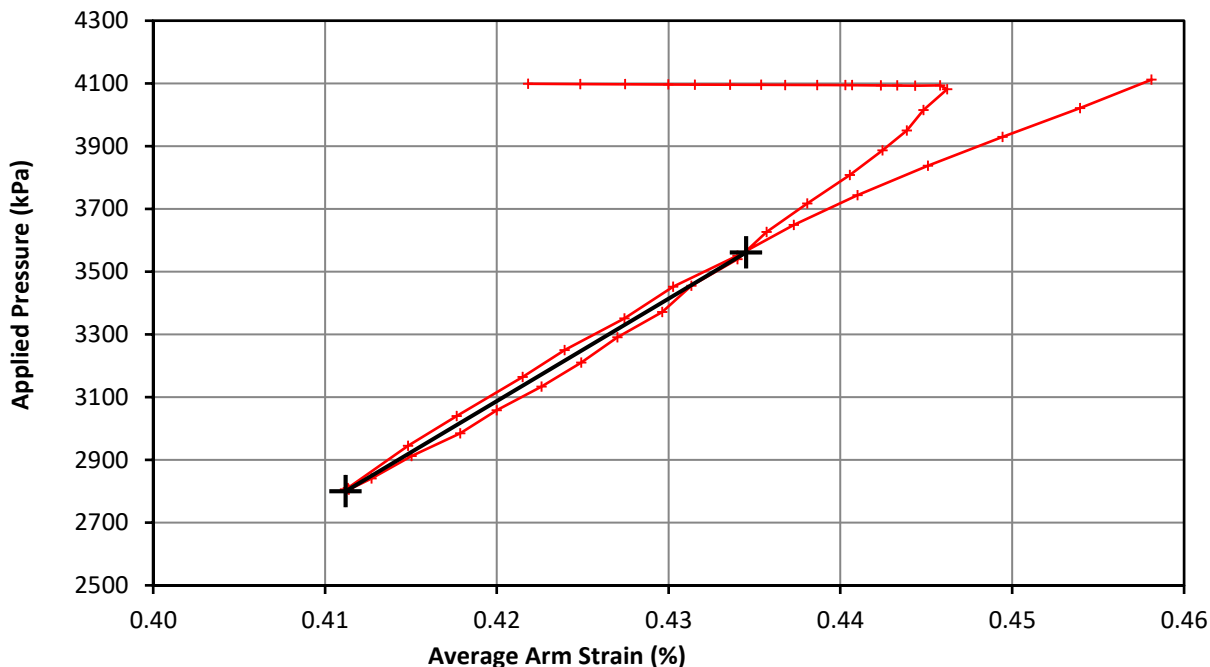
Pressuremeter Test Unload Reload Loop



Test Date	01/10/2020	Test No.	4
Borehole	R71905	Test Depth (m)	32.80



Loop 1	Shear Modulus	1109.4 MPa
	Cavity Strain Range	0.012 %



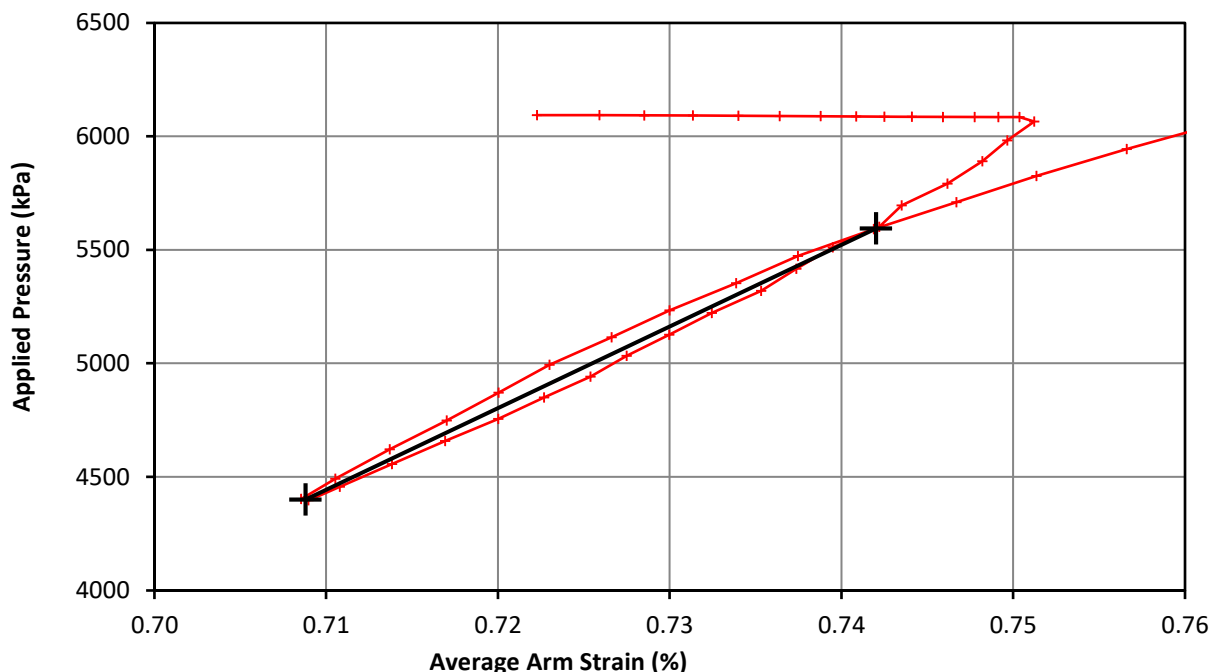
Loop 2	Shear Modulus	1642.3 MPa
	Cavity Strain Range	0.023 %

Project	A303 Amesbury to Berwick Down	Figure No.	R71905 T04 - 05
Client	RPS Ltd		
Project No.	P1200116		

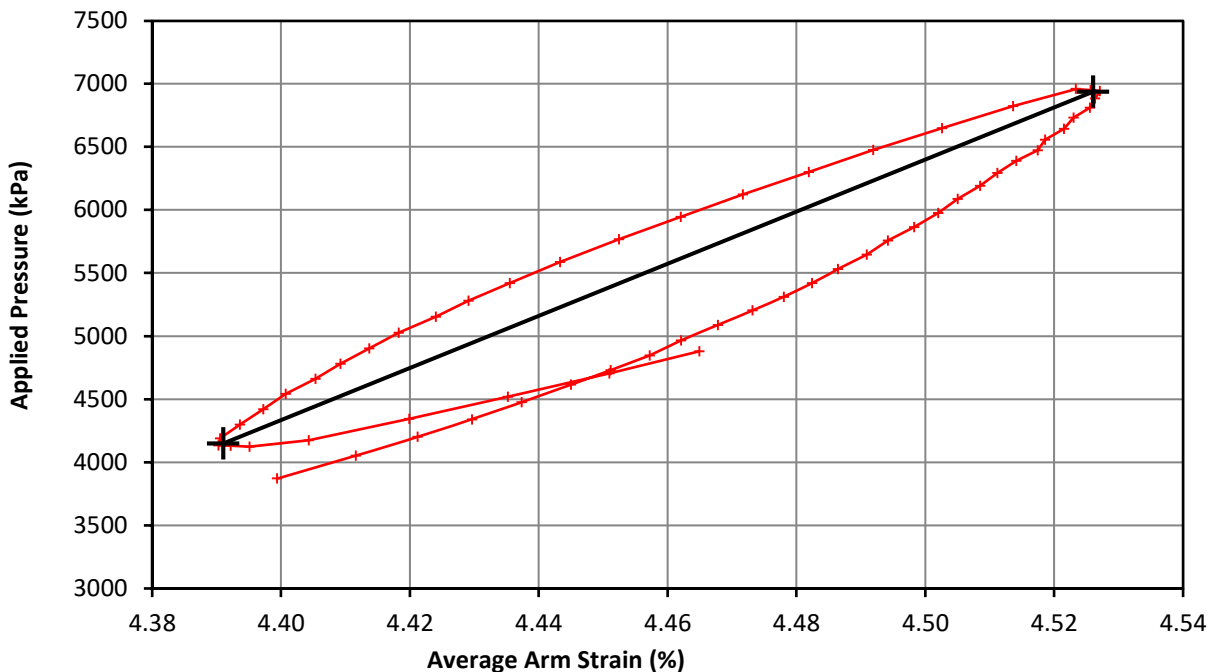
Pressuremeter Test Unload Reload Loop



Test Date	01/10/2020	Test No.	4
Borehole	R71905	Test Depth (m)	32.80



Loop 3	Shear Modulus	1813.1 MPa
	Cavity Strain Range	0.033 %



Loop 4	Shear Modulus	1080.1 MPa
	Cavity Strain Range	0.135 %

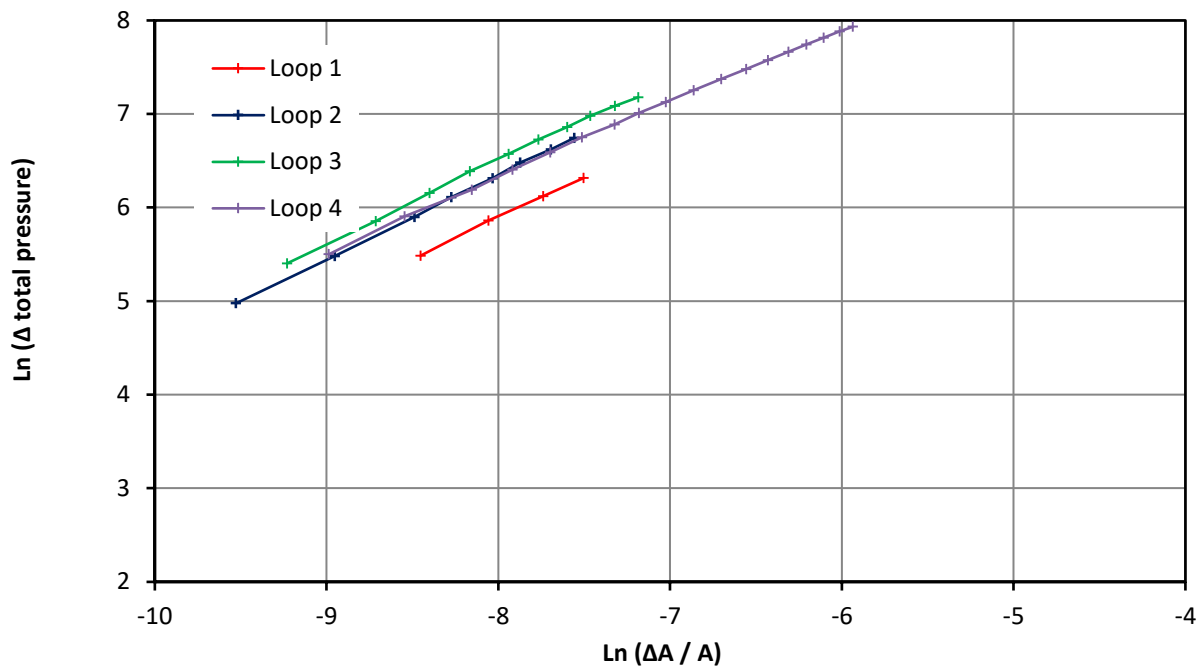
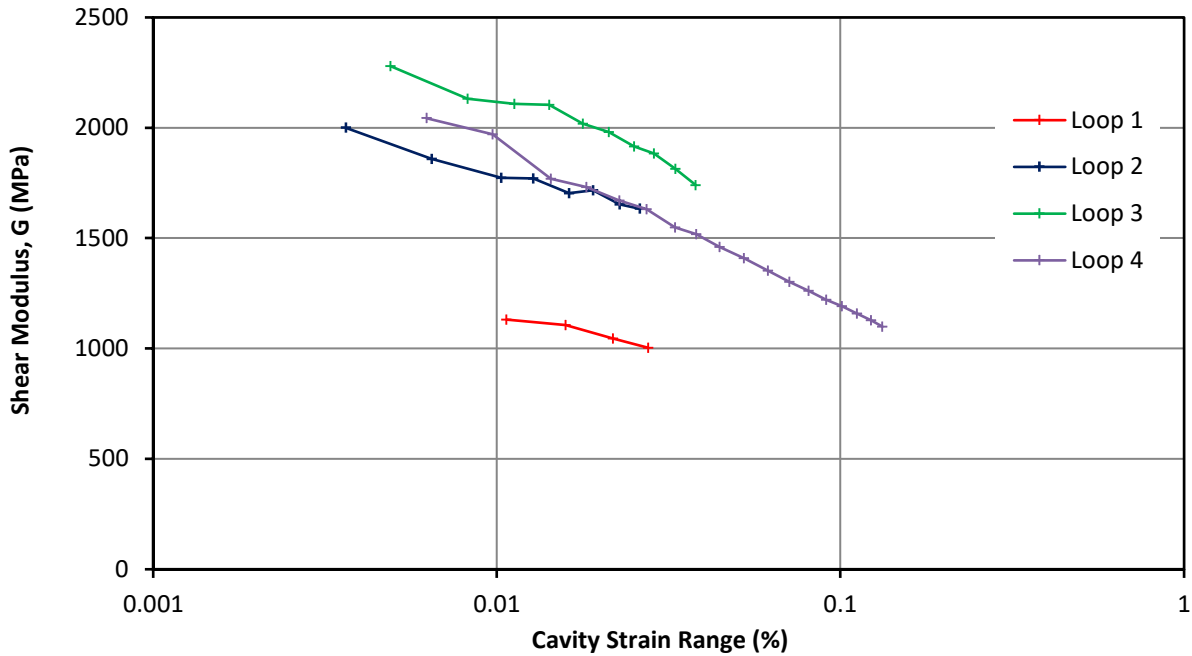
Project	A303 Amesbury to Berwick Down	Figure No.	R71905 T04 - 06
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Analysis

Small Strain Stiffness and Bolton and Whittle (1999)



Test Date	01/10/2020	Test No.	4
Borehole	R71905	Test Depth (m)	32.80



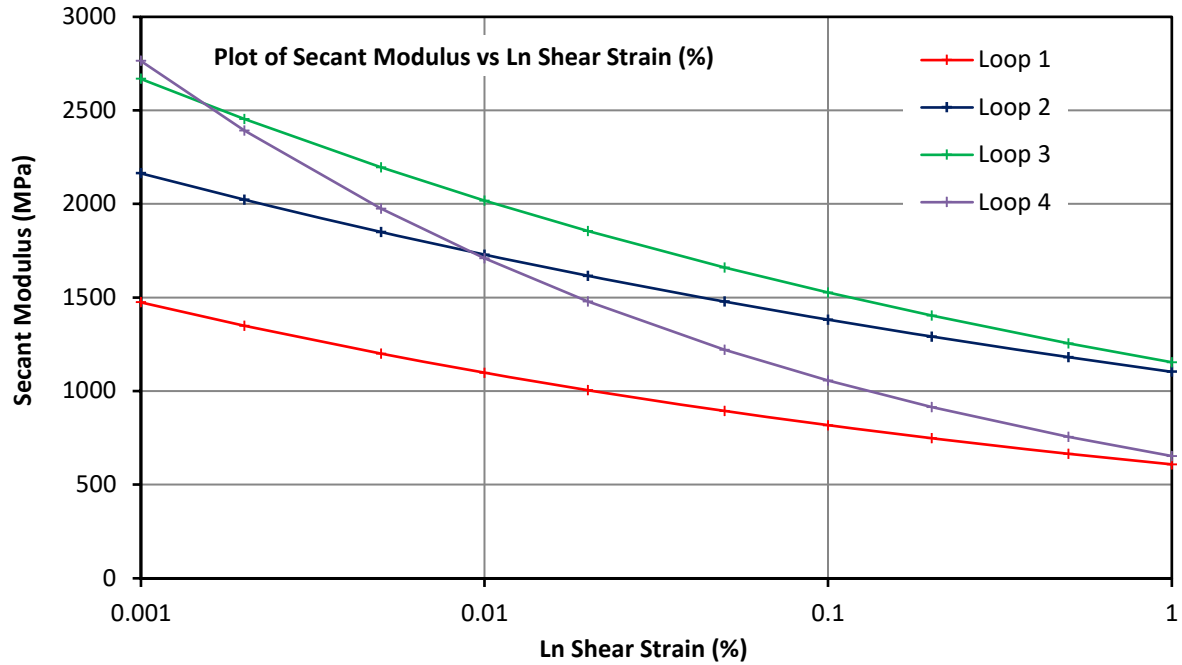
Loop 1		Loop 2		Loop 3		Loop 4	
Gradient(β)	Intercept	Gradient(β)	Intercept	Gradient(β)	Intercept	Gradient(β)	Intercept
0.872	387.005 (MPa)	0.902	780.456 (MPa)	0.879	750.950 (MPa)	0.791	315.335 (MPa)

Project	A303 Amesbury to Berwick Down	Figure No.	R71905 T04 - 07
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Analysis
 Secant Modulus - Shear Strain (%)



Test Date	01/10/2020	Test No.	4
Borehole	R71905	Test Depth (m)	32.80

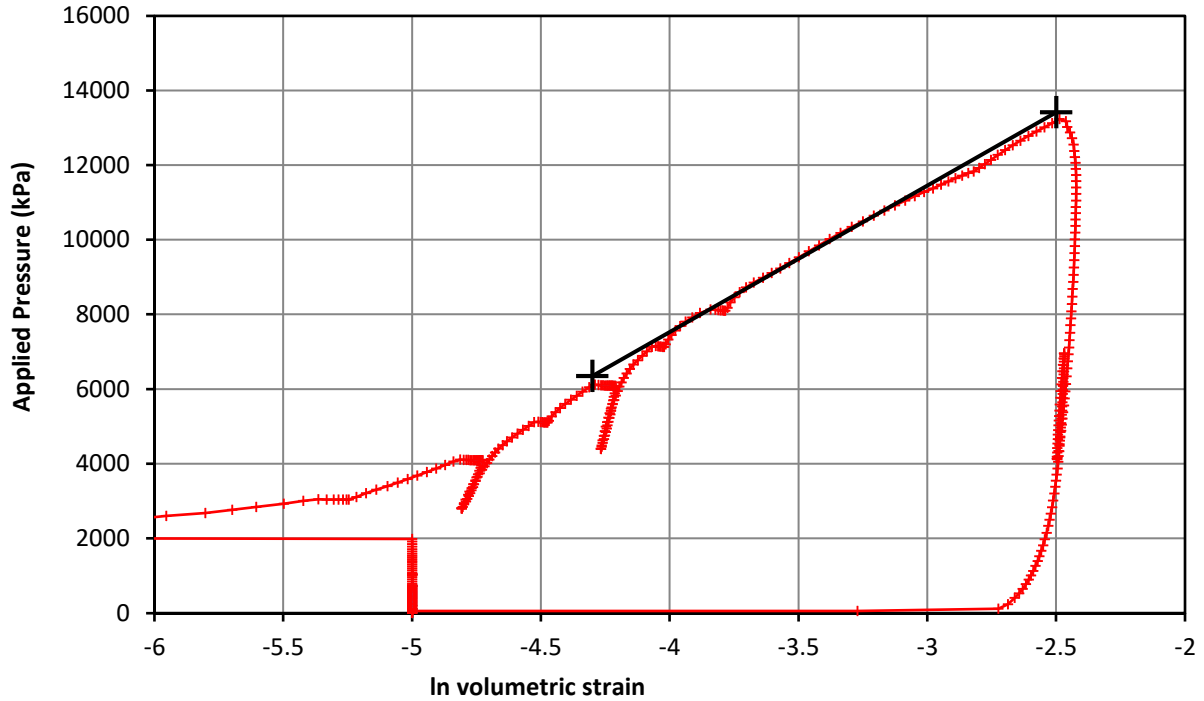


Shear Strain	Loop 1	Loop 2	Loop 3	Loop 4
0.001%	1475	2164	2669	2764
0.002%	1349	2023	2453	2392
0.005%	1200	1850	2195	1975
0.010%	1098	1729	2018	1709
0.020%	1005	1616	1855	1478
0.050%	893	1478	1660	1221
0.100%	817	1381	1526	1056
0.200%	748	1291	1403	914
0.500%	665	1181	1255	755
1.000%	609	1104	1154	653

Project	A303 Amesbury to Berwick Down	Figure No.	R71905 T04 - 08
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test - Strength

Test Date	01/10/2020	Test No.	4
Borehole	R71905	Test Depth (m)	32.80



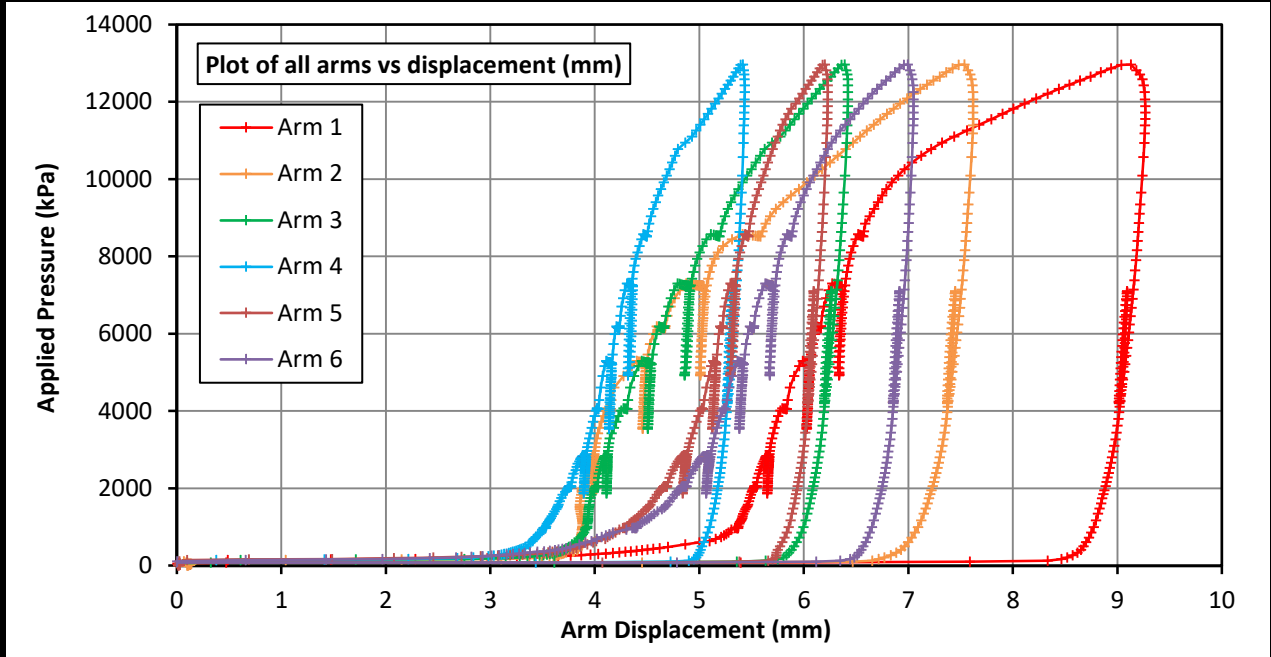
Strength	Undrained Shear	3928 kPa
	Limit Pressure	23239 kPa

Project	A303 Amesbury to Berwick Down	Figure No.	R71905 T04 - 09
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test Overview High Pressure Dilatometer (HPD)



Test Date	02/10/2020	Test No.	5
Borehole	R71905	Test Depth (m)	41.25
Coordinates (m)	412040.6 (E)	141895 (N)	Elevation (m) 99.03



Material description from borehole log:
Very weak very high density white CHALK with occasional orange stains.

Test pocket conditions:

Total core recovery:	75 %	Test pocket depth range:	
Solid core recovery:	60 %	From:	40.00 m to: 43.00 m
Rock quality designation:	40 %	Flush:	Water

Test comment:
The test pocket was good with arms lifting off between 3.5 to 5.5mm. The p_0 was estimated to be at 2290kPa, with the following loading section being relatively long. Material yield is interpreted at 7500kPa with the test taken to a high pressure of 12958kPa. The displacement-pressure response was reasonably consistent on all arms through the test, with some variation in expansion. Analysis of three unload-reload loops provides increasing modulus values from 1194 to 1403MPa, whilst a loop on the unload section provides a modulus of 1160MPa. Derived undrained shear strength analysis provides values of 5000 to 5210kPa.

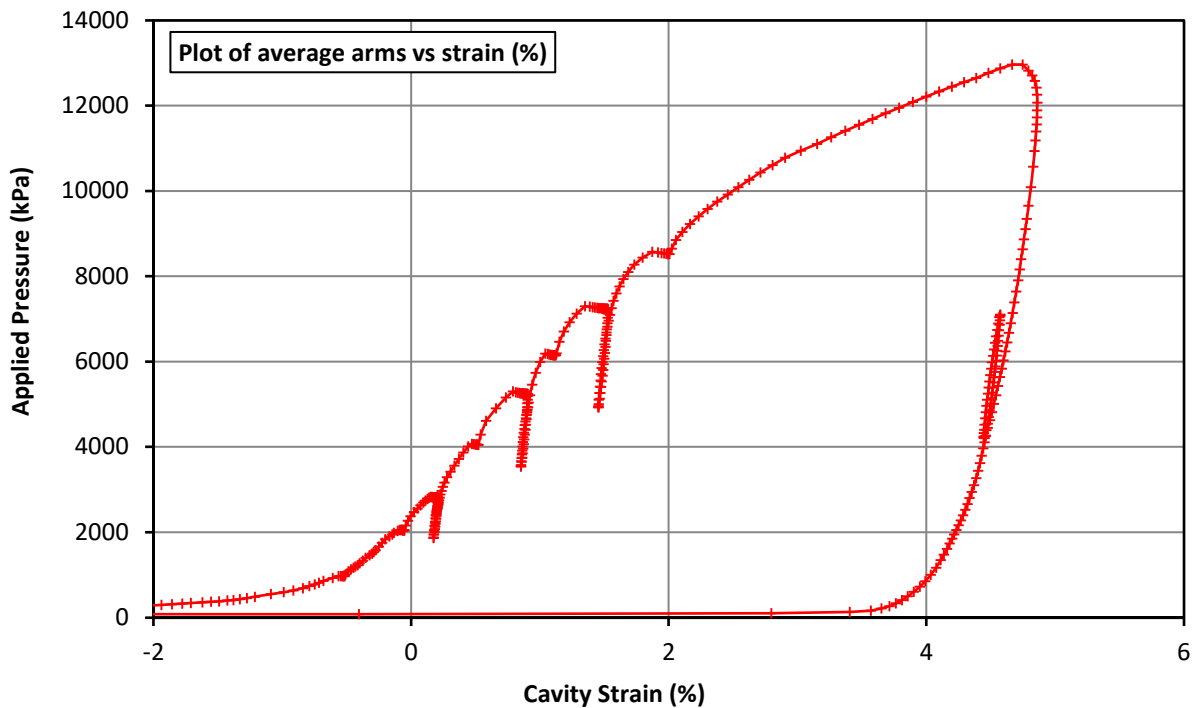
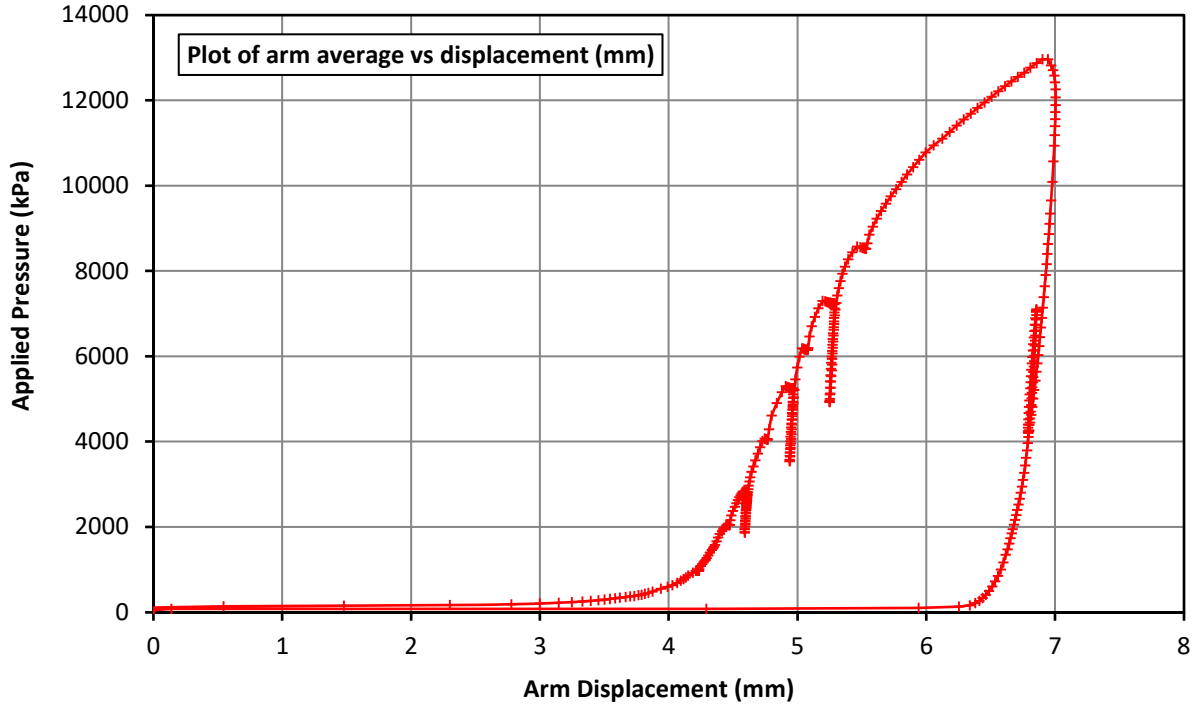
Test details:		Instrument:		Wally		
Drilling method:	Rotary coring		mV	mV/mm	mV	mV/MPa
Casing depth:	40.00 m	Arm 1:	-2009.3	146.5	TPC A: -1611.3	109.0
Water level:	- m	Arm 2:	-2657.2	139.0	TPC B: -2060.6	109.1
		Arm 3:	-2304.4	146.3		
Test time:		Arm 4:	-2044.9	140.5		
Start (probe in):	10:40 hrs	Arm 5:	-2326.9	139.9		
Finish (probe out):	12:00 hrs	Arm 6:	-2047.1	126.0		

Project	A303 Amesbury to Berwick Down	Figure No.	R71905 T05 - 01
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test Overview



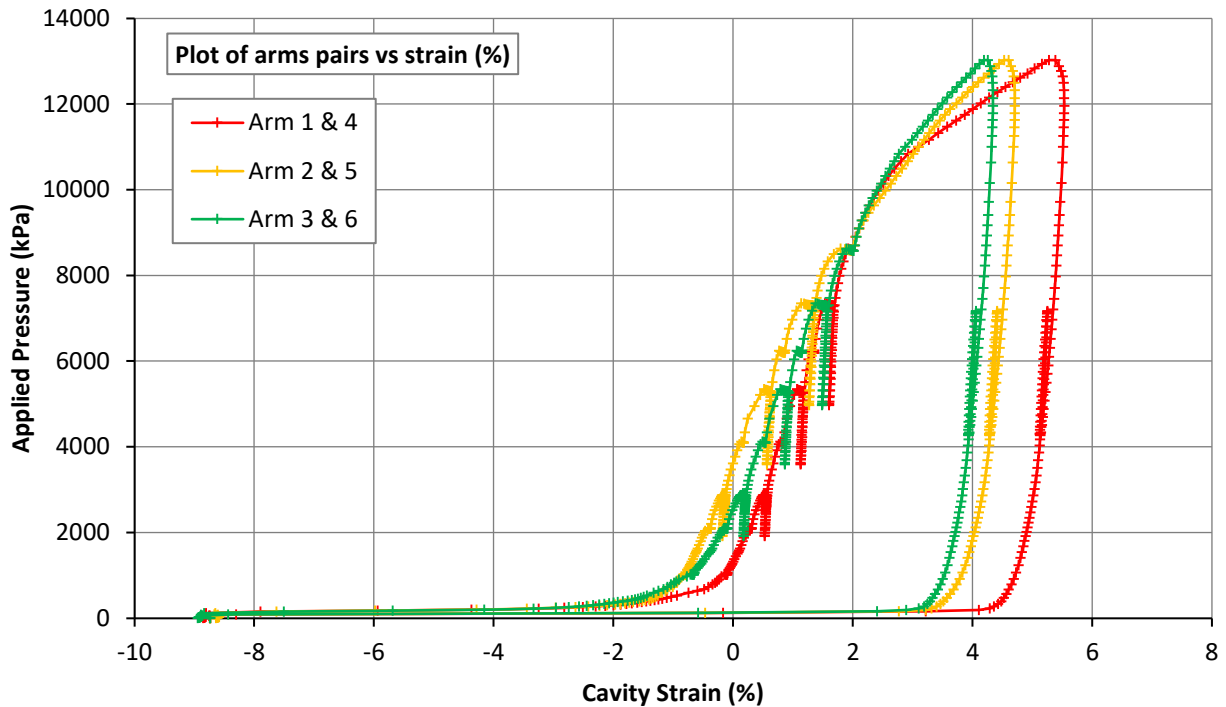
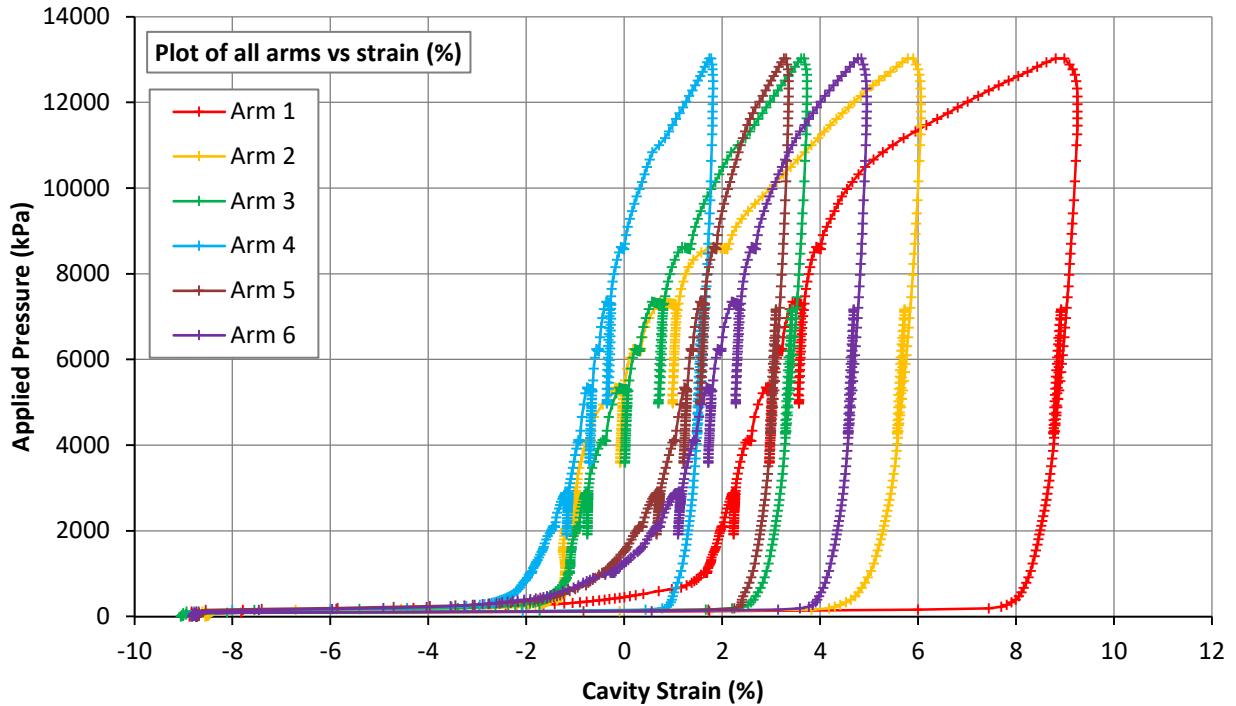
Test Date	02/10/2020	Test No.	5
Borehole	R71905	Test Depth (m)	41.25



Project	A303 Amesbury to Berwick Down	Figure No.	R71905 T05 - 02
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test - Arm Displacement vs Strain (%)

Test Date	02/10/2020	Test No.	5
Borehole	R71905	Test Depth (m)	41.25

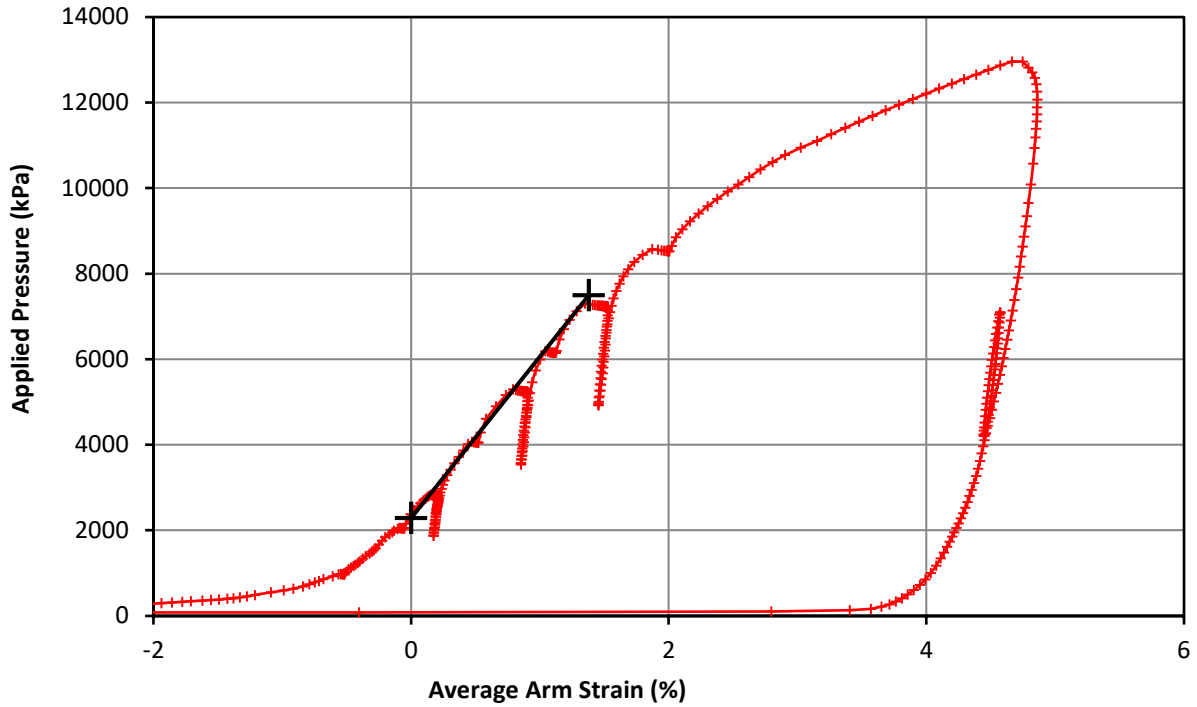


Project	A303 Amesbury to Berwick Down	Figure No.	R71905 T05 - 03
Client	RPS Ltd		
Project No.	P1200116		

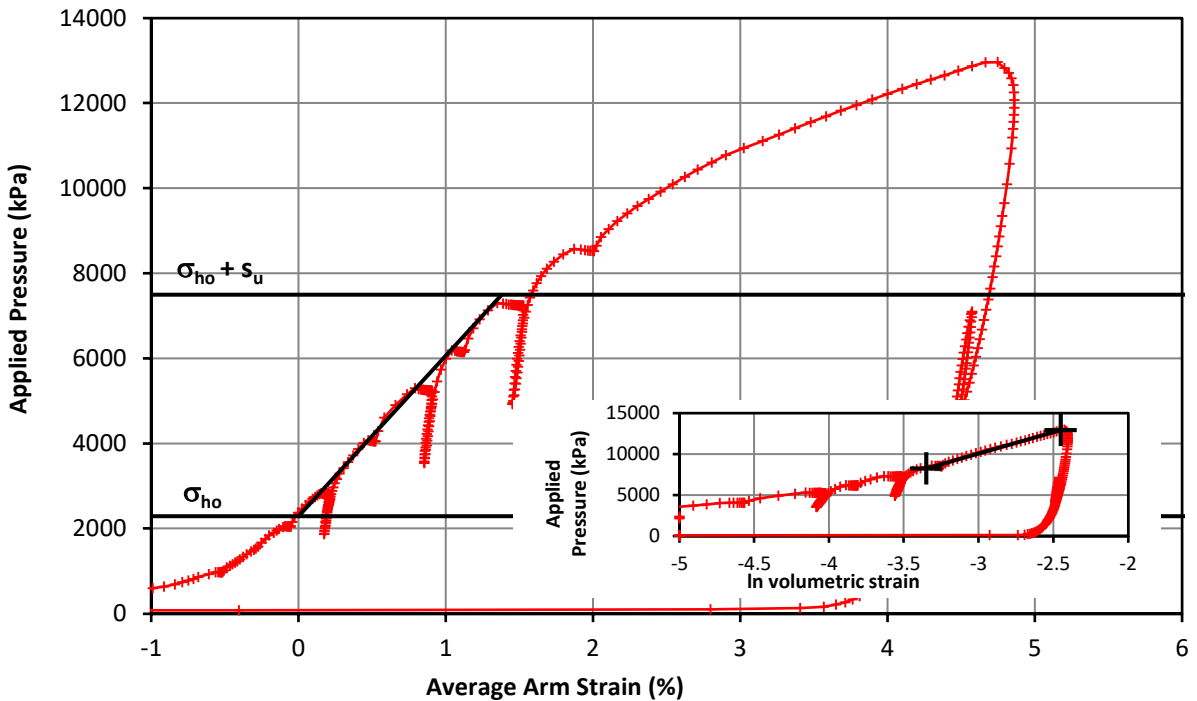
Pressuremeter Test Initial Modulus & In Situ Horizontal Stress



Test Date	02/10/2020	Test No.	5
Borehole	R71905	Test Depth (m)	41.25



Initial Modulus	Shear Modulus	191.4 MPa
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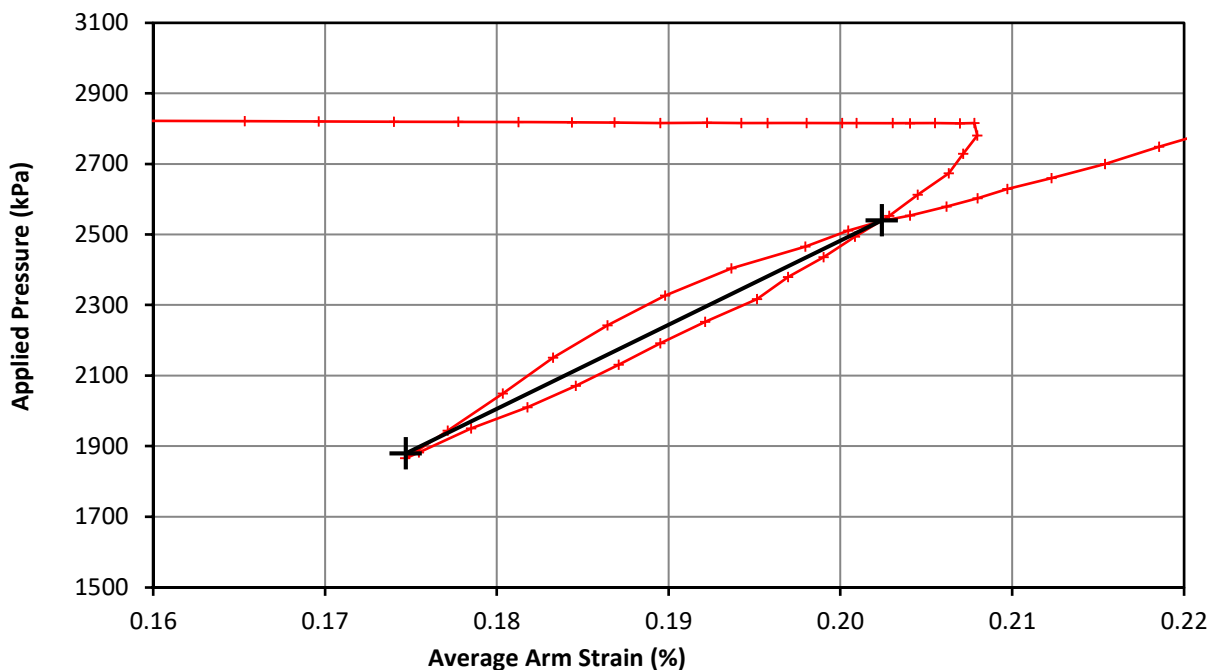
Marsland & Randolph	In situ horizontal stress	2290 kPa
	Undrained Strength	5210 kPa

Project	A303 Amesbury to Berwick Down	Figure No.	R71905 T05 - 04
Client	RPS Ltd		
Project No.	P1200116		

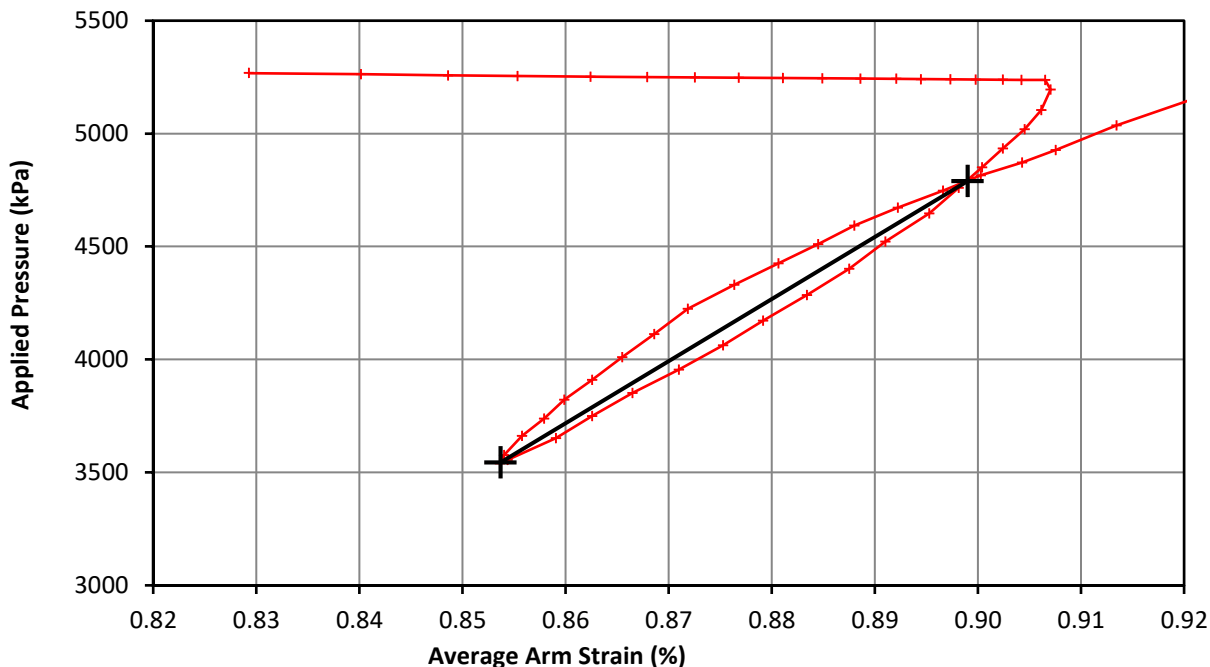
Pressuremeter Test Unload Reload Loop



Test Date	02/10/2020	Test No.	5
Borehole	R71905	Test Depth (m)	41.25



Loop 1	Shear Modulus	1193.7 MPa
	Cavity Strain Range	0.028 %



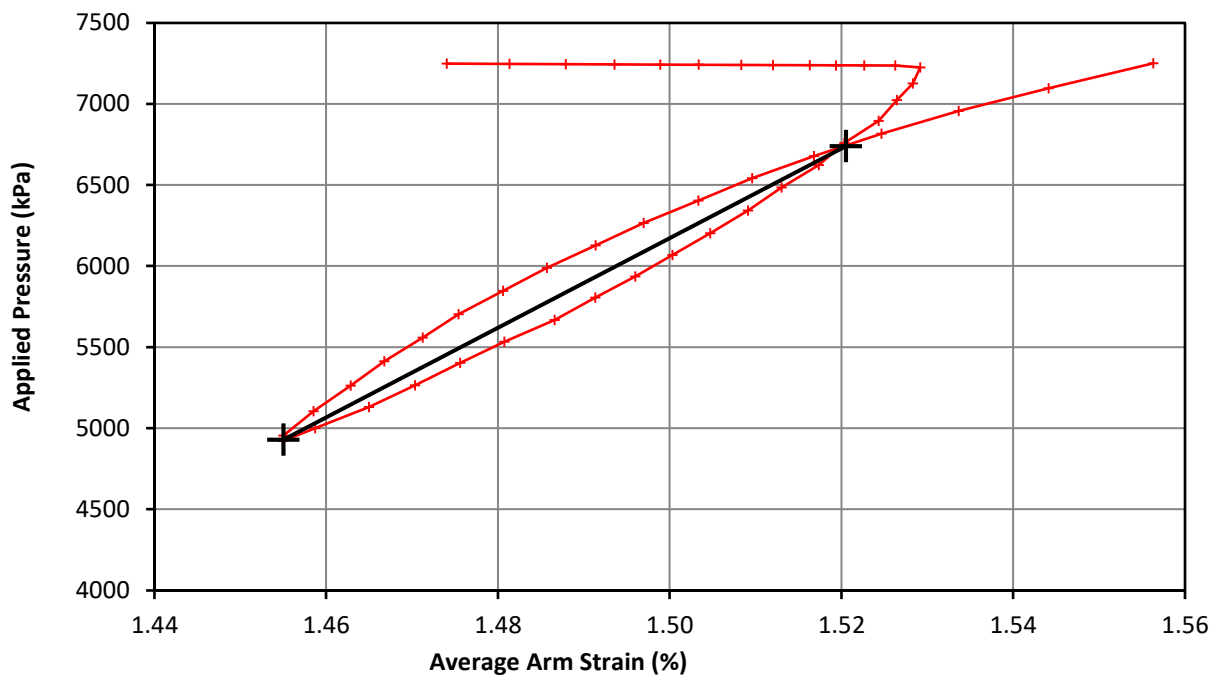
Loop 2	Shear Modulus	1386.5 MPa
	Cavity Strain Range	0.045 %

Project	A303 Amesbury to Berwick Down	Figure No.	R71905 T05 - 05
Client	RPS Ltd		
Project No.	P1200116		

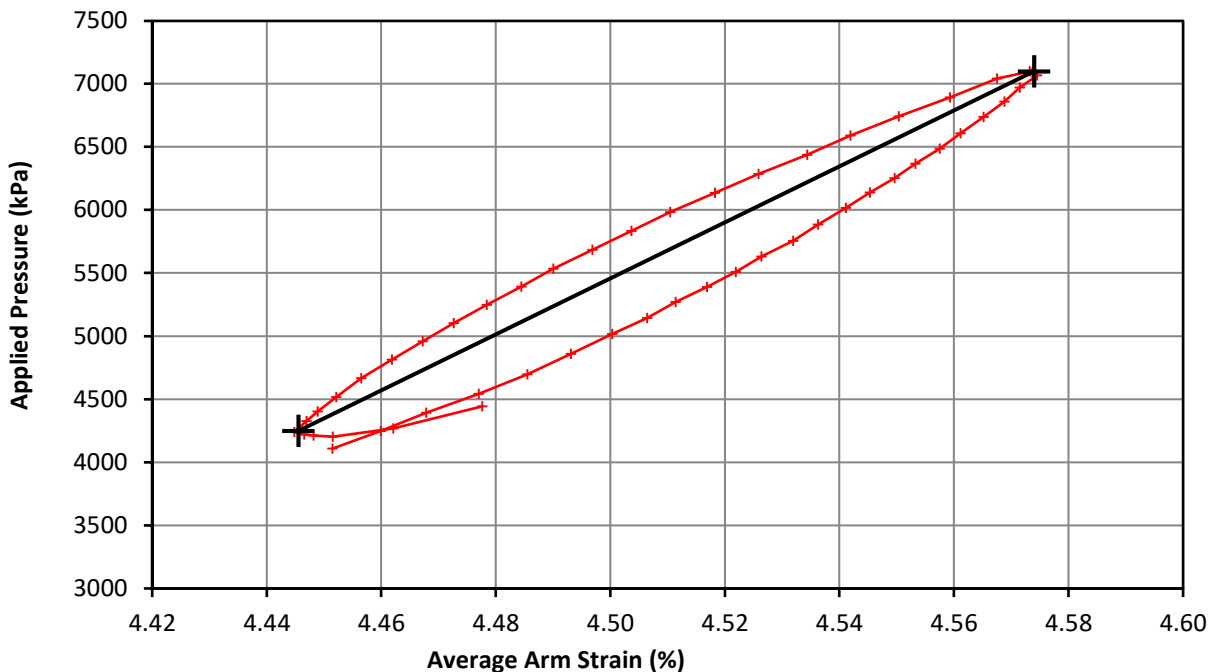
Pressuremeter Test Unload Reload Loop



Test Date	02/10/2020	Test No.	5
Borehole	R71905	Test Depth (m)	41.25



Loop 3	Shear Modulus	1402.7 MPa
	Cavity Strain Range	0.065 %



Loop 4	Shear Modulus	1159.7 MPa
	Cavity Strain Range	0.129 %

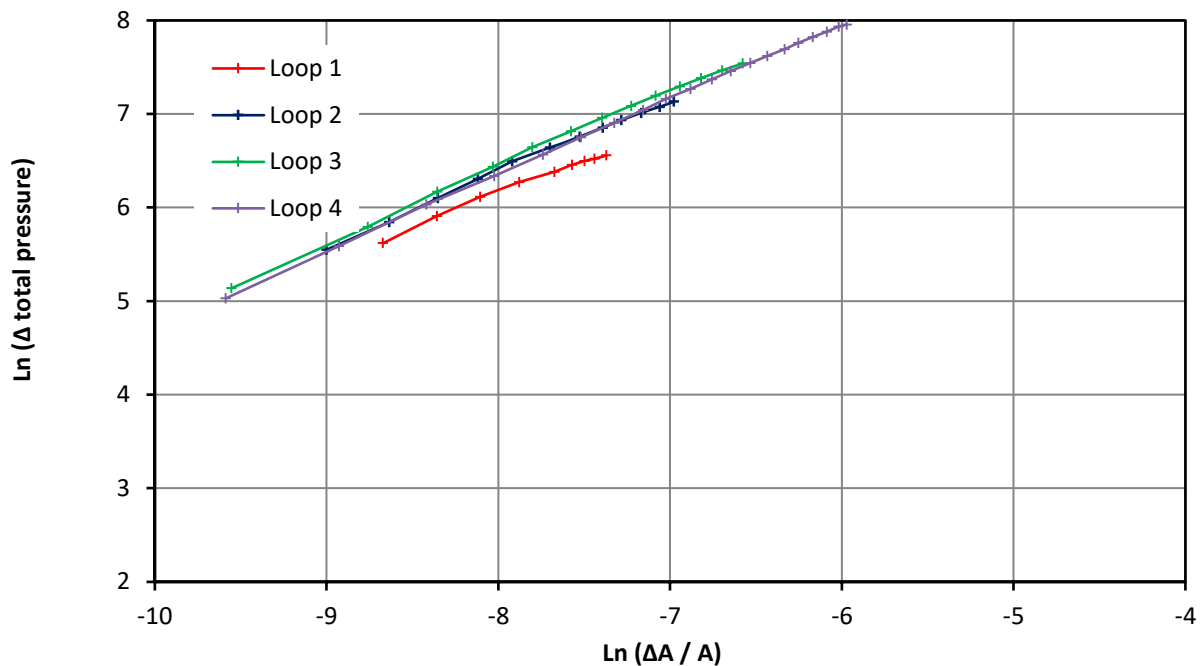
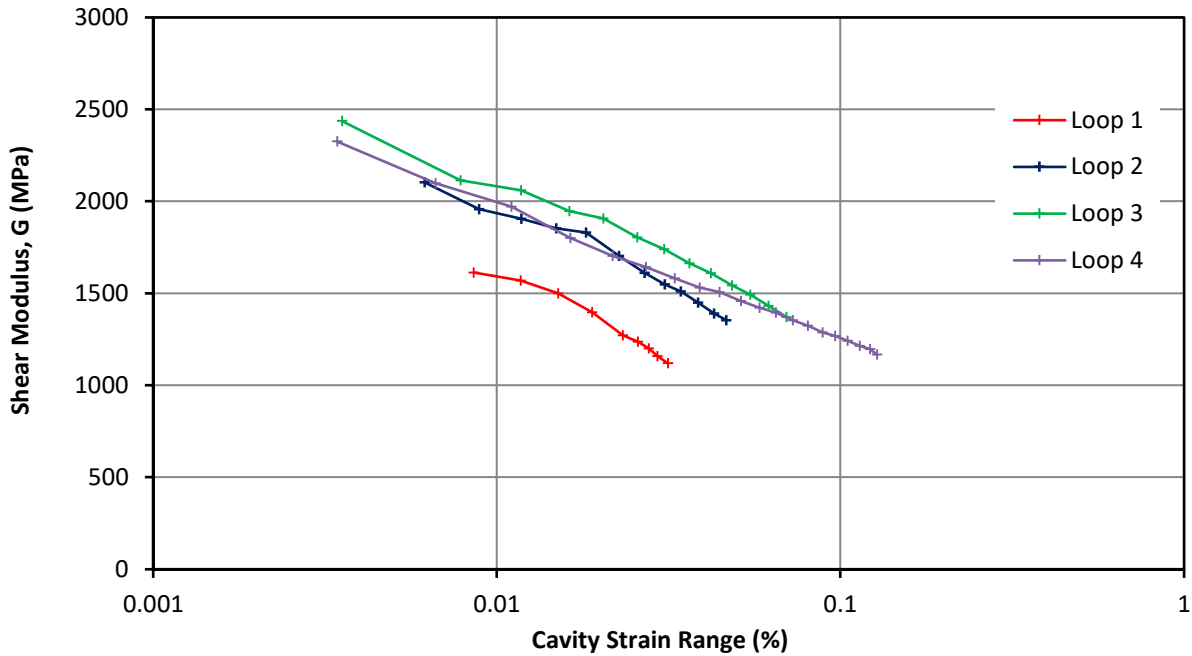
Project	A303 Amesbury to Berwick Down	Figure No.	R71905 T05 - 06
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Analysis

Small Strain Stiffness and Bolton and Whittle (1999)



Test Date	02/10/2020	Test No.	5
Borehole	R71905	Test Depth (m)	41.25



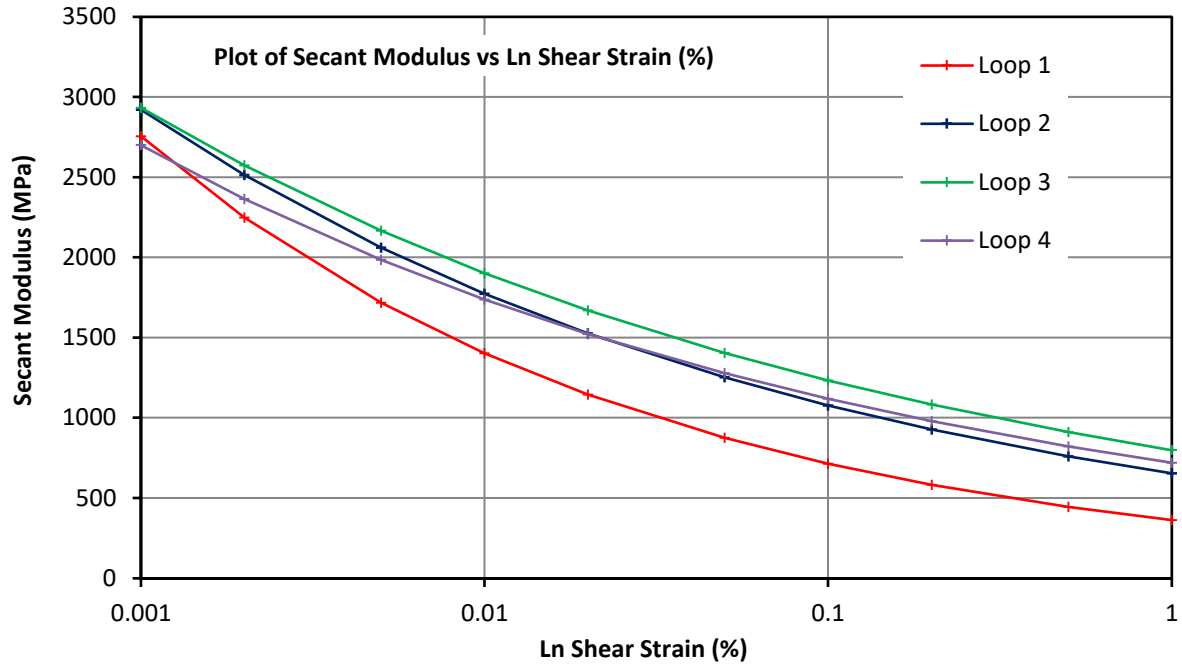
Loop 1		Loop 2		Loop 3		Loop 4	
Gradient(β)	Intercept	Gradient(β)	Intercept	Gradient(β)	Intercept	Gradient(β)	Intercept
0.707	133.053 (MPa)	0.783	307.910 (MPa)	0.812	413.738 (MPa)	0.809	368.959 (MPa)

Project	A303 Amesbury to Berwick Down	Figure No.	R71905 T05 - 07
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Analysis
 Secant Modulus - Shear Strain (%)



Test Date	02/10/2020	Test No.	5
Borehole	R71905	Test Depth (m)	41.25

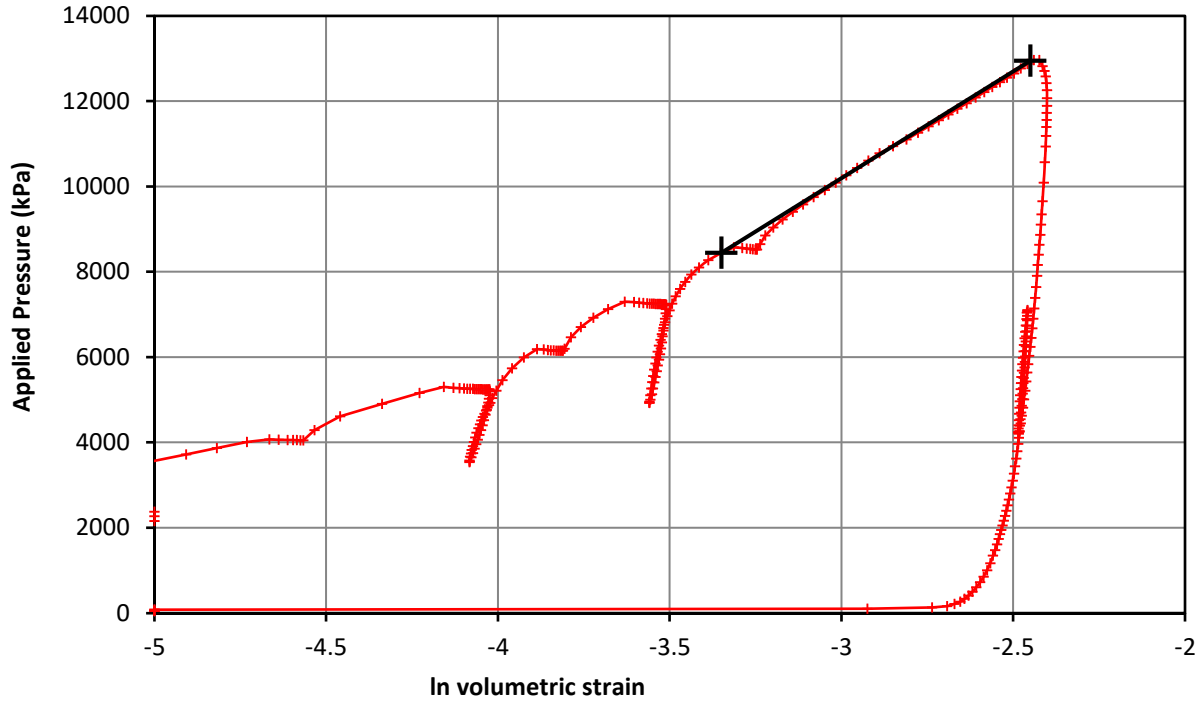


Shear Strain	Loop 1	Loop 2	Loop 3	Loop 4
0.001%	2755	2921	2932	2700
0.002%	2248	2514	2574	2364
0.005%	1718	2061	2166	1984
0.010%	1402	1774	1901	1738
0.020%	1144	1527	1669	1522
0.050%	874	1252	1404	1277
0.100%	713	1077	1233	1119
0.200%	582	927	1082	980
0.500%	445	760	910	822
1.000%	363	654	799	720

Project	A303 Amesbury to Berwick Down	Figure No.	R71905 T05 - 08
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test - Strength

Test Date	02/10/2020	Test No.	5
Borehole	R71905	Test Depth (m)	41.25



Strength	Undrained Shear	5000 kPa
	Limit Pressure	25200 kPa

Project	A303 Amesbury to Berwick Down	Figure No.	R71905 T05 - 09
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Results Summary

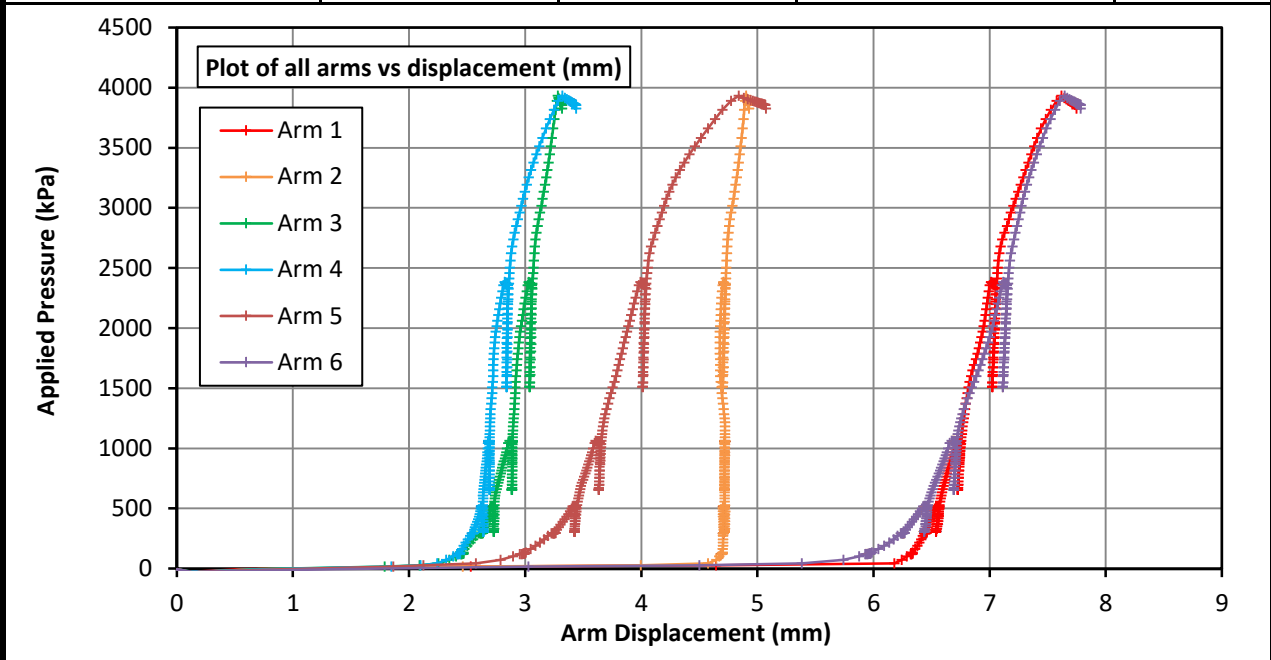
Test	Depth (m)	Material description from borehole log	Max. test pressure (MPa)	P _o (kPa)	Undrained strength			G _i (MPa)	Loop No.	G _{ur} (MPa)	ε _c (%)	Non linear stiffness		Secant shear modulus G (MPa)		
					S _{u (M&R)} (kPa)	S _u (kPa)	P _L (kPa)					α (MPa)	β	Shear strain		
														0.1%	0.01%	0.001%
R71916																
1	15.00	Very weak high density white with rare orange stains CHALK.	3934	980	1760	1609	9701	142.8	1	822	0.010	Full analysis not possible due to poor loop definition				
									2	844	0.039	167.771	0.803	654	1030	1621
2	21.00	Very weak medium density white with rare orange stains CHALK.	6088	1045	2645	1883	10280	89.5	1	494	0.039	169.259	0.869	418	565	763
									2	837	0.044	167.181	0.802	657	1037	1636
									3	940	0.049	193.541	0.811	716	1107	1712
3	27.00	Very weak medium to high density creamy white CHALK.	5853	1610	3824	4171	20809	153.7	1	688	0.031	107.855	0.783	483	797	1314
									2	1169	0.042	258.259	0.817	916	1398	2132
4	33.00	Very weak medium density creamy white CHALK.	11955	1895	5015	4417	25650	360.7	1	1300	0.021	683.291	0.928	1125	1328	1568
									2	1500	0.044	609.424	0.888	1321	1710	2213
									3	1496	0.055	609.799	0.885	1345	1751	2279
									4	1337	0.059	486.047	0.873	1171	1569	2103
5	39.00	Very weak medium density creamy white CHALK.	11034	2495	4300	4300	24200	264.3	1	1071	0.028	406.183	0.886	895	1165	1516
									2	1424	0.042	368.271	0.834	1163	1706	2504
									3	1431	0.062	336.814	0.815	1212	1858	2847
									4	1370	0.055	298.201	0.810	1111	1723	2671

Project	A303 Amesbury to Berwick Down
Client	RPS
Project No.	P1200116
Table No.	
	R71916

Pressuremeter Test Overview High Pressure Dilatometer (HPD)



Test Date	21/10/2020	Test No.	1
Borehole	R71916	Test Depth (m)	15.00
Coordinates (m)	411898.7 (E)	141782.1 (N)	Elevation (m) 99.37



Material description from borehole log:
Very weak high density white with rare orange stains CHALK.

Test pocket conditions:

Total core recovery:	69 %	Test pocket depth range:	
Solid core recovery:	42 %	From:	14.00 m to: 16.50 m
Rock quality designation:	26 %	Flush:	Water

Test comment:
The test pocket was oversize with arms lifting off between 2.5 to 6.5mm. The p_0 was estimated to be at 980kPa, with the following loading section being relatively long. Material yield is interpreted at 2740kPa with the test taken to a pressure of 3934kPa. The membrane burst just after the start of unloading. The displacement-pressure response was reasonably consistent on all arms through the test, although arm 2 was pinned to the pocket wall with some negative movement. Analysis of two unload-reload loops provides increasing modulus values from 822 to 844MPa. Derived undrained shear strength analysis provides values of 1609 to 1760kPa.

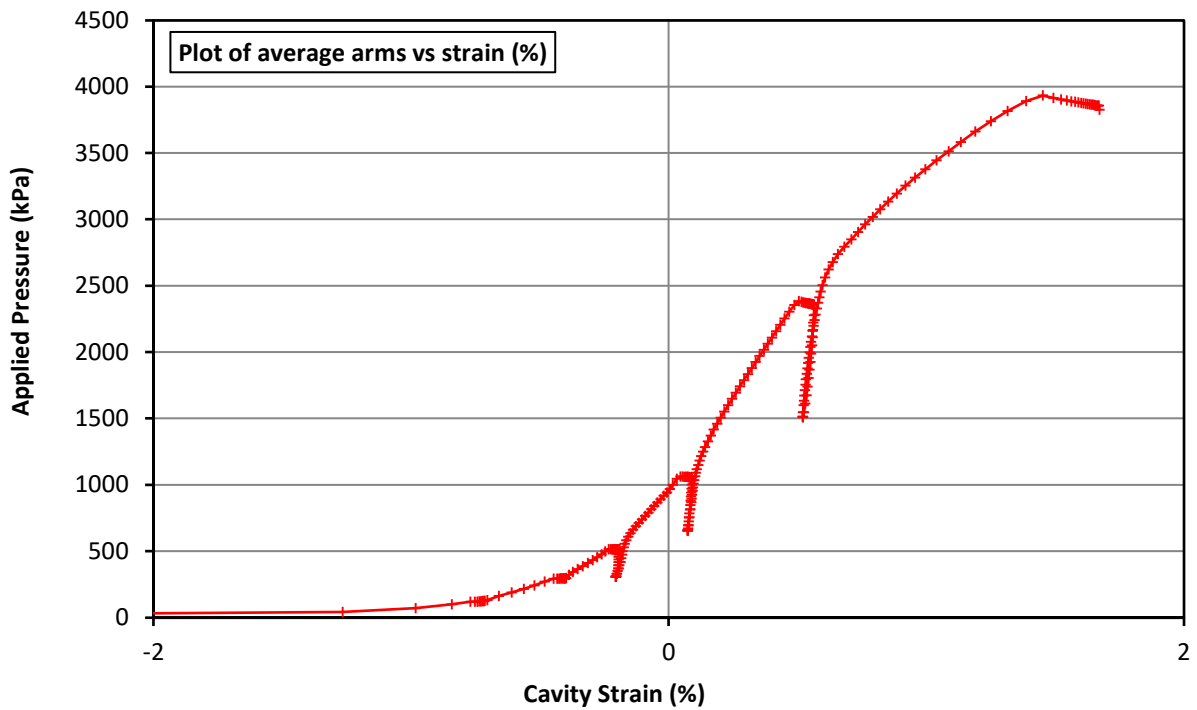
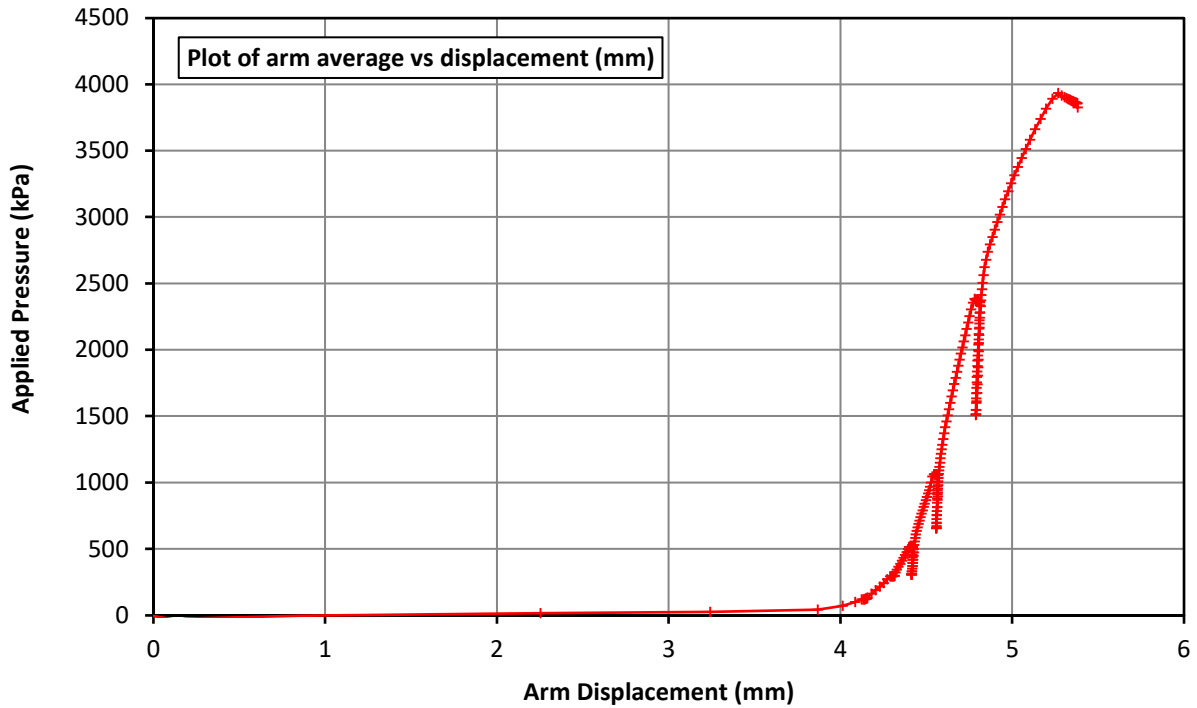
Test details:		Instrument:		Wally		
Drilling method:	Rotary coring		mV	mV/mm	mV	mV/MPa
Casing depth:	14.00 m	Arm 1:	-2007.7	146.5	TPC A:	-1607.2 109.0
Water level:	- m	Arm 2:	-2653.1	139.0	TPC B:	-2055.6 109.1
		Arm 3:	-2294.5	146.3		
Test time:		Arm 4:	-2047.5	140.5		
Start (probe in):	12:54 hrs	Arm 5:	-2327.8	139.9		
Finish (probe out):	13:45 hrs	Arm 6:	-2045.0	126.0		

Project	A303 Amesbury to Berwick Down	Figure No.	R71916 T01 - 01
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test Overview



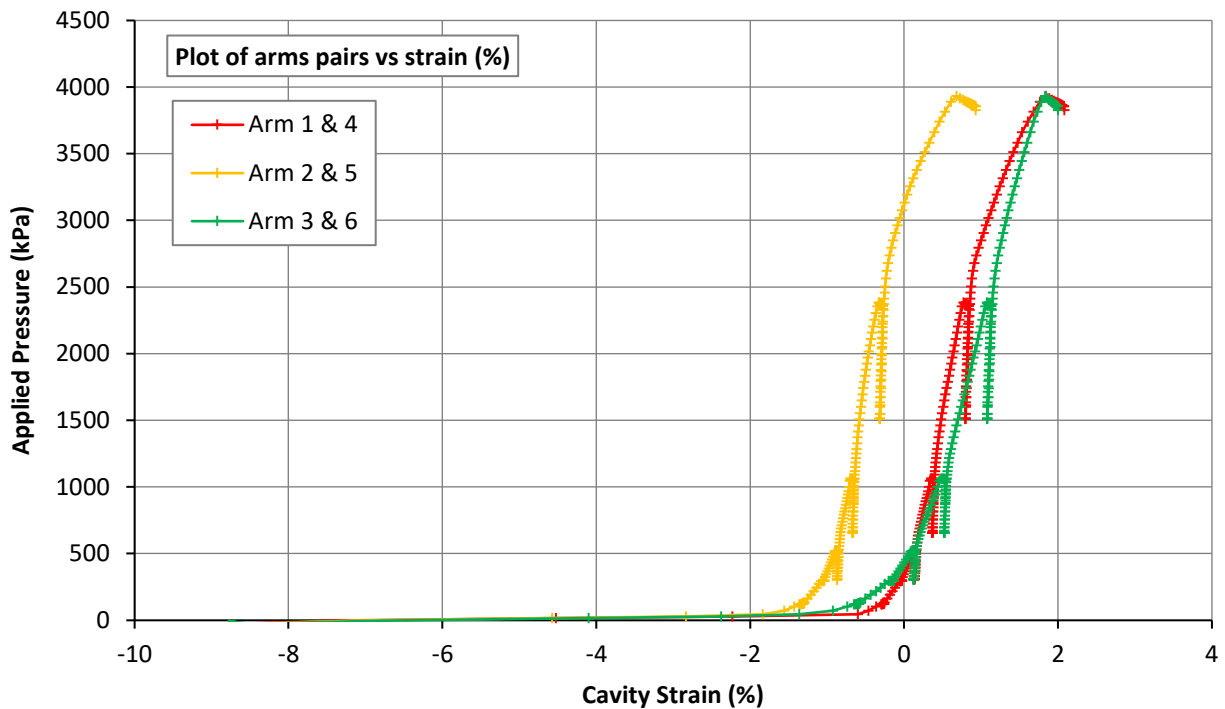
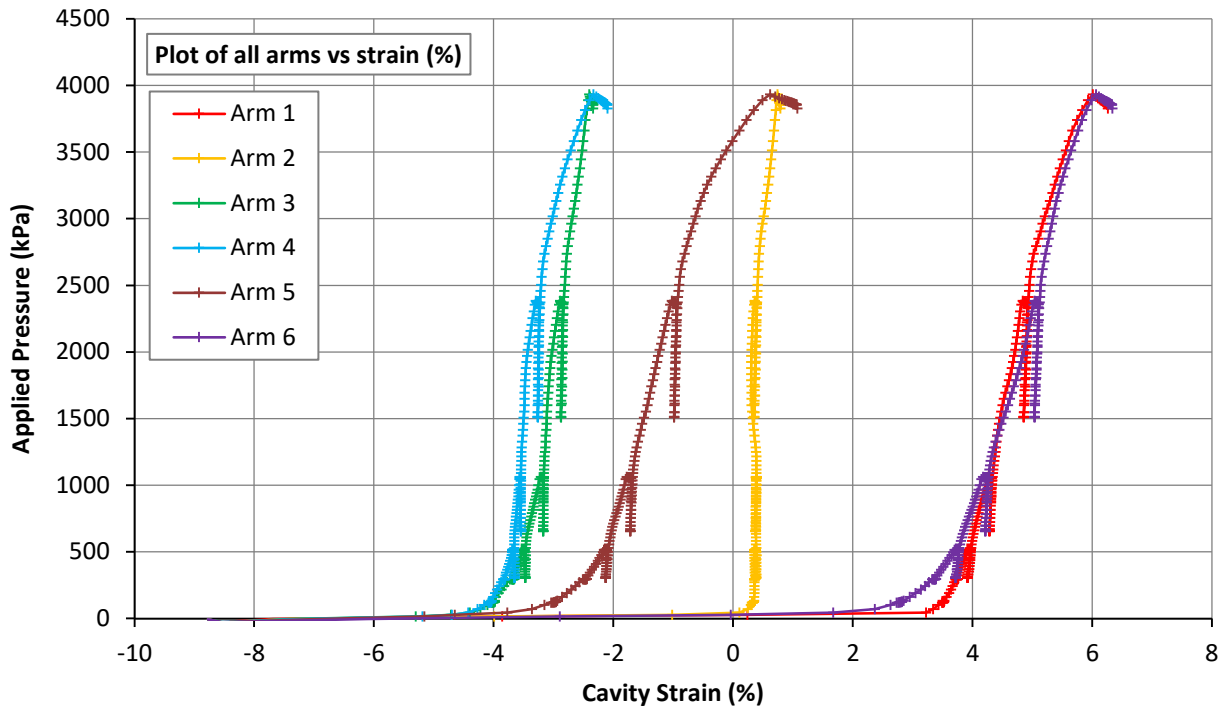
Test Date	21/10/2020	Test No.	1
Borehole	R71916	Test Depth (m)	15.00



Project	A303 Amesbury to Berwick Down	Figure No.	R71916 T01 - 02
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test - Arm Displacement vs Strain (%)

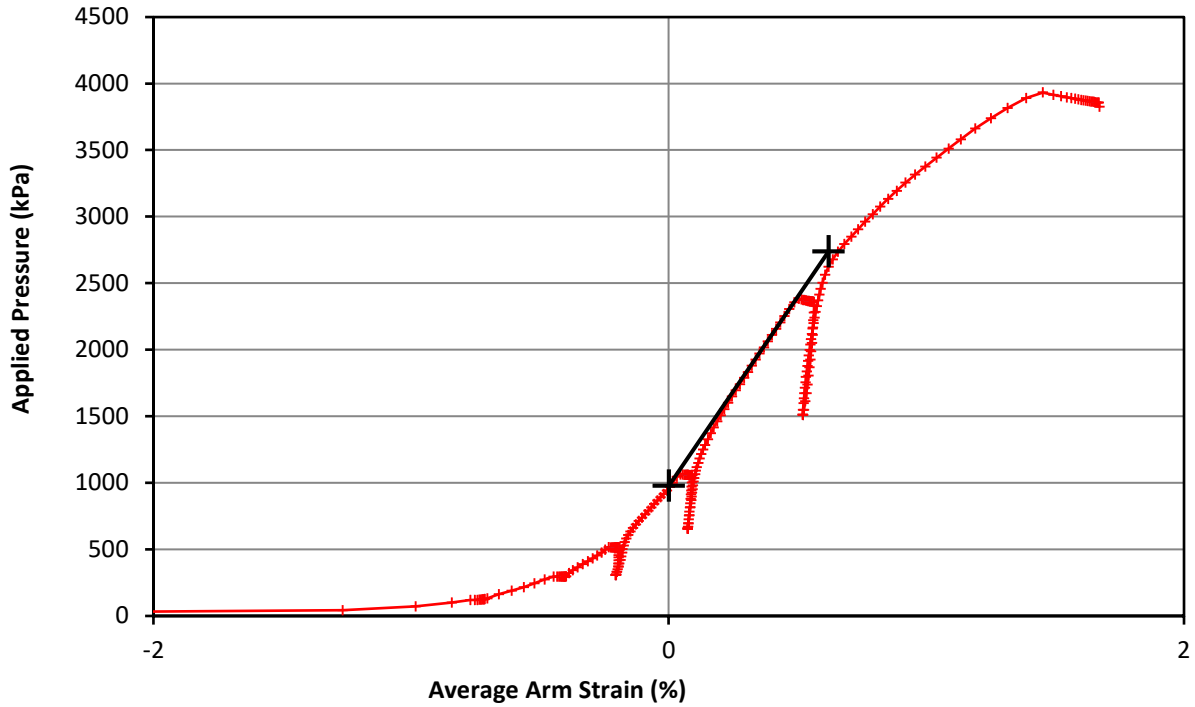
Test Date	21/10/2020	Test No.	1
Borehole	R71916	Test Depth (m)	15.00



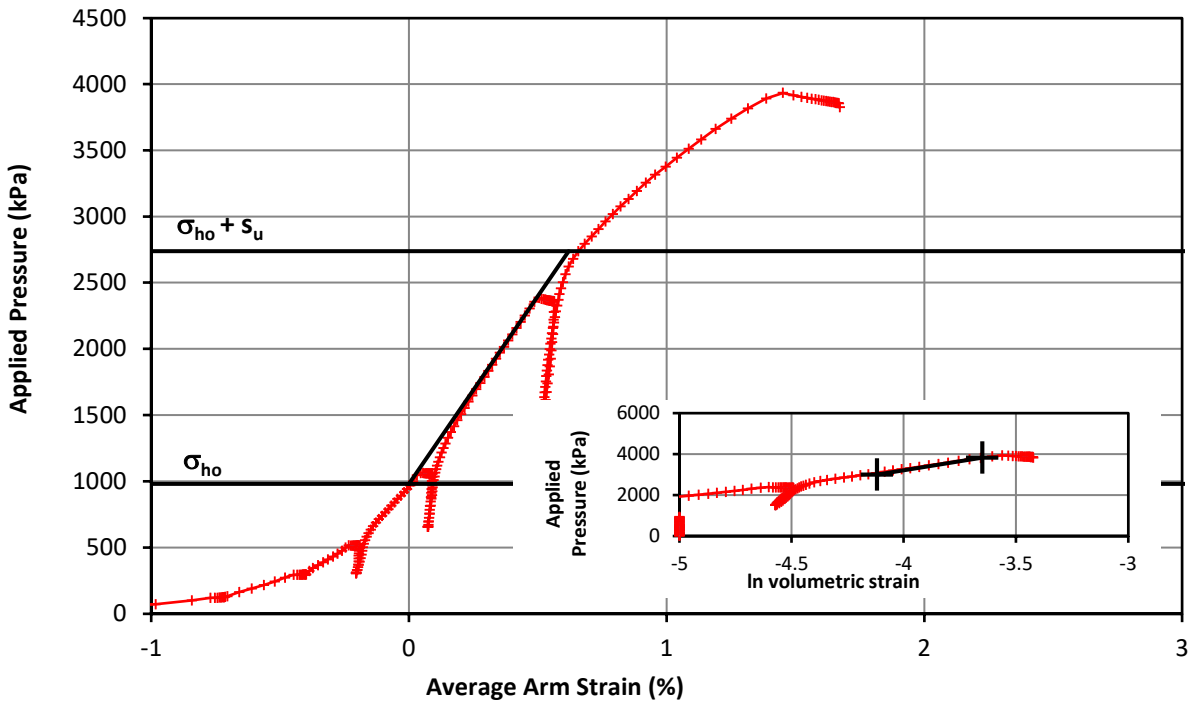
Project	A303 Amesbury to Berwick Down	Figure No.	R71916 T01 - 03
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test Initial Modulus & In Situ Horizontal Stress

Test Date	21/10/2020	Test No.	1
Borehole	R71916	Test Depth (m)	15.00



Initial Modulus	Shear Modulus	142.8 MPa
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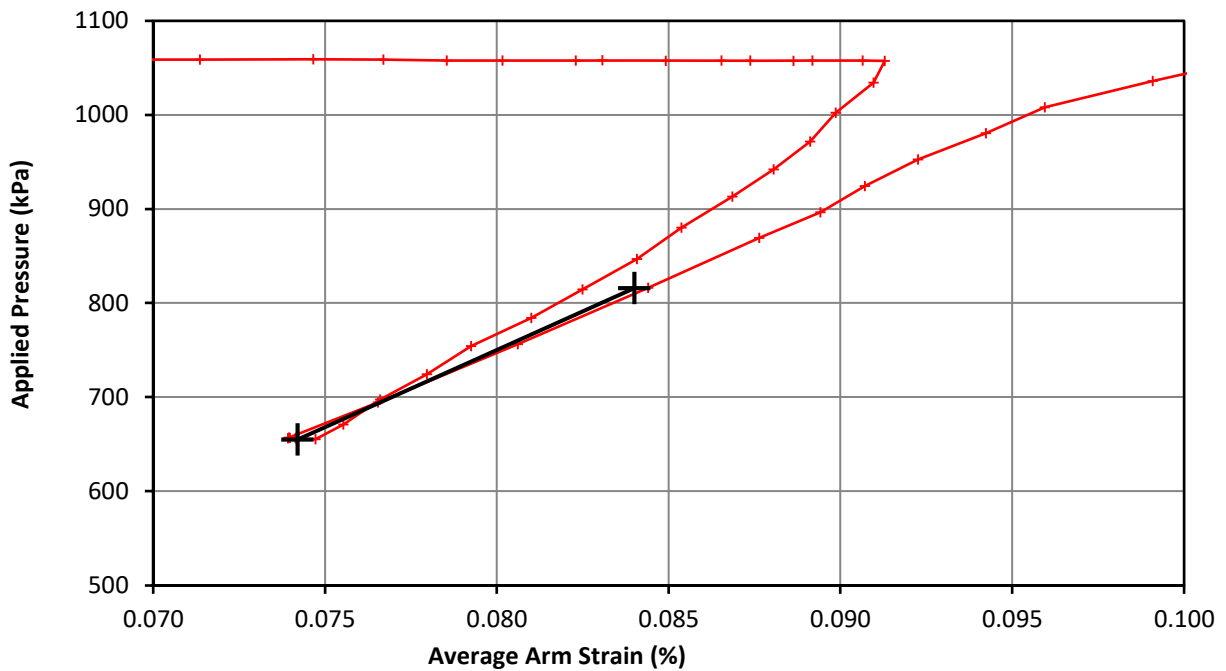


Marsland & Randolph	In situ horizontal stress	980 kPa
	Undrained Strength	1760 kPa

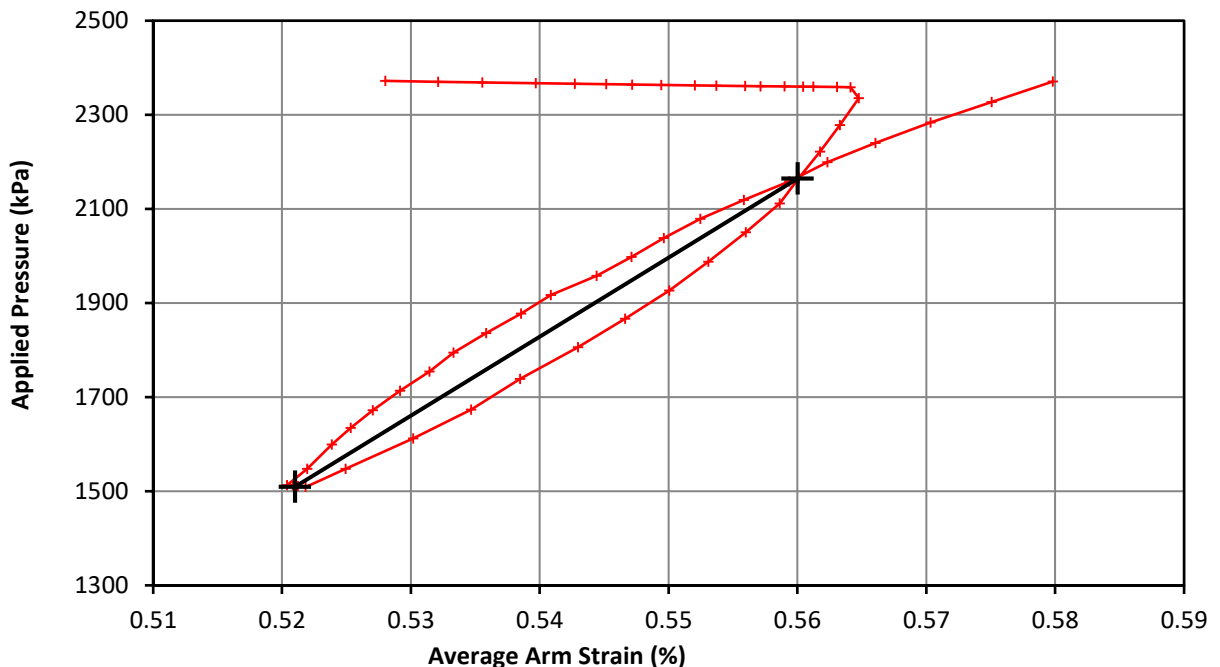
Project	A303 Amesbury to Berwick Down	Figure No.	R71916 T01 - 04
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test Unload Reload Loop

Test Date	21/10/2020	Test No.	1
Borehole	R71916	Test Depth (m)	15.00



Loop 1	Shear Modulus	822.1 MPa
	Cavity Strain Range	0.010 %



Loop 2	Shear Modulus	844.4 MPa
	Cavity Strain Range	0.039 %

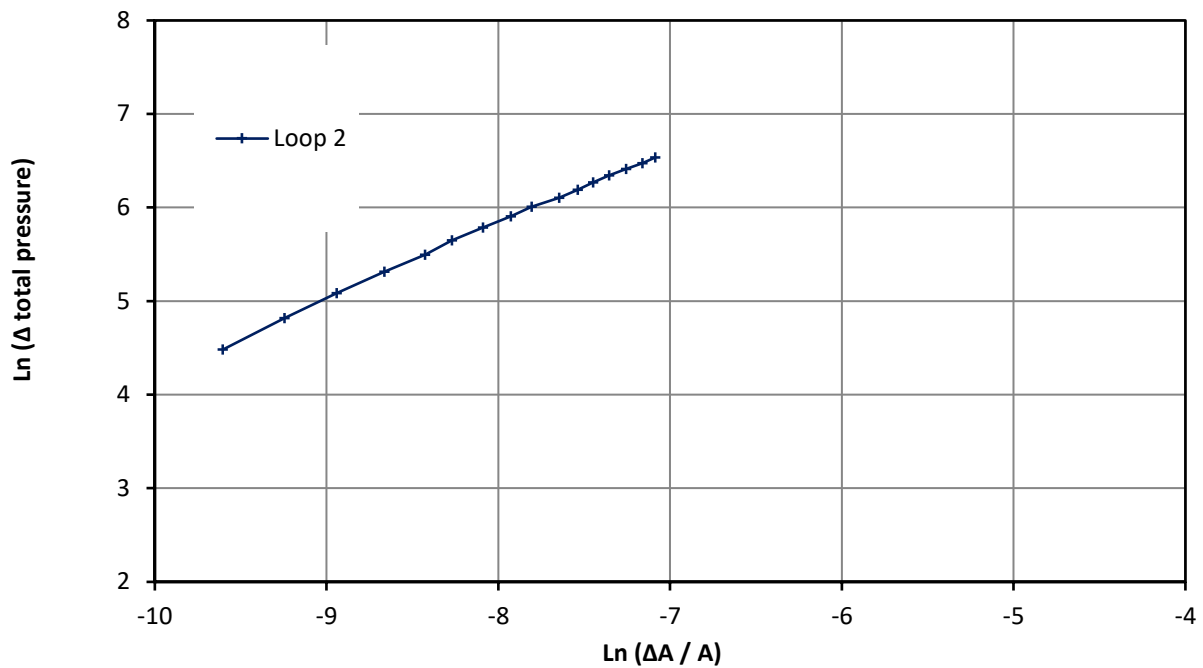
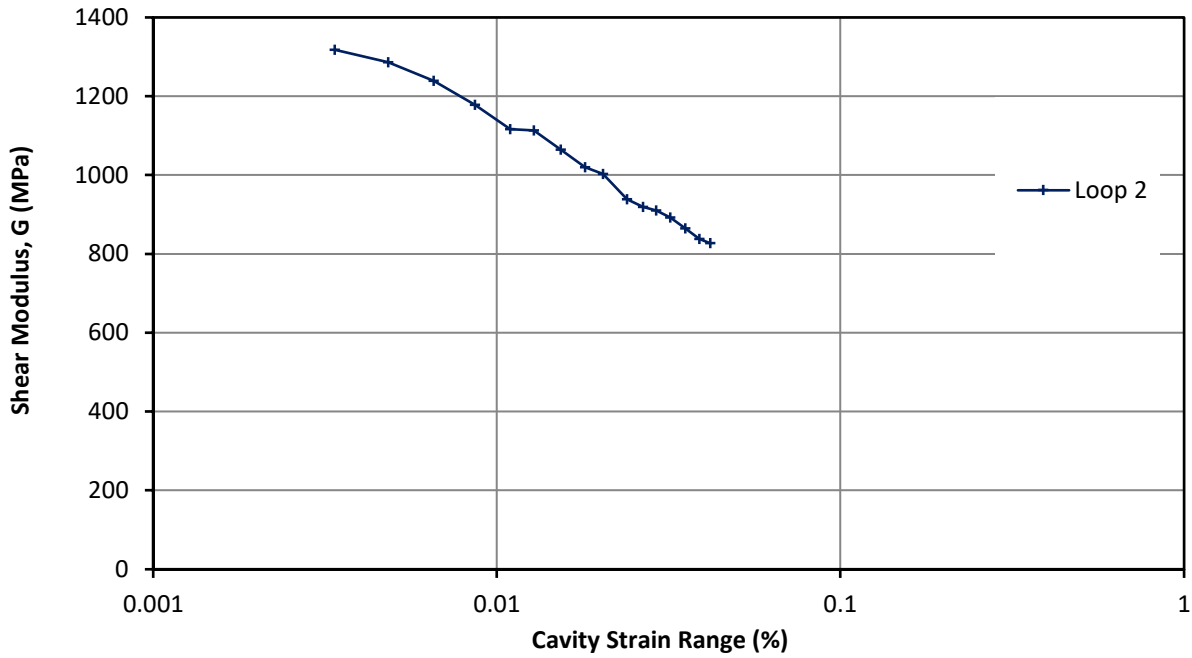
Project	A303 Amesbury to Berwick Down	Figure No.	R71916 T01 - 05
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Analysis

Small Strain Stiffness and Bolton and Whittle (1999)



Test Date	21/10/2020	Test No.	1
Borehole	R71916	Test Depth (m)	15.00



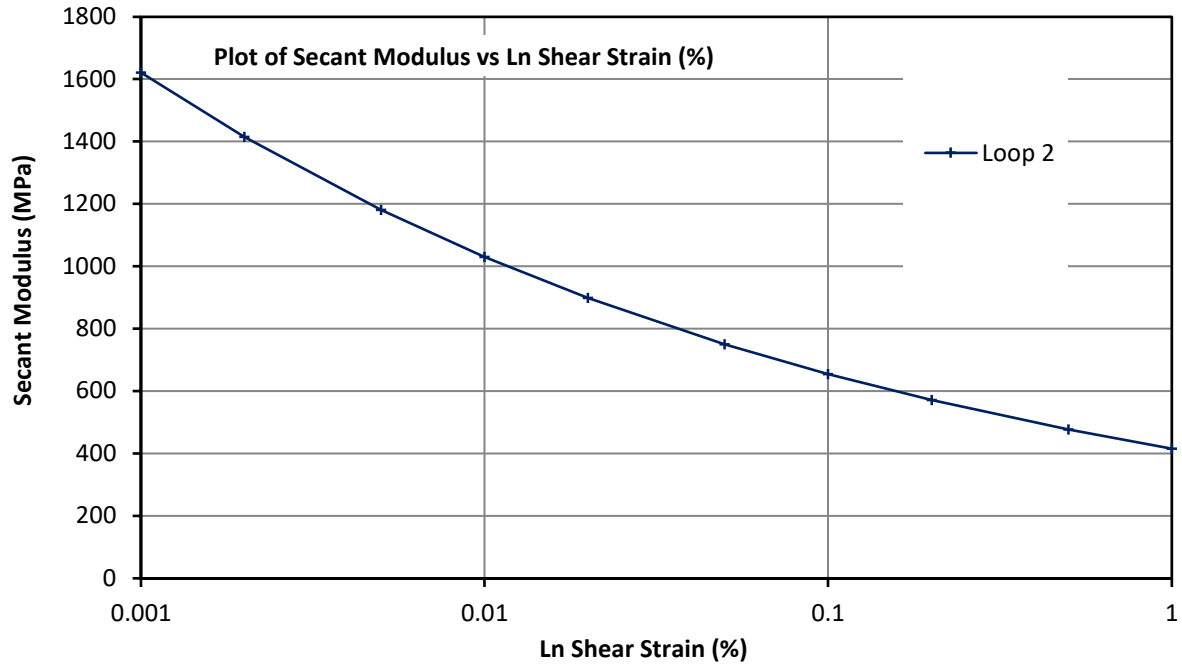
Loop 2	
Gradient(β)	Intercept
0.803	208.936 (MPa)

Project	A303 Amesbury to Berwick Down	Figure No.	R71916 T01 - 06
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Analysis
 Secant Modulus - Shear Strain (%)



Test Date	21/10/2020	Test No.	1
Borehole	R71916	Test Depth (m)	15.00

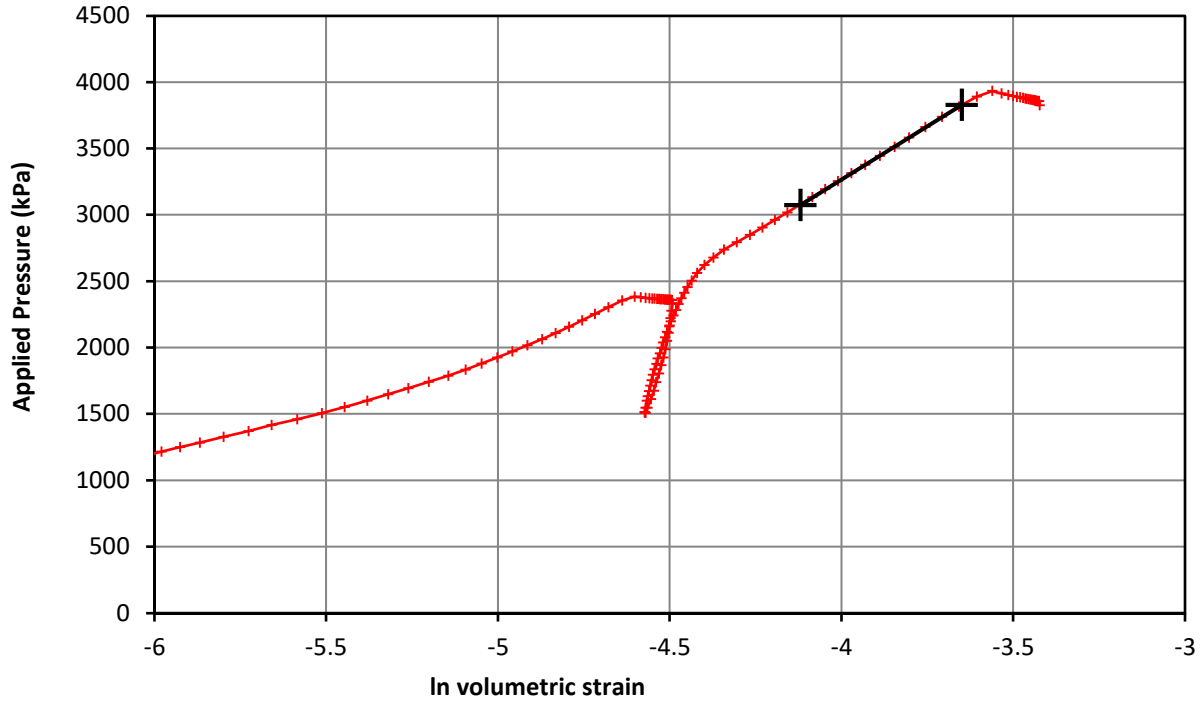


Shear Strain	Loop 2
0.001%	1621
0.002%	1414
0.005%	1181
0.010%	1030
0.020%	898
0.050%	750
0.100%	654
0.200%	571
0.500%	477
1.000%	416

Project	A303 Amesbury to Berwick Down	Figure No.	R71916 T01 - 07
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test - Strength

Test Date	21/10/2020	Test No.	1
Borehole	R71916	Test Depth (m)	15.00



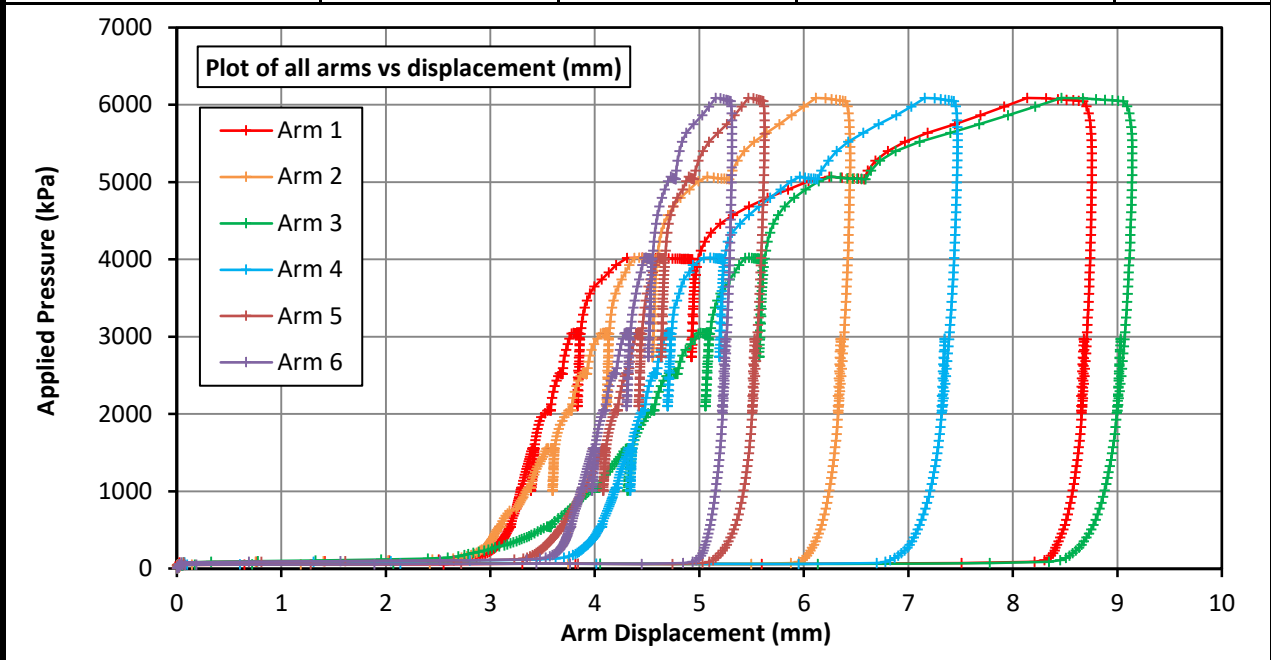
Strength	Undrained Shear	1609 kPa
	Limit Pressure	9701 kPa

Project	A303 Amesbury to Berwick Down	Figure No.	R71916 T01 - 08
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test Overview High Pressure Dilatometer (HPD)



Test Date	22/10/2020	Test No.	2
Borehole	R71916	Test Depth (m)	21.00
Coordinates (m)	411898.7 (E)	141782.1 (N)	Elevation (m) 99.37



Material description from borehole log:
Very weak medium density white with rare orange stains CHALK.

Test pocket conditions:

Total core recovery:	45 %	Test pocket depth range:	
Solid core recovery:	34 %	From:	20.00 m to: 22.50 m
Rock quality designation:	18 %	Flush:	Water

Test comment:
The test pocket was good with arms lifting off between 3.5 to 4.5mm. The po was estimated to be at 1045kPa, with the following loading section being relatively long but non-linear due to some minor arm displacements during loading. Overall material yield is interpreted at 3690kPa with the test taken to a pressure of 6088kPa. The displacement-pressure response was reasonably consistent on all arms through the test, with some variation in expansion and softening on arms 1 & 3. Analysis of three unload-reload loops provides increasing modulus values from 494 to 940MPa. Derived undrained shear strength analysis provides values of 1883 to 2645kPa.

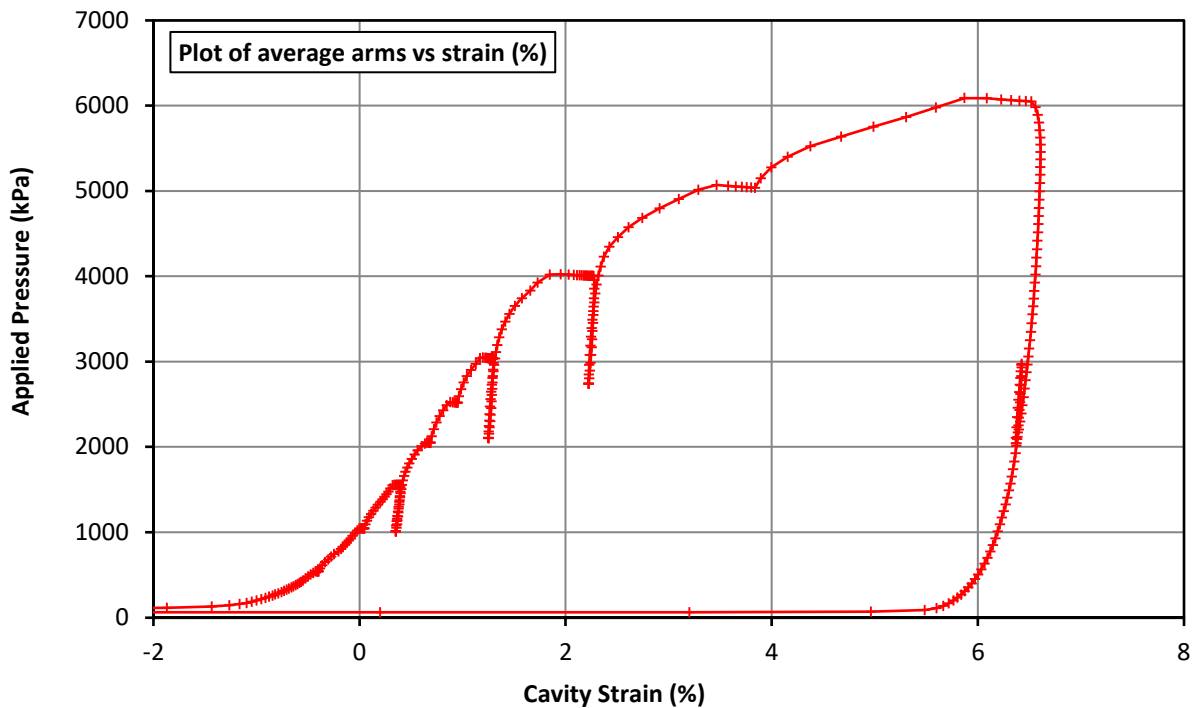
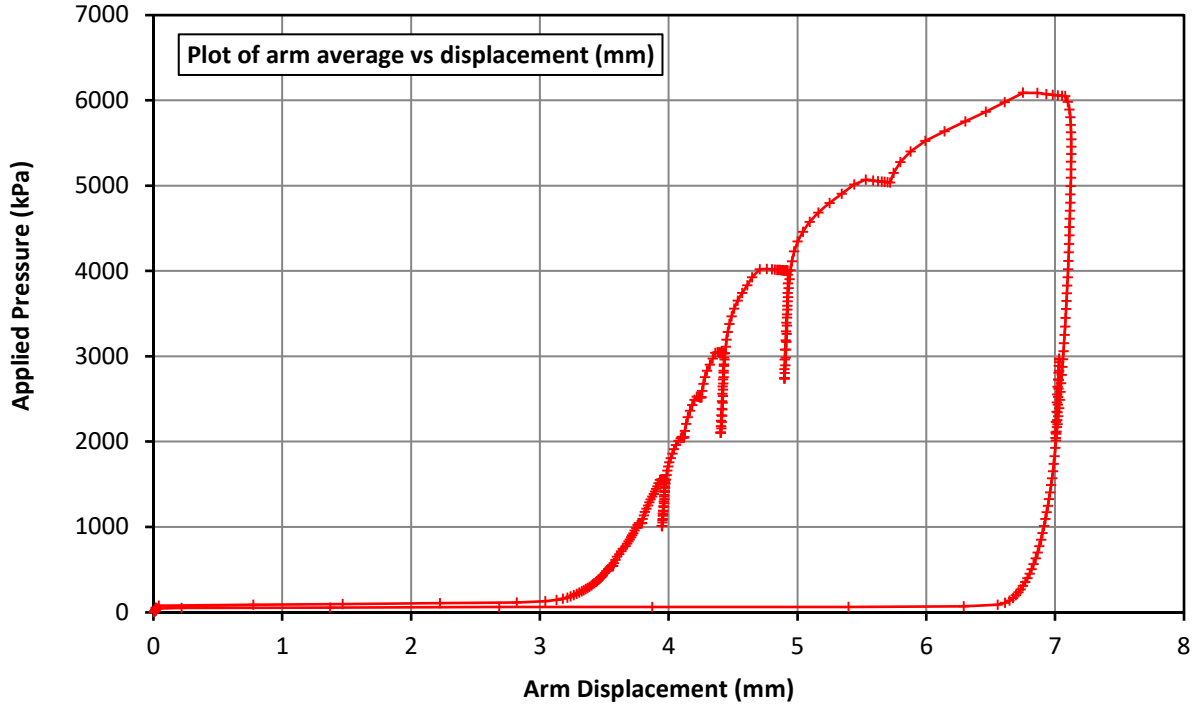
Test details:		Instrument:		Wally	
Drilling method:	Rotary coring		mV	mV/mm	mV
Casing depth:	- m	Arm 1:	-2013.6	146.5	TPC A: -1611.2
Water level:	- m	Arm 2:	-2644.4	139.0	TPC B: -2061.4
		Arm 3:	-2312.4	146.3	
Test time:		Arm 4:	-2049.1	140.5	
Start (probe in):	11:51 hrs	Arm 5:	-2326.0	139.9	
Finish (probe out):	12:59 hrs	Arm 6:	-2049.8	126.0	

Project	A303 Amesbury to Berwick Down	Figure No.	R71916 T02 - 01
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test Overview



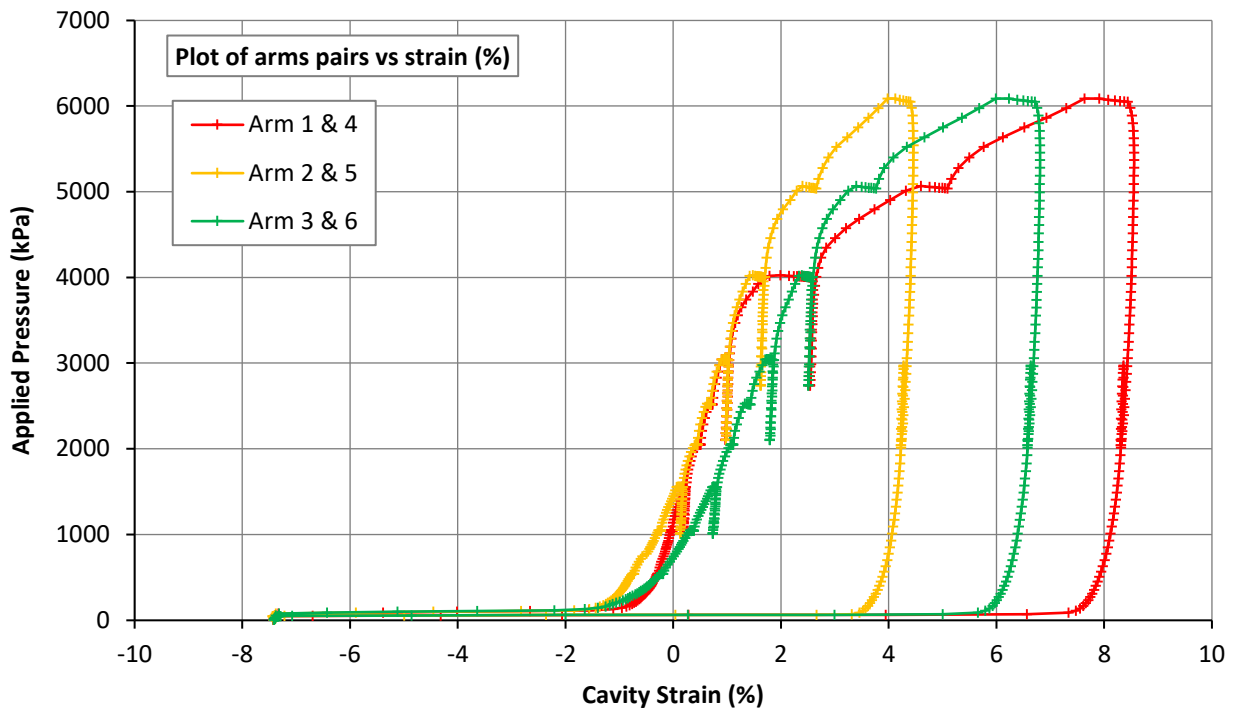
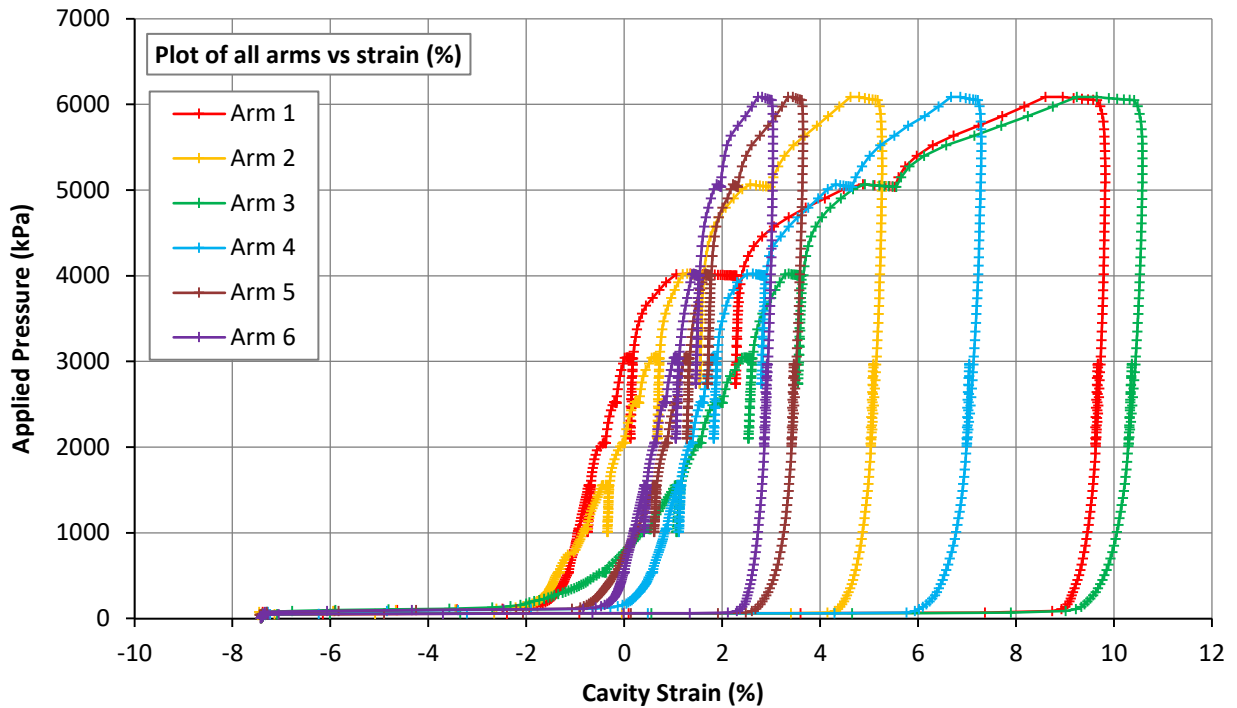
Test Date	22/10/2020	Test No.	2
Borehole	R71916	Test Depth (m)	21.00



Project	A303 Amesbury to Berwick Down	Figure No.	R71916 T02 - 02
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test - Arm Displacement vs Strain (%)

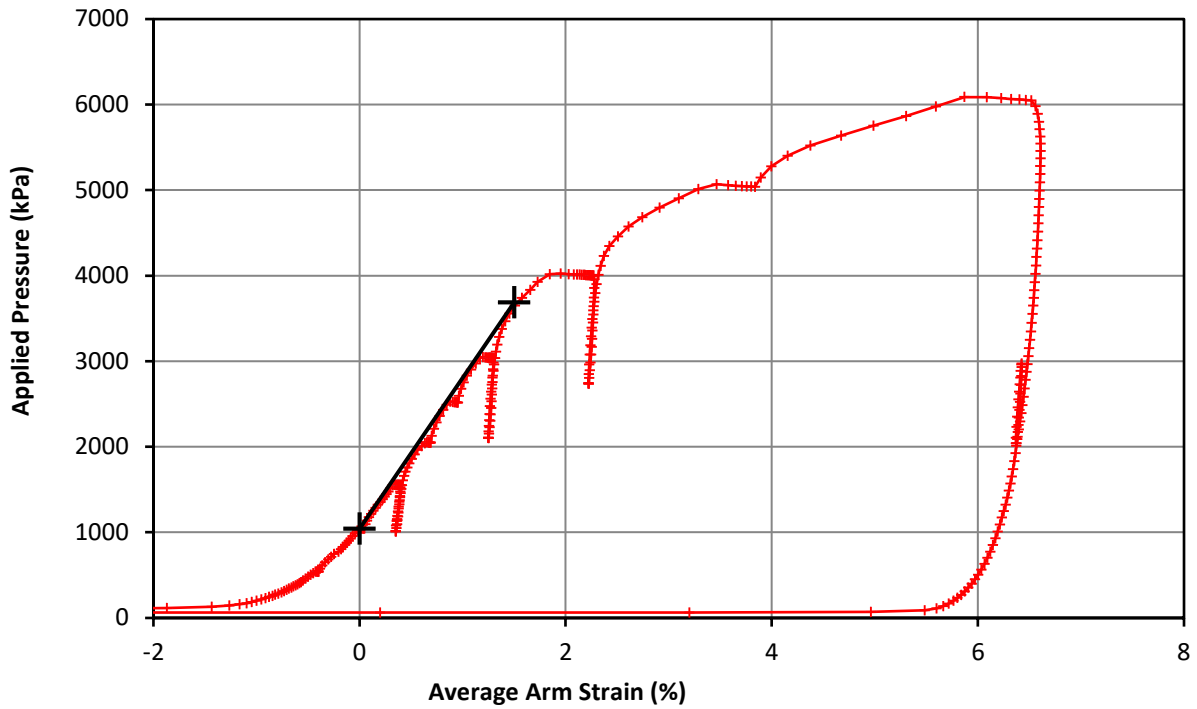
Test Date	22/10/2020	Test No.	2
Borehole	R71916	Test Depth (m)	21.00



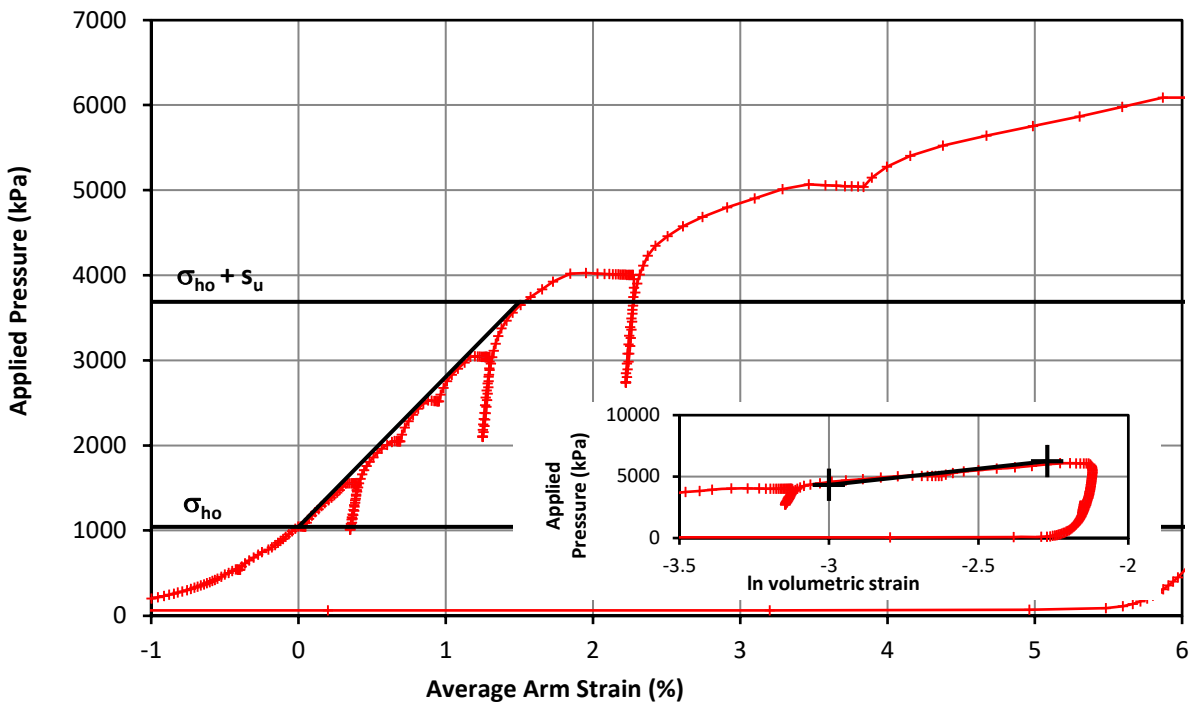
Project	A303 Amesbury to Berwick Down	Figure No.	R71916 T02 - 03
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test Initial Modulus & In Situ Horizontal Stress

Test Date	22/10/2020	Test No.	2
Borehole	R71916	Test Depth (m)	21.00



Initial Modulus	Shear Modulus	89.5 MPa
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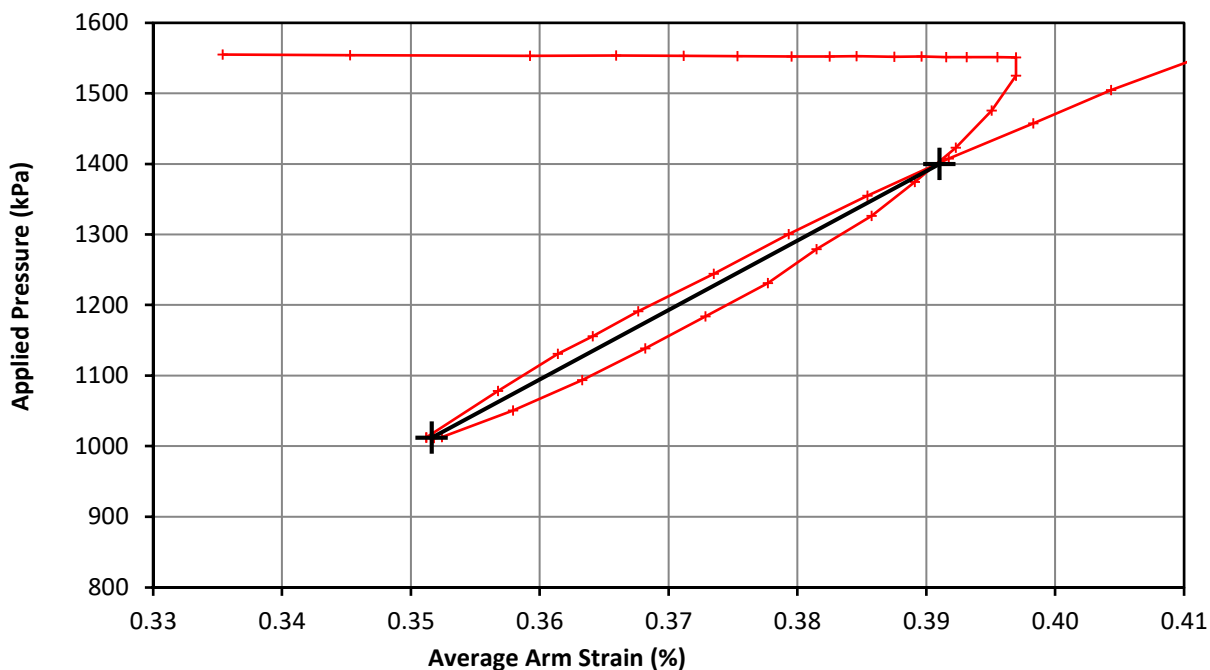
Marsland & Randolph	In situ horizontal stress	1045 kPa
	Undrained Strength	2645 kPa

Project	A303 Amesbury to Berwick Down	Figure No.	R71916 T02 - 04
Client	RPS Ltd		
Project No.	P1200116		

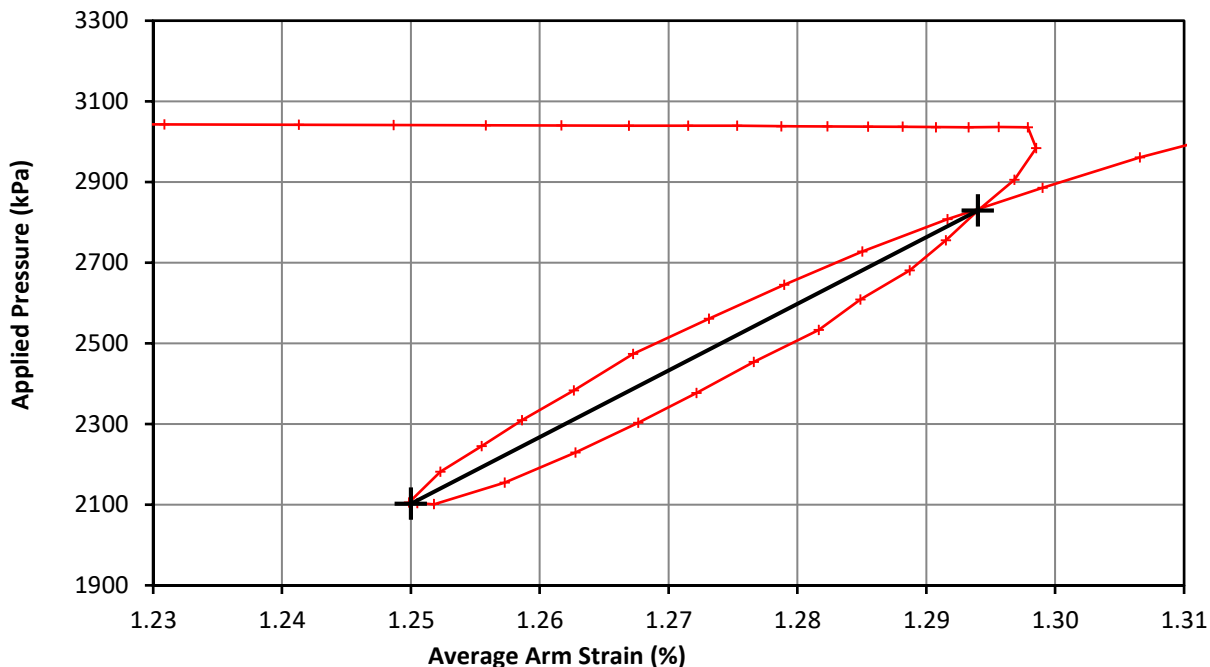
Pressuremeter Test Unload Reload Loop



Test Date	22/10/2020	Test No.	2
Borehole	R71916	Test Depth (m)	21.00



Loop 1	Shear Modulus	494.3 MPa
	Cavity Strain Range	0.039 %



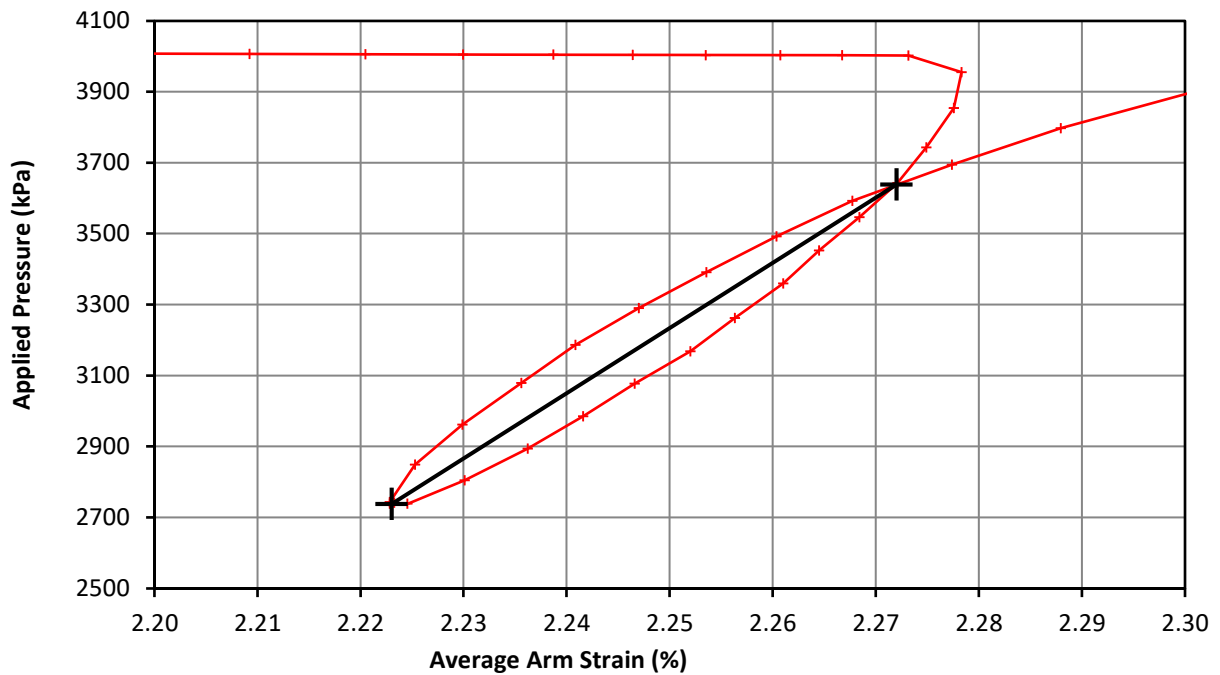
Loop 2	Shear Modulus	836.8 MPa
	Cavity Strain Range	0.044 %

Project	A303 Amesbury to Berwick Down	Figure No.	R71916 T02 - 05
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test Unload Reload Loop



Test Date	22/10/2020	Test No.	2
Borehole	R71916	Test Depth (m)	21.00



Loop 3	Shear Modulus	940.3	MPa
	Cavity Strain Range	0.049	%

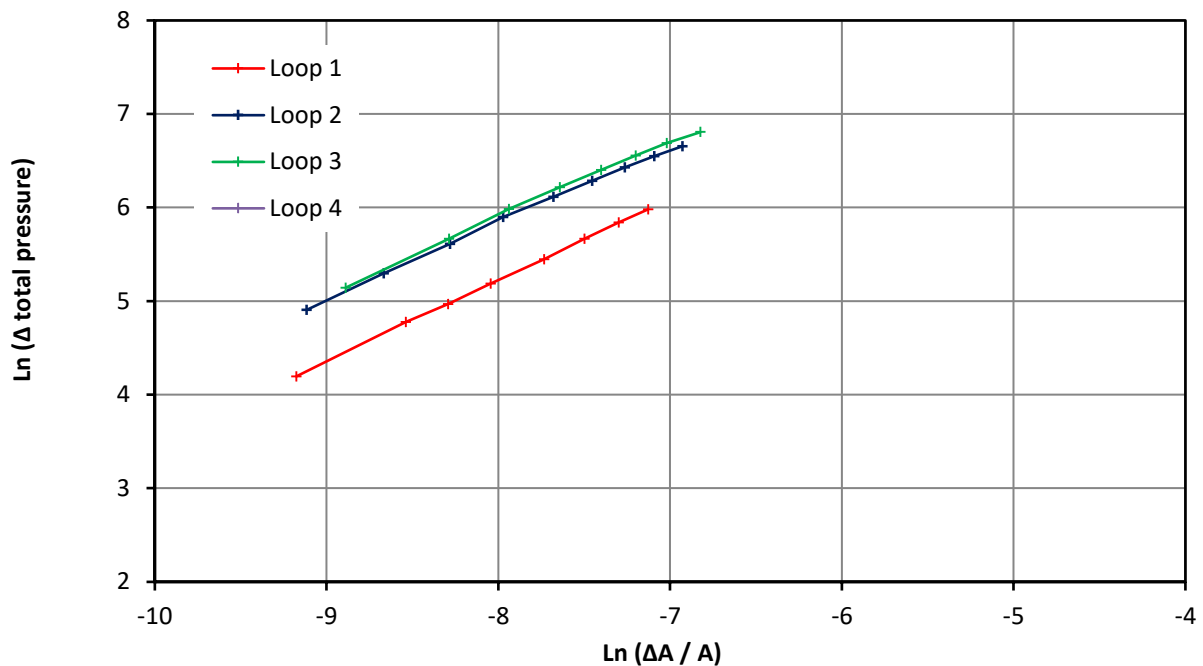
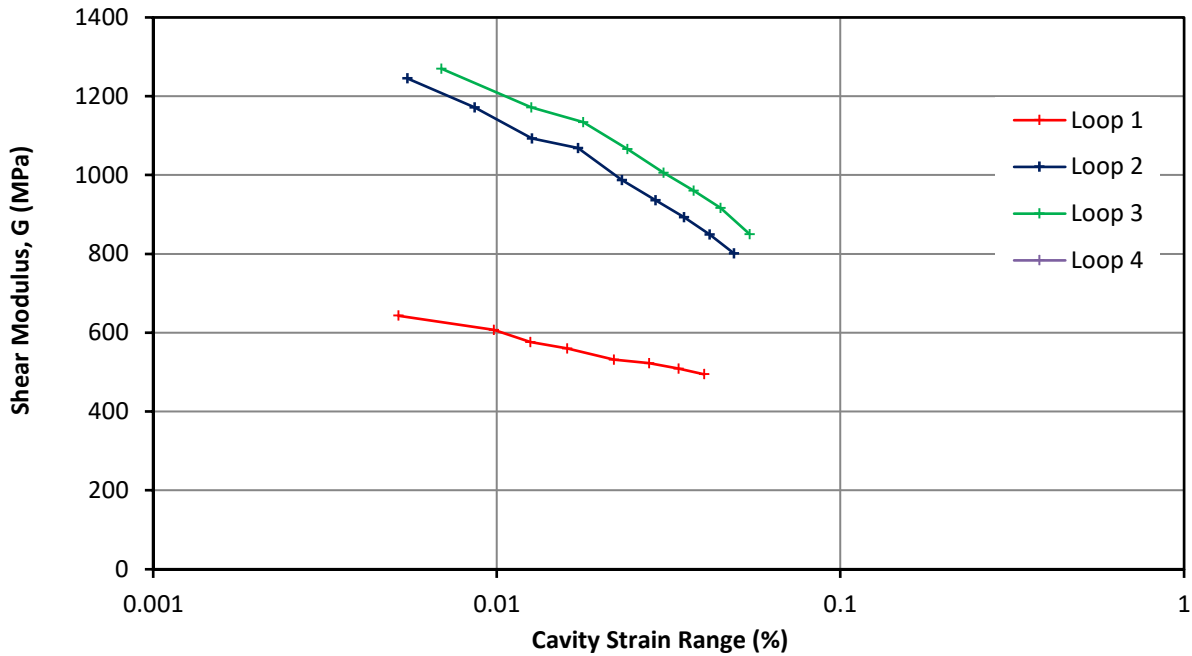
Project	A303 Amesbury to Berwick Down	Figure No.	R71916 T02 - 06
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Analysis

Small Strain Stiffness and Bolton and Whittle (1999)



Test Date	22/10/2020	Test No.	2
Borehole	R71916	Test Depth (m)	21.00



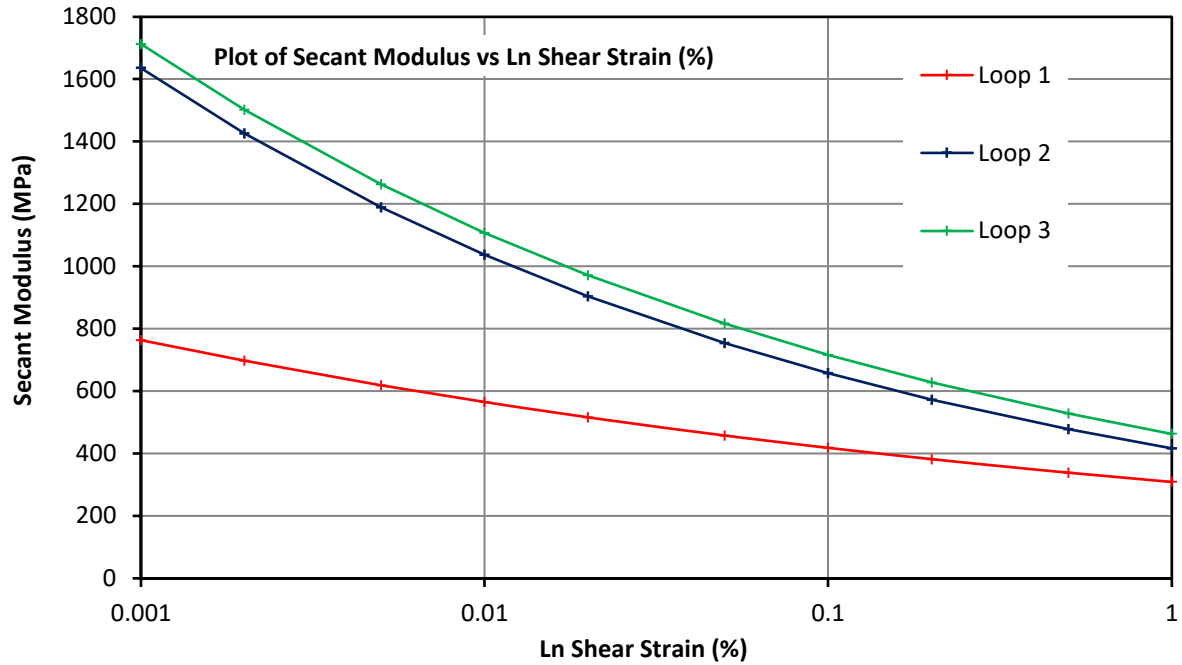
Loop 1		Loop 2		Loop 3		Loop 4	
Gradient(β)	Intercept	Gradient(β)	Intercept	Gradient(β)	Intercept	Gradient(β)	Intercept
0.869	194.729	0.802	208.482	0.811	238.750		
	(MPa)		(MPa)		(MPa)		(MPa)

Project	A303 Amesbury to Berwick Down	Figure No.	R71916 T02 - 07
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Analysis
 Secant Modulus - Shear Strain (%)



Test Date	22/10/2020	Test No.	2
Borehole	R71916	Test Depth (m)	21.00



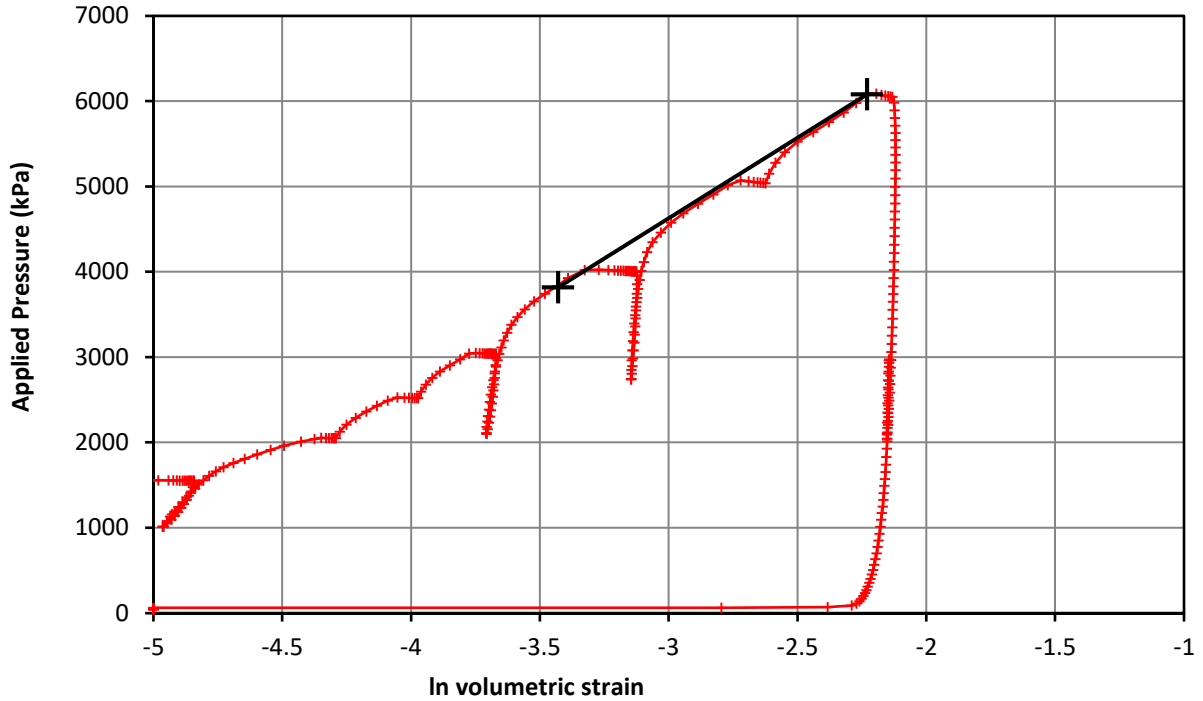
Shear Strain	Loop 1	Loop 2	Loop 3
0.001%	763	1636	1712
0.002%	697	1426	1502
0.005%	618	1189	1262
0.010%	565	1037	1107
0.020%	516	904	971
0.050%	457	754	816
0.100%	418	657	716
0.200%	382	573	628
0.500%	338	478	528
1.000%	309	416	463

Project	A303 Amesbury to Berwick Down	Figure No.	R71916 T02 - 08
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test - Strength



Test Date	22/10/2020	Test No.	2
Borehole	R71916	Test Depth (m)	21.00



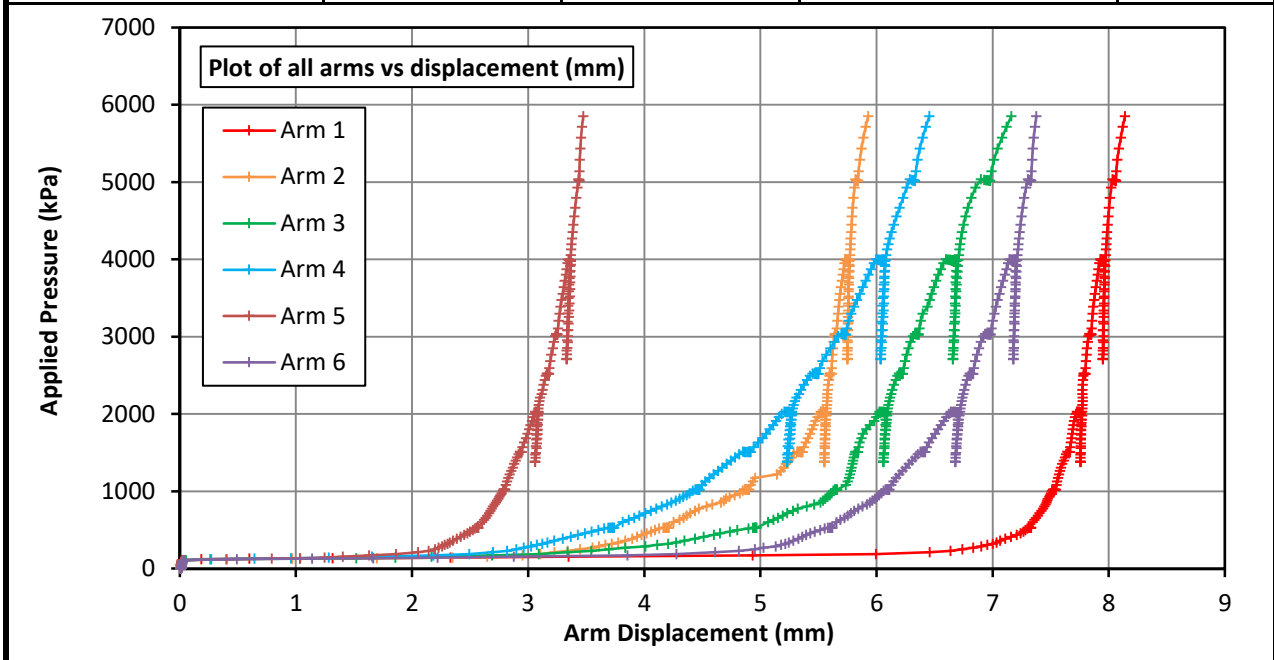
Strength	Undrained Shear	1883 kPa
	Limit Pressure	10280 kPa

Project	A303 Amesbury to Berwick Down	Figure No.	R71916 T02 - 09
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test Overview High Pressure Dilatometer (HPD)



Test Date	23/10/2020	Test No.	3	
Borehole	R71916	Test Depth (m)	27.00	
Coordinates (m)	411898.7 (E)	141782.1 (N)	Elevation (m)	99.37



Material description from borehole log:
Very weak medium to high density creamy white CHALK.

Test pocket conditions:

Total core recovery:	60 %	Test pocket depth range:	
Solid core recovery:	17 %	From:	26.00 m to: 28.50 m
Rock quality designation:	11 %	Flush:	Water

Test comment:
The test pocket was oversize with arms lifting off between 3.0 to 7.5mm. Some disturbance is noted during initial loading. The p_0 was estimated to be at 1610kPa, with the following loading section being relatively long. Material yield is interpreted at 5434kPa with the test taken to a pressure of 5853kPa where the membrane burst. The displacement-pressure response was variable with arms 2 & 5 tight against the wall and the other arms showing greater expansion. Analysis of two unload-reload loops provides increasing modulus values from 689 to 1169MPa. Derived undrained shear strength analysis provides values of 3824 to 4171kPa.

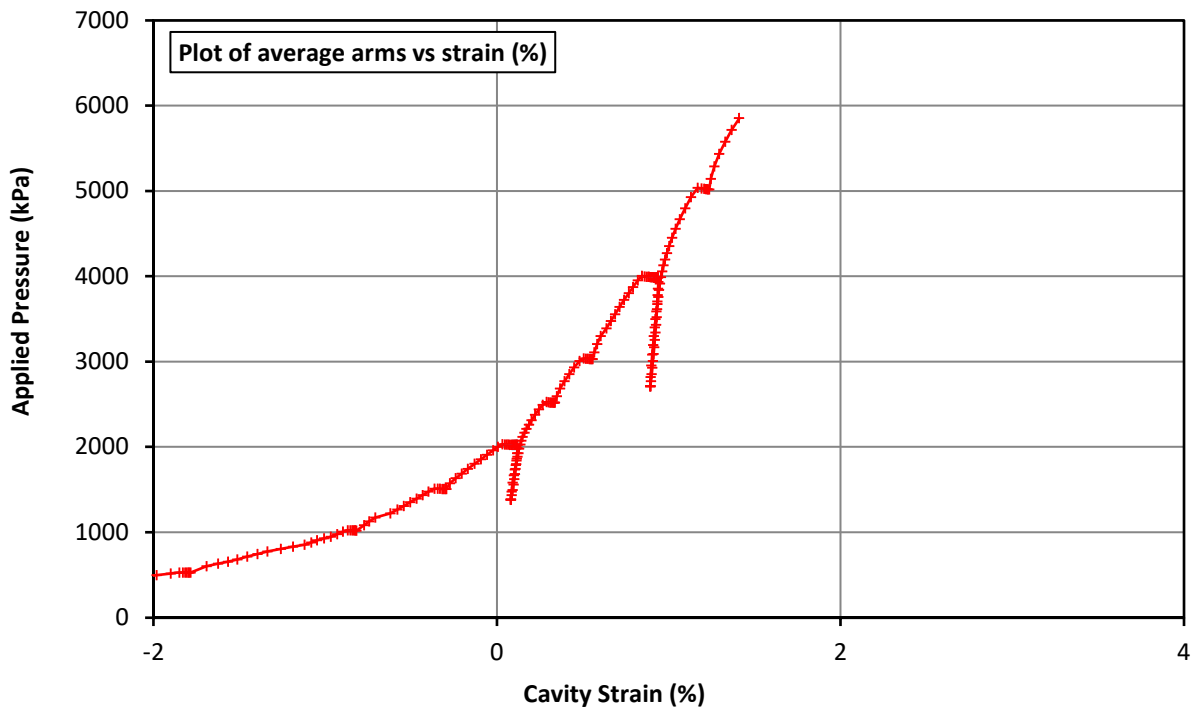
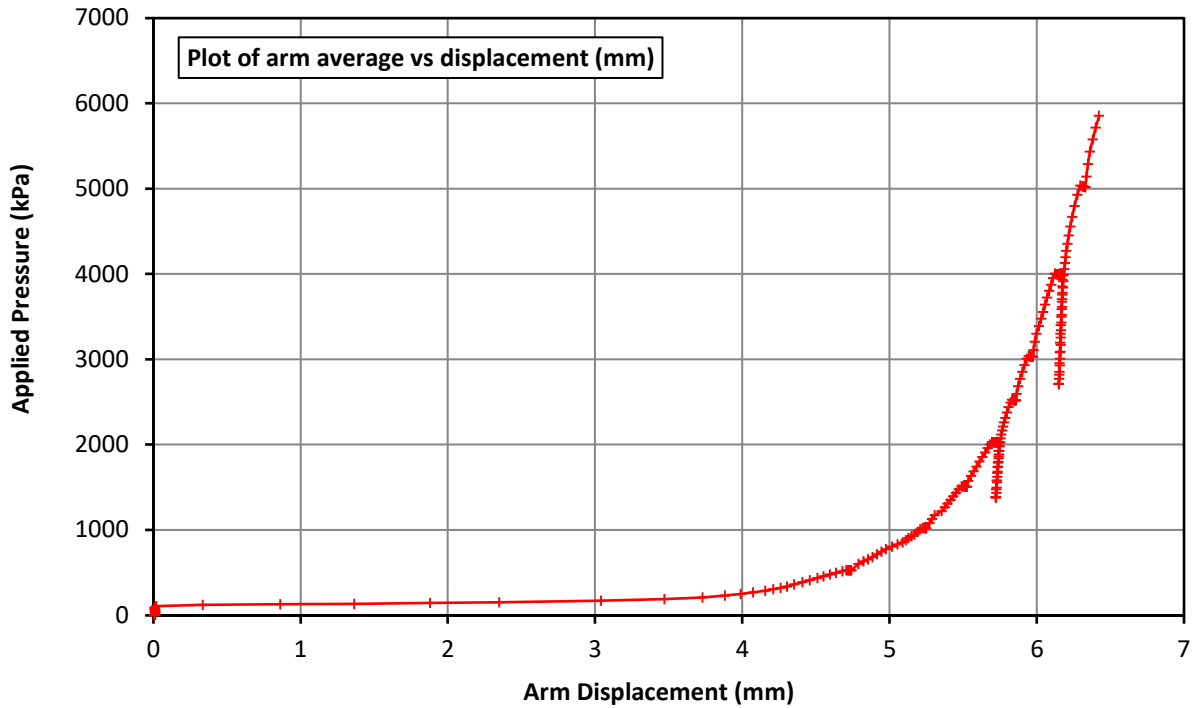
Test details:		Instrument:		Wally	
Drilling method:	Rotary coring		mV	mV/mm	mV
Casing depth:	26.00 m	Arm 1:	-2011.1	146.5	TPC A: -1610.0
Water level:	- m	Arm 2:	-2638.0	139.0	TPC B: -2060.1
		Arm 3:	-2310.1	146.3	
Test time:		Arm 4:	-2051.3	140.5	
Start (probe in):	11:39 hrs	Arm 5:	-2329.5	139.9	
Finish (probe out):	12:24 hrs	Arm 6:	-2054.9	126.0	

Project	A303 Amesbury to Berwick Down	Figure No.	R71916 T03 - 01
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test Overview



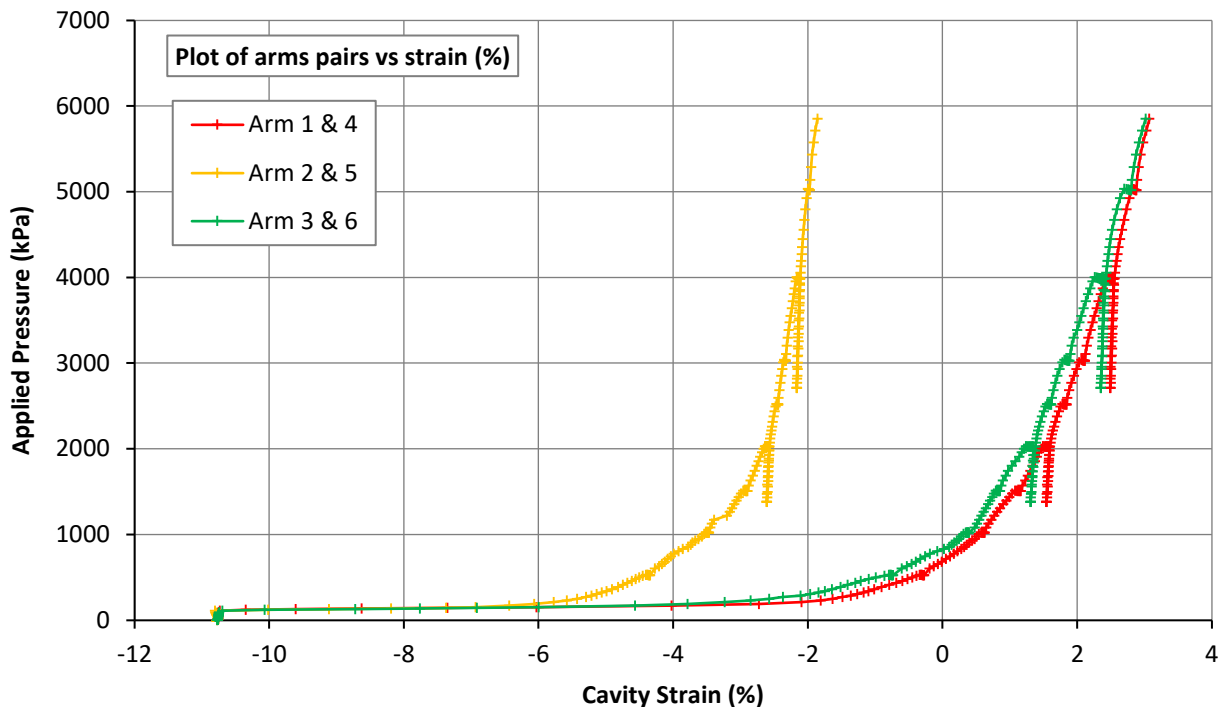
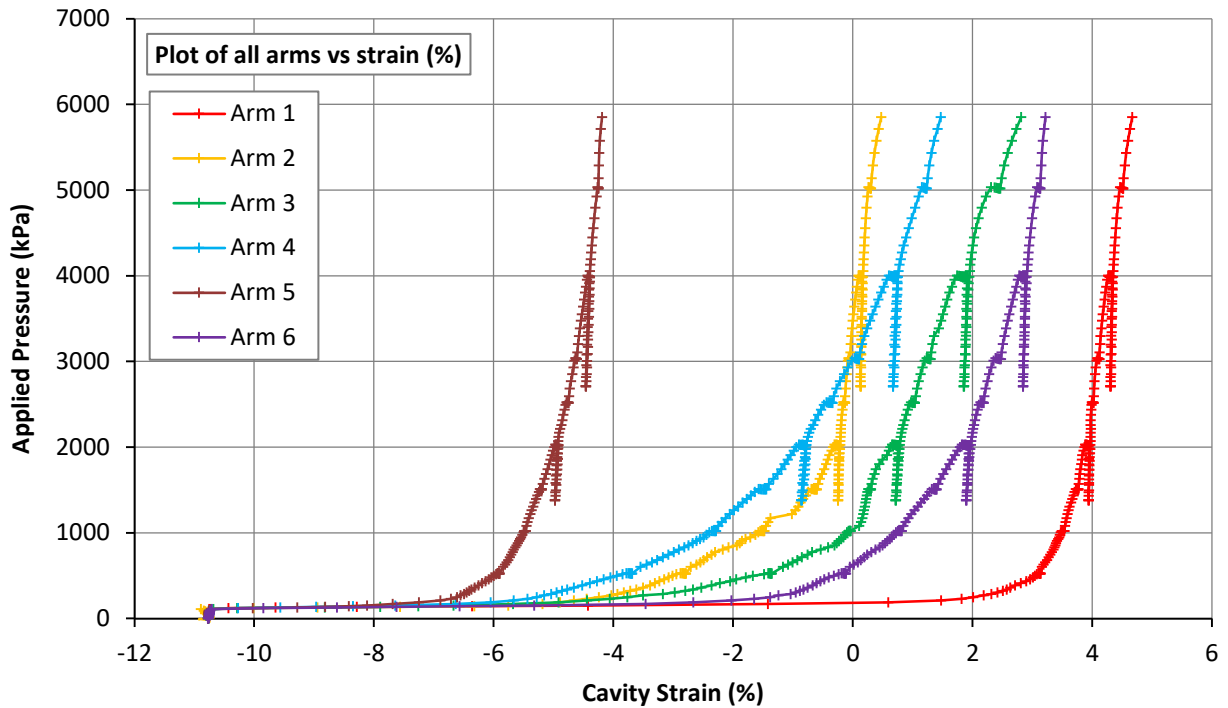
Test Date	23/10/2020	Test No.	3
Borehole	R71916	Test Depth (m)	27.00



Project	A303 Amesbury to Berwick Down	Figure No.	R71916 T03 - 02
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test - Arm Displacement vs Strain (%)

Test Date	23/10/2020	Test No.	3
Borehole	R71916	Test Depth (m)	27.00

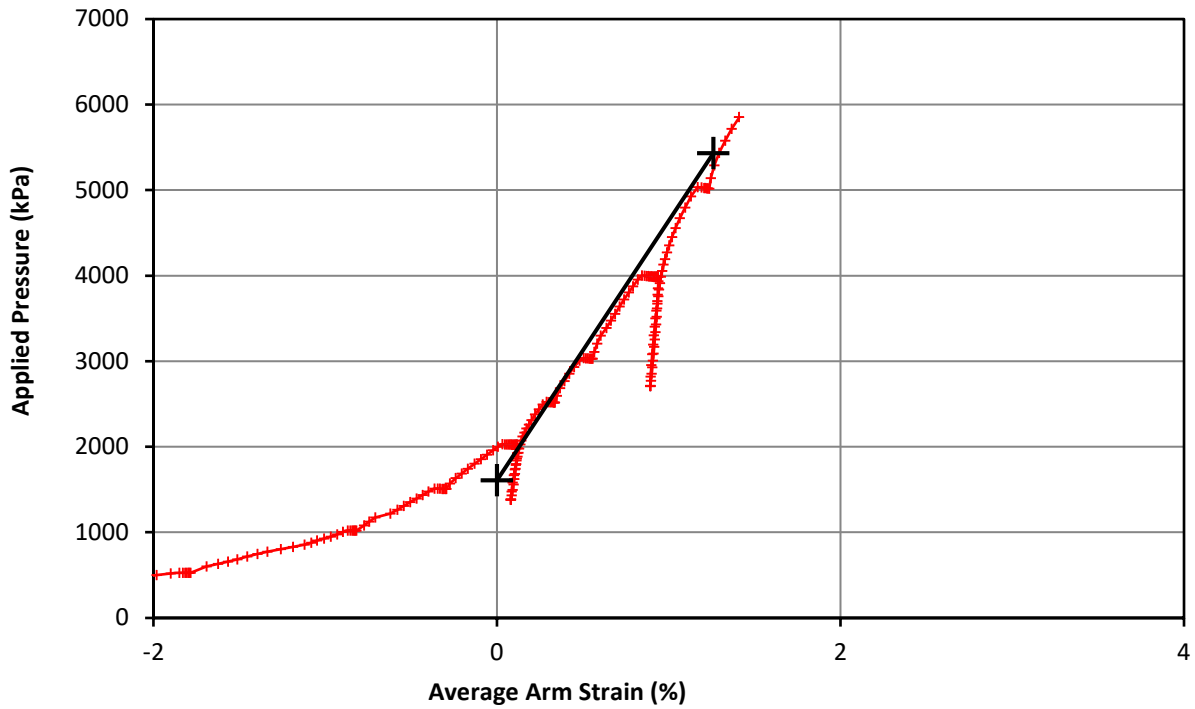


Project	A303 Amesbury to Berwick Down	Figure No.	R71916 T03 - 03
Client	RPS Ltd		
Project No.	P1200116		

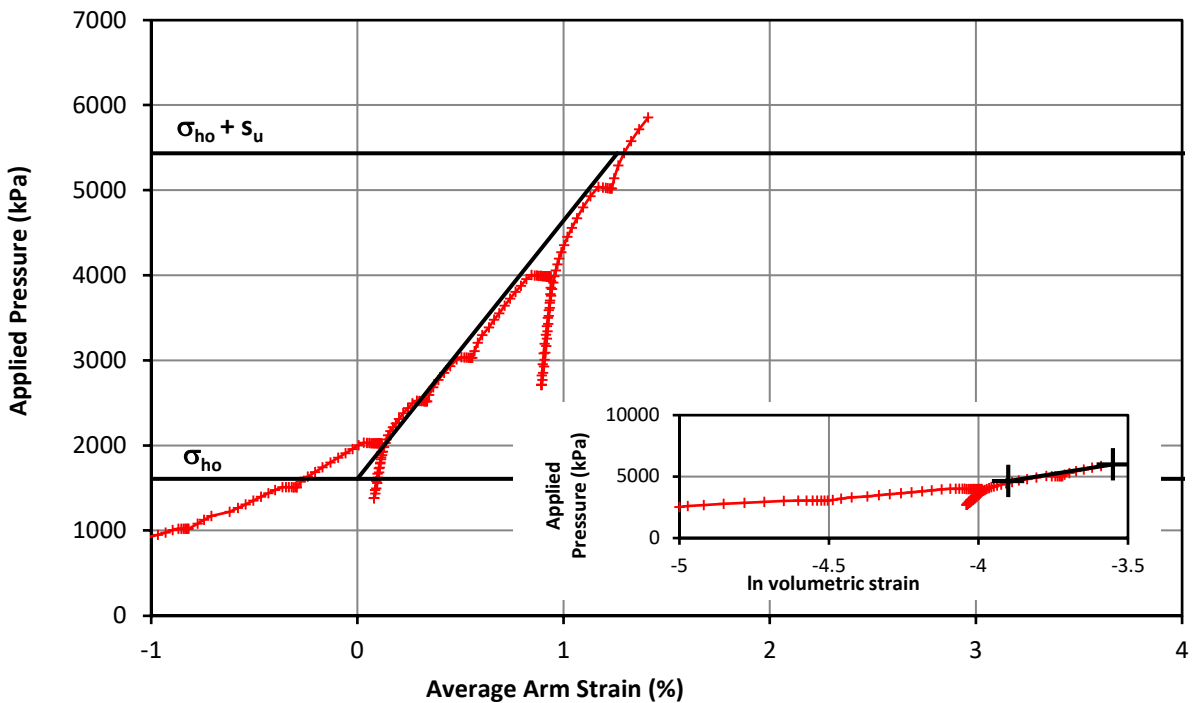
Pressuremeter Test Initial Modulus & In Situ Horizontal Stress



Test Date	23/10/2020	Test No.	3
Borehole	R71916	Test Depth (m)	27.00



Initial Modulus	Shear Modulus	153.7 MPa
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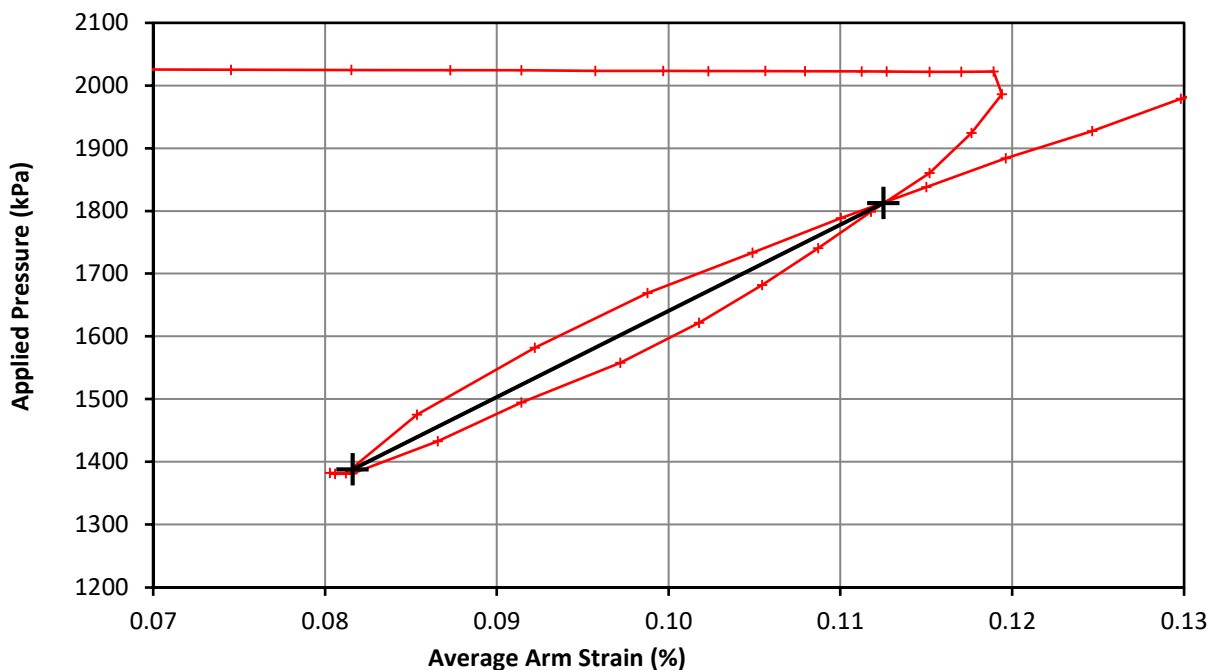
Marsland & Randolph	In situ horizontal stress	1610 kPa
	Undrained Strength	3824 kPa

Project	A303 Amesbury to Berwick Down	Figure No.	R71916 T03 - 04
Client	RPS Ltd		
Project No.	P1200116		

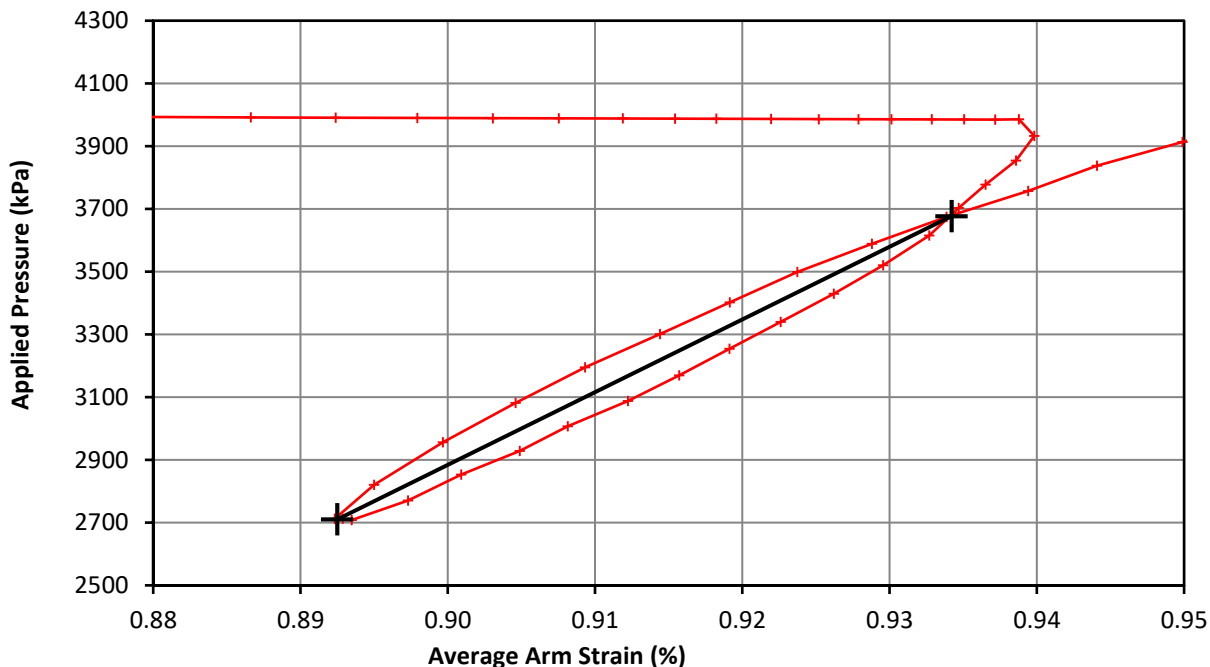
Pressuremeter Test Unload Reload Loop



Test Date	23/10/2020	Test No.	3
Borehole	R71916	Test Depth (m)	27.00



Loop 1	Shear Modulus	688.5 MPa
	Cavity Strain Range	0.031 %



Loop 2	Shear Modulus	1169.1 MPa
	Cavity Strain Range	0.042 %

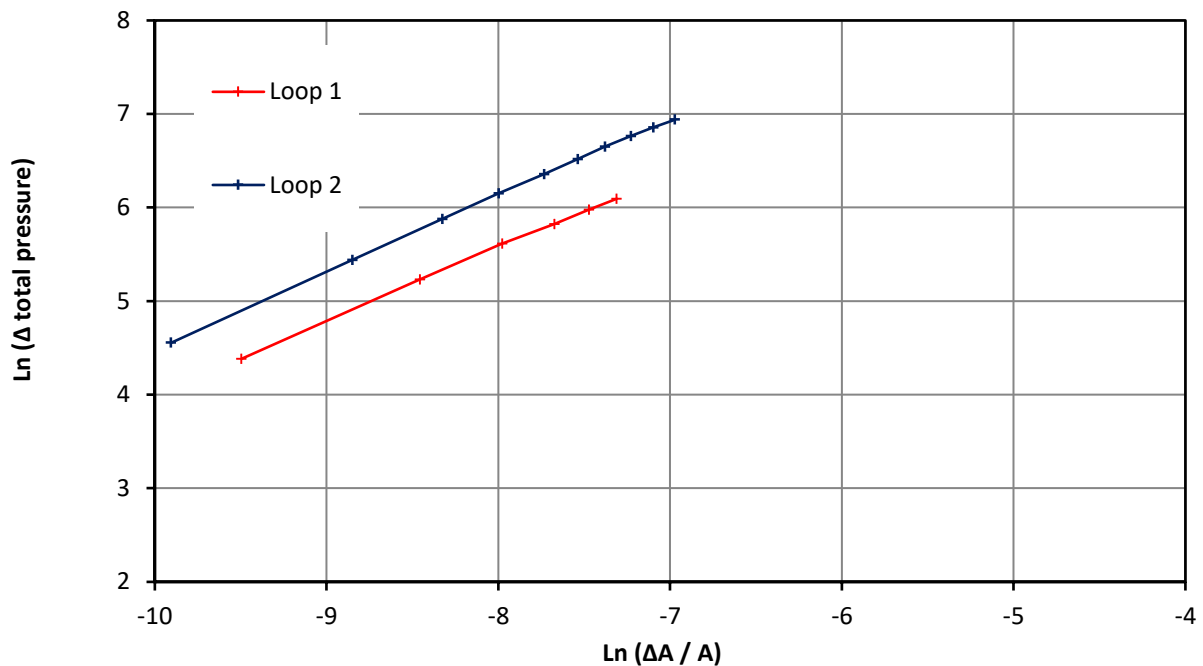
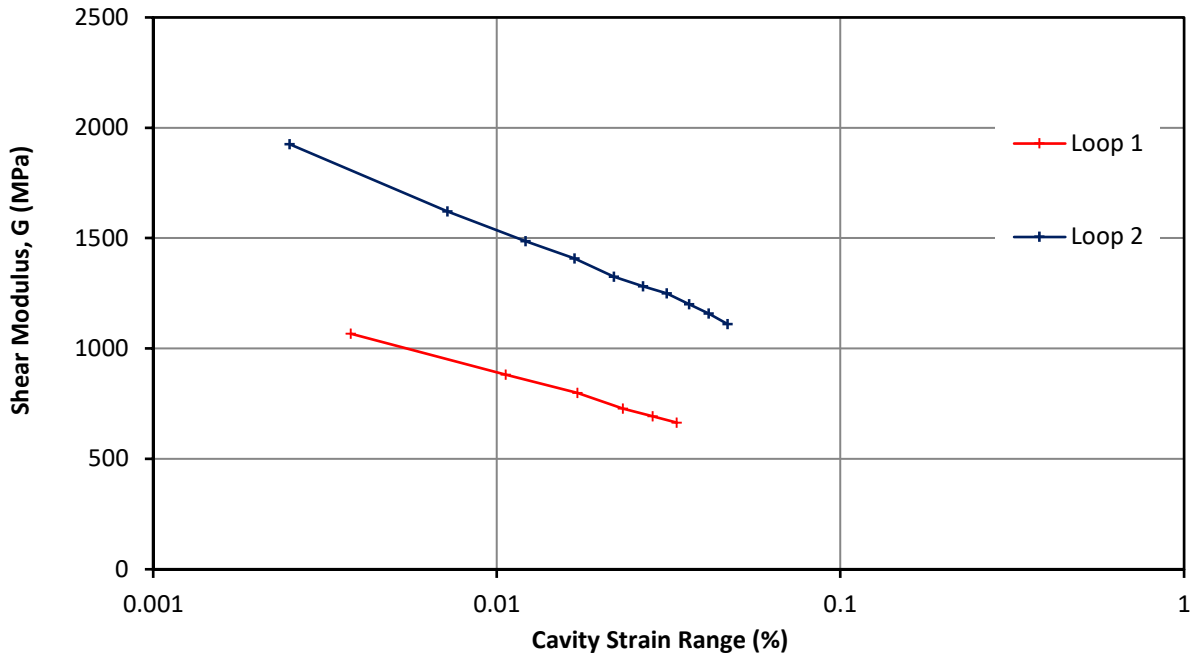
Project	A303 Amesbury to Berwick Down	Figure No.	R71916 T03 - 05
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Analysis

Small Strain Stiffness and Bolton and Whittle (1999)



Test Date	23/10/2020	Test No.	3
Borehole	R71916	Test Depth (m)	27.00



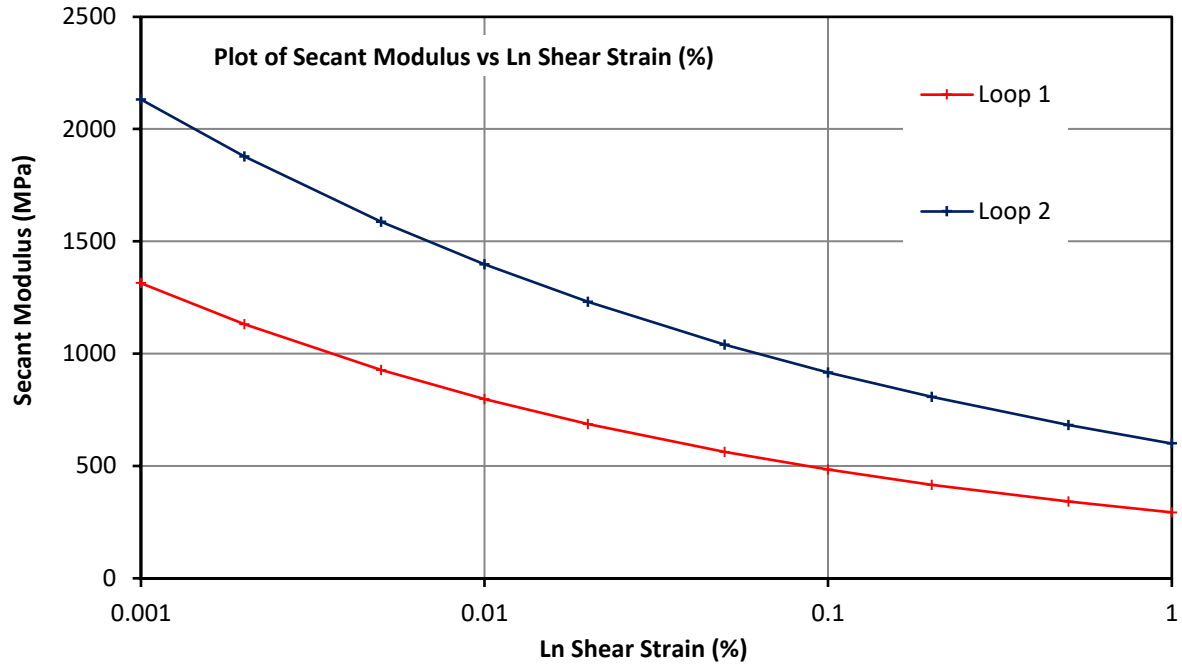
Loop 1		Loop 2	
Gradient(β)	Intercept	Gradient(β)	Intercept
0.783	137.775	0.817	316.235
	(MPa)		(MPa)

Project	A303 Amesbury to Berwick Down	Figure No.	R71916 T03 - 06
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Analysis
 Secant Modulus - Shear Strain (%)



Test Date	23/10/2020	Test No.	3
Borehole	R71916	Test Depth (m)	27.00

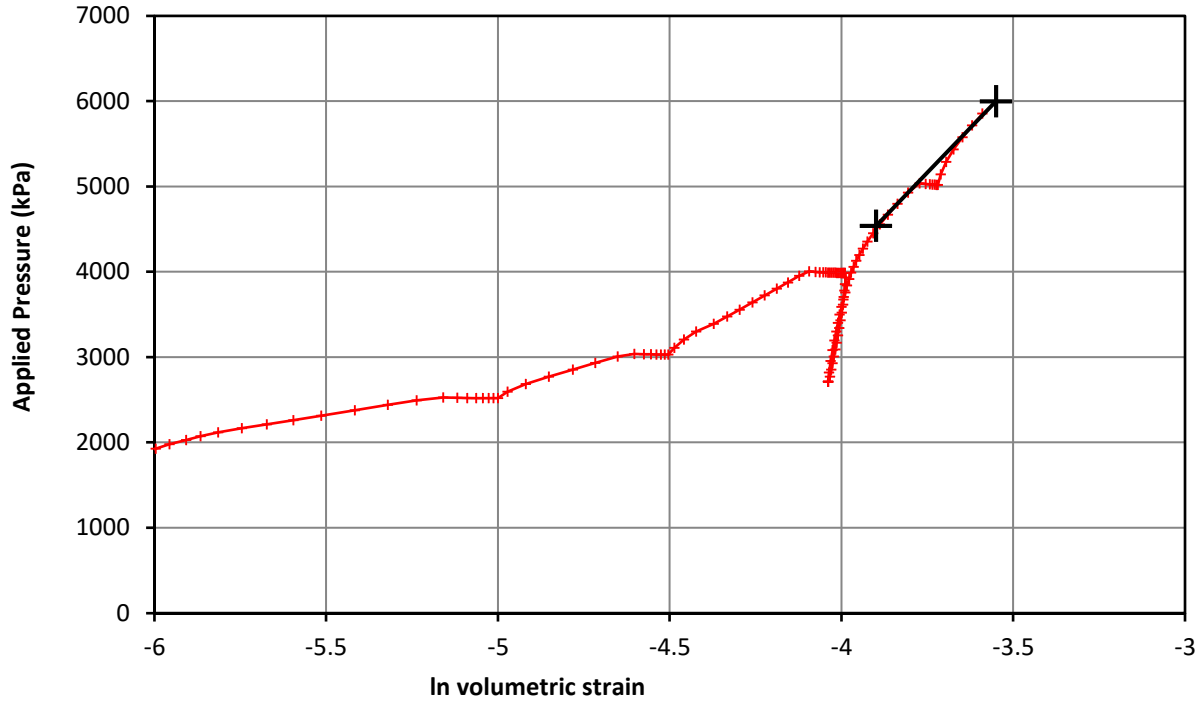


Shear Strain	Loop 1	Loop 2
0.001%	1314	2132
0.002%	1131	1877
0.005%	927	1587
0.010%	797	1398
0.020%	686	1231
0.050%	562	1040
0.100%	483	916
0.200%	416	807
0.500%	341	682
1.000%	293	601

Project	A303 Amesbury to Berwick Down	Figure No.	R71916 T03 - 07
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test - Strength

Test Date	23/10/2020	Test No.	3
Borehole	R71916	Test Depth (m)	27.00



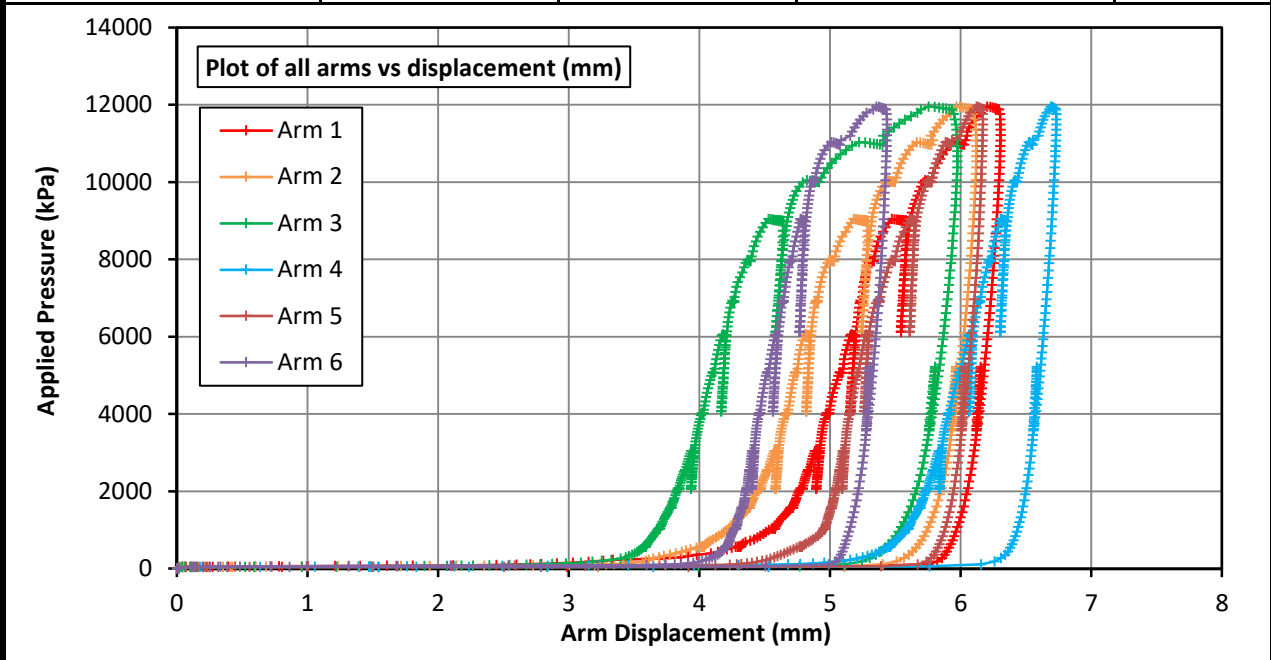
Strength	Undrained Shear	4171 kPa
	Limit Pressure	20809 kPa

Project	A303 Amesbury to Berwick Down	Figure No.	R71916 T03 - 08
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test Overview High Pressure Dilatometer (HPD)



Test Date	27/10/2020	Test No.	4
Borehole	R71916	Test Depth (m)	33.00
Coordinates (m)	411898.7 (E)	141782.1 (N)	Elevation (m) 99.37



Material description from borehole log:
Very weak medium density creamy white CHALK.

Test pocket conditions:

Total core recovery:	21 %	Test pocket depth range:	
Solid core recovery:	18 %	From:	32.00 m to: 34.50 m
Rock quality designation:	10 %	Flush:	Water

Test comment:
The test pocket was slightly oversize with arms lifting off between 3.5 to 5.5mm. The po was estimated to be at 1895kPa, with the following loading section being long, but slightly non-linear due to minor arm disturbance. Material yield is interpreted at 6909kPa with the test taken to a high pressure of 11955kPa. The displacement-pressure response was reasonably consistent on all arms through the test, with some variation in expansion. Analysis of four unload-reload loops provides modulus values from 1300 to 1500MPa. Derived undrained shear strength analysis provides values of 4417 to 5015kPa.

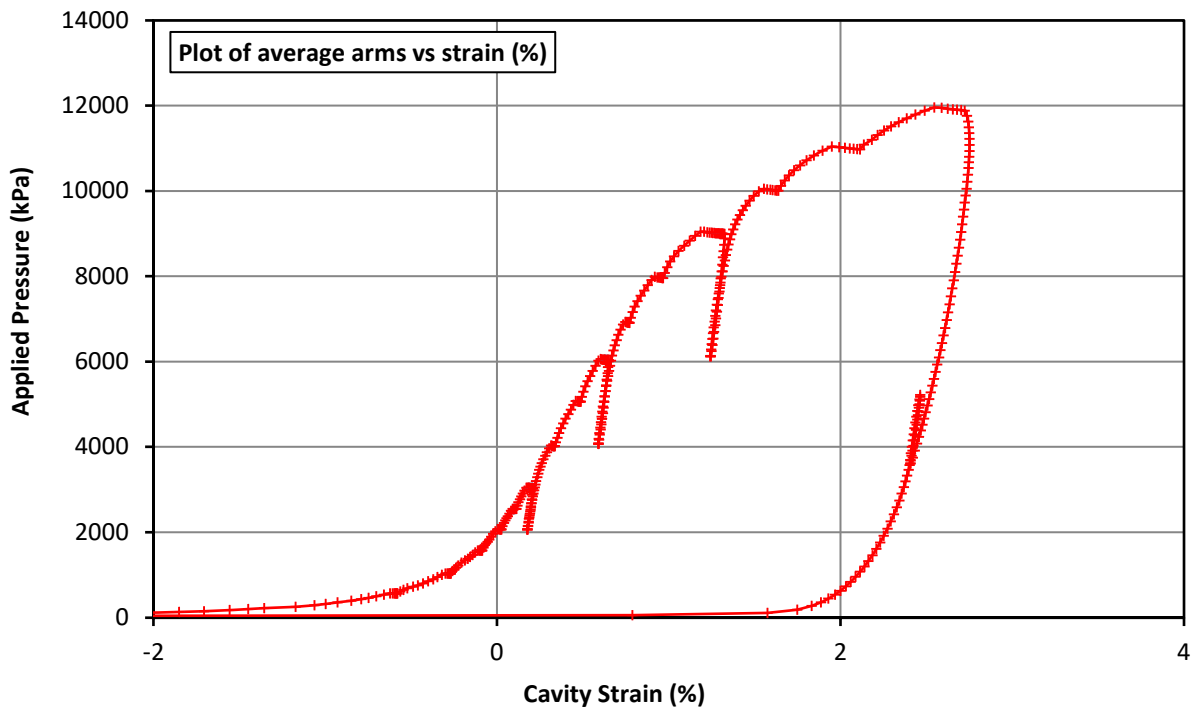
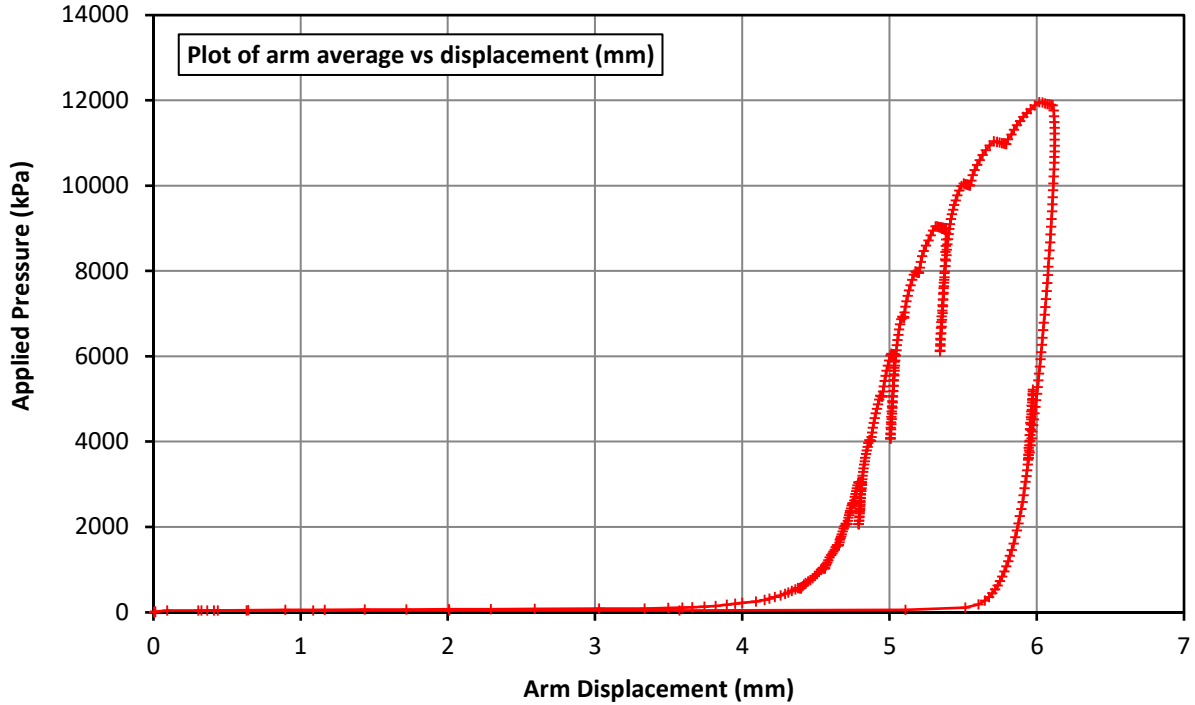
Test details:		Instrument:		Wally		
Drilling method:	Rotary coring		mV	mV/mm	mV	mV/MPa
Casing depth:	32.00 m	Arm 1:	-2008.1	146.5	TPC A:	-1611.5 109.0
Water level:	- m	Arm 2:	-2648.1	139.0	TPC B:	-2061.1 109.1
		Arm 3:	-2307.6	146.3		
Test time:		Arm 4:	-2042.0	140.5		
Start (probe in):	09:19 hrs	Arm 5:	-2320.3	139.9		
Finish (probe out):	10:45 hrs	Arm 6:	-2044.8	126.0		

Project	A303 Amesbury to Berwick Down	Figure No.	R71916 T04 - 01
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test Overview



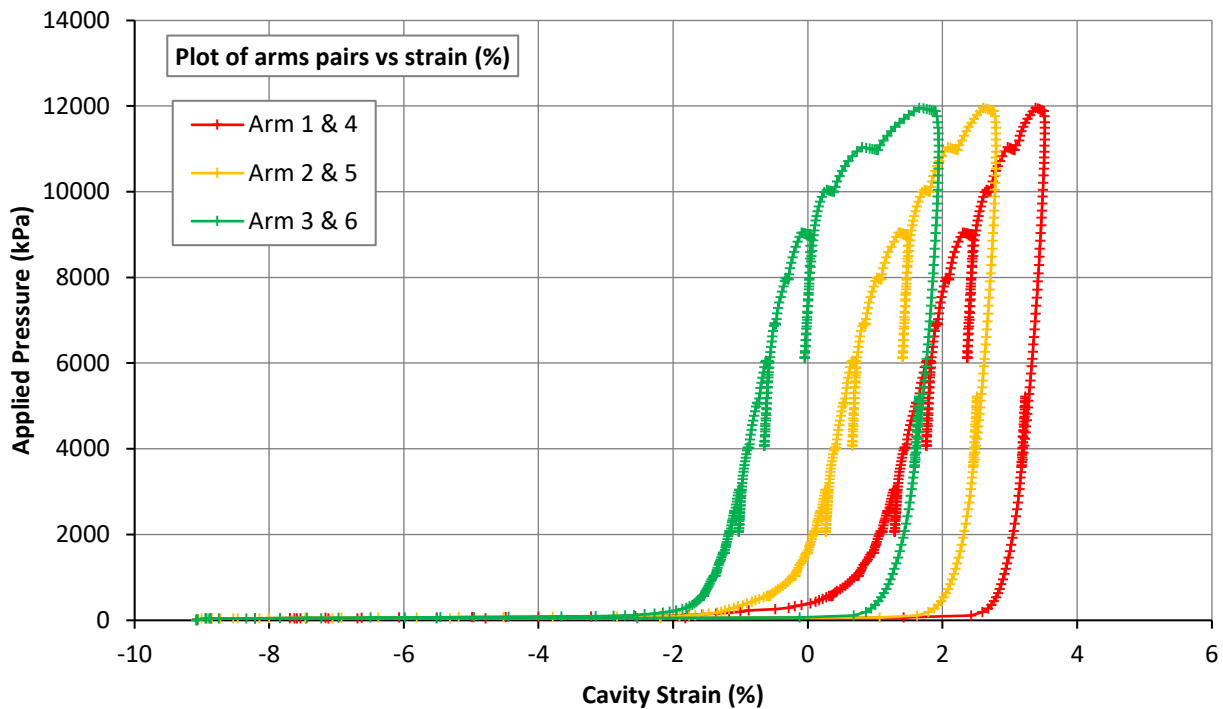
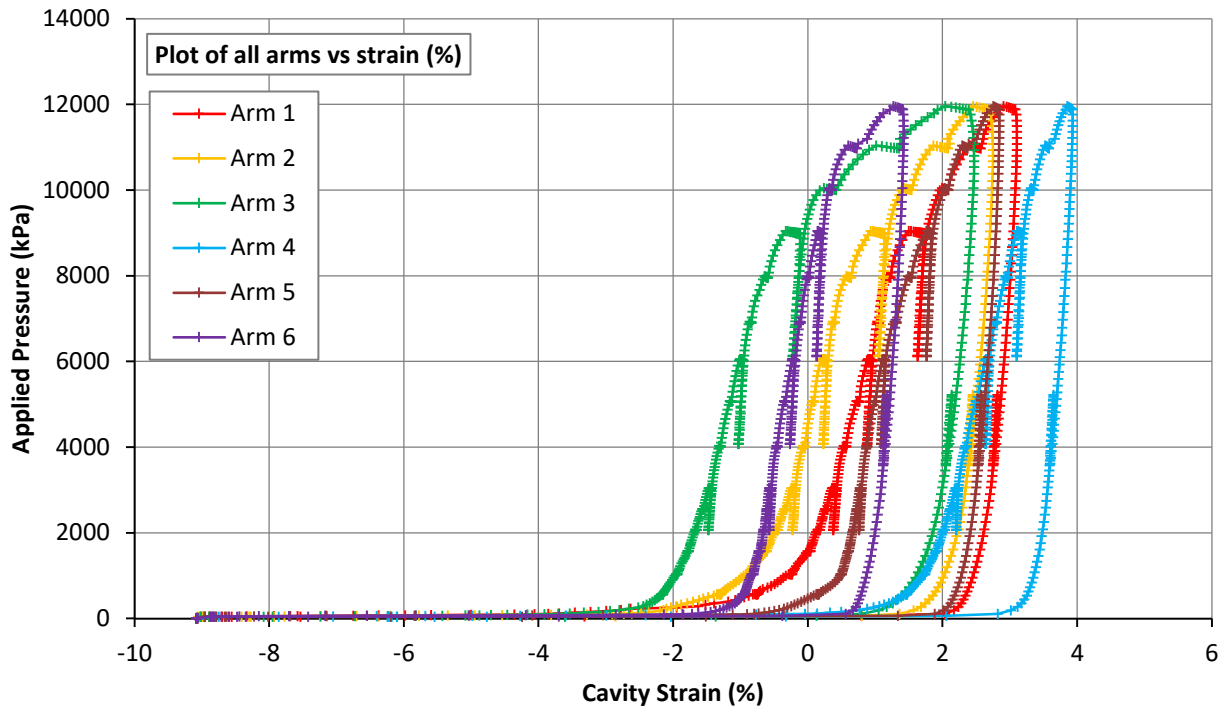
Test Date	27/10/2020	Test No.	4
Borehole	R71916	Test Depth (m)	33.00



Project	A303 Amesbury to Berwick Down	Figure No.	R71916 T04 - 02
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test - Arm Displacement vs Strain (%)

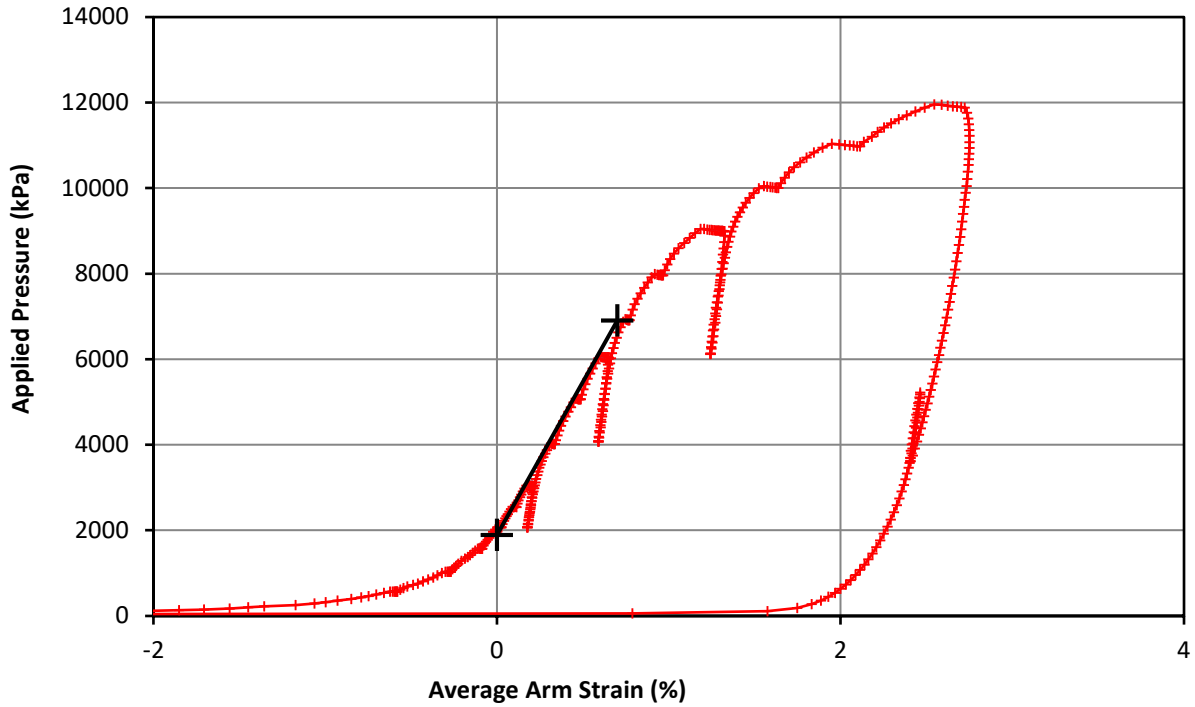
Test Date	27/10/2020	Test No.	4
Borehole	R71916	Test Depth (m)	33.00



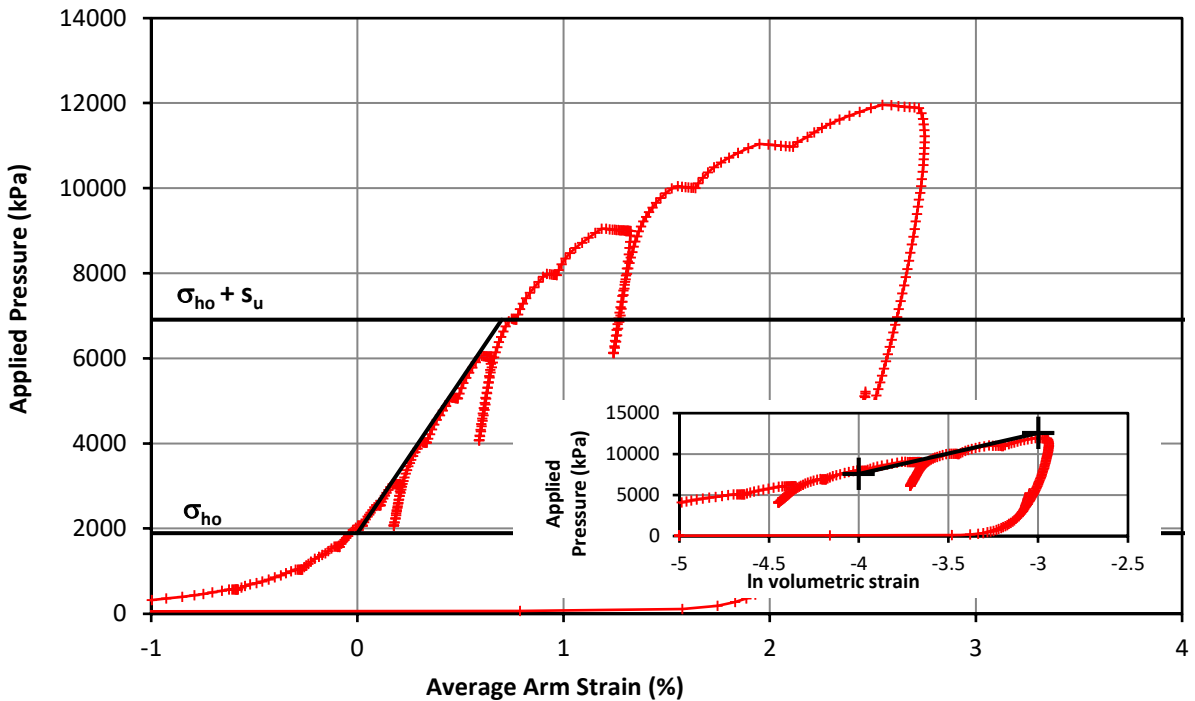
Project	A303 Amesbury to Berwick Down	Figure No.	R71916 T04 - 03
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test Initial Modulus & In Situ Horizontal Stress

Test Date	27/10/2020	Test No.	4
Borehole	R71916	Test Depth (m)	33.00



Initial Modulus	Shear Modulus	360.7 MPa
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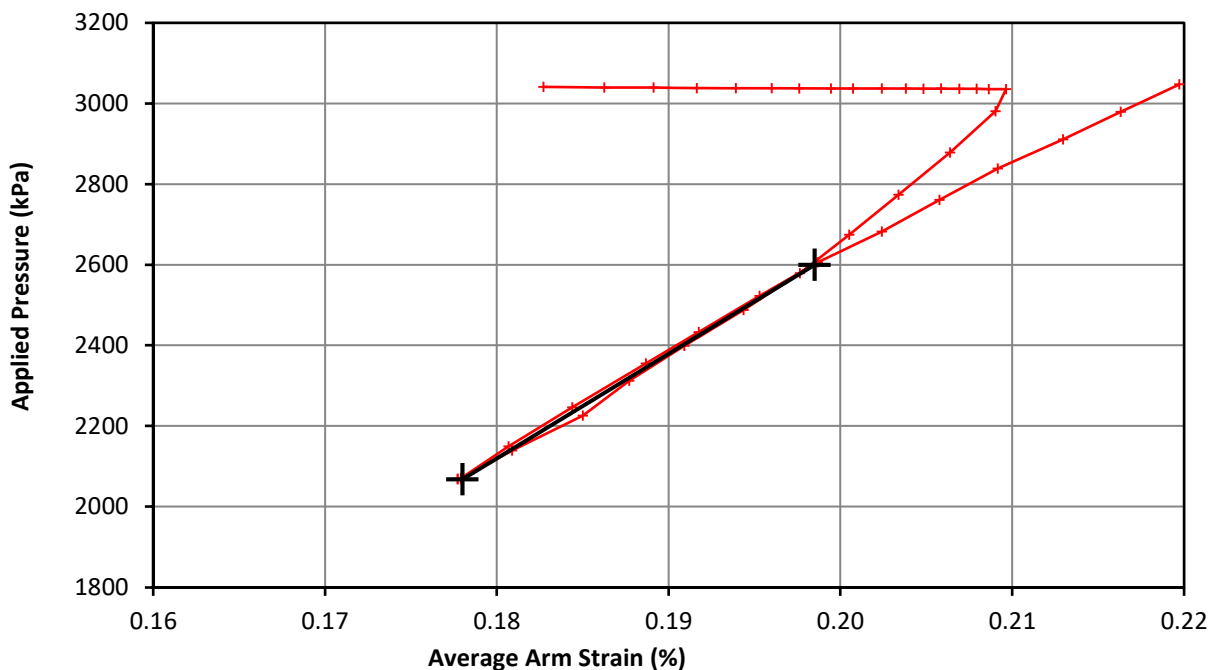
Marsland & Randolph	In situ horizontal stress	1895 kPa
	Undrained Strength	5015 kPa

Project	A303 Amesbury to Berwick Down	Figure No.	R71916 T04 - 04
Client	RPS Ltd		
Project No.	P1200116		

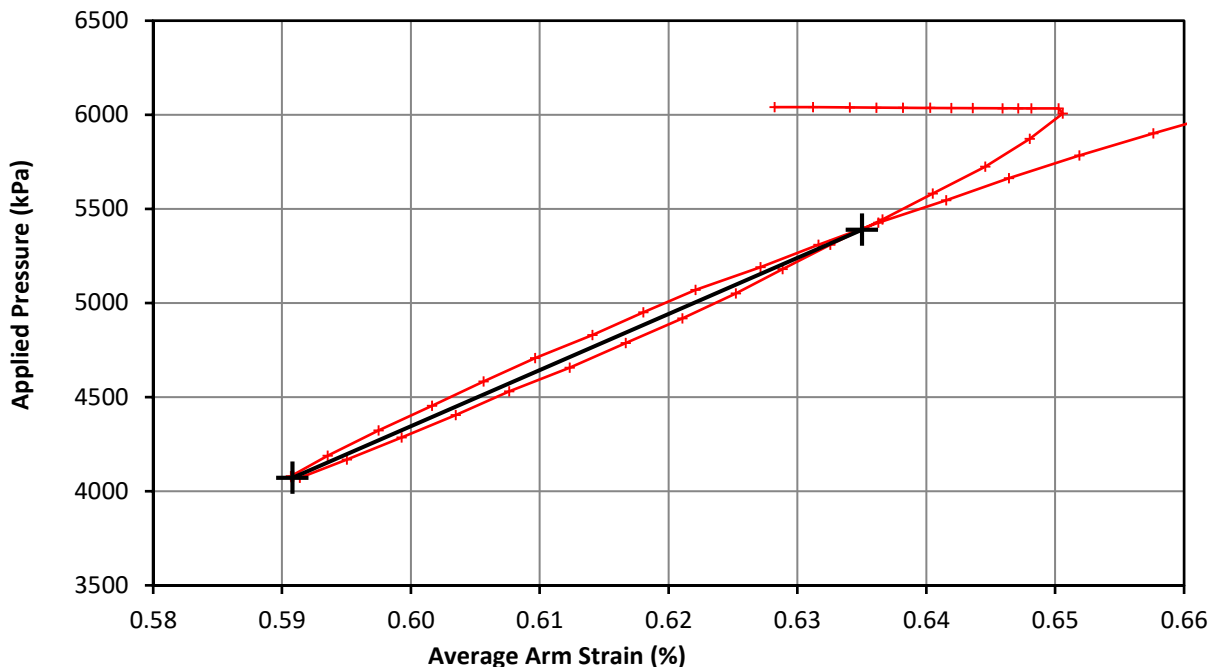
Pressuremeter Test Unload Reload Loop



Test Date	27/10/2020	Test No.	4
Borehole	R71916	Test Depth (m)	33.00



Loop 1	Shear Modulus	1300.1 MPa
	Cavity Strain Range	0.021 %



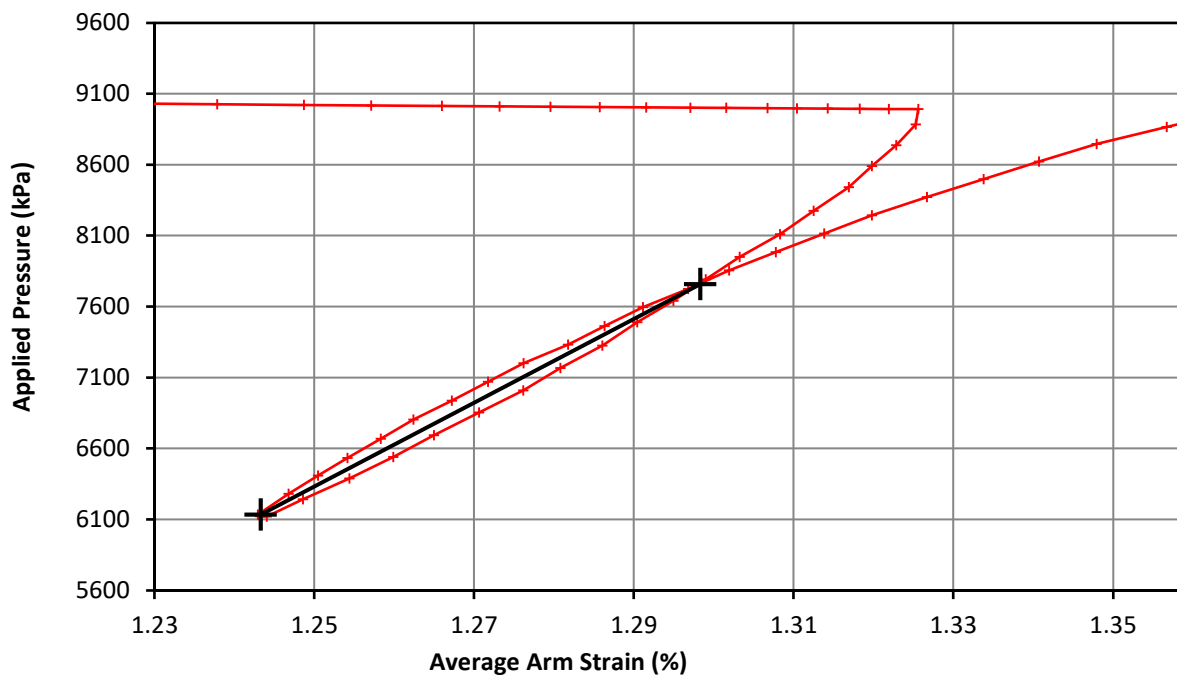
Loop 2	Shear Modulus	1500.4 MPa
	Cavity Strain Range	0.044 %

Project	A303 Amesbury to Berwick Down	Figure No.	R71916 T04 - 05
Client	RPS Ltd		
Project No.	P1200116		

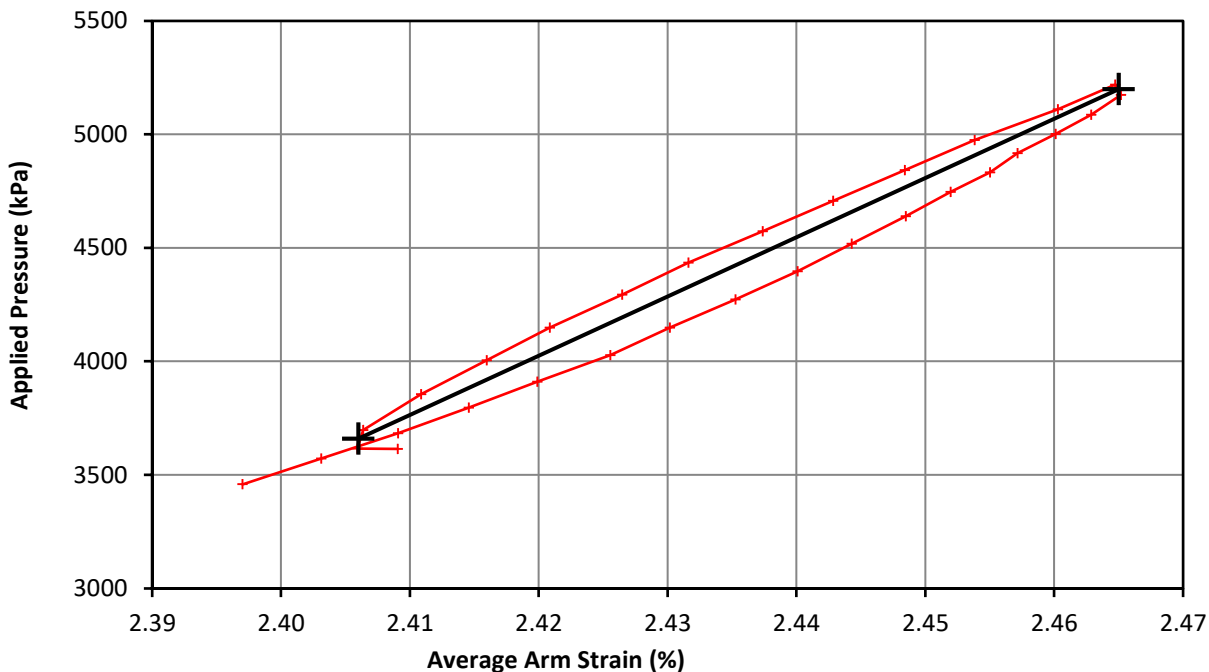
Pressuremeter Test Unload Reload Loop



Test Date	27/10/2020	Test No.	4
Borehole	R71916	Test Depth (m)	33.00



Loop 3	Shear Modulus	1496.5 MPa
	Cavity Strain Range	0.055 %



Loop 4	Shear Modulus	1337.3 MPa
	Cavity Strain Range	0.059 %

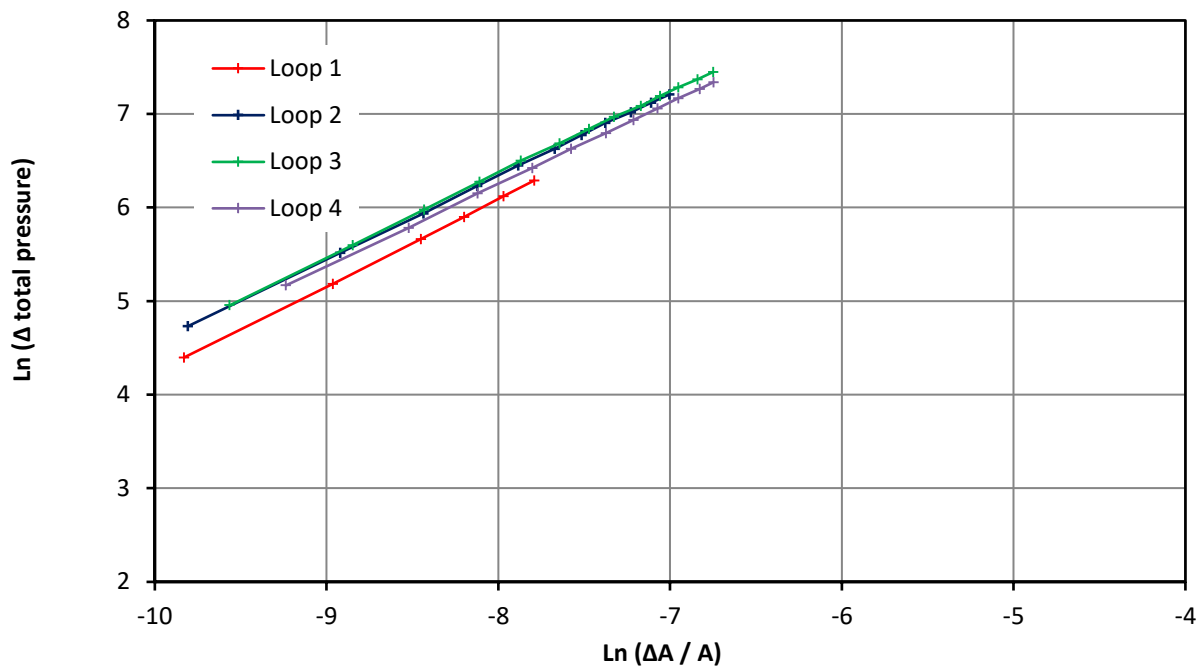
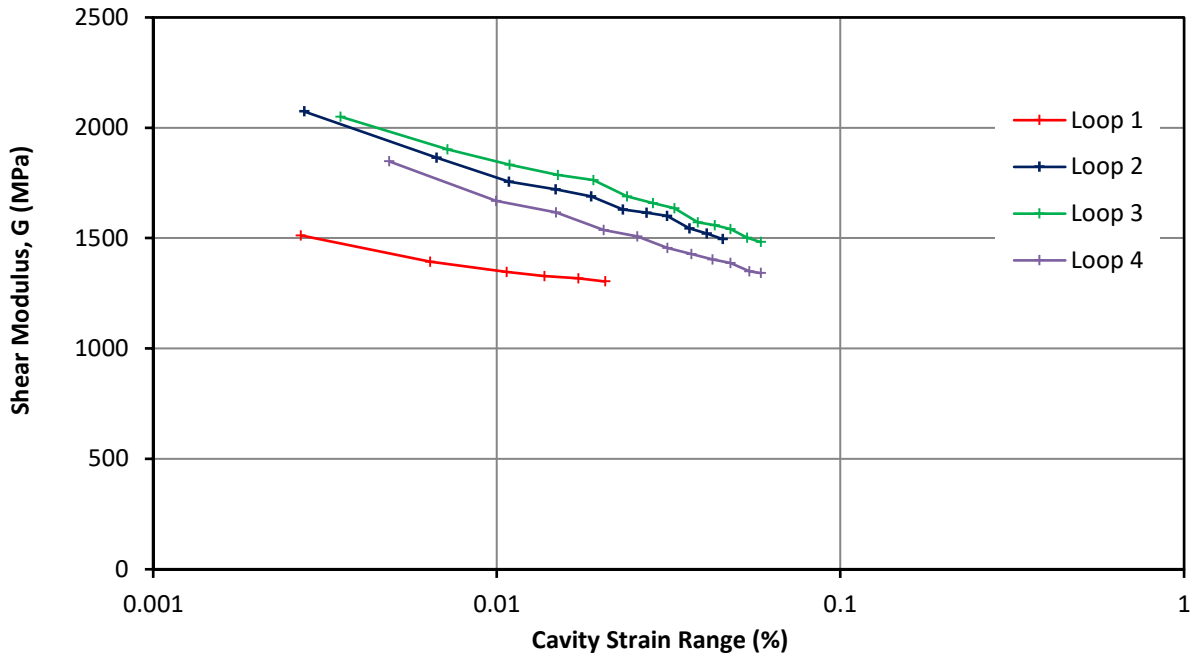
Project	A303 Amesbury to Berwick Down	Figure No.	R71916 T04 - 06
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Analysis

Small Strain Stiffness and Bolton and Whittle (1999)



Test Date	27/10/2020	Test No.	4
Borehole	R71916	Test Depth (m)	33.00



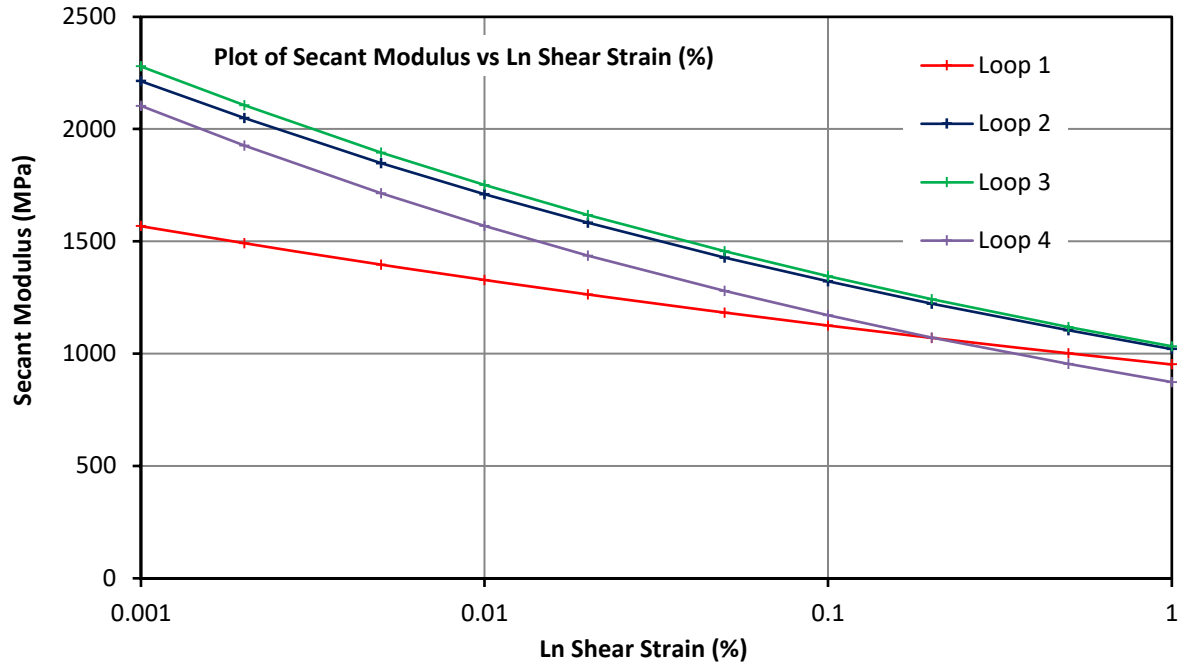
Loop 1		Loop 2		Loop 3		Loop 4	
Gradient(β)	Intercept	Gradient(β)	Intercept	Gradient(β)	Intercept	Gradient(β)	Intercept
0.928	736.424 (MPa)	0.888	686.312 (MPa)	0.885	688.661 (MPa)	0.873	556.911 (MPa)

Project	A303 Amesbury to Berwick Down	Figure No.	R71916 T04 - 07
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Analysis
 Secant Modulus - Shear Strain (%)



Test Date	27/10/2020	Test No.	4
Borehole	R71916	Test Depth (m)	33.00

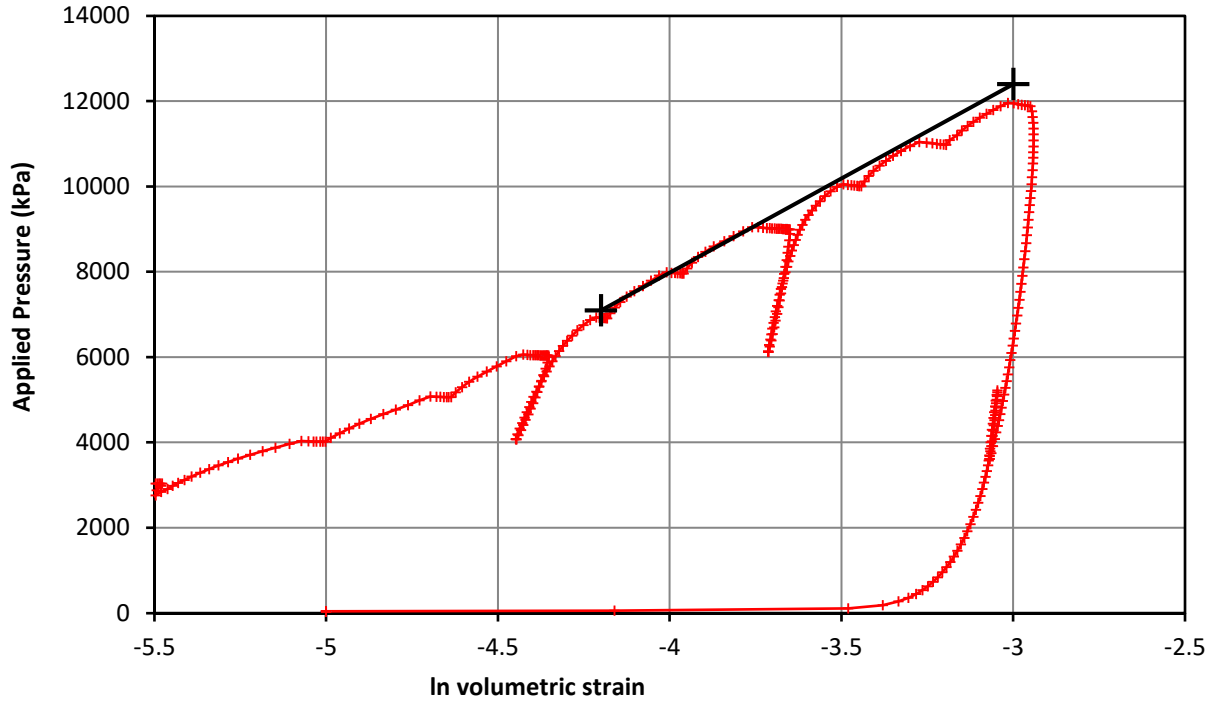


Shear Strain	Loop 1	Loop 2	Loop 3	Loop 4
0.001%	1568	2213	2279	2103
0.002%	1492	2048	2105	1926
0.005%	1396	1848	1895	1714
0.010%	1328	1710	1751	1569
0.020%	1263	1582	1617	1437
0.050%	1182	1428	1456	1279
0.100%	1125	1321	1345	1171
0.200%	1070	1223	1242	1072
0.500%	1001	1103	1119	954
1.000%	953	1021	1033	873

Project	A303 Amesbury to Berwick Down	Figure No.	R71916 T04 - 08
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test - Strength

Test Date	27/10/2020	Test No.	4
Borehole	R71916	Test Depth (m)	33.00



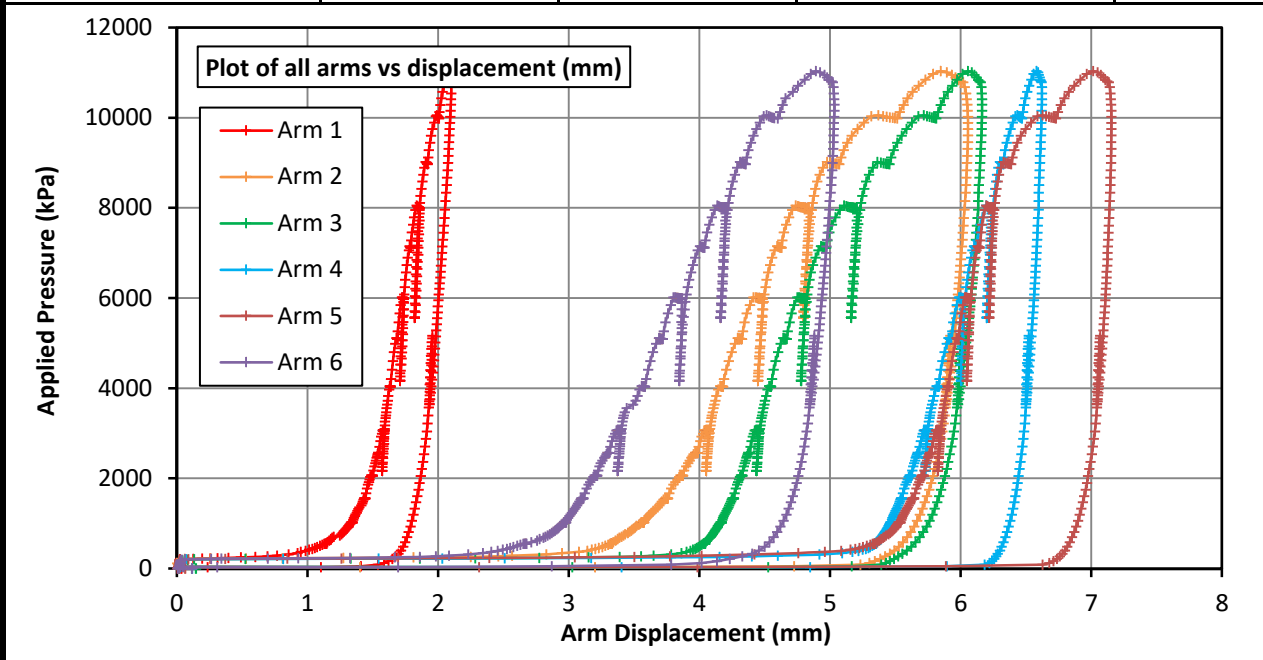
Strength	Undrained Shear	4417 kPa
	Limit Pressure	25650 kPa

Project	A303 Amesbury to Berwick Down	Figure No.	R71916 T04 - 09
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test Overview High Pressure Dilatometer (HPD)



Test Date	27/10/2020	Test No.	5
Borehole	R71916	Test Depth (m)	39.00
Coordinates (m)	411898.7 (E)	141782.1 (N)	Elevation (m) 99.37



Material description from borehole log:
Very weak medium density creamy white CHALK.

Test pocket conditions:

Total core recovery:	63 %	Test pocket depth range:	
Solid core recovery:	43 %	From:	38.10 m to: 40.50 m
Rock quality designation:	25 %	Flush:	Water

Test comment:
The test pocket was oversize with arms lifting off between 1.5 to 5.5mm. Arm 1 was pinned close to the pocket wall. The p_0 was estimated to be at 2495kPa, with the following loading section being long. Material yield is interpreted at 6795kPa with the test taken to a pressure of 11034kPa. The displacement-pressure response was variable in terms of expansion. Analysis of four unload-reload loops provides modulus values from 1071 to 1431MPa. Derived undrained shear strength analysis provides a value of 4300kPa.

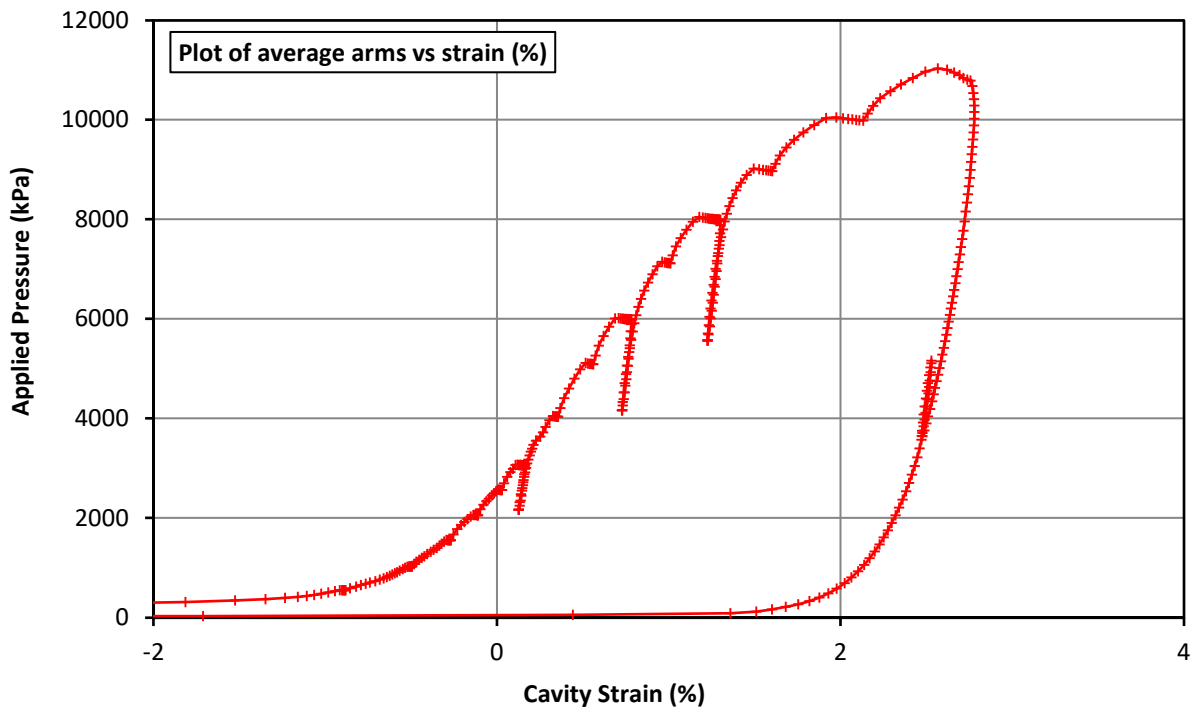
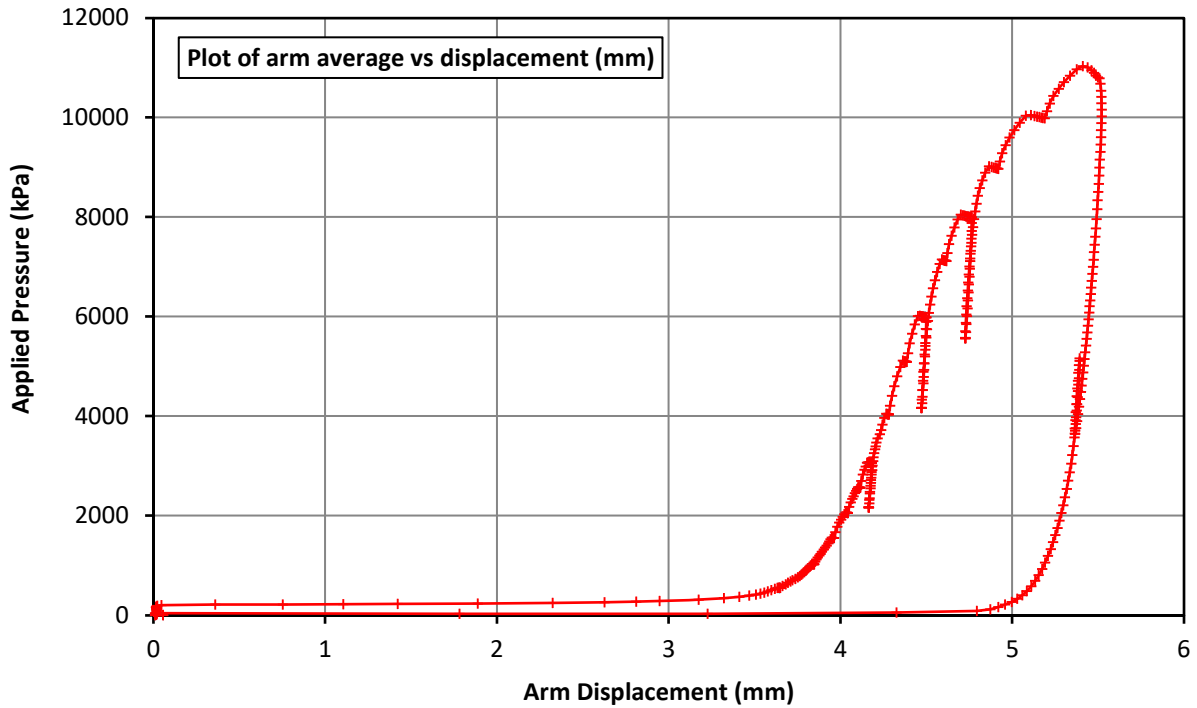
Test details:		Instrument:		Wally	
Drilling method:	Rotary coring		mV	mV/mm	mV
Casing depth:	38.00 m	Arm 1:	-2018.2	146.5	TPC A: -1610.2
Water level:	- m	Arm 2:	-2628.6	139.0	TPC B: -2060.3
		Arm 3:	-2320.7	146.3	
Test time:		Arm 4:	-2047.5	140.5	
Start (probe in):	13:01 hrs	Arm 5:	-2322.5	139.9	
Finish (probe out):	14:17 hrs	Arm 6:	-2054.8	126.0	

Project	A303 Amesbury to Berwick Down	Figure No.	R71916 T05 - 01
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test Overview



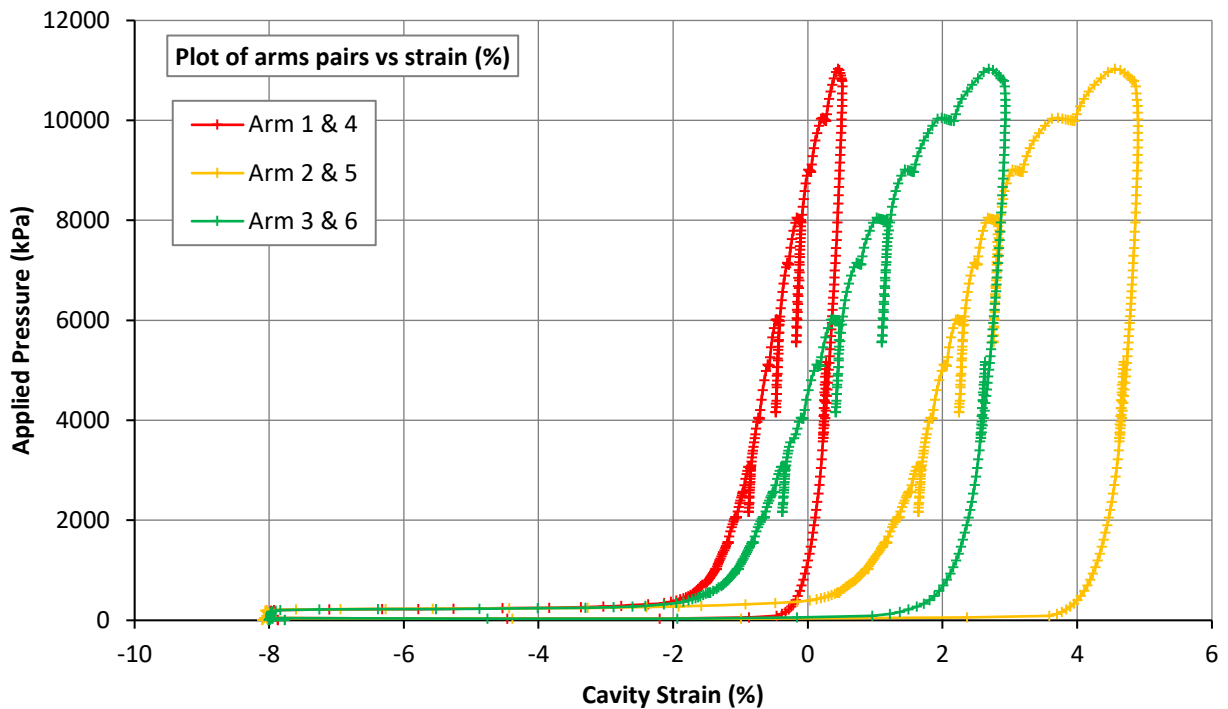
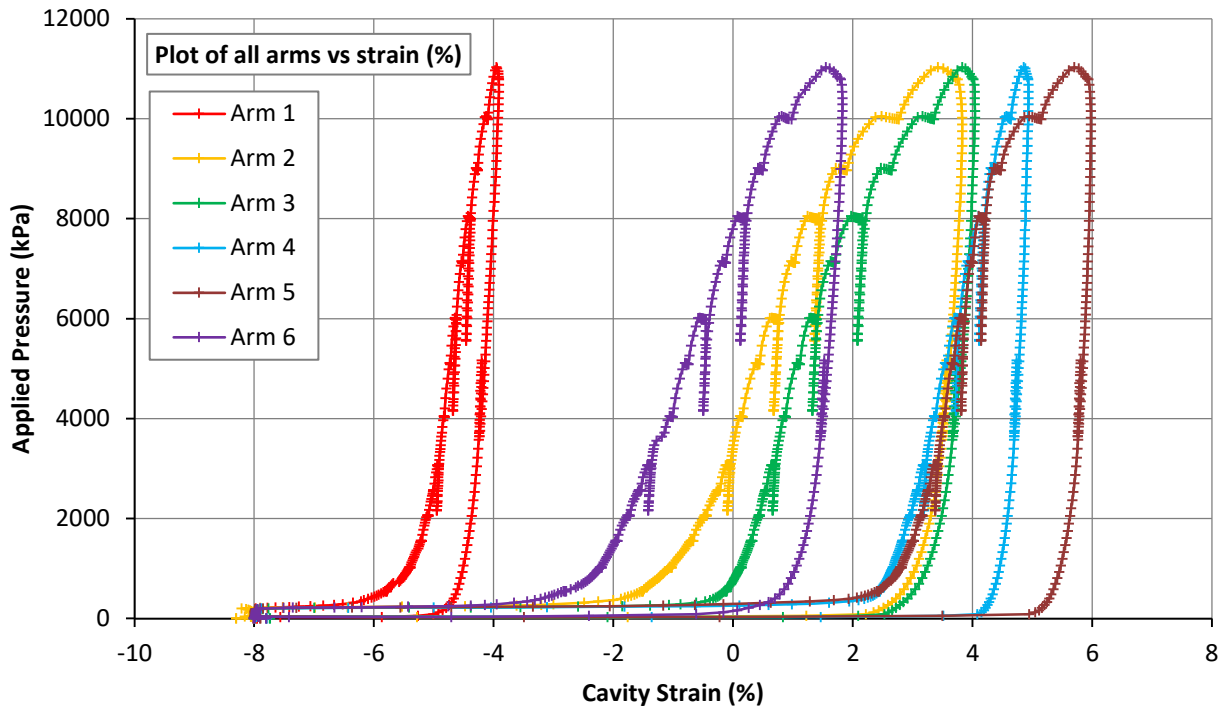
Test Date	27/10/2020	Test No.	5
Borehole	R71916	Test Depth (m)	39.00



Project	A303 Amesbury to Berwick Down	Figure No.	R71916 T05 - 02
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test - Arm Displacement vs Strain (%)

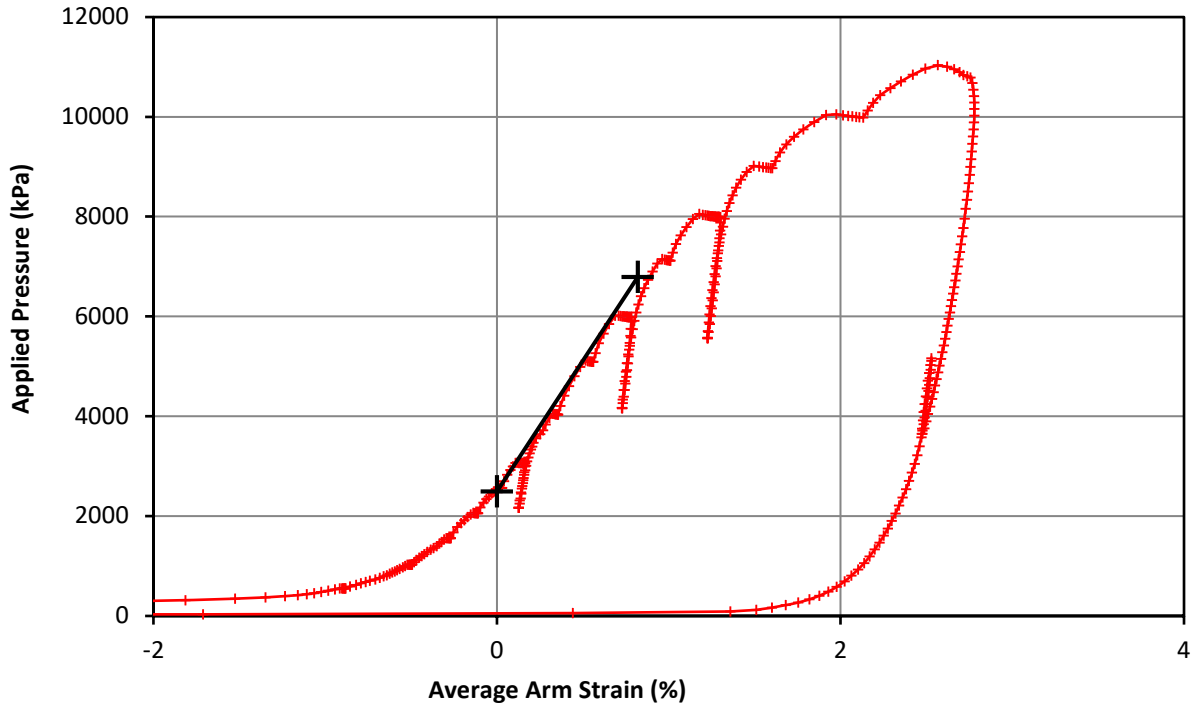
Test Date	27/10/2020	Test No.	5
Borehole	R71916	Test Depth (m)	39.00



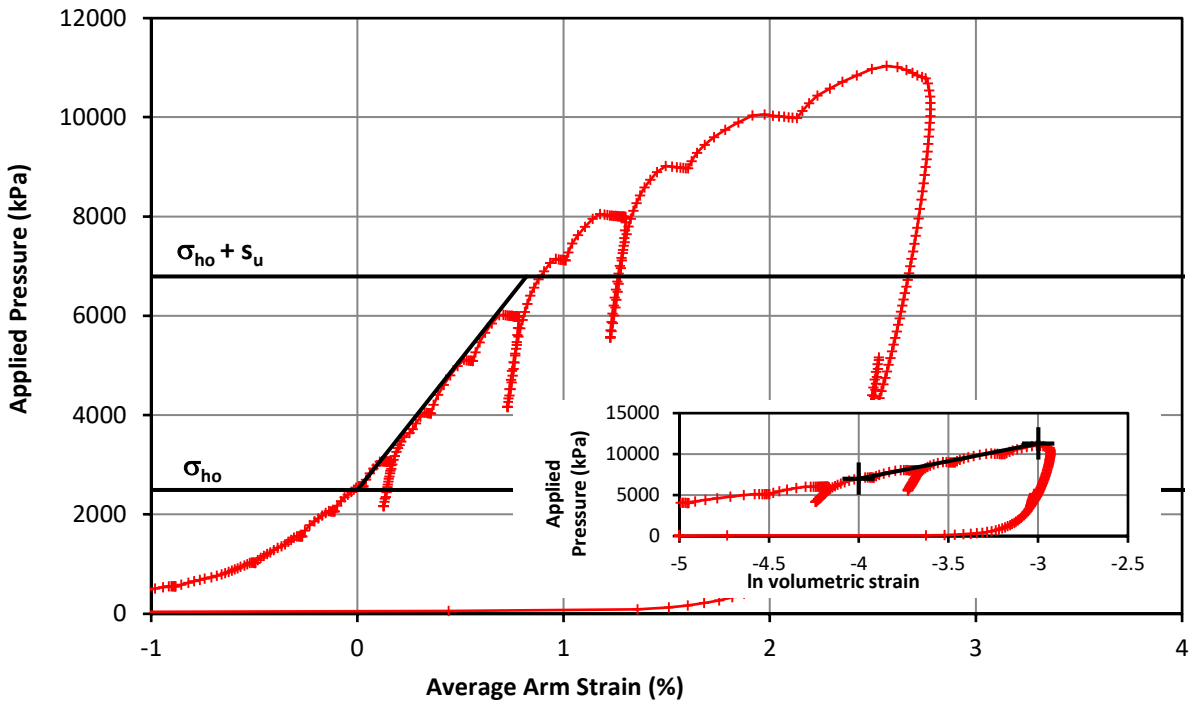
Project	A303 Amesbury to Berwick Down	Figure No.	R71916 T05 - 03
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test Initial Modulus & In Situ Horizontal Stress

Test Date	27/10/2020	Test No.	5
Borehole	R71916	Test Depth (m)	39.00



Initial Modulus	Shear Modulus	264.3 MPa
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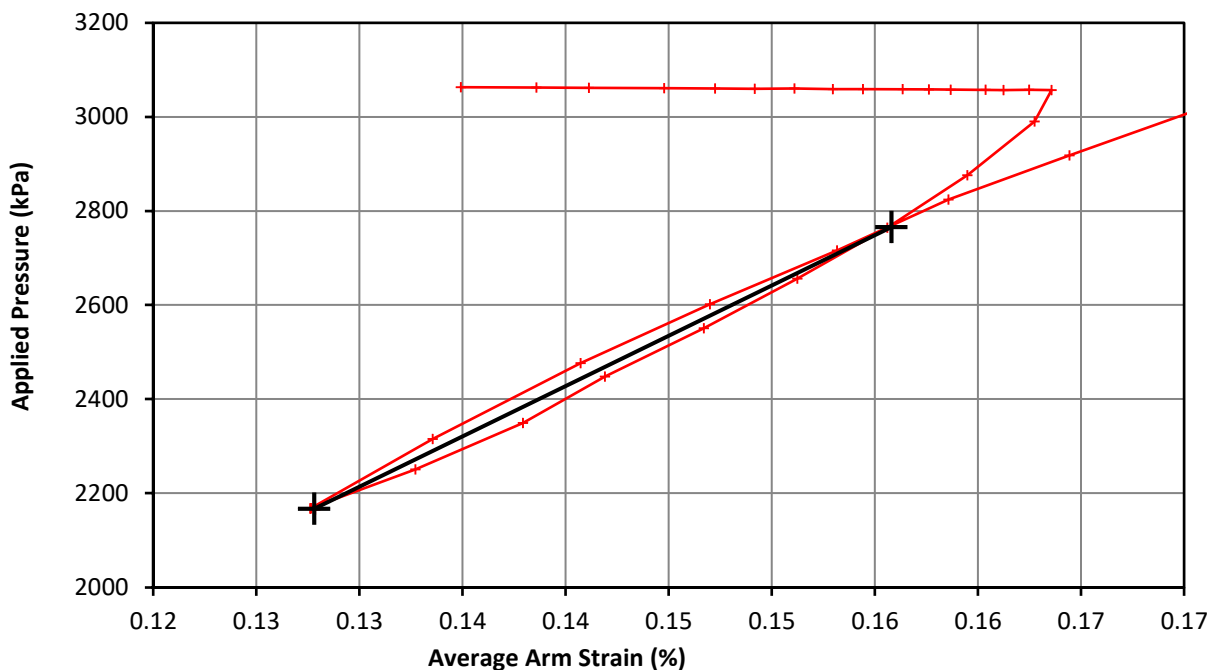
Marsland & Randolph	In situ horizontal stress	2495 kPa
	Undrained Strength	4300 kPa

Project	A303 Amesbury to Berwick Down	Figure No.	R71916 T05 - 04
Client	RPS Ltd		
Project No.	P1200116		

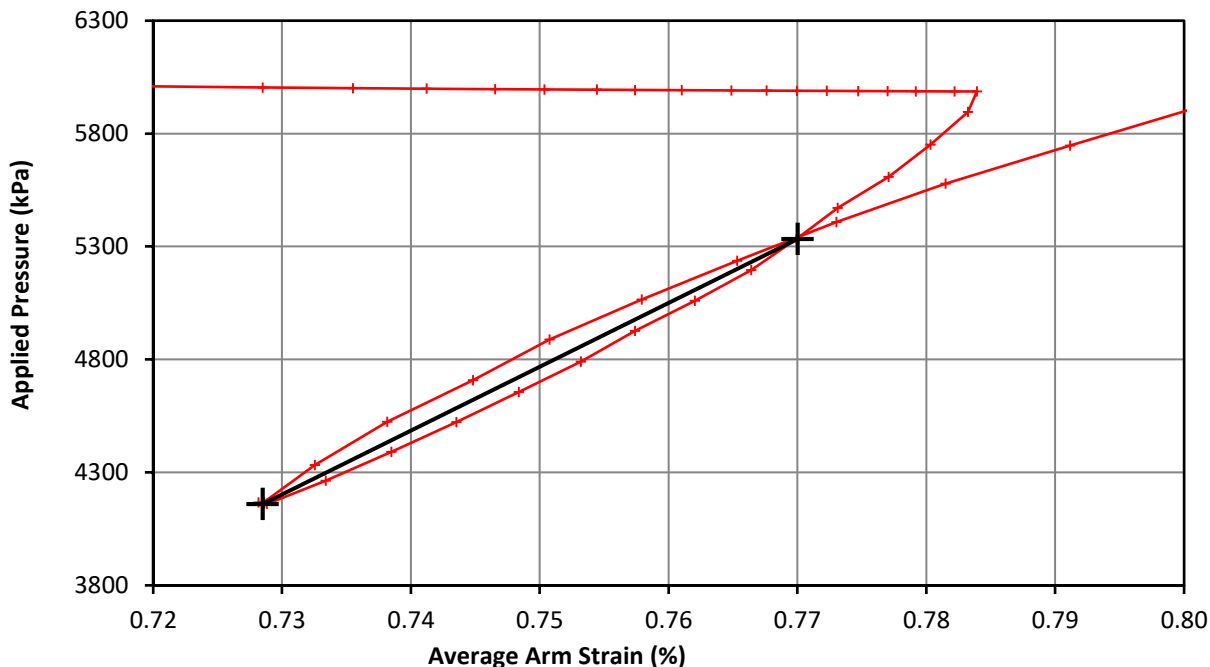
Pressuremeter Test Unload Reload Loop



Test Date	27/10/2020	Test No.	5
Borehole	R71916	Test Depth (m)	39.00



Loop 1	Shear Modulus	1071.3 MPa
	Cavity Strain Range	0.028 %



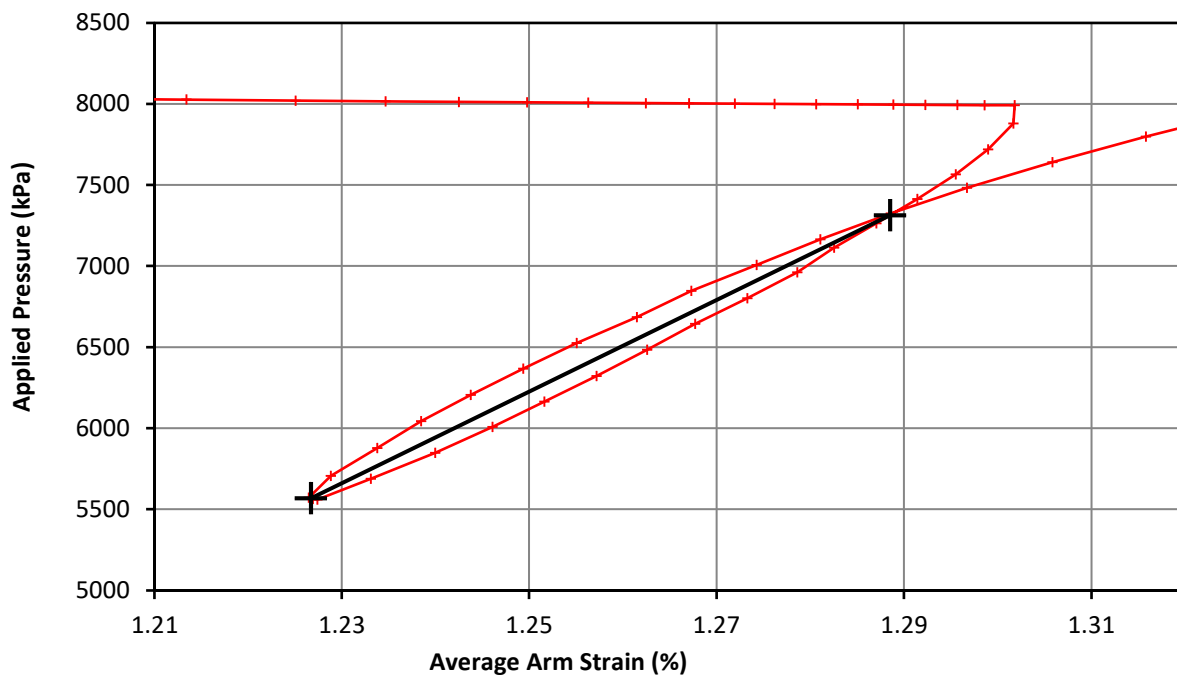
Loop 2	Shear Modulus	1424.1 MPa
	Cavity Strain Range	0.042 %

Project	A303 Amesbury to Berwick Down	Figure No.	R71916 T05 - 05
Client	RPS Ltd		
Project No.	P1200116		

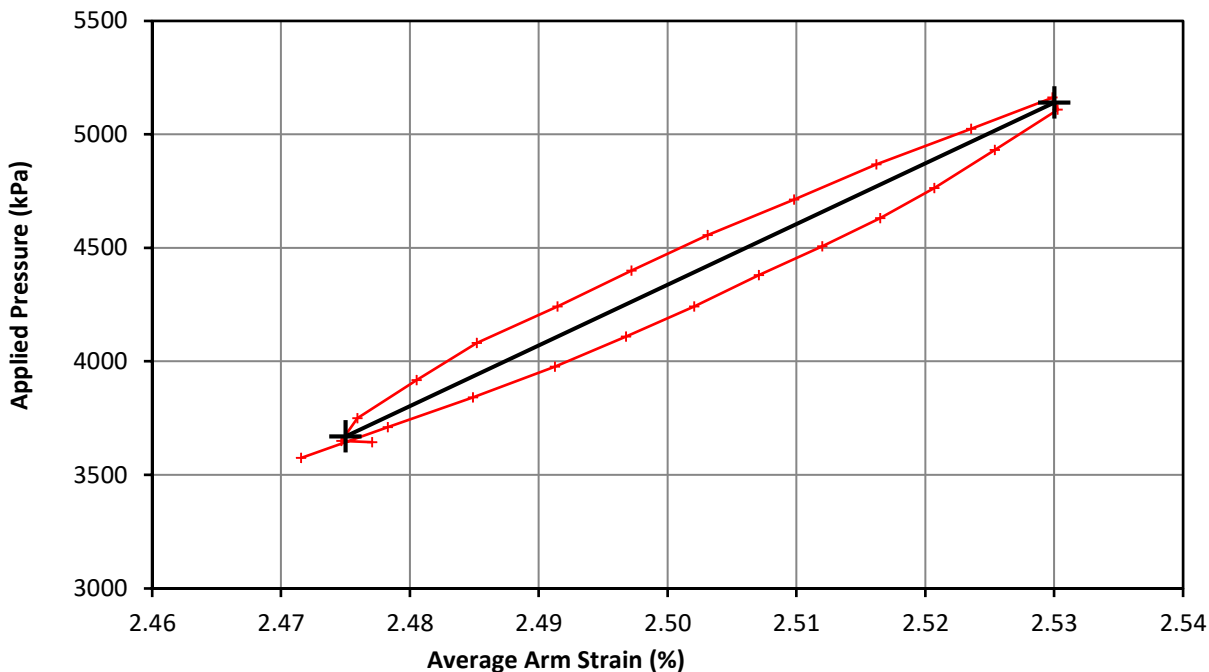
Pressuremeter Test Unload Reload Loop



Test Date	27/10/2020	Test No.	5
Borehole	R71916	Test Depth (m)	39.00



Loop 3	Shear Modulus	1430.8 MPa
	Cavity Strain Range	0.062 %



Loop 4	Shear Modulus	1370.2 MPa
	Cavity Strain Range	0.055 %

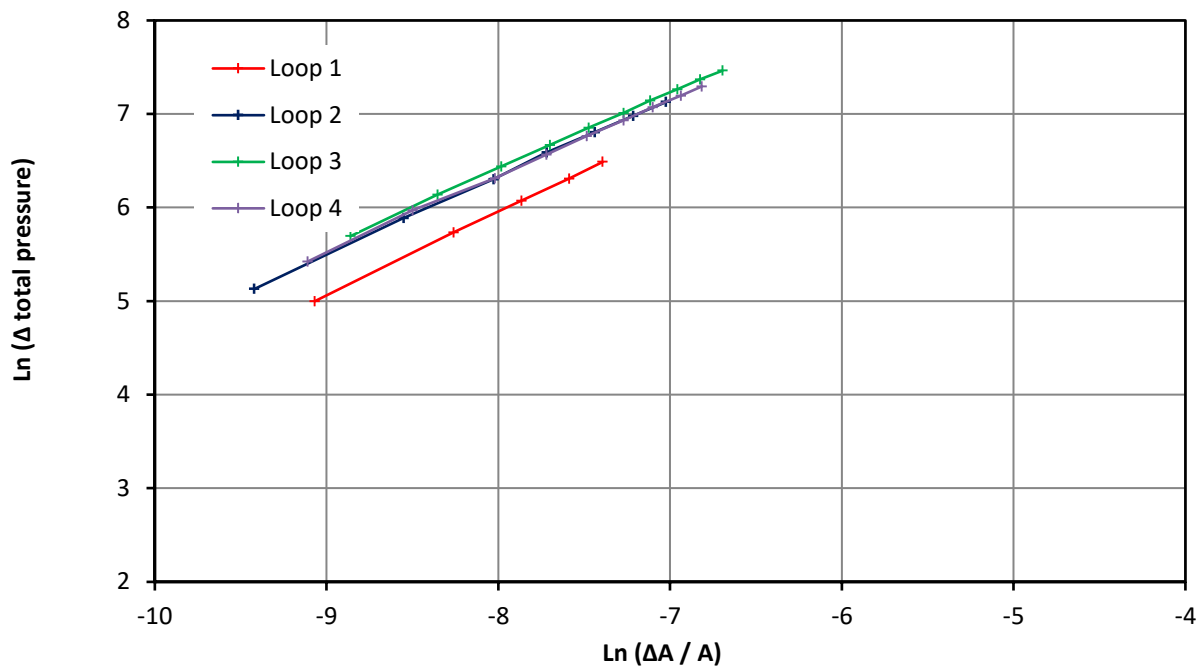
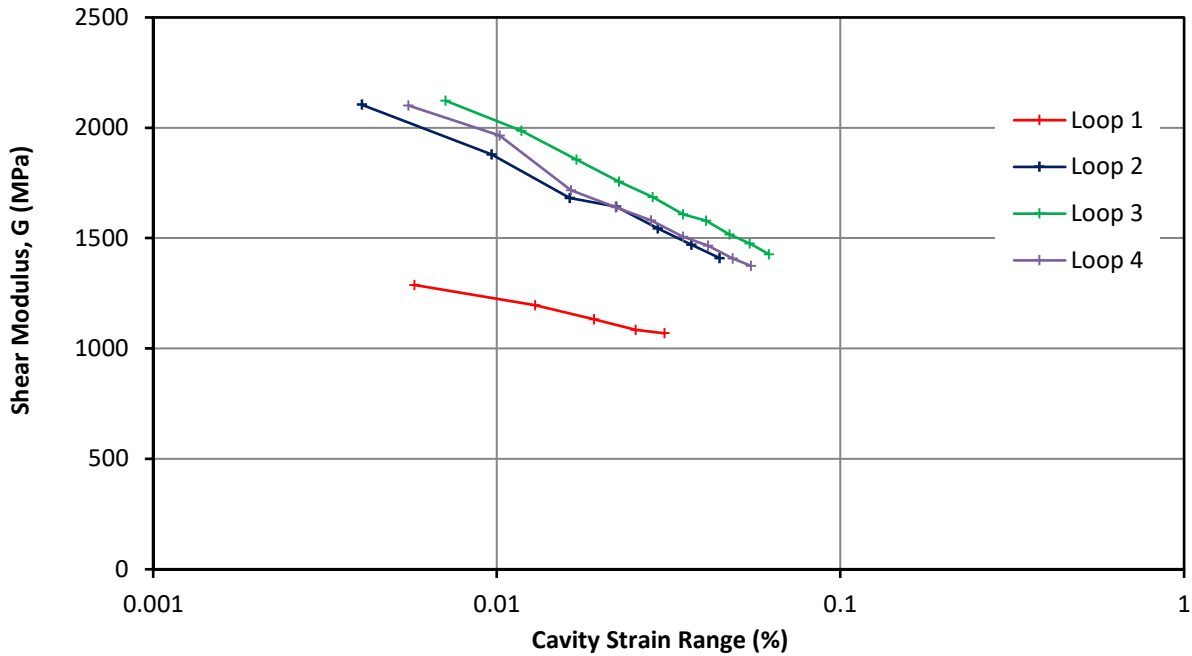
Project	A303 Amesbury to Berwick Down	Figure No.	R71916 T05 - 06
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Analysis

Small Strain Stiffness and Bolton and Whittle (1999)



Test Date	27/10/2020	Test No.	5
Borehole	R71916	Test Depth (m)	39.00



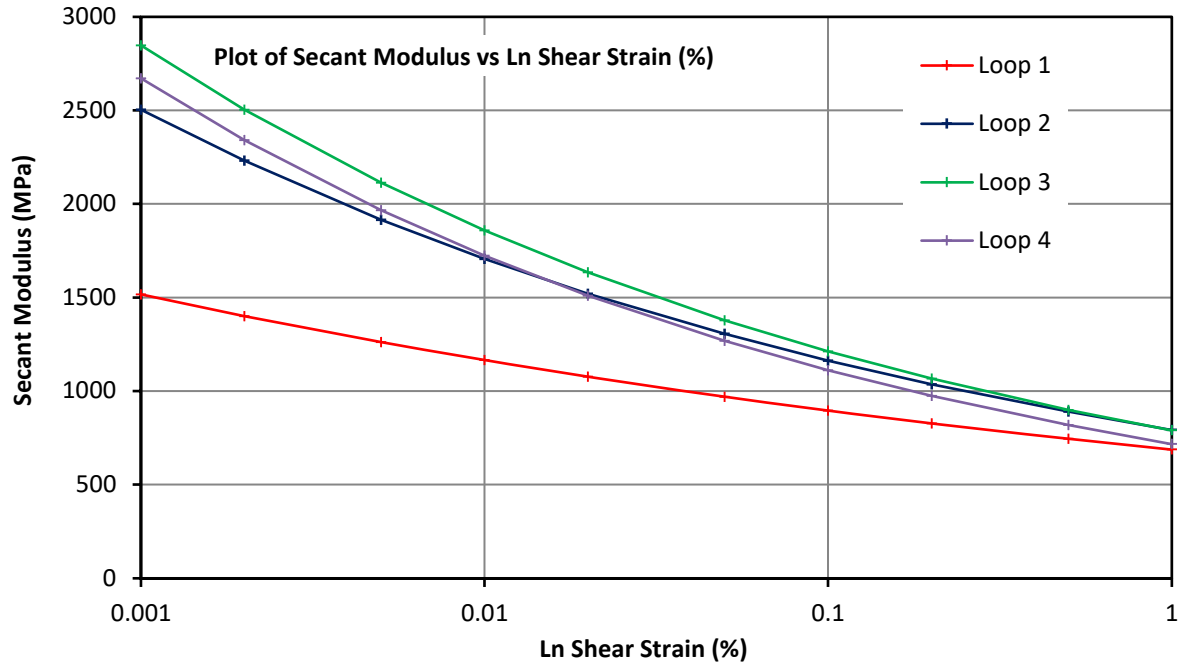
Loop 1		Loop 2		Loop 3		Loop 4	
Gradient(β)	Intercept	Gradient(β)	Intercept	Gradient(β)	Intercept	Gradient(β)	Intercept
0.886	458.660 (MPa)	0.834	441.827 (MPa)	0.815	413.469 (MPa)	0.810	368.350 (MPa)

Project	A303 Amesbury to Berwick Down	Figure No.	R71916 T05 - 07
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Analysis

Secant Modulus - Shear Strain (%)

Test Date	27/10/2020	Test No.	5
Borehole	R71916	Test Depth (m)	39.00

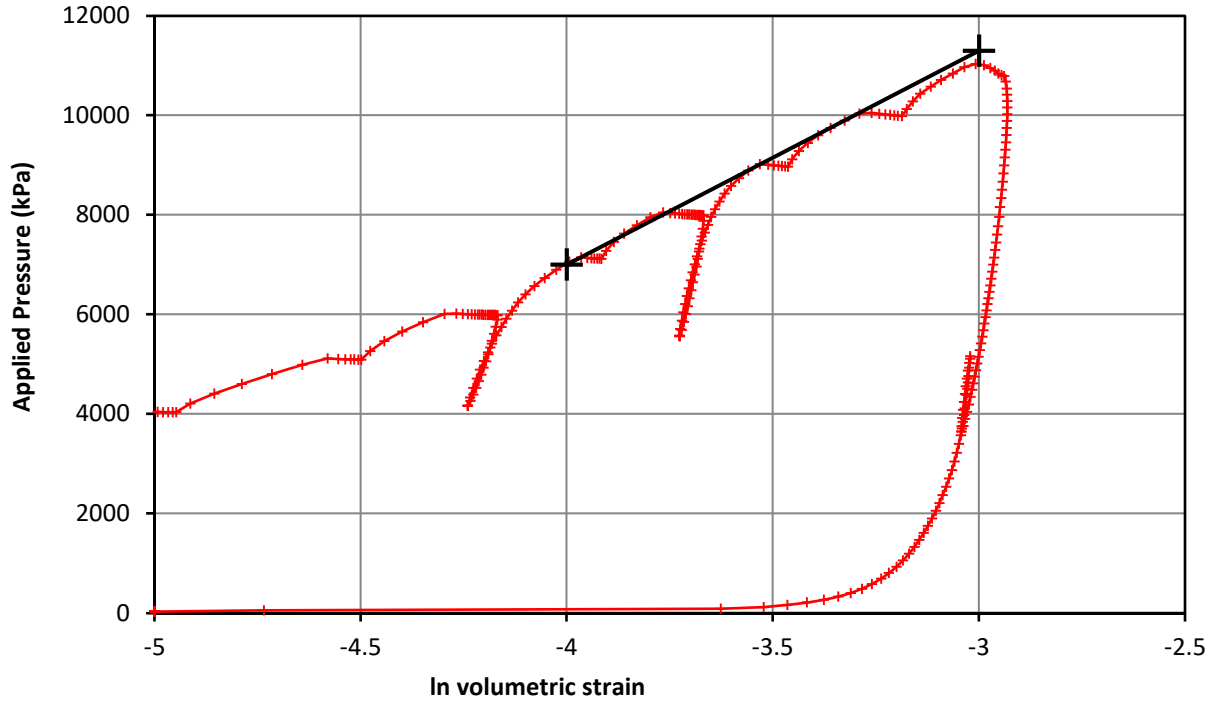


Shear Strain	Loop 1	Loop 2	Loop 3	Loop 4
0.001%	1516	2504	2847	2671
0.002%	1401	2231	2504	2341
0.005%	1261	1915	2112	1966
0.010%	1165	1706	1858	1723
0.020%	1076	1520	1634	1510
0.050%	969	1305	1378	1268
0.100%	895	1163	1212	1111
0.200%	827	1036	1066	974
0.500%	745	890	899	818
1.000%	688	793	791	717

Project	A303 Amesbury to Berwick Down	Figure No.	R71916 T05 - 08
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test - Strength

Test Date	27/10/2020	Test No.	5
Borehole	R71916	Test Depth (m)	39.00



Strength	Undrained Shear	4300 kPa
	Limit Pressure	24200 kPa

Project	A303 Amesbury to Berwick Down	Figure No.	R71916 T05 - 09
Client	RPS Ltd		
Project No.	P1200116		

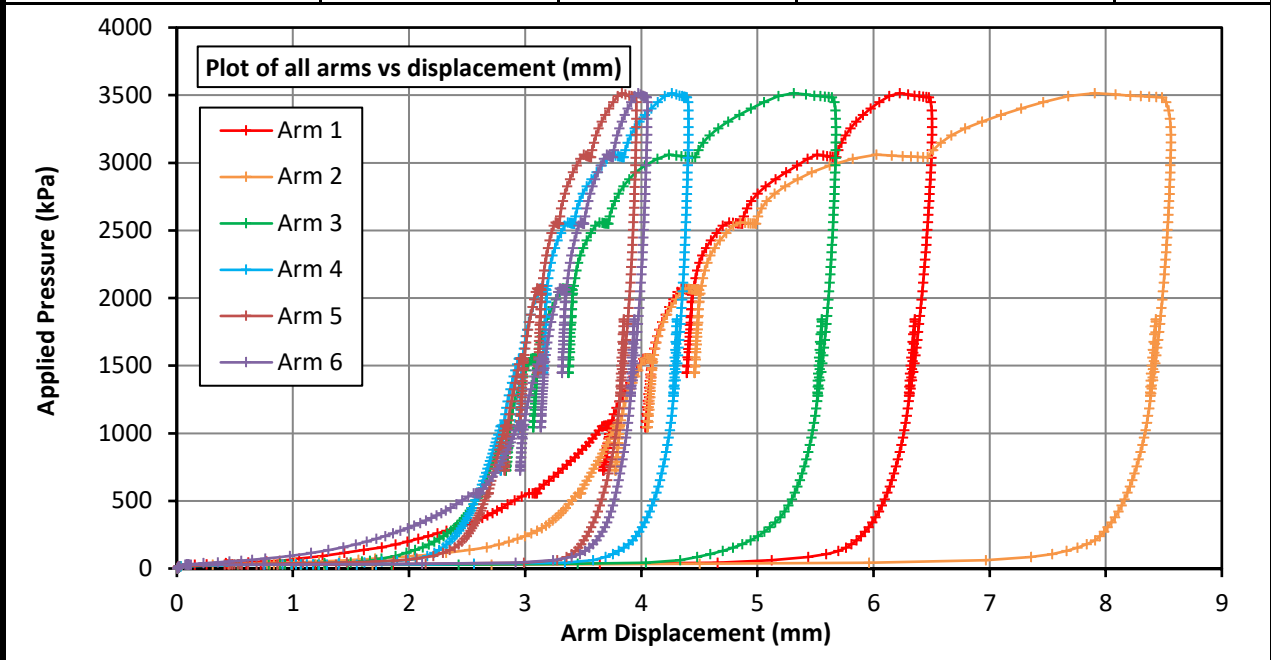
Pressuremeter Results Summary

Test	Depth (m)	Material description from borehole log	Max. test pressure (MPa)	P _o (kPa)	Undrained strength			G _i (MPa)	Loop No.	G _{ur} (MPa)	ε _c (%)	Non linear stiffness		Secant shear modulus G (MPa)		
					S _{u (M&R)} (kPa)	S _u (kPa)	P _L (kPa)					α (MPa)	β	Shear strain		
														0.1%	0.01%	0.001%
												R71917				
1	14.60	Structureless CHALK composed of slightly gravelly sandy silt.	3514	970	981	981	6001	61.8	1	234	0.057	79.620	0.861	207	285	393
									2	314	0.065	78.067	0.817	277	422	643
									3	400	0.060	96.983	0.816	345	526	802
									4	382	0.076	84.231	0.806	322	504	788
2	21.00	Weak low to medium density off mottled light grey slightly pink hue sandy CHALK with black specks.	7002	1425	2525	2201	13023	163.1	1	473	0.031	210.969	0.903	412	515	644
									2	889	0.021	369.064	0.899	743	939	1185
									3	1045	0.040	287.628	0.844	843	1206	1725
									4	945	0.061	248.290	0.833	788	1158	1702
3	27.00	Structureless CHALK composed of slightly sandy silty subangular to subrounded fine to coarse gravel with low cobble content.	7039	1531	3102	2930	15740	142.6	1	770	0.031	209.756	0.846	609	868	1239
									2	1072	0.036	358.023	0.868	888	1203	1628
									3	940	0.059	259.812	0.842	775	1115	1604
4	33.00	Structureless CHALK composed of cream slightly sandy silt.	7009	1932	2933	2933	16927	205.1	1	784	0.046	188.311	0.824	635	951	1426
									2	1030	0.061	252.386	0.820	876	1326	2008
									3	1144	0.069	269.560	0.810	998	1544	2389
									4	1259	0.025	255.802	0.820	887	1343	2033
5	39.00	Very weak medium density off white with black specks and orange staining CHALK.	12058	2461	4319	4500	24310	229.5	1	982	0.023	262.097	0.849	746	1058	1499
									2	1278	0.036	327.325	0.842	978	1409	2030
									3	1363	0.051	384.704	0.847	1105	1572	2234
									4	1000	0.087	282.177	0.833	892	1309	1921

Project	A303 Amesbury to Berwick Down
Client	RPS
Project No.	P1200116
Table No.	R71917

Pressuremeter Test Overview High Pressure Dilatometer (HPD)

Test Date	29/10/2020	Test No.	1
Borehole	R71917	Test Depth (m)	14.60
Coordinates (m)	-	Elevation (m)	-



Material description from borehole log:
CHALK.

Test pocket conditions:

Total core recovery:	- %	Test pocket depth range:	
Solid core recovery:	- %	From:	14.00 m to: 16.50 m
Rock quality designation:	- %	Flush:	Water

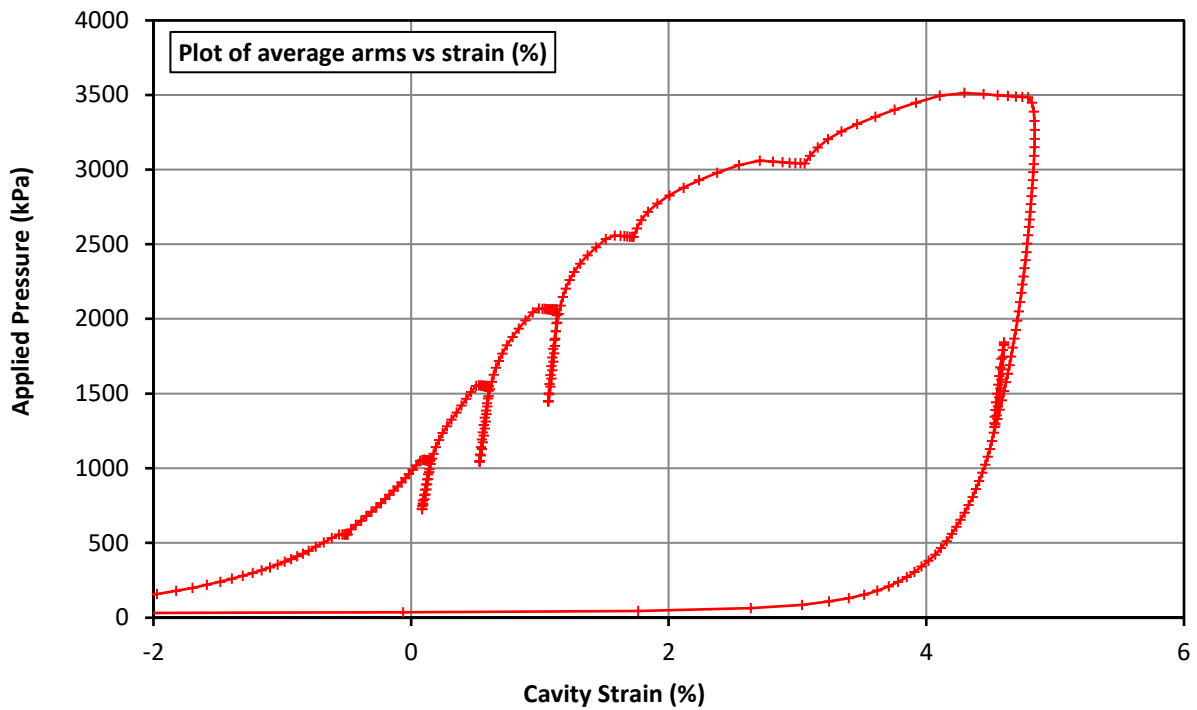
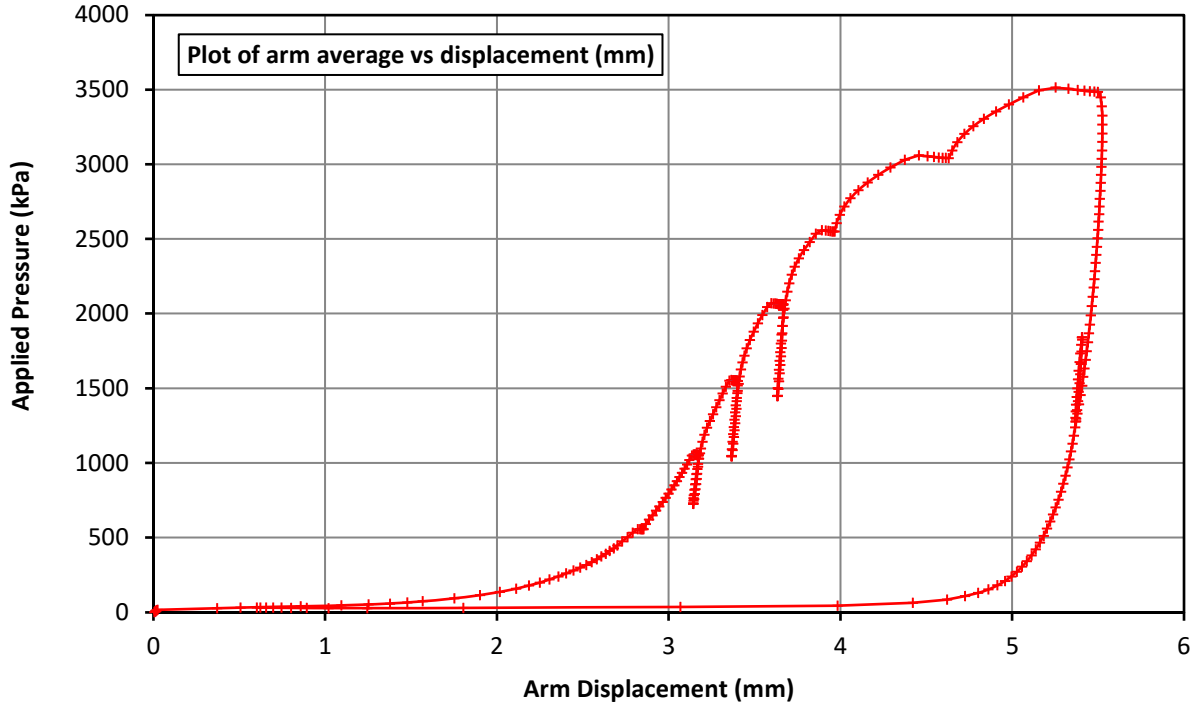
Test comment:
The test pocket was good with arms lifting off between 2.5 to 4.0mm. Arms 1 & 2 showed some disturbance during initial loading. The po was estimated to be at 970kPa, with the following loading section being relatively short. Material yield is interpreted at 1951kPa with the test taken to a pressure of 3514kPa. The displacement-pressure response was variable with excessive expansion on arm 2. Analysis of four unload-reload loops provides modulus values from 234 to 400MPa. Derived undrained shear strength analysis provides a value of 981kPa.

Test details:		Instrument:		Wally		
Drilling method:	Rotary coring		mV	mV/mm	mV	mV/MPa
Casing depth:	- m	Arm 1:	-2009.3	146.5	TPC A:	-1610.5 109.0
Water level:	- m	Arm 2:	-2652.5	139.0	TPC B:	-2060.8 109.1
		Arm 3:	-2278.6	146.3		
Test time:		Arm 4:	-2019.4	140.5		
Start (probe in):	12:40 hrs	Arm 5:	-2300.7	139.9		
Finish (probe out):	13:40 hrs	Arm 6:	-2050.2	126.0		

Project	A303 Stonehenge HPD	Figure No.	R71917 T01 - 01
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test Overview

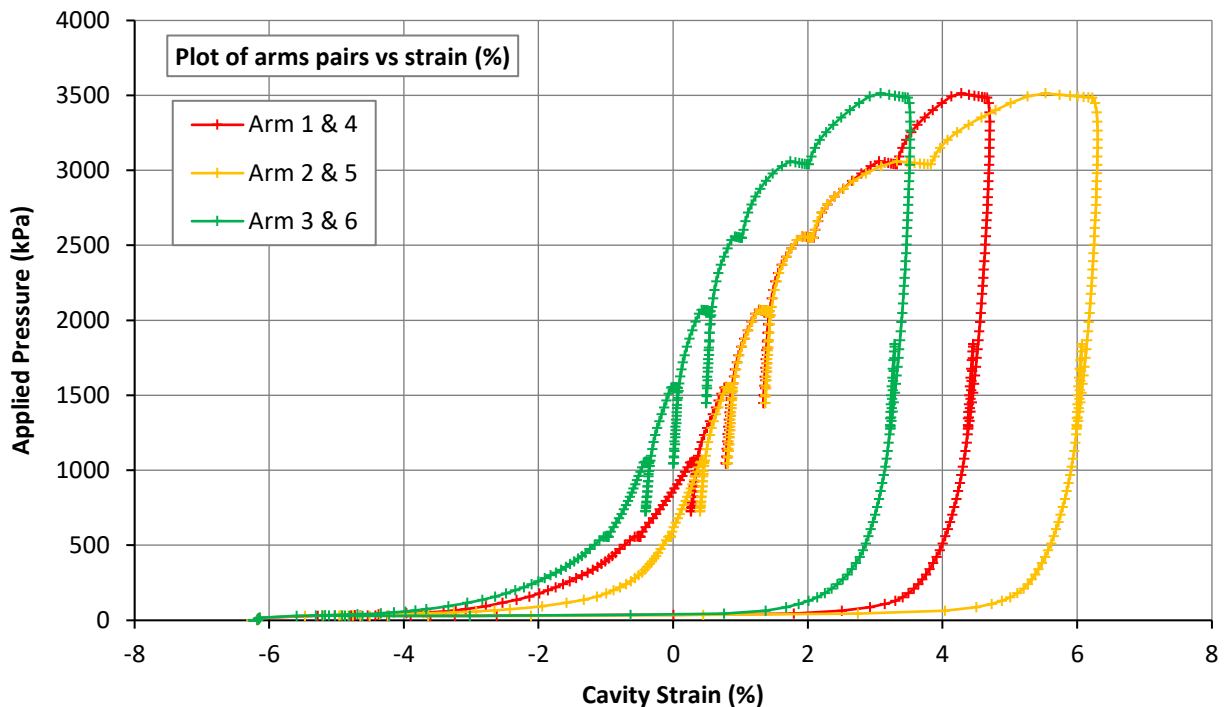
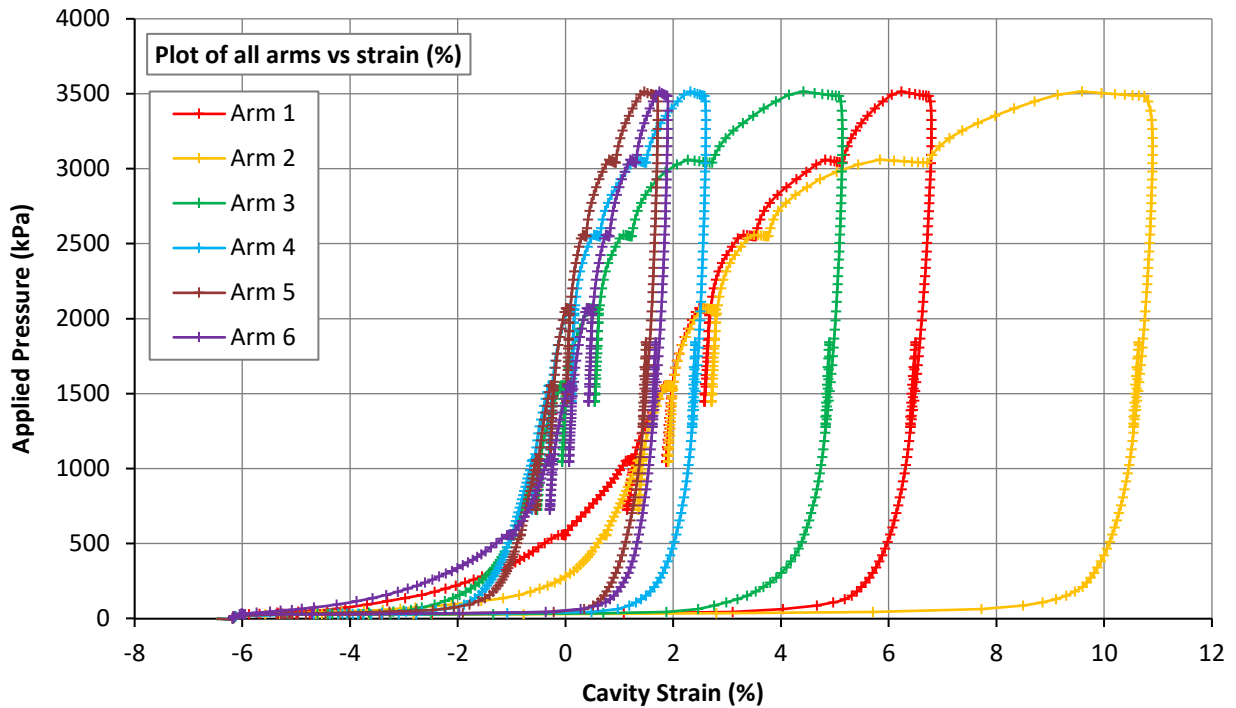
Test Date	29/10/2020	Test No.	1
Borehole	R71917	Test Depth (m)	14.60



Project	A303 Stonehenge HPD	Figure No.	R71917 T01 - 02
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test - Arm Displacement vs Strain (%)

Test Date	29/10/2020	Test No.	1
Borehole	R71917	Test Depth (m)	14.60

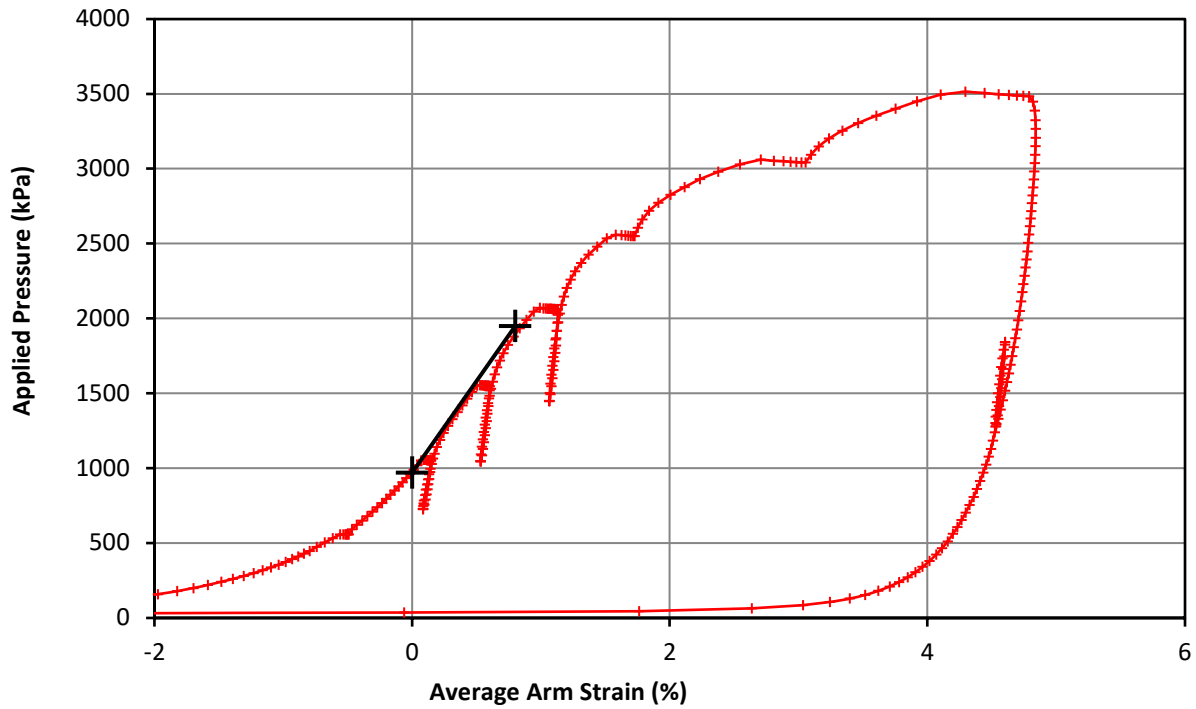


Project	A303 Stonehenge HPD	Figure No.	R71917 T01 - 03
Client	RPS Ltd		
Project No.	P1200116		

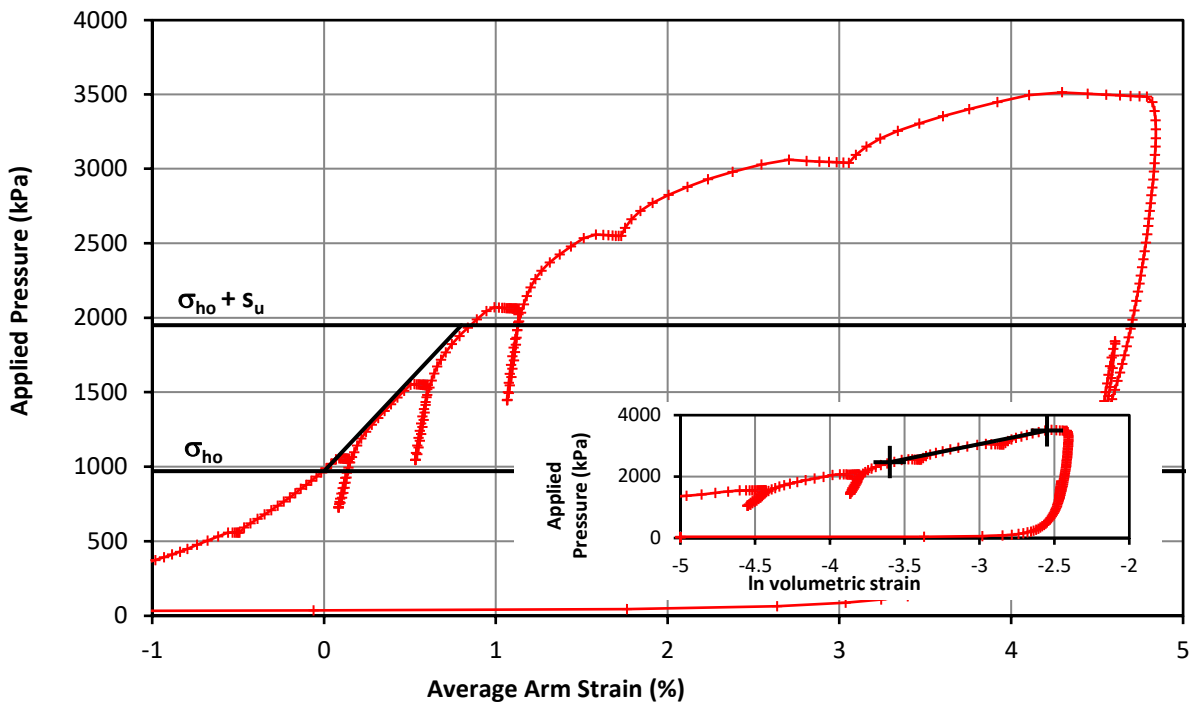
Pressuremeter Test Initial Modulus & In Situ Horizontal Stress



Test Date	29/10/2020	Test No.	1
Borehole	R71917	Test Depth (m)	14.60



Initial Modulus	Shear Modulus	61.8 MPa
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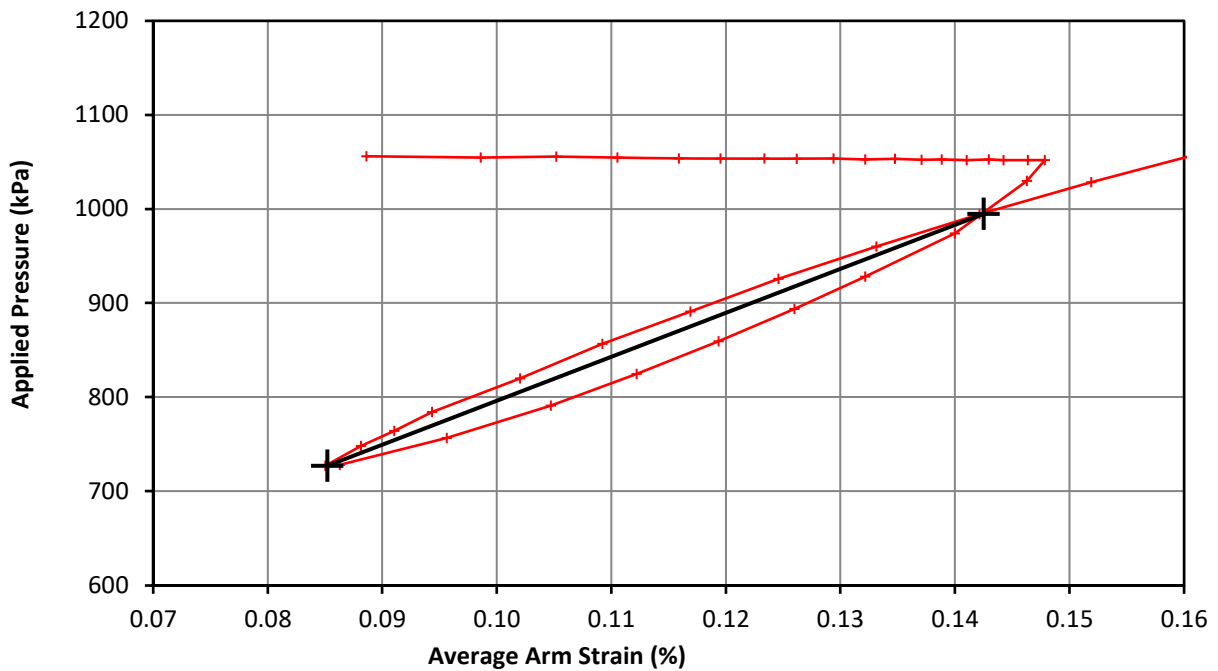
Marsland & Randolph	In situ horizontal stress	970 kPa
	Undrained Strength	981 kPa

Project	A303 Stonehenge HPD	Figure No.	R71917 T01 - 04
Client	RPS Ltd		
Project No.	P1200116		

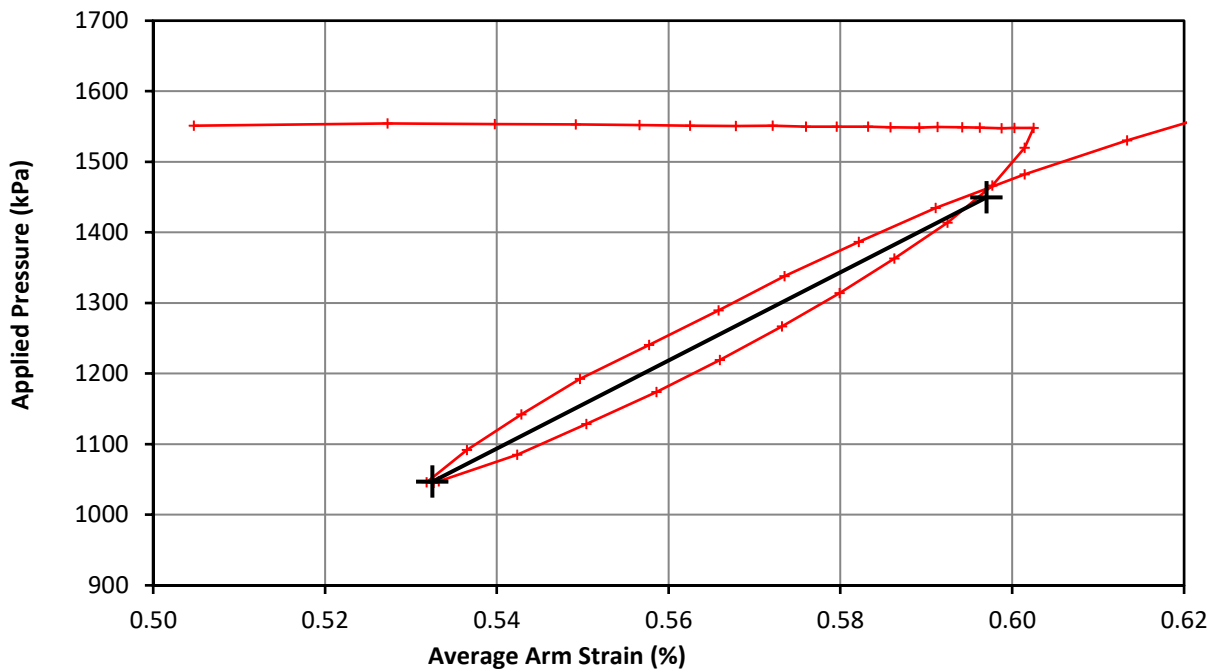
Pressuremeter Test Unload Reload Loop



Test Date	29/10/2020	Test No.	1
Borehole	R71917	Test Depth (m)	14.60



Loop 1	Shear Modulus	234.2 MPa
	Cavity Strain Range	0.057 %



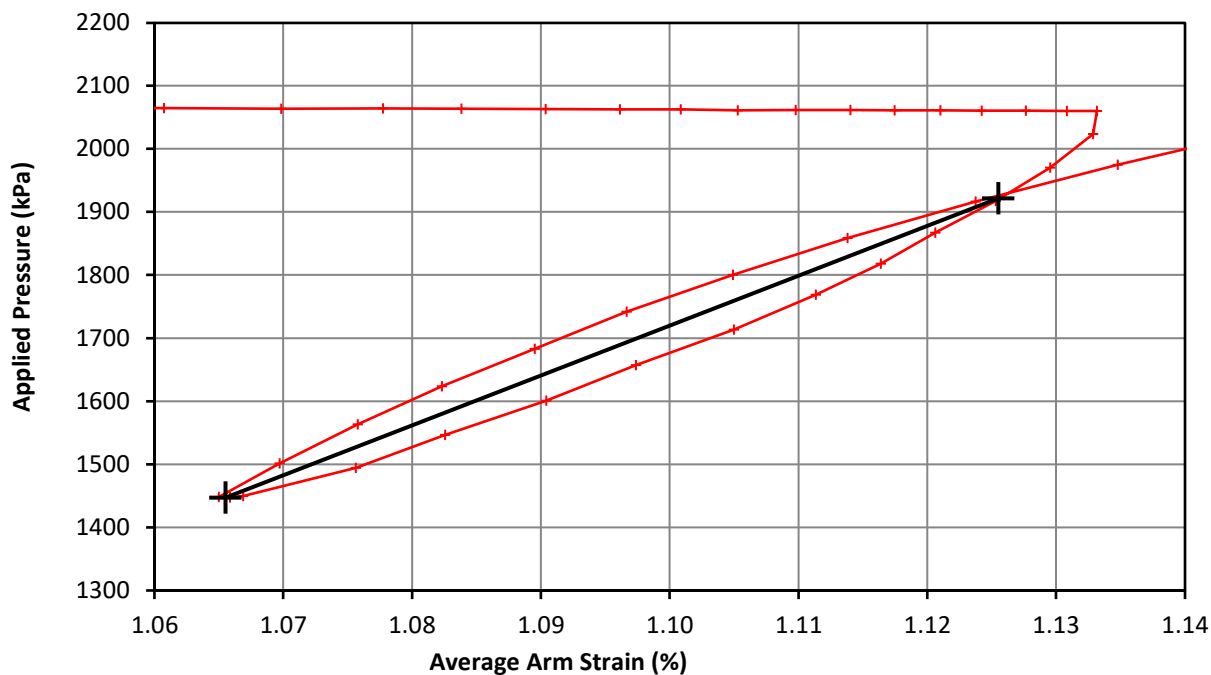
Loop 2	Shear Modulus	314.3 MPa
	Cavity Strain Range	0.065 %

Project	A303 Stonehenge HPD	Figure No.	R71917 T01 - 05
Client	RPS Ltd		
Project No.	P1200116		

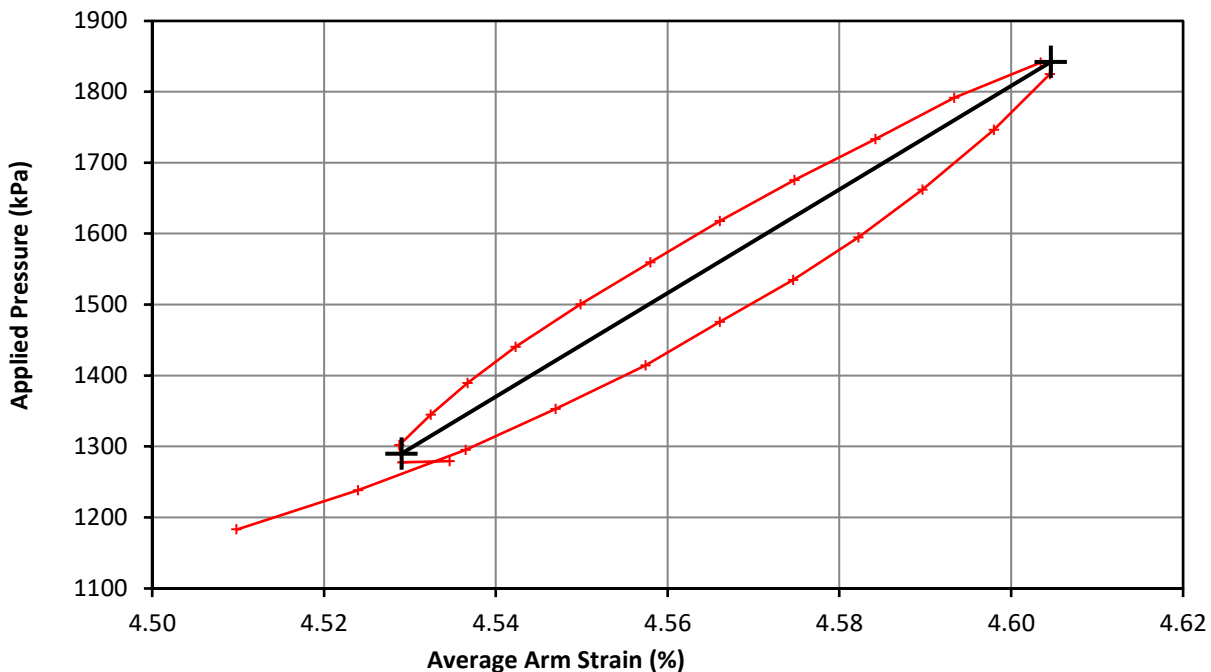
Pressuremeter Test Unload Reload Loop



Test Date	29/10/2020	Test No.	1
Borehole	R71917	Test Depth (m)	14.60



Loop 3	Shear Modulus	400.3 MPa
	Cavity Strain Range	0.060 %



Loop 4	Shear Modulus	381.9 MPa
	Cavity Strain Range	0.076 %

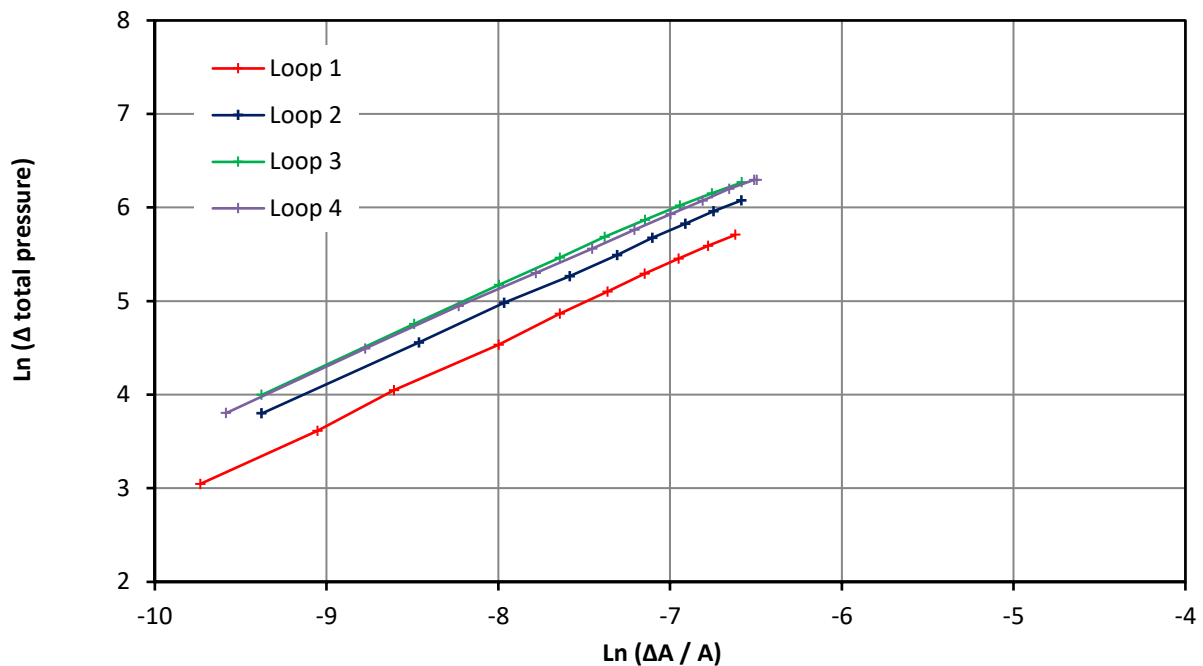
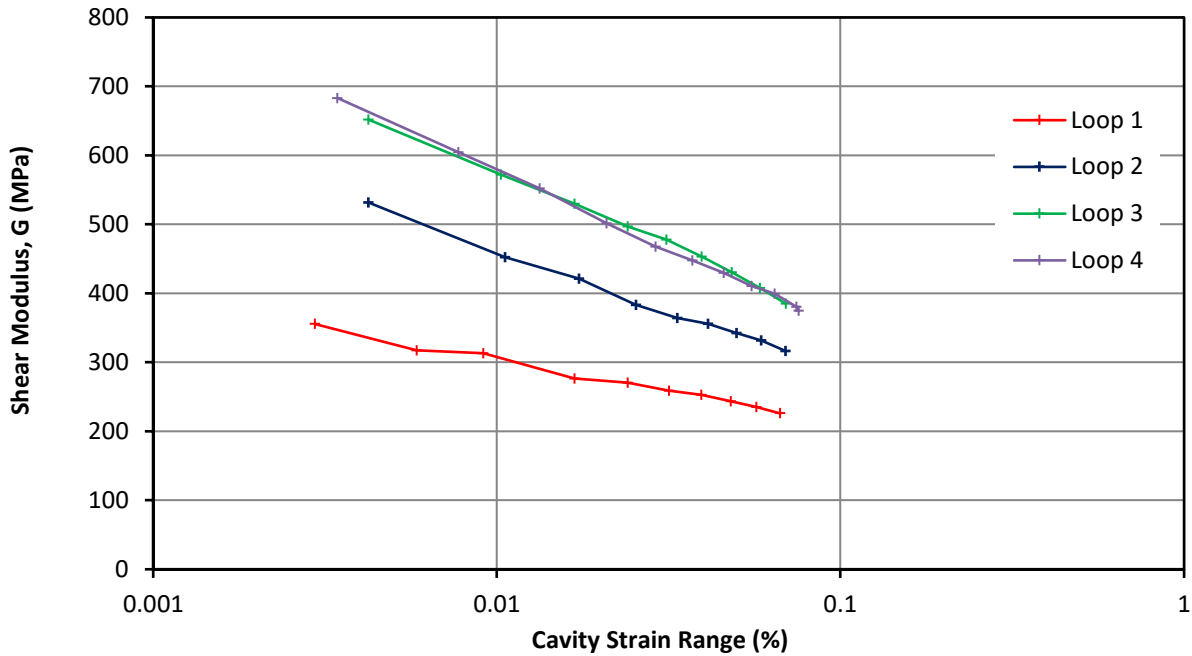
Project	A303 Stonehenge HPD	Figure No.	R71917 T01 - 06
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Analysis

Small Strain Stiffness and Bolton and Whittle (1999)



Test Date	29/10/2020	Test No.	1
Borehole	R71917	Test Depth (m)	14.60



Loop 1		Loop 2		Loop 3		Loop 4	
Gradient(β)	Intercept	Gradient(β)	Intercept	Gradient(β)	Intercept	Gradient(β)	Intercept
0.861	92.430 (MPa)	0.817	95.576 (MPa)	0.816	118.781 (MPa)	0.806	104.533 (MPa)

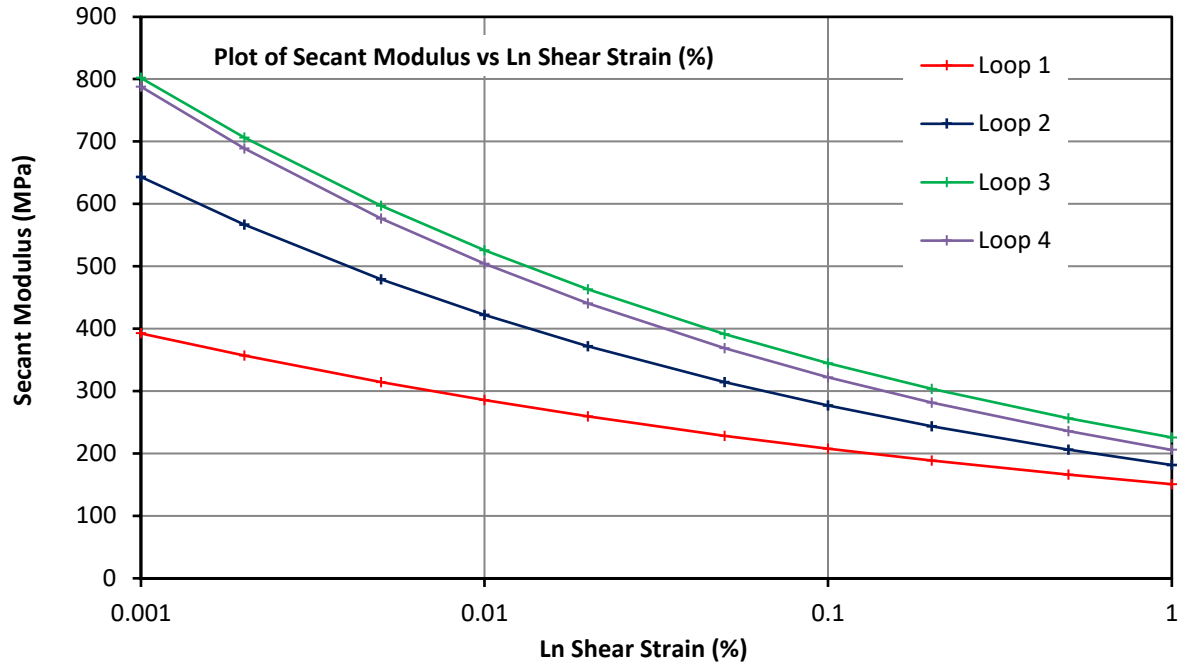
Project	A303 Stonehenge HPD	Figure No.	R71917 T01 - 07
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Analysis

Secant Modulus - Shear Strain (%)



Test Date	29/10/2020	Test No.	1
Borehole	R71917	Test Depth (m)	14.60

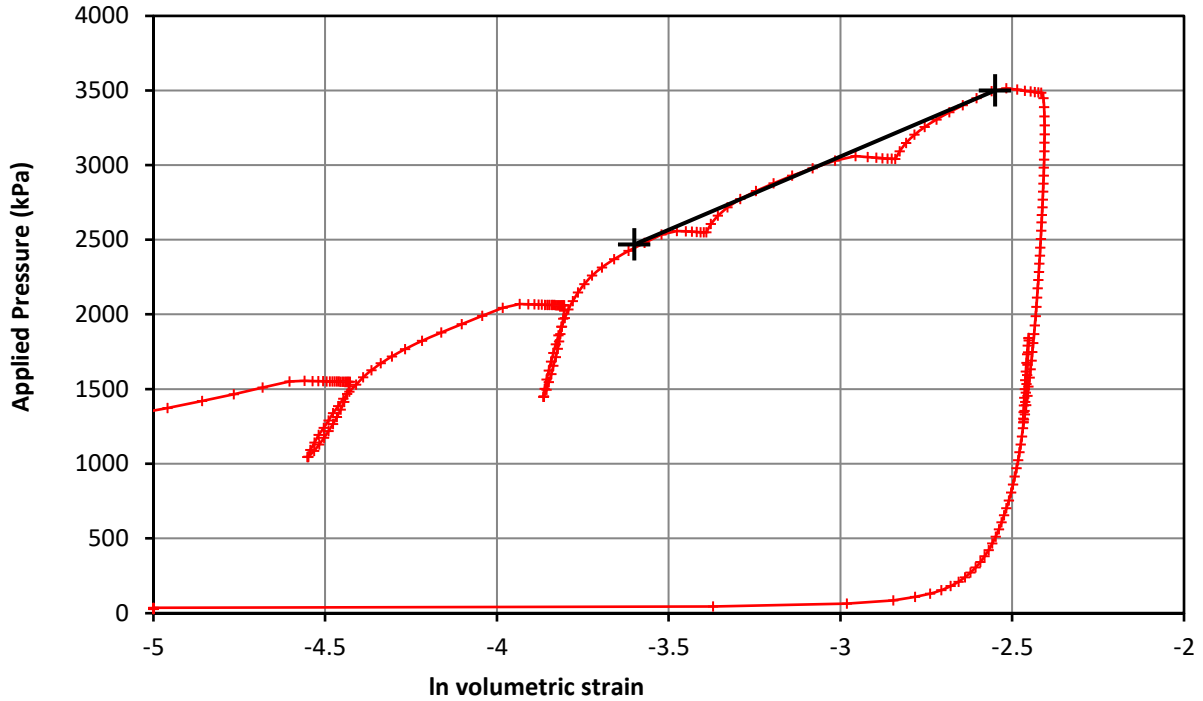


Shear Strain	Loop 1	Loop 2	Loop 3	Loop 4
0.001%	393	643	802	788
0.002%	357	567	706	689
0.005%	314	479	597	577
0.010%	285	422	526	504
0.020%	259	372	463	440
0.050%	228	314	391	369
0.100%	207	277	345	322
0.200%	188	244	303	282
0.500%	166	206	256	236
1.000%	151	181	226	206

Project	A303 Stonehenge HPD	Figure No.	R71917 T01 - 08
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test - Strength

Test Date	29/10/2020	Test No.	1
Borehole	R71917	Test Depth (m)	14.60



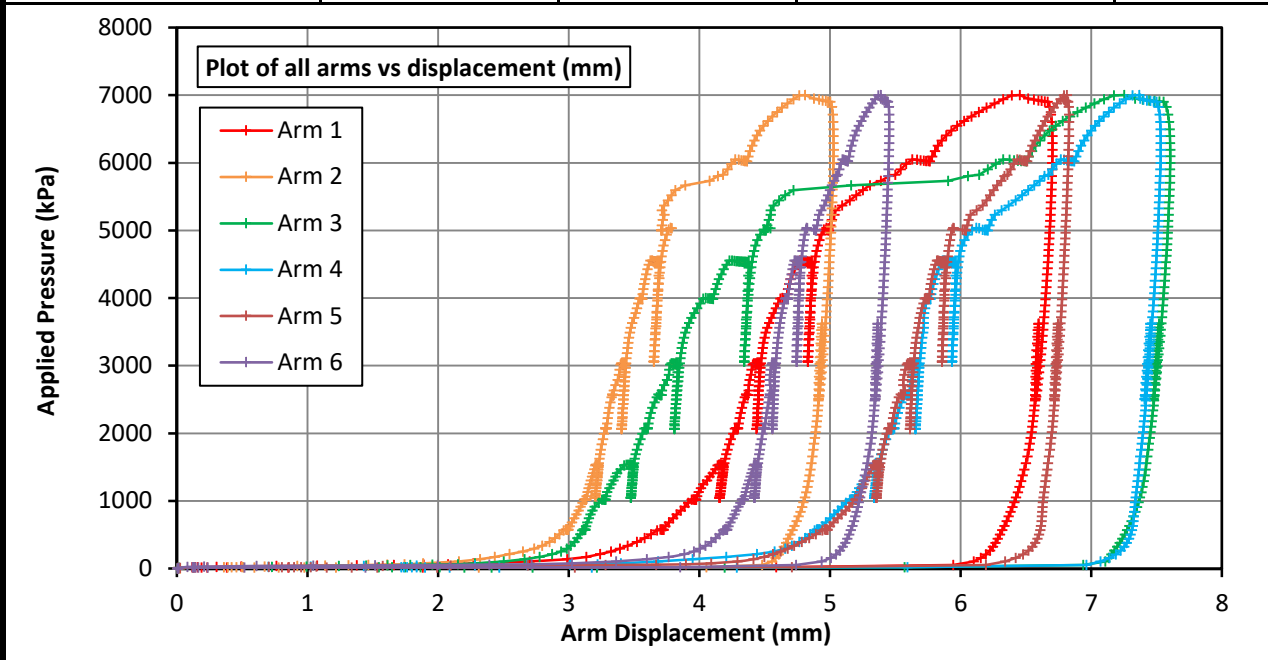
Strength	Undrained Shear	981 kPa
	Limit Pressure	6001 kPa

Project	A303 Stonehenge HPD	Figure No.	R71917 T01 - 09
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test Overview High Pressure Dilatometer (HPD)



Test Date	30/10/2020	Test No.	2
Borehole	R71917	Test Depth (m)	21.00
Coordinates (m)	412110.3 (E)	141828.7 (N)	Elevation (m) 94.57



Material description from borehole log:
Weak low to medium density off mottled light grey slightly pink hue sandy CHALK with black specks.

Test pocket conditions:

Total core recovery:	52 %	Test pocket depth range:	
Solid core recovery:	24 %	From:	20.00 m to: 22.50 m
Rock quality designation:	5 %	Flush:	Water

Test comment:
The test pocket was oversized with arms lifting off between 3 to 5.5mm. The p_0 was estimated to be at 1425kPa, with the following loading section being relatively long. Sudden material yield is interpreted at 3950kPa with further failure at 5600MPa, seen particularly on arm 3. The test was taken to a pressure of 7002kPa. The displacement-pressure response was variable in terms of expansion, especially on arms 3, 4 & 5. Analysis of four unload-reload loops provides modulus values from 473 to 1045MPa. Derived undrained shear strength analysis provides values of 2201 to 2525kPa.

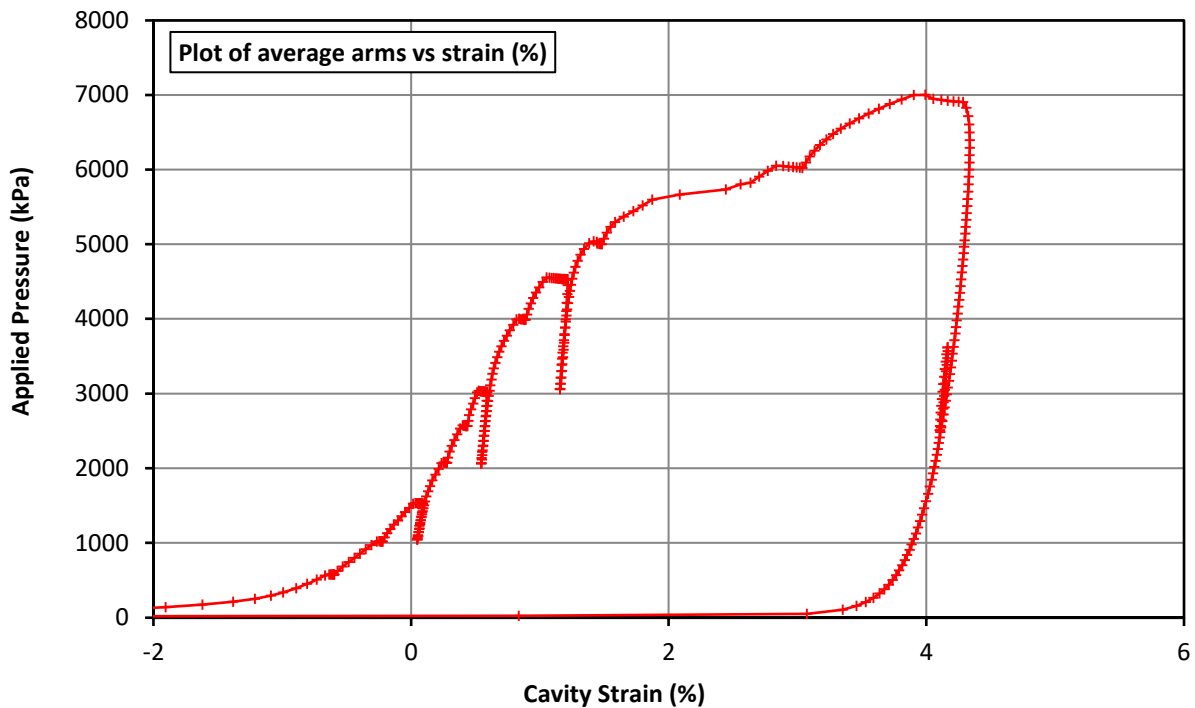
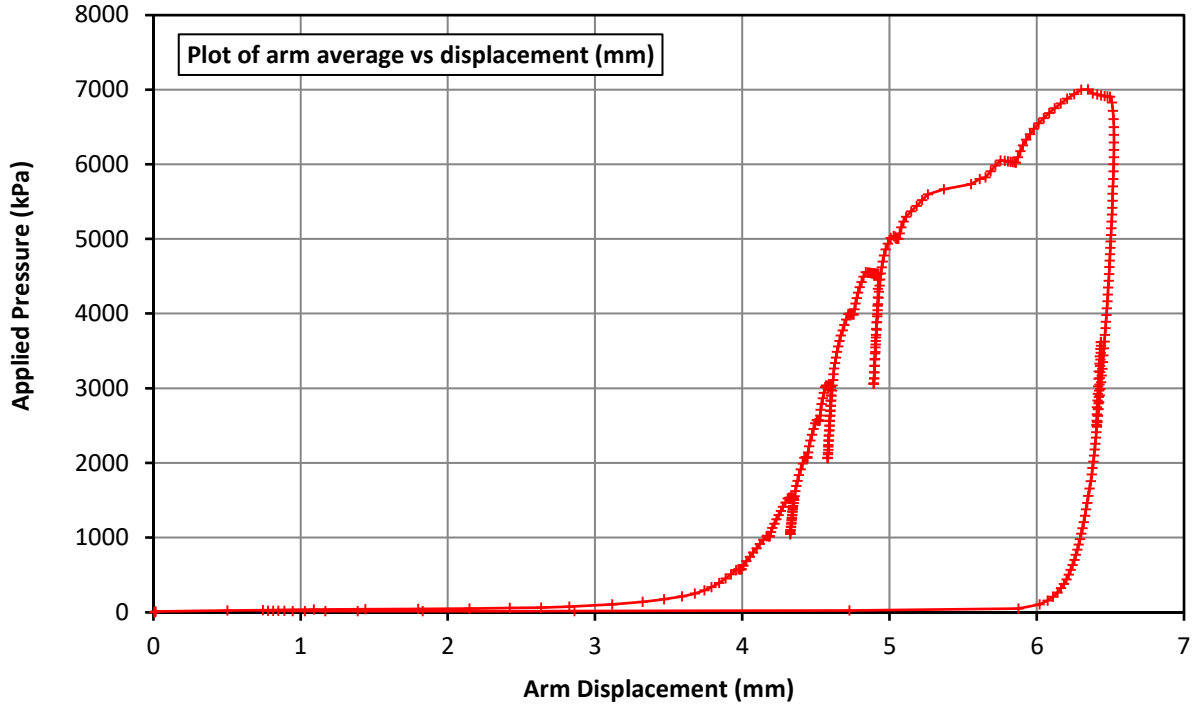
Test details:		Instrument:		Wally	
Drilling method:	Rotary coring		mV	mV/mm	mV
Casing depth:	20.00 m	Arm 1:	-2020.7	146.5	TPC A: -1608.8
Water level:	- m	Arm 2:	-2653.9	139.0	TPC B: -2059.2
		Arm 3:	-2287.9	146.3	
Test time:		Arm 4:	-2037.8	140.5	
Start (probe in):	09:37 hrs	Arm 5:	-2315.5	139.9	
Finish (probe out):	10:50 hrs	Arm 6:	-2051.0	126.0	

Project	A303 Amesbury to Berwick Down	Figure No.	R71917 T02 - 01
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test Overview



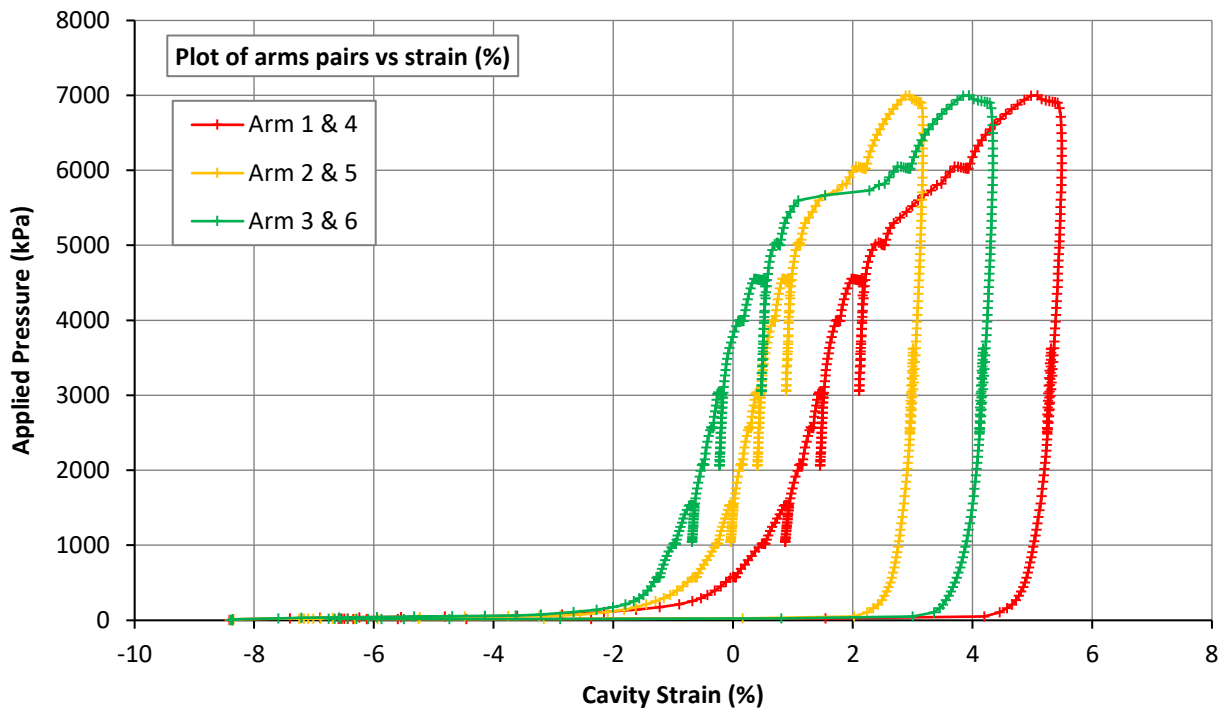
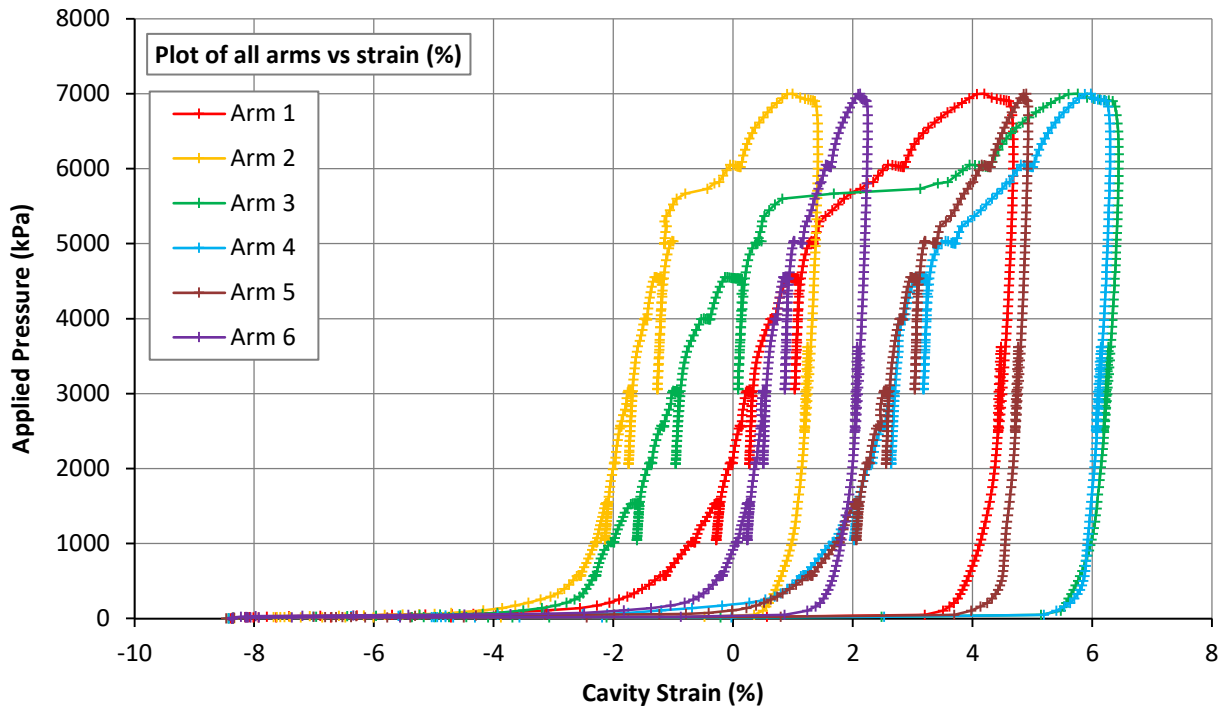
Test Date	30/10/2020	Test No.	2
Borehole	R71917	Test Depth (m)	21.00



Project	A303 Amesbury to Berwick Down	Figure No.	R71917 T02 - 02
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test - Arm Displacement vs Strain (%)

Test Date	30/10/2020	Test No.	2
Borehole	R71917	Test Depth (m)	21.00

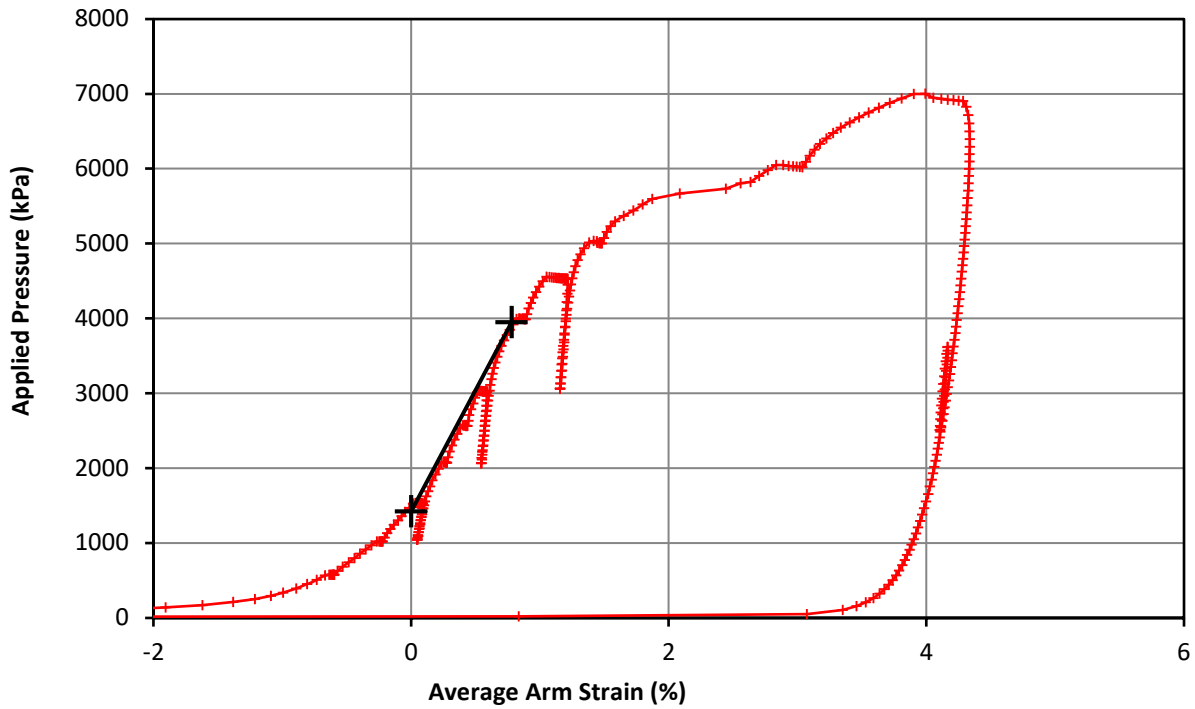


Project	A303 Amesbury to Berwick Down	Figure No.	R71917 T02 - 03
Client	RPS Ltd		
Project No.	P1200116		

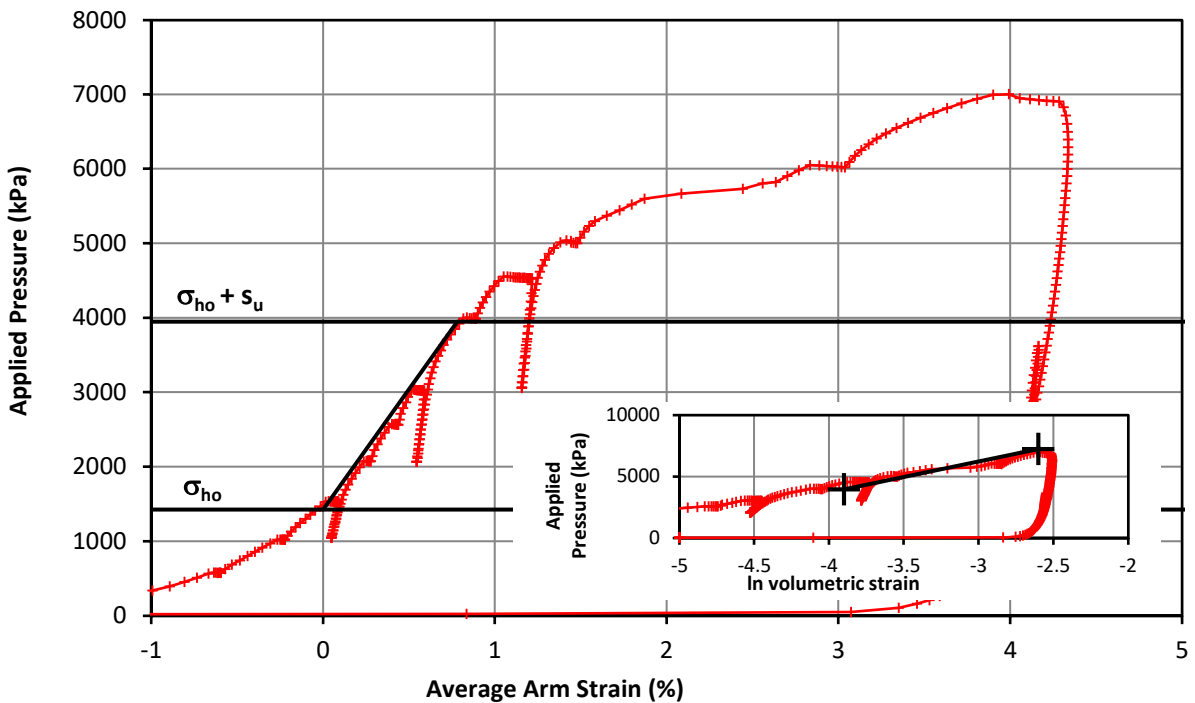
Pressuremeter Test Initial Modulus & In Situ Horizontal Stress



Test Date	30/10/2020	Test No.	2
Borehole	R71917	Test Depth (m)	21.00



Initial Modulus	Shear Modulus	163.1 MPa
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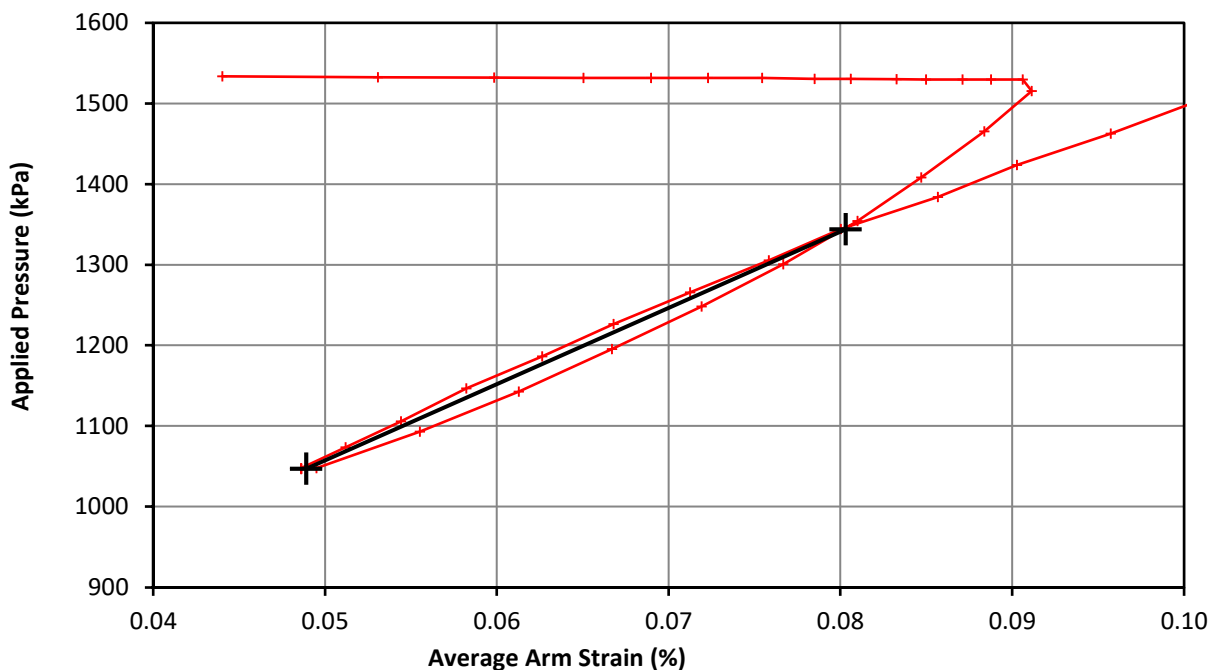
Marsland & Randolph	In situ horizontal stress	1425 kPa
	Undrained Strength	2525 kPa

Project	A303 Amesbury to Berwick Down	Figure No.	R71917 T02 - 04
Client	RPS Ltd		
Project No.	P1200116		

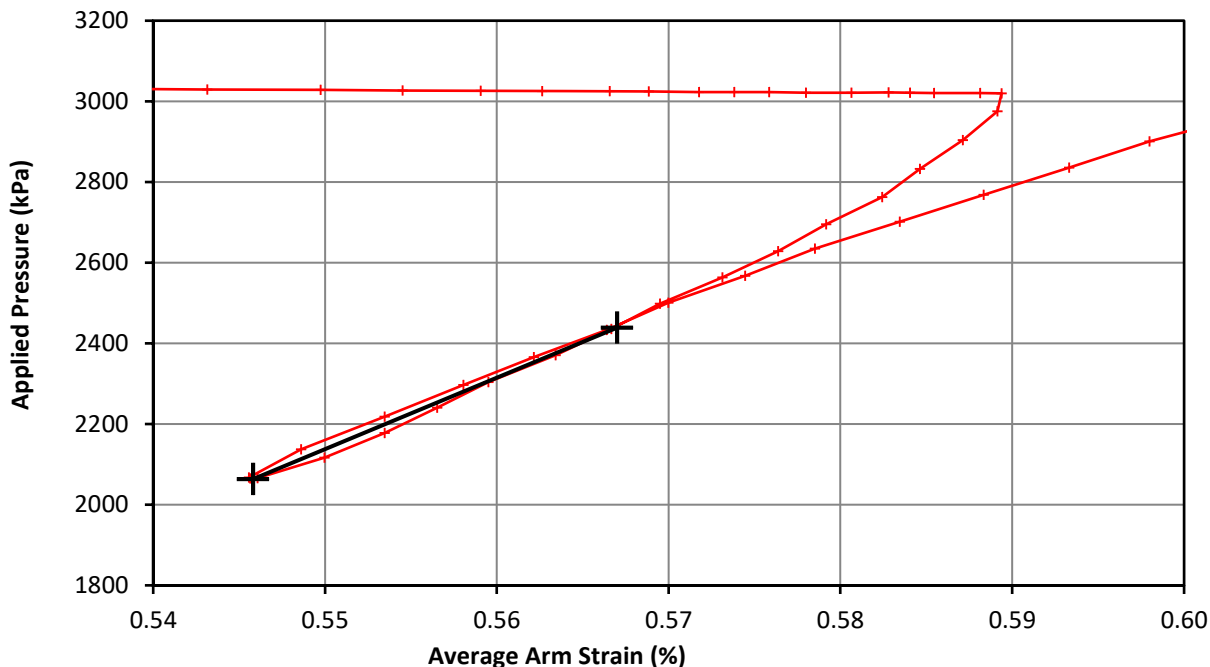
Pressuremeter Test Unload Reload Loop



Test Date	30/10/2020	Test No.	2
Borehole	R71917	Test Depth (m)	21.00



Loop 1	Shear Modulus	473.3 MPa
	Cavity Strain Range	0.031 %



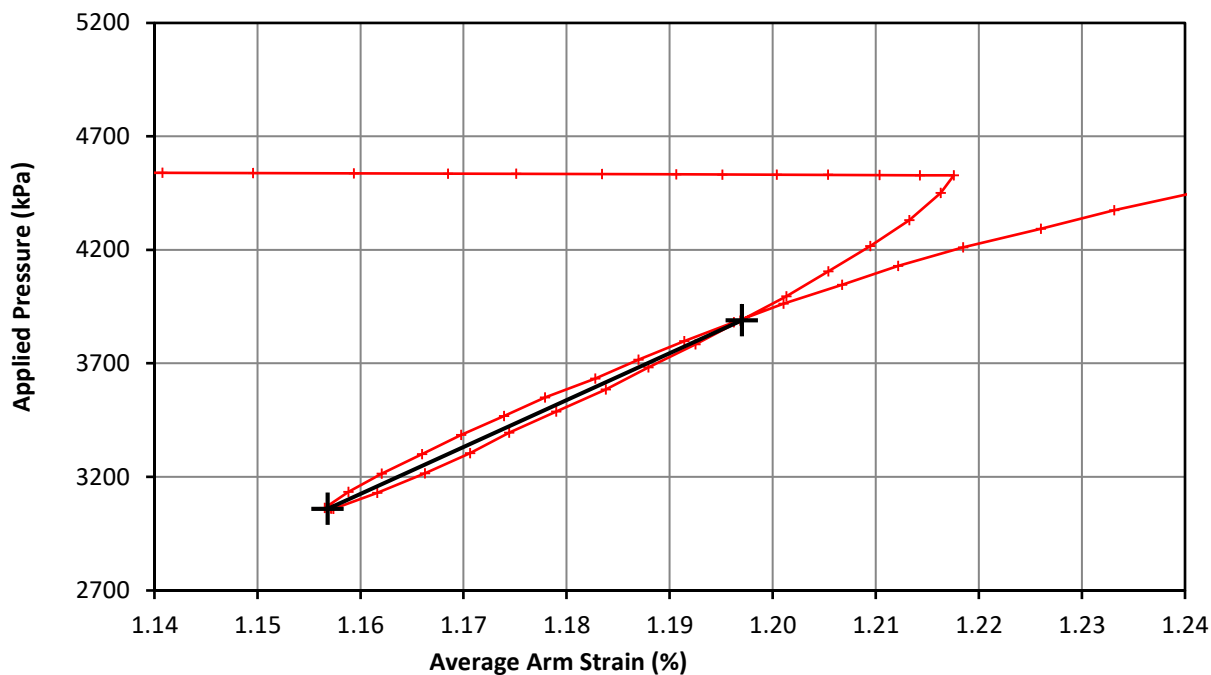
Loop 2	Shear Modulus	889.4 MPa
	Cavity Strain Range	0.021 %

Project	A303 Amesbury to Berwick Down	Figure No.	R71917 T02 - 05
Client	RPS Ltd		
Project No.	P1200116		

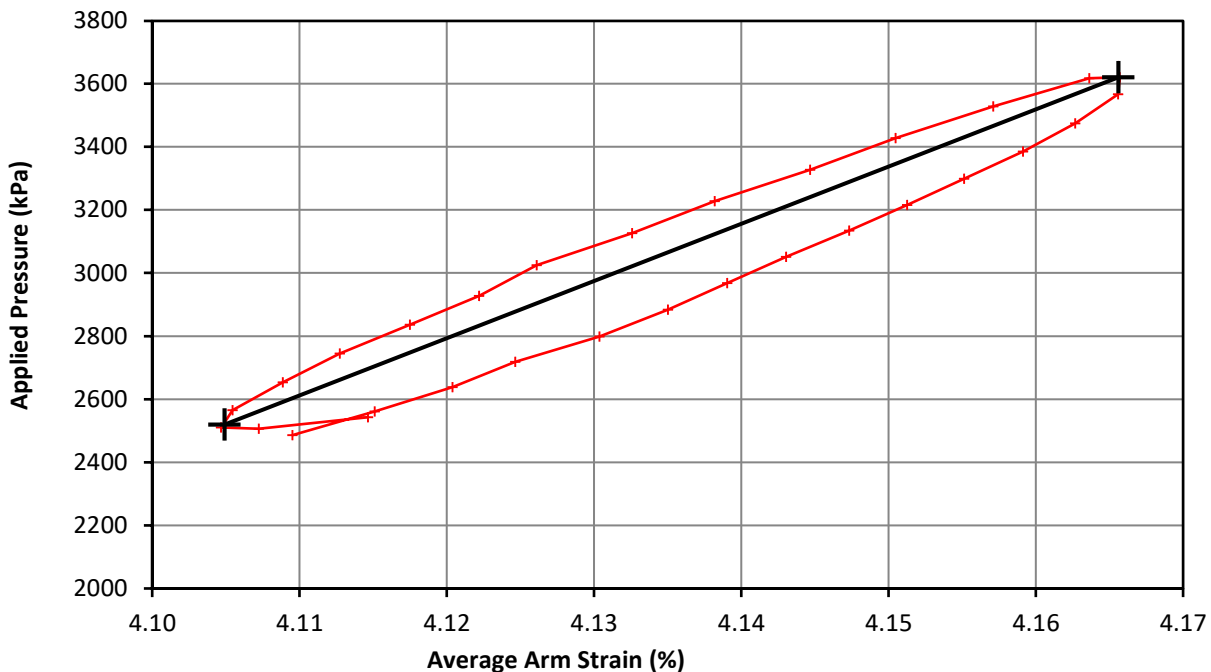
Pressuremeter Test Unload Reload Loop



Test Date	30/10/2020	Test No.	2
Borehole	R71917	Test Depth (m)	21.00



Loop 3	Shear Modulus	1044.7 MPa
	Cavity Strain Range	0.040 %



Loop 4	Shear Modulus	944.7 MPa
	Cavity Strain Range	0.061 %

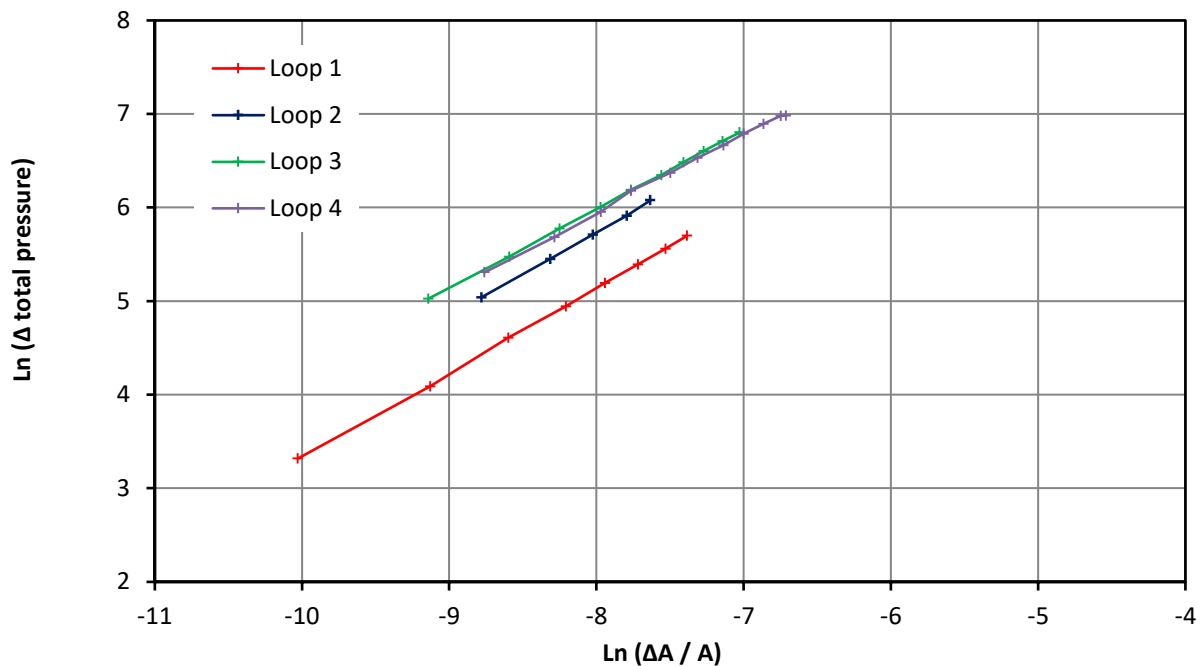
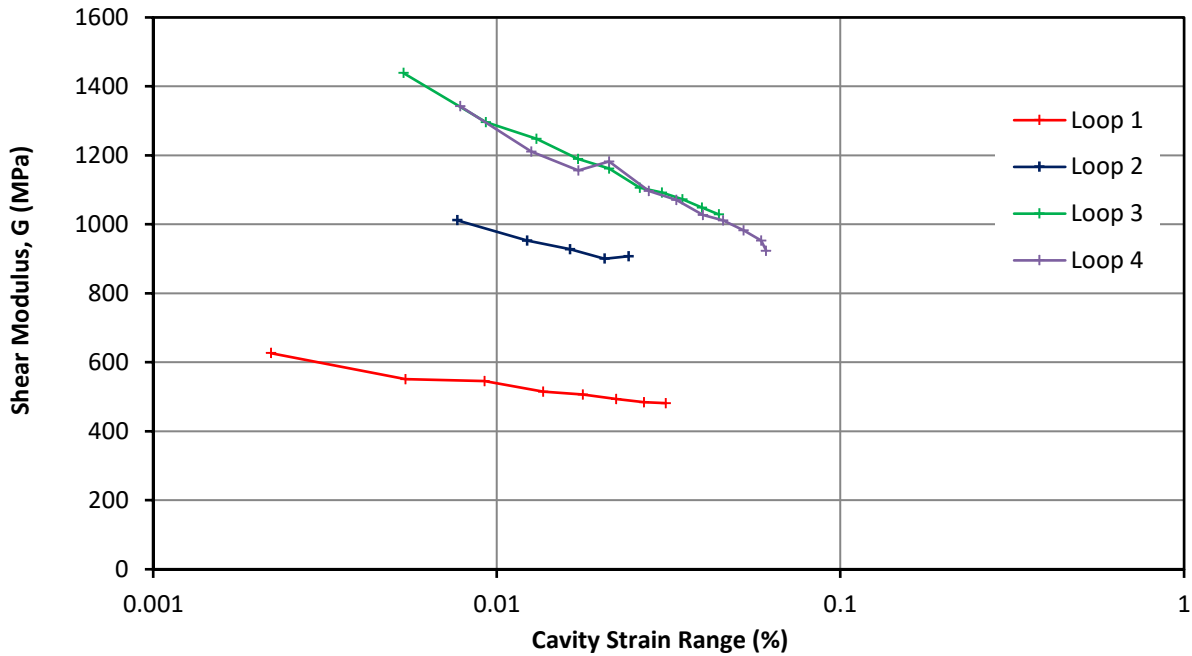
Project	A303 Amesbury to Berwick Down	Figure No.	R71917 T02 - 06
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Analysis

Small Strain Stiffness and Bolton and Whittle (1999)



Test Date	30/10/2020	Test No.	2
Borehole	R71917	Test Depth (m)	21.00



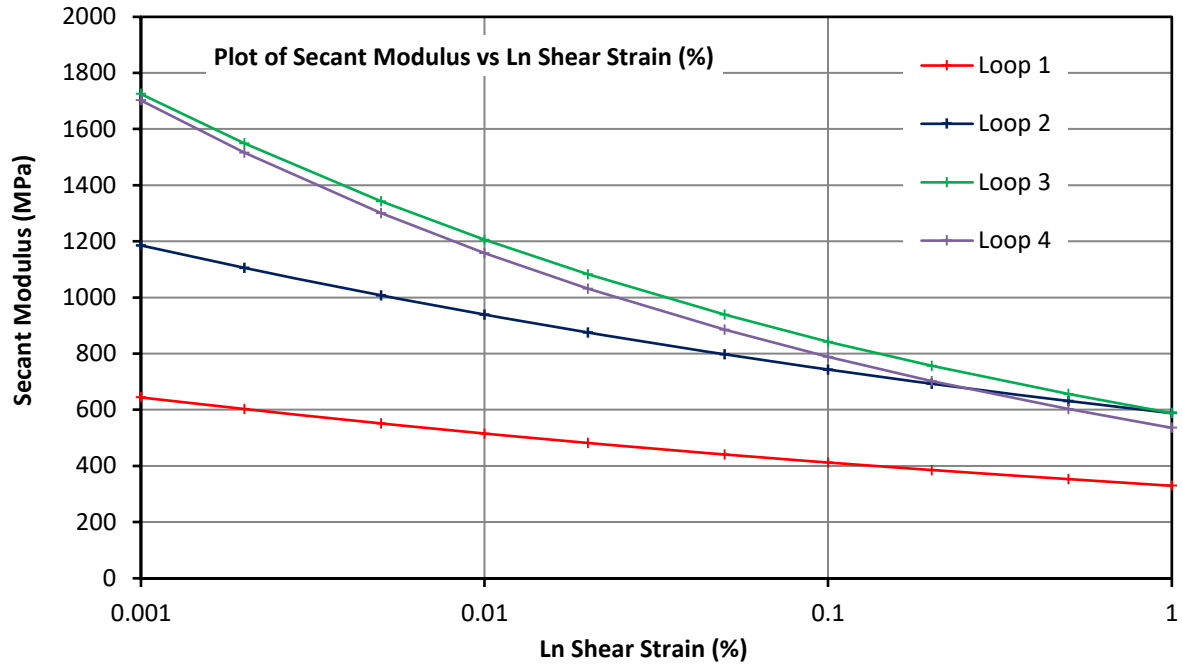
Loop 1		Loop 2		Loop 3		Loop 4	
Gradient(β)	Intercept	Gradient(β)	Intercept	Gradient(β)	Intercept	Gradient(β)	Intercept
0.903	233.627 (MPa)	0.899	410.688 (MPa)	0.844	340.633 (MPa)	0.833	298.146 (MPa)

Project	A303 Amesbury to Berwick Down	Figure No.	R71917 T02 - 07
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Analysis

Secant Modulus - Shear Strain (%)

Test Date	30/10/2020	Test No.	2
Borehole	R71917	Test Depth (m)	21.00

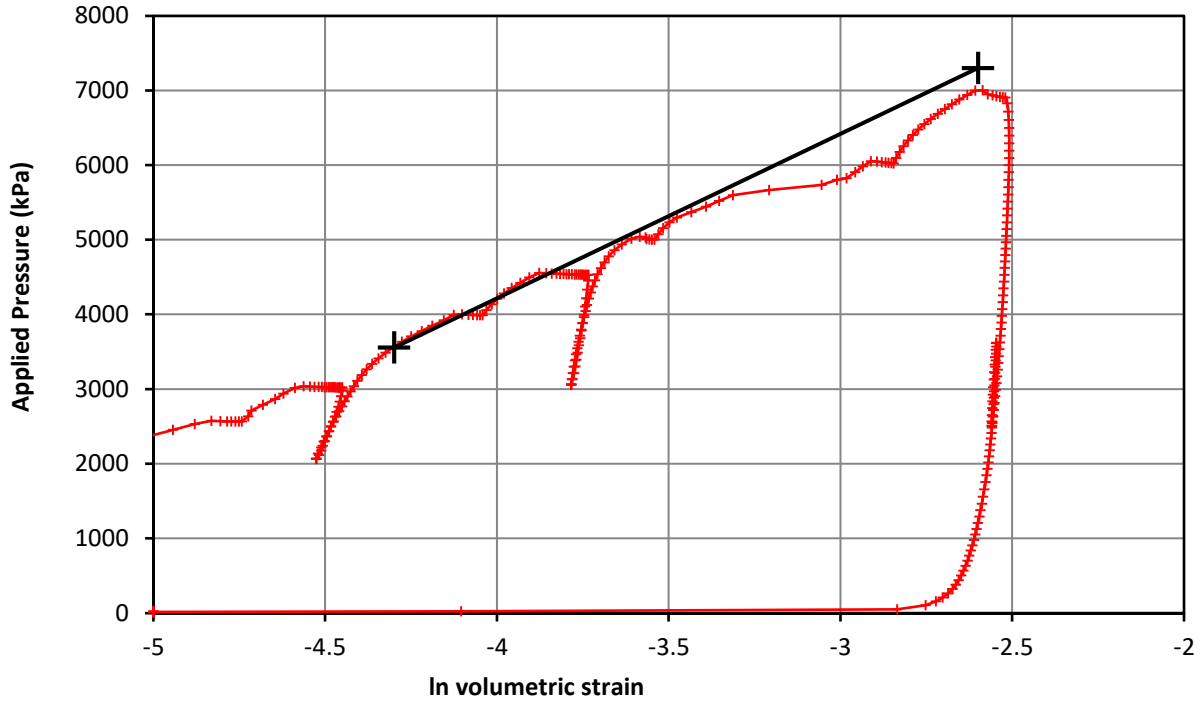


Shear Strain	Loop 1	Loop 2	Loop 3	Loop 4
0.001%	644	1185	1725	1702
0.002%	602	1105	1549	1516
0.005%	551	1007	1343	1301
0.010%	515	939	1206	1158
0.020%	482	875	1082	1032
0.050%	441	797	939	885
0.100%	412	743	843	788
0.200%	385	693	757	702
0.500%	353	631	656	602
1.000%	330	589	589	536

Project	A303 Amesbury to Berwick Down	Figure No.	R71917 T02 - 08
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test - Strength

Test Date	30/10/2020	Test No.	2
Borehole	R71917	Test Depth (m)	21.00

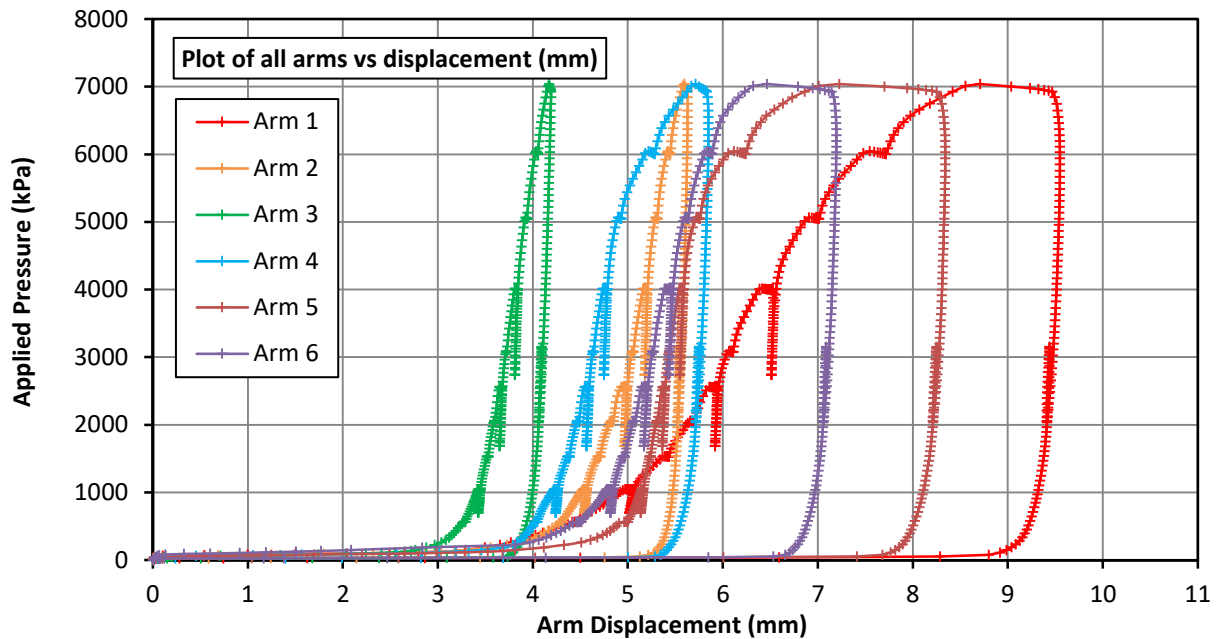


Strength	Undrained Shear	2201 kPa
	Limit Pressure	13023 kPa

Project	A303 Amesbury to Berwick Down	Figure No.	R71917 T02 - 09
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test Overview High Pressure Dilatometer (HPD)

Test Date	02/11/2020	Test No.	3	
Borehole	R71917	Test Depth (m)	27.00	
Coordinates (m)	412110.3 (E)	141828.7 (N)	Elevation (m)	94.57



Material description from borehole log:

Structureless CHALK composed of slightly sandy silty subangular to subrounded fine to coarse gravel with low cobble content.

Test pocket conditions:

Total core recovery:	52 %	Test pocket depth range:	
Solid core recovery:	0 %	From:	26.00 m to: 28.50 m
Rock quality designation:	0 %	Flush:	Water

Test comment:

The test pocket was oversize with arms lifting off between 3.5 to 5.5mm. The p_0 was estimated to be at 1531kPa, with the following loading section being relatively long. Material yield is interpreted at 4633kPa with the test taken to a pressure of 7039kPa. The displacement-pressure response was variable in terms of expansion, with some disturbance and softening shown on arm 1. Analysis of two unload-reload loops provides increasing modulus values from 770 to 1072MPa, whilst a loop on the unload section provides a modulus of 940MPa. Derived undrained shear strength analysis provides values of 2930 to 3102kPa.

Test details:

Instrument: Wally

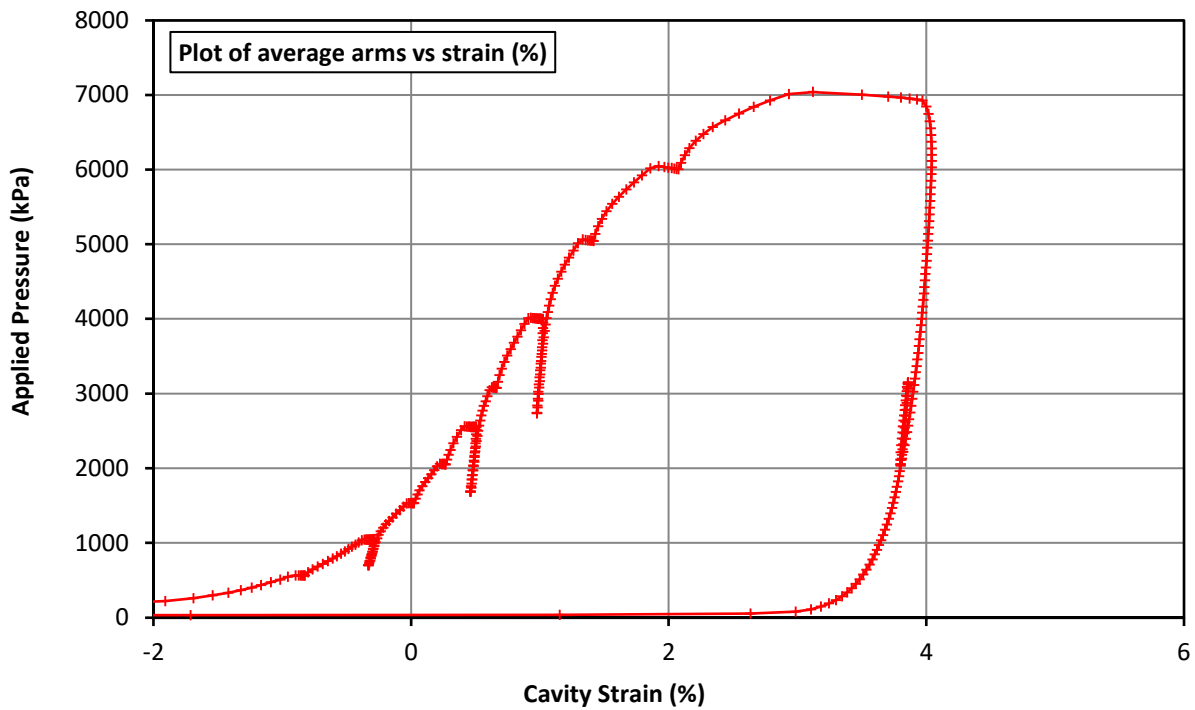
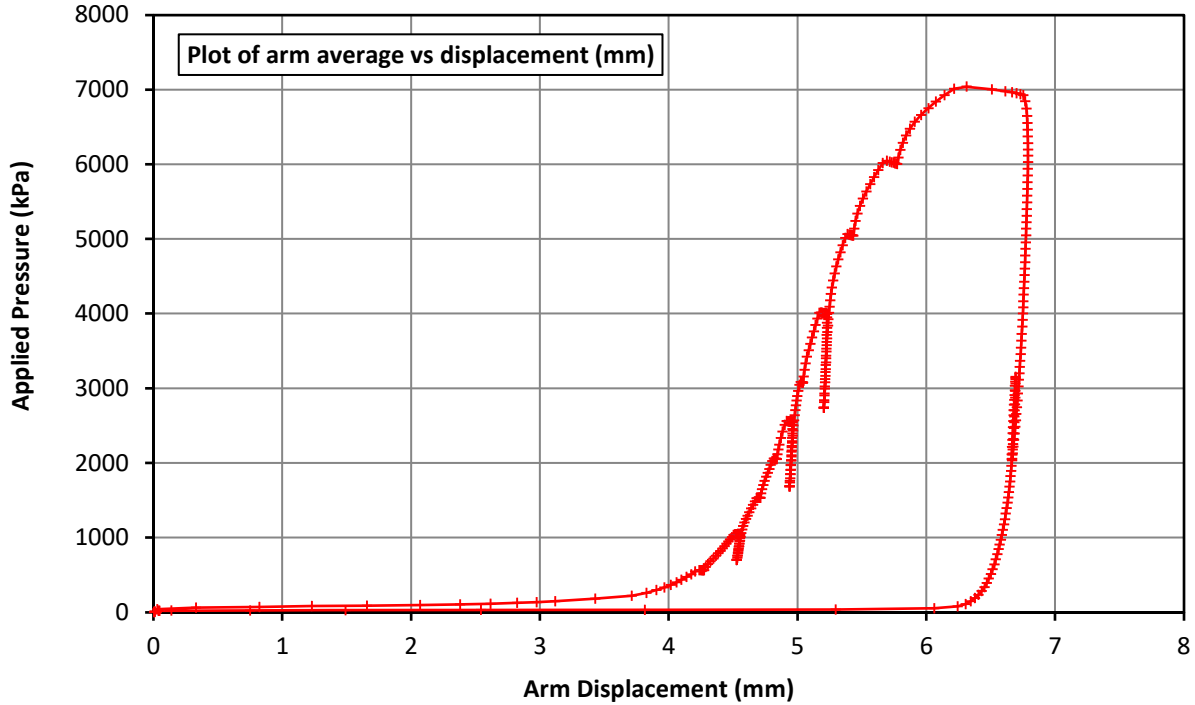
	Rotary coring	mV	mV/mm	mV	mV/MPa
Drilling method:	Rotary coring				
Casing depth:	26.00 m	Arm 1: -2020.5	146.5	TPC A: -1608.6	109.0
Water level:	- m	Arm 2: -2646.2	139.0	TPC B: -2058.8	109.1
		Arm 3: -2313.5	146.3		
Test time:		Arm 4: -2046.8	140.5		
Start (probe in):	11:05 hrs	Arm 5: -2323.8	139.9		
Finish (probe out):	12:18 hrs	Arm 6: -2053.3	126.0		

Project	A303 Amesbury to Berwick Down	Figure No.	R71917 T03 - 01
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test Overview



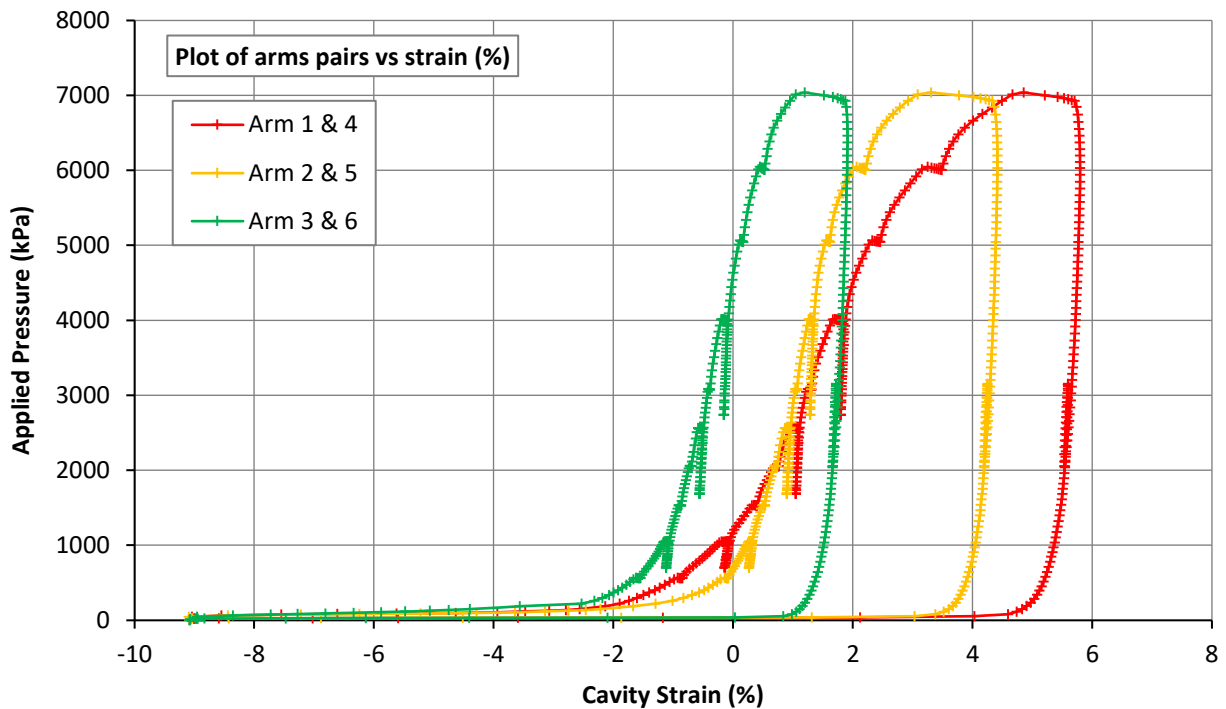
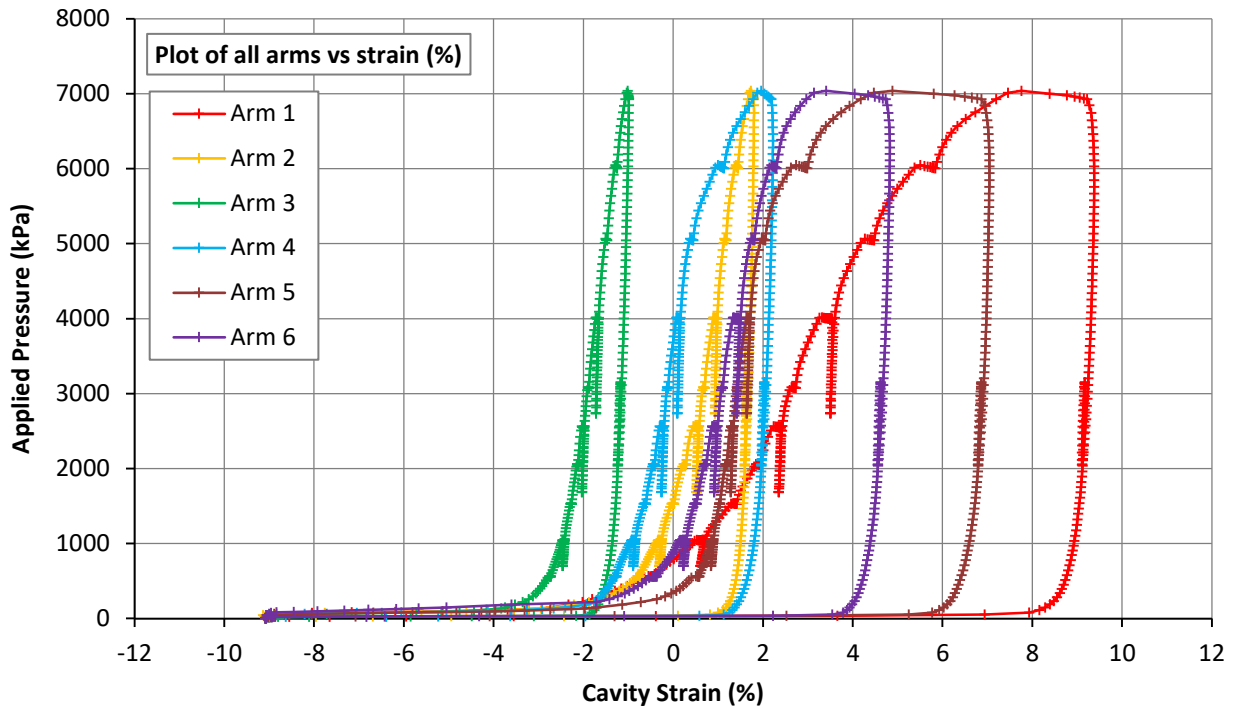
Test Date	02/11/2020	Test No.	3
Borehole	R71917	Test Depth (m)	27.00



Project	A303 Amesbury to Berwick Down	Figure No.	R71917 T03 - 02
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test - Arm Displacement vs Strain (%)

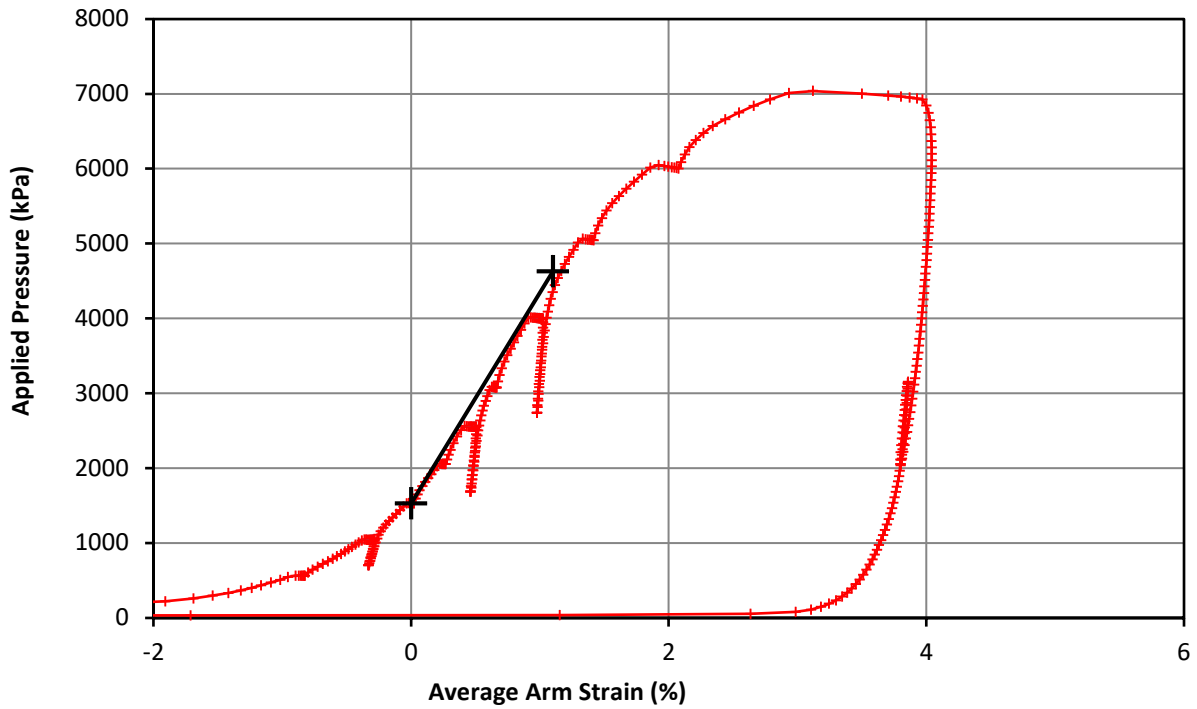
Test Date	02/11/2020	Test No.	3
Borehole	R71917	Test Depth (m)	27.00



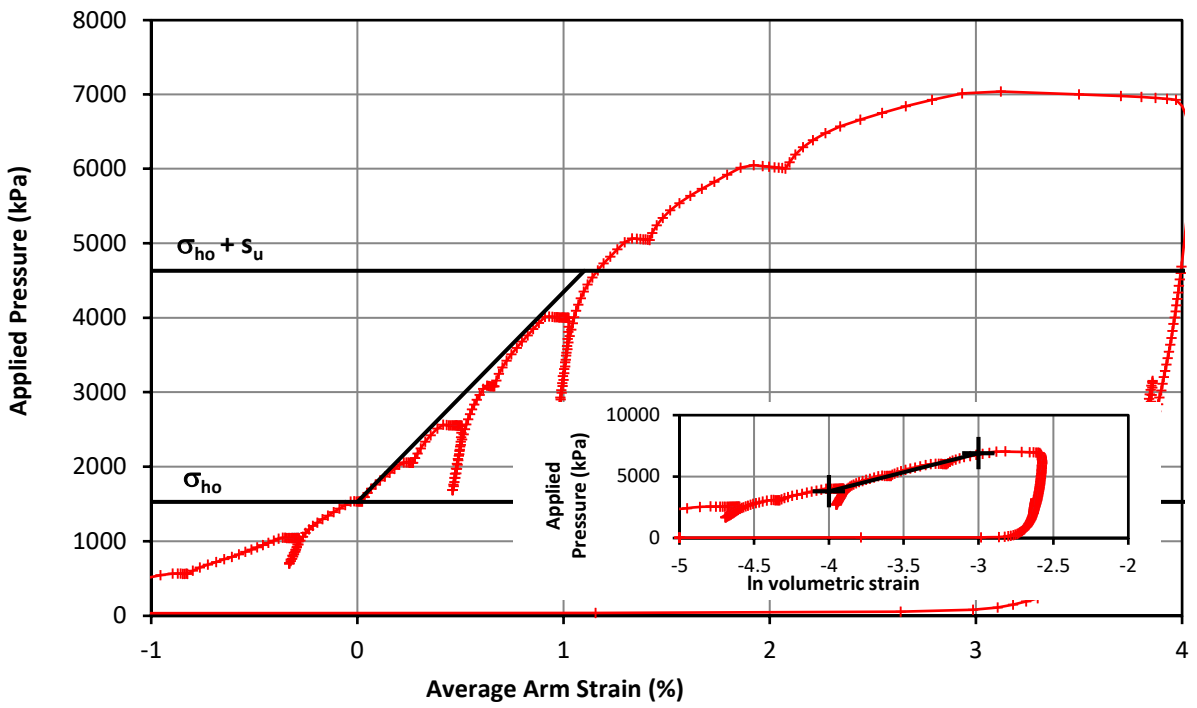
Project	A303 Amesbury to Berwick Down	Figure No.	R71917 T03 - 03
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test Initial Modulus & In Situ Horizontal Stress

Test Date	02/11/2020	Test No.	3
Borehole	R71917	Test Depth (m)	27.00



Initial Modulus	Shear Modulus	142.6 MPa
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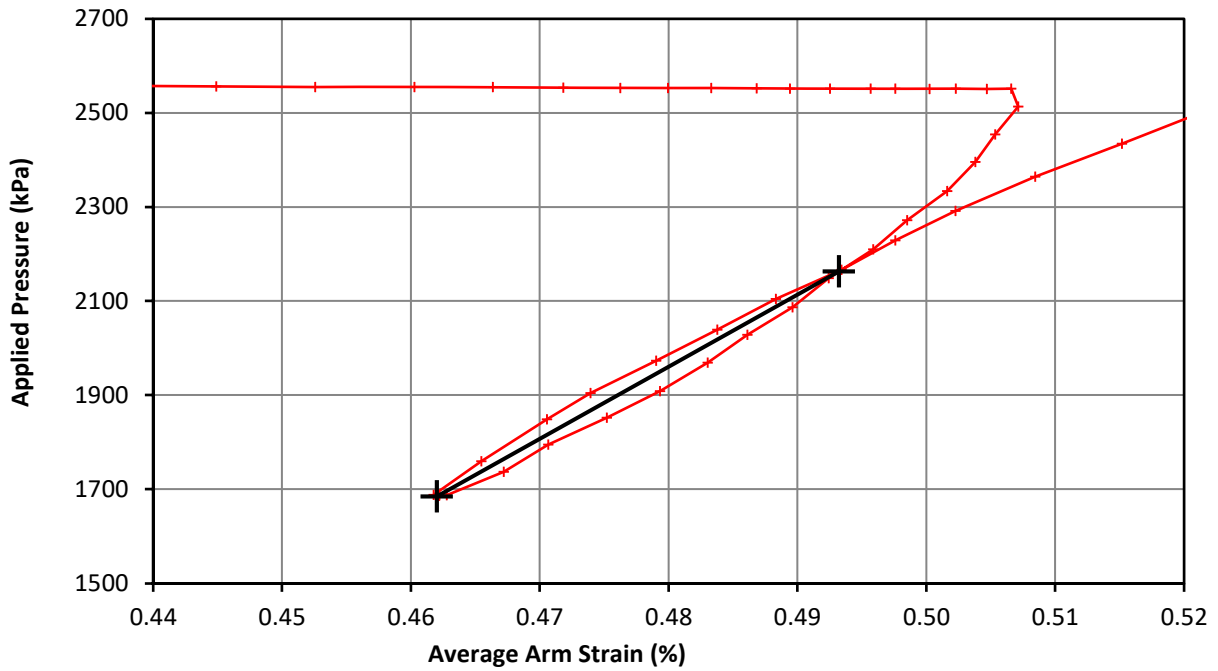
Marsland & Randolph	In situ horizontal stress	1531 kPa
	Undrained Strength	3102 kPa

Project	A303 Amesbury to Berwick Down	Figure No.	R71917 T03 - 04
Client	RPS Ltd		
Project No.	P1200116		

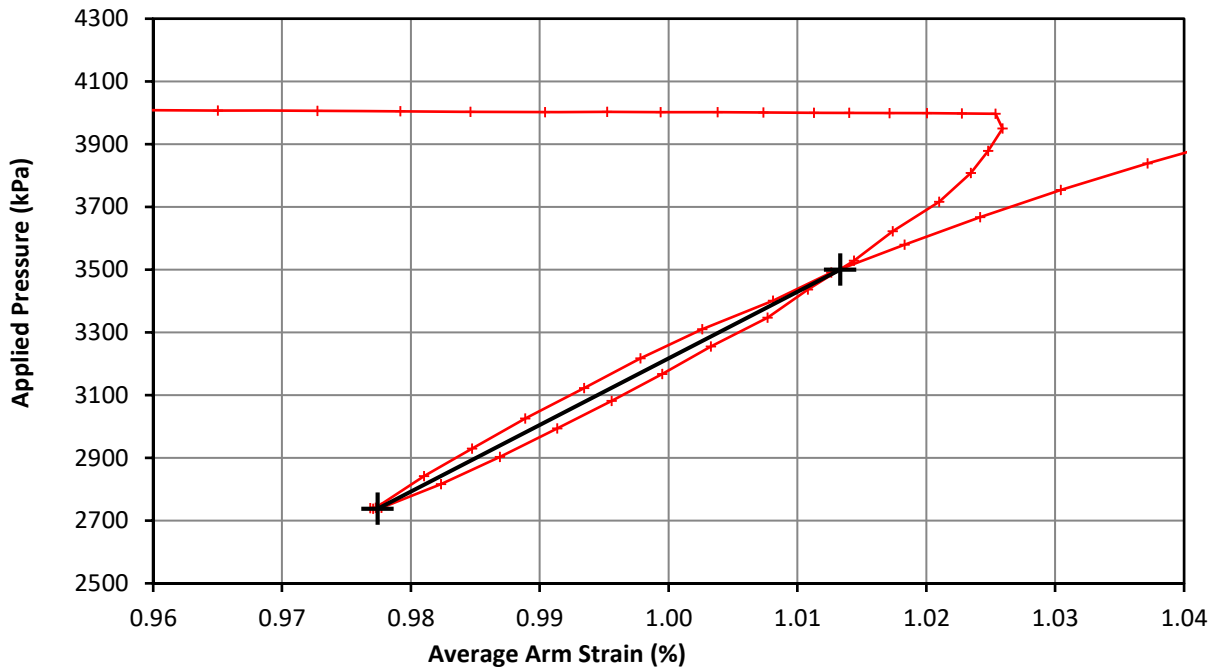
Pressuremeter Test Unload Reload Loop



Test Date	02/11/2020	Test No.	3
Borehole	R71917	Test Depth (m)	27.00



Loop 1	Shear Modulus	769.8 MPa
	Cavity Strain Range	0.031 %



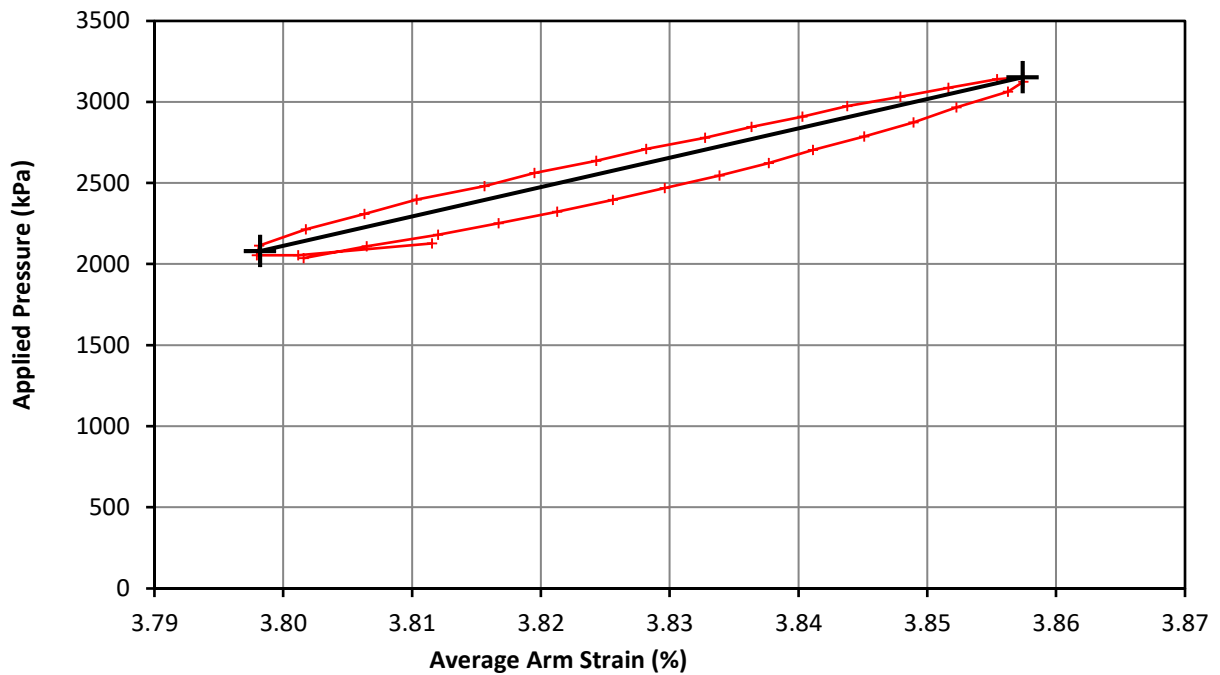
Loop 2	Shear Modulus	1072.0 MPa
	Cavity Strain Range	0.036 %

Project	A303 Amesbury to Berwick Down	Figure No.	R71917 T03 - 05
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test Unload Reload Loop



Test Date	02/11/2020	Test No.	3
Borehole	R71917	Test Depth (m)	27.00



Loop 3	Shear Modulus	940.3 MPa
	Cavity Strain Range	0.059 %

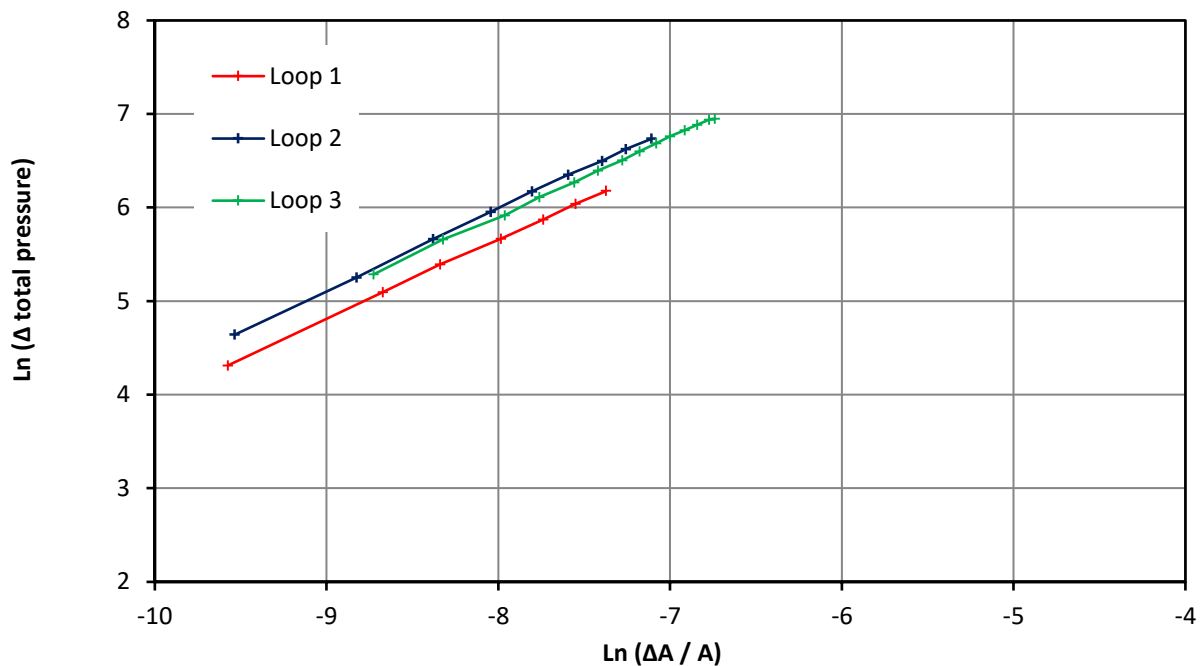
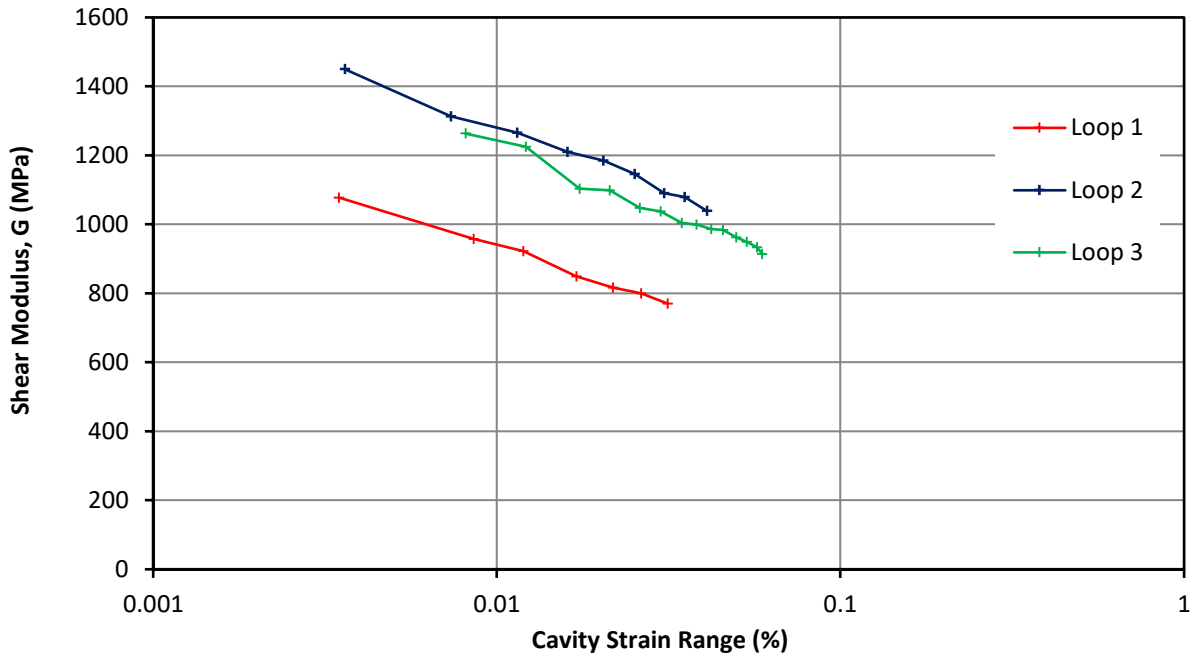
Project	A303 Amesbury to Berwick Down	Figure No.	R71917 T03 - 06
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Analysis

Small Strain Stiffness and Bolton and Whittle (1999)



Test Date	02/11/2020	Test No.	3
Borehole	R71917	Test Depth (m)	27.00



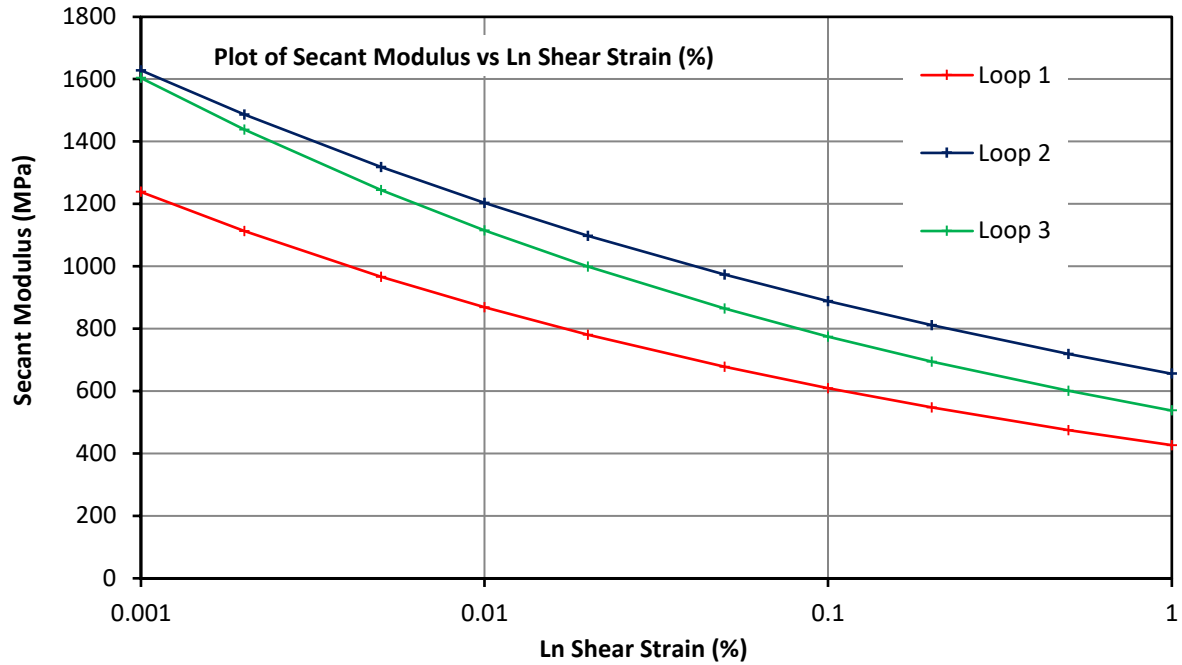
Loop 1		Loop 2		Loop 3	
Gradient(β)	Intercept	Gradient(β)	Intercept	Gradient(β)	Intercept
0.846	248.015 (MPa)	0.868	412.267 (MPa)	0.842	308.610 (MPa)

Project	A303 Amesbury to Berwick Down	Figure No.	R71917 T03 - 07
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Analysis
 Secant Modulus - Shear Strain (%)



Test Date	02/11/2020	Test No.	3
Borehole	R71917	Test Depth (m)	27.00

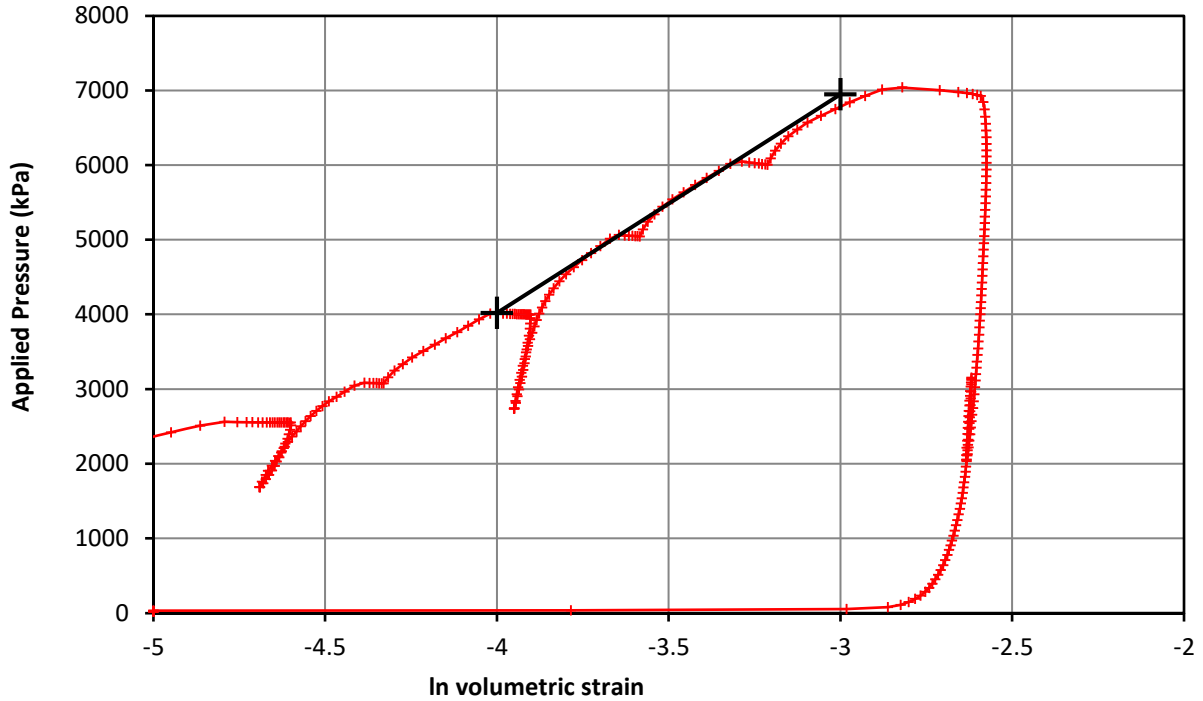


Shear Strain	Loop 1	Loop 2	Loop 3
0.001%	1239	1628	1604
0.002%	1113	1487	1438
0.005%	966	1318	1244
0.010%	868	1203	1115
0.020%	780	1098	999
0.050%	678	973	864
0.100%	609	888	775
0.200%	547	811	694
0.500%	475	719	600
1.000%	427	656	538

Project	A303 Amesbury to Berwick Down	Figure No.	R71917 T03 - 08
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test - Strength

Test Date	02/11/2020	Test No.	3
Borehole	R71917	Test Depth (m)	27.00



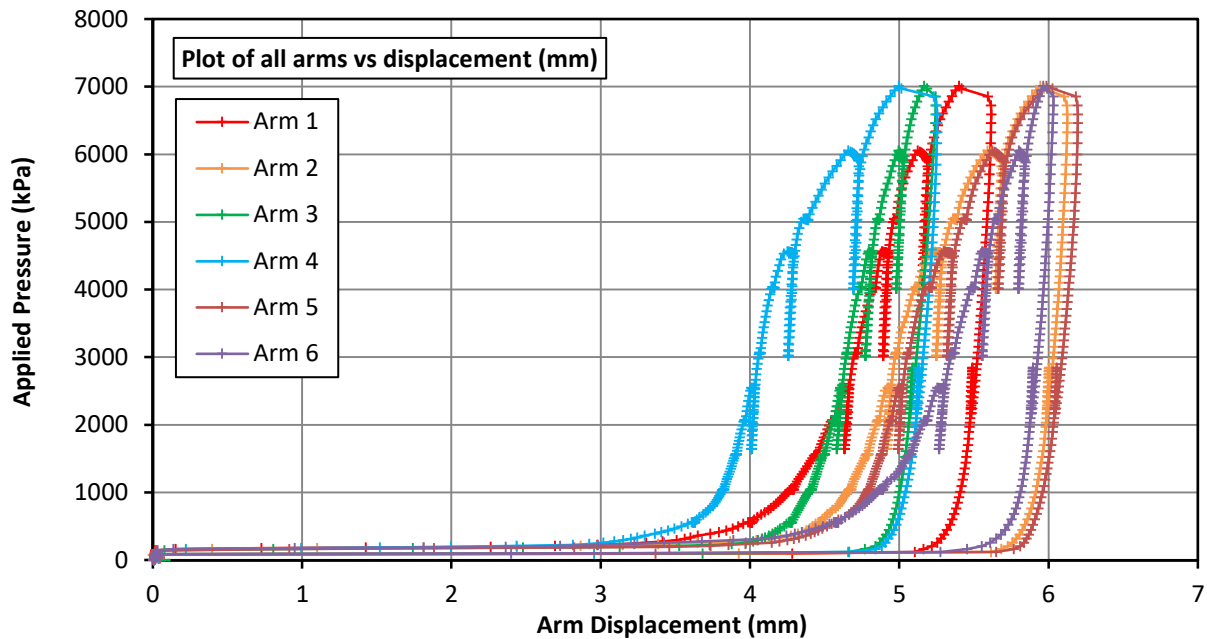
Strength	Undrained Shear	2930 kPa
	Limit Pressure	15740 kPa

Project	A303 Amesbury to Berwick Down	Figure No.	R71917 T03 - 09
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test Overview High Pressure Dilatometer (HPD)



Test Date	02/11/2020	Test No.	4	
Borehole	R71917	Test Depth (m)	33.00	
Coordinates (m)	412110.3 (E)	141828.7 (N)	Elevation (m)	94.57



Material description from borehole log:

Structureless CHALK composed of cream slightly sandy silt.

Test pocket conditions:

Total core recovery:	52 %	Test pocket depth range:	
Solid core recovery:	28 %	From:	32.00 m to: 34.50 m
Rock quality designation:	0 %	Flush:	Water

Test comment:

The test pocket was oversize with arms lifting off between 3.5 to 5.0mm. The p_0 was estimated to be at 1932kPa, with the following loading section being relatively long. Material yield is interpreted at 4865kPa with the test taken to a pressure of 7009kPa. The displacement-pressure response was reasonably consistent on all arms through the test, with some variation in expansion. Analysis of three unload-reload loops provides increasing modulus values from 784 to 1144MPa, whilst a loop on the unload section provides a modulus of 1259MPa. Derived undrained shear strength analysis provides a value of 2933kPa.

Test details:

Instrument: Wally

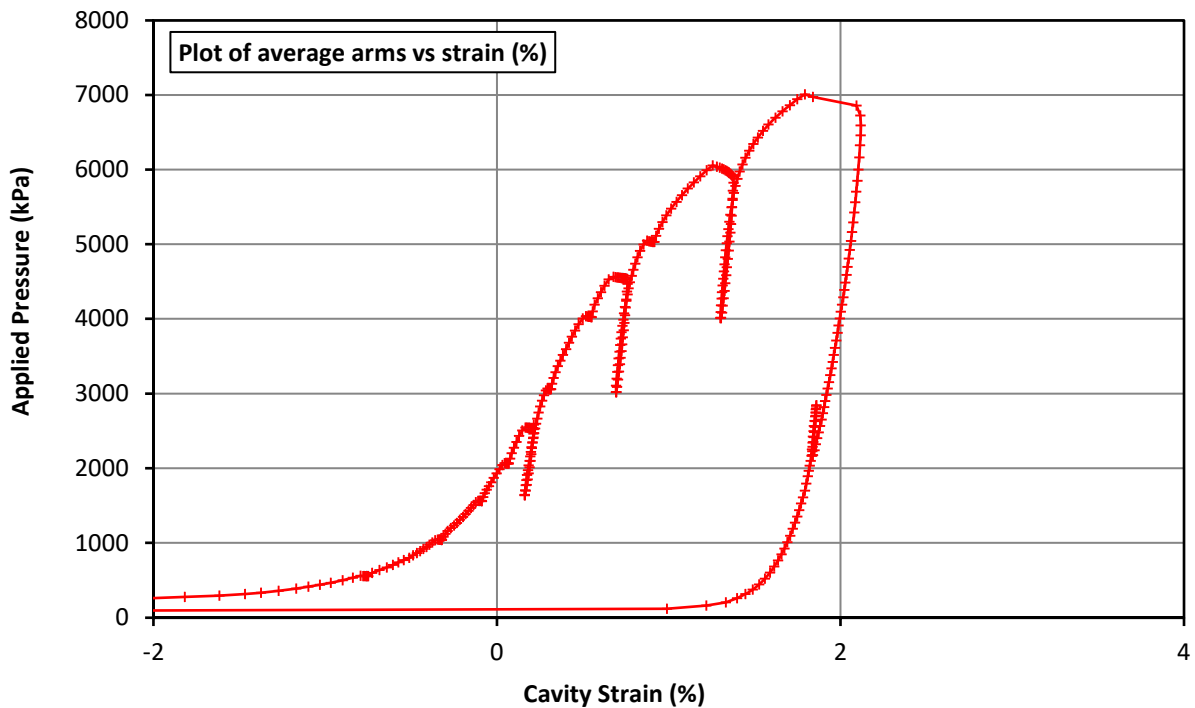
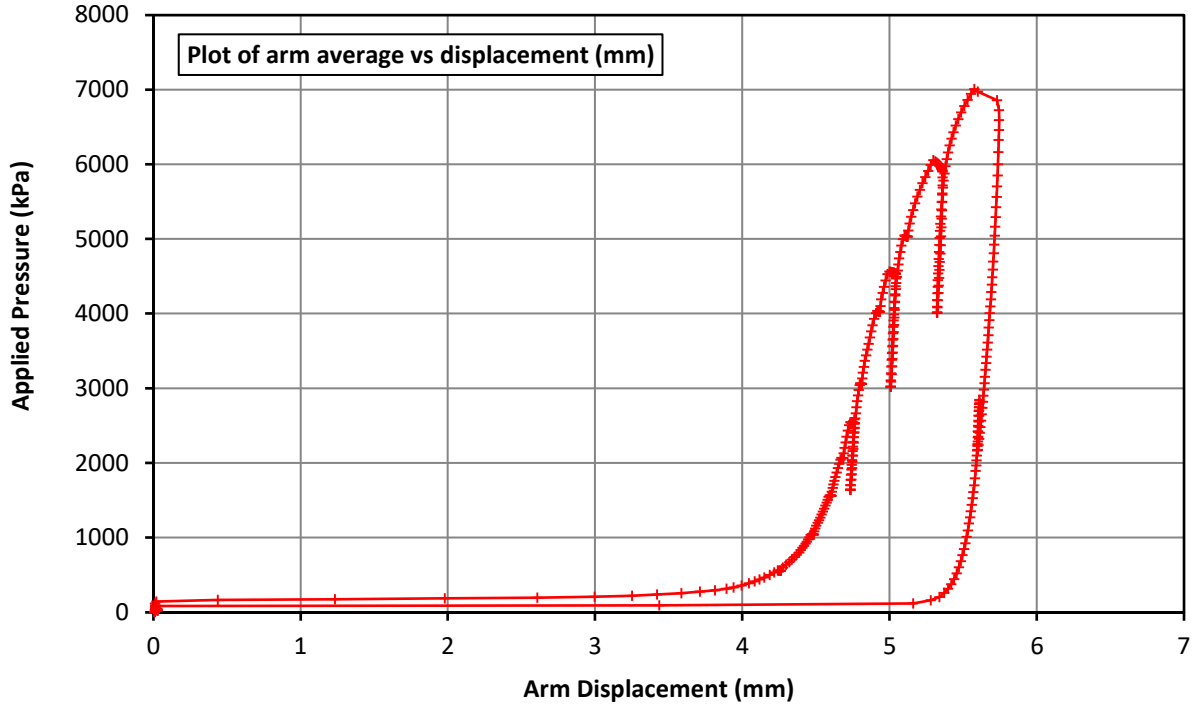
	Rotary coring	mV	mV/mm	mV	mV/MPa
Drilling method:	Rotary coring				
Casing depth:	32.00 m	Arm 1: -2018.9	146.5	TPC A: -1610.0	109.0
Water level:	21.00 m	Arm 2: -2636.8	139.0	TPC B: -2060.2	109.1
		Arm 3: -2317.4	146.3		
Test time:		Arm 4: -2050.1	140.5		
Start (probe in):	13:40 hrs	Arm 5: -2325.6	139.9		
Finish (probe out):	14:56 hrs	Arm 6: -2052.0	126.0		

Project	A303 Amesbury to Berwick Down	Figure No.	R71917 T04 - 01
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test Overview



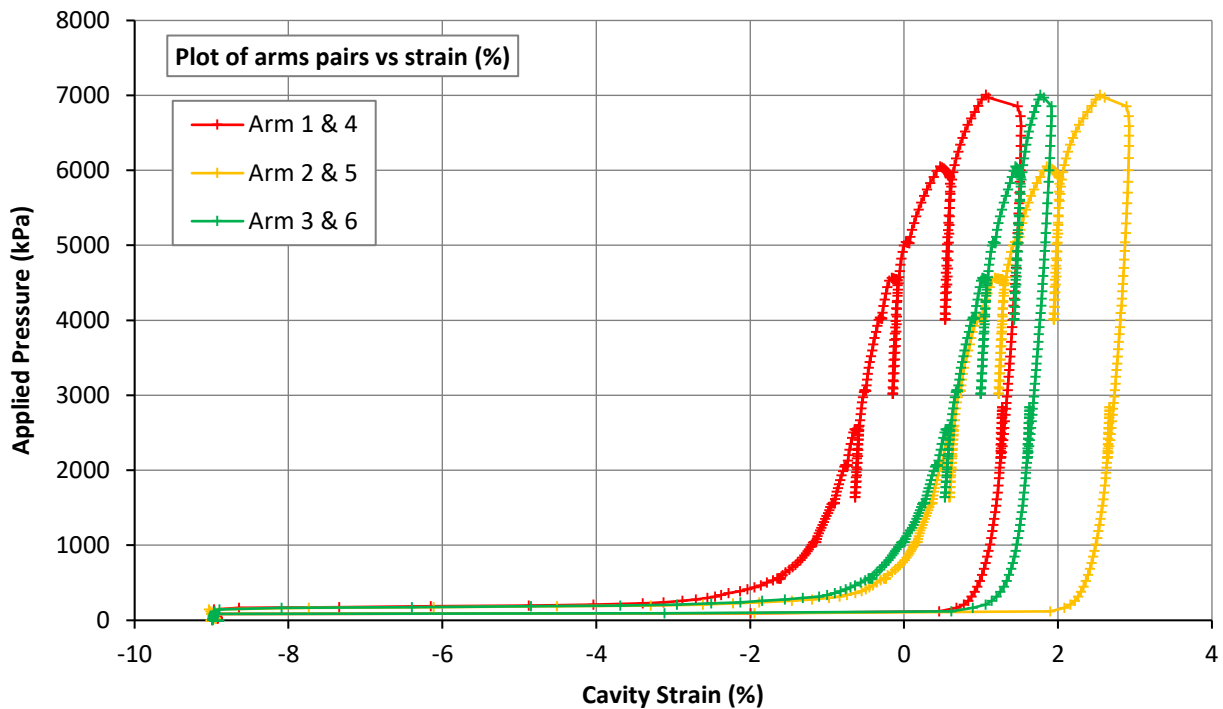
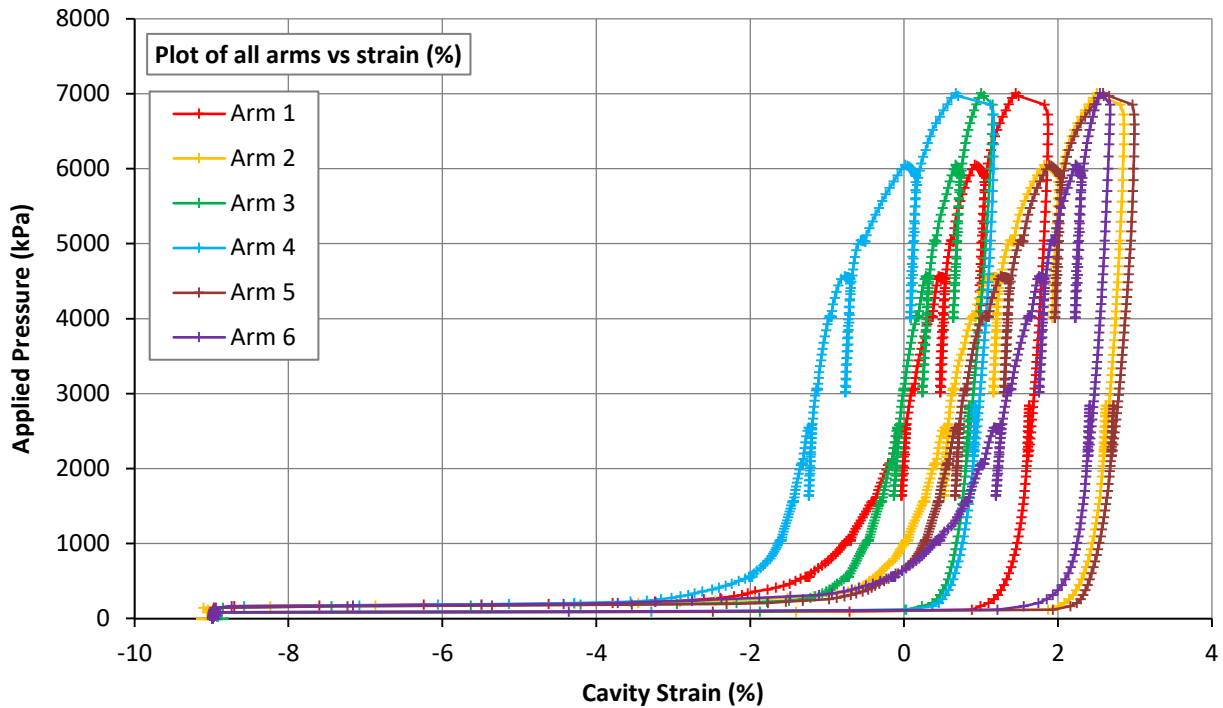
Test Date	02/11/2020	Test No.	4
Borehole	R71917	Test Depth (m)	33.00



Project	A303 Amesbury to Berwick Down	Figure No.	R71917 T04 - 02
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test - Arm Displacement vs Strain (%)

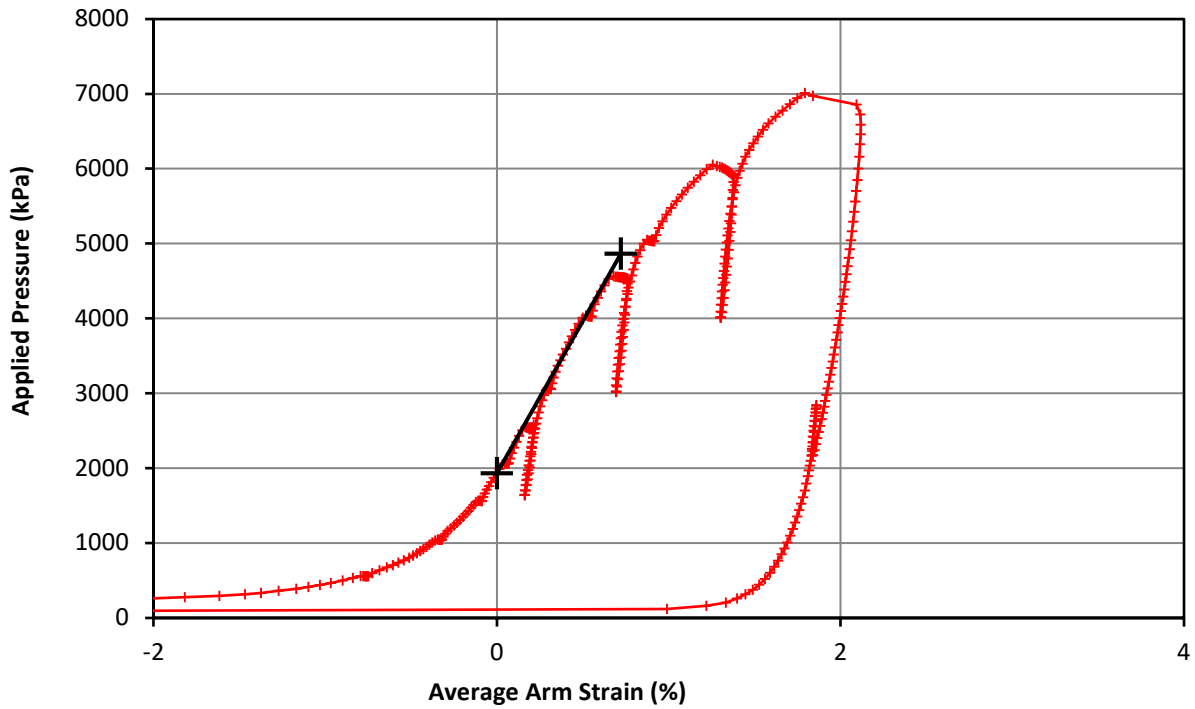
Test Date	02/11/2020	Test No.	4
Borehole	R71917	Test Depth (m)	33.00



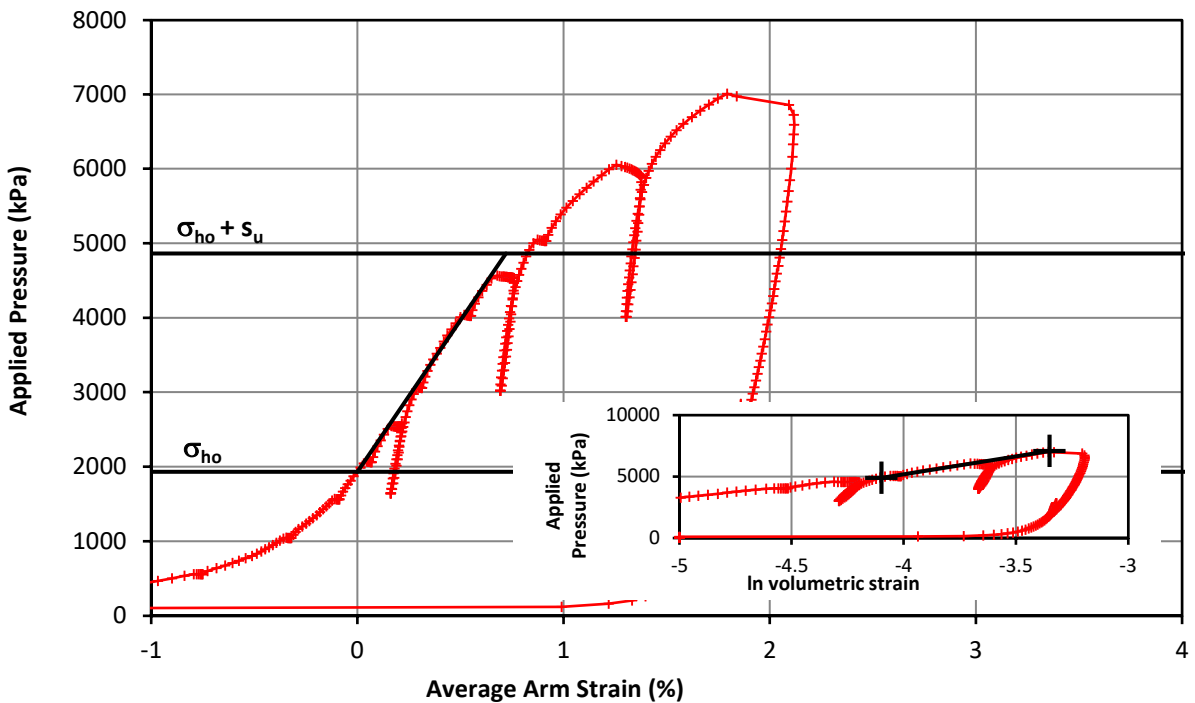
Project	A303 Amesbury to Berwick Down	Figure No.	R71917 T04 - 03
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test Initial Modulus & In Situ Horizontal Stress

Test Date	02/11/2020	Test No.	4
Borehole	R71917	Test Depth (m)	33.00



Initial Modulus	Shear Modulus	205.1 MPa
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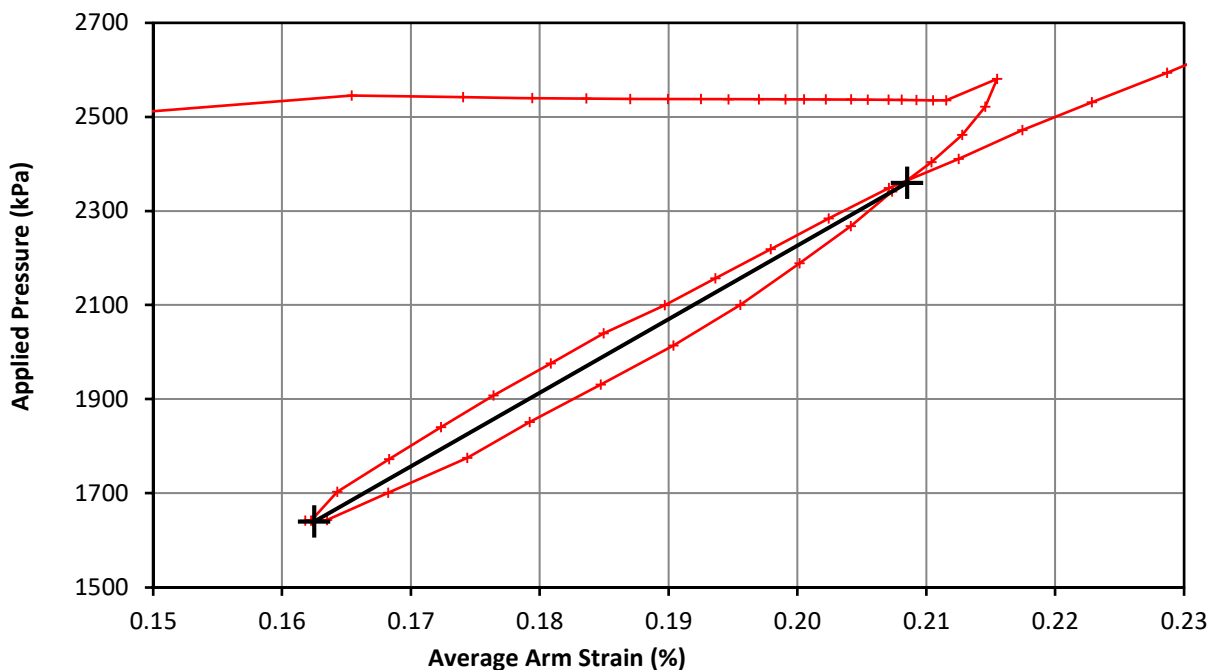
Marsland & Randolph	In situ horizontal stress	1932 kPa
	Undrained Strength	2933 kPa

Project	A303 Amesbury to Berwick Down	Figure No.	R71917 T04 - 04
Client	RPS Ltd		
Project No.	P1200116		

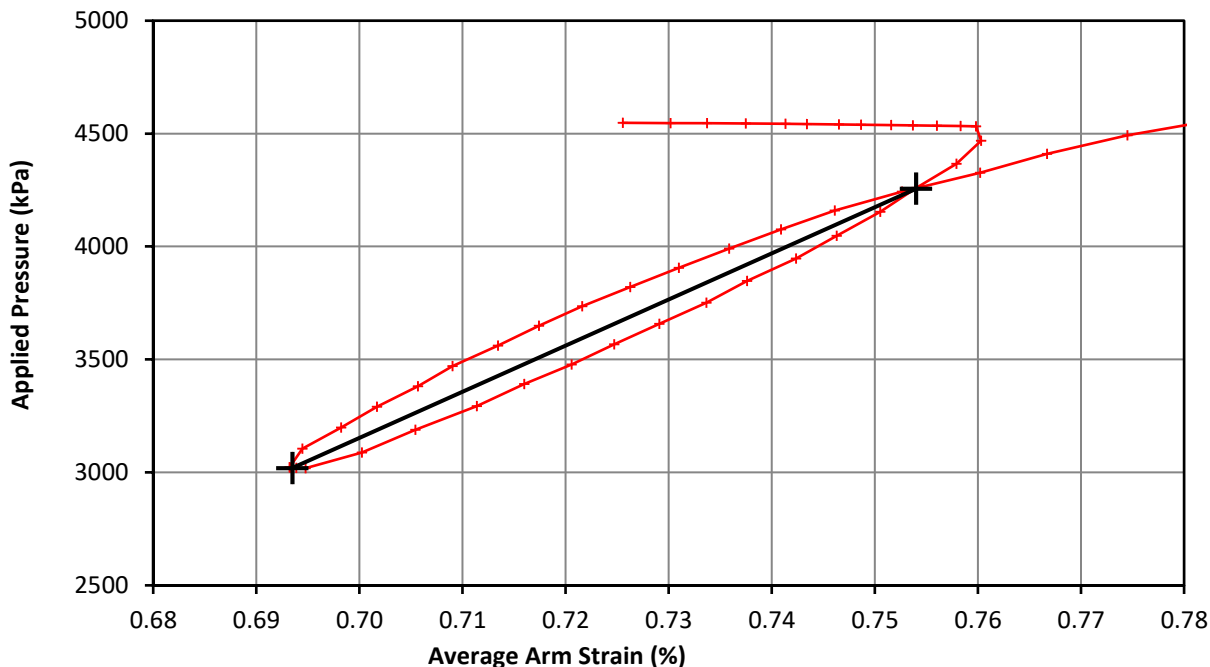
Pressuremeter Test Unload Reload Loop



Test Date	02/11/2020	Test No.	4
Borehole	R71917	Test Depth (m)	33.00



Loop 1	Shear Modulus	784.2 MPa
	Cavity Strain Range	0.046 %



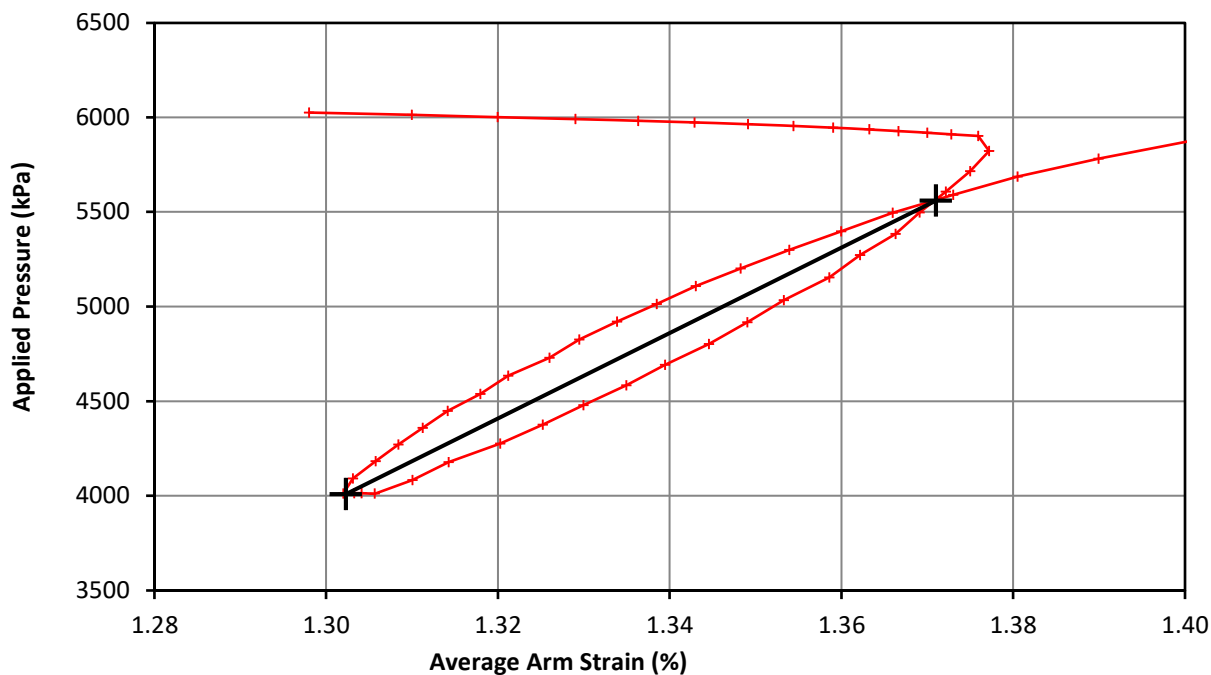
Loop 2	Shear Modulus	1030.0 MPa
	Cavity Strain Range	0.061 %

Project	A303 Amesbury to Berwick Down	Figure No.	R71917 T04 - 05
Client	RPS Ltd		
Project No.	P1200116		

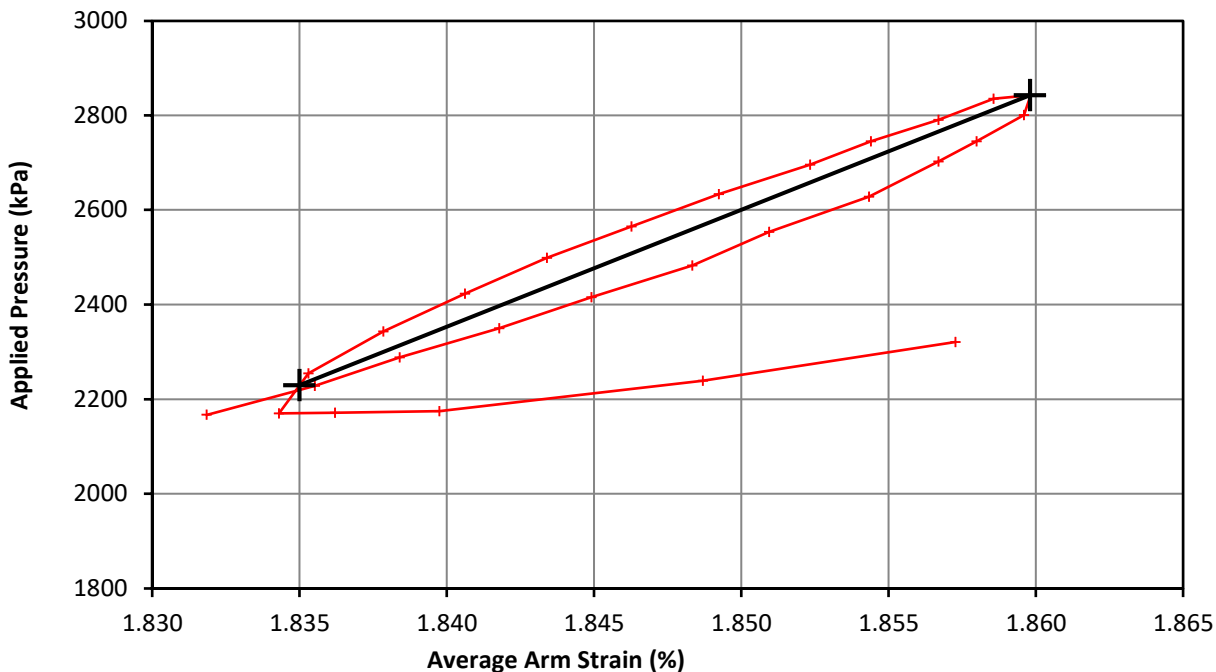
Pressuremeter Test Unload Reload Loop



Test Date	02/11/2020	Test No.	4
Borehole	R71917	Test Depth (m)	33.00



Loop 3	Shear Modulus	1143.6 MPa
	Cavity Strain Range	0.069 %



Loop 4	Shear Modulus	1258.9 MPa
	Cavity Strain Range	0.025 %

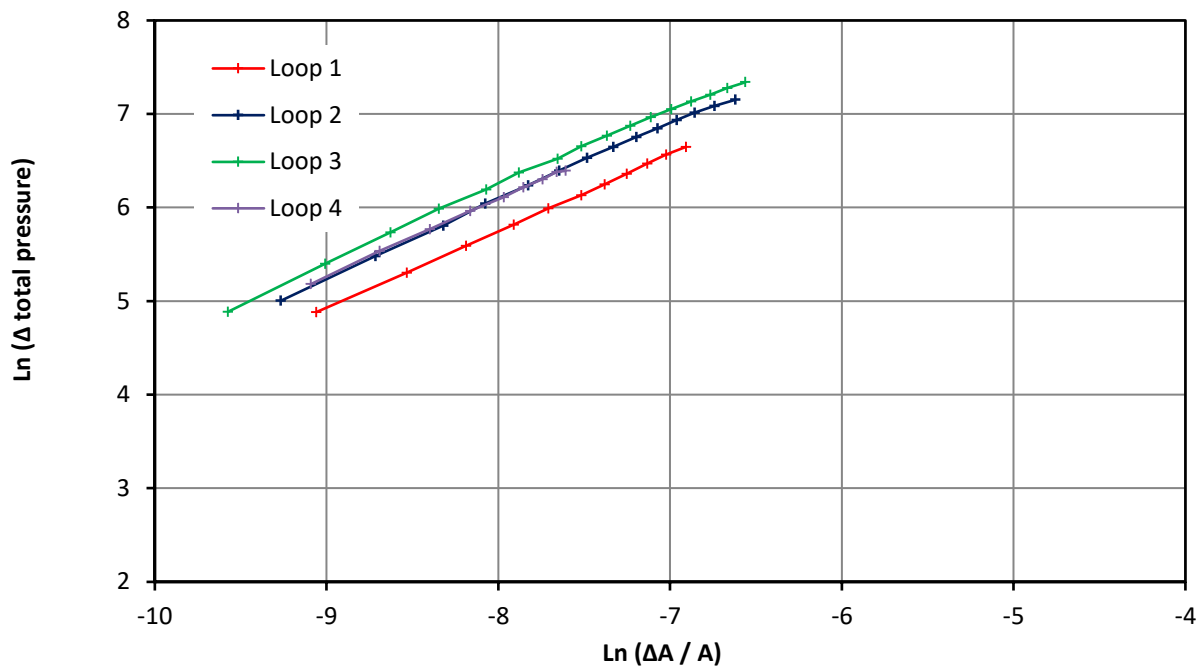
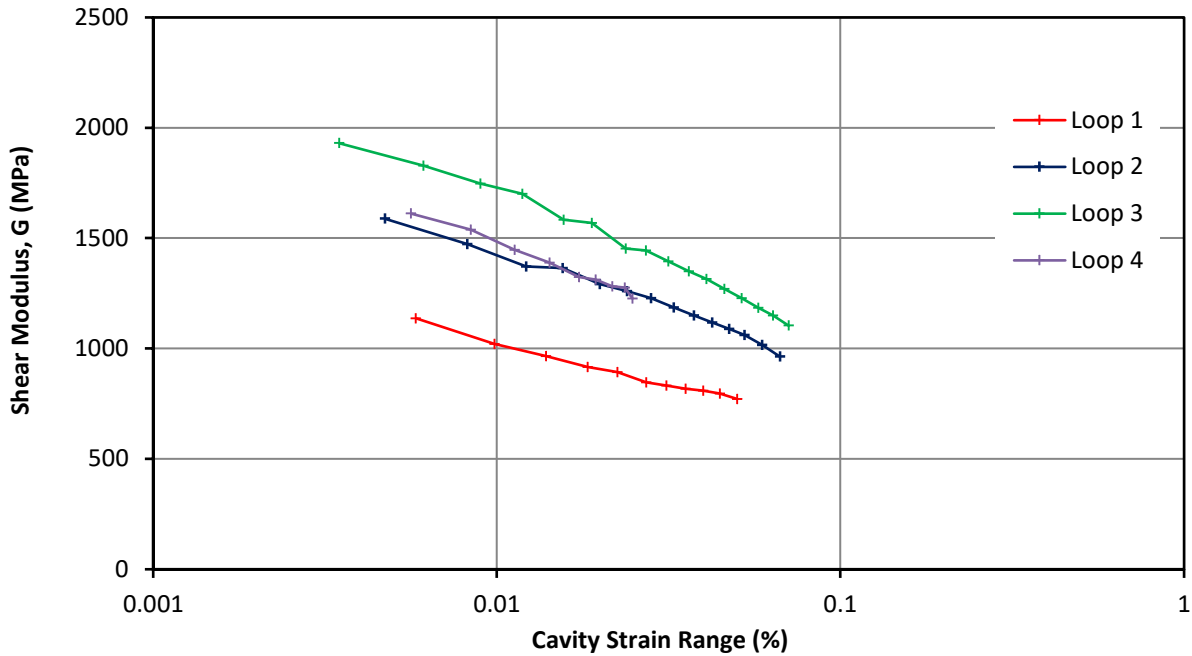
Project	A303 Amesbury to Berwick Down	Figure No.	R71917 T04 - 06
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Analysis

Small Strain Stiffness and Bolton and Whittle (1999)



Test Date	02/11/2020	Test No.	4
Borehole	R71917	Test Depth (m)	33.00



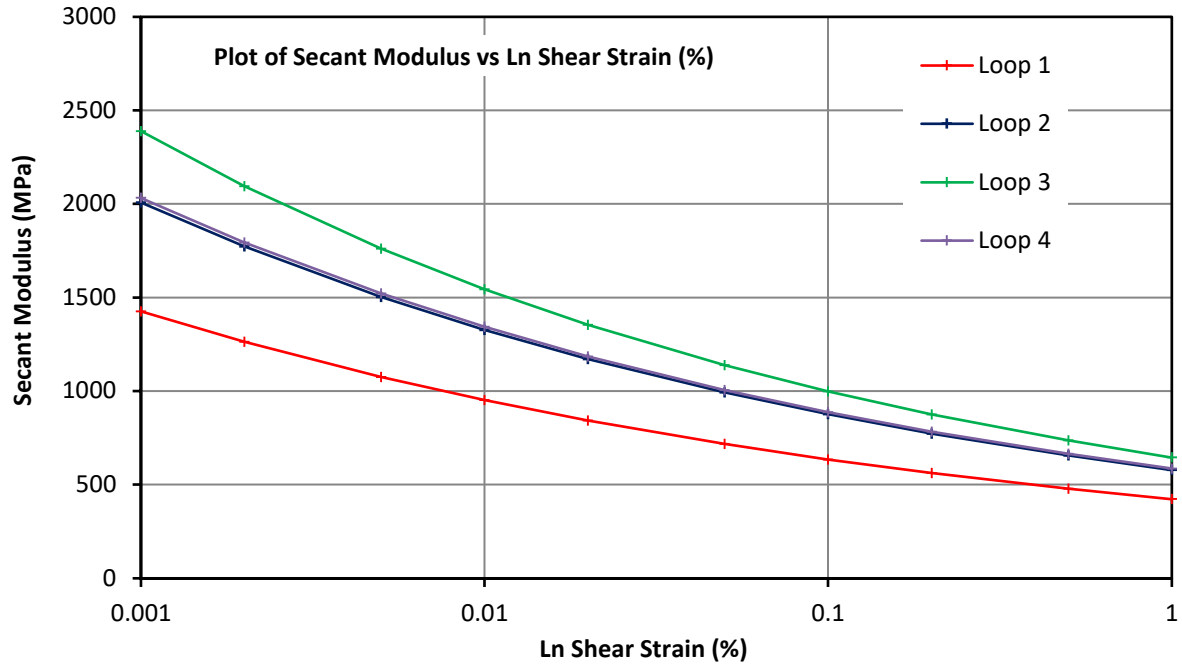
Loop 1		Loop 2		Loop 3		Loop 4	
Gradient(β)	Intercept	Gradient(β)	Intercept	Gradient(β)	Intercept	Gradient(β)	Intercept
0.824	228.498 (MPa)	0.820	307.839 (MPa)	0.810	332.593 (MPa)	0.820	311.965 (MPa)

Project	A303 Amesbury to Berwick Down	Figure No.	R71917 T04 - 07
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Analysis
 Secant Modulus - Shear Strain (%)



Test Date	02/11/2020	Test No.	4
Borehole	R71917	Test Depth (m)	33.00

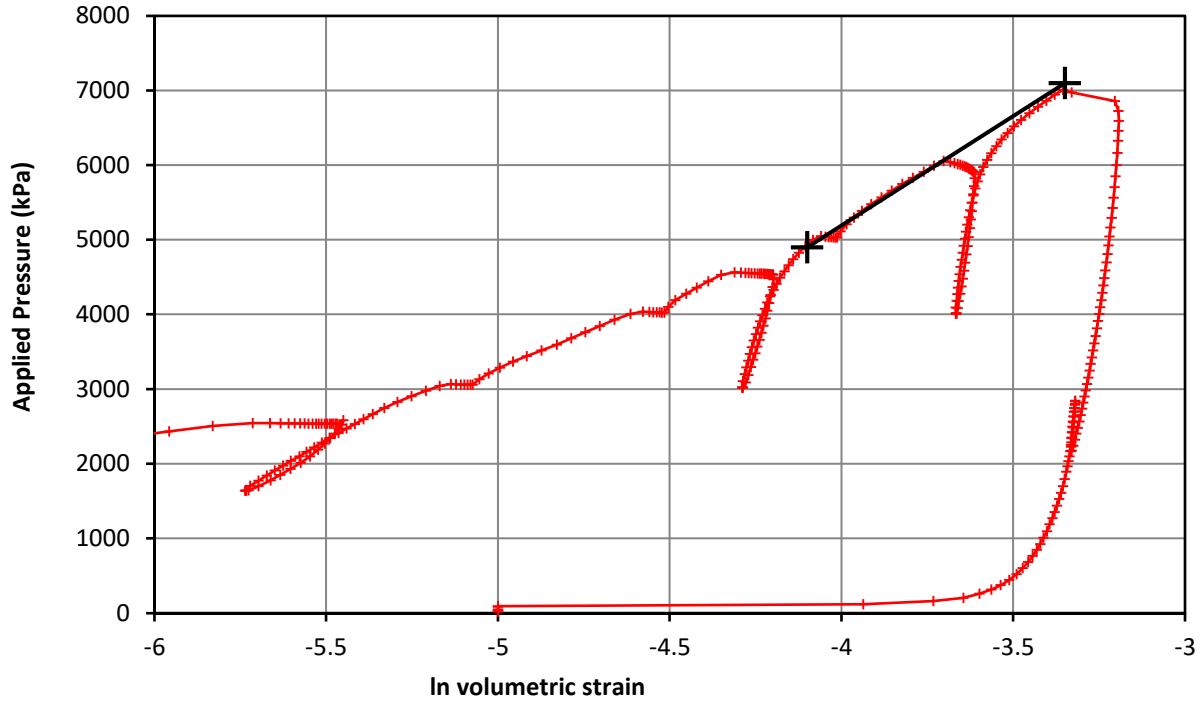


Shear Strain	Loop 1	Loop 2	Loop 3	Loop 4
0.001%	1426	2008	2389	2033
0.002%	1263	1772	2095	1794
0.005%	1075	1503	1761	1521
0.010%	951	1326	1544	1343
0.020%	842	1171	1354	1185
0.050%	717	992	1138	1005
0.100%	635	876	998	887
0.200%	562	773	875	783
0.500%	478	655	736	664
1.000%	423	579	645	586

Project	A303 Amesbury to Berwick Down	Figure No.	R71917 T04 - 08
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test - Strength

Test Date	02/11/2020	Test No.	4
Borehole	R71917	Test Depth (m)	33.00



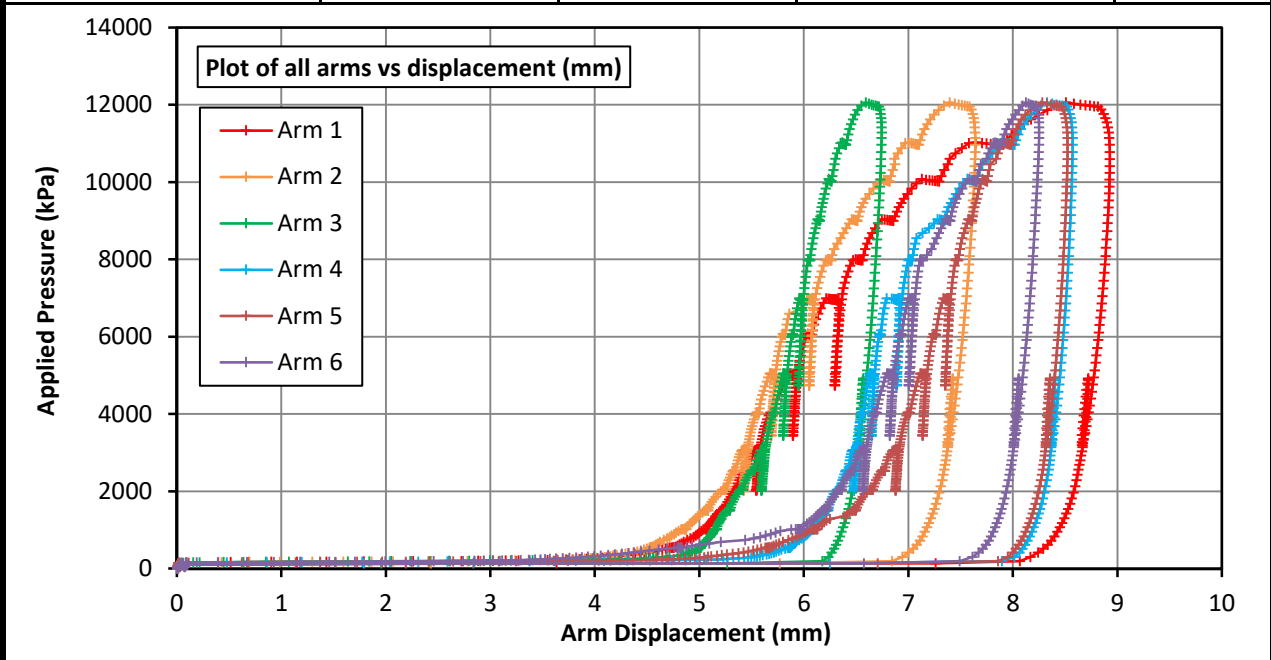
Strength	Undrained Shear	2933 kPa
	Limit Pressure	16927 kPa

Project	A303 Amesbury to Berwick Down	Figure No.	R71917 T04 - 09
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test Overview High Pressure Dilatometer (HPD)



Test Date	03/11/2020	Test No.	5
Borehole	R71917	Test Depth (m)	39.00
Coordinates (m)	412110.3 (E)	141828.7 (N)	Elevation (m) 94.57



Material description from borehole log:
Very weak medium density off white with black specks and orange staining CHALK.

Test pocket conditions:

Total core recovery:	36 %	Test pocket depth range:	
Solid core recovery:	6 %	From:	38.00 m to: 40.50 m
Rock quality designation:	0 %	Flush:	Water

Test comment:
The test pocket was oversize with arms lifting off between 5.5 to 6.5mm. The po was estimated to be at 2641kPa, with the following loading section being relatively long. Material yield is interpreted at 6780kPa with the test taken to a high pressure of 12058kPa. The displacement-pressure response was variable with prolonged failure at high pressure on arms 1, 2 & 4. Analysis of three unload-reload loops provides increasing modulus values from 982 to 1363MPa, whilst a loop on the unload section provides a modulus of 1000MPa. Derived undrained shear strength analysis provides values of 4319 to 4500kPa.

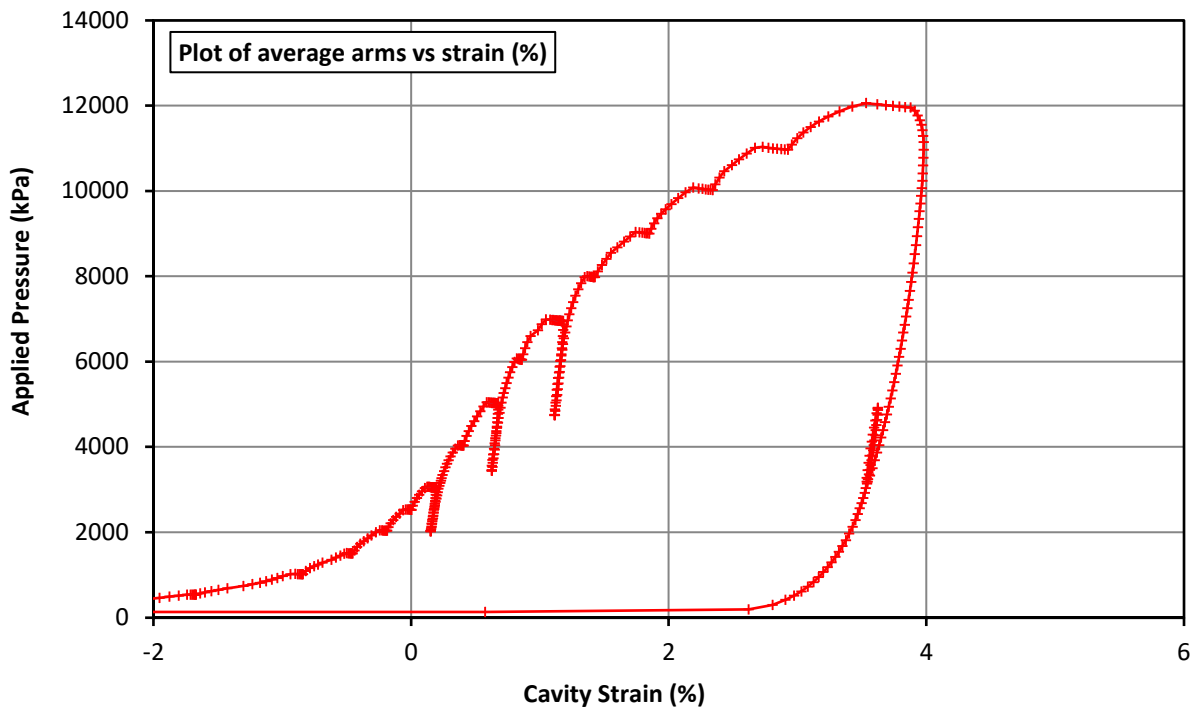
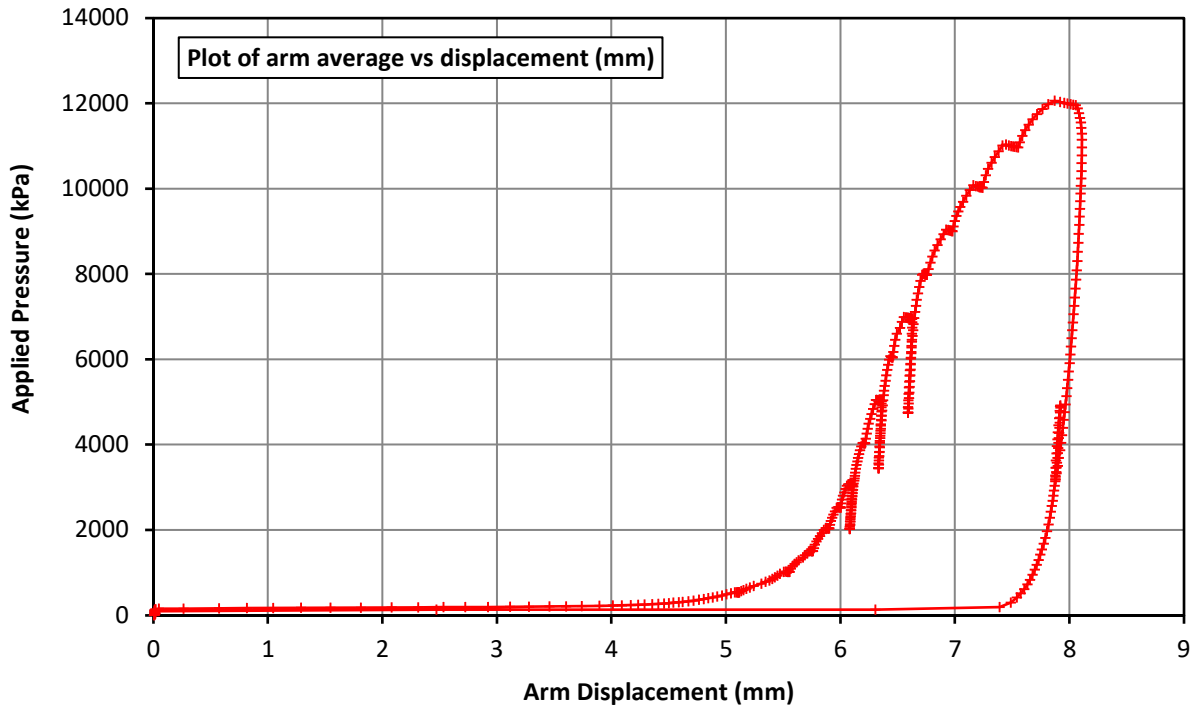
Test details:		Instrument:		Wally			
Drilling method:	Rotary coring		mV	mV/mm	mV	mV/MPa	
Casing depth:	38.00 m	Arm 1:	-2005.4	146.5	TPC A:	-1609.5	109.0
Water level:	23.00 m	Arm 2:	-2632.7	139.0	TPC B:	-2059.4	109.1
		Arm 3:	-2317.1	146.3			
Test time:		Arm 4:	-2045.6	140.5			
Start (probe in):	11:59 hrs	Arm 5:	-2327.8	139.9			
Finish (probe out):	13:26 hrs	Arm 6:	-2059.3	126.0			

Project	A303 Amesbury to Berwick Down	Figure No.	R71917 T05 - 01
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test Overview



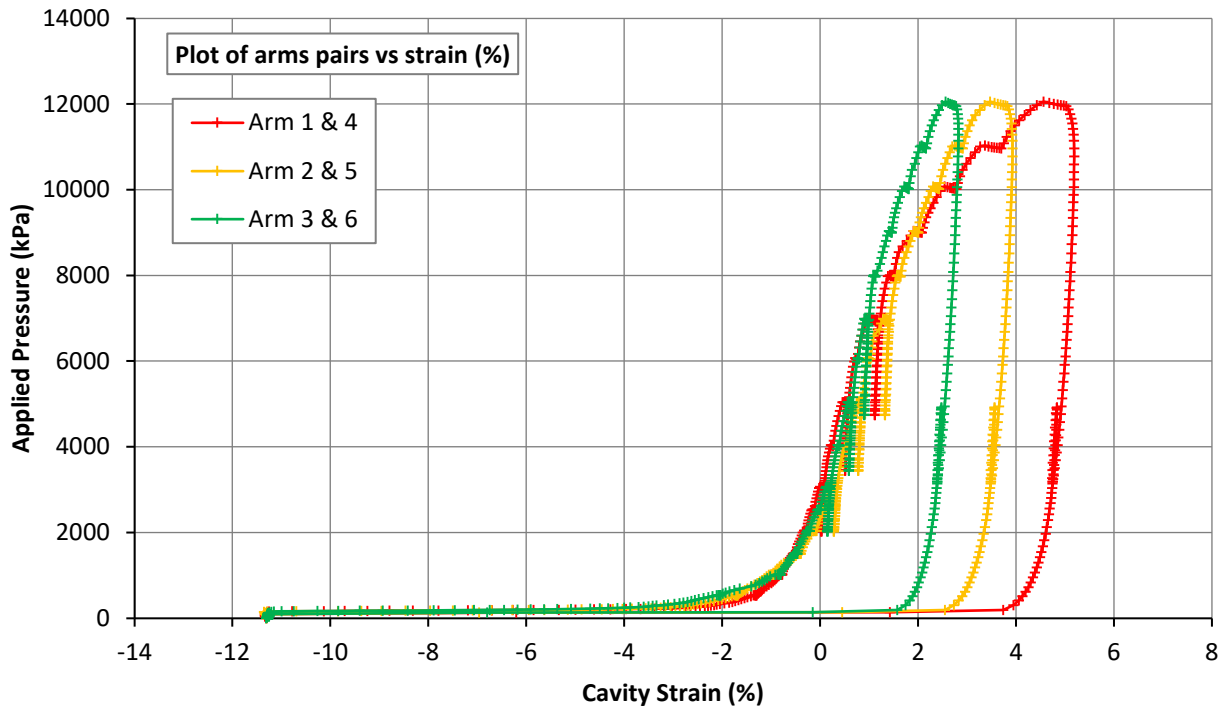
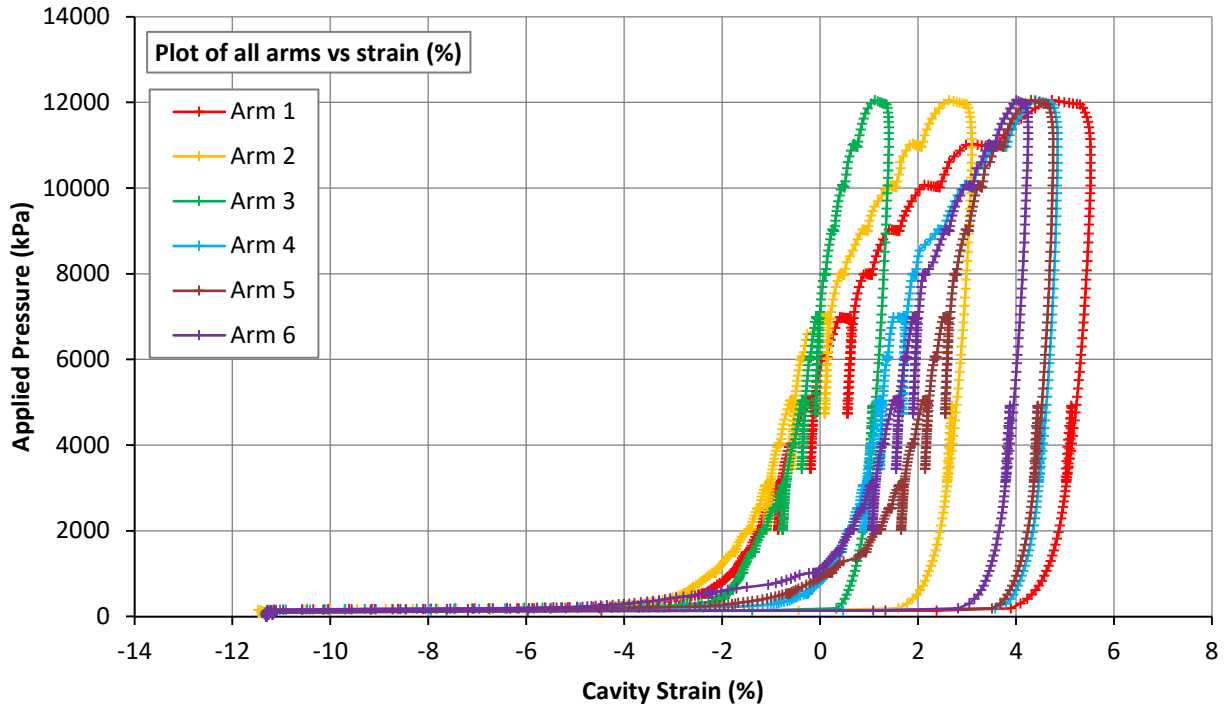
Test Date	03/11/2020	Test No.	5
Borehole	R71917	Test Depth (m)	39.00



Project	A303 Amesbury to Berwick Down	Figure No.	R71917 T05 - 02
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test - Arm Displacement vs Strain (%)

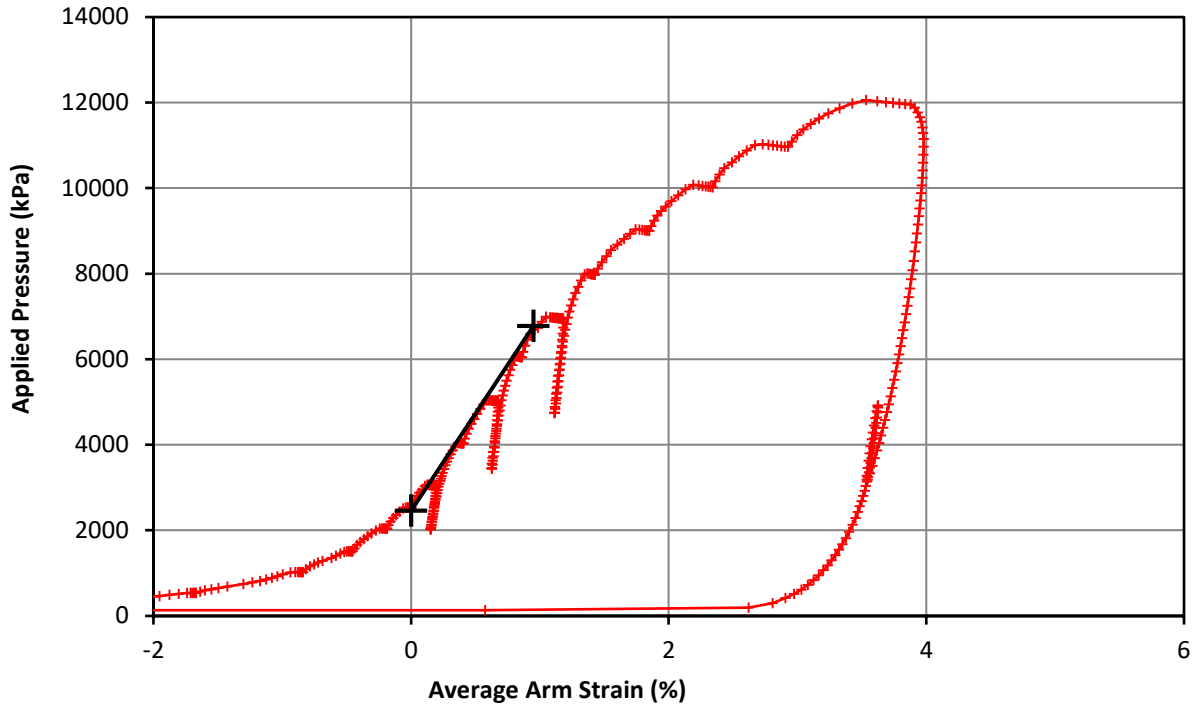
Test Date	03/11/2020	Test No.	5
Borehole	R71917	Test Depth (m)	39.00



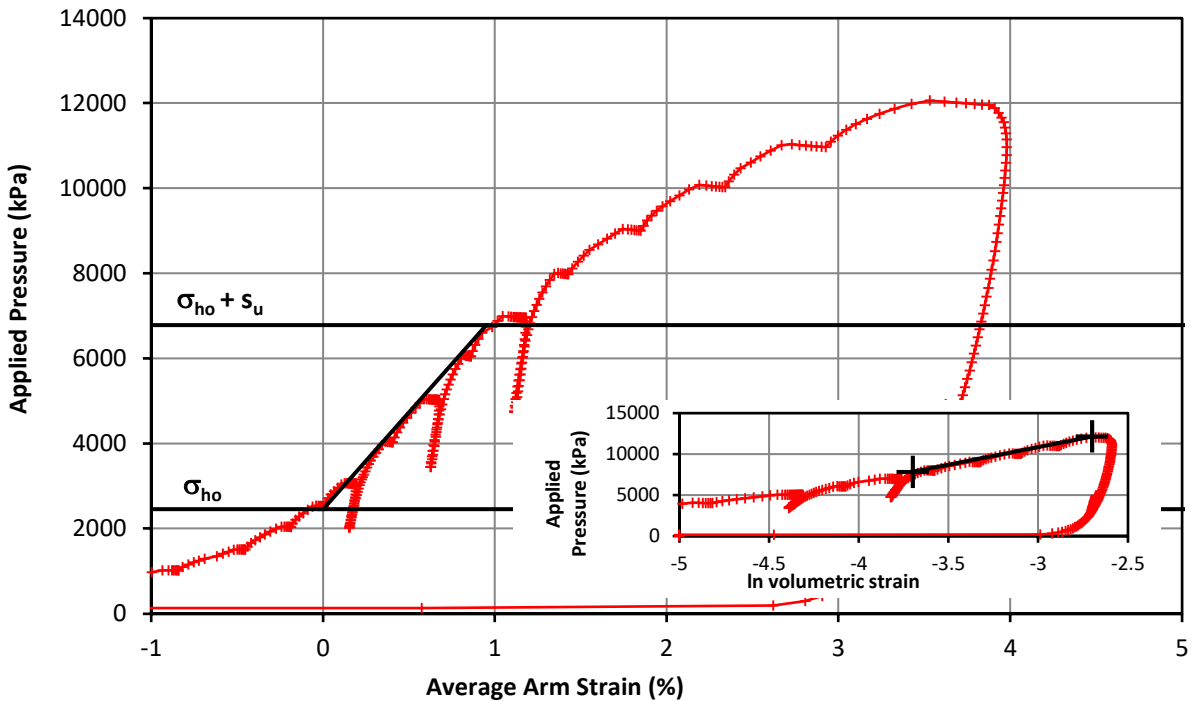
Project	A303 Amesbury to Berwick Down	Figure No.	R71917 T05 - 03
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test Initial Modulus & In Situ Horizontal Stress

Test Date	03/11/2020	Test No.	5
Borehole	R71917	Test Depth (m)	39.00



Initial Modulus	Shear Modulus	229.5 MPa
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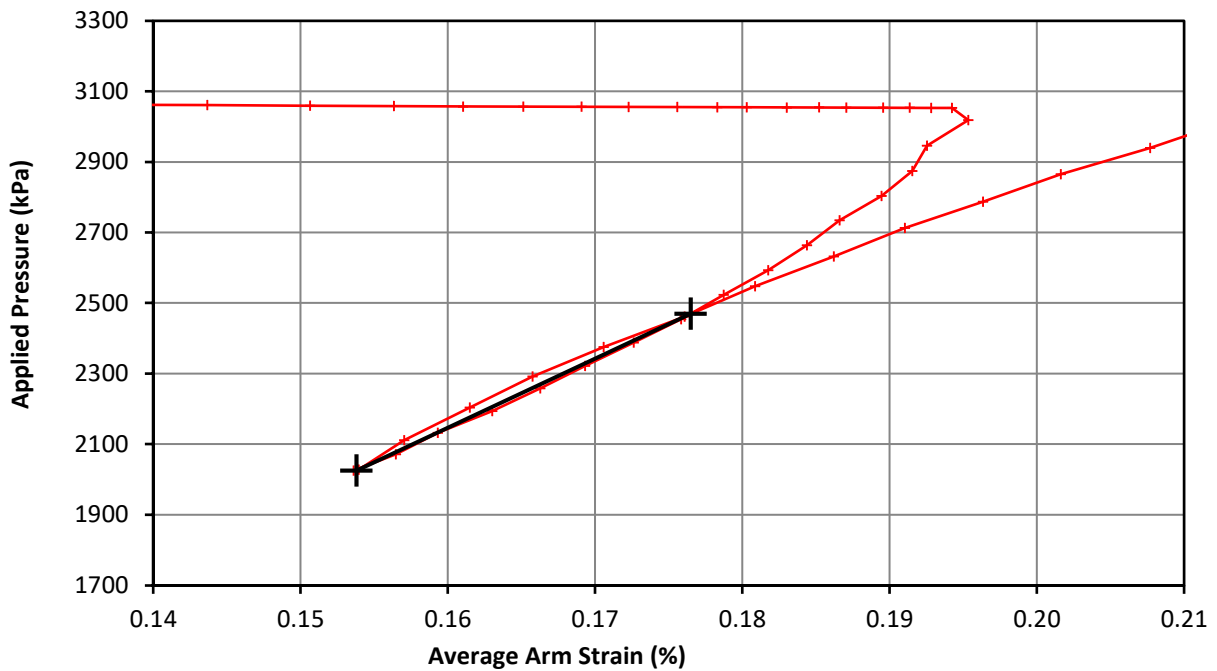
Marsland & Randolph	In situ horizontal stress	2461 kPa
	Undrained Strength	4319 kPa

Project	A303 Amesbury to Berwick Down	Figure No.	R71917 T05 - 04
Client	RPS Ltd		
Project No.	P1200116		

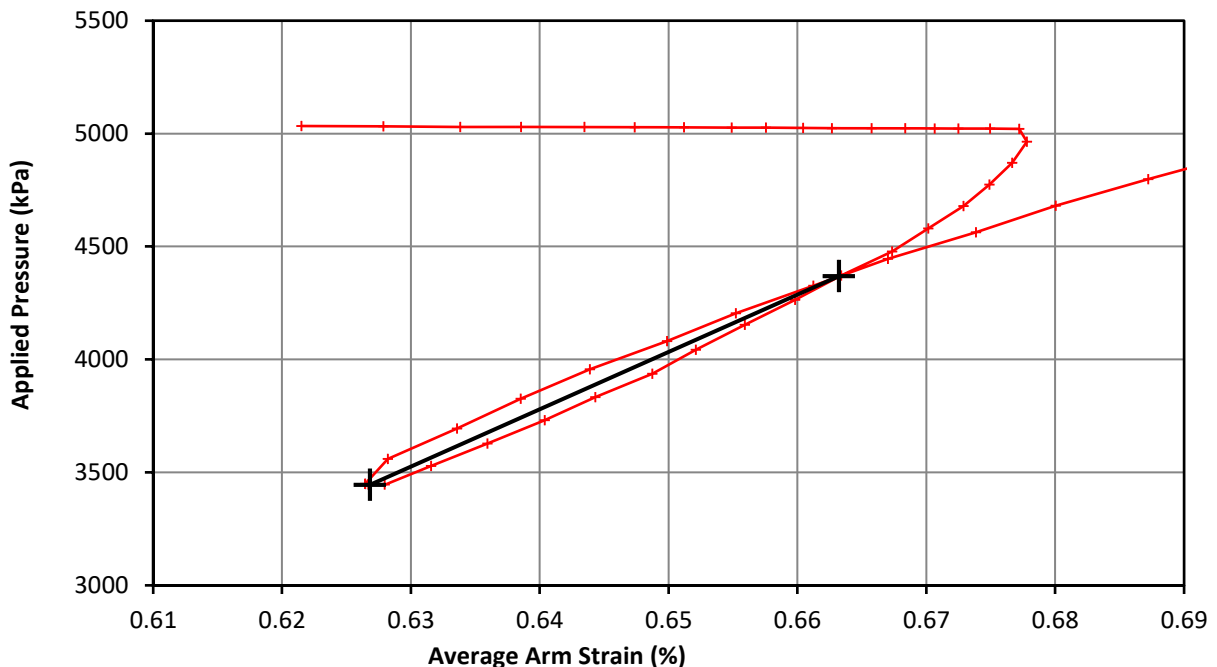
Pressuremeter Test Unload Reload Loop



Test Date	03/11/2020	Test No.	5
Borehole	R71917	Test Depth (m)	39.00



Loop 1	Shear Modulus	981.9 MPa
	Cavity Strain Range	0.023 %



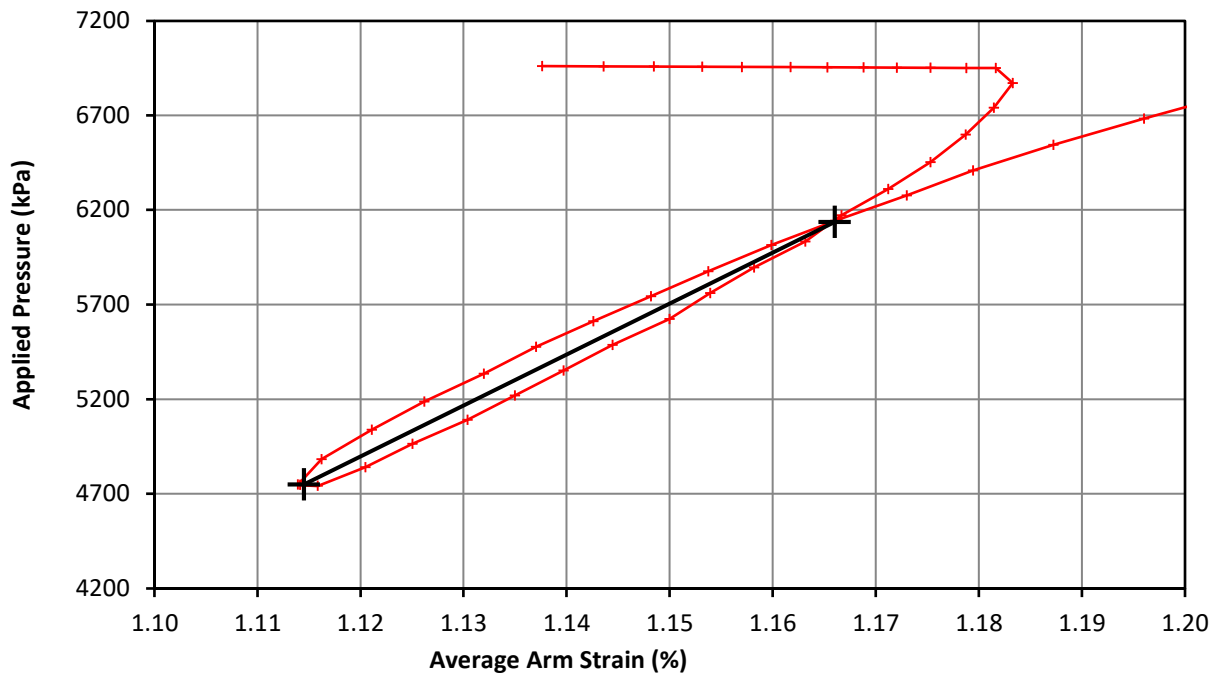
Loop 2	Shear Modulus	1277.6 MPa
	Cavity Strain Range	0.036 %

Project	A303 Amesbury to Berwick Down	Figure No.	R71917 T05 - 05
Client	RPS Ltd		
Project No.	P1200116		

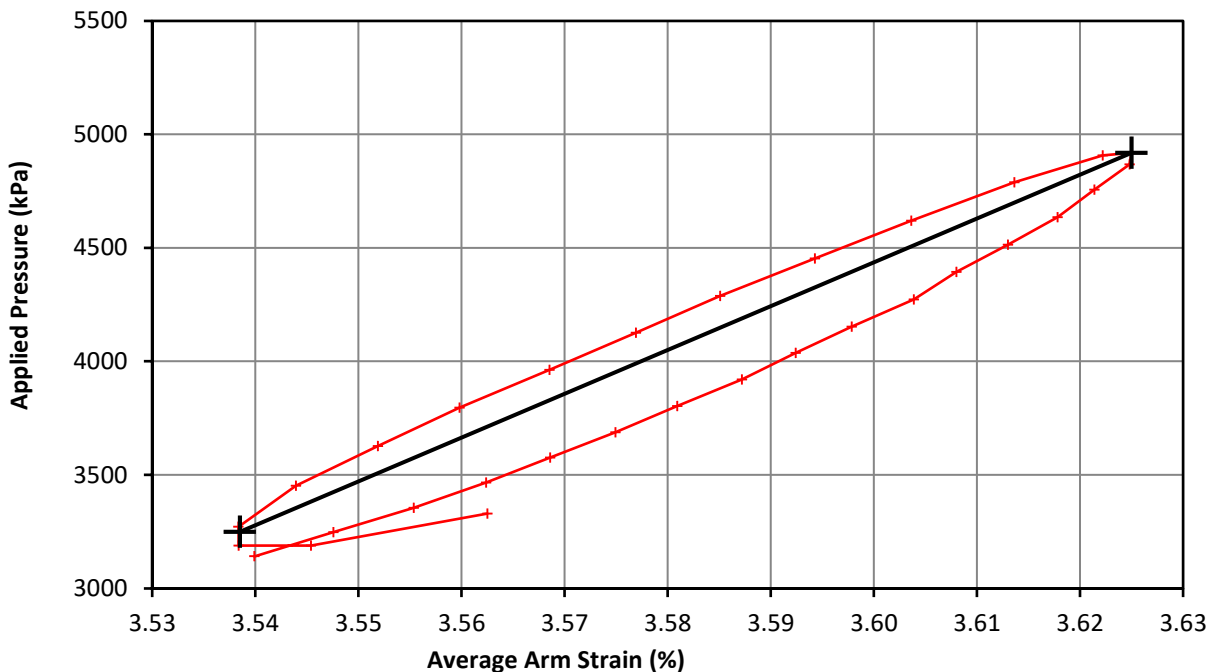
Pressuremeter Test Unload Reload Loop



Test Date	03/11/2020	Test No.	5
Borehole	R71917	Test Depth (m)	39.00



Loop 3	Shear Modulus	1363.3 MPa
	Cavity Strain Range	0.051 %



Loop 4	Shear Modulus	999.7 MPa
	Cavity Strain Range	0.087 %

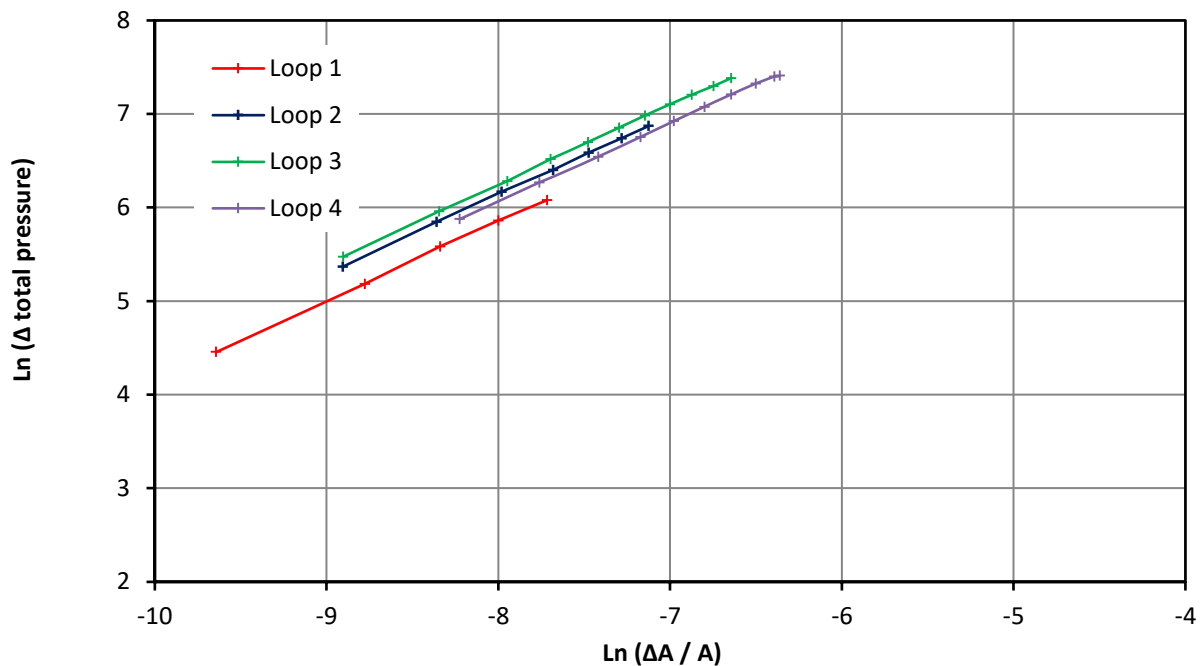
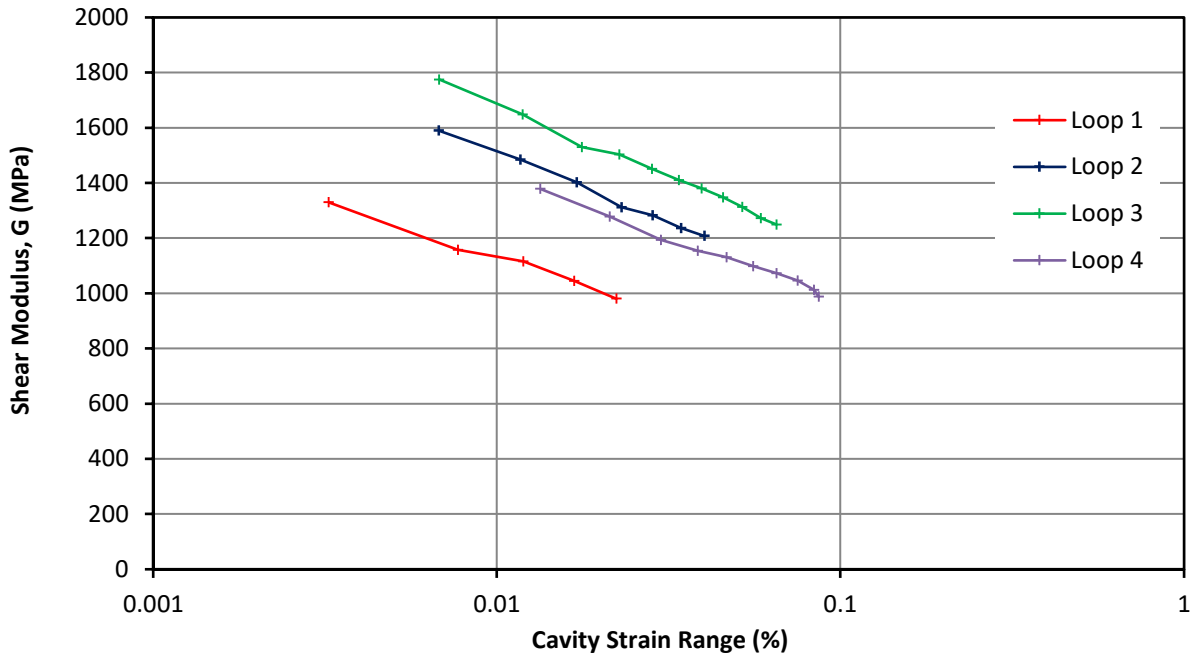
Project	A303 Amesbury to Berwick Down	Figure No.	R71917 T05 - 06
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Analysis

Small Strain Stiffness and Bolton and Whittle (1999)



Test Date	03/11/2020	Test No.	5
Borehole	R71917	Test Depth (m)	39.00



Loop 1		Loop 2		Loop 3		Loop 4	
Gradient(β)	Intercept	Gradient(β)	Intercept	Gradient(β)	Intercept	Gradient(β)	Intercept
0.849	308.880 (MPa)	0.842	388.970 (MPa)	0.847	454.092 (MPa)	0.833	338.586 (MPa)

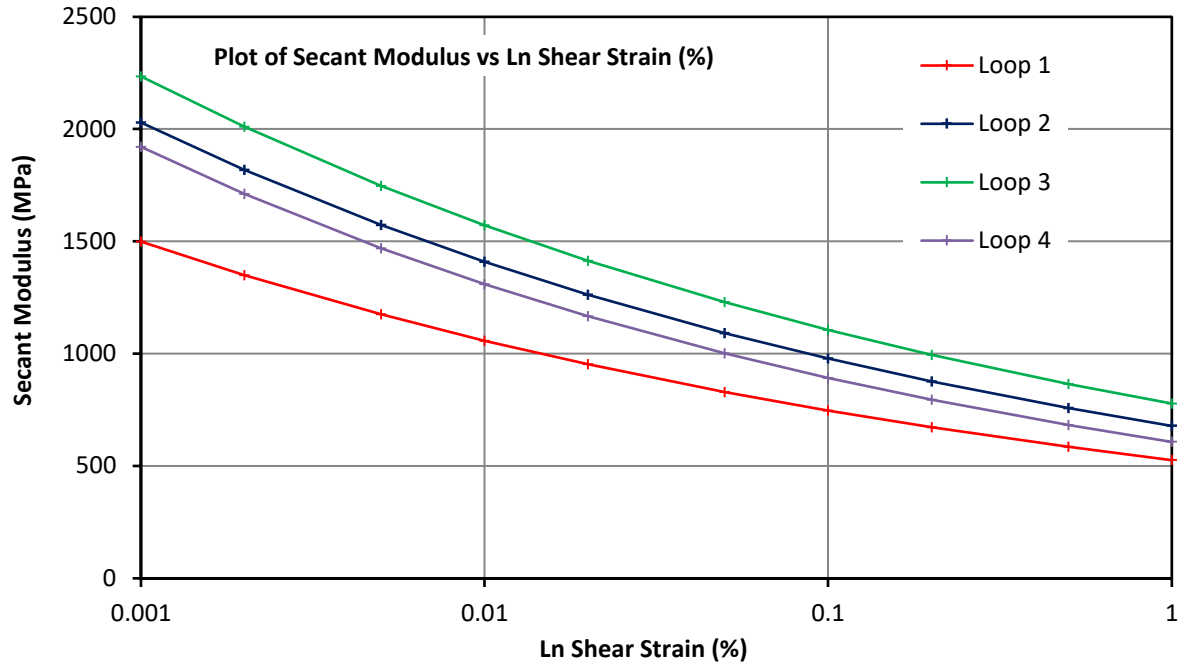
Project	A303 Amesbury to Berwick Down	Figure No.	R71917 T05 - 07
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Analysis

Secant Modulus - Shear Strain (%)



Test Date	03/11/2020	Test No.	5
Borehole	R71917	Test Depth (m)	39.00

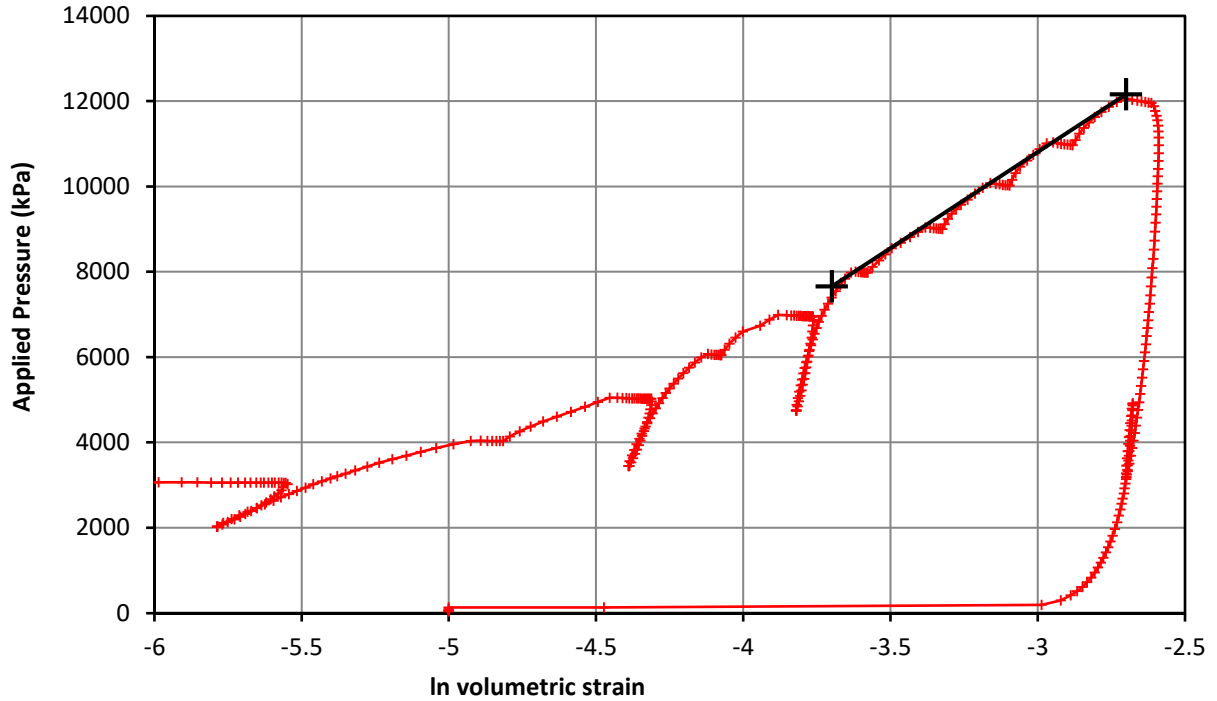


Shear Strain	Loop 1	Loop 2	Loop 3	Loop 4
0.001%	1499	2030	2234	1921
0.002%	1349	1818	2010	1712
0.005%	1175	1573	1747	1469
0.010%	1058	1409	1572	1309
0.020%	952	1262	1414	1166
0.050%	829	1092	1229	1001
0.100%	746	978	1105	892
0.200%	672	876	994	795
0.500%	585	758	864	682
1.000%	526	679	778	608

Project	A303 Amesbury to Berwick Down	Figure No.	R71917 T05 - 08
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test - Strength

Test Date	03/11/2020	Test No.	5
Borehole	R71917	Test Depth (m)	39.00



Strength	Undrained Shear	4500 kPa
	Limit Pressure	24310 kPa

Project	A303 Amesbury to Berwick Down	Figure No.	R71917 T05 - 09
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Results Summary

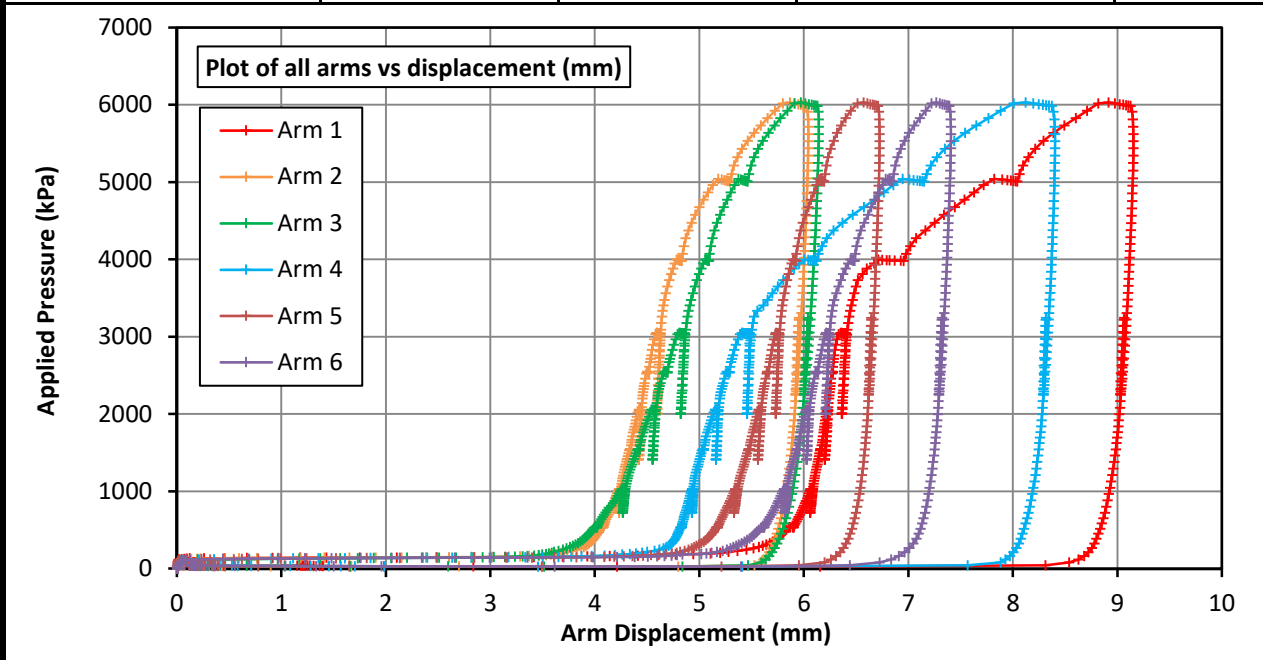
Test	Depth (m)	Material description from borehole log	Max. test pressure (MPa)	P _o (kPa)	Undrained strength			G _i (MPa)	Loop No.	G _{ur} (MPa)	ε _c (%)	Non linear stiffness		Secant shear modulus G (MPa)		
					S _{u (M&R)} (kPa)	S _u (kPa)	P _L (kPa)					α (MPa)	β	Shear strain		
														0.1%	0.01%	0.001%
R71918																
1	18.00	CHALK recovered as slightly silty angular to subangular fine to coarse gravel with low cobble content.	6031	1010	2250	2003	11367	138.3	1	635	0.038	264.669	0.893	555	710	908
									2	760	0.053	287.912	0.875	682	909	1211
									3	874	0.058	306.102	0.871	744	1001	1346
2	28.00	Very weak medium density cream / white with many black specks CHALK with occasional flint bands.	8008	1530	2170	2374	14547	242.2	1	978	0.036	426.744	0.899	855	1078	1359
									2	1105	0.039	426.103	0.885	946	1234	1609
									3	1031	0.048	239.005	0.825	803	1202	1800
3	38.00	Very weak medium density cream / white with many black specks CHALK with rinded flint.	12032	2400	4100	4080	24049	312.7	1	1074	0.019	330.087	0.868	822	1115	1511
									2	1417	0.031	536.971	0.886	1180	1534	1995
									3	1369	0.056	544.568	0.884	1216	1589	2077
									4	1005	0.101	339.733	0.858	907	1258	1744

Project No. P1200116	Project A303 Amesbury to Berwick Down
Client RPS	
Table No.	R71918

Pressuremeter Test Overview High Pressure Dilatometer (HPD)



Test Date	16/11/2020	Test No.	1	
Borehole	R71918	Test Depth (m)	18.00	
Coordinates (m)	412648 (E)	141930 (N)	Elevation (m)	89.50



Material description from borehole log:
CHALK recovered as slightly silty angular to subangular fine to coarse gravel with low cobble content.

Test pocket conditions:

Total core recovery:	73 %	Test pocket depth range:	
Solid core recovery:	17 %	From:	17.00 m to: 19.50 m
Rock quality designation:	0 %	Flush:	Water

Test comment:
The test pocket was oversized with arms lifting off between 4.0 to 6.0mm. The p_0 was estimated to be at 1010kPa, with the following loading section being relatively long. Material yield is interpreted at 3260kPa with the test taken to a pressure of 6031kPa. The displacement-pressure response was variable with progressive failure and greater expansion noted on arms 1 & 4. Analysis of three unload-reload loops provides modulus values from 635 to 874MPa. Derived undrained shear strength analysis provides values of 2003 to 2250kPa.

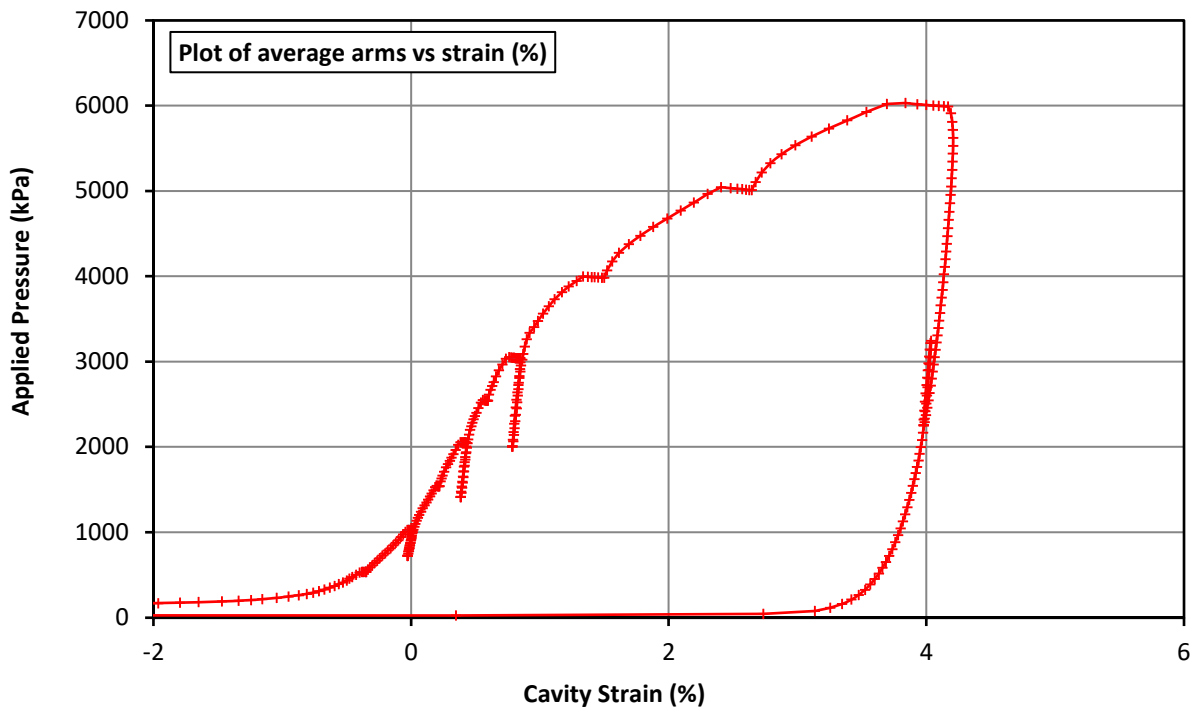
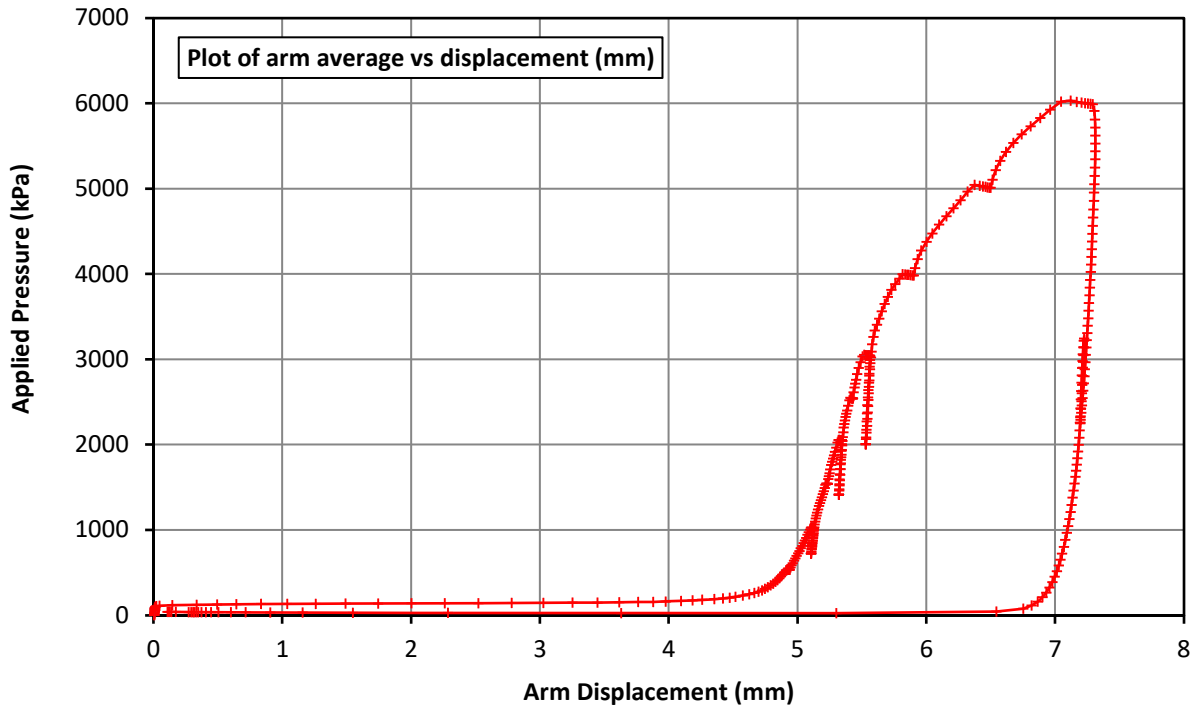
Test details:		Instrument:		Wally	
Drilling method:	Rotary coring		mV	mV/mm	mV
Casing depth:	17.00 m	Arm 1:	-2011.5	146.5	TPC A: -1610.3
Water level:	- m	Arm 2:	-2636.3	139.0	TPC B: -2059.8
		Arm 3:	-2315.4	146.3	
Test time:		Arm 4:	-2048.1	140.5	
Start (probe in):	10:21 hrs	Arm 5:	-2325.1	139.9	
Finish (probe out):	11:35 hrs	Arm 6:	-2052.5	126.0	

Project	A303 Amesbury to Berwick Down	Figure No.	R71918 T01 - 01
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test Overview



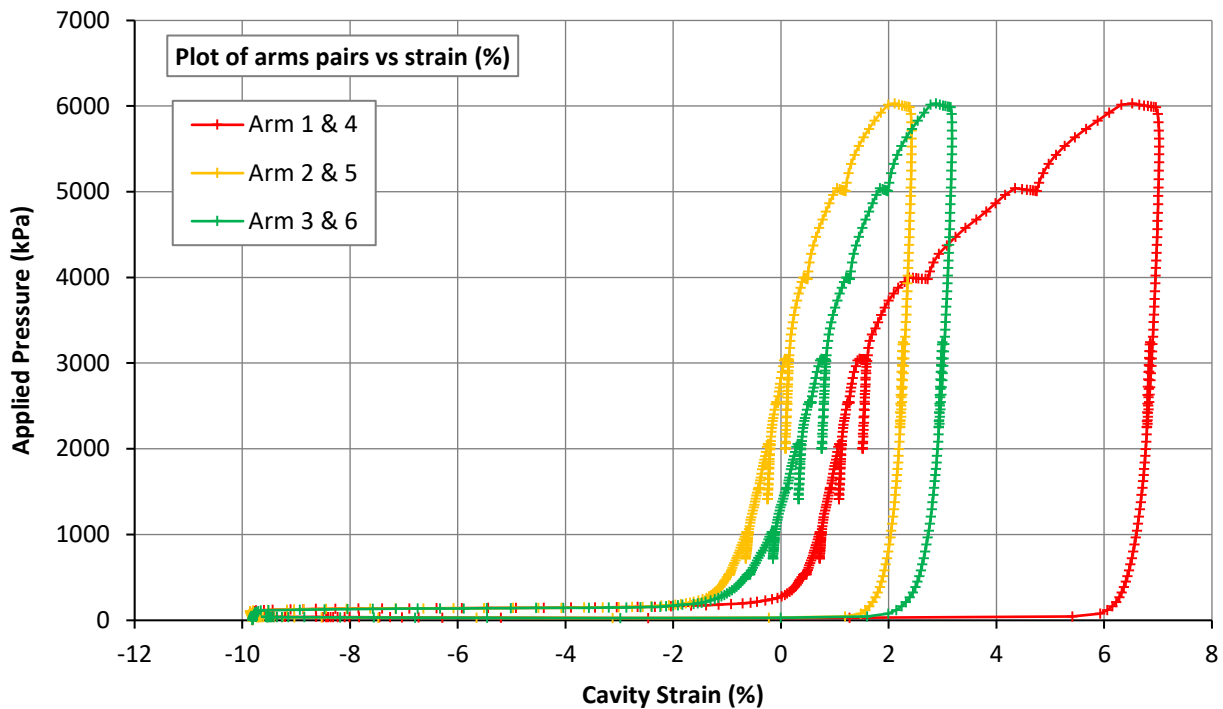
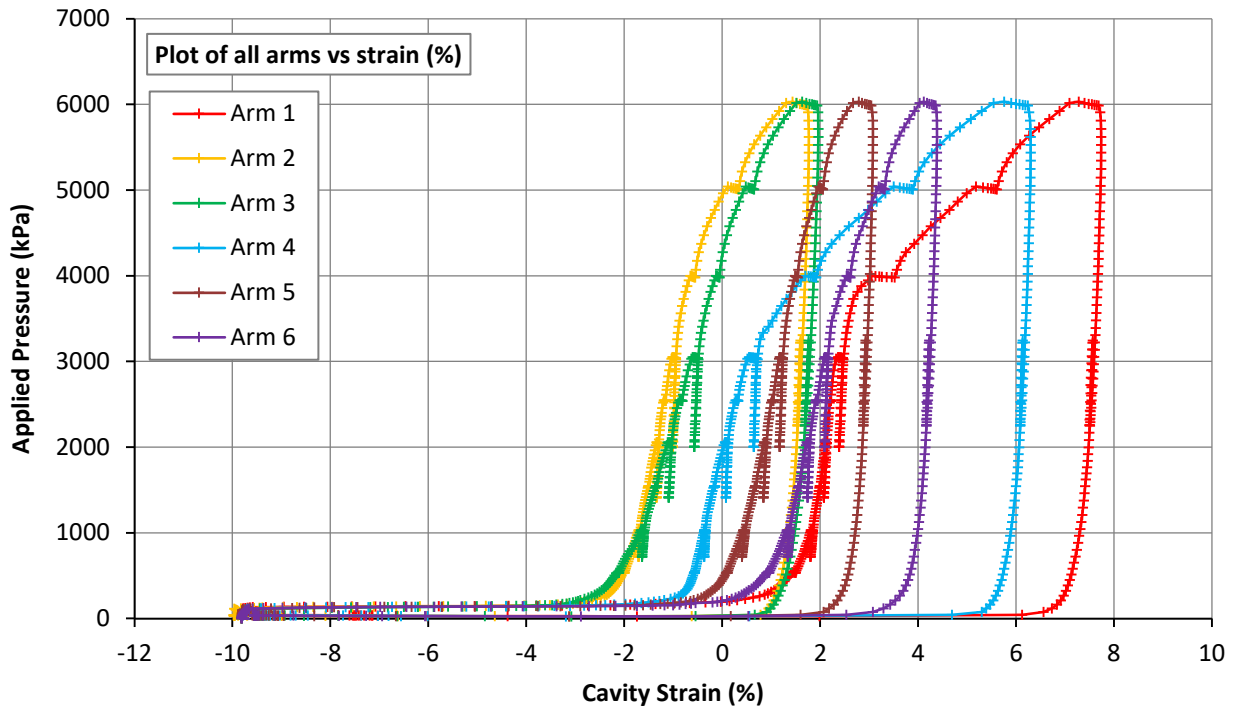
Test Date	16/11/2020	Test No.	1
Borehole	R71918	Test Depth (m)	18.00



Project	A303 Amesbury to Berwick Down	Figure No.	R71918 T01 - 02
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test - Arm Displacement vs Strain (%)

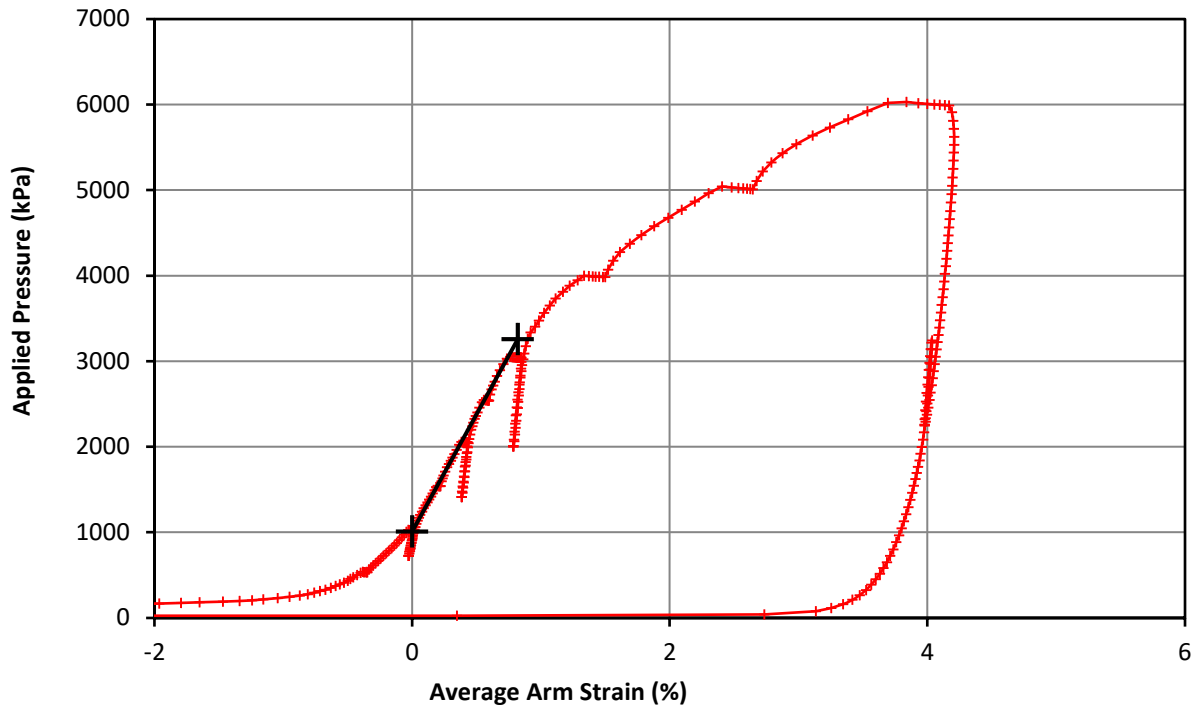
Test Date	16/11/2020	Test No.	1
Borehole	R71918	Test Depth (m)	18.00



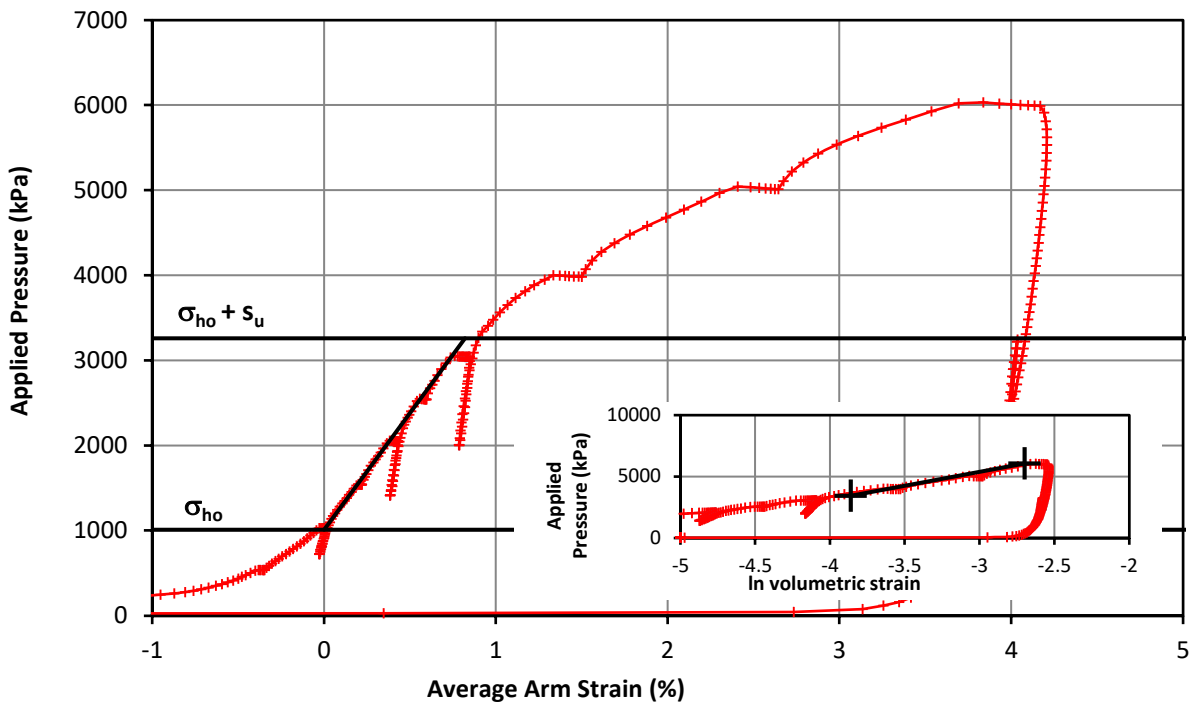
Project	A303 Amesbury to Berwick Down	Figure No.	R71918 T01 - 03
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test Initial Modulus & In Situ Horizontal Stress

Test Date	16/11/2020	Test No.	1
Borehole	R71918	Test Depth (m)	18.00



Initial Modulus	Shear Modulus	138.3 MPa
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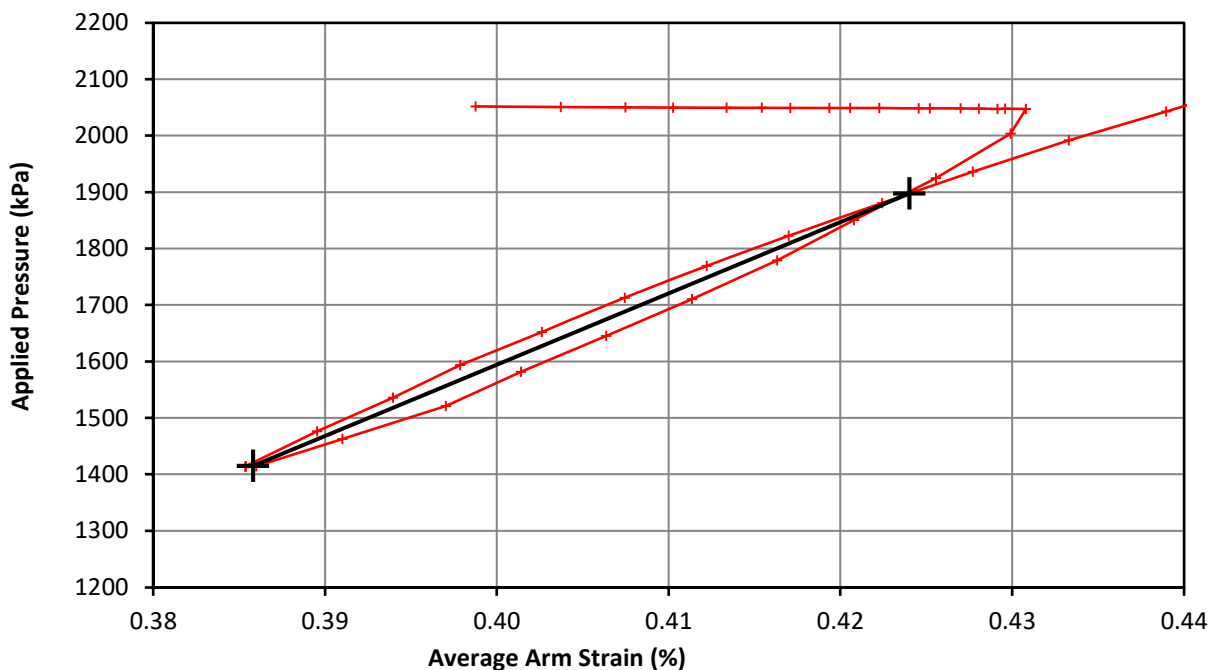
Marsland & Randolph	In situ horizontal stress	1010 kPa
	Undrained Strength	2250 kPa

Project	A303 Amesbury to Berwick Down	Figure No.	R71918 T01 - 04
Client	RPS Ltd		
Project No.	P1200116		

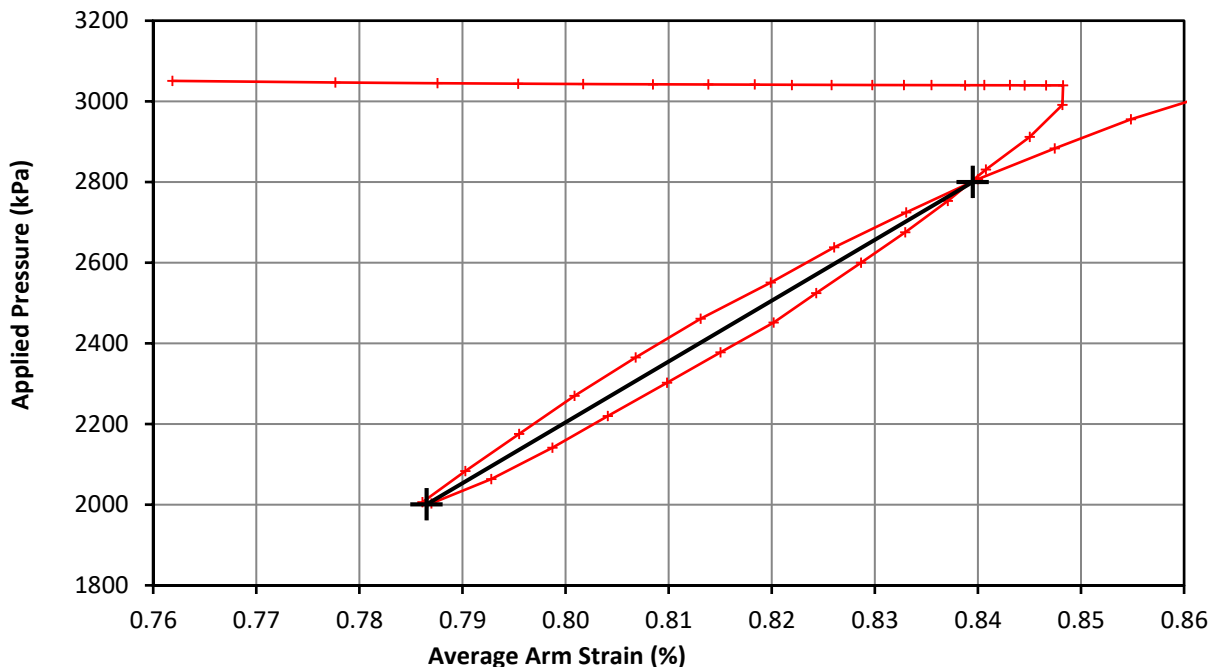
Pressuremeter Test Unload Reload Loop



Test Date	16/11/2020	Test No.	1
Borehole	R71918	Test Depth (m)	18.00



Loop 1	Shear Modulus	634.9 MPa
	Cavity Strain Range	0.038 %



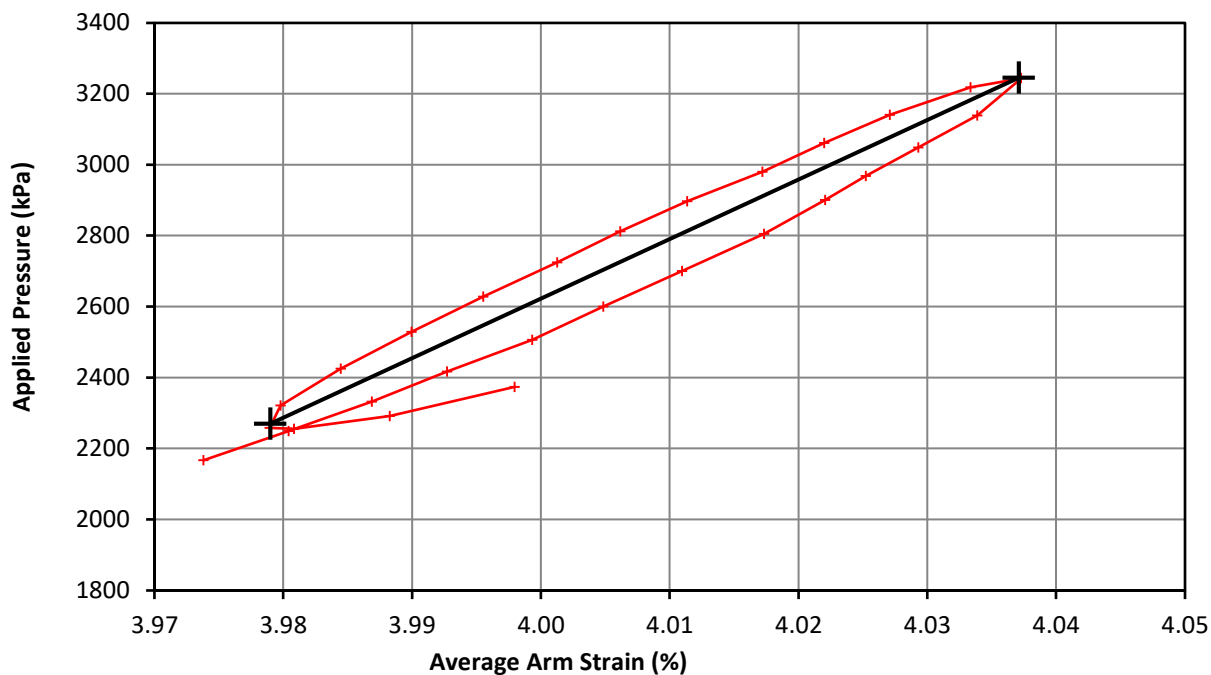
Loop 2	Shear Modulus	760.1 MPa
	Cavity Strain Range	0.053 %

Project	A303 Amesbury to Berwick Down	Figure No.	R71918 T01 - 05
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test Unload Reload Loop



Test Date	16/11/2020	Test No.	1
Borehole	R71918	Test Depth (m)	18.00



Loop 3	Shear Modulus	873.8 MPa
	Cavity Strain Range	0.058 %

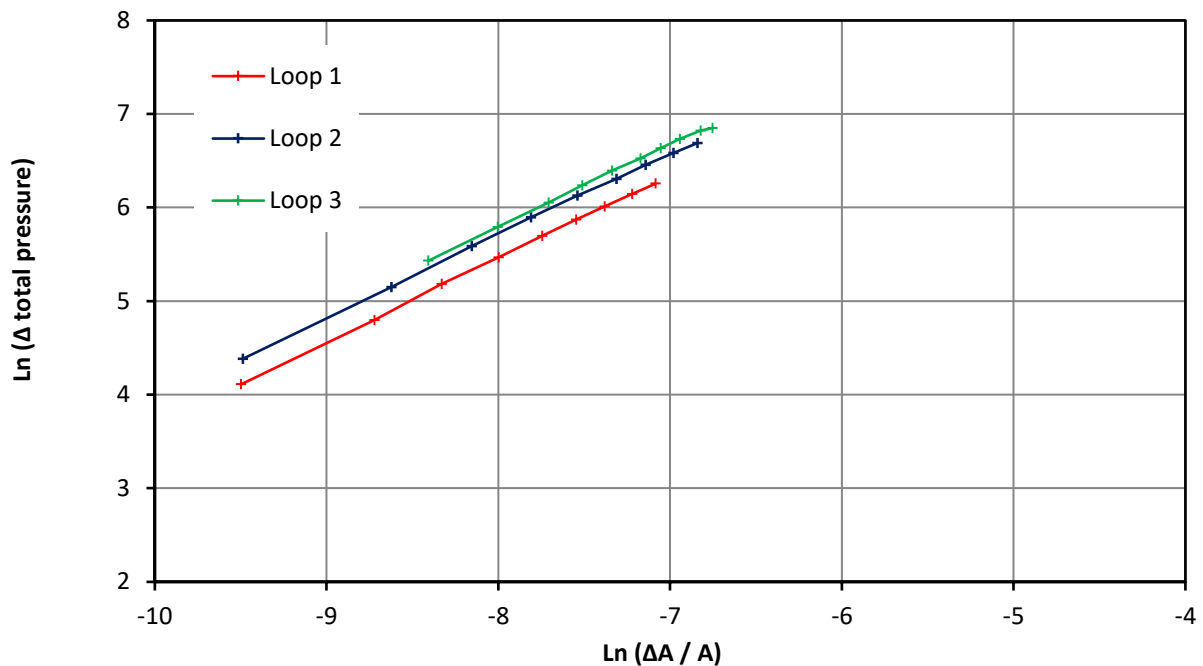
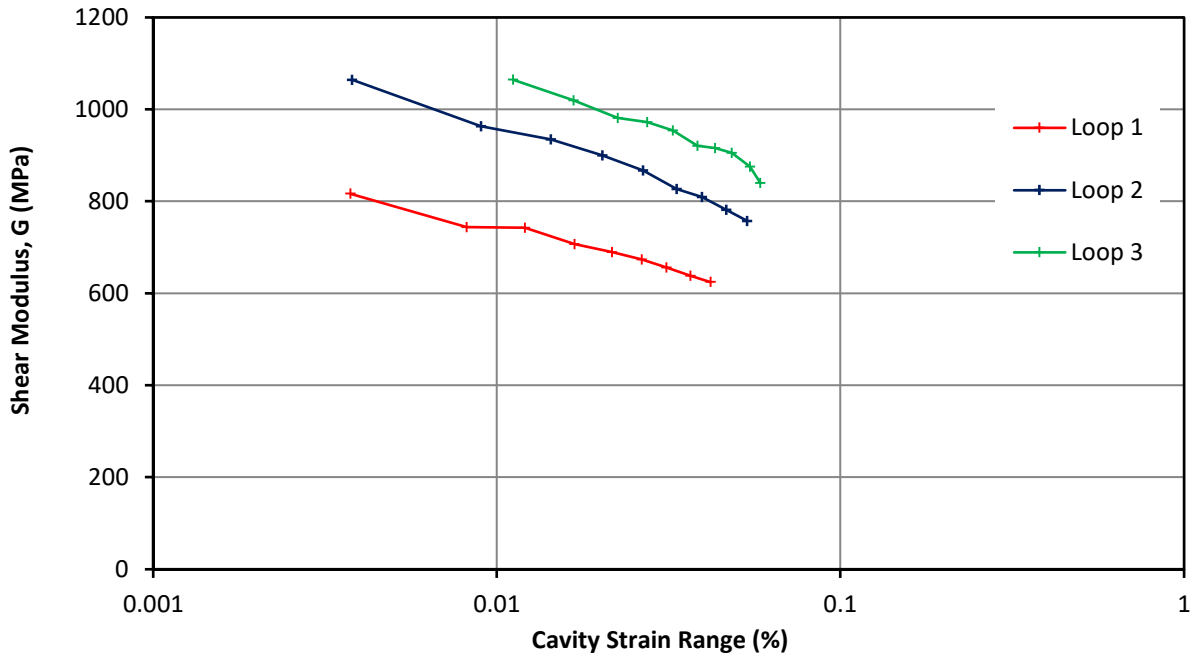
Project	A303 Amesbury to Berwick Down	Figure No.	R71918 T01 - 06
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Analysis

Small Strain Stiffness and Bolton and Whittle (1999)



Test Date	16/11/2020	Test No.	1
Borehole	R71918	Test Depth (m)	18.00



Loop 1		Loop 2		Loop 3	
Gradient(β)	Intercept	Gradient(β)	Intercept	Gradient(β)	Intercept
0.893	296.414	0.875	328.960	0.871	351.302
	(MPa)		(MPa)		(MPa)

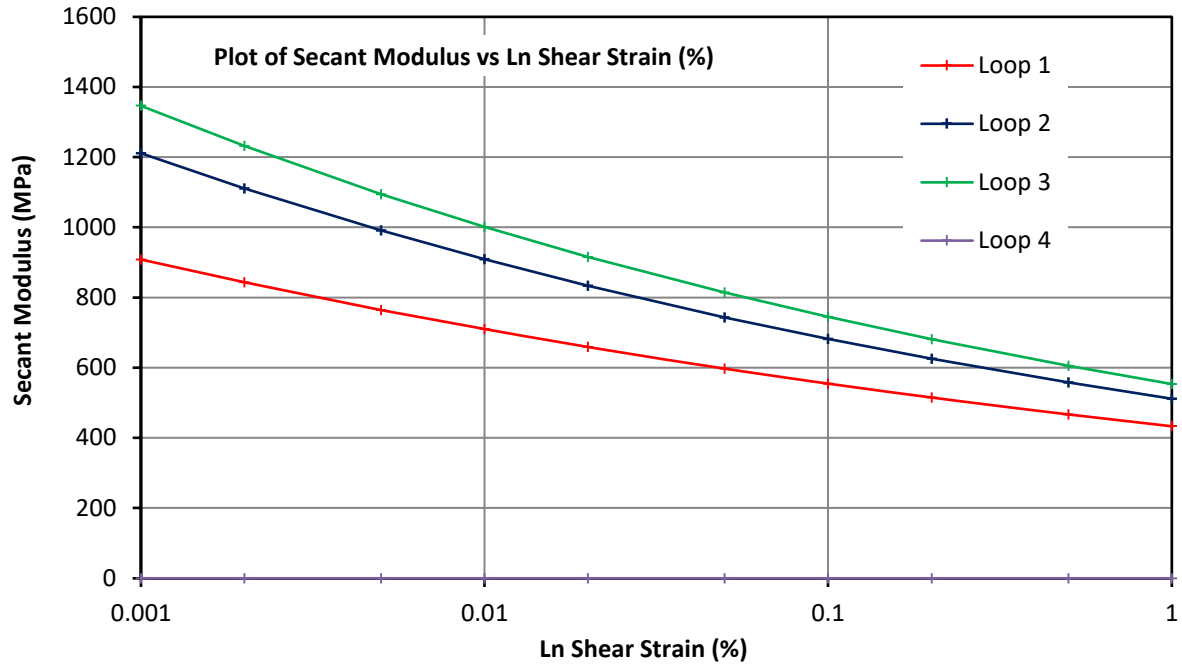
Project	A303 Amesbury to Berwick Down	Figure No.	R71918 T01 - 07
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Analysis

Secant Modulus - Shear Strain (%)



Test Date	16/11/2020	Test No.	1
Borehole	R71918	Test Depth (m)	18.00

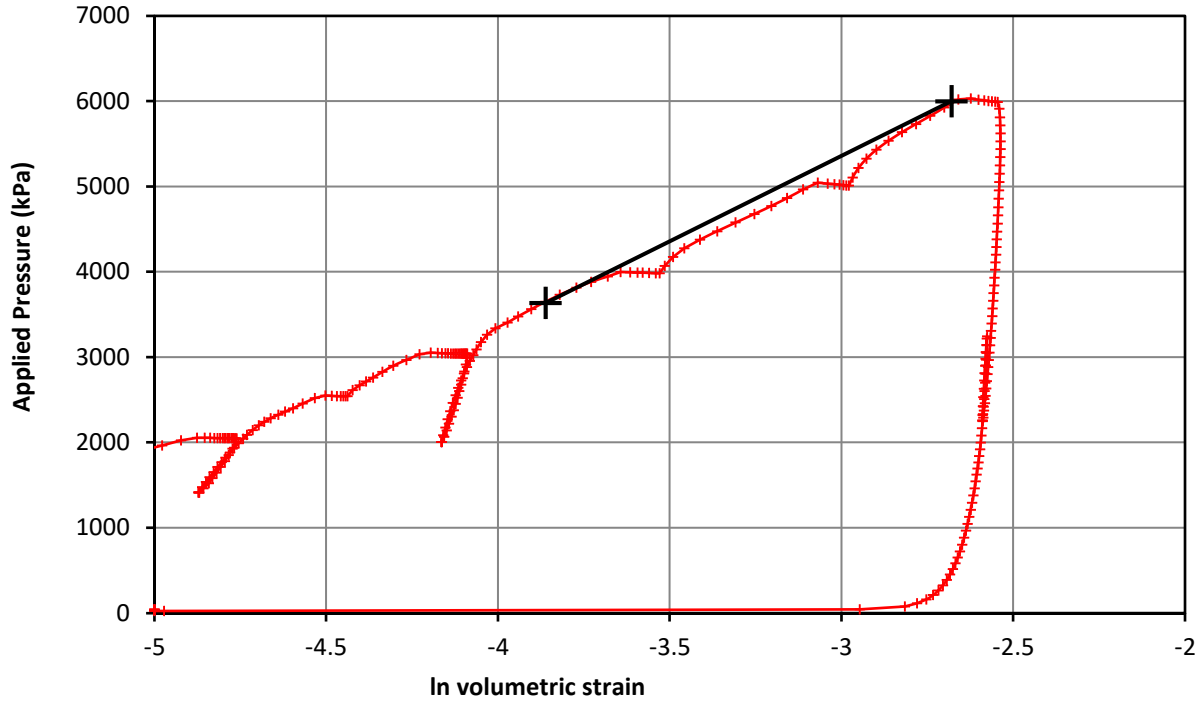


Shear Strain	Loop 1	Loop 2	Loop 3
0.001%	908	1211	1346
0.002%	843	1111	1232
0.005%	764	991	1095
0.010%	710	909	1001
0.020%	659	833	916
0.050%	597	743	814
0.100%	555	682	744
0.200%	515	625	681
0.500%	467	558	605
1.000%	433	511	554

Project	A303 Amesbury to Berwick Down	Figure No.	R71918 T01 - 08
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test - Strength

Test Date	16/11/2020	Test No.	1
Borehole	R71918	Test Depth (m)	18.00



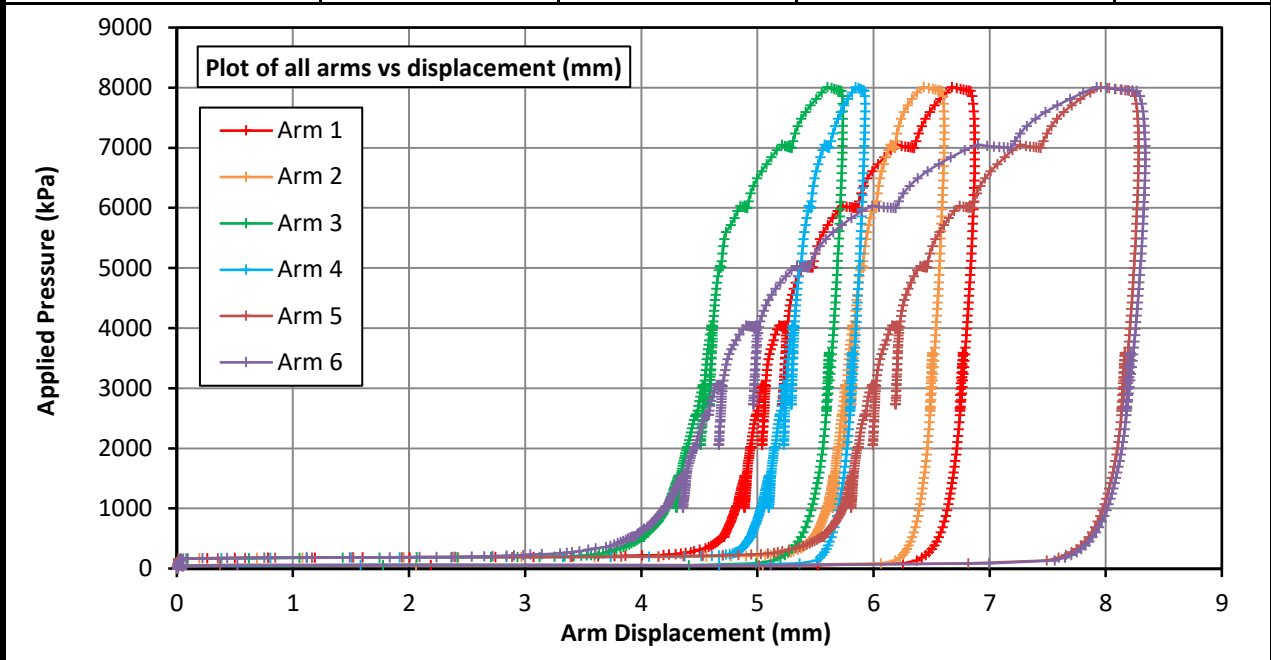
Strength	Undrained Shear	2003 kPa
	Limit Pressure	11367 kPa

Project	A303 Amesbury to Berwick Down	Figure No.	R71918 T01 - 09
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test Overview High Pressure Dilatometer (HPD)



Test Date	16/11/2020	Test No.	2
Borehole	R71918	Test Depth (m)	28.00
Coordinates (m)	412648 (E)	141930 (N)	Elevation (m) 89.50



Material description from borehole log:
Very weak medium density cream / white with many black specks CHALK with occasional flint bands.

Test pocket conditions:

Total core recovery:	57 %	Test pocket depth range:	
Solid core recovery:	22 %	From:	27.00 m to: 29.50 m
Rock quality designation:	7 %	Flush:	Water

Test comment:
The test pocket was oversize with arms lifting off between 4.0 to 6.0mm. The po was estimated to be at 1530kPa, with the following loading section being relatively long. Material yield is interpreted at 3700kPa with the test taken to a pressure of 8008kPa. The displacement-pressure response was variable with probable disturbance and greater expansion shown on arms 5 & 6. Analysis of two unload-reload loops provides increasing modulus values from 978 to 1105MPa, whilst a loop on the unload section provides a modulus of 1031MPa. Derived undrained shear strength analysis provides values of 2170 to 2374kPa.

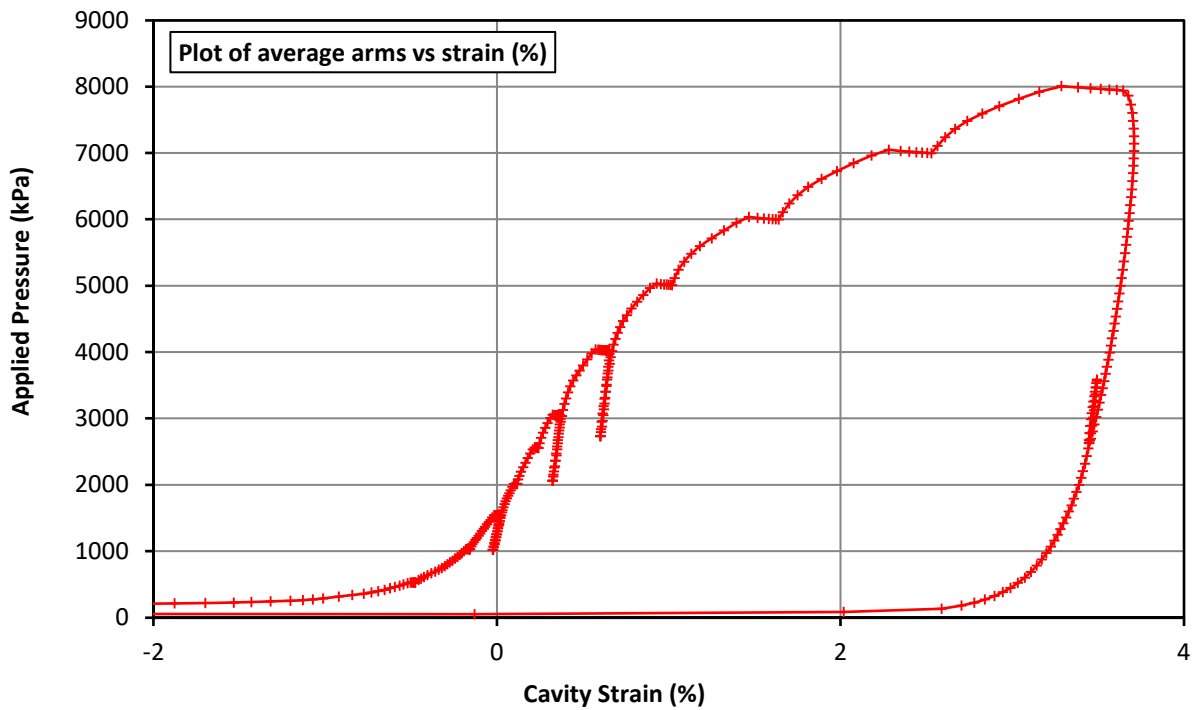
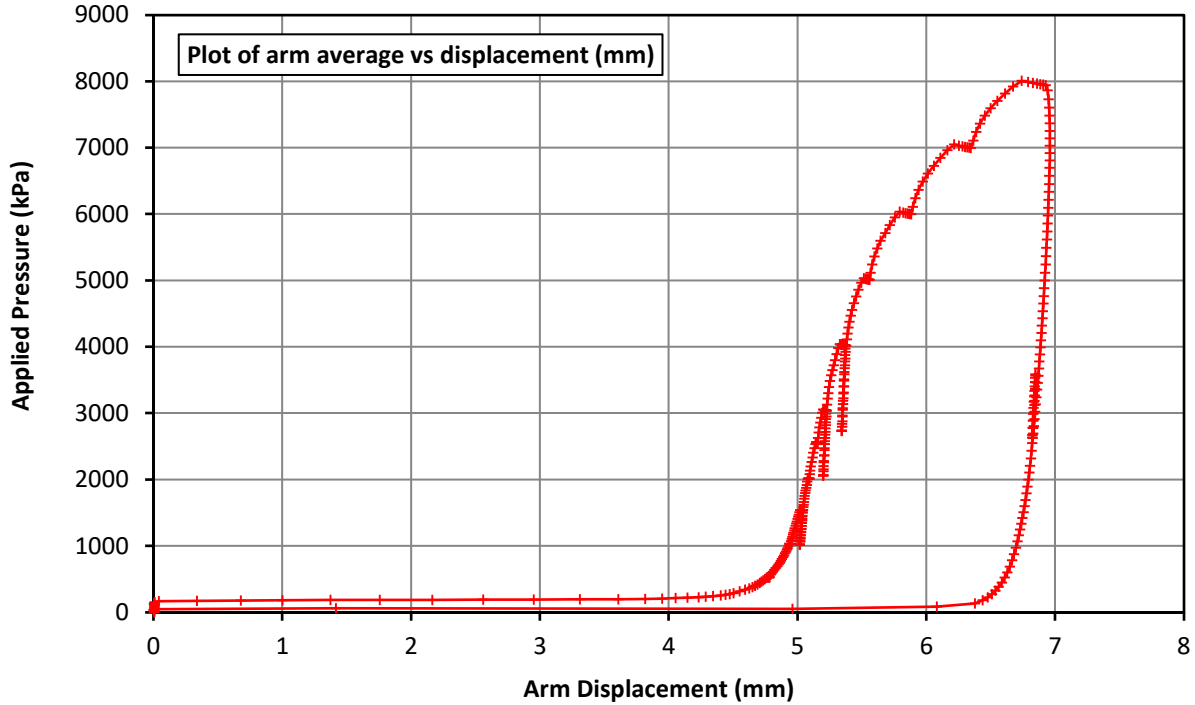
Test details:		Instrument:		Wally	
Drilling method:	Rotary coring		mV	mV/mm	mV
Casing depth:	27.00 m	Arm 1:	-2018.6	146.5	TPC A: -1609.2
Water level:	- m	Arm 2:	-2633.6	139.0	TPC B: -2059.2
		Arm 3:	-2313.4	146.3	
Test time:		Arm 4:	-2043.2	140.5	
Start (probe in):	13:41 hrs	Arm 5:	-2323.6	139.9	
Finish (probe out):	14:55 hrs	Arm 6:	-2056.9	126.0	

Project	A303 Amesbury to Berwick Down	Figure No.	R71918 T02 - 01
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test Overview



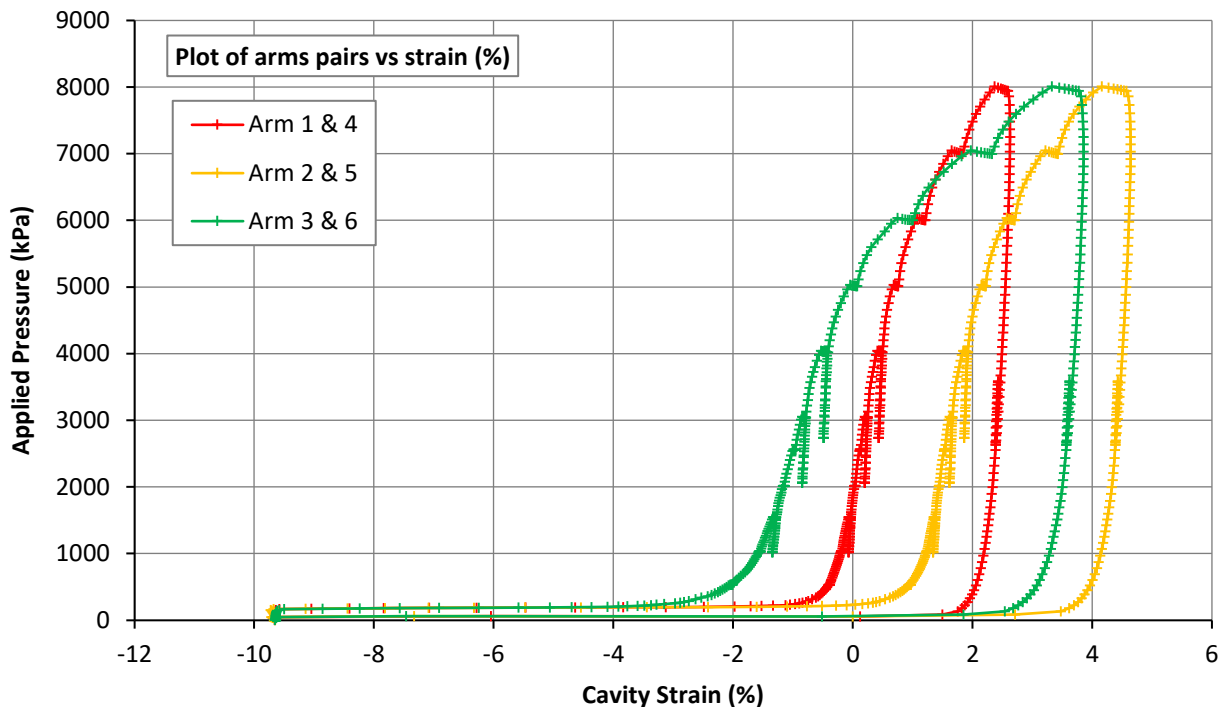
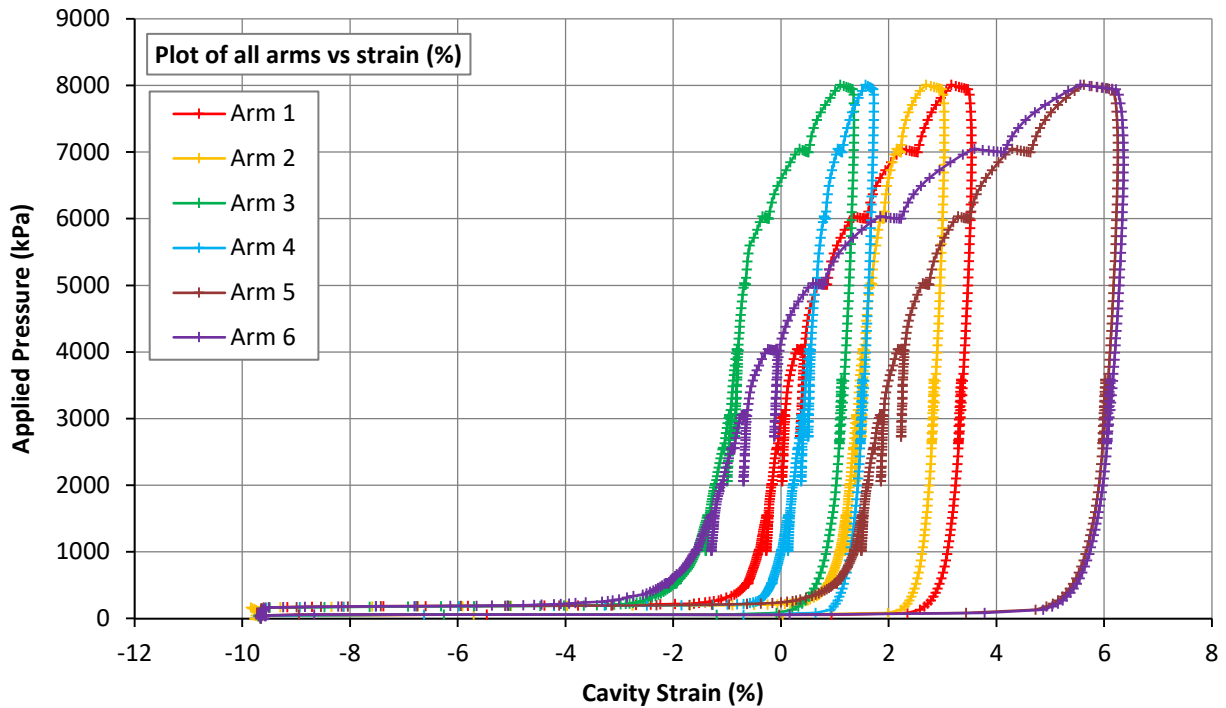
Test Date	16/11/2020	Test No.	2
Borehole	R71918	Test Depth (m)	28.00



Project	A303 Amesbury to Berwick Down	Figure No.	R71918 T02 - 02
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test - Arm Displacement vs Strain (%)

Test Date	16/11/2020	Test No.	2
Borehole	R71918	Test Depth (m)	28.00

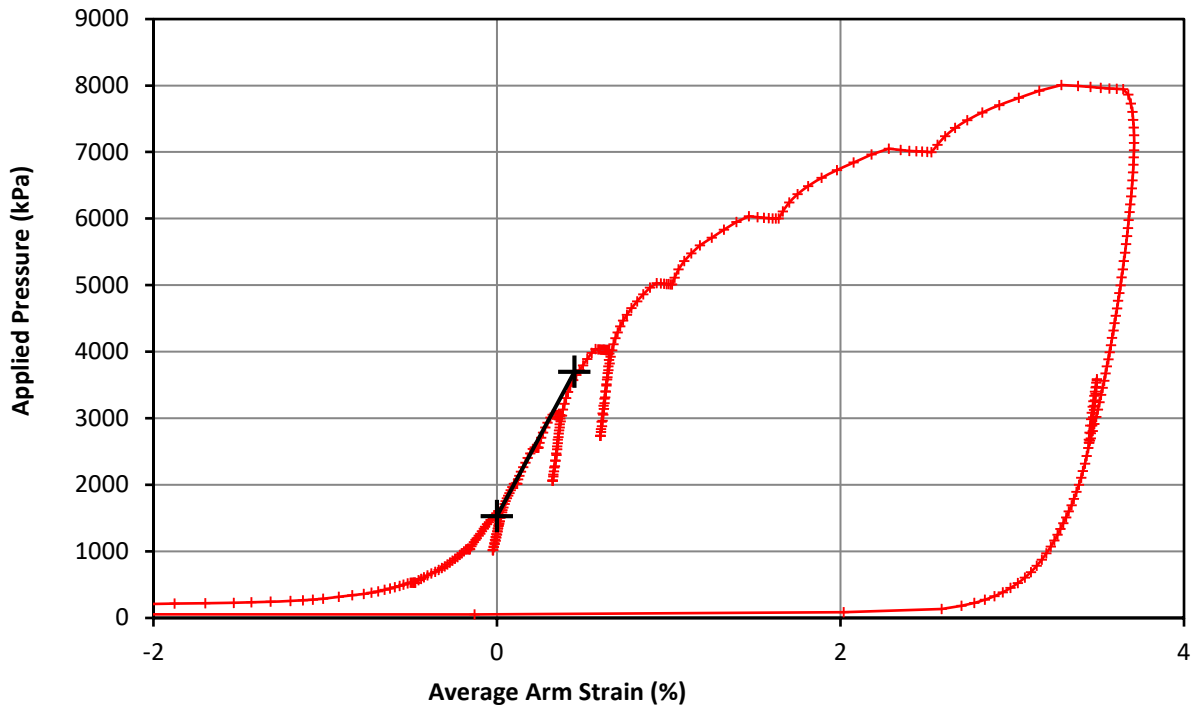


Project	A303 Amesbury to Berwick Down	Figure No.	R71918 T02 - 03
Client	RPS Ltd		
Project No.	P1200116		

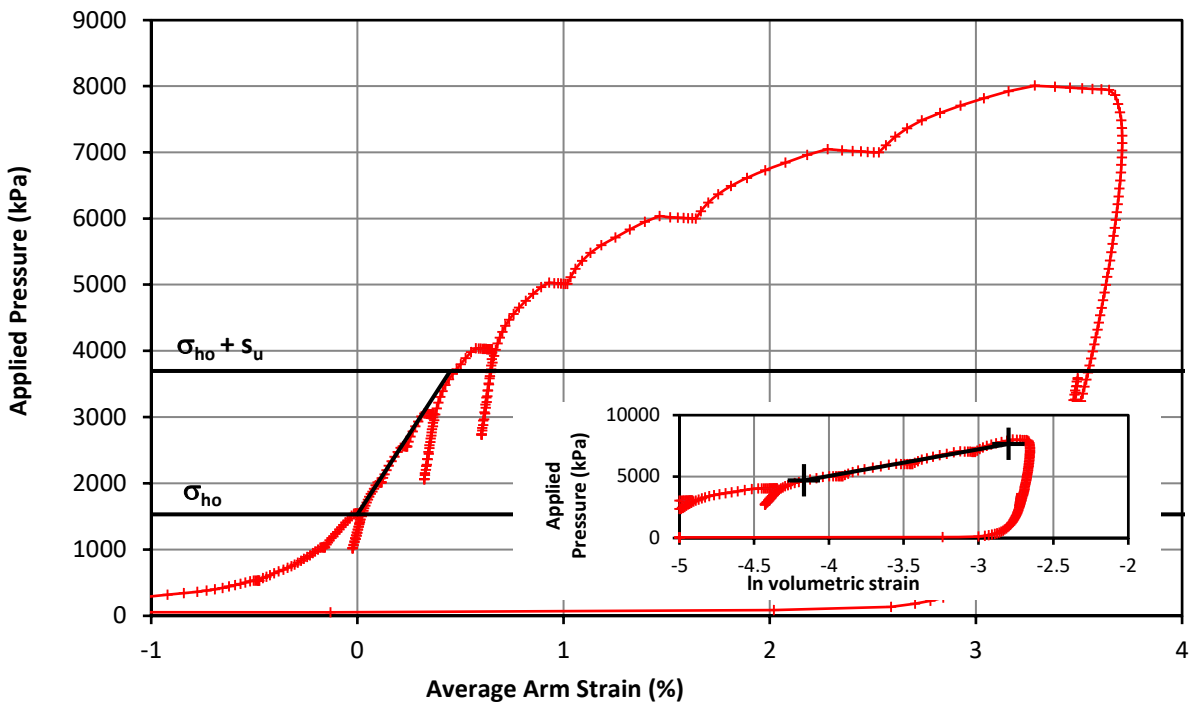
Pressuremeter Test Initial Modulus & In Situ Horizontal Stress



Test Date	16/11/2020	Test No.	2
Borehole	R71918	Test Depth (m)	28.00



Initial Modulus	Shear Modulus	242.2 MPa
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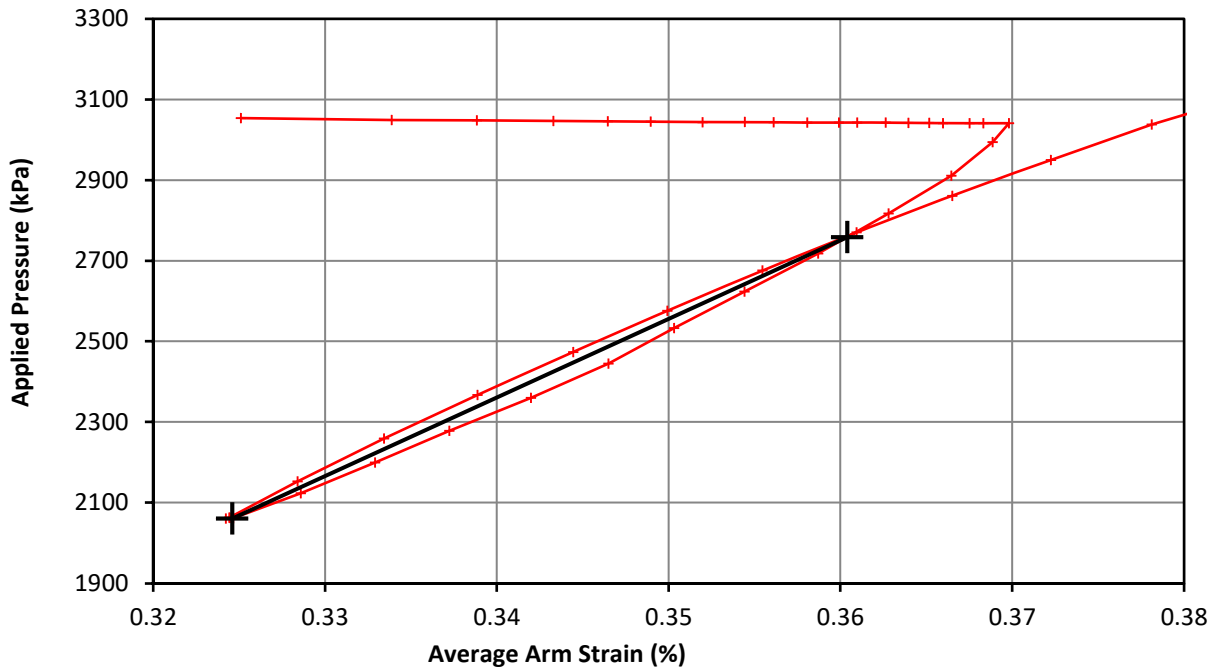


Marsland & Randolph	In situ horizontal stress	1530 kPa
	Undrained Strength	2170 kPa

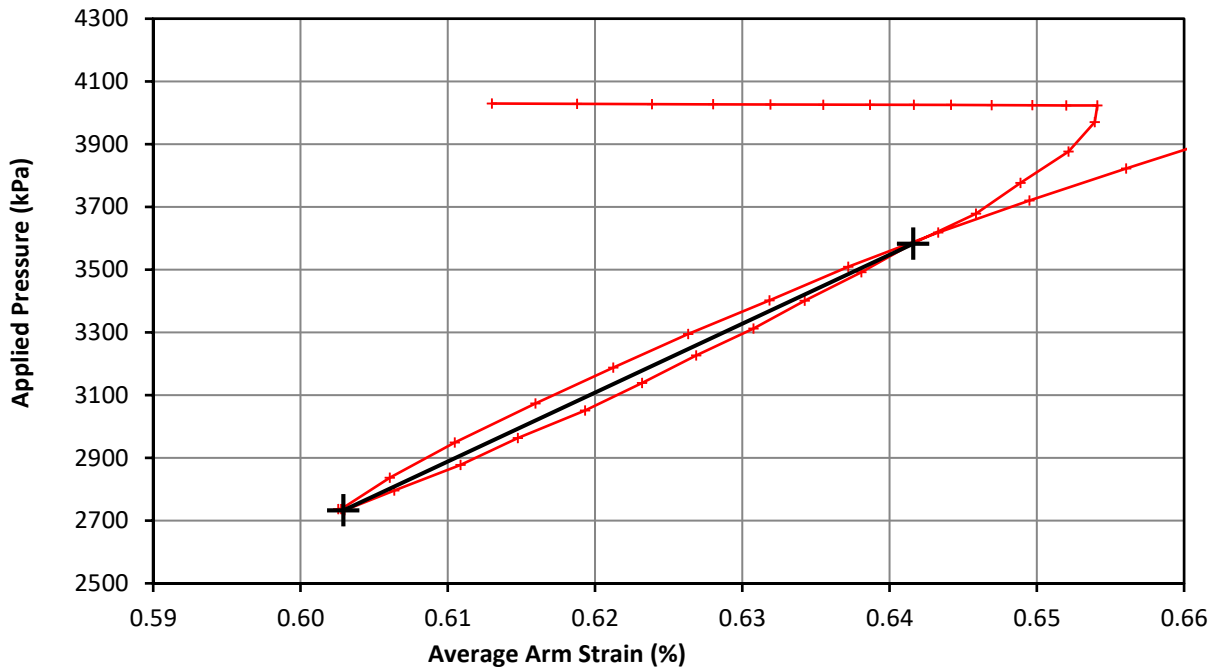
Project	A303 Amesbury to Berwick Down	Figure No.	R71918 T02 - 04
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test Unload Reload Loop

Test Date	16/11/2020	Test No.	2
Borehole	R71918	Test Depth (m)	28.00



Loop 1	Shear Modulus	978.4 MPa
	Cavity Strain Range	0.036 %



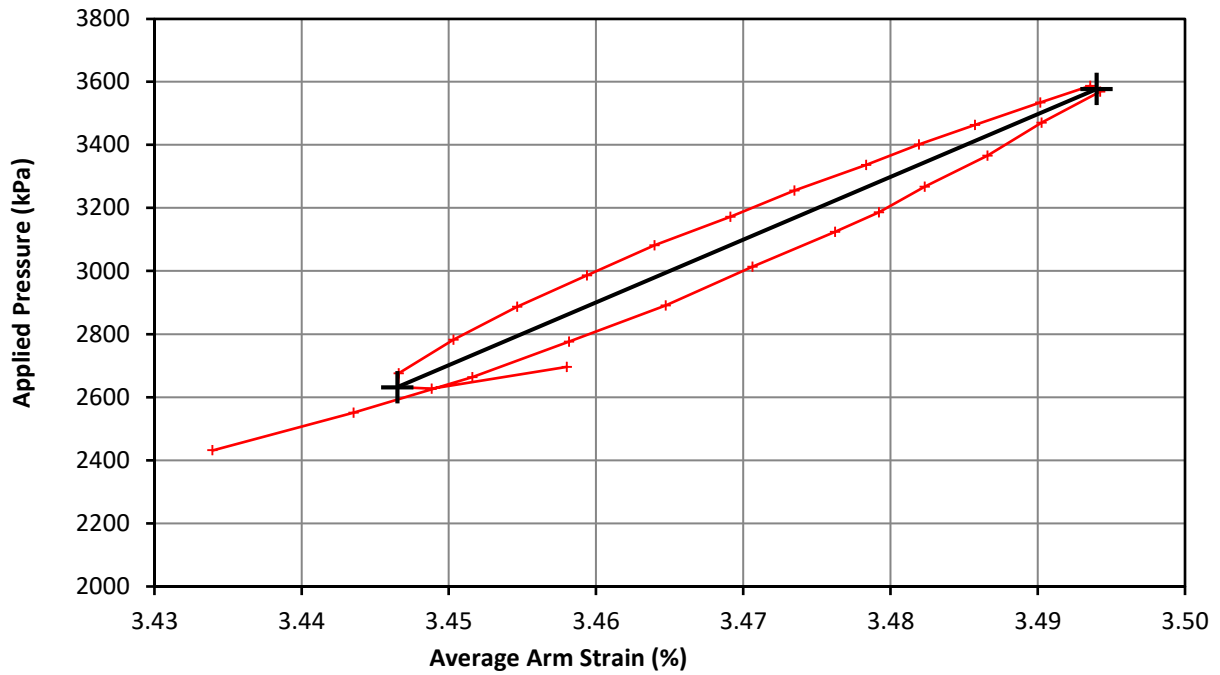
Loop 2	Shear Modulus	1105.2 MPa
	Cavity Strain Range	0.039 %

Project	A303 Amesbury to Berwick Down	Figure No.	R71918 T02 - 05
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test Unload Reload Loop



Test Date	16/11/2020	Test No.	2
Borehole	R71918	Test Depth (m)	28.00



Loop 3	Shear Modulus	1030.6 MPa
	Cavity Strain Range	0.048 %

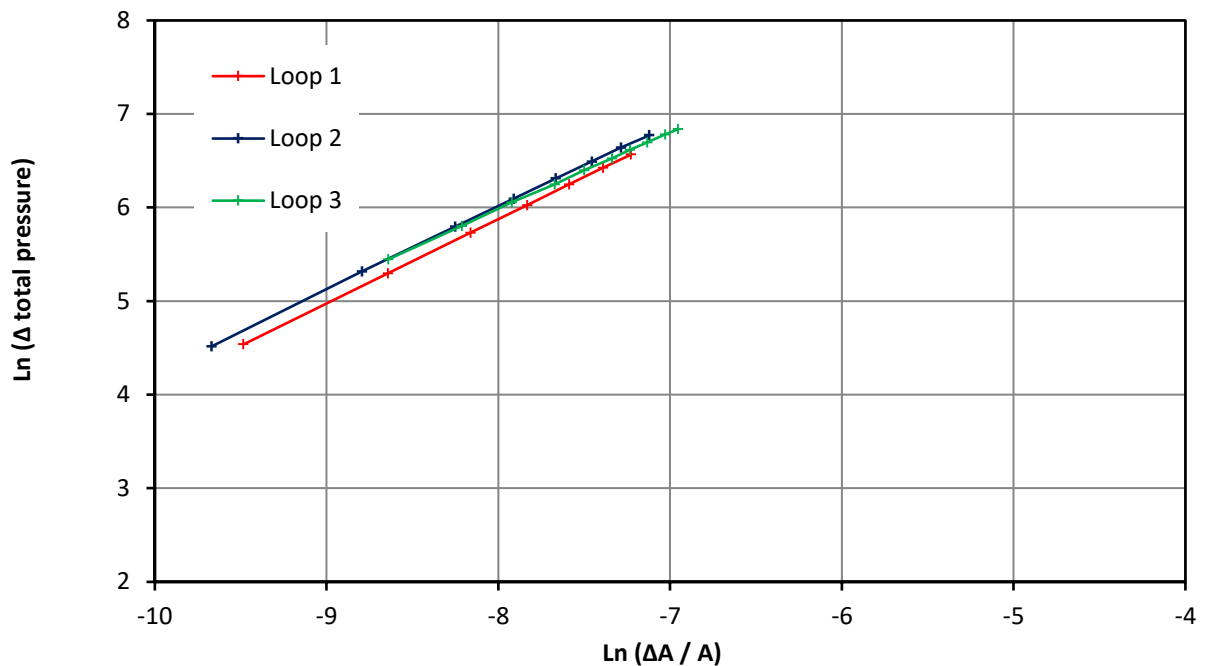
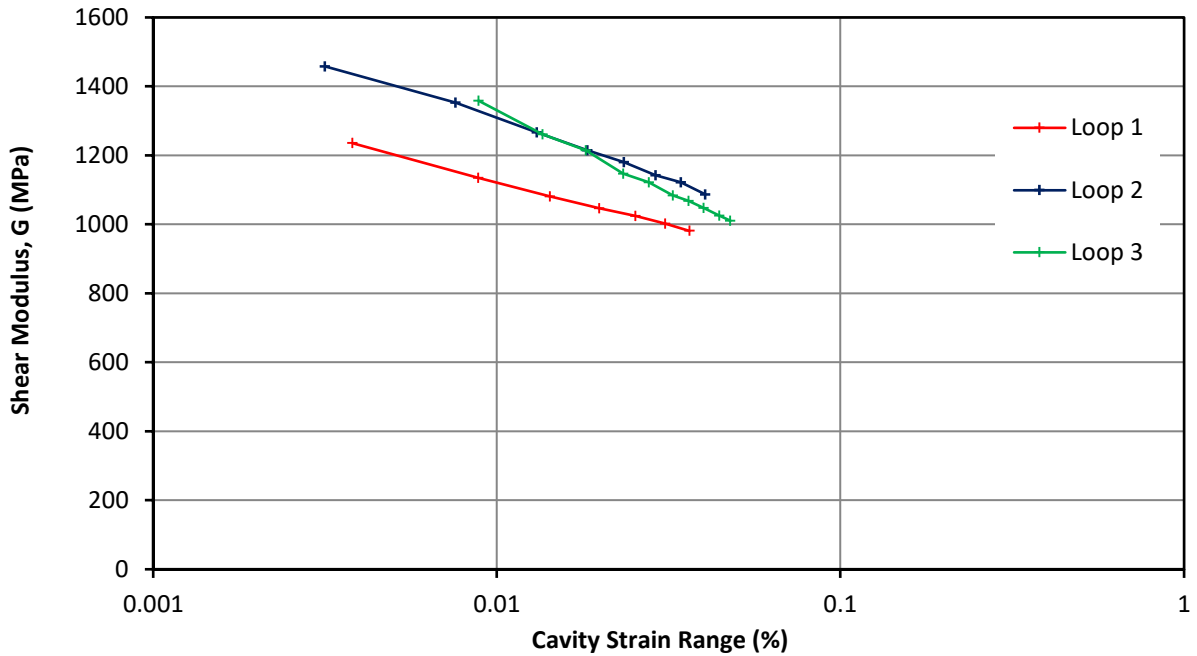
Project	A303 Amesbury to Berwick Down	Figure No.	R71918 T02 - 06
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Analysis

Small Strain Stiffness and Bolton and Whittle (1999)



Test Date	16/11/2020	Test No.	2
Borehole	R71918	Test Depth (m)	28.00



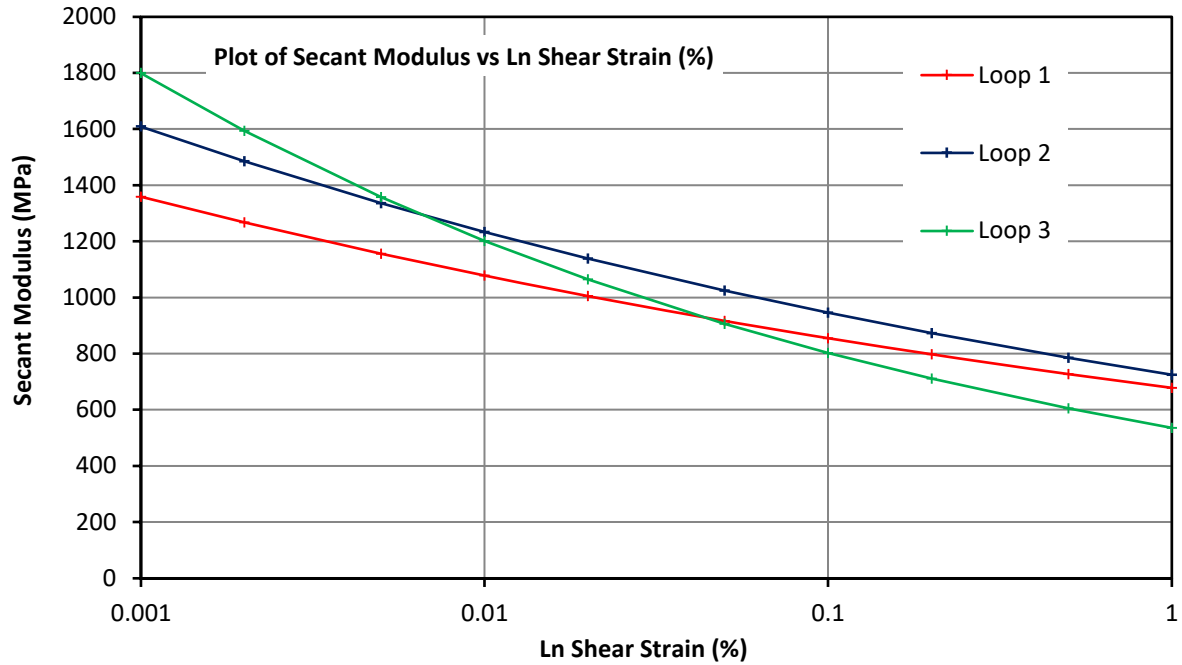
Loop 1		Loop 2		Loop 3	
Gradient(β)	Intercept	Gradient(β)	Intercept	Gradient(β)	Intercept
0.899	474.472	0.885	481.694	0.825	289.827
	(MPa)		(MPa)		(MPa)

Project	A303 Amesbury to Berwick Down	Figure No.	R71918 T02 - 07
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Analysis
 Secant Modulus - Shear Strain (%)



Test Date	16/11/2020	Test No.	2
Borehole	R71918	Test Depth (m)	28.00

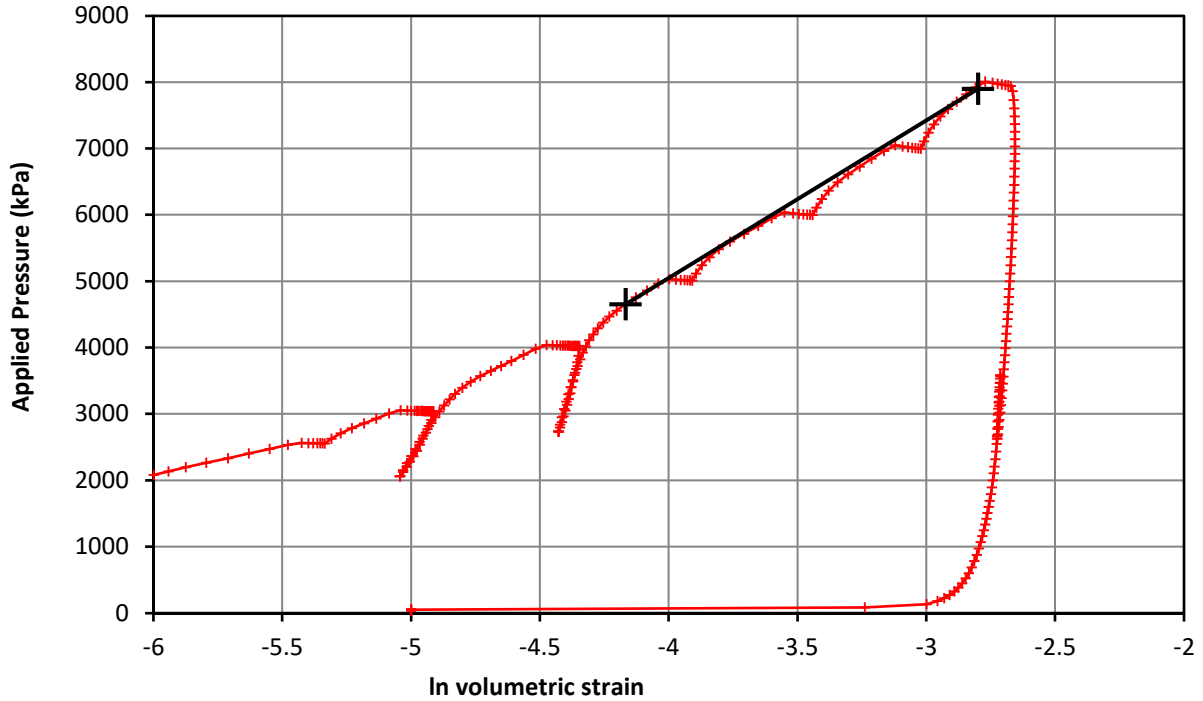


Shear Strain	Loop 1	Loop 2	Loop 3
0.001%	1359	1609	1800
0.002%	1267	1485	1594
0.005%	1156	1336	1357
0.010%	1078	1234	1202
0.020%	1005	1139	1064
0.050%	917	1024	906
0.100%	855	946	803
0.200%	797	873	711
0.500%	727	785	605
1.000%	678	725	536

Project	A303 Amesbury to Berwick Down	Figure No.	R71918 T02 - 08
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test - Strength

Test Date	16/11/2020	Test No.	2
Borehole	R71918	Test Depth (m)	28.00



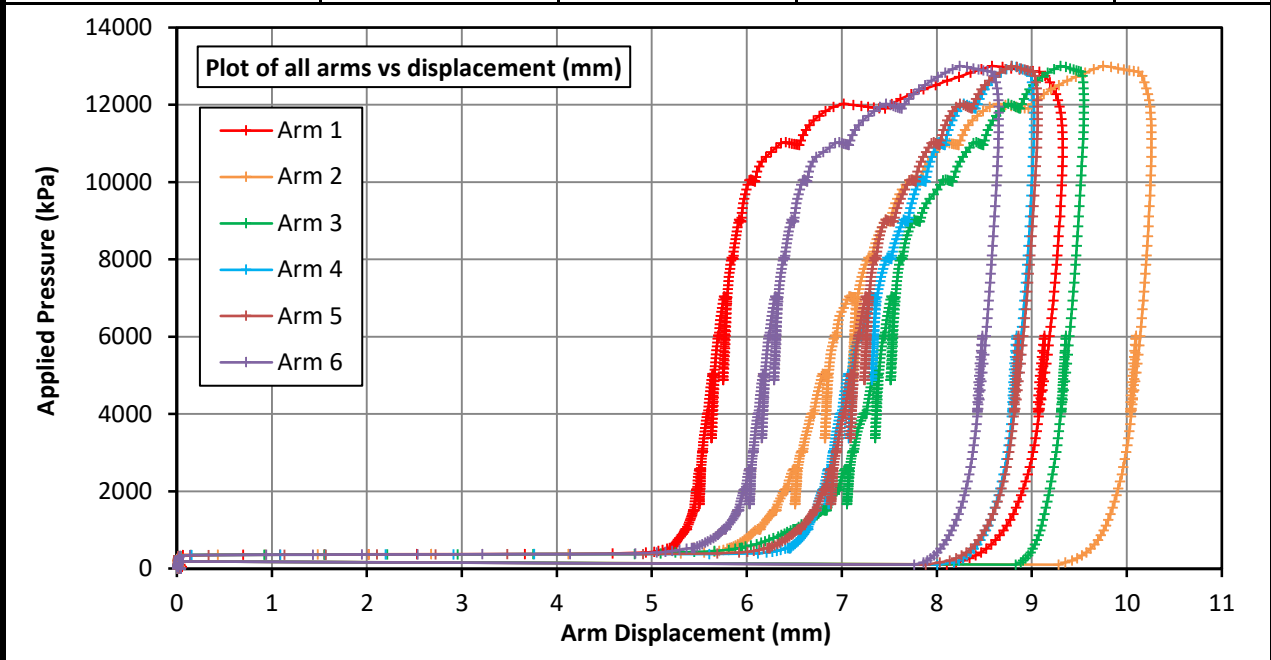
Strength	Undrained Shear	2374 kPa
	Limit Pressure	14547 kPa

Project	A303 Amesbury to Berwick Down	Figure No.	R71918 T02 - 09
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test Overview High Pressure Dilatometer (HPD)



Test Date	17/11/2020	Test No.	3
Borehole	R71918	Test Depth (m)	38.00
Coordinates (m)	412648 (E)	141930 (N)	Elevation (m) 89.50



Material description from borehole log:
Very weak medium density cream / white with many black specks CHALK with rinded flint.

Test pocket conditions:

Total core recovery:	52 %	Test pocket depth range:	
Solid core recovery:	1 %	From:	37.00 m to: 39.50 m
Rock quality designation:	0 %	Flush:	Water

Test comment:
The test pocket was oversize with arms lifting off between 4.5 to 7.0mm. The po was estimated to be at 2400kPa, with the following loading section being long. Material yield is interpreted at 6500kPa with the test taken to a high pressure of 12032kPa. The displacement-pressure response was variable with arms 6 & 1 tight and the others showing progressive failure and expansion. Analysis of three unload-reload loops provides modulus values from 1074 to 1369MPa, whilst a loop on the unload section provides a modulus of 1004MPa. Derived undrained shear strength analysis provides values of 4080 to 4100kPa.

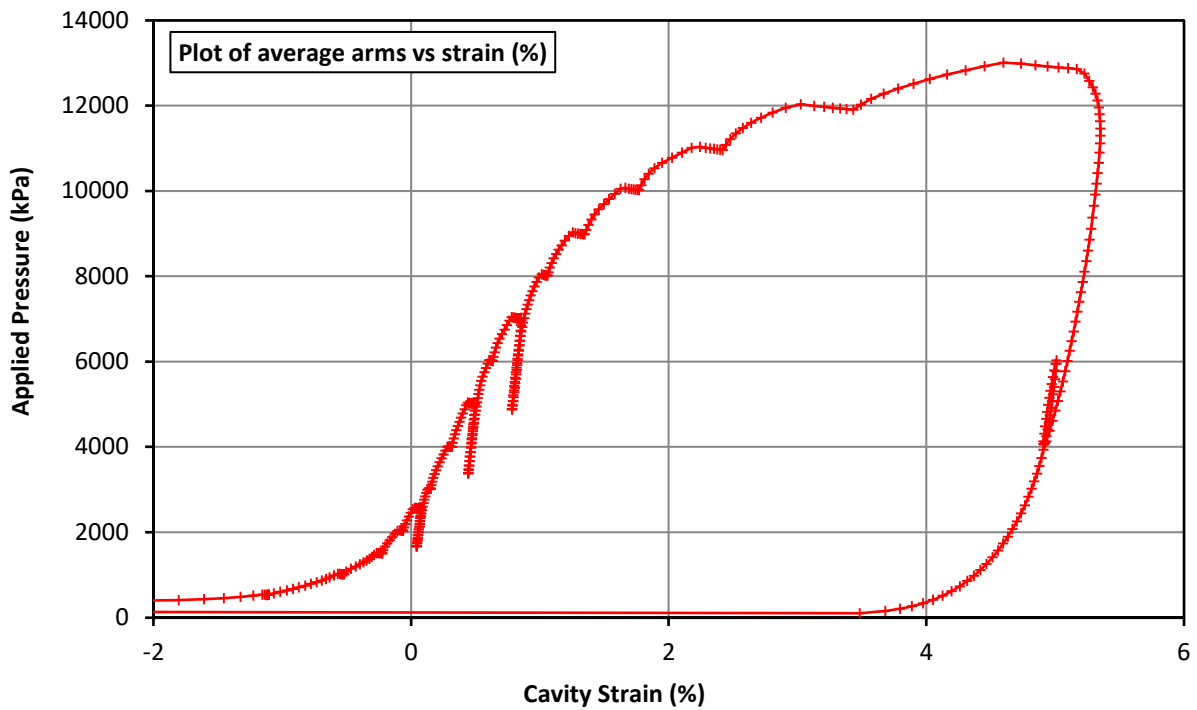
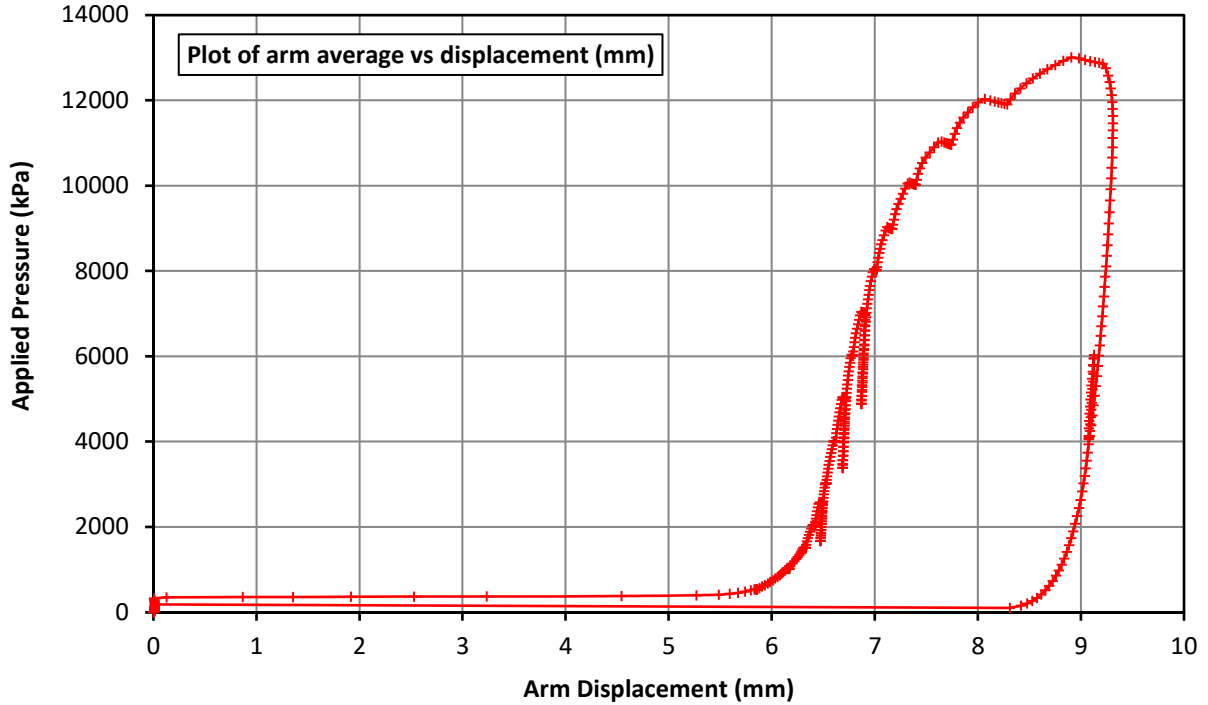
Test details:		Instrument:		Wally	
Drilling method:	Rotary coring		mV	mV/mm	mV
Casing depth:	37.00 m	Arm 1:	-2020.8	146.5	TPC A: -1608.7
Water level:	29.00 m	Arm 2:	-2628.4	139.0	TPC B: -2058.8
		Arm 3:	-2315.3	146.3	
Test time:		Arm 4:	-2048.6	140.5	
Start (probe in):	12:23 hrs	Arm 5:	-2324.7	139.9	
Finish (probe out):	13:51 hrs	Arm 6:	-2052.0	126.0	

Project	A303 Amesbury to Berwick Down	Figure No.	R71918 T03 - 01
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test Overview



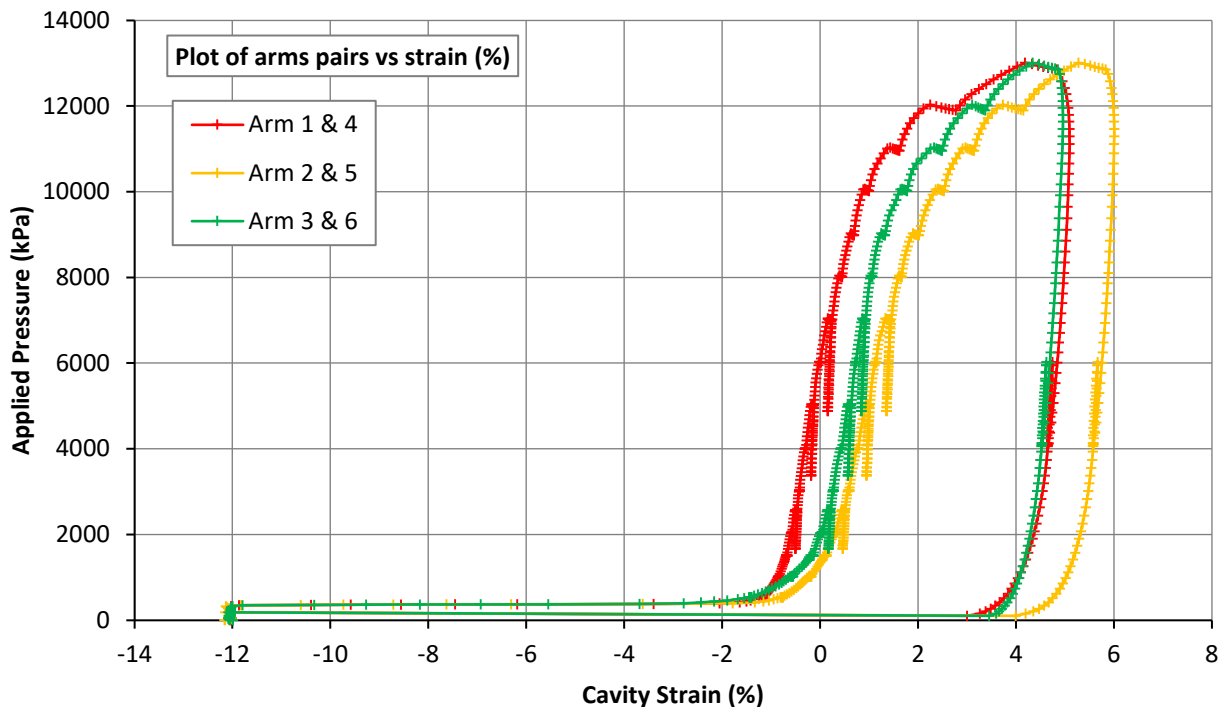
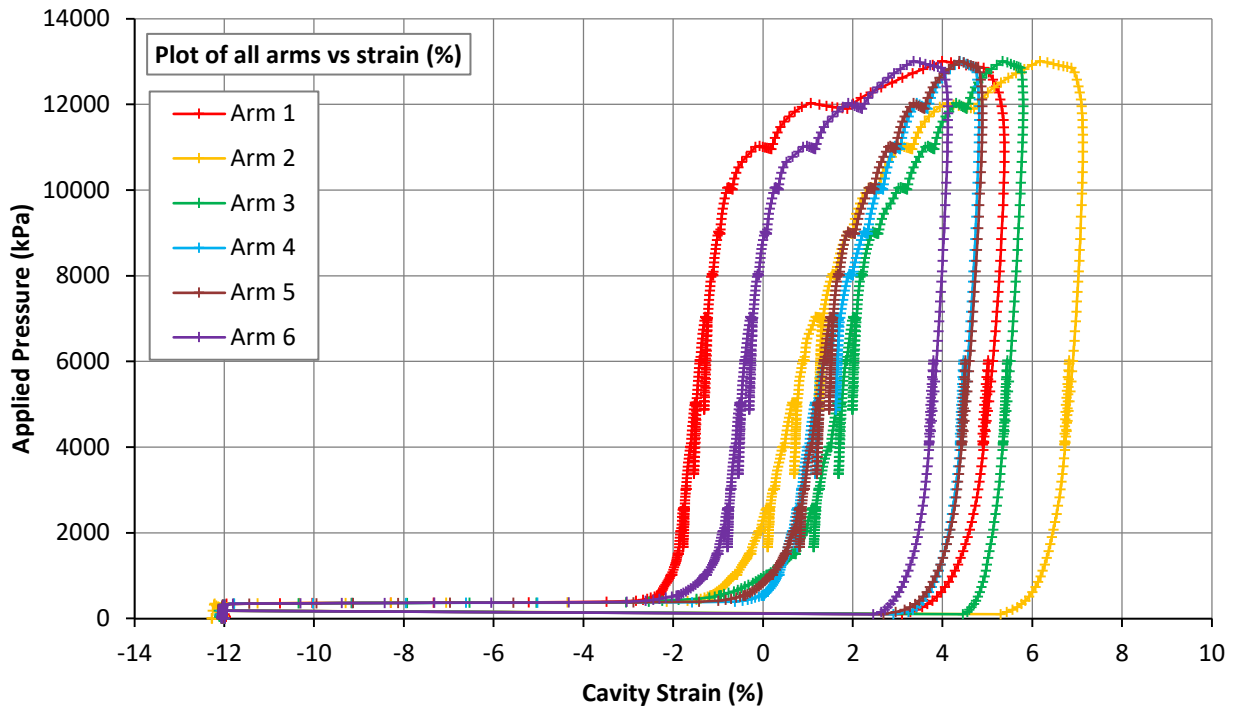
Test Date	17/11/2020	Test No.	3
Borehole	R71918	Test Depth (m)	38.00



Project	A303 Amesbury to Berwick Down	Figure No.	R71918 T03 - 02
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test - Arm Displacement vs Strain (%)

Test Date	17/11/2020	Test No.	3
Borehole	R71918	Test Depth (m)	38.00

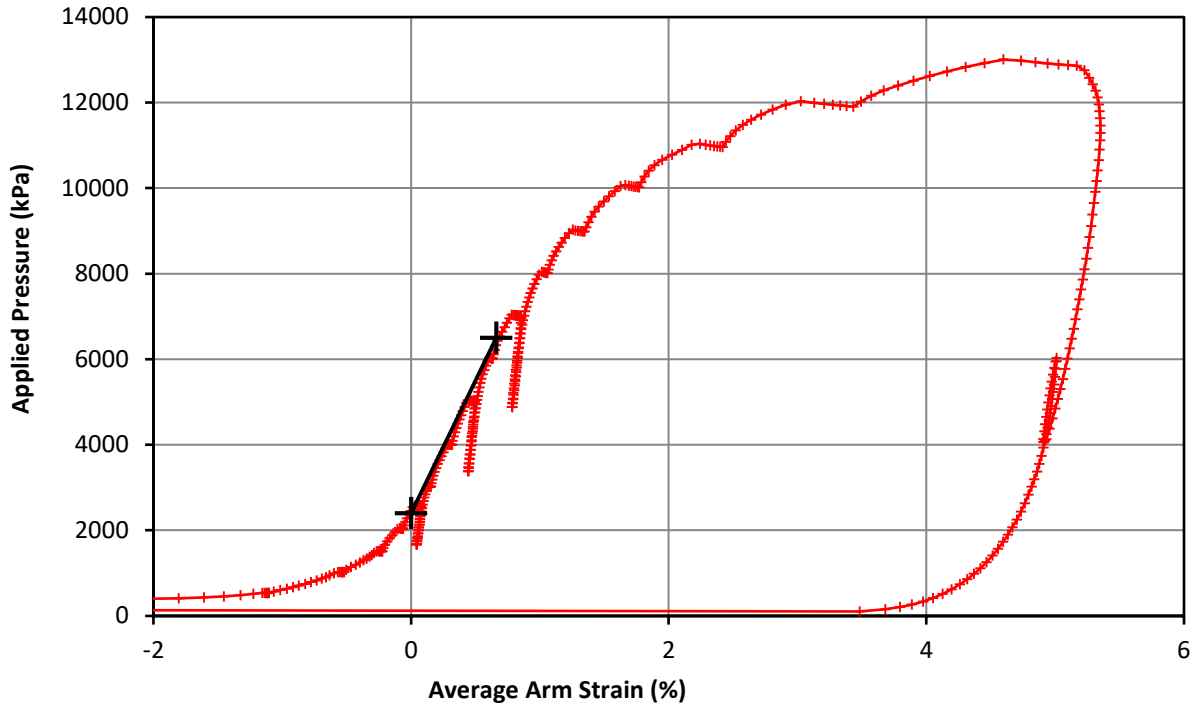


Project	A303 Amesbury to Berwick Down	Figure No.	R71918 T03 - 03
Client	RPS Ltd		
Project No.	P1200116		

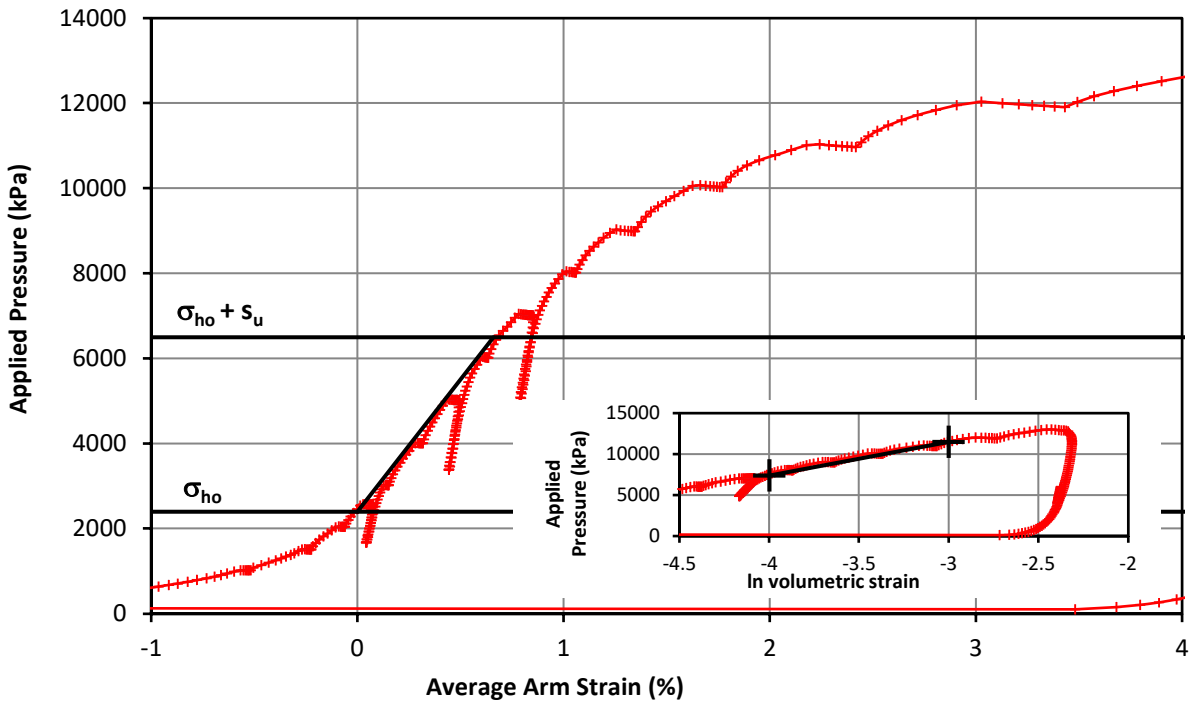
Pressuremeter Test Initial Modulus & In Situ Horizontal Stress



Test Date	17/11/2020	Test No.	3
Borehole	R71918	Test Depth (m)	38.00



Initial Modulus	Shear Modulus	312.7 MPa
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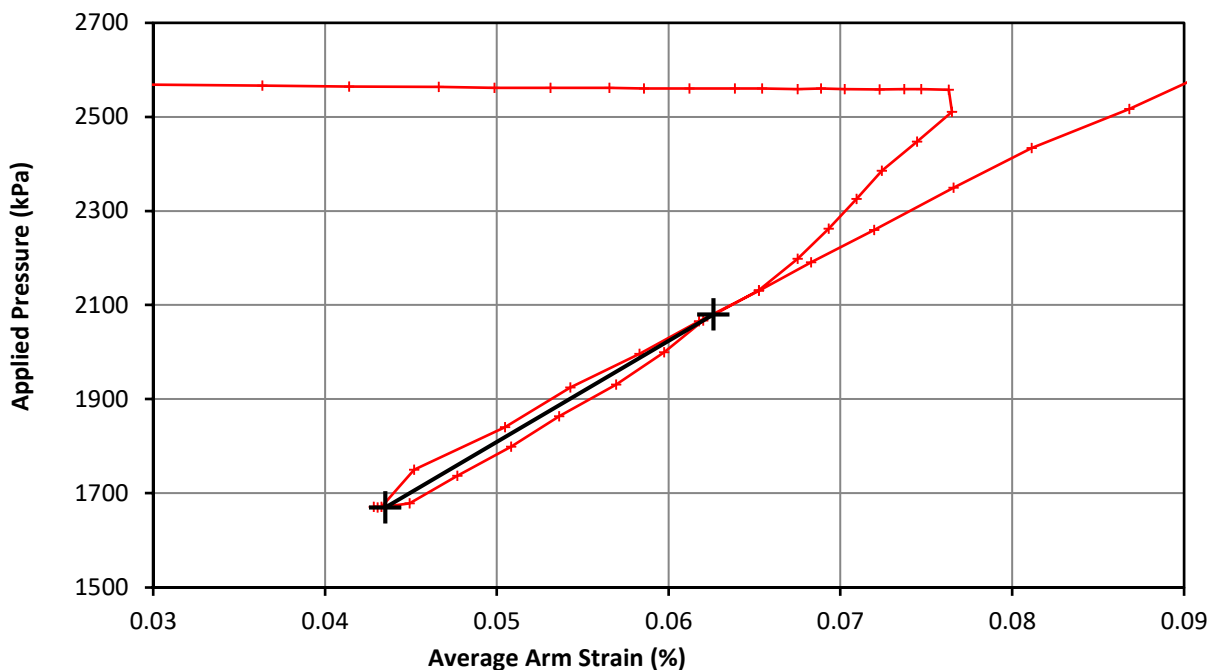
Marsland & Randolph	In situ horizontal stress	2400 kPa
	Undrained Strength	4100 kPa

Project	A303 Amesbury to Berwick Down	Figure No.	R71918 T03 -
Client	RPS Ltd		
Project No.	P1200116		

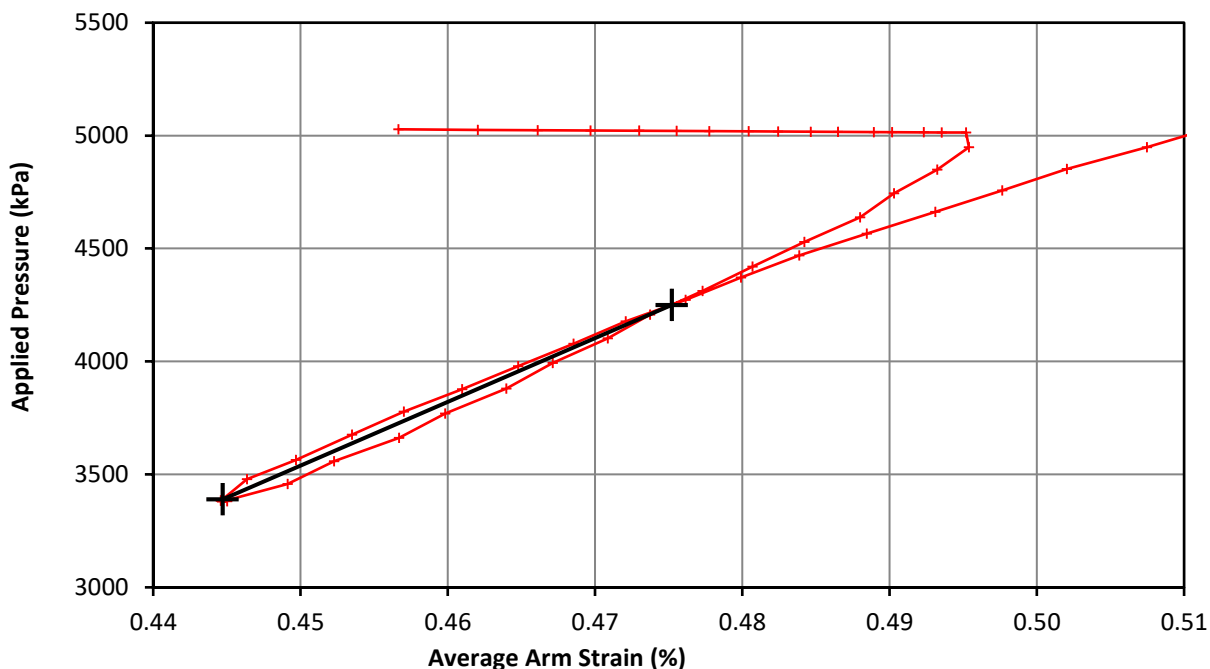
Pressuremeter Test Unload Reload Loop



Test Date	17/11/2020	Test No.	3
Borehole	R71918	Test Depth (m)	38.00



Loop 1	Shear Modulus	1074.0 MPa
	Cavity Strain Range	0.019 %



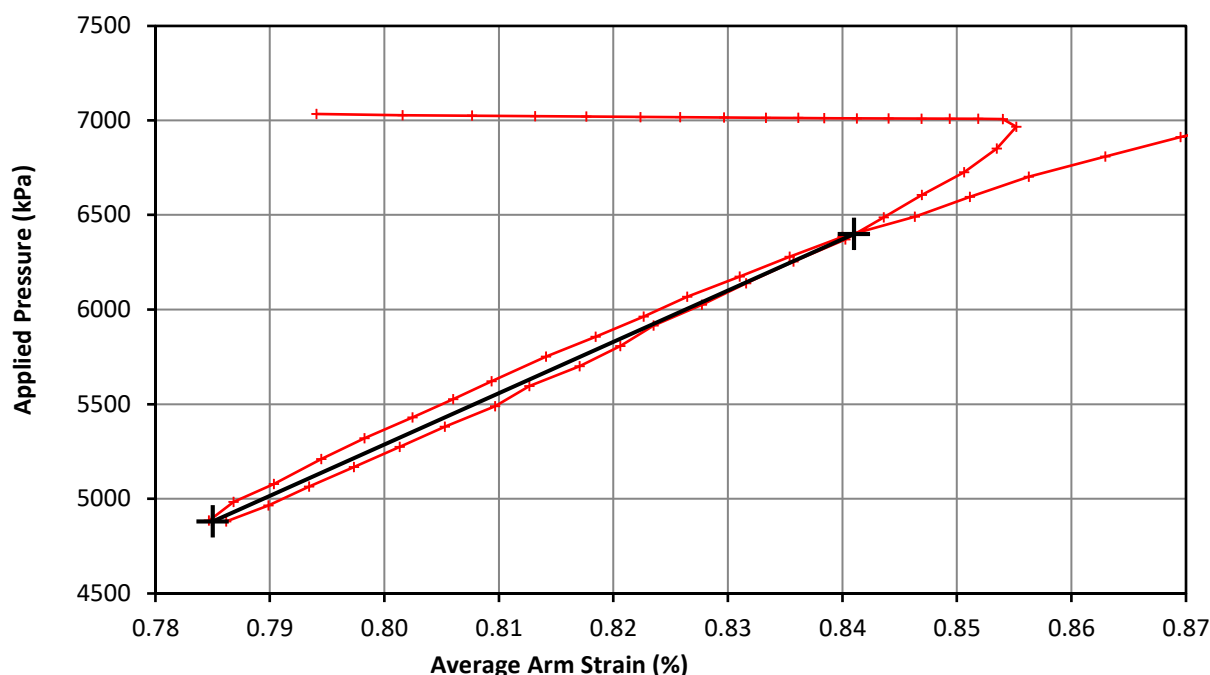
Loop 2	Shear Modulus	1416.5 MPa
	Cavity Strain Range	0.031 %

Project	A303 Amesbury to Berwick Down	Figure No.	R71918 T03 -
Client	RPS Ltd		
Project No.	P1200116		

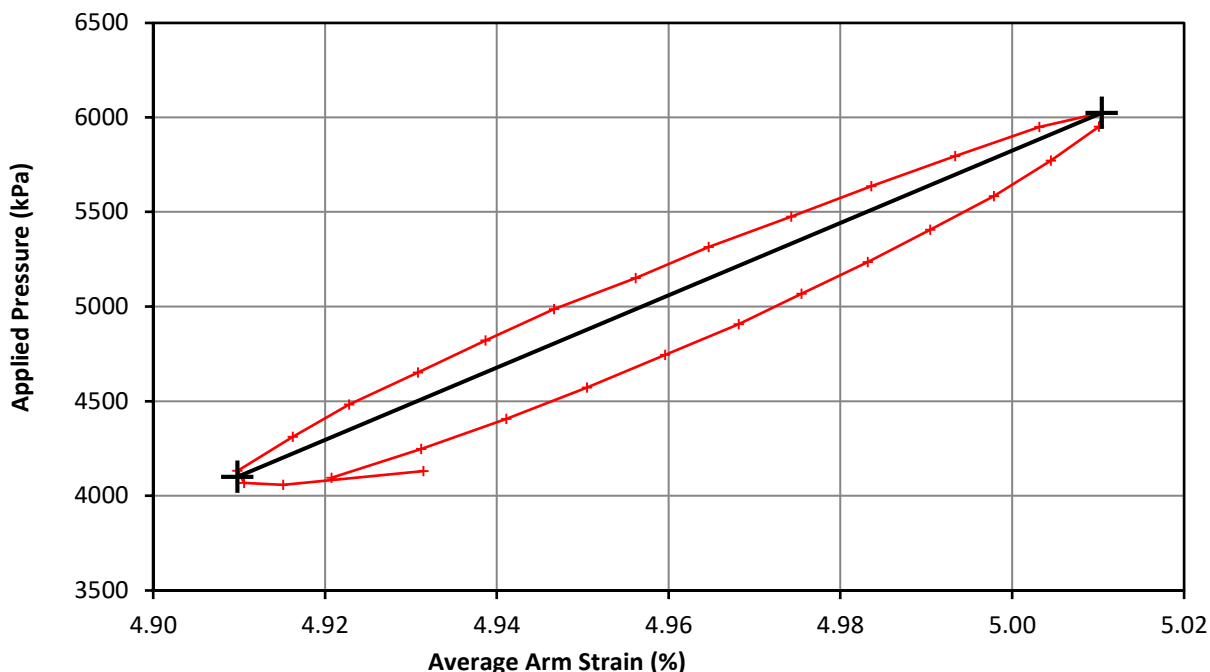
Pressuremeter Test Unload Reload Loop



Test Date	17/11/2020	Test No.	3
Borehole	R71918	Test Depth (m)	38.00



Loop 3	Shear Modulus	1368.6 MPa
	Cavity Strain Range	0.056 %



Loop 4	Shear Modulus	1004.7 MPa
	Cavity Strain Range	0.101 %

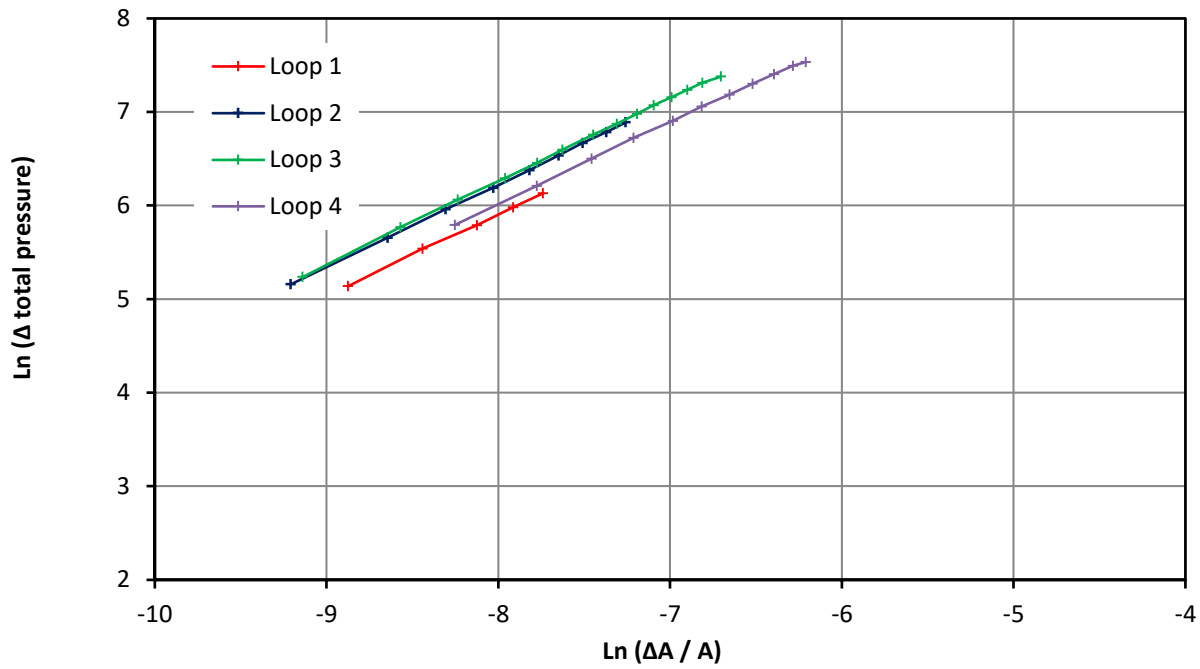
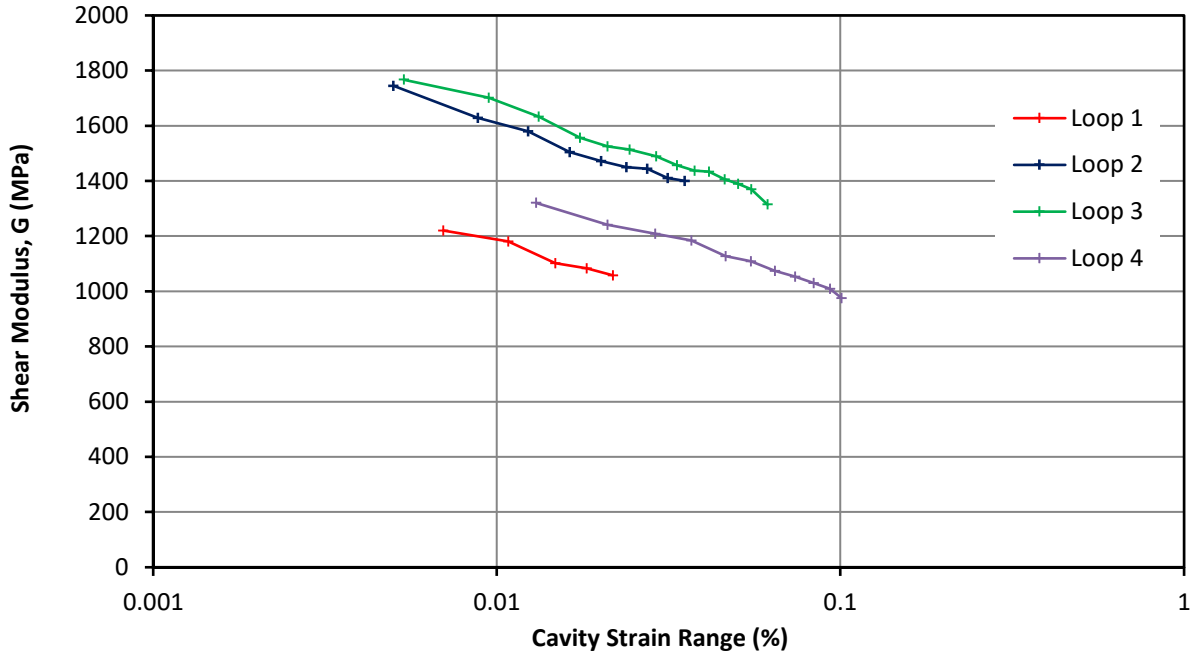
Project	A303 Amesbury to Berwick Down	Figure No.	R71918 T03 -
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Analysis

Small Strain Stiffness and Bolton and Whittle (1999)



Test Date	17/11/2020	Test No.	3
Borehole	R71918	Test Depth (m)	38.00



Loop 1		Loop 2		Loop 3		Loop 4	
Gradient(β)	Intercept	Gradient(β)	Intercept	Gradient(β)	Intercept	Gradient(β)	Intercept
0.868	380.337 (MPa)	0.886	606.051 (MPa)	0.884	616.214 (MPa)	0.858	396.005 (MPa)

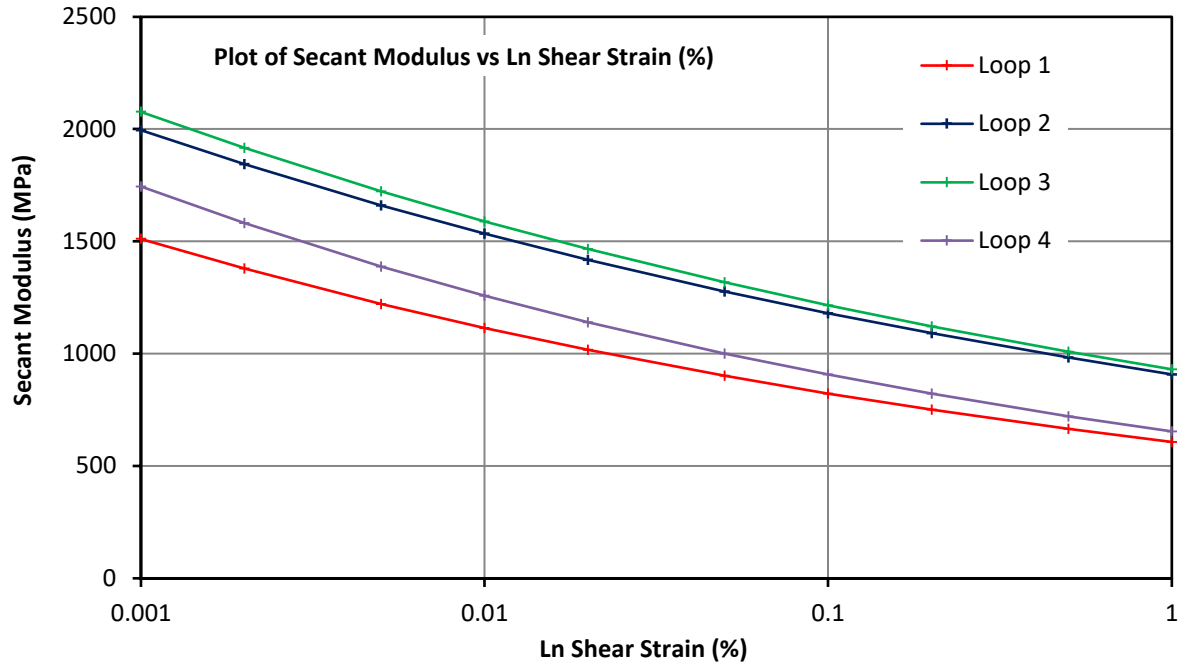
Project	A303 Amesbury to Berwick Down	Figure No.	R71918 T03 -
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Analysis

Secant Modulus - Shear Strain (%)



Test Date	17/11/2020	Test No.	3
Borehole	R71918	Test Depth (m)	38.00

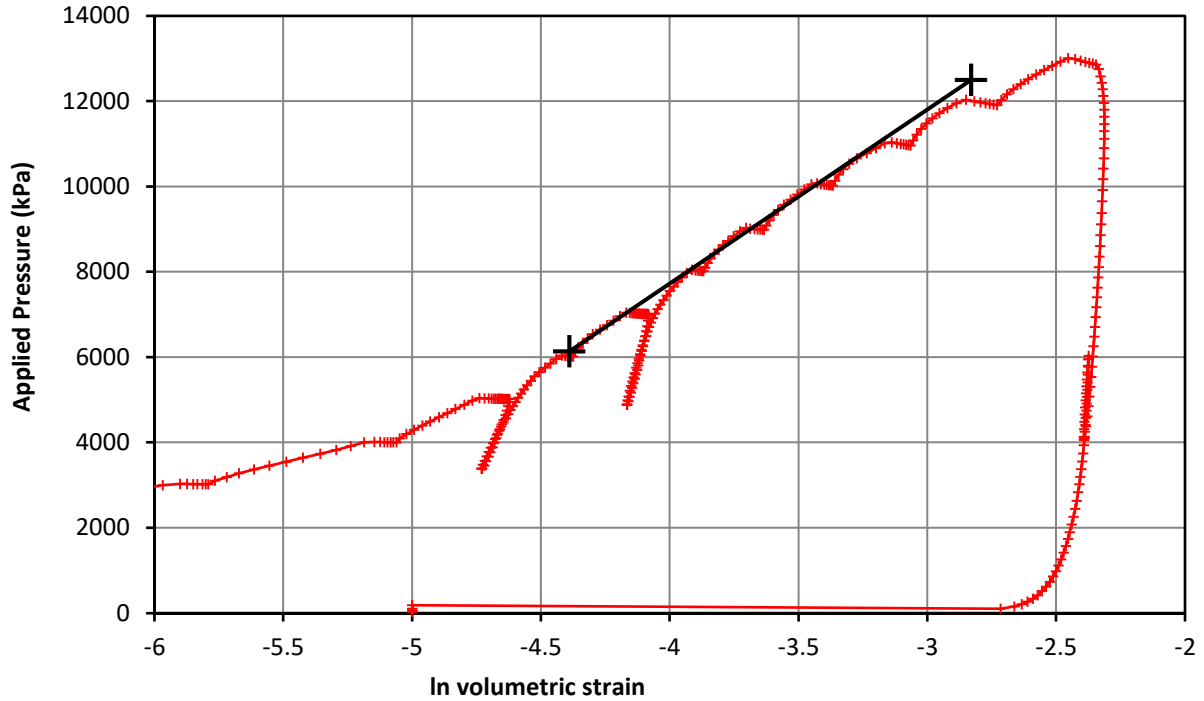


Shear Strain	Loop 1	Loop 2	Loop 3	Loop 4
0.001%	1511	1995	2077	1744
0.002%	1379	1843	1916	1581
0.005%	1221	1660	1722	1388
0.010%	1115	1534	1589	1258
0.020%	1017	1418	1466	1140
0.050%	901	1277	1318	1000
0.100%	822	1180	1216	907
0.200%	750	1090	1122	822
0.500%	665	982	1008	721
1.000%	607	908	930	654

Project	A303 Amesbury to Berwick Down	Figure No.	R71918 T03 -
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test - Strength

Test Date	17/11/2020	Test No.	3
Borehole	R71918	Test Depth (m)	38.00



Strength	Undrained Shear	4080 kPa
	Limit Pressure	24049 kPa

Project	A303 Amesbury to Berwick Down	Figure No.	R71918 T03 -
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Results Summary



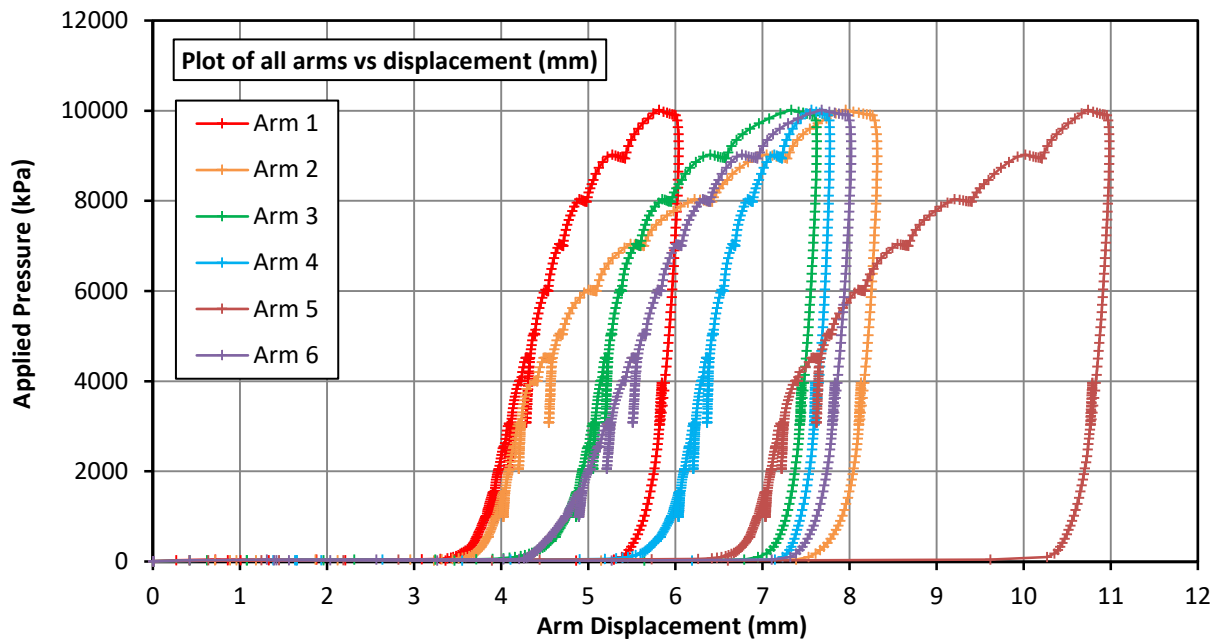
Test	Depth (m)	Material description from borehole log	Max. test pressure (MPa)	P _o (kPa)	Undrained strength			G _i (MPa)	Loop No.	G _{ur} (MPa)	ε _c (%)	Non linear stiffness		Secant shear modulus G (MPa)		
					S _{u (M&R)} (kPa)	S _u (kPa)	P _L (kPa)					α (MPa)	β	Shear strain		
														0.1%	0.01%	0.001%
R71919																
1	22.00	Very weak low to medium density occasionally alternating bands of high density creamy white CHALK.	10018	1350	3324	3324	17777	194.9	1	586	0.026	277.258	0.912	510	625	766
									2	932	0.032	325.715	0.875	771	1027	1368
									3	1103	0.046	429.913	0.882	975	1280	1682
									4	1083	0.042	351.329	0.867	880	1196	1624
2	33.00	Very weak low to medium density occasionally alternating bands of high density creamy white CHALK.	5051	1540	1361	1323	8757	145.5	1	623	0.047	177.887	0.844	524	751	1077
									2	689	0.049	192.974	0.842	575	827	1189
									3	710	0.045	224.143	0.857	600	834	1158
									4	543	0.081	136.541	0.822	468	706	1065
3	44.00	Very weak low to medium density occasionally alternating bands of high density creamy white CHALK.	13073	2555	4245	4346	24385	251.8	1	1057	0.030	444.908	0.899	896	1131	1428
									2	1264	0.054	439.501	0.866	1106	1504	2046
									3	1056	0.095	357.841	0.856	965	1343	1869

Project	A303 Amesbury to Berwick Down
Client	RPS
Project No.	P1200116
Table No.	R71919

Pressuremeter Test Overview High Pressure Dilatometer (HPD)



Test Date	19/11/2020	Test No.	1
Borehole	R71919	Test Depth (m)	22.00
Coordinates (m)	412869 (E)	142029.7 (N)	Elevation (m) 93.02



Material description from borehole log:

Very weak low to medium density occasionally alternating bands of high density creamy white CHALK.

Test pocket conditions:

Total core recovery:	44 %	Test pocket depth range:	
Solid core recovery:	10 %	From:	21.00 m to: 23.50 m
Rock quality designation:	0 %	Flush:	Water

Test comment:

The test pocket was oversized with arms lifting off between 3.5 to 7.0mm. The p_0 was estimated to be at 1350kPa, with the following loading section being relatively long. Material yield is interpreted at 4674kPa with the test taken to a high pressure of 10018kPa. The displacement-pressure response was variable in terms of expansion. Analysis of three unload-reload loops provides increasing modulus values from 586 to 1103MPa, whilst a loop on the unload section provides a modulus of 1083MPa. Derived undrained shear strength analysis provides a value of 3324kPa.

Test details:

Instrument: Wally

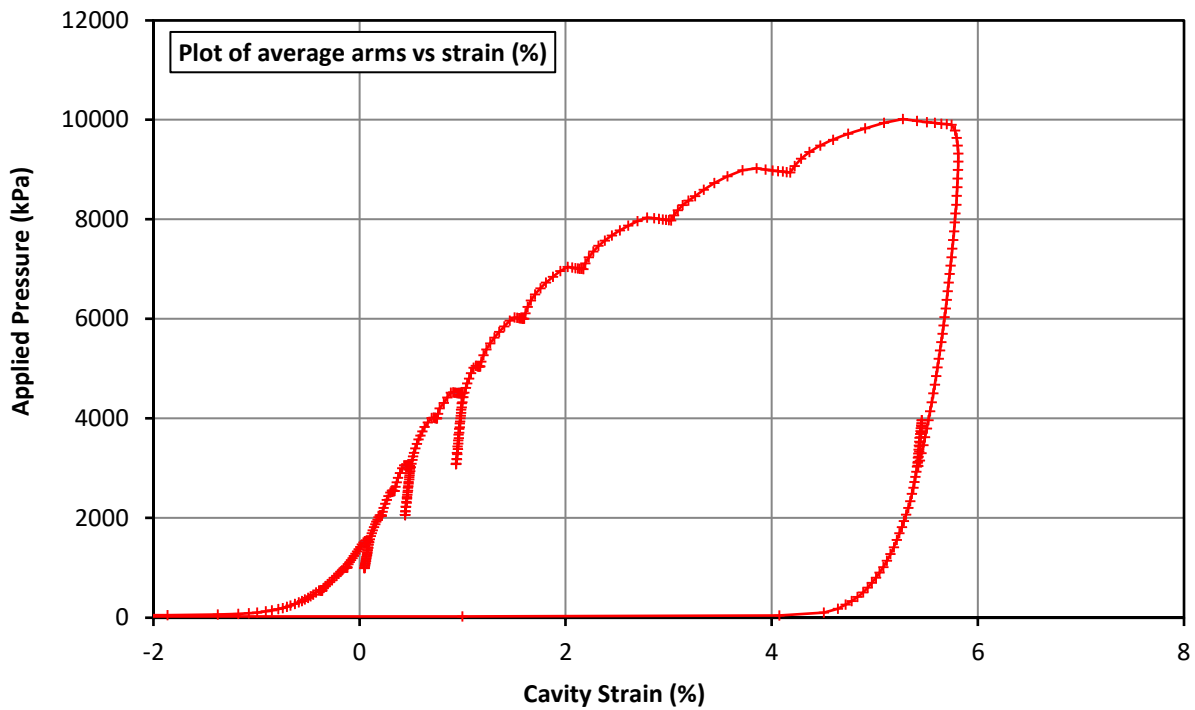
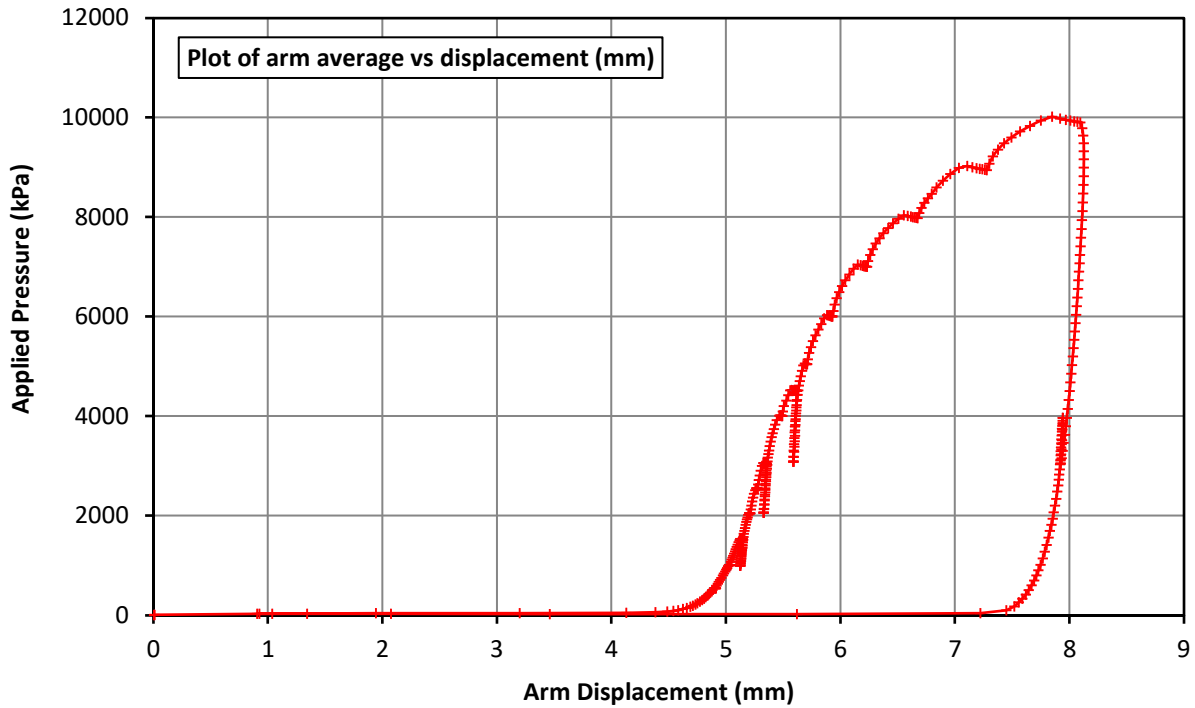
Drilling method:	Rotary coring		mV	mV/mm		mV	mV/MPa
Casing depth:	21.00 m	Arm 1:	-2017.6	146.5	TPC A:	-1609.6	109.0
Water level:	- m	Arm 2:	-2652.3	139.0	TPC B:	-2059.1	109.1
		Arm 3:	-2304.4	146.3			
Test time:		Arm 4:	-2043.7	140.5			
Start (probe in):	12:30 hrs	Arm 5:	-2321.4	139.9			
Finish (probe out):	13:34 hrs	Arm 6:	-2046.1	126.0			

Project	A303 Amesbury to Berwick Down	Figure No.	R71919 T01 - 01
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test Overview



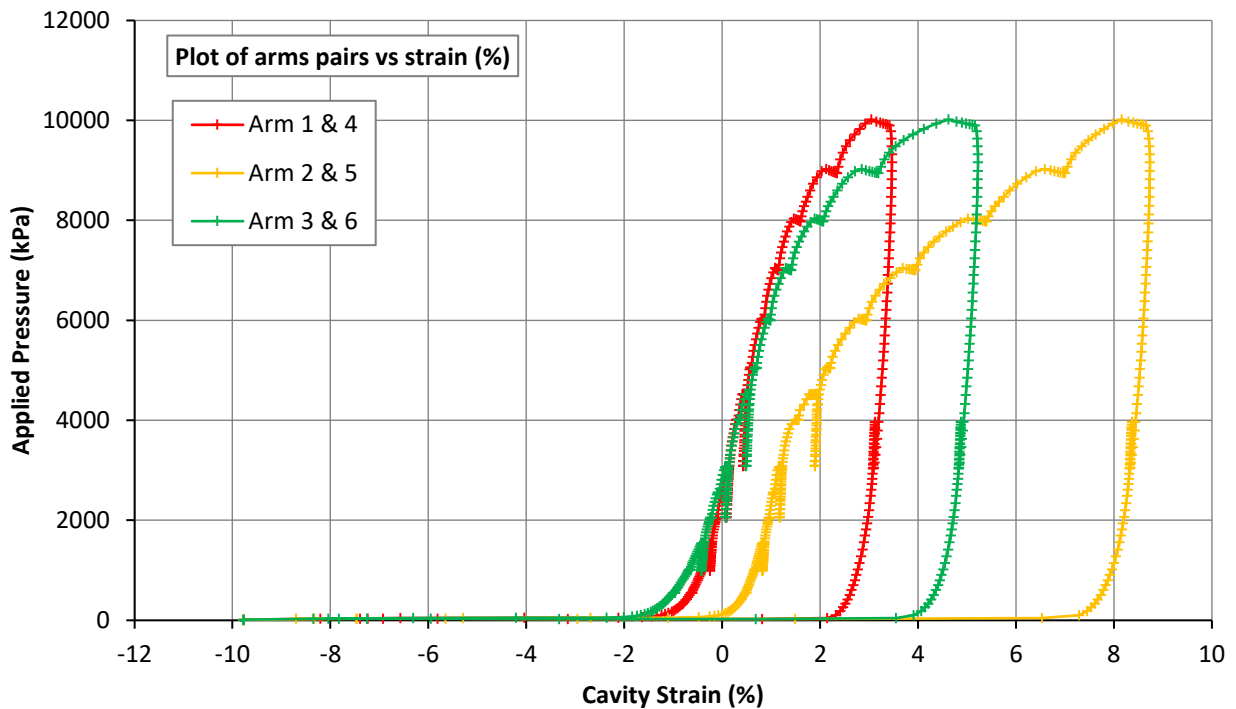
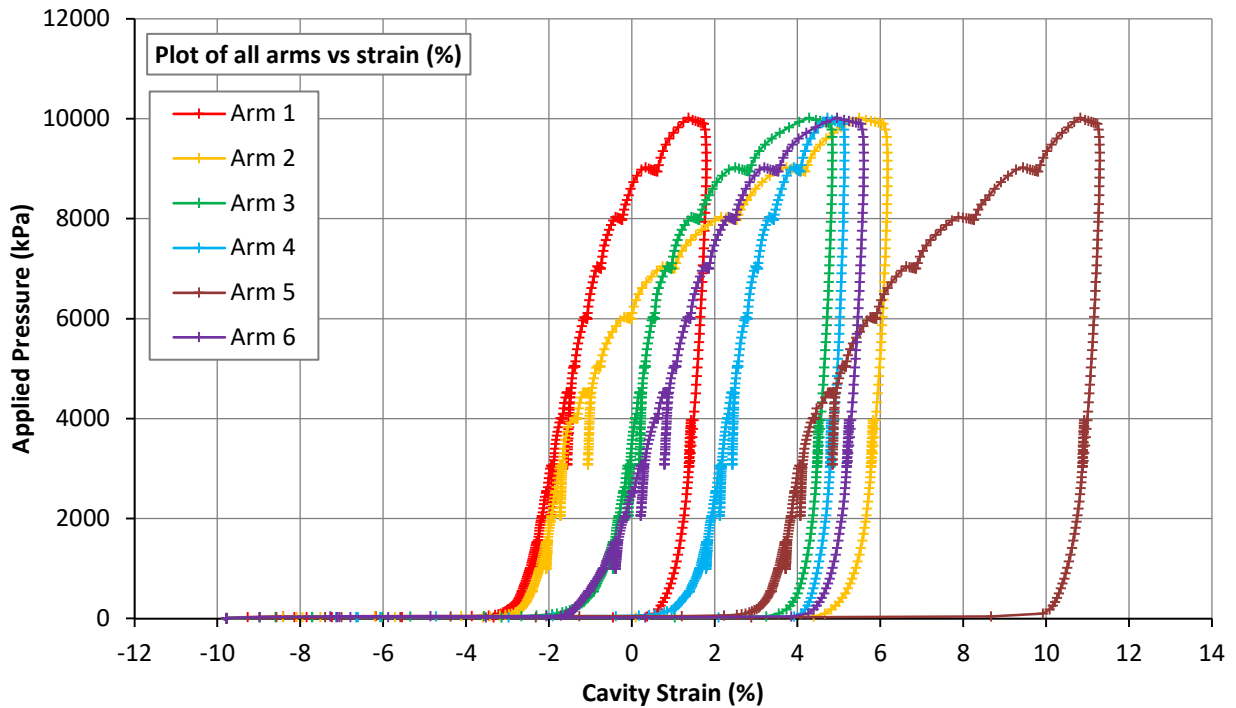
Test Date	19/11/2020	Test No.	1
Borehole	R71919	Test Depth (m)	22.00



Project	A303 Amesbury to Berwick Down	Figure No.	R71919 T01 - 02
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test - Arm Displacement vs Strain (%)

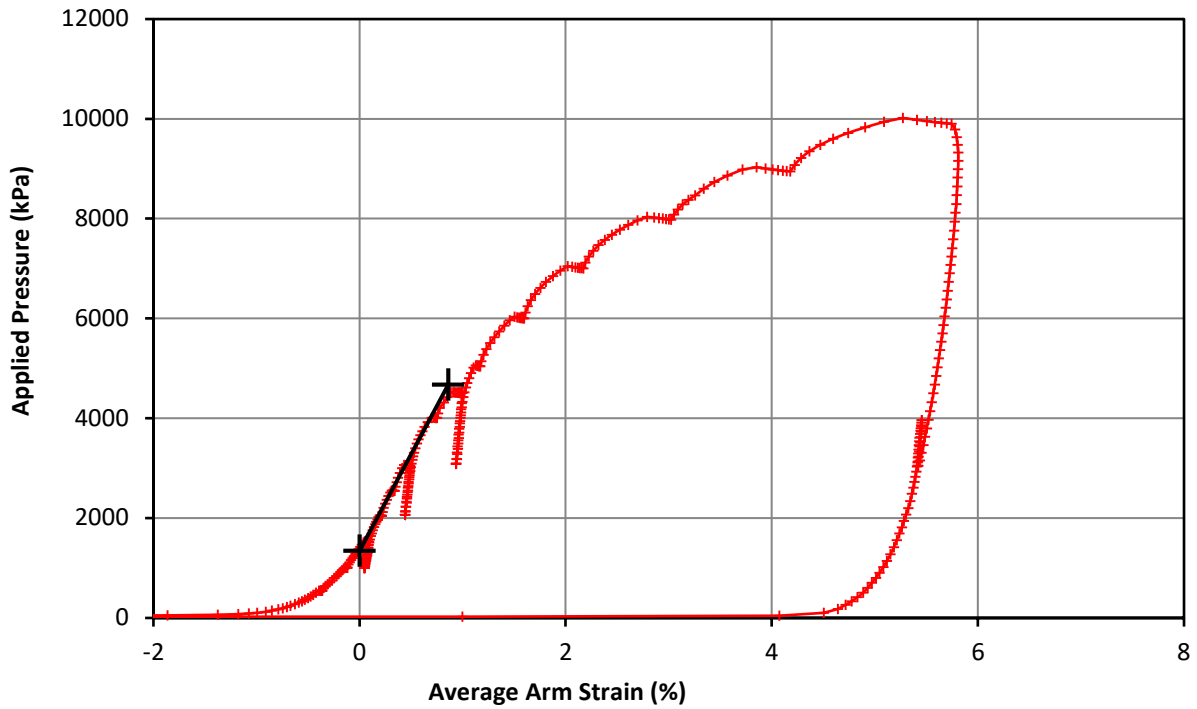
Test Date	19/11/2020	Test No.	1
Borehole	R71919	Test Depth (m)	22.00



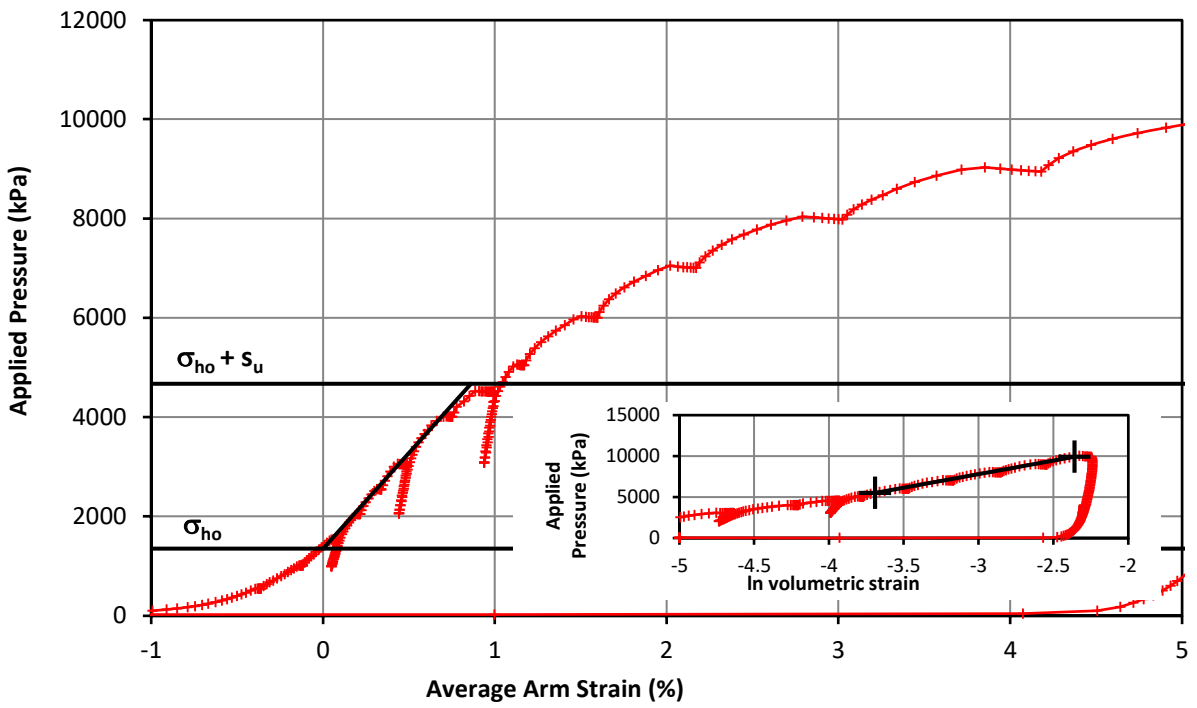
Project	A303 Amesbury to Berwick Down	Figure No.	R71919 T01 - 03
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test Initial Modulus & In Situ Horizontal Stress

Test Date	19/11/2020	Test No.	1
Borehole	R71919	Test Depth (m)	22.00



Initial Modulus	Shear Modulus	194.9 MPa
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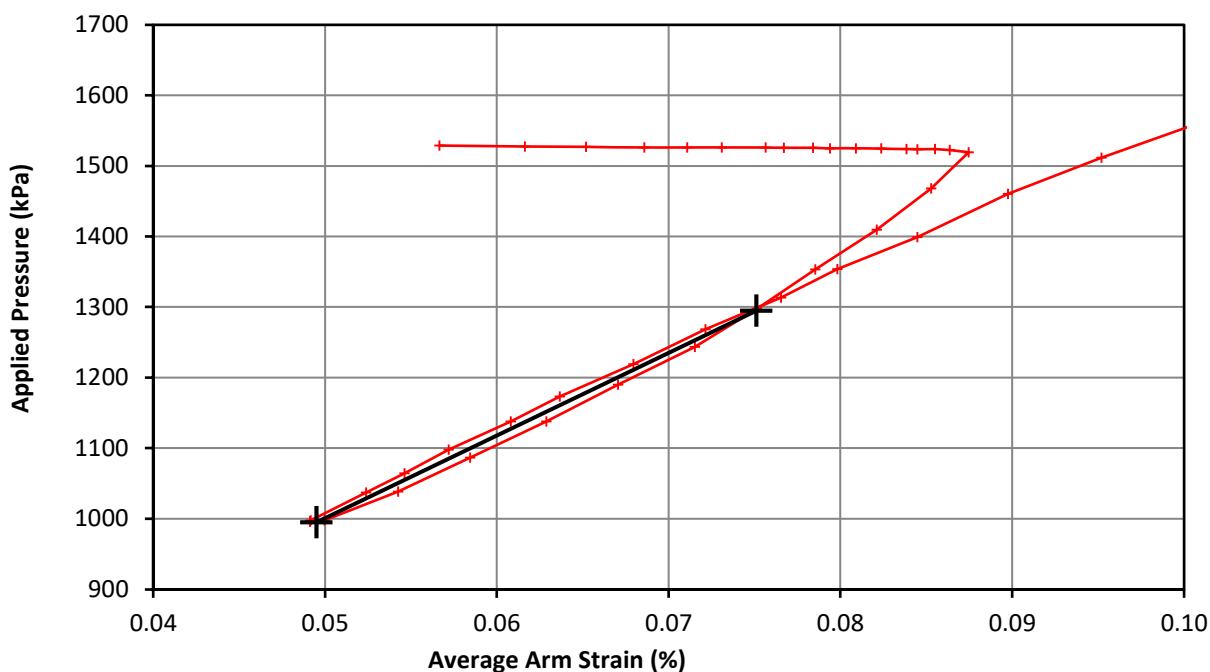
Marsland & Randolph	In situ horizontal stress	1350 kPa
	Undrained Strength	3324 kPa

Project	A303 Amesbury to Berwick Down	Figure No.	R71919 T01 - 04
Client	RPS Ltd		
Project No.	P1200116		

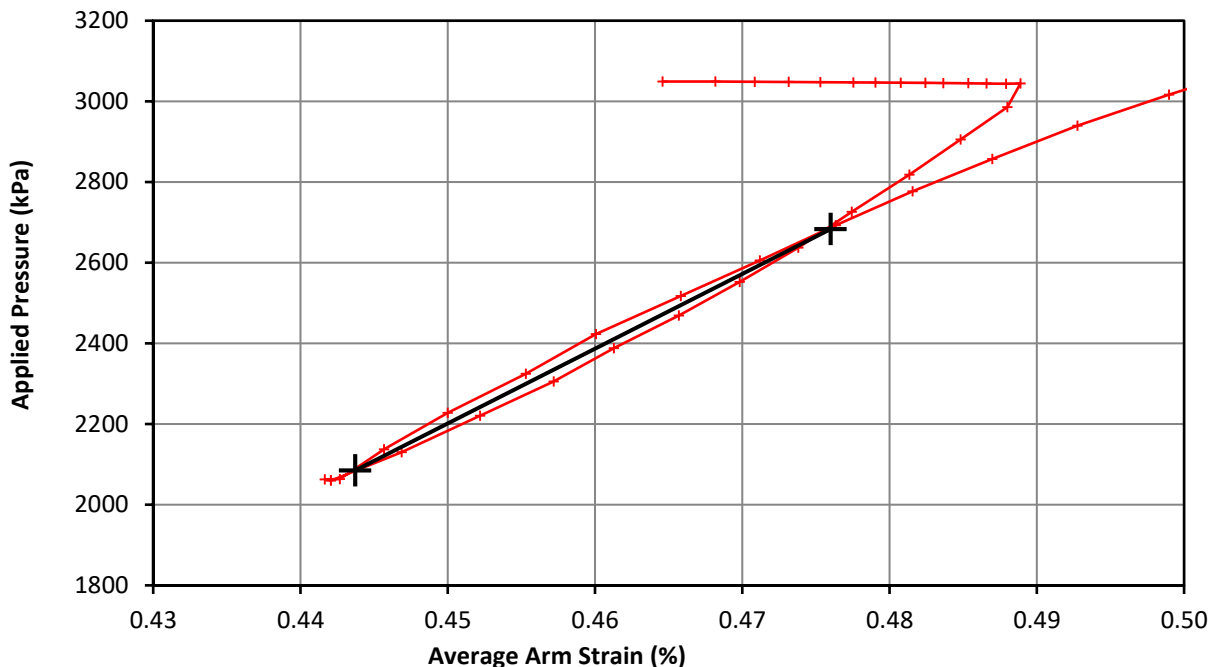
Pressuremeter Test Unload Reload Loop



Test Date	19/11/2020	Test No.	1
Borehole	R71919	Test Depth (m)	22.00



Loop 1	Shear Modulus	586.4 MPa
	Cavity Strain Range	0.026 %



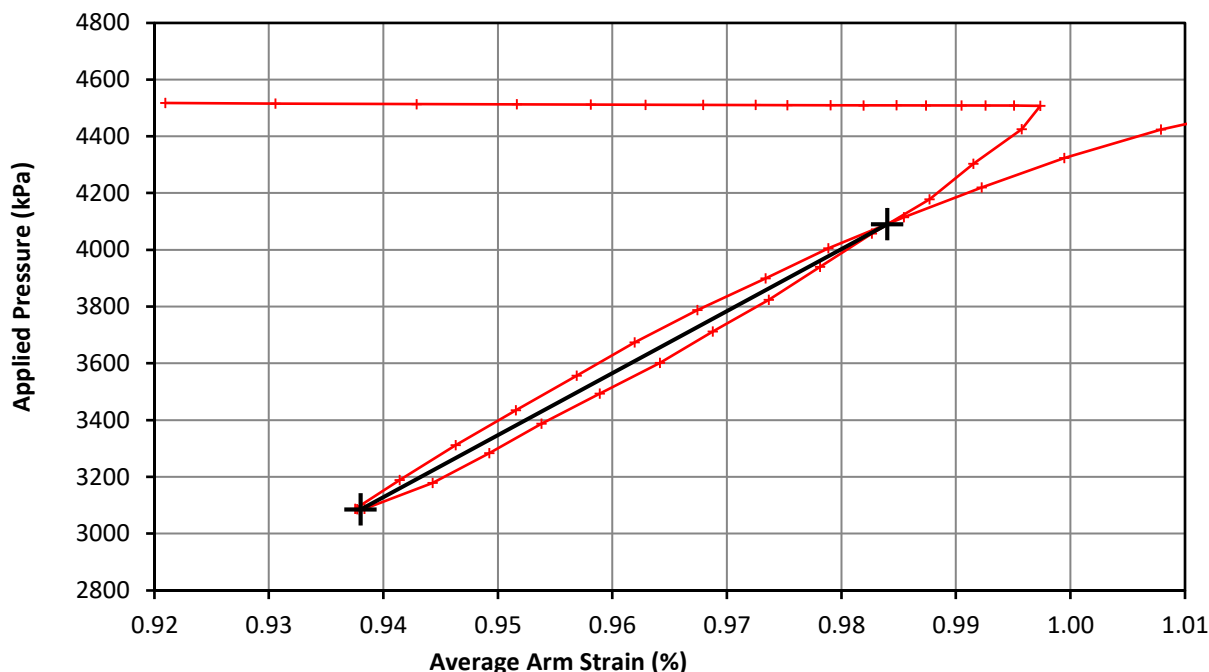
Loop 2	Shear Modulus	931.7 MPa
	Cavity Strain Range	0.032 %

Project	A303 Amesbury to Berwick Down	Figure No.	R71919 T01 - 05
Client	RPS Ltd		
Project No.	P1200116		

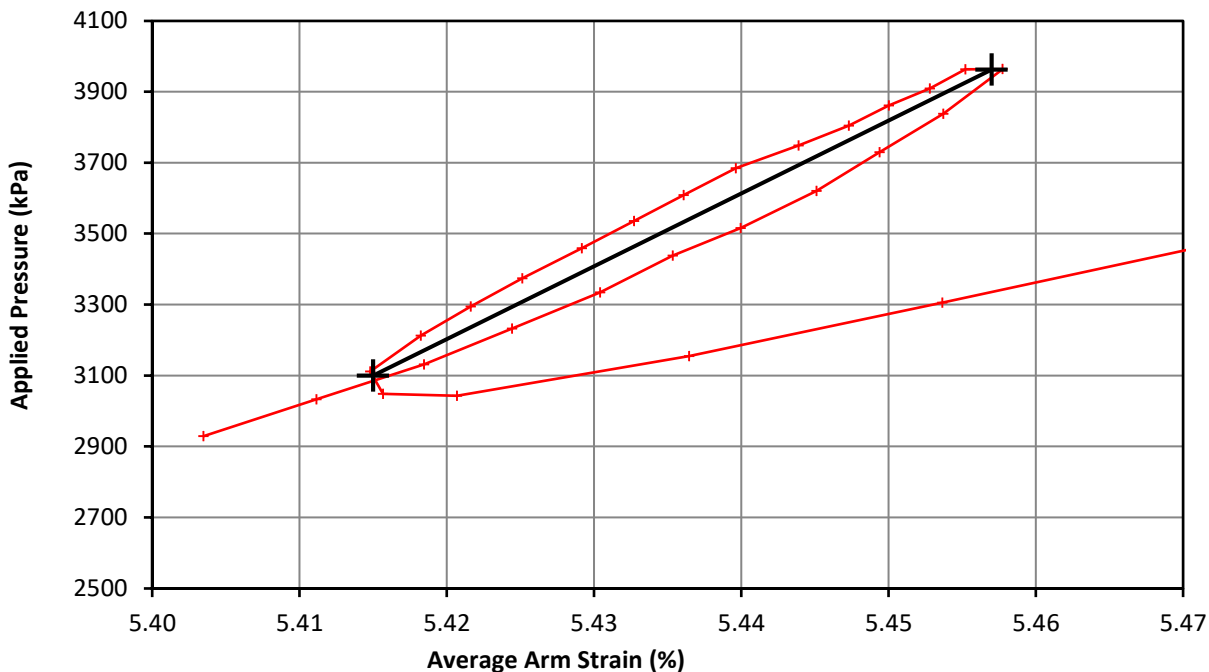
Pressuremeter Test Unload Reload Loop



Test Date	19/11/2020	Test No.	1
Borehole	R71919	Test Depth (m)	22.00



Loop 3	Shear Modulus	1103.1 MPa
	Cavity Strain Range	0.046 %



Loop 4	Shear Modulus	1083.4 MPa
	Cavity Strain Range	0.042 %

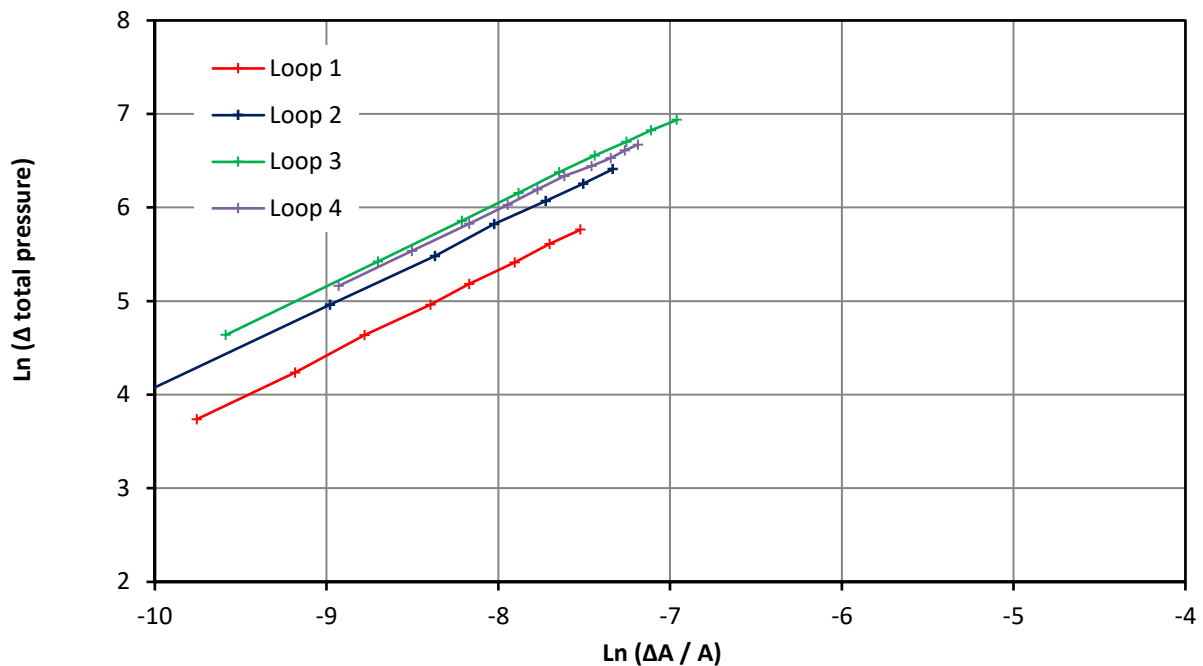
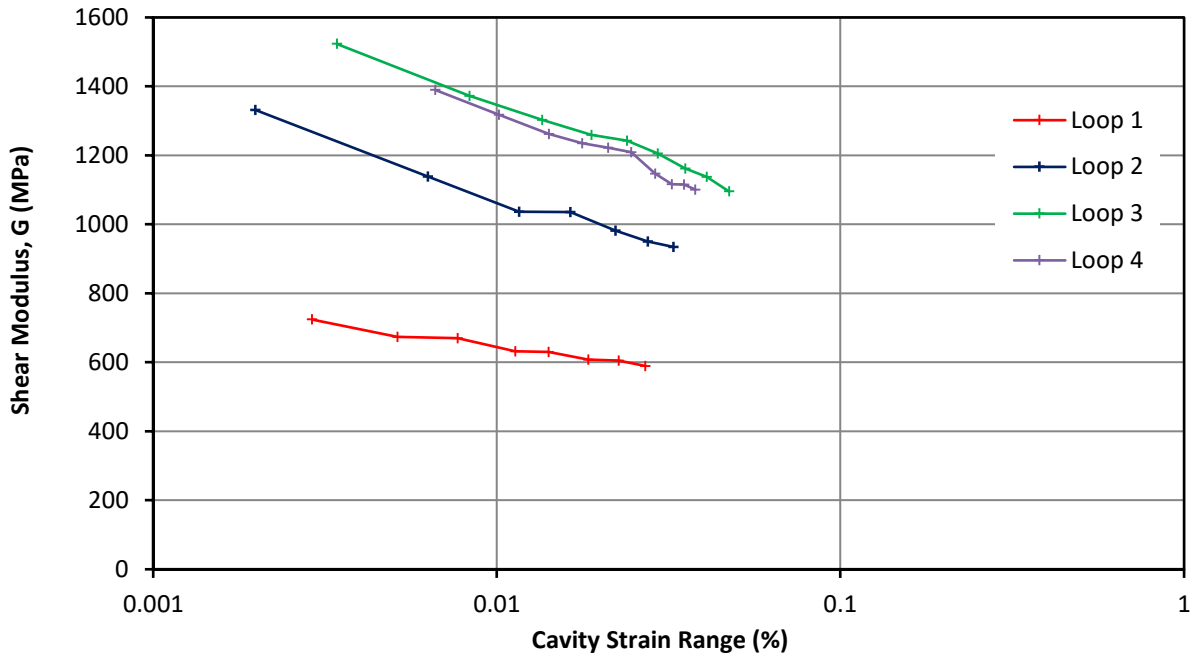
Project	A303 Amesbury to Berwick Down	Figure No.	R71919 T01 - 06
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Analysis

Small Strain Stiffness and Bolton and Whittle (1999)



Test Date	19/11/2020	Test No.	1
Borehole	R71919	Test Depth (m)	22.00



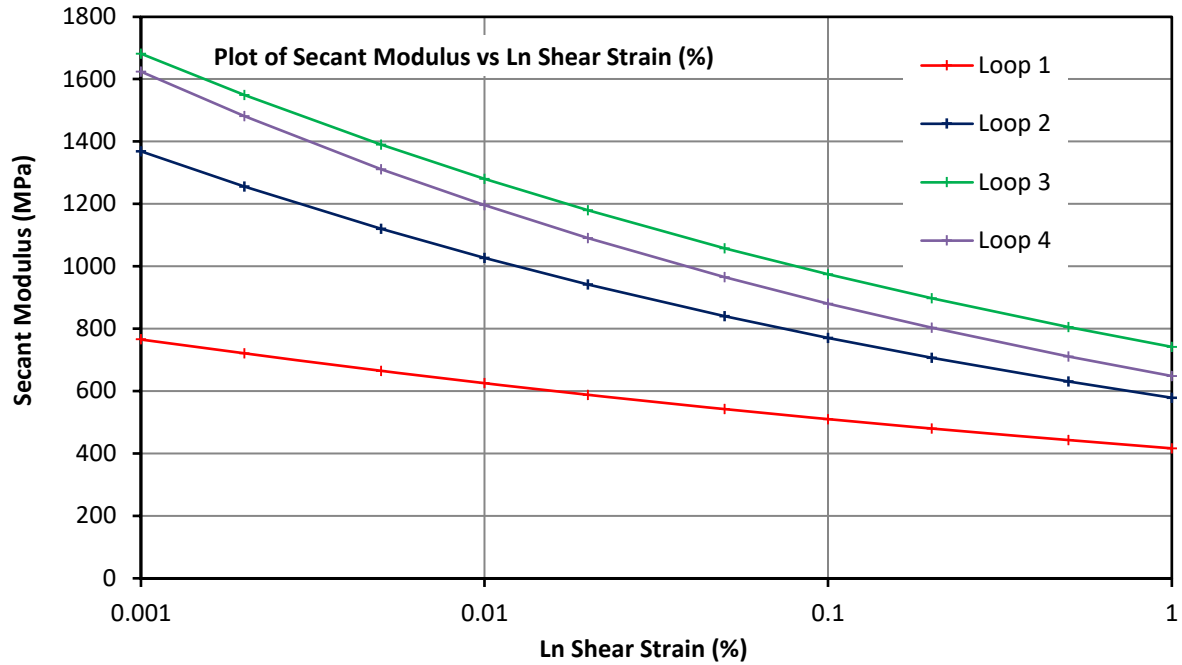
Loop 1		Loop 2		Loop 3		Loop 4	
Gradient(β)	Intercept	Gradient(β)	Intercept	Gradient(β)	Intercept	Gradient(β)	Intercept
0.912	304.096 (MPa)	0.875	372.110 (MPa)	0.882	487.693 (MPa)	0.867	405.215 (MPa)

Project	A303 Amesbury to Berwick Down	Figure No.	R71919 T01 - 07
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Analysis

Secant Modulus - Shear Strain (%)

Test Date	19/11/2020	Test No.	1
Borehole	R71919	Test Depth (m)	22.00

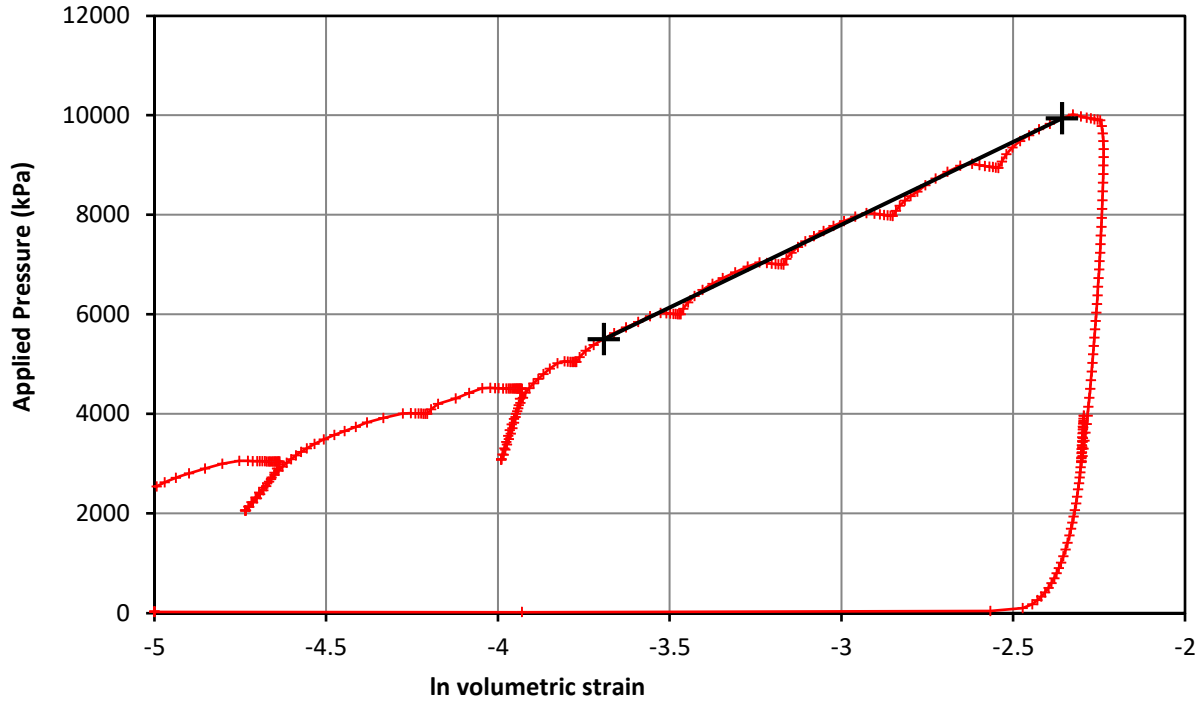


Shear Strain	Loop 1	Loop 2	Loop 3	Loop 4
0.001%	766	1368	1682	1624
0.002%	720	1255	1549	1481
0.005%	664	1120	1390	1311
0.010%	625	1027	1280	1196
0.020%	588	942	1179	1090
0.050%	542	840	1058	965
0.100%	510	771	975	880
0.200%	480	707	898	803
0.500%	443	631	805	711
1.000%	416	578	742	648

Project	A303 Amesbury to Berwick Down	Figure No.	R71919 T01 - 08
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test - Strength

Test Date	19/11/2020	Test No.	1
Borehole	R71919	Test Depth (m)	22.00



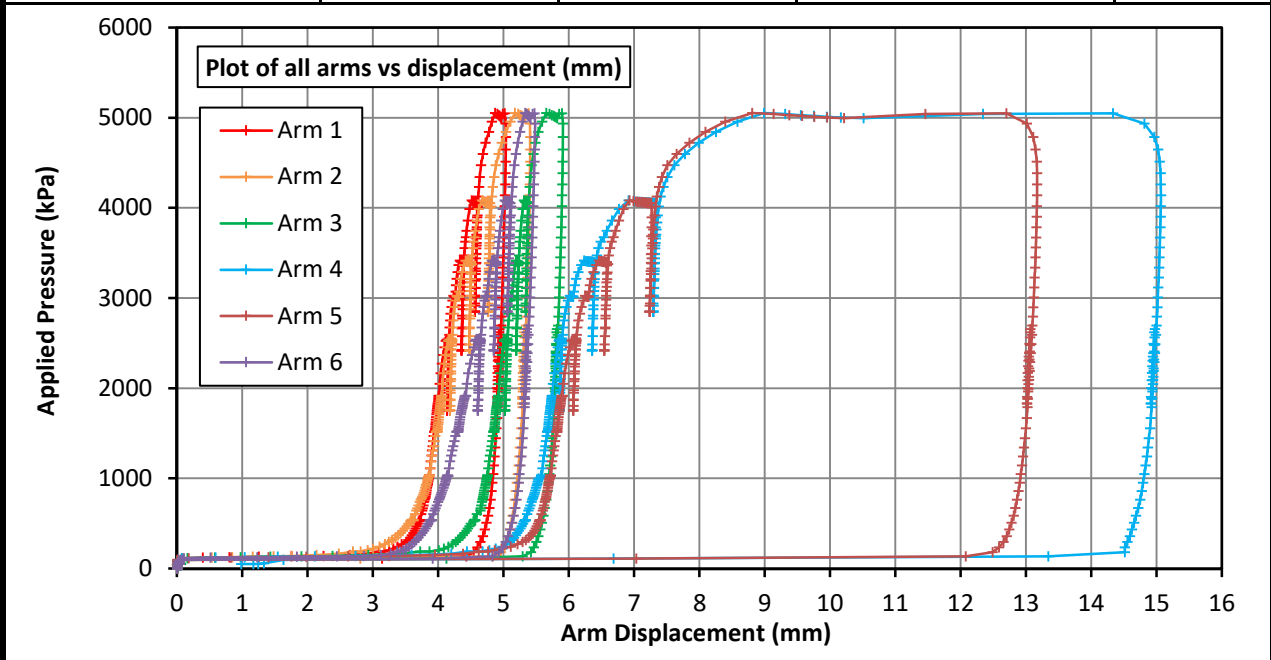
Strength	Undrained Shear	3324 kPa
	Limit Pressure	17777 kPa

Project	A303 Amesbury to Berwick Down	Figure No.	R71919 T01 - 09
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test Overview High Pressure Dilatometer (HPD)



Test Date	20/11/2020	Test No.	2
Borehole	R71919	Test Depth (m)	33.00
Coordinates (m)	412869 (E)	142029.7 (N)	Elevation (m) 93.02



Material description from borehole log:
Very weak low to medium density occasionally alternating bands of high density creamy white CHALK.

Test pocket conditions:

Total core recovery:	60 %	Test pocket depth range:	
Solid core recovery:	5 %	From:	32.00 m to: 34.50 m
Rock quality designation:	0 %	Flush:	Water

Test comment:
The test pocket was oversize with arms lifting off between 4.0 to 6.0mm. The po was estimated to be at 1540kPa, with the following loading section being relatively short. Material yield is interpreted at 2901kPa with the test taken to a pressure of 5051kPa. The displacement-pressure response was variable with arms 6, 1, 2 & 3 tight, whilst arms 4 & 5 show failure and large expansion. Analysis of three unload-reload loops provides increasing modulus values from 623 to 710MPa, whilst a loop on the unload section provides a modulus of 543MPa. Derived undrained shear strength analysis provides values of 1323 to 1361kPa.

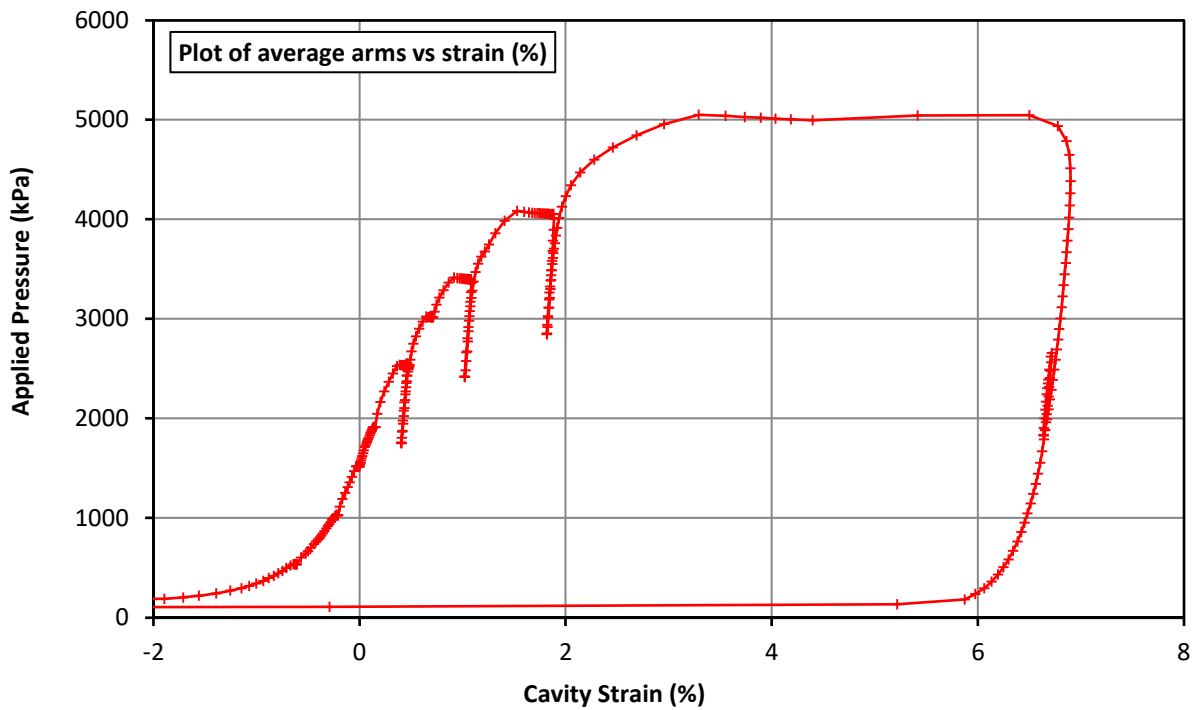
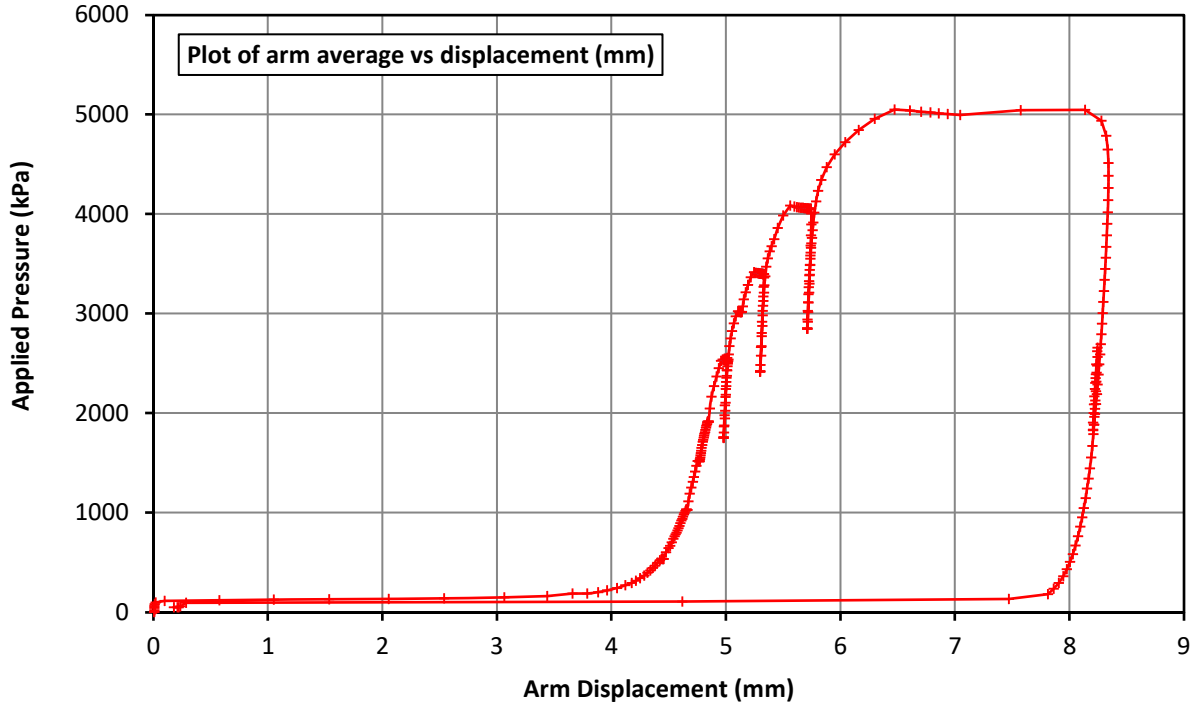
Test details:		Instrument:		Wally	
Drilling method:	Rotary coring		mV	mV/mm	mV
Casing depth:	32.00 m	Arm 1:	-1997.7	146.5	TPC A: -1613.7
Water level:	25.00 m	Arm 2:	-2641.6	139.0	TPC B: -2062.3
		Arm 3:	-2330.5	146.3	
Test time:		Arm 4:	-2044.1	140.5	
Start (probe in):	09:25 hrs	Arm 5:	-2322.9	139.9	
Finish (probe out):	10:26 hrs	Arm 6:	-2056.0	126.0	

Project	A303 Amesbury to Berwick Down	Figure No.	R71919 T02 - 01
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test Overview



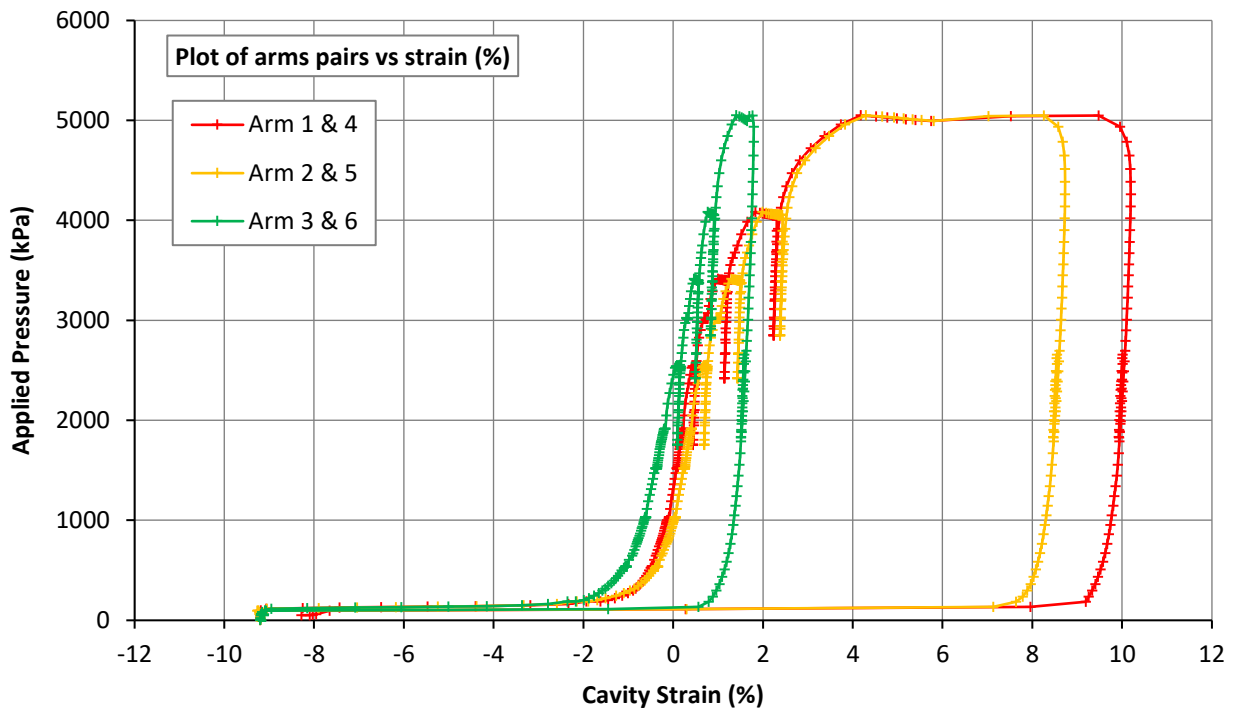
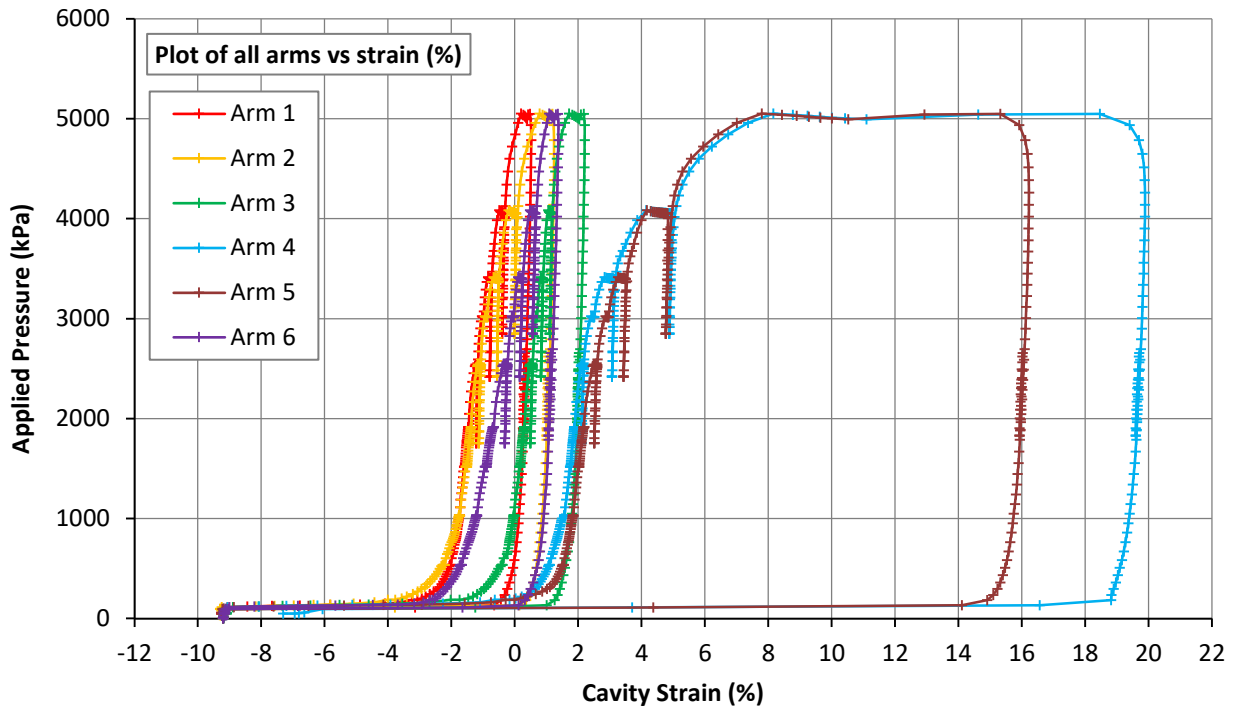
Test Date	20/11/2020	Test No.	2
Borehole	R71919	Test Depth (m)	33.00



Project	A303 Amesbury to Berwick Down	Figure No.	R71919 T02 - 02
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test - Arm Displacement vs Strain (%)

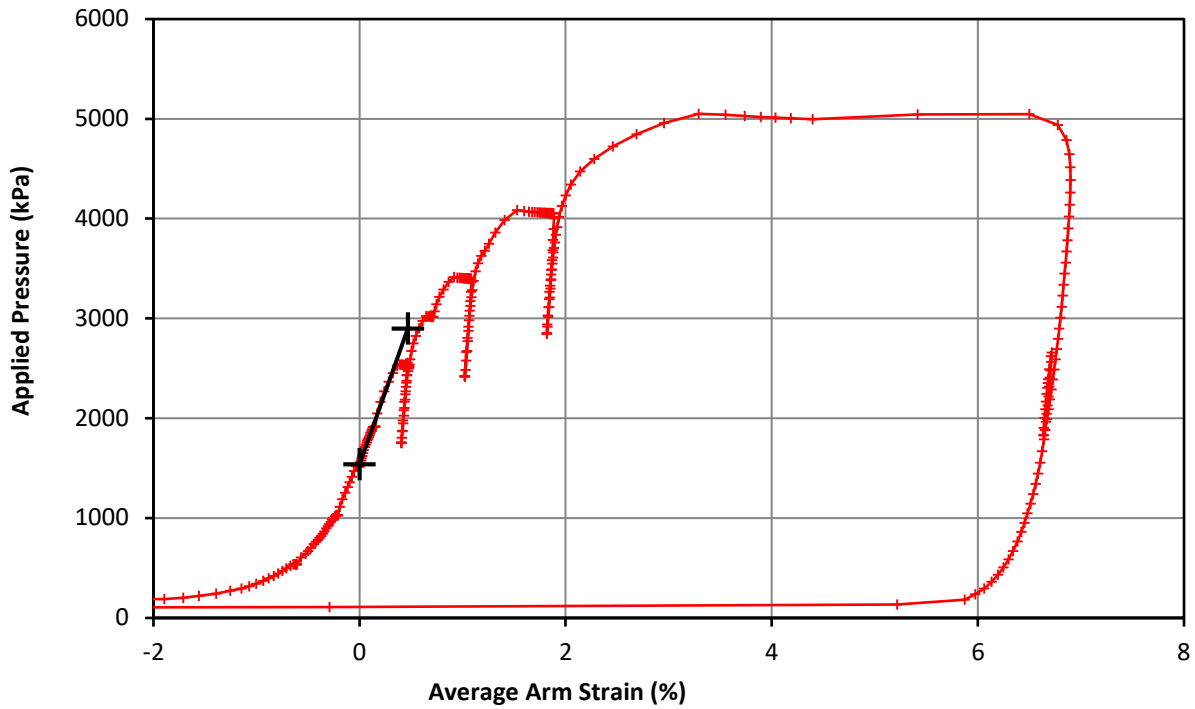
Test Date	20/11/2020	Test No.	2
Borehole	R71919	Test Depth (m)	33.00



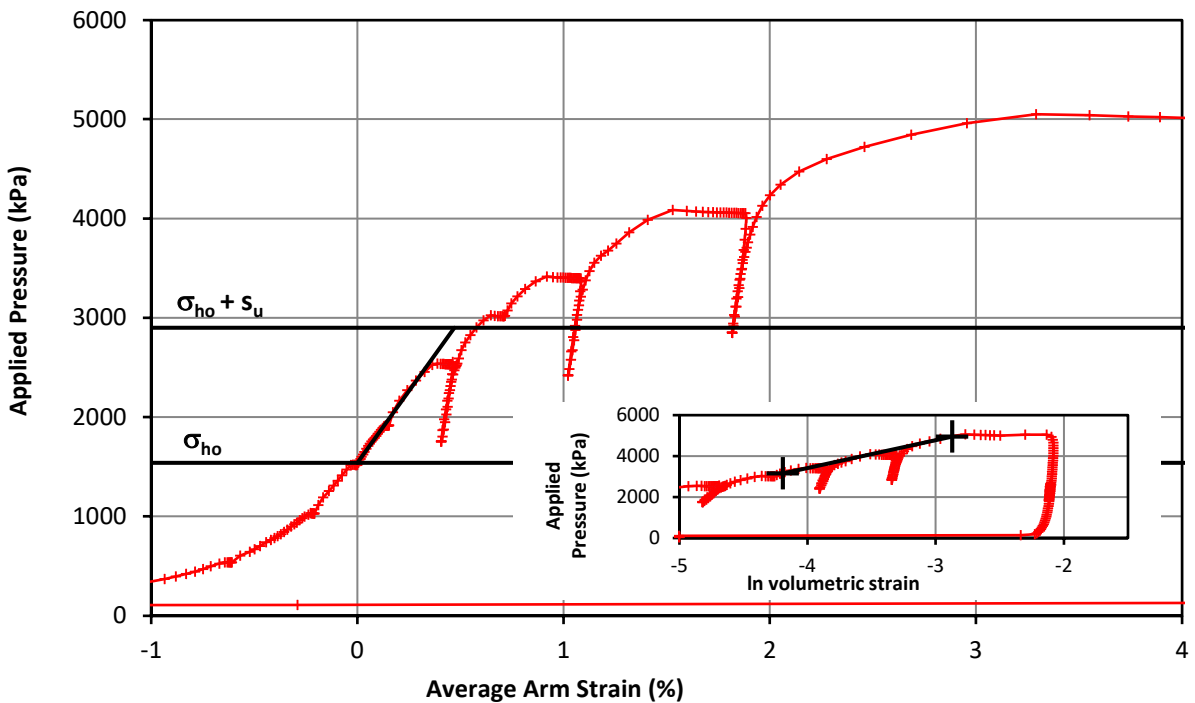
Project	A303 Amesbury to Berwick Down	Figure No.	R71919 T02 - 03
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test Initial Modulus & In Situ Horizontal Stress

Test Date	20/11/2020	Test No.	2
Borehole	R71919	Test Depth (m)	33.00



Initial Modulus	Shear Modulus	145.5 MPa
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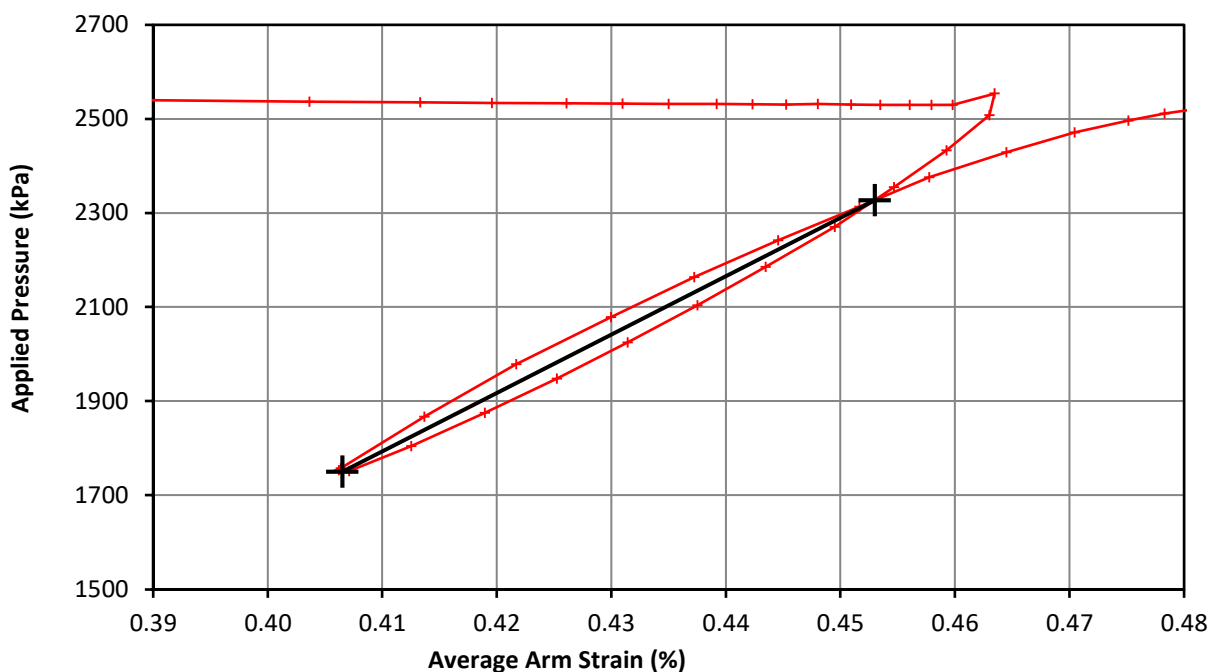
Marsland & Randolph	In situ horizontal stress	1540 kPa
	Undrained Strength	1361 kPa

Project	A303 Amesbury to Berwick Down	Figure No.	R71919 T02 - 04
Client	RPS Ltd		
Project No.	P1200116		

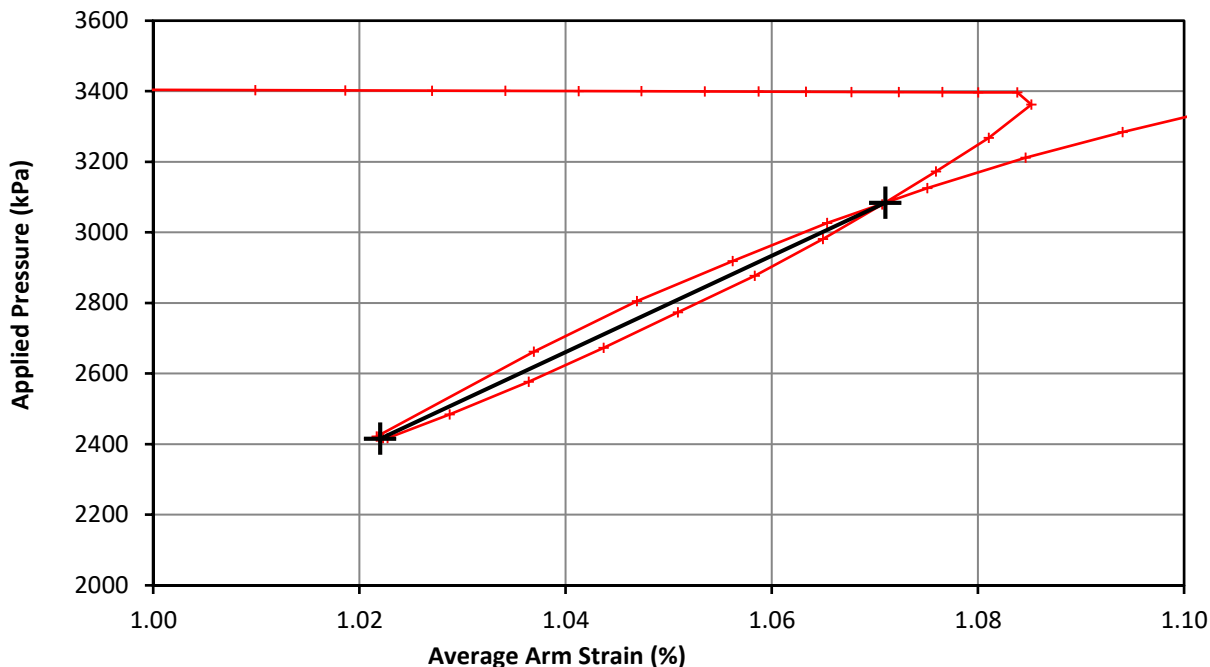
Pressuremeter Test Unload Reload Loop



Test Date	20/11/2020	Test No.	2
Borehole	R71919	Test Depth (m)	33.00



Loop 1	Shear Modulus	623.2 MPa
	Cavity Strain Range	0.047 %



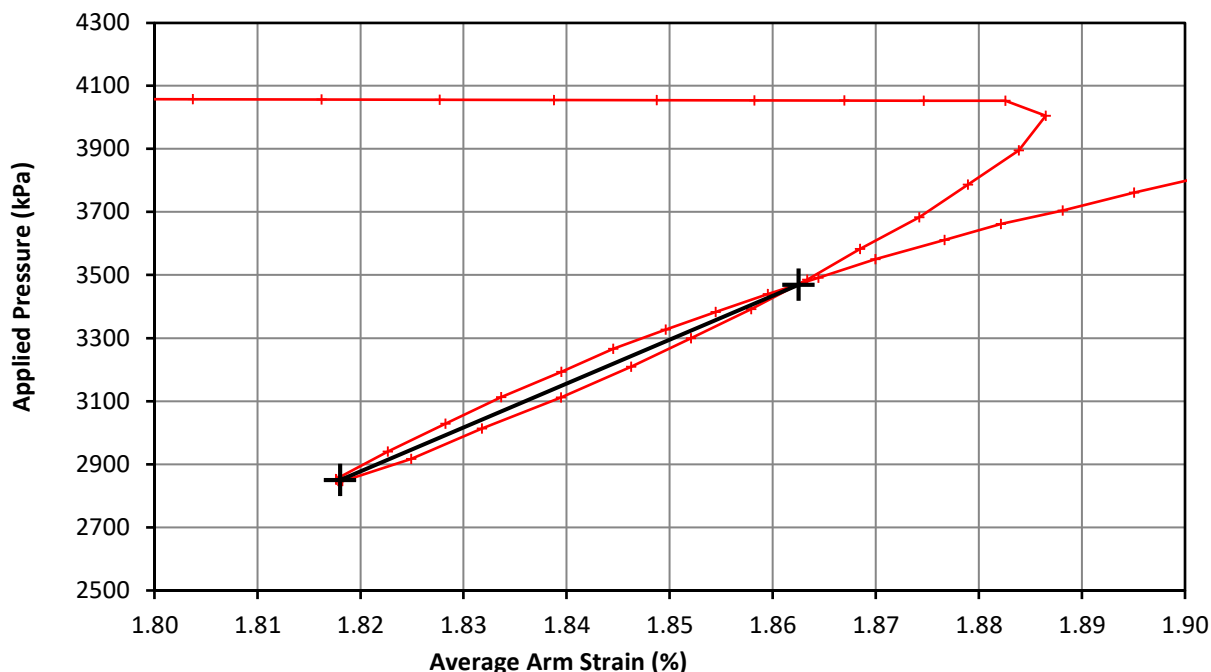
Loop 2	Shear Modulus	688.9 MPa
	Cavity Strain Range	0.049 %

Project	A303 Amesbury to Berwick Down	Figure No.	R71919 T02 - 05
Client	RPS Ltd		
Project No.	P1200116		

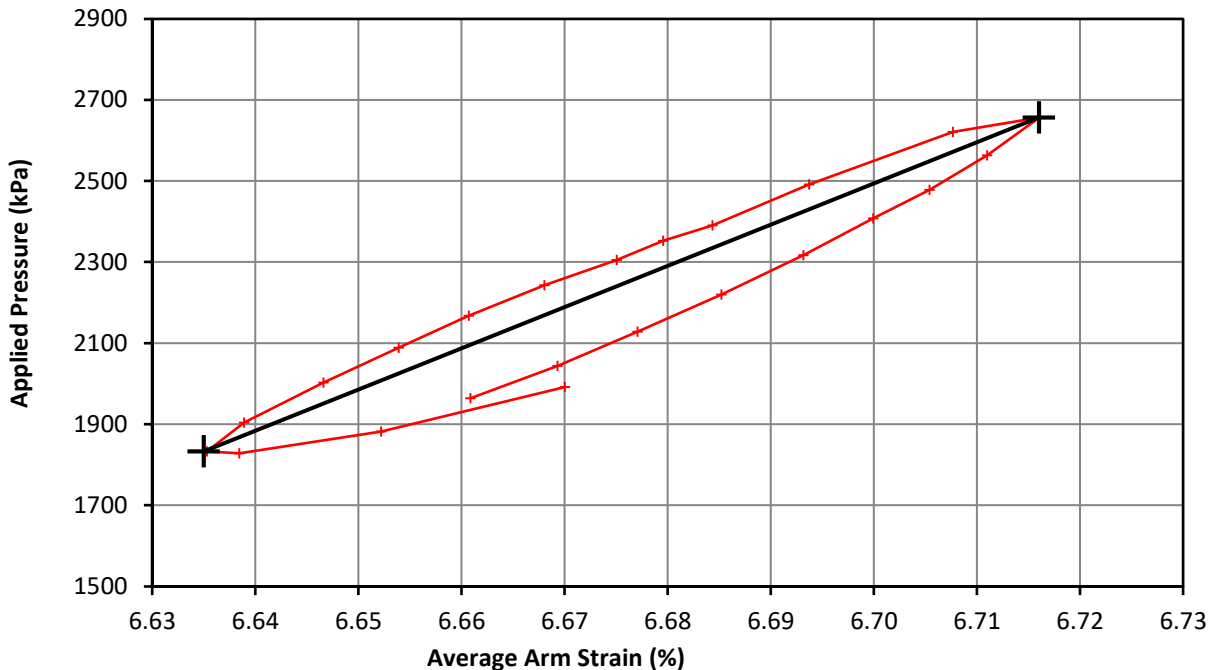
Pressuremeter Test Unload Reload Loop



Test Date	20/11/2020	Test No.	2
Borehole	R71919	Test Depth (m)	33.00



Loop 3	Shear Modulus	709.6 MPa
	Cavity Strain Range	0.045 %



Loop 4	Shear Modulus	542.8 MPa
	Cavity Strain Range	0.081 %

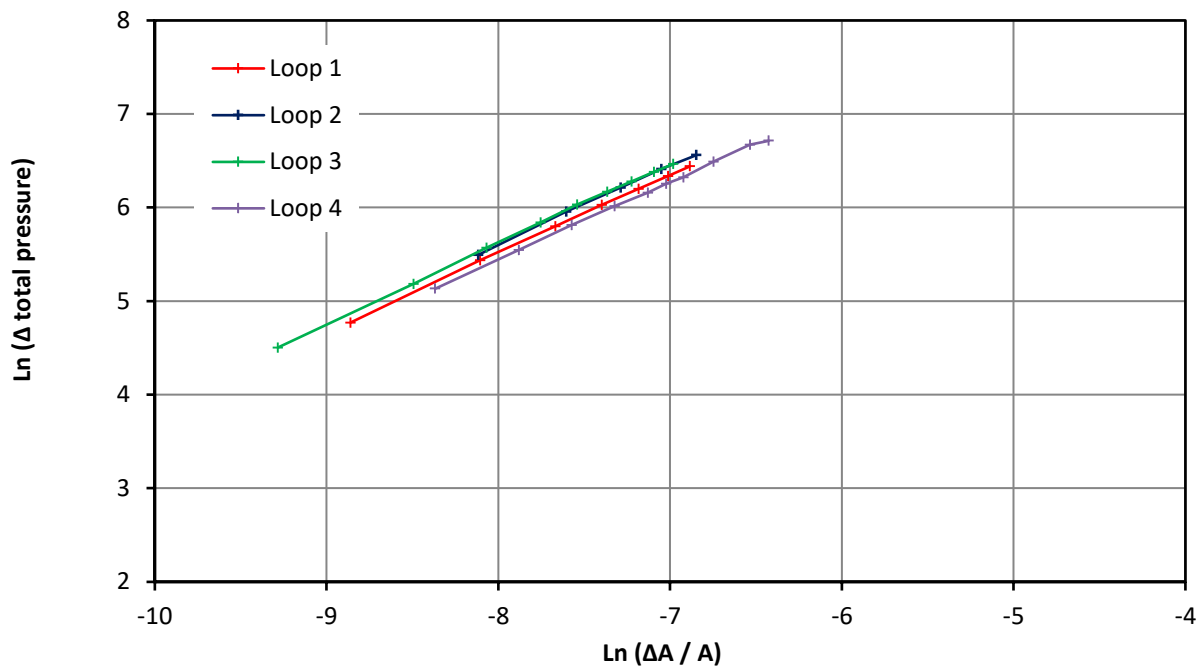
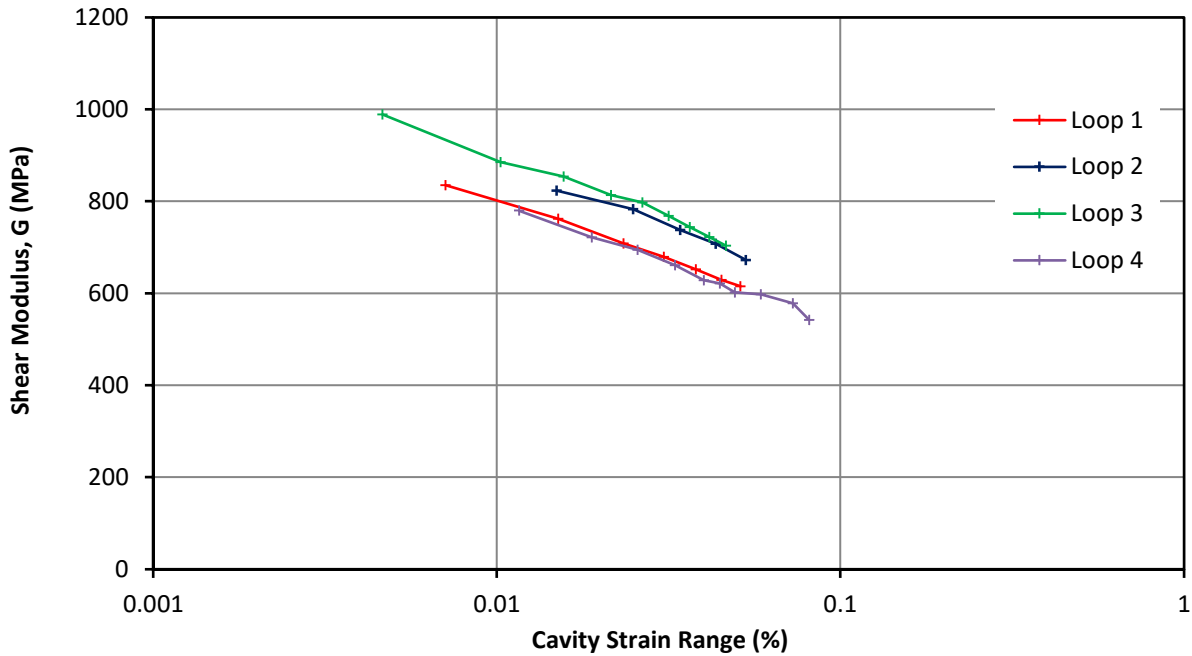
Project	A303 Amesbury to Berwick Down	Figure No.	R71919 T02 - 06
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Analysis

Small Strain Stiffness and Bolton and Whittle (1999)



Test Date	20/11/2020	Test No.	2
Borehole	R71919	Test Depth (m)	33.00



Loop 1		Loop 2		Loop 3		Loop 4	
Gradient(β)	Intercept	Gradient(β)	Intercept	Gradient(β)	Intercept	Gradient(β)	Intercept
0.844	210.867 (MPa)	0.842	229.178 (MPa)	0.857	261.425 (MPa)	0.822	166.188 (MPa)

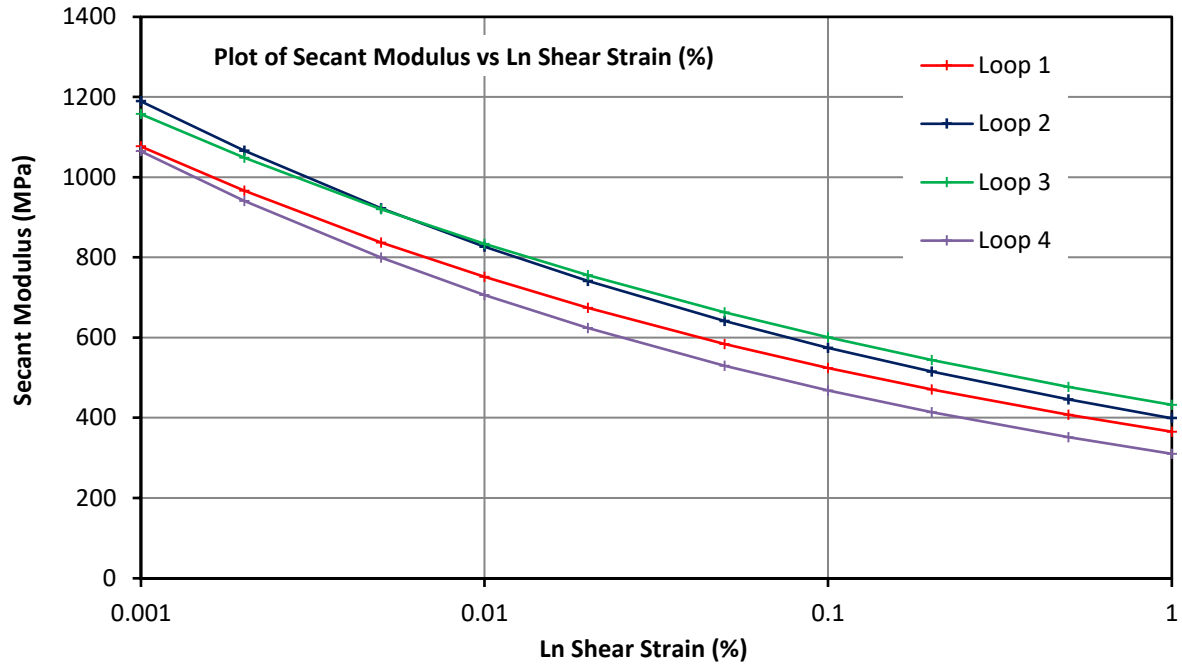
Project	A303 Amesbury to Berwick Down	Figure No.	R71919 T02 - 07
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Analysis

Secant Modulus - Shear Strain (%)



Test Date	20/11/2020	Test No.	2
Borehole	R71919	Test Depth (m)	33.00

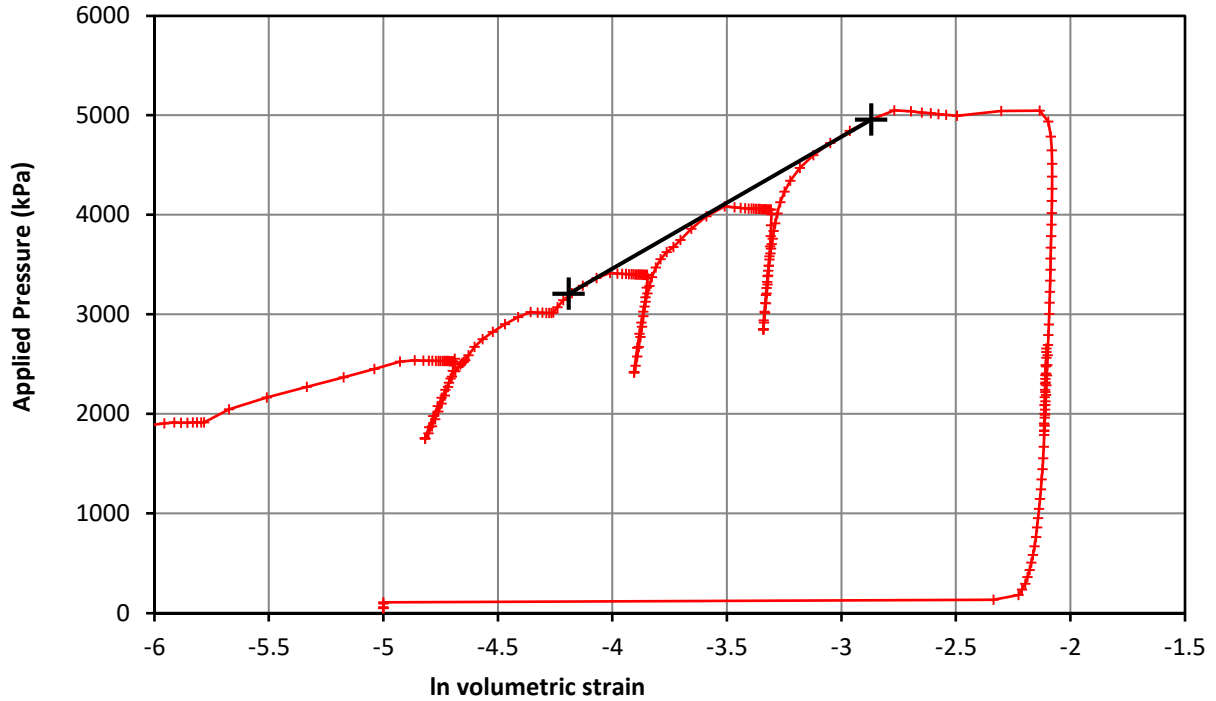


Shear Strain	Loop 1	Loop 2	Loop 3	Loop 4
0.001%	1077	1189	1158	1065
0.002%	966	1066	1049	941
0.005%	837	922	920	799
0.010%	751	827	834	706
0.020%	674	741	755	624
0.050%	584	641	663	530
0.100%	524	575	600	468
0.200%	470	515	544	414
0.500%	407	446	477	351
1.000%	366	399	432	310

Project	A303 Amesbury to Berwick Down	Figure No.	R71919 T02 - 08
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test - Strength

Test Date	20/11/2020	Test No.	2
Borehole	R71919	Test Depth (m)	33.00



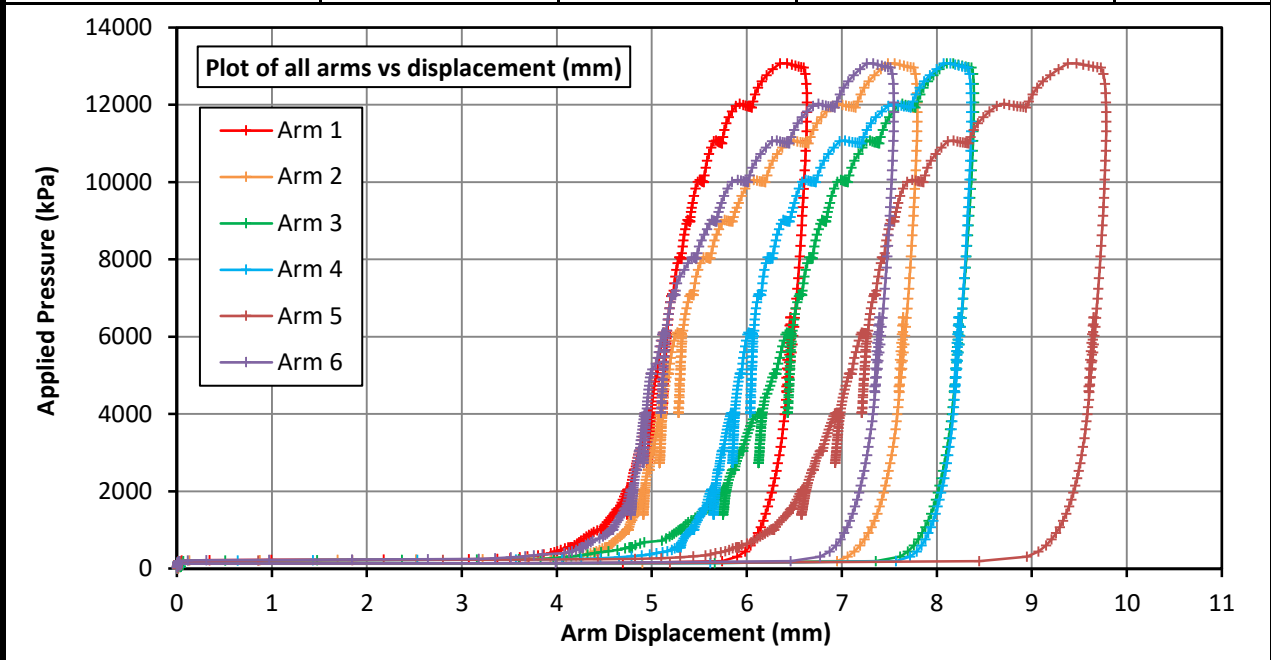
Strength	Undrained Shear	1323 kPa
	Limit Pressure	8757 kPa

Project	A303 Amesbury to Berwick Down	Figure No.	R71919 T02 - 09
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test Overview High Pressure Dilatometer (HPD)



Test Date	20/10/2020	Test No.	3
Borehole	R71919	Test Depth (m)	44.00
Coordinates (m)	412869 (E)	142029.7 (N)	Elevation (m) 93.02



Material description from borehole log:
Very weak low to medium density occasionally alternating bands of high density creamy white CHALK.

Test pocket conditions:

Total core recovery:	86 %	Test pocket depth range:	
Solid core recovery:	0 %	From:	43.00 m to: 45.50 m
Rock quality designation:	0 %	Flush:	Water

Test comment:
The test pocket was oversize with arms lifting off between 4.5 to 6.5mm. The p_0 was estimated to be at 2555kPa, with the following loading section being long. Material yield is interpreted at 6800kPa with the test taken to a high pressure of 13073kPa. The displacement-pressure response was variable in terms of expansion. Analysis of two unload-reload loops provides increasing modulus values from 1057 to 1264MPa, whilst a loop on the unload section provides a modulus of 1056MPa. Derived undrained shear strength analysis provides values of 4245 to 4346kPa.

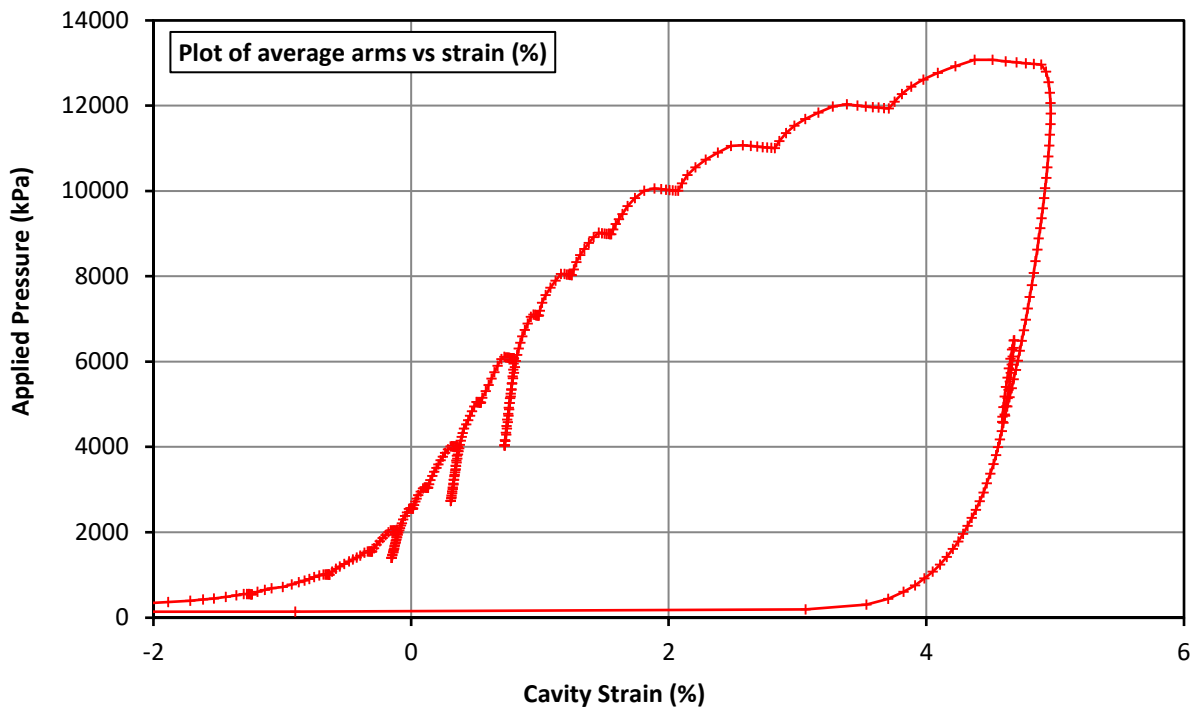
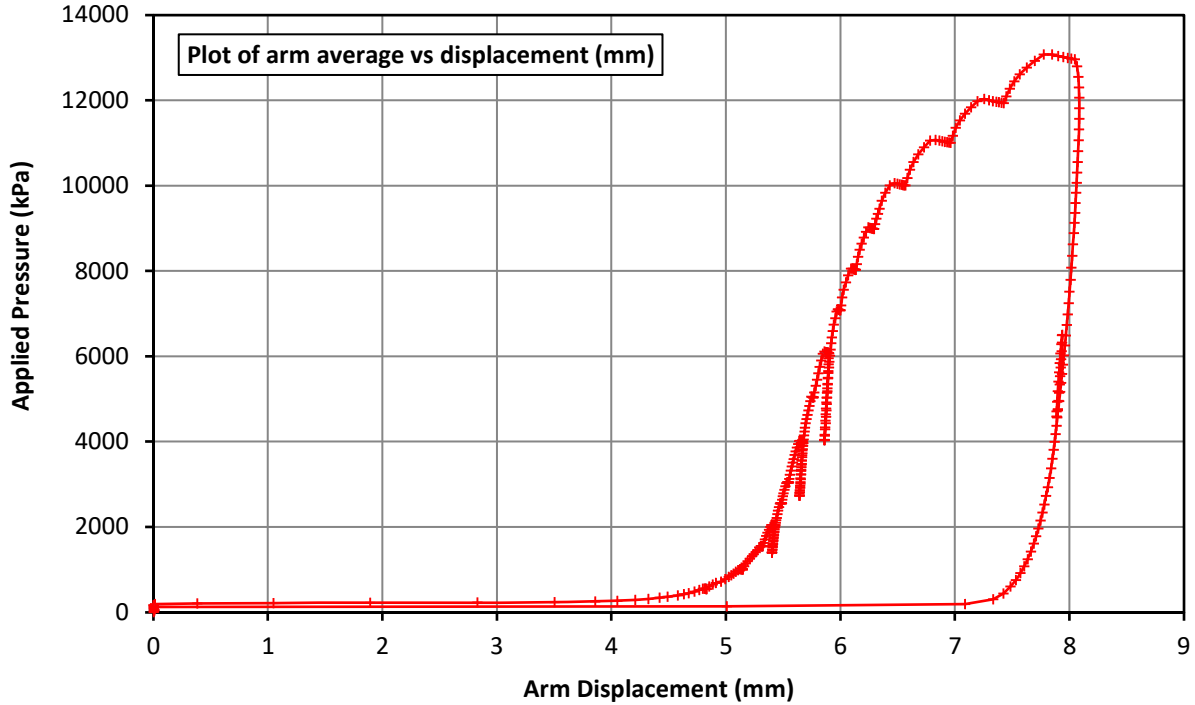
Test details:		Instrument: Wally					
Drilling method:	Rotary coring		mV	mV/mm	mV	mV/MPa	
Casing depth:	43.00 m	Arm 1:	-2010.8	146.5	TPC A:	-1610.7	109.0
Water level:	27.00 m	Arm 2:	-2634.1	139.0	TPC B:	-2058.8	109.1
		Arm 3:	-2325.9	146.3			
Test time:		Arm 4:	-2048.1	140.5			
Start (probe in):	12:07 hrs	Arm 5:	-2326.3	139.9			
Finish (probe out):	13:23 hrs	Arm 6:	-2048.8	126.0			

Project	A303 Amesbury to Berwick Down	Figure No.	R71919 T03 - 01
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test Overview



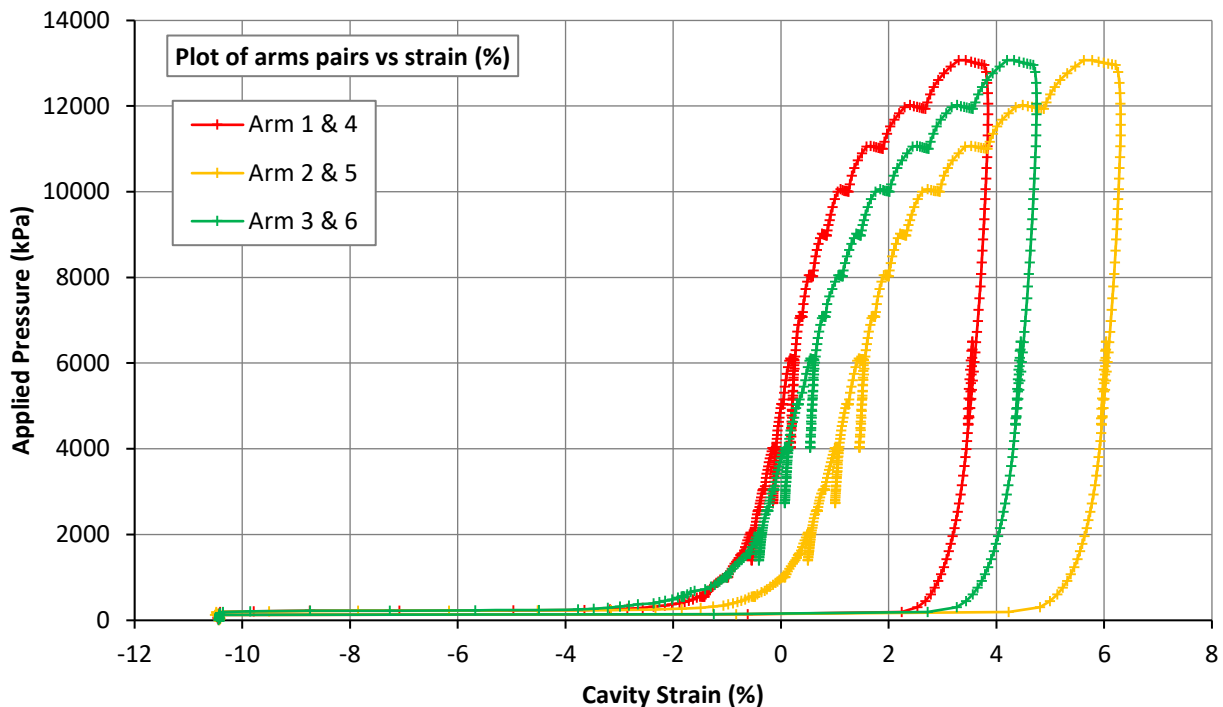
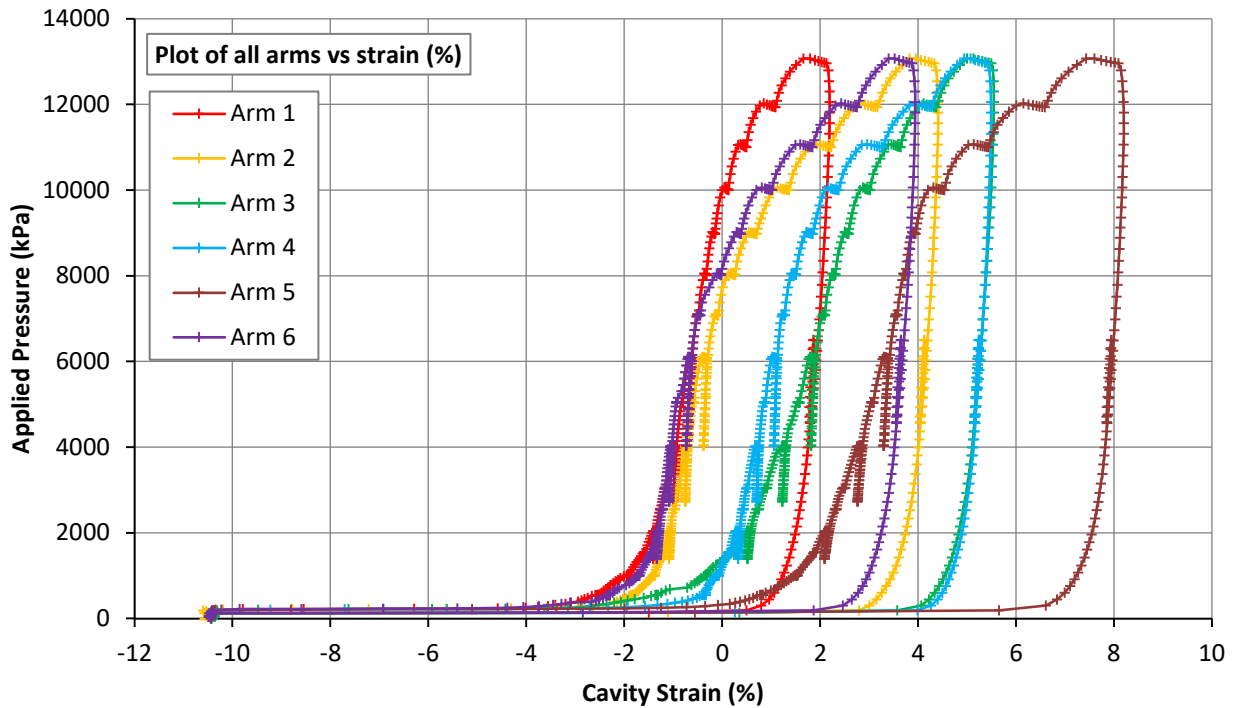
Test Date	20/10/2020	Test No.	3
Borehole	R71919	Test Depth (m)	44.00



Project	A303 Amesbury to Berwick Down	Figure No.	R71919 T03 - 02
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test - Arm Displacement vs Strain (%)

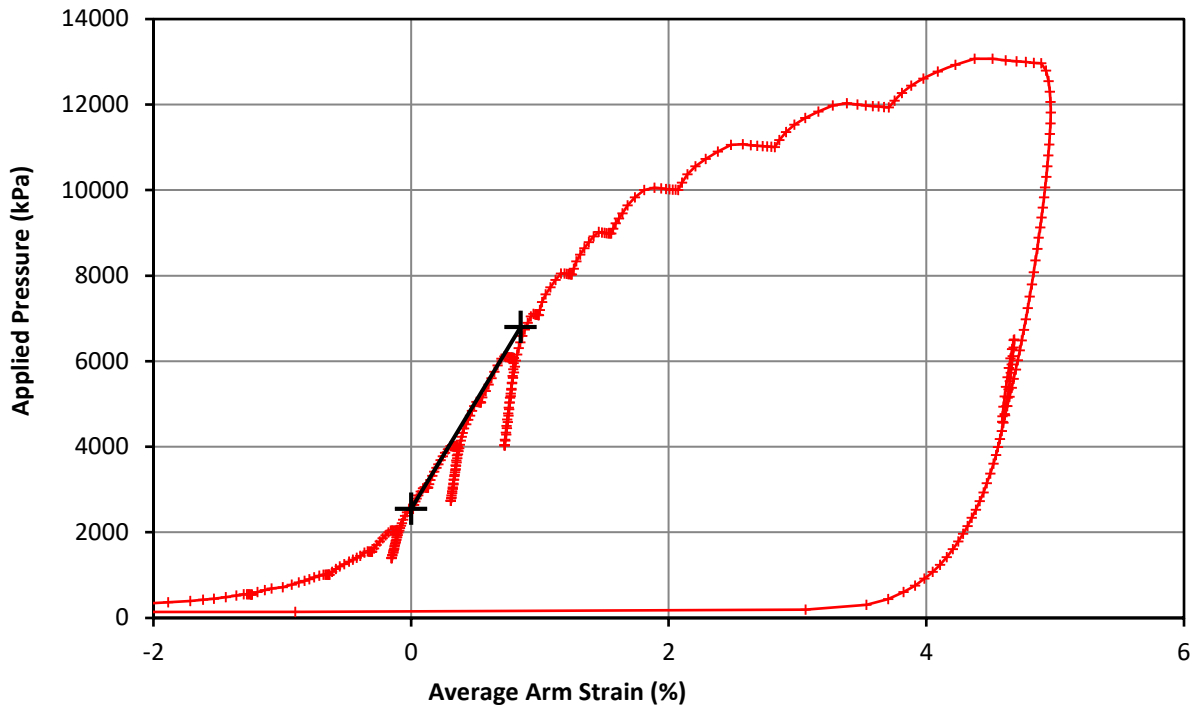
Test Date	20/10/2020	Test No.	3
Borehole	R71919	Test Depth (m)	44.00



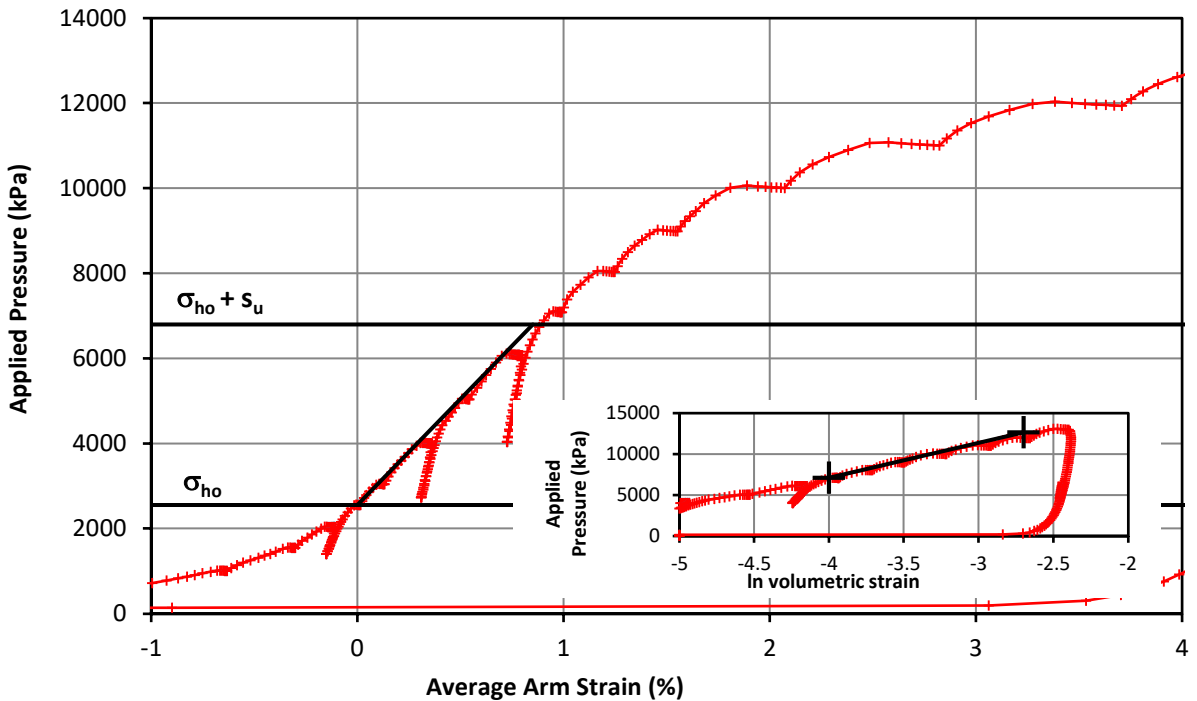
Project	A303 Amesbury to Berwick Down	Figure No.	R71919 T03 - 03
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test Initial Modulus & In Situ Horizontal Stress

Test Date	20/10/2020	Test No.	3
Borehole	R71919	Test Depth (m)	44.00



Initial Modulus	Shear Modulus	251.8 MPa
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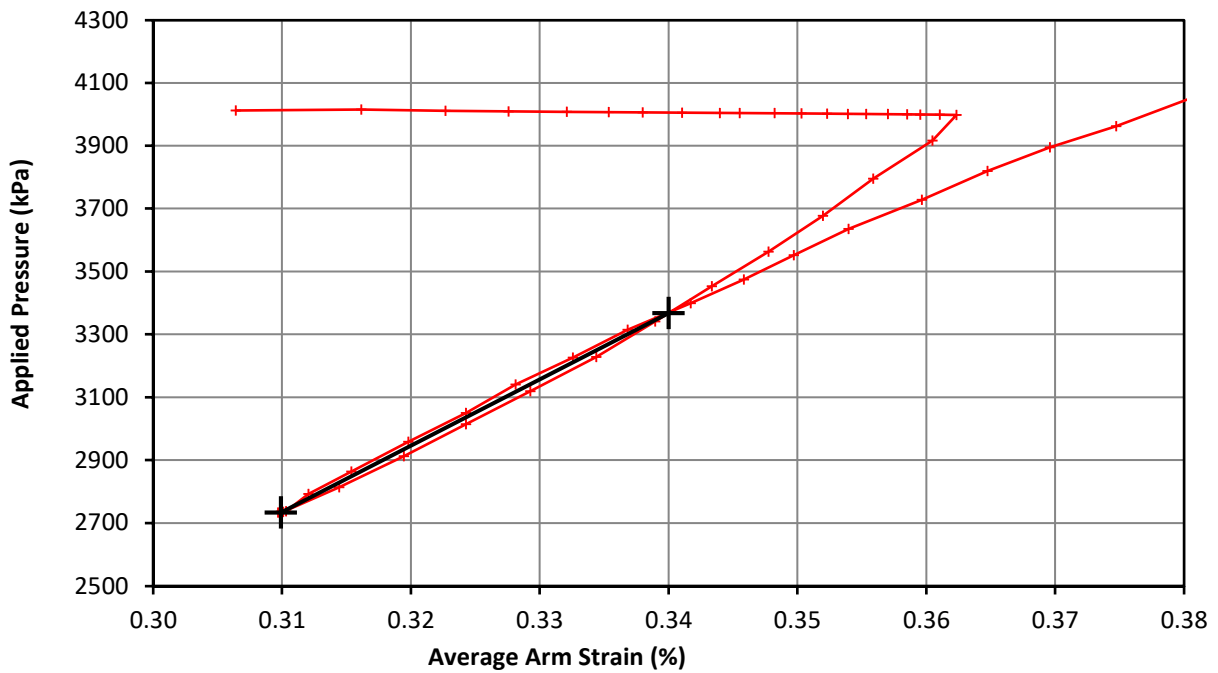


Marsland & Randolph	In situ horizontal stress	2555 kPa
	Undrained Strength	4245 kPa

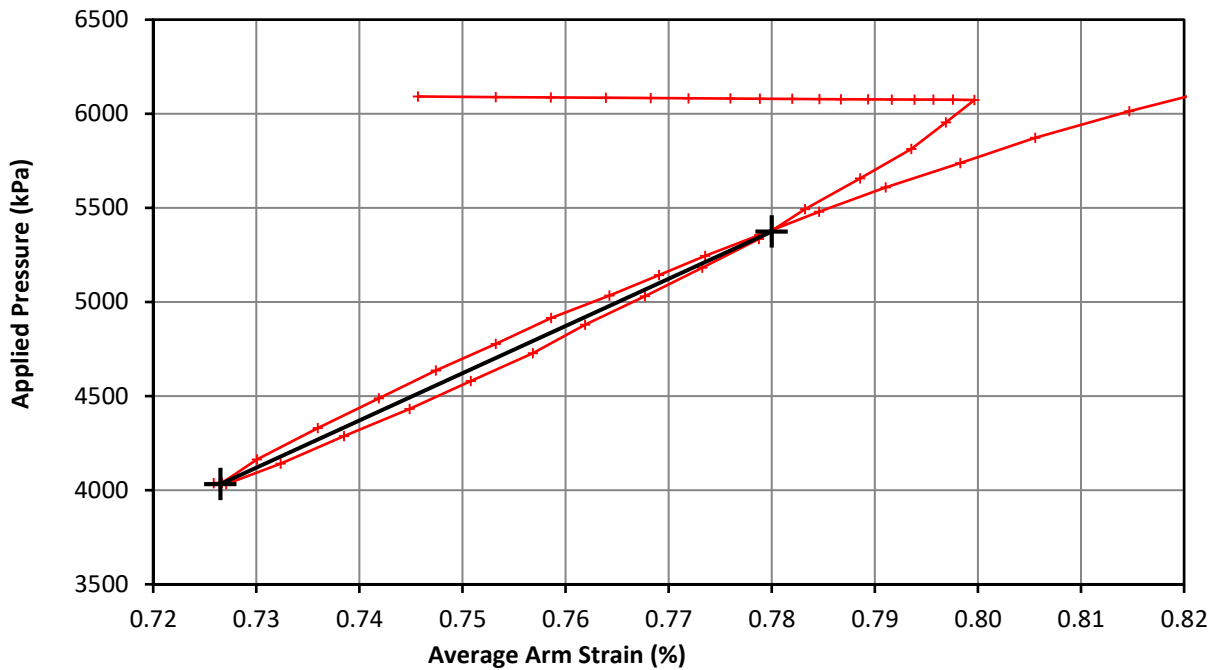
Project	A303 Amesbury to Berwick Down	Figure No.	R71919 T03 - 04
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test Unload Reload Loop

Test Date	20/10/2020	Test No.	3
Borehole	R71919	Test Depth (m)	44.00



Loop 1	Shear Modulus	1056.7 MPa
	Cavity Strain Range	0.030 %



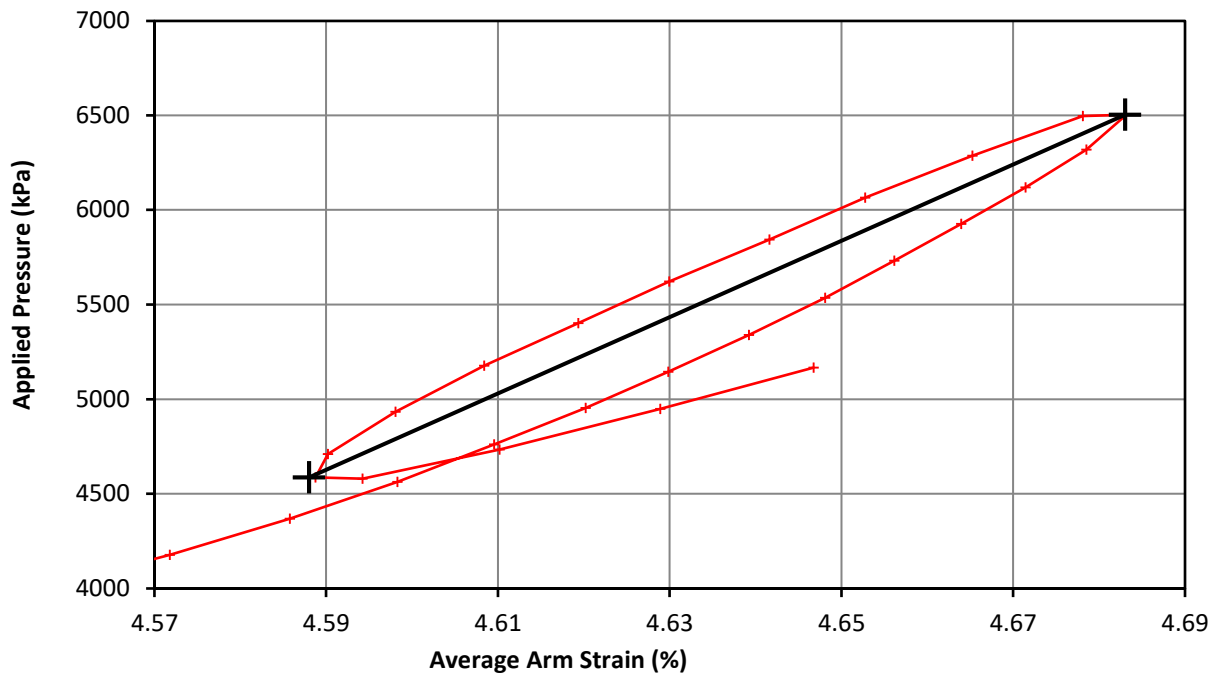
Loop 2	Shear Modulus	1264.0 MPa
	Cavity Strain Range	0.054 %

Project	A303 Amesbury to Berwick Down	Figure No.	R71919 T03 - 05
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test Unload Reload Loop



Test Date	20/10/2020	Test No.	3
Borehole	R71919	Test Depth (m)	44.00



Loop 3	Shear Modulus	1056.2 MPa
	Cavity Strain Range	0.095 %

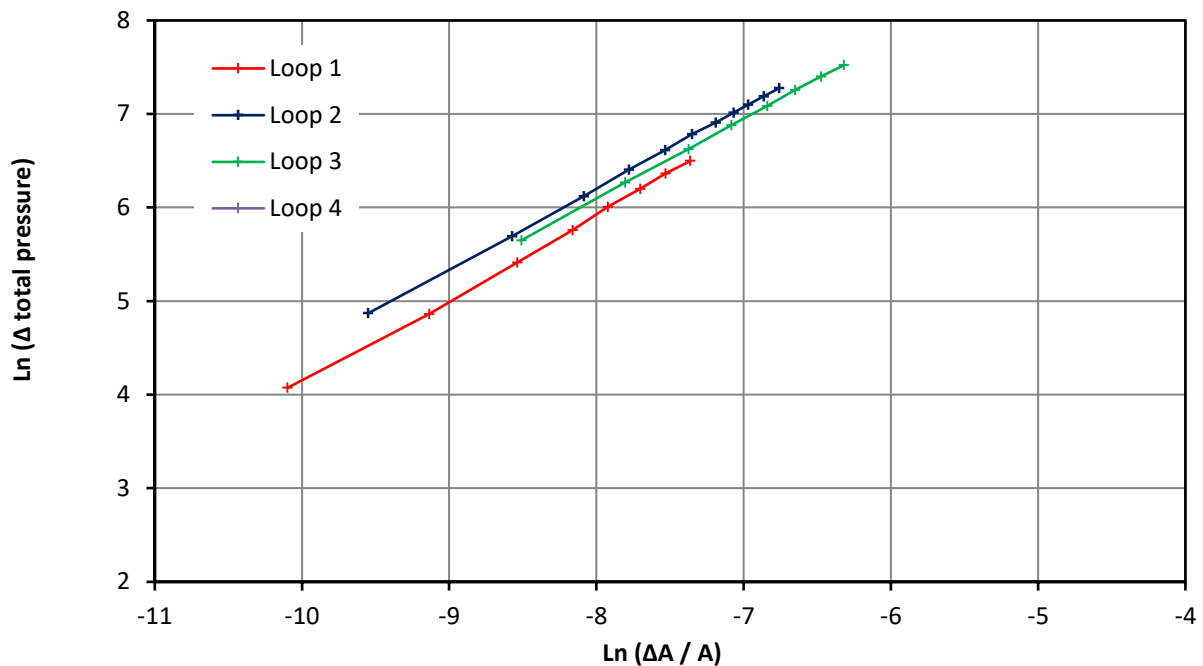
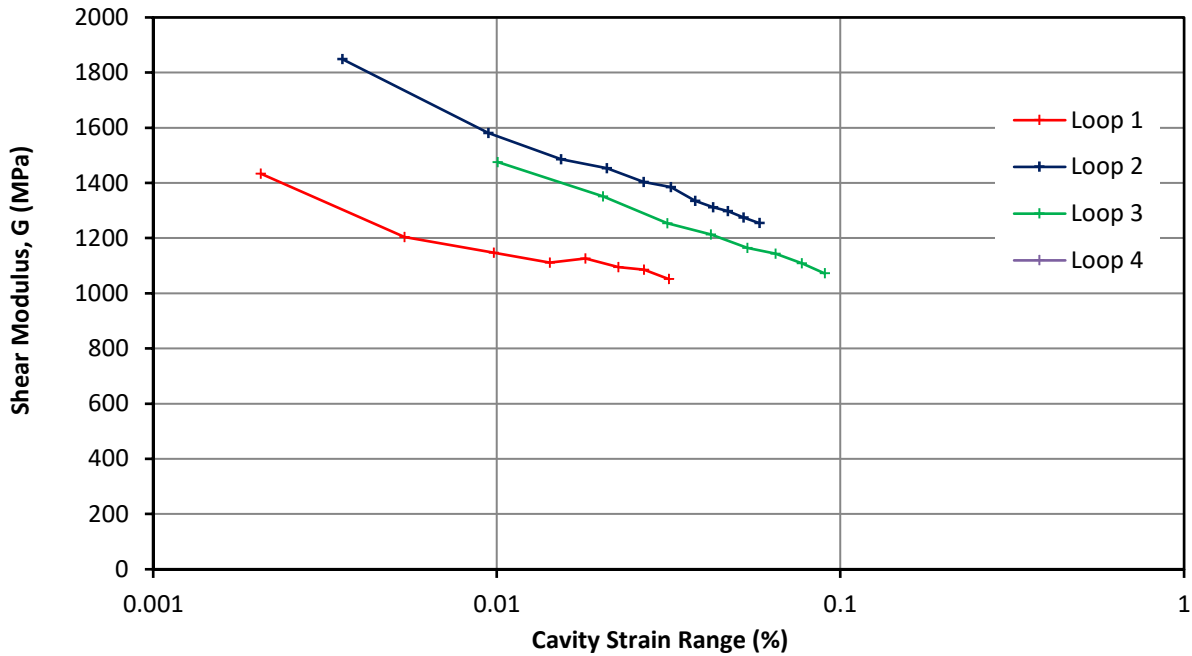
Project	A303 Amesbury to Berwick Down	Figure No.	R71919 T03 - 06
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Analysis

Small Strain Stiffness and Bolton and Whittle (1999)



Test Date	20/10/2020	Test No.	3
Borehole	R71919	Test Depth (m)	44.00



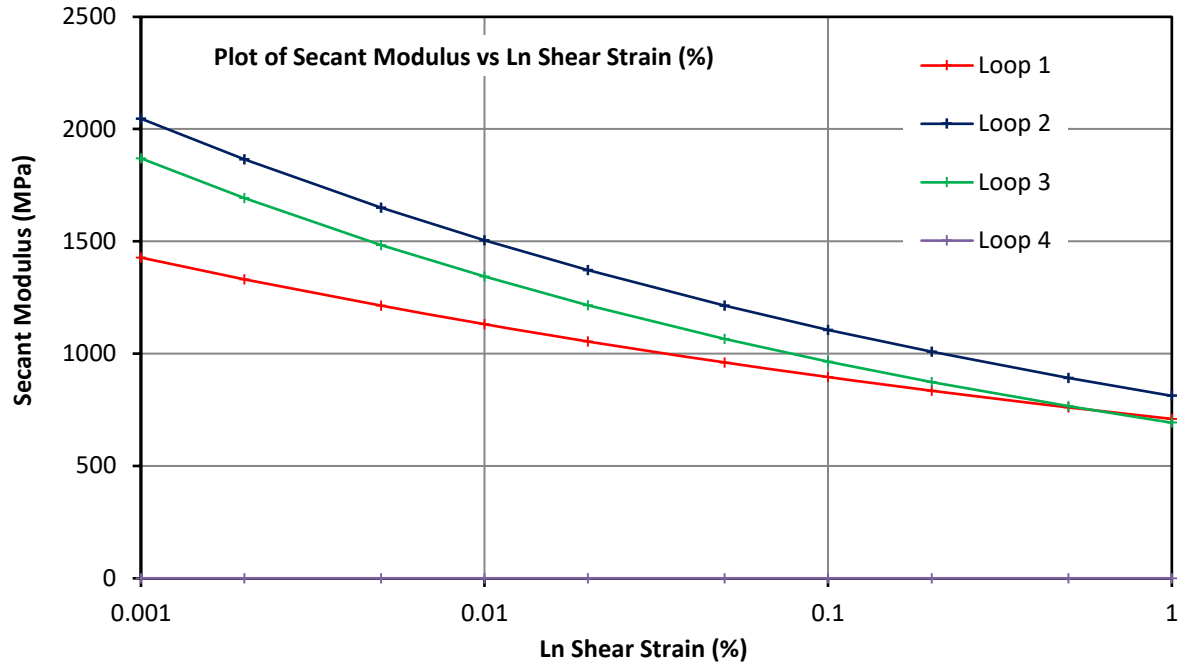
Loop 1		Loop 2		Loop 3		Loop 4	
Gradient(β)	Intercept	Gradient(β)	Intercept	Gradient(β)	Intercept	Gradient(β)	Intercept
0.899	495.042 (MPa)	0.866	507.267 (MPa)	0.856	417.842 (MPa)		(MPa)

Project	A303 Amesbury to Berwick Down	Figure No.	R71919 T03 - 07
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Analysis
 Secant Modulus - Shear Strain (%)



Test Date	20/10/2020	Test No.	3
Borehole	R71919	Test Depth (m)	44.00

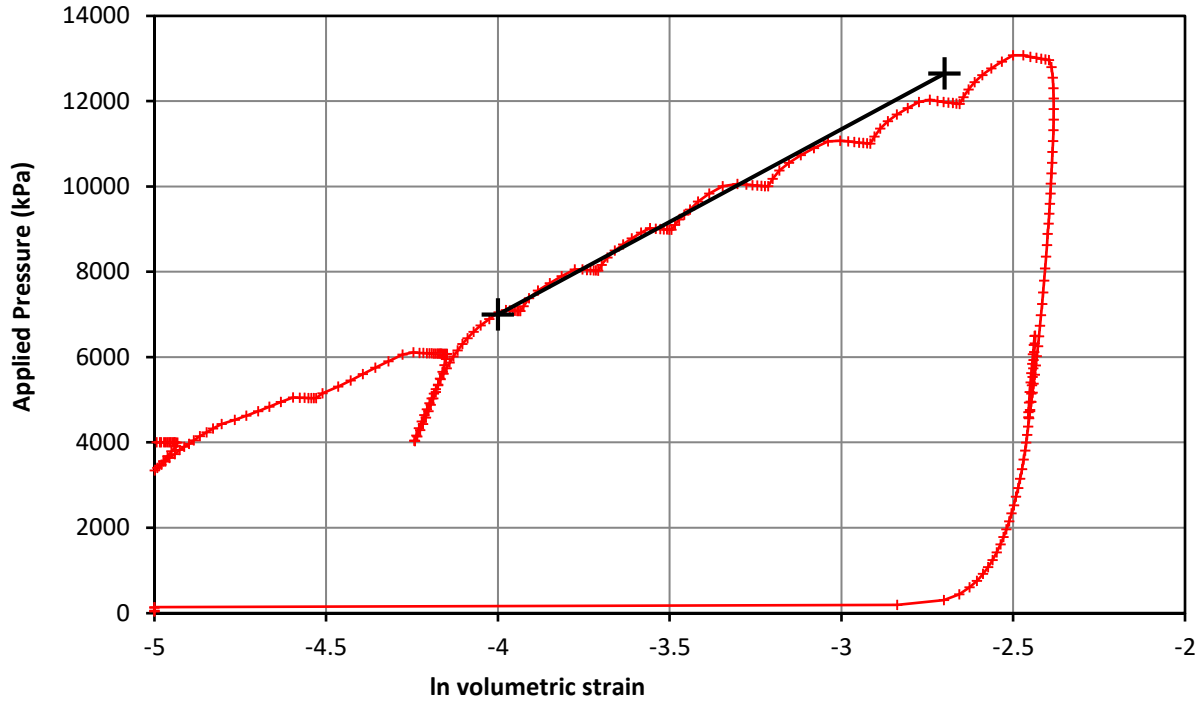


Shear Strain	Loop 1	Loop 2	Loop 3
0.001%	1428	2046	1869
0.002%	1331	1865	1692
0.005%	1213	1650	1484
0.010%	1131	1504	1343
0.020%	1054	1371	1216
0.050%	961	1213	1066
0.100%	896	1106	965
0.200%	835	1008	873
0.500%	761	892	766
1.000%	709	813	693

Project	A303 Amesbury to Berwick Down	Figure No.	R71919 T03 - 08
Client	RPS Ltd		
Project No.	P1200116		

Pressuremeter Test - Strength

Test Date	20/10/2020	Test No.	3
Borehole	R71919	Test Depth (m)	44.00



Strength	Undrained Shear	4346 kPa
	Limit Pressure	24385 kPa

Project	A303 Amesbury to Berwick Down	Figure No.	R71919 T03 - 09
Client	RPS Ltd		
Project No.	P1200116		

APPENDIX B

Calibrations

Description
CI HPD (Wally)

SUB APPENDIX C.3

PLATE LOAD TESTS

GEO Site and Testing Services Ltd



2788

Laboratory Report



GEO Site & Testing Services Ltd

Contract Number: 49268

Client Ref:

Report Date: **08-10-2020**

Client PO: **PO20-712**

Client **RPS Group**
St Annes House
Oxford Square
Oxford Street
Newbury
RG14 1JQ

Contract Title: **A303 Stonehenge**
For the attention of: **Lauren Davies**

Date Received: **13-07-2020**
Date Completed: **08-10-2020**

Test Description	Qty
Day rate to provide Technician and equipment including mobilisation but excluding provision of machine as kentledge (to be provided by others) & Determination of the vertical deformation and strength characteristics of soil by the plate loading test, using a 600 mm diameter steel plate. The test comprises 5 No. loading and 1 No. unloading cycles, as specified by the Client. As many tests are required by client that can be done in one day.	6
- * UKAS	

Notes: Observations and Interpretations are outside the UKAS Accreditation
* - denotes test included in laboratory scope of accreditation
- denotes test carried out by approved contractor
@ - denotes non accredited tests

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

Approved Signatories:

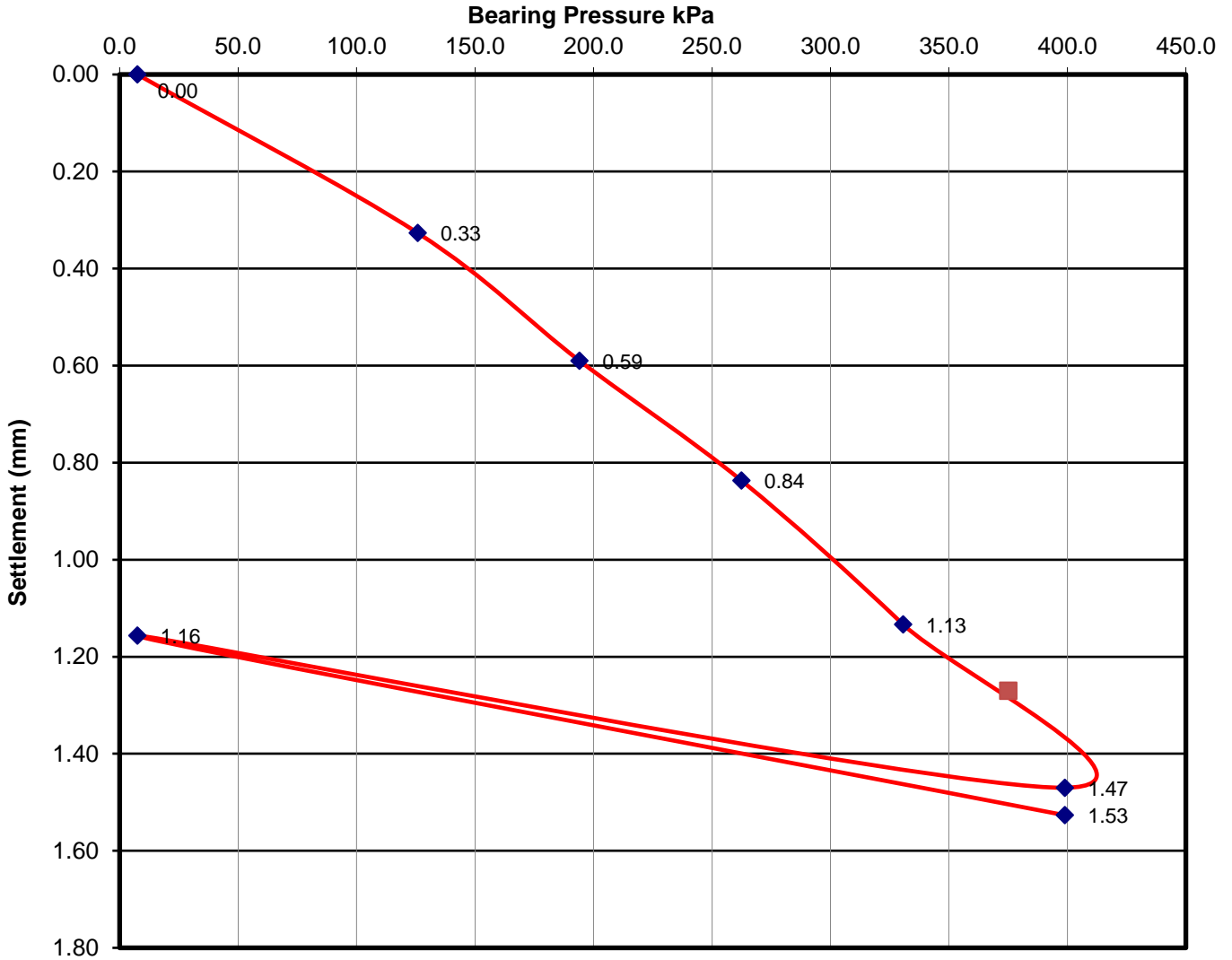
Emma Sharp (Office Manager/Director) - Paul Evans (Quality/Technical Manager) - Richard John (Advanced Testing Manager)
Sean Penn (Administrative/Accounts Assistant) - Shaun Jones (Laboratory manager) - Wayne Honey (Administrative/Quality Assistant)



Determination of the Vertical Deformation Tests BS 1377: Part 9: 1990 Clause 4.1

Contract Number	49268
Client Reference	0
Test Date	21/09/2020
Test Location	DTP70301
Test Depth (m)	0.50
Kentledge Type	JCB

Client	RPS Group
Site Location	A303 Stonehenge
Soil Description	White gravelley CHALK



Maximum Applied Pressure (kn/m ²)	398.92
Maximum Deformation (mm)	1.47
Plate Area (m ²)	0.07211
Plate Diameter (m)	0.303
Modulus of Subgrade Reaction:	295.276
Modulus of Subgrade Reaction (k ₇₆₂):	212.598
Assumed Poissons Ratio	0.25
Remarks	

Test Operator	Checked and Authorised by		Paul Evans
Shaun Thomas	Date	08/10/2020	

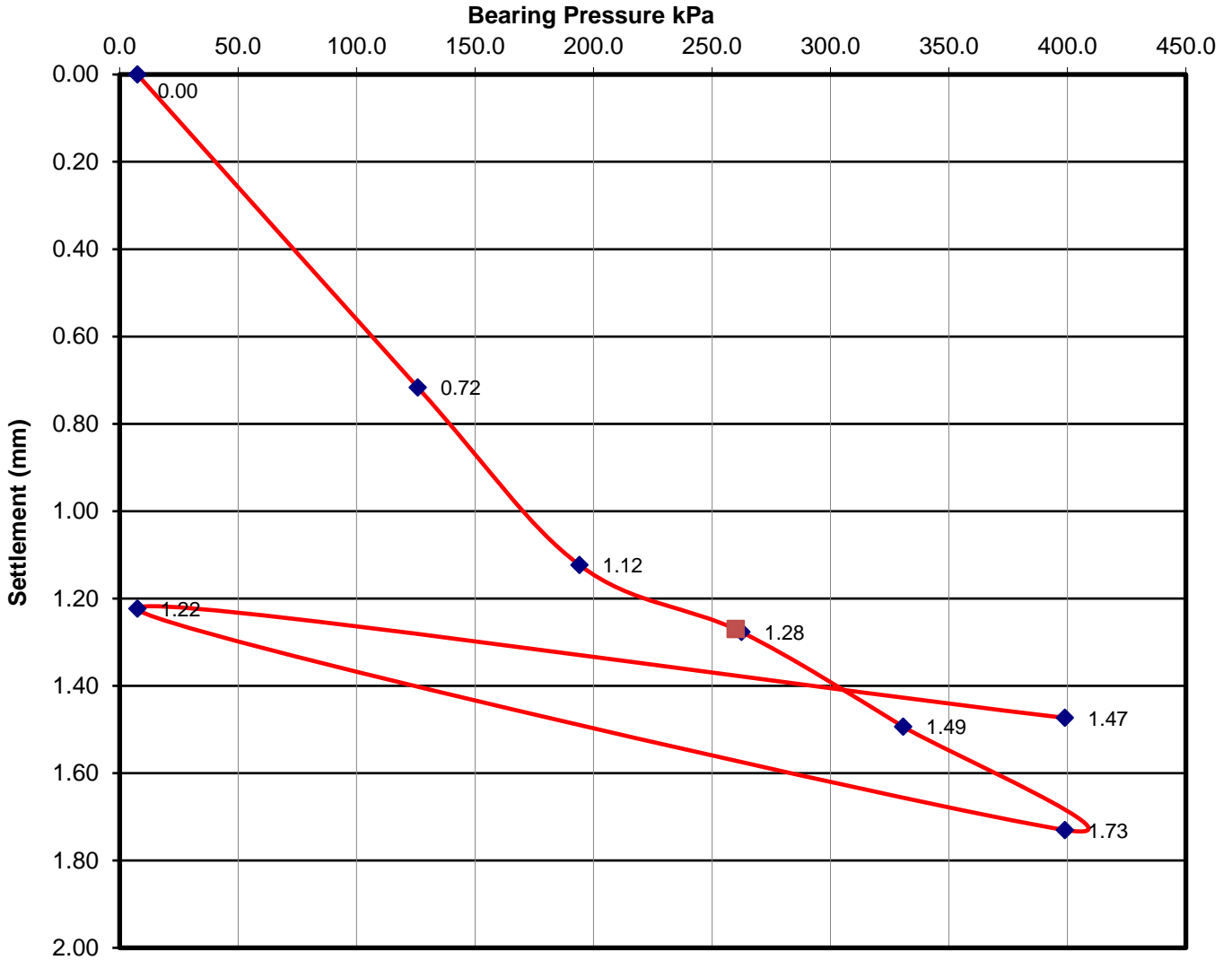




Determination of the Vertical Deformation Tests BS 1377: Part 9: 1990 Clause 4.1

Contract Number	49268
Client Reference	0
Test Date	18/09/2020
Test Location	DTP70302
Test Depth (m)	0.50
Kentledge Type	JCB

Client	RPS Group
Site Location	A303 Stonehenge
Soil Description	White gravelley CHALK



Maximum Applied Pressure (kn/m ²)	398.92
Maximum Deformation (mm)	1.73
Plate Area (m ²)	0.07211
Plate Diameter (m)	0.303
Modulus of Subgrade Reaction:	204.724
Modulus of Subgrade Reaction (k ₇₆₂):	147.402
Assumed Poissons Ratio	0.25
Remarks	

Test Operator	Checked and Authorised by	Paul Evans
Shaun Thomas	Date 13/10/2020	

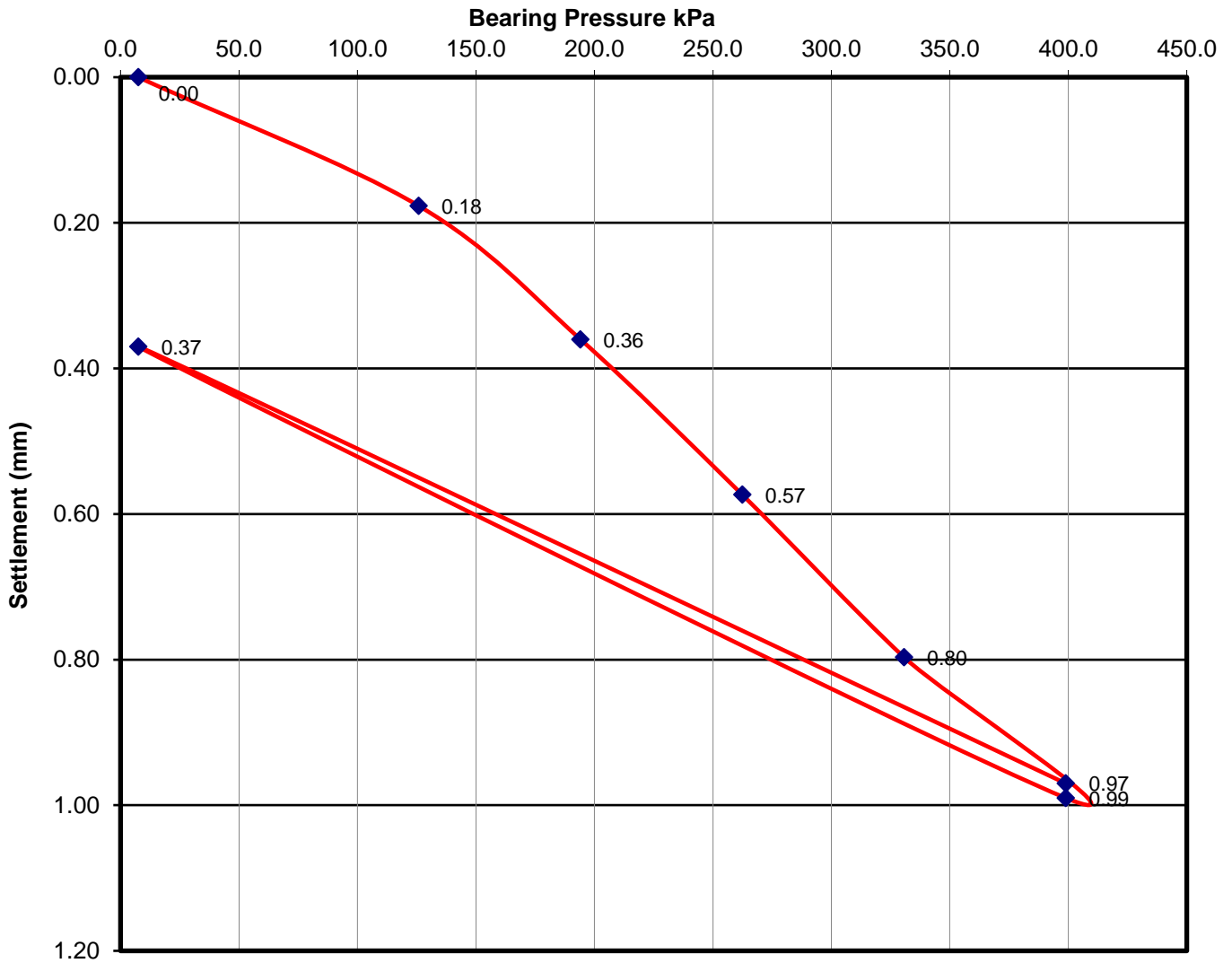




Determination of the Vertical Deformation Tests BS 1377: Part 9: 1990 Clause 4.1

Contract Number	49268
Client Reference	0
Test Date	16/09/2020
Test Location	DTP70303
Test Depth (m)	0.60
Kentledge Type	JCB

Client	RPS Group
Site Location	A303 Stonehenge
Soil Description	White gravelly CHALK



Maximum Applied Pressure (kn/m2)	398.92
Maximum Deformation (mm)	0.99
Plate Area (m2)	0.07211
Plate Diameter (m)	0.303
Modulus of Subgrade Reaction:	314.961
Modulus of Subgrade Reaction (k_{762}):	226.772
Assumed Poissons Ratio	0.25
Remarks	

Test Operator	Checked and Authorised by	Paul Evans
Shaun Thomas	Date	
	13/10/2020	

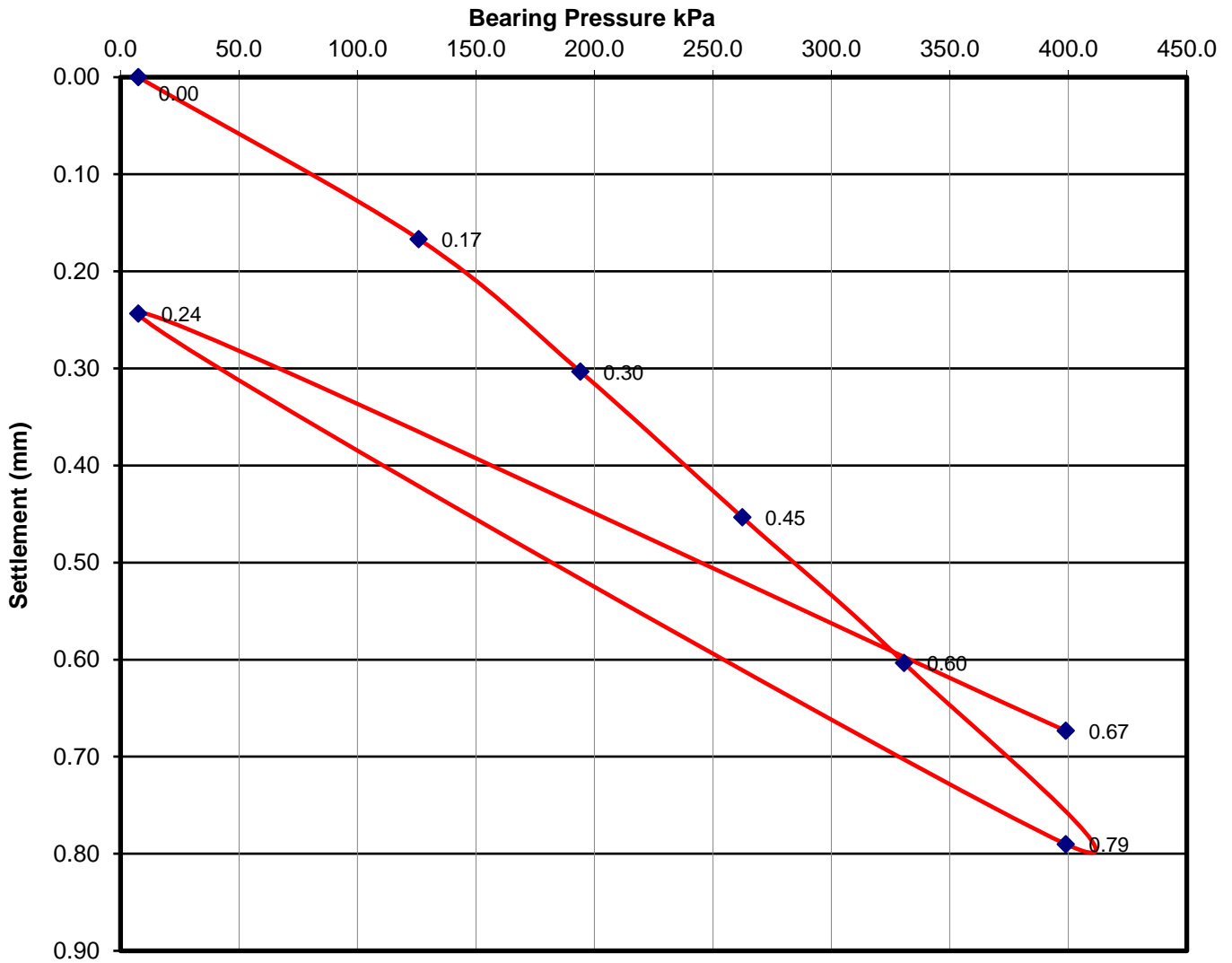




Determination of the Vertical Deformation Tests BS 1377: Part 9: 1990 Clause 4.1

Contract Number	49268
Client Reference	0
Test Date	15/09/2020
Test Location	DTP70702
Test Depth (m)	0.60
Kentledge Type	JCB

Client	RPS Group
Site Location	A303 Stonehenge
Soil Description	White gravelley CHALK



Maximum Applied Pressure (kn/m ²)	398.92
Maximum Deformation (mm)	0.79
Plate Area (m ²)	0.07211
Plate Diameter (m)	0.303
Modulus of Subgrade Reaction:	314.961
Modulus of Subgrade Reaction (k ₇₆₂):	226.772
Assumed Poissons Ratio	0.25
Remarks	

Test Operator	Checked and Authorised by		Paul Evans
Shaun Thomas	Date	13/10/2020	

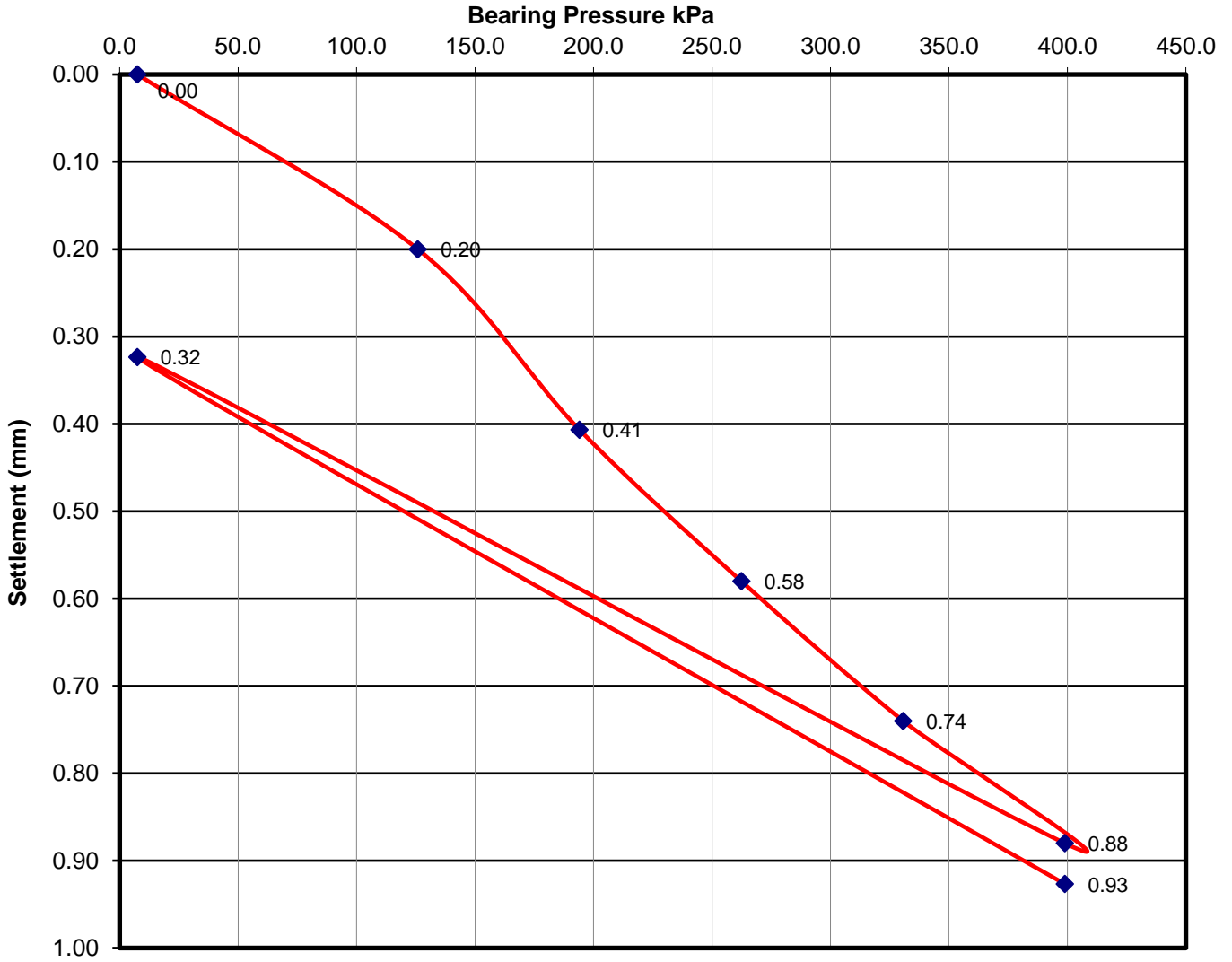




Determination of the Vertical Deformation Tests BS 1377: Part 9: 1990 Clause 4.1

Contract Number	49268
Client Reference	0
Test Date	15/09/2020
Test Location	DTP70703
Test Depth (m)	0.60
Kentledge Type	JCB

Client	RPS Group
Site Location	A303 Stonehenge
Soil Description	White gravelley CHALK



Maximum Applied Pressure (kn/m2)	398.92
Maximum Deformation (mm)	0.88
Plate Area (m2)	0.07211
Plate Diameter (m)	0.303
Modulus of Subgrade Reaction:	314.961
Modulus of Subgrade Reaction (k_{762}):	226.772
Assumed Poissons Ratio	0.25
Remarks	

Test Operator	Checked and Authorised by	Paul Evans
Shaun Thomas	Date 13/10/2020	

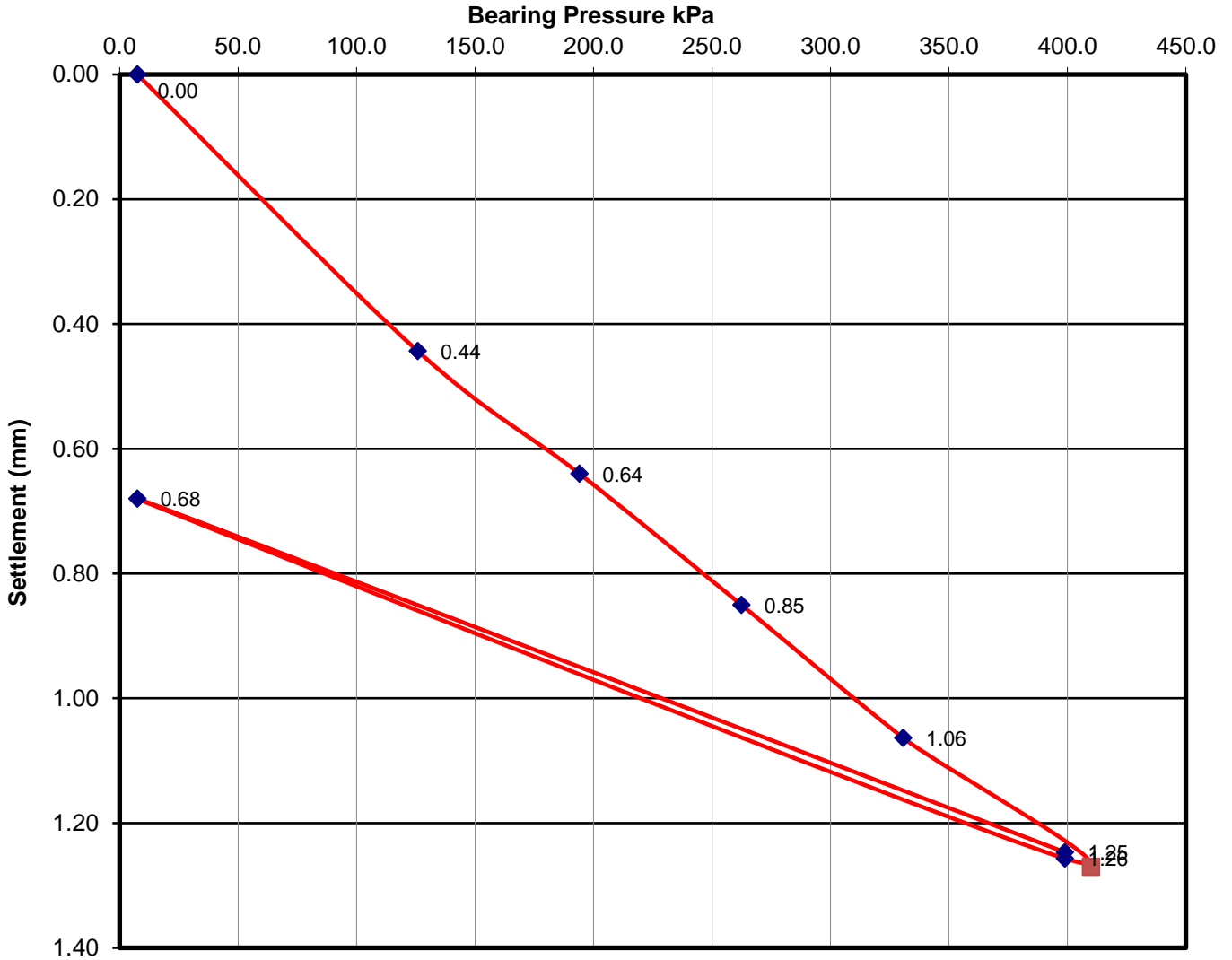




Determination of the Vertical Deformation Tests BS 1377: Part 9: 1990 Clause 4.1

Contract Number	49268
Client Reference	0
Test Date	30/09/2020
Test Location	STP70401
Test Depth (m)	0.50
Kentledge Type	JCB

Client	RPS Group
Site Location	A303 Stonehenge
Soil Description	White gravelley CHALK



Maximum Applied Pressure (kn/m2)	398.92
Maximum Deformation (mm)	1.26
Plate Area (m2)	0.07211
Plate Diameter (m)	0.303
Modulus of Subgrade Reaction:	322.835
Modulus of Subgrade Reaction (k_{762}):	232.441
Assumed Poissons Ratio	0.25
Remarks	

Test Operator	Checked and Authorised by	Paul Evans
Shaun Thomas	Date	
	08/10/2020	

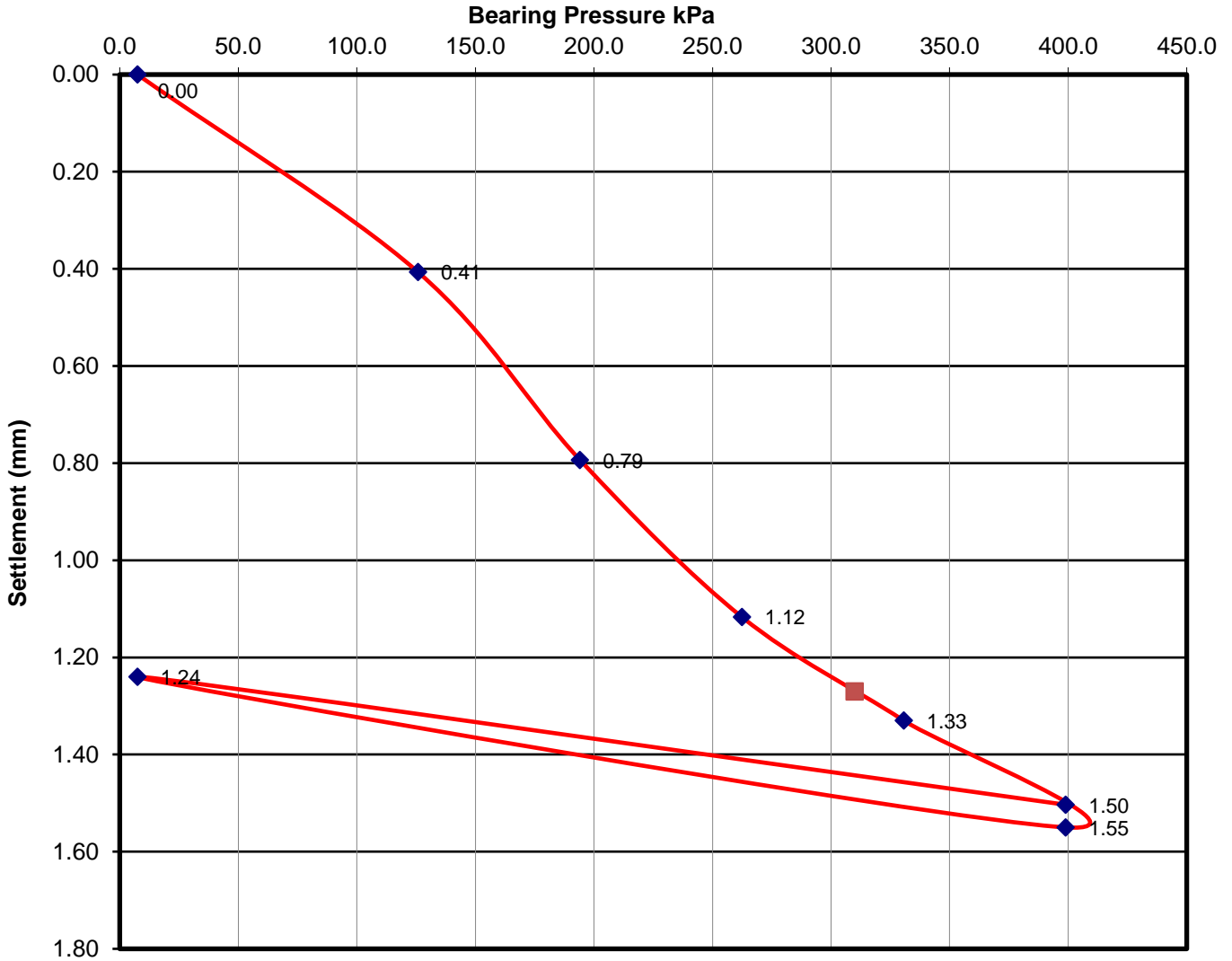




Determination of the Vertical Deformation Tests BS 1377: Part 9: 1990 Clause 4.1

Contract Number	49268
Client Reference	0
Test Date	21/09/2020
Test Location	STP70403
Test Depth (m)	0.50
Kentledge Type	JCB

Client	RPS Group
Site Location	A303 Stonehenge
Soil Description	White gravelly CHALK



Maximum Applied Pressure (kn/m2)	398.92
Maximum Deformation (mm)	1.55
Plate Area (m2)	0.07211
Plate Diameter (m)	0.303
Modulus of Subgrade Reaction:	244.094
Modulus of Subgrade Reaction (k_{762}):	175.748
Assumed Poissons Ratio	0.25
Remarks	

Test Operator	Checked and Authorised by	Paul Evans
Shaun Thomas	Date 08/10/2020	

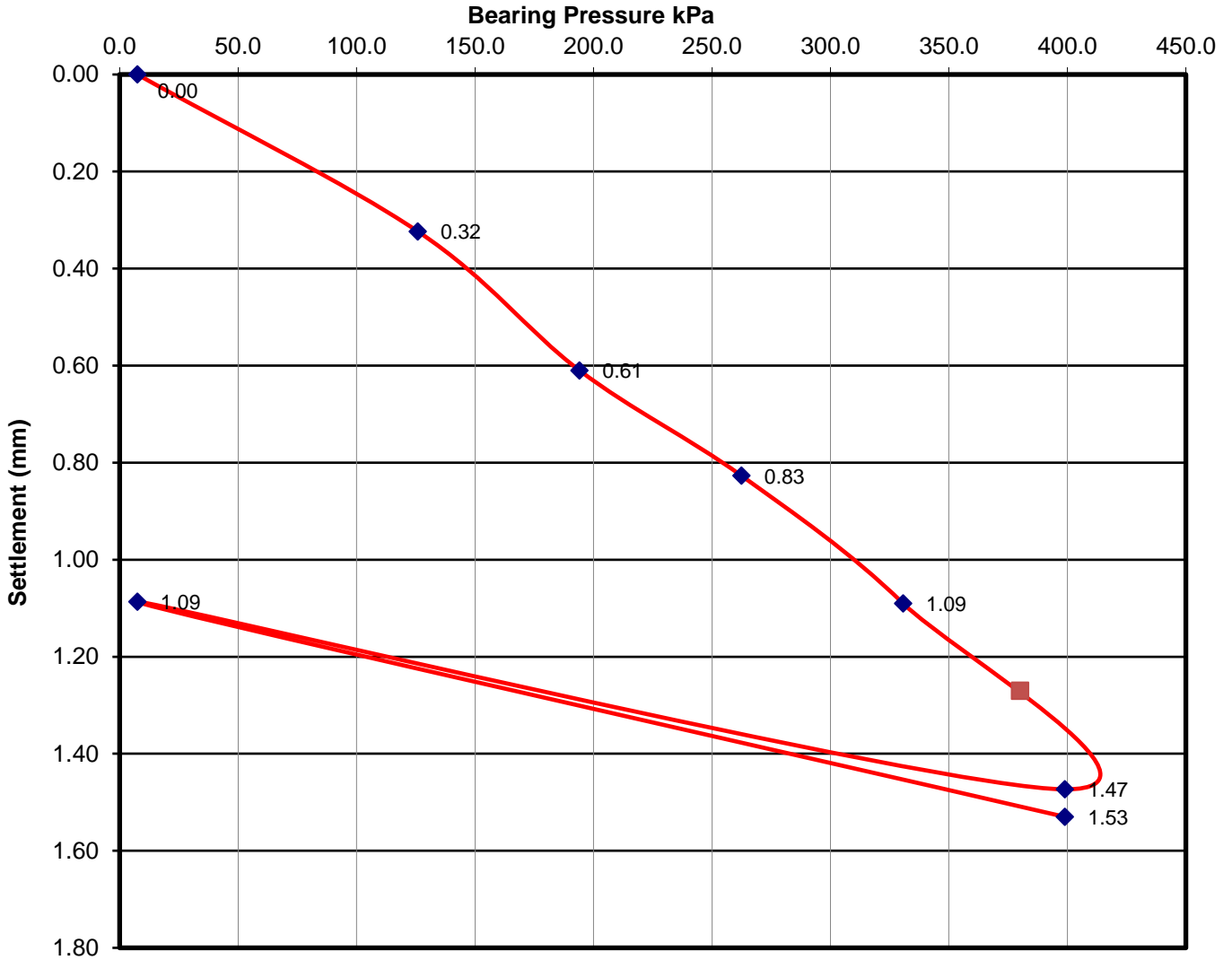




Determination of the Vertical Deformation Tests BS 1377: Part 9: 1990 Clause 4.1

Contract Number	49268
Client Reference	0
Test Date	21/09/2020
Test Location	STP70505
Test Depth (m)	0.50
Kentledge Type	JCB

Client	RPS Group
Site Location	A303 Stonehenge
Soil Description	White gravelley CHALK



Maximum Applied Pressure (kn/m2)	398.92
Maximum Deformation (mm)	1.47
Plate Area (m2)	0.07211
Plate Diameter (m)	0.303
Modulus of Subgrade Reaction:	299.213
Modulus of Subgrade Reaction (k_{762}):	215.433
Assumed Poissons Ratio	0.25
Remarks	

Test Operator	Checked and Authorised by	Paul Evans
Shaun Thomas	Date		13/10/2020

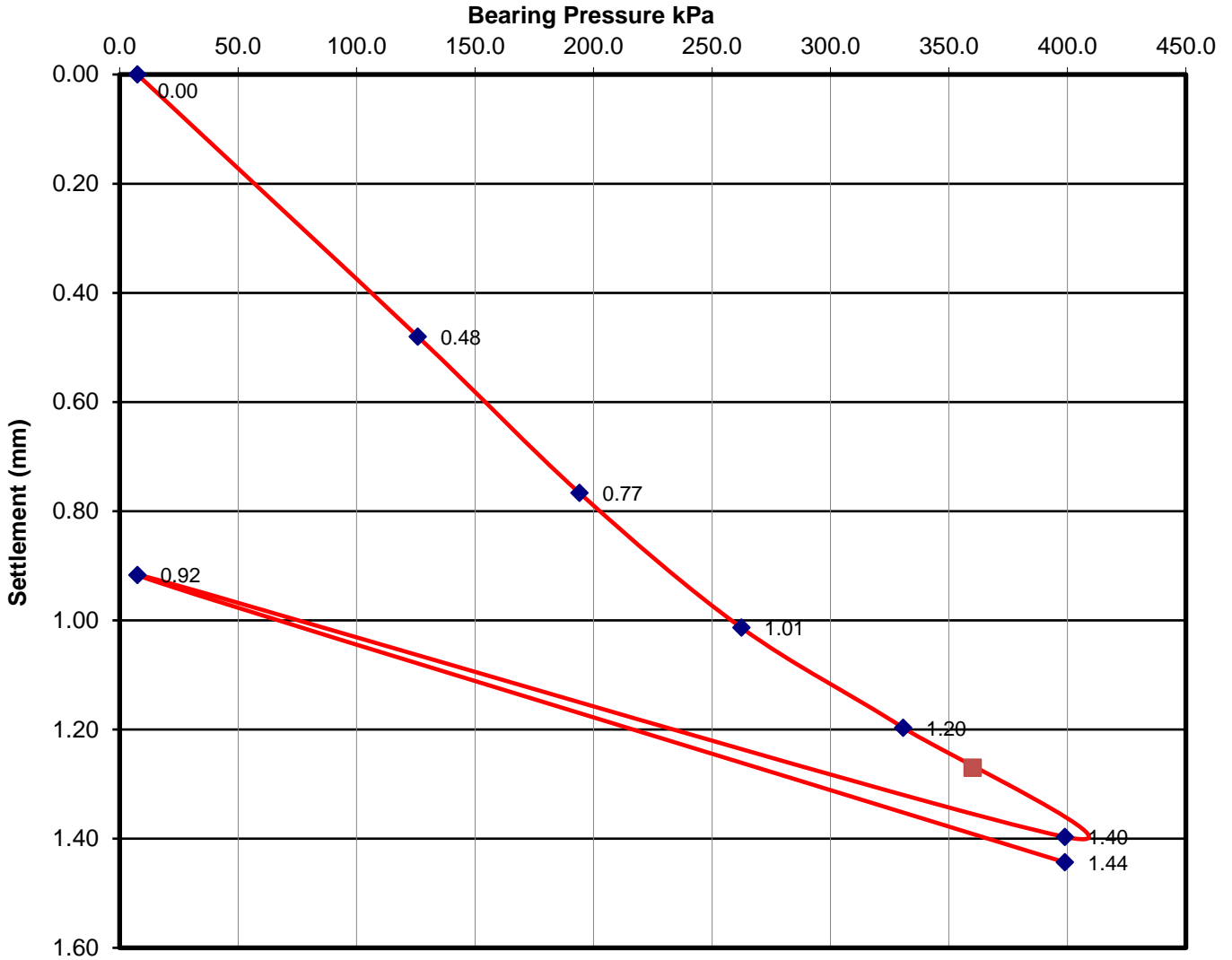




Determination of the Vertical Deformation Tests BS 1377: Part 9: 1990 Clause 4.1

Contract Number	49268
Client Reference	0
Test Date	30/09/2020
Test Location	STP70509
Test Depth (m)	0.50
Kentledge Type	JCB

Client	RPS Group
Site Location	A303 Stonehenge
Soil Description	White gravelly CHALK



Maximum Applied Pressure (kn/m2)	398.92
Maximum Deformation (mm)	1.40
Plate Area (m2)	0.07211
Plate Diameter (m)	0.303
Modulus of Subgrade Reaction:	283.465
Modulus of Subgrade Reaction (k_{762}):	204.094
Assumed Poissons Ratio	0.25
Remarks	

Test Operator	Checked and Authorised by	Paul Evans
Shaun Thomas	Date	08/10/2020

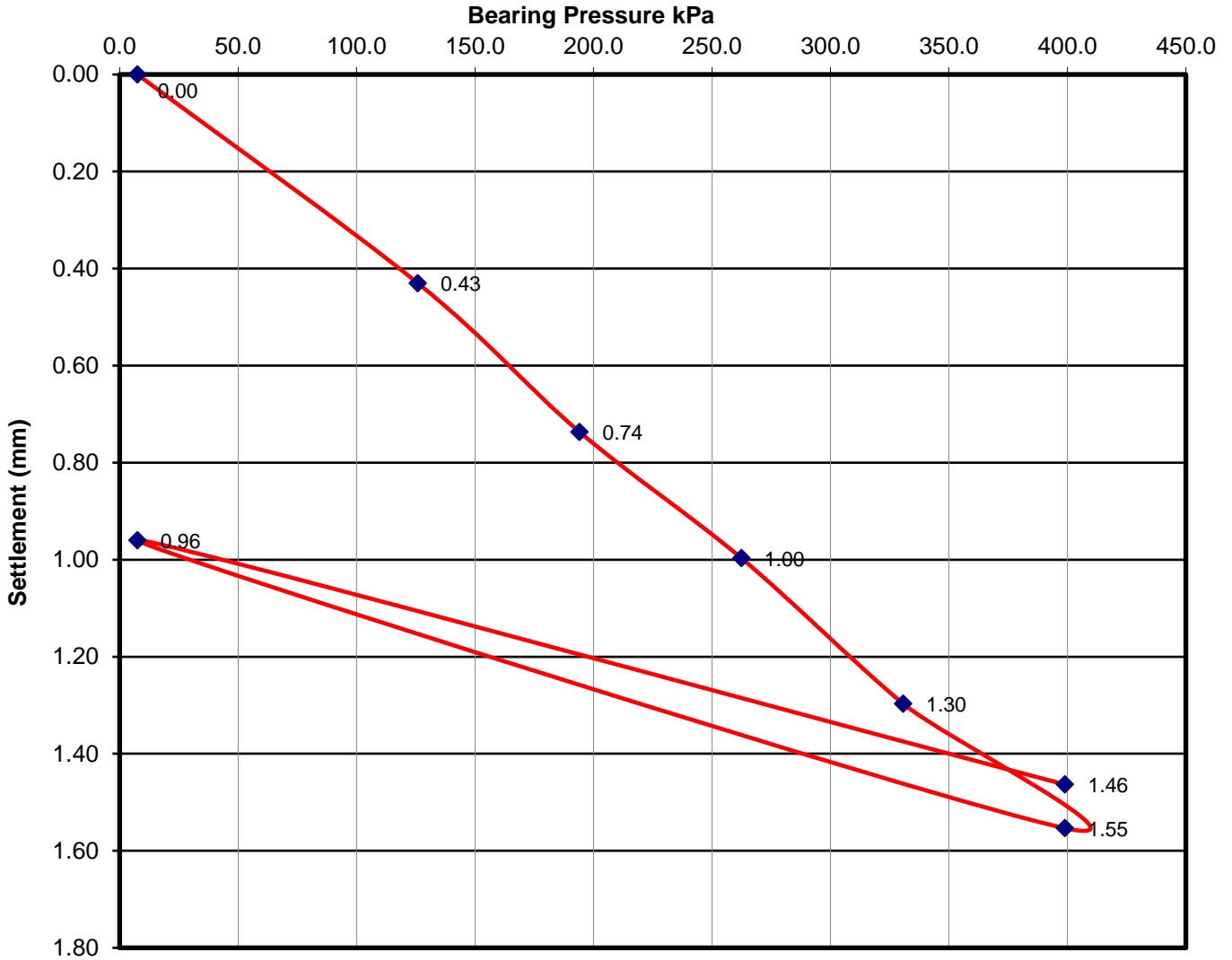




Determination of the Vertical Deformation Tests BS 1377: Part 9: 1990 Clause 4.1

Contract Number	49268
Client Reference	0
Test Date	06/10/2020
Test Location	STP70602
Test Depth (m)	0.60
Kentledge Type	JCB

Client	RPS Group
Site Location	A303 Stonehenge
Soil Description	White gravelley CHALK



Maximum Applied Pressure (kn/m ²)	398.92
Maximum Deformation (mm)	1.55
Plate Area (m ²)	0.07211
Plate Diameter (m)	0.303
Modulus of Subgrade Reaction:	314.961
Modulus of Subgrade Reaction (k_{762}):	226.772
Assumed Poissons Ratio	0.25
Remarks	

Test Operator	Checked and Authorised by	Paul Evans
Shaun Thomas	Date 08/10/2020	

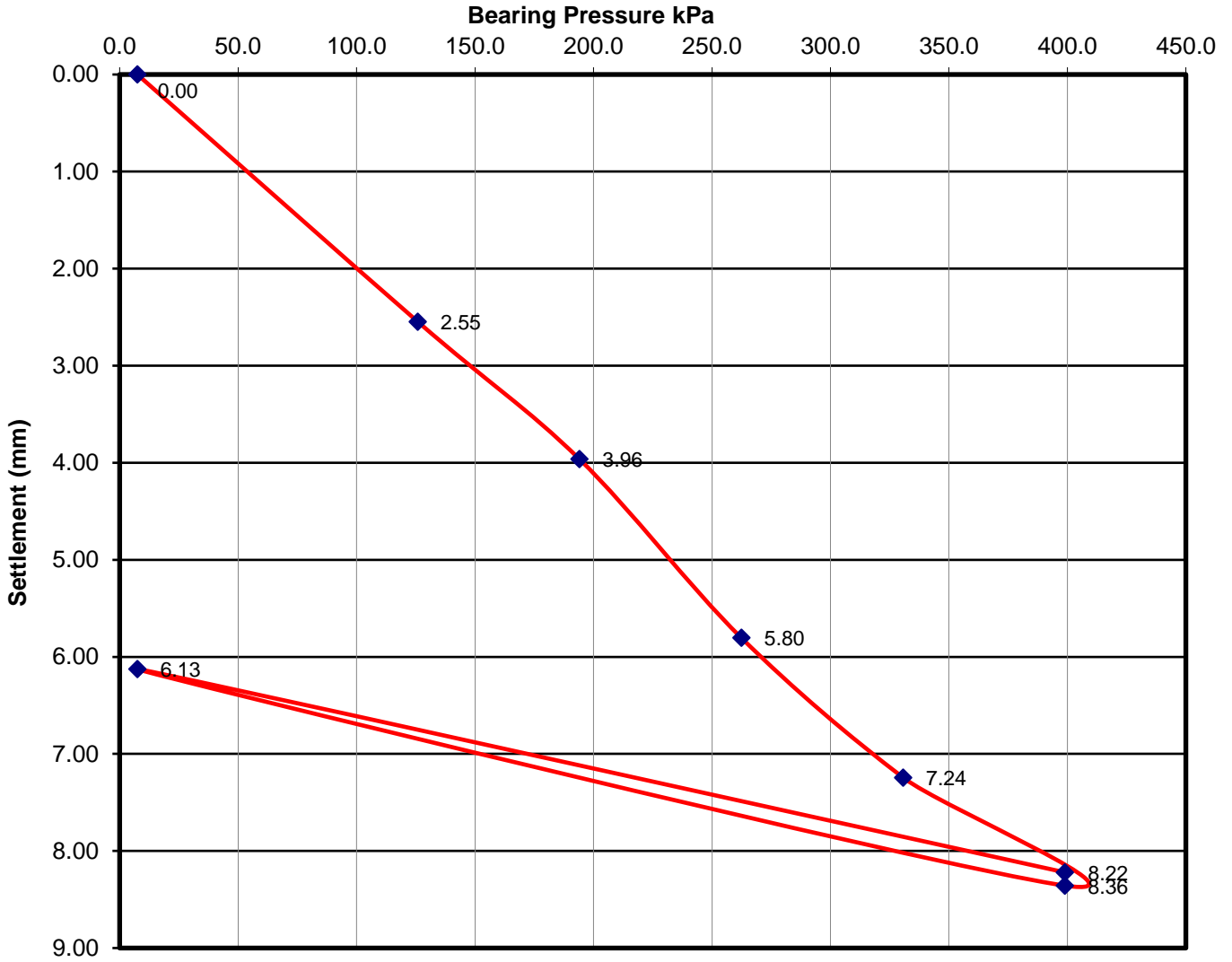




Determination of the Vertical Deformation Tests BS 1377: Part 9: 1990 Clause 4.1

Contract Number	49268
Client Reference	0
Test Date	06/10/2020
Test Location	STP72602
Test Depth (m)	0.50
Kentledge Type	JCB

Client	RPS Group
Site Location	A303 Stonehenge
Soil Description	White gravelley CHALK



Maximum Applied Pressure (kn/m2)	398.92
Maximum Deformation (mm)	8.36
Plate Area (m2)	0.07211
Plate Diameter (m)	0.303
Modulus of Subgrade Reaction:	314.961
Modulus of Subgrade Reaction (k_{762}):	226.772
Assumed Poissons Ratio	0.25
Remarks	

Test Operator	Checked and Authorised by	Paul Evans
Shaun Thomas	Date 08/10/2020	



SUB APPENDIX C.4

PACKER TESTS

Marriott Geotechnical Drilling

Packer Test: R71916 @27.5 – 29m

Marriott Geotechnical Drilling

**Field Test Sheet - Packer
(Rock)**

Project Name	A303 GI					
Borehole No.	R71916					
Test section	from	27.50	m	to	29.00	m
Length of test section (L)	1.50		m	Date of test	26/10/2020	
Diameter of test section (D)	147		mm	Time at start	1150hrs	
Depth of water level before test (Hw)	Dry		m	Time at finish	1305hrs	
Depth of water level after test	Dry		m			
Gauge height above ground level (Hg)	N/A		m			
Depth of borehole at time of test	29.00		m			
Depth of casing at time of test			m			
Rock type in section	Chalk					
Pressure gauge type	N/A			Flowmeter type		
Size	N/A			Size	3/4"	
Serial Number	N/A			Serial Number		
Test type	SINGLE			Inflation pressure	8 bar	
Packer type	Pneumatic			Water Source	Bowser	
Stage pressures				Test Operator	IK	

Pressure Stage	100kpa		200kpa		300kpa		200kpa		100kpa	
Time (m)	Flow Meter Reading / Water Used (litres)									
0	85.2		121.5		187.2		263.7		333.6	
1	87.6	2.4	129.2	7.7	195.3	8.1	272.1	8.4	336.1	2.5
2	89.1	1.5	134.8	5.6	202	6.7	277.7	5.6	340.6	4.5
3	91.1	2	141.7	6.9	210.2	8.2	282.2	4.5	343.5	2.9
4	92.6	1.5	147.2	5.5	217.5	7.3	288.1	5.9	346.4	2.9
5	95.9	3.3	150.8	3.6	224.5	7	295.9	7.8	350.7	4.3
6	100.1	4.2	156.7	5.9	231.2	6.7	300.1	4.2	353.4	2.7
7	101.3	1.2	158.8	2.1	238.3	7.1	303.2	3.1	356.5	3.1
8	116.9	15.6	162.5	3.7	245.1	6.8	307.4	4.2	359.8	3.3
9	117.5	0.6	170.9	8.4	252.1	7	312	4.6	363.3	3.5
10	119.8	2.3	174.4	3.5	260.3	8.2	317.3	5.3	367.9	4.6
11										
12										
13										
14										
15										
16										
17										
18										
Average	3.46		5.29		7.31		5.36		3.43	

Remarks & Notes

- 1 Test section was 33.30m - 35.00m due to length of drill string and height of rig clamps.
- 2 After 4th pressure stage could not get response zone pressure below 150kpa. Switch off pump for 10 mins to allow pressure to drop before restarting
3. Slight leakage past packer / around seal; pressure on top transducer rose from 2pka to 48kpa over the course of the tests
4. Pressure readings monitored in real time using calibrated transducers in and above test section (results attached)

LINX 4ch v.2.0.1

26/10/2020 12:07

Vibrating Wire Conversion: Linear

Temperature Conversion: Celsius

Calibration Factors	Channel 1	Channel 2	Channel 3	Channel 4
Sensorname	TOP	MIDDLE	BOTTOM	CV GES
Model	VWT-9100	VWT-9100	VWT-9100	
Serial	351895	351897	351896	
Baro	1013	1013	1013	
TempatCal	20	20	20	
LinFactor	-0.46704	-0.50422	-0.45623	
ConstA	-2.76E-06	-2.49E-06	-7.95E-07	
ConstB	-0.42656	-0.46758	-0.44517	
ConstC	4326.403	4625.507	4174.389	
ConstT	1.043164	0.872405	1.158424	
Sweepmin	800	800	800	
Sweepmax	3500	3500	3500	
Range	2700	2700	2700	
Thermistor	3K	3K	3K	3K
ZeroRdg	9551.1	9420.6	9224.6	
ZeroT	20	20	20	

Date/time	Vbatt	Temp.	Press.	Channel 1 () (°C)	Channel 2 () (°C)	Channel 3 () (°C)	Channel 4 () (°C)	CH1 Raw (Digits)	CH2 Raw (Digits)	CH3 Raw (Digits)	CH4 Raw (Digits)
26/10/2020 10:54	6	13.3	983.4	-7.8	13.7	6.5	13.7	10.1	13.1 N.U.	N.U.	9553.7 9396.7 9185.1 N.U.
26/10/2020 10:54	6	13.3	983.1	-7.5	13.7	5.9	13.6	10.6	13.1 N.U.	N.U.	9553 9397.9 9183.9 N.U.
26/10/2020 10:54	6	13.4	983.3	-7.8	13.7	5.9	13.6	10	13.1 N.U.	N.U.	9553.7 9397.9 9185.1 N.U.
26/10/2020 10:54	6	13.4	983.2	-7.3	13.6	6.2	13.6	10.1	13.1 N.U.	N.U.	9552.4 9397.3 9185.1 N.U.
26/10/2020 10:54	6	13.4	983.2	-7.6	13.6	6.5	13.6	10	13.1 N.U.	N.U.	9553 9396.7 9185.1 N.U.
26/10/2020 10:55	6	13.4	983.2	-7.9	13.6	5.2	13.6	10.6	13.1 N.U.	N.U.	9553.7 9399.1 9183.9 N.U.
26/10/2020 10:55	6	13.5	983.4	-7.3	13.6	6.2	13.6	10.3	13.1 N.U.	N.U.	9552.4 9397.3 9184.5 N.U.
26/10/2020 10:55	6	13.5	983.3	-7.3	13.6	5.9	13.6	8.9	13.1 N.U.	N.U.	9552.4 9397.9 9187.6 N.U.
26/10/2020 10:55	6	13.5	983.1	-7.3	13.6	5.9	13.6	9.2	13.1 N.U.	N.U.	9552.4 9397.9 9187 N.U.
26/10/2020 10:55	6	13.6	983.1	-7.6	13.6	5.9	13.6	9.7	13.1 N.U.	N.U.	9553 9397.9 9185.7 N.U.
26/10/2020 10:55	6	13.6	983.1	-7.6	13.6	6.5	13.6	10.5	13.1 N.U.	N.U.	9553 9396.7 9183.9 N.U.
26/10/2020 10:56	6	13.6	983	-7	13.6	8.3	13.6	11.6	13.1 N.U.	N.U.	9551.8 9393 9181.5 N.U.
26/10/2020 10:56	6	13.6	983	-7	13.6	11.1	13.6	14.7	13.1 N.U.	N.U.	9551.8 9387.5 9174.8 N.U.
26/10/2020 10:56	6	13.7	983.1	-6.8	13.5	13.2	13.5	16.9	13.1 N.U.	N.U.	9551.2 9383.2 9170 N.U.
26/10/2020 10:56	6	13.7	983.1	-6.5	13.5	15.1	13.5	18.3	13.1 N.U.	N.U.	9550.6 9379.5 9167 N.U.
26/10/2020 10:56	6	13.7	983.3	-7.1	13.5	12.9	13.5	15.8	13.1 N.U.	N.U.	9551.8 9383.8 9172.4 N.U.
26/10/2020 10:56	6	13.8	983.1	-7.1	13.5	11.7	13.5	15.5	13.1 N.U.	N.U.	9551.8 9386.3 9173 N.U.
26/10/2020 10:57	6	13.8	983.2	-6.5	13.5	11.7	13.5	14.7	13.1 N.U.	N.U.	9550.6 9386.3 9174.8 N.U.
26/10/2020 10:57	6	13.8	983.3	-6.5	13.5	11.4	13.5	14.4	13.1 N.U.	N.U.	9550.6 9386.9 9175.4 N.U.
26/10/2020 10:57	6	13.8	983	-6.2	13.5	10.8	13.5	14.7	13.1 N.U.	N.U.	9550 9388.1 9174.8 N.U.
26/10/2020 10:57	6	13.8	983.1	-5.9	13.5	12	13.5	15	13.1 N.U.	N.U.	9549.3 9385.6 9174.2 N.U.
26/10/2020 10:57	6	13.8	983	-6.2	13.5	10.8	13.5	14.1	13.1 N.U.	N.U.	9550 9388.1 9176.1 N.U.
26/10/2020 10:57	6	13.8	983.3	-6.5	13.5	11.7	13.5	14.4	13.1 N.U.	N.U.	9550.6 9386.3 9175.4 N.U.
26/10/2020 10:58	6	13.9	983.1	-6.5	13.5	10.4	13.5	13.6	13.1 N.U.	N.U.	9550.6 9388.7 9177.3 N.U.
26/10/2020 10:58	6	13.9	983.3	-6.5	13.5	11.7	13.5	14.1	13.1 N.U.	N.U.	9550.6 9386.3 9176.1 N.U.
26/10/2020 10:58	6	13.9	983.2	-5.7	13.5	13.2	13.5	16.9	13.1 N.U.	N.U.	9548.7 9383.2 9170 N.U.

Date/time	Vbatt	Temp.	Press.	Channel 1 (°C)	Channel 2 (°C)	Channel 3 (°C)	Channel 4 (°C)	CH1 Raw (Digits)	CH2 Raw (Digits)	CH3 Raw (Digits)	CH4 Raw (Digits)
26/10/2020 10:58	6	13.9	983.4	-6.9	13.5	12.9	13.5	16.5	13 N.U.	N.U.	9551.2 9383.8 9170.6 N.U.
26/10/2020 10:58	6	13.9	983.1	-6.6	13.5	13.5	13.5	17.1	13 N.U.	N.U.	9550.6 9382.6 9169.4 N.U.
26/10/2020 10:58	6	13.9	983.2	-6.9	13.5	13.5	13.5	16.8	13 N.U.	N.U.	9551.2 9382.6 9170 N.U.
26/10/2020 10:59	6	13.9	983	-7.4	13.5	14.1	13.5	17.6	13 N.U.	N.U.	9552.4 9381.4 9168.2 N.U.
26/10/2020 10:59	6	13.9	983.4	-7.4	13.5	14.7	13.5	19.6	13 N.U.	N.U.	9552.4 9380.1 9163.9 N.U.
26/10/2020 10:59	6	14	983.3	-6.3	13.5	22.1	13.5	26.5	13 N.U.	N.U.	9550 9365.4 9148.8 N.U.
26/10/2020 10:59	6	14	983.2	-7.2	13.4	35.4	13.5	38.9	13 N.U.	N.U.	9551.8 9339.1 9121.6 N.U.
26/10/2020 10:59	6	14	983.3	-6.6	13.4	47	13.4	50.7	13 N.U.	N.U.	9550.6 9315.9 9095.7 N.U.
26/10/2020 11:00	6	14	983.2	-6.9	13.4	69.5	13.4	75.5	13 N.U.	N.U.	9551.2 9271.4 9041.4 N.U.
26/10/2020 11:00	6	14	983.1	-7.5	13.4	117.9	13.4	125.5	13 N.U.	N.U.	9552.4 9175.4 8931.7 N.U.
26/10/2020 11:00	6	14	983.2	-6.6	13.4	181.8	13.4	189.1	13 N.U.	N.U.	9550.6 9048.7 8792.4 N.U.
26/10/2020 11:00	6	14	983.1	-5.3	13.3	231.9	13.3	238.4	13 N.U.	N.U.	9547.5 8949.1 8684.2 N.U.
26/10/2020 11:00	6	14	982.9	-5.8	13.3	263.3	13.3	269.2	13 N.U.	N.U.	9548.7 8887 8616.6 N.U.
26/10/2020 11:00	6	14	983.5	-4.7	13.3	275.6	13.3	279.1	13 N.U.	N.U.	9546.2 8862.5 8594.9 N.U.
26/10/2020 11:01	6	14.1	983	-5	13.3	221	13.3	224.1	13 N.U.	N.U.	9546.9 8970.6 8715.5 N.U.
26/10/2020 11:01	6	14.1	983	-4.5	13.3	175.6	13.3	179.8	13 N.U.	N.U.	9545.6 9060.7 8812.6 N.U.
26/10/2020 11:01	6	14.1	982.9	-4.8	13.2	173.7	13.2	177.6	12.9 N.U.	N.U.	9546.2 9064.3 8817.3 N.U.
26/10/2020 11:01	6	14.1	983.2	-5.7	13.1	170.3	13.1	174.6	12.9 N.U.	N.U.	9548.1 9070.9 8823.9 N.U.
26/10/2020 11:01	6	14.1	983.3	-5	13.1	165.8	13.1	169.9	12.8 N.U.	N.U.	9546.2 9080 8834 N.U.
26/10/2020 11:01	6	14.1	983.1	-5	13	160.8	13.1	164.5	12.8 N.U.	N.U.	9546.2 9089.6 8845.9 N.U.
26/10/2020 11:02	6	14.1	983.3	-5.7	13	173.2	13	178.5	12.8 N.U.	N.U.	9547.5 9064.9 8815 N.U.
26/10/2020 11:02	6	14.1	983.4	-6.3	12.9	228.6	13	236	12.8 N.U.	N.U.	9548.7 8955.1 8688.9 N.U.
26/10/2020 11:02	6	14.1	983.3	-5.8	12.8	276.7	13	280	12.8 N.U.	N.U.	9547.5 8859.6 8592.5 N.U.
26/10/2020 11:02	6	14.1	983	-5.6	12.8	254.7	12.9	256.1	12.7 N.U.	N.U.	9546.9 8903.1 8644.8 N.U.
26/10/2020 11:02	6	14.2	983	-5.6	12.7	224.3	12.8	228.7	12.7 N.U.	N.U.	9546.9 8963.4 8704.9 N.U.
26/10/2020 11:02	6	14.2	982.9	-5.1	12.6	209.7	12.8	213.6	12.7 N.U.	N.U.	9545.6 8992.2 8737.9 N.U.
26/10/2020 11:03	6	14.2	983.2	-6.6	12.6	198.5	12.8	203	12.7 N.U.	N.U.	9548.7 9014.4 8761 N.U.
26/10/2020 11:03	6	14.2	983	-5.8	12.6	189.4	12.8	193.2	12.6 N.U.	N.U.	9546.9 9032.4 8782.3 N.U.
26/10/2020 11:03	6	14.2	983.3	-5.8	12.5	173.3	12.7	175.9	12.6 N.U.	N.U.	9546.9 9064.3 8820.3 N.U.
26/10/2020 11:03	6	14.2	983.4	-5.6	12.5	168.4	12.7	170.2	12.6 N.U.	N.U.	9546.2 9074 8832.8 N.U.
26/10/2020 11:03	6	14.2	983.3	-5.6	12.4	162.3	12.6	166.4	12.6 N.U.	N.U.	9546.2 9086 8841.1 N.U.
26/10/2020 11:03	6	14.2	983.3	-5.6	12.4	155.9	12.6	158.8	12.6 N.U.	N.U.	9546.2 9098.7 8857.8 N.U.
26/10/2020 11:04	6	14.2	983.1	-6	12.4	149.8	12.6	152.8	12.6 N.U.	N.U.	9546.9 9110.7 8870.9 N.U.
26/10/2020 11:04	6	14.2	983.1	-6	12.4	143.7	12.6	146.8	12.6 N.U.	N.U.	9546.9 9122.8 8884 N.U.
26/10/2020 11:04	6	14.2	983.1	-6	12.3	139.1	12.6	141.9	12.6 N.U.	N.U.	9546.9 9131.9 8894.7 N.U.
26/10/2020 11:04	6	14.2	983.2	-5.7	12.3	133	12.6	136.4	12.5 N.U.	N.U.	9546.2 9144 8906.6 N.U.
26/10/2020 11:04	6	14.2	982.9	-5.5	12.3	127.8	12.6	129.3	12.5 N.U.	N.U.	9545.6 9154.3 8922.2 N.U.
26/10/2020 11:04	6	14.2	983.1	-5.5	12.3	122.9	12.5	125.2	12.5 N.U.	N.U.	9545.6 9163.9 8931.1 N.U.
26/10/2020 11:05	6	14.2	983	-5.8	12.3	118	12.5	121.9	12.5 N.U.	N.U.	9546.2 9173.6 8938.3 N.U.
26/10/2020 11:05	6	14.3	983.2	-5.2	12.3	113.7	12.5	118.4	12.5 N.U.	N.U.	9545 9182.1 8946.1 N.U.
26/10/2020 11:05	6	14.3	983	-5.2	12.3	110.7	12.5	112.9	12.4 N.U.	N.U.	9545 9188.2 8958 N.U.
26/10/2020 11:05	6	14.3	983.3	-5.6	12.2	105.8	12.5	109.3	12.4 N.U.	N.U.	9545.6 9197.9 8965.8 N.U.
26/10/2020 11:05	6	14.3	983	-5	12.2	102.3	12.4	106	12.4 N.U.	N.U.	9544.4 9204.5 8973 N.U.
26/10/2020 11:06	6	14.3	983.4	-5	12.2	99.6	12.4	104.7	12.4 N.U.	N.U.	9544.4 9210 8976 N.U.
26/10/2020 11:06	6	14.3	983.2	-5.3	12.2	99.9	12.4	103.8	12.4 N.U.	N.U.	9545 9209.4 8977.8 N.U.
26/10/2020 11:06	6	14.3	983.2	-5.3	12.2	103.6	12.4	107.7	12.4 N.U.	N.U.	9545 9202.1 8969.4 N.U.
26/10/2020 11:06	6	14.3	983.2	-5.4	12.1	113.4	12.4	117.2	12.4 N.U.	N.U.	9545 9182.7 8948.5 N.U.
26/10/2020 11:06	6	14.3	983.3	-5.9	12.1	123.7	12.4	128.1	12.4 N.U.	N.U.	9546.2 9162.1 8924.6 N.U.
26/10/2020 11:06	6	14.3	983.2	-5.6	12.1	134.7	12.4	139.5	12.4 N.U.	N.U.	9545.6 9140.3 8899.5 N.U.

Date/time	Vbatt	Temp.	Press.	Channel 1 (°C)	Channel 2 (°C)	Channel 3 (°C)	Channel 4 (°C)	CH1 Raw (Digits)	CH2 Raw (Digits)	CH3 Raw (Digits)	CH4 Raw (Digits)				
26/10/2020 11:07	6	14.3	983.3	-5.4	12.1	146.9	12.4	150.9	12.4	N.U.	N.U.	9545	9116.2	8874.4	N.U.
26/10/2020 11:07	6	14.3	983.3	-5.4	12.1	158.5	12.4	162.3	12.4	N.U.	N.U.	9545	9093.2	8849.4	N.U.
26/10/2020 11:07	6	14.3	983.1	-5.4	12.1	168.2	12.4	170.5	12.4	N.U.	N.U.	9545	9074	8831.6	N.U.
26/10/2020 11:07	6	14.3	983.1	-5.4	12.1	172.7	12.4	175.6	12.4	N.U.	N.U.	9545	9064.9	8820.3	N.U.
26/10/2020 11:07	6	14.3	983.3	-5.1	12.1	168.8	12.4	170.5	12.4	N.U.	N.U.	9544.4	9072.7	8831.6	N.U.
26/10/2020 11:07	6	14.3	983.4	-5.6	12.1	160.2	12.4	162.6	12.4	N.U.	N.U.	9545.6	9089.6	8848.8	N.U.
26/10/2020 11:08	6	14.3	983.1	-5.4	12.1	152.6	12.4	156.3	12.3	N.U.	N.U.	9545	9104.7	8862.5	N.U.
26/10/2020 11:08	6	14.3	983.3	-5.1	12.1	145.9	12.4	148.4	12.3	N.U.	N.U.	9544.4	9118	8879.8	N.U.
26/10/2020 11:08	6	14.3	983.4	-5.4	12.1	139.8	12.4	143	12.3	N.U.	N.U.	9545	9130.1	8891.7	N.U.
26/10/2020 11:08	6	14.3	983.3	-5.1	12.1	134.3	12.3	137.8	12.3	N.U.	N.U.	9544.4	9140.9	8903.1	N.U.
26/10/2020 11:08	6	14.3	983	-5.1	12.1	129.1	12.3	132.6	12.3	N.U.	N.U.	9544.4	9151.2	8914.4	N.U.
26/10/2020 11:08	6	14.3	983.4	-5.1	12.1	124.5	12.3	127.6	12.3	N.U.	N.U.	9544.4	9160.3	8925.2	N.U.
26/10/2020 11:09	6	14.3	983.5	-5.4	12.1	120	12.3	124.1	12.3	N.U.	N.U.	9545	9169.4	8932.9	N.U.
26/10/2020 11:09	6	14.3	983.4	-5.4	12.1	116.3	12.3	119.7	12.3	N.U.	N.U.	9545	9176.7	8942.5	N.U.
26/10/2020 11:09	6	14.3	983.2	-4.8	12.1	112.6	12.3	115.6	12.3	N.U.	N.U.	9543.8	9183.9	8951.5	N.U.
26/10/2020 11:09	6	14.3	983.7	-5.4	12.1	108	12.3	111.3	12.3	N.U.	N.U.	9545	9193	8961	N.U.
26/10/2020 11:09	6	14.3	983.4	-5.1	12.1	104.9	12.3	107.5	12.3	N.U.	N.U.	9544.4	9199.1	8969.4	N.U.
26/10/2020 11:09	6	14.3	983.2	-5.4	12.1	101.6	12.3	104.6	12.2	N.U.	N.U.	9545	9205.8	8975.4	N.U.
26/10/2020 11:10	6	14.4	983.2	-4.8	12.1	98.2	12.3	101.4	12.2	N.U.	N.U.	9543.8	9212.4	8982.6	N.U.
26/10/2020 11:10	6	14.3	983.5	-5.4	12.1	96.4	12.3	99.7	12.2	N.U.	N.U.	9545	9216.1	8986.2	N.U.
26/10/2020 11:10	6	14.4	983.6	-5.1	12.1	93.9	12.2	97.8	12.2	N.U.	N.U.	9544.4	9220.9	8990.4	N.U.
26/10/2020 11:10	6	14.4	983.1	-5.1	12.1	94.8	12.2	97.3	12.2	N.U.	N.U.	9544.4	9219.1	8991.6	N.U.
26/10/2020 11:10	6	14.4	983.1	-5.1	12.1	92.3	12.2	96.7	12.2	N.U.	N.U.	9544.4	9224	8992.8	N.U.
26/10/2020 11:11	6	14.4	983.3	-5.1	12.1	93.6	12.2	97	12.2	N.U.	N.U.	9544.4	9221.5	8992.2	N.U.
26/10/2020 11:11	6	14.4	982.9	-5.5	12	93.9	12.2	97.7	12.1	N.U.	N.U.	9545	9220.9	8990.4	N.U.
26/10/2020 11:11	6	14.4	983.5	-4.9	12	95.1	12.2	97.2	12.1	N.U.	N.U.	9543.8	9218.5	8991.6	N.U.
26/10/2020 11:11	6	14.4	983.2	-5.8	12	93.8	12.1	97.5	12.1	N.U.	N.U.	9545.6	9220.9	8991	N.U.
26/10/2020 11:11	6	14.4	983.3	-5.2	12	95	12.1	98.8	12.1	N.U.	N.U.	9544.4	9218.5	8988	N.U.
26/10/2020 11:11	6	14.4	983.2	-5.5	12	96.3	12.1	100.5	12.1	N.U.	N.U.	9545	9216.1	8984.4	N.U.
26/10/2020 11:12	6	14.4	983.2	-5.8	12	99.6	12.1	103.2	12.1	N.U.	N.U.	9545.6	9209.4	8978.4	N.U.
26/10/2020 11:12	6	14.4	983.2	-5.2	12	104.8	12.1	107.2	12.1	N.U.	N.U.	9544.4	9199.1	8969.4	N.U.
26/10/2020 11:12	6	14.4	983.6	-5.5	12	108.8	12.1	111.9	12.1	N.U.	N.U.	9545	9191.2	8959.2	N.U.
26/10/2020 11:12	6	14.4	983.4	-5.5	12	109.4	12.1	111.6	12.1	N.U.	N.U.	9545	9190	8959.8	N.U.
26/10/2020 11:12	6	14.4	983.3	-5.2	12	105.4	12.1	108.1	12.1	N.U.	N.U.	9544.4	9197.9	8967.6	N.U.
26/10/2020 11:12	6	14.4	983.5	-5.5	12	101.4	12.1	103.4	12.1	N.U.	N.U.	9545	9205.8	8977.8	N.U.
26/10/2020 11:13	6	14.4	982.9	-5.2	12	97.7	12.1	101.2	12.1	N.U.	N.U.	9544.4	9213	8982.6	N.U.
26/10/2020 11:13	6	14.4	983.3	-5.2	12	95.3	12.1	99.9	12.1	N.U.	N.U.	9544.4	9217.9	8985.6	N.U.
26/10/2020 11:13	6	14.4	983	-4.9	12	96.2	12.1	99.2	12	N.U.	N.U.	9543.8	9216.1	8986.8	N.U.
26/10/2020 11:13	6	14.4	983.1	-4.6	12	99.3	12.1	103.1	12.1	N.U.	N.U.	9543.2	9210	8978.4	N.U.
26/10/2020 11:13	6	14.4	983.5	-5.2	12	103.2	12.1	106.1	12	N.U.	N.U.	9544.4	9202.1	8971.8	N.U.
26/10/2020 11:13	6	14.4	983.5	-5.2	12	106.9	12	110.2	12	N.U.	N.U.	9544.4	9194.8	8962.8	N.U.
26/10/2020 11:14	6	14.4	983.4	-4.9	12	112.4	12	113.2	12	N.U.	N.U.	9543.8	9183.9	8956.3	N.U.
26/10/2020 11:14	6	14.4	983.1	-4.6	12	113.3	12	117.8	12	N.U.	N.U.	9543.2	9182.1	8946.1	N.U.
26/10/2020 11:14	6	14.4	983.3	-5.2	12	114.2	12	118.6	12	N.U.	N.U.	9544.4	9180.3	8944.3	N.U.
26/10/2020 11:14	6	14.4	983.2	-5.5	12	115.4	12	116.5	12	N.U.	N.U.	9545	9177.9	8949.1	N.U.
26/10/2020 11:14	6	14.4	983.1	-5.8	12	114.2	12	117.2	12	N.U.	N.U.	9545.6	9180.3	8947.3	N.U.
26/10/2020 11:14	6	14.4	983.4	-5	12	110.5	12	113.7	12	N.U.	N.U.	9543.8	9187.6	8955.1	N.U.
26/10/2020 11:15	6	14.4	983.2	-5.6	12	107.2	12	109.3	12	N.U.	N.U.	9545	9194.2	8964.6	N.U.
26/10/2020 11:15	6	14.4	983.1	-5	12	102.3	12	105.5	12	N.U.	N.U.	9543.8	9203.9	8973	N.U.

Date/time	Vbatt	Temp.	Press.	Channel 1 (°C)	Channel 2 (°C)	Channel 3 (°C)	Channel 4 (°C)	CH1 Raw (Digits)	CH2 Raw (Digits)	CH3 Raw (Digits)	CH4 Raw (Digits)				
26/10/2020 11:15	6	14.5	983.3	-5.3	12	100.1	12	103	12	N.U.	N.U.	9544.4	9208.2	8978.4	N.U.
26/10/2020 11:15	6	14.5	983.5	-5.3	12	97	12	100.3	12	N.U.	N.U.	9544.4	9214.3	8984.4	N.U.
26/10/2020 11:15	6	14.5	983.3	-5.3	12	94.9	12	98.9	12	N.U.	N.U.	9544.4	9218.5	8987.4	N.U.
26/10/2020 11:16	6	14.5	983.2	-5.6	12	93.7	12	97	12	N.U.	N.U.	9545	9220.9	8991.6	N.U.
26/10/2020 11:16	6	14.5	983.3	-4.4	12	94.3	12	97	12	N.U.	N.U.	9542.5	9219.7	8991.6	N.U.
26/10/2020 11:16	6	14.5	983.1	-5	12	95.2	12	98.3	12	N.U.	N.U.	9543.8	9217.9	8988.6	N.U.
26/10/2020 11:16	6	14.5	983.2	-4.1	12	98.6	12	102.4	12	N.U.	N.U.	9541.9	9211.2	8979.6	N.U.
26/10/2020 11:16	6	14.5	983.5	-5.3	12	102.5	12	105.2	12	N.U.	N.U.	9544.4	9203.3	8973.6	N.U.
26/10/2020 11:16	6	14.5	983.4	-4.1	12	105.9	12	109.8	11.9	N.U.	N.U.	9541.9	9196.7	8963.4	N.U.
26/10/2020 11:17	6	14.5	983.3	-5.3	12	111.1	12	112.8	11.9	N.U.	N.U.	9544.4	9186.4	8956.9	N.U.
26/10/2020 11:17	6	14.5	983.4	-4.1	12	113.8	12	116.6	11.9	N.U.	N.U.	9541.9	9180.9	8948.5	N.U.
26/10/2020 11:17	6	14.5	983.3	-5.3	12	117.8	12	121.2	11.9	N.U.	N.U.	9544.4	9173	8938.3	N.U.
26/10/2020 11:17	6	14.5	983.3	-5.6	11.9	135.5	12	139.5	11.9	N.U.	N.U.	9545	9137.9	8898.3	N.U.
26/10/2020 11:17	6	14.5	983	-5	11.9	172.9	12	178.9	11.9	N.U.	N.U.	9543.8	9063.7	8812	N.U.
26/10/2020 11:17	6	14.5	983.3	-5.6	11.9	223.5	12	229.1	11.9	N.U.	N.U.	9545	8963.4	8701.9	N.U.
26/10/2020 11:18	6	14.5	983.2	-5	11.9	269.9	12	277.1	11.9	N.U.	N.U.	9543.8	8871.5	8596.6	N.U.
26/10/2020 11:18	6	14.5	983	-5.3	11.9	260.2	11.9	264	11.9	N.U.	N.U.	9544.4	8890.5	8625.4	N.U.
26/10/2020 11:18	6	14.5	983.2	-5.3	11.9	241.5	11.9	244.1	11.9	N.U.	N.U.	9544.4	8927.5	8668.9	N.U.
26/10/2020 11:18	6	14.5	983.3	-5	11.9	227.7	11.9	231	11.9	N.U.	N.U.	9543.8	8955.1	8697.8	N.U.
26/10/2020 11:18	6	14.6	983.4	-4.5	11.9	217.7	11.9	221.3	11.9	N.U.	N.U.	9542.5	8974.8	8719	N.U.
26/10/2020 11:18	6	14.5	983.3	-4.7	11.9	208.3	11.9	211.8	11.9	N.U.	N.U.	9543.2	8993.4	8739.7	N.U.
26/10/2020 11:19	6	14.6	983.2	-5	11.9	202.6	11.9	205.3	11.8	N.U.	N.U.	9543.8	9004.8	8753.9	N.U.
26/10/2020 11:19	6	14.6	983.4	-4.2	11.9	200.5	11.9	205	11.8	N.U.	N.U.	9541.9	9009	8754.5	N.U.
26/10/2020 11:19	6	14.6	983.1	-5.3	11.9	211.4	11.9	216.3	11.8	N.U.	N.U.	9544.4	8987.4	8729.7	N.U.
26/10/2020 11:19	6	14.6	983.3	-5.1	11.8	221.3	11.9	224.4	11.8	N.U.	N.U.	9543.8	8967.6	8711.9	N.U.
26/10/2020 11:19	6	14.6	983.2	-4.2	11.8	218.9	11.9	221.7	11.8	N.U.	N.U.	9541.9	8972.4	8717.8	N.U.
26/10/2020 11:19	6	14.6	983.1	-4.7	11.9	212.3	11.9	215.5	11.8	N.U.	N.U.	9543.2	8985.6	8731.4	N.U.
26/10/2020 11:20	6	14.6	983	-5.4	11.8	207.7	11.9	209.6	11.8	N.U.	N.U.	9544.4	8994.6	8744.4	N.U.
26/10/2020 11:20	6	14.6	983.1	-4.5	11.8	205.6	11.9	208.5	11.8	N.U.	N.U.	9542.5	8998.8	8746.8	N.U.
26/10/2020 11:20	6	14.6	983.4	-4.8	11.8	213.5	11.9	218	11.8	N.U.	N.U.	9543.2	8983.2	8726.1	N.U.
26/10/2020 11:20	6	14.6	983.2	-4.8	11.8	212.5	11.8	215.8	11.8	N.U.	N.U.	9543.2	8985	8730.8	N.U.
26/10/2020 11:20	6	14.6	983.5	-4.5	11.8	203.7	11.8	205.8	11.8	N.U.	N.U.	9542.5	9002.4	8752.7	N.U.
26/10/2020 11:20	6	14.6	983.3	-5.1	11.8	201.3	11.8	204.7	11.8	N.U.	N.U.	9543.8	9007.2	8755.1	N.U.
26/10/2020 11:21	6	14.6	983.4	-3.9	11.8	221.6	11.8	227.4	11.8	N.U.	N.U.	9541.3	8967	8705.5	N.U.
26/10/2020 11:21	6	14.6	983.2	-4.8	11.8	259.8	11.8	265.8	11.8	N.U.	N.U.	9543.2	8891.1	8621.3	N.U.
26/10/2020 11:21	6	14.6	983.3	-4.5	11.8	286.3	11.9	288.5	11.8	N.U.	N.U.	9542.5	8838.7	8571.4	N.U.
26/10/2020 11:21	6	14.6	983.2	-5.1	11.8	266.5	11.8	268.5	11.8	N.U.	N.U.	9543.8	8878	8615.4	N.U.
26/10/2020 11:21	6	14.6	983.3	-4.6	11.8	248.7	11.8	249.4	11.8	N.U.	N.U.	9542.5	8913.2	8657.1	N.U.
26/10/2020 11:22	6	14.6	983.5	-4.3	11.8	232.7	11.8	235.5	11.8	N.U.	N.U.	9541.9	8944.9	8687.8	N.U.
26/10/2020 11:22	6	14.7	983.2	-4.3	11.8	220.4	11.8	223.1	11.8	N.U.	N.U.	9541.9	8969.4	8714.9	N.U.
26/10/2020 11:22	6	14.7	983.4	-5.2	11.8	210.4	11.8	214.2	11.8	N.U.	N.U.	9543.8	8989.2	8734.4	N.U.
26/10/2020 11:22	6	14.7	983.3	-4.9	11.8	200.4	11.8	204.5	11.8	N.U.	N.U.	9543.2	9009	8755.7	N.U.
				(°C)	(°C)	(°C)	(°C)	(°C)	(°C)	(°C)	(°C)	(Digits)	(Digits)	(Digits)	(Digits)
26/10/2020 10:54	6	13.3	983.4	-7.8	13.7	6.5	13.7	10.1	13.1	N.U.	N.U.	9553.7	9396.7	9185.1	N.U.
26/10/2020 10:54	6	13.3	983.1	-7.5	13.7	5.9	13.6	10.6	13.1	N.U.	N.U.	9553	9397.9	9183.9	N.U.
26/10/2020 10:54	6	13.4	983.3	-7.8	13.7	5.9	13.6	10	13.1	N.U.	N.U.	9553.7	9397.9	9185.1	N.U.
26/10/2020 10:54	6	13.4	983.2	-7.3	13.6	6.2	13.6	10.1	13.1	N.U.	N.U.	9552.4	9397.3	9185.1	N.U.
26/10/2020 10:54	6	13.4	983.2	-7.6	13.6	6.5	13.6	10	13.1	N.U.	N.U.	9553	9396.7	9185.1	N.U.
26/10/2020 10:55	6	13.4	983.2	-7.9	13.6	5.2	13.6	10.6	13.1	N.U.	N.U.	9553.7	9399.1	9183.9	N.U.

Date/time	Vbatt	Temp.	Press.	Channel 1 (°C)	Channel 2 (°C)	Channel 3 (°C)	Channel 4 (°C)	CH1 Raw (Digits)	CH2 Raw (Digits)	CH3 Raw (Digits)	CH4 Raw (Digits)				
26/10/2020 11:23	6	14.7	983.4	-3.7	11.8	236.6	11.8	239.2	11.8	N.U.	N.U.	9540.7	8937.1	8679.5	N.U.
26/10/2020 11:24	6	14.7	983.4	-4.9	11.8	230.3	11.8	233.2	11.8	N.U.	N.U.	9543.2	8949.7	8692.5	N.U.
26/10/2020 11:24	6	14.7	983.1	-4.3	11.8	222.4	11.8	225.7	11.8	N.U.	N.U.	9541.9	8965.2	8709	N.U.
26/10/2020 11:24	6	14.7	983.5	-3.8	11.7	214	11.8	217.4	11.8	N.U.	N.U.	9540.7	8982	8727.3	N.U.
26/10/2020 11:24	6	14.7	983.4	-3.8	11.7	207	11.8	211.7	11.8	N.U.	N.U.	9540.7	8995.8	8739.7	N.U.
26/10/2020 11:24	6	14.7	983.5	-4.6	11.7	202.5	11.8	205.8	11.8	N.U.	N.U.	9542.5	9004.8	8752.7	N.U.
26/10/2020 11:24	6	14.7	983.4	-4.4	11.7	198.2	11.8	201.4	11.8	N.U.	N.U.	9541.9	9013.2	8762.2	N.U.
26/10/2020 11:25	6	14.7	983.2	-4.4	11.7	196.4	11.8	199.5	11.8	N.U.	N.U.	9541.9	9016.8	8766.3	N.U.
26/10/2020 11:25	6	14.8	983.2	-4.6	11.7	195.8	11.8	198.7	11.8	N.U.	N.U.	9542.5	9018	8768.1	N.U.
26/10/2020 11:25	6	14.8	983.3	-4.4	11.7	194.9	11.8	199.8	11.8	N.U.	N.U.	9541.9	9019.8	8765.7	N.U.
26/10/2020 11:25	6	14.8	983.2	-3.5	11.7	198.5	11.8	201.7	11.8	N.U.	N.U.	9540.1	9012.6	8761.6	N.U.
26/10/2020 11:25	6	14.8	983.6	-3.5	11.7	199.8	11.8	203.1	11.8	N.U.	N.U.	9540.1	9010.2	8758.6	N.U.
26/10/2020 11:25	6	14.8	983.4	-4.4	11.7	203.1	11.8	204.7	11.8	N.U.	N.U.	9541.9	9003.6	8755.1	N.U.
26/10/2020 11:26	6	14.8	983.1	-3.8	11.7	204	11.8	208.2	11.8	N.U.	N.U.	9540.7	9001.8	8747.4	N.U.
26/10/2020 11:26	6	14.8	983.1	-4.4	11.7	206.1	11.8	209.5	11.8	N.U.	N.U.	9541.9	8997.6	8744.4	N.U.
26/10/2020 11:26	6	14.8	983.5	-3.2	11.7	207	11.8	209.8	11.8	N.U.	N.U.	9539.4	8995.8	8743.8	N.U.
26/10/2020 11:26	6	14.8	983.3	-4.4	11.7	208.2	11.8	212.2	11.8	N.U.	N.U.	9541.9	8993.4	8738.5	N.U.
26/10/2020 11:26	6	14.8	983.5	-3.5	11.7	209.1	11.8	212.8	11.8	N.U.	N.U.	9540.1	8991.6	8737.3	N.U.
26/10/2020 11:27	6	14.8	983.5	-3.5	11.7	210	11.8	211.7	11.8	N.U.	N.U.	9540.1	8989.8	8739.7	N.U.
26/10/2020 11:27	6	14.9	983.5	-3.5	11.7	210.3	11.8	213.8	11.8	N.U.	N.U.	9540.1	8989.2	8735	N.U.
26/10/2020 11:27	6	14.9	983.3	-3.8	11.7	211.2	11.8	213.8	11.8	N.U.	N.U.	9540.7	8987.4	8735	N.U.
26/10/2020 11:27	6	14.9	983.1	-4.1	11.7	210.9	11.7	214.7	11.8	N.U.	N.U.	9541.3	8988	8733.2	N.U.
26/10/2020 11:27	6	14.9	983.2	-4.4	11.7	210.6	11.7	214.1	11.8	N.U.	N.U.	9541.9	8988.6	8734.4	N.U.
26/10/2020 11:27	6	14.9	983.3	-4.4	11.6	210.9	11.7	214.1	11.8	N.U.	N.U.	9541.9	8988	8734.4	N.U.
26/10/2020 11:28	6	14.9	983.4	-3.6	11.6	228.7	11.7	233.8	11.8	N.U.	N.U.	9540.1	8952.7	8691.3	N.U.
26/10/2020 11:28	6	14.9	983.2	-3.6	11.6	287.4	11.7	296.4	11.7	N.U.	N.U.	9540.1	8836.4	8553.9	N.U.
26/10/2020 11:28	6	14.9	983.1	-3.8	11.6	359	11.7	366.3	11.7	N.U.	N.U.	9540.7	8694.2	8400.7	N.U.
26/10/2020 11:28	6	14.9	983.1	-4.1	11.6	373.9	11.7	373.9	11.7	N.U.	N.U.	9541.3	8664.8	8383.9	N.U.
26/10/2020 11:28	6	15	983.4	-3.8	11.6	325.4	11.7	327.3	11.7	N.U.	N.U.	9540.7	8761	8486.2	N.U.
26/10/2020 11:28	6	14.9	983.4	-3.3	11.6	294.3	11.7	297.7	11.7	N.U.	N.U.	9539.4	8822.7	8550.9	N.U.
26/10/2020 11:29	6	15	982.9	-4.1	11.6	276.6	11.7	280.4	11.7	N.U.	N.U.	9541.3	8857.8	8589	N.U.
26/10/2020 11:29	6	15	983.3	-4.1	11.6	264.8	11.7	267.8	11.7	N.U.	N.U.	9541.3	8881	8616.6	N.U.
26/10/2020 11:29	6	15	983.5	-3.6	11.6	258.5	11.7	263	11.7	N.U.	N.U.	9540.1	8893.5	8627.1	N.U.
26/10/2020 11:29	6	15	983.4	-3	11.6	268.2	11.7	272.6	11.7	N.U.	N.U.	9538.8	8874.4	8606	N.U.
26/10/2020 11:29	6	15	983.3	-3.8	11.6	280.5	11.7	283.6	11.7	N.U.	N.U.	9540.7	8850	8582	N.U.
26/10/2020 11:29	6	15	983.3	-3.8	11.6	293.1	11.7	296.1	11.7	N.U.	N.U.	9540.7	8825.1	8554.5	N.U.
26/10/2020 11:30	6	15	983.5	-4.1	11.6	301.7	11.7	304.9	11.7	N.U.	N.U.	9541.3	8807.8	8535.2	N.U.
26/10/2020 11:30	6	15	983.3	-3.6	11.6	305.6	11.7	308.9	11.7	N.U.	N.U.	9540.1	8800.1	8526.4	N.U.
26/10/2020 11:30	6	15.1	983.3	-3	11.6	307.7	11.7	311.1	11.7	N.U.	N.U.	9538.8	8796	8521.7	N.U.
26/10/2020 11:30	6	15.1	983	-3.3	11.6	309.5	11.7	312.4	11.7	N.U.	N.U.	9539.4	8792.4	8518.8	N.U.
26/10/2020 11:30	6	15.1	983.6	-3.3	11.6	310.1	11.7	313.2	11.7	N.U.	N.U.	9539.4	8791.2	8517.1	N.U.
26/10/2020 11:30	6	15.1	983.4	-3.3	11.6	309.5	11.7	313.7	11.7	N.U.	N.U.	9539.4	8792.4	8515.9	N.U.
26/10/2020 11:31	6	15.1	983.6	-2.7	11.6	309.2	11.7	312.7	11.7	N.U.	N.U.	9538.2	8793	8518.2	N.U.
26/10/2020 11:31	6	15.1	983.4	-2.7	11.6	308.3	11.7	312.7	11.7	N.U.	N.U.	9538.2	8794.8	8518.2	N.U.
26/10/2020 11:31	6	15.1	983.3	-2.1	11.6	308.6	11.7	312.1	11.7	N.U.	N.U.	9537	8794.2	8519.4	N.U.
26/10/2020 11:31	6	15.1	983.4	-3.3	11.6	309.5	11.7	312.9	11.7	N.U.	N.U.	9539.4	8792.4	8517.6	N.U.
26/10/2020 11:31	6	15.1	983.1	-3.8	11.6	309.2	11.7	311.6	11.7	N.U.	N.U.	9540.7	8793	8520.6	N.U.
26/10/2020 11:31	5.9	15.1	983	-3	11.6	308.6	11.7	310.8	11.7	N.U.	N.U.	9538.8	8794.2	8522.3	N.U.
26/10/2020 11:32	6	15.1	983.5	-3	11.6	308.9	11.7	312.1	11.7	N.U.	N.U.	9538.8	8793.6	8519.4	N.U.

Date/time	Vbatt	Temp.	Press.	Channel 1 (°C)	Channel 2 (°C)	Channel 3 (°C)	Channel 4 (°C)	CH1 Raw (Digits)	CH2 Raw (Digits)	CH3 Raw (Digits)	CH4 Raw (Digits)				
26/10/2020 11:32	6	15.1	983.4	-3	11.6	308.6	11.7	311.6	11.7	N.U.	N.U.	9538.8	8794.2	8520.6	N.U.
26/10/2020 11:32	5.9	15.1	983.3	-2.8	11.6	307.7	11.7	311.6	11.7	N.U.	N.U.	9538.2	8796	8520.6	N.U.
26/10/2020 11:32	6	15.1	983.7	-3	11.6	308.3	11.7	310.8	11.7	N.U.	N.U.	9538.8	8794.8	8522.3	N.U.
26/10/2020 11:32	6	15.1	983.3	-3.6	11.6	307.1	11.7	310.3	11.7	N.U.	N.U.	9540.1	8797.2	8523.5	N.U.
26/10/2020 11:33	6	15.1	983.2	-3.6	11.6	306.8	11.7	310.3	11.7	N.U.	N.U.	9540.1	8797.7	8523.5	N.U.
26/10/2020 11:33	6	15.1	983.3	-3	11.6	305.3	11.7	308.1	11.7	N.U.	N.U.	9538.8	8800.7	8528.2	N.U.
26/10/2020 11:33	6	15.1	983.2	-2.8	11.6	305	11.7	308.1	11.6	N.U.	N.U.	9538.2	8801.3	8528.2	N.U.
26/10/2020 11:33	5.9	15.1	983.6	-2.5	11.6	304.1	11.7	307.5	11.6	N.U.	N.U.	9537.6	8803.1	8529.3	N.U.
26/10/2020 11:33	6	15.1	983.3	-3	11.6	303.5	11.7	307.5	11.6	N.U.	N.U.	9538.8	8804.3	8529.3	N.U.
26/10/2020 11:33	6	15.1	983.2	-3.3	11.6	305	11.7	307.8	11.6	N.U.	N.U.	9539.4	8801.3	8528.7	N.U.
26/10/2020 11:34	6	15.2	983.3	-3	11.6	304.4	11.7	307.8	11.6	N.U.	N.U.	9538.8	8802.5	8528.7	N.U.
26/10/2020 11:34	6	15.2	983.4	-3.6	11.6	304.7	11.7	307	11.6	N.U.	N.U.	9540.1	8801.9	8530.5	N.U.
26/10/2020 11:34	6	15.2	983.6	-1.9	11.6	304.7	11.7	307	11.6	N.U.	N.U.	9536.4	8801.9	8530.5	N.U.
26/10/2020 11:34	6	15.2	983.2	-3.3	11.6	303.2	11.7	307	11.6	N.U.	N.U.	9539.4	8804.9	8530.5	N.U.
26/10/2020 11:34	5.9	15.2	983.5	-2.8	11.6	303.5	11.7	307.5	11.6	N.U.	N.U.	9538.2	8804.3	8529.3	N.U.
26/10/2020 11:34	6	15.2	983.3	-3.3	11.6	304.1	11.7	307.3	11.6	N.U.	N.U.	9539.4	8803.1	8529.9	N.U.
26/10/2020 11:35	6	15.2	983.2	-2.5	11.6	303.2	11.6	307.5	11.6	N.U.	N.U.	9537.6	8804.9	8529.3	N.U.
26/10/2020 11:35	5.9	15.2	983.2	-2.8	11.6	304.1	11.7	307.3	11.6	N.U.	N.U.	9538.2	8803.1	8529.9	N.U.
26/10/2020 11:35	6	15.2	983.2	-3.6	11.6	302.3	11.7	307.3	11.6	N.U.	N.U.	9540.1	8806.6	8529.9	N.U.
26/10/2020 11:35	6	15.2	983.2	-3.3	11.6	302.3	11.6	304.6	11.6	N.U.	N.U.	9539.4	8806.6	8535.7	N.U.
26/10/2020 11:35	5.9	15.2	983.3	-1.9	11.6	300.5	11.6	304.9	11.6	N.U.	N.U.	9536.4	8810.2	8535.2	N.U.
26/10/2020 11:35	6	15.2	983.4	-2.8	11.6	300.2	11.6	303.5	11.6	N.U.	N.U.	9538.2	8810.8	8538.1	N.U.
26/10/2020 11:36	6	15.2	983.2	-3	11.6	298.4	11.7	303.5	11.6	N.U.	N.U.	9538.8	8814.4	8538.1	N.U.
26/10/2020 11:36	5.9	15.2	983.4	-1.9	11.6	298.4	11.6	301.9	11.6	N.U.	N.U.	9536.4	8814.4	8541.6	N.U.
26/10/2020 11:36	6	15.2	983.4	-2.2	11.6	298.4	11.6	301.4	11.6	N.U.	N.U.	9537	8814.4	8542.8	N.U.
26/10/2020 11:36	6	15.3	983.6	-2.2	11.6	300.2	11.6	303.3	11.6	N.U.	N.U.	9537	8810.8	8538.7	N.U.
26/10/2020 11:36	5.9	15.3	983.4	-2.8	11.6	301.4	11.6	305.4	11.6	N.U.	N.U.	9538.2	8808.4	8534	N.U.
26/10/2020 11:36	6	15.3	983.3	-2.2	11.6	303.5	11.6	306.7	11.6	N.U.	N.U.	9537	8804.3	8531.1	N.U.
26/10/2020 11:37	6	15.3	983.1	-2.2	11.6	305	11.6	307.8	11.6	N.U.	N.U.	9537	8801.3	8528.7	N.U.
26/10/2020 11:37	5.9	15.3	983.2	-1.9	11.6	305.6	11.6	308.3	11.6	N.U.	N.U.	9536.4	8800.1	8527.6	N.U.
26/10/2020 11:37	6	15.3	983.1	-2.5	11.6	305.9	11.6	308.9	11.6	N.U.	N.U.	9537.6	8799.5	8526.4	N.U.
26/10/2020 11:37	6	15.3	983.3	-2.5	11.6	305.6	11.6	310.5	11.6	N.U.	N.U.	9537.6	8800.1	8522.9	N.U.
26/10/2020 11:37	5.9	15.3	983	-2.5	11.6	306.5	11.6	310.2	11.6	N.U.	N.U.	9537.6	8798.3	8523.5	N.U.
26/10/2020 11:38	5.9	15.3	983	-1.9	11.6	306.8	11.6	310.5	11.6	N.U.	N.U.	9536.4	8797.7	8522.9	N.U.

Packer Test: R71905 @33.3m – 35m

Marriott Geotechnical Drilling

**Field Test Sheet - Packer
(Rock)**

Project Name	A303 GI			
Borehole No.	R71905			
Test section	from	33.30 m	to	35.00 m
Length of test section (L)	1.70 m		Date of test	01/10/2020
Diameter of test section (D)	147 mm		Time at start	1440hrs
Depth of water level before test (Hw)	Dry m		Time at finish	1700hrs
Depth of water level after test	Dry m			
Gauge height above ground level (Hg)	N/A m			
Depth of borehole at time of test	35.00 m			
Depth of casing at time of test	2.00 m			
Rock type in section	Chalk			
Pressure gauge type	N/A		Flowmeter type	
Size	N/A		Size	3/4"
Serial Number	N/A		Serial Number	
Test type	SINGLE		Inflation pressure	8 bar
Packer type	Pneumatic		Water Source	Bowser
Stage pressures			Test Operator	IK

Pressure Stage	100kpa		200kpa		300kpa		200kpa		109kpa	
Time (m)	Flow Meter Reading / Water Used (litres)									
0	195.6		246.0		310.1		415.2		496.5	
1	197.9	2.3	247.5	1.5	314.8	4.7	419.0	3.8	498.6	2.1
2	198.1	0.2	250.0	2.5	319.2	4.4	422.4	3.4	500.3	1.7
3	199.3	1.2	252.2	2.2	323.6	4.4	426.0	3.6	502.1	1.8
4	201.3	2	253.9	1.7	328.1	4.5	429.8	3.8	504.0	1.9
5	204.4	3.1	256.0	2.1	332.7	4.6	433.5	3.7	505.8	1.8
6	205.3	0.9	258.4	2.4	337.3	4.6	437.0	3.5	507.7	1.9
7	208.8	3.5	261.9	3.5	342.8	5.5	440.8	3.8	509.5	1.8
8	209.8	1	263.1	1.2	346.5	3.7	444.3	3.5	511.4	1.9
9	211.1	1.3	265.2	2.1	351.9	5.4	448.9	4.6	513.3	1.9
10	212.6	1.5	267.5	2.3	355.1	3.2	451.6	2.7	515.2	1.9
11			270.0	2.5	360.0	4.9	455.4	3.8	517.0	1.8
12			272.3	2.3	364.0	4	458.9	3.5		
13					368.4	4.4	462.5	3.6		
14					372.0	3.6	466.1	3.6		
15					377.1	5.1	469.8	3.7		
16					381.6	4.5	473.5	3.7		
17					386.0	4.4				
18					390.4	4.4				
Average	1.70		2.19		4.72		3.64		1.86	

Remarks & Notes

- 1 Test section was 33.30m - 35.00m due to length of drill string and height of rig clamps.
- 2 After 4th pressure stage could not get response zone pressure below 150kpa. Switch off pump for 10 mins to allow pressure to drop before restarting
3. Slight leakage past packer / around seal; pressure on top transducer rose from 2kpa to 48kpa over the course of the tests
4. Pressure readings monitored in real time using calibrated transducers in and above test section (results attached)

LINX 4ch v.2.0.1

01/10/2020 14:35

Vibrating Wire Conversion: Linear

Temperature Conversion: Celsius

Calibration Factors	Channel 1	Channel 2	Channel 3	Channel 4
Sensorname	TOP	MIDDLE	BOTTOM	CV GES
Model	VWT-9100	VWT-9100	VWT-9100	
Serial	351895	351897	351896	
Baro	1013	1013	1013	
TempatCal	20	20	20	
LinFactor	-0.46704	-0.50422	-0.45623	
ConstA	-2.76E-06	-2.49E-06	-7.95E-07	
ConstB	-0.42656	-0.46758	-0.44517	
ConstC	4326.403	4625.507	4174.389	
ConstT	1.043164	0.872405	1.158424	
Sweepmin	800	800	800	
Sweepmax	3500	3500	3500	
Range	2700	2700	2700	
Thermistor	3K	3K	3K	3K
ZeroRdg	9551.1	9420.6	9224.6	
ZeroT	20	20	20	

Date/time	Vbatt	Temp.	Press.	Channel 1 () (°C)	Channel 2 () (°C)	Channel 3 () (°C)	Channel 4 () (°C)	CH1 Raw (Digits)	CH2 Raw (Digits)	CH3 Raw (Digits)	CH4 Raw (Digits)
01/10/2020 14:34	6	16.9	983.1	-4.6	13.7	12.9	13.9	18	14 N.U.	N.U.	9546.9 9384.4 9170 N.U.
01/10/2020 14:35	6	17	982.8	-5	13.6	12.9	13.9	17.7	14 N.U.	N.U.	9547.5 9384.4 9170.6 N.U.
01/10/2020 14:35	6	17.3	983	-4.7	13.6	12.5	13.8	17.6	13.9 N.U.	N.U.	9546.9 9385 9170.6 N.U.
01/10/2020 14:35	6	17.3	982.6	-4.2	13.5	11.9	13.8	17.9	13.9 N.U.	N.U.	9545.6 9386.3 9170 N.U.
01/10/2020 14:36	6	17.4	983.1	-4.2	13.5	12.5	13.8	17.6	13.9 N.U.	N.U.	9545.6 9385 9170.6 N.U.
01/10/2020 14:36	6	17.4	983	-3.9	13.5	11.9	13.7	17.3	13.9 N.U.	N.U.	9545 9386.3 9171.2 N.U.
01/10/2020 14:36	6	17.5	983.1	-4.2	13.5	13.1	13.7	17.6	13.9 N.U.	N.U.	9545.6 9383.8 9170.6 N.U.
01/10/2020 14:36	6	17.6	982.8	-4.2	13.5	11.9	13.7	17.5	13.9 N.U.	N.U.	9545.6 9386.3 9170.6 N.U.
01/10/2020 14:36	6	17.6	983.2	-4.5	13.5	12.5	13.7	17.8	13.9 N.U.	N.U.	9546.2 9385 9170 N.U.
01/10/2020 14:36	6	17.7	983	-3.6	13.5	12.5	13.7	17.3	13.9 N.U.	N.U.	9544.4 9385 9171.2 N.U.
01/10/2020 14:37	6	17.8	982.9	-4.5	13.5	11.9	13.7	16.4	13.9 N.U.	N.U.	9546.2 9386.3 9173 N.U.
01/10/2020 14:37	6	17.8	982.8	-4.3	13.5	11.5	13.7	17	13.9 N.U.	N.U.	9545.6 9386.9 9171.8 N.U.
01/10/2020 14:37	6	17.9	983	-3.7	13.5	14.3	13.7	19.4	13.8 N.U.	N.U.	9544.4 9381.4 9166.4 N.U.
01/10/2020 14:37	6	18	983.1	-4	13.5	15.5	13.7	21.9	13.8 N.U.	N.U.	9545 9378.9 9160.9 N.U.
01/10/2020 14:37	6	18	982.9	-3.7	13.5	18.9	13.7	24.1	13.8 N.U.	N.U.	9544.4 9372.2 9156.1 N.U.
01/10/2020 14:37	6	18.1	983.1	-4.3	13.5	24.5	13.7	31	13.8 N.U.	N.U.	9545.6 9361.2 9140.9 N.U.
01/10/2020 14:38	6	18.1	983.1	-4.5	13.5	29.4	13.7	36	13.8 N.U.	N.U.	9546.2 9351.4 9130.1 N.U.
01/10/2020 14:38	6	18.2	983	-4	13.4	33.7	13.7	38.2	13.8 N.U.	N.U.	9545 9342.8 9125.2 N.U.
01/10/2020 14:38	6	18.2	982.7	-4.6	13.4	34.3	13.7	40.1	13.8 N.U.	N.U.	9546.2 9341.6 9121 N.U.
01/10/2020 14:38	6	18.3	982.9	-4	13.4	37.7	13.6	41.5	13.8 N.U.	N.U.	9545 9334.9 9118 N.U.
01/10/2020 14:38	6	18.4	982.9	-4	13.4	38.3	13.6	42.5	13.7 N.U.	N.U.	9545 9333.6 9115.6 N.U.
01/10/2020 14:39	6	18.4	983	-4.6	13.4	39.5	13.6	44.7	13.7 N.U.	N.U.	9546.2 9331.2 9110.7 N.U.
01/10/2020 14:39	6	18.5	983.1	-4	13.4	40.7	13.6	46.1	13.7 N.U.	N.U.	9545 9328.7 9107.7 N.U.
01/10/2020 14:39	6	18.5	982.9	-4	13.4	38.6	13.6	43.3	13.7 N.U.	N.U.	9545 9333 9113.8 N.U.
01/10/2020 14:39	6	18.5	982.8	-4.1	13.3	39.2	13.6	42.8	13.7 N.U.	N.U.	9545 9331.8 9115 N.U.
01/10/2020 14:39	6	18.6	982.8	-4.1	13.3	39.5	13.6	44.4	13.7 N.U.	N.U.	9545 9331.2 9111.3 N.U.

Date/time	Vbatt	Temp.	Press.	Channel 1 ((°C)	Channel 2 ((°C)	Channel 3 ((°C)	Channel 4 ((°C)	CH1 Raw (Digits)	CH2 Raw (Digits)	CH3 Raw (Digits)	CH4 Raw (Digits)				
01/10/2020 14:39	6	18.6	983.2	-4.1	13.3	39.4	13.5	44.1	13.7	N.U.	N.U.	9545	9331.2	9111.9	N.U.
01/10/2020 14:40	6	18.7	982.9	-3.8	13.3	38.9	13.6	43.5	13.7	N.U.	N.U.	9544.4	9332.4	9113.2	N.U.
01/10/2020 14:40	6	18.7	983.3	-4.1	13.3	38.8	13.5	44.1	13.7	N.U.	N.U.	9545	9332.4	9111.9	N.U.
01/10/2020 14:40	6	18.8	983.3	-4.1	13.3	40.7	13.5	45.4	13.7	N.U.	N.U.	9545	9328.7	9108.9	N.U.
01/10/2020 14:40	6	18.8	982.9	-4.5	13.3	41.6	13.5	46	13.7	N.U.	N.U.	9545.6	9326.9	9107.7	N.U.
01/10/2020 14:40	6	18.8	982.8	-4.2	13.3	42.5	13.5	47.4	13.7	N.U.	N.U.	9545	9325.1	9104.7	N.U.
01/10/2020 14:40	6	18.9	983	-4.2	13.3	46.5	13.5	50.7	13.7	N.U.	N.U.	9545	9317.1	9097.5	N.U.
01/10/2020 14:41	6	18.9	983.1	-3.9	13.3	52.7	13.5	58.8	13.6	N.U.	N.U.	9544.4	9304.9	9079.4	N.U.
01/10/2020 14:41	6	19	983	-4.2	13.3	59.7	13.5	65.2	13.6	N.U.	N.U.	9545	9290.9	9065.5	N.U.
01/10/2020 14:41	6	19	982.9	-3.7	13.2	72.6	13.5	77	13.6	N.U.	N.U.	9543.8	9265.3	9039.6	N.U.
01/10/2020 14:41	6	19	983	-3.7	13.2	94.4	13.5	98.9	13.6	N.U.	N.U.	9543.8	9222.2	8991.6	N.U.
01/10/2020 14:41	6	19.1	983.1	-4	13.2	117.3	13.5	121.8	13.6	N.U.	N.U.	9544.4	9176.7	8941.3	N.U.
01/10/2020 14:41	6	19.1	982.9	-4	13.2	142.3	13.5	148.3	13.6	N.U.	N.U.	9544.4	9127	8883.4	N.U.
01/10/2020 14:42	6	19.2	982.8	-3.7	13.2	150.5	13.5	154.5	13.6	N.U.	N.U.	9543.8	9110.7	8869.7	N.U.
01/10/2020 14:42	6	19.2	982.9	-3.4	13.2	149.6	13.5	152.5	13.5	N.U.	N.U.	9543.2	9112.5	8873.8	N.U.
01/10/2020 14:42	6	19.3	983	-3.7	13.2	145.4	13.5	148.7	13.5	N.U.	N.U.	9543.8	9121	8882.2	N.U.
01/10/2020 14:42	6	19.3	983	-3.4	13.1	139.8	13.4	142.5	13.5	N.U.	N.U.	9543.2	9131.9	8895.9	N.U.
01/10/2020 14:42	6	19.4	982.9	-3.4	13.1	136.5	13.4	140.6	13.5	N.U.	N.U.	9543.2	9138.5	8900.1	N.U.
01/10/2020 14:42	6	19.4	983	-2.9	13.1	134.6	13.4	138.1	13.5	N.U.	N.U.	9541.9	9142.2	8905.4	N.U.
01/10/2020 14:43	6	19.5	983.2	-3.2	13.1	132.2	13.4	136.4	13.5	N.U.	N.U.	9542.5	9147	8909	N.U.
01/10/2020 14:43	6	19.5	983.2	-2.9	13.1	131.5	13.3	135.6	13.5	N.U.	N.U.	9541.9	9148.2	8910.8	N.U.
01/10/2020 14:43	6	19.5	982.7	-2.9	13.1	130.3	13.3	134.8	13.5	N.U.	N.U.	9541.9	9150.6	8912.6	N.U.
01/10/2020 14:43	6	19.6	983	-3.5	13.1	129.3	13.3	134.7	13.4	N.U.	N.U.	9543.2	9152.4	8912.6	N.U.
01/10/2020 14:43	6	19.6	983.1	-2.9	13.1	128.7	13.3	131.2	13.4	N.U.	N.U.	9541.9	9153.7	8920.4	N.U.
01/10/2020 14:43	6	19.7	982.7	-3	13	126.9	13.3	131.7	13.4	N.U.	N.U.	9541.9	9157.3	8919.2	N.U.
01/10/2020 14:44	6	19.7	983	-3	13	125.6	13.2	130.3	13.4	N.U.	N.U.	9541.9	9159.7	8922.2	N.U.
01/10/2020 14:44	6	19.8	983.1	-3.1	13	125.3	13.2	129.2	13.3	N.U.	N.U.	9541.9	9160.3	8924.6	N.U.
01/10/2020 14:44	6	19.8	982.7	-2.8	13	124.4	13.1	129.2	13.3	N.U.	N.U.	9541.3	9162.1	8924.6	N.U.
01/10/2020 14:44	6	19.8	983	-2.2	13	123.4	13.1	128.3	13.3	N.U.	N.U.	9540.1	9163.9	8926.4	N.U.
01/10/2020 14:44	6	19.9	982.9	-2.3	12.9	122.2	13.1	126.6	13.2	N.U.	N.U.	9540.1	9166.4	8929.9	N.U.
01/10/2020 14:44	6	19.9	982.9	-2.6	12.9	121.2	13.1	125.2	13.2	N.U.	N.U.	9540.7	9168.2	8932.9	N.U.
01/10/2020 14:45	6	20	982.9	-2.6	12.9	120.3	13.1	124.4	13.2	N.U.	N.U.	9540.7	9170	8934.7	N.U.
01/10/2020 14:45	6	20	982.7	-3.2	12.8	120	13.1	123.8	13.1	N.U.	N.U.	9541.9	9170.6	8935.9	N.U.
01/10/2020 14:45	6	20	982.8	-2.6	12.8	118.7	13	123.2	13.1	N.U.	N.U.	9540.7	9173	8937.1	N.U.
01/10/2020 14:45	6	20	982.7	-2.9	12.8	117.5	13	122.1	13.1	N.U.	N.U.	9541.3	9175.4	8939.5	N.U.
01/10/2020 14:45	6	20.1	982.7	-2.7	12.8	117.2	13	121.2	13.1	N.U.	N.U.	9540.7	9176.1	8941.3	N.U.
01/10/2020 14:45	6	20.1	982.7	-2.7	12.8	116.9	13	121.5	13.1	N.U.	N.U.	9540.7	9176.7	8940.7	N.U.
01/10/2020 14:46	6	20.2	982.9	-2.5	12.7	115.6	13	119.8	13	N.U.	N.U.	9540.1	9179.1	8944.3	N.U.
01/10/2020 14:46	6	20.2	983.1	-2.5	12.7	115	13	119.2	13	N.U.	N.U.	9540.1	9180.3	8945.5	N.U.
01/10/2020 14:46	6	20.2	982.8	-2.2	12.7	113.8	13	118.2	13	N.U.	N.U.	9539.4	9182.7	8947.9	N.U.
01/10/2020 14:46	6	20.3	982.9	-2.8	12.7	112.5	12.9	116.7	13	N.U.	N.U.	9540.7	9185.1	8950.9	N.U.
01/10/2020 14:46	6	20.3	983	-2.2	12.6	109.5	12.9	115.4	13	N.U.	N.U.	9539.4	9191.2	8953.9	N.U.
01/10/2020 14:47	6	20.3	982.7	-2.2	12.6	107.9	12.9	113.4	13	N.U.	N.U.	9539.4	9194.2	8958	N.U.
01/10/2020 14:47	6	20.3	982.7	-2.8	12.6	109.5	12.9	112.9	13	N.U.	N.U.	9540.7	9191.2	8959.2	N.U.
01/10/2020 14:47	6	20.4	983	-1.7	12.6	107.6	12.9	112.8	12.9	N.U.	N.U.	9538.2	9194.8	8959.2	N.U.
01/10/2020 14:47	6	20.4	983	-2.5	12.6	107.3	12.8	111.5	12.9	N.U.	N.U.	9540.1	9195.4	8962.2	N.U.
01/10/2020 14:47	6	20.4	982.8	-2.3	12.6	107	12.8	111.2	12.9	N.U.	N.U.	9539.4	9196.1	8962.8	N.U.
01/10/2020 14:47	6	20.5	982.9	-2.3	12.6	105.4	12.8	110.1	12.9	N.U.	N.U.	9539.4	9199.1	8965.2	N.U.
01/10/2020 14:48	6	20.5	982.8	-1.7	12.6	105.7	12.8	108.9	12.8	N.U.	N.U.	9538.2	9198.5	8967.6	N.U.

Date/time	Vbatt	Temp.	Press.	Channel 1 ()	Channel 2 ()	Channel 3 ()	Channel 4 ()	CH1 Raw (Digits)	CH2 Raw (Digits)	CH3 Raw (Digits)	CH4 Raw (Digits)				
01/10/2020 14:48	6	20.5	982.7	-2	12.6	104.8	12.8	109.2	12.8	N.U.	N.U.	9538.8	9200.3	8967	N.U.
01/10/2020 14:48	6	20.5	982.7	-2	12.6	99.3	12.8	102.4	12.8	N.U.	N.U.	9538.8	9211.2	8982	N.U.
01/10/2020 14:48	6	20.5	982.9	-2.1	12.5	97.7	12.8	102.4	12.8	N.U.	N.U.	9538.8	9214.3	8982	N.U.
01/10/2020 14:48	6	20.5	982.9	-1.5	12.5	97.7	12.8	102.1	12.8	N.U.	N.U.	9537.6	9214.3	8982.6	N.U.
01/10/2020 14:48	6	20.5	982.8	-2.1	12.5	96.8	12.8	101.3	12.8	N.U.	N.U.	9538.8	9216.1	8984.4	N.U.
01/10/2020 14:49	6	20.6	982.5	-1.8	12.5	95.9	12.8	100.4	12.8	N.U.	N.U.	9538.2	9217.9	8986.2	N.U.
01/10/2020 14:49	6	20.6	982.4	-2.7	12.5	95.3	12.8	99.3	12.8	N.U.	N.U.	9540.1	9219.1	8988.6	N.U.
01/10/2020 14:49	6	20.6	982.5	-1.5	12.5	95.8	12.7	100.9	12.8	N.U.	N.U.	9537.6	9217.9	8985	N.U.
01/10/2020 14:49	6	20.6	982.7	-2.1	12.5	96.4	12.7	101.2	12.8	N.U.	N.U.	9538.8	9216.7	8984.4	N.U.
01/10/2020 14:49	6	20.6	983.1	-2.2	12.4	96.1	12.7	100.4	12.8	N.U.	N.U.	9538.8	9217.3	8986.2	N.U.
01/10/2020 14:49	6	20.6	982.9	-1.9	12.4	95.5	12.7	99.3	12.8	N.U.	N.U.	9538.2	9218.5	8988.6	N.U.
01/10/2020 14:50	6	20.6	982.9	-1.9	12.4	95.8	12.7	100.4	12.8	N.U.	N.U.	9538.2	9217.9	8986.2	N.U.
01/10/2020 14:50	6	20.6	982.8	-1.9	12.4	95.8	12.7	99.8	12.7	N.U.	N.U.	9538.2	9217.9	8987.4	N.U.
01/10/2020 14:50	6	20.6	982.8	-1.9	12.4	94.6	12.7	99.2	12.7	N.U.	N.U.	9538.2	9220.3	8988.6	N.U.
01/10/2020 14:50	6	20.6	982.6	-1.6	12.4	94	12.7	99.2	12.7	N.U.	N.U.	9537.6	9221.5	8988.6	N.U.
01/10/2020 14:50	6	20.6	982.8	-2.2	12.4	93.6	12.6	98.4	12.7	N.U.	N.U.	9538.8	9222.2	8990.4	N.U.
01/10/2020 14:50	6	20.6	982.6	-1.6	12.4	93.3	12.6	97.3	12.7	N.U.	N.U.	9537.6	9222.8	8992.8	N.U.
01/10/2020 14:51	6	20.6	982.6	-1.3	12.4	92.7	12.6	97	12.7	N.U.	N.U.	9537	9224	8993.4	N.U.
01/10/2020 14:51	6	20.6	982.6	-1.9	12.4	93.9	12.6	97.6	12.7	N.U.	N.U.	9538.2	9221.5	8992.2	N.U.
01/10/2020 14:51	6	20.6	982.7	-1.1	12.4	92.1	12.6	97	12.7	N.U.	N.U.	9536.4	9225.2	8993.4	N.U.
01/10/2020 14:51	6	20.6	982.5	-0.8	12.4	92.7	12.6	97	12.7	N.U.	N.U.	9535.7	9224	8993.4	N.U.
01/10/2020 14:51	6	20.6	983.2	-0.5	12.4	94.2	12.6	98.4	12.7	N.U.	N.U.	9535.1	9220.9	8990.4	N.U.
01/10/2020 14:52	6	20.6	982.7	-1.4	12.4	97.6	12.6	101.7	12.7	N.U.	N.U.	9537	9214.3	8983.2	N.U.
01/10/2020 14:52	6	20.6	982.8	-1.1	12.4	102.2	12.6	107.9	12.6	N.U.	N.U.	9536.4	9205.2	8969.4	N.U.
01/10/2020 14:52	6	20.6	982.6	-1.4	12.4	108.3	12.6	112.5	12.6	N.U.	N.U.	9537	9193	8959.2	N.U.
01/10/2020 14:52	6	20.6	982.5	-2.2	12.4	111.6	12.6	113.6	12.6	N.U.	N.U.	9538.8	9186.4	8956.9	N.U.
01/10/2020 14:52	6	20.6	982.9	-0.5	12.4	111.9	12.6	113.9	12.6	N.U.	N.U.	9535.1	9185.7	8956.3	N.U.
01/10/2020 14:52	6	20.6	982.7	-1.1	12.4	109.8	12.6	113.3	12.6	N.U.	N.U.	9536.4	9190	8957.5	N.U.
01/10/2020 14:53	6	20.6	982.9	-0.6	12.3	108	12.6	111.7	12.6	N.U.	N.U.	9535.1	9193.6	8961	N.U.
01/10/2020 14:53	6	20.6	982.6	-1.6	12.4	107	12.6	111.2	12.6	N.U.	N.U.	9537.6	9195.4	8962.2	N.U.
01/10/2020 14:53	6	20.6	982.5	-1.7	12.3	106.7	12.6	110.6	12.6	N.U.	N.U.	9537.6	9196.1	8963.4	N.U.
01/10/2020 14:53	6	20.6	982.5	-1.1	12.3	105.2	12.6	109	12.6	N.U.	N.U.	9536.4	9199.1	8967	N.U.
01/10/2020 14:53	6	20.6	982.8	-1.1	12.3	105.2	12.6	108.7	12.6	N.U.	N.U.	9536.4	9199.1	8967.6	N.U.
01/10/2020 14:53	6	20.5	982.4	-0.3	12.3	103.3	12.5	107.9	12.6	N.U.	N.U.	9534.5	9202.7	8969.4	N.U.
01/10/2020 14:54	6	20.5	982.5	-0.8	12.3	103.6	12.5	106.8	12.6	N.U.	N.U.	9535.7	9202.1	8971.8	N.U.
01/10/2020 14:54	6	20.5	982.7	-0.6	12.3	103.3	12.5	106.5	12.6	N.U.	N.U.	9535.1	9202.7	8972.4	N.U.
01/10/2020 14:54	6	20.5	982.7	0	12.3	101.2	12.5	105.7	12.6	N.U.	N.U.	9533.9	9207	8974.2	N.U.
01/10/2020 14:54	6	20.5	982.6	-0.8	12.3	100.9	12.5	105.4	12.6	N.U.	N.U.	9535.7	9207.6	8974.8	N.U.
01/10/2020 14:54	6	20.5	982.7	-0.8	12.3	101.5	12.5	105.7	12.6	N.U.	N.U.	9535.7	9206.4	8974.2	N.U.
01/10/2020 14:54	6	20.5	982.8	-1.2	12.3	99.6	12.5	103	12.6	N.U.	N.U.	9536.4	9210	8980.2	N.U.
01/10/2020 14:55	6	20.5	982.6	-0.3	12.3	98.1	12.5	103	12.6	N.U.	N.U.	9534.5	9213	8980.2	N.U.
01/10/2020 14:55	6	20.5	982.6	-1.8	12.3	97.8	12.5	102.7	12.6	N.U.	N.U.	9537.6	9213.7	8980.8	N.U.
01/10/2020 14:55	6	20.5	982.7	-1.2	12.3	97.5	12.5	101.6	12.6	N.U.	N.U.	9536.4	9214.3	8983.2	N.U.
01/10/2020 14:55	6	20.4	982.8	-1.2	12.3	96.6	12.5	101.1	12.6	N.U.	N.U.	9536.4	9216.1	8984.4	N.U.
01/10/2020 14:55	6	20.4	982.7	-1.2	12.3	95.7	12.5	101.1	12.6	N.U.	N.U.	9536.4	9217.9	8984.4	N.U.
01/10/2020 14:55	6	20.4	982.8	0	12.3	95.7	12.5	100.2	12.6	N.U.	N.U.	9533.9	9217.9	8986.2	N.U.
01/10/2020 14:56	6	20.4	982.6	-0.6	12.3	94.7	12.5	98.5	12.6	N.U.	N.U.	9535.1	9219.7	8989.8	N.U.
01/10/2020 14:56	6	20.4	982.6	-0.3	12.3	94.7	12.5	98.2	12.6	N.U.	N.U.	9534.5	9219.7	8990.4	N.U.
01/10/2020 14:56	6	20.4	982.9	0.5	12.3	93.5	12.5	96.9	12.6	N.U.	N.U.	9532.7	9222.2	8993.4	N.U.

Date/time	Vbatt	Temp.	Press.	Channel 1 ((°C)	Channel 2 ((°C)	Channel 3 ((°C)	Channel 4 ((°C)	CH1 Raw (Digits)	CH2 Raw (Digits)	CH3 Raw (Digits)	CH4 Raw (Digits)				
01/10/2020 14:56	6	20.4	982.7	-1.2	12.3	93.5	12.5	97.7	12.6	N.U.	N.U.	9536.4	9222.2	8991.6	N.U.
01/10/2020 14:56	6	20.4	982.5	-0.3	12.3	91.9	12.4	96.9	12.6	N.U.	N.U.	9534.5	9225.2	8993.4	N.U.
01/10/2020 14:56	6	20.3	983	-1.8	12.3	91.9	12.4	95.8	12.6	N.U.	N.U.	9537.6	9225.2	8995.8	N.U.
01/10/2020 14:57	6	20.3	982.6	-0.1	12.2	91.9	12.4	95	12.6	N.U.	N.U.	9533.9	9225.2	8997.6	N.U.
01/10/2020 14:57	6	20.3	982.8	-0.4	12.2	91.3	12.4	95.2	12.6	N.U.	N.U.	9534.5	9226.4	8997	N.U.
01/10/2020 14:57	6	20.3	983	-1.3	12.2	90.4	12.4	94.1	12.6	N.U.	N.U.	9536.4	9228.2	8999.4	N.U.
01/10/2020 14:57	6	20.3	982.8	-0.7	12.2	89.8	12.4	94.4	12.6	N.U.	N.U.	9535.1	9229.4	8998.8	N.U.
01/10/2020 14:57	6	20.3	982.7	0.8	12.2	89.8	12.4	93.6	12.6	N.U.	N.U.	9532	9229.4	9000.6	N.U.
01/10/2020 14:58	6	20.3	983	-0.4	12.2	89.5	12.4	95	12.6	N.U.	N.U.	9534.5	9230.1	8997.6	N.U.
01/10/2020 14:58	6	20.2	982.6	0.2	12.2	93.2	12.4	95.8	12.6	N.U.	N.U.	9533.3	9222.8	8995.8	N.U.
01/10/2020 14:58	6	20.2	982.9	0.2	12.2	93.2	12.4	97.7	12.6	N.U.	N.U.	9533.3	9222.8	8991.6	N.U.
01/10/2020 14:58	6	20.2	982.5	1	12.2	95.3	12.4	99.1	12.6	N.U.	N.U.	9531.4	9218.5	8988.6	N.U.
01/10/2020 14:58	6	20.2	982.7	-1	12.2	98.4	12.4	102.6	12.6	N.U.	N.U.	9535.7	9212.4	8980.8	N.U.
01/10/2020 14:58	6	20.2	982.4	-0.7	12.2	98.7	12.4	104	12.6	N.U.	N.U.	9535.1	9211.8	8977.8	N.U.
01/10/2020 14:59	6	20.2	982.6	-1	12.2	100.8	12.4	104.5	12.5	N.U.	N.U.	9535.7	9207.6	8976.6	N.U.
01/10/2020 14:59	6	20.1	982.9	-0.4	12.2	102	12.4	105	12.5	N.U.	N.U.	9534.5	9205.2	8975.4	N.U.
01/10/2020 14:59	6	20.1	982.7	0.5	12.2	101.1	12.4	105.8	12.5	N.U.	N.U.	9532.7	9207	8973.6	N.U.
01/10/2020 14:59	6	20.1	982.6	0.2	12.2	102.3	12.4	105.6	12.5	N.U.	N.U.	9533.3	9204.5	8974.2	N.U.
01/10/2020 14:59	6	20.1	982.8	1	12.2	102	12.4	104.7	12.5	N.U.	N.U.	9531.4	9205.2	8976	N.U.
01/10/2020 14:59	6	20.1	982.6	-1.8	12.2	100.8	12.4	106.9	12.5	N.U.	N.U.	9537.6	9207.6	8971.2	N.U.
01/10/2020 15:00	6	20.1	982.7	-0.1	12.2	102.6	12.4	104.7	12.5	N.U.	N.U.	9533.9	9203.9	8976	N.U.
01/10/2020 15:00	6	20.1	982.7	-0.4	12.2	102.6	12.4	106.1	12.5	N.U.	N.U.	9534.5	9203.9	8973	N.U.
01/10/2020 15:00	6	20.1	982.8	-0.4	12.2	102.7	12.4	106.6	12.5	N.U.	N.U.	9534.5	9203.9	8971.8	N.U.
01/10/2020 15:00	6	20.1	982.6	-0.1	12.2	102.6	12.4	106.6	12.5	N.U.	N.U.	9533.9	9203.9	8971.8	N.U.
01/10/2020 15:00	6	20.1	982.8	-1	12.2	101.4	12.4	106.6	12.5	N.U.	N.U.	9535.7	9206.4	8971.8	N.U.
01/10/2020 15:00	6	20.1	982.7	-0.4	12.2	102.6	12.4	105	12.5	N.U.	N.U.	9534.5	9203.9	8975.4	N.U.
01/10/2020 15:01	6	20.1	982.7	0.5	12.2	101.7	12.4	105.6	12.5	N.U.	N.U.	9532.7	9205.8	8974.2	N.U.
01/10/2020 15:01	6	20.1	982.6	-1	12.2	100.5	12.4	105.3	12.5	N.U.	N.U.	9535.7	9208.2	8974.8	N.U.
01/10/2020 15:01	6	20.1	982.7	0.8	12.2	101.4	12.4	105	12.5	N.U.	N.U.	9532	9206.4	8975.4	N.U.
01/10/2020 15:01	6	20.1	982.6	0.5	12.2	101.1	12.4	106.6	12.5	N.U.	N.U.	9532.7	9207	8971.8	N.U.
01/10/2020 15:01	6	20.1	982.7	0.8	12.2	102.6	12.4	105.3	12.5	N.U.	N.U.	9532	9203.9	8974.8	N.U.
01/10/2020 15:01	6	20.1	982.7	1	12.2	102.6	12.4	105.6	12.5	N.U.	N.U.	9531.4	9203.9	8974.2	N.U.
01/10/2020 15:02	6	20.1	982.8	2.2	12.2	100.5	12.4	105.6	12.5	N.U.	N.U.	9529	9208.2	8974.2	N.U.
01/10/2020 15:02	6	20.1	982.9	0.2	12.2	101.1	12.4	105.6	12.5	N.U.	N.U.	9533.3	9207	8974.2	N.U.
01/10/2020 15:02	6	20.1	982.8	0.2	12.2	101.1	12.4	105.3	12.5	N.U.	N.U.	9533.3	9207	8974.8	N.U.
01/10/2020 15:02	6	20.1	982.7	-0.4	12.2	102.6	12.4	104.5	12.5	N.U.	N.U.	9534.5	9203.9	8976.6	N.U.
01/10/2020 15:02	6	20.1	982.7	-0.1	12.2	100.5	12.4	105.8	12.5	N.U.	N.U.	9533.9	9208.2	8973.6	N.U.
01/10/2020 15:03	6	20.1	982.8	-0.4	12.2	100.5	12.4	104.7	12.5	N.U.	N.U.	9534.5	9208.2	8976	N.U.
01/10/2020 15:03	6	20.1	982.7	2.2	12.2	102.6	12.4	104.2	12.5	N.U.	N.U.	9529	9203.9	8977.2	N.U.
01/10/2020 15:03	6	20.1	982.5	1.6	12.1	101.1	12.4	106.1	12.5	N.U.	N.U.	9530.2	9207	8973	N.U.
01/10/2020 15:03	6	20.1	982.9	0.7	12.1	102	12.4	104.7	12.5	N.U.	N.U.	9532	9205.2	8976	N.U.
01/10/2020 15:03	6	20.1	982.7	0.4	12.1	102	12.4	104.2	12.5	N.U.	N.U.	9532.7	9205.2	8977.2	N.U.
01/10/2020 15:03	6	20.1	982.7	0.5	12.2	101.1	12.4	105.8	12.5	N.U.	N.U.	9532.7	9207	8973.6	N.U.
01/10/2020 15:04	6	20.1	982.6	1.3	12.1	101.1	12.4	105	12.5	N.U.	N.U.	9530.8	9207	8975.4	N.U.
01/10/2020 15:04	6	20.2	982.5	2.1	12.1	101.7	12.4	105.6	12.5	N.U.	N.U.	9529	9205.8	8974.2	N.U.
				((°C)	((°C)	((°C)	((°C)	((°C)	((°C)	((°C)	((°C)	(Digits)	(Digits)	(Digits)	(Digits)
01/10/2020 14:34	6	16.9	983.1	-4.6	13.7	12.9	13.9	18	14	N.U.	N.U.	9546.9	9384.4	9170	N.U.
01/10/2020 14:35	6	17	982.8	-5	13.6	12.9	13.9	17.7	14	N.U.	N.U.	9547.5	9384.4	9170.6	N.U.
01/10/2020 14:35	6	17.3	983	-4.7	13.6	12.5	13.8	17.6	13.9	N.U.	N.U.	9546.9	9385	9170.6	N.U.

Date/time	Vbatt	Temp.	Press.	Channel 1 ((°C)	Channel 2 ((°C)	Channel 3 ((°C)	Channel 4 ((°C)	CH1 Raw (Digits)	CH2 Raw (Digits)	CH3 Raw (Digits)	CH4 Raw (Digits)				
01/10/2020 15:05	6	20.2	982.8	-0.5	12.1	103.2	12.4	105.3	12.5	N.U.	N.U.	9534.5	9202.7	8974.8	N.U.
01/10/2020 15:05	6	20.2	982.6	2.1	12.1	101.1	12.4	106.6	12.5	N.U.	N.U.	9529	9207	8971.8	N.U.
01/10/2020 15:05	6	20.3	982.6	2.1	12.1	103.8	12.4	107.7	12.5	N.U.	N.U.	9529	9201.5	8969.4	N.U.
01/10/2020 15:05	6	20.3	982.3	1.3	12.1	109	12.4	112.9	12.5	N.U.	N.U.	9530.8	9191.2	8958	N.U.
01/10/2020 15:05	6	20.3	982.7	1.3	12.1	125.8	12.4	128.2	12.5	N.U.	N.U.	9530.8	9157.9	8924.6	N.U.
01/10/2020 15:05	6	20.3	982.5	1.9	12.1	141.1	12.4	144.8	12.5	N.U.	N.U.	9529.6	9127.6	8888.1	N.U.
01/10/2020 15:06	6	20.3	982.6	2.7	12.1	158.4	12.4	161.7	12.5	N.U.	N.U.	9527.7	9093.2	8851.2	N.U.
01/10/2020 15:06	6	20.3	982.4	-0.2	12.1	169.7	12.4	171.7	12.5	N.U.	N.U.	9533.9	9070.9	8829.2	N.U.
01/10/2020 15:06	6	20.3	982.8	1	12.1	179.4	12.4	183.6	12.5	N.U.	N.U.	9531.4	9051.7	8803.1	N.U.
01/10/2020 15:06	6	20.3	982.6	3	12.1	180	12.4	183.1	12.5	N.U.	N.U.	9527.1	9050.5	8804.3	N.U.
01/10/2020 15:06	6	20.4	982.6	1.9	12.1	181.5	12.4	184.8	12.6	N.U.	N.U.	9529.6	9047.5	8800.7	N.U.
01/10/2020 15:06	6	20.4	982.8	1.3	12.1	181.5	12.4	185	12.5	N.U.	N.U.	9530.8	9047.5	8800.1	N.U.
01/10/2020 15:07	6	20.4	982.7	1.3	12.1	186.7	12.4	189.8	12.5	N.U.	N.U.	9530.8	9037.2	8789.4	N.U.
01/10/2020 15:07	6	20.4	982.3	1.6	12.1	206.3	12.3	206.9	12.5	N.U.	N.U.	9530.2	8998.2	8752.1	N.U.
01/10/2020 15:07	6	20.4	982.3	1.6	12.1	215.4	12.4	219	12.5	N.U.	N.U.	9530.2	8980.2	8725.5	N.U.
01/10/2020 15:07	6	20.4	982.3	1.3	12.1	219.3	12.3	223.3	12.5	N.U.	N.U.	9530.8	8972.4	8716.1	N.U.
01/10/2020 15:07	6	20.4	982.5	2.1	12.1	215.4	12.3	217.9	12.5	N.U.	N.U.	9529	8980.2	8727.9	N.U.
01/10/2020 15:07	6	20.4	982.4	0.6	12.1	213.3	12.4	216	12.5	N.U.	N.U.	9532	8984.4	8732	N.U.
01/10/2020 15:08	6	20.4	982.8	1.9	12.1	211.1	12.3	213.9	12.5	N.U.	N.U.	9529.6	8988.6	8736.8	N.U.
01/10/2020 15:08	6	20.4	982.8	2.4	12.1	207.9	12.4	211.5	12.5	N.U.	N.U.	9528.3	8995.2	8742.1	N.U.
01/10/2020 15:08	6	20.4	982.6	1.3	12.1	206	12.4	209.6	12.5	N.U.	N.U.	9530.8	8998.8	8746.2	N.U.
01/10/2020 15:08	6	20.5	982.6	1	12.1	203	12.4	206.3	12.5	N.U.	N.U.	9531.4	9004.8	8753.3	N.U.
01/10/2020 15:08	6	20.5	982.5	1.9	12.1	200.9	12.4	204.4	12.5	N.U.	N.U.	9529.6	9009	8757.5	N.U.
01/10/2020 15:09	6	20.5	982.8	1.5	12.1	198.5	12.4	202	12.5	N.U.	N.U.	9530.2	9013.8	8762.8	N.U.
01/10/2020 15:09	6	20.5	982.4	3.3	12.1	197.6	12.4	201.8	12.6	N.U.	N.U.	9526.5	9015.6	8763.4	N.U.
01/10/2020 15:09	6	20.5	982.7	2.1	12.1	196.7	12.4	200.7	12.5	N.U.	N.U.	9529	9017.4	8765.7	N.U.
01/10/2020 15:09	6	20.5	982.6	2.1	12.1	196	12.4	199.7	12.6	N.U.	N.U.	9529	9018.6	8768.1	N.U.
01/10/2020 15:09	6	20.5	982.6	2.4	12.1	195.1	12.4	198.5	12.5	N.U.	N.U.	9528.3	9020.4	8770.5	N.U.
01/10/2020 15:09	6	20.5	982.4	1.2	12.1	195.7	12.4	199.4	12.6	N.U.	N.U.	9530.8	9019.2	8768.7	N.U.
01/10/2020 15:10	6	20.5	982.5	2.9	12.1	196	12.4	198.6	12.6	N.U.	N.U.	9527.1	9018.6	8770.5	N.U.
01/10/2020 15:10	6	20.5	982.4	3.8	12.1	198.5	12.4	201.8	12.6	N.U.	N.U.	9525.2	9013.8	8763.4	N.U.
01/10/2020 15:10	6	20.5	982.4	3.5	12.1	204.5	12.4	206.9	12.5	N.U.	N.U.	9525.9	9001.8	8752.1	N.U.
01/10/2020 15:10	6	20.5	982.5	1.8	12.1	210.3	12.4	214	12.6	N.U.	N.U.	9529.6	8990.4	8736.8	N.U.
01/10/2020 15:10	6	20.5	982.6	2.9	12.1	213.3	12.4	218.2	12.5	N.U.	N.U.	9527.1	8984.4	8727.3	N.U.
01/10/2020 15:10	6	20.5	982.5	2.1	12.1	216.6	12.4	219.6	12.5	N.U.	N.U.	9529	8977.8	8724.3	N.U.
01/10/2020 15:11	6	20.5	982.5	2.1	12.1	216.9	12.4	220.2	12.6	N.U.	N.U.	9529	8977.2	8723.2	N.U.
01/10/2020 15:11	6	20.5	982.4	4.1	12.1	218.1	12.4	221.7	12.5	N.U.	N.U.	9524.6	8974.8	8719.6	N.U.
01/10/2020 15:11	6	20.5	982.5	2.9	12.1	217.8	12.4	221.4	12.5	N.U.	N.U.	9527.1	8975.4	8720.2	N.U.
01/10/2020 15:11	6	20.4	982.4	2.1	12.1	215.4	12.4	219.1	12.6	N.U.	N.U.	9529	8980.2	8725.5	N.U.
01/10/2020 15:11	6	20.4	982.6	3.5	12.1	213.9	12.4	217.7	12.6	N.U.	N.U.	9525.9	8983.2	8728.5	N.U.
01/10/2020 15:11	6	20.4	982.5	2.9	12.1	212.4	12.4	215.6	12.6	N.U.	N.U.	9527.1	8986.2	8733.2	N.U.
01/10/2020 15:12	6	20.4	982.2	2.1	12.1	209.4	12.4	212.9	12.6	N.U.	N.U.	9529	8992.2	8739.1	N.U.
01/10/2020 15:12	6	20.4	982.3	3	12.1	208.2	12.4	211.3	12.6	N.U.	N.U.	9527.1	8994.6	8742.7	N.U.
01/10/2020 15:12	6	20.4	982.5	3	12.1	205.1	12.4	209.1	12.6	N.U.	N.U.	9527.1	9000.6	8747.4	N.U.
01/10/2020 15:12	6	20.4	982.3	3.9	12.1	203	12.4	208	12.6	N.U.	N.U.	9525.2	9004.8	8749.8	N.U.
01/10/2020 15:12	6	20.4	982.7	3.9	12.1	202.4	12.4	203.2	12.6	N.U.	N.U.	9525.2	9006	8760.4	N.U.
01/10/2020 15:12	6	20.4	982.5	3.6	12.1	200	12.4	202.9	12.6	N.U.	N.U.	9525.9	9010.8	8761	N.U.
01/10/2020 15:13	6	20.4	982.4	3.9	12.1	198.8	12.4	201.5	12.6	N.U.	N.U.	9525.2	9013.2	8764	N.U.
01/10/2020 15:13	6	20.4	982.6	3.3	12.1	196.7	12.4	200.2	12.6	N.U.	N.U.	9526.5	9017.4	8766.9	N.U.

Date/time	Vbatt	Temp.	Press.	Channel 1 ((°C)	Channel 2 ((°C)	Channel 3 ((°C)	Channel 4 ((°C)	CH1 Raw (Digits)	CH2 Raw (Digits)	CH3 Raw (Digits)	CH4 Raw (Digits)				
01/10/2020 15:13	6	20.4	982.5	3.6	12.1	196	12.4	198.6	12.6	N.U.	N.U.	9525.9	9018.6	8770.5	N.U.
01/10/2020 15:13	6	20.4	982.5	3.9	12.1	196.1	12.4	199.7	12.6	N.U.	N.U.	9525.2	9018.6	8768.1	N.U.
01/10/2020 15:13	6	20.3	982.6	3.9	12.1	201.9	12.4	207.2	12.6	N.U.	N.U.	9525.2	9007.2	8751.5	N.U.
01/10/2020 15:14	6	20.3	982.4	2.7	12.1	208.2	12.4	209.1	12.6	N.U.	N.U.	9527.7	8994.6	8747.4	N.U.
01/10/2020 15:14	6	20.3	982.3	2.7	12.1	212.1	12.4	216.9	12.6	N.U.	N.U.	9527.7	8986.8	8730.3	N.U.
01/10/2020 15:14	6	20.3	982.5	3.9	12.1	214	12.4	217.5	12.6	N.U.	N.U.	9525.2	8983.2	8729.1	N.U.
01/10/2020 15:14	6	20.3	982.5	3.4	12.2	212.1	12.4	215.6	12.6	N.U.	N.U.	9526.5	8986.8	8733.2	N.U.
01/10/2020 15:14	6	20.3	982.7	4.2	12.2	209.4	12.4	213.8	12.6	N.U.	N.U.	9524.6	8992.2	8737.3	N.U.
01/10/2020 15:14	6	20.3	982.3	3.9	12.2	208.2	12.4	211.6	12.6	N.U.	N.U.	9525.2	8994.6	8742.1	N.U.
01/10/2020 15:15	6	20.2	982.5	4.2	12.2	206.1	12.4	208.9	12.6	N.U.	N.U.	9524.6	8998.8	8748	N.U.
01/10/2020 15:15	6	20.2	982.5	4.2	12.2	205.5	12.4	207.6	12.6	N.U.	N.U.	9524.6	9000	8750.9	N.U.
01/10/2020 15:15	6	20.2	982.5	4.8	12.2	202.2	12.4	205.4	12.6	N.U.	N.U.	9523.4	9006.6	8755.7	N.U.
01/10/2020 15:15	6	20.2	982.3	3.4	12.2	201.3	12.4	205.9	12.6	N.U.	N.U.	9526.5	9008.4	8754.5	N.U.
01/10/2020 15:15	6	20.2	982.6	3.9	12.2	201	12.5	203.8	12.6	N.U.	N.U.	9525.2	9009	8759.2	N.U.
01/10/2020 15:15	6	20.1	982.3	3.9	12.2	202.5	12.4	205.7	12.6	N.U.	N.U.	9525.2	9006	8755.1	N.U.
01/10/2020 15:16	6	20.1	982.7	4.5	12.2	206.1	12.5	208.1	12.6	N.U.	N.U.	9524	8998.8	8749.8	N.U.
01/10/2020 15:16	6	20.1	982.5	4.5	12.2	207.7	12.5	208.9	12.6	N.U.	N.U.	9524	8995.8	8748	N.U.
01/10/2020 15:16	6	20.1	982.5	4	12.3	208.9	12.5	211.1	12.6	N.U.	N.U.	9525.2	8993.4	8743.3	N.U.
01/10/2020 15:16	6	20.1	982.3	4	12.3	210.4	12.5	213	12.6	N.U.	N.U.	9525.2	8990.4	8739.1	N.U.
01/10/2020 15:16	6	20.1	982.3	5.2	12.3	210.4	12.5	213.2	12.6	N.U.	N.U.	9522.8	8990.4	8738.5	N.U.
01/10/2020 15:16	6	20.1	982.2	4.9	12.3	210.1	12.5	212.7	12.6	N.U.	N.U.	9523.4	8991	8739.7	N.U.
01/10/2020 15:17	6	20	982.2	4.6	12.3	208.3	12.5	210.9	12.7	N.U.	N.U.	9524	8994.6	8743.8	N.U.
01/10/2020 15:17	6	20	982.4	5.2	12.3	206.7	12.5	210.6	12.7	N.U.	N.U.	9522.8	8997.6	8744.4	N.U.
01/10/2020 15:17	6	20	982.3	4.9	12.3	205.2	12.5	209.3	12.7	N.U.	N.U.	9523.4	9000.6	8747.4	N.U.
01/10/2020 15:17	6	20	982.4	4.6	12.3	204.9	12.5	206.8	12.7	N.U.	N.U.	9524	9001.2	8752.7	N.U.
01/10/2020 15:17	6	20	982.6	5.2	12.3	204.6	12.5	205.7	12.7	N.U.	N.U.	9522.8	9001.8	8755.1	N.U.
01/10/2020 15:17	6	20	982.5	5.2	12.3	203.7	12.5	204.9	12.7	N.U.	N.U.	9522.8	9003.6	8756.9	N.U.
01/10/2020 15:18	6	20	982.7	5.2	12.3	202.5	12.5	205.7	12.7	N.U.	N.U.	9522.8	9006	8755.1	N.U.
01/10/2020 15:18	6	19.9	982.6	5.4	12.3	201.6	12.5	206.6	12.7	N.U.	N.U.	9522.2	9007.8	8753.3	N.U.
01/10/2020 15:18	6	19.9	982.5	5.5	12.3	201.3	12.5	206	12.7	N.U.	N.U.	9522.2	9008.4	8754.5	N.U.
01/10/2020 15:18	6	19.9	982.5	5.8	12.3	203.4	12.5	204.1	12.7	N.U.	N.U.	9521.5	9004.2	8758.6	N.U.
01/10/2020 15:18	6	19.9	982.5	5.2	12.3	203.8	12.6	204.9	12.7	N.U.	N.U.	9522.8	9003.6	8756.9	N.U.
01/10/2020 15:18	6	19.9	982.6	5.2	12.3	201.9	12.5	206	12.7	N.U.	N.U.	9522.8	9007.2	8754.5	N.U.
01/10/2020 15:19	6	19.8	982.5	5.2	12.3	201.7	12.6	204.2	12.8	N.U.	N.U.	9522.8	9007.8	8758.6	N.U.
01/10/2020 15:19	6	19.8	982.5	5.5	12.3	200.8	12.6	205.5	12.8	N.U.	N.U.	9522.2	9009.6	8755.7	N.U.
01/10/2020 15:19	6	19.8	982.3	5.8	12.3	200.1	12.6	205.3	12.8	N.U.	N.U.	9521.5	9010.8	8756.3	N.U.
01/10/2020 15:19	6	19.8	982.5	5.2	12.3	200.5	12.6	205.3	12.8	N.U.	N.U.	9522.8	9010.2	8756.3	N.U.
01/10/2020 15:19	6	19.8	982.3	5.5	12.3	201.1	12.6	204.7	12.8	N.U.	N.U.	9522.2	9009	8757.5	N.U.
01/10/2020 15:20	6	19.8	982.4	6.7	12.3	201.1	12.6	204.5	12.8	N.U.	N.U.	9519.7	9009	8758	N.U.
01/10/2020 15:20	6	19.8	982.3	5.5	12.3	201.1	12.6	204.2	12.8	N.U.	N.U.	9522.2	9009	8758.6	N.U.
01/10/2020 15:20	6	19.8	982.3	5.8	12.3	203.5	12.6	204.7	12.8	N.U.	N.U.	9521.5	9004.2	8757.5	N.U.
01/10/2020 15:20	6	19.7	982.6	6.1	12.3	200.5	12.6	203.7	12.8	N.U.	N.U.	9520.9	9010.2	8759.8	N.U.
01/10/2020 15:20	6	19.7	982.5	6.4	12.3	202.3	12.6	205.9	12.8	N.U.	N.U.	9520.3	9006.6	8755.1	N.U.
01/10/2020 15:20	6	19.7	982.3	5.5	12.3	200.1	12.6	205.4	12.8	N.U.	N.U.	9522.2	9010.8	8756.3	N.U.
01/10/2020 15:21	6	19.7	982.3	6.4	12.4	202	12.6	204.8	12.8	N.U.	N.U.	9520.3	9007.2	8757.5	N.U.
01/10/2020 15:21	6	19.7	982.3	5.9	12.4	203.8	12.6	206.2	12.8	N.U.	N.U.	9521.5	9003.6	8754.5	N.U.
01/10/2020 15:21	6	19.7	982.3	6.4	12.4	199.8	12.6	204	12.8	N.U.	N.U.	9520.3	9011.4	8759.2	N.U.
01/10/2020 15:21	6	19.6	982.5	6.4	12.4	202.6	12.6	203.7	12.8	N.U.	N.U.	9520.3	9006	8759.8	N.U.
01/10/2020 15:21	6	19.6	982.4	6.1	12.4	202	12.6	205.4	12.8	N.U.	N.U.	9520.9	9007.2	8756.3	N.U.

Date/time	Vbatt	Temp.	Press.	Channel 1 ((°C)	Channel 2 ((°C)	Channel 3 ((°C)	Channel 4 ((°C)	CH1 Raw (Digits)	CH2 Raw (Digits)	CH3 Raw (Digits)	CH4 Raw (Digits)				
01/10/2020 15:21	6	19.6	982.1	6.1	12.4	200.8	12.6	204.8	12.8	N.U.	N.U.	9520.9	9009.6	8757.5	N.U.
01/10/2020 15:22	6	19.6	982.5	7.3	12.4	201.1	12.6	204.3	12.8	N.U.	N.U.	9518.5	9009	8758.6	N.U.
01/10/2020 15:22	6	19.6	982.3	6.4	12.4	202.9	12.6	205.6	12.8	N.U.	N.U.	9520.3	9005.4	8755.7	N.U.
01/10/2020 15:22	6	19.6	982.7	6.7	12.4	202	12.6	204.5	12.8	N.U.	N.U.	9519.7	9007.2	8758	N.U.
01/10/2020 15:22	6	19.6	982.3	8.2	12.4	200.5	12.6	204.9	12.9	N.U.	N.U.	9516.6	9010.2	8757.5	N.U.
01/10/2020 15:22	6	19.5	982.3	7	12.4	199.8	12.6	204.1	12.9	N.U.	N.U.	9519.1	9011.4	8759.2	N.U.
01/10/2020 15:22	6	19.5	982.6	6.7	12.4	202.3	12.6	203.3	12.9	N.U.	N.U.	9519.7	9006.6	8761	N.U.
01/10/2020 15:23	6	19.5	982.9	6.4	12.4	199.8	12.6	204.6	12.9	N.U.	N.U.	9520.3	9011.4	8758	N.U.
01/10/2020 15:23	6	19.5	982.4	7.3	12.4	201.4	12.6	204.9	12.9	N.U.	N.U.	9518.5	9008.4	8757.5	N.U.
01/10/2020 15:23	6	19.5	982.2	7.3	12.4	201.4	12.6	205.7	12.9	N.U.	N.U.	9518.5	9008.4	8755.7	N.U.
01/10/2020 15:23	6	19.5	982.1	6.7	12.4	201.4	12.6	204.9	12.9	N.U.	N.U.	9519.7	9008.4	8757.5	N.U.
01/10/2020 15:23	6	19.5	982.6	7.3	12.4	200.5	12.6	203.8	12.9	N.U.	N.U.	9518.5	9010.2	8759.8	N.U.
01/10/2020 15:23	6	19.5	982.1	7.3	12.4	202.6	12.6	205.4	12.9	N.U.	N.U.	9518.5	9006	8756.3	N.U.
01/10/2020 15:24	6	19.5	982.4	7	12.4	201.4	12.6	205.4	12.9	N.U.	N.U.	9519.1	9008.4	8756.3	N.U.
01/10/2020 15:24	6	19.5	982.2	7.3	12.4	201.1	12.6	204.9	12.9	N.U.	N.U.	9518.5	9009	8757.5	N.U.
01/10/2020 15:24	6	19.5	982.1	7.3	12.4	202.3	12.6	204.9	12.9	N.U.	N.U.	9518.5	9006.6	8757.5	N.U.
01/10/2020 15:24	6	19.4	982.4	8.5	12.4	202.6	12.6	204.3	12.9	N.U.	N.U.	9516	9006	8758.6	N.U.
01/10/2020 15:24	6	19.4	982	7.3	12.4	202	12.6	205.7	12.9	N.U.	N.U.	9518.5	9007.2	8755.7	N.U.
01/10/2020 15:25	6	19.4	982.4	7.3	12.4	203.2	12.6	203.8	12.9	N.U.	N.U.	9518.5	9004.8	8759.8	N.U.
01/10/2020 15:25	6	19.4	982.3	7.3	12.4	201.1	12.6	206.2	12.9	N.U.	N.U.	9518.5	9009	8754.5	N.U.
01/10/2020 15:25	6	19.4	982.4	7.6	12.4	203.2	12.6	205.7	12.9	N.U.	N.U.	9517.8	9004.8	8755.7	N.U.
01/10/2020 15:25	6	19.4	982.2	7.6	12.4	203.2	12.6	206	12.9	N.U.	N.U.	9517.8	9004.8	8755.1	N.U.
01/10/2020 15:25	6	19.4	982.4	7.9	12.4	203.2	12.6	203.5	12.9	N.U.	N.U.	9517.2	9004.8	8760.4	N.U.
01/10/2020 15:25	6	19.4	982.3	8.2	12.4	202	12.6	204.9	12.9	N.U.	N.U.	9516.6	9007.2	8757.5	N.U.
01/10/2020 15:26	6	19.4	982.4	8.5	12.4	201.7	12.6	204.6	12.9	N.U.	N.U.	9516	9007.8	8758	N.U.
01/10/2020 15:26	6	19.4	982.1	8.7	12.4	202	12.6	204.9	12.9	N.U.	N.U.	9515.4	9007.2	8757.5	N.U.
01/10/2020 15:26	6	19.4	982.4	8.5	12.4	202.6	12.6	206	12.9	N.U.	N.U.	9516	9006	8755.1	N.U.
01/10/2020 15:26	6	19.4	982.3	7.9	12.4	198.9	12.6	204.6	12.9	N.U.	N.U.	9517.2	9013.2	8758	N.U.
01/10/2020 15:26	6	19.3	982.2	8.2	12.4	204.1	12.6	206.2	12.9	N.U.	N.U.	9516.6	9003	8754.5	N.U.
01/10/2020 15:26	6	19.3	982.7	9	12.4	202	12.6	204.3	12.9	N.U.	N.U.	9514.8	9007.2	8758.6	N.U.
01/10/2020 15:27	6	19.3	982	8.5	12.4	208.9	12.6	211.6	12.9	N.U.	N.U.	9516	8993.4	8742.7	N.U.
01/10/2020 15:27	6	19.3	982.3	9	12.4	326.7	12.6	343.3	12.9	N.U.	N.U.	9514.8	8759.8	8454.1	N.U.
01/10/2020 15:27	6	19.3	982.4	8.7	12.4	657.6	12.6	641.6	12.9	N.U.	N.U.	9515.4	8103.7	7800.3	N.U.
01/10/2020 15:27	6	19.3	982.4	9	12.4	500.2	12.6	497.4	12.9	N.U.	N.U.	9514.8	8415.8	8116.2	N.U.
01/10/2020 15:27	6	19.3	982.7	10.5	12.4	417.6	12.6	420.1	12.9	N.U.	N.U.	9511.7	8579.6	8285.8	N.U.
01/10/2020 15:27	6	19.3	982.2	10.5	12.4	375	12.6	375.6	12.9	N.U.	N.U.	9511.7	8664.2	8383.3	N.U.
01/10/2020 15:28	6	19.3	982.3	9.9	12.4	341.7	12.6	344.6	12.9	N.U.	N.U.	9512.9	8730.3	8451.2	N.U.
01/10/2020 15:28	6	19.3	982.2	9.9	12.4	319.6	12.6	324.4	12.9	N.U.	N.U.	9512.9	8774	8495.5	N.U.
01/10/2020 15:28	6	19.3	982.3	9.3	12.4	310	12.6	314	12.9	N.U.	N.U.	9514.1	8793	8518.2	N.U.
01/10/2020 15:28	6	19.3	982.5	9.9	12.4	304.9	12.6	308.7	12.9	N.U.	N.U.	9512.9	8803.1	8529.9	N.U.
01/10/2020 15:28	6	19.3	982.3	10.2	12.4	299	12.6	303.9	12.9	N.U.	N.U.	9512.3	8815	8540.4	N.U.
01/10/2020 15:28	6	19.3	982.2	10.8	12.4	294.5	12.6	299.1	12.9	N.U.	N.U.	9511.1	8823.9	8550.9	N.U.
01/10/2020 15:29	6	19.3	982.3	10	12.4	291.2	12.6	295.1	12.9	N.U.	N.U.	9512.9	8830.4	8559.7	N.U.
01/10/2020 15:29	6	19.3	982.3	11.7	12.4	287.9	12.7	291.9	12.9	N.U.	N.U.	9509.2	8836.9	8566.7	N.U.
01/10/2020 15:29	6	19.3	982.6	10.6	12.5	283.1	12.7	288.7	12.9	N.U.	N.U.	9511.7	8846.5	8573.8	N.U.
01/10/2020 15:29	6	19.3	982.4	11.7	12.5	285.2	12.7	289	12.9	N.U.	N.U.	9509.2	8842.3	8573.2	N.U.
01/10/2020 15:29	6	19.3	982.2	11.7	12.5	286.7	12.7	291.9	12.9	N.U.	N.U.	9509.2	8839.3	8566.7	N.U.
01/10/2020 15:29	6	19.3	982	11.5	12.6	297.9	12.8	301.8	12.9	N.U.	N.U.	9509.8	8817.3	8545.1	N.U.
01/10/2020 15:30	6	19.3	982.2	12.1	12.6	306.5	12.8	310.6	13	N.U.	N.U.	9508.6	8800.1	8525.8	N.U.

Date/time	Vbatt	Temp.	Press.	Channel 1 ((°C)	Channel 2 ((°C)	Channel 3 ((°C)	Channel 4 ((°C)	CH1 Raw (Digits)	CH2 Raw (Digits)	CH3 Raw (Digits)	CH4 Raw (Digits)			
01/10/2020 15:30	6	19.3	982.2	12.1	12.6	312.2	12.8	315.2	13 N.U.	N.U.	9508.6 8788.9 8515.9 N.U.			
01/10/2020 15:30	6	19.3	982.5	12.7	12.6	314.9	12.8	319.4	13 N.U.	N.U.	9507.4 8783.5 8506.6 N.U.			
01/10/2020 15:30	6	19.3	982.5	13.6	12.6	317	12.8	320	13 N.U.	N.U.	9505.5 8779.4 8505.4 N.U.			
01/10/2020 15:30	6	19.3	982.5	12.7	12.6	319.5	12.8	321.8	13 N.U.	N.U.	9507.4 8774.6 8501.3 N.U.			
01/10/2020 15:31	6	19.3	982.1	13.6	12.6	316.2	12.8	320.5	13 N.U.	N.U.	9505.5 8781.1 8504.2 N.U.			
01/10/2020 15:31	6	19.4	982.4	13.7	12.7	312.3	12.8	316.2	13 N.U.	N.U.	9505.5 8788.9 8513.6 N.U.			
01/10/2020 15:31	6	19.4	982.3	15.4	12.7	305.5	12.9	309.6	13 N.U.	N.U.	9501.8 8802.5 8528.2 N.U.			
01/10/2020 15:31	6	19.4	982.4	14	12.7	301.6	12.9	306.2	13 N.U.	N.U.	9504.9 8810.2 8535.7 N.U.			
01/10/2020 15:31	6	19.4	982.3	12.8	12.7	298.9	12.9	302.4	13 N.U.	N.U.	9507.4 8815.6 8543.9 N.U.			
01/10/2020 15:31	6	19.4	982.1	14.3	12.8	298.6	12.9	302.4	13 N.U.	N.U.	9504.3 8816.1 8543.9 N.U.			
01/10/2020 15:32	6	19.4	982.2	14.6	12.8	298.3	12.9	302.2	13 N.U.	N.U.	9503.7 8816.7 8544.5 N.U.			
01/10/2020 15:32	6	19.4	982.5	14.9	12.8	299.2	13	304	13 N.U.	N.U.	9503 8815 8540.4 N.U.			
01/10/2020 15:32	6	19.4	982.3	14.3	12.8	298.9	13	302.7	13 N.U.	N.U.	9504.3 8815.6 8543.3 N.U.			
01/10/2020 15:32	6	19.4	982.2	14.6	12.8	299.8	13	303.5	13 N.U.	N.U.	9503.7 8813.8 8541.6 N.U.			
01/10/2020 15:32	6	19.4	982.3	16.1	12.8	300.1	13	304.1	13.1 N.U.	N.U.	9500.6 8813.2 8540.4 N.U.			
01/10/2020 15:32	6	19.4	982.1	16.1	12.8	300.4	13	304.8	13 N.U.	N.U.	9500.6 8812.6 8538.7 N.U.			
01/10/2020 15:33	6	19.4	982.4	16.1	12.8	301	13	304.7	13.1 N.U.	N.U.	9500.6 8811.4 8539.3 N.U.			
01/10/2020 15:33	6	19.4	982.4	16.7	12.8	300.4	13	304.9	13.1 N.U.	N.U.	9499.3 8812.6 8538.7 N.U.			
01/10/2020 15:33	6	19.4	982.4	15.2	12.8	300.5	13	304.7	13.1 N.U.	N.U.	9502.4 8812.6 8539.3 N.U.			
				((°C)	((°C)	((°C)	((°C)	((°C)	((°C)	((°C)	(Digits)	(Digits)	(Digits)	(Digits)
01/10/2020 14:34	6	16.9	983.1	-4.6	13.7	12.9	13.9	18	14 N.U.	N.U.	9546.9 9384.4 9170 N.U.			
01/10/2020 14:35	6	17	982.8	-5	13.6	12.9	13.9	17.7	14 N.U.	N.U.	9547.5 9384.4 9170.6 N.U.			
01/10/2020 14:35	6	17.3	983	-4.7	13.6	12.5	13.8	17.6	13.9 N.U.	N.U.	9546.9 9385 9170.6 N.U.			
01/10/2020 14:35	6	17.3	982.6	-4.2	13.5	11.9	13.8	17.9	13.9 N.U.	N.U.	9545.6 9386.3 9170 N.U.			
01/10/2020 14:36	6	17.4	983.1	-4.2	13.5	12.5	13.8	17.6	13.9 N.U.	N.U.	9545.6 9385 9170.6 N.U.			
01/10/2020 14:36	6	17.4	983	-3.9	13.5	11.9	13.7	17.3	13.9 N.U.	N.U.	9545 9386.3 9171.2 N.U.			
01/10/2020 14:36	6	17.5	983.1	-4.2	13.5	13.1	13.7	17.6	13.9 N.U.	N.U.	9545.6 9383.8 9170.6 N.U.			
01/10/2020 14:36	6	17.6	982.8	-4.2	13.5	11.9	13.7	17.5	13.9 N.U.	N.U.	9545.6 9386.3 9170.6 N.U.			
01/10/2020 14:36	6	17.6	983.2	-4.5	13.5	12.5	13.7	17.8	13.9 N.U.	N.U.	9546.2 9385 9170 N.U.			
01/10/2020 14:36	6	17.7	983	-3.6	13.5	12.5	13.7	17.3	13.9 N.U.	N.U.	9544.4 9385 9171.2 N.U.			
01/10/2020 14:37	6	17.8	982.9	-4.5	13.5	11.9	13.7	16.4	13.9 N.U.	N.U.	9546.2 9386.3 9173 N.U.			
01/10/2020 14:37	6	17.8	982.8	-4.3	13.5	11.5	13.7	17	13.9 N.U.	N.U.	9545.6 9386.9 9171.8 N.U.			
01/10/2020 14:37	6	17.9	983	-3.7	13.5	14.3	13.7	19.4	13.8 N.U.	N.U.	9544.4 9381.4 9166.4 N.U.			
01/10/2020 14:37	6	18	983.1	-4	13.5	15.5	13.7	21.9	13.8 N.U.	N.U.	9545 9378.9 9160.9 N.U.			
01/10/2020 14:37	6	18	982.9	-3.7	13.5	18.9	13.7	24.1	13.8 N.U.	N.U.	9544.4 9372.2 9156.1 N.U.			
01/10/2020 14:37	6	18.1	983.1	-4.3	13.5	24.5	13.7	31	13.8 N.U.	N.U.	9545.6 9361.2 9140.9 N.U.			
01/10/2020 14:38	6	18.1	983.1	-4.5	13.5	29.4	13.7	36	13.8 N.U.	N.U.	9546.2 9351.4 9130.1 N.U.			
01/10/2020 14:38	6	18.2	983	-4	13.4	33.7	13.7	38.2	13.8 N.U.	N.U.	9545 9342.8 9125.2 N.U.			
01/10/2020 14:38	6	18.2	982.7	-4.6	13.4	34.3	13.7	40.1	13.8 N.U.	N.U.	9546.2 9341.6 9121 N.U.			
01/10/2020 14:38	6	18.3	982.9	-4	13.4	37.7	13.6	41.5	13.8 N.U.	N.U.	9545 9334.9 9118 N.U.			
01/10/2020 14:38	6	18.4	982.9	-4	13.4	38.3	13.6	42.5	13.7 N.U.	N.U.	9545 9333.6 9115.6 N.U.			
01/10/2020 14:39	6	18.4	983	-4.6	13.4	39.5	13.6	44.7	13.7 N.U.	N.U.	9546.2 9331.2 9110.7 N.U.			
01/10/2020 14:39	6	18.5	983.1	-4	13.4	40.7	13.6	46.1	13.7 N.U.	N.U.	9545 9328.7 9107.7 N.U.			
01/10/2020 14:39	6	18.5	982.9	-4	13.4	38.6	13.6	43.3	13.7 N.U.	N.U.	9545 9333 9113.8 N.U.			
01/10/2020 14:39	6	18.5	982.8	-4.1	13.3	39.2	13.6	42.8	13.7 N.U.	N.U.	9545 9331.8 9115 N.U.			
01/10/2020 14:39	6	18.6	982.8	-4.1	13.3	39.5	13.6	44.4	13.7 N.U.	N.U.	9545 9331.2 9111.3 N.U.			
01/10/2020 14:39	6	18.6	983.2	-4.1	13.3	39.4	13.5	44.1	13.7 N.U.	N.U.	9545 9331.2 9111.9 N.U.			
01/10/2020 14:40	6	18.7	982.9	-3.8	13.3	38.9	13.6	43.5	13.7 N.U.	N.U.	9544.4 9332.4 9113.2 N.U.			
01/10/2020 14:40	6	18.7	983.3	-4.1	13.3	38.8	13.5	44.1	13.7 N.U.	N.U.	9545 9332.4 9111.9 N.U.			

Date/time	Vbatt	Temp.	Press.	Channel 1 ((°C)	Channel 2 ((°C)	Channel 3 ((°C)	Channel 4 ((°C)	CH1 Raw (Digits)	CH2 Raw (Digits)	CH3 Raw (Digits)	CH4 Raw (Digits)				
01/10/2020 15:38	6	19.4	982.3	22.6	13	301.5	13.2	305.1	13.2	N.U.	N.U.	9487	8810.8	8538.7	N.U.
01/10/2020 15:38	6	19.4	982.1	21.8	13.1	299.8	13.2	304.9	13.3	N.U.	N.U.	9488.9	8814.4	8539.3	N.U.
01/10/2020 15:39	6	19.4	982.4	22.4	13.1	301.2	13.2	306	13.3	N.U.	N.U.	9487.6	8811.4	8536.9	N.U.
01/10/2020 15:39	6	19.4	982.2	23	13.1	300.9	13.2	306	13.3	N.U.	N.U.	9486.4	8812	8536.9	N.U.
01/10/2020 15:39	6	19.4	982.2	22.1	13.1	300.9	13.2	304.6	13.3	N.U.	N.U.	9488.2	8812	8539.8	N.U.
01/10/2020 15:39	6	19.3	981.9	24.1	13.1	301.2	13.2	304.9	13.3	N.U.	N.U.	9483.9	8811.4	8539.3	N.U.
01/10/2020 15:39	6	19.3	982	22.1	13.1	301.5	13.2	305.4	13.3	N.U.	N.U.	9488.2	8810.8	8538.1	N.U.
01/10/2020 15:39	6	19.3	982.3	22.4	13.1	300.9	13.2	305.7	13.3	N.U.	N.U.	9487.6	8812	8537.5	N.U.
01/10/2020 15:40	6	19.3	982.2	23	13.1	301.2	13.2	305.7	13.3	N.U.	N.U.	9486.4	8811.4	8537.5	N.U.
01/10/2020 15:40	6	19.3	982.2	23.3	13.1	301.5	13.2	304.9	13.3	N.U.	N.U.	9485.8	8810.8	8539.3	N.U.
01/10/2020 15:40	6	19.3	982.2	24.7	13.1	300.7	13.2	304.6	13.3	N.U.	N.U.	9482.7	8812.6	8539.8	N.U.
01/10/2020 15:40	6	19.3	982	23.9	13.1	300.7	13.2	303.8	13.3	N.U.	N.U.	9484.6	8812.6	8541.6	N.U.
01/10/2020 15:40	6	19.3	982	24.4	13.1	300.4	13.2	305.7	13.3	N.U.	N.U.	9483.3	8813.2	8537.5	N.U.
01/10/2020 15:41	6	19.3	982	24.1	13.1	301.2	13.2	306.2	13.3	N.U.	N.U.	9483.9	8811.4	8536.3	N.U.
01/10/2020 15:41	6	19.3	982.1	25	13.1	301.8	13.2	304.9	13.3	N.U.	N.U.	9482.1	8810.2	8539.3	N.U.
01/10/2020 15:41	6	19.3	982.2	24.7	13.1	301.2	13.2	305.4	13.3	N.U.	N.U.	9482.7	8811.4	8538.1	N.U.
01/10/2020 15:41	6	19.3	982.1	25	13.1	300.7	13.2	304.9	13.3	N.U.	N.U.	9482.1	8812.6	8539.3	N.U.
01/10/2020 15:41	6	19.3	982.1	25.3	13.1	300.9	13.2	305.4	13.3	N.U.	N.U.	9481.5	8812	8538.1	N.U.
01/10/2020 15:41	6	19.3	982.2	26.5	13.1	300.9	13.2	304.9	13.3	N.U.	N.U.	9479	8812	8539.3	N.U.
01/10/2020 15:42	6	19.2	982	26.5	13.1	300.4	13.2	306.8	13.3	N.U.	N.U.	9479	8813.2	8535.2	N.U.
01/10/2020 15:42	5.9	19.2	982.1	25.3	13.1	301.5	13.2	304.9	13.3	N.U.	N.U.	9481.5	8810.8	8539.3	N.U.
01/10/2020 15:42	6	19.2	982.1	24.7	13.1	302.1	13.2	306	13.3	N.U.	N.U.	9482.7	8809.6	8536.9	N.U.
01/10/2020 15:42	6	19.2	981.9	26.5	13.1	300.7	13.2	306	13.3	N.U.	N.U.	9479	8812.6	8536.9	N.U.
01/10/2020 15:42	6	19.2	982.1	25.3	13.1	300.9	13.2	306.6	13.3	N.U.	N.U.	9481.5	8812	8535.7	N.U.
01/10/2020 15:42	6	19.2	982.2	26.7	13.1	302.7	13.2	306	13.3	N.U.	N.U.	9478.4	8808.4	8536.9	N.U.
01/10/2020 15:43	6	19.2	982.1	26.5	13.1	302.4	13.2	307.1	13.3	N.U.	N.U.	9479	8809	8534.6	N.U.
01/10/2020 15:43	6	19.2	981.9	27	13.1	300.7	13.2	305.4	13.3	N.U.	N.U.	9477.8	8812.6	8538.1	N.U.
01/10/2020 15:43	6	19.2	982.1	27.9	13.1	301.8	13.2	306.5	13.3	N.U.	N.U.	9475.9	8810.2	8535.7	N.U.
01/10/2020 15:43	6	19.2	982.2	26.5	13.1	301.2	13.2	304.2	13.3	N.U.	N.U.	9479	8811.4	8541	N.U.
01/10/2020 15:43	6	19.2	982	26.7	13.1	301.8	13.2	304.4	13.3	N.U.	N.U.	9478.4	8810.2	8540.4	N.U.
01/10/2020 15:43	6	19.2	982.1	26.7	13.1	300.4	13.2	305.2	13.3	N.U.	N.U.	9478.4	8813.2	8538.7	N.U.
01/10/2020 15:44	6	19.2	982.2	27	13.1	301.2	13.2	307.1	13.3	N.U.	N.U.	9477.8	8811.4	8534.6	N.U.
01/10/2020 15:44	6	19.1	981.8	27	13.1	301.8	13.2	304.6	13.3	N.U.	N.U.	9477.8	8810.2	8539.8	N.U.
01/10/2020 15:44	6	19.1	982.3	27.3	13.1	302.4	13.2	306	13.3	N.U.	N.U.	9477.2	8809	8536.9	N.U.
01/10/2020 15:44	6	19.1	982	27	13.1	302.4	13.2	305.8	13.3	N.U.	N.U.	9477.8	8809	8537.5	N.U.
01/10/2020 15:44	6	19.1	982	27	13.1	301	13.3	305.8	13.3	N.U.	N.U.	9477.8	8812	8537.5	N.U.
01/10/2020 15:44	6	19.1	982.2	28	13.1	301.5	13.2	303.9	13.3	N.U.	N.U.	9475.9	8810.8	8541.6	N.U.
01/10/2020 15:45	6	19.1	981.8	28.8	13.1	300.9	13.2	305.5	13.3	N.U.	N.U.	9474.1	8812	8538.1	N.U.
01/10/2020 15:45	6	19.1	982.3	27.3	13.1	301.5	13.2	305.2	13.3	N.U.	N.U.	9477.2	8810.8	8538.7	N.U.
01/10/2020 15:45	6	19.1	982.4	27.6	13.1	301.5	13.2	305.8	13.3	N.U.	N.U.	9476.5	8810.8	8537.5	N.U.
01/10/2020 15:45	6	19.1	982	28.5	13.1	302.1	13.2	305.2	13.3	N.U.	N.U.	9474.7	8809.6	8538.7	N.U.
01/10/2020 15:45	6	19.1	981.8	28.2	13.1	300.9	13.2	306.3	13.3	N.U.	N.U.	9475.3	8812	8536.3	N.U.
01/10/2020 15:45	6	19.1	982	28	13.1	302.4	13.2	307.1	13.3	N.U.	N.U.	9475.9	8809	8534.6	N.U.
01/10/2020 15:46	6	19.1	982.3	29.7	13.1	302.4	13.2	306.6	13.3	N.U.	N.U.	9472.2	8809	8535.7	N.U.
01/10/2020 15:46	6	19.1	982	28.8	13.1	302.4	13.2	306.3	13.3	N.U.	N.U.	9474.1	8809	8536.3	N.U.
01/10/2020 15:46	5.9	19.1	982.1	29.1	13.1	302.4	13.2	306.6	13.3	N.U.	N.U.	9473.5	8809	8535.7	N.U.
01/10/2020 15:46	6	19.1	982.1	29.1	13.1	302.1	13.2	307.9	13.3	N.U.	N.U.	9473.5	8809.6	8532.8	N.U.
01/10/2020 15:46	5.9	19.1	982	30.3	13.1	302.1	13.2	306.6	13.3	N.U.	N.U.	9471	8809.6	8535.7	N.U.
01/10/2020 15:47	6	19.1	981.9	29.1	13.1	302.1	13.2	306	13.3	N.U.	N.U.	9473.5	8809.6	8536.9	N.U.

Date/time	Vbatt	Temp.	Press.	Channel 1 ()	Channel 2 ()	Channel 3 ()	Channel 4 ()	CH1 Raw (Digits)	CH2 Raw (Digits)	CH3 Raw (Digits)	CH4 Raw (Digits)				
01/10/2020 15:47	6	19.1	982	30	13.1	302.4	13.2	306	13.3	N.U.	N.U.	9471.6	8809	8536.9	N.U.
01/10/2020 15:47	6	19.1	982.3	30.5	13.1	301.2	13.2	307.1	13.3	N.U.	N.U.	9470.4	8811.4	8534.6	N.U.
01/10/2020 15:47	6	19.1	982	28.8	13.1	301.2	13.2	306	13.3	N.U.	N.U.	9474.1	8811.4	8536.9	N.U.
01/10/2020 15:47	6	19	982	29.7	13.1	302.2	13.3	307.4	13.3	N.U.	N.U.	9472.2	8809.6	8534	N.U.
01/10/2020 15:47	6	19	981.9	30.5	13.1	302.4	13.2	306	13.3	N.U.	N.U.	9470.4	8809	8536.9	N.U.
01/10/2020 15:48	5.9	19	982	30.5	13.1	302.1	13.2	305.2	13.3	N.U.	N.U.	9470.4	8809.6	8538.7	N.U.
01/10/2020 15:48	6	19	981.9	29.4	13.1	302.4	13.2	306.6	13.3	N.U.	N.U.	9472.9	8809	8535.7	N.U.
01/10/2020 15:48	6	19	982.2	32	13.1	303.6	13.2	307.1	13.3	N.U.	N.U.	9467.3	8806.6	8534.6	N.U.
01/10/2020 15:48	5.9	19	982.2	30	13.1	300.9	13.2	306.6	13.3	N.U.	N.U.	9471.6	8812	8535.7	N.U.
01/10/2020 15:48	6	19	982	33.4	13.1	301.2	13.2	306	13.3	N.U.	N.U.	9464.2	8811.4	8536.9	N.U.
01/10/2020 15:48	6	19	981.9	31.4	13.1	301.6	13.3	306.3	13.3	N.U.	N.U.	9468.5	8810.8	8536.3	N.U.
01/10/2020 15:49	5.9	19	981.8	32	13.1	301.8	13.2	305	13.3	N.U.	N.U.	9467.3	8810.2	8539.3	N.U.
01/10/2020 15:49	6	19	982.1	32.6	13.1	300.9	13.2	305.8	13.3	N.U.	N.U.	9466.1	8812	8537.5	N.U.
01/10/2020 15:49	6	19	982	32.8	13.1	301.8	13.2	305.8	13.3	N.U.	N.U.	9465.5	8810.2	8537.5	N.U.
01/10/2020 15:49	5.9	19	981.7	32.6	13.1	303	13.2	307.1	13.3	N.U.	N.U.	9466.1	8807.8	8534.6	N.U.
01/10/2020 15:49	6	19	982.1	32.3	13.1	302.7	13.2	306.8	13.3	N.U.	N.U.	9466.7	8808.4	8535.2	N.U.
01/10/2020 15:49	6	19	982.1	33.1	13.1	302.1	13.2	305.2	13.3	N.U.	N.U.	9464.9	8809.6	8538.7	N.U.
01/10/2020 15:50	6	19	982.1	32.3	13.1	302.5	13.3	307.1	13.3	N.U.	N.U.	9466.7	8809	8534.6	N.U.
01/10/2020 15:50	6	19	982	33.7	13.1	301.8	13.2	306	13.3	N.U.	N.U.	9463.6	8810.2	8536.9	N.U.
01/10/2020 15:50	6	19	981.9	32.6	13.1	301.5	13.2	306.6	13.3	N.U.	N.U.	9466.1	8810.8	8535.7	N.U.
01/10/2020 15:50	6	19	982.1	32.8	13.1	301.5	13.2	304.7	13.3	N.U.	N.U.	9465.5	8810.8	8539.8	N.U.
01/10/2020 15:50	5.9	19	981.8	31.7	13.1	301.5	13.2	304.2	13.3	N.U.	N.U.	9467.9	8810.8	8541	N.U.
01/10/2020 15:50	6	19	982	33.1	13.1	290.5	13.2	294.5	13.3	N.U.	N.U.	9464.9	8832.8	8562.1	N.U.
01/10/2020 15:51	6	19	981.8	32.6	13.1	280.9	13.2	285.7	13.3	N.U.	N.U.	9466.1	8851.8	8581.4	N.U.
01/10/2020 15:51	5.9	19	982	33.7	13.1	271.9	13.2	276.4	13.3	N.U.	N.U.	9463.6	8869.7	8601.9	N.U.
01/10/2020 15:51	6	19	982	34.3	13.1	266.8	13.2	270.2	13.3	N.U.	N.U.	9462.4	8879.8	8615.4	N.U.
01/10/2020 15:51	6	19	981.8	33.4	13.1	261	13.2	265.4	13.3	N.U.	N.U.	9464.2	8891.1	8626	N.U.
01/10/2020 15:51	5.9	19	982.2	32.8	13.1	256.5	13.2	260.6	13.3	N.U.	N.U.	9465.5	8900.1	8636.5	N.U.
01/10/2020 15:52	6	19	981.8	34	13.1	249.6	13.2	254.1	13.3	N.U.	N.U.	9463	8913.8	8650.7	N.U.
01/10/2020 15:52	6	19	982	34.6	13.1	245.7	13.2	250.6	13.3	N.U.	N.U.	9461.8	8921.6	8658.3	N.U.
01/10/2020 15:52	5.9	19	982.1	35.1	13.1	240.3	13.2	243.1	13.3	N.U.	N.U.	9460.5	8932.3	8674.8	N.U.
01/10/2020 15:52	6	19	981.9	34.6	13.1	237	13.2	241	13.3	N.U.	N.U.	9461.8	8938.9	8679.5	N.U.
01/10/2020 15:52	6	19	981.9	35.1	13.1	231.5	13.2	236.1	13.3	N.U.	N.U.	9460.5	8949.7	8690.1	N.U.
01/10/2020 15:52	5.9	19	981.8	34.3	13.1	228.2	13.2	231.6	13.3	N.U.	N.U.	9462.4	8956.3	8700.1	N.U.
01/10/2020 15:53	6	18.9	982.3	33.7	13.1	224	13.2	228.3	13.3	N.U.	N.U.	9463.6	8964.6	8707.2	N.U.
01/10/2020 15:53	6	19	982.2	35.7	13.1	219.2	13.2	223.5	13.3	N.U.	N.U.	9459.3	8974.2	8717.8	N.U.
01/10/2020 15:53	5.9	18.9	982	36.3	13.1	216.4	13.2	220	13.3	N.U.	N.U.	9458.1	8979.6	8725.5	N.U.
01/10/2020 15:53	6	18.9	982.2	35.7	13.1	213.1	13.2	216.5	13.3	N.U.	N.U.	9459.3	8986.2	8733.2	N.U.
01/10/2020 15:53	6	18.9	982	33.7	13.1	209.5	13.2	214	13.3	N.U.	N.U.	9463.6	8993.4	8738.5	N.U.
01/10/2020 15:53	5.9	18.9	981.8	35.1	13.1	205.8	13.2	210.8	13.3	N.U.	N.U.	9460.5	9000.6	8745.6	N.U.
01/10/2020 15:54	5.9	18.9	982.2	35.4	13.1	200.4	13.2	206.2	13.3	N.U.	N.U.	9459.9	9011.4	8755.7	N.U.
01/10/2020 15:54	6	18.9	982	35.1	13.1	199.8	13.2	204.3	13.3	N.U.	N.U.	9460.5	9012.6	8759.8	N.U.
01/10/2020 15:54	5.9	18.9	981.7	36.3	13.1	197.4	13.2	201.1	13.3	N.U.	N.U.	9458.1	9017.4	8766.9	N.U.
01/10/2020 15:54	5.9	18.9	982.1	35.4	13.1	194.3	13.2	197.3	13.3	N.U.	N.U.	9459.9	9023.4	8775.2	N.U.
01/10/2020 15:54	6	18.9	982.3	35.4	13.1	190.7	13.2	194.1	13.3	N.U.	N.U.	9459.9	9030.6	8782.3	N.U.
01/10/2020 15:54	5.9	18.9	982.1	36.3	13.1	186.8	13.2	191.1	13.3	N.U.	N.U.	9458.1	9038.4	8788.9	N.U.
01/10/2020 15:55	5.9	18.9	981.8	36.6	13.1	184.6	13.2	188.4	13.3	N.U.	N.U.	9457.5	9042.7	8794.8	N.U.
01/10/2020 15:55	6	18.9	981.9	35.4	13.1	182.9	13.3	185.9	13.3	N.U.	N.U.	9459.9	9046.3	8800.1	N.U.
01/10/2020 15:55	6	18.9	981.8	35.7	13.1	179.2	13.2	182.4	13.3	N.U.	N.U.	9459.3	9053.5	8807.8	N.U.

Date/time	Vbatt	Temp.	Press.	Channel 1 ()	Channel 2 ()	Channel 3 ()	Channel 4 ()	CH1 Raw (Digits)	CH2 Raw (Digits)	CH3 Raw (Digits)	CH4 Raw (Digits)				
01/10/2020 15:55	5.9	18.9	981.8	36	13.1	177.1	13.3	181.1	13.3	N.U.	N.U.	9458.7	9057.7	8810.8	N.U.
01/10/2020 15:55	6	18.9	981.9	36.3	13.1	175.6	13.3	178.6	13.3	N.U.	N.U.	9458.1	9060.7	8816.1	N.U.
01/10/2020 15:55	6	18.9	982.3	35.4	13.1	175.6	13.3	180	13.3	N.U.	N.U.	9459.9	9060.7	8813.2	N.U.
01/10/2020 15:56	5.9	18.9	981.8	37.2	13.1	178	13.2	181.1	13.3	N.U.	N.U.	9456.2	9055.9	8810.8	N.U.
01/10/2020 15:56	6	18.9	982	36.9	13.1	178.6	13.3	183	13.3	N.U.	N.U.	9456.9	9054.7	8806.6	N.U.
01/10/2020 15:56	6	18.9	981.9	36.9	13.1	180.2	13.3	184.1	13.3	N.U.	N.U.	9456.9	9051.7	8804.3	N.U.
01/10/2020 15:56	5.9	18.9	981.7	37.2	13.1	182.3	13.3	184.6	13.3	N.U.	N.U.	9456.2	9047.5	8803.1	N.U.
01/10/2020 15:56	5.9	18.9	981.9	36.3	13.1	182.9	13.3	187	13.3	N.U.	N.U.	9458.1	9046.3	8797.7	N.U.
01/10/2020 15:56	6	18.9	981.8	36.3	13.1	184.7	13.3	189.2	13.3	N.U.	N.U.	9458.1	9042.7	8793	N.U.
01/10/2020 15:57	5.9	18.9	981.9	35.7	13.1	186.5	13.3	190.8	13.3	N.U.	N.U.	9459.3	9039	8789.4	N.U.
01/10/2020 15:57	5.9	18.9	982	36.3	13.1	188.9	13.3	192.4	13.3	N.U.	N.U.	9458.1	9034.2	8785.9	N.U.
01/10/2020 15:57	6	18.9	981.9	36.9	13.1	189.6	13.3	193.3	13.3	N.U.	N.U.	9456.9	9033	8784.1	N.U.
01/10/2020 15:57	5.9	18.9	982.1	36.3	13.1	190.5	13.3	194.3	13.3	N.U.	N.U.	9458.1	9031.2	8781.7	N.U.
01/10/2020 15:57	5.9	18.9	981.9	37.2	13.1	191.1	13.3	195.4	13.3	N.U.	N.U.	9456.2	9030	8779.4	N.U.
01/10/2020 15:58	6	18.9	982	37.7	13.1	192	13.3	195.1	13.3	N.U.	N.U.	9455	9028.2	8780	N.U.
01/10/2020 15:58	5.9	18.9	982.2	37.7	13.1	193.2	13.3	197	13.3	N.U.	N.U.	9455	9025.8	8775.8	N.U.
01/10/2020 15:58	5.9	18.9	982.1	37.2	13.1	193.5	13.3	197.8	13.3	N.U.	N.U.	9456.2	9025.2	8774	N.U.
01/10/2020 15:58	6	18.8	982.1	37.2	13.1	195.3	13.3	199.5	13.3	N.U.	N.U.	9456.2	9021.6	8770.5	N.U.
01/10/2020 15:58	5.9	18.8	982	37.7	13.1	195.9	13.3	199.5	13.3	N.U.	N.U.	9455	9020.4	8770.5	N.U.
01/10/2020 15:58	5.9	18.8	982	37.7	13.1	196.2	13.3	199.2	13.3	N.U.	N.U.	9455	9019.8	8771.1	N.U.
01/10/2020 15:59	6	18.8	981.9	37.7	13.1	195.9	13.3	199.5	13.3	N.U.	N.U.	9455	9020.4	8770.5	N.U.
01/10/2020 15:59	5.9	18.8	981.7	37.2	13.1	195.6	13.3	200.3	13.3	N.U.	N.U.	9456.2	9021	8768.7	N.U.
01/10/2020 15:59	5.9	18.8	981.9	37.2	13.1	195.6	13.3	199.7	13.3	N.U.	N.U.	9456.2	9021	8769.9	N.U.
01/10/2020 15:59	6	18.8	981.7	37.7	13.1	198	13.3	201.4	13.3	N.U.	N.U.	9455	9016.2	8766.3	N.U.
01/10/2020 15:59	6	18.8	981.8	37.2	13.1	199.6	13.3	203	13.3	N.U.	N.U.	9456.2	9013.2	8762.8	N.U.
01/10/2020 15:59	5.9	18.8	981.8	38.6	13.1	202.6	13.3	204.9	13.3	N.U.	N.U.	9453.2	9007.2	8758.6	N.U.
01/10/2020 16:00	5.9	18.8	981.8	37.4	13.1	202	13.3	206.2	13.3	N.U.	N.U.	9455.6	9008.4	8755.7	N.U.
01/10/2020 16:00	6	18.8	981.8	38.6	13.1	204.4	13.3	206.5	13.3	N.U.	N.U.	9453.2	9003.6	8755.1	N.U.
01/10/2020 16:00	5.9	18.8	981.8	37.7	13.1	201.4	13.3	207.3	13.3	N.U.	N.U.	9455	9009.6	8753.3	N.U.
01/10/2020 16:00	5.9	18.8	981.6	38	13.1	202.3	13.3	206.5	13.3	N.U.	N.U.	9454.4	9007.8	8755.1	N.U.
01/10/2020 16:00	6	18.8	981.8	38	13.1	204.1	13.3	206.5	13.3	N.U.	N.U.	9454.4	9004.2	8755.1	N.U.
01/10/2020 16:00	5.9	18.8	982	38.3	13.1	203.8	13.3	206.2	13.3	N.U.	N.U.	9453.8	9004.8	8755.7	N.U.
01/10/2020 16:01	5.9	18.8	982.1	38	13.1	203.2	13.3	206.5	13.3	N.U.	N.U.	9454.4	9006	8755.1	N.U.
01/10/2020 16:01	6	18.8	981.7	38.6	13.1	204.1	13.3	205.4	13.3	N.U.	N.U.	9453.2	9004.2	8757.5	N.U.
01/10/2020 16:01	5.9	18.8	981.8	38.6	13.1	203.2	13.3	206.8	13.3	N.U.	N.U.	9453.2	9006	8754.5	N.U.
01/10/2020 16:01	5.9	18.8	981.9	38.9	13.1	203.2	13.3	207	13.3	N.U.	N.U.	9452.6	9006	8753.9	N.U.
01/10/2020 16:01	6	18.7	981.8	38.6	13.1	203.8	13.3	206.8	13.3	N.U.	N.U.	9453.2	9004.8	8754.5	N.U.
01/10/2020 16:01	6	18.7	982	39.2	13.1	201.7	13.3	204.9	13.3	N.U.	N.U.	9451.9	9009	8758.6	N.U.
01/10/2020 16:02	5.9	18.7	981.7	39.2	13.1	203.8	13.3	207	13.3	N.U.	N.U.	9451.9	9004.8	8753.9	N.U.
01/10/2020 16:02	6	18.7	981.9	37.7	13.1	203.5	13.3	207.8	13.3	N.U.	N.U.	9455	9005.4	8752.1	N.U.
01/10/2020 16:02	5.9	18.7	981.5	39.5	13.1	203.8	13.3	207	13.3	N.U.	N.U.	9451.3	9004.8	8753.9	N.U.
01/10/2020 16:02	5.9	18.7	981.9	39.5	13.1	205	13.3	208.1	13.3	N.U.	N.U.	9451.3	9002.4	8751.5	N.U.
01/10/2020 16:02	5.9	18.7	981.8	39.5	13.1	201.7	13.3	207	13.3	N.U.	N.U.	9451.3	9009	8753.9	N.U.
01/10/2020 16:03	6	18.7	981.7	39.5	13.1	203.2	13.3	207.3	13.3	N.U.	N.U.	9451.3	9006	8753.3	N.U.
01/10/2020 16:03	5.9	18.7	981.7	39.2	13.1	205.9	13.3	205.7	13.3	N.U.	N.U.	9451.9	9000.6	8756.9	N.U.
01/10/2020 16:03	5.9	18.7	981.9	39.4	13.1	203.5	13.3	206.5	13.3	N.U.	N.U.	9451.3	9005.4	8755.1	N.U.
01/10/2020 16:03	6	18.7	981.8	39.4	13.1	204.4	13.3	207	13.3	N.U.	N.U.	9451.3	9003.6	8753.9	N.U.
01/10/2020 16:03	5.9	18.7	982	39.4	13.1	202.6	13.3	207.6	13.3	N.U.	N.U.	9451.3	9007.2	8752.7	N.U.
01/10/2020 16:03	5.9	18.6	982	40.2	13.1	203.2	13.3	206.5	13.3	N.U.	N.U.	9449.5	9006	8755.1	N.U.

Date/time	Vbatt	Temp.	Press.	Channel 1 () (°C)	Channel 2 () (°C)	Channel 3 () (°C)	Channel 4 () (°C)	CH1 Raw (Digits)	CH2 Raw (Digits)	CH3 Raw (Digits)	CH4 Raw (Digits)				
01/10/2020 16:04	6	18.7	981.7	39.1	13.1	204.4	13.3	206.5	13.3	N.U.	N.U.	9451.9	9003.6	8755.1	N.U.
01/10/2020 16:04	5.9	18.6	981.7	39.4	13.1	204.1	13.3	207.3	13.3	N.U.	N.U.	9451.3	9004.2	8753.3	N.U.
01/10/2020 16:04	5.9	18.6	982.1	40	13.1	204.4	13.3	206.5	13.3	N.U.	N.U.	9450.1	9003.6	8755.1	N.U.
01/10/2020 16:04	6	18.6	981.8	40.2	13.1	203.2	13.3	207.8	13.3	N.U.	N.U.	9449.5	9006	8752.1	N.U.
01/10/2020 16:04	5.9	18.6	981.6	40.2	13.1	203.2	13.3	205.9	13.3	N.U.	N.U.	9449.5	9006	8756.3	N.U.
01/10/2020 16:04	5.9	18.6	981.7	38.8	13.1	202.9	13.3	206.8	13.3	N.U.	N.U.	9452.6	9006.6	8754.5	N.U.
01/10/2020 14:34	6	16.9	983.1	-4.6	13.7	12.9	13.9	18	14	N.U.	N.U.	9546.9	9384.4	9170	N.U.
01/10/2020 14:35	6	17	982.8	-5	13.6	12.9	13.9	17.7	14	N.U.	N.U.	9547.5	9384.4	9170.6	N.U.
01/10/2020 14:35	6	17.3	983	-4.7	13.6	12.5	13.8	17.6	13.9	N.U.	N.U.	9546.9	9385	9170.6	N.U.
01/10/2020 14:35	6	17.3	982.6	-4.2	13.5	11.9	13.8	17.9	13.9	N.U.	N.U.	9545.6	9386.3	9170	N.U.
01/10/2020 14:36	6	17.4	983.1	-4.2	13.5	12.5	13.8	17.6	13.9	N.U.	N.U.	9545.6	9385	9170.6	N.U.
01/10/2020 14:36	6	17.4	983	-3.9	13.5	11.9	13.7	17.3	13.9	N.U.	N.U.	9545	9386.3	9171.2	N.U.
01/10/2020 14:36	6	17.5	983.1	-4.2	13.5	13.1	13.7	17.6	13.9	N.U.	N.U.	9545.6	9383.8	9170.6	N.U.
01/10/2020 14:36	6	17.6	982.8	-4.2	13.5	11.9	13.7	17.5	13.9	N.U.	N.U.	9545.6	9386.3	9170.6	N.U.
01/10/2020 14:36	6	17.6	983.2	-4.5	13.5	12.5	13.7	17.8	13.9	N.U.	N.U.	9546.2	9385	9170	N.U.
01/10/2020 14:36	6	17.7	983	-3.6	13.5	12.5	13.7	17.3	13.9	N.U.	N.U.	9544.4	9385	9171.2	N.U.
01/10/2020 14:37	6	17.8	982.9	-4.5	13.5	11.9	13.7	16.4	13.9	N.U.	N.U.	9546.2	9386.3	9173	N.U.
01/10/2020 14:37	6	17.8	982.8	-4.3	13.5	11.5	13.7	17	13.9	N.U.	N.U.	9545.6	9386.9	9171.8	N.U.
01/10/2020 14:37	6	17.9	983	-3.7	13.5	14.3	13.7	19.4	13.8	N.U.	N.U.	9544.4	9381.4	9166.4	N.U.
01/10/2020 14:37	6	18	983.1	-4	13.5	15.5	13.7	21.9	13.8	N.U.	N.U.	9545	9378.9	9160.9	N.U.
01/10/2020 14:37	6	18	982.9	-3.7	13.5	18.9	13.7	24.1	13.8	N.U.	N.U.	9544.4	9372.2	9156.1	N.U.
01/10/2020 14:37	6	18.1	983.1	-4.3	13.5	24.5	13.7	31	13.8	N.U.	N.U.	9545.6	9361.2	9140.9	N.U.
01/10/2020 14:38	6	18.1	983.1	-4.5	13.5	29.4	13.7	36	13.8	N.U.	N.U.	9546.2	9351.4	9130.1	N.U.
01/10/2020 14:38	6	18.2	983	-4	13.4	33.7	13.7	38.2	13.8	N.U.	N.U.	9545	9342.8	9125.2	N.U.
01/10/2020 14:38	6	18.2	982.7	-4.6	13.4	34.3	13.7	40.1	13.8	N.U.	N.U.	9546.2	9341.6	9121	N.U.
01/10/2020 14:38	6	18.3	982.9	-4	13.4	37.7	13.6	41.5	13.8	N.U.	N.U.	9545	9334.9	9118	N.U.
01/10/2020 14:38	6	18.4	982.9	-4	13.4	38.3	13.6	42.5	13.7	N.U.	N.U.	9545	9333.6	9115.6	N.U.
01/10/2020 14:39	6	18.4	983	-4.6	13.4	39.5	13.6	44.7	13.7	N.U.	N.U.	9546.2	9331.2	9110.7	N.U.
01/10/2020 14:39	6	18.5	983.1	-4	13.4	40.7	13.6	46.1	13.7	N.U.	N.U.	9545	9328.7	9107.7	N.U.
01/10/2020 14:39	6	18.5	982.9	-4	13.4	38.6	13.6	43.3	13.7	N.U.	N.U.	9545	9333	9113.8	N.U.
01/10/2020 14:39	6	18.5	982.8	-4.1	13.3	39.2	13.6	42.8	13.7	N.U.	N.U.	9545	9331.8	9115	N.U.
01/10/2020 14:39	6	18.6	982.8	-4.1	13.3	39.5	13.6	44.4	13.7	N.U.	N.U.	9545	9331.2	9111.3	N.U.
01/10/2020 14:39	6	18.6	983.2	-4.1	13.3	39.4	13.5	44.1	13.7	N.U.	N.U.	9545	9331.2	9111.9	N.U.
01/10/2020 14:40	6	18.7	982.9	-3.8	13.3	38.9	13.6	43.5	13.7	N.U.	N.U.	9544.4	9332.4	9113.2	N.U.
01/10/2020 14:40	6	18.7	983.3	-4.1	13.3	38.8	13.5	44.1	13.7	N.U.	N.U.	9545	9332.4	9111.9	N.U.
01/10/2020 14:40	6	18.8	983.3	-4.1	13.3	40.7	13.5	45.4	13.7	N.U.	N.U.	9545	9328.7	9108.9	N.U.
01/10/2020 14:40	6	18.8	982.9	-4.5	13.3	41.6	13.5	46	13.7	N.U.	N.U.	9545.6	9326.9	9107.7	N.U.
01/10/2020 14:40	6	18.8	982.8	-4.2	13.3	42.5	13.5	47.4	13.7	N.U.	N.U.	9545	9325.1	9104.7	N.U.
01/10/2020 14:40	6	18.9	983	-4.2	13.3	46.5	13.5	50.7	13.7	N.U.	N.U.	9545	9317.1	9097.5	N.U.
01/10/2020 14:41	6	18.9	983.1	-3.9	13.3	52.7	13.5	58.8	13.6	N.U.	N.U.	9544.4	9304.9	9079.4	N.U.
01/10/2020 14:41	6	19	983	-4.2	13.3	59.7	13.5	65.2	13.6	N.U.	N.U.	9545	9290.9	9065.5	N.U.
01/10/2020 14:41	6	19	982.9	-3.7	13.2	72.6	13.5	77	13.6	N.U.	N.U.	9543.8	9265.3	9039.6	N.U.
01/10/2020 14:41	6	19	983	-3.7	13.2	94.4	13.5	98.9	13.6	N.U.	N.U.	9543.8	9222.2	8991.6	N.U.
01/10/2020 14:41	6	19.1	983.1	-4	13.2	117.3	13.5	121.8	13.6	N.U.	N.U.	9544.4	9176.7	8941.3	N.U.
01/10/2020 14:41	6	19.1	982.9	-4	13.2	142.3	13.5	148.3	13.6	N.U.	N.U.	9544.4	9127	8883.4	N.U.
01/10/2020 14:42	6	19.2	982.8	-3.7	13.2	150.5	13.5	154.5	13.6	N.U.	N.U.	9543.8	9110.7	8869.7	N.U.
01/10/2020 14:42	6	19.2	982.9	-3.4	13.2	149.6	13.5	152.5	13.5	N.U.	N.U.	9543.2	9112.5	8873.8	N.U.
01/10/2020 14:42	6	19.3	983	-3.7	13.2	145.4	13.5	148.7	13.5	N.U.	N.U.	9543.8	9121	8882.2	N.U.

Date/time	Vbatt	Temp.	Press.	Channel 1 ()	Channel 2 ()	Channel 3 ()	Channel 4 ()	CH1 Raw (Digits)	CH2 Raw (Digits)	CH3 Raw (Digits)	CH4 Raw (Digits)				
01/10/2020 16:12	5.9	18.4	981.5	42.5	13	204.3	13.2	206.7	13.3	N.U.	N.U.	9444.6	9003.6	8754.5	N.U.
01/10/2020 16:12	5.9	18.4	981.7	44.2	13	204.9	13.2	207.2	13.3	N.U.	N.U.	9440.9	9002.4	8753.3	N.U.
01/10/2020 16:12	5.9	18.3	981.4	43	13	204.6	13.2	207.2	13.3	N.U.	N.U.	9443.3	9003	8753.3	N.U.
01/10/2020 16:12	5.9	18.3	981.6	43.3	13	203.7	13.2	206.4	13.3	N.U.	N.U.	9442.7	9004.8	8755.1	N.U.
01/10/2020 16:13	5.9	18.3	981.3	42.8	13	204.3	13.2	206.7	13.3	N.U.	N.U.	9443.9	9003.6	8754.5	N.U.
01/10/2020 16:13	5.9	18.3	981.7	43.6	13	202.5	13.2	207.5	13.3	N.U.	N.U.	9442.1	9007.2	8752.7	N.U.
01/10/2020 16:13	5.9	18.3	981.5	43.9	13	202.5	13.2	207.2	13.3	N.U.	N.U.	9441.5	9007.2	8753.3	N.U.
01/10/2020 16:13	5.9	18.3	981.5	43.3	13	203.4	13.2	207.5	13.3	N.U.	N.U.	9442.7	9005.4	8752.7	N.U.
01/10/2020 16:13	6	18.3	981.8	42.8	13	203.1	13.2	207.2	13.3	N.U.	N.U.	9443.9	9006	8753.3	N.U.
01/10/2020 16:14	5.9	18.3	981.2	44.8	13	203.4	13.2	207.8	13.3	N.U.	N.U.	9439.6	9005.4	8752.1	N.U.
01/10/2020 16:14	5.9	18.3	981.7	44.5	13	203.1	13.2	206.4	13.3	N.U.	N.U.	9440.3	9006	8755.1	N.U.
01/10/2020 16:14	5.9	18.3	981.8	43.6	13	202.8	13.2	205.3	13.3	N.U.	N.U.	9442.1	9006.6	8757.5	N.U.
01/10/2020 16:14	5.9	18.3	981.6	44.8	13	204	13.2	208.8	13.3	N.U.	N.U.	9439.6	9004.2	8749.8	N.U.
01/10/2020 16:14	5.9	18.3	981.6	45.1	13	202.8	13.2	207.2	13.3	N.U.	N.U.	9439	9006.6	8753.3	N.U.
01/10/2020 16:14	5.9	18.3	981.4	43.9	13	203.1	13.1	207.2	13.3	N.U.	N.U.	9441.5	9006	8753.3	N.U.
01/10/2020 16:15	5.9	18.3	981.7	43.3	13	203.1	13.2	206.1	13.3	N.U.	N.U.	9442.7	9006	8755.7	N.U.
01/10/2020 16:15	5.9	18.3	981.4	45.1	13	202.5	13.2	206.7	13.3	N.U.	N.U.	9439	9007.2	8754.5	N.U.
01/10/2020 16:15	5.9	18.3	981.5	43	13	203.1	13.2	206.7	13.3	N.U.	N.U.	9443.3	9006	8754.5	N.U.
01/10/2020 16:15	5.9	18.3	981.4	44.2	13	204.3	13.2	208.3	13.3	N.U.	N.U.	9440.9	9003.6	8750.9	N.U.
01/10/2020 16:15	5.9	18.3	981.4	44.2	13	206.5	13.2	206.7	13.3	N.U.	N.U.	9440.9	8999.4	8754.5	N.U.
01/10/2020 16:15	5.9	18.3	981.8	44.5	13	202.5	13.2	207	13.3	N.U.	N.U.	9440.3	9007.2	8753.9	N.U.
01/10/2020 16:16	5.9	18.3	981.7	45.1	13	203.1	13.2	205.3	13.3	N.U.	N.U.	9439	9006	8757.5	N.U.
01/10/2020 16:16	5.9	18.3	981.9	43.3	13	202.8	13.2	205.9	13.3	N.U.	N.U.	9442.7	9006.6	8756.3	N.U.
01/10/2020 16:16	5.9	18.3	981.5	45.1	13	201	13.2	205.6	13.3	N.U.	N.U.	9439	9010.2	8756.9	N.U.
01/10/2020 16:16	5.9	18.3	981.5	45.1	13	198.6	13.2	202.1	13.3	N.U.	N.U.	9439	9015	8764.6	N.U.
01/10/2020 16:16	5.9	18.3	981.7	45.9	13	194.6	13.2	198.9	13.3	N.U.	N.U.	9437.2	9022.8	8771.7	N.U.
01/10/2020 16:16	5.9	18.3	981.5	44.2	13	191.6	13.2	194.5	13.3	N.U.	N.U.	9440.9	9028.8	8781.1	N.U.
01/10/2020 16:17	6	18.3	981.5	44.5	13	188.6	13.2	191.8	13.3	N.U.	N.U.	9440.3	9034.8	8787.1	N.U.
01/10/2020 16:17	5.9	18.3	981.6	45.6	13	185.9	13.2	188.8	13.3	N.U.	N.U.	9437.8	9040.2	8793.6	N.U.
01/10/2020 16:17	5.9	18.3	981.3	45.6	13	181.9	13.2	186.4	13.3	N.U.	N.U.	9437.8	9048.1	8798.9	N.U.
01/10/2020 16:17	5.9	18.3	981.5	46.2	13	180.1	13.2	184.5	13.3	N.U.	N.U.	9436.6	9051.7	8803.1	N.U.
01/10/2020 16:17	5.9	18.3	981.6	45.6	13	177.7	13.2	181.5	13.3	N.U.	N.U.	9437.8	9056.5	8809.6	N.U.
01/10/2020 16:17	5.9	18.3	981.7	46.2	13	174.3	13.2	178.6	13.3	N.U.	N.U.	9436.6	9063.1	8816.1	N.U.
01/10/2020 16:18	5.9	18.3	981.4	45.9	13	172.8	13.2	176.9	13.3	N.U.	N.U.	9437.2	9066.1	8819.7	N.U.
01/10/2020 16:18	5.9	18.3	981.6	44.2	13	169.5	13.2	175	13.3	N.U.	N.U.	9440.9	9072.7	8823.9	N.U.
01/10/2020 16:18	5.9	18.3	981.6	45.3	13	166.7	13.2	169.6	13.3	N.U.	N.U.	9438.4	9078.2	8835.8	N.U.
01/10/2020 16:18	5.9	18.3	981.5	45.9	13	165.5	13.2	167.2	13.3	N.U.	N.U.	9437.2	9080.6	8841.1	N.U.
01/10/2020 16:18	5.9	18.3	981.4	45.1	13	162.2	13.2	167.4	13.3	N.U.	N.U.	9439	9087.2	8840.5	N.U.
01/10/2020 16:18	5.9	18.3	981.5	45.3	13	161.6	13.2	164.7	13.3	N.U.	N.U.	9438.4	9088.4	8846.5	N.U.
01/10/2020 16:19	5.9	18.3	981.5	45.9	13	158.5	13.2	162.3	13.3	N.U.	N.U.	9437.2	9094.4	8851.8	N.U.
01/10/2020 16:19	5.9	18.3	981.5	46.5	13	154.9	13.2	160.4	13.3	N.U.	N.U.	9436	9101.7	8856	N.U.
01/10/2020 16:19	5.9	18.3	981.5	46.8	13	154	13.2	158.2	13.3	N.U.	N.U.	9435.3	9103.5	8860.7	N.U.
01/10/2020 16:19	5.9	18.3	981.4	47.9	13	152.1	13.2	156.3	13.3	N.U.	N.U.	9432.9	9107.1	8864.9	N.U.
01/10/2020 16:19	5.9	18.3	981.4	44.8	13	150	13.1	153.6	13.3	N.U.	N.U.	9439.6	9111.3	8870.9	N.U.
01/10/2020 16:20	5.9	18.3	981.4	45.1	13	148.2	13.2	151.6	13.2	N.U.	N.U.	9439	9115	8875	N.U.
01/10/2020 16:20	5.9	18.3	981.5	44.2	13	146.1	13.2	149.4	13.2	N.U.	N.U.	9440.9	9119.2	8879.8	N.U.
01/10/2020 16:20	5.9	18.3	981.6	46.2	13	144.8	13.1	149.2	13.2	N.U.	N.U.	9436.6	9121.6	8880.4	N.U.
01/10/2020 16:20	5.9	18.3	981.6	45.6	13	143.6	13.1	147.3	13.2	N.U.	N.U.	9437.8	9124	8884.6	N.U.
01/10/2020 16:20	5.9	18.3	981.6	47.4	13	142.3	13.1	145.6	13.2	N.U.	N.U.	9434.1	9126.4	8888.1	N.U.

Date/time	Vbatt	Temp.	Press.	Channel 1 ()	Channel 2 ()	Channel 3 ()	Channel 4 ()	CH1 Raw (Digits)	CH2 Raw (Digits)	CH3 Raw (Digits)	CH4 Raw (Digits)				
01/10/2020 16:20	5.9	18.3	981.3	45.1	13	141.4	13.1	143.7	13.2	N.U.	N.U.	9439	9128.3	8892.3	N.U.
01/10/2020 16:21	5.9	18.3	981.3	47.1	13	138.1	13.1	143.5	13.2	N.U.	N.U.	9434.7	9134.9	8892.9	N.U.
01/10/2020 16:21	5.9	18.3	981.7	47.1	13	139	13.1	142.6	13.2	N.U.	N.U.	9434.7	9133.1	8894.7	N.U.
01/10/2020 16:21	5.9	18.3	981.6	45.6	13	139.6	13.1	141.5	13.2	N.U.	N.U.	9437.8	9131.9	8897.1	N.U.
01/10/2020 16:21	5.9	18.3	981.7	46.8	13	138.4	13.1	142.1	13.2	N.U.	N.U.	9435.3	9134.3	8895.9	N.U.
01/10/2020 16:21	5.9	18.3	981.4	46.2	13	138.4	13.1	141.3	13.2	N.U.	N.U.	9436.6	9134.3	8897.7	N.U.
01/10/2020 16:21	5.9	18.3	981.6	47.6	13	138.7	13.1	142.1	13.2	N.U.	N.U.	9433.5	9133.7	8895.9	N.U.
01/10/2020 16:22	5.9	18.3	981.7	46.5	13	139	13.1	142.1	13.2	N.U.	N.U.	9436	9133.1	8895.9	N.U.
01/10/2020 16:22	5.9	18.3	981.3	45.3	13	140.5	13.1	142.4	13.2	N.U.	N.U.	9438.4	9130.1	8895.3	N.U.
01/10/2020 16:22	5.9	18.3	981.3	45.1	13	139	13.1	142.6	13.2	N.U.	N.U.	9439	9133.1	8894.7	N.U.
01/10/2020 16:22	5.9	18.3	981.5	46.5	13	138.1	13.1	142.9	13.2	N.U.	N.U.	9436	9134.9	8894.1	N.U.
01/10/2020 16:22	5.9	18.3	981.5	45.3	13	138.4	13.1	142.6	13.2	N.U.	N.U.	9438.4	9134.3	8894.7	N.U.
01/10/2020 16:22	5.9	18.3	981.4	45.1	13	136.6	13.1	142.6	13.2	N.U.	N.U.	9439	9137.9	8894.7	N.U.
01/10/2020 16:23	5.9	18.4	981.5	46.5	13	138.1	13.1	141.5	13.2	N.U.	N.U.	9436	9134.9	8897.1	N.U.
01/10/2020 16:23	5.9	18.4	981.5	46.5	13	138.4	13.1	142.6	13.2	N.U.	N.U.	9436	9134.3	8894.7	N.U.
01/10/2020 16:23	5.9	18.4	981.3	45.1	13	138.1	13.1	142.4	13.2	N.U.	N.U.	9439	9134.9	8895.3	N.U.
01/10/2020 16:23	5.9	18.4	981.3	45.9	13	138.7	13.1	142.6	13.2	N.U.	N.U.	9437.2	9133.7	8894.7	N.U.
01/10/2020 16:23	5.9	18.4	981.5	46.8	13	140.5	13.1	142.4	13.2	N.U.	N.U.	9435.3	9130.1	8895.3	N.U.
01/10/2020 16:23	5.9	18.4	981.4	46.8	13	141.1	13.1	142.6	13.2	N.U.	N.U.	9435.3	9128.9	8894.7	N.U.
01/10/2020 16:24	5.9	18.4	981.5	47.1	13	137.2	13.1	142.6	13.2	N.U.	N.U.	9434.7	9136.7	8894.7	N.U.
01/10/2020 16:24	5.9	18.4	981.6	44.2	13	136.2	13.1	139.1	13.2	N.U.	N.U.	9440.9	9138.5	8902.5	N.U.
01/10/2020 16:24	5.9	18.4	981.2	44.2	13	134.4	13.1	138.3	13.2	N.U.	N.U.	9440.9	9142.2	8904.3	N.U.
01/10/2020 16:24	5.9	18.4	981.4	46.8	13	133.5	13.1	136.6	13.1	N.U.	N.U.	9435.3	9144	8907.8	N.U.
01/10/2020 16:24	5.9	18.4	981.3	47.6	13	130.8	13.1	135.2	13.1	N.U.	N.U.	9433.5	9149.4	8910.8	N.U.
01/10/2020 16:25	5.9	18.4	981.5	47.4	13	129.5	13.1	133.6	13.1	N.U.	N.U.	9434.1	9151.8	8914.4	N.U.
01/10/2020 16:25	5.9	18.4	981.5	46.8	13	126.8	13.1	131.4	13.1	N.U.	N.U.	9435.3	9157.3	8919.2	N.U.
01/10/2020 16:25	5.9	18.4	981.5	46.2	13	126.5	13.1	130.6	13.1	N.U.	N.U.	9436.6	9157.9	8921	N.U.
01/10/2020 16:25	5.9	18.4	981.6	45.9	13	124.4	13.1	128.1	13.1	N.U.	N.U.	9437.2	9162.1	8926.4	N.U.
01/10/2020 16:25	5.9	18.4	981.3	46.2	13	121.9	13.1	126.2	13.1	N.U.	N.U.	9436.6	9167	8930.5	N.U.
01/10/2020 16:25	5.9	18.4	981.5	47.4	13	121.5	13.1	127	13.1	N.U.	N.U.	9434.1	9167.6	8928.7	N.U.
01/10/2020 16:26	5.9	18.4	981.2	45.9	13	120	13.1	123.2	13.1	N.U.	N.U.	9437.2	9170.6	8937.1	N.U.
01/10/2020 16:26	5.9	18.4	981.5	45.9	13	118.2	13.1	122.7	13.1	N.U.	N.U.	9437.2	9174.2	8938.3	N.U.
01/10/2020 16:26	5.9	18.3	981.3	45.1	13	115.8	13.1	120.8	13.1	N.U.	N.U.	9439	9179.1	8942.5	N.U.
01/10/2020 16:26	5.9	18.3	981.3	45.9	13	115.1	13.1	119.4	13.1	N.U.	N.U.	9437.2	9180.3	8945.5	N.U.
01/10/2020 16:26	5.9	18.3	981.4	48.2	13	113.9	13.1	118.9	13.1	N.U.	N.U.	9432.3	9182.7	8946.7	N.U.
01/10/2020 16:26	5.9	18.3	981.2	46.5	13	112.7	13.1	116.9	13.1	N.U.	N.U.	9436	9185.1	8950.9	N.U.
01/10/2020 16:27	5.9	18.3	981.4	45.1	13	110.2	13.1	115.9	13.1	N.U.	N.U.	9439	9190	8953.3	N.U.
01/10/2020 16:27	5.9	18.3	981.4	47.4	13	110.2	13.1	113.4	13.1	N.U.	N.U.	9434.1	9190	8958.6	N.U.
01/10/2020 16:27	5.9	18.3	981.3	45.3	13	106.3	13.1	112.8	13.1	N.U.	N.U.	9438.4	9197.9	8959.8	N.U.
01/10/2020 16:27	5.9	18.3	981.6	46.5	13	106.6	13.1	109.8	13.1	N.U.	N.U.	9436	9197.3	8966.4	N.U.
01/10/2020 16:27	5.9	18.3	981.3	47.1	13	105	13.1	109.3	13.1	N.U.	N.U.	9434.7	9200.3	8967.6	N.U.
01/10/2020 16:27	5.9	18.3	981.4	45.1	13	103.5	13.1	108.5	13.1	N.U.	N.U.	9439	9203.3	8969.4	N.U.
01/10/2020 16:28	5.9	18.3	981.4	45.9	13	103.2	13.1	107.4	13.1	N.U.	N.U.	9437.2	9203.9	8971.8	N.U.
01/10/2020 16:28	5.9	18.3	981.5	45.1	13	101.7	13.1	105.7	13.1	N.U.	N.U.	9439	9207	8975.4	N.U.
01/10/2020 16:28	5.9	18.3	981.5	46.5	13	99.8	13.1	104.1	13.1	N.U.	N.U.	9436	9210.6	8979	N.U.
01/10/2020 16:28	5.9	18.3	981.4	47	13	99.2	13.1	102.7	13.1	N.U.	N.U.	9434.7	9211.8	8982	N.U.
01/10/2020 16:28	5.9	18.3	981.1	47.6	13	98	13.1	101.1	13.1	N.U.	N.U.	9433.5	9214.3	8985.6	N.U.
01/10/2020 16:28	5.9	18.3	981.4	46.1	13	96.5	13.1	100.8	13.1	N.U.	N.U.	9436.6	9217.3	8986.2	N.U.
01/10/2020 16:29	5.9	18.3	981.6	46.7	13	95.6	13.1	99.7	13.1	N.U.	N.U.	9435.3	9219.1	8988.6	N.U.

Date/time	Vbatt	Temp.	Press.	Channel 1 ((°C)	Channel 2 ((°C)	Channel 3 ((°C)	Channel 4 ((°C)	CH1 Raw (Digits)	CH2 Raw (Digits)	CH3 Raw (Digits)	CH4 Raw (Digits)				
01/10/2020 16:29	5.9	18.3	981.2	44.1	13	94.9	13.1	98.4	13.1	N.U.	N.U.	9440.9	9220.3	8991.6	N.U.
01/10/2020 16:29	5.9	18.2	981.3	47	13	94	13.1	97.3	13.1	N.U.	N.U.	9434.7	9222.2	8994	N.U.
01/10/2020 16:29	5.9	18.2	981.2	47.3	13	93.7	13.1	96.4	13.1	N.U.	N.U.	9434.1	9222.8	8995.8	N.U.
01/10/2020 16:29	5.9	18.2	981.3	46.7	13	89.7	13.1	95.5	13.1	N.U.	N.U.	9435.3	9230.7	8997.6	N.U.
01/10/2020 16:29	5.9	18.2	981.4	44.4	13	90	13.1	95	13.1	N.U.	N.U.	9440.3	9230.1	8998.8	N.U.
01/10/2020 16:30	5.9	18.2	981.3	47	13	94.9	13	98.3	13.1	N.U.	N.U.	9434.7	9220.3	8991.6	N.U.
01/10/2020 16:30	5.9	18.2	981.2	45.9	13	104.1	13.1	107.9	13.1	N.U.	N.U.	9437.2	9202.1	8970.6	N.U.
01/10/2020 16:30	5.9	18.2	981.2	45.9	13	108.7	13.1	111.7	13.1	N.U.	N.U.	9437.2	9193	8962.2	N.U.
01/10/2020 16:30	5.9	18.2	981.3	45.9	13	108.7	13	112.5	13.1	N.U.	N.U.	9437.2	9193	8960.4	N.U.
01/10/2020 16:30	5.9	18.2	981.3	46.7	13	109.6	13.1	111.7	13.1	N.U.	N.U.	9435.3	9191.2	8962.2	N.U.
01/10/2020 16:31	5.9	18.1	981.2	45.9	13	107.4	13	110.9	13.1	N.U.	N.U.	9437.2	9195.4	8964	N.U.
01/10/2020 16:31	5.9	18.1	981.4	44.7	13	107.1	13	109.8	13.1	N.U.	N.U.	9439.6	9196.1	8966.4	N.U.
01/10/2020 16:31	5.9	18.1	981.2	46.4	13	105.9	13	108.9	13.1	N.U.	N.U.	9436	9198.5	8968.2	N.U.
01/10/2020 16:31	5.9	18.1	981.2	46.4	13	105	13	107.9	13.1	N.U.	N.U.	9436	9200.3	8970.6	N.U.
01/10/2020 16:31	5.9	18.1	981.3	46.4	13	105	13	108.4	13.1	N.U.	N.U.	9436	9200.3	8969.4	N.U.
01/10/2020 16:31	5.9	18.1	981.4	48.1	13	106.2	13	110.3	13.1	N.U.	N.U.	9432.3	9197.9	8965.2	N.U.
01/10/2020 16:32	5.9	18.1	981.2	46.4	13	109	13	113.3	13.1	N.U.	N.U.	9436	9192.4	8958.6	N.U.
01/10/2020 16:32	5.9	18	981.2	46.1	13	108.7	13	113	13.1	N.U.	N.U.	9436.6	9193	8959.2	N.U.
01/10/2020 16:32	5.9	18	981.2	45.6	13	108.7	13	113.6	13.1	N.U.	N.U.	9437.8	9193	8958	N.U.
01/10/2020 16:32	5.9	18	981.2	44.7	13	107.7	13	113.6	13.1	N.U.	N.U.	9439.6	9194.8	8958	N.U.
01/10/2020 16:32	5.9	18	981.3	45	13	108	13	113	13.1	N.U.	N.U.	9439	9194.2	8959.2	N.U.
01/10/2020 16:32	5.9	18	981.2	48.1	13	107.7	13	112.8	13.1	N.U.	N.U.	9432.3	9194.8	8959.8	N.U.
01/10/2020 16:33	5.9	18	981.3	45.2	12.9	108	13	113	13.1	N.U.	N.U.	9438.4	9194.2	8959.2	N.U.
01/10/2020 16:33	5.9	18	981.3	45.8	12.9	109.9	13	112.2	13.1	N.U.	N.U.	9437.2	9190.6	8961	N.U.
01/10/2020 16:33	5.9	18	981.1	47	13	107.7	13	112.5	13.1	N.U.	N.U.	9434.7	9194.8	8960.4	N.U.
01/10/2020 16:33	5.9	18	981.2	47.2	12.9	110.8	13	113	13	N.U.	N.U.	9434.1	9188.8	8959.2	N.U.
01/10/2020 16:33	5.9	17.9	981.4	48.1	13	108.7	13	113	13	N.U.	N.U.	9432.3	9193	8959.2	N.U.
01/10/2020 16:33	5.9	17.9	981	45.5	12.9	108.7	13	112.1	13	N.U.	N.U.	9437.8	9193	8961	N.U.
01/10/2020 16:34	5.9	17.9	981.2	46.4	12.9	108	13	112.4	13	N.U.	N.U.	9436	9194.2	8960.4	N.U.
01/10/2020 16:34	5.9	17.9	981.3	46.9	12.9	109.3	13	112.4	13	N.U.	N.U.	9434.7	9191.8	8960.4	N.U.
01/10/2020 16:34	5.9	17.9	981.3	47.8	12.9	108	13	113	13	N.U.	N.U.	9432.9	9194.2	8959.2	N.U.
01/10/2020 16:34	5.9	17.9	981	46.4	12.9	108.7	13	112.1	13	N.U.	N.U.	9436	9193	8961	N.U.
01/10/2020 16:34	5.9	17.9	981.1	46.9	12.9	107.4	13	112.1	13	N.U.	N.U.	9434.7	9195.4	8961	N.U.
01/10/2020 16:34	5.9	17.9	981.3	45.8	12.9	108.7	13	112.1	13	N.U.	N.U.	9437.2	9193	8961	N.U.
01/10/2020 16:35	5.9	17.8	981.1	44.9	12.9	110.2	13	112.1	13	N.U.	N.U.	9439	9190	8961	N.U.
01/10/2020 16:35	5.9	17.8	981.2	44.9	12.9	108.7	13	111.9	13	N.U.	N.U.	9439	9193	8961.6	N.U.
01/10/2020 16:35	5.9	17.8	981	45.8	12.9	108.3	13	113.5	13	N.U.	N.U.	9437.2	9193.6	8958	N.U.
01/10/2020 16:35	5.9	17.8	981.1	45.8	12.9	108.6	13	113	13	N.U.	N.U.	9437.2	9193	8959.2	N.U.
				((°C)	((°C)	((°C)	((°C)	((°C)	((°C)	((°C)	((°C)	(Digits)	(Digits)	(Digits)	(Digits)
01/10/2020 14:34	6	16.9	983.1	-4.6	13.7	12.9	13.9	18	14	N.U.	N.U.	9546.9	9384.4	9170	N.U.
01/10/2020 14:35	6	17	982.8	-5	13.6	12.9	13.9	17.7	14	N.U.	N.U.	9547.5	9384.4	9170.6	N.U.
01/10/2020 14:35	6	17.3	983	-4.7	13.6	12.5	13.8	17.6	13.9	N.U.	N.U.	9546.9	9385	9170.6	N.U.
01/10/2020 14:35	6	17.3	982.6	-4.2	13.5	11.9	13.8	17.9	13.9	N.U.	N.U.	9545.6	9386.3	9170	N.U.
01/10/2020 14:36	6	17.4	983.1	-4.2	13.5	12.5	13.8	17.6	13.9	N.U.	N.U.	9545.6	9385	9170.6	N.U.
01/10/2020 14:36	6	17.4	983	-3.9	13.5	11.9	13.7	17.3	13.9	N.U.	N.U.	9545	9386.3	9171.2	N.U.
01/10/2020 14:36	6	17.5	983.1	-4.2	13.5	13.1	13.7	17.6	13.9	N.U.	N.U.	9545.6	9383.8	9170.6	N.U.
01/10/2020 14:36	6	17.6	982.8	-4.2	13.5	11.9	13.7	17.5	13.9	N.U.	N.U.	9545.6	9386.3	9170.6	N.U.
01/10/2020 14:36	6	17.6	983.2	-4.5	13.5	12.5	13.7	17.8	13.9	N.U.	N.U.	9546.2	9385	9170	N.U.
01/10/2020 14:36	6	17.7	983	-3.6	13.5	12.5	13.7	17.3	13.9	N.U.	N.U.	9544.4	9385	9171.2	N.U.

Date/time	Vbatt	Temp.	Press.	Channel 1 ((°C)	Channel 2 ((°C)	Channel 3 ((°C)	Channel 4 ((°C)	CH1 Raw (Digits)	CH2 Raw (Digits)	CH3 Raw (Digits)	CH4 Raw (Digits)				
01/10/2020 16:37	5.9	17.6	981.2	46.6	12.9	109.2	13	111.9	13	N.U.	N.U.	9435.3	9191.8	8961.6	N.U.
01/10/2020 16:37	5.9	17.6	981.1	46.1	12.9	108.9	13	112.1	13	N.U.	N.U.	9436.6	9192.4	8961	N.U.
01/10/2020 16:38	5.9	17.6	981	46.3	12.8	108.9	13	112.4	13	N.U.	N.U.	9436	9192.4	8960.4	N.U.
01/10/2020 16:38	5.9	17.6	981.2	46.4	12.9	107.1	13	112.1	13	N.U.	N.U.	9436	9196.1	8961	N.U.
01/10/2020 16:38	5.9	17.6	981.3	46.9	12.8	108	13	113	13	N.U.	N.U.	9434.7	9194.2	8959.2	N.U.
01/10/2020 16:38	5.9	17.6	981.1	45.7	12.8	110.1	13	113	13	N.U.	N.U.	9437.2	9190	8959.2	N.U.
01/10/2020 16:38	5.9	17.6	981.2	47.2	12.9	109.5	13	113	13	N.U.	N.U.	9434.1	9191.2	8959.2	N.U.
01/10/2020 16:38	5.9	17.6	981.3	46	12.8	108.3	13	111.3	13	N.U.	N.U.	9436.6	9193.6	8962.8	N.U.
01/10/2020 16:39	5.9	17.6	981.2	46.9	12.8	109.5	13	112.1	13	N.U.	N.U.	9434.7	9191.2	8961	N.U.
01/10/2020 16:39	5.9	17.5	981.1	44.9	12.8	108.9	13	112.4	13	N.U.	N.U.	9439	9192.4	8960.4	N.U.
01/10/2020 16:39	5.9	17.5	981	46.6	12.8	109.2	13	112.1	13	N.U.	N.U.	9435.3	9191.8	8961	N.U.
01/10/2020 16:39	5.9	17.5	981.2	46.3	12.8	108	13	112.1	13	N.U.	N.U.	9436	9194.2	8961	N.U.
01/10/2020 16:39	5.9	17.5	981	46.3	12.8	107.4	13	111.5	13	N.U.	N.U.	9436	9195.4	8962.2	N.U.
01/10/2020 16:39	5.9	17.5	981	45.1	12.8	108.9	13	112.9	13	N.U.	N.U.	9438.4	9192.4	8959.2	N.U.
01/10/2020 16:40	5.9	17.5	981.3	45.4	12.8	110.1	13	112.9	13	N.U.	N.U.	9437.8	9190	8959.2	N.U.
01/10/2020 16:40	5.9	17.5	980.9	47.2	12.8	108.3	13	111.5	13	N.U.	N.U.	9434.1	9193.6	8962.2	N.U.
01/10/2020 16:40	5.9	17.5	981.1	47.2	12.8	110.1	13	112.9	13	N.U.	N.U.	9434.1	9190	8959.2	N.U.
01/10/2020 16:40	5.9	17.5	981.3	46	12.8	108	13	112.4	13	N.U.	N.U.	9436.6	9194.2	8960.4	N.U.
01/10/2020 16:40	5.9	17.5	981.2	46.9	12.8	108.6	13	112.4	13	N.U.	N.U.	9434.7	9193	8960.4	N.U.
01/10/2020 16:41	5.9	17.5	981.3	47.7	12.8	108.6	13	112.1	13	N.U.	N.U.	9432.9	9193	8961	N.U.
01/10/2020 16:41	5.9	17.5	981	46	12.8	109.2	13	111.5	13	N.U.	N.U.	9436.6	9191.8	8962.2	N.U.
01/10/2020 16:41	5.9	17.5	981	46	12.8	108.9	13	112.1	13	N.U.	N.U.	9436.6	9192.4	8961	N.U.
01/10/2020 16:41	5.9	17.4	981.2	46.3	12.8	108.9	13	112.4	13	N.U.	N.U.	9436	9192.4	8960.4	N.U.
01/10/2020 16:41	5.9	17.4	981	46.9	12.8	108.6	13	112.1	13	N.U.	N.U.	9434.7	9193	8961	N.U.
01/10/2020 16:41	5.9	17.4	981.2	46.3	12.8	108.3	13	111.8	13	N.U.	N.U.	9436	9193.6	8961.6	N.U.
01/10/2020 16:42	5.9	17.4	981.1	46.9	12.8	108.6	13	112.1	13	N.U.	N.U.	9434.7	9193	8961	N.U.
01/10/2020 16:42	5.9	17.4	981.2	46.9	12.8	108.6	13	112.1	13	N.U.	N.U.	9434.7	9193	8961	N.U.
01/10/2020 16:42	5.9	17.4	981.2	46.9	12.8	107.4	13	112.9	13	N.U.	N.U.	9434.7	9195.4	8959.2	N.U.
01/10/2020 16:42	5.9	17.4	981.2	47.4	12.8	108	13	111.3	13	N.U.	N.U.	9433.5	9194.2	8962.8	N.U.
01/10/2020 16:42	5.9	17.4	981.1	46.6	12.8	108.6	13	112.9	13	N.U.	N.U.	9435.3	9193	8959.2	N.U.
01/10/2020 16:42	5.9	17.4	981	46	12.8	108.9	13	111.8	13	N.U.	N.U.	9436.6	9192.4	8961.6	N.U.
01/10/2020 16:43	5.9	17.4	981.1	46.3	12.8	107.7	13	112.1	13	N.U.	N.U.	9436	9194.8	8961	N.U.
01/10/2020 16:43	5.9	17.4	980.8	45.7	12.8	108.6	13	112.6	13	N.U.	N.U.	9437.2	9193	8959.8	N.U.
01/10/2020 16:43	5.9	17.4	981.2	46.3	12.8	108.6	13	112.1	13	N.U.	N.U.	9436	9193	8961	N.U.
01/10/2020 16:43	5.9	17.4	981.1	47.2	12.8	108.9	13	112.9	13	N.U.	N.U.	9434.1	9192.4	8959.2	N.U.
01/10/2020 16:43	5.9	17.4	981.2	44.6	12.8	108	13	111.8	13	N.U.	N.U.	9439.6	9194.2	8961.6	N.U.
01/10/2020 16:43	5.9	17.3	981.3	46	12.8	108	13	112.4	13	N.U.	N.U.	9436.6	9194.2	8960.4	N.U.
01/10/2020 16:44	5.9	17.3	981.1	46.9	12.8	108.6	13	111.5	13	N.U.	N.U.	9434.7	9193	8962.2	N.U.
01/10/2020 16:44	5.9	17.3	981.1	46.3	12.8	108	13	112.1	13	N.U.	N.U.	9436	9194.2	8961	N.U.
01/10/2020 16:44	5.9	17.3	981	46.3	12.8	108.9	13	111.3	13	N.U.	N.U.	9436	9192.4	8962.8	N.U.
01/10/2020 16:44	5.9	17.3	980.6	47.2	12.8	108	13	112.1	13	N.U.	N.U.	9434.1	9194.2	8961	N.U.
01/10/2020 16:44	5.9	17.3	981	45.4	12.8	107.9	12.9	111.5	13	N.U.	N.U.	9437.8	9194.2	8962.2	N.U.
01/10/2020 16:44	5.9	17.3	981	46	12.8	107.3	12.9	112.1	13	N.U.	N.U.	9436.6	9195.4	8961	N.U.
01/10/2020 16:45	5.9	17.3	980.9	46.6	12.8	108.9	13	112.1	13	N.U.	N.U.	9435.3	9192.4	8961	N.U.
01/10/2020 16:45	5.9	17.3	980.8	46.6	12.8	107.6	12.9	111.5	13	N.U.	N.U.	9435.3	9194.8	8962.2	N.U.
01/10/2020 16:45	5.9	17.3	980.8	46.6	12.8	109.2	12.9	112.1	13	N.U.	N.U.	9435.3	9191.8	8961	N.U.
01/10/2020 16:45	5.9	17.3	981.1	46	12.8	107.4	13	111.8	13	N.U.	N.U.	9436.6	9195.4	8961.6	N.U.
01/10/2020 16:45	5.9	17.3	980.9	48	12.8	107	12.9	112.9	13	N.U.	N.U.	9432.3	9196.1	8959.2	N.U.
01/10/2020 16:45	5.9	17.3	981.2	46.3	12.8	108.5	12.9	112.1	13	N.U.	N.U.	9436	9193	8961	N.U.

Date/time	Vbatt	Temp.	Press.	Channel 1 ()	(°C)	Channel 2 ()	(°C)	Channel 3 ()	(°C)	Channel 4 ()	(°C)	CH1 Raw (Digits)	CH2 Raw (Digits)	CH3 Raw (Digits)	CH4 Raw (Digits)
01/10/2020 16:46	5.9	17.3	981.2	48	12.8	108.2	12.9	112.6	13	N.U.	N.U.	9432.3	9193.6	8959.8	N.U.
01/10/2020 16:46	5.9	17.3	981.1	46.3	12.8	108.3	13	111.8	13	N.U.	N.U.	9436	9193.6	8961.6	N.U.
01/10/2020 16:46	5.9	17.3	981.1	48	12.8	107.6	12.9	112.1	13	N.U.	N.U.	9432.3	9194.8	8961	N.U.
01/10/2020 16:46	5.9	17.3	980.9	45.7	12.8	107.9	12.9	112.1	13	N.U.	N.U.	9437.2	9194.2	8961	N.U.
01/10/2020 16:46	5.9	17.2	981	47.1	12.8	108.8	12.9	111.7	12.9	N.U.	N.U.	9434.1	9192.4	8961.6	N.U.
01/10/2020 16:47	5.9	17.2	980.9	46.5	12.8	107.9	12.9	111.8	13	N.U.	N.U.	9435.3	9194.2	8961.6	N.U.
01/10/2020 16:47	5.9	17.2	981.1	45.7	12.8	108.2	12.9	111	13	N.U.	N.U.	9437.2	9193.6	8963.4	N.U.
01/10/2020 16:47	5.9	17.2	981	47.1	12.8	106.5	13	109.9	13	N.U.	N.U.	9434.1	9197.3	8965.8	N.U.
01/10/2020 16:47	5.9	17.2	980.9	47.1	12.8	104.9	13	109.3	13	N.U.	N.U.	9434.1	9200.3	8967	N.U.
01/10/2020 16:47	5.9	17.2	980.9	47.4	12.8	104	12.9	108.3	13	N.U.	N.U.	9433.5	9202.1	8969.4	N.U.
01/10/2020 16:47	5.9	17.2	981	45.9	12.8	104	12.9	107.4	12.9	N.U.	N.U.	9436.6	9202.1	8971.2	N.U.

Packer Test: R71917 @23.5m – 25m

Marriott Geotechnical Drilling

**Field Test Sheet - Packer
(Rock)**

Project Name	A303 GI					
Borehole No.	R71917					
Test section	from	23.50	m	to	25.00	m
Length of test section (L)	1.50		m	Date of test	30/10/2020	
Diameter of test section (D)	147		mm	Time at start	1234hrs	
Depth of water level before test (Hw)	Dry		m	Time at finish	1347hrs	
Depth of water level after test	Dry		m			
Gauge height above ground level (Hg)	1.00		m			
Depth of borehole at time of test	29.00		m			
Depth of casing at time of test	1.20		m			
Rock type in section	Chalk					
Pressure gauge type	N/A			Flowmeter type		
Size	N/A			Size	3/4"	
Serial Number	N/A			Serial Number	16011810	
Test type	SINGLE			Inflation pressure	8 bar	
Packer type	Pneumatic			Water Source	Bowser	
Stage pressures				Test Operator	JJ	

Pressure Stage	100kpa		200kpa		300kpa		200kpa		100kpa	
Time (m)	Flow Meter Reading / Water Used (litres)									
0	377.1		688.7		1357		2162.1		2782.1	
1	385.2	8.1	721.1	32.4	1421.8	64.8	2205.7	43.6	2812.4	30.3
2	404	18.8	775.3	54.2	1494.6	72.8	2253.8	48.1	2847.2	34.8
3	422.4	18.4	820.2	44.9	1578.4	83.8	2300.5	46.7	2889.6	42.4
4	449.6	27.2	885.6	65.4	1647.5	69.1	2354.1	53.6	2912.3	22.7
5	468.7	19.1	915.4	29.8	1713.2	65.7	2409.2	55.1	2944.7	32.4
6	488.5	19.8	950.9	35.5	1775.6	62.4	2473.6	64.4	2980.1	35.4
7	506.3	17.8	1009.4	58.5	1841.3	65.7	2529.8	56.2	3012.2	32.1
8	512.4	6.1	1035.8	26.4	1911.2	69.9	2568.7	38.9	3044.9	32.7
9	531.9	19.5	1084.2	48.4	1973.5	62.3	2619.8	51.1	3071.8	26.9
10	558.5	26.6	1128.6	44.4	2036.2	62.7	2678.2	58.4	3101.1	29.3
11										
12										
13										
14										
15										
16										
17										
18										
Average	18.14		43.99		67.92		51.61		31.90	

Remarks & Notes
 1 Pressure readings monitored in real time using calibrated transducers in and above test section (results attached)

LINX 4ch v.2.0.1

30/10/2020 12:34

Vibrating Wire Conversion: Linear

Temperature Conversion: Celsius

Calibration Factors	Channel 1	Channel 2	Channel 3	Channel 4
Sensorname	TOP	MIDDLE	BOTTOM	CV GES
Model	VWT-9100	VWT-9100	VWT-9100	
Serial	351895	351897	351896	
Baro	1013	1013	1013	
TempatCal	20	20	20	
LinFactor	-0.46704	-0.50422	-0.45623	
ConstA	-2.76E-06	-2.49E-06	-7.95E-07	
ConstB	-0.42656	-0.46758	-0.44517	
ConstC	4326.403	4625.507	4174.389	
ConstT	1.043164	0.872405	1.158424	
Sweepmin	800	800	800	
Sweepmax	3500	3500	3500	
Range	2700	2700	2700	
Thermistor	3K	3K	3K	3K
ZeroRdg	9551.1	9420.6	9224.6	
ZeroT	20	20	20	

Date/time	Vbatt	Temp.	Press.	Channel 1	Channel 2	Channel 3	Channel 4	CH1 Raw	CH2 Raw	CH3 Raw	CH4 Raw				
				()	(°C)	()	(°C)	()	(°C)	()	(°C)	(Digits)	(Digits)	(Digits)	(Digits)
30/10/2020 12:34	6	15.1	1002.4	-5.6	14.3	-1.8	14.4	-2.7	14.6	N.U.	N.U.	9550.6	9414.5	9216.7	N.U.
30/10/2020 12:34	6	15.2	1002.1	-5.6	14.3	-1.5	14.4	-2.4	14.6	N.U.	N.U.	9550.6	9413.9	9216.1	N.U.
30/10/2020 12:34	6	15.2	1002.1	-6.2	14.3	-1.2	14.4	-2.1	14.6	N.U.	N.U.	9551.8	9413.2	9215.5	N.U.
30/10/2020 12:34	6	15.3	1002.3	-5.6	14.3	-2.1	14.4	-2.4	14.6	N.U.	N.U.	9550.6	9415.1	9216.1	N.U.
30/10/2020 12:35	6	15.3	1002.2	-5.6	14.3	-2.1	14.4	-2.4	14.6	N.U.	N.U.	9550.6	9415.1	9216.1	N.U.
30/10/2020 12:35	6	15.3	1002.3	-5.4	14.3	-2.1	14.3	-2.4	14.6	N.U.	N.U.	9550	9415.1	9216.1	N.U.
30/10/2020 12:35	6	15.4	1002.2	-5.6	14.3	-1.8	14.3	-2.8	14.5	N.U.	N.U.	9550.6	9414.5	9216.7	N.U.
30/10/2020 12:35	6	15.4	1002	-5.6	14.3	-1.2	14.3	-2.5	14.5	N.U.	N.U.	9550.6	9413.2	9216.1	N.U.
30/10/2020 12:35	6	15.4	1002.3	-4.9	14.3	-1.8	14.3	-2.8	14.5	N.U.	N.U.	9548.7	9414.5	9216.7	N.U.
30/10/2020 12:36	6	15.5	1002.2	-6.6	14.3	-1.8	14.3	-2.5	14.5	N.U.	N.U.	9552.4	9414.5	9216.1	N.U.
30/10/2020 12:36	6	15.5	1002.4	-5.1	14.3	-2.1	14.3	-2.5	14.5	N.U.	N.U.	9549.3	9415.1	9216.1	N.U.
30/10/2020 12:36	6	15.6	1002.3	-5.4	14.3	-2.1	14.3	-2.5	14.5	N.U.	N.U.	9550	9415.1	9216.1	N.U.
30/10/2020 12:36	6	15.6	1002.1	-5.1	14.3	-0.6	14.3	-1.7	14.5	N.U.	N.U.	9549.3	9412	9214.3	N.U.
30/10/2020 12:36	6	15.6	1002	-5.1	14.3	-0.3	14.3	-0.3	14.5	N.U.	N.U.	9549.3	9411.4	9211.2	N.U.
30/10/2020 12:36	6	15.7	1002.2	-5.7	14.3	0.6	14.3	0	14.5	N.U.	N.U.	9550.6	9409.6	9210.6	N.U.
30/10/2020 12:37	6	15.7	1002.2	-5.7	14.3	1.6	14.3	1.1	14.5	N.U.	N.U.	9550.6	9407.7	9208.2	N.U.
30/10/2020 12:37	6	15.7	1002.2	-5.7	14.3	2.2	14.3	1.4	14.5	N.U.	N.U.	9550.6	9406.5	9207.6	N.U.
30/10/2020 12:37	6	15.8	1002.2	-5.7	14.3	2.2	14.3	1.7	14.5	N.U.	N.U.	9550.6	9406.5	9207	N.U.
30/10/2020 12:37	6	15.8	1002.3	-5.7	14.3	4	14.3	4.7	14.5	N.U.	N.U.	9550.6	9402.8	9200.3	N.U.
30/10/2020 12:37	6	15.8	1002.1	-5.4	14.3	7.1	14.3	6.4	14.5	N.U.	N.U.	9550	9396.7	9196.7	N.U.
30/10/2020 12:37	6	15.9	1002.3	-4.9	14.3	10.8	14.3	8	14.5	N.U.	N.U.	9548.7	9389.3	9193	N.U.
30/10/2020 12:38	6	15.9	1002.2	-5.5	14.2	14.2	14.3	12.9	14.4	N.U.	N.U.	9550	9382.6	9182.1	N.U.
30/10/2020 12:38	6	15.9	1002.4	-5.7	14.3	15.7	14.3	14.6	14.4	N.U.	N.U.	9550.6	9379.5	9178.5	N.U.
30/10/2020 12:38	6	15.9	1002.3	-4.9	14.3	17	14.3	15.1	14.4	N.U.	N.U.	9548.7	9377.1	9177.3	N.U.
30/10/2020 12:38	6	16	1002.2	-5.8	14.2	15.7	14.3	13.7	14.4	N.U.	N.U.	9550.6	9379.5	9180.3	N.U.

Date/time	Vbatt	Temp.	Press.	Channel 1		Channel 2		Channel 3		Channel 4		CH1 Raw	CH2 Raw	CH3 Raw	CH4 Raw
				()	(°C)	()	(°C)	()	(°C)	()	(°C)	(Digits)	(Digits)	(Digits)	(Digits)
30/10/2020 12:38	6	16	1002.3	-5.5	14.2	12	14.3	8.5	14.4	N.U.	N.U.	9550	9386.9	9191.8	N.U.
30/10/2020 12:38	6	16	1002	-5.8	14.2	9.5	14.3	7.7	14.4	N.U.	N.U.	9550.6	9391.8	9193.6	N.U.
30/10/2020 12:39	6	16	1002.2	-5.2	14.2	14.2	14.3	13.2	14.4	N.U.	N.U.	9549.3	9382.6	9181.5	N.U.
30/10/2020 12:39	6	16.1	1002.1	-5.8	14.2	22.2	14.3	21.2	14.4	N.U.	N.U.	9550.6	9366.7	9163.9	N.U.
30/10/2020 12:39	6	16.1	1002.1	-6.1	14.2	31.5	14.3	30.6	14.4	N.U.	N.U.	9551.2	9348.3	9143.4	N.U.
30/10/2020 12:39	6	16.1	1002.1	-5.5	14.2	40.1	14.3	40	14.4	N.U.	N.U.	9550	9331.2	9122.8	N.U.
30/10/2020 12:39	6	16.1	1002.2	-5.8	14.2	50.6	14.3	49.9	14.4	N.U.	N.U.	9550.6	9310.4	9101.1	N.U.
30/10/2020 12:39	6	16.1	1002.1	-5.5	14.2	58.9	14.3	60.6	14.4	N.U.	N.U.	9550	9294	9077.6	N.U.
30/10/2020 12:40	6	16.2	1002.3	-5.8	14.2	69.3	14.3	70.2	14.4	N.U.	N.U.	9550.6	9273.2	9056.5	N.U.
30/10/2020 12:40	6	16.2	1002.1	-5.5	14.2	77.9	14.3	80.1	14.4	N.U.	N.U.	9550	9256.2	9034.8	N.U.
30/10/2020 12:40	6	16.2	1002.1	-5.5	14.2	84.7	14.3	86.1	14.4	N.U.	N.U.	9550	9242.8	9021.6	N.U.
30/10/2020 12:40	6	16.2	1002.3	-5.5	14.2	91.6	14.2	92.7	14.4	N.U.	N.U.	9550	9228.8	9007.2	N.U.
30/10/2020 12:40	6	16.3	1002.2	-5.5	14.2	92	14.3	92.7	14.4	N.U.	N.U.	9550	9228.2	9007.2	N.U.
30/10/2020 12:41	6	16.3	1002.3	-5.5	14.2	82.2	14.3	84.2	14.4	N.U.	N.U.	9550	9247.7	9025.8	N.U.
30/10/2020 12:41	6	16.3	1001.9	-5.9	14.1	73.3	14.3	77.4	14.4	N.U.	N.U.	9550.6	9265.3	9040.8	N.U.
30/10/2020 12:41	6	16.3	1001.9	-5.9	14.1	68.1	14.3	73	14.4	N.U.	N.U.	9550.6	9275.7	9050.5	N.U.
30/10/2020 12:41	6	16.3	1002	-5.6	14.1	66.2	14.3	71.6	14.4	N.U.	N.U.	9550	9279.3	9053.5	N.U.
30/10/2020 12:41	6	16.3	1002.3	-5	14.1	66.9	14.3	71.1	14.4	N.U.	N.U.	9548.7	9278.1	9054.7	N.U.
30/10/2020 12:41	5.9	16.3	1002	-5.9	14.1	69	14.3	72.4	14.4	N.U.	N.U.	9550.6	9273.9	9051.7	N.U.
30/10/2020 12:42	6	16.4	1001.8	-5.6	14.1	71.5	14.3	75.6	14.3	N.U.	N.U.	9550	9269	9044.5	N.U.
30/10/2020 12:42	6	16.4	1002.1	-5	14.1	75.1	14.3	78.9	14.3	N.U.	N.U.	9548.7	9261.7	9037.2	N.U.
30/10/2020 12:42	5.9	16.4	1002.1	-5.6	14.1	80.4	14.3	82.5	14.3	N.U.	N.U.	9550	9251.3	9029.4	N.U.
30/10/2020 12:42	6	16.4	1002.2	-5.1	14.1	79.7	14.3	83.3	14.3	N.U.	N.U.	9548.7	9252.5	9027.6	N.U.
30/10/2020 12:42	6	16.4	1002	-5.4	14.1	78.8	14.2	81.7	14.3	N.U.	N.U.	9549.3	9254.4	9031.2	N.U.
30/10/2020 12:42	5.9	16.4	1001.9	-4.8	14.1	79.1	14.2	82.2	14.3	N.U.	N.U.	9548.1	9253.8	9030	N.U.
30/10/2020 12:43	6	16.4	1002.3	-5.6	14.1	86.1	14.2	90.7	14.3	N.U.	N.U.	9550	9239.8	9011.4	N.U.
30/10/2020 12:43	6	16.5	1002	-5.1	14	97.2	14.2	100.3	14.3	N.U.	N.U.	9548.7	9217.9	8990.4	N.U.
30/10/2020 12:43	5.9	16.5	1001.8	-5.1	14	98.7	14.2	101.9	14.3	N.U.	N.U.	9548.7	9214.9	8986.8	N.U.
30/10/2020 12:43	6	16.5	1001.8	-4.6	14	98.3	14.1	101	14.3	N.U.	N.U.	9547.5	9215.5	8988.6	N.U.
30/10/2020 12:43	6	16.5	1002.2	-4.9	14	97.4	14.1	99.7	14.3	N.U.	N.U.	9548.1	9217.3	8991.6	N.U.
30/10/2020 12:43	5.9	16.5	1002.1	-5.4	14	97.7	14.1	100.2	14.3	N.U.	N.U.	9549.3	9216.7	8990.4	N.U.
30/10/2020 12:44	5.9	16.5	1002.3	-6	14	98.9	14.1	101.3	14.3	N.U.	N.U.	9550.6	9214.3	8988	N.U.
30/10/2020 12:44	5.9	16.5	1002.1	-5.5	13.9	99.5	14.1	102.7	14.3	N.U.	N.U.	9549.3	9213	8985	N.U.
30/10/2020 12:44	6	16.5	1001.8	-6.1	13.9	101	14.1	104	14.2	N.U.	N.U.	9550.6	9210	8982	N.U.
30/10/2020 12:44	5.9	16.6	1002	-5.5	13.9	101.9	14.1	104.2	14.2	N.U.	N.U.	9549.3	9208.2	8981.4	N.U.
30/10/2020 12:44	6	16.6	1002.1	-5.3	13.9	102.5	14	105.1	14.2	N.U.	N.U.	9548.7	9207	8979.6	N.U.
30/10/2020 12:44	5.9	16.6	1002.2	-5.3	13.9	102.5	14	105.3	14.2	N.U.	N.U.	9548.7	9207	8979	N.U.
30/10/2020 12:45	5.9	16.6	1002	-5.3	13.9	103.4	14	106.4	14.1	N.U.	N.U.	9548.7	9205.2	8976.6	N.U.
30/10/2020 12:45	6	16.6	1002	-5.6	13.9	103.3	13.9	105.5	14.1	N.U.	N.U.	9549.3	9205.2	8978.4	N.U.
30/10/2020 12:45	5.9	16.6	1002.2	-5.4	13.8	103	13.9	105	14.1	N.U.	N.U.	9548.7	9205.8	8979.6	N.U.
30/10/2020 12:45	5.9	16.6	1002	-5.4	13.8	102.7	13.9	105.8	14.1	N.U.	N.U.	9548.7	9206.4	8977.8	N.U.
30/10/2020 12:45	6	16.6	1002	-6.2	13.8	103.6	13.9	106.6	14.1	N.U.	N.U.	9550.6	9204.5	8976	N.U.
30/10/2020 12:45	5.9	16.6	1002	-6.2	13.8	105.7	13.9	107.4	14.1	N.U.	N.U.	9550.6	9200.3	8974.2	N.U.
30/10/2020 12:46	5.9	16.6	1002.1	-5.4	13.7	106.3	13.8	109	14.1	N.U.	N.U.	9548.7	9199.1	8970.6	N.U.
30/10/2020 12:46	6	16.6	1002	-5.4	13.7	106.3	13.8	110.1	14.1	N.U.	N.U.	9548.7	9199.1	8968.2	N.U.
30/10/2020 12:46	5.9	16.7	1001.8	-5.4	13.7	106.3	13.8	109.6	14.1	N.U.	N.U.	9548.7	9199.1	8969.4	N.U.
30/10/2020 12:46	5.9	16.7	1002.1	-5.1	13.7	105.1	13.8	108.4	14	N.U.	N.U.	9548.1	9201.5	8971.8	N.U.
30/10/2020 12:46	6	16.7	1002.1	-4.6	13.7	103.8	13.7	107	14	N.U.	N.U.	9546.9	9203.9	8974.8	N.U.

Date/time	Vbatt	Temp.	Press.	Channel 1		Channel 2		Channel 3		Channel 4		CH1 Raw	CH2 Raw	CH3 Raw	CH4 Raw
				()	(°C)	()	(°C)	()	(°C)	()	(°C)	(Digits)	(Digits)	(Digits)	(Digits)
30/10/2020 12:47	6	16.7	1002	-5.2	13.7	103.2	13.7	107.8	14	N.U.	N.U.	9548.1	9205.2	8973	N.U.
30/10/2020 12:47	5.9	16.7	1001.8	-5.5	13.7	103.5	13.7	105.9	14	N.U.	N.U.	9548.7	9204.5	8977.2	N.U.
30/10/2020 12:47	5.9	16.7	1001.5	-5.2	13.7	102.2	13.7	105.3	13.9	N.U.	N.U.	9548.1	9207	8978.4	N.U.
30/10/2020 12:47	5.9	16.7	1001.9	-5.5	13.7	103.7	13.7	107.2	13.9	N.U.	N.U.	9548.7	9203.9	8974.2	N.U.
30/10/2020 12:47	5.9	16.7	1002	-5.3	13.6	102.8	13.7	106.9	13.9	N.U.	N.U.	9548.1	9205.8	8974.8	N.U.
30/10/2020 12:47	5.9	16.7	1002	-5.6	13.6	102.2	13.7	105.8	13.9	N.U.	N.U.	9548.7	9207	8977.2	N.U.
30/10/2020 12:48	5.9	16.8	1002	-5.3	13.6	101.5	13.6	104.9	13.9	N.U.	N.U.	9548.1	9208.2	8979	N.U.
30/10/2020 12:48	5.9	16.8	1002	-5	13.6	101.5	13.6	107.1	13.9	N.U.	N.U.	9547.5	9208.2	8974.2	N.U.
30/10/2020 12:48	5.9	16.8	1001.8	-5.6	13.5	102.1	13.6	105.5	13.9	N.U.	N.U.	9548.7	9207	8977.8	N.U.
30/10/2020 12:48	5.9	16.8	1002.2	-5	13.5	103.7	13.6	105.2	13.9	N.U.	N.U.	9547.5	9203.9	8978.4	N.U.
30/10/2020 12:48	5.9	16.8	1001.9	-5	13.5	103.3	13.5	106.2	13.8	N.U.	N.U.	9547.5	9204.5	8976	N.U.
30/10/2020 12:48	5.9	16.8	1002	-5.6	13.5	102.4	13.5	106.2	13.8	N.U.	N.U.	9548.7	9206.4	8976	N.U.
30/10/2020 12:49	5.9	16.8	1002.1	-4.8	13.5	103	13.5	106	13.8	N.U.	N.U.	9546.9	9205.2	8976.6	N.U.
30/10/2020 12:49	5.9	16.8	1002	-5.6	13.5	102.7	13.5	105.7	13.8	N.U.	N.U.	9548.7	9205.8	8977.2	N.U.
30/10/2020 12:49	5.9	16.8	1001.9	-5.7	13.5	103.3	13.5	106.8	13.8	N.U.	N.U.	9548.7	9204.5	8974.8	N.U.
30/10/2020 12:49	5.9	16.8	1001.9	-4.8	13.5	103.6	13.5	106.2	13.7	N.U.	N.U.	9546.9	9203.9	8976	N.U.
30/10/2020 12:49	5.9	16.8	1002.1	-5.7	13.5	101.4	13.5	104.5	13.7	N.U.	N.U.	9548.7	9208.2	8979.6	N.U.
30/10/2020 12:49	5.9	16.8	1002	-5.1	13.5	103.5	13.5	109.2	13.7	N.U.	N.U.	9547.5	9203.9	8969.4	N.U.
30/10/2020 12:50	5.9	16.8	1002	-5.7	13.5	104.5	13.5	107.5	13.7	N.U.	N.U.	9548.7	9202.1	8973	N.U.
30/10/2020 12:50	5.9	16.8	1002.2	-5.7	13.5	102.3	13.5	108.6	13.7	N.U.	N.U.	9548.7	9206.4	8970.6	N.U.
30/10/2020 12:50	5.9	16.9	1001.9	-5.8	13.4	103.9	13.5	106.2	13.7	N.U.	N.U.	9548.7	9203.3	8976	N.U.
30/10/2020 12:50	5.9	16.9	1002.2	-4.9	13.4	102.9	13.5	105.5	13.7	N.U.	N.U.	9546.9	9205.2	8977.2	N.U.
30/10/2020 12:50	5.9	16.9	1002.1	-5.5	13.4	102.9	13.5	106.4	13.7	N.U.	N.U.	9548.1	9205.2	8975.4	N.U.
30/10/2020 12:50	5.9	16.9	1002.2	-5.8	13.4	102.6	13.5	105.8	13.7	N.U.	N.U.	9548.7	9205.8	8976.6	N.U.
30/10/2020 12:51	5.9	16.9	1002.1	-6.3	13.4	102.9	13.5	106.1	13.7	N.U.	N.U.	9550	9205.2	8976	N.U.
30/10/2020 12:51	5.9	16.9	1002	-5.2	13.4	103.8	13.4	106.6	13.7	N.U.	N.U.	9547.5	9203.3	8974.8	N.U.
30/10/2020 12:51	5.9	16.9	1002.1	-4.9	13.4	104.4	13.4	107.2	13.7	N.U.	N.U.	9546.9	9202.1	8973.6	N.U.
30/10/2020 12:51	5.9	16.9	1002	-5	13.3	104.1	13.4	106.5	13.6	N.U.	N.U.	9546.9	9202.7	8974.8	N.U.
30/10/2020 12:51	5.9	16.9	1001.9	-5.8	13.3	103.2	13.4	107.1	13.6	N.U.	N.U.	9548.7	9204.5	8973.6	N.U.
30/10/2020 12:52	5.9	16.9	1002.2	-5.8	13.3	104.4	13.4	105.5	13.6	N.U.	N.U.	9548.7	9202.1	8977.2	N.U.
30/10/2020 12:52	5.9	16.9	1002	-5.8	13.3	103.5	13.4	105.2	13.6	N.U.	N.U.	9548.7	9203.9	8977.8	N.U.
30/10/2020 12:52	5.9	16.9	1001.8	-5.8	13.3	103.5	13.4	106.8	13.6	N.U.	N.U.	9548.7	9203.9	8974.2	N.U.
30/10/2020 12:52	5.9	16.9	1002.2	-5.5	13.3	104.1	13.4	106	13.6	N.U.	N.U.	9548.1	9202.7	8976	N.U.
30/10/2020 12:52	5.9	16.9	1002.2	-6.5	13.3	102.3	13.4	107.1	13.6	N.U.	N.U.	9550	9206.4	8973.6	N.U.
30/10/2020 12:52	5.9	17	1002	-5.6	13.3	102.8	13.3	106	13.6	N.U.	N.U.	9548.1	9205.2	8976	N.U.
30/10/2020 12:53	5.9	17	1002.1	-5.3	13.3	103.4	13.3	105.7	13.5	N.U.	N.U.	9547.5	9203.9	8976.6	N.U.
30/10/2020 12:53	5.9	17	1001.9	-5.3	13.3	104.7	13.3	106.5	13.5	N.U.	N.U.	9547.5	9201.5	8974.8	N.U.
30/10/2020 12:53	5.9	17	1001.9	-5.3	13.3	102.8	13.3	106.2	13.5	N.U.	N.U.	9547.5	9205.2	8975.4	N.U.
30/10/2020 12:53	5.9	17	1001.9	-5.3	13.3	101.9	13.3	106.5	13.5	N.U.	N.U.	9547.5	9207	8974.8	N.U.
30/10/2020 12:53	5.9	17	1002	-5.1	13.2	103.4	13.3	104.6	13.5	N.U.	N.U.	9546.9	9203.9	8979	N.U.
30/10/2020 12:53	5.9	17	1002	-6.3	13.2	103.4	13.3	106.7	13.5	N.U.	N.U.	9549.3	9203.9	8974.2	N.U.
30/10/2020 12:54	5.9	17	1002	-5.1	13.2	103.4	13.3	105.4	13.5	N.U.	N.U.	9546.9	9203.9	8977.2	N.U.
30/10/2020 12:54	5.9	17	1002.3	-4.8	13.2	101.9	13.3	104.6	13.5	N.U.	N.U.	9546.2	9207	8979	N.U.
30/10/2020 12:54	5.9	17	1002.4	-6	13.2	103.1	13.3	104.5	13.5	N.U.	N.U.	9548.7	9204.5	8979	N.U.
30/10/2020 12:54	5.9	17	1002.3	-5.7	13.2	102.8	13.3	104.2	13.5	N.U.	N.U.	9548.1	9205.2	8979.6	N.U.
30/10/2020 12:54	5.9	17	1002.2	-5.4	13.2	103.1	13.3	104.5	13.5	N.U.	N.U.	9547.5	9204.5	8979	N.U.
30/10/2020 12:54	5.9	17	1002	-5.1	13.2	104.6	13.3	105.8	13.5	N.U.	N.U.	9546.9	9201.5	8976	N.U.
30/10/2020 12:55	5.9	17	1002	-5.1	13.2	109.8	13.3	112.4	13.5	N.U.	N.U.	9546.9	9191.2	8961.6	N.U.

Date/time	Vbatt	Temp.	Press.	Channel 1		Channel 2		Channel 3		Channel 4		CH1 Raw	CH2 Raw	CH3 Raw	CH4 Raw
				()	(°C)	()	(°C)	()	(°C)	()	(°C)	(Digits)	(Digits)	(Digits)	(Digits)
30/10/2020 12:55	5.9	17	1002	-5.1	13.2	113.2	13.3	119.2	13.5	N.U.	N.U.	9546.9	9184.5	8946.7	N.U.
30/10/2020 12:55	5.9	17	1002.2	-5.7	13.1	120.5	13.3	125.5	13.5	N.U.	N.U.	9548.1	9170	8932.9	N.U.
30/10/2020 12:55	5.9	17	1002.2	-5.2	13.1	131.5	13.3	132.3	13.5	N.U.	N.U.	9546.9	9148.2	8918	N.U.
30/10/2020 12:55	5.9	17.1	1002.2	-6	13.1	141.8	13.3	142.9	13.5	N.U.	N.U.	9548.7	9127.6	8894.7	N.U.
30/10/2020 12:55	5.9	17.1	1002.1	-6	13.1	155.2	13.3	159.5	13.5	N.U.	N.U.	9548.7	9101.1	8858.4	N.U.
30/10/2020 12:56	5.9	17.1	1002	-5.5	13.1	166.5	13.3	166.3	13.5	N.U.	N.U.	9547.5	9078.8	8843.5	N.U.
30/10/2020 12:56	5.9	17.1	1002	-5.2	13.1	175.9	13.3	179.1	13.5	N.U.	N.U.	9546.9	9060.1	8815.6	N.U.
30/10/2020 12:56	5.9	17.1	1001.9	-6	13.1	180.8	13.3	182	13.5	N.U.	N.U.	9548.7	9050.5	8809	N.U.
30/10/2020 12:56	5.9	17.1	1002.2	-5.7	13.1	185.9	13.3	188.2	13.4	N.U.	N.U.	9548.1	9040.2	8795.4	N.U.
30/10/2020 12:56	5.9	17.1	1002.1	-5.2	13.1	187.1	13.3	191.4	13.4	N.U.	N.U.	9546.9	9037.8	8788.3	N.U.
30/10/2020 12:56	5.9	17.1	1002.1	-6	13.1	199.8	13.2	201.2	13.4	N.U.	N.U.	9548.7	9012.6	8766.9	N.U.
30/10/2020 12:57	5.9	17.1	1002.2	-5.5	13.1	189.3	13.3	192	13.4	N.U.	N.U.	9547.5	9033.6	8787.1	N.U.
30/10/2020 12:57	5.9	17.1	1001.9	-5.2	13.1	191	13.2	196.8	13.4	N.U.	N.U.	9546.9	9030	8776.4	N.U.
30/10/2020 12:57	5.9	17.1	1002	-5.2	13.1	197.1	13.2	198.5	13.4	N.U.	N.U.	9546.9	9018	8772.9	N.U.
30/10/2020 12:57	5.9	17.1	1002	-5.2	13.1	200.4	13.2	202.5	13.4	N.U.	N.U.	9546.9	9011.4	8764	N.U.
30/10/2020 12:57	5.9	17.1	1002.1	-5.2	13.1	201.3	13.2	205.5	13.4	N.U.	N.U.	9546.9	9009.6	8757.5	N.U.
30/10/2020 12:58	5.9	17.1	1002.2	-5.8	13.1	202.5	13.2	202	13.4	N.U.	N.U.	9548.1	9007.2	8765.2	N.U.
30/10/2020 12:58	5.9	17.1	1002	-5	13.1	198.6	13.2	203.1	13.4	N.U.	N.U.	9546.2	9015	8762.8	N.U.
30/10/2020 12:58	5.9	17.1	1002.4	-5.5	13.1	199.5	13.2	203.1	13.4	N.U.	N.U.	9547.5	9013.2	8762.8	N.U.
30/10/2020 12:58	5.9	17.1	1002	-5.2	13.1	201.9	13.2	206.8	13.4	N.U.	N.U.	9546.9	9008.4	8754.5	N.U.
30/10/2020 12:58	5.9	17.1	1002.4	-5.2	13.1	207.7	13.2	212.4	13.3	N.U.	N.U.	9546.9	8997	8742.1	N.U.
30/10/2020 12:58	5.9	17.1	1002	-5	13.1	200.7	13.2	201.9	13.3	N.U.	N.U.	9546.2	9010.8	8765.2	N.U.
30/10/2020 12:59	5.9	17.1	1002.2	-5.2	13.1	202.5	13.2	205.4	13.3	N.U.	N.U.	9546.9	9007.2	8757.5	N.U.
30/10/2020 12:59	5.9	17.1	1002.3	-5.5	13.1	205.2	13.2	208.7	13.3	N.U.	N.U.	9547.5	9001.8	8750.4	N.U.
30/10/2020 12:59	5.9	17.2	1002.5	-5.2	13.1	210.4	13.2	211.3	13.3	N.U.	N.U.	9546.9	8991.6	8744.4	N.U.
30/10/2020 12:59	5.9	17.2	1002.3	-4.7	13.1	213.1	13.2	217.3	13.3	N.U.	N.U.	9545.6	8986.2	8731.4	N.U.
30/10/2020 12:59	5.9	17.2	1002.3	-5.5	13.1	218.2	13.2	220.5	13.3	N.U.	N.U.	9547.5	8976	8724.3	N.U.
30/10/2020 12:59	5.9	17.2	1002.2	-4.7	13.1	223.1	13.2	223.5	13.3	N.U.	N.U.	9545.6	8966.4	8717.8	N.U.
30/10/2020 13:00	5.9	17.2	1002.2	-5	13	220.4	13.2	223.5	13.3	N.U.	N.U.	9546.2	8971.8	8717.8	N.U.
30/10/2020 13:00	5.9	17.2	1002.1	-5.6	13	223.1	13.2	224	13.3	N.U.	N.U.	9547.5	8966.4	8716.7	N.U.
30/10/2020 13:00	5.9	17.2	1002.2	-5	13	222.5	13.2	227.5	13.3	N.U.	N.U.	9546.2	8967.6	8709	N.U.
30/10/2020 13:00	5.9	17.2	1002.3	-5	13	222.5	13.2	226.7	13.3	N.U.	N.U.	9546.2	8967.6	8710.8	N.U.
30/10/2020 13:00	5.9	17.2	1002.2	-5.3	13	223.7	13.2	225.8	13.3	N.U.	N.U.	9546.9	8965.2	8712.5	N.U.
30/10/2020 13:00	5.9	17.2	1002.2	-5.6	13	224.3	13.2	228.3	13.3	N.U.	N.U.	9547.5	8964	8707.2	N.U.
30/10/2020 13:01	5.9	17.2	1002	-5.3	13	224.3	13.2	226.6	13.3	N.U.	N.U.	9546.9	8964	8710.8	N.U.
30/10/2020 13:01	5.9	17.2	1002.2	-4.7	13	225.8	13.2	228.5	13.3	N.U.	N.U.	9545.6	8961	8706.6	N.U.
30/10/2020 13:01	5.9	17.2	1002	-5.6	13	224.6	13.2	227.7	13.3	N.U.	N.U.	9547.5	8963.4	8708.4	N.U.
30/10/2020 13:01	5.9	17.2	1002.1	-4.4	13	225.2	13.2	228.8	13.3	N.U.	N.U.	9545	8962.2	8706	N.U.
30/10/2020 13:01	5.9	17.2	1002.1	-5.3	13	225.2	13.2	228.8	13.3	N.U.	N.U.	9546.9	8962.2	8706	N.U.
30/10/2020 13:01	5.9	17.2	1002.2	-5.3	13	225.8	13.2	228.3	13.3	N.U.	N.U.	9546.9	8961	8707.2	N.U.
30/10/2020 13:02	5.9	17.2	1002	-4.2	13	225.1	13.1	229.1	13.3	N.U.	N.U.	9544.4	8962.2	8705.5	N.U.
30/10/2020 13:02	5.9	17.2	1002	-5	13	225.2	13.2	228.7	13.2	N.U.	N.U.	9546.2	8962.2	8706	N.U.
30/10/2020 13:02	5.9	17.2	1001.7	-4.4	13	221.5	13.1	223.3	13.2	N.U.	N.U.	9545	8969.4	8717.8	N.U.
30/10/2020 13:02	5.9	17.2	1002.2	-5.6	13	206.1	13.1	207.4	13.2	N.U.	N.U.	9547.5	9000	8752.7	N.U.
30/10/2020 13:02	5.9	17.2	1002.2	-5.3	13	213.7	13.1	218.5	13.2	N.U.	N.U.	9546.9	8985	8728.5	N.U.
30/10/2020 13:03	5.9	17.2	1002.1	-5	13	211.3	13.2	213.9	13.2	N.U.	N.U.	9546.2	8989.8	8738.5	N.U.
30/10/2020 13:03	5.9	17.2	1002.3	-5.3	13	205.5	13.1	208	13.2	N.U.	N.U.	9546.9	9001.2	8751.5	N.U.
30/10/2020 13:03	5.9	17.2	1001.8	-4.8	13	190.1	13.2	191.7	13.2	N.U.	N.U.	9545.6	9031.8	8787.1	N.U.

Date/time	Vbatt	Temp.	Press.	Channel 1		Channel 2		Channel 3		Channel 4		CH1 Raw	CH2 Raw	CH3 Raw	CH4 Raw
				()	(°C)	()	(°C)	()	(°C)	()	(°C)	(Digits)	(Digits)	(Digits)	(Digits)
30/10/2020 13:03	5.9	17.2	1002.2	-5.1	13	180.1	13.2	182.3	13.2	N.U.	N.U.	9546.2	9051.7	8807.8	N.U.
30/10/2020 13:03	5.9	17.3	1002.2	-5.4	13	175.8	13.2	178.2	13.2	N.U.	N.U.	9546.9	9060.1	8816.7	N.U.
30/10/2020 13:03	5.9	17.2	1002.2	-5.1	13	165.8	13.1	165.5	13.2	N.U.	N.U.	9546.2	9080	8844.7	N.U.
30/10/2020 13:04	5.9	17.3	1002.1	-4.8	13	165.2	13.1	167.1	13.2	N.U.	N.U.	9545.6	9081.2	8841.1	N.U.
30/10/2020 13:04	5.9	17.3	1002.3	-5.1	13	156.3	13.1	161.1	13.2	N.U.	N.U.	9546.2	9098.7	8854.2	N.U.
30/10/2020 13:04	5.9	17.3	1002.1	-5.1	13	157.9	13.1	163.6	13.2	N.U.	N.U.	9546.2	9095.7	8848.8	N.U.
30/10/2020 13:04	5.9	17.3	1002.1	-5.1	13	162.1	13.1	161.4	13.2	N.U.	N.U.	9546.2	9087.2	8853.6	N.U.
30/10/2020 13:04	5.9	17.3	1002	-5.4	13	162.7	13.1	165.7	13.2	N.U.	N.U.	9546.9	9086	8844.1	N.U.
30/10/2020 13:04	5.9	17.3	1002	-5.1	13	165.2	13.1	167.9	13.2	N.U.	N.U.	9546.2	9081.2	8839.3	N.U.
30/10/2020 13:05	5.9	17.3	1001.8	-4.5	13	166.7	13.1	171.7	13.2	N.U.	N.U.	9545	9078.2	8831	N.U.
30/10/2020 13:05	5.9	17.3	1002.1	-5.1	13	165.2	13.1	167.4	13.2	N.U.	N.U.	9546.2	9081.2	8840.5	N.U.
30/10/2020 13:05	5.9	17.3	1001.8	-4.5	13	163	13.1	169	13.2	N.U.	N.U.	9545	9085.4	8836.9	N.U.
30/10/2020 13:05	5.9	17.3	1002.3	-4.8	13	177.9	13.1	182.3	13.2	N.U.	N.U.	9545.6	9055.9	8807.8	N.U.
30/10/2020 13:05	5.9	17.3	1002.2	-5.1	13	175.5	13.1	177.4	13.2	N.U.	N.U.	9546.2	9060.7	8818.5	N.U.
30/10/2020 13:05	5.9	17.3	1002.2	-4.5	13	172.8	13.1	175	13.2	N.U.	N.U.	9545	9066.1	8823.9	N.U.
30/10/2020 13:06	5.9	17.3	1002	-5.4	13	170.3	13.1	171.6	13.1	N.U.	N.U.	9546.9	9070.9	8831	N.U.
30/10/2020 13:06	5.9	17.3	1002	-4.2	13	186.7	13.1	186	13.1	N.U.	N.U.	9544.4	9038.4	8799.5	N.U.
30/10/2020 13:06	5.9	17.3	1002.3	-5.4	13	193.4	13.1	197.1	13.1	N.U.	N.U.	9546.9	9025.2	8775.2	N.U.
30/10/2020 13:06	5.9	17.3	1002.3	-4.8	13	193.1	13.1	197.9	13.1	N.U.	N.U.	9545.6	9025.8	8773.4	N.U.
30/10/2020 13:06	5.9	17.3	1002.2	-5.7	13	191.6	13.1	195.7	13.1	N.U.	N.U.	9547.5	9028.8	8778.2	N.U.
30/10/2020 13:06	5.9	17.3	1002.2	-3.9	13	191.6	13.1	190.9	13.1	N.U.	N.U.	9543.8	9028.8	8788.9	N.U.
30/10/2020 13:07	5.9	17.3	1002.1	-5.4	13	189.4	13.1	191.7	13.1	N.U.	N.U.	9546.9	9033	8787.1	N.U.
30/10/2020 13:07	5.9	17.3	1002.2	-5.4	13	191.6	13.1	193.8	13.1	N.U.	N.U.	9546.9	9028.8	8782.3	N.U.
30/10/2020 13:07	5.9	17.3	1002.1	-4.5	13	192.2	13.1	194.1	13.1	N.U.	N.U.	9545	9027.6	8781.7	N.U.
30/10/2020 13:07	5.9	17.3	1002.3	-4.5	13	189.4	13.1	192.2	13.1	N.U.	N.U.	9545	9033	8785.9	N.U.
30/10/2020 13:07	5.9	17.3	1002.3	-4.8	13	188.8	13.1	192.2	13.1	N.U.	N.U.	9545.6	9034.2	8785.9	N.U.
30/10/2020 13:08	5.9	17.3	1002	-4.8	13	190.4	13.1	190.6	13.1	N.U.	N.U.	9545.6	9031.2	8789.4	N.U.
30/10/2020 13:08	5.9	17.3	1002.2	-3.9	13	191.6	13.1	195.2	13.1	N.U.	N.U.	9543.8	9028.8	8779.4	N.U.
30/10/2020 13:08	5.9	17.3	1002.2	-4.8	13	201.3	13.1	205.7	13.1	N.U.	N.U.	9545.6	9009.6	8756.3	N.U.
30/10/2020 13:08	5.9	17.3	1002.2	-4.5	13	216.4	13.1	220.8	13.1	N.U.	N.U.	9545	8979.6	8723.2	N.U.
30/10/2020 13:08	5.9	17.3	1002.3	-4.3	12.9	221.5	13.1	224.9	13.1	N.U.	N.U.	9544.4	8969.4	8714.3	N.U.
30/10/2020 13:08	5.9	17.3	1002.1	-4	12.9	220.9	13.1	226.8	13.1	N.U.	N.U.	9543.8	8970.6	8710.2	N.U.
30/10/2020 13:09	5.9	17.3	1002	-4.3	12.9	225.4	13.1	229.4	13.1	N.U.	N.U.	9544.4	8961.6	8704.3	N.U.
30/10/2020 13:09	5.9	17.3	1002.1	-4.6	12.9	228.2	13.1	230	13.1	N.U.	N.U.	9545	8956.3	8703.1	N.U.
30/10/2020 13:09	5.9	17.3	1002.1	-4	12.9	231.2	13.1	230.5	13.1	N.U.	N.U.	9543.8	8950.3	8701.9	N.U.
30/10/2020 13:09	5.9	17.3	1002	-4.6	12.9	232.4	13.1	234	13.1	N.U.	N.U.	9545	8947.9	8694.2	N.U.
30/10/2020 13:09	5.9	17.3	1002.3	-4.3	12.9	233	13.1	236.7	13.1	N.U.	N.U.	9544.4	8946.7	8688.3	N.U.
30/10/2020 13:09	5.9	17.3	1002.4	-4	12.9	233	13.1	238.6	13.1	N.U.	N.U.	9543.8	8946.7	8684.2	N.U.
30/10/2020 13:10	5.9	17.3	1002.1	-4	12.9	235.6	13.1	238.5	13.1	N.U.	N.U.	9543.8	8941.3	8684.2	N.U.
30/10/2020 13:10	5.9	17.3	1002	-4.9	12.9	253.1	13.1	256.9	13.1	N.U.	N.U.	9545.6	8906.6	8644.2	N.U.
30/10/2020 13:10	5.9	17.3	1002.1	-4	12.9	257.6	13.1	260.3	13.1	N.U.	N.U.	9543.8	8897.7	8636.5	N.U.
30/10/2020 13:10	5.9	17.3	1002.3	-4.6	12.9	256.4	13.1	260.8	13.1	N.U.	N.U.	9545	8900.1	8635.4	N.U.
30/10/2020 13:10	5.9	17.3	1002.1	-3.7	12.9	259.1	13.1	262	13.1	N.U.	N.U.	9543.2	8894.7	8633	N.U.
30/10/2020 13:10	5.9	17.3	1002.2	-4.3	12.9	259.1	13.1	262.1	13.1	N.U.	N.U.	9544.4	8894.7	8632.4	N.U.
30/10/2020 13:11	5.9	17.3	1002.3	-4.6	12.9	258.5	13.1	263	13.1	N.U.	N.U.	9545	8895.9	8630.7	N.U.
30/10/2020 13:11	5.9	17.4	1002.2	-4	12.9	260.6	13.1	263.8	13.1	N.U.	N.U.	9543.8	8891.7	8628.9	N.U.
30/10/2020 13:11	5.9	17.4	1002.2	-4	12.9	261.2	13.1	263.2	13.1	N.U.	N.U.	9543.8	8890.5	8630.1	N.U.
30/10/2020 13:11	5.9	17.4	1002.1	-4.6	12.9	261.8	13.1	264.3	13.1	N.U.	N.U.	9545	8889.3	8627.7	N.U.

Date/time	Vbatt	Temp.	Press.	Channel 1		Channel 2		Channel 3		Channel 4		CH1 Raw	CH2 Raw	CH3 Raw	CH4 Raw
				()	(°C)	()	(°C)	()	(°C)	()	(°C)	(Digits)	(Digits)	(Digits)	(Digits)
30/10/2020 13:11	5.9	17.4	1002.5	-4	12.9	268.4	13.1	271.5	13.1	N.U.	N.U.	9543.8	8876.2	8611.9	N.U.
30/10/2020 13:11	5.9	17.4	1002.3	-4	12.9	288.3	13.1	288.9	13.1	N.U.	N.U.	9543.8	8836.9	8573.8	N.U.
30/10/2020 13:12	5.9	17.4	1002.3	-4.3	12.9	302.9	13.1	305.2	13.1	N.U.	N.U.	9544.4	8807.8	8538.1	N.U.
30/10/2020 13:12	5.9	17.4	1001.8	-4	12.9	298.4	13.1	300.4	13.1	N.U.	N.U.	9543.8	8816.7	8548.6	N.U.
30/10/2020 13:12	5.9	17.4	1002.1	-4.3	12.9	296	13.1	300.1	13.1	N.U.	N.U.	9544.4	8821.5	8549.2	N.U.
30/10/2020 13:12	5.9	17.4	1002.2	-4.3	12.9	301.7	13.1	305.5	13.1	N.U.	N.U.	9544.4	8810.2	8537.5	N.U.
30/10/2020 13:12	5.9	17.4	1002.3	-4	12.9	305.9	13.1	308.4	13.1	N.U.	N.U.	9543.8	8801.9	8531.1	N.U.
30/10/2020 13:12	5.9	17.4	1002.3	-3.7	12.9	303.5	13.1	307.1	13.1	N.U.	N.U.	9543.2	8806.6	8534	N.U.
30/10/2020 13:13	5.9	17.4	1002.1	-4.3	12.9	302.3	13.1	306.8	13.1	N.U.	N.U.	9544.4	8809	8534.6	N.U.
30/10/2020 13:13	5.9	17.4	1002.2	-3.4	12.9	299.3	13.1	302.3	13.1	N.U.	N.U.	9542.5	8815	8544.5	N.U.
30/10/2020 13:13	5.9	17.4	1002.4	-4	12.9	297.5	13.1	300.7	13.1	N.U.	N.U.	9543.8	8818.5	8548	N.U.
30/10/2020 13:13	5.9	17.4	1002.5	-3.1	12.9	299.9	13.1	303.6	13.1	N.U.	N.U.	9541.9	8813.8	8541.6	N.U.
30/10/2020 13:13	5.9	17.4	1002.3	-4.3	12.9	300.8	13	304.9	13.1	N.U.	N.U.	9544.4	8812	8538.7	N.U.
30/10/2020 13:14	5.9	17.4	1002.5	-4.4	12.8	298.7	13	303.1	13.1	N.U.	N.U.	9544.4	8816.1	8542.8	N.U.
30/10/2020 13:14	5.9	17.4	1002	-4.1	12.8	299.6	13	302.7	13	N.U.	N.U.	9543.8	8814.4	8543.3	N.U.
30/10/2020 13:14	5.9	17.4	1002.3	-3.5	12.8	302.3	13	305.2	13.1	N.U.	N.U.	9542.5	8809	8538.1	N.U.
30/10/2020 13:14	5.9	17.4	1002.4	-4.6	12.8	302.3	13	304.9	13.1	N.U.	N.U.	9545	8809	8538.7	N.U.
30/10/2020 13:14	5.9	17.4	1002.1	-3.2	12.8	301.4	13	305.6	13	N.U.	N.U.	9541.9	8810.8	8536.9	N.U.
30/10/2020 13:14	5.9	17.4	1002.2	-4.1	12.8	299.2	13	304	13	N.U.	N.U.	9543.8	8815	8540.4	N.U.
30/10/2020 13:15	5.9	17.4	1002	-4.1	12.8	300.7	13	304.8	13	N.U.	N.U.	9543.8	8812	8538.7	N.U.
30/10/2020 13:15	5.9	17.4	1002.1	-4.1	12.8	302.2	13	307.2	13	N.U.	N.U.	9543.8	8809	8533.4	N.U.
30/10/2020 13:15	5.9	17.4	1002.2	-3.8	12.8	301.3	13	305.1	13	N.U.	N.U.	9543.2	8810.8	8538.1	N.U.
30/10/2020 13:15	5.9	17.4	1002.2	-3.8	12.8	300.7	13	304.6	13	N.U.	N.U.	9543.2	8812	8539.3	N.U.
30/10/2020 13:15	5.9	17.4	1002.2	-3.8	12.8	300.4	13	303.8	13	N.U.	N.U.	9543.2	8812.6	8541	N.U.
30/10/2020 13:15	5.9	17.4	1002.4	-4.1	12.8	302.8	13	304.6	13	N.U.	N.U.	9543.8	8807.8	8539.3	N.U.
30/10/2020 13:16	5.9	17.4	1002.2	-3.6	12.8	300.1	13	302.7	13	N.U.	N.U.	9542.5	8813.2	8543.3	N.U.
30/10/2020 13:16	5.9	17.4	1002.1	-3	12.8	300.7	13	304	13	N.U.	N.U.	9541.3	8812	8540.4	N.U.
30/10/2020 13:16	5.9	17.4	1002.2	-3.3	12.8	299.5	13	303	13	N.U.	N.U.	9541.9	8814.4	8542.8	N.U.
30/10/2020 13:16	5.9	17.4	1002.3	-3.3	12.8	301.3	12.9	305.9	13	N.U.	N.U.	9541.9	8810.8	8536.3	N.U.
30/10/2020 13:16	5.9	17.4	1002.2	-2.4	12.8	303.4	12.9	306.7	13	N.U.	N.U.	9540.1	8806.6	8534.6	N.U.
30/10/2020 13:16	5.9	17.4	1002.1	-3.3	12.8	303.4	13	306.2	13	N.U.	N.U.	9541.9	8806.6	8535.7	N.U.
30/10/2020 13:17	5.9	17.4	1002.3	-3	12.8	301.9	12.9	304.8	13	N.U.	N.U.	9541.3	8809.6	8538.7	N.U.
30/10/2020 13:17	5.9	17.4	1002.1	-3.3	12.8	300.4	12.9	303.8	13	N.U.	N.U.	9541.9	8812.6	8541	N.U.
30/10/2020 13:17	5.9	17.4	1002.2	-2.7	12.8	302.8	12.9	306.2	13	N.U.	N.U.	9540.7	8807.8	8535.7	N.U.
30/10/2020 13:17	5.9	17.4	1002.4	-3.6	12.8	301.3	12.9	302.9	13	N.U.	N.U.	9542.5	8810.8	8542.8	N.U.
30/10/2020 13:17	5.9	17.4	1002.2	-3	12.8	300.4	12.9	302.6	13	N.U.	N.U.	9541.3	8812.6	8543.3	N.U.
30/10/2020 13:17	5.9	17.4	1002.2	-4.1	12.8	298	12.9	301.3	13	N.U.	N.U.	9543.8	8817.3	8546.3	N.U.
30/10/2020 13:18	5.9	17.4	1002.3	-2.4	12.8	301.3	12.9	305	13	N.U.	N.U.	9540.1	8810.8	8538.1	N.U.
30/10/2020 13:18	5.9	17.4	1002.5	-3.3	12.8	303.1	12.9	305.6	13	N.U.	N.U.	9541.9	8807.2	8536.9	N.U.
30/10/2020 13:18	5.9	17.4	1002.3	-2.7	12.8	296.5	12.9	299.2	13	N.U.	N.U.	9540.7	8820.3	8550.9	N.U.
30/10/2020 13:18	5.9	17.4	1002.2	-3.6	12.7	298	12.9	301.8	13	N.U.	N.U.	9542.5	8817.3	8545.1	N.U.
30/10/2020 13:18	5.9	17.4	1002.4	-3.9	12.7	300.1	12.9	305.8	13	N.U.	N.U.	9543.2	8813.2	8536.3	N.U.
30/10/2020 13:19	5.9	17.4	1002.2	-2.8	12.7	304.6	12.9	308	13	N.U.	N.U.	9540.7	8804.3	8531.7	N.U.
30/10/2020 13:19	5.9	17.4	1002.3	-3.6	12.7	306.7	12.9	308.8	13	N.U.	N.U.	9542.5	8800.1	8529.9	N.U.
30/10/2020 13:19	5.9	17.4	1002.5	-2.5	12.7	303.4	12.9	306.1	13	N.U.	N.U.	9540.1	8806.6	8535.7	N.U.
30/10/2020 13:19	5.9	17.4	1002.3	-2.8	12.7	303.4	12.9	306.1	13	N.U.	N.U.	9540.7	8806.6	8535.7	N.U.
30/10/2020 13:19	5.9	17.4	1002.1	-2.5	12.7	306.4	12.9	309.4	13	N.U.	N.U.	9540.1	8800.7	8528.7	N.U.
30/10/2020 13:19	5.9	17.5	1002.7	-2.5	12.7	289.6	12.9	290.9	13	N.U.	N.U.	9540.1	8834	8569.1	N.U.

Date/time	Vbatt	Temp.	Press.	Channel 1		Channel 2		Channel 3		Channel 4		CH1 Raw	CH2 Raw	CH3 Raw	CH4 Raw
				()	(°C)	()	(°C)	()	(°C)	()	(°C)	(Digits)	(Digits)	(Digits)	(Digits)
30/10/2020 13:20	5.9	17.5	1002.4	-2.2	12.7	288.1	12.9	293.3	13	N.U.	N.U.	9539.4	8836.9	8563.8	N.U.
30/10/2020 13:20	5.9	17.5	1002.6	-2.5	12.7	287.2	12.9	290.9	13	N.U.	N.U.	9540.1	8838.7	8569.1	N.U.
30/10/2020 13:20	5.9	17.5	1002.5	-3.3	12.7	290.2	12.9	293	13	N.U.	N.U.	9541.9	8832.8	8564.4	N.U.
30/10/2020 13:20	5.9	17.4	1002.2	-3.3	12.7	251.1	12.9	259.1	13	N.U.	N.U.	9541.9	8910.2	8638.9	N.U.
30/10/2020 13:20	5.9	17.5	1002.1	-2.5	12.7	274.3	12.9	271.4	13	N.U.	N.U.	9540.1	8864.3	8611.9	N.U.
30/10/2020 13:20	5.9	17.5	1002.4	-2.5	12.7	291.4	12.9	299.7	13	N.U.	N.U.	9540.1	8830.4	8549.8	N.U.
30/10/2020 13:21	5.9	17.5	1002.4	-3.9	12.7	298.6	12.9	301.8	13	N.U.	N.U.	9543.2	8816.1	8545.1	N.U.
30/10/2020 13:21	5.9	17.5	1002.4	-3.3	12.7	304	12.9	306.6	13	N.U.	N.U.	9541.9	8805.5	8534.6	N.U.
30/10/2020 13:21	5.9	17.5	1002.2	-3	12.7	304	12.9	308.5	13	N.U.	N.U.	9541.3	8805.5	8530.5	N.U.
30/10/2020 13:21	5.9	17.5	1002.4	-2.2	12.7	309.3	12.9	310.9	13	N.U.	N.U.	9539.4	8794.8	8525.2	N.U.
30/10/2020 13:21	5.9	17.5	1002.5	-2.5	12.7	307.9	12.9	309.8	13	N.U.	N.U.	9540.1	8797.7	8527.6	N.U.
30/10/2020 13:21	5.9	17.5	1002.6	-2.8	12.7	304.6	12.9	308.8	13	N.U.	N.U.	9540.7	8804.3	8529.9	N.U.
30/10/2020 13:22	5.9	17.5	1002.2	-3.3	12.7	307.3	12.9	310.4	13	N.U.	N.U.	9541.9	8798.9	8526.4	N.U.
30/10/2020 13:22	5.9	17.5	1002.2	-2.8	12.7	307.6	12.9	310.4	13	N.U.	N.U.	9540.7	8798.3	8526.4	N.U.
30/10/2020 13:22	5.9	17.5	1002.1	-2.5	12.7	288.7	12.9	289.8	13	N.U.	N.U.	9540.1	8835.8	8571.4	N.U.
30/10/2020 13:22	5.9	17.5	1002.2	-2.5	12.7	226.4	12.9	228.4	13	N.U.	N.U.	9540.1	8959.2	8706	N.U.
30/10/2020 13:22	5.9	17.5	1002.4	-1.6	12.7	225.8	12.9	229	13	N.U.	N.U.	9538.2	8960.4	8704.9	N.U.
30/10/2020 13:22	5.9	17.5	1002.2	-2.5	12.7	224.6	12.9	225.7	13	N.U.	N.U.	9540.1	8962.8	8711.9	N.U.
30/10/2020 13:23	5.9	17.5	1002.2	-2.8	12.7	221.9	12.9	224.4	13	N.U.	N.U.	9540.7	8968.2	8714.9	N.U.
30/10/2020 13:23	5.9	17.5	1002.2	-3.3	12.7	221	12.9	223	13	N.U.	N.U.	9541.9	8970	8717.8	N.U.
30/10/2020 13:23	5.9	17.4	1002.4	-3	12.7	220.1	12.9	223	13	N.U.	N.U.	9541.3	8971.8	8717.8	N.U.
30/10/2020 13:23	5.9	17.5	1002.3	-2.8	12.7	220.4	12.9	223.8	13	N.U.	N.U.	9540.7	8971.2	8716.1	N.U.
30/10/2020 13:23	5.9	17.4	1002.5	-2.2	12.7	220.7	12.9	223.6	13	N.U.	N.U.	9539.4	8970.6	8716.7	N.U.
30/10/2020 13:23	5.9	17.5	1002.4	-3.3	12.7	216.5	12.9	218.4	13	N.U.	N.U.	9541.9	8979	8727.9	N.U.
30/10/2020 13:24	5.9	17.5	1002.3	-2.5	12.7	206.5	12.9	211.4	13	N.U.	N.U.	9540.1	8998.8	8743.3	N.U.
30/10/2020 13:24	5.9	17.4	1002.4	-2.5	12.7	214.3	12.9	216.6	13	N.U.	N.U.	9540.1	8983.2	8732	N.U.
30/10/2020 13:24	5.9	17.4	1002.2	-2.8	12.7	212.2	12.9	214.7	13	N.U.	N.U.	9540.7	8987.4	8736.2	N.U.
30/10/2020 13:24	5.9	17.5	1002.4	-3.3	12.7	207.4	12.9	211.4	13	N.U.	N.U.	9541.9	8997	8743.3	N.U.
30/10/2020 13:24	5.9	17.5	1002.3	-3	12.7	202.2	12.9	204.4	13	N.U.	N.U.	9541.3	9007.2	8758.6	N.U.
30/10/2020 13:25	5.9	17.5	1002.6	-2.4	12.8	197.7	12.9	199.8	13	N.U.	N.U.	9540.1	9016.2	8768.7	N.U.
30/10/2020 13:25	5.9	17.5	1002.3	-2.4	12.8	194.4	12.9	196	13	N.U.	N.U.	9540.1	9022.8	8777	N.U.
30/10/2020 13:25	5.9	17.4	1002.3	-1.5	12.8	192.9	13	192.3	13	N.U.	N.U.	9538.2	9025.8	8785.3	N.U.
30/10/2020 13:25	5.9	17.5	1002.1	-3.3	12.8	186.8	13	189.8	13	N.U.	N.U.	9541.9	9037.8	8790.6	N.U.
30/10/2020 13:25	5.9	17.5	1002.1	-2.7	12.8	184.7	13	187.7	13	N.U.	N.U.	9540.7	9042	8795.4	N.U.
30/10/2020 13:25	5.9	17.4	1002.1	-2.1	12.8	183.5	13	184.5	13	N.U.	N.U.	9539.4	9044.5	8802.5	N.U.
30/10/2020 13:26	5.9	17.4	1002.4	-2.1	12.8	181.4	13	185	13	N.U.	N.U.	9539.4	9048.7	8801.3	N.U.
30/10/2020 13:26	5.9	17.5	1002.4	-1.2	12.8	178.1	13	179.1	13	N.U.	N.U.	9537.6	9055.3	8814.4	N.U.
30/10/2020 13:26	5.9	17.4	1002.5	-3.3	12.8	178.1	13	179.3	13	N.U.	N.U.	9541.9	9055.3	8813.8	N.U.
30/10/2020 13:26	5.9	17.4	1002.1	-2.4	12.8	173.5	13	176.9	13	N.U.	N.U.	9540.1	9064.3	8819.1	N.U.
30/10/2020 13:26	5.9	17.4	1002.5	-3	12.8	174.1	13	177.4	13	N.U.	N.U.	9541.3	9063.1	8817.9	N.U.
30/10/2020 13:26	5.9	17.4	1002.2	-2.4	12.8	170.8	13	173.1	13	N.U.	N.U.	9540.1	9069.7	8827.4	N.U.
30/10/2020 13:27	5.9	17.4	1002	-3.6	12.8	161	13	162	13	N.U.	N.U.	9542.5	9089	8851.8	N.U.
30/10/2020 13:27	5.9	17.4	1002.3	-1.8	12.8	156.8	13	160.4	13	N.U.	N.U.	9538.8	9097.5	8855.4	N.U.
30/10/2020 13:27	5.9	17.4	1002.3	-2.1	12.8	168.3	13	172.3	13	N.U.	N.U.	9539.4	9074.6	8829.2	N.U.
30/10/2020 13:27	5.9	17.4	1002	-2.4	12.8	192	13	197.2	13	N.U.	N.U.	9540.1	9027.6	8774.6	N.U.
30/10/2020 13:27	5.9	17.4	1002.4	-2.4	12.8	195.9	13	201.8	13	N.U.	N.U.	9540.1	9019.8	8764.6	N.U.
30/10/2020 13:27	5.9	17.4	1002.2	-1.8	12.8	198.4	13	203.7	13	N.U.	N.U.	9538.8	9015	8760.4	N.U.
30/10/2020 13:28	5.9	17.4	1002.3	-2.7	12.8	203.5	13	208	13	N.U.	N.U.	9540.7	9004.8	8750.9	N.U.

Date/time	Vbatt	Temp.	Press.	Channel 1 ((°C)	Channel 2 ((°C)	Channel 3 ((°C)	Channel 4 ((°C)	CH1 Raw (Digits)	CH2 Raw (Digits)	CH3 Raw (Digits)	CH4 Raw (Digits)				
30/10/2020 13:28	5.9	17.4	1002	-2.4	12.8	205	13	210.4	13	N.U.	N.U.	9540.1	9001.8	8745.6	N.U.
30/10/2020 13:28	5.9	17.4	1001.9	-2.1	12.8	207.1	13	213.7	13	N.U.	N.U.	9539.4	8997.6	8738.5	N.U.
30/10/2020 13:28	5.9	17.4	1002.3	-2.4	12.8	208.7	13	214.7	13	N.U.	N.U.	9540.1	8994.6	8736.2	N.U.
30/10/2020 13:28	5.9	17.4	1002.1	-2.4	12.8	210.2	13	215.8	13	N.U.	N.U.	9540.1	8991.6	8733.8	N.U.
30/10/2020 13:28	5.9	17.4	1002.2	-2.1	12.8	213.2	13	219.1	13	N.U.	N.U.	9539.4	8985.6	8726.7	N.U.
30/10/2020 13:29	5.9	17.4	1002.2	-3.3	12.8	214.4	13	220.4	13	N.U.	N.U.	9541.9	8983.2	8723.8	N.U.
30/10/2020 13:29	5.9	17.4	1002.3	-2.1	12.8	216.5	13	222.3	13	N.U.	N.U.	9539.4	8979	8719.6	N.U.
30/10/2020 13:29	5.9	17.4	1002.2	-2.4	12.8	216.2	13	223.1	13	N.U.	N.U.	9540.1	8979.6	8717.8	N.U.
30/10/2020 13:29	5.9	17.4	1001.9	-2.7	12.8	217.4	13	223.6	13	N.U.	N.U.	9540.7	8977.2	8716.7	N.U.
30/10/2020 13:29	5.9	17.4	1002.4	-2.7	12.8	218	13	223.1	13	N.U.	N.U.	9540.7	8976	8717.8	N.U.
30/10/2020 13:30	5.9	17.4	1002.4	-2.7	12.8	217.7	13	224.2	13	N.U.	N.U.	9540.7	8976.6	8715.5	N.U.
30/10/2020 13:30	5.9	17.4	1002.2	-2.4	12.8	218.3	13	224.7	13	N.U.	N.U.	9540.1	8975.4	8714.3	N.U.
30/10/2020 13:30	5.9	17.4	1002	-1.8	12.8	219.8	13	225.5	13	N.U.	N.U.	9538.8	8972.4	8712.5	N.U.
30/10/2020 13:30	5.9	17.4	1002.1	-2.3	12.8	219.3	13	225.8	13	N.U.	N.U.	9540.1	8973.6	8711.9	N.U.
30/10/2020 13:30	5.9	17.4	1002.2	-2	12.8	220.2	13	228	13	N.U.	N.U.	9539.4	8971.8	8707.2	N.U.
30/10/2020 13:30	5.9	17.4	1002.2	-2.1	12.8	220.5	13	226.1	13	N.U.	N.U.	9539.4	8971.2	8711.4	N.U.
30/10/2020 13:31	5.9	17.4	1001.9	-2	12.8	220.8	13	228.2	13	N.U.	N.U.	9539.4	8970.6	8706.6	N.U.
30/10/2020 13:31	5.9	17.4	1002.2	-1.8	12.8	221.4	13	227.4	13	N.U.	N.U.	9538.8	8969.4	8708.4	N.U.
30/10/2020 13:31	5.9	17.4	1002	-2.3	12.8	222	13	228.2	13	N.U.	N.U.	9540.1	8968.2	8706.6	N.U.
30/10/2020 13:31	5.9	17.4	1002.2	-2.4	12.8	221.1	13	228.2	13	N.U.	N.U.	9540.1	8970	8706.6	N.U.
30/10/2020 13:31	5.9	17.4	1002.2	-2.3	12.8	222.6	13	228.5	13	N.U.	N.U.	9540.1	8967	8706	N.U.
30/10/2020 13:31	5.9	17.4	1002.2	-2.7	12.8	216	13	222.3	13	N.U.	N.U.	9540.7	8980.2	8719.6	N.U.
30/10/2020 13:32	5.9	17.4	1002.2	-2.3	12.8	210.5	13	219.6	13	N.U.	N.U.	9540.1	8991	8725.5	N.U.
30/10/2020 13:32	5.9	17.4	1002.2	-3.2	12.8	210.8	13	218.3	13	N.U.	N.U.	9541.9	8990.4	8728.5	N.U.
30/10/2020 13:32	5.9	17.4	1002.4	-2	12.8	206.9	13	212.9	13	N.U.	N.U.	9539.4	8998.2	8740.3	N.U.
30/10/2020 13:32	5.9	17.4	1001.9	-2.3	12.8	203.6	13	211	13	N.U.	N.U.	9540.1	9004.8	8744.4	N.U.
30/10/2020 13:32	5.9	17.4	1002.2	-2.3	12.8	201.7	13	207.7	13	N.U.	N.U.	9540.1	9008.4	8751.5	N.U.
30/10/2020 13:32	5.9	17.4	1002.1	-2.3	12.8	198.7	13	205.6	13	N.U.	N.U.	9540.1	9014.4	8756.3	N.U.
30/10/2020 13:33	5.9	17.4	1002.3	-1.5	12.8	195.1	13	202.6	13	N.U.	N.U.	9538.2	9021.6	8762.8	N.U.
30/10/2020 13:33	5.9	17.4	1002.1	-2.3	12.8	197.2	13	201.8	13	N.U.	N.U.	9540.1	9017.4	8764.6	N.U.
30/10/2020 13:33	5.9	17.4	1001.9	-2.9	12.8	198.7	13	204.5	13	N.U.	N.U.	9541.3	9014.4	8758.6	N.U.
30/10/2020 13:33	5.9	17.4	1002.3	-2.9	12.8	193.6	13	199.9	13	N.U.	N.U.	9541.3	9024.6	8768.7	N.U.
30/10/2020 13:33	5.9	17.4	1002.2	-2.3	12.8	193.6	13	199.1	13	N.U.	N.U.	9540.1	9024.6	8770.5	N.U.
30/10/2020 13:33	5.9	17.4	1002.2	-3.2	12.8	191.4	13	196.4	13	N.U.	N.U.	9541.9	9028.8	8776.4	N.U.
30/10/2020 13:34	5.9	17.4	1002.3	-2.6	12.8	189	13	196.4	13	N.U.	N.U.	9540.7	9033.6	8776.4	N.U.
30/10/2020 13:34	5.9	17.4	1002.3	-2	12.8	188.7	13	194.5	13	N.U.	N.U.	9539.4	9034.2	8780.6	N.U.
				((°C)	((°C)	((°C)	((°C)					(Digits)	(Digits)	(Digits)	(Digits)
30/10/2020 12:34	6	15.1	1002.4	-5.6	14.3	-1.8	14.4	-2.7	14.6	N.U.	N.U.	9550.6	9414.5	9216.7	N.U.
30/10/2020 12:34	6	15.2	1002.1	-5.6	14.3	-1.5	14.4	-2.4	14.6	N.U.	N.U.	9550.6	9413.9	9216.1	N.U.
30/10/2020 12:34	6	15.2	1002.1	-6.2	14.3	-1.2	14.4	-2.1	14.6	N.U.	N.U.	9551.8	9413.2	9215.5	N.U.
30/10/2020 12:34	6	15.3	1002.3	-5.6	14.3	-2.1	14.4	-2.4	14.6	N.U.	N.U.	9550.6	9415.1	9216.1	N.U.
30/10/2020 12:35	6	15.3	1002.2	-5.6	14.3	-2.1	14.4	-2.4	14.6	N.U.	N.U.	9550.6	9415.1	9216.1	N.U.
30/10/2020 12:35	6	15.3	1002.3	-5.4	14.3	-2.1	14.3	-2.4	14.6	N.U.	N.U.	9550	9415.1	9216.1	N.U.
30/10/2020 12:35	6	15.4	1002.2	-5.6	14.3	-1.8	14.3	-2.8	14.5	N.U.	N.U.	9550.6	9414.5	9216.7	N.U.
30/10/2020 12:35	6	15.4	1002	-5.6	14.3	-1.2	14.3	-2.5	14.5	N.U.	N.U.	9550.6	9413.2	9216.1	N.U.
30/10/2020 12:35	6	15.4	1002.3	-4.9	14.3	-1.8	14.3	-2.8	14.5	N.U.	N.U.	9548.7	9414.5	9216.7	N.U.
30/10/2020 12:36	6	15.5	1002.2	-6.6	14.3	-1.8	14.3	-2.5	14.5	N.U.	N.U.	9552.4	9414.5	9216.1	N.U.
30/10/2020 12:36	6	15.5	1002.4	-5.1	14.3	-2.1	14.3	-2.5	14.5	N.U.	N.U.	9549.3	9415.1	9216.1	N.U.

Date/time	Vbatt	Temp.	Press.	Channel 1		Channel 2		Channel 3		Channel 4		CH1 Raw	CH2 Raw	CH3 Raw	CH4 Raw
				()	(°C)	()	(°C)	()	(°C)	()	(°C)	(Digits)	(Digits)	(Digits)	(Digits)
30/10/2020 13:36	5.9	17.4	1002.1	-3.2	12.8	118.7	13	121.7	13	N.U.	N.U.	9541.9	9173	8940.1	N.U.
30/10/2020 13:36	5.9	17.4	1002.3	-2.9	12.8	115.4	13	117.6	13	N.U.	N.U.	9541.3	9179.7	8949.1	N.U.
30/10/2020 13:36	5.9	17.4	1002.1	-2.3	12.8	116	13	117.9	13	N.U.	N.U.	9540.1	9178.5	8948.5	N.U.
30/10/2020 13:37	5.9	17.4	1002	-1.2	12.8	112.9	13	112.7	13	N.U.	N.U.	9537.6	9184.5	8959.8	N.U.
30/10/2020 13:37	5.9	17.4	1002.2	-2.6	12.8	109.6	13	111.6	13	N.U.	N.U.	9540.7	9191.2	8962.2	N.U.
30/10/2020 13:37	5.9	17.4	1002.2	-2	12.8	112.6	13	114.1	13	N.U.	N.U.	9539.4	9185.1	8956.9	N.U.
30/10/2020 13:37	5.9	17.4	1002	-2	12.8	106.5	13	110.8	13	N.U.	N.U.	9539.4	9197.3	8964	N.U.
30/10/2020 13:37	5.9	17.4	1002.5	-2.6	12.8	108	13	110.5	13	N.U.	N.U.	9540.7	9194.2	8964.6	N.U.
30/10/2020 13:37	5.9	17.4	1002.2	-3.2	12.8	112	13	116	13	N.U.	N.U.	9541.9	9186.4	8952.7	N.U.
30/10/2020 13:38	5.9	17.4	1002.2	-2	12.8	106.5	13	110.5	13	N.U.	N.U.	9539.4	9197.3	8964.6	N.U.
30/10/2020 13:38	5.9	17.4	1002.5	-1.8	12.8	108	13	114.6	13	N.U.	N.U.	9538.8	9194.2	8955.7	N.U.
30/10/2020 13:38	5.9	17.4	1002.5	-2.3	12.8	106.5	13	108.6	13	N.U.	N.U.	9540.1	9197.3	8968.8	N.U.
30/10/2020 13:38	5.9	17.4	1002.1	-2.3	12.8	108	13	109.1	13	N.U.	N.U.	9540.1	9194.2	8967.6	N.U.
30/10/2020 13:38	5.9	17.4	1002.1	-2.3	12.8	106.5	13	111.1	13	N.U.	N.U.	9540.1	9197.3	8963.4	N.U.
30/10/2020 13:38	5.9	17.4	1002.2	-2	12.8	105	13	108.3	13	N.U.	N.U.	9539.4	9200.3	8969.4	N.U.
30/10/2020 13:39	5.9	17.4	1002.1	-1.5	12.8	107.1	13	108.1	13	N.U.	N.U.	9538.2	9196.1	8970	N.U.
30/10/2020 13:39	5.9	17.4	1002	-2.9	12.8	105.6	13	107.5	13	N.U.	N.U.	9541.3	9199.1	8971.2	N.U.
30/10/2020 13:39	5.9	17.4	1002.7	-2.6	12.8	108	13	113	13	N.U.	N.U.	9540.7	9194.2	8959.2	N.U.
30/10/2020 13:39	5.9	17.4	1002.3	-3.2	12.8	105	13	110.2	13	N.U.	N.U.	9541.9	9200.3	8965.2	N.U.
30/10/2020 13:39	5.9	17.4	1002.2	-2	12.8	103.1	13	109.7	13	N.U.	N.U.	9539.4	9203.9	8966.4	N.U.
30/10/2020 13:39	5.9	17.4	1002.3	-2.3	12.8	108.7	13	111.1	13	N.U.	N.U.	9540.1	9193	8963.4	N.U.
30/10/2020 13:40	5.9	17.4	1002.4	-2.3	12.8	105	13	112.1	13	N.U.	N.U.	9540.1	9200.3	8961	N.U.
30/10/2020 13:40	5.9	17.4	1002.3	-2	12.8	109.6	13	115.2	13	N.U.	N.U.	9539.4	9191.2	8954.5	N.U.
30/10/2020 13:40	5.9	17.4	1002.5	-2	12.8	109	13	113.8	13	N.U.	N.U.	9539.4	9192.4	8957.5	N.U.
30/10/2020 13:40	5.9	17.4	1002.2	-2.3	12.8	110.2	13	116.6	13.1	N.U.	N.U.	9540.1	9190	8951.5	N.U.
30/10/2020 13:40	5.9	17.4	1002.7	-3.5	12.8	107.7	13	115.7	13	N.U.	N.U.	9542.5	9194.8	8953.3	N.U.
30/10/2020 13:41	5.9	17.4	1002.2	-2.9	12.8	107.7	13	114.1	13.1	N.U.	N.U.	9541.3	9194.8	8956.9	N.U.
30/10/2020 13:41	5.9	17.4	1002.1	-2.3	12.8	105.6	13	113.6	13.1	N.U.	N.U.	9540.1	9199.1	8958	N.U.
30/10/2020 13:41	5.9	17.4	1002.4	-2.3	12.8	107.1	13	113	13.1	N.U.	N.U.	9540.1	9196.1	8959.2	N.U.
30/10/2020 13:41	5.9	17.4	1002.3	-2.3	12.8	109	13	115.5	13.1	N.U.	N.U.	9540.1	9192.4	8953.9	N.U.
30/10/2020 13:41	5.9	17.4	1002.3	-2.9	12.8	107.1	13	112.5	13.1	N.U.	N.U.	9541.3	9196.1	8960.4	N.U.
30/10/2020 13:41	5.9	17.4	1002.1	-2	12.8	109.6	13	120.7	13.1	N.U.	N.U.	9539.4	9191.2	8942.5	N.U.
30/10/2020 13:42	5.9	17.4	1002.1	-2.6	12.8	108.3	13	117.7	13.1	N.U.	N.U.	9540.7	9193.6	8949.1	N.U.
30/10/2020 13:42	5.9	17.4	1002.5	-1.2	12.8	108	13	115.5	13.1	N.U.	N.U.	9537.6	9194.2	8953.9	N.U.
30/10/2020 13:42	5.9	17.4	1002.3	-2.9	12.8	106.8	13	116.9	13.1	N.U.	N.U.	9541.3	9196.7	8950.9	N.U.
30/10/2020 13:42	5.9	17.4	1002.1	-2.3	12.8	107.1	13	114.7	13.1	N.U.	N.U.	9540.1	9196.1	8955.7	N.U.
30/10/2020 13:42	5.9	17.4	1002.3	-2	12.8	106.5	13	113	13.1	N.U.	N.U.	9539.4	9197.3	8959.2	N.U.
30/10/2020 13:42	5.9	17.4	1002.2	-2.6	12.8	105.9	13	113.3	13.1	N.U.	N.U.	9540.7	9198.5	8958.6	N.U.
30/10/2020 13:43	5.9	17.4	1002.3	-3.2	12.8	107.7	13	115	13.1	N.U.	N.U.	9541.9	9194.8	8955.1	N.U.
30/10/2020 13:43	5.9	17.4	1002.3	-2.3	12.8	107.7	13	112.5	13.1	N.U.	N.U.	9540.1	9194.8	8960.4	N.U.
30/10/2020 13:43	5.9	17.4	1002.2	-2	12.8	108	13	113.6	13.1	N.U.	N.U.	9539.4	9194.2	8958	N.U.
30/10/2020 13:43	5.9	17.4	1002.4	-1.8	12.8	109.9	13	113.6	13.1	N.U.	N.U.	9538.8	9190.6	8958	N.U.
30/10/2020 13:43	5.9	17.4	1002.3	-2.3	12.8	108	13	115.2	13.1	N.U.	N.U.	9540.1	9194.2	8954.5	N.U.
30/10/2020 13:43	5.9	17.4	1002.1	-2.3	12.8	108.7	13	112.2	13.1	N.U.	N.U.	9540.1	9193	8961	N.U.
30/10/2020 13:44	5.9	17.4	1002	-1.8	12.8	108.3	13	113	13.1	N.U.	N.U.	9538.8	9193.6	8959.2	N.U.
30/10/2020 13:44	5.9	17.4	1002.4	-2.3	12.8	106.2	13	115.5	13.1	N.U.	N.U.	9540.1	9197.9	8953.9	N.U.
30/10/2020 13:44	5.9	17.4	1002.1	-2.6	12.8	108	13	115.5	13.1	N.U.	N.U.	9540.7	9194.2	8953.9	N.U.
30/10/2020 13:44	5.9	17.4	1002.2	-3.2	12.8	108.3	13	115	13.1	N.U.	N.U.	9541.9	9193.6	8955.1	N.U.

Date/time	Vbatt	Temp.	Press.	Channel 1 ()	Channel 2 ()	Channel 3 ()	Channel 4 ()	CH1 Raw (Digits)	CH2 Raw (Digits)	CH3 Raw (Digits)	CH4 Raw (Digits)		
30/10/2020 13:44	5.9	17.4	1002.3	-1.5	12.8	106.8	13	113.6	13.1 N.U.	N.U.	9538.2	9196.7	8958 N.U.
30/10/2020 13:44	5.9	17.4	1002.2	-2.6	12.8	107.1	13	115	13.1 N.U.	N.U.	9540.7	9196.1	8955.1 N.U.
30/10/2020 13:45	5.9	17.4	1002.2	-1.8	12.8	107.1	13	113.6	13.1 N.U.	N.U.	9538.8	9196.1	8958 N.U.
30/10/2020 13:45	5.9	17.4	1002.6	-2	12.8	107.1	13	113	13.1 N.U.	N.U.	9539.4	9196.1	8959.2 N.U.
30/10/2020 13:45	5.9	17.4	1002.5	-2.3	12.8	104.4	13	110.6	13.1 N.U.	N.U.	9540.1	9201.5	8964.6 N.U.
30/10/2020 13:45	5.9	17.4	1002.2	-1.5	12.8	95.5	13	103.2	13.1 N.U.	N.U.	9538.2	9219.1	8980.8 N.U.
30/10/2020 13:45	5.9	17.4	1002.3	-2.3	12.8	89.7	13.1	91.7	13.1 N.U.	N.U.	9540.1	9230.7	9006 N.U.
30/10/2020 13:45	5.9	17.4	1002.3	-2	12.8	78.4	13.1	86.5	13.1 N.U.	N.U.	9539.4	9253.2	9017.4 N.U.
30/10/2020 13:46	5.9	17.4	1002.6	-1.8	12.8	88.1	13	93.6	13.1 N.U.	N.U.	9538.8	9233.7	9001.8 N.U.
30/10/2020 13:46	5.9	17.4	1002.2	-2.3	12.8	78.7	13.1	81.9	13.1 N.U.	N.U.	9540.1	9252.5	9027.6 N.U.
30/10/2020 13:46	5.9	17.4	1002.4	-2	12.8	60	13.1	62.4	13.1 N.U.	N.U.	9539.4	9289.7	9070.3 N.U.
30/10/2020 13:46	5.9	17.4	1002.2	-2.9	12.8	46.4	13.1	52.2	13.1 N.U.	N.U.	9541.3	9316.5	9092.6 N.U.
30/10/2020 13:46	5.9	17.4	1002.4	-1.5	12.8	38.1	13.1	42.3	13.1 N.U.	N.U.	9538.2	9333	9114.4 N.U.
30/10/2020 13:47	5.9	17.4	1002.4	-2.9	12.8	26.7	13.1	31.8	13.1 N.U.	N.U.	9541.3	9355.6	9137.3 N.U.

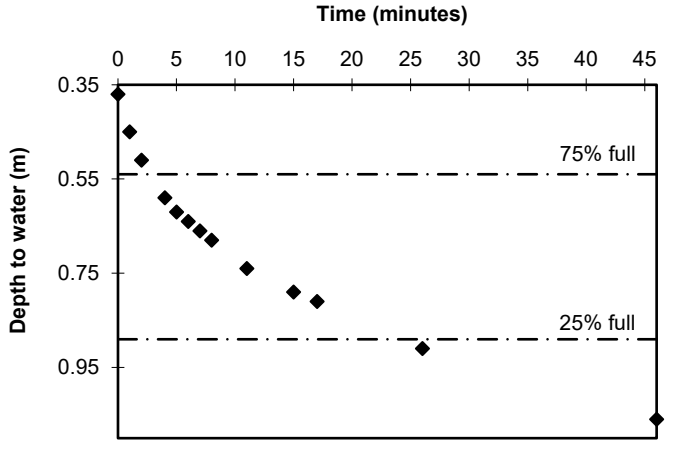
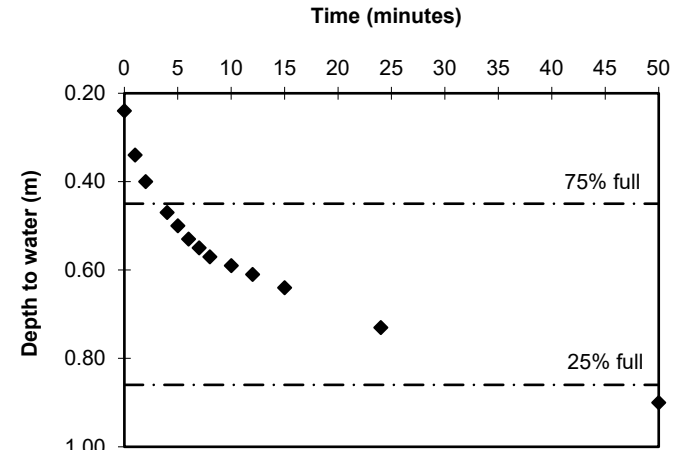
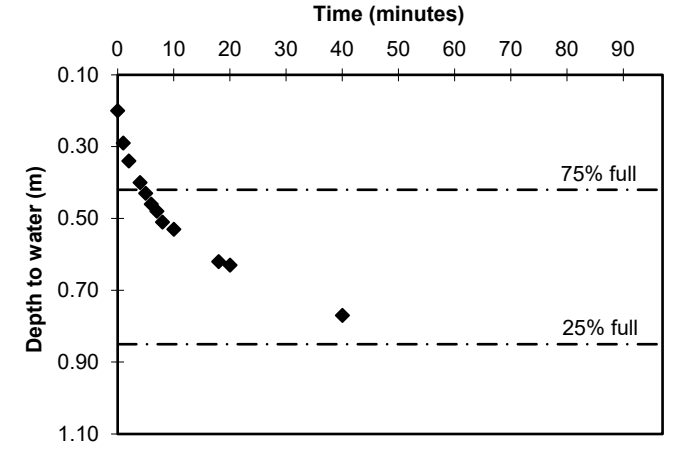
APPENDIX D

INFILTRATION TEST DATA

SOAKAWAY TEST

CLIENT HIGHWAYS ENGLAND
 SITE A303 STONEHENGE
 DATE 04/11/2020

Infiltration Pit **TP - A**

<p>TEST 1</p> <p>LENGTH 0.50 m BREADTH 0.50 m DEPTH 1.06 m WATER LEVEL DRY m FILL LEVEL 0.37 m</p> <p>V_{p75-25} 0.09 m³ a_{p50} 0.94 m² t_{p75-25} 21.25 min</p> <p>soil infiltration rate, f $7.51 \times 10^{-5} \text{ ms}^{-1}$ Calculated by extrapolating timeline</p>			
<p>TEST 2</p> <p>LENGTH 0.50 m BREADTH 0.50 m DEPTH 1.06 m WATER LEVEL DRY m FILL LEVEL 0.24 m</p> <p>V_{p75-25} 0.10 m³ a_{p50} 1.07 m² t_{p75-25} 44.67 min</p> <p>soil infiltration rate, f $3.49 \times 10^{-5} \text{ ms}^{-1}$ Calculated by extrapolating timeline</p>			
<p>TEST 3</p> <p>LENGTH 0.50 m BREADTH 0.50 m DEPTH 1.06 m WATER LEVEL DRY m FILL LEVEL 0.20 m</p> <p>V_{p75-25} 0.11 m³ a_{p50} 1.11 m² t_{p75-25} 51.75 min</p> <p>soil infiltration rate, f $3.19 \times 10^{-5} \text{ ms}^{-1}$ Calculated by extrapolating timeline</p>			
<p>Remarks Test carried out in accordance with BRE DG 365 (2016).</p>		<p>CONTRACT JFR1451</p>	<p>CHECKED</p>

9

SOAKAWAY TEST

CLIENT HIGHWAYS ENGLAND
 SITE A303 STONEHENGE
 DATE 30/10/2020

Infiltration Pit **TP - B**

<p>TEST 1</p> <p>LENGTH 0.50 m BREADTH 0.50 m DEPTH 1.00 m WATER LEVEL DRY m FILL LEVEL 0.23 m</p> <p>V_{p75-25} 0.10 m³ a_{p50} 1.02 m² t_{p75-25} 41.5 min</p> <p>soil infiltration rate, f $3.94 \times 10^{-5} \text{ ms}^{-1}$ Calculated by extrapolating timeline</p>			
<p>TEST 2</p> <p>LENGTH 0.50 m BREADTH 5.00 m DEPTH 1.00 m WATER LEVEL DRY m FILL LEVEL 0.21 m</p> <p>V_{p75-25} 0.10 m³ a_{p50} 1.04 m² t_{p75-25} 72.0 min</p> <p>soil infiltration rate, f $2.23 \times 10^{-5} \text{ ms}^{-1}$ Calculated by extrapolating timeline</p>			
<p>TEST 3</p> <p>LENGTH 0.50 m BREADTH 0.50 m DEPTH 1.00 m WATER LEVEL DRY m FILL LEVEL 0.19 m</p> <p>V_{p75-25} 0.10 m³ a_{p50} 1.06 m² t_{p75-25} 96.0 min</p> <p>soil infiltration rate, f $1.64 \times 10^{-5} \text{ ms}^{-1}$ Calculated by extrapolating timeline</p>			
<p>Remarks Test carried out in accordance with BRE DG 365 (2016).</p>		<p>CONTRACT JFR1451</p>	<p>CHECKED</p>

SOAKAWAY TEST

CLIENT HIGHWAYS ENGLAND
 SITE A303 STONEHENGE
 DATE 04/11/2020

Infiltration Pit **TP-C**

<p>TEST 1</p> <p>LENGTH 0.50 m BREADTH 0.50 m DEPTH 1.10 m WATER LEVEL DRY m FILL LEVEL 0.47 m</p> <p>V_{p75-25} 0.08 m³ a_{p50} 0.88 m² t_{p75-25} 12.33 min</p> <p>soil infiltration rate, f $1.23 \times 10^{-4} \text{ ms}^{-1}$ Calculated by extrapolating timeline</p>			
<p>TEST 2</p> <p>LENGTH 0.50 m BREADTH 0.50 m DEPTH 1.10 m WATER LEVEL DRY m FILL LEVEL 0.32 m</p> <p>V_{p75-25} 0.10 m³ a_{p50} 1.03 m² t_{p75-25} 23.25 min</p> <p>soil infiltration rate, f $6.96 \times 10^{-5} \text{ ms}^{-1}$ Calculated by extrapolating timeline</p>			
<p>TEST 3</p> <p>LENGTH 0.50 m BREADTH 0.50 m DEPTH 1.10 m WATER LEVEL DRY m FILL LEVEL 0.35 m</p> <p>V_{p75-25} 0.09 m³ a_{p50} 1.00 m² t_{p75-25} 24.25 min</p> <p>soil infiltration rate, f $6.19 \times 10^{-5} \text{ ms}^{-1}$ Calculated by extrapolating timeline</p>			
<p>Remarks Test carried out in accordance with BRE DG 365 (2016).</p>		<p>CONTRACT JFR1451</p>	<p>CHECKED</p>

SOAKAWAY TEST

CLIENT HIGHWAYS ENGLAND
 SITE A303 STONEHENGE
 DATE 02/11/2020

Infiltration Pit **TP - D**

<p>TEST 1</p> <p>LENGTH 0.50 m BREADTH 0.50 m DEPTH 0.80 m WATER LEVEL DRY m FILL LEVEL 0.40 m</p> <p>V_{p75-25} 0.05 m³ a_{p50} 0.65 m² t_{p75-25} 17.5 min</p> <p>soil infiltration rate, f $7.33 \times 10^{-5} \text{ ms}^{-1}$ Calculated by extrapolating timeline</p>	<p>Time (minutes)</p> <p>Depth to water (m)</p> <p>75% full</p> <p>25% full</p>		
<p>TEST 2</p> <p>LENGTH 0.50 m BREADTH 0.50 m DEPTH 0.80 m WATER LEVEL DRY m FILL LEVEL 0.41 m</p> <p>V_{p75-25} 0.05 m³ a_{p50} 0.64 m² t_{p75-25} 33.0 min</p> <p>soil infiltration rate, f $3.95 \times 10^{-5} \text{ ms}^{-1}$ Calculated by extrapolating timeline</p>	<p>Time (minutes)</p> <p>Depth to water (m)</p> <p>75% full</p> <p>25% full</p>		
<p>TEST 3</p> <p>LENGTH 0.50 m BREADTH 0.50 m DEPTH 0.80 m WATER LEVEL DRY m FILL LEVEL 0.40 m</p> <p>V_{p75-25} 0.05 m³ a_{p50} 0.65 m² t_{p75-25} 43.33 min</p> <p>soil infiltration rate, f $2.96 \times 10^{-5} \text{ ms}^{-1}$ Calculated by extrapolating timeline</p>	<p>Time (minutes)</p> <p>Depth to water (m)</p> <p>75% full</p> <p>25% full</p>		
<p>Remarks Test carried out in accordance with BRE DG 365 (2016).</p>		<p>CONTRACT JFR1451</p>	<p>CHECKED</p>

SOAKAWAY TEST

CLIENT HIGHWAYS ENGLAND
 SITE A303 STONEHENGE
 DATE 02/11/2020

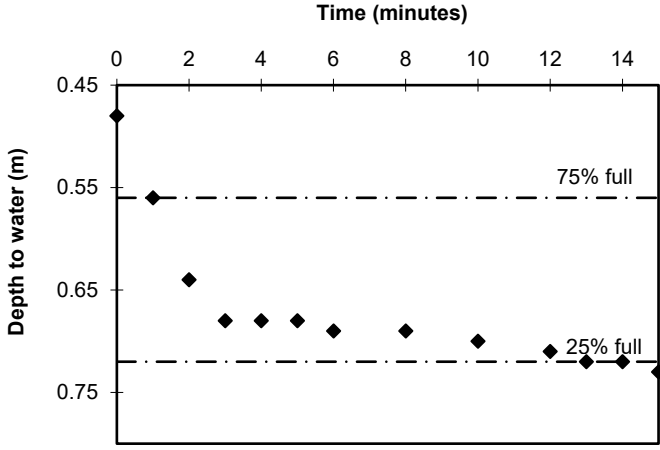
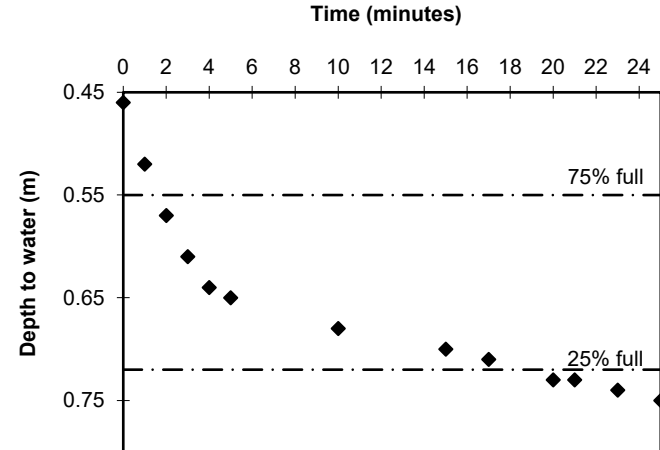
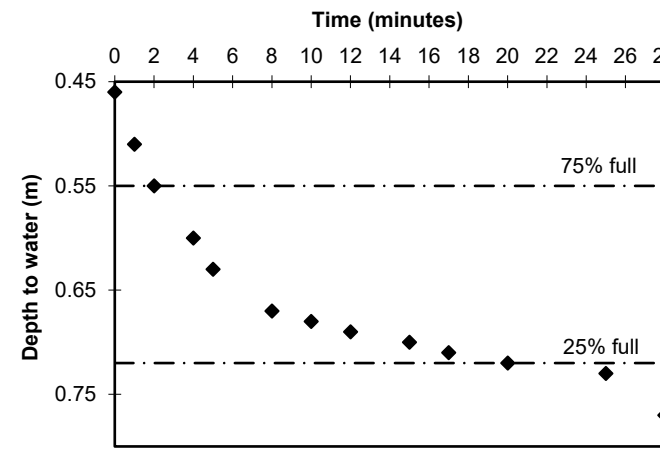
Infiltration Pit **TP - E**

<p>TEST 1</p> <p>LENGTH 0.50 m BREADTH 0.50 m DEPTH 0.80 m WATER LEVEL DRY m FILL LEVEL 0.43 m</p> <p>V_{p75-25} 0.05 m³ a_{p50} 0.62 m² t_{p75-25} 10.5 min</p> <p>soil infiltration rate, f $1.28 \times 10^{-4} \text{ ms}^{-1}$ Calculated by extrapolating timeline</p>	<p style="text-align: center;">Time (minutes)</p>		
<p>TEST 2</p> <p>LENGTH 0.50 m BREADTH 0.50 m DEPTH 0.80 m WATER LEVEL DRY m FILL LEVEL 0.38 m</p> <p>V_{p75-25} 0.05 m³ a_{p50} 0.67 m² t_{p75-25} 25.33 min</p> <p>soil infiltration rate, f $4.91 \times 10^{-5} \text{ ms}^{-1}$ Calculated by extrapolating timeline</p>	<p style="text-align: center;">Time (minutes)</p>		
<p>TEST 3</p> <p>LENGTH 0.50 m BREADTH 0.50 m DEPTH 0.80 m WATER LEVEL DRY m FILL LEVEL 0.39 m</p> <p>V_{p75-25} 0.05 m³ a_{p50} 0.66 m² t_{p75-25} 31.0 min</p> <p>soil infiltration rate, f $4.07 \times 10^{-5} \text{ ms}^{-1}$ Calculated by extrapolating timeline</p>	<p style="text-align: center;">Time (minutes)</p>		
<p>Remarks Test carried out in accordance with BRE DG 365 (2016).</p>		<p>CONTRACT JFR1451</p>	<p>CHECKED</p>

SOAKAWAY TEST

CLIENT HIGHWAYS ENGLAND
 SITE A303 STONEHENGE
 DATE 12/11/2020

Infiltration Pit **TP - F**

<p>TEST 1</p> <p>LENGTH 0.50 m BREADTH 0.50 m DEPTH 0.80 m WATER LEVEL DRY m FILL LEVEL 0.48 m</p> <p>V_{p75-25} 0.04 m³ a_{p50} 0.57 m² t_{p75-25} 12.50 min</p> <p>soil infiltration rate, f 9.36 x10-5 ms⁻¹</p>			
<p>TEST 2</p> <p>LENGTH 0.50 m BREADTH 0.50 m DEPTH 0.80 m WATER LEVEL 0.73 m FILL LEVEL 0.46 m</p> <p>V_{p75-25} 0.04 m³ a_{p50} 0.59 m² t_{p75-25} 16.90 min</p> <p>soil infiltration rate, f 6.69x10-5 ms⁻¹</p>			
<p>TEST 3</p> <p>LENGTH 0.50 m BREADTH 0.50 m DEPTH 0.80 m WATER LEVEL DRY m FILL LEVEL 0.46 m</p> <p>V_{p75-25} 0.04 m³ a_{p50} 0.59 m² t_{p75-25} 19.00 min</p> <p>soil infiltration rate, f 5.95x10-5 ms⁻¹</p>			
<p>Remarks Test carried out in accordance with BRE DG 365 (2016).</p>		<p>CONTRACT JFR1451</p>	<p>CHECKED</p>

RD.L

SOAKAWAY TEST

CLIENT HIGHWAYS ENGLAND
 SITE A303 STONEHENGE
 DATE 03/11/2020

Infiltration Pit **TP - G**

<p>TEST 1</p> <p>LENGTH 0.50 m BREADTH 0.50 m DEPTH 1.40 m WATER LEVEL DRY m FILL LEVEL 0.65 m</p> <p>V_{p75-25} 0.09 m³ a_{p50} 1.00 m² t_{p75-25} 7.65 min</p> <p>soil infiltration rate, f $1.96 \times 10^{-4} \text{ ms}^{-1}$ Calculated by extrapolating timeline</p>			
<p>TEST 2</p> <p>LENGTH 0.50 m BREADTH 0.50 m DEPTH 1.40 m WATER LEVEL DRY m FILL LEVEL 0.55 m</p> <p>V_{p75-25} 0.11 m³ a_{p50} 1.10 m² t_{p75-25} 16.25 min</p> <p>soil infiltration rate, f $1.03 \times 10^{-4} \text{ ms}^{-1}$ Calculated by extrapolating timeline</p>			
<p>TEST 3</p> <p>LENGTH 0.50 m BREADTH 0.50 m DEPTH 1.40 m WATER LEVEL DRY m FILL LEVEL 0.39 m</p> <p>V_{p75-25} 0.13 m³ a_{p50} 1.26 m² t_{p75-25} 23.9 min</p> <p>soil infiltration rate, f $7.20 \times 10^{-5} \text{ ms}^{-1}$ Calculated by extrapolating timeline</p>			
<p>Remarks Test carried out in accordance with BRE DG 365 (2016).</p>		<p>CONTRACT JFR1451</p>	<p>CHECKED</p>

SOAKAWAY TEST

CLIENT HIGHWAYS ENGLAND
 SITE A303 STONEHENGE
 DATE 03/11/2020

Infiltration Pit **TP - H**

<p>TEST 1</p> <p>LENGTH 0.50 m BREADTH 0.50 m DEPTH 0.60 m WATER LEVEL DRY m FILL LEVEL 0.34 m</p> <p>V_{p75-25} 0.03 m³ a_{p50} 0.51 m² t_{p75-25} 130 min</p> <p>soil infiltration rate, f $7.54 \times 10^{-6} \text{ ms}^{-1}$ Calculated by extrapolating timeline</p>			
<p>TEST 2</p> <p>LENGTH 0.50 m BREADTH 0.50 m DEPTH 0.60 m WATER LEVEL DRY m FILL LEVEL 0.34 m</p> <p>V_{p75-25} 0.03 m³ a_{p50} 0.51 m² t_{p75-25} 198.4 min</p> <p>soil infiltration rate, f $4.94 \times 10^{-6} \text{ ms}^{-1}$ Calculated by extrapolating timeline</p>			
<p>TEST 3</p> <p>LENGTH 0.50 m BREADTH 0.50 m DEPTH 0.61 m WATER LEVEL DRY m FILL LEVEL 0.36 m</p> <p>V_{p75-25} 0.03 m³ a_{p50} 0.50 m² t_{p75-25} 183.0 min</p> <p>soil infiltration rate, f $5.46 \times 10^{-6} \text{ ms}^{-1}$ Calculated by extrapolating timeline</p>			
<p>Remarks Test carried out in accordance with BRE DG 365 (2016).</p>		<p>CONTRACT JFR1451</p>	<p>CHECKED</p>

SOAKAWAY TEST

CLIENT HIGHWAYS ENGLAND
 SITE A303 STONEHENGE
 DATE 05/11/2020

Infiltration Pit **TP - J**

<p>TEST 1</p> <p>LENGTH 0.50 m BREADTH 0.50 m DEPTH 0.70 m WATER LEVEL DRY m FILL LEVEL 0.36 m</p> <p>V_{p75-25} 0.04 m³ a_{p50} 0.59 m² t_{p75-25} 371 min</p> <p>soil infiltration rate, f $3.05 \times 10^{-6} \text{ ms}^{-1}$ Calculated by extrapolating timeline</p>			
<p>TEST 2</p> <p>LENGTH 0.50 m BREADTH 0.50 m DEPTH 1.20 m WATER LEVEL DRY m FILL LEVEL 0.64 m</p> <p>V_{p75-25} 0.07 m³ a_{p50} 0.81 m² t_{p75-25} 90.0 min</p> <p>soil infiltration rate, f $1.60 \times 10^{-5} \text{ ms}^{-1}$ Calculated by extrapolating timeline</p>			
<p>TEST 3</p> <p>LENGTH 0.50 m BREADTH 0.50 m DEPTH 1.20 m WATER LEVEL DRY m FILL LEVEL 0.55 m</p> <p>V_{p75-25} 0.08 m³ a_{p50} 0.90 m² t_{p75-25} 157.0 min</p> <p>soil infiltration rate, f $9.44 \times 10^{-6} \text{ ms}^{-1}$ Calculated by extrapolating timeline</p>			
<p>Remarks Test carried out in accordance with BRE DG 365 (2016).</p>		<p>CONTRACT JFR1451</p>	<p>CHECKED</p>

SOAKAWAY TEST

CLIENT HIGHWAYS ENGLAND
 SITE A303 STONEHENGE
 DATE 05-06/11/2020

Infiltration Pit **TP-K**

<p>TEST 1</p> <p>LENGTH 0.50 m BREADTH 0.50 m DEPTH 0.70 m WATER LEVEL DRY m FILL LEVEL 0.45 m</p> <p>V_{p75-25} 0.03 m³ a_{p50} 0.50 m² t_{p75-25} 452 min</p> <p>soil infiltration rate, f $2.21 \times 10^{-6} \text{ ms}^{-1}$ Calculated by extrapolating timeline</p>	
<p>TEST 2</p> <p>LENGTH 0.50 m BREADTH 0.50 m DEPTH 1.20 m WATER LEVEL DRY m FILL LEVEL 0.62 m</p> <p>V_{p75-25} 0.07 m³ a_{p50} 0.83 m² t_{p75-25} 27.7 min</p> <p>soil infiltration rate, f $5.08 \times 10^{-5} \text{ ms}^{-1}$ Calculated by extrapolating timeline</p>	
<p>TEST 3</p> <p>LENGTH 0.50 m BREADTH 0.50 m DEPTH 1.20 m WATER LEVEL DRY m FILL LEVEL 0.56 m</p> <p>V_{p75-25} 0.08 m³ a_{p50} 0.89 m² t_{p75-25} 54.0 min</p> <p>soil infiltration rate, f $2.77 \times 10^{-5} \text{ ms}^{-1}$ Calculated by extrapolating timeline</p>	
<p>Remarks Test carried out in accordance with BRE DG 365 (2016).</p> <p style="text-align: right;">CONTRACT JFR1451 CHECKED</p>	

SOAKAWAY TEST

CLIENT HIGHWAYS ENGLAND
 SITE A303 STONEHENGE
 DATE 05-06/11/2020

Infiltration Pit **TP-K**

<p>TEST 4</p> <p>LENGTH 0.50 m BREADTH 0.50 m DEPTH 1.20 m WATER LEVEL DRY m FILL LEVEL 0.86 m</p> <p>V_{p75-25} 0.04 m³ a_{p50} 0.59 m² t_{p75-25} 33.25 min</p> <p>soil infiltration rate, f $3.40 \times 10^{-5} \text{ ms}^{-1}$ Calculated by extrapolating timeline</p>	<table border="1" style="display: none;"> <caption>Approximate data points from the graph</caption> <thead> <tr> <th>Time (minutes)</th> <th>Depth to water (m)</th> </tr> </thead> <tbody> <tr><td>0</td><td>0.85</td></tr> <tr><td>2</td><td>0.90</td></tr> <tr><td>4</td><td>0.95</td></tr> <tr><td>6</td><td>1.00</td></tr> <tr><td>10</td><td>1.05</td></tr> <tr><td>20</td><td>1.10</td></tr> <tr><td>30</td><td>1.15</td></tr> <tr><td>45</td><td>1.20</td></tr> </tbody> </table>	Time (minutes)	Depth to water (m)	0	0.85	2	0.90	4	0.95	6	1.00	10	1.05	20	1.10	30	1.15	45	1.20
Time (minutes)	Depth to water (m)																		
0	0.85																		
2	0.90																		
4	0.95																		
6	1.00																		
10	1.05																		
20	1.10																		
30	1.15																		
45	1.20																		

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<p>Remarks Test carried out in accordance with BRE DG 365 (2016).</p>	<p>CONTRACT JFR1451</p>	<p>CHECKED</p>
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APPENDIX E

VARIABLE HEAD TEST DATA



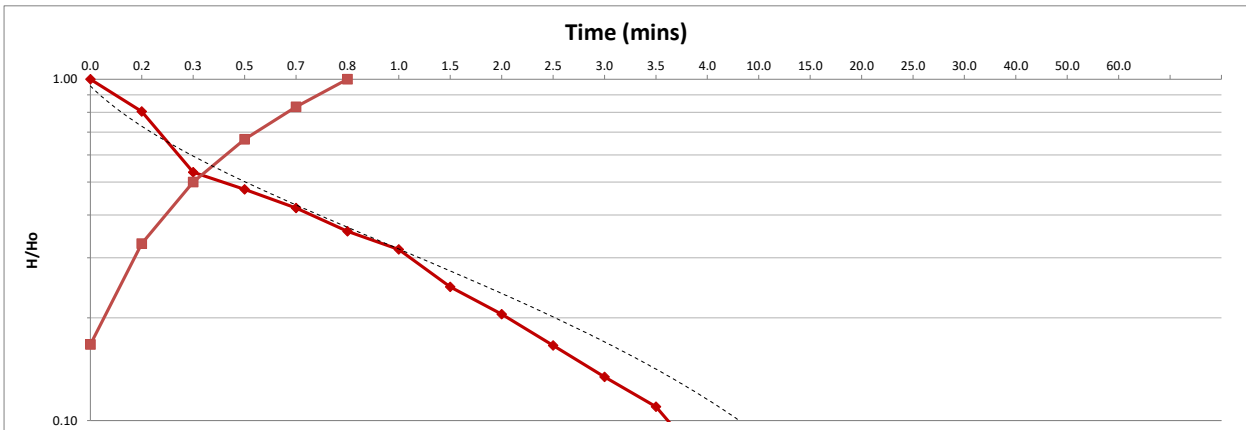
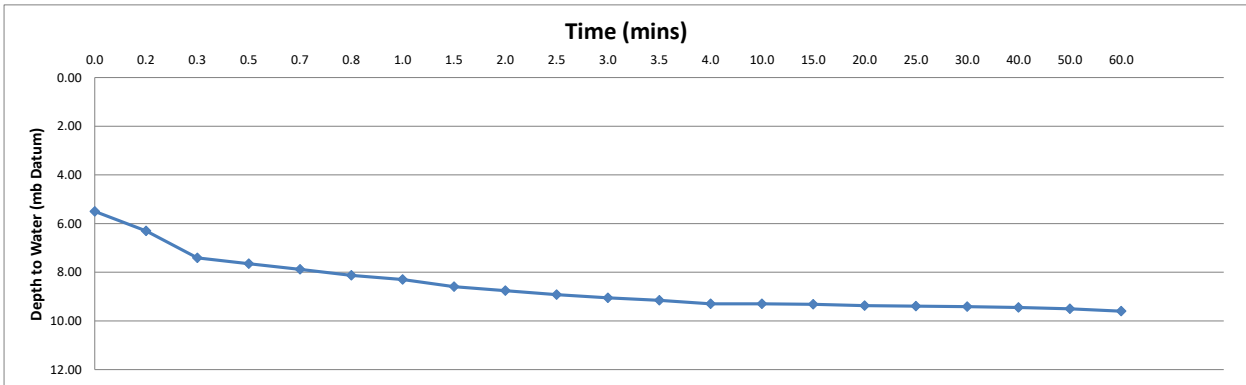
Job Code: JFR1451
 Site Name: A303 Stonehenge

LOCATION DETAILS		R72006	TEST DETAILS			
Ground Level (mAOD)	84.6611		Date of Test	09/10/2020	GW Level (m below Datum)	10.23
Height of Datum (maGL)	0.8		Test Type	Falling	Base of Pipe (mbGL)	n/a
Hole Diameter (m)	0.11		Test Number	1	Volume of Water Added (litres)	n/a
Casing Diameter (m)	0.46		Stage Number (if Applicable)	n/a	Volume of Water Purged (litres)	n/a
Borehole Depth (mbGL)	9.60		Test Undertaken by	G. Ellis	Purging Method	n/a
Casing Depth (mbGL)	8.50		Equipment Details	Dip Meter		
Geological Stratum	Chalk		Start of test GW Level	9.43 m bgl (likely water flush)		

TEST RESULTS

Test performed to BS EN ISO 22282-2:2012

Time (mins)	Depth to Water below Ground Level (m bgl)	Head (m)	H/Ho	Remarks
0	5.50	4.10	1.00	Test 1 terminated after 1 hour in accordance with specification
0.167	6.30	3.30	0.80	
0.33	7.41	2.19	0.53	
0.5	7.65	1.95	0.48	
0.667	7.88	1.72	0.42	
0.83	8.13	1.47	0.36	
1	8.30	1.30	0.32	
1.5	8.59	1.01	0.25	
2	8.76	0.84	0.20	
2.5	8.92	0.68	0.17	
3	9.05	0.55	0.13	
3.5	9.15	0.45	0.11	
4	9.30	0.30	0.07	
10	9.30	0.30	0.07	
15	9.32	0.28	0.07	
20	9.37	0.23	0.06	
25	9.39	0.21	0.05	
30	9.41	0.19	0.05	
40	9.45	0.15	0.04	
50	9.50	0.10	0.02	
60	9.60	0.00	0.00	



PRELIMINARY PERMEABILITY CALCULATIONS

TIME LAG (HVORLSEV) METHOD $k = A/(F \times T)$

Cross sectional Area of Casing (A) m^2

Intake Factor (F) based on Hvorslev intake factor D 'hole extended in uniform soil' ($F=2\pi L/\ln(L/D + \sqrt{1+(L/D)^2})$) =

Time Lag (T) (time at which H/Ho = 0.37)

Approximate Permeability $k = ms^{-1}$



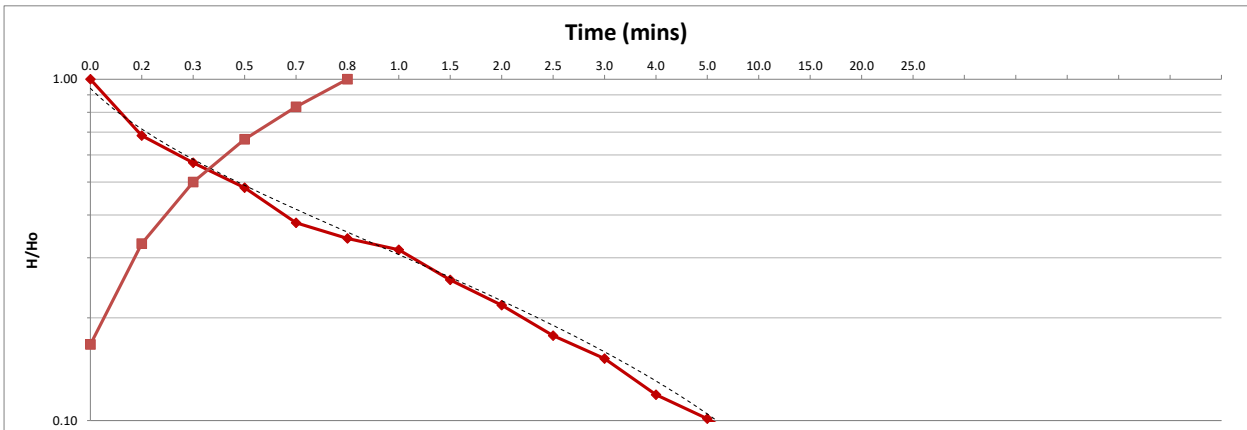
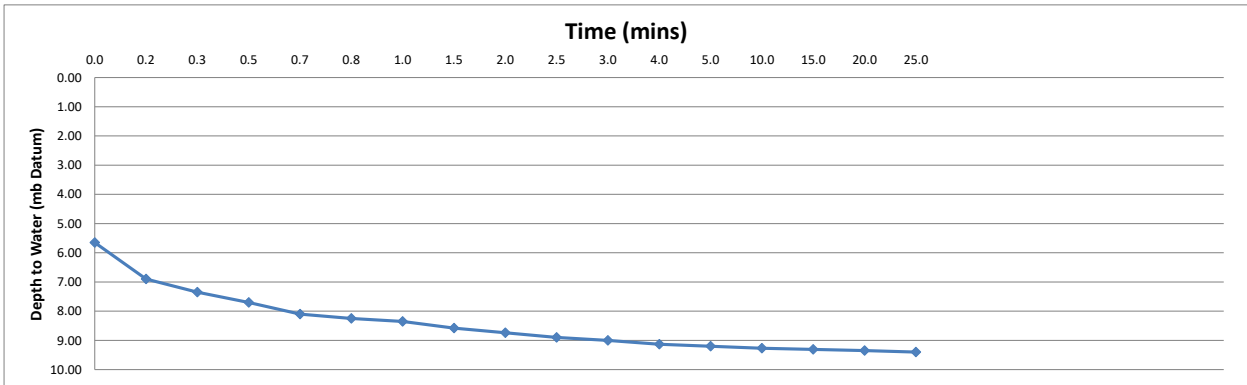
Job Code: JFR1451
 Site Name: A303 Stonehenge

LOCATION DETAILS		R72006	TEST DETAILS			
Ground Level (mAOD)	84.6611		Date of Test	09/10/2020	GW Level (m below Datum)	Dry
Height of Datum (maGL)	0.8		Test Type	Falling	Base of Pipe (mbGL)	n/a
Hole Diameter (m)	0.11		Test Number	2	Volume of Water Added (litres)	n/a
Casing Diameter (m)	0.46		Stage Number (if Applicable)	n/a	Volume of Water Purged (litres)	n/a
Borehole Depth (mbGL)	9.60		Test Undertaken by	G. Ellis	Purging Method	n/a
Casing Depth (mbGL)	8.50		Equipment Details	Dip Meter		
Geological Stratum	Chalk		Start of test GW Level	No groundwater		

TEST RESULTS

Test performed to BS EN ISO 22282-2:2012

Time (mins)	Depth to Water below Ground Level (m bgl)	Head (m)	H/Ho	Remarks	
0	5.65	3.95	1.00	Test 2 terminated after 25 minutes due to full infiltration of head of water.	
0.167	6.90	2.70	0.68		
0.33	7.35	2.25	0.57		
0.5	7.70	1.90	0.48		
0.667	8.10	1.50	0.38		
0.83	8.25	1.35	0.34		
1	8.35	1.25	0.32		
1.5	8.58	1.02	0.26		
2	8.74	0.86	0.22		
2.5	8.90	0.70	0.18		
3	9.00	0.60	0.15		
4	9.13	0.47	0.12		
5	9.20	0.40	0.10		
10	9.27	0.33	0.08		
15	9.31	0.29	0.07		
20	9.35	0.25	0.06		
25	9.40	0.20	0.05		



PRELIMINARY PERMEABILITY CALCULATIONS

TIME LAG (HVORLSEV) METHOD $k = A/(F \times T)$

Cross sectional Area of Casing (A) m^2

Intake Factor (F) based on Hvorslev intake factor D 'hole extended in uniform soil' ($F = 2\pi L / \ln(L/D) + \sqrt{1 + (L/D)^2}$) =

Time Lag (T) (time at which H/Ho = 0.37) =

Approximate Permeability $k = ms^{-1}$



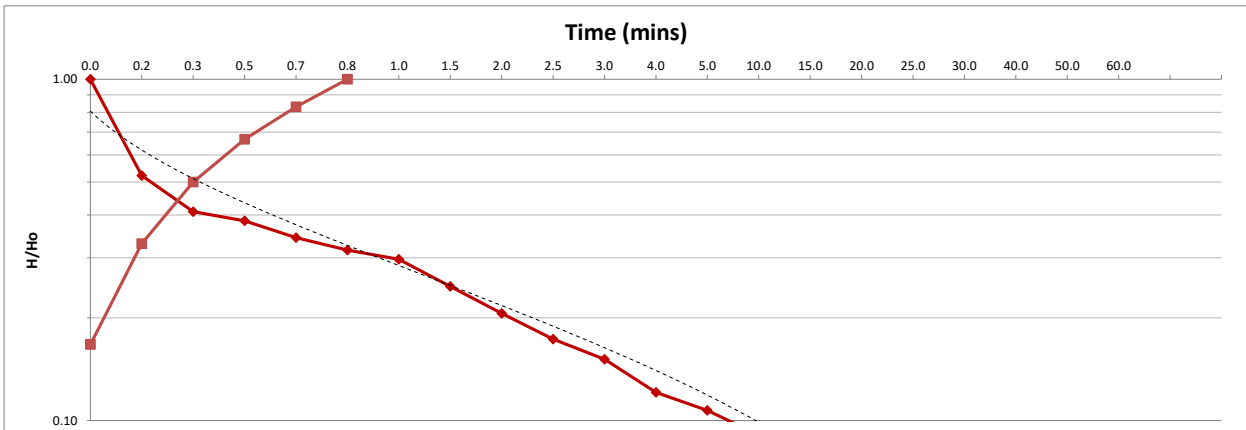
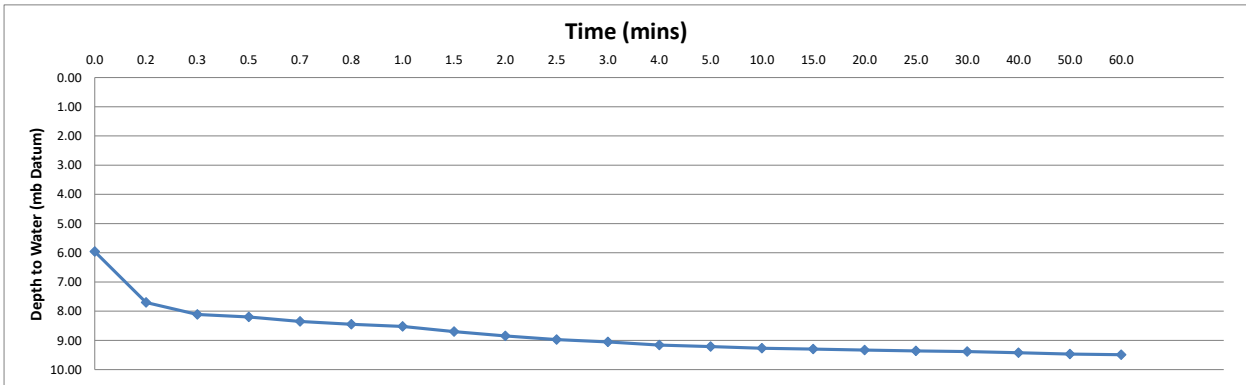
Job Code: JFR1451
 Site Name: A303 Stonehenge

LOCATION DETAILS		R72006	TEST DETAILS			
Ground Level (mAOD)	84.6611		Date of Test	09/10/2020	GW Level (m below Datum)	10.20
Height of Datum (maGL)	0.8		Test Type	Falling	Base of Pipe (mbGL)	n/a
Hole Diameter (m)	0.11		Test Number	3	Volume of Water Added (litres)	n/a
Casing Diameter (m)	0.46		Stage Number (if Applicable)	n/a	Volume of Water Purged (litres)	n/a
Borehole Depth (mbGL)	9.60		Test Undertaken by	G. Ellis	Purging Method	n/a
Casing Depth (mbGL)	8.50		Equipment Details	Dip Meter		
Geological Stratum	Chalk		Start of test GW Level	9.40 m bgl (from Test 2)		

TEST RESULTS

Test performed to BS EN ISO 22282-2:2012

Time (mins)	Depth to Water below Ground Level (m bgl)	Head (m)	H/Ho	Remarks
0	5.96	3.64	1.00	Test 3 terminated after 1 hour in accordance with specification.
0.167	7.70	1.90	0.52	
0.33	8.11	1.49	0.41	
0.5	8.20	1.40	0.38	
0.667	8.35	1.25	0.34	
0.83	8.45	1.15	0.32	
1	8.52	1.08	0.30	
1.5	8.70	0.90	0.25	
2	8.85	0.75	0.21	
2.5	8.97	0.63	0.17	
3	9.05	0.55	0.15	
4	9.16	0.44	0.12	
5	9.21	0.39	0.11	
10	9.27	0.33	0.09	
15	9.30	0.30	0.08	
20	9.33	0.27	0.07	
25	9.36	0.24	0.07	
30	9.38	0.22	0.06	
40	9.42	0.18	0.05	
50	9.47	0.13	0.04	
60	9.49	0.11	0.03	



PRELIMINARY PERMEABILITY CALCULATIONS

TIME LAG (HVORLSEV) METHOD $k = A/(F \times T)$

Cross sectional Area of Casing (A) m^2

Intake Factor (F) based on Hvorslev intake factor D 'hole extended in uniform soil' ($F=2\pi L/\ln(L/D) + \sqrt{1+(L/D)^2}$)

Time Lag (T) (time at which H/Ho = 0.37)

Approximate Permeability $k = ms^{-1}$



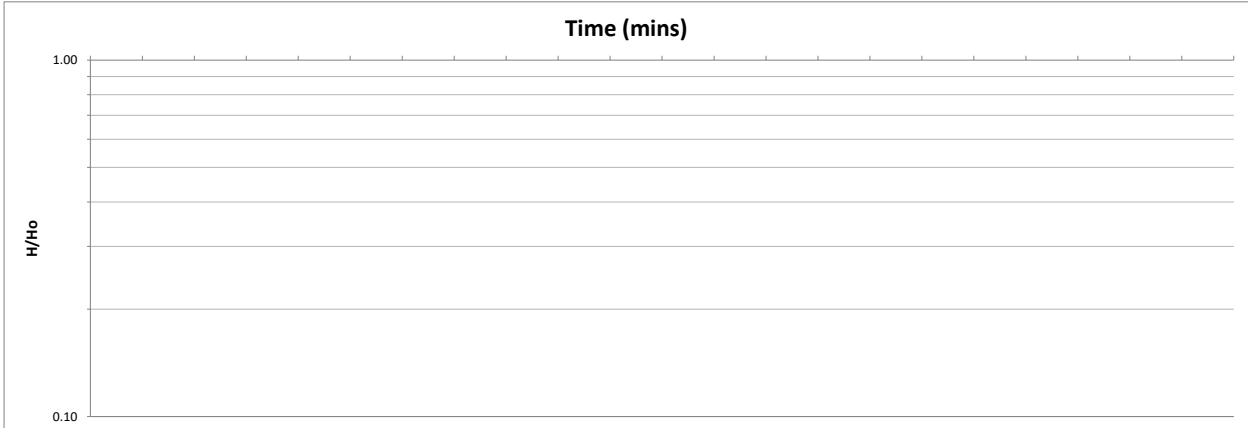
Job Code: JFR1451
 Site Name: A303 Stonehenge

LOCATION DETAILS		R72001	TEST DETAILS			
Ground Level (mAOD)	94.6139		Date of Test	27/08/2020	GW Level (m below Datum)	Dry
Height of Datum (maGL)	0.1		Test Type	Falling	Base of Pipe (mbGL)	n/a
Hole Diameter (m)	0.11		Test Number	1	Volume of Water Added (litres)	n/a
Casing Diameter (m)	0.146		Stage Number (if Applicable)	n/a	Volume of Water Purged (litres)	n/a
Borehole Depth (mbGL)	17.5		Test Undertaken by	L. Davies	Purging Method	n/a
Casing Depth (mbGL)	1.1		Equipment Details	Dip meter / Divers		
Geological Stratum	Chalk		Start of test GW Level	Dry - no groundwater		

TEST RESULTS

Test performed to BS EN ISO 22282-2:2012

Time (mins)	Depth to Water below Ground Level (m bgl)	Head (m)	H/Ho	Remarks
				Test recorded using divers. Readings taken are at intervals to determine the rate of infiltration.
				Test 1 undertaken between 07:45 am and 09:20 am. Terminated after one and half hours as instructed.



PRELIMINARY PERMEABILITY CALCULATIONS

TIME LAG (HVORLSEV) METHOD $k = A/(F \times T)$

Cross sectional Area of Casing (A) m^2

Intake Factor (F) based on Hvorslev intake factor D 'hole extended in uniform soil' ($F = 2\pi t / (L \ln(L/D) + \sqrt{L^2 + (L/D)^2})$)

Time Lag (T) (time at which H/Ho = 0.37)

Approximate Permeability $k = ms^{-1}$



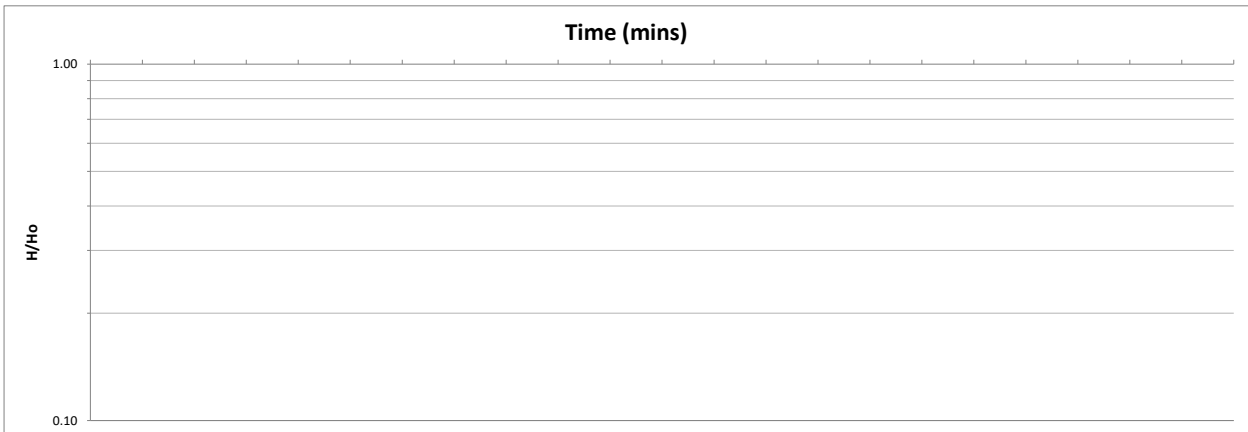
Job Code: JFR1451
Site Name: A303 Stonehenge

LOCATION DETAILS		R72001	TEST DETAILS			
Ground Level (mAOD)		94.6139	Date of Test	27/08/2020	GW Level (m below Datum)	
Height of Datum (maGL)		0.1	Test Type	Falling	Base of Pipe (mbGL)	n/a
Hole Diameter (m)		0.11	Test Number	2	Volume of Water Added (litres)	n/a
Casing Diameter (m)		0.146	Stage Number (if Applicable)	n/a	Volume of Water Purged (litres)	n/a
Borehole Depth (mbGL)		17.5	Test Undertaken by	L. Davies	Purging Method	n/a
Casing Depth (mbGL)		1.1	Equipment Details	Dip meter / Divers		
Geological Stratum		Chalk	Start of test GW Level			

TEST RESULTS

Test performed to BS EN ISO 22282-2:2012

Time (mins)	Depth to Water below Ground Level (m bgl)	Head (m)	H/Ho	Remarks
				Test recorded using divers. Readings taken are at intervals to determine the rate of infiltration.
				Test 2 undertaken between 09:21 am and 10:30 am. Test terminated after the one hour mark as instructed.



PRELIMINARY PERMEABILITY CALCULATIONS

TIME LAG (HVORLSEV) METHOD $k = A/(F \times T)$

Cross sectional Area of Casing (A) m^2

Intake Factor (F) based on Hvorslev intake factor D 'hole extended in uniform soil' ($F = 2\pi t / \ln[L/D + \sqrt{1 + (L/D)^2}]$) =

Time Lag (T) (time at which H/Ho = 0.37)

Approximate Permeability $k = ms^{-1}$



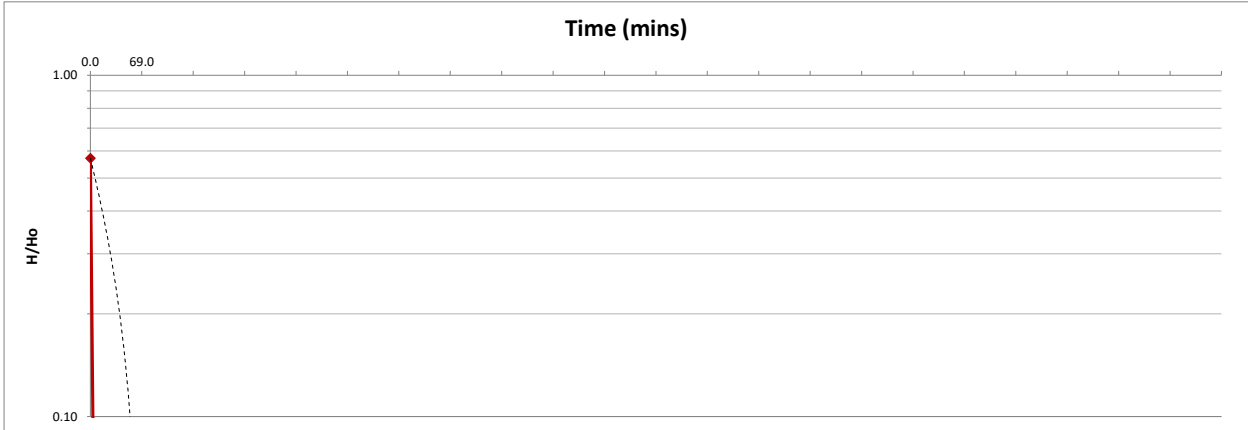
Job Code: JFR1451
Site Name: A303 Stonehenge

LOCATION DETAILS		R72001	TEST DETAILS		
Ground Level (mAOD)	94.6139	Date of Test	27/08/2020	GW Level (m below Datum)	16.03
Height of Datum (maGL)	0.1	Test Type	Falling	Base of Pipe (mbGL)	n/a
Hole Diameter (m)	0.11	Test Number	3	Volume of Water Added (litres)	n/a
Casing Diameter (m)	0.146	Stage Number (if Applicable)	n/a	Volume of Water Purged (litres)	n/a
Borehole Depth (mbGL)	17.5	Test Undertaken by	L. Davies	Purging Method	n/a
Casing Depth (mbGL)	1.1	Equipment Details	Dip meter / Divers		
Geological Stratum	Chalk	Start of test GW Level	Water level brought up to 14.84 m bgl		

TEST RESULTS

Test performed to BS EN ISO 22282-2:2012

Time (mins)	Depth to Water below Ground Level (m bgl)	Head (m)	H/Ho	Remarks
0	14.84	2.66	0.57	Test recorded using divers. Readings taken are at intervals to determine the rate of infiltration.
69	15.98	1.52	0.00	
				Test 3 undertaken between 11:35 am and 12:45 pm. Test terminated after the one hour mark as instructed.



PRELIMINARY PERMEABILITY CALCULATIONS

TIME LAG (HVORLSEV) METHOD $k = A/(F \times T)$

Cross sectional Area of Casing (A) m^2

Intake Factor (F) based on Hvorslev intake factor D 'hole extended in uniform soil' ($F = 2\pi L / \ln(L/D + \sqrt{1 + (L/D)^2})$) =

Time Lag (T) (time at which $H/H_o = 0.37$) =

Approximate Permeability $k = ms^{-1}$



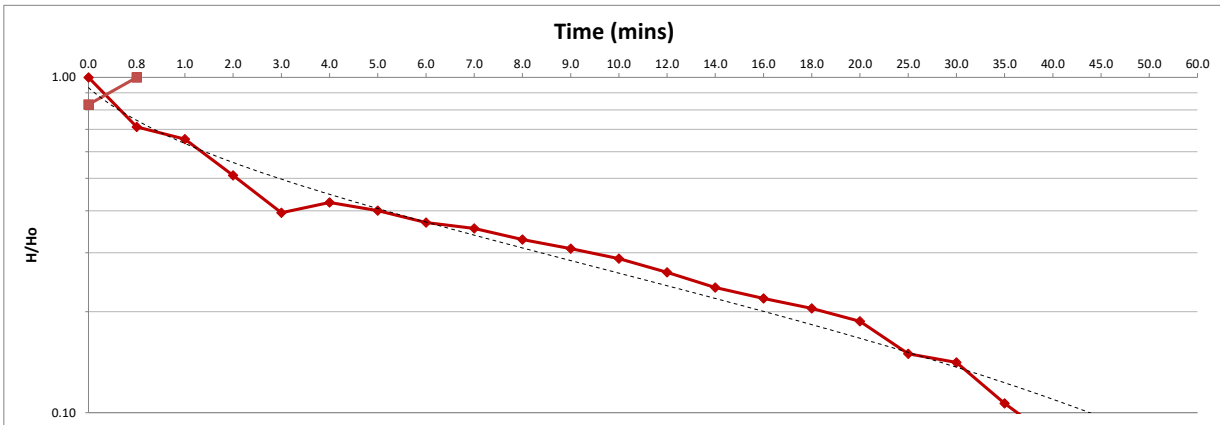
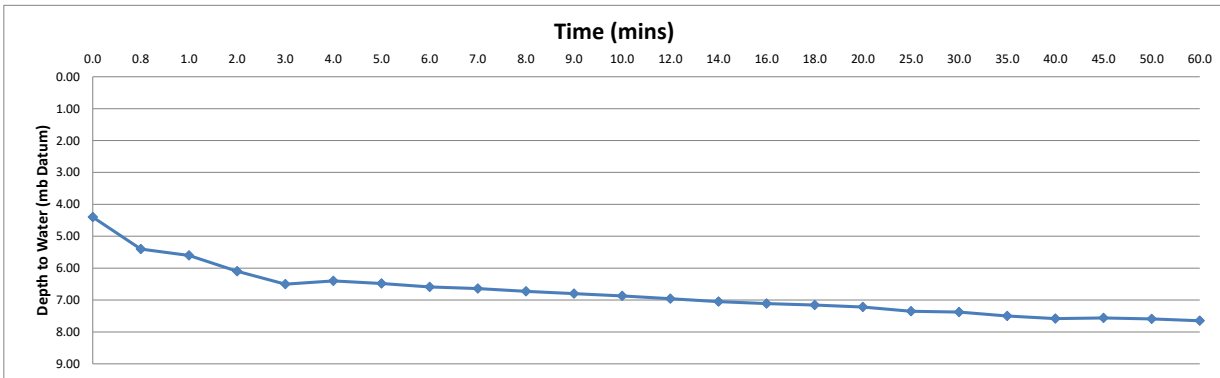
Job Code: JFR1451
 Site Name: A303 Stonehenge

LOCATION DETAILS		R72004	TEST DETAILS			
Ground Level (mAOD)	85.4883		Date of Test	27/08/2020	GW Level (m below Datum)	Dry
Height of Datum (maGL)	0.1		Test Type	Falling	Base of Pipe (mbGL)	n/a
Hole Diameter (m)	0.11		Test Number	1	Volume of Water Added (litres)	n/a
Casing Diameter (m)	0.146		Stage Number (if Applicable)	n/a	Volume of Water Purged (litres)	n/a
Borehole Depth (mbGL)	7.87		Test Undertaken by	L. Davies	Purging Method	n/a
Casing Depth (mbGL)	2.10		Equipment Details	Dip Meter		
Geological Stratum	Chalk		Start of test GW Level	Dry - no groundwater		

TEST RESULTS

Test performed to BS EN ISO 22282-2:2012

Time (mins)	Depth to Water below Ground Level (m bgl)	Head (m)	H/Ho	Remarks
0	4.40	3.47	1.00	Test 1 terminated after 1 hour in accordance with specification.
0.83	5.40	2.47	0.71	
1	5.60	2.27	0.65	
2	6.10	1.77	0.51	
3	6.50	1.37	0.39	
4	6.40	1.47	0.42	
5	6.48	1.39	0.40	
6	6.59	1.28	0.37	
7	6.64	1.23	0.35	
8	6.73	1.14	0.33	
9	6.80	1.07	0.31	
10	6.87	1.00	0.29	
12	6.96	0.91	0.26	
14	7.05	0.82	0.24	
16	7.11	0.76	0.22	
18	7.16	0.71	0.20	
20	7.22	0.65	0.19	
25	7.35	0.52	0.15	
30	7.38	0.49	0.14	
35	7.50	0.37	0.11	
40	7.58	0.29	0.08	
45	7.56	0.31	0.09	
50	7.59	0.28	0.08	
60	7.65	0.22	0.06	



PRELIMINARY PERMEABILITY CALCULATIONS

TIME LAG (HVORLSEV) METHOD $k = A/(F \times T)$
 Cross sectional Area of Casing (A) m^2
 Intake Factor (F) based on Hvorslev intake factor 'D' hole extended in uniform soil ' $(F = 2\pi L / \ln[L/D + \sqrt{1+(L/D)^2}])$ ' =
 Time Lag (T) (time at which $H/H_o = 0.37$)
 Approximate Permeability $k = ms^{-1}$

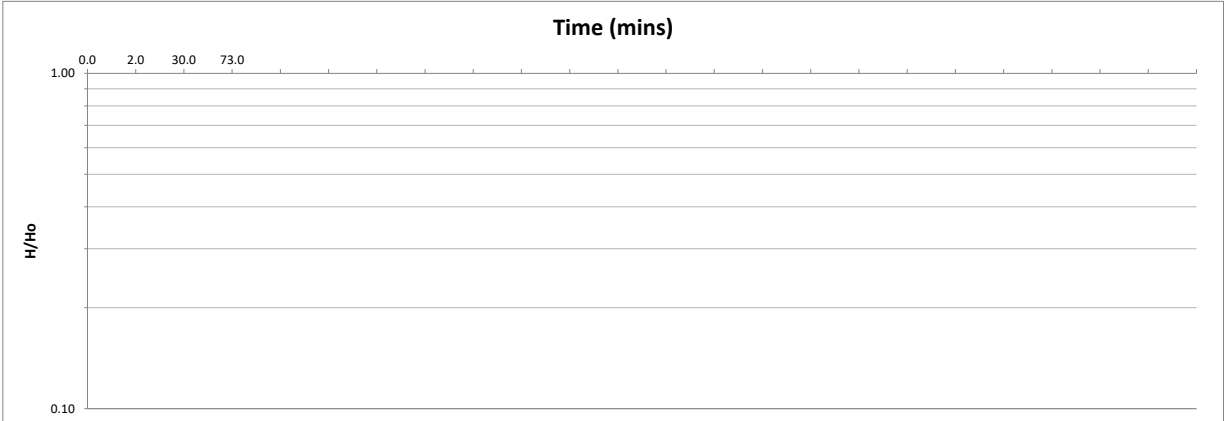


Job Code: JFR1451
 Site Name: A303 Stonehenge

LOCATION DETAILS		R72004	TEST DETAILS			
Ground Level (mAOD)	85.4883		Date of Test	27/08/2020	GW Level (m below Datum)	7.81
Height of Datum (maGL)	0.1		Test Type	Falling	Base of Pipe (mbGL)	n/a
Hole Diameter (m)	0.11		Test Number	2	Volume of Water Added (litres)	n/a
Casing Diameter (m)	0.146		Stage Number (if Applicable)	n/a	Volume of Water Purged (litres)	n/a
Borehole Depth (mbGL)	7.82		Test Undertaken by	L. Davies	Purging Method	n/a
Casing Depth (mbGL)	2.10		Equipment Details	Divers		
Geological Stratum	Chalk		Start of test GW Level	Water brought up to 4.20 m bgl for Test 2		

TEST RESULTS Test performed to BS EN ISO 22282-2:2012

Time (mins)	Depth to Water below Ground Level (m bgl)	Head (m)	H/Ho	Remarks
0	4.20	3.62		Test 2 recorded on diver.
2	5.63	2.19		Possible slurry to base of pit upon completion of Test 1 - base of borehole now at 7.82 m bgl.
30	7.18	0.64		Please note errors occurred when downloading the barometric data. For compensation of data, please use the atmospheric pressure of 1024 cmH2O (relatively stable readings prior to Test 2).
73	7.46	0.36		



PRELIMINARY PERMEABILITY CALCULATIONS

TIME LAG (HVORLSEV) METHOD $k = A/(F \times T)$
 Cross sectional Area of Casing (A) m²
 Intake Factor (F) based on Hvorslev intake factor 'D' hole extended in uniform soil ' ($F=2\pi L/\ln[L/D + \sqrt{1+(L/D)^2}])$) =
 Time Lag (T) (time at which H/Ho = 0.37)
 Approximate Permeability $k = \text{ms}^{-1}$



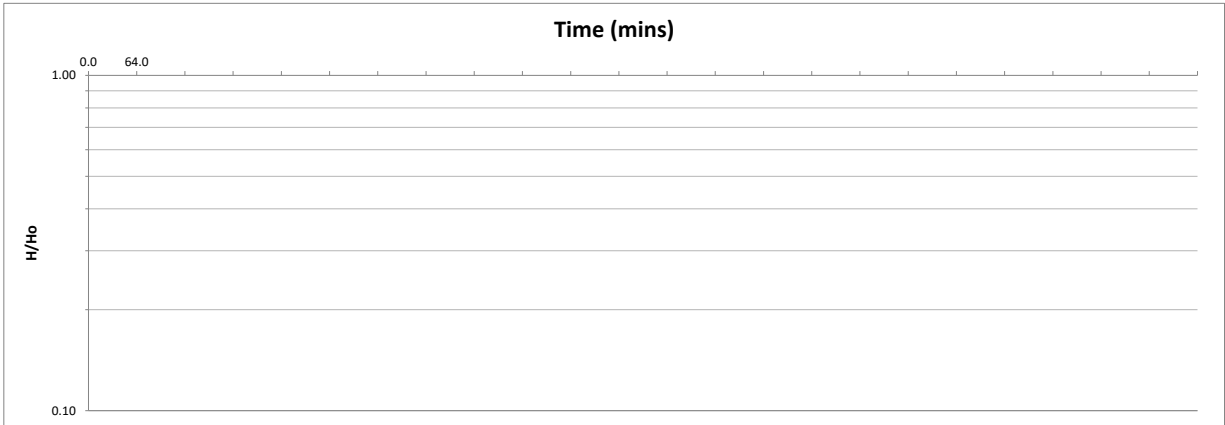
Job Code: JFR1451
Site Name: A303 Stonehenge

LOCATION DETAILS		R72004	TEST DETAILS			
Ground Level (mAOD)		85.4883	Date of Test	27/08/2020	GW Level (m below Datum)	7.56
Height of Datum (maGL)		0.1	Test Type	Falling	Base of Pipe (mbGL)	n/a
Hole Diameter (m)		0.11	Test Number	3	Volume of Water Added (litres)	n/a
Casing Diameter (m)		0.146	Stage Number (if Applicable)	n/a	Volume of Water Purged (litres)	n/a
Borehole Depth (mbGL)		7.82	Test Undertaken by	L. Davies	Purging Method	n/a
Casing Depth (mbGL)		2.10	Equipment Details	Divers		
Geological Stratum		Chalk	Start of test GW Level	Water brought up to 5.00 m bgl for Test 3		

TEST RESULTS

Test performed to BS EN ISO 22282-2:2012

Time (mins)	Depth to Water below Ground Level (m bgl)	Head (m)	H/Ho	Remarks
0	5.00	2.82		Test 3 recorded on diver.
64	7.45	0.37		
				Please note errors occurred when downloading the barometric data. For compensation of data, please use the atmospheric pressure of 1024 cmH2O (relatively stable readings prior to Test 3).



PRELIMINARY PERMEABILITY CALCULATIONS

TIME LAG (HVORLSEV) METHOD $k = A/(F \times T)$
 Cross sectional Area of Casing (A) m^2
 Intake Factor (F) based on Hvorslev intake factor 'D' hole extended in uniform soil ' $(F=2\pi L/\ln[L/D + \sqrt{1+(L/D)^2}])$ ' =
 Time Lag (T) (time at which H/Ho = 0.37)
 Approximate Permeability k = ms^{-1}



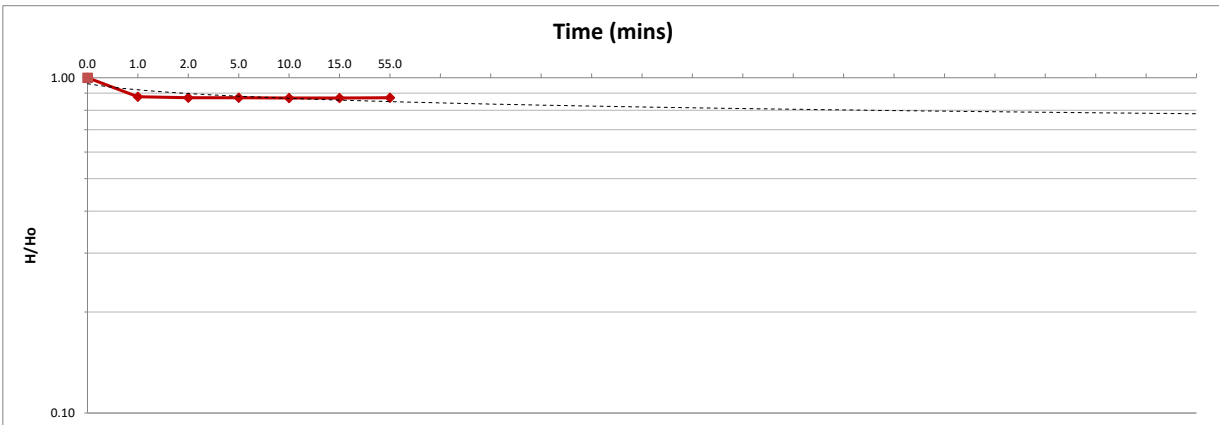
Job Code: JFR1451
 Site Name: A303 Stonehenge

LOCATION DETAILS		BH72401	TEST DETAILS			
Ground Level (mAOD)		71	Date of Test	22/09/2020	GW Level (m below Datum)	3.50
Height of Datum (maGL)		0.46	Test Type	Falling	Base of Pipe (mbGL)	n/a
Hole Diameter (m)		0.11	Test Number	1	Volume of Water Added (litres)	n/a
Casing Diameter (m)		0.146	Stage Number (if Applicable)	n/a	Volume of Water Purged (litres)	n/a
Borehole Depth (mbGL)		8	Test Undertaken by	L. Davies	Purging Method	n/a
Casing Depth (mbGL)		7.25	Equipment Details	Dip meter / divers		
Geological Stratum		Chalk	Start of test GW Level	Water level brought up to 2.69 m bgl for Test 1		

TEST RESULTS

Test performed to BS EN ISO 22282-2:2012

Time (mins)	Depth to Water below Ground Level (m bgl)	Head (m)	H/Ho	Remarks
0	2.69	5.31	1.00	Test record using divers.
1	3.34	4.66	0.88	Test 1 terminated after one hour as per instruction.
2	3.37	4.63	0.87	
5	3.37	4.63	0.87	
10	3.38	4.62	0.87	
15	3.38	4.62	0.87	
55	3.37	4.63	0.87	



PRELIMINARY PERMEABILITY CALCULATIONS

TIME LAG (HVORLSEV) METHOD $k = A / (F \cdot T)$
 Cross sectional Area of Casing (A) m^2
 Intake Factor (F) based on Hvorlsev intake factor ' $(F = 2\pi L / \ln(L/D + \sqrt{1 + (L/D)^2}))$ =
 Time Lag (T) (time at which H/Ho = 0.37)
 Approximate Permeability $k = ms^{-1}$



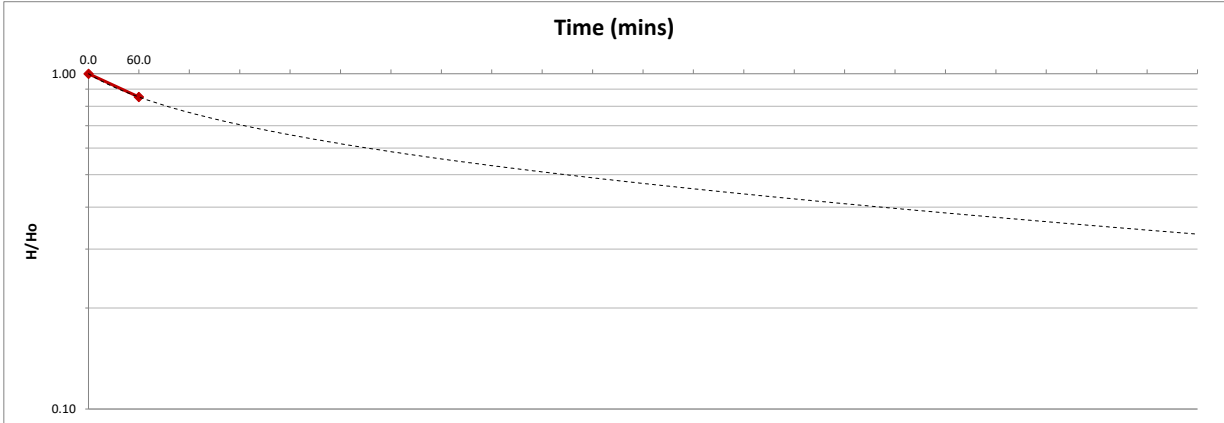
Job Code: JFR1451
 Site Name: A303 Stonehenge

LOCATION DETAILS		BH72401	TEST DETAILS			
Ground Level (mAOD)		71	Date of Test	22/09/2020	GW Level (m below Datum)	3.79
Height of Datum (maGL)		0.46	Test Type	Falling	Base of Pipe (mbGL)	n/a
Hole Diameter (m)		0.11	Test Number	3	Volume of Water Added (litres)	n/a
Casing Diameter (m)		0.146	Stage Number (if Applicable)	n/a	Volume of Water Purged (litres)	n/a
Borehole Depth (mbGL)		7.98	Test Undertaken by	L. Davies	Purging Method	n/a
Casing Depth (mbGL)		7.25	Equipment Details	Dip meter / divers		
Geological Stratum		Chalk	Start of test GW Level	Water level brought up to 2.56 m bgl for Test 3		

TEST RESULTS

Test performed to BS EN ISO 22282-2:2012

Time (mins)	Depth to Water below Ground Level (m bgl)	Head (m)	H/Ho	Remarks
0	2.56	5.42	1.00	Test record using divers.
60	3.36	4.62	0.85	Test 3 terminated after one hour as per instruction. Borehole base at 7.98 m bgl before Test 3.



PRELIMINARY PERMEABILITY CALCULATIONS

TIME LAG (HVORLSEV) METHOD $k = A/(F \cdot T)$
 Cross sectional Area of Casing (A) m^2
 Intake Factor (F) based on Hvorslev intake factor 'hole extended in uniform soil' ($F=2\pi L/\ln[L/D + \sqrt{1+(L/D)^2}]$) =
 Time Lag (T) (time at which H/Ho = 0.37)
 Approximate Permeability $k = ms^{-1}$



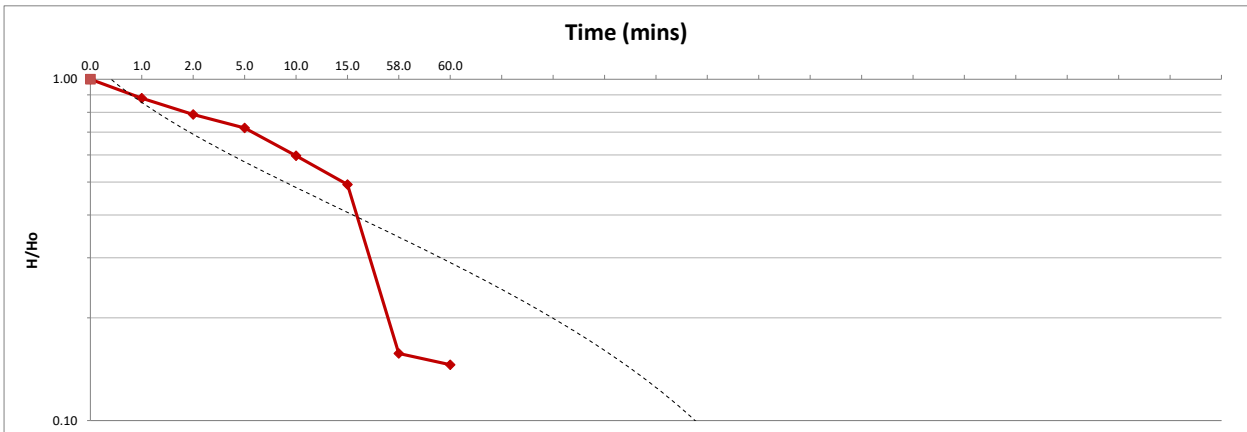
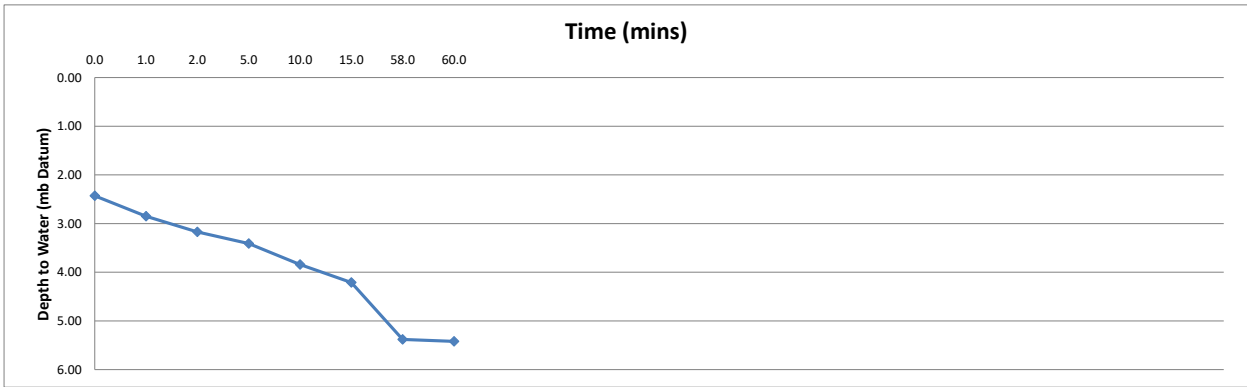
Job Code: JFR1451
 Site Name: A303 Stonehenge

LOCATION DETAILS		R71210	TEST DETAILS			
Ground Level (mAOD)	109.74		Date of Test	22/09/2020	GW Level (m below Datum)	Dry
Height of Datum (maGL)	0.47		Test Type	Falling	Base of Pipe (mbGL)	n/a
Hole Diameter (m)	0.11		Test Number	1	Volume of Water Added (litres)	n/a
Casing Diameter (m)	0.146		Stage Number (if Applicable)	n/a	Volume of Water Purged (litres)	n/a
Borehole Depth (mbGL)	5.93		Test Undertaken by	L. Davies	Purging Method	n/a
Casing Depth (mbGL)	5		Equipment Details	Dip Meter / Diver		
Geological Stratum	Chalk		Start of test GW Level	Dry - no groundwater		

TEST RESULTS

Test performed to BS EN ISO 22282-2:2012

Time (mins)	Depth to Water below Ground Level (m)	Head (m)	H/Ho	Remarks
0	2.43	3.50	1.00	Divers used to record full Test 1.
1	2.85	3.08	0.88	Test 1 terminated after 1 hour in accordance with specification.
2	3.17	2.76	0.79	
5	3.41	2.52	0.72	
10	3.84	2.09	0.60	
15	4.21	1.72	0.49	
58	5.38	0.55	0.16	
60	5.42	0.51	0.15	



PRELIMINARY PERMEABILITY CALCULATIONS

TIME LAG (HVORLSEV) METHOD $k = A/(F \times T)$

Cross sectional Area of Casing (A) m^2

Intake Factor (F) based on Hvorslev intake factor D 'hole extended in uniform soil' ($F = 2\pi L / \ln(L/D + \sqrt{1 + (L/D)^2})$) =

Time Lag (T) (time at which $H/H_0 = 0.37$)

Approximate Permeability $k = ms^{-1}$



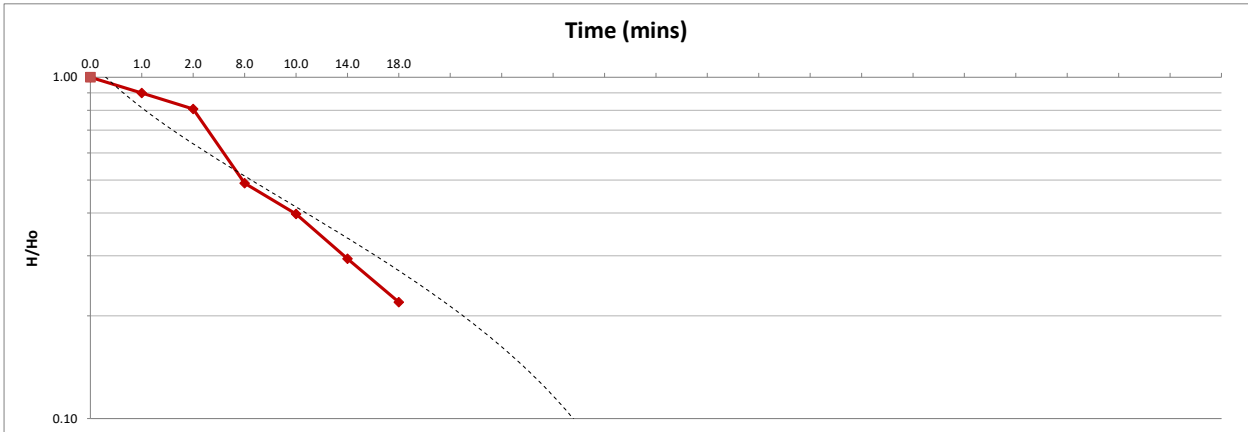
Job Code: JFR1451
 Site Name: A303 Stonehenge

LOCATION DETAILS		R71210	TEST DETAILS			
Ground Level (mAOD)		109.74	Date of Test	22/09/2020	GW Level (m below Datum)	5.89
Height of Datum (maGL)		0.47	Test Type	Falling	Base of Pipe (mbGL)	n/a
Hole Diameter (m)		0.11	Test Number	2	Volume of Water Added (litres)	n/a
Casing Diameter (m)		0.146	Stage Number (if Applicable)	n/a	Volume of Water Purged (litres)	n/a
Borehole Depth (mbGL)		5.93	Test Undertaken by	L. Davies	Purging Method	n/a
Casing Depth (mbGL)		5	Equipment Details	Dip Meter / Diver		
Geological Stratum		Chalk	Start of test GW Level	Water level at 5.42 m bgl prior to Test 2.		

TEST RESULTS

Test performed to BS EN ISO 22282-2:2012

Time (mins)	Depth to Water below Ground Level (m)	Head (m)	H/Ho	Remarks
0	1.78	4.15	1.00	Divers used to record full Test 2.
1	2.20	3.73	0.90	Test 2 completed after 18 minutes - 75 percentile
2	2.58	3.35	0.81	
8	3.90	2.03	0.49	
10	4.28	1.65	0.40	
14	4.71	1.22	0.29	
18	5.02	0.91	0.22	



PRELIMINARY PERMEABILITY CALCULATIONS

TIME LAG (HVORLSEV) METHOD $k = A/(F \times T)$

Cross sectional Area of Casing (A) m^2

Intake Factor (F) based on Hvorslev intake factor D 'hole extended in uniform soil' ($F = 2\pi L / (\ln(L/D) + \sqrt{1 + (L/D)^2})$) =

Time Lag (T) (time at which H/Ho = 0.37)

Approximate Permeability $k = ms^{-1}$



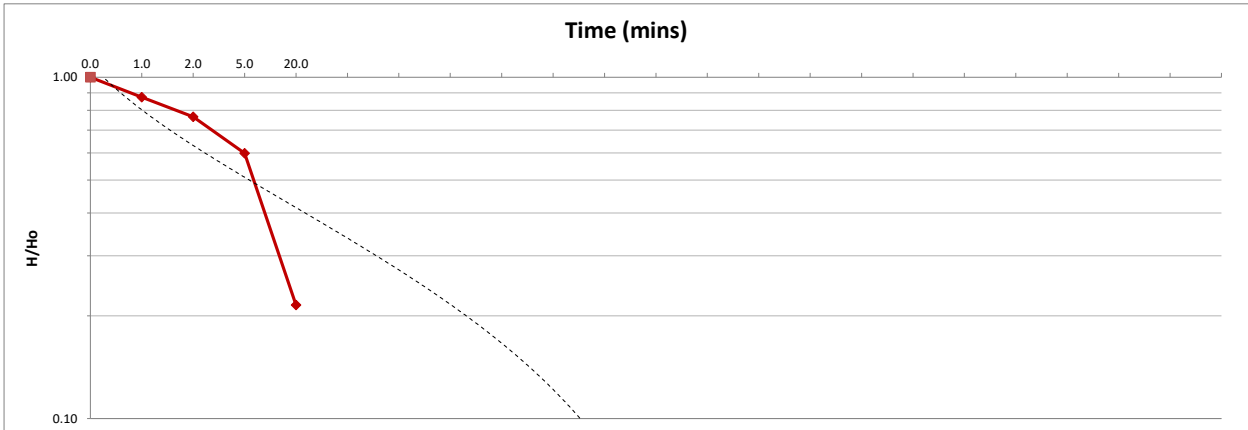
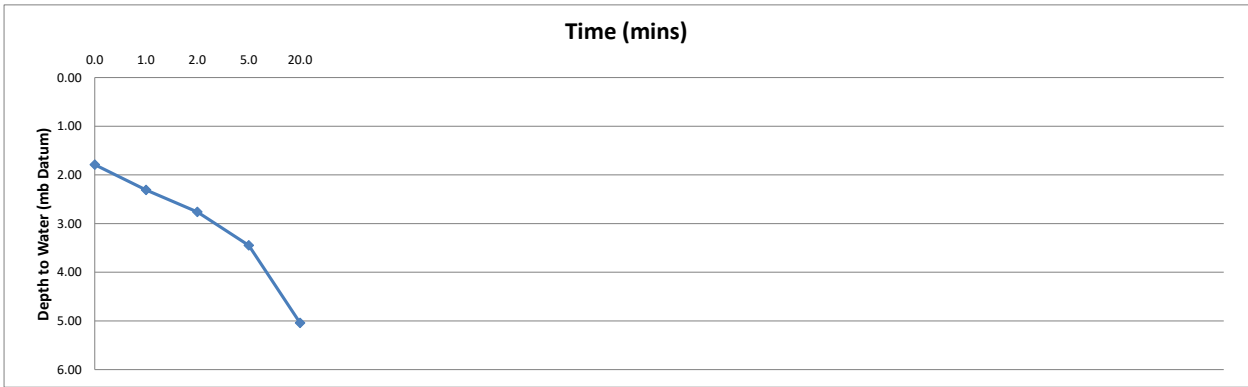
Job Code: JFR1451
Site Name: A303 Stonehenge

LOCATION DETAILS		R71210	TEST DETAILS			
Ground Level (mAOD)		109.74	Date of Test	22/09/2020	GW Level (m below Datum)	5.49
Height of Datum (maGL)		0.47	Test Type	Falling	Base of Pipe (mbGL)	n/a
Hole Diameter (m)		0.11	Test Number	3	Volume of Water Added (litres)	n/a
Casing Diameter (m)		0.146	Stage Number (if Applicable)	n/a	Volume of Water Purged (litres)	n/a
Borehole Depth (mbGL)		5.93	Test Undertaken by	L. Davies	Purging Method	n/a
Casing Depth (mbGL)		5	Equipment Details	Dip Meter / Diver		
Geological Stratum		Chalk	Start of test GW Level	Water level at 5.02 m bgl prior to Test 3.		

TEST RESULTS

Test performed to BS EN ISO 22282-2:2012

Time (mins)	Depth to Water below Ground Level (m)	Head (m)	H/Ho	Remarks
0	1.79	4.14	1.00	Divers used to record full Test 3
1	2.31	3.62	0.87	Test 3 completed after 24 minutes - 75 percentile
2	2.76	3.17	0.77	Base of hole after Test 3 at 5.91 m bgl
5	3.45	2.48	0.60	
20	5.04	0.89	0.21	



PRELIMINARY PERMEABILITY CALCULATIONS

TIME LAG (HVORLSEV) METHOD $k = A/(F \times T)$
 Cross sectional Area of Casing (A) m^2
 Intake Factor (F) based on Hvorslev intake factor D 'hole extended in uniform soil' ($F=2\pi L/\ln(L/D + \sqrt{1+(L/D)^2})$) =
 Time Lag (T) (time at which $H/H_0 = 0.37$)
 Approximate Permeability $k = ms^{-1}$



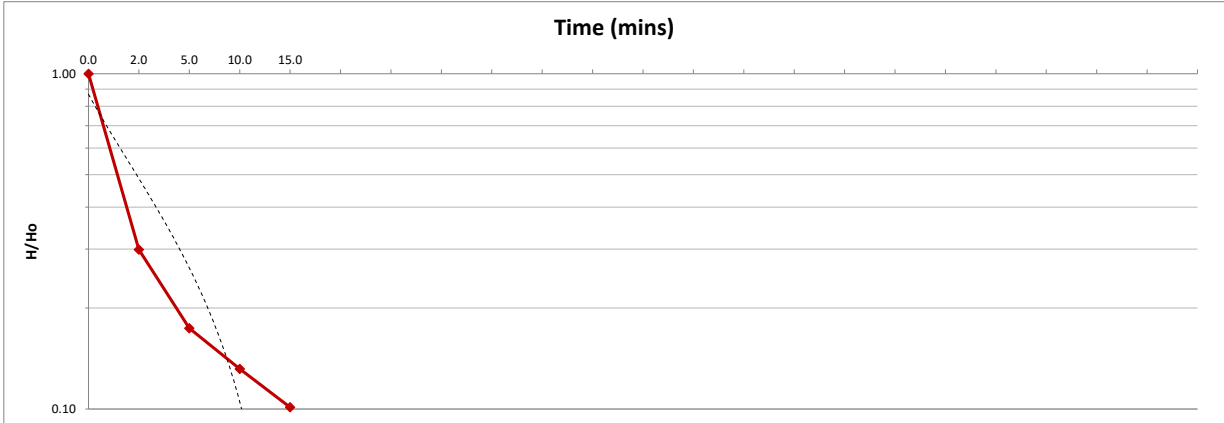
Job Code: JFR1451
 Site Name: A303 Stonehenge

LOCATION DETAILS		R70109	TEST DETAILS			
Ground Level (mAOD)	125.8246		Date of Test	30/09/2020	GW Level (m below Datum)	Dry
Height of Datum (maGL)	0.64		Test Type	Falling	Base of Pipe (mbGL)	n/a
Hole Diameter (m)	0.11		Test Number	1	Volume of Water Added (litres)	n/a
Casing Diameter (m)	0.146		Stage Number (if Applicable)	n/a	Volume of Water Purged (litres)	n/a
Borehole Depth (mbGL)	8.77		Test Undertaken by	L. Davies	Purging Method	n/a
Casing Depth (mbGL)	7.36		Equipment Details	Dip meter / divers		
Geological Stratum	Chalk		Start of test GW Level	No groundwater		

TEST RESULTS

Test performed to BS EN ISO 22282-2:2012

Time (mins)	Depth to Water below Ground Level (m bgl)	Head (m)	H/Ho	Remarks
0	4.52	4.25	1.00	Test recorded using divers.
2	7.50	1.27	0.30	Test reached 75 percentile after 18 minutes - test then terminated.
5	8.03	0.74	0.17	
10	8.21	0.56	0.13	
15	8.34	0.43	0.10	



PRELIMINARY PERMEABILITY CALCULATIONS

TIME LAG (HVORLSEV) METHOD $k = A/(F \cdot T)$
 Cross sectional Area of Casing (A) = m^2
 Intake Factor (F) based on Hvorslev intake factor ' ($F = 2\pi L / \ln[L/D + \sqrt{1+(L/D)^2}]$) =
 Time Lag (T) (time at which $H/Ho = 0.37$)
 Approximate Permeability $k = ms^{-1}$



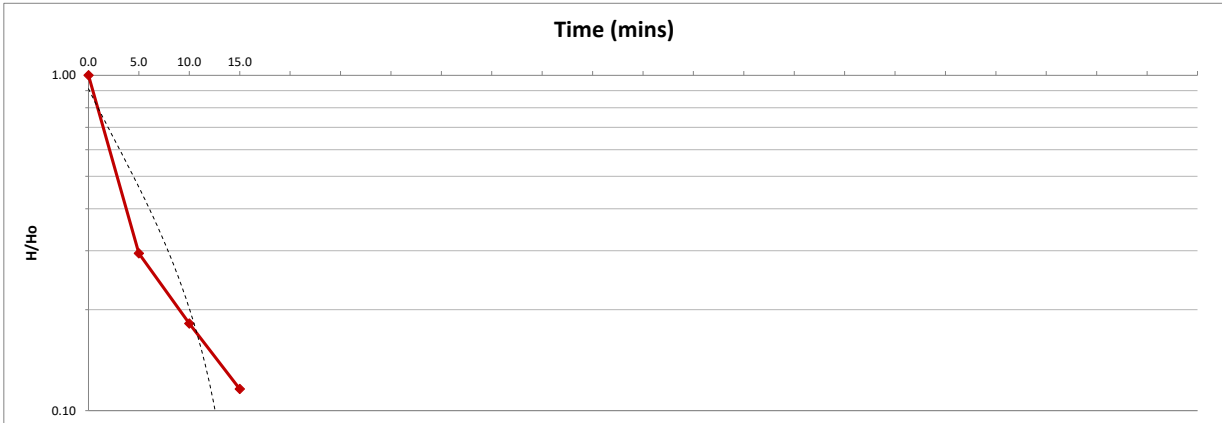
Job Code: JFR1451
 Site Name: A303 Stonehenge

LOCATION DETAILS		R70109	TEST DETAILS			
Ground Level (mAOD)	125.8246		Date of Test	30/09/2020	GW Level (m below Datum)	8.98
Height of Datum (maGL)	0.64		Test Type	Falling	Base of Pipe (mbGL)	n/a
Hole Diameter (m)	0.11		Test Number	2	Volume of Water Added (litres)	n/a
Casing Diameter (m)	0.146		Stage Number (if Applicable)	n/a	Volume of Water Purged (litres)	n/a
Borehole Depth (mbGL)	8.76		Test Undertaken by	L. Davies	Purging Method	n/a
Casing Depth (mbGL)	7.36		Equipment Details	Dip meter / divers		
Geological Stratum	Chalk		Start of test GW Level	Water level brought up to 5.57 m bgl for Test 2.		

TEST RESULTS

Test performed to BS EN ISO 22282-2:2012

Time (mins)	Depth to Water below Ground Level (m bgl)	Head (m)	H/Ho	Remarks
0	5.57	3.19	1.00	Borehole base at 8.76 m bgl at start of Test 2 - possible silting.
5	7.82	0.94	0.29	Test recorded using divers.
10	8.18	0.58	0.18	Test reached 75 percentile after 20 minutes - test then terminated.
15	8.39	0.37	0.12	



PRELIMINARY PERMEABILITY CALCULATIONS

TIME LAG (HVORLSEV) METHOD $k = A / (F \cdot T)$
 Cross sectional Area of Casing (A) m^2
 Intake Factor (F) based on Hvorslev intake factor D' hole extended in uniform soil ($F = 2\pi L / \ln[L/D + \sqrt{1 + (L/D)^2}])$ =
 Time Lag (T) (time at which $H/H_o = 0.37$)
 Approximate Permeability $k = ms^{-1}$



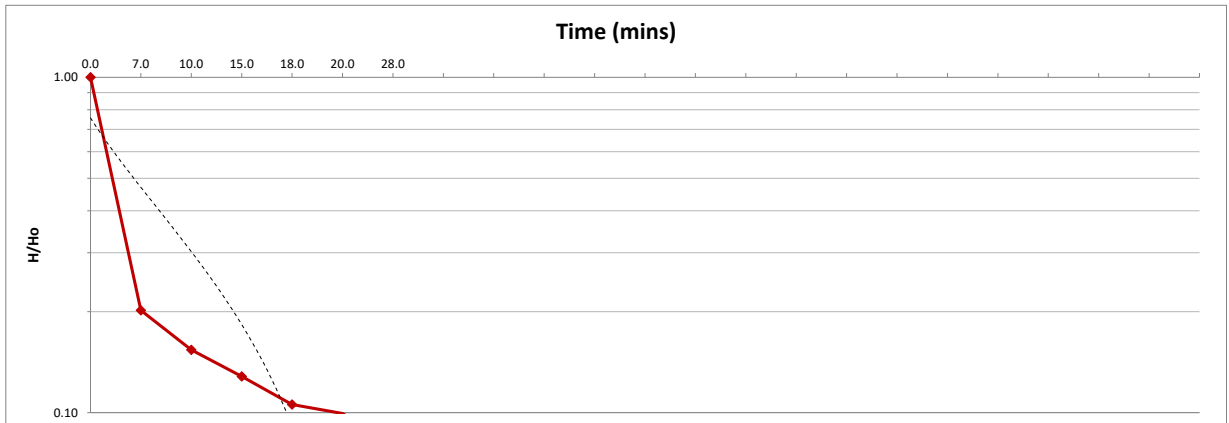
Job Code: JFR1451
 Site Name: A303 Stonehenge

LOCATION DETAILS		R70109	TEST DETAILS			
Ground Level (mAOD)	125.8246		Date of Test	30/09/2020	GW Level (m below Datum)	9.03
Height of Datum (maGL)	0.64		Test Type	Falling	Base of Pipe (mbGL)	n/a
Hole Diameter (m)	0.11		Test Number	3	Volume of Water Added (litres)	n/a
Casing Diameter (m)	0.146		Stage Number (if Applicable)	n/a	Volume of Water Purged (litres)	n/a
Borehole Depth (mbGL)	8.78		Test Undertaken by	L. Davies	Purging Method	n/a
Casing Depth (mbGL)	7.36		Equipment Details	Dip meter / divers		
Geological Stratum	Chalk		Start of test GW Level	Water level brought up to 5.66 m bgl for Test 3.		

TEST RESULTS

Test performed to BS EN ISO 22282-2:2012

Time (mins)	Depth to Water below Ground Level (m bgl)	Head (m)	H/Ho	Remarks
0	5.66	3.12	1.00	Borehole base depth at 8.78 m bgl at start of Test 3 - Test 2 potentially washed out silt at base of hole.
7	8.15	0.63	0.20	
10	8.30	0.48	0.15	Test recorded using divers.
15	8.38	0.40	0.13	Test 3 terminated after reaching 75 percentile.
18	8.45	0.33	0.11	
20	8.47	0.31	0.10	
28	8.53	0.25	0.08	



PRELIMINARY PERMEABILITY CALCULATIONS

TIME LAG (HVORLSEV) METHOD $k = A/(F \cdot T)$
 Cross sectional Area of Casing (A) m²
 Intake Factor (F) based on Hvorslev intake factor ' (F=2πL/ln[L/D + √(1+(L/D)²)])
 Time Lag (T) (time at which H/Ho = 0.37)
 Approximate Permeability k = ms⁻¹



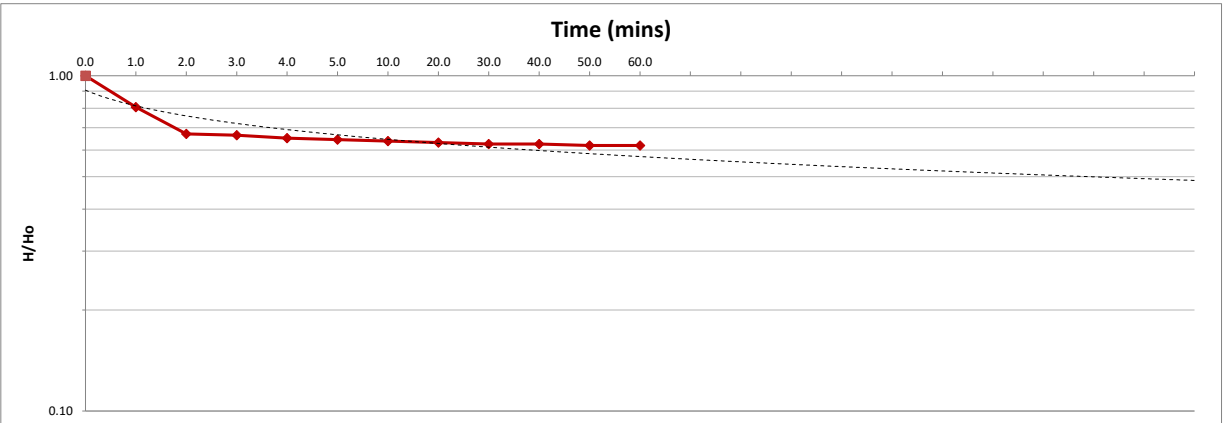
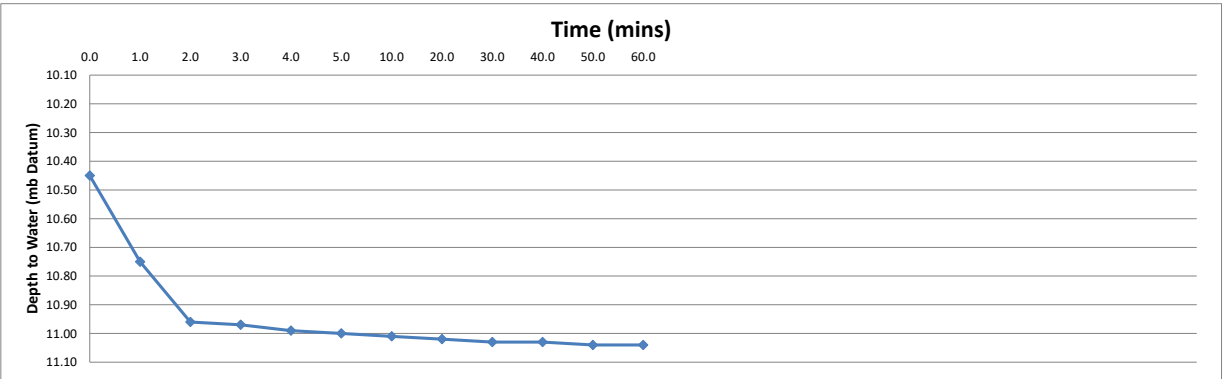
Job Code: JFR1451
 Site Name: A303 Stonehenge

LOCATION DETAILS		R70112		TEST DETAILS			
Ground Level (mAOD)		122.4572		Date of Test	06/10/2020	GW Level (m below Datum)	Dry
Height of Datum (maGL)		0.65		Test Type	Falling	Base of Pipe (mbGL)	n/a
Hole Diameter (m)		0.11		Test Number	1	Volume of Water Added (litres)	n/a
Casing Diameter (m)		0.146		Stage Number (if Applicable)	n/a	Volume of Water Purged (litres)	n/a
Borehole Depth (mbGL)		12		Test Undertaken by	P. Bird	Purging Method	n/a
Casing Depth (mbGL)		10.5		Equipment Details	Dip meter		
Geological Stratum		Chalk		Start of test GW Level	No groundwater encountered		

TEST RESULTS

Test performed to BS EN ISO 22282-2:2012

Time (mins)	Depth to Water below Gound Level (m bgl)	Head (m)	H/Ho	Remarks
0	10.45	1.55	1.00	Test 1 terminated after 1 hour in accordance with specification.
1	10.75	1.25	0.81	
2	10.96	1.04	0.67	
3	10.97	1.03	0.66	
4	10.99	1.01	0.65	
5	11.00	1.00	0.65	
10	11.01	0.99	0.64	
20	11.02	0.98	0.63	
30	11.03	0.97	0.63	
40	11.03	0.97	0.63	
50	11.04	0.96	0.62	
60	11.04	0.96	0.62	



PRELIMINARY PERMEABILITY CALCULATIONS

TIME LAG (HVORLSEV) METHOD $k = A/(F \cdot T)$
 Cross sectional Area of Casing (A) m²
 Intake Factor (F) based on Hvorslev intake factor ' ($F = 2\pi L / \ln[L/D + \sqrt{1+(L/D)^2}]$) =
 Time Lag (T) (time at which H/Ho = 0.37)
Approximate Permeability k = ms⁻¹



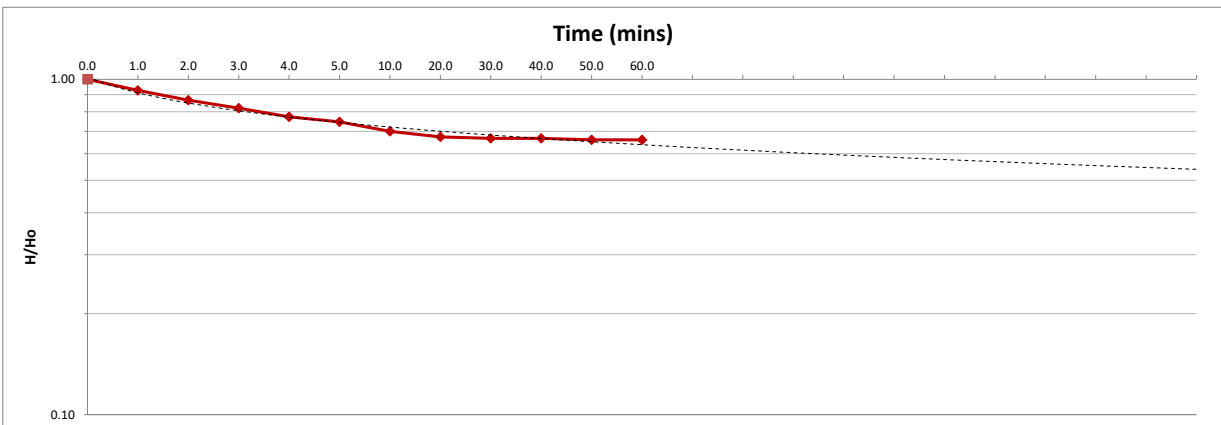
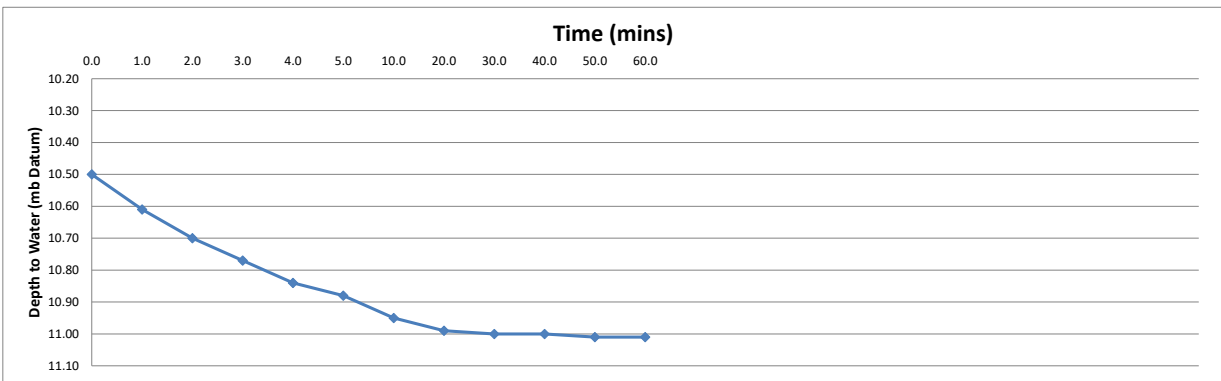
Job Code: JFR1451
 Site Name: A303 Stonehenge

LOCATION DETAILS		R70112		TEST DETAILS			
Ground Level (mAOD)		122.4572		Date of Test	06/10/2020	GW Level (m below Datum)	11.69
Height of Datum (maGL)	0.65			Test Type	Falling	Base of Pipe (mbGL)	n/a
Hole Diameter (m)	0.11			Test Number	2	Volume of Water Added (litres)	n/a
Casing Diameter (m)	0.146			Stage Number (if Applicable)	n/a	Volume of Water Purged (litres)	n/a
Borehole Depth (mbGL)	12			Test Undertaken by	P. Bird	Purging Method	n/a
Casing Depth (mbGL)	10.5			Equipment Details Dip meter			
Geological Stratum	Chalk			Start of test GW Level Water level at 11.04 m bgl prior to Test 2.			

TEST RESULTS

Test performed to BS EN ISO 22282-2:2012

Time (mins)	Depth to Water below Ground Level (m bgl)	Head (m)	H/Ho	Remarks
0	10.50	1.50	1.00	Test 2 terminated after 1 hour in accordance with specification.
1	10.61	1.39	0.93	
2	10.70	1.30	0.87	
3	10.77	1.23	0.82	
4	10.84	1.16	0.77	
5	10.88	1.12	0.75	
10	10.95	1.05	0.70	
20	10.99	1.01	0.67	
30	11.00	1.00	0.67	
40	11.00	1.00	0.67	
50	11.01	0.99	0.66	
60	11.01	0.99	0.66	



PRELIMINARY PERMEABILITY CALCULATIONS

TIME LAG (HVORLSEV) METHOD $k = A / (F \cdot T)$
 Cross sectional Area of Casing (A) m^2
 Intake Factor (F) based on Hvorslev intake factor ' ($F = 2\pi L / \ln[L/D + \sqrt{1 + (L/D)^2}]$) =
 Time Lag (T) (time at which $H/H_o = 0.37$)
 Approximate Permeability $k = ms^{-1}$



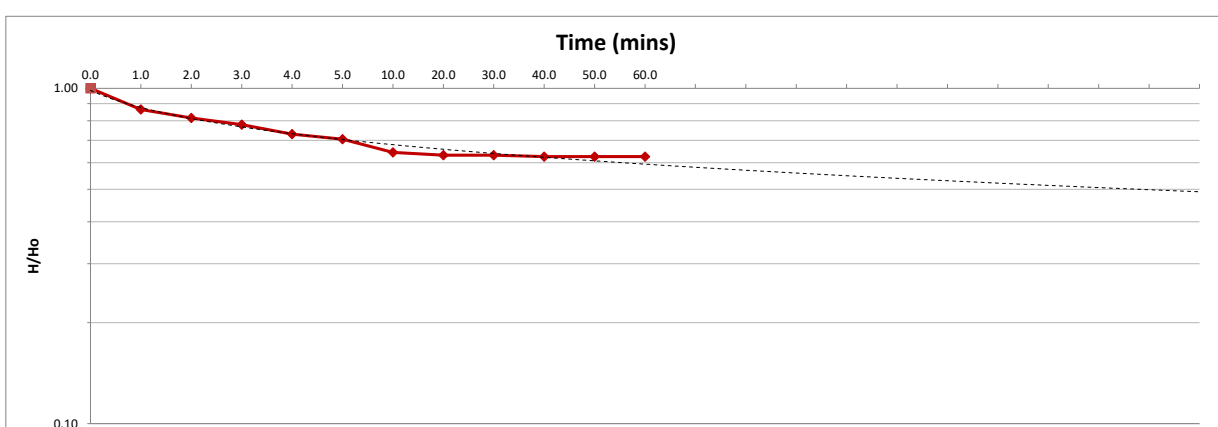
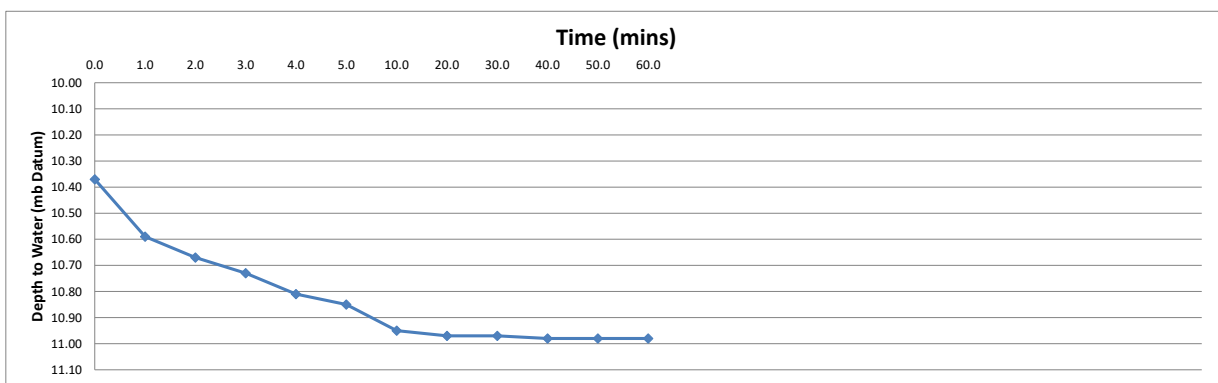
Job Code: JFR1451
 Site Name: A303 Stonehenge

LOCATION DETAILS		R70112		TEST DETAILS			
Ground Level (mAOD)		122.4572		Date of Test	06/10/2020	GW Level (m below Datum)	11.67
Height of Datum (maGL)		0.65		Test Type	Falling	Base of Pipe (mbGL)	n/a
Hole Diameter (m)		0.11		Test Number	3	Volume of Water Added (litres)	n/a
Casing Diameter (m)		0.146		Stage Number (if Applicable)	n/a	Volume of Water Purged (litres)	n/a
Borehole Depth (mbGL)		12		Test Undertaken by	P. Bird	Purging Method	n/a
Casing Depth (mbGL)		10.5		Equipment Details	Dip meter		
Geological Stratum		Chalk		Start of test GW Level	Water level at 11.01 m bgl prior to Test 3.		

TEST RESULTS

Test performed to BS EN ISO 22282-2:2012

Time (mins)	Depth to Water below Ground Level (m bgl)	Head (m)	H/Ho	Remarks
0	10.37	1.63	1.00	Test 3 terminated after 1 hour in accordance with specification
1	10.59	1.41	0.87	
2	10.67	1.33	0.82	
3	10.73	1.27	0.78	
4	10.81	1.19	0.73	
5	10.85	1.15	0.71	
10	10.95	1.05	0.64	
20	10.97	1.03	0.63	
30	10.97	1.03	0.63	
40	10.98	1.02	0.63	
50	10.98	1.02	0.63	
60	10.98	1.02	0.63	



PRELIMINARY PERMEABILITY CALCULATIONS

TIME LAG (HVORLSEV) METHOD $k = A/(F \cdot T)$
 Cross sectional Area of Casing (A) m²
 Intake Factor (F) based on Hvorslev intake factor ' ($F = 2 \pi L / \ln[L/D + \sqrt{1 + (L/D)^2}]$) =
 Time Lag (T) (time at which H/Ho = 0.37)
 Approximate Permeability k = ms⁻¹



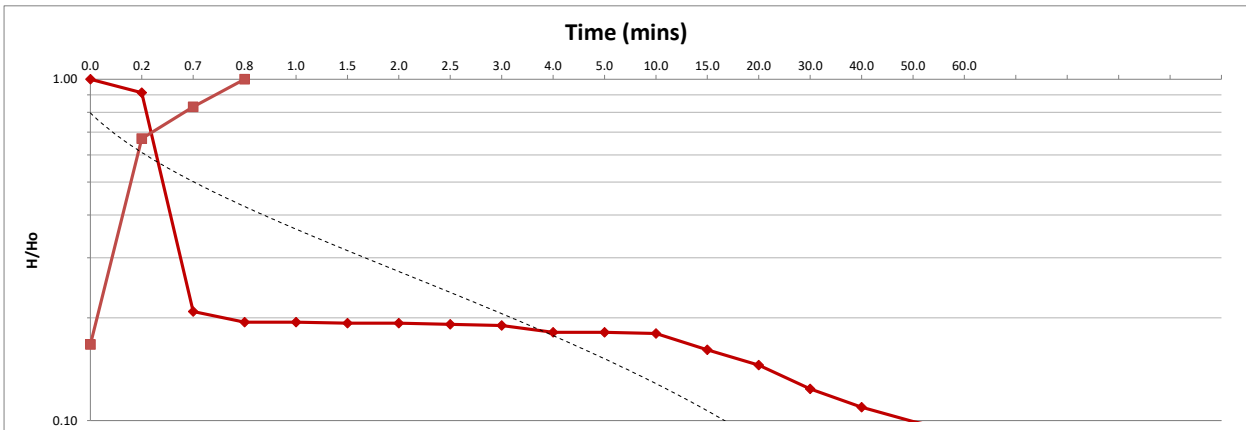
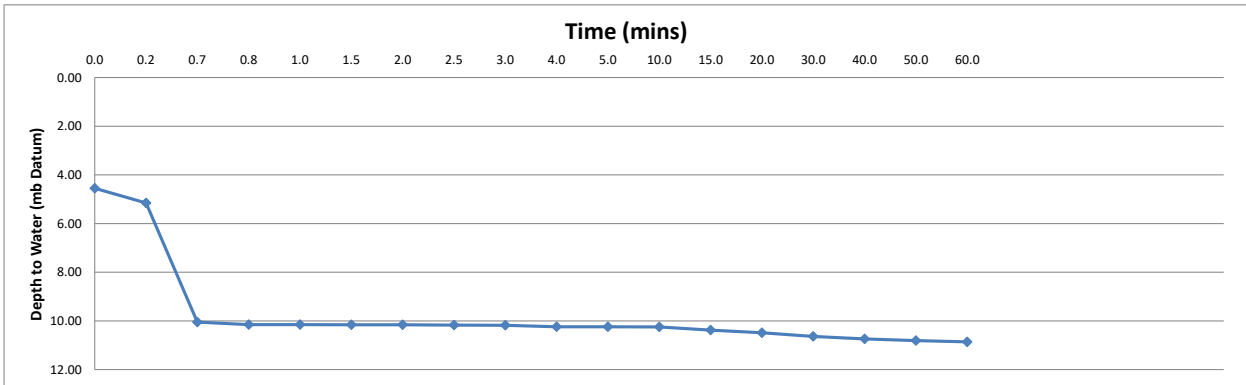
Job Code: JFR1451
 Site Name: A303 Stonehenge

LOCATION DETAILS		R72005	TEST DETAILS			
Ground Level (mAOD)	84.008		Date of Test	06/10/2020	GW Level (m below Datum)	Dry
Height of Datum (maGL)	0.55		Test Type	Falling	Base of Pipe (mbGL)	n/a
Hole Diameter (m)	0.11		Test Number	1	Volume of Water Added (litres)	n/a
Casing Diameter (m)	0.46		Stage Number (if Applicable)	n/a	Volume of Water Purged (litres)	n/a
Borehole Depth (mbGL)	11.5		Test Undertaken by	G. Ellis	Purging Method	n/a
Casing Depth (mbGL)	11.2		Equipment Details	Dip Meter		
Geological Stratum	Chalk		Start of test GW Level	No groundwater		

TEST RESULTS

Test performed to BS EN ISO 22282-2:2012

Time (mins)	Depth to Water below Ground Level (m bgl)	Head (m)	H/Ho	Remarks
0	4.55	6.95	1.00	Test 1 terminated after 1 hour in accordance with the specification.
0.167	5.15	6.35	0.91	
0.67	10.05	1.45	0.21	
0.83	10.15	1.35	0.19	
1	10.15	1.35	0.19	
1.5	10.16	1.34	0.19	
2	10.16	1.34	0.19	
2.5	10.17	1.33	0.19	
3	10.18	1.32	0.19	
4	10.24	1.26	0.18	
5	10.24	1.26	0.18	
10	10.25	1.25	0.18	
15	10.38	1.12	0.16	
20	10.49	1.01	0.15	
30	10.64	0.86	0.12	
40	10.74	0.76	0.11	
50	10.81	0.69	0.10	
60	10.86	0.64	0.09	



PRELIMINARY PERMEABILITY CALCULATIONS

TIME LAG (HVORLSEV) METHOD $k = A/(F \times T)$

Cross sectional Area of Casing (A) m^2

Intake Factor (F) based on Hvorslev intake factor D 'hole extended in uniform soil' ($F = 2\pi L / \ln(L/D + \sqrt{1 + (L/D)^2})$)

Time Lag (T) (time at which $H/H_o = 0.37$)

Approximate Permeability $k = ms^{-1}$



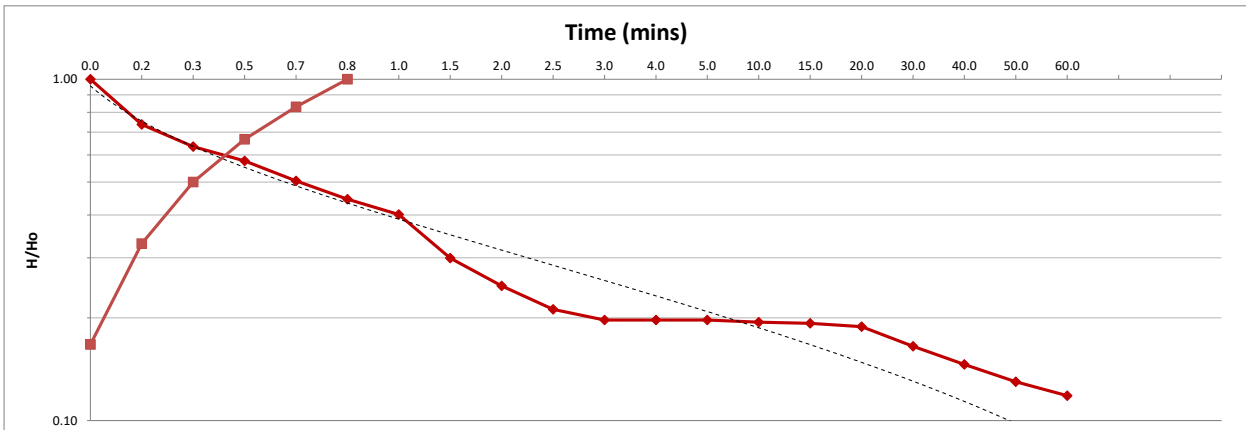
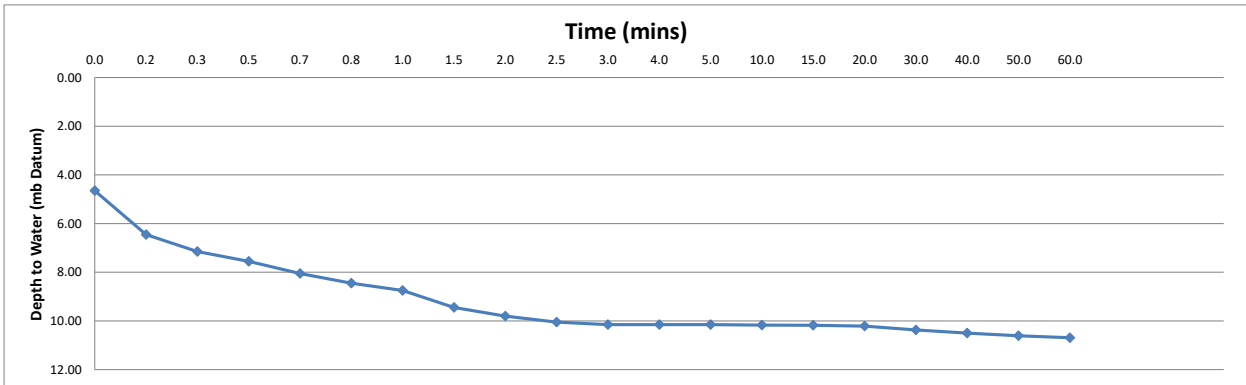
Job Code: JFR1451
 Site Name: A303 Stonehenge

LOCATION DETAILS		R72005	TEST DETAILS			
Ground Level (mAOD)	84.008		Date of Test	06/10/2020	GW Level (m below Datum)	11.24
Height of Datum (maGL)	0.55		Test Type	Falling	Base of Pipe (mbGL)	n/a
Hole Diameter (m)	0.11		Test Number	2	Volume of Water Added (litres)	n/a
Casing Diameter (m)	0.46		Stage Number (if Applicable)	n/a	Volume of Water Purged (litres)	n/a
Borehole Depth (mbGL)	11.5		Test Undertaken by	G. Ellis	Purging Method	n/a
Casing Depth (mbGL)	11.2		Equipment Details	Dip Meter		
Geological Stratum	Chalk		Start of test GW Level	Water level brought up to 4.65 m bgl for Test 2		

TEST RESULTS

Test performed to BS EN ISO 22282-2:2012

Time (mins)	Depth to Water below Ground Level (m bgl)	Head (m)	H/Ho	Remarks
0	4.65	6.85	1.00	Test 2 terminated after 1 hour in accordance with the specification.
0.167	6.45	5.05	0.74	
0.33	7.15	4.35	0.64	
0.5	7.55	3.95	0.58	
0.667	8.05	3.45	0.50	
0.83	8.45	3.05	0.45	
1	8.75	2.75	0.40	
1.5	9.45	2.05	0.30	
2	9.80	1.70	0.25	
2.5	10.05	1.45	0.21	
3	10.15	1.35	0.20	
4	10.15	1.35	0.20	
5	10.15	1.35	0.20	
10	10.17	1.33	0.19	
15	10.18	1.32	0.19	
20	10.21	1.29	0.19	
30	10.37	1.13	0.16	
40	10.50	1.00	0.15	
50	10.61	0.89	0.13	
60	10.69	0.81	0.12	



PRELIMINARY PERMEABILITY CALCULATIONS

TIME LAG (HVORLSEV) METHOD $k = A/(F \times T)$

Cross sectional Area of Casing (A) m²

Intake Factor (F) based on Hvorslev intake factor D 'hole extended in uniform soil' ($F = 2\pi L / \ln(L/D + \sqrt{1 + (L/D)^2})$)

Time Lag (T) (time at which H/Ho = 0.37)

Approximate Permeability $k = \text{ms}^{-1}$



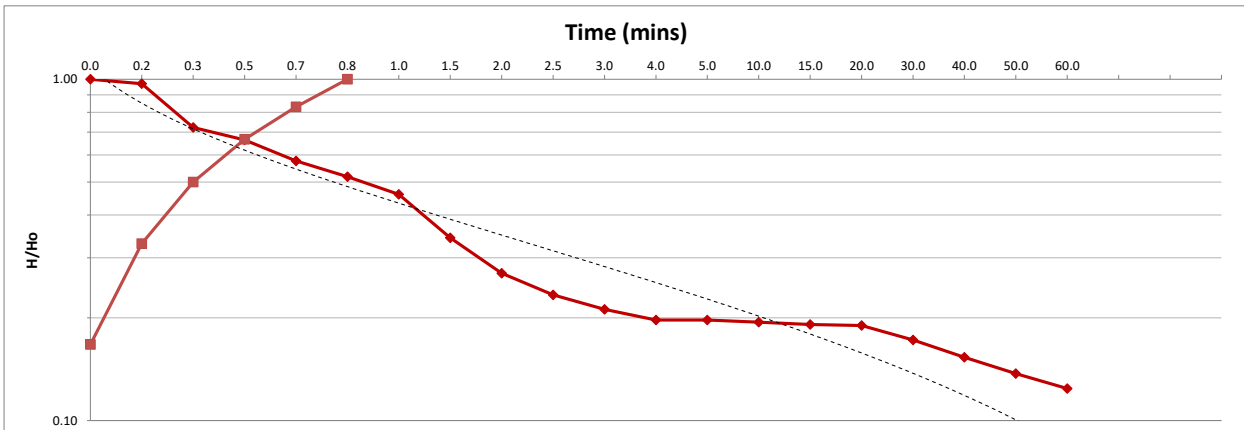
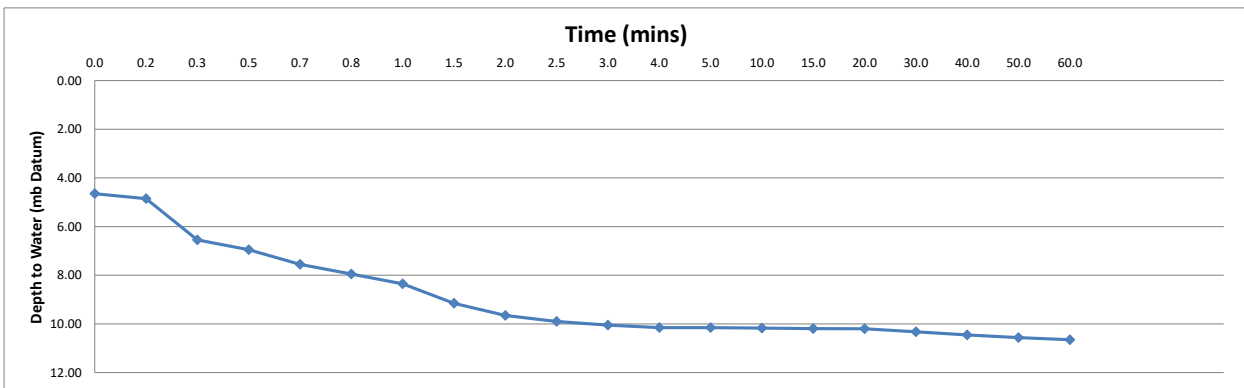
Job Code: JFR1451
Site Name: A303 Stonehenge

LOCATION DETAILS		R72005	TEST DETAILS			
Ground Level (mAOD)	84.008		Date of Test	06/10/2020	GW Level (m below Datum)	11.24
Height of Datum (maGL)	0.55		Test Type	Falling	Base of Pipe (mbGL)	n/a
Hole Diameter (m)	0.11		Test Number	3	Volume of Water Added (litres)	n/a
Casing Diameter (m)	0.46		Stage Number (if Applicable)	n/a	Volume of Water Purged (litres)	n/a
Borehole Depth (mbGL)	11.5		Test Undertaken by	G. Ellis	Purging Method	n/a
Casing Depth (mbGL)	11.2		Equipment Details	Dip Meter		
Geological Stratum	Chalk		Start of test GW Level	Water level brought up to 4.65 m bgl for Test 3		

TEST RESULTS

Test performed to BS EN ISO 22282-2:2012

Time (mins)	Depth to Water below Ground Level (m bgl)	Head (m)	H/Ho	Remarks
0	4.65	6.85	1.00	Test 3 terminated after 1 hour in accordance with the specification
0.167	4.85	6.65	0.97	
0.33	6.55	4.95	0.72	
0.5	6.95	4.55	0.66	
0.667	7.55	3.95	0.58	
0.83	7.95	3.55	0.52	
1	8.35	3.15	0.46	
1.5	9.15	2.35	0.34	
2	9.65	1.85	0.27	
2.5	9.90	1.60	0.23	
3	10.05	1.45	0.21	
4	10.15	1.35	0.20	
5	10.15	1.35	0.20	
10	10.17	1.33	0.19	
15	10.19	1.31	0.19	
20	10.20	1.30	0.19	
30	10.32	1.18	0.17	
40	10.45	1.05	0.15	
50	10.56	0.94	0.14	
60	10.65	0.85	0.12	



PRELIMINARY PERMEABILITY CALCULATIONS

TIME LAG (HVORLSEV) METHOD $k = A/(F \times T)$

Cross sectional Area of Casing (A) m^2

Intake Factor (F) based on Hvorslev intake factor D 'hole extended in uniform soil' ($F=2\pi tL/\ln(L/D + \sqrt{1+(L/D)^2})$)

Time Lag (T) (time at which $H/H_o = 0.37$)

Approximate Permeability $k = ms^{-1}$

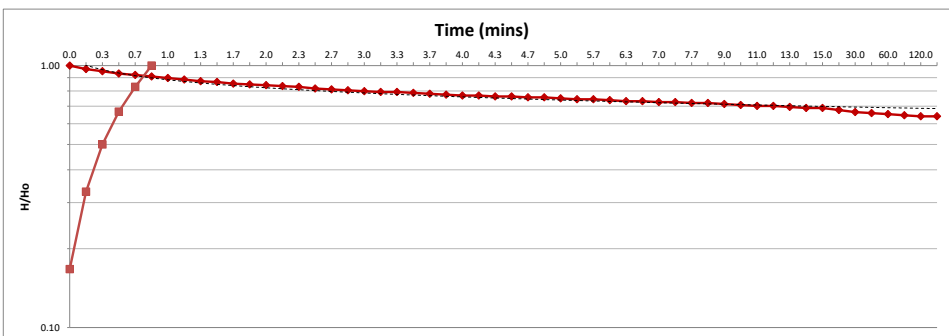
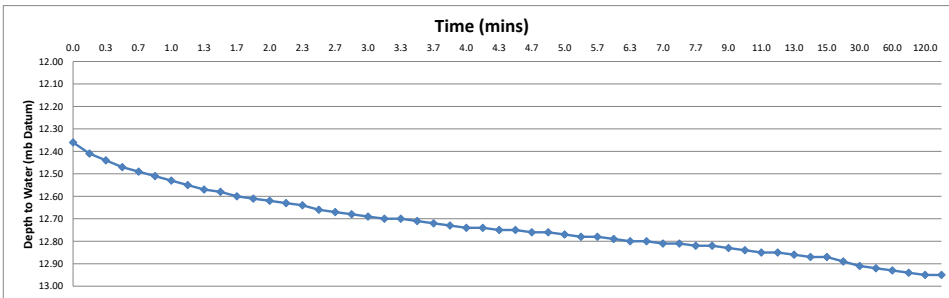


Job Code: JFR1451
 Site Name: A303 Stonehenge

LOCATION DETAILS		TEST DETAILS			
Ground Level (mAOD)	119.2782	Date of Test	08/10/2020	GW Level (m below Datum)	Dry
Height of Datum (maGL)	0.58	Test Type	Falling	Base of Pipe (mbGL)	n/a
Hole Diameter (m)	0.11	Test Number	1	Volume of Water Added (litres)	n/a
Casing Diameter (m)	0.46	Stage Number (if Applicable)	n/a	Volume of Water Purged (litres)	n/a
Borehole Depth (mbGL)	14	Test Undertaken by	A. Aitchison	Purging Method	n/a
Casing Depth (mbGL)	13	Equipment Details	Dip meter		
Geological Stratum	Chalk	Start of test GW Level	No groundwater		

TEST RESULTS Test performed to BS EN ISO 22282-2:2012

Time (mins)	Depth to Water below Ground Level (m)	Head (m)	H/Ho	Remarks
0	12.36	1.64	1.00	
0.167	12.41	1.59	0.97	
0.33	12.44	1.56	0.95	
0.5	12.47	1.53	0.93	
0.667	12.49	1.51	0.92	
0.83	12.51	1.49	0.91	
1	12.53	1.47	0.90	
1.167	12.55	1.45	0.88	
1.33	12.57	1.43	0.87	
1.5	12.58	1.42	0.87	
1.667	12.60	1.40	0.85	
1.83	12.61	1.39	0.85	
2	12.62	1.38	0.84	
2.167	12.63	1.37	0.84	
2.33	12.64	1.36	0.83	
2.5	12.66	1.34	0.82	
2.667	12.67	1.33	0.81	
2.83	12.68	1.32	0.80	
3	12.69	1.31	0.80	
3.167	12.70	1.30	0.79	
3.33	12.70	1.30	0.79	
3.5	12.71	1.29	0.79	
3.667	12.72	1.28	0.78	
3.83	12.73	1.27	0.77	
4	12.74	1.26	0.77	
4.167	12.74	1.26	0.77	
4.33	12.75	1.25	0.76	
4.5	12.75	1.25	0.76	
4.667	12.76	1.24	0.76	
4.83	12.76	1.24	0.76	
5	12.77	1.23	0.75	
5.33	12.78	1.22	0.74	
5.667	12.78	1.22	0.74	
6	12.79	1.21	0.74	
6.33	12.80	1.20	0.73	
6.667	12.80	1.20	0.73	
7	12.81	1.19	0.73	
7.33	12.81	1.19	0.73	
7.667	12.82	1.18	0.72	
8	12.82	1.18	0.72	
8	12.83	1.17	0.71	
10	12.84	1.16	0.71	
11	12.85	1.15	0.70	
12	12.85	1.15	0.70	
13	12.86	1.14	0.70	
14	12.87	1.13	0.69	
15	12.87	1.13	0.69	
20	12.89	1.11	0.68	
30	12.91	1.09	0.66	
40	12.92	1.08	0.66	
60	12.93	1.07	0.65	
90	12.94	1.06	0.65	
120	12.95	1.05	0.64	
150	12.95	1.05	0.64	



PRELIMINARY PERMEABILITY CALCULATIONS

TIME LAG (HVORLSEV) METHOD $k = A/(F \cdot T)$

Cross sectional Area of Casing (A) = m²
 Intake Factor (F) based on Hvorslev intake factor D 'hole extended in uniform soil' ($F = 2\pi L / \ln(L/D + \sqrt{1+(L/D)^2})$) =
 Time Lag (T) (time at which H/Ho = 0.37)
 Approximate Permeability $k = \text{ms}^{-1}$



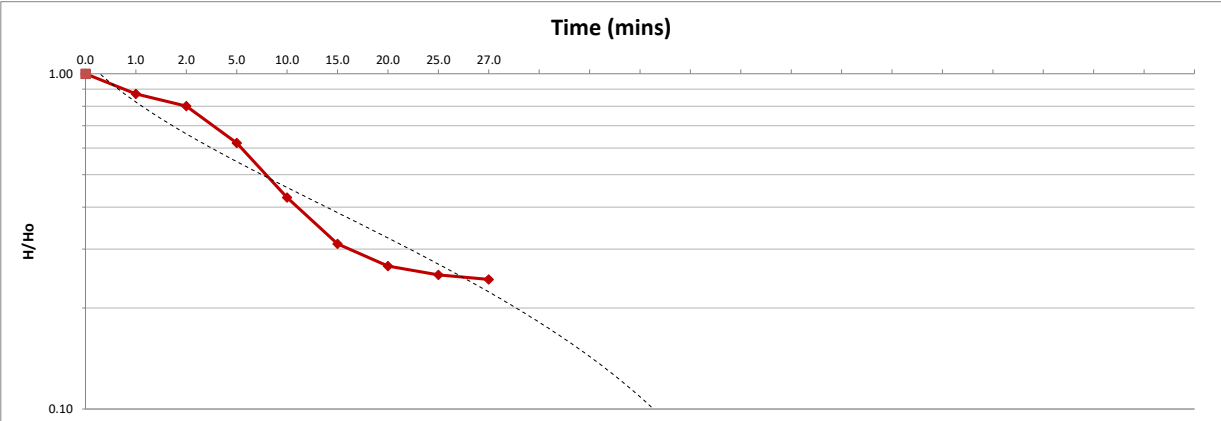
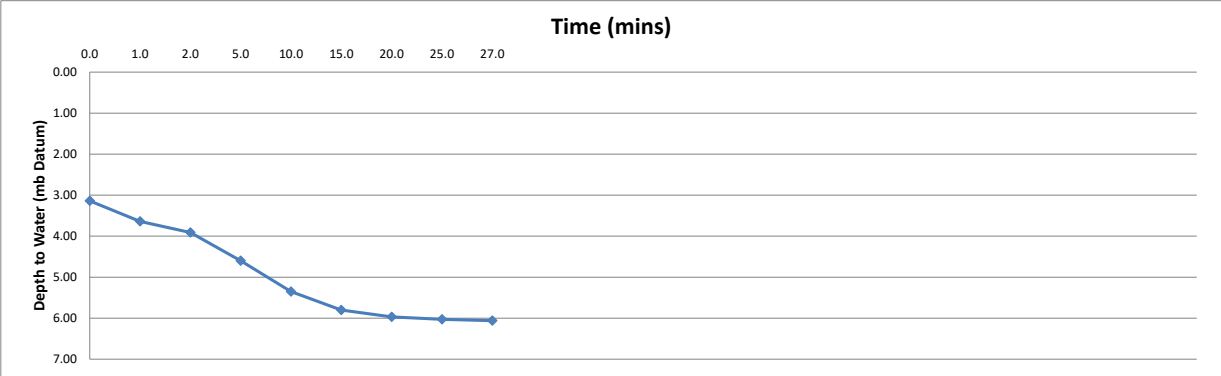
Job Code: JFR1451
 Site Name: A303 Stonehenge

LOCATION DETAILS		R70106	TEST DETAILS			
Ground Level (mAOD)	127.5974		Date of Test	24/09/2020	GW Level (m below Datum)	Dry
Height of Datum (maGL)	0.45		Test Type	Falling	Base of Pipe (mbGL)	n/a
Hole Diameter (m)	0.11		Test Number	1	Volume of Water Added (litres)	n/a
Casing Diameter (m)	0.146		Stage Number (if Applicable)	n/a	Volume of Water Purged (litres)	n/a
Borehole Depth (mbGL)	7		Test Undertaken by	L. Davies	Purging Method	n/a
Casing Depth (mbGL)	6.55		Equipment Details	Dip meter / divers		
Geological Stratum	Chalk		Start of test GW Level	Water level brought up to 3.14 m bgl for Test 1		

TEST RESULTS

Test performed to BS EN ISO 22282-2:2012

Time (mins)	Depth to Water below Ground Level (m bgl)	Head (m)	H/Ho	Remarks
0	3.14	3.86	1.00	Test record using divers.
1	3.64	3.36	0.87	Test reached 75 percentile after 30 minutes - test terminated at 30 minutes.
2	3.91	3.09	0.80	
5	4.60	2.40	0.62	
10	5.35	1.65	0.43	
15	5.80	1.20	0.31	
20	5.97	1.03	0.27	
25	6.03	0.97	0.25	
27	6.06	0.94	0.24	



PRELIMINARY PERMEABILITY CALCULATIONS

TIME LAG (HVORLSEV) METHOD $k = A/(F \cdot T)$
 Cross sectional Area of Casing (A) = m²
 Intake Factor (F) based on Hvorslev intake factor ' ($F = 2\pi L / \ln[L/D + \sqrt{1 + (L/D)^2}]$) =
 Time Lag (T) (time at which H/Ho = 0.37)
 Approximate Permeability k = ms⁻¹



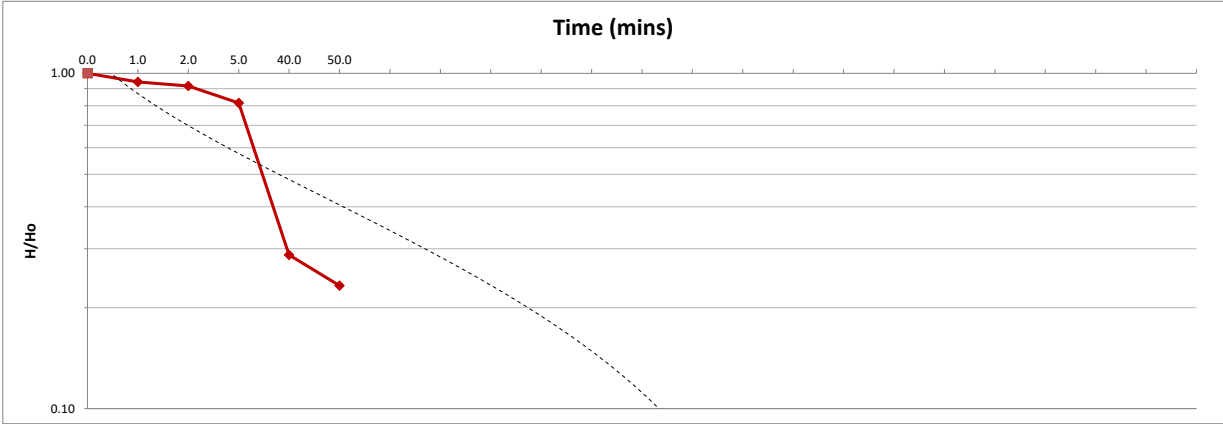
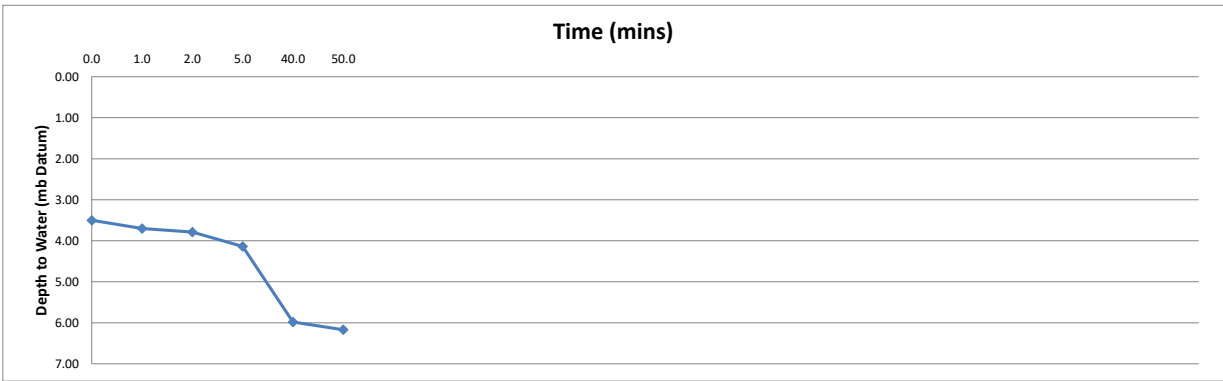
Job Code: JFR1451
 Site Name: A303 Stonehenge

LOCATION DETAILS		R70106	TEST DETAILS			
Ground Level (mAOD)	127.5974		Date of Test	24/09/2020	GW Level (m below Datum)	6.52
Height of Datum (maGL)	0.45		Test Type	Falling	Base of Pipe (mbGL)	n/a
Hole Diameter (m)	0.11		Test Number	2	Volume of Water Added (litres)	n/a
Casing Diameter (m)	0.146		Stage Number (if Applicable)	n/a	Volume of Water Purged (litres)	n/a
Borehole Depth (mbGL)	6.98		Test Undertaken by	L. Davies	Purging Method	n/a
Casing Depth (mbGL)	6.55		Equipment Details	Dip meter / divers		
Geological Stratum	Chalk		Start of test GW Level	6.07 m bgl from end of Test 1		

TEST RESULTS

Test performed to BS EN ISO 22282-2:2012

Time (mins)	Depth to Water below Ground Level (m bgl)	Head (m)	H/Ho	Remarks
0	3.50	3.48	1.00	Test 2 terminated just under 1 hour as reached 75 percentile.
1	3.70	3.28	0.94	Test recorded using divers.
2	3.79	3.19	0.92	Borehole now at 6.98 m bgl - possible silting at base.
5	4.14	2.84	0.82	
40	5.98	1.00	0.29	
50	6.17	0.81	0.23	



PRELIMINARY PERMEABILITY CALCULATIONS

TIME LAG (HVORLSEV) METHOD $k = A/(F \cdot T)$
 Cross sectional Area of Casing (A) m²
 Intake Factor (F) based on Hvorslev intake factor 'hole extended in uniform soil' ($F = 2\pi r L / \ln[L/D + \sqrt{1+(L/D)^2}])$ =
 Time Lag (T) (time at which H/Ho = 0.37)
 Approximate Permeability k = ms⁻¹



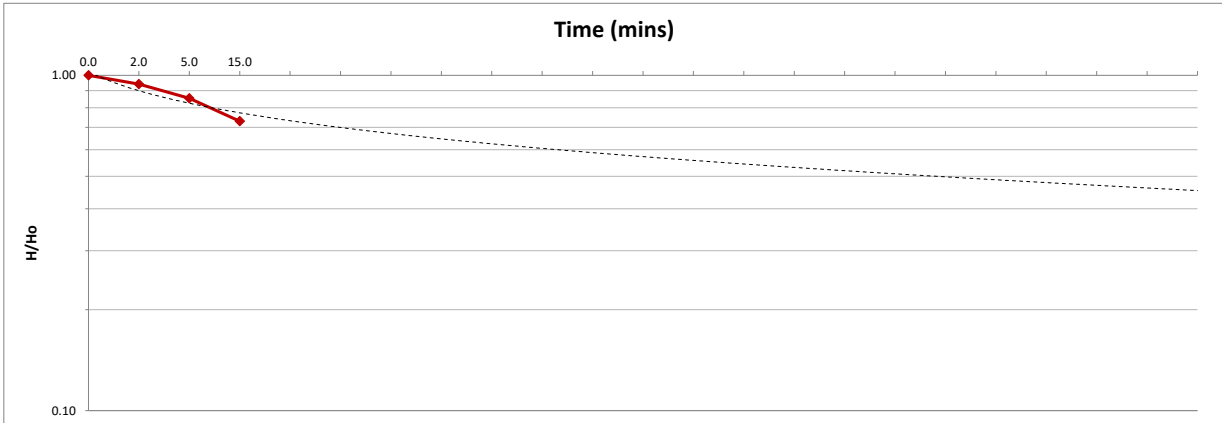
Job Code: JFR1451
Site Name: A303 Stonehenge

LOCATION DETAILS		R70106	TEST DETAILS			
Ground Level (mAOD)	127.5974		Date of Test	24/09/2020	GW Level (m below Datum)	6.62
Height of Datum (maGL)	0.45		Test Type	Falling	Base of Pipe (mbGL)	n/a
Hole Diameter (m)	0.11		Test Number	3	Volume of Water Added (litres)	n/a
Casing Diameter (m)	0.146		Stage Number (if Applicable)	n/a	Volume of Water Purged (litres)	n/a
Borehole Depth (mbGL)	6.96		Test Undertaken by	L. Davies	Purging Method	n/a
Casing Depth (mbGL)	6.55		Equipment Details	Dip meter / divers		
Geological Stratum	Chalk		Start of test GW Level	Water level at 6.17 m bgl before start of Test 3.		

TEST RESULTS

Test performed to BS EN ISO 22282-2:2012

Time (mins)	Depth to Water below Ground Level (m bgl)	Head (m)	H/Ho	Remarks
0	4.22	2.74	1.00	Test recorded using divers.
2	4.38	2.58	0.94	Borehole at 6.96 m bgl at start of Test 3 - possible silting at base.
5	4.62	2.34	0.85	Test terminated after 1 hour.
15	4.96	2.00	0.73	



PRELIMINARY PERMEABILITY CALCULATIONS

TIME LAG (HVORLSEV) METHOD $k = A/(F \times T)$
 Cross sectional Area of Casing (A) m^2
 Intake Factor (F) based on Hvorslev intake factor D 'hole extended in uniform soil' ($F=2\pi L/\ln[L/D + \sqrt{1+(L/D)^2}]) =$
 Time Lag (T) (time at which $H/H_0 = 0.37$)
 Approximate Permeability $k = m \cdot s^{-1}$

CP72310 Rising Head Test Data



Create Date 04/12/2020 12:47:05 GMT Standard Time
 Log Setup Time Zone GMT Standard Time
 Notes Size(bytes) 4096
 Overwrite when full Disabled
 Scheduled Start Time 04/12/2020 13:00:00 GMT Standard Time
 Scheduled Stop Time 04/12/2020 19:00:00 GMT Standard Time
 Type Fast Linear
 Duration Days: 0 hrs: 06 mins: 00 secs: 00
 Interval Days: 0 hrs: 00 mins: 00 secs: 05
 Level Measurement Mode: Depth
 Specific Gravity: 0.999

Create Date 04/12/2020 12:48:16 GMT Standard Time
 Log Setup Time Zone GMT Standard Time
 Notes Size(bytes) 4096
 Overwrite when full Disabled
 Scheduled Start Time 04/12/2020 13:00:00 GMT Standard Time
 Scheduled Stop Time 04/12/2020 19:00:00 GMT Standard Time
 Type Linear
 Duration Days: 0 hrs: 06 mins: 00 secs: 00
 Interval Days: 0 hrs: 00 mins: 01 secs: 00

Sensor: Pres(A) 30ft
SN#: 636786

Sensor: Pres(A) 30ft
SN#: 672154

Sensor: Baro Pres
SN#: 658714

Baro-Pressure/Temp

Date and Time	Seconds	Pressure (mBar)	Temp (°C)	Depth (m)
04/12/2020 13:47	0	1827.614	11.156	18.655
04/12/2020 13:47	5	1827.587	11.208	18.655
04/12/2020 13:47	10	1827.669	11.156	18.656
04/12/2020 13:47	15	1827.669	11.156	18.656
04/12/2020 13:47	20	1827.587	11.208	18.655
04/12/2020 13:47	25	1827.614	11.156	18.655
04/12/2020 13:47	30	1827.642	11.208	18.655
04/12/2020 13:47	35	1827.478	11.208	18.654
04/12/2020 13:47	40	1827.915	11.208	18.658
04/12/2020 13:47	45	1827.696	11.208	18.656
04/12/2020 13:47	50	1827.751	11.208	18.657
04/12/2020 13:47	55	1827.669	11.156	18.656
04/12/2020 13:48	0	1827.806	11.208	18.657
04/12/2020 13:48	5	1827.996	11.156	18.659
04/12/2020 13:48	10	1827.969	11.208	18.659

Date and Time	Seconds	Barometric Pressure (mBar)	Temp (°C)
04/12/2020 13:47	2820	970.131	7.415
04/12/2020 13:48	2880	970.026	7.415
04/12/2020 13:49	2940	970.064	7.362
04/12/2020 13:50	3000	970.363	7.31
04/12/2020 13:51	3060	970.259	7.31
04/12/2020 13:52	3120	970.311	7.31
04/12/2020 13:53	3180	970.402	7.257
04/12/2020 13:54	3240	970.193	7.257
04/12/2020 13:55	3300	970.14	7.257
04/12/2020 13:56	3360	969.97	7.204
04/12/2020 13:57	3420	969.97	7.204
04/12/2020 13:58	3480	970.269	7.151
04/12/2020 13:59	3540	970.06	7.151
04/12/2020 14:00	3600	970.426	7.151
04/12/2020 14:01	3660	969.837	7.098

Sensor: Pres(A) 30ft
 Sensor: Pres(A) 30ft
 SN#: 636786

Sensor: Pres(A) 30ft
 SN#: 672154

Date and Time	Seconds	Pressure (mBar)	Temp (°C)	Depth (m)
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Sensor: Baro Pres
 SN#: 658714

Date and Time	Seconds	Barometric Pressure (mBar)	Temp (°C)
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Baro-Pressure/Temp

04/12/2020 13:48	15	1827.996	11.156	18.659
04/12/2020 13:48	20	1827.969	11.208	18.659
04/12/2020 13:48	25	1828.078	11.208	18.66
04/12/2020 13:48	30	1827.915	11.208	18.658
04/12/2020 13:48	35	1827.915	11.208	18.658
04/12/2020 13:48	40	1828.024	11.208	18.659
04/12/2020 13:48	45	1828.133	11.208	18.66
04/12/2020 13:48	50	1828.078	11.208	18.66
04/12/2020 13:48	55	1828.078	11.208	18.66
04/12/2020 13:49	0	1828.242	11.208	18.662
04/12/2020 13:49	5	1828.133	11.208	18.66
04/12/2020 13:49	10	1828.078	11.208	18.66
04/12/2020 13:49	15	1828.242	11.208	18.662
04/12/2020 13:49	20	1828.133	11.208	18.66
04/12/2020 13:49	25	1828.46	11.208	18.664
04/12/2020 13:49	30	1828.133	11.208	18.66
04/12/2020 13:49	35	1828.405	11.208	18.663
04/12/2020 13:49	40	1828.078	11.208	18.66
04/12/2020 13:49	45	1828.187	11.208	18.661
04/12/2020 13:49	50	1828.242	11.208	18.662
04/12/2020 13:49	55	1828.078	11.208	18.66
04/12/2020 13:50	0	1828.405	11.208	18.663
04/12/2020 13:50	5	1828.351	11.208	18.663
04/12/2020 13:50	10	1828.187	11.208	18.661
04/12/2020 13:50	15	1828.569	11.208	18.665
04/12/2020 13:50	20	1828.569	11.208	18.665
04/12/2020 13:50	25	1828.46	11.208	18.664
04/12/2020 13:50	30	1828.405	11.208	18.663
04/12/2020 13:50	35	1828.297	11.208	18.662
04/12/2020 13:50	40	1828.351	11.208	18.663
04/12/2020 13:50	45	1828.542	11.26	18.665
04/12/2020 13:50	50	1828.46	11.208	18.664
04/12/2020 13:50	55	1828.46	11.208	18.664
04/12/2020 13:51	0	1828.515	11.208	18.664
04/12/2020 13:51	5	1828.269	11.26	18.662
04/12/2020 13:51	10	1828.651	11.26	18.666
04/12/2020 13:51	15	1828.215	11.26	18.661
04/12/2020 13:51	20	1828.488	11.26	18.664
04/12/2020 13:51	25	1828.597	11.26	18.665
04/12/2020 13:51	30	1828.76	11.26	18.667
04/12/2020 13:51	35	1828.651	11.26	18.666

04/12/2020 14:02	3720	970.203	7.098
04/12/2020 14:03	3780	970.046	7.098
04/12/2020 14:04	3840	970.502	7.045
04/12/2020 14:05	3900	970.555	7.045
04/12/2020 14:06	3960	970.345	7.045
04/12/2020 14:07	4020	969.861	6.992
04/12/2020 14:08	4080	970.332	6.992
04/12/2020 14:09	4140	970.265	6.939
04/12/2020 14:10	4200	970.213	6.939
04/12/2020 14:11	4260	970.004	6.939
04/12/2020 14:12	4320	970.095	6.886
04/12/2020 14:13	4380	970.565	6.886
04/12/2020 14:14	4440	970.043	6.886
04/12/2020 14:15	4500	970.133	6.833
04/12/2020 14:16	4560	970.328	6.78
04/12/2020 14:17	4620	970.185	6.833
04/12/2020 14:18	4680	970.381	6.78
04/12/2020 14:19	4740	970.262	6.727
04/12/2020 14:20	4800	970.054	6.727
04/12/2020 14:21	4860	970.301	6.674
04/12/2020 14:22	4920	970.287	6.621
04/12/2020 14:23	4980	970.392	6.621
04/12/2020 14:24	5040	970.183	6.621
04/12/2020 14:25	5100	970.392	6.621
04/12/2020 14:26	5160	970.169	6.568
04/12/2020 14:27	5220	969.947	6.515
04/12/2020 14:28	5280	970.417	6.515
04/12/2020 14:29	5340	970.26	6.515
04/12/2020 14:30	5400	970.403	6.462
04/12/2020 14:31	5460	970.56	6.462
04/12/2020 14:32	5520	970.128	6.409
04/12/2020 14:33	5580	970.585	6.356
04/12/2020 14:34	5640	970.637	6.356
04/12/2020 14:35	5700	970.376	6.356
04/12/2020 14:36	5760	970.885	6.303
04/12/2020 14:37	5820	970.311	6.303
04/12/2020 14:38	5880	970.676	8.996
04/12/2020 14:39	5940	970.526	9.73
04/12/2020 14:40	6000	970.223	9.939
04/12/2020 14:41	6060	970.108	9.73
04/12/2020 14:42	6120	970.202	9.521

Sensor: Pres(A) 30ft SN#: 636786				
Date and Time	Seconds	Pressure (mBar)	Temp (°C)	Depth (m)
04/12/2020 13:51	40	1828.706	11.26	18.666
04/12/2020 13:51	45	1828.542	11.26	18.665
04/12/2020 13:51	50	1828.488	11.26	18.664
04/12/2020 13:51	55	1828.651	11.26	18.666
04/12/2020 13:52	0	1828.869	11.26	18.668
04/12/2020 13:52	5	1829.088	11.26	18.67
04/12/2020 13:52	10	1828.733	11.208	18.667
04/12/2020 13:52	15	1829.033	11.26	18.67
04/12/2020 13:52	20	1828.924	11.26	18.669
04/12/2020 13:52	25	1828.924	11.26	18.669
04/12/2020 13:52	30	1829.142	11.26	18.671
04/12/2020 13:52	35	1829.088	11.26	18.67
04/12/2020 13:52	40	1828.924	11.26	18.669
04/12/2020 13:52	45	1829.197	11.26	18.671
04/12/2020 13:52	50	1829.142	11.26	18.671
04/12/2020 13:52	55	1829.142	11.26	18.671
04/12/2020 13:53	0	1828.924	11.26	18.669
04/12/2020 13:53	5	1833.617	11.26	18.716
04/12/2020 13:53	10	1833.563	11.26	18.716
04/12/2020 13:53	15	1831.761	11.26	18.697
04/12/2020 13:53	20	1830.888	11.26	18.689
04/12/2020 13:53	25	1830.615	11.26	18.686
04/12/2020 13:53	30	1830.67	11.26	18.686
04/12/2020 13:53	35	1830.288	11.26	18.682
04/12/2020 13:53	40	1830.397	11.26	18.684
04/12/2020 13:53	45	1830.179	11.26	18.681
04/12/2020 13:53	50	1830.124	11.26	18.681
04/12/2020 13:53	55	1830.288	11.26	18.682
04/12/2020 13:54	0	1830.397	11.26	18.684
04/12/2020 13:54	5	1830.124	11.26	18.681
04/12/2020 13:54	10	1830.342	11.26	18.683
04/12/2020 13:54	15	1830.288	11.26	18.682
04/12/2020 13:54	20	1830.288	11.26	18.682
04/12/2020 13:54	25	1830.288	11.26	18.682
04/12/2020 13:54	30	1830.124	11.26	18.681
04/12/2020 13:54	35	1830.288	11.26	18.682
04/12/2020 13:54	40	1830.451	11.26	18.684
04/12/2020 13:54	45	1830.07	11.26	18.68
04/12/2020 13:54	50	1830.179	11.26	18.681
04/12/2020 13:54	55	1830.233	11.26	18.682
04/12/2020 13:55	0	1830.179	11.26	18.681

Sensor: Pres(A) 30ft SN#: 672154				
Date and Time	Seconds	Pressure (mBar)	Temp (°C)	Depth (m)
04/12/2020 13:51	40	1828.706	11.26	18.666
04/12/2020 13:51	45	1828.542	11.26	18.665
04/12/2020 13:51	50	1828.488	11.26	18.664
04/12/2020 13:51	55	1828.651	11.26	18.666
04/12/2020 13:52	0	1828.869	11.26	18.668
04/12/2020 13:52	5	1829.088	11.26	18.67
04/12/2020 13:52	10	1828.733	11.208	18.667
04/12/2020 13:52	15	1829.033	11.26	18.67
04/12/2020 13:52	20	1828.924	11.26	18.669
04/12/2020 13:52	25	1828.924	11.26	18.669
04/12/2020 13:52	30	1829.142	11.26	18.671
04/12/2020 13:52	35	1829.088	11.26	18.67
04/12/2020 13:52	40	1828.924	11.26	18.669
04/12/2020 13:52	45	1829.197	11.26	18.671
04/12/2020 13:52	50	1829.142	11.26	18.671
04/12/2020 13:52	55	1829.142	11.26	18.671
04/12/2020 13:53	0	1828.924	11.26	18.669
04/12/2020 13:53	5	1833.617	11.26	18.716
04/12/2020 13:53	10	1833.563	11.26	18.716
04/12/2020 13:53	15	1831.761	11.26	18.697
04/12/2020 13:53	20	1830.888	11.26	18.689
04/12/2020 13:53	25	1830.615	11.26	18.686
04/12/2020 13:53	30	1830.67	11.26	18.686
04/12/2020 13:53	35	1830.288	11.26	18.682
04/12/2020 13:53	40	1830.397	11.26	18.684
04/12/2020 13:53	45	1830.179	11.26	18.681
04/12/2020 13:53	50	1830.124	11.26	18.681
04/12/2020 13:53	55	1830.288	11.26	18.682
04/12/2020 13:54	0	1830.397	11.26	18.684
04/12/2020 13:54	5	1830.124	11.26	18.681
04/12/2020 13:54	10	1830.342	11.26	18.683
04/12/2020 13:54	15	1830.288	11.26	18.682
04/12/2020 13:54	20	1830.288	11.26	18.682
04/12/2020 13:54	25	1830.288	11.26	18.682
04/12/2020 13:54	30	1830.124	11.26	18.681
04/12/2020 13:54	35	1830.288	11.26	18.682
04/12/2020 13:54	40	1830.451	11.26	18.684
04/12/2020 13:54	45	1830.07	11.26	18.68
04/12/2020 13:54	50	1830.179	11.26	18.681
04/12/2020 13:54	55	1830.233	11.26	18.682
04/12/2020 13:55	0	1830.179	11.26	18.681

Sensor: Baro Pres SN#: 658714			
Date and Time	Seconds	Barometric Pressure (mBar)	Temp (°C)
04/12/2020 14:43	6180	970.35	9.311
04/12/2020 14:44	6240	970.43	9.048
04/12/2020 14:45	6300	970.4	8.943
04/12/2020 14:46	6360	970.511	8.786
04/12/2020 14:47	6420	970.518	8.628
04/12/2020 14:48	6480	970.511	8.418
04/12/2020 14:49	6540	970.638	8.312
04/12/2020 14:50	6600	970.698	8.154
04/12/2020 14:51	6660	970.46	8.049
04/12/2020 14:52	6720	970.155	7.891
04/12/2020 14:53	6780	970.701	7.785
04/12/2020 14:54	6840	970.463	7.679
04/12/2020 14:55	6900	970.748	7.574
04/12/2020 14:56	6960	970.929	7.468
04/12/2020 14:57	7020	970.587	7.362
04/12/2020 14:58	7080	970.558	7.257
04/12/2020 14:59	7140	970.844	7.151
04/12/2020 15:00	7200	970.255	7.098
04/12/2020 15:01	7260	970.75	6.992
04/12/2020 15:02	7320	970.931	6.886

Sensor: Pres(A) 30ft
Sensor: Pres(A) 30ft
SN#: 636786

Sensor: Pres(A) 30ft
SN#: 672154

Date and Time	Seconds	Pressure (mBar)	Temp (°C)	Depth (m)
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Sensor: Baro Pres
SN#: 658714

Date and Time	Seconds	Barometric Pressure (mBar)	Temp (°C)
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04/12/2020 13:55	5	1830.233	11.26	18.682
04/12/2020 13:55	10	1830.124	11.26	18.681
04/12/2020 13:55	15	1830.315	11.311	18.683
04/12/2020 13:55	20	1830.315	11.311	18.683
04/12/2020 13:55	25	1830.315	11.311	18.683
04/12/2020 13:55	30	1830.424	11.311	18.684
04/12/2020 13:55	35	1830.124	11.26	18.681
04/12/2020 13:55	40	1830.261	11.311	18.682
04/12/2020 13:55	45	1830.561	11.26	18.685
04/12/2020 13:55	50	1830.206	11.311	18.682
04/12/2020 13:55	55	1830.561	11.26	18.685
04/12/2020 13:56	0	1830.479	11.311	18.684
04/12/2020 13:56	5	1830.643	11.311	18.686
04/12/2020 13:56	10	1830.451	11.26	18.684
04/12/2020 13:56	15	1830.698	11.311	18.687
04/12/2020 13:56	20	1830.588	11.311	18.685
04/12/2020 13:56	25	1830.561	11.26	18.685
04/12/2020 13:56	30	1830.643	11.311	18.686
04/12/2020 13:56	35	1830.479	11.311	18.684
04/12/2020 13:56	40	1830.479	11.311	18.684
04/12/2020 13:56	45	1830.315	11.311	18.683
04/12/2020 13:56	50	1830.479	11.311	18.684
04/12/2020 13:56	55	1830.615	11.26	18.686
04/12/2020 13:57	0	1830.643	11.311	18.686
04/12/2020 13:57	5	1832.607	11.311	18.706
04/12/2020 13:57	10	1820.935	11.311	18.587
04/12/2020 13:57	15	1827.669	11.26	18.656
04/12/2020 13:57	20	1828.46	11.311	18.664
04/12/2020 13:57	25	1828.679	11.311	18.666
04/12/2020 13:57	30	1829.061	11.311	18.67
04/12/2020 13:57	35	1829.279	11.311	18.672
04/12/2020 13:57	40	1829.333	11.311	18.673
04/12/2020 13:57	45	1829.388	11.311	18.673
04/12/2020 13:57	50	1829.442	11.311	18.674
04/12/2020 13:57	55	1829.388	11.311	18.673
04/12/2020 13:58	0	1829.333	11.311	18.673
04/12/2020 13:58	5	1829.442	11.311	18.674
04/12/2020 13:58	10	1829.279	11.311	18.672
04/12/2020 13:58	15	1829.388	11.311	18.673
04/12/2020 13:58	20	1829.388	11.311	18.673
04/12/2020 13:58	25	1829.606	11.311	18.675

Sensor: Pres(A) 30ft
 Sensor: Pres(A) 30ft
 SN#: 636786

Sensor: Pres(A) 30ft
 SN#: 672154

Date and Time	Seconds	Pressure (mBar)	Temp (°C)	Depth (m)
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Sensor: Baro Pres
 SN#: 658714

Date and Time	Seconds	Barometric Pressure (mBar)	Temp (°C)
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04/12/2020 13:58	30	1829.388	11.311	18.673
04/12/2020 13:58	35	1829.333	11.311	18.673
04/12/2020 13:58	40	1829.497	11.311	18.674
04/12/2020 13:58	45	1829.606	11.311	18.675
04/12/2020 13:58	50	1829.497	11.311	18.674
04/12/2020 13:58	55	1829.279	11.311	18.672
04/12/2020 13:59	0	1829.606	11.311	18.675
04/12/2020 13:59	5	1829.442	11.311	18.674
04/12/2020 13:59	10	1829.551	11.311	18.675
04/12/2020 13:59	15	1829.442	11.311	18.674
04/12/2020 13:59	20	1829.661	11.311	18.676
04/12/2020 13:59	25	1829.497	11.311	18.674
04/12/2020 13:59	30	1829.442	11.311	18.674
04/12/2020 13:59	35	1829.579	11.363	18.675
04/12/2020 13:59	40	1829.224	11.311	18.672
04/12/2020 13:59	45	1829.333	11.311	18.673
04/12/2020 13:59	50	1829.442	11.311	18.674
04/12/2020 13:59	55	1829.661	11.311	18.676
04/12/2020 14:00	0	1829.497	11.311	18.674
04/12/2020 14:00	5	1829.333	11.311	18.673
04/12/2020 14:00	10	1829.442	11.311	18.674
04/12/2020 14:00	15	1829.497	11.311	18.674
04/12/2020 14:00	20	1829.442	11.311	18.674
04/12/2020 14:00	25	1829.661	11.311	18.676
04/12/2020 14:00	30	1829.388	11.311	18.673
04/12/2020 14:00	35	1829.497	11.311	18.674
04/12/2020 14:00	40	1829.524	11.363	18.675
04/12/2020 14:00	45	1829.606	11.311	18.675
04/12/2020 14:00	50	1829.442	11.311	18.674
04/12/2020 14:00	55	1829.442	11.311	18.674
04/12/2020 14:01	0	1829.715	11.311	18.677
04/12/2020 14:01	5	1829.934	11.311	18.679
04/12/2020 14:01	10	1829.497	11.311	18.674
04/12/2020 14:01	15	1829.388	11.311	18.673
04/12/2020 14:01	20	1829.606	11.311	18.675
04/12/2020 14:01	25	1829.415	11.363	18.674
04/12/2020 14:01	30	1829.606	11.311	18.675
04/12/2020 14:01	35	1829.497	11.311	18.674
04/12/2020 14:01	40	1829.606	11.311	18.675
04/12/2020 14:01	45	1829.661	11.311	18.676
04/12/2020 14:01	50	1829.442	11.311	18.674

Sensor: Pres(A) 30ft
 Sensor: Pres(A) 30ft
 SN#: 636786

Sensor: Pres(A) 30ft
 SN#: 672154

Date and Time	Seconds	Pressure (mBar)	Temp (°C)	Depth (m)
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Sensor: Baro Pres
 SN#: 658714

Date and Time	Seconds	Barometric Pressure (mBar)	Temp (°C)
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04/12/2020 14:15	35	1829.879	11.311	18.678
04/12/2020 14:15	40	1829.77	11.311	18.677
04/12/2020 14:15	45	1829.661	11.311	18.676
04/12/2020 14:15	50	1829.606	11.311	18.675
04/12/2020 14:15	55	1829.661	11.311	18.676
04/12/2020 14:16	0	1829.824	11.311	18.678
04/12/2020 14:16	5	1829.715	11.311	18.677
04/12/2020 14:16	10	1829.77	11.311	18.677
04/12/2020 14:16	15	1829.661	11.311	18.676
04/12/2020 14:16	20	1829.606	11.311	18.675
04/12/2020 14:16	25	1829.579	11.26	18.675
04/12/2020 14:16	30	1829.661	11.311	18.676
04/12/2020 14:16	35	1829.77	11.311	18.677
04/12/2020 14:16	40	1829.988	11.311	18.679
04/12/2020 14:16	45	1829.824	11.311	18.678
04/12/2020 14:16	50	1830.261	11.311	18.682
04/12/2020 14:16	55	1830.097	11.311	18.68
04/12/2020 14:17	0	1830.206	11.311	18.682
04/12/2020 14:17	5	1829.824	11.311	18.678
04/12/2020 14:17	10	1830.043	11.311	18.68
04/12/2020 14:17	15	1829.606	11.311	18.675
04/12/2020 14:17	20	1829.988	11.311	18.679
04/12/2020 14:17	25	1830.043	11.311	18.68
04/12/2020 14:17	30	1829.77	11.311	18.677
04/12/2020 14:17	35	1829.988	11.311	18.679
04/12/2020 14:17	40	1829.77	11.311	18.677
04/12/2020 14:17	45	1829.934	11.311	18.679
04/12/2020 14:17	50	1829.934	11.311	18.679
04/12/2020 14:17	55	1829.934	11.311	18.679
04/12/2020 14:18	0	1833.153	11.311	18.712
04/12/2020 14:18	5	1856.656	11.311	18.952
04/12/2020 14:18	10	1832.007	11.311	18.7
04/12/2020 14:18	15	1832.062	11.311	18.701
04/12/2020 14:18	20	1831.461	11.311	18.694
04/12/2020 14:18	25	1831.68	11.311	18.697
04/12/2020 14:18	30	1831.134	11.311	18.691
04/12/2020 14:18	35	1831.025	11.311	18.69
04/12/2020 14:18	40	1831.298	11.311	18.693
04/12/2020 14:18	45	1831.134	11.311	18.691
04/12/2020 14:18	50	1830.97	11.311	18.689
04/12/2020 14:18	55	1830.861	11.311	18.688

Sensor: Pres(A) 30ft		Sensor: Pres(A) 30ft SN#: 636786		
Date and Time	Seconds	Pressure (mBar)	Temp (°C)	Depth (m)
04/12/2020 14:32	40	971.446	10.012	9.916
04/12/2020 14:32	45	971.383	9.959	9.915
04/12/2020 14:32	50	971.534	9.959	9.917
04/12/2020 14:32	55	971.42	9.907	9.916
04/12/2020 14:33	0	971.356	9.855	9.915
04/12/2020 14:33	5	971.356	9.855	9.915
04/12/2020 14:33	10	971.393	9.803	9.915
04/12/2020 14:33	15	971.43	9.751	9.916
04/12/2020 14:33	20	971.467	9.698	9.916
04/12/2020 14:33	25	971.417	9.698	9.916
04/12/2020 14:33	30	971.454	9.646	9.916
04/12/2020 14:33	35	971.542	9.594	9.917
04/12/2020 14:33	40	971.428	9.542	9.916
04/12/2020 14:33	45	971.327	9.542	9.915
04/12/2020 14:33	50	971.364	9.489	9.915
04/12/2020 14:33	55	971.452	9.437	9.916
04/12/2020 14:34	0	971.237	9.385	9.914
04/12/2020 14:34	5	971.388	9.385	9.915
04/12/2020 14:34	10	971.375	9.332	9.915
04/12/2020 14:34	15	971.312	9.28	9.915
04/12/2020 14:34	20	971.349	9.228	9.915
04/12/2020 14:34	25	971.399	9.228	9.915
04/12/2020 14:34	30	971.386	9.175	9.915
04/12/2020 14:34	35	971.424	9.123	9.916
04/12/2020 14:34	40	971.562	9.07	9.917
04/12/2020 14:34	45	971.461	9.07	9.916
04/12/2020 14:34	50	971.498	9.018	9.916
04/12/2020 14:34	55	971.599	9.018	9.917

Sensor: Pres(A) 30ft SN#: 672154		Sensor: Pres(A) 30ft SN#: 672154		
Date and Time	Seconds	Pressure (mBar)	Temp (°C)	Depth (m)
04/12/2020 14:35	0	970.771	6.138	9.909
04/12/2020 14:35	5	970.45	6.085	9.906
04/12/2020 14:35	10	970.727	6.138	9.909
04/12/2020 14:35	15	970.538	6.085	9.907
04/12/2020 14:35	20	970.759	6.085	9.909
04/12/2020 14:35	25	970.45	6.085	9.906
04/12/2020 14:35	30	970.538	6.085	9.907
04/12/2020 14:35	35	970.727	6.138	9.909
04/12/2020 14:35	40	970.45	6.085	9.906
04/12/2020 14:35	45	970.626	6.085	9.908
04/12/2020 14:35	50	970.626	6.085	9.908
04/12/2020 14:35	55	970.626	6.085	9.908
04/12/2020 14:36	0	970.803	6.085	9.909

Sensor: Baro Pres SN#: 658714		Baro-Pressure/Temp		
Date and Time	Seconds	Barometric Pressure (mBar)	Temp (°C)	

Sensor: Pres(A) 30ft
 Sensor: Pres(A) 30ft
 SN#: 636786

Date and Time	Seconds	Pressure (mBar)	Temp (°C)	Depth (m)
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Sensor: Pres(A) 30ft
 SN#: 672154

Date and Time	Seconds	Pressure (mBar)	Temp (°C)	Depth (m)
04/12/2020 14:36	5	970.582	6.085	9.907
04/12/2020 14:36	10	970.847	6.085	9.91
04/12/2020 14:36	15	970.67	6.085	9.908
04/12/2020 14:36	20	970.879	6.031	9.91
04/12/2020 14:36	25	970.626	6.085	9.908
04/12/2020 14:36	30	970.582	6.085	9.907
04/12/2020 14:36	35	970.582	6.085	9.907
04/12/2020 14:36	40	970.67	6.085	9.908
04/12/2020 14:36	45	970.538	6.085	9.907
04/12/2020 14:36	50	970.526	6.031	9.907
04/12/2020 14:36	55	970.582	6.085	9.907
04/12/2020 14:37	0	970.362	6.085	9.905
04/12/2020 14:37	5	970.393	6.031	9.905
04/12/2020 14:37	10	970.658	6.031	9.908
04/12/2020 14:37	15	970.582	6.085	9.907
04/12/2020 14:37	20	970.658	6.031	9.908
04/12/2020 14:37	25	970.715	6.085	9.908
04/12/2020 14:37	30	970.935	6.085	9.911
04/12/2020 14:37	35	970.614	6.031	9.907
04/12/2020 14:37	40	970.847	6.085	9.91
04/12/2020 14:37	45	970.967	6.031	9.911
04/12/2020 14:37	50	970.614	6.031	9.907
04/12/2020 14:37	55	970.891	6.085	9.91
04/12/2020 14:38	0	970.967	6.031	9.911
04/12/2020 14:38	5	970.746	6.031	9.909
04/12/2020 14:38	10	971.011	6.031	9.911
04/12/2020 14:38	15	970.526	6.031	9.907
04/12/2020 14:38	20	970.746	6.031	9.909
04/12/2020 14:38	25	970.746	6.031	9.909
04/12/2020 14:38	30	970.658	6.031	9.908
04/12/2020 14:38	35	970.702	6.031	9.908
04/12/2020 14:38	40	970.734	5.978	9.909
04/12/2020 14:38	45	970.602	5.978	9.907
04/12/2020 14:38	50	971.144	6.031	9.913
04/12/2020 14:38	55	970.646	5.978	9.908
04/12/2020 14:39	0	970.69	5.978	9.908
04/12/2020 14:39	5	970.702	6.031	9.908
04/12/2020 14:39	10	970.803	6.085	9.909
04/12/2020 14:39	15	970.771	6.138	9.909
04/12/2020 14:39	20	970.815	6.138	9.909
04/12/2020 14:39	25	970.828	6.191	9.91

Sensor: Baro Pres
 SN#: 658714

Date and Time	Seconds	Barometric Pressure (mBar)	Temp (°C)
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Baro-Pressure/Temp

Sensor: Pres(A) 30ft
Sensor: Pres(A) 30ft
SN#: 636786

Sensor: Pres(A) 30ft
SN#: 672154

Sensor: Baro Pres
SN#: 658714

Baro-Pressure/Temp

Date and Time Seconds Pressure
(mBar) Temp
(°C) Depth
(m)

Date and Time Seconds Pressure
(mBar) Temp
(°C) Depth
(m)

Date and Time Seconds Barometric Pressure
(mBar) Temp
(°C)

04/12/2020 14:39	30	970.607	6.191	9.907
04/12/2020 14:39	35	970.632	6.298	9.908
04/12/2020 14:39	40	970.468	6.351	9.906
04/12/2020 14:39	45	970.625	6.458	9.908
04/12/2020 14:39	50	970.531	6.618	9.907
04/12/2020 14:39	55	970.524	6.778	9.907
04/12/2020 14:40	0	1121.477	7.044	11.447
04/12/2020 14:40	5	1417.079	7.203	14.465
04/12/2020 14:40	10	1736.99	7.416	17.73
04/12/2020 14:40	15	1832.296	7.522	18.703
04/12/2020 14:40	20	1832.394	7.628	18.704
04/12/2020 14:40	25	1832.255	7.734	18.703
04/12/2020 14:40	30	1832.378	7.893	18.704
04/12/2020 14:40	35	1832.404	7.946	18.704
04/12/2020 14:40	40	1832.429	7.999	18.704
04/12/2020 14:40	45	1832.102	8.104	18.701
04/12/2020 14:40	50	1832.484	8.21	18.705
04/12/2020 14:40	55	1832.415	8.263	18.704
04/12/2020 14:41	0	1832.277	8.369	18.703
04/12/2020 14:41	5	1832.16	8.422	18.702
04/12/2020 14:41	10	1832.259	8.527	18.703
04/12/2020 14:41	15	1832.285	8.58	18.703
04/12/2020 14:41	20	1832.311	8.633	18.703
04/12/2020 14:41	25	1832.336	8.686	18.703
04/12/2020 14:41	30	1832.362	8.739	18.704
04/12/2020 14:41	35	1832.225	8.844	18.702
04/12/2020 14:41	40	1832.225	8.844	18.702
04/12/2020 14:41	45	1832.23	8.949	18.702
04/12/2020 14:41	50	1832.067	9.002	18.701
04/12/2020 14:41	55	1832.234	9.055	18.702
04/12/2020 14:42	0	1832.071	9.108	18.701
04/12/2020 14:42	5	1832.334	9.16	18.703
04/12/2020 14:42	10	1832.171	9.213	18.702
04/12/2020 14:42	15	1832.124	9.213	18.701
04/12/2020 14:42	20	1832.271	9.318	18.703
04/12/2020 14:42	25	1832.129	9.318	18.701
04/12/2020 14:42	30	1832.25	9.371	18.702
04/12/2020 14:42	35	1832.134	9.423	18.701
04/12/2020 14:42	40	1832.208	9.476	18.702
04/12/2020 14:42	45	1832.187	9.529	18.702
04/12/2020 14:42	50	1832.187	9.529	18.702

Sensor: Pres(A) 30ft
 Sensor: Pres(A) 30ft
 SN#: 636786

Date and Time	Seconds	Pressure (mBar)	Temp (°C)	Depth (m)
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Sensor: Pres(A) 30ft
 SN#: 672154

Date and Time	Seconds	Pressure (mBar)	Temp (°C)	Depth (m)
04/12/2020 14:42	55	1832.234	9.529	18.702
04/12/2020 14:43	0	1832.261	9.581	18.703
04/12/2020 14:43	5	1832.193	9.634	18.702
04/12/2020 14:43	10	1832.55	9.686	18.706
04/12/2020 14:43	15	1832.529	9.739	18.705
04/12/2020 14:43	20	1832.577	9.739	18.706
04/12/2020 14:43	25	1832.651	9.791	18.707
04/12/2020 14:43	30	1832.698	9.791	18.707
04/12/2020 14:43	35	1832.772	9.844	18.708
04/12/2020 14:43	40	1832.819	9.844	18.708
04/12/2020 14:43	45	1832.562	9.896	18.706
04/12/2020 14:43	50	1832.751	9.896	18.708
04/12/2020 14:43	55	1832.683	9.949	18.707
04/12/2020 14:44	0	1832.804	10.001	18.708
04/12/2020 14:44	5	1835.69	10.001	18.738
04/12/2020 14:44	10	1862.207	10.054	19.008
04/12/2020 14:44	15	1835.974	10.001	18.74
04/12/2020 14:44	20	1835.46	10.106	18.735
04/12/2020 14:44	25	1834.913	10.054	18.73
04/12/2020 14:44	30	1834.514	10.106	18.726
04/12/2020 14:44	35	1834.608	10.106	18.727
04/12/2020 14:44	40	1834.588	10.159	18.726
04/12/2020 14:44	45	1835.041	10.211	18.731
04/12/2020 14:44	50	1834.283	10.211	18.723
04/12/2020 14:44	55	1834.499	10.263	18.725
04/12/2020 14:45	0	1834.168	10.263	18.722
04/12/2020 14:45	5	1834.29	10.316	18.723
04/12/2020 14:45	10	1834.074	10.263	18.721
04/12/2020 14:45	15	1834.1	10.316	18.721
04/12/2020 14:45	20	1834.127	10.368	18.722
04/12/2020 14:45	25	1834.269	10.368	18.723
04/12/2020 14:45	30	1833.796	10.368	18.718
04/12/2020 14:45	35	1833.256	10.421	18.713
04/12/2020 14:45	40	1833.303	10.421	18.713
04/12/2020 14:45	45	1832.877	10.421	18.709
04/12/2020 14:45	50	1833.093	10.473	18.711
04/12/2020 14:45	55	1832.904	10.473	18.709
04/12/2020 14:46	0	1832.951	10.473	18.71
04/12/2020 14:46	5	1806.545	10.473	18.44
04/12/2020 14:46	10	1815.066	10.525	18.527
04/12/2020 14:46	15	1830.829	10.578	18.688

Sensor: Baro Pres
 SN#: 658714

Date and Time	Seconds	Barometric Pressure (mBar)	Temp (°C)
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Baro-Pressure/Temp

Sensor: Pres(A) 30ft
 Sensor: Pres(A) 30ft
 SN#: 636786

Date and Time	Seconds	Pressure (mBar)	Temp (°C)	Depth (m)
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Sensor: Pres(A) 30ft
 SN#: 672154

Date and Time	Seconds	Pressure (mBar)	Temp (°C)	Depth (m)
04/12/2020 14:46	20	1831.843	10.525	18.698
04/12/2020 14:46	25	1832.485	10.578	18.705
04/12/2020 14:46	30	1833.005	10.578	18.71
04/12/2020 14:46	35	1832.843	10.63	18.709
04/12/2020 14:46	40	1833.526	10.578	18.715
04/12/2020 14:46	45	1833.032	10.63	18.71
04/12/2020 14:46	50	1832.701	10.63	18.707
04/12/2020 14:46	55	1833.154	10.682	18.712
04/12/2020 14:47	0	1833.364	10.63	18.714
04/12/2020 14:47	5	1833.296	10.682	18.713
04/12/2020 14:47	10	1833.6	10.63	18.716
04/12/2020 14:47	15	1833.323	10.735	18.713
04/12/2020 14:47	20	1833.512	10.735	18.715
04/12/2020 14:47	25	1833.56	10.735	18.716
04/12/2020 14:47	30	1833.607	10.735	18.716
04/12/2020 14:47	35	1833.465	10.735	18.715
04/12/2020 14:47	40	1833.891	10.735	18.719
04/12/2020 14:47	45	1833.654	10.735	18.717
04/12/2020 14:47	50	1833.54	10.787	18.716
04/12/2020 14:47	55	1833.654	10.735	18.717
04/12/2020 14:48	0	1833.472	10.839	18.715
04/12/2020 14:48	5	1833.749	10.735	18.718
04/12/2020 14:48	10	1832.336	10.839	18.703
04/12/2020 14:48	15	1833.918	10.787	18.719
04/12/2020 14:48	20	1833.851	10.839	18.719
04/12/2020 14:48	25	1833.972	10.891	18.72
04/12/2020 14:48	30	1833.898	10.839	18.719
04/12/2020 14:48	35	1833.729	10.787	18.718
04/12/2020 14:48	40	1833.831	10.891	18.719
04/12/2020 14:48	45	1834.094	10.944	18.721
04/12/2020 14:48	50	1834.02	10.891	18.721
04/12/2020 14:48	55	1833.972	10.891	18.72
04/12/2020 14:49	0	1834.114	10.891	18.721
04/12/2020 14:49	5	1852.778	10.891	18.912
04/12/2020 14:49	10	1845.005	10.891	18.833
04/12/2020 14:49	15	1836.603	10.944	18.747
04/12/2020 14:49	20	1836.177	10.944	18.743
04/12/2020 14:49	25	1835.487	10.891	18.735
04/12/2020 14:49	30	1835.372	10.944	18.734
04/12/2020 14:49	35	1835.751	10.944	18.738
04/12/2020 14:49	40	1835.041	10.944	18.731

Sensor: Baro Pres
 SN#: 658714

Date and Time	Seconds	Barometric Pressure (mBar)	Temp (°C)
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Baro-Pressure/Temp

Sensor: Pres(A) 30ft
 Sensor: Pres(A) 30ft
 SN#: 636786

Date and Time	Seconds	Pressure (mBar)	Temp (°C)	Depth (m)
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Sensor: Pres(A) 30ft
 SN#: 672154

Date and Time	Seconds	Pressure (mBar)	Temp (°C)	Depth (m)
04/12/2020 14:49	45	1834.994	10.944	18.73
04/12/2020 14:49	50	1835.041	10.944	18.731
04/12/2020 14:49	55	1835.021	10.996	18.731
04/12/2020 14:50	0	1835.116	10.996	18.732
04/12/2020 14:50	5	1834.831	10.996	18.729
04/12/2020 14:50	10	1835.399	10.996	18.735
04/12/2020 14:50	15	1835.068	10.996	18.731
04/12/2020 14:50	20	1835.305	10.996	18.734
04/12/2020 14:50	25	1835.116	10.996	18.732
04/12/2020 14:50	30	1835.285	11.048	18.733
04/12/2020 14:50	35	1835.163	10.996	18.732
04/12/2020 14:50	40	1835.21	10.996	18.733
04/12/2020 14:50	45	1832.276	10.996	18.703
04/12/2020 14:50	50	1835.663	11.048	18.737
04/12/2020 14:50	55	1834.974	10.996	18.73
04/12/2020 14:51	0	1834.974	10.996	18.73
04/12/2020 14:51	5	1835.143	11.048	18.732
04/12/2020 14:51	10	1835.048	11.048	18.731
04/12/2020 14:51	15	1835.143	11.048	18.732
04/12/2020 14:51	20	1835.001	11.048	18.731
04/12/2020 14:51	25	1835.332	11.048	18.734
04/12/2020 14:51	30	1835.143	11.048	18.732
04/12/2020 14:51	35	1795.618	11.048	18.329
04/12/2020 14:51	40	1795.193	11.048	18.324
04/12/2020 14:51	45	1832.824	11.048	18.708
04/12/2020 14:51	50	1833.486	11.048	18.715
04/12/2020 14:51	55	1834.102	11.048	18.721
04/12/2020 14:52	0	1834.291	11.048	18.723
04/12/2020 14:52	5	1834.386	11.048	18.724
04/12/2020 14:52	10	1834.717	11.048	18.728
04/12/2020 14:52	15	1834.669	11.048	18.727
04/12/2020 14:52	20	1834.622	11.048	18.727
04/12/2020 14:52	25	1834.811	11.048	18.729
04/12/2020 14:52	30	1834.859	11.048	18.729
04/12/2020 14:52	35	1834.649	11.1	18.727
04/12/2020 14:52	40	1834.528	11.048	18.726
04/12/2020 14:52	45	1834.811	11.048	18.729
04/12/2020 14:52	50	1834.528	11.048	18.726
04/12/2020 14:52	55	1834.622	11.048	18.727
04/12/2020 14:53	0	1834.622	11.048	18.727
04/12/2020 14:53	5	1834.717	11.048	18.728

Sensor: Baro Pres
 SN#: 658714

Date and Time	Seconds	Barometric Pressure (mBar)	Temp (°C)
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Baro-Pressure/Temp

Sensor: Pres(A) 30ft
 Sensor: Pres(A) 30ft
 SN#: 636786

Date and Time	Seconds	Pressure (mBar)	Temp (°C)	Depth (m)
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Sensor: Pres(A) 30ft
 SN#: 672154

Date and Time	Seconds	Pressure (mBar)	Temp (°C)	Depth (m)
04/12/2020 14:53	10	1834.575	11.048	18.726
04/12/2020 14:53	15	1834.811	11.048	18.729
04/12/2020 14:53	20	1834.906	11.048	18.73
04/12/2020 14:53	25	1834.717	11.048	18.728
04/12/2020 14:53	30	1834.669	11.048	18.727
04/12/2020 14:53	35	1834.744	11.1	18.728
04/12/2020 14:53	40	1834.528	11.048	18.726
04/12/2020 14:53	45	1834.953	11.048	18.73
04/12/2020 14:53	50	1834.717	11.048	18.728
04/12/2020 14:53	55	1834.717	11.048	18.728
04/12/2020 14:54	0	1834.669	11.048	18.727
04/12/2020 14:54	5	1834.717	11.048	18.728
04/12/2020 14:54	10	1835.19	11.048	18.732
04/12/2020 14:54	15	1834.669	11.048	18.727
04/12/2020 14:54	20	1834.859	11.048	18.729
04/12/2020 14:54	25	1834.764	11.048	18.728
04/12/2020 14:54	30	1834.811	11.048	18.729
04/12/2020 14:54	35	1834.717	11.048	18.728
04/12/2020 14:54	40	1834.859	11.048	18.729
04/12/2020 14:54	45	1834.717	11.048	18.728
04/12/2020 14:54	50	1834.886	11.1	18.729
04/12/2020 14:54	55	1834.717	11.048	18.728
04/12/2020 14:55	0	1834.933	11.1	18.73
04/12/2020 14:55	5	1834.717	11.048	18.728
04/12/2020 14:55	10	1834.622	11.048	18.727
04/12/2020 14:55	15	1834.622	11.048	18.727
04/12/2020 14:55	20	1834.575	11.048	18.726
04/12/2020 14:55	25	1834.622	11.048	18.727
04/12/2020 14:55	30	1834.764	11.048	18.728
04/12/2020 14:55	35	1834.811	11.048	18.729
04/12/2020 14:55	40	1835.048	11.048	18.731
04/12/2020 14:55	45	1834.811	11.048	18.729
04/12/2020 14:55	50	1834.811	11.048	18.729
04/12/2020 14:55	55	1834.764	11.048	18.728
04/12/2020 14:56	0	1834.906	11.048	18.73
04/12/2020 14:56	5	1834.953	11.048	18.73
04/12/2020 14:56	10	1835.048	11.048	18.731
04/12/2020 14:56	15	1834.338	11.048	18.724
04/12/2020 14:56	20	1835.048	11.048	18.731
04/12/2020 14:56	25	1834.906	11.048	18.73
04/12/2020 14:56	30	1834.811	11.048	18.729

Sensor: Baro Pres
 SN#: 658714

Date and Time	Seconds	Barometric Pressure (mBar)	Temp (°C)
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Baro-Pressure/Temp

Sensor: Pres(A) 30ft
 Sensor: Pres(A) 30ft
 SN#: 636786

Date and Time	Seconds	Pressure (mBar)	Temp (°C)	Depth (m)
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Sensor: Pres(A) 30ft
 SN#: 672154

Date and Time	Seconds	Pressure (mBar)	Temp (°C)	Depth (m)
04/12/2020 14:56	35	1834.669	11.048	18.727
04/12/2020 14:56	40	1835.048	11.048	18.731
04/12/2020 14:56	45	1835.048	11.048	18.731
04/12/2020 14:56	50	1834.906	11.048	18.73
04/12/2020 14:56	55	1834.717	11.048	18.728
04/12/2020 14:57	0	1834.859	11.048	18.729
04/12/2020 14:57	5	1845.419	11.048	18.837
04/12/2020 14:57	10	1847.93	11.048	18.863
04/12/2020 14:57	15	1834.575	11.048	18.726
04/12/2020 14:57	20	1841.014	11.048	18.792
04/12/2020 14:57	25	1836.184	11.048	18.743
04/12/2020 14:57	30	1836.089	11.048	18.742
04/12/2020 14:57	35	1836.089	11.048	18.742
04/12/2020 14:57	40	1835.805	11.048	18.739
04/12/2020 14:57	45	1835.711	11.048	18.738
04/12/2020 14:57	50	1835.048	11.048	18.731
04/12/2020 14:57	55	1835.001	11.048	18.731
04/12/2020 14:58	0	1834.811	11.048	18.729
04/12/2020 14:58	5	1835.096	11.048	18.732
04/12/2020 14:58	10	1835.048	11.048	18.731
04/12/2020 14:58	15	1834.669	11.048	18.727
04/12/2020 14:58	20	1834.764	11.048	18.728
04/12/2020 14:58	25	1835.001	11.048	18.731
04/12/2020 14:58	30	1834.744	11.1	18.728
04/12/2020 14:58	35	1834.717	11.048	18.728
04/12/2020 14:58	40	1834.649	11.1	18.727
04/12/2020 14:58	45	1834.528	11.048	18.726
04/12/2020 14:58	50	1834.953	11.048	18.73
04/12/2020 14:58	55	1834.811	11.048	18.729
04/12/2020 14:59	0	1834.791	11.1	18.728
04/12/2020 14:59	5	1808.942	11.1	18.465
04/12/2020 14:59	10	1828.168	11.1	18.661
04/12/2020 14:59	15	1833.277	11.1	18.713
04/12/2020 14:59	20	1834.508	11.1	18.726
04/12/2020 14:59	25	1834.791	11.1	18.728
04/12/2020 14:59	30	1834.764	11.048	18.728
04/12/2020 14:59	35	1834.981	11.1	18.73
04/12/2020 14:59	40	1834.933	11.1	18.73
04/12/2020 14:59	45	1835.17	11.1	18.732
04/12/2020 14:59	50	1835.123	11.1	18.732
04/12/2020 14:59	55	1835.123	11.1	18.732

Sensor: Baro Pres
 SN#: 658714

Date and Time	Seconds	Barometric Pressure (mBar)	Temp (°C)
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Baro-Pressure/Temp

Sensor: Pres(A) 30ft
 Sensor: Pres(A) 30ft
 SN#: 636786

Date and Time	Seconds	Pressure (mBar)	Temp (°C)	Depth (m)
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Sensor: Pres(A) 30ft
 SN#: 672154

Date and Time	Seconds	Pressure (mBar)	Temp (°C)	Depth (m)
04/12/2020 15:00	0	1835.096	11.048	18.732
04/12/2020 15:00	5	1835.17	11.1	18.732
04/12/2020 15:00	10	1835.075	11.1	18.731
04/12/2020 15:00	15	1835.265	11.1	18.733
04/12/2020 15:00	20	1835.028	11.1	18.731
04/12/2020 15:00	25	1835.075	11.1	18.731
04/12/2020 15:00	30	1835.17	11.1	18.732
04/12/2020 15:00	35	1835.028	11.1	18.731
04/12/2020 15:00	40	1835.17	11.1	18.732
04/12/2020 15:00	45	1835.17	11.1	18.732
04/12/2020 15:00	50	1835.34	11.153	18.734
04/12/2020 15:00	55	1835.407	11.1	18.735
04/12/2020 15:01	0	1835.17	11.1	18.732
04/12/2020 15:01	5	1835.17	11.1	18.732
04/12/2020 15:01	10	1835.218	11.1	18.733
04/12/2020 15:01	15	1835.075	11.1	18.731
04/12/2020 15:01	20	1835.265	11.1	18.733
04/12/2020 15:01	25	1835.103	11.153	18.732
04/12/2020 15:01	30	1835.103	11.153	18.732
04/12/2020 15:01	35	1835.292	11.153	18.734
04/12/2020 15:01	40	1835.075	11.1	18.731
04/12/2020 15:01	45	1835.407	11.1	18.735
04/12/2020 15:01	50	1835.387	11.153	18.734
04/12/2020 15:01	55	1835.17	11.1	18.732
04/12/2020 15:02	0	1835.17	11.1	18.732
04/12/2020 15:02	5	1835.407	11.1	18.735
04/12/2020 15:02	10	1835.198	11.153	18.733
04/12/2020 15:02	15	1835.245	11.153	18.733
04/12/2020 15:02	20	1835.17	11.1	18.732
04/12/2020 15:02	25	1835.198	11.153	18.733
04/12/2020 15:02	30	1835.056	11.153	18.731
04/12/2020 15:02	35	1835.218	11.1	18.733
04/12/2020 15:02	40	1835.15	11.153	18.732
04/12/2020 15:02	45	1835.34	11.153	18.734
04/12/2020 15:02	50	1835.34	11.153	18.734
04/12/2020 15:02	55	1835.245	11.153	18.733

Sensor: Baro Pres
 SN#: 658714

Date and Time	Seconds	Barometric Pressure (mBar)	Temp (°C)
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Baro-Pressure/Temp

APPENDIX F

GEOTECHNICAL LABORATORY DATA


SUMMARY OF LIQUID AND PLASTIC LIMIT TESTS

1115 - Pl Summary - 32135.XLSM

Location	Depth m	Sample Ref	Sample Type	Description	Water Content BS EN ISO 17892-1 : 2014 %	Liquid Limit %	Plastic Limit %	Plasticity Index %	Percentage Passing 425µm %	Atterberg Classification	Test Type	Sample Condition
R70111	1.40-1.65	13	D	White fine to coarse CHALK gravel.	26.9	~	NP		18	~	3	3

Test Type:
 1 - 1 point 80g / 30° fall cone method.
 2 - 4 point 80g / 30° fall cone method.
 3 - Non plastic determination.

Sample condition:
 1 - As Received
 2 - Air Dried
 3 - Washed & Air Dried

Checked and Approved by:

 J. ger
 17/12/2020

Project Number: **GEO / 32135**
 Project Name: **A303 STONEHENG
 JFR1451**



SUMMARY OF LIQUID AND PLASTIC LIMIT TESTS

Location	Depth m	Sample Ref	Sample Type	Description	Water Content BS EN ISO 17892-1 : 2014 %	Liquid Limit %	Plastic Limit %	Plasticity Index %	Percentage Passing 425µm %	Atterberg Classification	Test Type	Sample Condition
DTP70701	0.50	6	D	Light brown gravelly structureless CHALK. Gravel is flint and chalk.	15.7	38	23	15	50	CI	2	3
DTP70702	0.50	6	D	Brown chalky CLAY with rare chalk and flint gravel.	17.8	38	25	13	42	MI	2	3
DTP70703	0.50	6	D	Brown chalky CLAY with rare chalk and flint gravel.	14.5	26	18	8	59	CL	2	3
DTP70704	1.00	7	B	Brown silty sandy GRAVEL. Gravel is flint and chalk with one cobble.	11.9	~	~	~	~	~	~	~

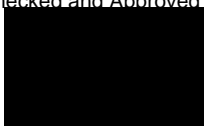
Test Type:

- 1 - 1 point 80g / 30° fall cone method.
- 2 - 4 point 80g / 30° fall cone method.
- 3 - Non plastic determination.

Sample condition:

- 1 - As Received
- 2 - Air Dried
- 3 - Washed & Air Dried

Checked and Approved by:



J Sturges - Operations Manager
24/12/2020

Project Number:

GEO / 32137

Project Name:

**A303 STONEHENG
JFR1451**


GEOLABS®



SUMMARY OF GEOTECHNICAL TESTING

Sample details					Classification Tests					Density Tests		Undrained Triaxial Compression			Chemical Tests			Other tests and comments	
Location	Depth (m)	Sample Ref	Type	Description	WC %	LL %	PL %	PI %	<425 μm %	Bulk Mg/m³	Dry Mg/m³	Condition	Cell Pressure kPa	Deviator Stress kPa	Shear Stress kPa	pH	2:1 W/S SO4 g/L		W/S Mg mg/L
R70302	1.25-1.45		D	Light grey gravel sized CHALK with occasional structureless chalk.	20.5	28	17	11	33										


Sample type: B (Bulk disturb.) BLK (Block) C (Core) D (Disturbed) LB (Large Bulk dist.) U (Undisturbed)

Checked and Approved by <div style="background-color: black; width: 100px; height: 40px; margin: 5px 0;"></div> S Burke - Senior Technician 01/12/2020	Project Number: <p style="text-align: center; font-weight: bold; font-size: 1.2em;">GEO / 31889</p> Project Name: <p style="text-align: center; font-weight: bold; font-size: 1.2em;">A303 STONEHENGE JFR1451</p>	
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SUMMARY OF GEOTECHNICAL TESTING

Sample details					Classification Tests					Density Tests		Undrained Triaxial Compression				Chemical Tests			Other tests and comments
Location	Depth (m)	Sample Ref	Type	Description	WC %	LL %	PL %	PI %	<425 µm %	Bulk Mg/m³	Dry Mg/m³	Condition	Cell Pressure kPa	Deviator Stress kPa	Shear Stress kPa	pH	2:1 W/S SO4 g/L	W/S Mg mg/L	
STP70401	0.30	4	D	Brown sandy clayey SILT with rare gravel and rootlets.	21.6	42	32	10	69										
STP70403	0.30	4	D	Brown sandy clayey SILT with rare gravel and rootlets.	19.9	53	40	13	54										
STP70403	0.50	5	B	White gravel sized CHALK in a structureless chalk matrix															Particle Size Distribution
STP70404	0.50	5	B	Grey and brown slightly sandy slightly gravelly clayey SILT.															Particle Size Distribution
STP70404	0.50	6	D	Brown clayey SILT with rare gravel.	20.5	41	26	15	83										
STP70404	2.00	9	B	White CHALK															Saturation Moisture Content
STP70404	3.00	11	B	White CHALK															Saturation Moisture Content


Sample type: B (Bulk disturb.) BLK (Block) C (Core) D (Disturbed) LB (Large Bulk dist.) U (Undisturbed)

<p>Checked and Approved by</p> <div style="background-color: black; width: 100px; height: 50px; margin: 5px 0;"></div> <p>J Sturges - Operations Manager 25/01/2021</p>	<p>Project Number: GEO / 32372</p> <p>Project Name: A303 STONEHENGE JFR1451</p>	
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SUMMARY OF GEOTECHNICAL TESTING

Sample details					Classification Tests					Density Tests		Undrained Triaxial Compression				Chemical Tests			Other tests and comments
Location	Depth (m)	Sample Ref	Type	Description	WC %	LL %	PL %	PI %	<425 µm %	Bulk Mg/m³	Dry Mg/m³	Condition	Cell Pressure kPa	Deviator Stress kPa	Shear Stress kPa	pH	2:1 W/S SO4 g/L	W/S Mg mg/L	
STP72201	0.90-1.10		B	White CHALK															Saturation moisture Content
STP72202A	0.50	5	B	Grey brown slightly sandy slightly gravelly silty CLAY. Gravel is flint.															Particle Size Distribution
STP72202A	1.00	7	B	Light brown slightly sandy gravelly silty CLAY. Gravel is flint and chalk.	13.8	25	17	8.0	53										Particle Size Distribution
STP72202A	3.00	11	B	Light brown silty CLAY with rare gravel.	9.9	26	18	8.0	51										



Sample type: B (Bulk disturb.) BLK (Block) C (Core) D (Disturbed) LB (Large Bulk dist.) U (Undisturbed)

<p>Checked and Approved by</p> <div style="background-color: black; width: 100px; height: 40px; margin: 5px 0;"></div> <p>J Sturges - Operations Manager 22/01/2021</p>	<p>Project Number: GEO / 32371</p> <p>Project Name: A303 STONEHENGE JFR1451</p>	
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SUMMARY OF GEOTECHNICAL TESTING

Sample details					Classification Tests					Density Tests		Undrained Triaxial Compression			Chemical Tests			Other tests and comments	
Location	Depth (m)	Sample Ref	Type	Description	WC %	LL %	PL %	PI %	<425 µm %	Bulk Mg/m³	Dry Mg/m³	Condition	Cell Pressure kPa	Deviator Stress kPa	Shear Stress kPa	pH	2:1 W/S SO4 g/L		W/S Mg mg/L
CP72307	3.65-4.20		B	White CHALK															Saturation Moisture Content
CP72308A	5.00-5.50		B	White CHALK															Saturation Moisture Content
CP72310	6.00-6.45		U	Firm off white structureless CHALK with fine to medium gravel sized chalk.															Effective Stress
CP72310	7.50-8.00		B	White CHALK															Saturation Moisture Content
CP72310	13.50-14.00		B	White CHALK															Saturation Moisture Content
CP72602	1.65-2.10		D	White clayey SILT with rare sand. (CHALK).															Particle Size Distribution
CP72602	2.50-2.95		D	White structureless CHALK.	25.7	32	25	7.0	65										
CP72602	3.00-3.65		U	Very stiff white gravelly silty CLAY. Gravel is chalk.															One Dimensional Consolidation
CP72602	4.50-4.95		D																Chemical
CP72602	7.50-8.00		B	Light grey slightly sandy flint GRAVEL with rare cobbles.															Particle Size Distribution


Sample type: B (Bulk disturb.) BLK (Block) C (Core) D (Disturbed) LB (Large Bulk dist.) U (Undisturbed)

Checked and Approved by  J Sturges - Operations Manager 22/01/2021	Project Number: <p style="text-align: center;">GEO / 32303</p> Project Name: <p style="text-align: center;">A303 STONEHENGE JFR1451</p>	
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SUMMARY OF GEOTECHNICAL TESTING

Sample details					Classification Tests					Density Tests		Undrained Triaxial Compression			Chemical Tests			Other tests and comments		
Location	Depth (m)	Sample Ref	Type	Description	WC	LL	PL	PI	<425 µm	Bulk	Dry	Condition	Cell Pressure	Deviator Stress	Shear Stress	pH	2:1 W/S SO4		W/S Mg	
					%	%	%	%	%	Mg/m³	Mg/m³		kPa	kPa	kPa		g/L	mg/L		
STP70118	0.50	6	D	Light brown clayey SILT with rare chalk gravel.	19.0	41	30	11	35											
STP70118	1.00	8	D	White CHALK												9.0	0.081		Saturation Moisture Content, Chemical	
STP70118	3.00	12	D	White CHALK															Saturation Moisture Content	


Sample type: B (Bulk disturb.) BLK (Block) C (Core) D (Disturbed) LB (Large Bulk dist.) U (Undisturbed)

<p>Checked and Approved by</p> <div style="background-color: black; width: 100px; height: 50px; margin: 5px 0;"></div> <p>J Sturges - Operations Manager 22/01/2021</p>	<p>Project Number: GEO / 32180</p> <p>Project Name: A303 STONEHENGE JFR1451</p>	
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SUMMARY OF GEOTECHNICAL TESTING

Sample details					Classification Tests					Density Tests		Undrained Triaxial Compression			Chemical Tests			Other tests and comments	
Location	Depth (m)	Sample Ref	Type	Description	WC %	LL %	PL %	PI %	<425 µm %	Bulk Mg/m³	Dry Mg/m³	Condition	Cell Pressure kPa	Deviator Stress kPa	Shear Stress kPa	pH	2:1 W/S SO4 g/L		W/S Mg mg/L
DTP70301	0.50	5	B	Brown clayey sandy gravelly SILT. Gravel is chalk.															Particle Size Distribution
DTP70301	0.50	6	D	Brown clayey SILT with rare gravel sized chalk.	18.8	40	25	15	54										
DTP70301	1.00	9	B	White CHALK															Saturation Moisture Content
DTP70302	0.50	6	D	Light brown clayey SILT with rare gravel sized chalk.	18.4	39	28	11	46										
DTP70302	1.00	9	B	White CHALK															Saturation Moisture Content
DTP70302	2.00	11	B	White CHALK															Saturation Moisture Content
DTP70302	3.00	13	B	White CHALK															Saturation Moisture Content
DTP70303	0.30	4	D	Dark brown silty CLAY with rare gravel sized chalk.	13.2	40	23	17	47										
DTP70303	1.00	11	B	White CHALK															Saturation Moisture Content

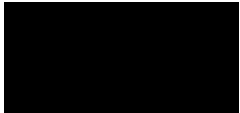

Sample type: B (Bulk disturb.) BLK (Block) C (Core) D (Disturbed) LB (Large Bulk dist.) U (Undisturbed)

<p>Checked and Approved by</p> <div style="background-color: black; width: 100px; height: 40px; margin: 5px 0;"></div> <p>J Sturges - Operations Manager 21/01/2021</p>	<p>Project Number: GEO / 32138</p> <p>Project Name: A303 STONEHENGE JFR1451</p>	
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SUMMARY OF GEOTECHNICAL TESTING

Sample details					Classification Tests					Density Tests		Undrained Triaxial Compression			Chemical Tests			Other tests and comments	
Location	Depth (m)	Sample Ref	Type	Description	WC %	LL %	PL %	PI %	<425 µm %	Bulk Mg/m³	Dry Mg/m³	Condition	Cell Pressure kPa	Deviator Stress kPa	Shear Stress kPa	pH	2:1 W/S SO4 g/L		W/S Mg mg/L
R72005	1.40-1.55		D	Light brown fine to medium gravel sized CHALK.	28.8	33	24	9.0	24										
R72005	3.00-3.15		D	White CHALK.															Saturation Moisture Content
R72005	7.57-7.66		D	White CHALK.															Saturation Moisture Content
R72005	8.85-8.98		C													9.0	< 0.010		Chemical
R72005	13.30-13.54		C	White CHALK.															Saturation Moisture Content
R72005	17.74-17.95		C	White CHALK.															Saturation Moisture Content
R72005	23.50-23.60		C	White CHALK.															Saturation Moisture Content
R72005	30.20-30.40		C	White CHALK.															Saturation Moisture Content
R72005	36.63		C	White CHALK.															Saturation Moisture Content
R72005	40.60-40.84		C	White CHALK.															Saturation Moisture Content

Sample type: B (Bulk disturb.) BLK (Block) C (Core) D (Disturbed) LB (Large Bulk dist.) U (Undisturbed)


Checked and Approved by  J Sturges - Operations Manager 21/01/2021	Project Number: <p style="text-align: center;">GEO / 32215</p> Project Name: <p style="text-align: center;">A303 STONEHENGE JFR1451</p>	
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SUMMARY OF GEOTECHNICAL TESTING

Sample details					Classification Tests					Density Tests		Undrained Triaxial Compression			Chemical Tests			Other tests and comments	
Location	Depth (m)	Sample Ref	Type	Description	WC %	LL %	PL %	PI %	<425 µm %	Bulk Mg/m³	Dry Mg/m³	Condition	Cell Pressure kPa	Deviator Stress kPa	Shear Stress kPa	pH	2:1 W/S SO4 g/L		W/S Mg mg/L
R72006	1.35-1.47		D	White CHALK.	30.0		NP		100										
R72006	2.80-2.95		D	White CHALK.															Saturation Moisture Content
R72006	5.80-5.95		C	White CHALK.															Saturation Moisture Content
R72006	6.34-6.59		C	White CHALK.															Saturation Moisture Content
R72006	6.59-6.74		C													8.7	0.12		Chemical
R72006	8.58-8.98		amal	White CHALK.															Moisture Condition Value Chalk Crushing Value
R72006	11.60-11.81		C	White CHALK.															Saturation Moisture Content
R72006	12.45-12.65		C	White CHALK.															Saturation Moisture Content
R72006	17.35-17.50		C	White CHALK.															Saturation Moisture Content
R72006	21.60-21.84		C	White CHALK.															Saturation Moisture Content

Sample type: B (Bulk disturb.) BLK (Block) C (Core) D (Disturbed) LB (Large Bulk dist.) U (Undisturbed)

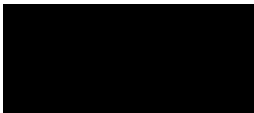

NP=Non Plastic

<p>Checked and Approved by</p> <div style="background-color: black; width: 100px; height: 40px; margin: 5px 0;"></div> <p>J Sturges - Operations Manager 21/01/2021</p>	<p>Project Number: GEO / 32302</p> <p>Project Name: A303 STONEHENGE JFR1451</p>	
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SUMMARY OF GEOTECHNICAL TESTING

Sample details					Classification Tests					Density Tests		Undrained Triaxial Compression			Chemical Tests			Other tests and comments	
Location	Depth (m)	Sample Ref	Type	Description	WC %	LL %	PL %	PI %	<425 µm %	Bulk Mg/m³	Dry Mg/m³	Condition	Cell Pressure kPa	Deviator Stress kPa	Shear Stress kPa	pH	2:1 W/S SO4 g/L		W/S Mg mg/L
STP70505	0.80		B	Light brown silty CLAY with rare chalk gravel.	17.4	30	22	8.0	58										
STP70505	1.00		B	White CHALK.															Saturation Moisture Content
STP70505	3.00		B	White CHALK.															Saturation Moisture Content
STP70602	0.90		B	White CHALK.															Saturation Moisture Content
STP70602	3.00		B	White CHALK.															Saturation Moisture Content
STP71601	0.30		B	Dark brown sandy gravelly clayey SILT with rare rootlets.	18.8	44	33	11	63										Chemical
STP71601	0.50		B	Light brown and white gravelly clayey SILT. Gravel is structureless chalk.												8.2	< 0.010		Particle Size Distribution Chemical
STP71601	1.00		B	White slightly gravelly structureless CHALK. Gravel is flint and chalk.															Moisture Condition Value Saturation Moisture Content
STP71601	1.00		D	White CHALK.															Saturation Moisture Content
STP71601	2.00		D	White CHALK.															Slake Durability

Sample type: B (Bulk disturb.) BLK (Block) C (Core) D (Disturbed) LB (Large Bulk dist.) U (Undisturbed)


Checked and Approved by  J Sturges - Operations Manager 21/01/2021	Project Number: <p style="text-align: center;">GEO / 32133</p> Project Name: <p style="text-align: center;">A303 STONEHENGE JFR1451</p>	
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SUMMARY OF GEOTECHNICAL TESTING

Sample details					Classification Tests					Density Tests		Undrained Triaxial Compression			Chemical Tests			Other tests and comments	
Location	Depth (m)	Sample Ref	Type	Description	WC %	LL %	PL %	PI %	<425 µm %	Bulk Mg/m³	Dry Mg/m³	Condition	Cell Pressure kPa	Deviator Stress kPa	Shear Stress kPa	pH	2:1 W/S SO4 g/L		W/S Mg mg/L
STP70501	0.50	5	B	Greyish brown slightly gravelly slightly sandy clayey SILT.	20.8	42	26	16	66										Particle Size Distribution
STP70501	2.00	10	B	White CHALK.															Saturation Moisture Content
STP70501	3.00	11	B	White CHALK.															Saturation Moisture Content
STP70503	0.50	5	B	Greyish brown slightly sandy gravelly clayey SILT. Gravel is flint and structured chalk.															Particle Size Distribution
STP70503	0.50	6	D	Loose sandy gravelly silty CLAY.	12.6	40	25	15	40										
STP70503	1.00	7	B	White CHALK.															Saturation Moisture Content
STP70503	2.00	9	B	White CHALK.															Saturation Moisture Content
STP70504	0.50	6	B	Light brown fine to medium gravel sized CHALK with rare flint gravel.	13.0		NP		41										
STP70504	1.00	7	B	White CHALK.															Saturation Moisture Content
STP70504	2.00	9	B	White CHALK.															Saturation Moisture Content

Sample type: B (Bulk disturb.) BLK (Block) C (Core) D (Disturbed) LB (Large Bulk dist.) U (Undisturbed)

NP=Non Plastic



Checked and Approved by <div style="background-color: black; width: 100px; height: 40px; margin: 5px;"></div> J Sturges - Operations Manager 20/01/2021	Project Number: <p style="text-align: center; font-weight: bold; font-size: 1.2em;">GEO / 32139</p> Project Name: <p style="text-align: center; font-weight: bold; font-size: 1.2em;">A303 STONEHENGE JFR1451</p>	
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SUMMARY OF GEOTECHNICAL TESTING

Sample details					Classification Tests					Density Tests		Undrained Triaxial Compression			Chemical Tests			Other tests and comments	
Location	Depth (m)	Sample Ref	Type	Description	WC %	LL %	PL %	PI %	<425 μm %	Bulk Mg/m³	Dry Mg/m³	Condition	Cell Pressure kPa	Deviator Stress kPa	Shear Stress kPa	pH	2:1 W/S SO4 g/L		W/S Mg mg/L
STP70509	0.50	5	B	Light brown and white GRAVEL in a structureless chalk matrix. Gravel is flint and chalk.	20.1	34	24	10	46										
STP70509	2.00	11	B	White CHALK.															Saturation Moisture Content

Sample type: B (Bulk disturb.) BLK (Block) C (Core) D (Disturbed) LB (Large Bulk dist.) U (Undisturbed)

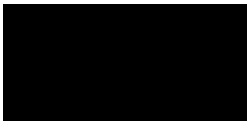

NP=Non Plastic

Checked and Approved by  J Sturges - Operations Manager 20/01/2021	Project Number: GEO / 32139 Project Name: A303 STONEHENGE JFR1451	
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SUMMARY OF GEOTECHNICAL TESTING

Sample details					Classification Tests					Density Tests		Undrained Triaxial Compression			Chemical Tests			Other tests and comments	
Location	Depth (m)	Sample Ref	Type	Description	WC %	LL %	PL %	PI %	<425 µm %	Bulk Mg/m³	Dry Mg/m³	Condition	Cell Pressure kPa	Deviator Stress kPa	Shear Stress kPa	pH	2:1 W/S SO4 g/L		W/S Mg mg/L
STP70601	0.50		D	Brown gravelly chalky clayey SILT. Gravel is chalk and flint.	21.9	43	31	12	30										

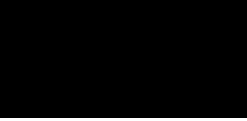

Sample type: B (Bulk disturb.) BLK (Block) C (Core) D (Disturbed) LB (Large Bulk dist.) U (Undisturbed)

Checked and Approved by  13/05/2021	Project Number: <p style="text-align: center;">GEO / 32141</p> Project Name: <p style="text-align: center;">A303 STONEHENGE JFR1451</p>	
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SUMMARY OF GEOTECHNICAL TESTING

Sample details					Classification Tests					Density Tests		Undrained Triaxial Compression			Chemical Tests			Other tests and comments	
Location	Depth (m)	Sample Ref	Type	Description	WC %	LL %	PL %	PI %	<425 µm %	Bulk Mg/m³	Dry Mg/m³	Condition	Cell Pressure kPa	Deviator Stress kPa	Shear Stress kPa	pH	2:1 W/S SO4 g/L		W/S Mg mg/L
STP70506	0.30		D	Brown clayey sandy gravelly SILT with rare rootlets.	22.0	45	32	13	70										
STP70506	0.50		D	Brown clayey sandy gravelly SILT with rare rootlets.	20.2	40	28	12	34										
STP70507	0.50		D	White gravel sized CHALK with rare structureless chalk.	19.9	34	25	9.0	41										
STP70508	0.30		D	Brown clayey sandy SILT with rare gravel and rootlets.	21.0	46	33	13	96										
STP70507	0.30		B	Brown silty CLAY with rare gravel.	20.4	48	33	15	63										

Sample type: B (Bulk disturb.) BLK (Block) C (Core) D (Disturbed) LB (Large Bulk dist.) U (Undisturbed)

Checked and Approved by  11/01/2021	Project Number: GEO / 32132 Project Name: A303 STONEHENGE JFR1451	
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SUMMARY OF GEOTECHNICAL TESTING

Sample details					Classification Tests					Density Tests		Undrained Triaxial Compression			Chemical Tests			Other tests and comments	
Location	Depth (m)	Sample Ref	Type	Description	WC %	LL %	PL %	PI %	<425 µm %	Bulk Mg/m³	Dry Mg/m³	Condition	Cell Pressure kPa	Deviator Stress kPa	Shear Stress kPa	pH	2:1 W/S SO4 g/L		W/S Mg mg/L
R70113	1.20-1.30		D													8.8	< 0.010		
R70113	7.60-7.83		C	White CHALK.															Chalk Crushing Value
R70114	7.00-7.25		C	White CHALK.															Chalk Crushing Value
R70115	1.60-1.70		D	White fine to coarse CHALK gravel.	22.8		NP		59										
R70115	7.30-7.70		B	White CHALK.															Chalk Crushing Value

Sample type: B (Bulk disturb.) BLK (Block) C (Core) D (Disturbed) LB (Large Bulk dist.) U (Undisturbed)

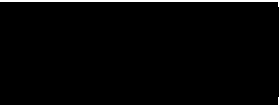

NP=Non Plastic

Checked and Approved by S Burke - Senior Technician 09/12/2020	Project Number: <p style="text-align: center;">GEO / 32203</p> Project Name: <p style="text-align: center;">A303 STONEHENGE JFR1451</p>	
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SUMMARY OF GEOTECHNICAL TESTING

Sample details					Classification Tests					Density Tests		Undrained Triaxial Compression			Chemical Tests			Other tests and comments	
Location	Depth (m)	Sample Ref	Type	Description	WC %	LL %	PL %	PI %	<425 µm %	Bulk Mg/m³	Dry Mg/m³	Condition	Cell Pressure kPa	Deviator Stress kPa	Shear Stress kPa	pH	2:1 W/S SO4 g/L		W/S Mg mg/L
R70108	2.00-2.20		D	White structurless CHALK.	29.6	35	25	10	100										Particle Size Distribution
R70108	9.38-9.52	CD	C	White CHALK core.															Chalk Crushing Value

Sample type: B (Bulk disturb.) BLK (Block) C (Core) D (Disturbed) LB (Large Bulk dist.) U (Undisturbed)

Checked and Approved by  S Burke - Senior Technician 30/11/2020	Project Number: <p style="text-align: center;">GEO / 32136</p> Project Name: <p style="text-align: center;">A303 STONEHENGE JFR1451</p>	
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SUMMARY OF LIQUID AND PLASTIC LIMIT TESTS

Location	Depth m	Sample Ref	Sample Type	Description	Water Content BS EN ISO 17892-1 : 2014 %	Liquid Limit %	Plastic Limit %	Plasticity Index %	Percentage Passing 425µm %	Atterberg Classification	Test Type	Sample Condition
R71915	1.30-1.40		D	White Structureless CHALK.	29.4	34	26	8	28	ML	2	3

Test Type:
 1 - 1 point 80g / 30° fall cone method.
 2 - 4 point 80g / 30° fall cone method.
 3 - Non plastic determination.

Sample condition:
 1 - As Received
 2 - Air Dried
 3 - Washed & Air Dried

Checked and Approved by:

 11/11/2020

Project Number: **GEO / 31890**
 Project Name: **A303 STONEHENGE
 JFR1451**



SUMMARY OF LIQUID AND PLASTIC LIMIT TESTS

Location	Depth m	Sample Ref	Sample Type	Description	Water Content BS EN ISO 17892-1 : 2014 %	Liquid Limit %	Plastic Limit %	Plasticity Index %	Percentage Passing 425µm %	Atterberg Classification	Test Type	Sample Condition
STP70103	1.00	8	D	White fine to coarse gravel sized CHALK.	19.1	~	NP		11	~	3	3
STP70104	0.50	6	D	Brown gravelly sandy clayey SILT. Sand is fine.	17.3	46	32	14	51	MI	2	3
STP70402	0.50	6	D	Brown gravelly sandy clayey SILT. Sand is fine.	13.8	41	28	13	50	MI	2	3
STP70502	0.30	4	D	Light brown structureless CHALK.	22.2	38	25	13	45	MI	2	3

Test Type: 1 - 1 point 80g / 30° fall cone method. 2 - 4 point 80g / 30° fall cone method. 3 - Non plastic determination.	Sample condition: 1 - As Received 2 - Air Dried 3 - Washed & Air Dried
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Checked and Approved by:




J Sturges - Operations Manager
20/04/2021

Project Number: **GEO / 32903**




Project Name: **A303 STONEHENGE
JFR1451**



INDIRECT TENSILE STRENGTH BY THE BRAZIL TEST

Sample details				Indirect Tensile Strength test (LF0879C (1000kN) compression frame used)											
Borehole Ref.	Sample Ref.	Depth (m)	Description	D. Tested	Sample Diameter (mm)	Sample Width (mm)	Degree of Saturation (%)	Water Content (%)	Specific Gravity* (Mg/m ³)	Stress Rate (N/s)	Test Duration (min:sec)	Failure Sketch	Failure Load (kN)	Tensile Strength (MPa)	Remarks
R72006		18.30-18.51	White CHALK	06/01/21	99.70	52.40	92.5	23.8	2.90 (a)	200	00:08		1.60	0.195	

* Specific Gravity: (a) assumed or (m) measured/supplied by client.

Checked and Approved by  C Clergeaud (Snr. Geologist) Date: 08/01/2021	Project Number: Project Name:	GEO / 32302 A303 STONEHENGE JFR1451	 
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ISRM Suggested Methods – Rock Characterization Testing and Monitoring 1974 - 2006
INDIRECT TENSILE STRENGTH BY THE BRAZIL TEST

Borehole Ref.: R72006	Description: White CHALK
Sample Ref.:	
Depth (m): 18.30-18.51	

Sample Details

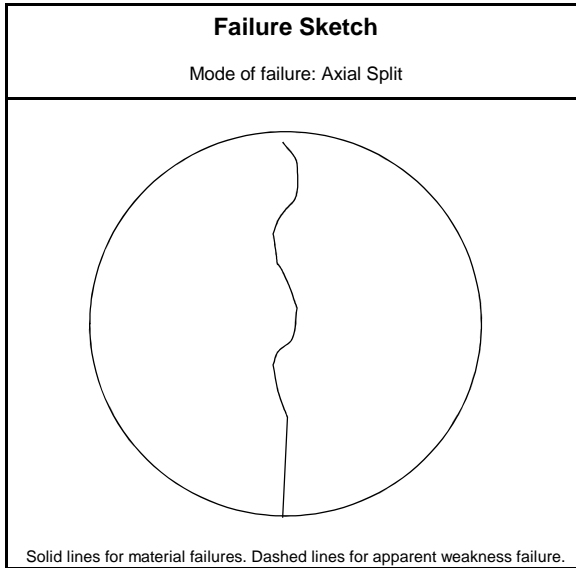
Diameter	99.70 mm
Thickness	52.40 mm
Thickness / Diameter Ratio	0.53
Bulk Density	2.06 Mg/m ³
Dry Density	1.66 Mg/m ³
Water Content	23.8 %
Specific Gravity (Assumed)	2.90 Mg/m ³
Degree of Saturation	92.5 %

Test Results

Stress Rate	0.20 kN/s
Test Duration	00:08 min:sec
Angle of loading with respect to anisotropy	90 °

Failure Sketch

Mode of failure: Axial Split



Solid lines for material failures. Dashed lines for apparent weakness failure.
 LF0879C (1000kN) compression frame and steel loading jaws used

Date tested: 06/01/2021

Failure Load

1.60 kN




Tensile Strength

0.195 MPa


Sample type: C

Remarks:




Note: The dimensional requirements of Flatness (<0.25 mm), Perpendicularity (to within 0.25°) and irregularities across thickness (< 0.025 mm) are all met.

Checked and Approved by  C Clergeaud (Snr. Geologist) Date: 08/01/2021	Project Number: <p style="text-align: center;">GEO / 32302</p>	  1982
	Project Name: <p style="text-align: center;">A303 STONEHENGE JFR1451</p>	

INDIRECT TENSILE STRENGTH BY THE BRAZIL TEST

Sample details				Indirect Tensile Strength test (LF0879C (1000kN) compression frame used)											
Borehole Ref.	Sample Ref.	Depth (m)	Description	D. Tested	Sample Diameter (mm)	Sample Width (mm)	Degree of Saturation (%)	Water Content (%)	Specific Gravity* (Mg/m ³)	Stress Rate (N/s)	Test Duration (min:sec)	Failure Sketch	Failure Load (kN)	Tensile Strength (MPa)	Remarks
R72005		14.30-14.50	White CHALK	27/11/20	102.40	52.60	89.7	28.6	2.90 (a)	200	00:11		2.30	0.272	

* Specific Gravity: (a) assumed or (m) measured/supplied by client.

Checked and Approved by  C Clergeaud (Snr. Geologist) Date: 04/12/2020	Project Number: GEO / 32215 Project Name: A303 STONEHENGE JFR1451	 
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ISRM Suggested Methods – Rock Characterization Testing and Monitoring 1974 - 2006
INDIRECT TENSILE STRENGTH BY THE BRAZIL TEST

Borehole Ref.: R72005	Description: White CHALK
Sample Ref.:	
Depth (m): 14.30-14.50	

Sample Details

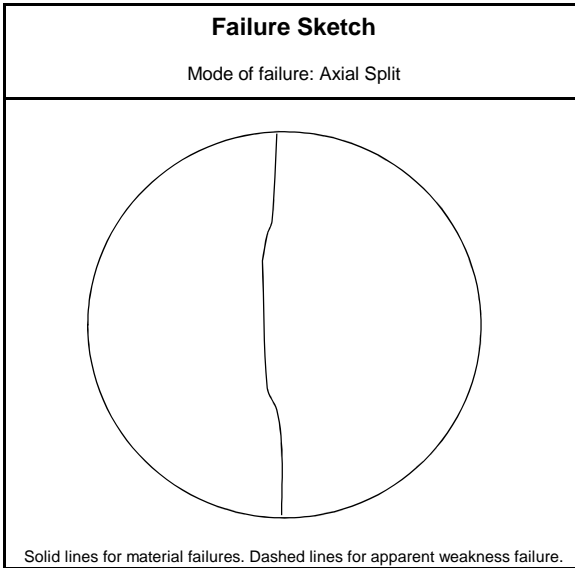
Diameter	102.40 mm
Thickness	52.60 mm
Thickness / Diameter Ratio	0.51
Bulk Density	1.94 Mg/m ³
Dry Density	1.51 Mg/m ³
Water Content	28.6 %
Specific Gravity (Assumed)	2.90 Mg/m ³
Degree of Saturation	89.7 %

Test Results

Stress Rate	0.20 kN/s
Test Duration	00:11 min:sec
Angle of loading with respect to anisotropy	90 °

Failure Sketch

Mode of failure: Axial Split



Solid lines for material failures. Dashed lines for apparent weakness failure.
 LF0879C (1000kN) compression frame and steel loading jaws used

Date tested: 27/11/2020

Failure Load

2.30 kN




Tensile Strength

0.272 MPa

Sample type: C

Remarks:

Note: The dimensional requirements of Flatness (<0.25 mm), Perpendicularity (to within 0.25°) and irregularities across thickness (< 0.025 mm) are all met.

Checked and Approved by  C Clergeaud (Snr. Geologist) Date: 04/12/2020	Project Number: <p style="text-align: center;">GEO / 32215</p>	 
	Project Name: <p style="text-align: center;">A303 STONEHENGE JFR1451</p>	

ISRM Suggested Methods – Rock Characterization Testing and Monitoring 1974 - 2006
INDIRECT TENSILE STRENGTH BY THE BRAZIL TEST

Borehole Ref.: R71910	Description: White CHALK
Sample Ref.:	
Depth (m): 43.40-43.73	

Sample Details

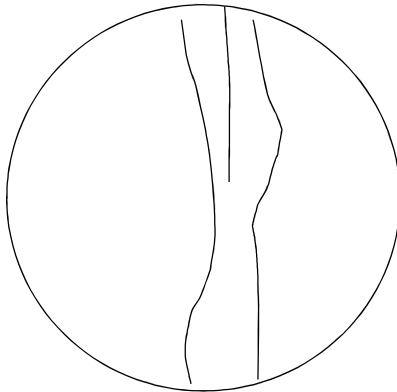
Diameter	99.90 mm
Thickness	52.00 mm
Thickness / Diameter Ratio	0.52
Bulk Density	2.03 Mg/m ³
Dry Density	1.63 Mg/m ³
Water Content	24.3 %
Specific Gravity (Assumed)	2.90 Mg/m ³
Degree of Saturation	90.8 %

Test Results

Stress Rate	0.20 kN/s
Test Duration	00:13 min:sec
Angle of loading with respect to anisotropy	90 °

Failure Sketch

Mode of failure: Multiple fracture



Solid lines for material failures. Dashed lines for apparent weakness failure.
 LF0879C (1000kN) compression frame and steel loading jaws used

Date tested: 21/10/2020

Failure Load

2.60 kN




Tensile Strength

0.318 MPa

Sample type: C

Remarks:

Note: The dimensional requirements of Flatness (<0.25 mm), Perpendicularity (to within 0.25°) and irregularities across thickness (< 0.025 mm) are all met.

Checked and Approved by  C Clergeaud (Snr. Geologist) Date: 22/10/2020	Project Number: <p style="text-align: center;">GEO / 31761</p>	 
	Project Name: <p style="text-align: center;">A303 STONEHENGE JFR1451</p>	

ISRM Suggested Methods – Rock Characterization Testing and Monitoring 1974 - 2006
INDIRECT TENSILE STRENGTH BY THE BRAZIL TEST

Borehole Ref.: R72001	Description: White CHALK
Sample Ref.:	
Depth (m): 20.74-20.92	

Sample Details

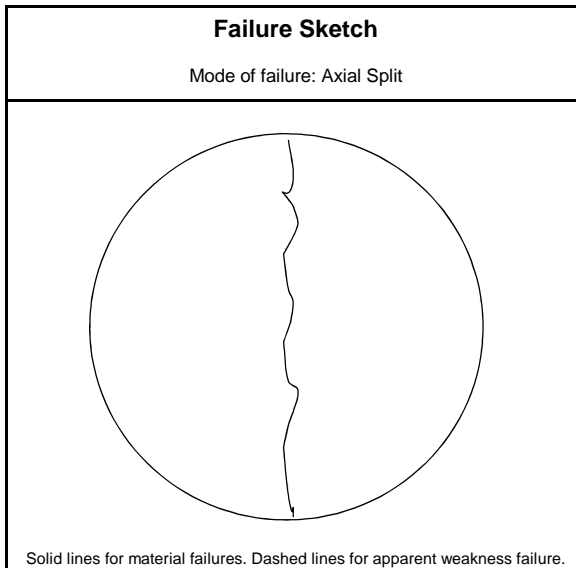
Diameter	101.60 mm
Thickness	52.60 mm
Thickness / Diameter Ratio	0.52
Bulk Density	1.96 Mg/m ³
Dry Density	1.53 Mg/m ³
Water Content	27.9 %
Specific Gravity (Assumed)	2.90 Mg/m ³
Degree of Saturation	90.5 %

Test Results

Stress Rate	0.20 kN/s
Test Duration	00:10 min:sec
Angle of loading with respect to anisotropy	90 °

Failure Sketch

Mode of failure: Axial Split



Solid lines for material failures. Dashed lines for apparent weakness failure.
 LF0879C (1000kN) compression frame and steel loading jaws used

Date tested: 19/10/2020

Failure Load

1.90 kN



Tensile Strength

0.226 MPa



Sample type: C

Remarks:




Note: The dimensional requirements of Flatness (<0.25 mm), Perpendicularity (to within 0.25°) and irregularities across thickness (< 0.025 mm) are all met.

Checked and Approved by  C Clergeaud (Snr. Geologist) Date: 20/10/2020	Project Number: GEO / 31879	
	Project Name: A303 STONEHENGE JFR1451	

INDIRECT TENSILE STRENGTH BY THE BRAZIL TEST

Sample details				Indirect Tensile Strength test (LF0879C (1000kN) compression frame used)											
Borehole Ref.	Sample Ref.	Depth (m)	Description	D. Tested	Sample Diameter (mm)	Sample Width (mm)	Degree of Saturation (%)	Water Content (%)	Specific Gravity* (Mg/m ³)	Stress Rate (N/s)	Test Duration (min:sec)	Failure Sketch	Failure Load (kN)	Tensile Strength (MPa)	Remarks
R71908	9	29.60-29.86	White CHALK	21/09/20	101.40	54.00	94.9	26.8	2.90 (a)	200	00:14		2.70	0.314	
R71908	18	47.95-48.20	White CHALK	21/09/20	100.20	51.00	91.8	28.5	2.90 (a)	200	00:11		2.20	0.274	

* Specific Gravity: (a) assumed or (m) measured/supplied by client.

Checked and Approved by  C Clergeaud (Snr. Geologist) Date: 24/09/2020	Project Number: GEO / 31728 Project Name: A303 STONEHENGE JFR1451	 
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ISRM Suggested Methods – Rock Characterization Testing and Monitoring 1974 - 2006
INDIRECT TENSILE STRENGTH BY THE BRAZIL TEST

Borehole Ref.:	R71908	Description: White CHALK
Sample Ref.:	9	
Depth (m):	29.60-29.86	

Sample Details

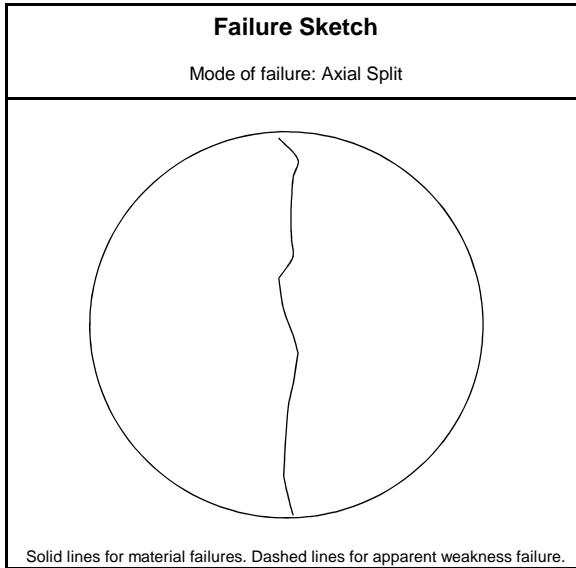
Diameter	101.40 mm
Thickness	54.00 mm
Thickness / Diameter Ratio	0.53
Bulk Density	2.02 Mg/m ³
Dry Density	1.59 Mg/m ³
Water Content	26.8 %
Specific Gravity (Assumed)	2.90 Mg/m ³
Degree of Saturation	94.9 %

Test Results

Stress Rate	0.20 kN/s
Test Duration	00:14 min:sec
Angle of loading with respect to anisotropy	90 °

Failure Sketch

Mode of failure: Axial Split



Solid lines for material failures. Dashed lines for apparent weakness failure.
 LF0879C (1000kN) compression frame and steel loading jaws used

Date tested: 21/09/2020

Failure Load

2.70 kN




Tensile Strength

0.314 MPa

Sample type: C

Remarks:

Note: The dimensional requirements of Flatness (<0.25 mm), Perpendicularity (to within 0.25°) and irregularities across thickness (< 0.025 mm) are all met.

Checked and Approved by  C Clergeaud (Snr. Geologist) Date: 24/09/2020	Project Number: <p style="text-align: center;">GEO / 31728</p>	  1982
	Project Name: <p style="text-align: center;">A303 STONEHENGE JFR1451</p>	

ISRM Suggested Methods – Rock Characterization Testing and Monitoring 1974 - 2006
INDIRECT TENSILE STRENGTH BY THE BRAZIL TEST

Borehole Ref.:	R71908	Description: White CHALK
Sample Ref.:	18	
Depth (m):	47.95-48.20	

Sample Details

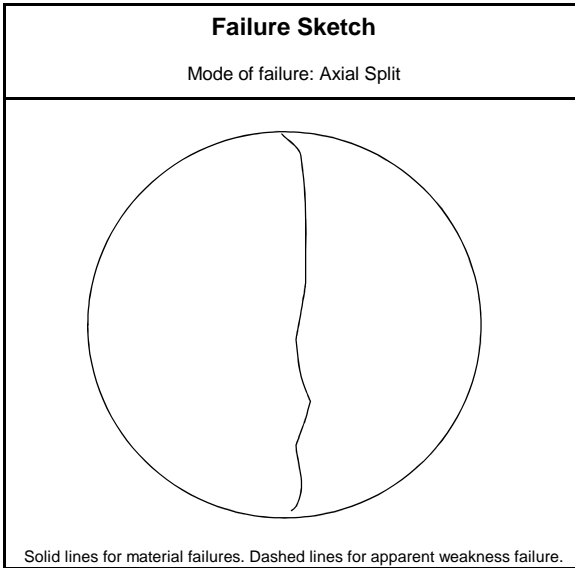
Diameter	100.20 mm
Thickness	51.00 mm
Thickness / Diameter Ratio	0.51
Bulk Density	1.96 Mg/m ³
Dry Density	1.53 Mg/m ³
Water Content	28.5 %
Specific Gravity (Assumed)	2.90 Mg/m ³
Degree of Saturation	91.8 %

Test Results

Stress Rate	0.20 kN/s
Test Duration	00:11 min:sec
Angle of loading with respect to anisotropy	90 °

Failure Sketch

Mode of failure: Axial Split



Solid lines for material failures. Dashed lines for apparent weakness failure.
 LF0879C (1000kN) compression frame and steel loading jaws used

Date tested: 21/09/2020

Failure Load

2.20 kN

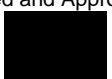

Tensile Strength

0.274 MPa

Sample type: C

Remarks:

Note: The dimensional requirements of Flatness (<0.25 mm), Perpendicularity (to within 0.25°) and irregularities across thickness (< 0.025 mm) are all met.

Checked and Approved by  C Clergeaud (Snr. Geologist) Date: 24/09/2020	Project Number: <p style="text-align: center;">GEO / 31728</p>	
	Project Name: <p style="text-align: center;">A303 STONEHENGE JFR1451</p>	

ISRM Suggested Methods – Rock Characterization Testing and Monitoring 1974 - 2006
INDIRECT TENSILE STRENGTH BY THE BRAZIL TEST

Borehole Ref.: R71915	Description: White CHALK
Sample Ref.:	
Depth (m): 18.20-18.46	

Sample Details

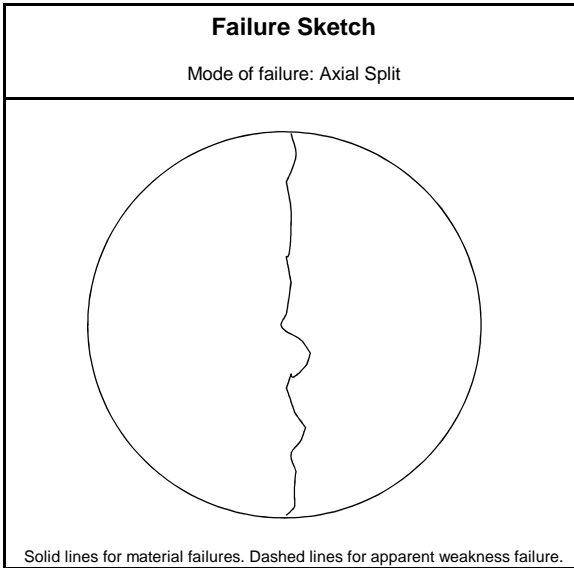
Diameter	94.60 mm
Thickness	50.30 mm
Thickness / Diameter Ratio	0.53
Bulk Density	1.85 Mg/m ³
Dry Density	1.43 Mg/m ³
Water Content	29.5 %
Specific Gravity (Assumed)	2.90 Mg/m ³
Degree of Saturation	82.6 %

Test Results

Stress Rate	0.20 kN/s
Test Duration	00:07 min:sec
Angle of loading with respect to anisotropy	90 °

Failure Sketch

Mode of failure: Axial Split



Solid lines for material failures. Dashed lines for apparent weakness failure.
 LF0879C (1000kN) compression frame and steel loading jaws used

Date tested: 19/10/2020

Failure Load

1.30 kN




Tensile Strength

0.174 MPa



Sample type: C

Remarks:

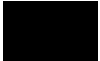


Note: The dimensional requirements of Flatness (<0.25 mm), Perpendicularity (to within 0.25°) and irregularities across thickness (< 0.025 mm) are all met.

Checked and Approved by  C Clergeaud (Snr. Geologist) Date: 22/10/2020	Project Number: <p style="text-align: center;">GEO / 31890</p> Project Name: <p style="text-align: center;">A303 STONEHENGE JFR1451</p>	 
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INDIRECT TENSILE STRENGTH BY THE BRAZIL TEST

Sample details				Indirect Tensile Strength test (LF0879C (1000kN) compression frame used)											
Borehole Ref.	Sample Ref.	Depth (m)	Description	D. Tested	Sample Diameter (mm)	Sample Width (mm)	Degree of Saturation (%)	Water Content (%)	Specific Gravity* (Mg/m ³)	Stress Rate (N/s)	Test Duration (min:sec)	Failure Sketch	Failure Load (kN)	Tensile Strength (MPa)	Remarks
R72004		19.59-20.00	White CHALK	13/10/20	99.40	50.20	82.6	23.7	2.90 (a)	200	00:16		3.10	0.395	
R72004		31.84-32.09	White CHALK	13/10/20	96.60	52.20	88.0	26.0	2.90 (a)	200	00:11		2.10	0.265	

* Specific Gravity: (a) assumed or (m) measured/supplied by client.

Checked and Approved by  C Clergeaud (Snr. Geologist) Date: 14/10/2020	Project Number: GEO / 31880 Project Name: A303 STONEHENGE JFR1451	 
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ISRM Suggested Methods – Rock Characterization Testing and Monitoring 1974 - 2006
INDIRECT TENSILE STRENGTH BY THE BRAZIL TEST

Borehole Ref.: R72004	Description: White CHALK
Sample Ref.:	
Depth (m): 19.59-20.00	

Sample Details

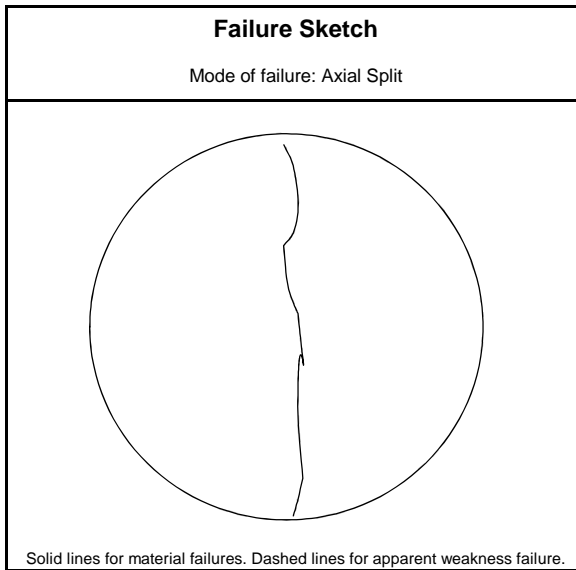
Diameter	99.40 mm
Thickness	50.20 mm
Thickness / Diameter Ratio	0.51
Bulk Density	1.96 Mg/m ³
Dry Density	1.58 Mg/m ³
Water Content	23.7 %
Specific Gravity (Assumed)	2.90 Mg/m ³
Degree of Saturation	82.6 %

Test Results

Stress Rate	0.20 kN/s
Test Duration	00:16 min:sec
Angle of loading with respect to anisotropy	90 °

Failure Sketch

Mode of failure: Axial Split



Solid lines for material failures. Dashed lines for apparent weakness failure.
 LF0879C (1000kN) compression frame and steel loading jaws used

Date tested: 13/10/2020

Failure Load

3.10 kN




Tensile Strength

0.395 MPa

Sample type: C

Remarks:

Note: The dimensional requirements of Flatness (<0.25 mm), Perpendicularity (to within 0.25°) and irregularities across thickness (< 0.025 mm) are all met.

Checked and Approved by  C Clergeaud (Snr. Geologist) Date: 14/10/2020	Project Number: <p style="text-align: center;">GEO / 31880</p>	 
	Project Name: <p style="text-align: center;">A303 STONEHENGE JFR1451</p>	

ISRM Suggested Methods – Rock Characterization Testing and Monitoring 1974 - 2006
INDIRECT TENSILE STRENGTH BY THE BRAZIL TEST

Borehole Ref.: R72004	Description: White CHALK
Sample Ref.:	
Depth (m): 31.84-32.09	

Sample Details

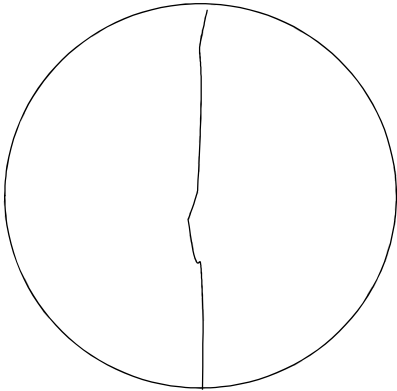
Diameter	96.60 mm
Thickness	52.20 mm
Thickness / Diameter Ratio	0.54
Bulk Density	1.97 Mg/m ³
Dry Density	1.56 Mg/m ³
Water Content	26.0 %
Specific Gravity (Assumed)	2.90 Mg/m ³
Degree of Saturation	88.0 %

Test Results

Stress Rate	0.20 kN/s
Test Duration	00:11 min:sec
Angle of loading with respect to anisotropy	90 °

Failure Sketch

Mode of failure: Axial Split



Date tested: 13/10/2020

Solid lines for material failures. Dashed lines for apparent weakness failure.
 LF0879C (1000kN) compression frame and steel loading jaws used




Failure Load
2.10 kN

Tensile Strength
0.265 MPa



Sample type: C

Remarks:




Note: The dimensional requirements of Flatness (<0.25 mm), Perpendicularity (to within 0.25°) and irregularities across thickness (< 0.025 mm) are all met.

Checked and Approved by  C Clergeaud (Snr. Geologist) Date: 14/10/2020	Project Number: <p style="text-align: center;">GEO / 31880</p> Project Name: <p style="text-align: center;">A303 STONEHENGE JFR1451</p>	 
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INDIRECT TENSILE STRENGTH BY THE BRAZIL TEST

Sample details				Indirect Tensile Strength test (LF0879C (1000kN) compression frame used)											
Borehole Ref.	Sample Ref.	Depth (m)	Description	D. Tested	Sample Diameter (mm)	Sample Width (mm)	Degree of Saturation (%)	Water Content (%)	Specific Gravity* (Mg/m ³)	Stress Rate (N/s)	Test Duration (min:sec)	Failure Sketch	Failure Load (kN)	Tensile Strength (MPa)	Remarks
R71916		22.47-22.67	White CHALK	11/01/21	98.70	52.10	96.6	25.7	2.90 (a)	200	00:07		1.40	0.173	
R71919	16	35.10-35.36	White CHALK	11/01/21	101.70	51.90	88.8	27.4	2.90 (a)	200	00:06		1.20	0.145	

* Specific Gravity: (a) assumed or (m) measured/supplied by client.

Checked and Approved by  C Clergeaud (Snr. Geologist) Date: 18/01/2021	Project Number: GEO / 32382 Project Name: A303 STONEHENGE JFR1451	 
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ISRM Suggested Methods – Rock Characterization Testing and Monitoring 1974 - 2006
INDIRECT TENSILE STRENGTH BY THE BRAZIL TEST

Borehole Ref.: R71916	Description: White CHALK
Sample Ref.:	
Depth (m): 22.47-22.67	

Sample Details

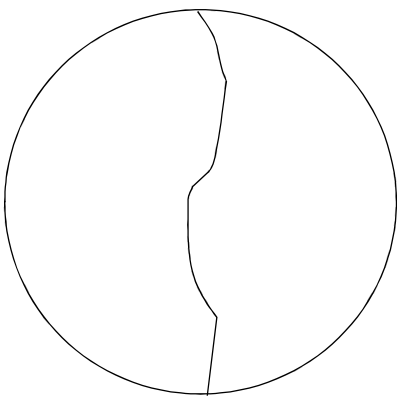
Diameter	98.70 mm
Thickness	52.10 mm
Thickness / Diameter Ratio	0.53
Bulk Density	2.06 Mg/m ³
Dry Density	1.64 Mg/m ³
Water Content	25.7 %
Specific Gravity (Assumed)	2.90 Mg/m ³
Degree of Saturation	96.6 %

Test Results

Stress Rate	0.20 kN/s
Test Duration	00:07 min:sec
Angle of loading with respect to anisotropy	90 °

Failure Sketch

Mode of failure: Axial Split



Date tested: 11/01/2021

Solid lines for material failures. Dashed lines for apparent weakness failure.
 LF0879C (1000kN) compression frame and steel loading jaws used




Failure Load
1.40 kN

Tensile Strength
0.173 MPa

Sample type: C

Remarks:

Note: The dimensional requirements of Flatness (<0.25 mm), Perpendicularity (to within 0.25°) and irregularities across thickness (< 0.025 mm) are not met.

Checked and Approved by  C Clergeaud (Snr. Geologist) Date: 18/01/2021	Project Number: <p style="text-align: center;">GEO / 32382</p> Project Name: <p style="text-align: center;">A303 STONEHENGE JFR1451</p>	 
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ISRM Suggested Methods – Rock Characterization Testing and Monitoring 1974 - 2006
INDIRECT TENSILE STRENGTH BY THE BRAZIL TEST

Borehole Ref.:	R71919	Description: White CHALK
Sample Ref.:	16	
Depth (m):	35.10-35.36	

Sample Details

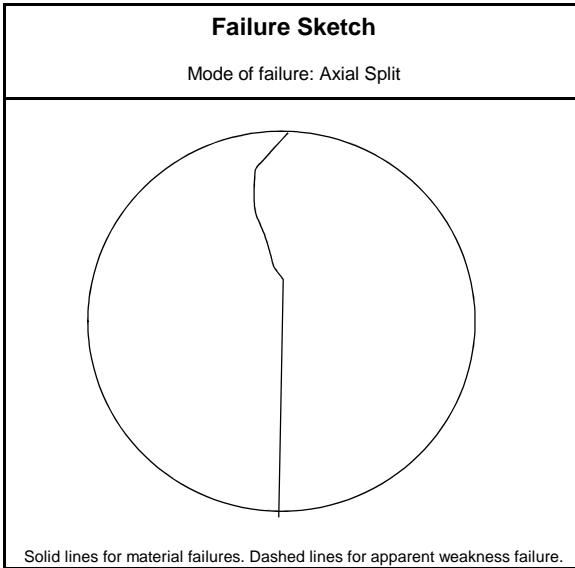
Diameter	101.70 mm
Thickness	51.90 mm
Thickness / Diameter Ratio	0.51
Bulk Density	1.95 Mg/m ³
Dry Density	1.53 Mg/m ³
Water Content	27.4 %
Specific Gravity (Assumed)	2.90 Mg/m ³
Degree of Saturation	88.8 %

Test Results

Stress Rate	0.20 kN/s
Test Duration	00:06 min:sec
Angle of loading with respect to anisotropy	90 °

Failure Sketch

Mode of failure: Axial Split



Date tested: 11/01/2021

Failure Load

1.20 kN




Tensile Strength

0.145 MPa


Sample type: C

Remarks:




Note: The dimensional requirements of Flatness (<0.25 mm), Perpendicularity (to within 0.25°) and irregularities across thickness (< 0.025 mm) are not met.

Checked and Approved by  C Clergeaud (Snr. Geologist) Date: 18/01/2021	Project Number:	GEO / 32382	 
	Project Name:	A303 STONEHENGE JFR1451	

INDIRECT TENSILE STRENGTH BY THE BRAZIL TEST

Sample details				Indirect Tensile Strength test (LF0879C (1000kN) compression frame used)											
Borehole Ref.	Sample Ref.	Depth (m)	Description	D. Tested	Sample Diameter (mm)	Sample Width (mm)	Degree of Saturation (%)	Water Content (%)	Specific Gravity* (Mg/m ³)	Stress Rate (N/s)	Test Duration (min:sec)	Failure Sketch	Failure Load (kN)	Tensile Strength (MPa)	Remarks
BH72503	5	20.70-20.93	White CHALK	08/03/21	99.90	50.30	80.4	20.7	2.90 (a)	200	00:18		3.50	0.443	

* Specific Gravity: (a) assumed or (m) measured/supplied by client.

Checked and Approved by  C Clergeaud (Snr. Geologist) Date: 09/03/2021	Project Number: GEO / 32695 Project Name: A303 STONEHENGE JFR1451	 
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ISRM Suggested Methods – Rock Characterization Testing and Monitoring 1974 - 2006
INDIRECT TENSILE STRENGTH BY THE BRAZIL TEST

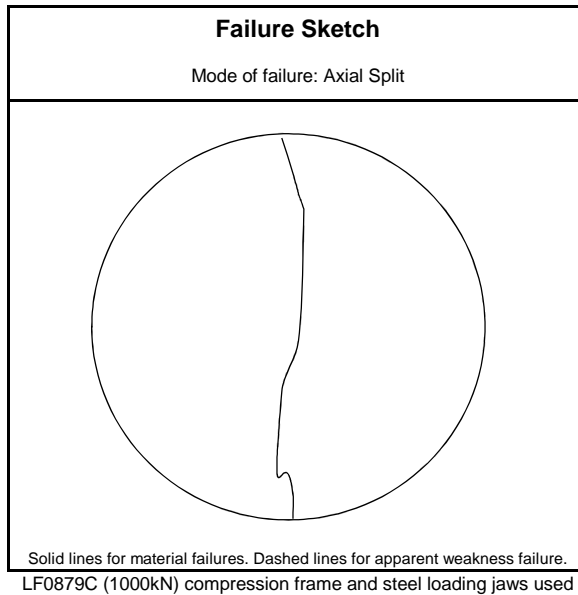
Borehole Ref.:	BH72503	Description: White CHALK
Sample Ref.:	5	
Depth (m):	20.70-20.93	

Sample Details

Diameter	99.90 mm
Thickness	50.30 mm
Thickness / Diameter Ratio	0.50
Bulk Density	2.00 Mg/m ³
Dry Density	1.66 Mg/m ³
Water Content	20.7 %
Specific Gravity (Assumed)	2.90 Mg/m ³
Degree of Saturation	80.4 %

Test Results

Stress Rate	0.20 kN/s
Test Duration	00:18 min:sec
Angle of loading with respect to anisotropy	90 °






Failure Load
3.50 kN

Tensile Strength
0.443 MPa

Sample type: C

Remarks:

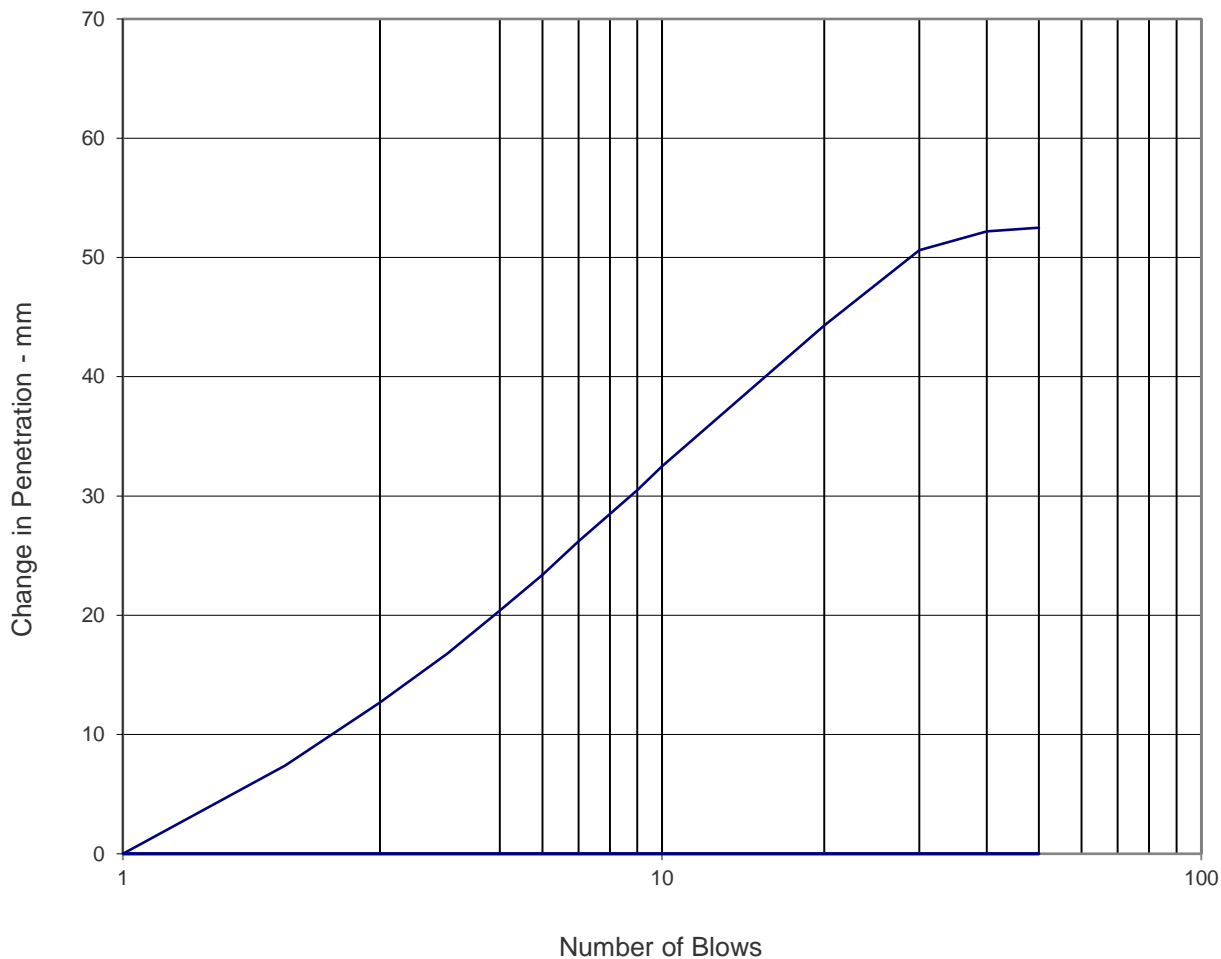
Note: The dimensional requirements of Flatness (<0.25 mm), Perpendicularity (to within 0.25°) and irregularities across thickness (< 0.025 mm) are all met.

Checked and Approved by  C Clergeaud (Snr. Geologist) Date: 09/03/2021	Project Number: <p style="text-align: center;">GEO / 32695</p> Project Name: <p style="text-align: center;">A303 STONEHENGE JFR1451</p>	 
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CHALK CRUSHING VALUE

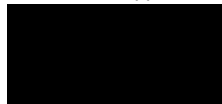
Location R70107
 Sample Ref 2
 Depth (m) 4.43
 Sample Type C

Description:
 White CHALK.



Material retained on 10mm test sieve	%				
Determination No		1			
Chalk crushing value		4.4			
Moisture content	%	26.0			
Mean chalk crushing value		4.4			

Checked and Approved by:



J Sturges - Operations Manager
 17/12/2020

Project Number:

GEO/32135

Project Name:

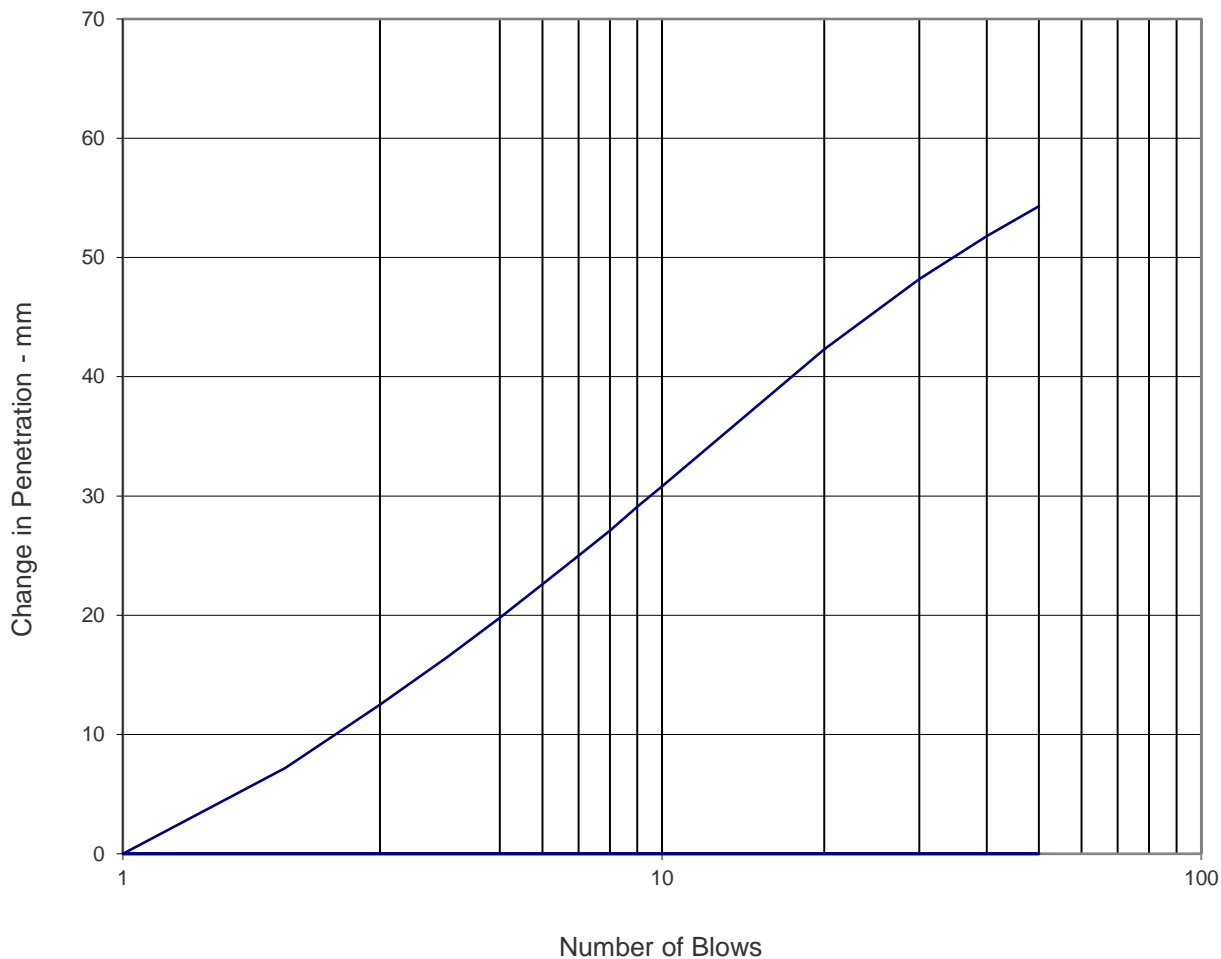
**A303 STONEHENGE
 JFR1451**



CHALK CRUSHING VALUE

Location R70109
 Sample Ref 9
 Depth (m) 9.55
 Sample Type D

Description:
 White CHALK.



Material retained on 10mm test sieve	%	77.9			
Determination No		1			
Chalk crushing value		3.9			
Moisture content	%	22.6			
Mean chalk crushing value		3.9			

Checked and Approved by:



J Sturges - Operations Manager
 17/12/2020

Project Number:

GEO/32135

Project Name:

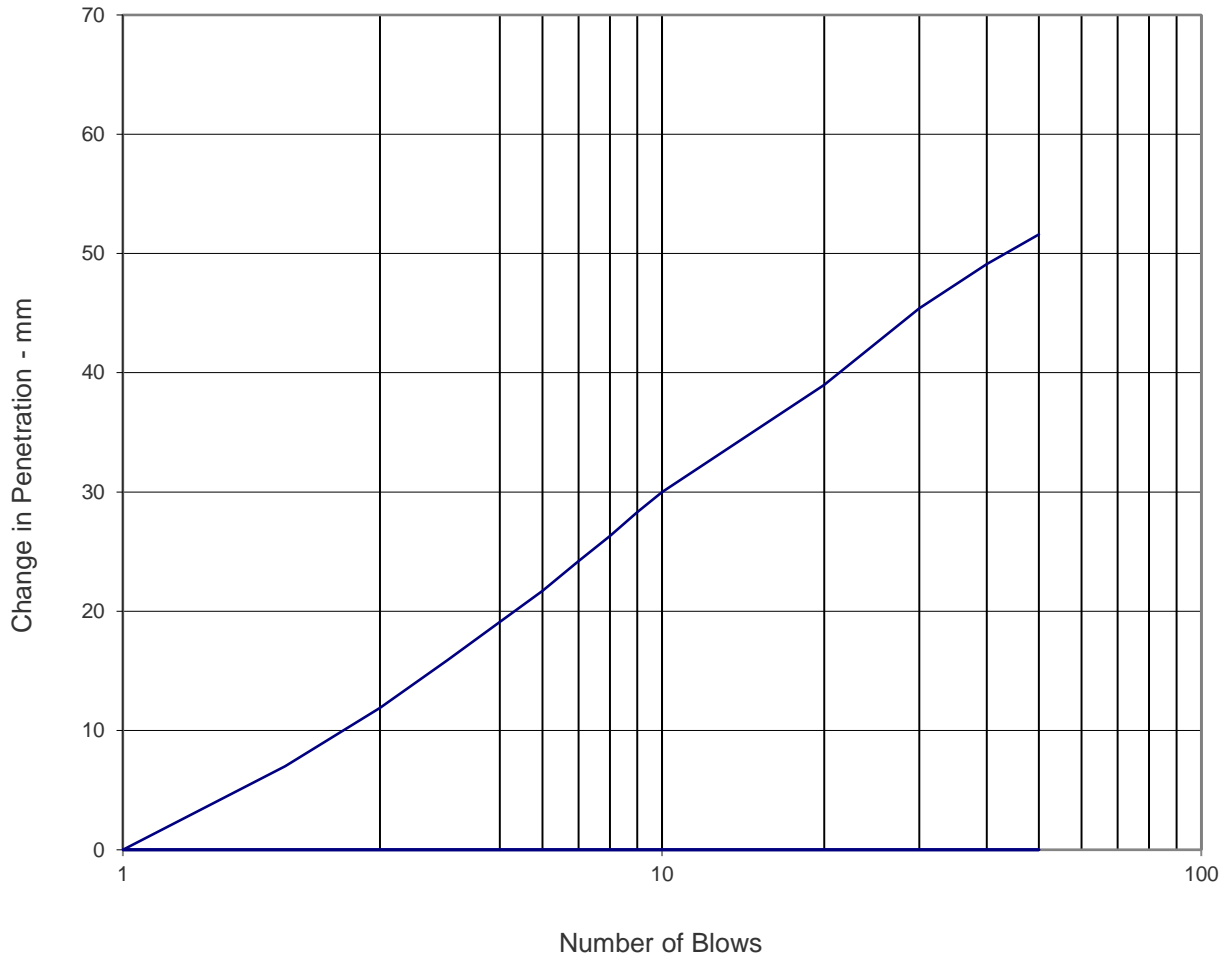
**A303 STONEHENGE
 JFR1451**



CHALK CRUSHING VALUE

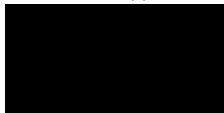
Location R70110
 Sample Ref 9
 Depth (m) 9.60
 Sample Type C

Description:
 White CHALK.



Material retained on 10mm test sieve	%				
Determination No		1			
Chalk crushing value		3.9			
Moisture content	%	21.1			
Mean chalk crushing value		3.9			

Checked and Approved by:



J Sturges - Operations Manager
 17/12/2020

Project Number:

GEO/32135

Project Name:

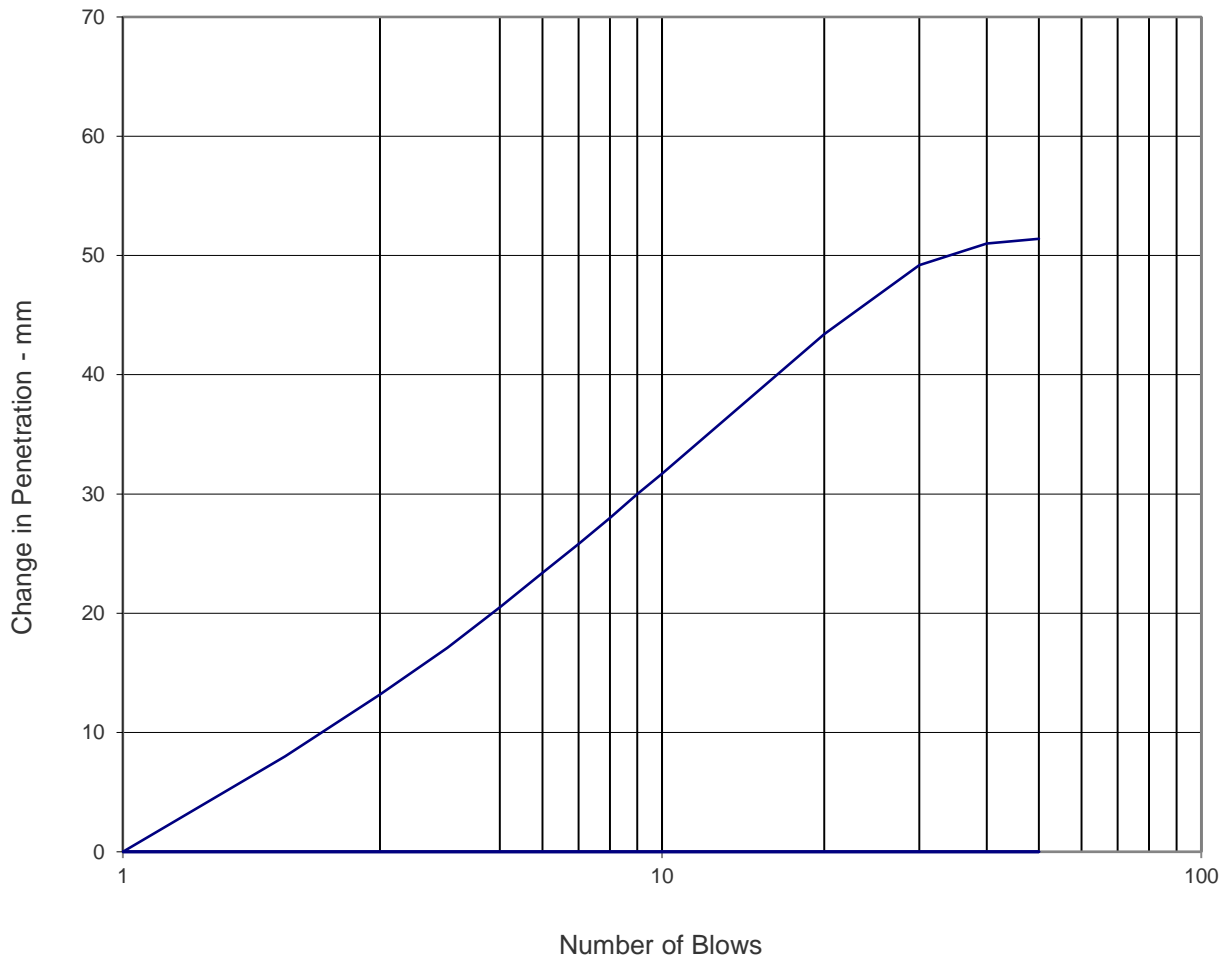
**A303 STONEHENGE
 JFR1451**



CHALK CRUSHING VALUE

Location R70111
 Sample Ref 9+10
 Depth (m) 11.46
 Sample Type amal

Description:
 White CHALK.



Material retained on 10mm test sieve	%				
Determination No		1			
Chalk crushing value		3.9			
Moisture content	%	24.9			
Mean chalk crushing value		3.9			

Checked and Approved by:



20/01/2021

Project Number:

GEO/32135

Project Name:

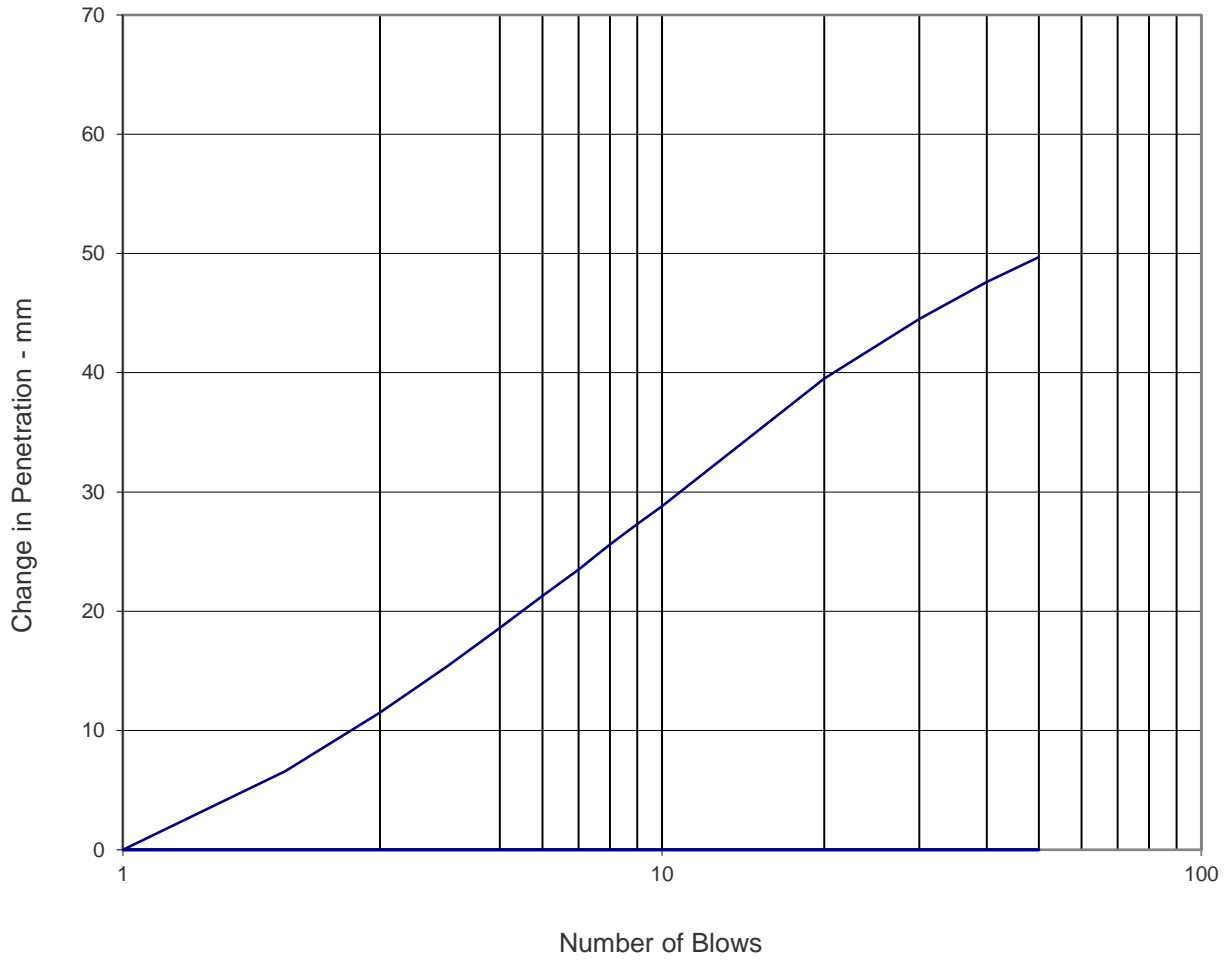
**A303 STONEHENGE
 JFR1451**



CHALK CRUSHING VALUE

Location R70112
 Sample Ref 11
 Depth (m) 13.55
 Sample Type C

Description:
 White CHALK.



Material retained on 10mm test sieve	%				
Determination No		1			
Chalk crushing value		3.6			
Moisture content	%	21.5			
Mean chalk crushing value		3.6			

Checked and Approved by:



17/12/2020

Project Number:

GEO/32135

Project Name:

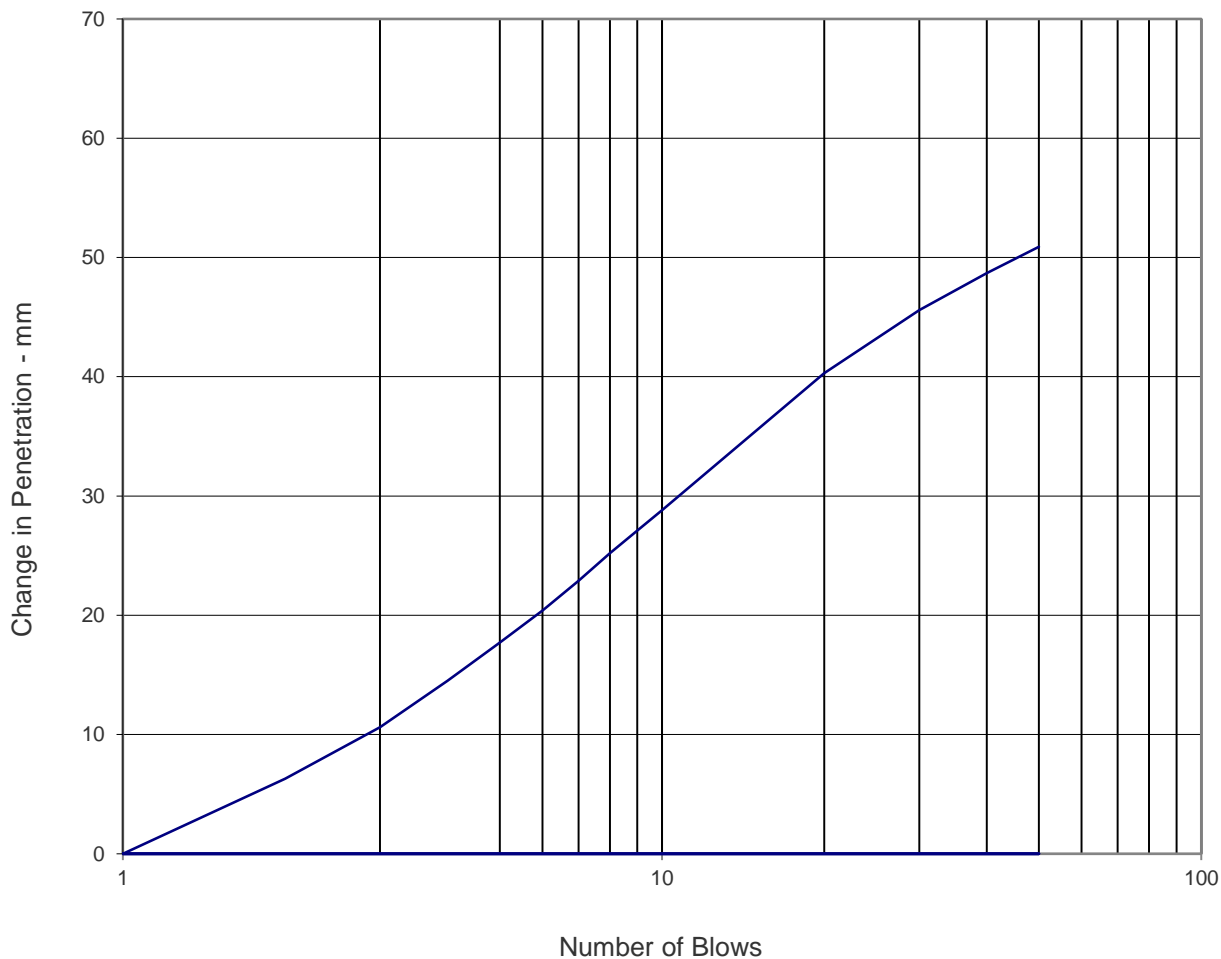
**A303 STONEHENGE
 JFR1451**



CHALK CRUSHING VALUE

Location	R70106
Depth (m)	5.02-5.25
Sample Type	amal

Description:	White CHALK
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Material retained on 10mm test sieve	%				
Determination No		1			
Chalk crushing value		4.0			
Moisture content	%	21.9			
Mean chalk crushing value		4.0			

Checked and Approved by:

J Sturges - Operations Manager
21/01/2021

Project Number: **GEO/32370**

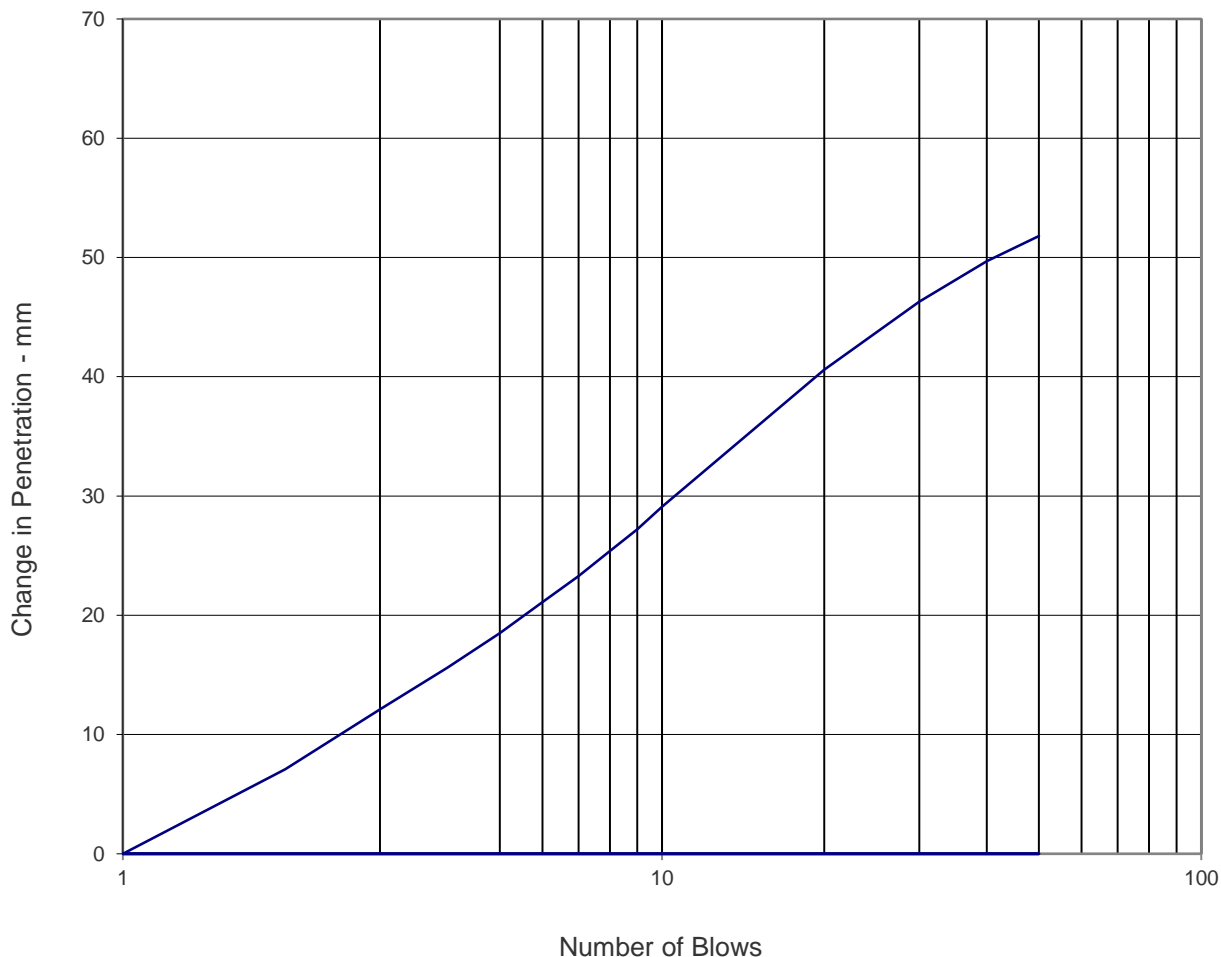
Project Name: **A303 STONEHENGE
JFR1451**



CHALK CRUSHING VALUE

Location R70701
 Depth (m) 4.07-4.50
 Sample Type amal

Description:
 White gravelly CHALK in a structureless chalk matrix. Gravel is flint.



Material retained on 10mm test sieve	%				
Determination No		1			
Chalk crushing value		4.2			
Moisture content	%	22.0			
Mean chalk crushing value		4.2			

Checked and Approved by:



J Sturges - Operations Manager
 21/01/2021

Project Number:

GEO/32369

Project Name:

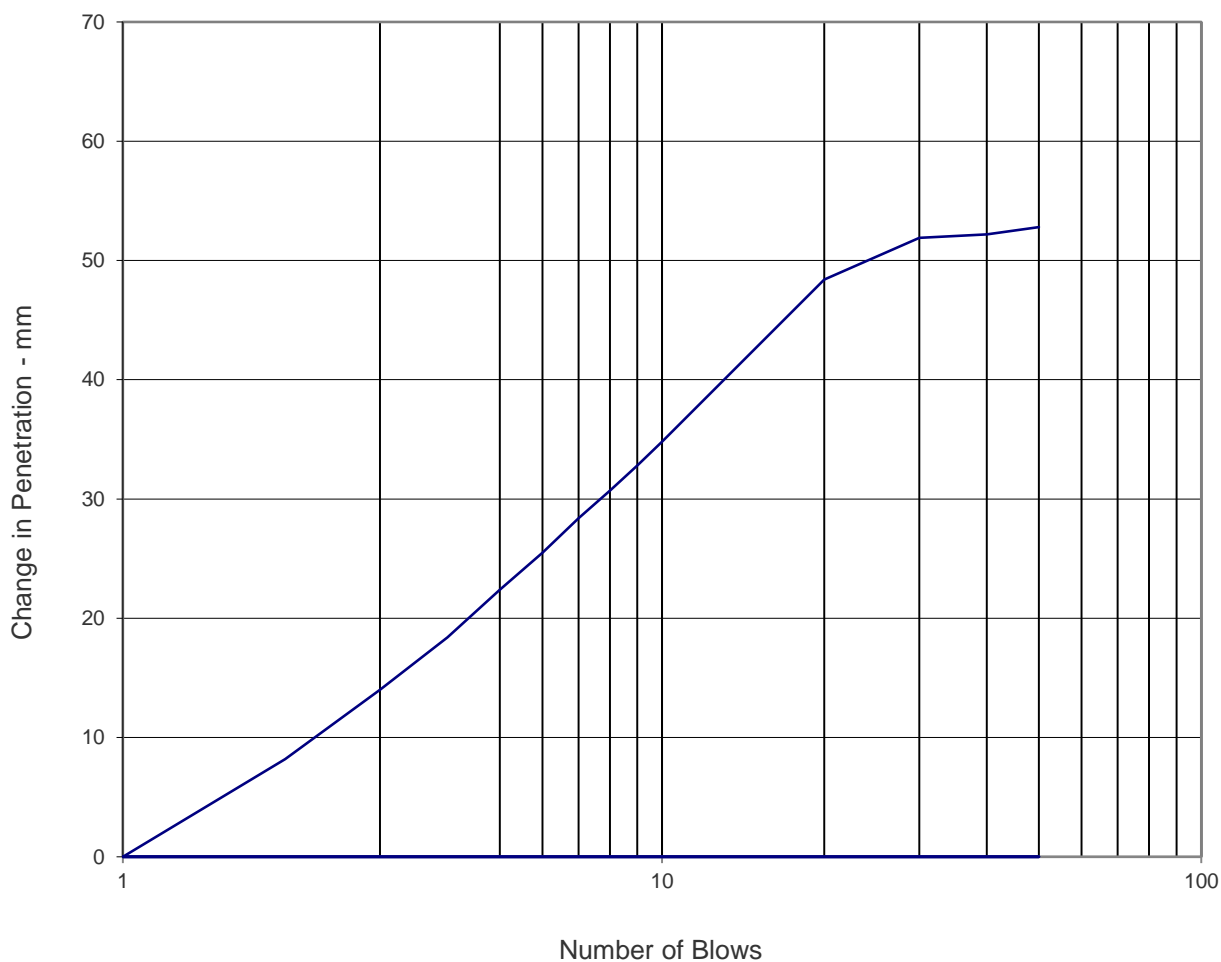
**A303 STONEHENGE
 JFR1451**



CHALK CRUSHING VALUE

Location R72006
 Depth (m) 8.58-8.98
 Sample Type combined

Description:
 White CHALK.



Material retained on 10mm test sieve	%				
Determination No		1			
Chalk crushing value		4.5			
Moisture content	%	29.2			
Mean chalk crushing value		4.5			

Checked and Approved by:



J Sturges - Operations Manager
 21/01/2021

Project Number:

GEO/32302

Project Name:

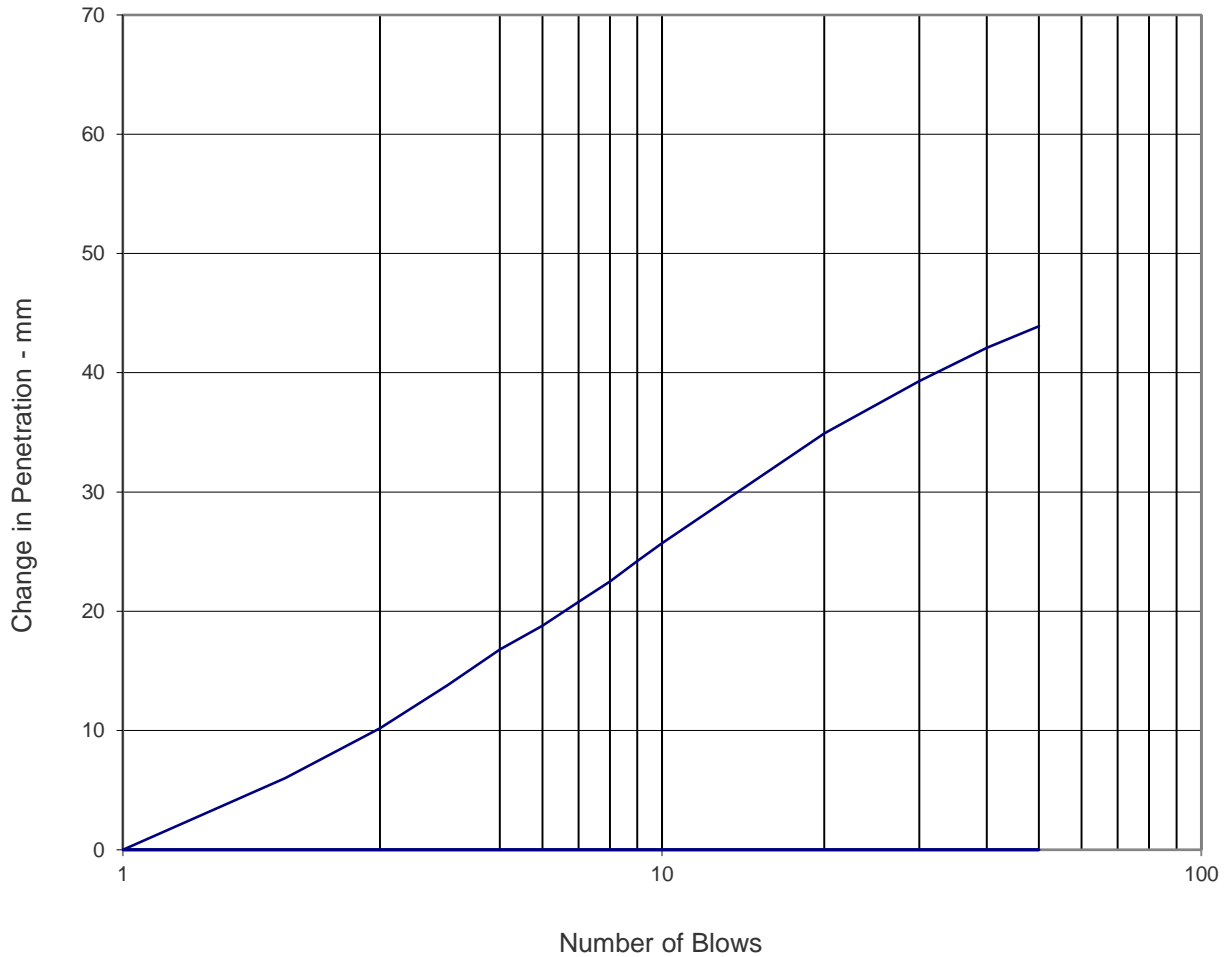
**A303 STONEHENGE
 JFR1451**



CHALK CRUSHING VALUE

Location	STP71601
Depth (m)	3.00
Sample Type	B

Description:
White cobble and gravel sized CHALK.



Material retained on 10mm test sieve	%				
Determination No		1			
Chalk crushing value		3.3			
Moisture content	%	17.2			
Mean chalk crushing value		3.3			

Checked and Approved by:

 J Sturges - Operations Manager
 21/01/2021

Project Number: **GEO/32133**

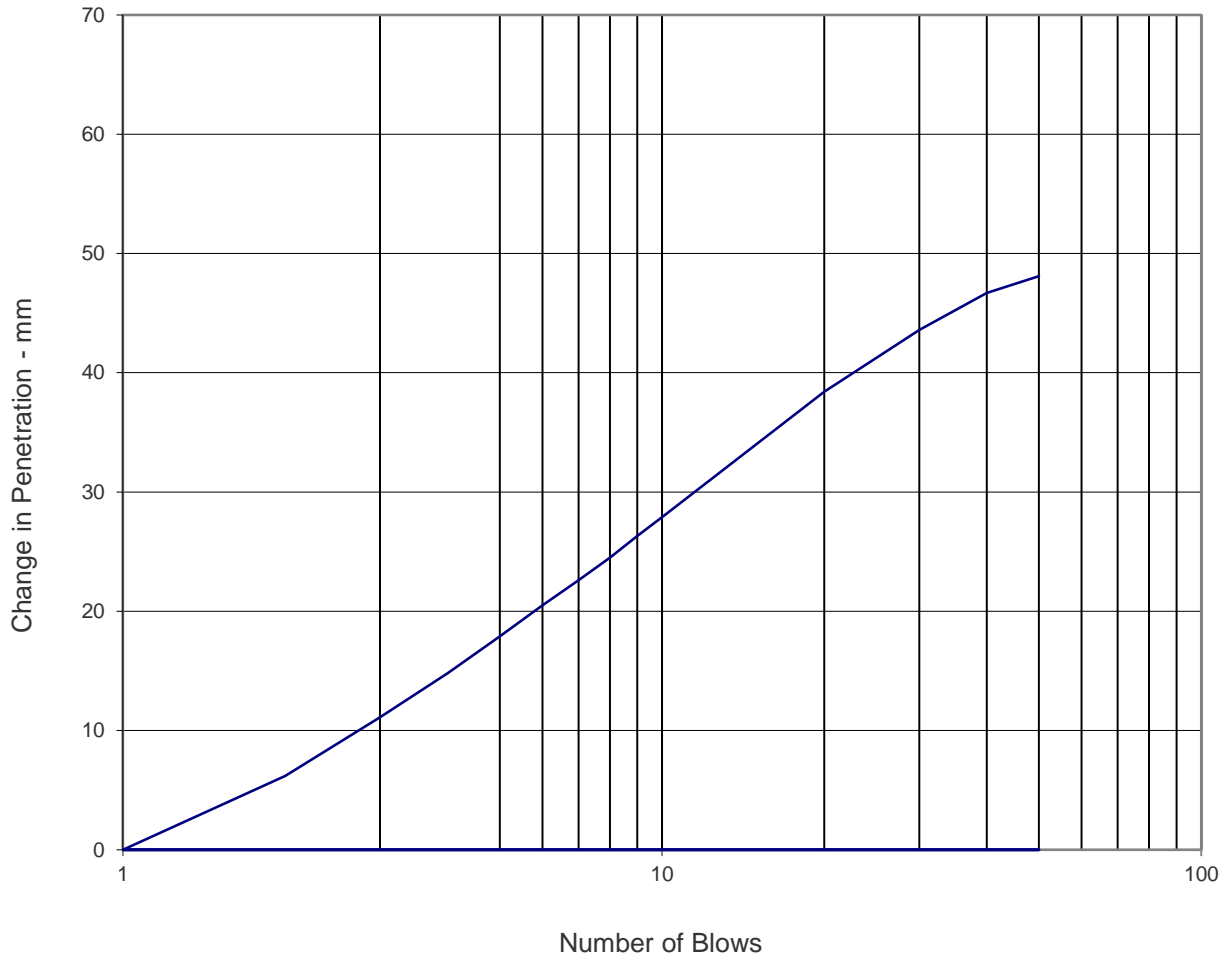
Project Name: **A303 STONEHENGE
JFR1451**



CHALK CRUSHING VALUE

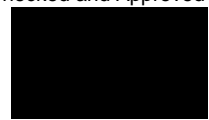
Location R70116
 Sample Ref 12+13
 Depth (m) 11.30
 Sample Type AMAL

Description:
 White CHALK.



Material retained on 10mm test sieve	%				
Determination No		1			
Chalk crushing value		3.5			
Moisture content	%	22.5			
Mean chalk crushing value		3.5			

Checked and Approved by:



J Sturges - Operations Manager
 20/01/2021

Project Number:

GEO/32134

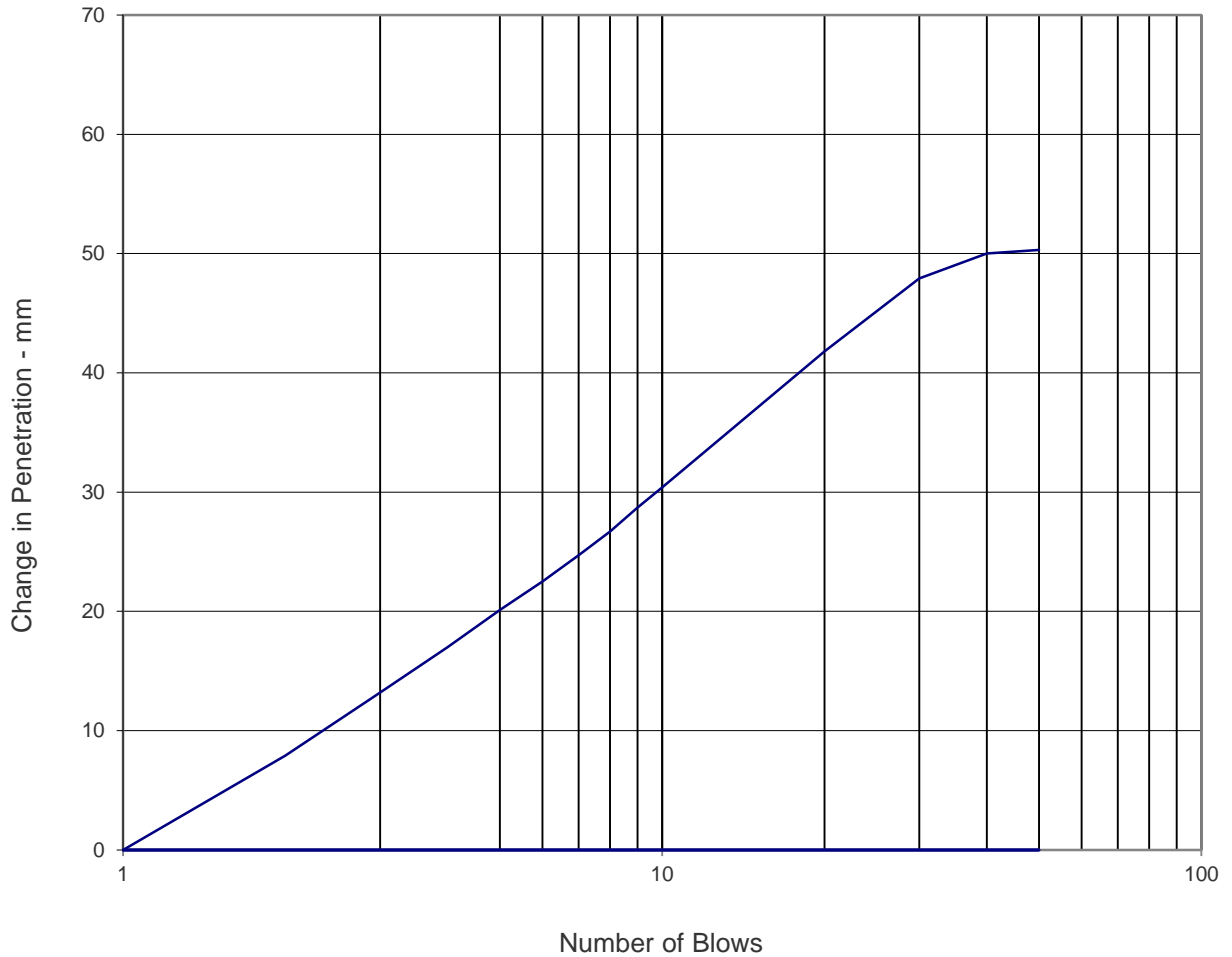
Project Name:

**A303 STONEHENGE
 JFR1451**



CHALK CRUSHING VALUE

<p>Location R70113 Depth (m) 7.60 Sample Type C</p>	<p>Description: White CHALK.</p>
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Material retained on 10mm test sieve	%				
Determination No		1			
Chalk crushing value		3.9			
Moisture content	%	25.6			
Mean chalk crushing value		3.9			

Checked and Approved by:

 S Burke - Senior Technician
 09/12/2020

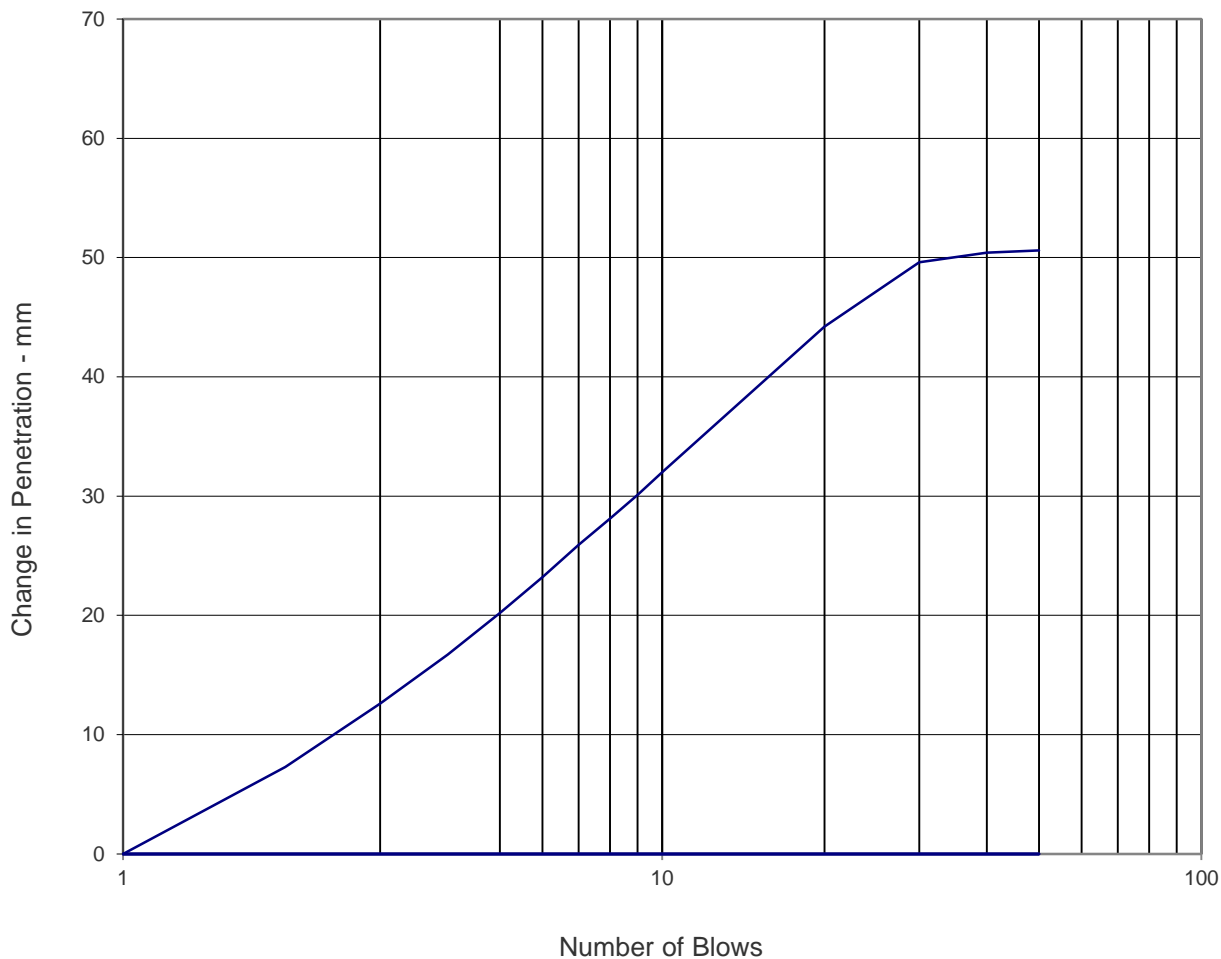
Project Number: **GEO/32203**

Project Name: **A303 STONEHENGE
JFR1451**



CHALK CRUSHING VALUE

<p>Location R70114 Depth (m) 7.00 Sample Type C</p>	<p>Description: White CHALK.</p>
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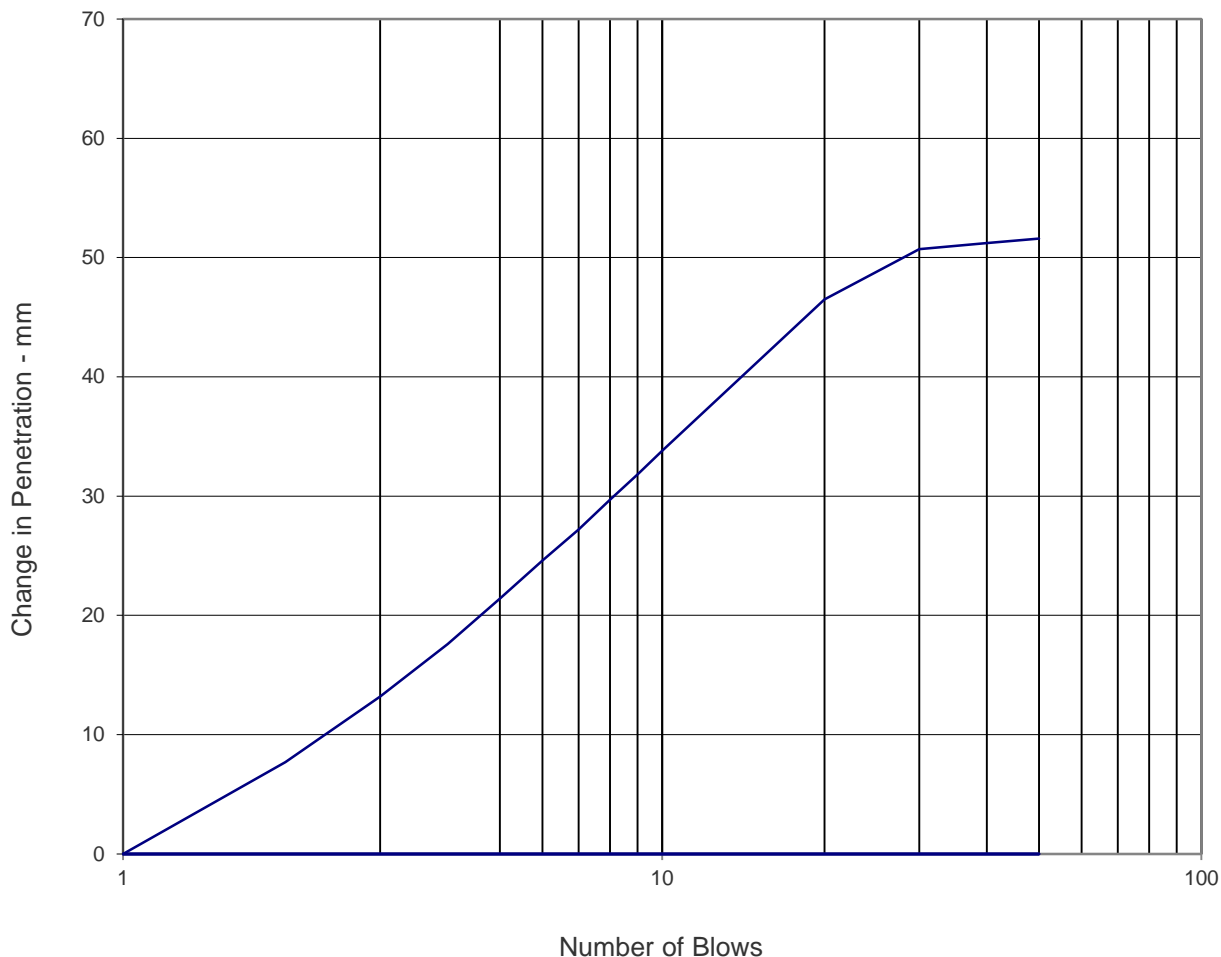
Material retained on 10mm test sieve	%				
Determination No		1			
Chalk crushing value		4.2			
Moisture content	%	26.6			
Mean chalk crushing value		4.2			

<p>Checked and Approved by:</p> <div style="background-color: black; width: 100px; height: 30px; margin: 5px;"></div> <p style="font-size: small;">S Burke - Senior Technician 09/12/2020</p>	<p>Project Number: GEO/32203</p> <p>Project Name: A303 STONEHENGE JFR1451</p>	
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BS1377:Part 4:1990 Clause 6
CHALK CRUSHING VALUE

Location R70115
Depth (m) 7.30
Sample Type B

Description:
White CHALK.



Material retained on 10mm test sieve	%				
Determination No		1			
Chalk crushing value		4.4			
Moisture content	%	27.5			
Mean chalk crushing value		4.4			

Checked and Approved by:



S Burke - Senior Technician
09/12/2020

Project Number:

GEO/32203

Project Name:

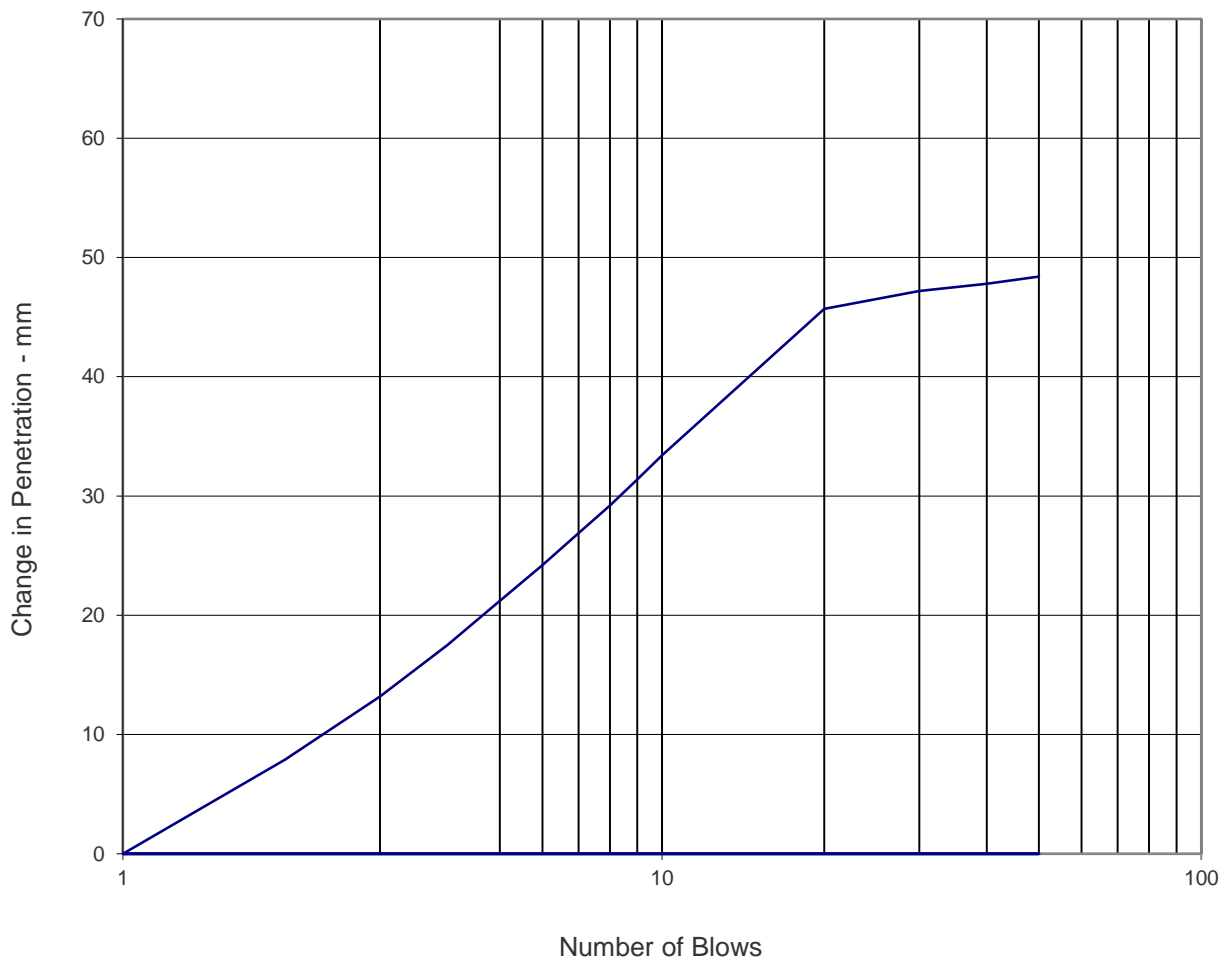
**A303 STONEHENGE
JFR1451**



CHALK CRUSHING VALUE

Location R72102
 Sample Ref D6
 Depth (m) 8.50
 Sample Type C

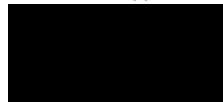
Description:
 White intact CHALK.



Remarks: Material crushed down to appropriate size prior to testing.

Material retained on 10mm test sieve	%				
Determination No		1			
Chalk crushing value		4.4			
Moisture content	%	29.9			
Mean chalk crushing value		4.4			

Checked and Approved by:



J Sturges - Operations Manager
 08/10/2020

Project Number:

GEO/31760

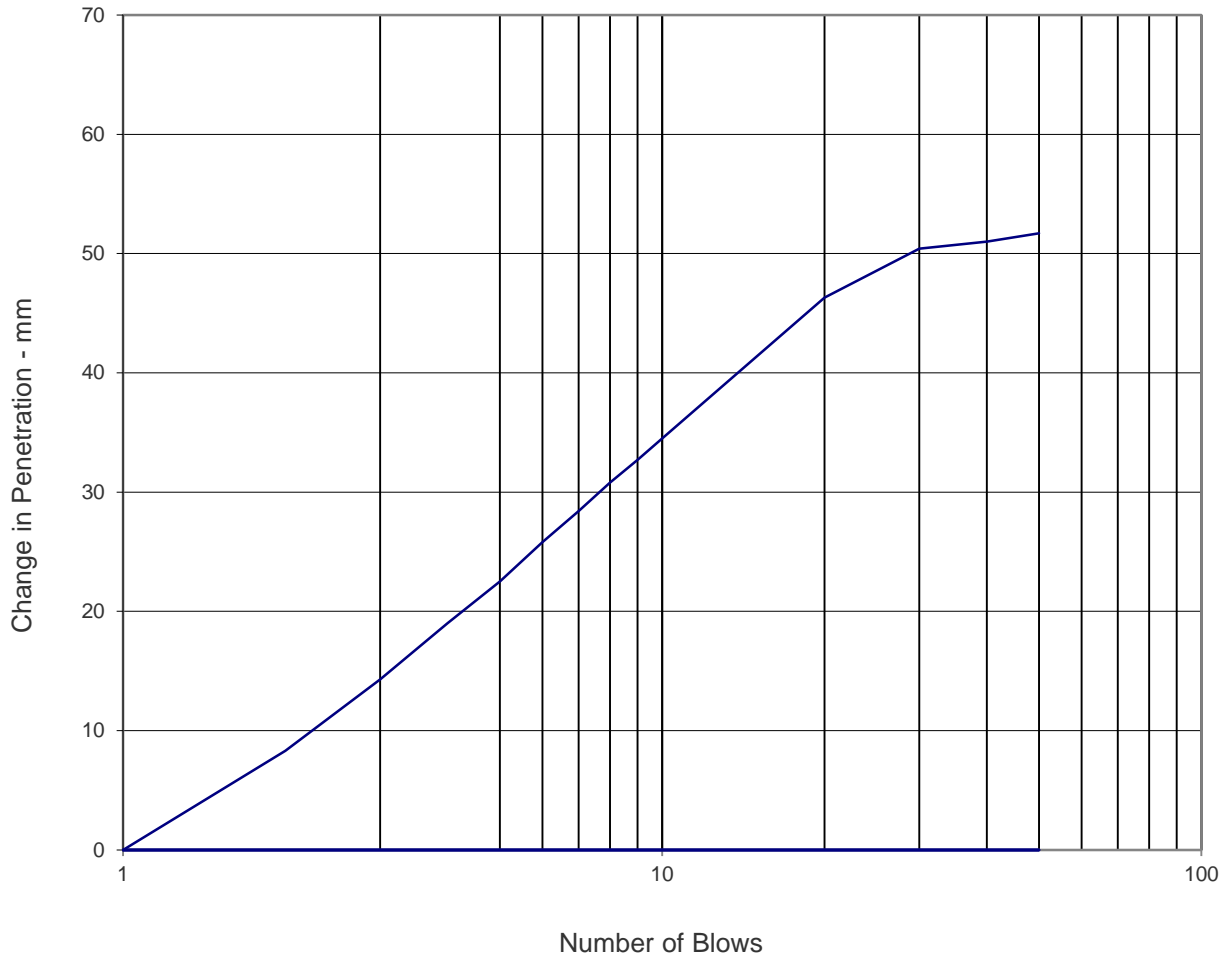
Project Name:

**A303 STONEHENGE
 JFR1451**



CHALK CRUSHING VALUE

Location R71914 Depth (m) 12.60 Sample Type C	Description: White CHALK
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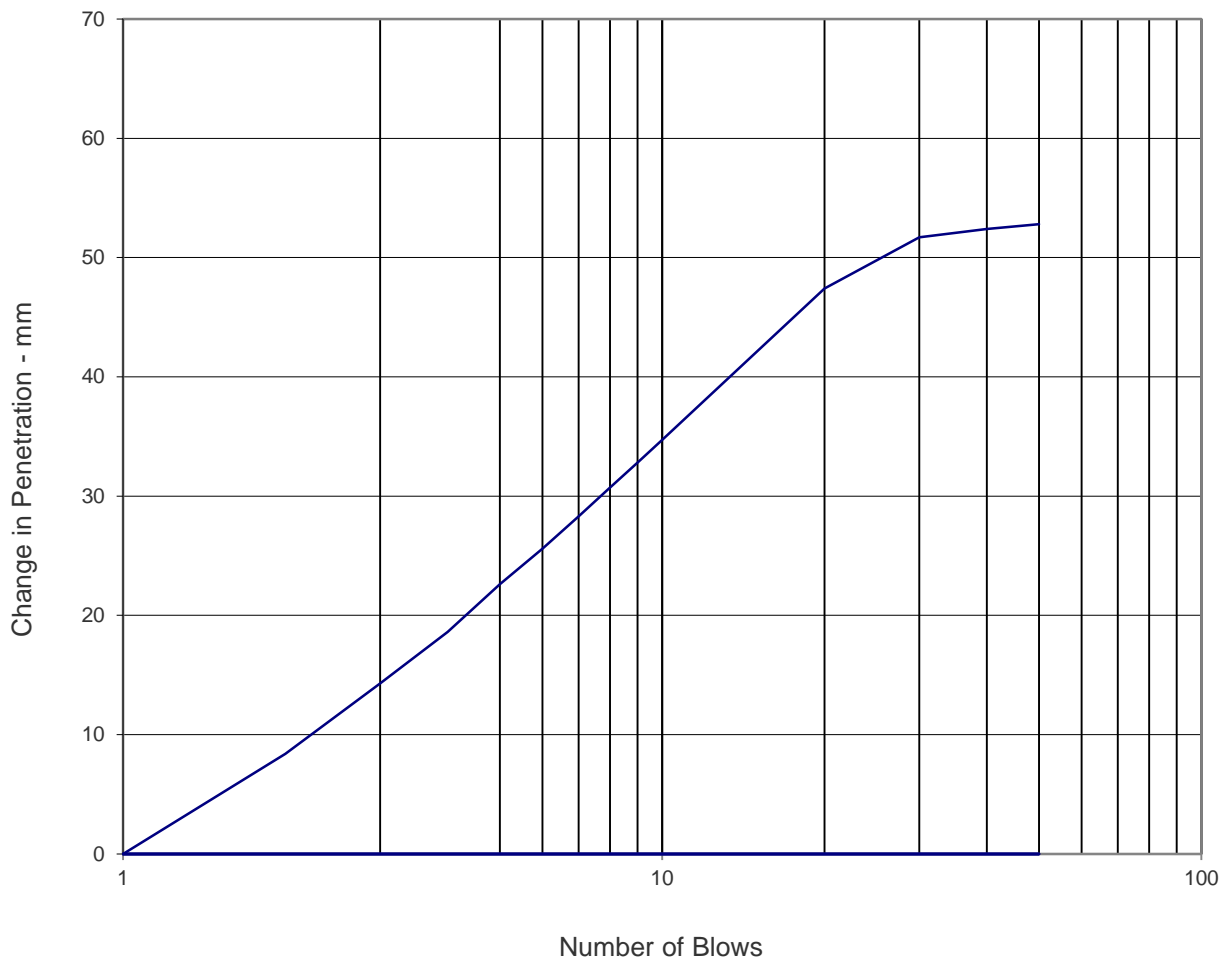
Material retained on 10mm test sieve	%				
Determination No		1			
Chalk crushing value		4.2			
Moisture content	%	26.3			
Mean chalk crushing value		4.2			

Checked and Approved by: S Burke - Senior Technician 01/12/2020	Project Number: GEO/32128 Project Name: A303 STONEHENGE JFR1451	
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CHALK CRUSHING VALUE

Location R70108
 Sample Ref CD
 Depth (m) 9.38
 Sample Type C

Description:
 White CHALK



Material retained on 10mm test sieve	%				
Determination No		1			
Chalk crushing value		4.2			
Moisture content	%	26.4			
Mean chalk crushing value		4.2			

Checked and Approved by:



S Burke - Senior Technician
 30/11/2020

Project Number:

GEO/32136

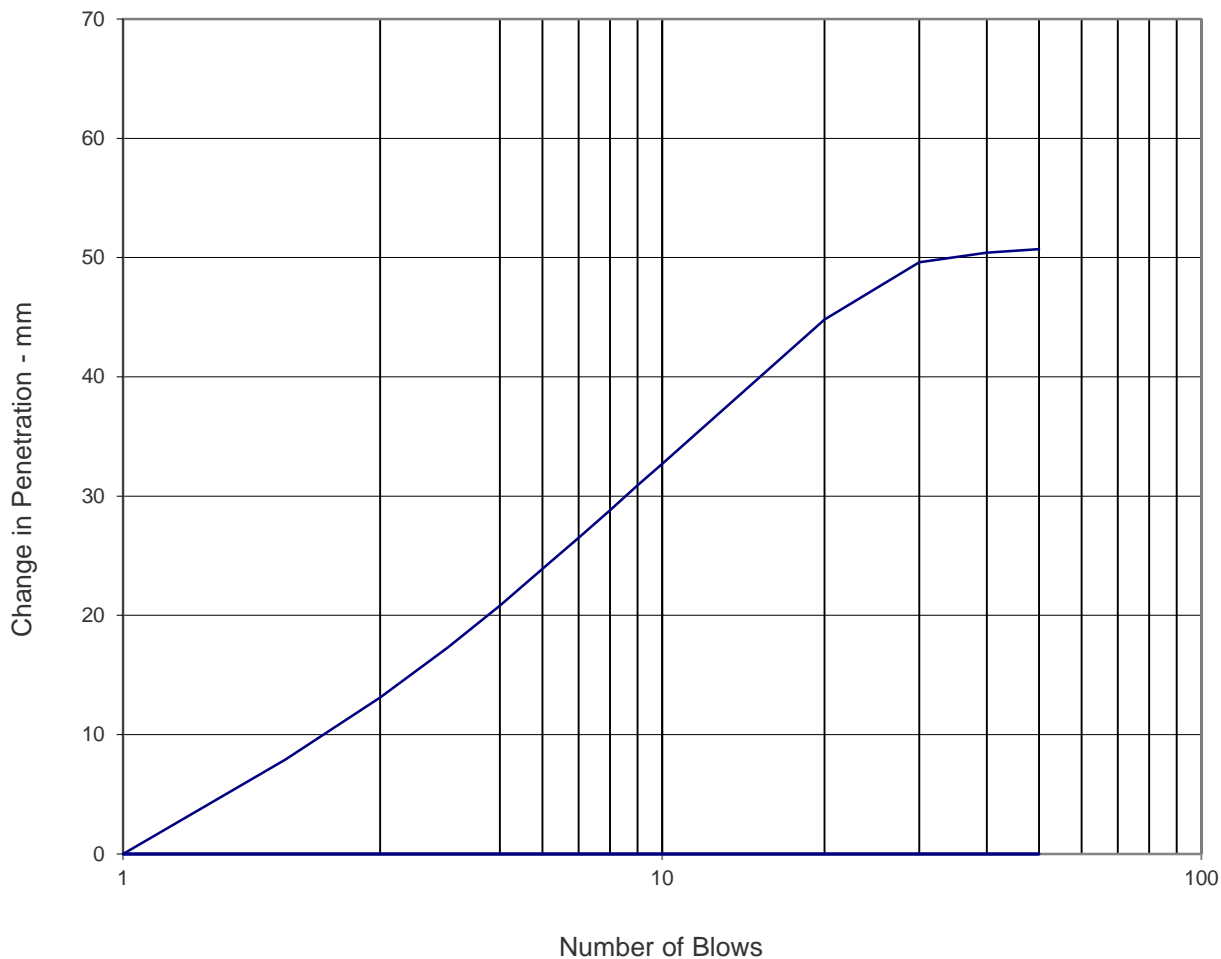
Project Name:

**A303 STONEHENGE
 JFR1451**



CHALK CRUSHING VALUE

<p>Location R70105 Depth (m) 7.27 Sample Type C</p>	<p>Description: White CHALK.</p>
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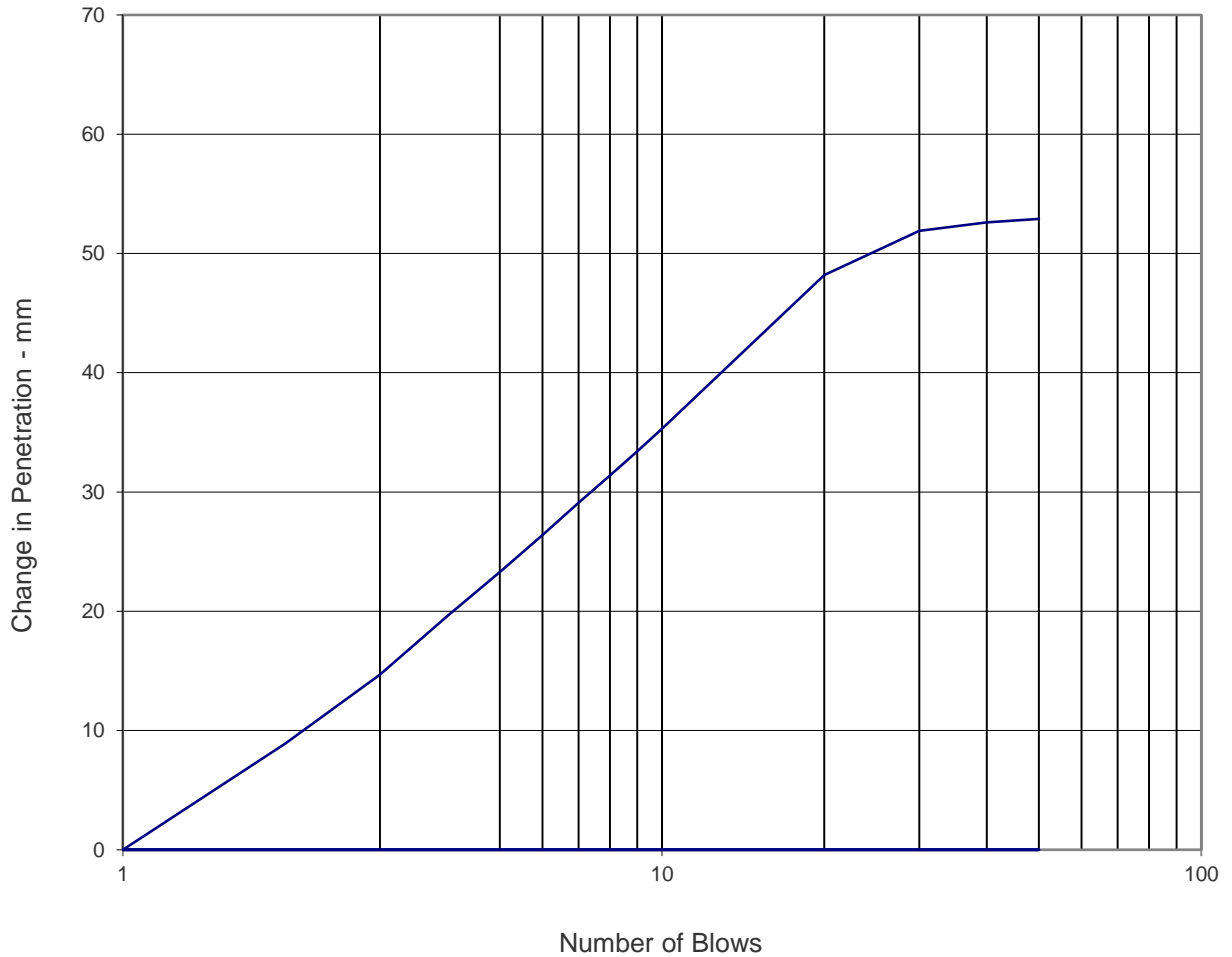
Material retained on 10mm test sieve	%				
Determination No		1			
Chalk crushing value		4.1			
Moisture content	%	24.5			
Mean chalk crushing value		4.1			

<p>Checked and Approved by:</p> <div style="background-color: black; width: 100px; height: 30px; margin: 5px 0;"></div> <p style="font-size: small;">S Burke - Senior Technician 27/11/2020</p>	<p>Project Number: GEO/32131</p> <p>Project Name: A303 STONEHENGE JFR1451</p>	
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CHALK CRUSHING VALUE

Location R72001
 Depth (m) 14.60
 Sample Type C

Description:
 White intact CHALK.



Material retained on 10mm test sieve	%				
Determination No		1			
Chalk crushing value		4.3			
Moisture content	%	26.4			
Mean chalk crushing value		4.3			

Checked and Approved by:



J Sturges - Operations Manager
 11/11/2020

Project Number:

GEO/31879

Project Name:

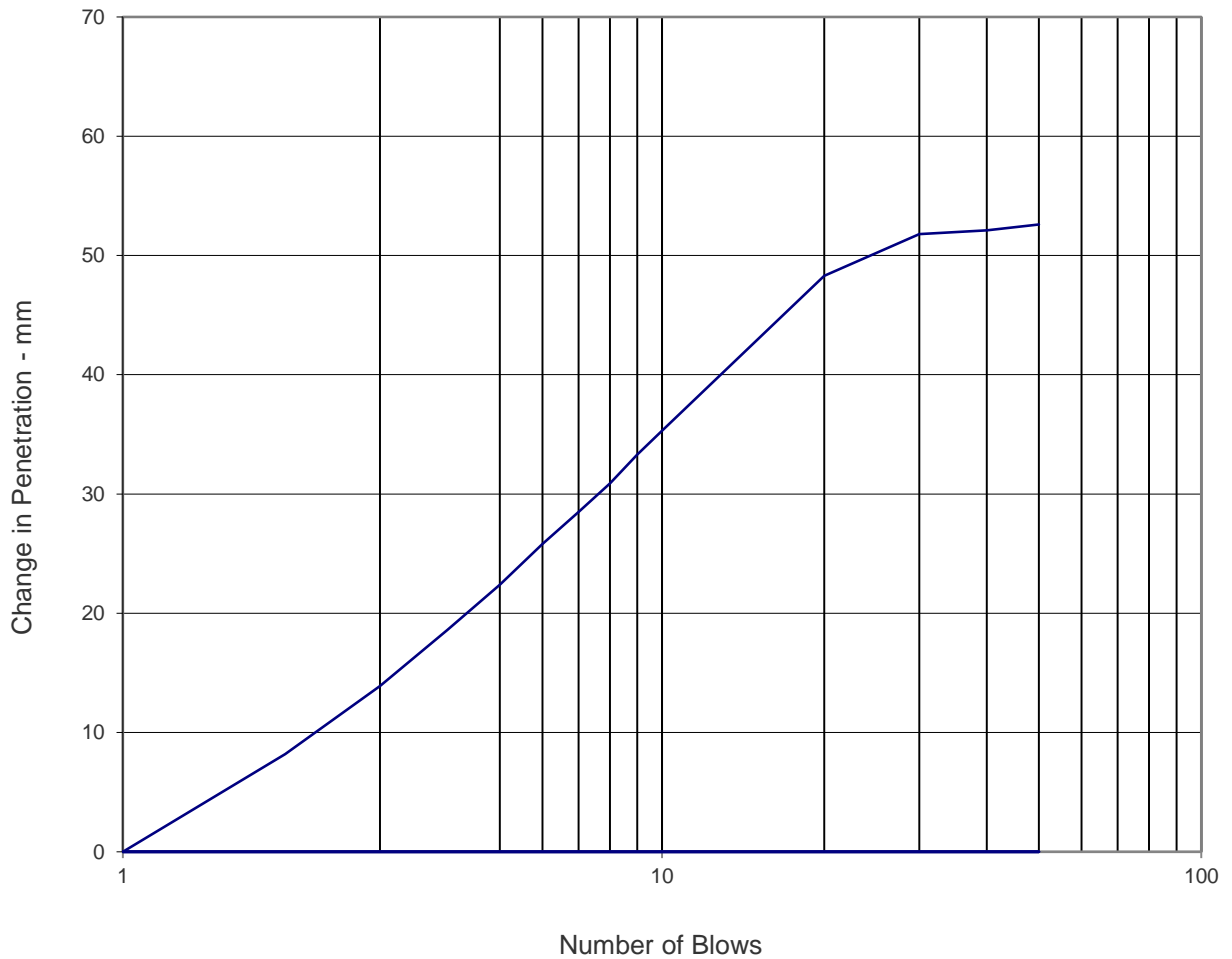
**A303 STONEHENGE
 JFR1451**



CHALK CRUSHING VALUE

Location R72101
 Depth (m) 7.25
 Sample Type C

Description:
 White intact CHALK.



Material retained on 10mm test sieve	%				
Determination No		1			
Chalk crushing value		4.7			
Moisture content	%	26.5			
Mean chalk crushing value		4.7			

Checked and Approved by:



J Sturges - Operations Manager
 11/11/2020

Project Number:

GEO/31881

Project Name:

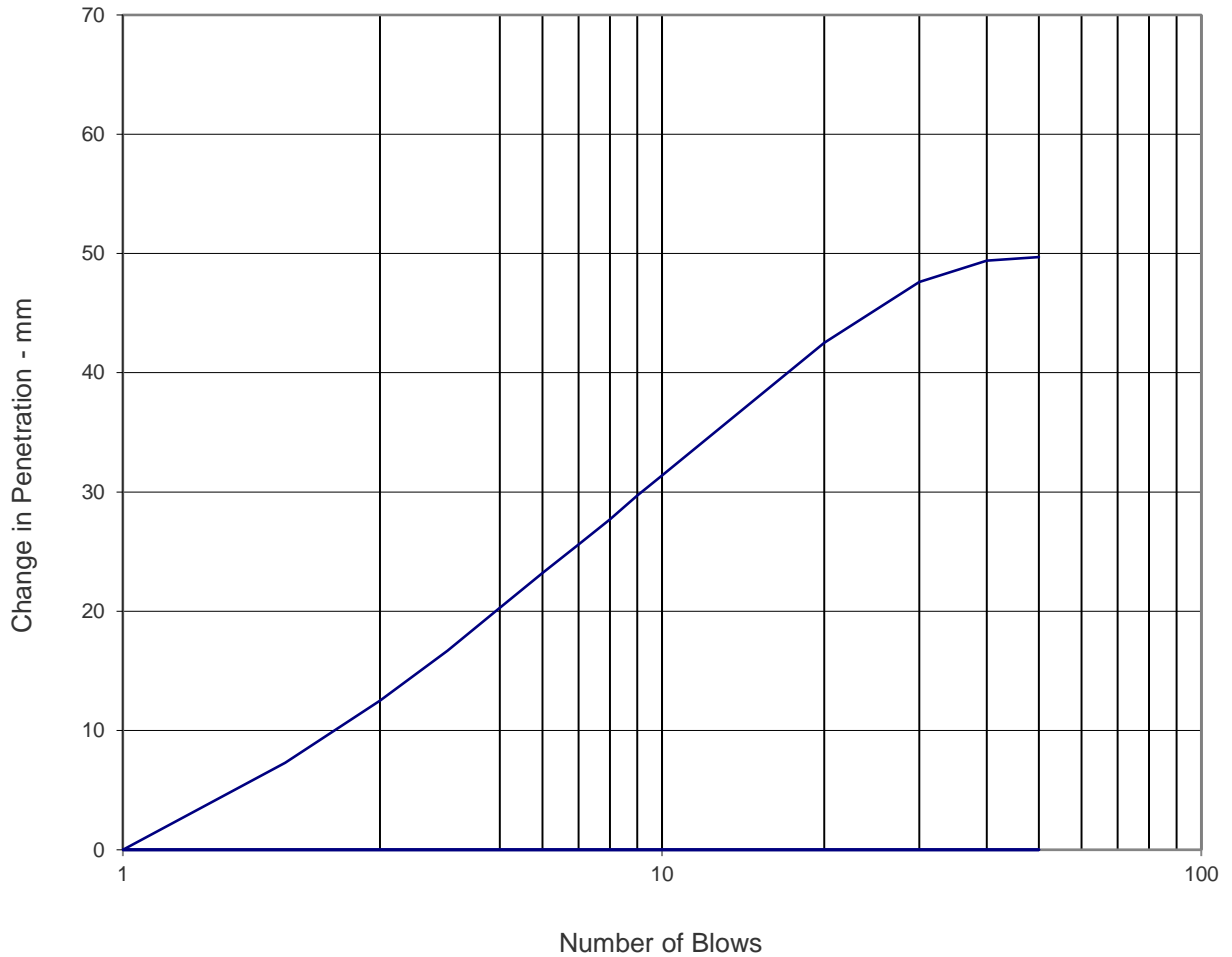
**A303 STONEHENGE
 JFR1451**



CHALK CRUSHING VALUE

Location R71915
 Depth (m) 24.24
 Sample Type C

Description:
 White intact CHALK.



Material retained on 10mm test sieve	%				
Determination No		1			
Chalk crushing value		3.9			
Moisture content	%	24.7			
Mean chalk crushing value		3.9			

Checked and Approved by:



J Sturges - Operations Manager
 11/11/2020

Project Number:

GEO/31890

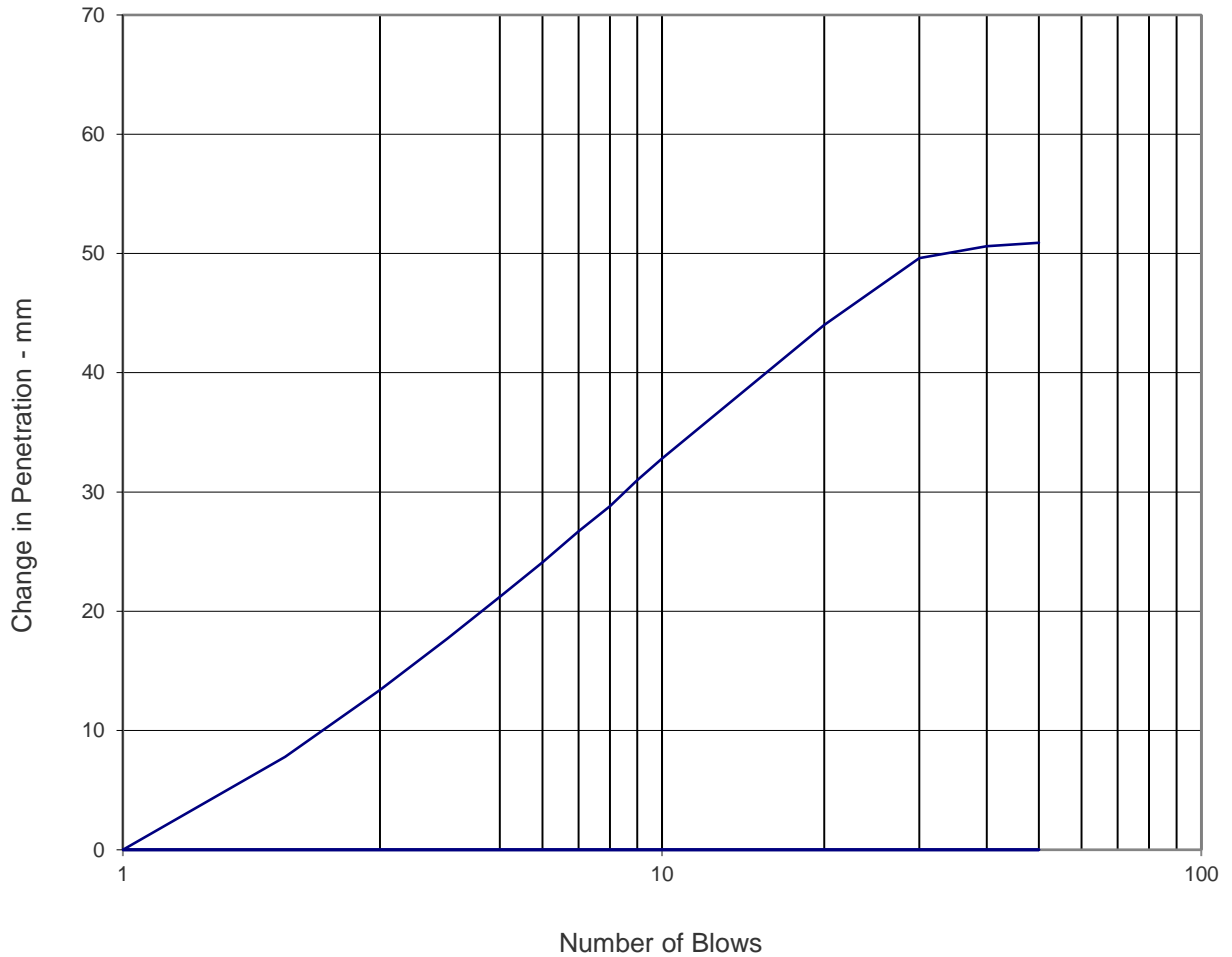
Project Name:

**A303 STONEHENGE
 JFR1451**



CHALK CRUSHING VALUE

<p>Location R72004 Depth (m) 13.31 Sample Type C</p>	<p>Description: White intact CHALK.</p>
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Material retained on 10mm test sieve	%				
Determination No		1			
Chalk crushing value		4.3			
Moisture content	%	25.8			
Mean chalk crushing value		4.3			

Checked and Approved by:

 J Sturges - Operations Manager
 11/11/2020

Project Number: **GEO/31880**

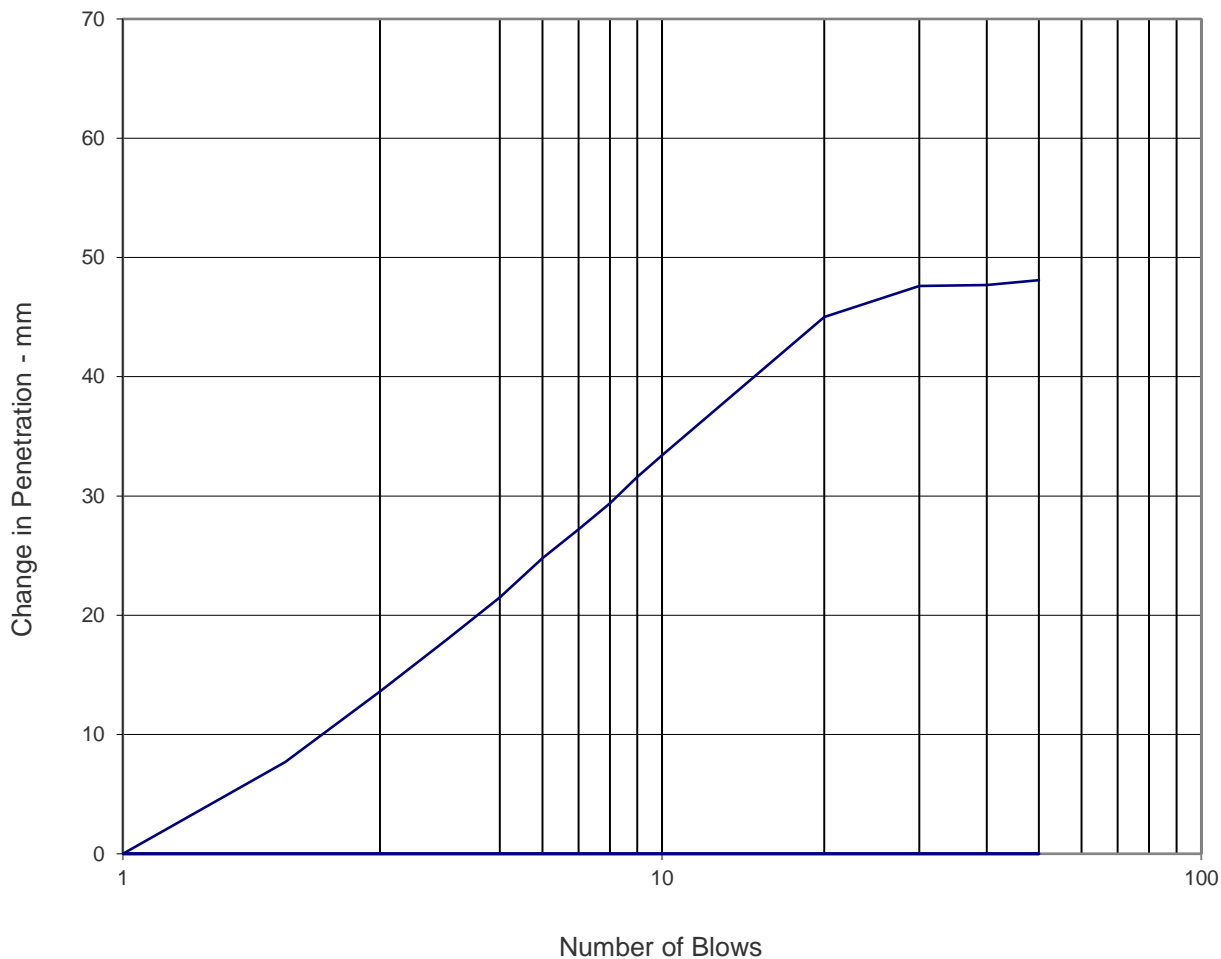
Project Name: **A303 STONEHENGE
JFR1451**



CHALK CRUSHING VALUE

Location BH72503
 Sample Ref 6
 Depth (m) 20.93
 Sample Type C

Description:
 White CHALK.



Material retained on 10mm test sieve	%	43.1				
Determination No		1				
Chalk crushing value		4.3				
Moisture content	%	26.6				
Mean chalk crushing value		4.3				

Checked and Approved by:



J Sturges - Operations Manager
 10/03/2021

Project Number:

GEO/32695

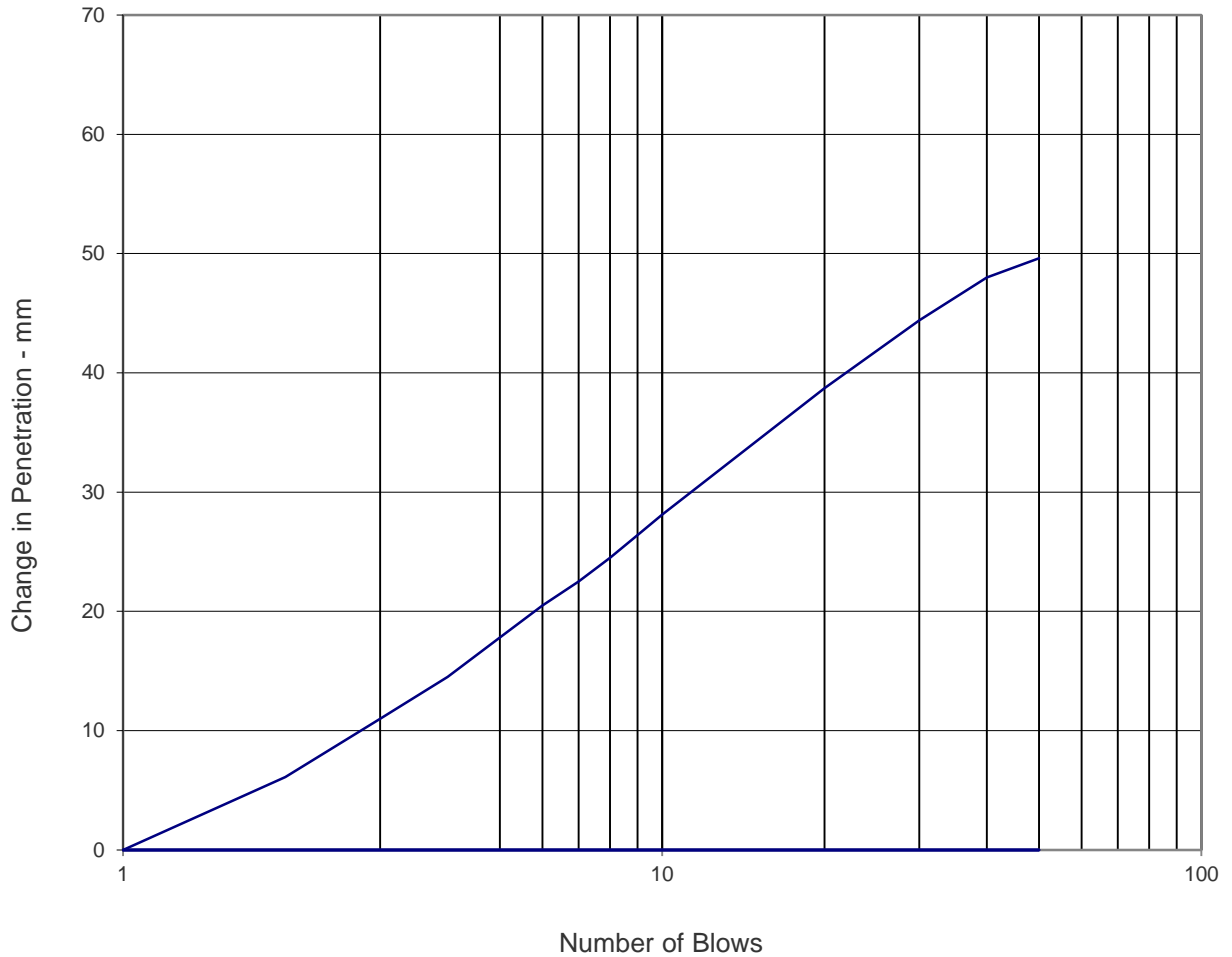
Project Name:

**A303 STONEHENGE
 JFR1451**



CHALK CRUSHING VALUE

Location R71210 Sample Ref 12 Depth (m) 13.95 Sample Type C	Description: White CHALK.
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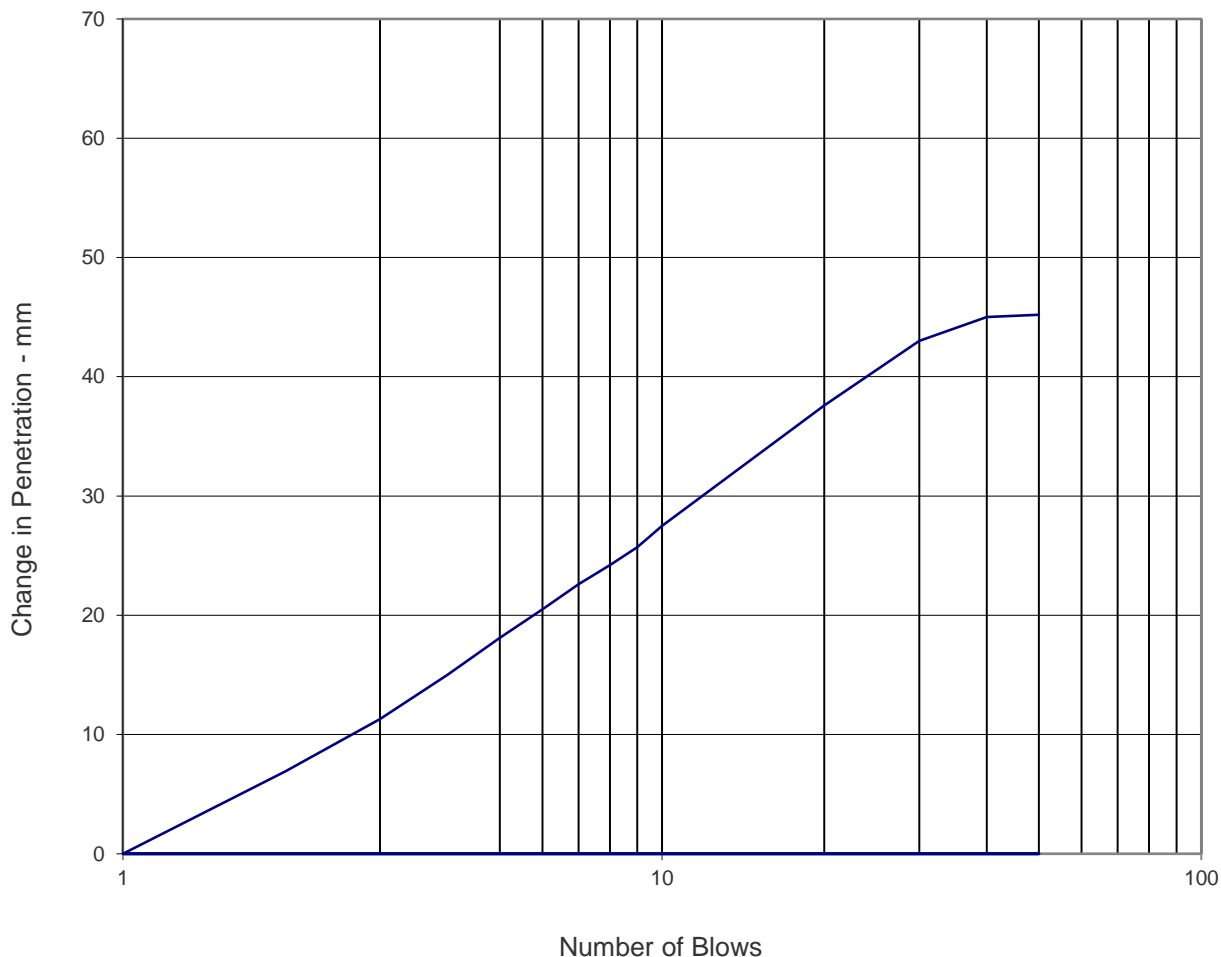
Material retained on 10mm test sieve	%	23.9				
Determination No		1				
Chalk crushing value		3.7				
Moisture content	%	23.0				
Mean chalk crushing value		3.7				

Checked and Approved by: <div style="background-color: black; width: 100px; height: 30px; margin: 5px 0;"></div> S Burke - Senior Technician 04/03/2021	Project Number: GEO/32691 Project Name: A303 STONEHENGE JFR1451	
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CHALK CRUSHING VALUE

Location STP70104
 Sample Ref 11
 Depth (m) 3.00
 Sample Type B

Description:
 White gravel sized CHALK in a structureless chalk matrix.



Material retained on 10mm test sieve	%	0.0				
Determination No		1				
Chalk crushing value		3.9				
Moisture content	%	24.2				
Mean chalk crushing value		3.9				

Checked and Approved by:

 J Sturges - Operations Manager
 20/04/2021

Project Number: **GEO/32903**



Project Name: **A303 STONEHENGE
JFR1451**



CERCHAR ABRASIVITY

Sample details				Cerchar Abrasivity								
Borehole Ref.	Sample Ref.	Depth (m)	Description	D. Tested	Water Content (%)	Surface condition (correction)	Direction of Stylus	As measured readings d (0.01 mm)	Mean pin wear (mm)	Standard Deviation of CAI	CA Index	Abrasivity Classification
R71905		26.25-26.48	White CHALK	27/11/20	As received	Rough Sample No correction needed	No weakness	3,2,1,2,2	0.02	0.07	0.20	Extremely Low



Notes: Stylus Rockwell Hardness and tip shape: 55 ± 1 conical. CERCHAR Apparatus: Type 2 (West). Measurement method: Top view and optical.

Checked and Approved by  C Clergeaud (Snr. Geologist) Date: 04/12/2020	Project Number: GEO / 32215 Project Name: A303 STONEHENGE JFR1451	
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CERCHAR ABRASIVITY

Sample details				Cerchar Abrasivity								
Borehole Ref.	Sample Ref.	Depth (m)	Description	D. Tested	Water Content (%)	Surface condition (correction)	Direction of Stylus	As measured readings d (0.01 mm)	Mean pin wear (mm)	Standard Deviation of CAI	CA Index	Abrasivity Classification
R71910		36.00-36.26	White CHALK	23/10/20	As received	Rough Sample No correction needed	No weakness	0,2,2,1,2	0.01	0.09	0.14	Extremely Low
R71910		51.02-51.39	White CHALK	23/10/20	As received	Rough Sample No correction needed	No weakness	2,1,2,2,1	0.02	0.05	0.16	Extremely Low

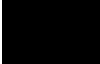

Notes: Stylus Rockwell Hardness and tip shape: 55 ± 1 conical. CERCHAR Apparatus: Type 2 (West). Measurement method: Top view and optical.

Checked and Approved by  C Clergeaud (Snr. Geologist) Date: 23/10/2020	Project Number: <p style="text-align: center;">GEO / 31761</p> Project Name: <p style="text-align: center;">A303 STONEHENGE JFR1451</p>	
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CERCHAR ABRASIVITY

Sample details				Cerchar Abrasivity								
Borehole Ref.	Sample Ref.	Depth (m)	Description	D. Tested	Water Content (%)	Surface condition (correction)	Direction of Stylus	As measured readings d (0.01 mm)	Mean pin wear (mm)	Standard Deviation of CAI	CA Index	Abrasivity Classification
R71914		10.74-10.97	White CHALK	14/11/20	As received	Rough Sample No correction needed	No weakness	3,1,2,1,1	0.02	0.09	0.16	Extremely Low


Notes: Stylus Rockwell Hardness and tip shape: 55 ± 1 conical. CERCHAR Apparatus: Type 2 (West). Measurement method: Top view and optical.

Checked and Approved by  C Clergeaud (Snr. Geologist) Date: 17/11/2020	Project Number: <p style="text-align: center;">GEO / 32128</p> Project Name: <p style="text-align: center;">A303 STONEHENGE JFR1451</p>	
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CERCHAR ABRASIVITY

Sample details				Cerchar Abrasivity								
Borehole Ref.	Sample Ref.	Depth (m)	Description	D. Tested	Water Content (%)	Surface condition (correction)	Direction of Stylus	As measured readings d (0.01 mm)	Mean pin wear (mm)	Standard Deviation of CAI	CA Index	Abrasivity Classification
R71912		29.86-30.20	White CHALK	14/11/20	As received	Rough Sample No correction needed	No weakness	3,2,1,3,2	0.02	0.08	0.22	Extremely Low



Notes: Stylus Rockwell Hardness and tip shape: 55 ± 1 conical. CERCHAR Apparatus: Type 2 (West). Measurement method: Top view and optical.

Checked and Approved by <div style="background-color: black; width: 40px; height: 20px; margin: 5px auto;"></div> C Clergeaud (Snr. Geologist) Date: 17/11/2020	Project Number: GEO / 32129 Project Name: A303 STONEHENGE JFR1451	
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CERCHAR ABRASIVITY

Sample details				Cerchar Abrasivity								
Borehole Ref.	Sample Ref.	Depth (m)	Description	D. Tested	Water Content (%)	Surface condition (correction)	Direction of Stylus	As measured readings d (0.01 mm)	Mean pin wear (mm)	Standard Deviation of CAI	CA Index	Abrasivity Classification
R71908	13	35.03-35.33	White CHALK	21/09/20	As received	Rough Sample No correction needed	No weakness	2,2,1,3,2	0.02	0.07	0.20	Extremely Low
R71908	18	47.95-48.20	White CHALK	21/09/20	As received	Rough Sample No correction needed	No weakness	2,3,3,2,1	0.02	0.08	0.22	Extremely Low



Notes: Stylus Rockwell Hardness and tip shape: 55 ± 1 conical. CERCHAR Apparatus: Type 2 (West). Measurement method: Top view and optical.

Checked and Approved by  C Clergeaud (Snr. Geologist) Date: 24/09/2020	Project Number: GEO / 31728 Project Name: A303 STONEHENGE JFR1451	
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CERCHAR ABRASIVITY

Sample details				Cerchar Abrasivity								
Borehole Ref.	Sample Ref.	Depth (m)	Description	D. Tested	Water Content (%)	Surface condition (correction)	Direction of Stylus	As measured readings d (0.01 mm)	Mean pin wear (mm)	Standard Deviation of CAI	CA Index	Abrasivity Classification
R71915		17.66-17.80	White CHALK	19/10/20	As received	Rough Sample No correction needed	No weakness	2,1,2,3,1	0.02	0.08	0.18	Extremely Low

Notes: Stylus Rockwell Hardness and tip shape: 55 ± 1 conical. CERCHAR Apparatus: Type 2 (West). Measurement method: Top view and optical.

Checked and Approved by  C Clergeaud (Snr. Geologist) Date: 22/10/2020	Project Number: GEO / 31890 Project Name: A303 STONEHENGE JFR1451	
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CERCHAR ABRASIVITY

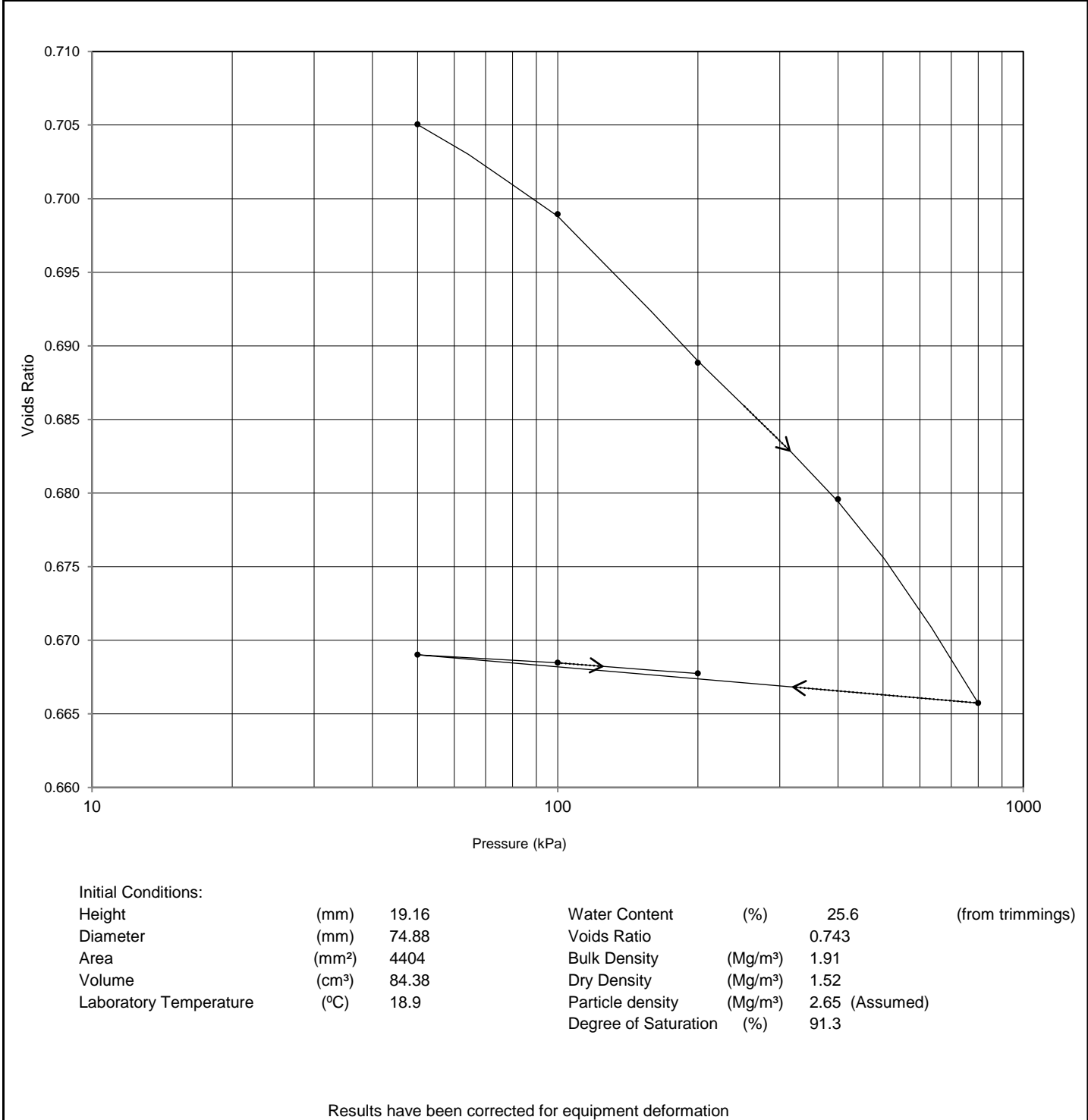
Sample details				Cerchar Abrasivity								
Borehole Ref.	Sample Ref.	Depth (m)	Description	D. Tested	Water Content (%)	Surface condition (correction)	Direction of Stylus	As measured readings d (0.01 mm)	Mean pin wear (mm)	Standard Deviation of CAI	CA Index	Abrasivity Classification
R71916		25.06-25.24	White CHALK	11/01/21	As received	Rough Sample No correction needed	No weakness	3,2,2,3,1	0.02	0.08	0.22	Extremely Low
R71919	12	29.04-29.35	White CHALK	11/01/21	As received	Rough Sample No correction needed	No weakness	4,2,1,1,2	0.02	0.12	0.20	Extremely Low

Notes: Stylus Rockwell Hardness and tip shape: 55 ± 1 conical. CERCHAR Apparatus: Type 2 (West). Measurement method: Top view and optical.

Checked and Approved by C Clergeaud (Snr. Geologist) Date: 18/01/2021	Project Number: GEO / 32382 Project Name: A303 STONEHENGE JFR1451	
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INCREMENTAL LOADING OEDOMETER TEST



Location CP72602 Depth (m) 3.00-3.65 Sample Type U Depth within original (mm) 15 Orientation within original Vertical Specimen preparation Undisturbed	Description: Very stiff white gravelly silty CLAY. Gravel is chalk. Note: Some patching required due to removal of chalk gravel.
---	--



Initial Conditions:

Height (mm)	19.16	Water Content (%)	25.6	(from trimmings)
Diameter (mm)	74.88	Voids Ratio	0.743	
Area (mm ²)	4404	Bulk Density (Mg/m ³)	1.91	
Volume (cm ³)	84.38	Dry Density (Mg/m ³)	1.52	
Laboratory Temperature (°C)	18.9	Particle density (Mg/m ³)	2.65 (Assumed)	
		Degree of Saturation (%)	91.3	

Results have been corrected for equipment deformation

Checked and Approved by  J Sturges - Operations Manager 22/01/2021	Project Number: GEO / 32303	
	Project Name: A303 STONEHENGE JFR1451	

INCREMENTAL LOADING OEDOMETER TEST

Location CP72602
 Depth (m) 3.00-3.65
 Sample Type U
 Depth within original (mm) 15
 Orientation within original Vertical
 Specimen preparation Undisturbed

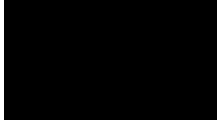
Description:

Very stiff white gravelly silty CLAY. Gravel is chalk.

Note: Some patching required due to removal of chalk gravel.

Pressure Range (kPa)	m_v (m ² /MN)	c_v (m ² /year)	Time Fitting		Voids Ratio
			Method	minutes	
0 - 50	0.44	56	t90	0.708	0.705
50 - 100	0.071	20	t90	1.95	0.699
100 - 200	0.059	40	t90	0.969	0.689
200 - 400	0.027	39	t90	0.970	0.680
400 - 800	0.021	47	t90	0.795	0.666
800 - 50	0.0026	30 (Sv)	t90	1.25	0.669
50 - 100	0.0065	Unable to assess	-	-	0.668
100 - 200	0.0044	13	t90	2.83	0.668

Checked and Approved by



J Sturges - Operations Manager
22/01/2021

Project Number:

GEO / 32303

Project Name:

A303 STONEHENGE
JFR1451

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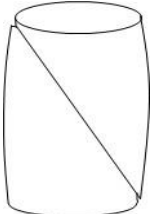
CONSOLIDATED UNDRAINED MULTISTAGE TRIAXIAL COMPRESSION TEST WITH MEASUREMENT OF PORE PRESSURE

Borehole No.: CP72310

Depth (m): 6.00-6.45

Description:

Firm off white structureless CHALK with fine to medium gravel sized chalk.

SPECIMEN DETAILS			
Depth within original sample	20 mm from top		
Orientation within original sample	Vertical		
TEST DETAILS			
Specimen Type and Preparation	U (Undisturbed)		
Cell Preparation	Checks performed in accordance with Clause 3.5		
Specimen Number	Multistage		
Initial Diameter <i>mm</i>	104.95		
Initial Length <i>mm</i>	200.10		
Initial Water Content <i>%</i>	28.7		
Initial Wet Density <i>Mg/m³</i>	1.95		
Drainage Conditions	One end and radial boundary		
SATURATION STAGE	Method: Clause 5.2		
Final Cell Pressure <i>kPa</i>	350		
Final Pore Pressure <i>kPa</i>	341		
Final Pore Pressure Parameter B	1.00		
Duration <i>day(s)</i>	0		
CONSOLIDATION STAGE	Stage No 1	Stage No 2	Stage No 3
Cell Pressure <i>kPa</i>	350	430	500
Back Pressure <i>kPa</i>	300	300	300
Effective Pressure <i>kPa</i>	50	130	200
Final Pore Pressure <i>kPa</i>	300	300	301
Final Pore Pressure Dissipation <i>%</i>	100	100	100
Duration <i>day(s)</i>	1	1	1
SHEARING STAGE			
Cell Pressure <i>kPa</i>	350	430	500
Rate of Axial Displacement <i>mm/min</i>	0.032	0.012	0.0080
Initial Pore Pressure <i>kPa</i>	300	300	301
Initial Effective Stress <i>kPa</i>	50	130	199
CONDITIONS AT FAILURE	<i>criteria</i> Maximum effective principal stress ratio		
Pore Pressure <i>kPa</i>	304	315	320
Minor Effective Principal Stress <i>kPa</i>	46	115	180
Deviator Stress <i>kPa</i>	231	500	766
Major Effective Principal Stress <i>kPa</i>	277	615	946
Effective Principal Stress Ratio	5.97	5.33	5.25
Pore Pressure Parameter A	0.02	0.03	0.02
Axial Strain <i>%</i>	1.3	1.0	0.7
Membrane & filter correction applied to Deviator Stress <i>kPa</i>	2	2	1
Duration <i>day(s)</i>	1	1	1
Final Water Content <i>%</i>	27.3		
Final Wet Density <i>Mg/m³</i>	1.96		
EFFECTIVE STRESS PARAMETERS			
Cohesion <i>kPa</i>	9		
Angle of Shear Resistance <i>degrees</i>	42.0		
FAILURE SKETCH			

Checked and Approved by

P Heritage - Project Manager
22/01/2021

Project Number:

GEO / 32303

Project Name:

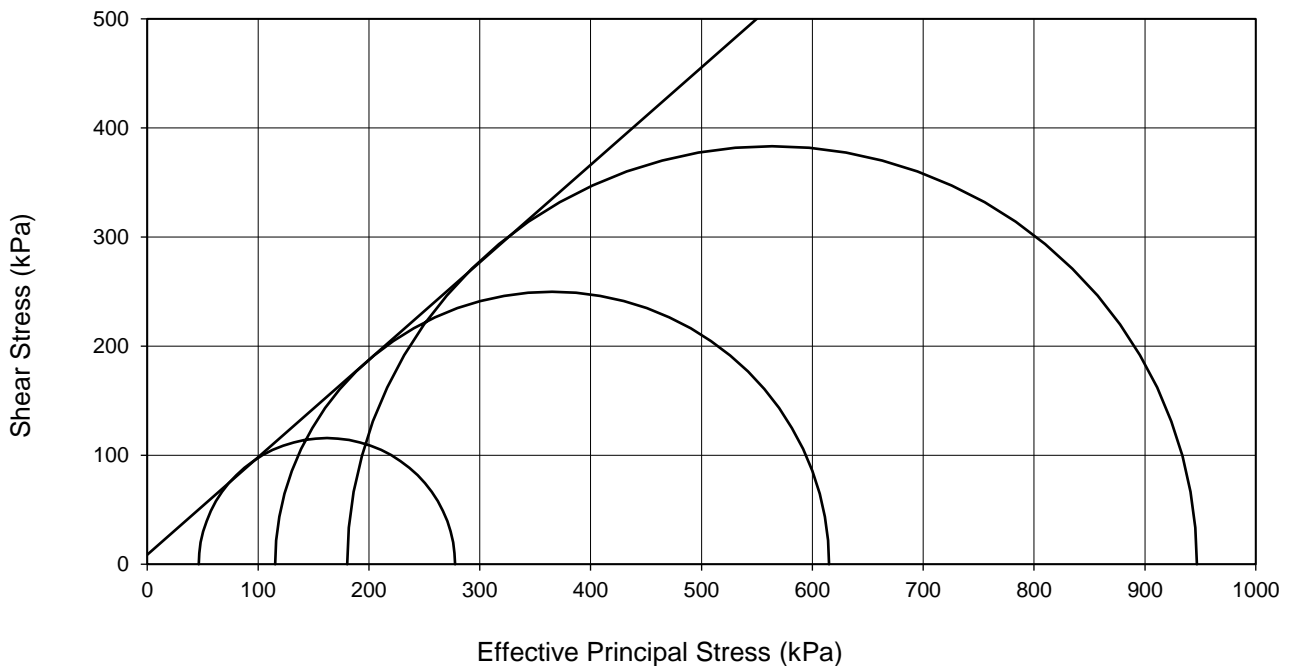
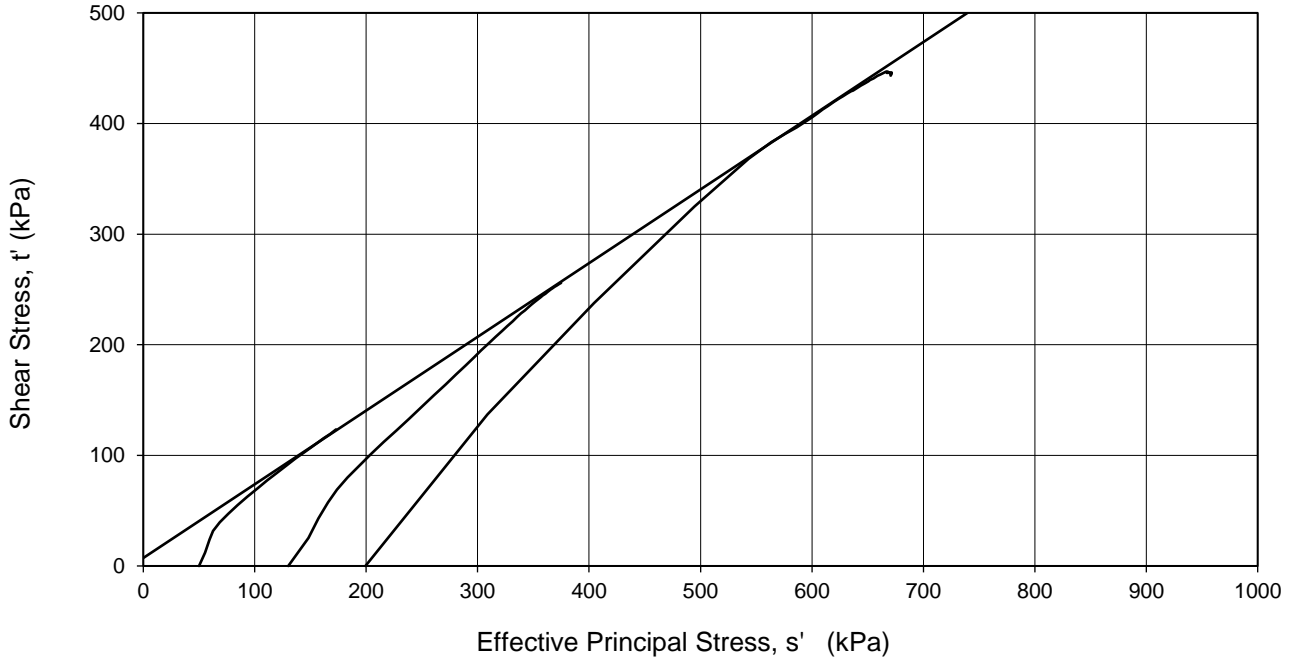
A303 STONEHENGE
JFR1451



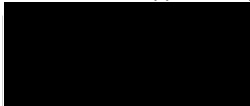
CONSOLIDATED UNDRAINED MULTISTAGE TRIAXIAL COMPRESSION TEST WITH MEASUREMENT OF PORE PRESSURE

Borehole No.: CP72310
Depth (m): 6.00-6.45

Description:
Firm off white structureless CHALK with fine to medium gravel sized chalk.



Checked and Approved by



P Heritage - Project Manager
22/01/2021

Project Number:

GEO / 32303

Project Name:

**A303 STONEHENGE
JFR1451**

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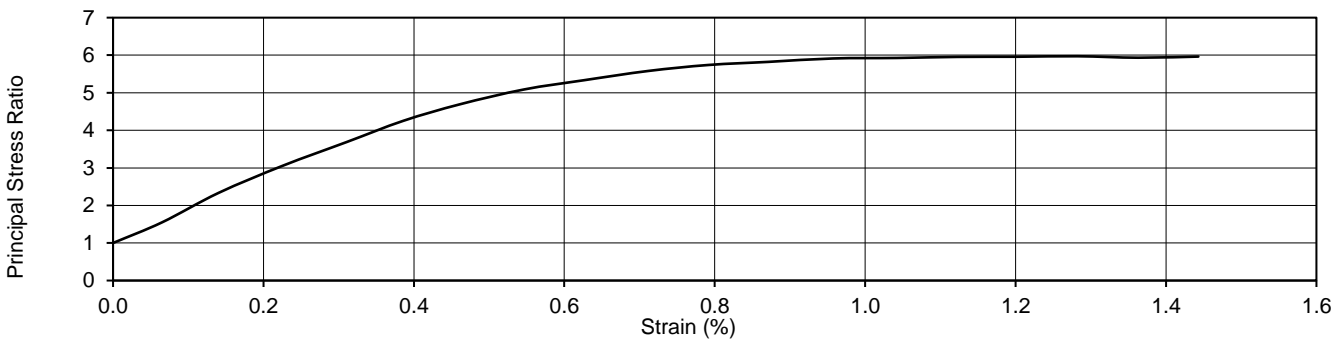
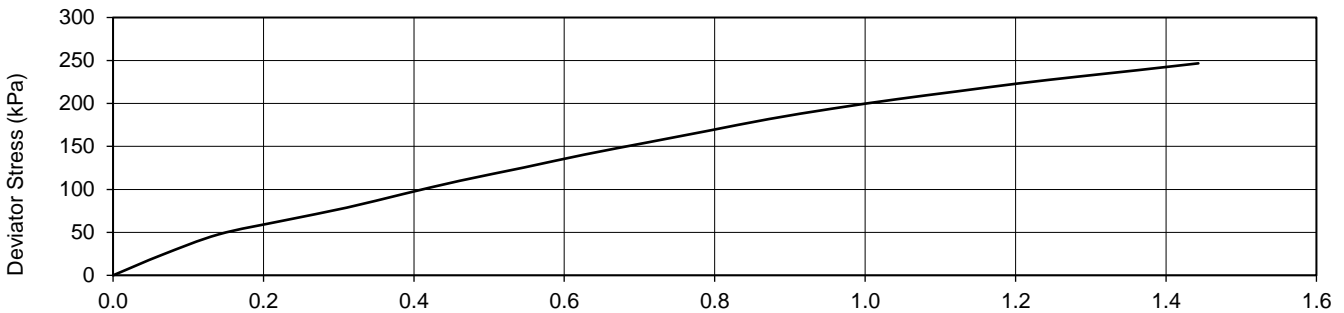
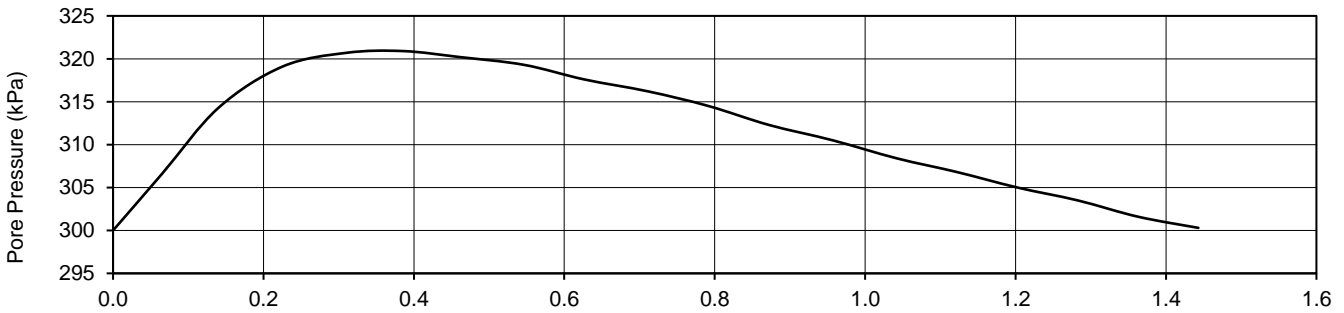
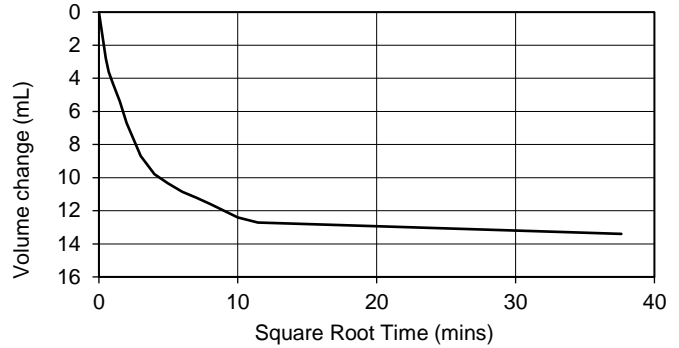
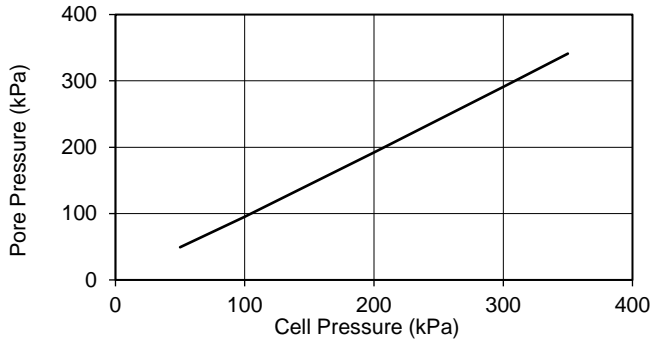


CONSOLIDATED UNDRAINED MULTISTAGE TRIAXIAL COMPRESSION TEST WITH MEASUREMENT OF PORE PRESSURE

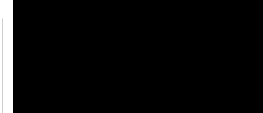
Borehole No.: CP72310

Depth (m): 6.00-6.45

Stage No 1



Checked and Approved by



P Heritage - Project Manager
22/01/2021

Project Number:

GEO / 32303

Project Name:

**A303 STONEHENGE
JFR1451**

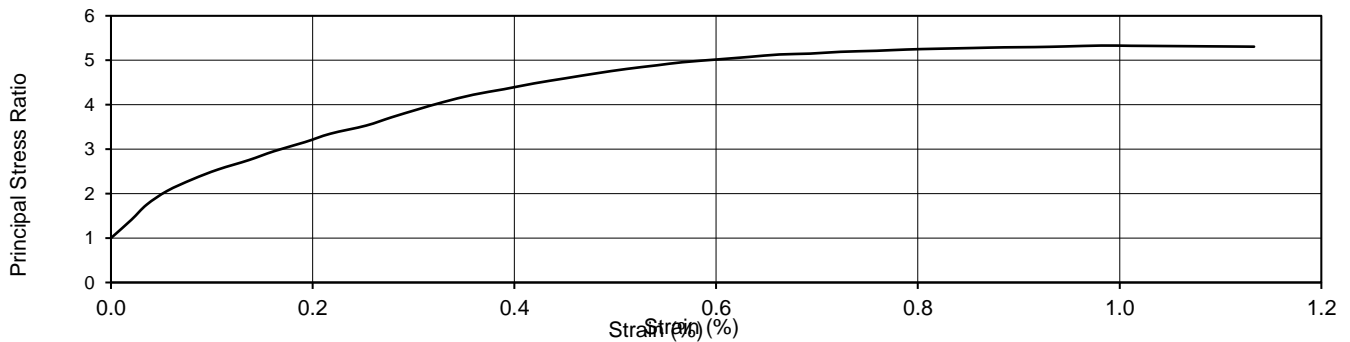
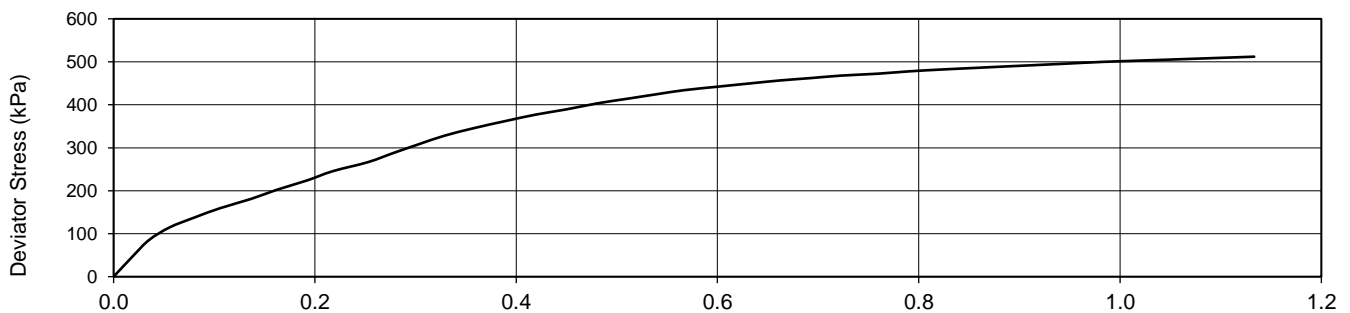
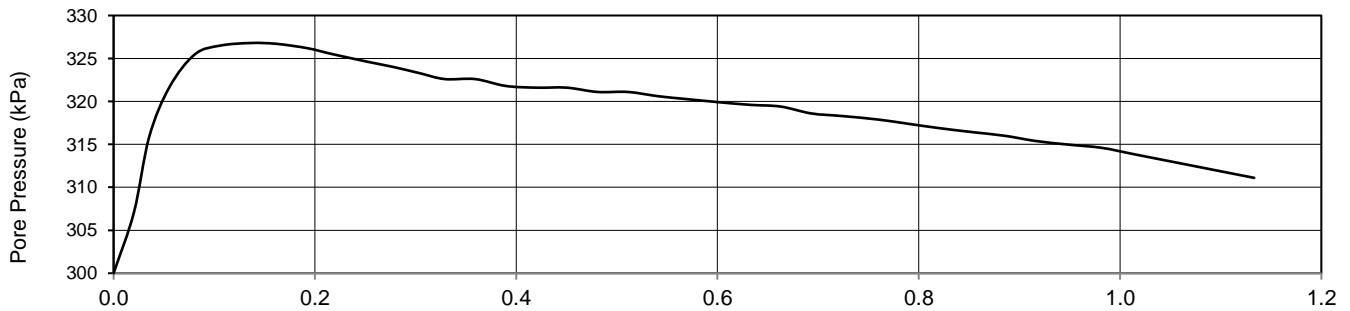
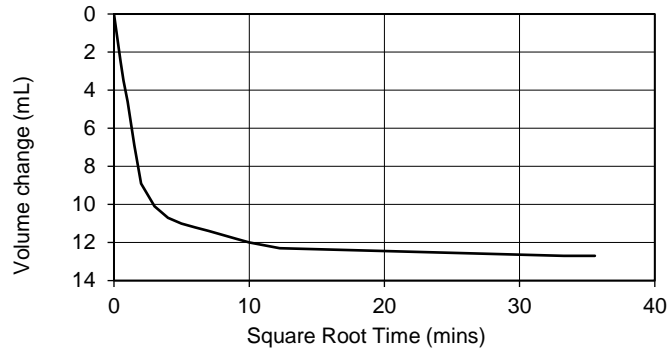
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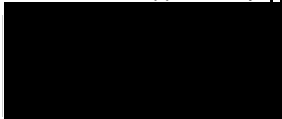
CONSOLIDATED UNDRAINED MULTISTAGE TRIAXIAL COMPRESSION TEST WITH MEASUREMENT OF PORE PRESSURE

Borehole No.: CP72310
Depth (m): 6.00-6.45

Stage No 2



Checked and Approved by



P Heritage - Project Manager
22/01/2021

Project Number:

GEO / 32303

Project Name:

**A303 STONEHENGE
JFR1451**

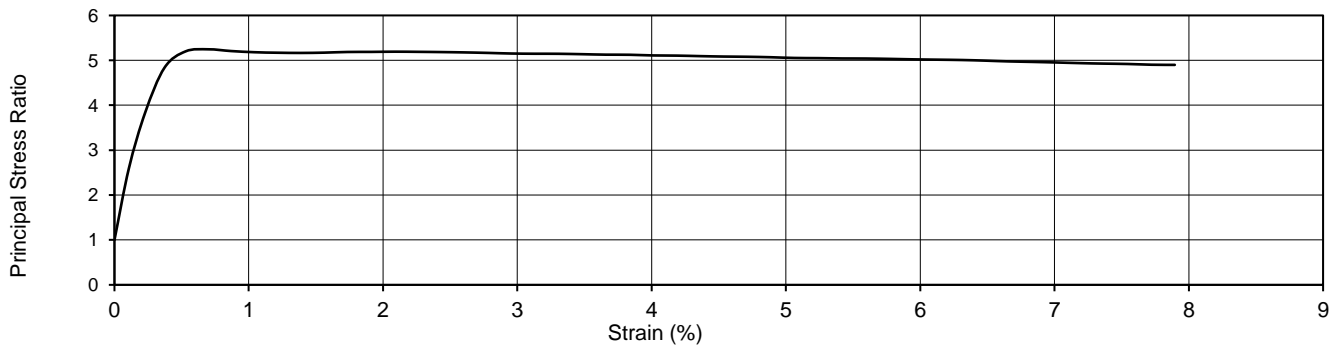
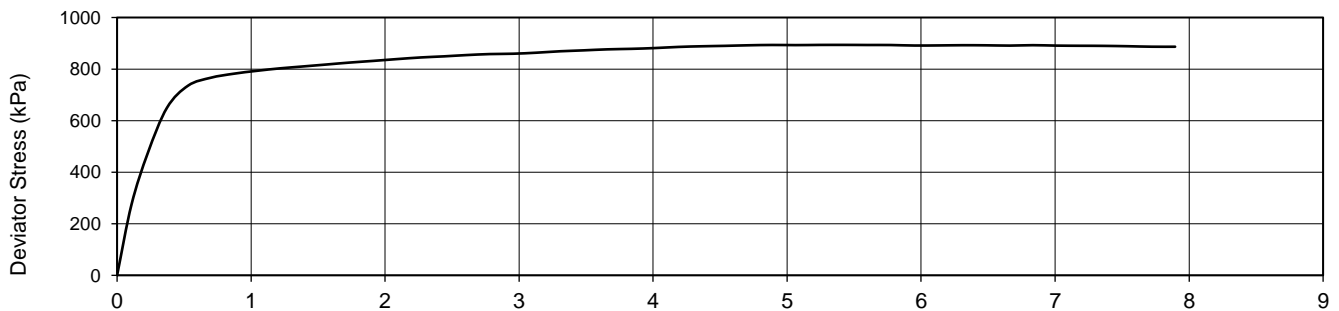
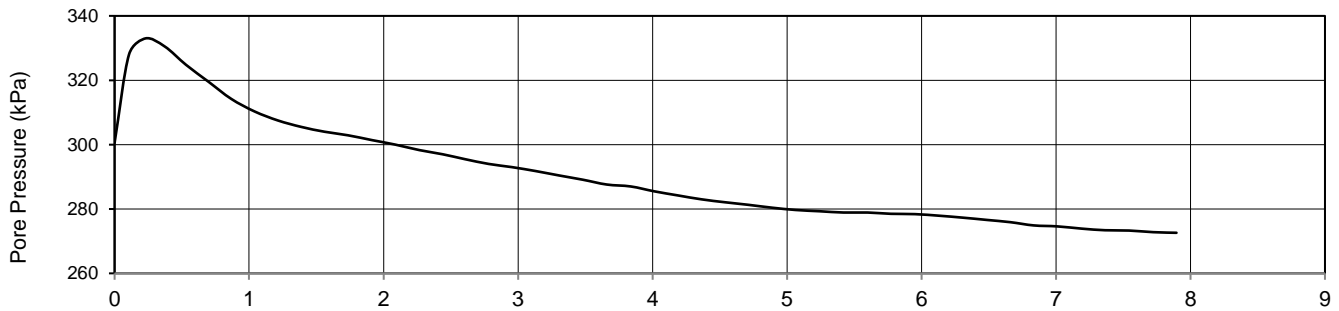
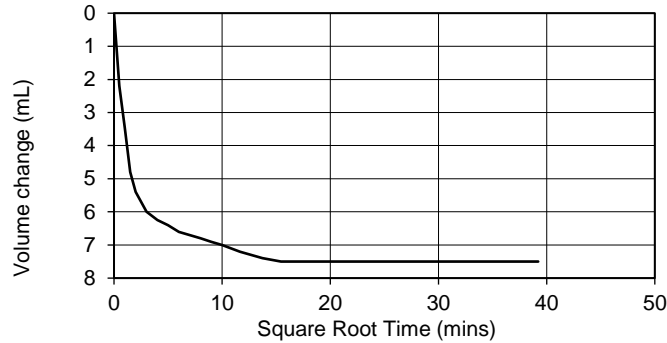
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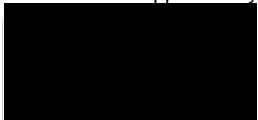
CONSOLIDATED UNDRAINED MULTISTAGE TRIAXIAL COMPRESSION TEST WITH MEASUREMENT OF PORE PRESSURE

Borehole No.: CP72310
Depth (m): 6.00-6.45

Stage No 3



Checked and Approved by



P Heritage - Project Manager
22/01/2021

Project Number:

GEO / 32303

Project Name:

**A303 STONEHENGE
JFR1451**



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DENSITY DETERMINATION USING BUOYANCY TECHNIQUES

Sample details				Test results							
Borehole Ref.	Sample Ref.	Depth (m)	Description	Bulk Density (Mg/m ³)	Dry Density (Mg/m ³)	Water Content (%)	Volume (cm ³)	Method of volume calculation	D. Tested	(*) Pore Volume (cm ³)	Porosity (%)
R71203		7.80-7.90	White CHALK	1.99	1.56	27	130.94	Buoyancy technique	13/11/20	-	-

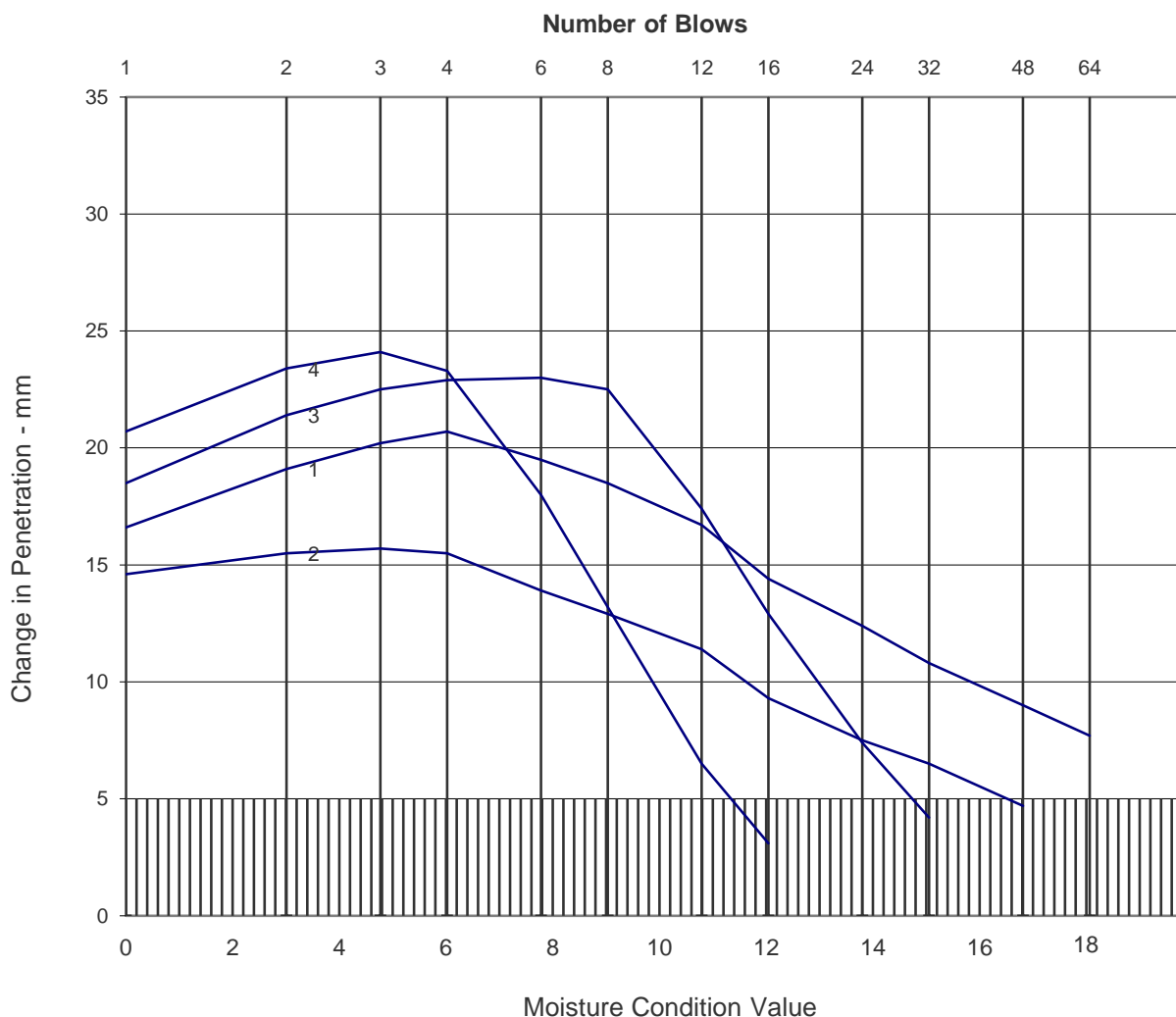
(*) Pore volume obtained by water saturation at 20°.

Checked and Approved by <div style="background-color: black; width: 50px; height: 20px; margin: 5px 0;"></div> C Clergeaud (Snr. Geologist) Date: 24/11/2020	Project Number: GEO / 32140 Project Name: A303 STONEHENGE JFR1451	 
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MOISTURE CONDITION VALUE

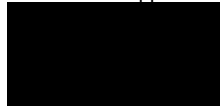
Location STP71601
 Depth (m) 1.00
 Sample Type B

Description:
 White slightly gravelly structureless CHALK. Gravel is flint and chalk.



Material retained on 20mm test sieve	%				
Determination No		1	2	3	4
Moisture condition value		20.9	16.7	14.6	11.3
Moisture content	%	15.4	18.8	21.9	26.8
Method of interpretation of the test curve		Best-fit line	Best-fit line	Best-fit line	Best-fit line

Checked and Approved by:



J Sturges - Operations Manager
 21/01/2021

Project Number:

GEO/32133

Project Name:

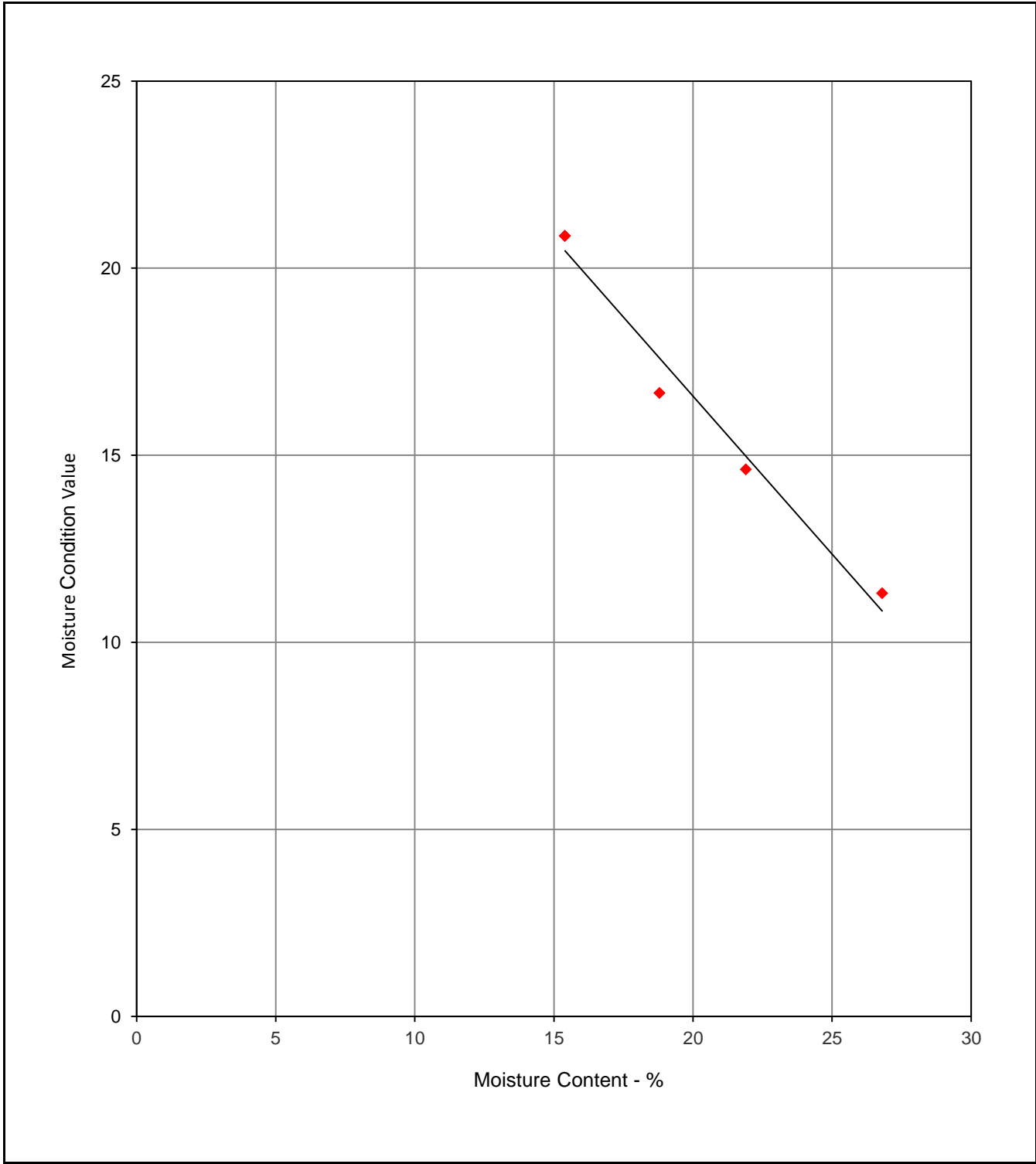
**A303 STONEHENGE
 JFR1451**



MOISTURE CONDITION VALUE

Location	STP71601
Depth (m)	1.00
Sample Type	B

Description:
 White slightly gravelly structureless CHALK. Gravel is flint and chalk.



Checked and Approved by:

 J Sturges - Operations Manager
 21/01/2021

Project Number: **GEO/32133**
 Project Name: **A303 STONEHENGE
 JFR1451**



PARTICLE DENSITY

Location	Depth (m)	Sample Ref	Sample Type	Description	Particle Density Mg/m ³	Test Method
STP70103	1.00	7	B	White CHALK.	2.08	1

Notes

Test Method
 1. Gas jar : BS1377 : Part 2 : 1990 Clause 8.2
 2. Pycnometer : BS EN ISO 17892-3:2015 (UKAS Accredited)

Checked and Approved by:



J Sturges - Operations Manager
14/04/2021

Project Number: **GEO / 32903**

Project Name: **A303 STONEHENGE JFR1451**





DETERMINATION OF POINT LOAD STRENGTH ON ROCK

Sample details				Point Load test											
Borehole Ref.	Sample Ref.	Depth (m)	Description	D. Tested	Test type & Direction		Sample width W (mm)	Platen separation (mm)		Water Content (%)	Equiv. Diameter D _e (mm)	Failure Load P (kN)	I _s P/De ² (MPa)	Correction Factor F	Point Load Index I _{s(50)} (MPa)
								Start D	End D'						
R70302		7.54-7.60	White CHALK	12/10/20	A	R	99.6	79.6	69.6		93.9	1.73	0.20	1.33	0.27

(*) Sample failed on weakness

Test type and direction: **D** - Diametral **A** - Axial **B** - Block **L** - Irregular lump **Pd** - Perpendicular to planes of weakness **R** - Random or unknown orientation **PI** - Parallel to planes of weakness

Checked and Approved by <div style="background-color: black; width: 50px; height: 20px; margin: 5px auto;"></div> C Clergeaud (Snr. Geologist) Date: 13/10/2020	Project Number: GEO / 31889 Project Name: A303 STONEHENGE JFR1451	 
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DETERMINATION OF POINT LOAD STRENGTH ON ROCK

Sample details				Point Load test											
Borehole Ref.	Sample Ref.	Depth (m)	Description	D. Tested	Test type & Direction		Sample width W (mm)	Platen separation (mm)		Water Content (%)	Equiv. Diameter D _e (mm)	Failure Load P (kN)	I _s P/De ² (MPa)	Correction Factor F	Point Load Index I _{s(50)} (MPa)
								Start D	End D'						
R70701		4.07-4.21	White CHALK	08/01/21	A	R	99.2	48.0	45.1		75.5	1.19	0.21	1.20	0.25
R70701		11.98-12.07	White CHALK	08/01/21	A	R	99.5	58.9	56.3		84.5	0.75	0.11	1.27	0.14
R70702		15.66-15.89	White CHALK	08/01/21	A	R	100.6	44.4	41.1		72.6	1.20	0.23	1.18	0.27

(*) Sample failed on weakness

Test type and direction: **D** - Diametral **A** - Axial **B** - Block **L** - Irregular lump **Pd** - Perpendicular to planes of weakness **R** - Random or unknown orientation **PI** - Parallel to planes of weakness



Checked and Approved by C Clergeaud (Snr. Geologist) Date: 18/01/2021	Project Number: GEO / 32369 Project Name: A303 STONEHENGE JFR1451	
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DETERMINATION OF POINT LOAD STRENGTH ON ROCK

Sample details				Point Load test											
Borehole Ref.	Sample Ref.	Depth (m)	Description	D. Tested	Test type & Direction		Sample width W (mm)	Platen separation (mm)		Water Content (%)	Equiv. Diameter D _e (mm)	Failure Load P (kN)	I _s P/De ² (MPa)	Correction Factor F	Point Load Index I _{s(50)} (MPa)
								Start D	End D'						
R71905		8.55-8.73	White CHALK	30/11/20	A	PI	98.7	69.3	63.5		89.3	0.21	0.03	1.30	0.04*
R71905		11.80-11.97	White CHALK	30/11/20	A	R	100.6	60.3	51.3		81.1	1.11	0.17	1.24	0.21
R71905		18.10-18.30	White CHALK	30/11/20	A	R	99.3	69.5	60.5		87.5	0.91	0.12	1.29	0.15
R71905		20.10-20.32	White CHALK	30/11/20	D	R	101.3	100.8	93.5		97.1	1.86	0.20	1.35	0.27
R72005		11.65-11.89	White CHALK	30/11/20	A	R	101.3	69.8	57.2		85.9	1.09	0.15	1.28	0.19
R72005		58.32-58.50	White CHALK	30/11/20	A	R	100.7	57.5	49.3		79.5	1.11	0.17	1.23	0.21

(*) Sample failed on weakness

Test type and direction: **D** - Diametral **A** - Axial **B** - Block **L** - Irregular lump **Pd** - Perpendicular to planes of weakness **R** - Random or unknown orientation **PI** - Parallel to planes of weakness

Checked and Approved by <div style="background-color: black; width: 60px; height: 20px; margin: 5px 0;"></div> C Clergeaud (Snr. Geologist) Date: 04/12/2020	Project Number: GEO / 32215 Project Name: A303 STONEHENGE JFR1451	 
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DETERMINATION OF POINT LOAD STRENGTH ON ROCK

Sample details				Point Load test										
Borehole Ref.	Sample Ref.	Depth (m)	Description	D. Tested	Test type & Direction	Sample width W (mm)	Platen separation (mm)		Water Content (%)	Equiv. Diameter D _e (mm)	Failure Load P (kN)	I _s P/De ² (MPa)	Correction Factor F	Point Load Index I _{s(50)} (MPa)
							Start D	End D'						
R72006		3.33-3.45	White CHALK	07/01/21	A R	100.1	64.2	61.9		88.8	0.23	0.03	1.30	0.04
R72006		7.50-7.68	White CHALK	07/01/21	D R	100.2	100.2	96.4		98.3	0.75	0.08	1.36	0.11
R72006		9.72-9.85	White CHALK	07/01/21	A R	70.2	41.0	38.8		58.9	0.27	0.08	1.08	0.09
R72006		14.00-14.12	White CHALK	07/01/21	A R	98.2	36.0	32.3		63.5	0.51	0.13	1.11	0.14
R72006		26.23-26.40	White CHALK	07/01/21	A R	99.7	65.9	61.6		88.4	0.32	0.04	1.29	0.05

(*) Sample failed on weakness

Test type and direction: **D** - Diametral **A** - Axial **B** - Block **L** - Irregular lump **Pd** - Perpendicular to planes of weakness **R** - Random or unknown orientation **PI** - Parallel to planes of weakness


Checked and Approved by C Clergeaud (Snr. Geologist) Date: 08/01/2021	Project Number: GEO / 32302 Project Name: A303 STONEHENGE JFR1451	
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DETERMINATION OF POINT LOAD STRENGTH ON ROCK

Sample details				Point Load test											
Borehole Ref.	Sample Ref.	Depth (m)	Description	D. Tested	Test type & Direction		Sample width W (mm)	Platen separation (mm)		Water Content (%)	Equiv. Diameter D _e (mm)	Failure Load P (kN)	I _s P/De ² (MPa)	Correction Factor F	Point Load Index I _{s(50)} (MPa)
								Start D	End D'						
BH72401	6	15.10-15.23	White CHALK	30/11/20	A	R	97.8	74.6	62.3		88.1	1.19	0.15	1.29	0.19
BH72401	9	19.08-19.20	White CHALK	30/11/20	A	Pd	101.3	90.2	85.3		104.9	0.30	0.03	1.40	0.04*
BH72401	17	24.76-24.94	White CHALK	30/11/20	D	PI	121.2	101.2	95.3		98.2	0.53	0.06	1.35	0.08*

(*) Sample failed on weakness

Test type and direction: **D** - Diametral **A** - Axial **B** - Block **L** - Irregular lump **Pd** - Perpendicular to planes of weakness **R** - Random or unknown orientation **PI** - Parallel to planes of weakness

Checked and Approved by

 C Clergeaud (Snr. Geologist)
 Date: 01/12/2020

Project Number:

 Project Name:

GEO / 32202

A303 STONEHENGE
JFR1451





DETERMINATION OF POINT LOAD STRENGTH ON ROCK

Sample details				Point Load test											
Borehole Ref.	Sample Ref.	Depth (m)	Description	D. Tested	Test type & Direction		Sample width W (mm)	Platen separation (mm)		Water Content (%)	Equiv. Diameter D _e (mm)	Failure Load P (kN)	I _s P/De ² (MPa)	Correction Factor F	Point Load Index I _{s(50)} (MPa)
								Start D	End D'						
R71910		29.04-29.31	White CHALK	21/10/20	A	R	98.4	89.0	85.1		103.3	1.33	0.12	1.39	0.17
R71910		37.37-37.59	White CHALK	21/10/20	A	R	98.1	68.9	65.6		90.5	1.06	0.13	1.31	0.17
R71910		41.98-42.22	White CHALK	21/10/20	D	R	98.8	98.8	92.6		95.6	1.55	0.17	1.34	0.23
R71910		46.09-46.39	White CHALK Determination 2	21/10/20	A	R	98.6	52.0	49.6		78.9	1.17	0.19	1.23	0.23
				21/10/20	D	R	99.0	97.9	92.3		95.1	1.43	0.16	1.34	0.21
R71910		52.00-52.24	White CHALK	16/12/20	A	R	99.5	51.0	47.4		77.5	1.25	0.21	1.22	0.26
R71910		57.50-57.76	White CHALK	21/10/20	D	PI	97.0	95.6	91.2		93.4	1.88	0.22	1.32	0.29

(*) Sample failed on weakness

Test type and direction: **D** - Diametral **A** - Axial **B** - Block **L** - Irregular lump **Pd** - Perpendicular to planes of weakness **R** - Random or unknown orientation **PI** - Parallel to planes of weakness



Checked and Approved by <div style="background-color: black; width: 40px; height: 20px; margin: 5px auto;"></div> C Clergeaud (Snr. Geologist) Date: 17/12/2020	Project Number: GEO / 31761 Project Name: A303 STONEHENGE JFR1451	 
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DETERMINATION OF POINT LOAD STRENGTH ON ROCK

Sample details				Point Load test											
Borehole Ref.	Sample Ref.	Depth (m)	Description	D. Tested	Test type & Direction	Sample width W (mm)	Platen separation (mm)		Water Content (%)	Equiv. Diameter D _e (mm)	Failure Load P (kN)	I _s P/De ² (MPa)	Correction Factor F	Point Load Index I _{s(50)} (MPa)	
							Start D	End D'							
R71914		4.30-4.45	White CHALK	08/01/21	A	PI	89.1	53.2	48.4		74.1	0.88	0.16	1.19	0.19
R71914		8.26-8.38	White CHALK	16/11/20	A	R	50.2	50.1	45.3		53.8	0.84	0.29	1.03	0.3
R71914		17.10-17.30	White CHALK	16/11/20	A	R	50.0	58.3	53.8		58.5	1.27	0.37	1.07	0.4
R71914		22.90-22.97	White CHALK	08/01/21	A	PI	101.4	65.6	60.8		88.6	1.76	0.22	1.29	0.28
R71914		25.50-25.68	White CHALK	16/11/20	A	R	99.8	42.4	38.1		69.6	0.63	0.13	1.16	0.15

(*) Sample failed on weakness

Test type and direction: **D** - Diametral **A** - Axial **B** - Block **L** - Irregular lump **Pd** - Perpendicular to planes of weakness **R** - Random or unknown orientation **PI** - Parallel to planes of weakness


Checked and Approved by <div style="background-color: black; width: 50px; height: 20px; margin: 5px auto;"></div> C Clergeaud (Snr. Geologist) Date: 13/01/2021	Project Number: GEO / 32128 Project Name: A303 STONEHENGE JFR1451	 
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DETERMINATION OF POINT LOAD STRENGTH ON ROCK

Sample details				Point Load test											
Borehole Ref.	Sample Ref.	Depth (m)	Description	D. Tested	Test type & Direction		Sample width W (mm)	Platen separation (mm)		Water Content (%)	Equiv. Diameter D _e (mm)	Failure Load P (kN)	I _s P/De ² (MPa)	Correction Factor F	Point Load Index I _{s(50)} (MPa)
								Start D	End D'						
R71203		5.60-5.70	White CHALK	13/11/20	A	R	101.6	81.0	78.0		100.4	0.30	0.03	1.37	0.04
R71203		7.80-7.90	White CHALK	13/11/20	A	R	101.2	84.8	84.0		104.0	0.17	0.02	1.39	0.03*
R71203		14.80-14.95	White CHALK	13/11/20	A	R	98.3	60.9	57.8		85.1	0.35	0.05	1.27	0.06
R71203		15.18-15.35	White CHALK	13/11/20	A	R	101.8	46.4	44.2		75.7	0.47	0.08	1.21	0.1

(*) Sample failed on weakness

Test type and direction: **D** - Diametral **A** - Axial **B** - Block **L** - Irregular lump **Pd** - Perpendicular to planes of weakness **R** - Random or unknown orientation **PI** - Parallel to planes of weakness

Checked and Approved by

 C Clergeaud (Snr. Geologist)
 Date: 24/11/2020

Project Number:

 Project Name:

GEO / 32140

A303 STONEHENGE
JFR1451




DETERMINATION OF POINT LOAD STRENGTH ON ROCK

Sample details				Point Load test											
Borehole Ref.	Sample Ref.	Depth (m)	Description	D. Tested	Test type & Direction		Sample width W (mm)	Platen separation (mm)		Water Content (%)	Equiv. Diameter D _e (mm)	Failure Load P (kN)	I _s P/De ² (MPa)	Correction Factor F	Point Load Index I _{s(50)} (MPa)
								Start D	End D'						
R70301		5.97-6.10	White CHALK	10/11/20	L	R	83.3	79.4	73.1		88.1	0.99	0.13	1.29	0.17
R70301		13.50-13.73	White CHALK	10/11/20	D	R	101.0	100.8	95.3		98.0	1.91	0.20	1.35	0.27

(*) Sample failed on weakness

Test type and direction: **D** - Diametral **A** - Axial **B** - Block **L** - Irregular lump **Pd** - Perpendicular to planes of weakness **R** - Random or unknown orientation **PI** - Parallel to planes of weakness

Checked and Approved by

 C Clergeaud (Snr. Geologist)
 Date: 17/11/2020

Project Number:
GEO / 32130

Project Name:
**A303 STONEHENGE
 JFR1451**



DETERMINATION OF POINT LOAD STRENGTH ON ROCK

Sample details				Point Load test										
Borehole Ref.	Sample Ref.	Depth (m)	Description	D. Tested	Test type & Direction	Sample width W (mm)	Platen separation (mm)		Water Content (%)	Equiv. Diameter D _e (mm)	Failure Load P (kN)	I _s P/De ² (MPa)	Correction Factor F	Point Load Index I _{s(50)} (MPa)
							Start D	End D'						
R71912		24.04-24.47	White CHALK	16/11/20	A R	101.1	50.8	46.7		77.5	0.64	0.11	1.22	0.13
R71912		39.80-40.00	White CHALK Determination 2	16/11/20	A R	96.4	36.3	31.5		62.2	1.02	0.26	1.10	0.29
				16/11/20	D R	96.3	96.2	92.4		94.3	1.41	0.16	1.33	0.21
R71912		45.10-45.45	White CHALK	16/11/20	A R	100.0	59.2	55.4		84.0	0.97	0.14	1.26	0.18
R71912		48.78-49.00	White CHALK	16/11/20	A R	95.0	55.1	50.6		78.2	0.78	0.13	1.22	0.16

(*) Sample failed on weakness

Test type and direction: **D** - Diametral **A** - Axial **B** - Block **L** - Irregular lump **Pd** - Perpendicular to planes of weakness **R** - Random or unknown orientation **PI** - Parallel to planes of weakness



Checked and Approved by C Clergeaud (Snr. Geologist) Date: 17/11/2020	Project Number: GEO / 32129 Project Name: A303 STONEHENGE JFR1451	
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DETERMINATION OF POINT LOAD STRENGTH ON ROCK

Sample details				Point Load test											
Borehole Ref.	Sample Ref.	Depth (m)	Description	D. Tested	Test type & Direction		Sample width W (mm)	Platen separation (mm)		Water Content (%)	Equiv. Diameter D _e (mm)	Failure Load P (kN)	I _s P/De ² (MPa)	Correction Factor F	Point Load Index I _{s(50)} (MPa)
								Start D	End D'						
R72001		5.94-6.03	White CHALK	19/10/20	A	R	101.5	60.0	55.2		84.5	1.01	0.14	1.27	0.18
R72001		11.22-11.50	White CHALK	19/10/20	A	R	101.0	67.5	62.3		89.5	1.61	0.20	1.30	0.26
R72001		14.25-14.50	White CHALK Determination 2	19/10/20	D	R	101.3	101.0	97.5		99.2	1.00	0.10	1.36	0.14
				19/10/20	A	R	101.0	57.6	50.4		80.5	0.81	0.12	1.24	0.15
R72001		22.50-22.79	White CHALK	19/10/20	D	R	102.0	58.4	53.6		55.9	1.10	0.35	1.05	0.37
R72001		29.90-30.10	White CHALK	19/10/20	A	R	101.0	70.0	66.1		92.2	0.84	0.10	1.32	0.13
R72001		38.62-38.86	White CHALK	19/10/20	D	R	95.5	95.5	90.4		92.9	0.51	0.06	1.32	0.08
R72001		41.76-41.99	White CHALK	19/10/20	A	R	101.0	50.1	43.6		74.9	1.13	0.20	1.20	0.24

(*) Sample failed on weakness

Test type and direction: **D** - Diametral **A** - Axial **B** - Block **L** - Irregular lump **Pd** - Perpendicular to planes of weakness **R** - Random or unknown orientation **PI** - Parallel to planes of weakness



Checked and Approved by <div style="background-color: black; width: 40px; height: 20px; margin: 5px 0;"></div> C Clergeaud (Snr. Geologist) Date: 20/10/2020	Project Number: GEO / 31879 Project Name: A303 STONEHENGE JFR1451	 
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DETERMINATION OF POINT LOAD STRENGTH ON ROCK

Sample details				Point Load test											
Borehole Ref.	Sample Ref.	Depth (m)	Description	D. Tested	Test type & Direction		Sample width W (mm)	Platen separation (mm)		Water Content (%)	Equiv. Diameter D _e (mm)	Failure Load P (kN)	I _s P/De ² (MPa)	Correction Factor F	Point Load Index I _{s(50)} (MPa)
								Start D	End D'						
R71908	5	23.90-24.19	White CHALK	24/09/20	A	Pd	100.0	45.2	40.4		71.7	0.68	0.13	1.18	0.15
R71908	8	29.30-29.50	White CHALK	24/09/20	A	Pd	101.2	31.1	27.7		59.7	0.61	0.17	1.08	0.18
R71908	10	36.40-36.62	White CHALK	24/09/20	A	Pd	99.9	59.0	51.8		81.2	0.75	0.11	1.24	0.14
R71908	12	45.50-45.70	White CHALK	24/09/20	A	Pd	97.2	54.0	48.6		77.6	0.75	0.12	1.22	0.15
R71908	21	49.40-49.70	White CHALK	24/09/20	A	Pd	100.9	64.7	59.1		87.1	1.06	0.14	1.28	0.18
R71908	24	53.69-53.96	White CHALK	24/09/20	A	Pd	93.4	39.0	35.2		64.7	0.75	0.18	1.12	0.2
R71908	17	61.54-61.75	White CHALK	24/09/20	A	Pd	100.0	41.7	37.7		69.3	1.13	0.24	1.16	0.28

(*) Sample failed on weakness

Test type and direction: **D** - Diametral **A** - Axial **B** - Block **L** - Irregular lump **Pd** - Perpendicular to planes of weakness **R** - Random or unknown orientation **PI** - Parallel to planes of weakness

Checked and Approved by <div style="background-color: black; width: 50px; height: 20px; margin: 5px 0;"></div> C Clergeaud (Snr. Geologist) Date: 25/09/2020	Project Number: GEO / 31728 Project Name: A303 STONEHENGE JFR1451	 
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DETERMINATION OF POINT LOAD STRENGTH ON ROCK

Sample details				Point Load test											
Borehole Ref.	Sample Ref.	Depth (m)	Description	D. Tested	Test type & Direction		Sample width W (mm)	Platen separation (mm)		Water Content (%)	Equiv. Diameter D _e (mm)	Failure Load P (kN)	I _s P/De ² (MPa)	Correction Factor F	Point Load Index I _{s(50)} (MPa)
								Start D	End D'						
R71915		6.30-6.45	White CHALK	15/10/20	A	R	101.0	54.3	50.1		80.3	0.33	0.05	1.24	0.06
R71915		10.84-10.96	White CHALK	15/10/20	D	R	100.0	100.1	95.5		97.8	0.61	0.06	1.35	0.08
R71915		25.53-25.68	White CHALK	15/10/20	D	R	100.0	100.5	94.3		97.4	1.18	0.12	1.35	0.16

(*) Sample failed on weakness

Test type and direction: **D** - Diametral **A** - Axial **B** - Block **L** - Irregular lump **Pd** - Perpendicular to planes of weakness **R** - Random or unknown orientation **PI** - Parallel to planes of weakness



Checked and Approved by C Clergeaud (Snr. Geologist) Date: 22/10/2020	Project Number: GEO / 31890 Project Name: A303 STONEHENGE JFR1451	
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DETERMINATION OF POINT LOAD STRENGTH ON ROCK

Sample details				Point Load test										
Borehole Ref.	Sample Ref.	Depth (m)	Description	D. Tested	Test type & Direction	Sample width W (mm)	Platen separation (mm)		Water Content (%)	Equiv. Diameter D _e (mm)	Failure Load P (kN)	I _s P/De ² (MPa)	Correction Factor F	Point Load Index I _{s(50)} (MPa)
							Start D	End D'						
R72004		5.89-5.99	White CHALK	12/10/20	A	98.3	79.6	73.5		95.9	0.75	0.08	1.34	0.11
R72004		9.10-9.21	White CHALK	12/10/20	D	101.5	101.1	96.4		98.7	1.04	0.11	1.36	0.15
R72004		13.74-13.93	White CHALK	12/10/20	A R	98.1	72.2	65.1		90.2	1.08	0.13	1.30	0.17
R72004		15.06-15.19	White CHALK	12/10/20	D R	98.1	97.3	91.1		94.1	1.13	0.13	1.33	0.17
R72004		23.85-24.08	White CHALK	12/10/20	A R	98.3	75.3	70.1		93.7	1.44	0.16	1.33	0.21
R72004		30.50-30.72	White CHALK	12/10/20	A R	96.5	91.3	88.5		104.3	1.66	0.15	1.39	0.21
R72004		41.09-41.24	White CHALK	12/10/20	D R	99.5	98.1	94.5		96.3	1.65	0.18	1.34	0.24
R72004		43.88-44.10	White CHALK	12/10/20	A R	98.1	76.3	68.1		92.2	2.03	0.24	1.32	0.32

(*) Sample failed on weakness

Test type and direction: **D** - Diametral **A** - Axial **B** - Block **L** - Irregular lump **Pd** - Perpendicular to planes of weakness **R** - Random or unknown orientation **PI** - Parallel to planes of weakness



Checked and Approved by <div style="background-color: black; width: 40px; height: 20px; margin: 5px auto;"></div> C Clergeaud (Snr. Geologist) Date: 14/10/2020	Project Number: GEO / 31880 Project Name: A303 STONEHENGE JFR1451	 
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DETERMINATION OF POINT LOAD STRENGTH ON ROCK

Sample details				Point Load test											
Borehole Ref.	Sample Ref.	Depth (m)	Description	D. Tested	Test type & Direction		Sample width W (mm)	Platen separation (mm)		Water Content (%)	Equiv. Diameter D _e (mm)	Failure Load P (kN)	I _s P/De ² (MPa)	Correction Factor F	Point Load Index I _{s(50)} (MPa)
								Start D	End D'						
BH72503	1	8.98-9.10	White CHALK	01/03/21	A	U	100.0	65.5	62.2		89.0	0.66	0.08	1.30	0.10
BH72503	2	12.10-12.18	White CHALK	01/03/21	I	U	100.4	77.1	74.8		97.8	0.60	0.06	1.35	0.08
BH72503	3	19.39-19.51	White CHALK	01/03/21	A	U	99.5	62.3	58.6		86.2	0.47	0.06	1.28	0.08

(*) Sample failed on weakness

Test type and direction: **D** - Diametral **A** - Axial **B** - Block **I** - Irregular lump **P** - Perpendicular to planes of weakness **U** - Random or unknown orientation **L** - Parallel to planes of weakness


Checked and Approved by <div style="background-color: black; width: 40px; height: 20px; margin: 5px 0;"></div> C Clergeaud (Snr. Geologist) Date: 03/03/2021	Project Number: <b style="text-align: center;">GEO / 32695 Project Name: <b style="text-align: center;">A303 STONEHENGE JFR1451	 
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DETERMINATION OF POINT LOAD STRENGTH ON ROCK

Sample details				Point Load test											
Borehole Ref.	Sample Ref.	Depth (m)	Description	D. Tested	Test type & Direction		Sample width W (mm)	Platen separation (mm)		Water Content (%)	Equiv. Diameter D _e (mm)	Failure Load P (kN)	I _s P/De ² (MPa)	Correction Factor F	Point Load Index I _{s(50)} (MPa)
								Start D	End D'						
R71210	6	7.70-7.88	White CHALK	01/03/21	D	U	98.4	100.0	97.3		98.6	0.72	0.07	1.36	0.10
R71210	8	10.40-10.67	White CHALK	01/03/21	D	U	97.4	97.3	95.1		96.2	0.91	0.10	1.34	0.13

(*) Sample failed on weakness

Test type and direction: **D** - Diametral **A** - Axial **B** - Block **I** - Irregular lump **P** - Perpendicular to planes of weakness **U** - Random or unknown orientation **L** - Parallel to planes of weakness

Checked and Approved by

 C Clergeaud (Snr. Geologist)
 Date: 05/03/2021

Project Number:

 Project Name:

GEO / 32691

A303 STONEHENGE
JFR1451






DETERMINATION OF POINT LOAD STRENGTH ON ROCK

Sample details				Point Load test											
Borehole Ref.	Sample Ref.	Depth (m)	Description	D. Tested	Test type & Direction		Sample width W (mm)	Platen separation (mm)		Water Content (%)	Equiv. Diameter D _e (mm)	Failure Load P (kN)	I _s P/De ² (MPa)	Correction Factor F	Point Load Index I _{s(50)} (MPa)
								Start D	End D'						
R71916		15.66-15.86	White CHALK	07/01/21	A	R	70.0	33.3	30.2		51.9	0.53	0.20	1.02	0.2
R71916		23.69-28.88	White CHALK	07/01/21	A	R	99.2	64.7	62.8		89.1	0.41	0.05	1.30	0.06
R71916		29.32-29.50	White CHALK	07/01/21	D	R	95.1	95.1	92.5		93.8	0.42	0.05	1.33	0.07
R71917	8	12.20-12.44	White CHALK	07/01/21	A	R	101.0	68.8	67.3		93.0	0.77	0.09	1.32	0.12
R71917	22	31.20-31.40	White CHALK	07/01/21	A	R	98.4	45.6	43.2		73.6	1.01	0.19	1.19	0.23
R71918	5	8.82-9.00	White CHALK	07/01/21	A	R	101.0	63.2	61.8		89.1	0.50	0.06	1.30	0.08
R71918	19	31.44-31.64	White CHALK	07/01/21	A	R	99.6	70.2	67.8		92.7	1.38	0.16	1.32	0.21
R71919	4	15.23-15.42	White CHALK	07/01/21	A	R	101.6	66.6	64.5		91.3	0.35	0.04	1.31	0.05
R71919	19	39.70-40.00	White CHALK	07/01/21	A	R	101.0	66.9	62.9		89.9	1.24	0.15	1.30	0.2
R71919	28	52.72-52.98	White CHALK	07/01/21	A	R	100.6	70.1	69.2		94.1	1.42	0.16	1.33	0.21

(*) Sample failed on weakness

Test type and direction: **D** - Diametral **A** - Axial **B** - Block **L** - Irregular lump **Pd** - Perpendicular to planes of weakness **R** - Random or unknown orientation **PI** - Parallel to planes of weakness

Checked and Approved by  C Clergeaud (Snr. Geologist) Date: 18/01/2021	Project Number: GEO / 32382 Project Name: A303 STONEHENGE JFR1451	 
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PARTICLE SIZE DISTRIBUTION

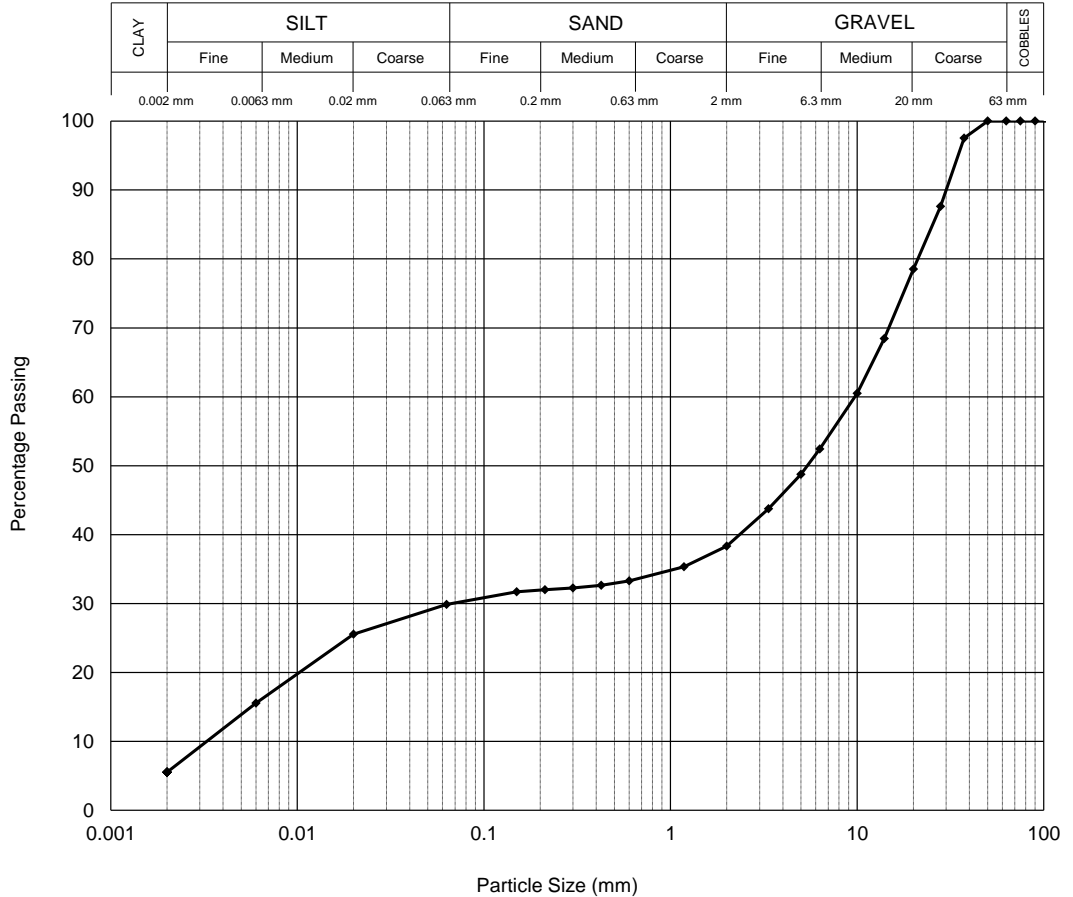
Location STP71601
 Depth (m) 0.50
 Sample Type B

Description

Light brown and white fine to coarse gravel sized CHALK in a structureless chalk matrix.

BS EN ISO 17892-4 : 2016 : Clause 5.2 - Wet Sieve
 BS EN ISO 17892-4 : 2016 : Clause 5.4 - Sedimentation by Pipette

Sieve	
Size	% Pass
200.0 mm	100
125.0 mm	100
90.0 mm	100
75.0 mm	100
63.0 mm	100
50.0 mm	100
37.5 mm	98
28.0 mm	88
20.0 mm	79
14.0 mm	68
10.0 mm	60
6.30 mm	52
5.00 mm	49
3.35 mm	44
2.00 mm	38
1.18 mm	35
600 µm	33
425 µm	33
300 µm	32
212 µm	32
150 µm	32
63 µm	30




Sedimentation	
No Pre-treatment used	
Temp (°C)	25
Size	% Pass
20 µm	26
6 µm	16
2 µm	6

Particle Density 2.70(A) Mg/m³

Particle Proportions	
Cobbles	0.0
Gravel	61.7
Sand	8.5
Silt	24.3
Clay	5.5

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 21/01/2021

Project Number:

GEO / 32133

Project Name:

**A303 STONEHENGE
 JFR1451**



PARTICLE SIZE DISTRIBUTION

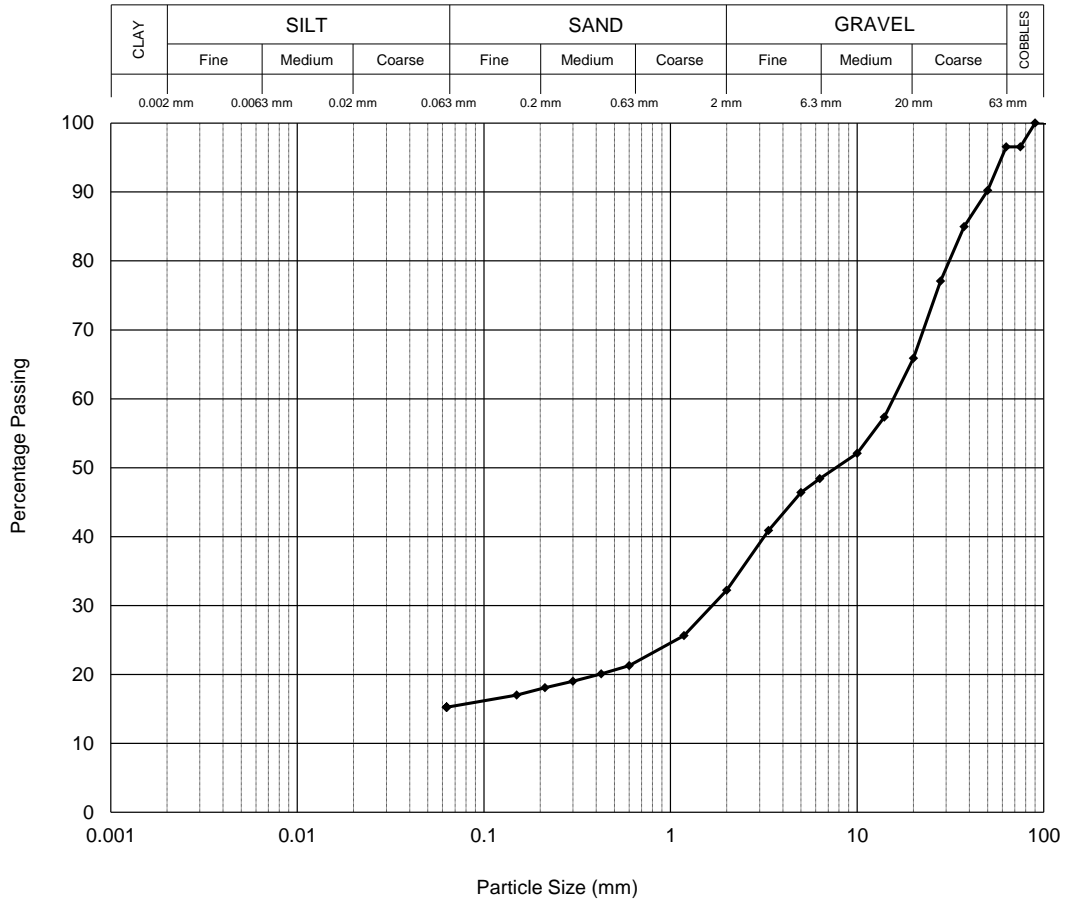
Location DTP70704
 Sample Ref 7
 Depth (m) 1.00
 Sample Type B

Description

Brown silty sandy GRAVEL. Gravel is flint and chalk with one cobble.

BS EN ISO 17892-4 : 2016 : Clause 5.2 - Wet Sieve


Sieve	
Size	% Pass
200.0 mm	100
125.0 mm	100
90.0 mm	100
75.0 mm	97
63.0 mm	97
50.0 mm	90
37.5 mm	85
28.0 mm	77
20.0 mm	66
14.0 mm	57
10.0 mm	52
6.30 mm	48
5.00 mm	46
3.35 mm	41
2.00 mm	32
1.18 mm	26
600 µm	21
425 µm	20
300 µm	19
212 µm	18
150 µm	17
63 µm	15



Particle Proportions	
Cobbles	3.4
Gravel	64.4
Sand	17.0
Silt & Clay	15.2

1262 - PSD DTP70704.01.00.7 B - 32137-376410.XLSM

Version 98.200730

Processed by CC
 Checked and Approved by

 J Sturges - Operations Manager
 24/12/2020

Project Number:

GEO / 32137

Project Name:

**A303 STONEHENGE
 JFR1451**



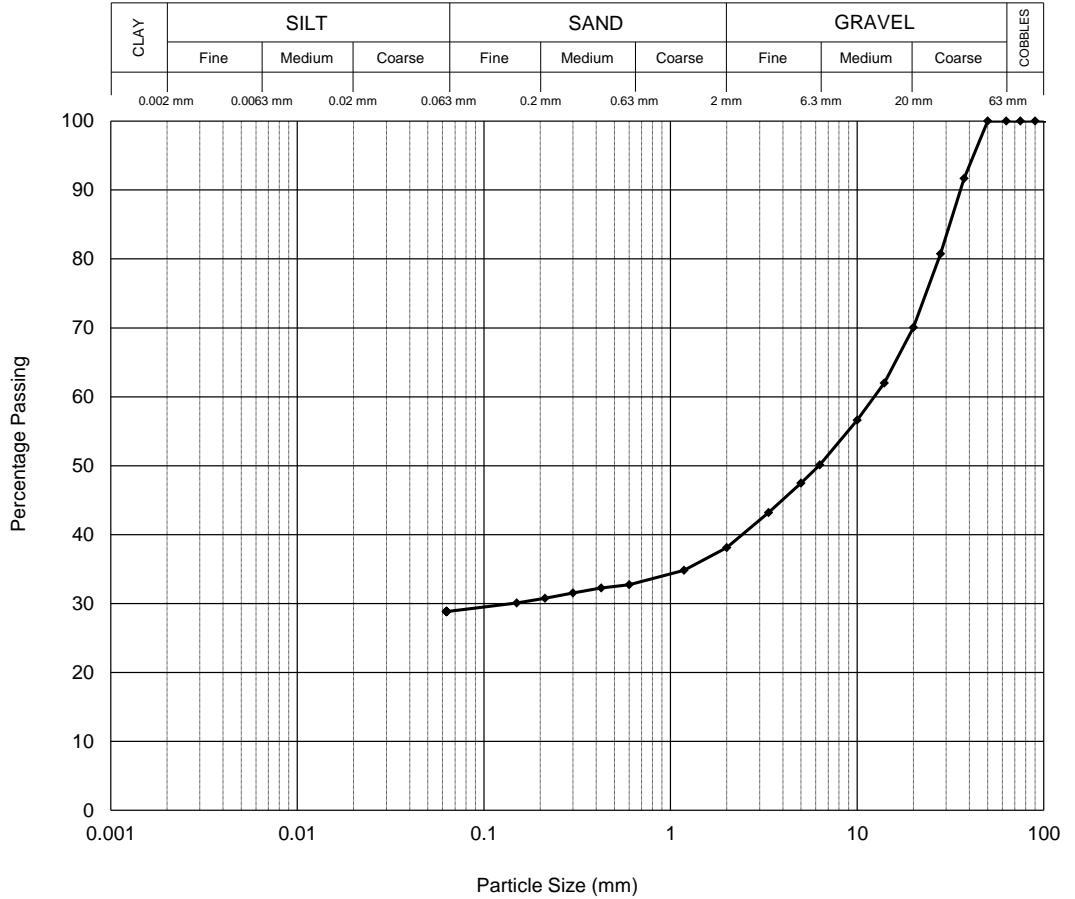
PARTICLE SIZE DISTRIBUTION

Location STP70403
 Sample Ref 5
 Depth (m) 0.50
 Sample Type B

Description
 White gravel sized CHALK in a structureless chalk matrix

BS EN ISO 17892-4 : 2016 : Clause 5.2 - Wet Sieve


Sieve	
Size	% Pass
200.0 mm	100
125.0 mm	100
90.0 mm	100
75.0 mm	100
63.0 mm	100
50.0 mm	100
37.5 mm	92
28.0 mm	81
20.0 mm	70
14.0 mm	62
10.0 mm	57
6.30 mm	50
5.00 mm	47
3.35 mm	43
2.00 mm	38
1.18 mm	35
600 µm	33
425 µm	32
300 µm	32
212 µm	31
150 µm	30
63 µm	29



Particle Proportions	
Cobbles	0.0
Gravel	61.9
Sand	9.3
Silt & Clay	28.8

1262 - PSD STP70403.00.50.5 B - 32372-376402.XLSM

Version 98.200730

Processed by JS
 Checked and Approved by

 J Sturges - Operations Manager
 25/01/2021

Project Number:

GEO / 32372

Project Name:

**A303 STONEHENGE
 JFR1451**



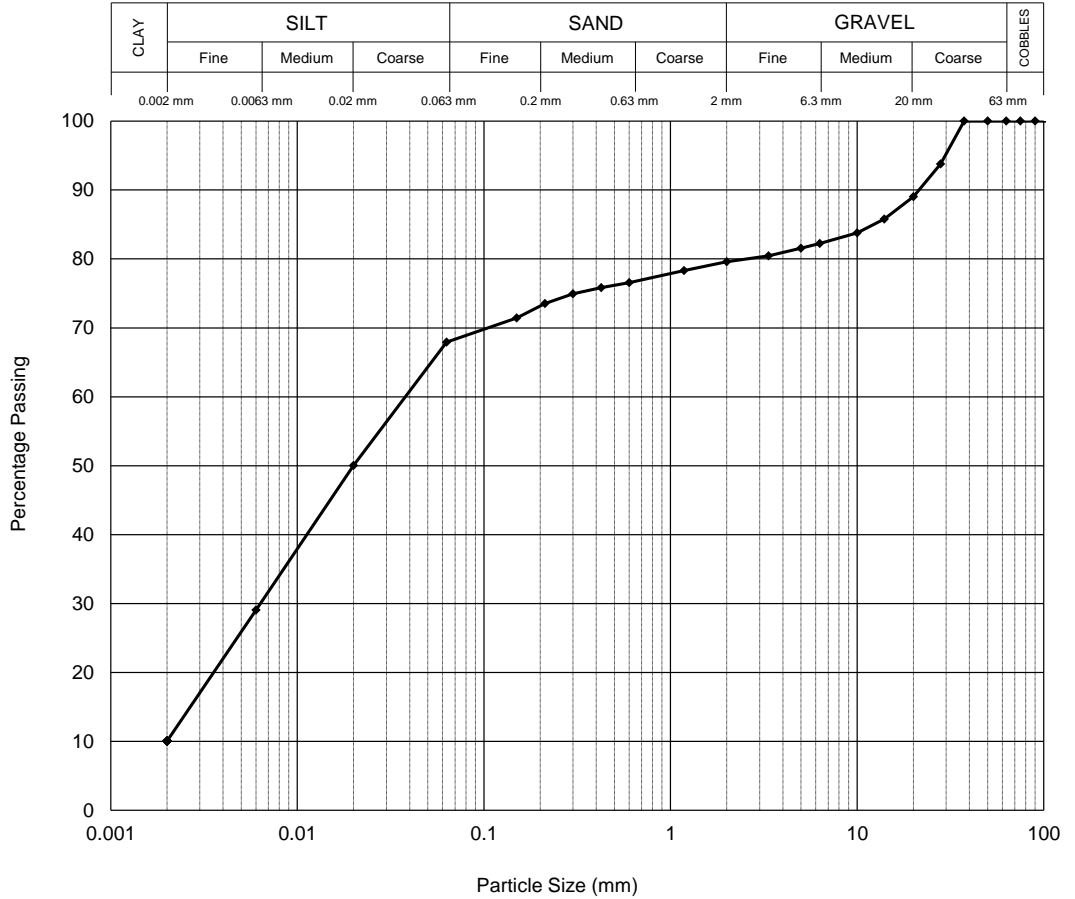
PARTICLE SIZE DISTRIBUTION

Location STP70404
 Sample Ref 5
 Depth (m) 0.50
 Sample Type B

Description
 Grey and brown slightly sandy slightly gravelly clayey SILT.

BS EN ISO 17892-4 : 2016 : Clause 5.2 - Wet Sieve
 BS EN ISO 17892-4 : 2016 : Clause 5.4 - Sedimentation by Pipette

Sieve	
Size	% Pass
200.0 mm	100
125.0 mm	100
90.0 mm	100
75.0 mm	100
63.0 mm	100
50.0 mm	100
37.5 mm	100
28.0 mm	94
20.0 mm	89
14.0 mm	86
10.0 mm	84
6.30 mm	82
5.00 mm	82
3.35 mm	80
2.00 mm	80
1.18 mm	78
600 µm	77
425 µm	76
300 µm	75
212 µm	74
150 µm	71
63 µm	68




Sedimentation	
No Pre-treatment used	
Temp (°C)	25
Size	% Pass
20 µm	50
6 µm	29
2 µm	10

Particle Density 2.70(A) Mg/m³

Particle Proportions	
Cobbles	0.0
Gravel	20.4
Sand	11.6
Silt	57.9
Clay	10.1

1262 - PSD STP70404.00.50.5 B - 32372-373745.XLSM

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 J Sturges - Operations Manager
 25/01/2021

Project Number:

GEO / 32372

Project Name:

**A303 STONEHENGE
 JFR1451**



PARTICLE SIZE DISTRIBUTION

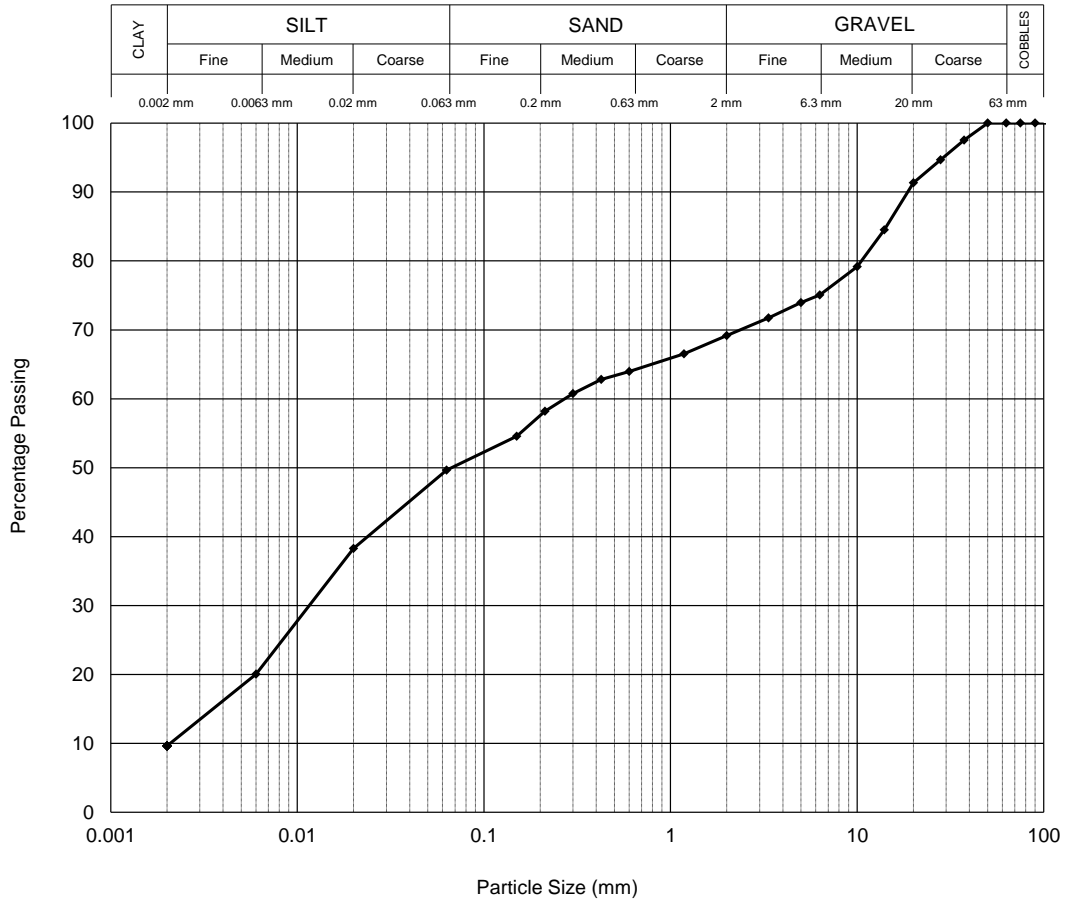
Location STP72202A
 Sample Ref 5
 Depth (m) 0.50
 Sample Type B

Description

Grey brown slightly sandy slightly gravelly clayey SILT . Gravel is flint.

BS EN ISO 17892-4 : 2016 : Clause 5.2 - Wet Sieve
 BS EN ISO 17892-4 : 2016 : Clause 5.4 - Sedimentation by Pipette

Sieve	
Size	% Pass
200.0 mm	100
125.0 mm	100
90.0 mm	100
75.0 mm	100
63.0 mm	100
50.0 mm	100
37.5 mm	98
28.0 mm	95
20.0 mm	91
14.0 mm	85
10.0 mm	79
6.30 mm	75
5.00 mm	74
3.35 mm	72
2.00 mm	69
1.18 mm	67
600 µm	64
425 µm	63
300 µm	61
212 µm	58
150 µm	55
63 µm	50




Sedimentation	
No Pre-treatment used	
Temp (°C)	25
Size	% Pass
20 µm	38
6 µm	20
2 µm	10

Particle Density 2.70(A) Mg/m³

Particle Proportions	
Cobbles	0.0
Gravel	30.8
Sand	19.5
Silt	40.0
Clay	9.7

1262 - PSD STP72202A.00.50.5 B - 32371-386204.XLSM

Version 98.200730

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 Checked and Approved by

 J Sturges - Operations Manager
 22/01/2021

Project Number:

GEO / 32371

Project Name:

**A303 STONEHENGE
 JFR1451**



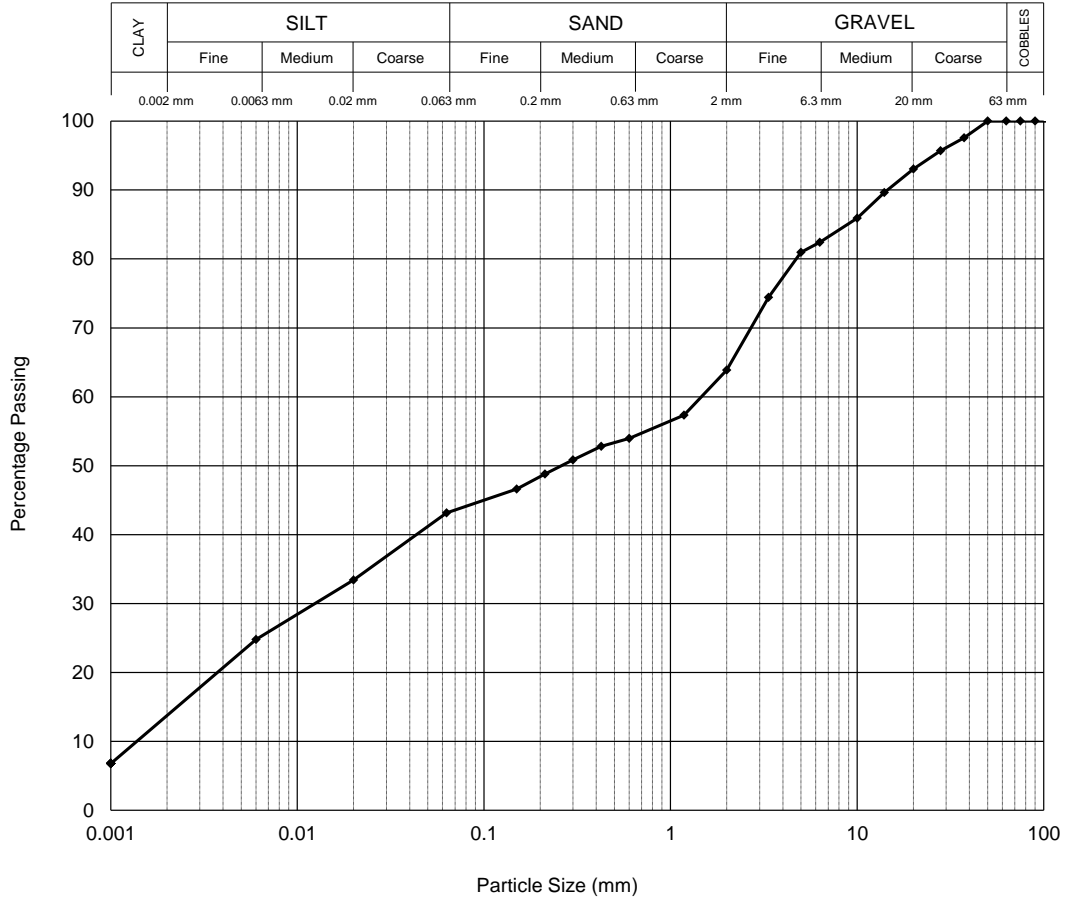
PARTICLE SIZE DISTRIBUTION

Location STP72202A
 Sample Ref 7
 Depth (m) 1.00
 Sample Type B

Description
 Light brown slightly sandy gravelly silty CLAY. Gravel is flint and chalk.

BS EN ISO 17892-4 : 2016 : Clause 5.2 - Wet Sieve
 BS EN ISO 17892-4 : 2016 : Clause 5.4 - Sedimentation by Pipette

Sieve	
Size	% Pass
200.0 mm	100
125.0 mm	100
90.0 mm	100
75.0 mm	100
63.0 mm	100
50.0 mm	100
37.5 mm	98
28.0 mm	96
20.0 mm	93
14.0 mm	90
10.0 mm	86
6.30 mm	82
5.00 mm	81
3.35 mm	74
2.00 mm	64
1.18 mm	57
600 µm	54
425 µm	53
300 µm	51
212 µm	49
150 µm	47
63 µm	43




Sedimentation	
No Pre-treatment used	
Temp (°C)	25
Size	% Pass
20 µm	33
6 µm	25
1 µm	7

Particle Density 2.70(A) Mg/m³

Particle Proportions	
Cobbles	0.0
Gravel	36.1
Sand	20.7
Silt	32.8
Clay	10.4

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 J Sturges - Operations Manager
 22/01/2021

Project Number:

GEO / 32371

Project Name:

**A303 STONEHENGE
 JFR1451**



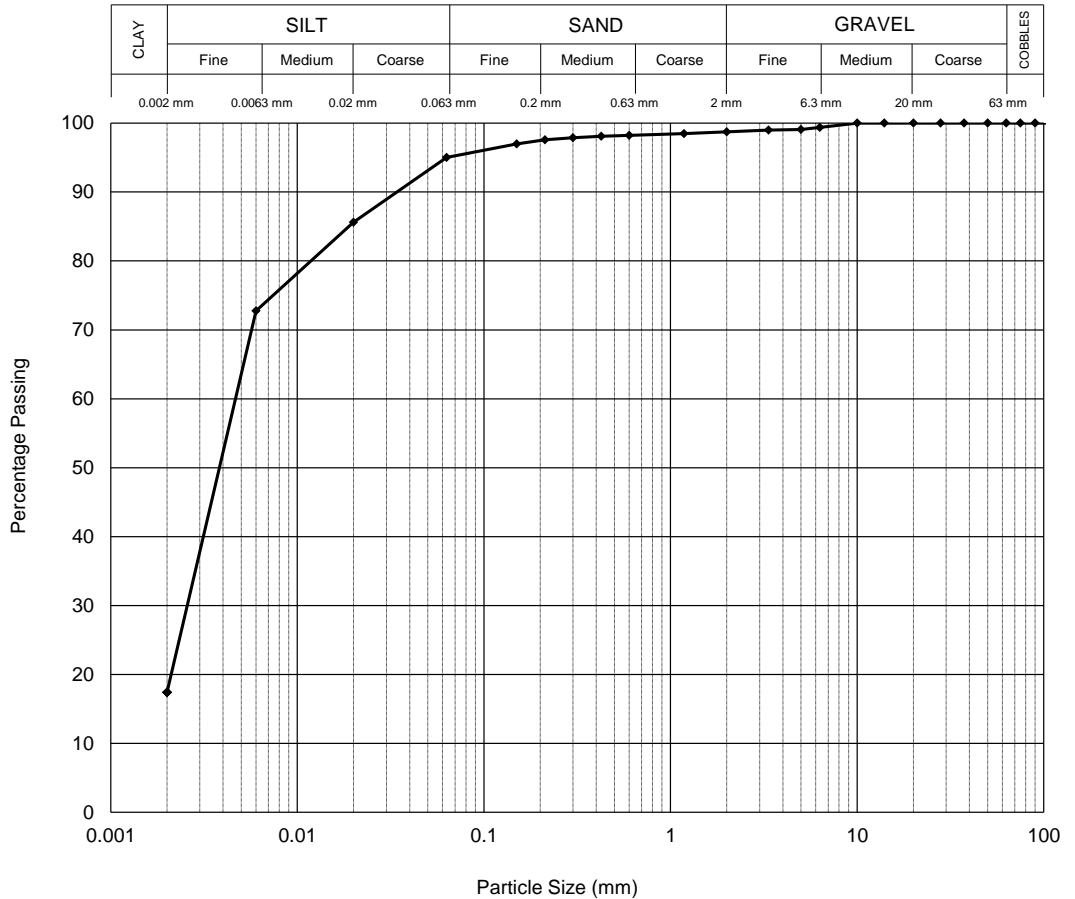
PARTICLE SIZE DISTRIBUTION

Location CP72602
 Depth (m) 1.65-2.10
 Sample Type D

Description
 White clayey SILT with rare sand. (CHALK).

BS EN ISO 17892-4 : 2016 : Clause 5.2 - Wet Sieve
 BS EN ISO 17892-4 : 2016 : Clause 5.4 - Sedimentation by Pipette

Sieve	
Size	% Pass
200.0 mm	100
125.0 mm	100
90.0 mm	100
75.0 mm	100
63.0 mm	100
50.0 mm	100
37.5 mm	100
28.0 mm	100
20.0 mm	100
14.0 mm	100
10.0 mm	100
6.30 mm	99
5.00 mm	99
3.35 mm	99
2.00 mm	99
1.18 mm	98
600 µm	98
425 µm	98
300 µm	98
212 µm	98
150 µm	97
63 µm	95




Sedimentation	
No Pre-treatment used	
Temp (°C)	25
Size	% Pass
20 µm	86
6 µm	73
2 µm	17

Particle Density 2.70(A) Mg/m³

Particle Proportions	
Cobbles	0.0
Gravel	1.3
Sand	3.7
Silt	77.6
Clay	17.4

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 J Sturges - Operations Manager
 22/01/2021

Project Number:

GEO / 32303

Project Name:

**A303 STONEHENGE
 JFR1451**



PARTICLE SIZE DISTRIBUTION

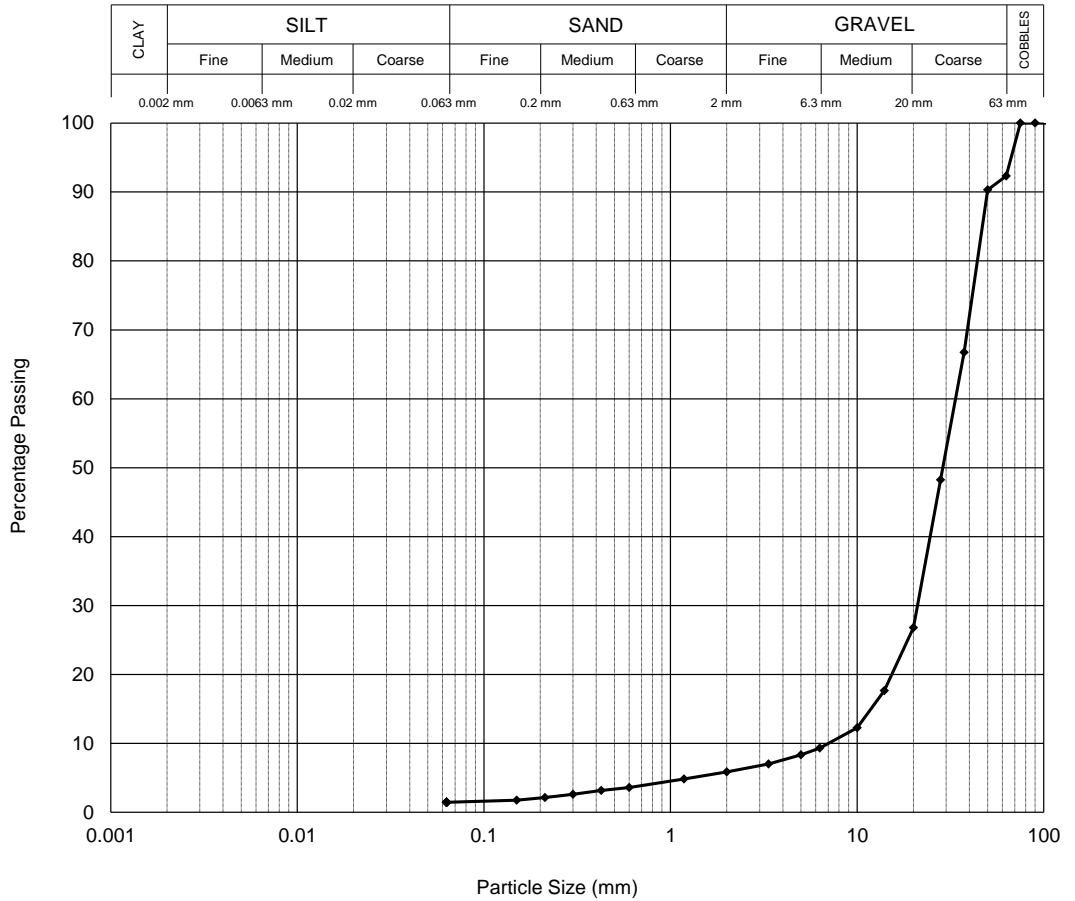
1262 - PSD CP72602 07.50.11 B - 32303-385975.XLSM

Location	CP72602
Sample Ref	11
Depth (m)	7.50-8.00
Sample Type	B

Description	
Light grey slightly sandy flint GRAVEL with rare cobbles.	
Remarks	Insufficient sample supplied to comply with BS EN ISO 17892-4 : 2016 minimum mass requirements

BS EN ISO 17892-4 : 2016 : Clause 5.2 - Wet Sieve


Sieve	
Size	% Pass
200.0 mm	100
125.0 mm	100
90.0 mm	100
75.0 mm	100
63.0 mm	92
50.0 mm	90
37.5 mm	67
28.0 mm	48
20.0 mm	27
14.0 mm	18
10.0 mm	12
6.30 mm	9
5.00 mm	8
3.35 mm	7
2.00 mm	6
1.18 mm	5
600 µm	4
425 µm	3
300 µm	3
212 µm	2
150 µm	2
63 µm	1



Particle Proportions	
Cobbles	7.7
Gravel	86.5
Sand	4.4
Silt & Clay	1.4

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J Sturges - Operations Manager
22/01/2021

Project Number: **GEO / 32303**

Project Name: **A303 STONEHENGE
JFR1451**



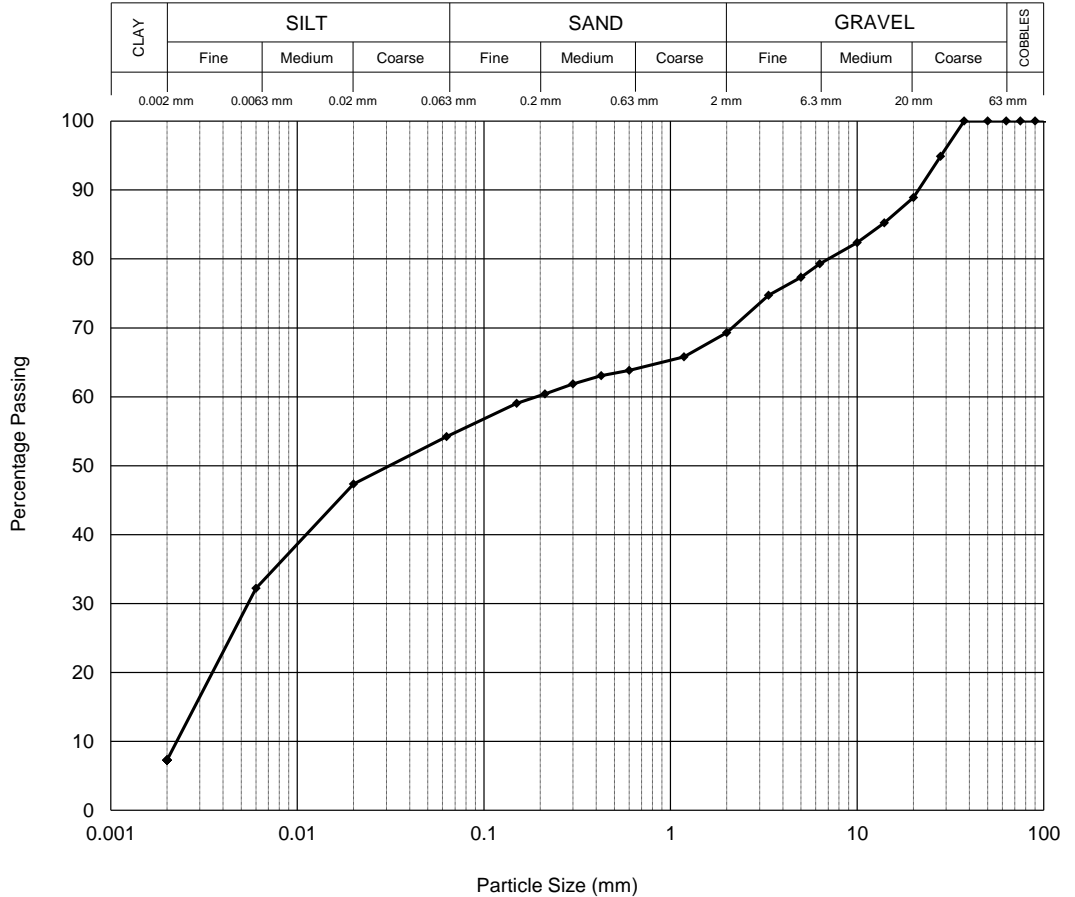

PARTICLE SIZE DISTRIBUTION

Location DTP70301
 Sample Ref 5
 Depth (m) 0.50
 Sample Type B

Description
 Brown clayey sandy gravelly SILT. Gravel is chalk.

BS EN ISO 17892-4 : 2016 : Clause 5.2 - Wet Sieve
 BS EN ISO 17892-4 : 2016 : Clause 5.4 - Sedimentation by Pipette

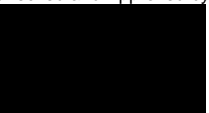
Sieve	
Size	% Pass
200.0 mm	100
125.0 mm	100
90.0 mm	100
75.0 mm	100
63.0 mm	100
50.0 mm	100
37.5 mm	100
28.0 mm	95
20.0 mm	89
14.0 mm	85
10.0 mm	82
6.30 mm	79
5.00 mm	77
3.35 mm	75
2.00 mm	69
1.18 mm	66
600 µm	64
425 µm	63
300 µm	62
212 µm	60
150 µm	59
63 µm	54



Sedimentation	
Pre-treatment used	
Temp (°C)	25
Size	% Pass
20 µm	47
6 µm	32
2 µm	7

Particle Density 2.70(A) Mg/m³

Particle Proportions	
Cobbles	0.0
Gravel	30.7
Sand	15.1
Silt	47.0
Clay	7.2

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 Checked and Approved by

 J Sturges - Operations Manager
 21/01/2021

Project Number: **GEO / 32138**
 Project Name: **A303 STONEHENGE JFR1451**



Version 98.200730

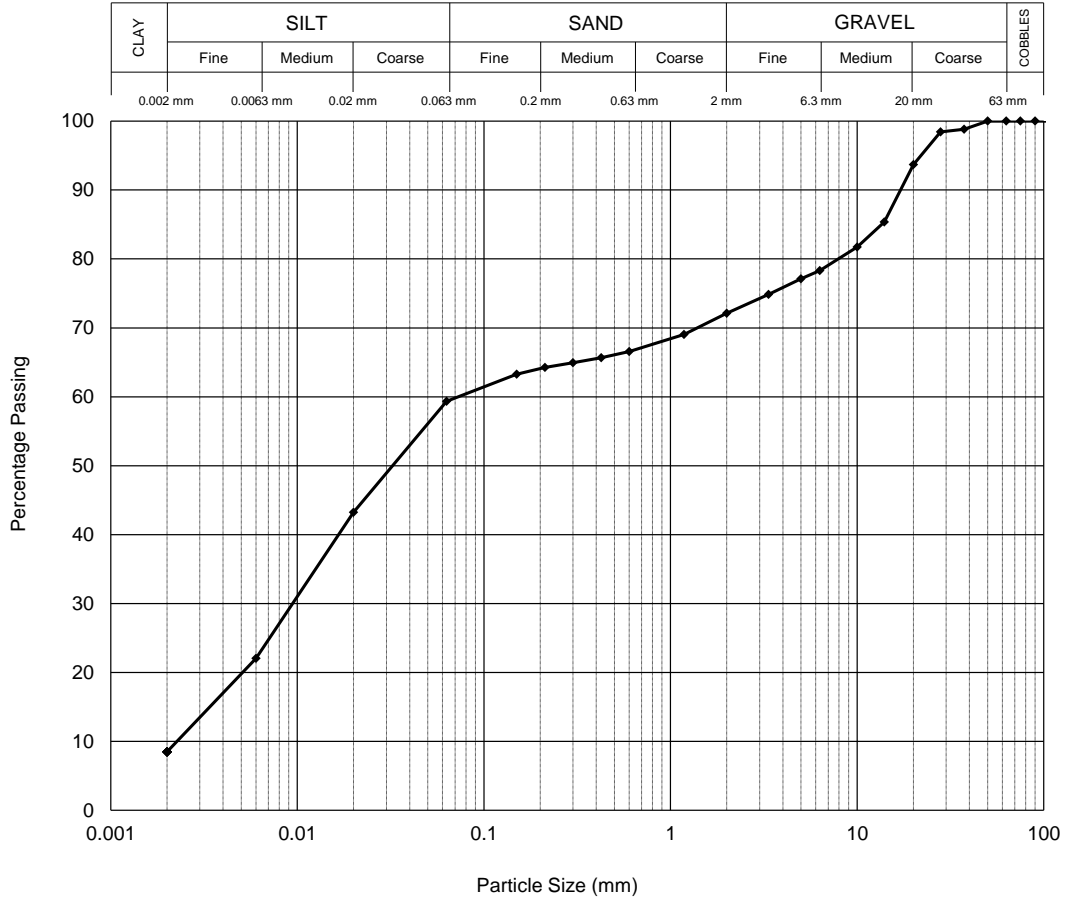
PARTICLE SIZE DISTRIBUTION

Location STP70501
 Sample Ref 5
 Depth (m) 0.50
 Sample Type B

Description
 Greyish brown slightly gravelly slightly sandy clayey SILT.

BS EN ISO 17892-4 : 2016 : Clause 5.2 - Wet Sieve
 BS EN ISO 17892-4 : 2016 : Clause 5.4 - Sedimentation by Pipette

Sieve	
Size	% Pass
200.0 mm	100
125.0 mm	100
90.0 mm	100
75.0 mm	100
63.0 mm	100
50.0 mm	100
37.5 mm	99
28.0 mm	98
20.0 mm	94
14.0 mm	85
10.0 mm	82
6.30 mm	78
5.00 mm	77
3.35 mm	75
2.00 mm	72
1.18 mm	69
600 µm	67
425 µm	66
300 µm	65
212 µm	64
150 µm	63
63 µm	59




Sedimentation	
Pre-treatment used	
Temp (°C)	25
Size	% Pass
20 µm	43
6 µm	22
2 µm	8

Particle Density 2.70(A) Mg/m³

Particle Proportions	
Cobbles	0.0
Gravel	27.9
Sand	12.8
Silt	50.9
Clay	8.4

Version 98.200730

Processed by CC
 Checked and Approved by

 J Sturges - Operations Manager
 20/01/2021

Project Number:

GEO / 32139

Project Name:

**A303 STONEHENGE
 JFR1451**



PARTICLE SIZE DISTRIBUTION

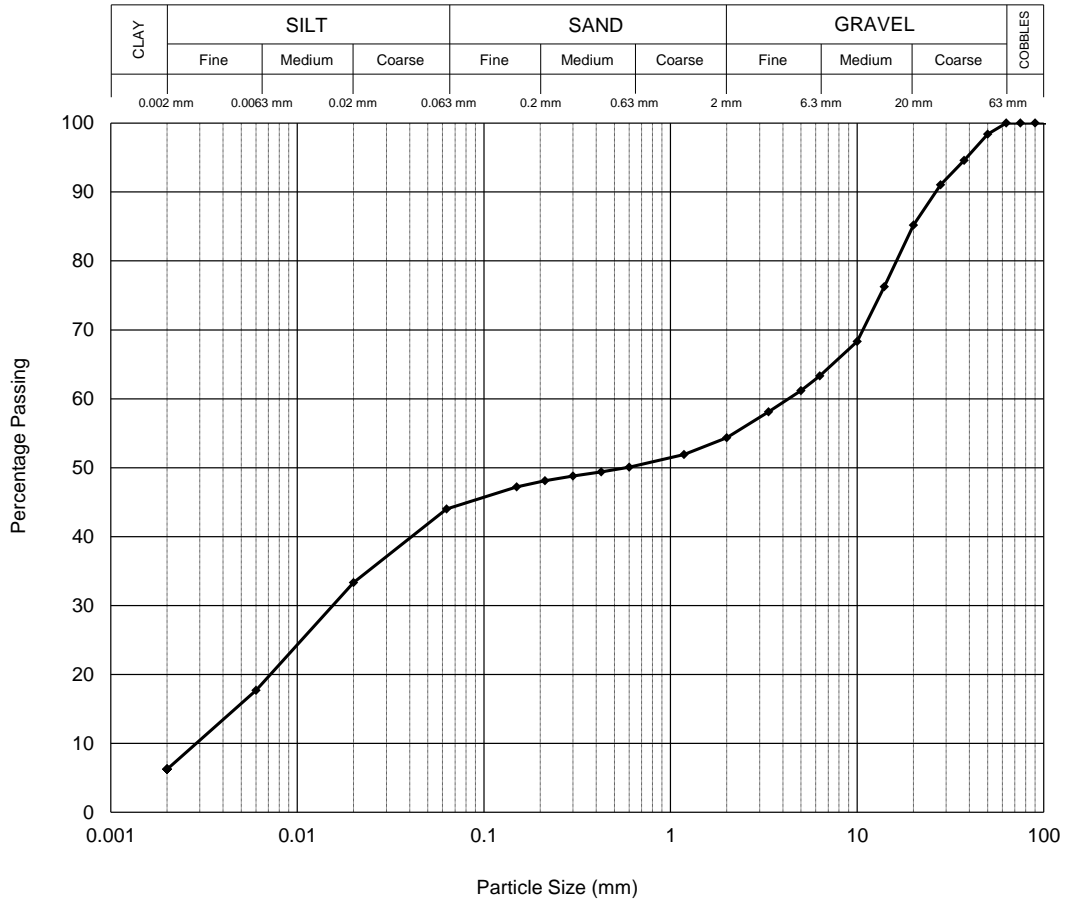
Location: STP70503
 Sample Ref: 5
 Depth (m): 0.50
 Sample Type: B

Description

Greyish brown slightly sandy gravelly clayey SILT. Gravel is flint and structured chalk.

BS EN ISO 17892-4 : 2016 : Clause 5.2 - Wet Sieve
 BS EN ISO 17892-4 : 2016 : Clause 5.4 - Sedimentation by Pipette

Sieve	
Size	% Pass
200.0 mm	100
125.0 mm	100
90.0 mm	100
75.0 mm	100
63.0 mm	100
50.0 mm	98
37.5 mm	95
28.0 mm	91
20.0 mm	85
14.0 mm	76
10.0 mm	68
6.30 mm	63
5.00 mm	61
3.35 mm	58
2.00 mm	54
1.18 mm	52
600 µm	50
425 µm	49
300 µm	49
212 µm	48
150 µm	47
63 µm	44



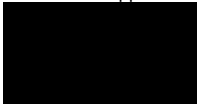
Sedimentation	
No Pre-treatment used	
Temp (°C)	25
Size	% Pass
20 µm	33
6 µm	18
2 µm	6

Particle Density 2.70(A) Mg/m³

Particle Proportions	
Cobbles	0.0
Gravel	45.7
Sand	10.3
Silt	37.8
Clay	6.2

Version 98.200730

Processed by CC
 Checked and Approved by



J Sturges - Operations Manager
 20/01/2021

Project Number:

GEO / 32139

Project Name:

**A303 STONEHENGE
 JFR1451**

GEOLABS



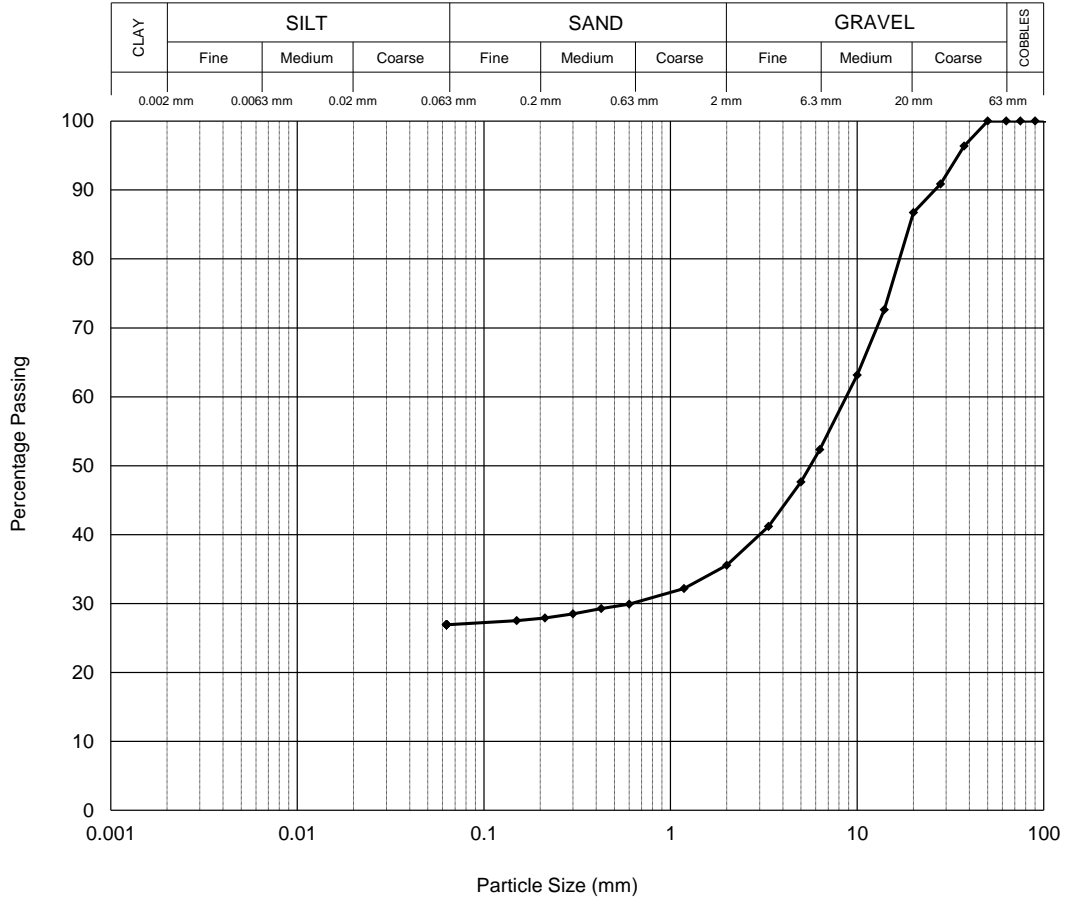
PARTICLE SIZE DISTRIBUTION

Location: BH72503
 Sample Ref: 14
 Depth (m): 9.50-9.80
 Sample Type: D

Description: White gravel sized CHALK in a structureless chalk matrix.

BS EN ISO 17892-4 : 2016 : Clause 5.2 - Wet Sieve

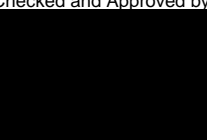
Sieve	
Size	% Pass
200.0 mm	100
125.0 mm	100
90.0 mm	100
75.0 mm	100
63.0 mm	100
50.0 mm	100
37.5 mm	96
28.0 mm	91
20.0 mm	87
14.0 mm	73
10.0 mm	63
6.30 mm	52
5.00 mm	48
3.35 mm	41
2.00 mm	36
1.18 mm	32
600 µm	30
425 µm	29
300 µm	28
212 µm	28
150 µm	28
63 µm	27



Particle Proportions	
Cobbles	0.0
Gravel	64.5
Sand	8.6
Silt & Clay	26.9

1262 - PSD BH72503 09.50 14 D - 32695-376421.XLSM

Version 103.2.10211

Processed by SB
 Checked and Approved by

 10/03/2021

Project Number:

GEO / 32695

Project Name:

**A303 STONEHENGE
 JFR1451**



PARTICLE SIZE DISTRIBUTION

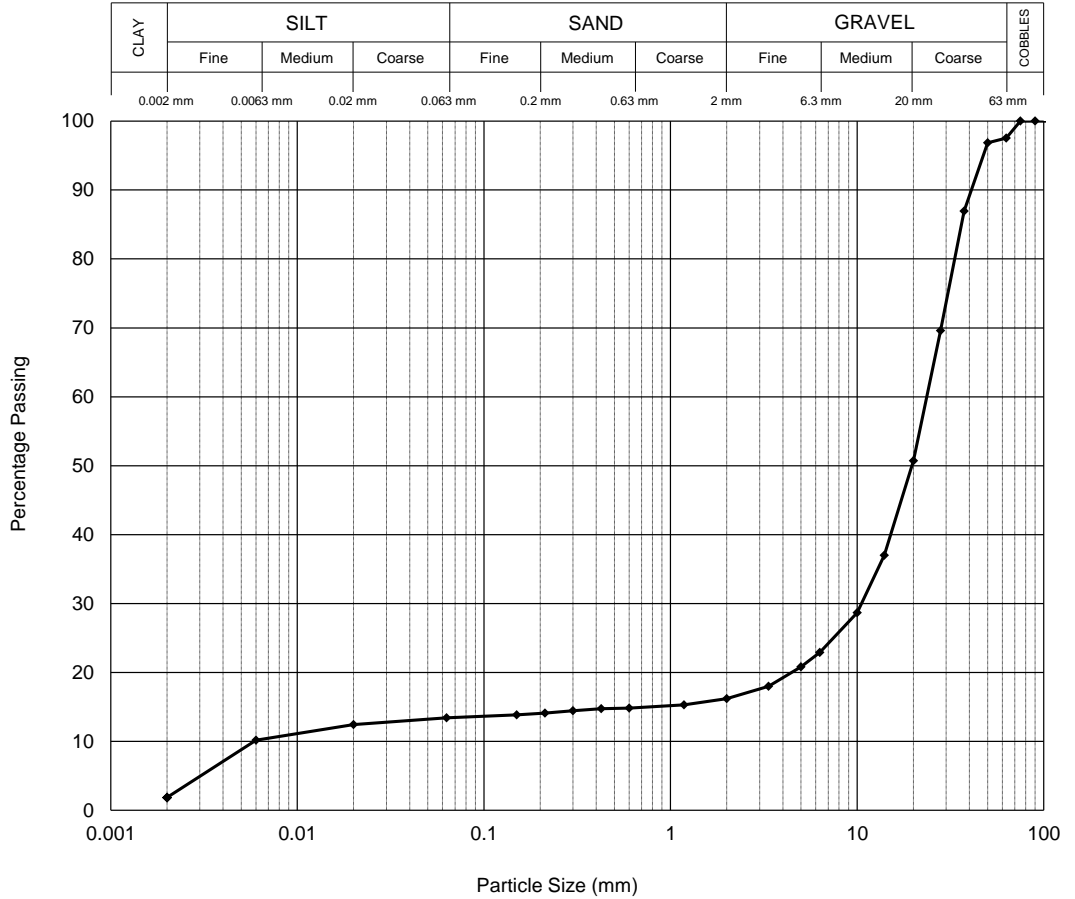
1262 - PSD STP70104.01.00.7 B - 32903-403849.XLSM

Location	STP70104
Sample Ref	7
Depth (m)	1.00
Sample Type	B

Description
White gravel sized CHALK in a structureless chalk matrix.

BS EN ISO 17892-4 : 2016 : Clause 5.2 - Wet Sieve
BS EN ISO 17892-4 : 2016 : Clause 5.4 - Sedimentation by Pipette


Sieve	
Size	% Pass
200.0 mm	100
125.0 mm	100
90.0 mm	100
75.0 mm	100
63.0 mm	98
50.0 mm	97
37.5 mm	87
28.0 mm	70
20.0 mm	51
14.0 mm	37
10.0 mm	29
6.30 mm	23
5.00 mm	21
3.35 mm	18
2.00 mm	16
1.18 mm	15
600 µm	15
425 µm	15
300 µm	14
212 µm	14
150 µm	14
63 µm	13



Sedimentation	
No Pre-treatment used	
Temp (°C)	25.0
Size	% Pass
20 µm	12
6 µm	10
2 µm	2

Particle Density 2.70(A) Mg/m³

Particle Proportions	
Cobbles	2.5
Gravel	81.3
Sand	2.8
Silt	11.6
Clay	1.8

Tested by AW
Checked and Approved by

20/04/2021

Project Number: **GEO / 32903**
Project Name: **A303 STONEHENGE
JFR1451**



Determination of Shear Strength by Direct Shear on Rock Sample

(large shearbox apparatus)

Borehole No: R71905
 Depth (m): 30.47 - 30.74

Description:

Weak off-white well structured CHALK (Grade A).
 Saw cut shear plane perpendicular to core axis.
 Joint roughness coefficient = 0-2.
 Debris is abundant silty fine to medium gravel.

Specimen Details

Type of shear plane	Saw cut		
Preparation	Rock core encapsulated in concrete avoiding shear plane then positioned in shearbox with shear plane parallel to interface of top and bottom halves of shearbox.		
Specimen Number	1		
Maximum Length	mm	100.9	
Maximum Width	mm	100.6	
Area	mm ²	7972.9	

Shearing Stage

Normal stress	kPa	100	200	350
Peak Conditions:				
Rate of horizontal displacement	mm/min	0.1	0.1	0.1
Maximum shear stress	kPa	136.7	190.5	266.8
Horizontal displacement at MSS	mm	2.6	8.9	16.2
Residual Conditions:				
Rate of horizontal displacement	mm/min	0.1	0.1	0.1
Residual shear stress	kPa	135.9	189.3	266.0
Final cumulative displacement	mm	19.0		

Duration	day(s)	1
----------	--------	---

Shear Strength Parameters**Maximum Condition:**

Apparent Cohesion	kPa	85
Angle of Shearing Resistance	degrees	27.5

Residual Condition:

Apparent Cohesion	kPa	84
Angle of Shearing Resistance	degrees	27.5

Notes:

Checked and Approved by



S R Allen (Senior Tech)

Date: 21/01/2021

Project Number:

GEO / 32215

Project Name:

**A303 STONEHENGE
JFR1451****GEOLABS**®

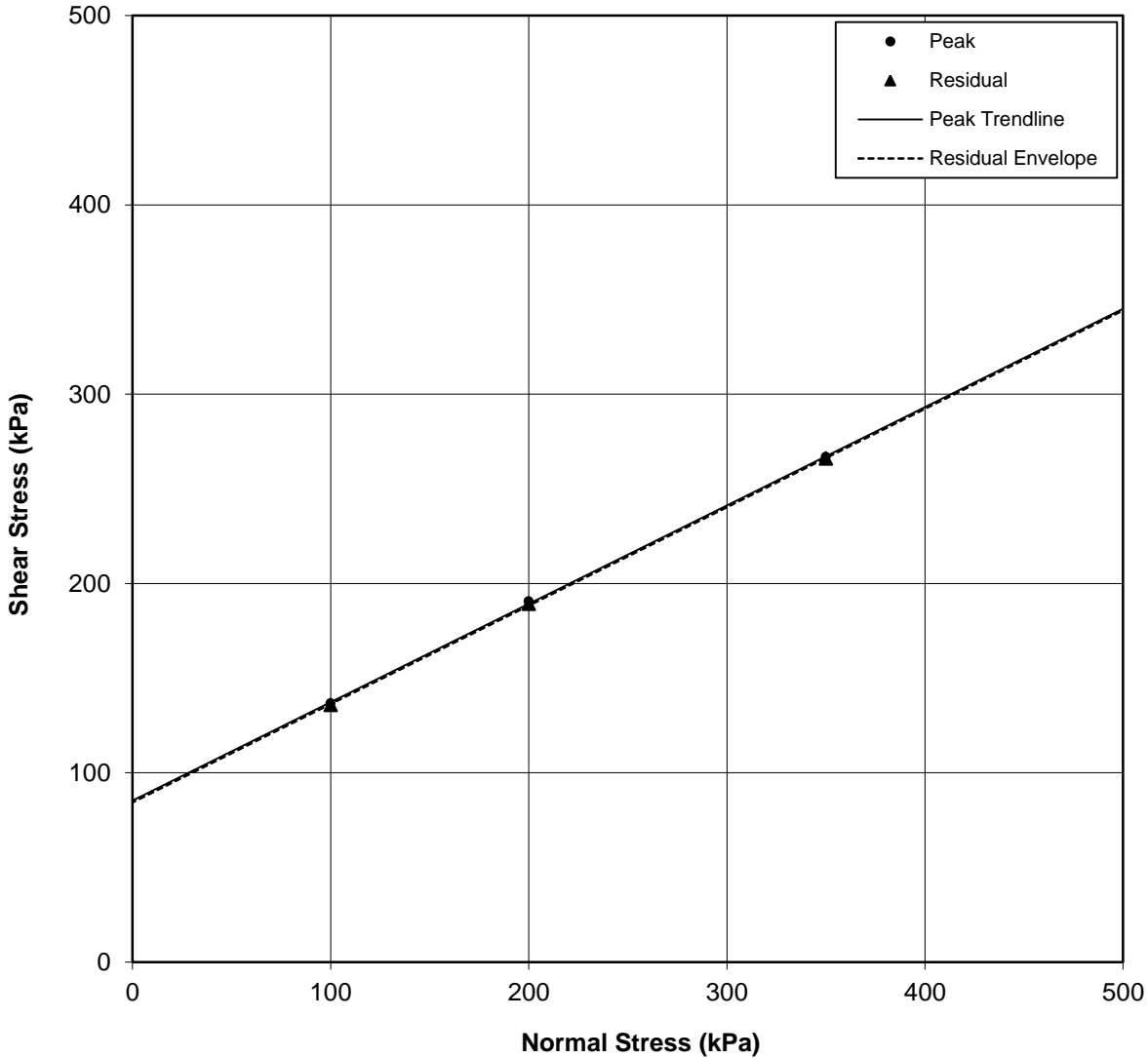
Determination of Shear Strength by Direct Shear on Rock Sample

(large shearbox apparatus)

Borehole No: R71905
 Depth (m): 30.47 - 30.74

Description:
 Weak off-white well structured CHALK (Grade A).
 Saw cut shear plane perpendicular to core axis.
 Joint roughness coefficient = 0-2.
 Debris is abundant silty fine to medium gravel.

Shear Stress v Normal Stress



Peak: $c' = 85$
 $\phi' = 27.5^\circ$

Residual: $c'_r = 84$
 $\phi'_r = 27.5^\circ$

Checked and Approved by



S R Allen (Senior Tech)

Date: 21/01/2021

Project Number:

GEO / 32215

Project Name:

**A303 STONEHENGE
 JFR1451**



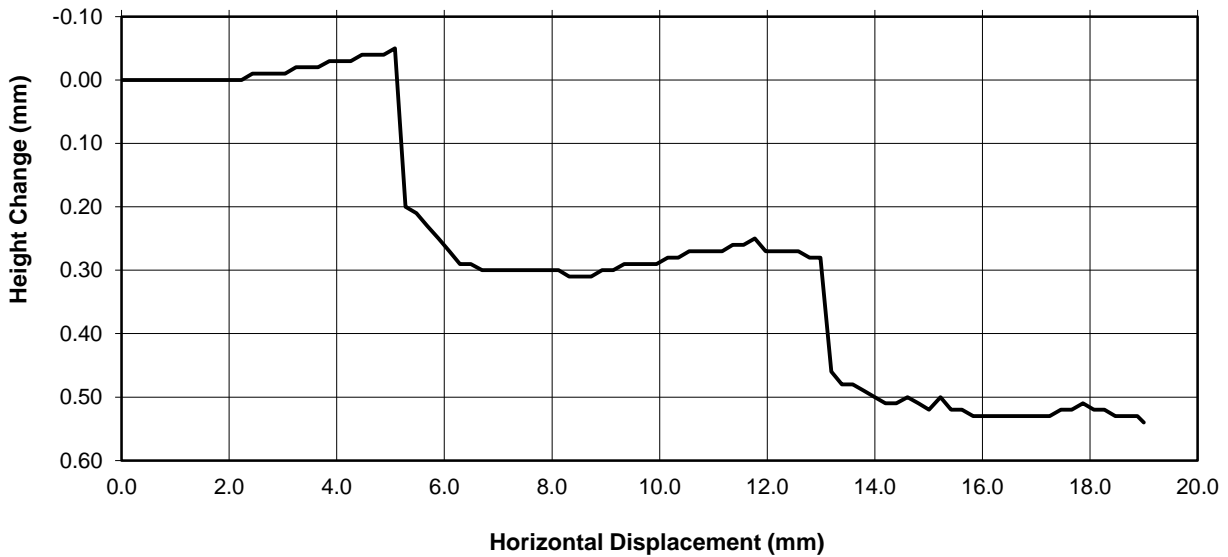
Determination of Shear Strength by Direct Shear on Rock Sample

(large shearbox apparatus)

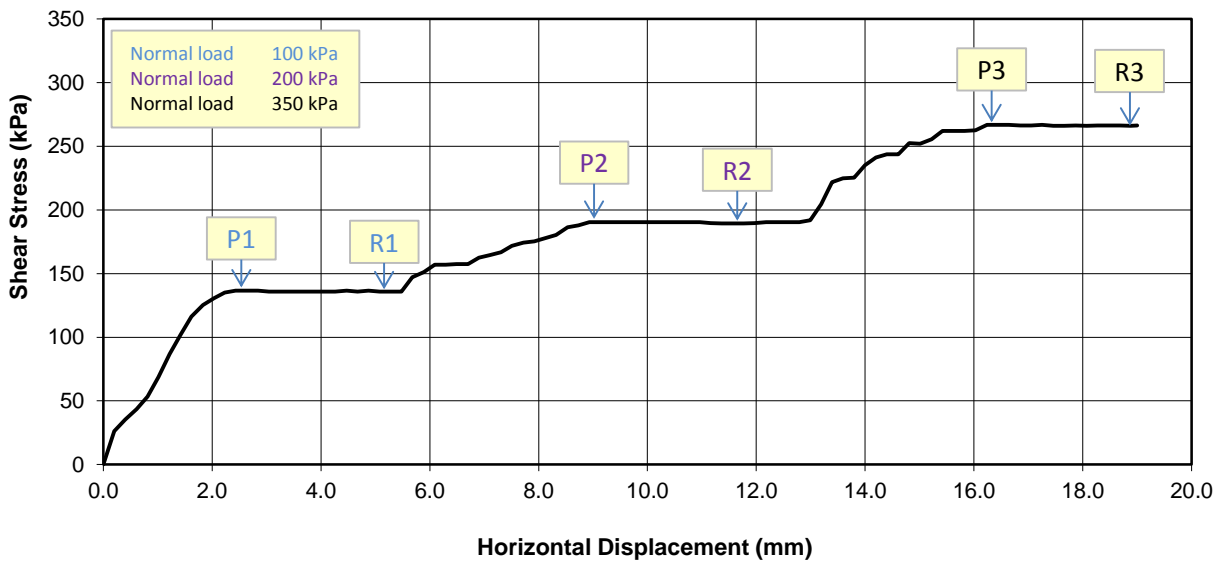
Borehole No: R71905
 Depth (m): 30.47 - 30.74

Description:
 Weak off-white well structured CHALK (Grade A).
 Saw cut shear plane perpendicular to core axis.
 Joint roughness coefficient = 0-2.
 Debris is abundant silty fine to medium gravel.

Height Change v Horizontal Displacement



Shear Stress v Horizontal Displacement



Checked and Approved by



S R Allen (Senior Tech)

Date: 21/01/2021

Project Number:

GEO / 32215

Project Name:

**A303 STONEHENGE
 JFR1451**



Determination of Shear Strength by Direct Shear on Rock Sample

(large shearbox apparatus)

Borehole No: R71910
 Depth (m): 41.05 - 41.50

Description:

Strong white well structured CHALK (Grade A).
 Saw cut shear plane perpendicular to core axis.
 Joint roughness coefficient = 0-2.
 Debris is fine to medium angular gravel.

Specimen Details

Type of shear plane	Saw cut		
Preparation	Rock core encapsulated in concrete avoiding shear plane then positioned in shearbox with shear plane parallel to interface of top and bottom halves of shearbox.		
Specimen Number	1		
Maximum Length	mm	100.2	
Maximum Width	mm	100.0	
Area	mm ²	7924.0	

Shearing Stage

Normal stress	kPa	200	450	700
Peak Conditions:				
Rate of horizontal displacement	mm/min	0.1	0.1	0.1
Maximum shear stress	kPa	122.7	219.2	325.9
Horizontal displacement at MSS	mm	3.5	7.9	12.8
Residual Conditions:				
Rate of horizontal displacement	mm/min	0.1	0.1	0.1
Residual shear stress	kPa	122.7	219.2	325.9
Final cumulative displacement	mm	18.1		

Duration	day(s)	1
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Shear Strength Parameters**Maximum Condition:**

Apparent Cohesion	kPa	40
Angle of Shearing Resistance	degrees	22.0

Residual Condition:

Apparent Cohesion	kPa	40
Angle of Shearing Resistance	degrees	22.0

Notes:

Checked and Approved by



S R Allen (Senior Tech)

Date: 28/10/2020

Project Number:

GEO / 31761

Project Name:

**A303 STONEHENGE
JFR1451****GEOLABS**®

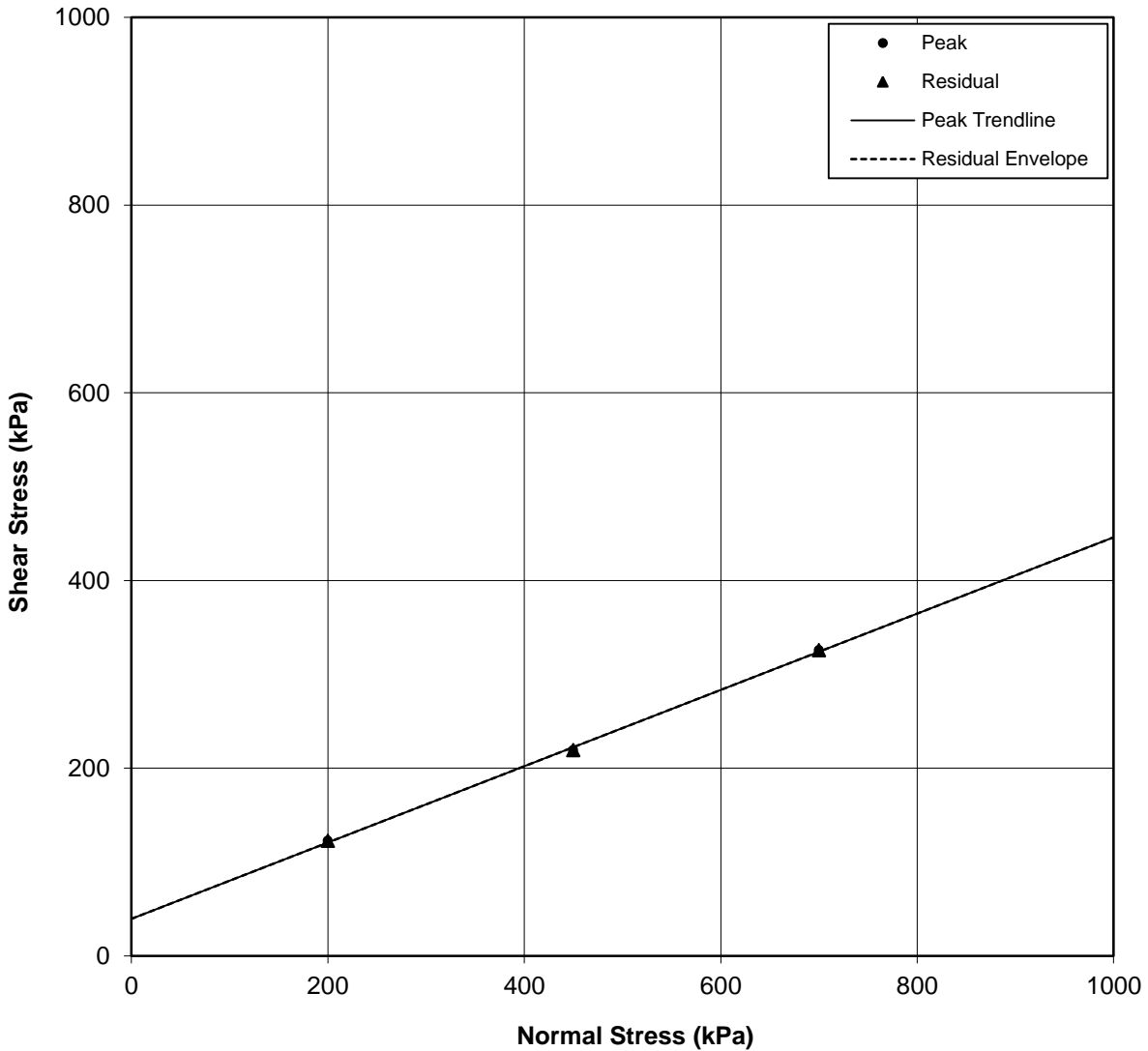
Determination of Shear Strength by Direct Shear on Rock Sample

(large shearbox apparatus)

Borehole No: R71910
 Depth (m): 41.05 - 41.50

Description:
 Strong white well structured CHALK (Grade A).
 Saw cut shear plane perpendicular to core axis.
 Joint roughness coefficient = 0-2.
 Debris is fine to medium angular gravel.

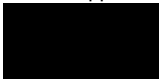
Shear Stress v Normal Stress



Peak: $c' = 40$
 $\phi' = 22^\circ$

Residual: $c'r = 40$
 $\phi'r = 22^\circ$

Checked and Approved by



S R Allen (Senior Tech)

Date: 28/10/2020

Project Number:

GEO / 31761

Project Name:

**A303 STONEHENGE
 JFR1451**



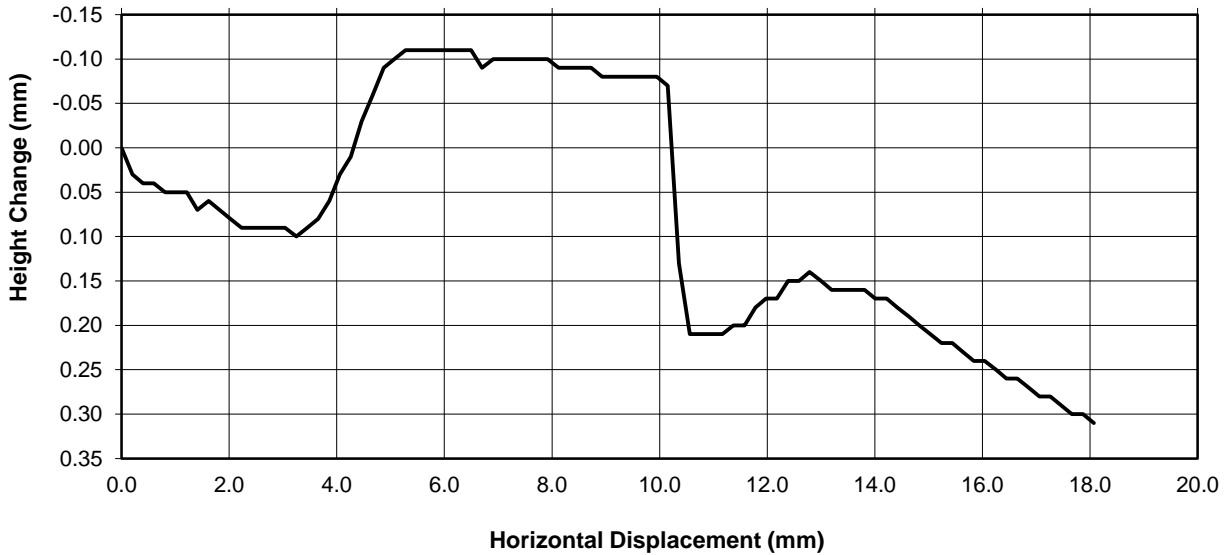
Determination of Shear Strength by Direct Shear on Rock Sample

(large shearbox apparatus)

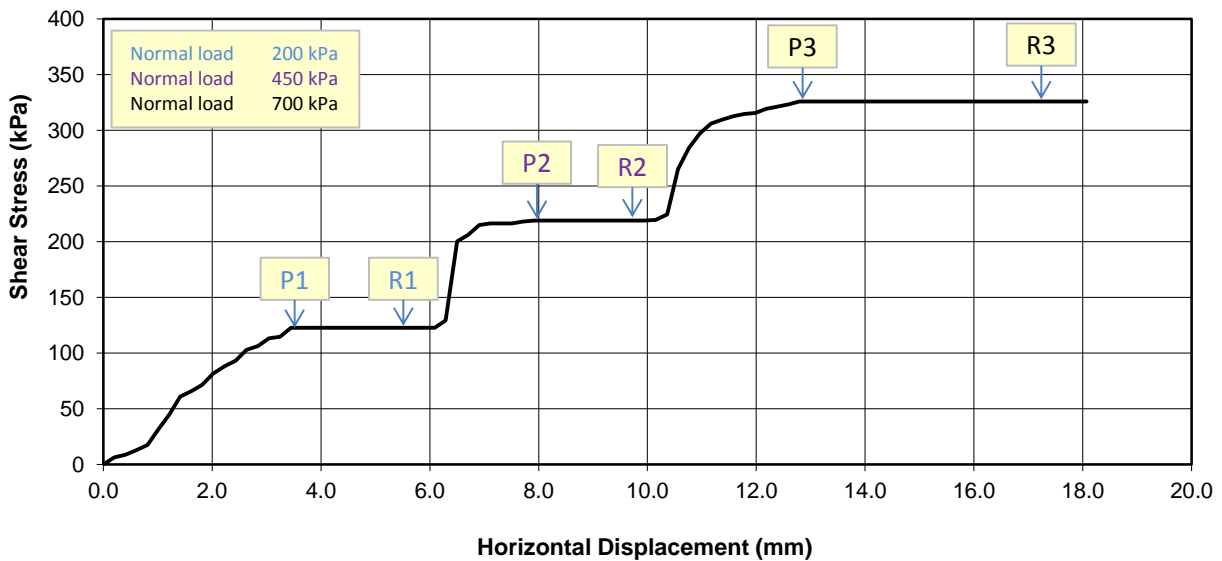
Borehole No: R71910
 Depth (m): 41.05 - 41.50

Description:
 Strong white well structured CHALK (Grade A).
 Saw cut shear plane perpendicular to core axis.
 Joint roughness coefficient = 0-2.
 Debris is fine to medium angular gravel.

Height Change v Horizontal Displacement



Shear Stress v Horizontal Displacement



Checked and Approved by



S R Allen (Senior Tech)

Date: 28/10/2020

Project Number:

GEO / 31761

Project Name:

**A303 STONEHENGE
 JFR1451**



Determination of Shear Strength by Direct Shear on Rock Sample

(large shearbox apparatus)

Borehole No: R71914
 Depth (m): 25.00 - 25.27

Description:

Weak off-white well structured CHALK (Grade A).
 Saw cut shear plane perpendicular to core axis.
 Joint roughness coefficient = 0-2.
 Debris is silty fine to coarse gravel.

Specimen Details

Type of shear plane	Saw cut		
Preparation	Rock core encapsulated in concrete avoiding shear plane then positioned in shearbox with shear plane parallel to interface of top and bottom halves of shearbox.		
Specimen Number	1		
Maximum Length	mm	94.7	
Maximum Width	mm	93.1	
Area	mm ²	6853.9	

Shearing Stage

Normal stress	kPa	100	200	400
Peak Conditions:				
Rate of horizontal displacement	mm/min	0.1	0.1	0.1
Maximum shear stress	kPa	97.1	166.7	245.6
Horizontal displacement at MSS	mm	3.7	7.5	10.6
Residual Conditions:				
Rate of horizontal displacement	mm/min	0.1	0.1	0.1
Residual shear stress	kPa	97.1	166.7	245.6
Final cumulative displacement	mm	15.0		

Duration	day(s)	1
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Shear Strength Parameters**Maximum Condition:**

Apparent Cohesion	kPa	58
Angle of Shearing Resistance	degrees	25.5

Residual Condition:

Apparent Cohesion	kPa	58
Angle of Shearing Resistance	degrees	25.5

Notes:

Checked and Approved by



S R Allen (Senior Tech)

Date: 23/11/2020

Project Number:

GEO / 32128

Project Name:

**A303 STONEHENGE
JFR1451****GEOLABS**®

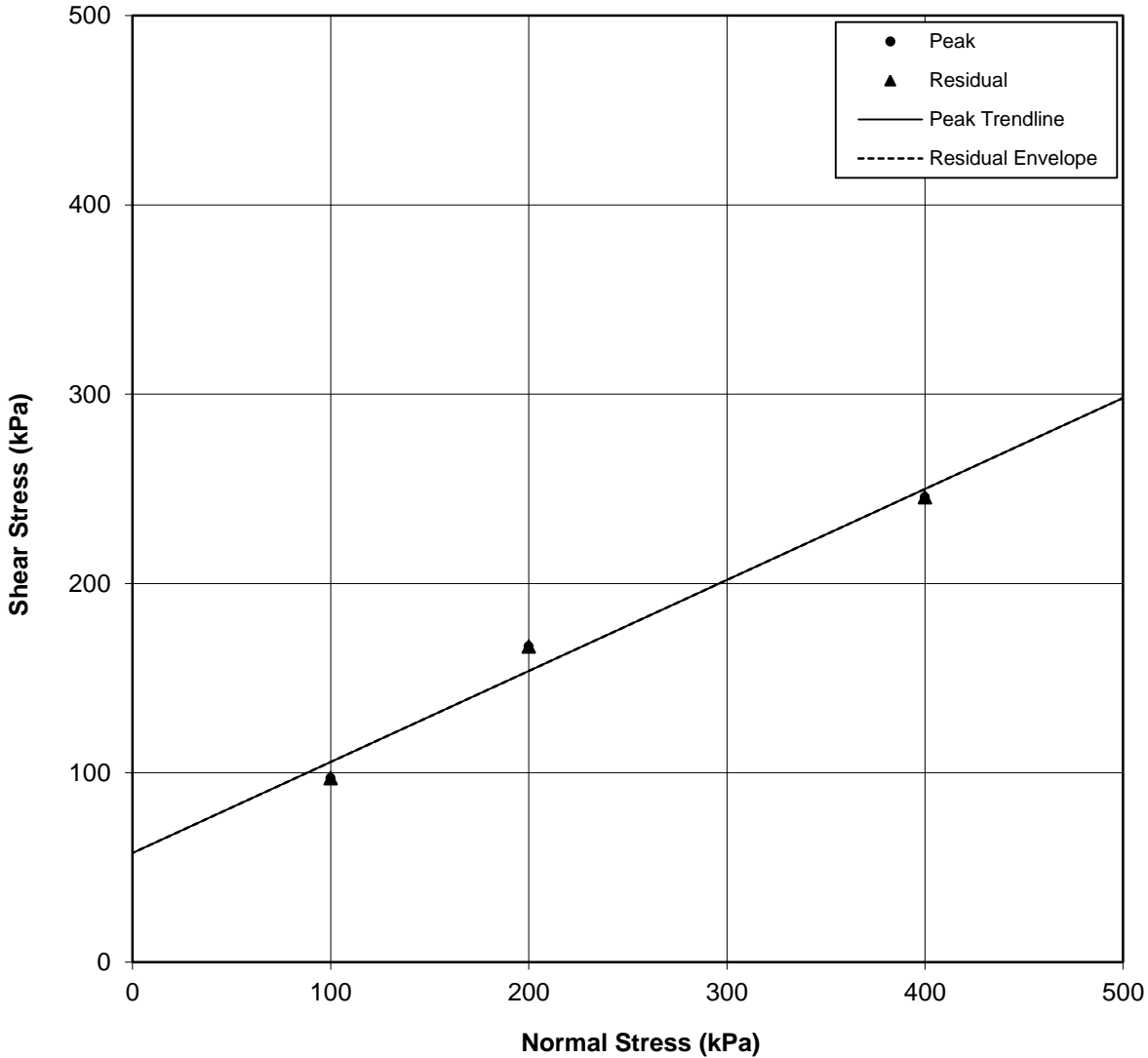
Determination of Shear Strength by Direct Shear on Rock Sample

(large shearbox apparatus)

Borehole No: R71914
 Depth (m): 25.00 - 25.27

Description:
 Weak off-white well structured CHALK (Grade A).
 Saw cut shear plane perpendicular to core axis.
 Joint roughness coefficient = 0-2.
 Debris is silty fine to coarse gravel.

Shear Stress v Normal Stress



Peak: $c' = 58$ **Residual:** $c' r = 58$
 $\phi' = 25.5^\circ$ $\phi' r = 25.5^\circ$

Checked and Approved by



S R Allen (Senior Tech)

Date: 23/11/2020

Project Number:

GEO / 32128

Project Name:

**A303 STONEHENGE
 JFR1451**



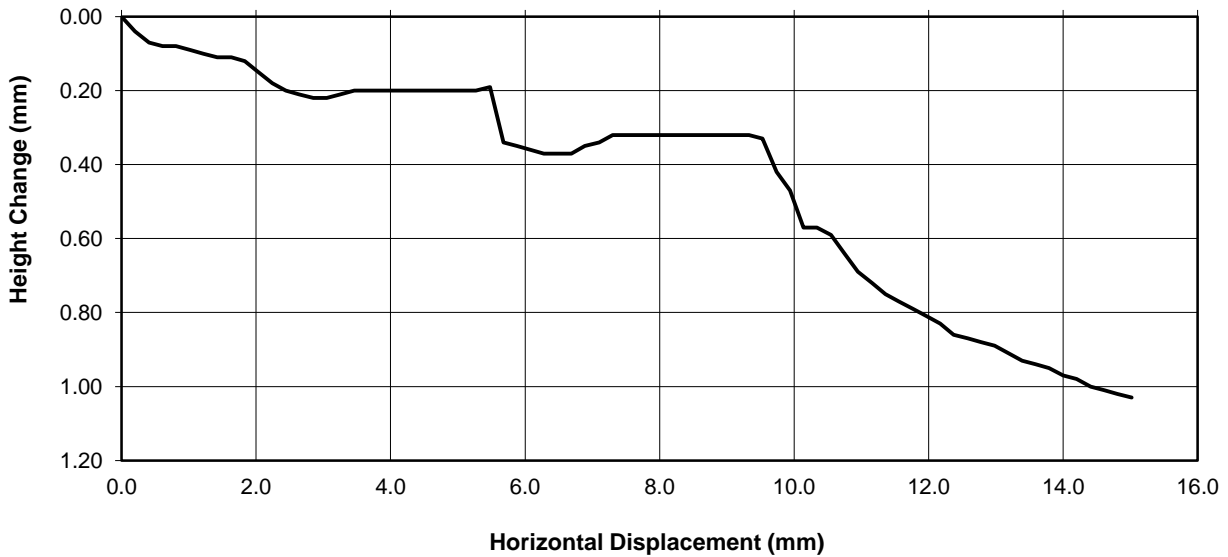
Determination of Shear Strength by Direct Shear on Rock Sample

(large shearbox apparatus)

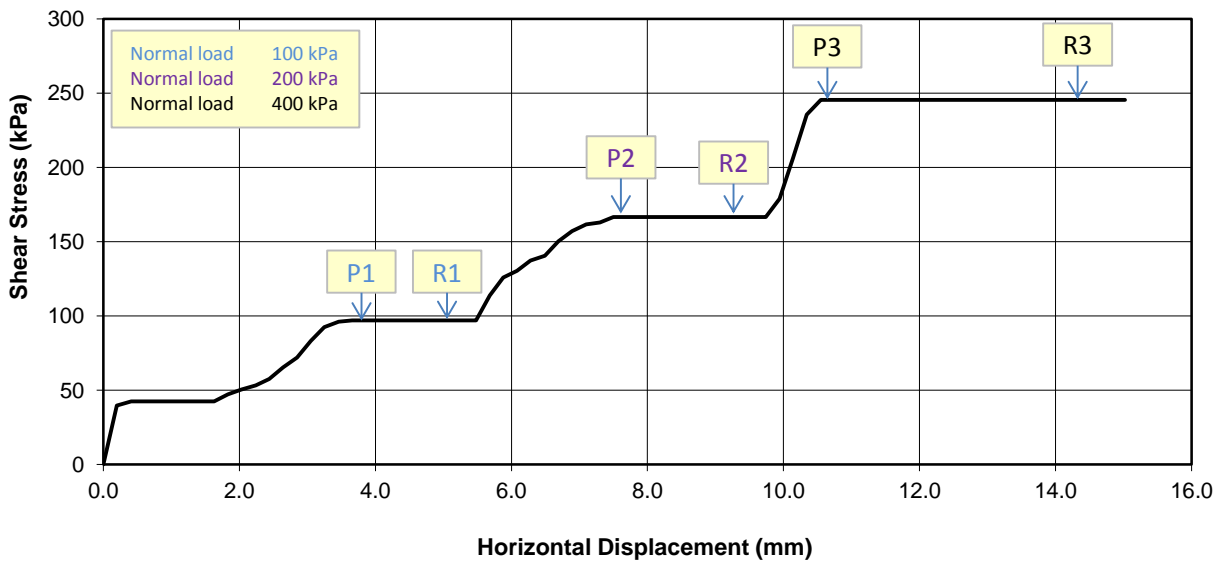
Borehole No: R71914
 Depth (m): 25.00 - 25.27

Description:
 Weak off-white well structured CHALK (Grade A).
 Saw cut shear plane perpendicular to core axis.
 Joint roughness coefficient = 0-2.
 Debris is silty fine to coarse gravel.

Height Change v Horizontal Displacement



Shear Stress v Horizontal Displacement



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S R Allen (Senior Tech)

Date: 23/11/2020

Project Number:

GEO / 32128

Project Name:

**A303 STONEHENGE
 JFR1451**



Determination of Shear Strength by Direct Shear on Rock Sample

(large shearbox apparatus)

Borehole No: R71203
Depth (m): 4.10 - 4.32

Description:

Weak off-white well structured CHALK (Grade A).
Saw cut shear plane perpendicular to core axis.
Joint roughness coefficient = 0-2.
Debris is silty fine to coarse gravel.

Specimen Details

Type of shear plane	Saw cut		
Preparation	Rock core encapsulated in concrete avoiding shear plane then positioned in shearbox with shear plane parallel to interface of top and bottom halves of shearbox.		
Specimen Number	1		
Maximum Length	mm	97.8	
Maximum Width	mm	89.9	
Area	mm ²	7479.2	

Shearing Stage

Normal stress	kPa	50	100	200
Peak Conditions:				
Rate of horizontal displacement	mm/min	0.1	0.1	0.1
Maximum shear stress	kPa	70.3	96.2	144.3
Horizontal displacement at MSS	mm	3.7	7.9	11.6
Residual Conditions:				
Rate of horizontal displacement	mm/min	0.1	0.1	0.1
Residual shear stress	kPa	70.3	96.2	144.3
Final cumulative displacement	mm	13.2		

Duration	day(s)	1
----------	--------	---

Shear Strength Parameters**Maximum Condition:**

Apparent Cohesion	kPa	46
Angle of Shearing Resistance	degrees	26.0

Residual Condition:

Apparent Cohesion	kPa	46
Angle of Shearing Resistance	degrees	26.0

Notes:

Checked and Approved by



S R Allen (Senior Tech)

Date: 24/11/2020

Project Number:

GEO / 31082

Project Name:

**A303 STONEHENGE
JFR1451****GEOLABS**®

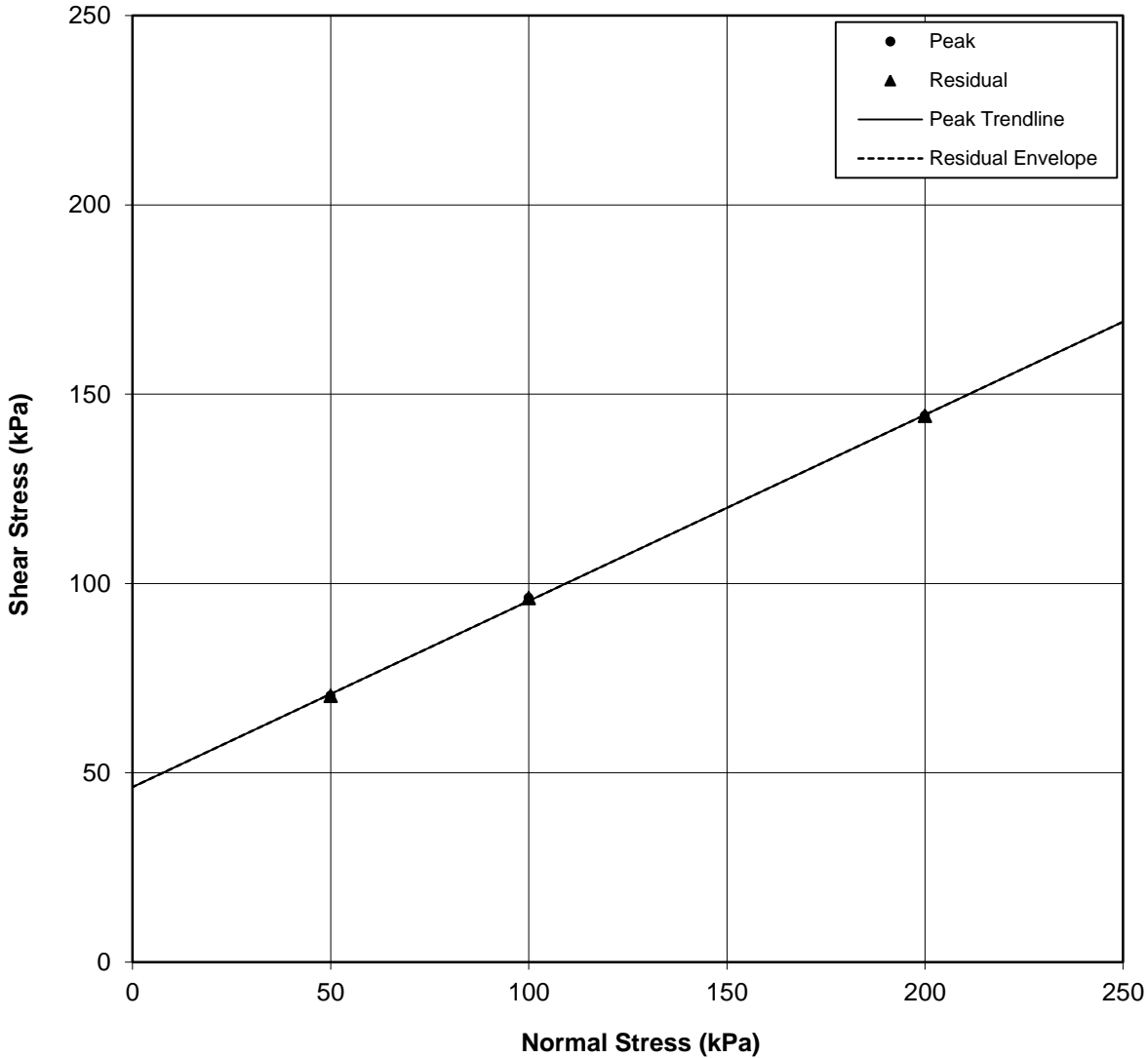
Determination of Shear Strength by Direct Shear on Rock Sample

(large shearbox apparatus)

Borehole No: R71203
 Depth (m): 4.10 - 4.32

Description:
 Weak off-white well structured CHALK (Grade A).
 Saw cut shear plane perpendicular to core axis.
 Joint roughness coefficient = 0-2.
 Debris is silty fine to coarse gravel.

Shear Stress v Normal Stress



Peak: $c' = 46$
 $\phi' = 26^\circ$

Residual: $c'_r = 46$
 $\phi'_r = 26^\circ$

Checked and Approved by



S R Allen (Senior Tech)

Date: 24/11/2020

Project Number:

GEO / 31082

Project Name:

**A303 STONEHENGE
 JFR1451**



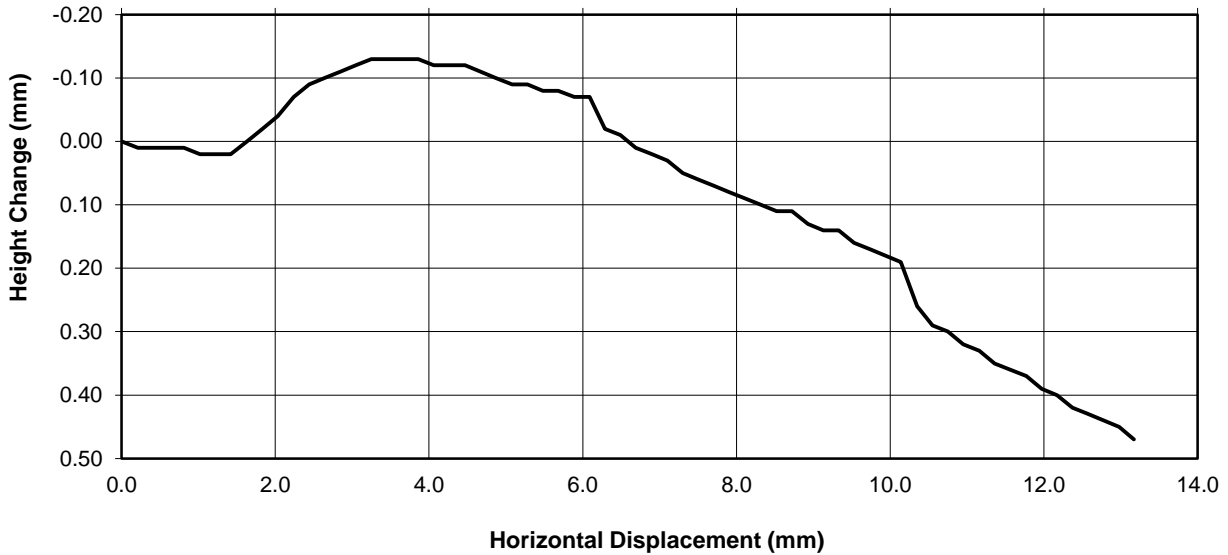
Determination of Shear Strength by Direct Shear on Rock Sample

(large shearbox apparatus)

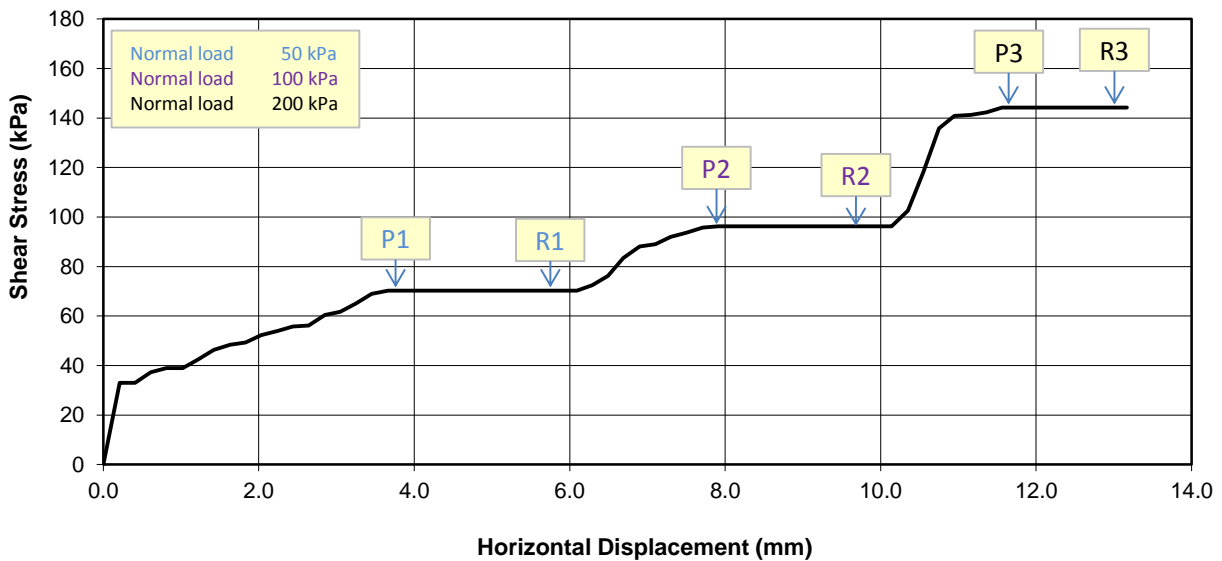
Borehole No: R71203
 Depth (m): 4.10 - 4.32

Description:
 Weak off-white well structured CHALK (Grade A).
 Saw cut shear plane perpendicular to core axis.
 Joint roughness coefficient = 0-2.
 Debris is silty fine to coarse gravel.

Height Change v Horizontal Displacement



Shear Stress v Horizontal Displacement



Checked and Approved by



S R Allen (Senior Tech)

Date: 24/11/2020

Project Number:

GEO / 31082

Project Name:

**A303 STONEHENGE
 JFR1451**



Determination of Shear Strength by Direct Shear on Rock Sample

(large shearbox apparatus)

Borehole No: R71912
 Depth (m): 37.47 - 37.82

Description:
 Weak off-white well structured CHALK (Grade A).
 Saw cut shear plane perpendicular to core axis.
 Joint roughness coefficient = 0-2.
 Debris is silty fine to coarse gravel.

Specimen Details

Type of shear plane	Saw cut		
Preparation	Rock core encapsulated in concrete avoiding shear plane then positioned in shearbox with shear plane parallel to interface of top and bottom halves of shearbox.		
Specimen Number	1		
Maximum Length	mm	93.3	
Maximum Width	mm	92.4	
Area	mm ²	6658.7	

Shearing Stage

Normal stress	kPa	100	300	500
Peak Conditions:				
Rate of horizontal displacement	mm/min	0.1	0.1	0.1
Maximum shear stress	kPa	96.1	190.4	295.8
Horizontal displacement at MSS	mm	1.2	3.5	6.7
Residual Conditions:				
Rate of horizontal displacement	mm/min	0.1	0.1	0.1
Residual shear stress	kPa	96.1	190.4	295.8
Final cumulative displacement	mm	9.3		

Duration day(s) 1

Shear Strength Parameters**Maximum Condition:**

Apparent Cohesion	kPa	44
Angle of Shearing Resistance	degrees	26.5

Residual Condition:

Apparent Cohesion	kPa	44
Angle of Shearing Resistance	degrees	26.5

Notes:

Checked and Approved by

S R Allen (Senior Tech)

Date: 23/11/2020

Project Number:

GEO / 32129

Project Name:

**A303 STONEHENGE
JFR1451****GEOLABS**®

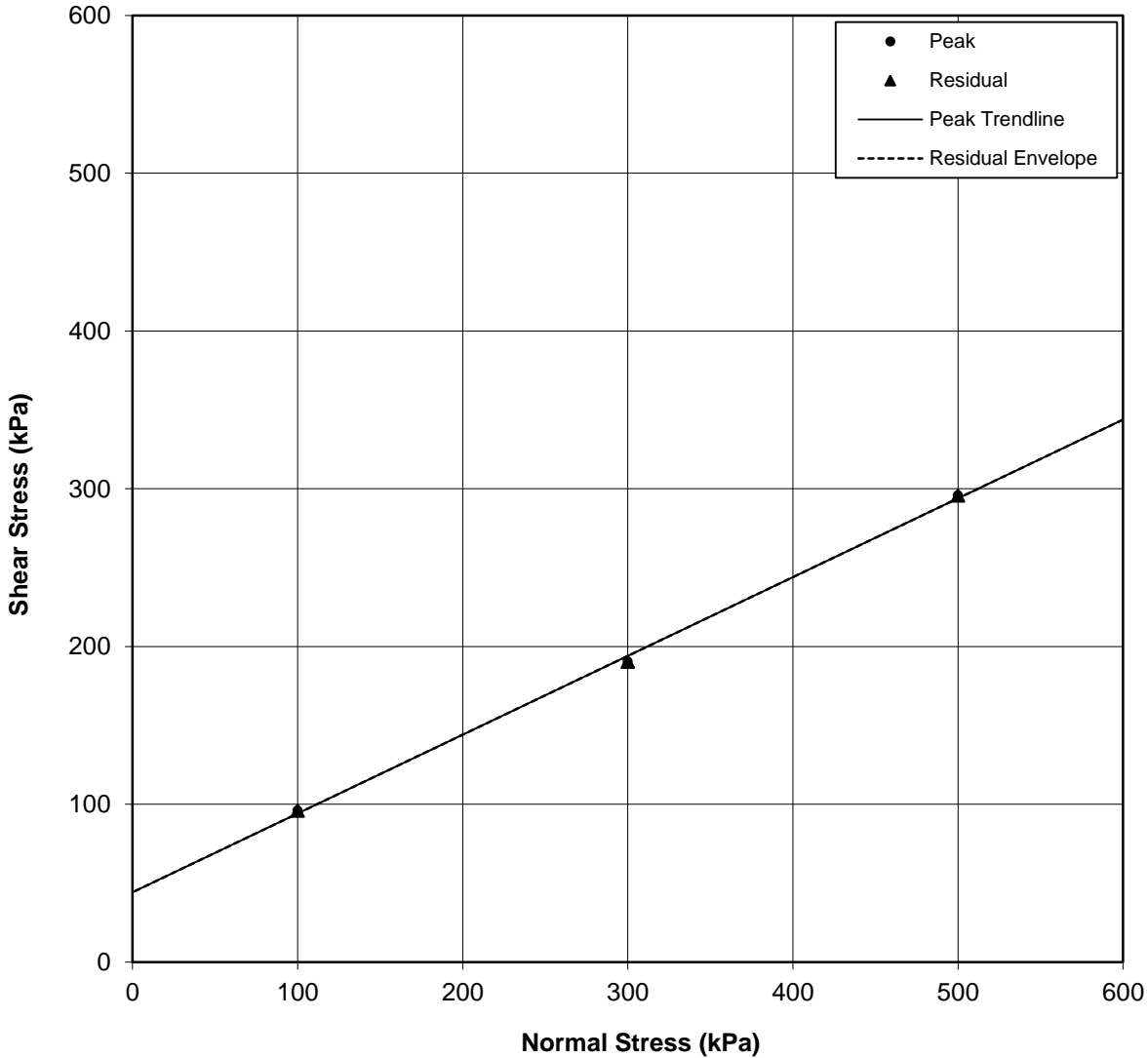
Determination of Shear Strength by Direct Shear on Rock Sample

(large shearbox apparatus)

Borehole No: R71912
 Depth (m): 37.47 - 37.82

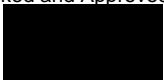
Description:
 Weak off-white well structured CHALK (Grade A).
 Saw cut shear plane perpendicular to core axis.
 Joint roughness coefficient = 0-2.
 Debris is silty fine to coarse gravel.

Shear Stress v Normal Stress



Peak: $c' = 44$ **Residual:** $c'r = 44$
 $\phi' = 26.5^\circ$ $\phi' r = 26.5^\circ$

Checked and Approved by



S R Allen (Senior Tech)

Date: 23/11/2020

Project Number:

GEO / 32129

Project Name:

**A303 STONEHENGE
 JFR1451**



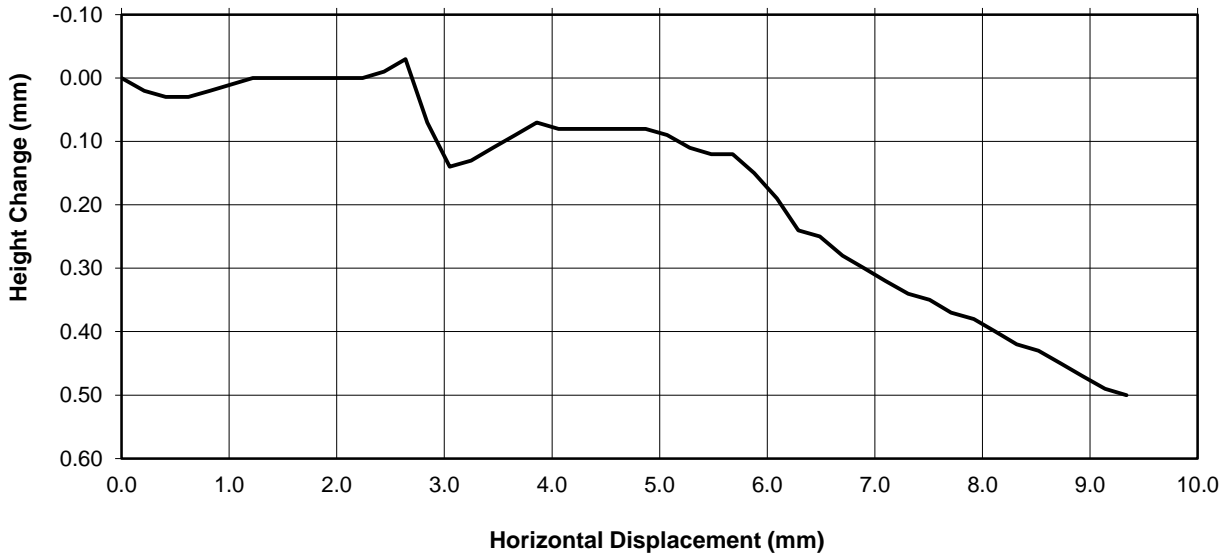
Determination of Shear Strength by Direct Shear on Rock Sample

(large shearbox apparatus)

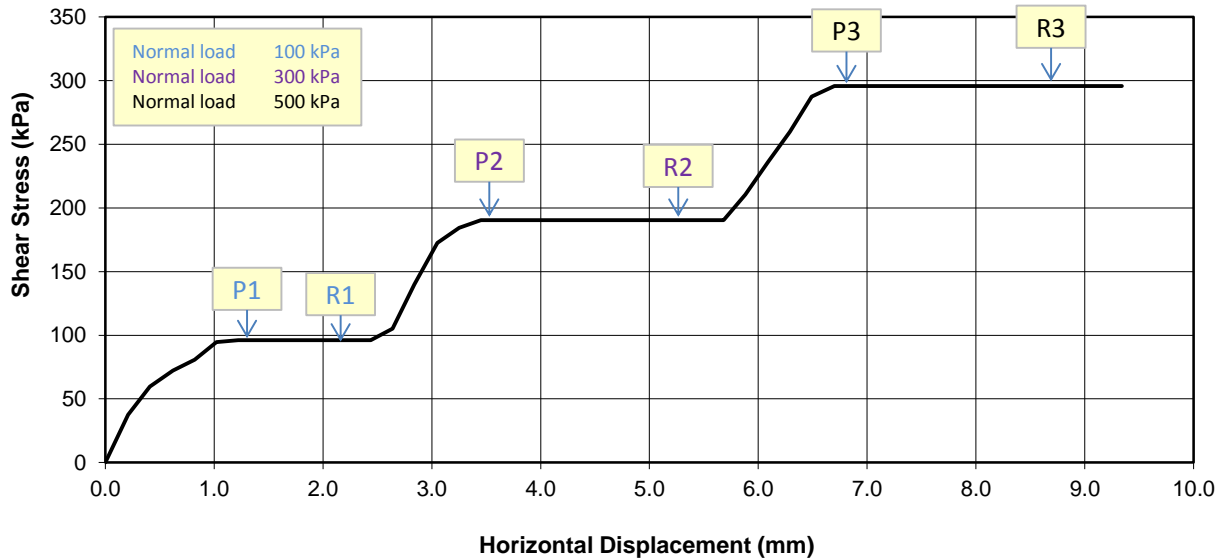
Borehole No: R71912
 Depth (m): 37.47 - 37.82

Description:
 Weak off-white well structured CHALK (Grade A).
 Saw cut shear plane perpendicular to core axis.
 Joint roughness coefficient = 0-2.
 Debris is silty fine to coarse gravel.

Height Change v Horizontal Displacement



Shear Stress v Horizontal Displacement



Checked and Approved by



S R Allen (Senior Tech)

Date: 23/11/2020

Project Number:

GEO / 32129

Project Name:

**A303 STONEHENGE
 JFR1451**



Determination of Shear Strength by Direct Shear on Rock Sample

(large shearbox apparatus)

Borehole No: R71908
 Sample No: 14
 Depth (m): 37.65 - 37.95

Description:

Strong white well structured CHALK (Grade A).
 Saw cut shear plane perpendicular to core axis.
 Joint roughness coefficient = 0-2.
 Debris is fine angular gravel.

Specimen Details

Type of shear plane

Saw cut

Preparation

Rock core encapsulated in concrete avoiding shear plane then positioned in shearbox with shear plane parallel to interface of top and bottom halves of shearbox.

Specimen Number

1

Maximum Length

mm 101.5

Maximum Width

mm 101.3

Area

mm² 8080.9**Shearing Stage**

Normal stress

kPa 100 350 600

Peak Conditions:

Rate of horizontal displacement

mm/min 0.1 0.1 0.1

Maximum shear stress

kPa 69.4 189.0 309.3

Horizontal displacement at MSS

mm 2.2 7.5 11.8

Residual Conditions:

Rate of horizontal displacement

mm/min 0.1 0.1 0.1

Residual shear stress

kPa 69.4 189.0 309.3

Final cumulative displacement

mm 15.6

Duration

day(s) 1**Shear Strength Parameters****Maximum Condition:**

Apparent Cohesion

kPa 21

Angle of Shearing Resistance

degrees 25.5**Residual Condition:**

Apparent Cohesion

kPa 21

Angle of Shearing Resistance

degrees 25.5**Notes:**

Checked and Approved by



S R Allen (Senior Tech)

Date: 28/10/2020

Project Number:

GEO / 31728

Project Name:

A303 STONEHENGE
JFR1451

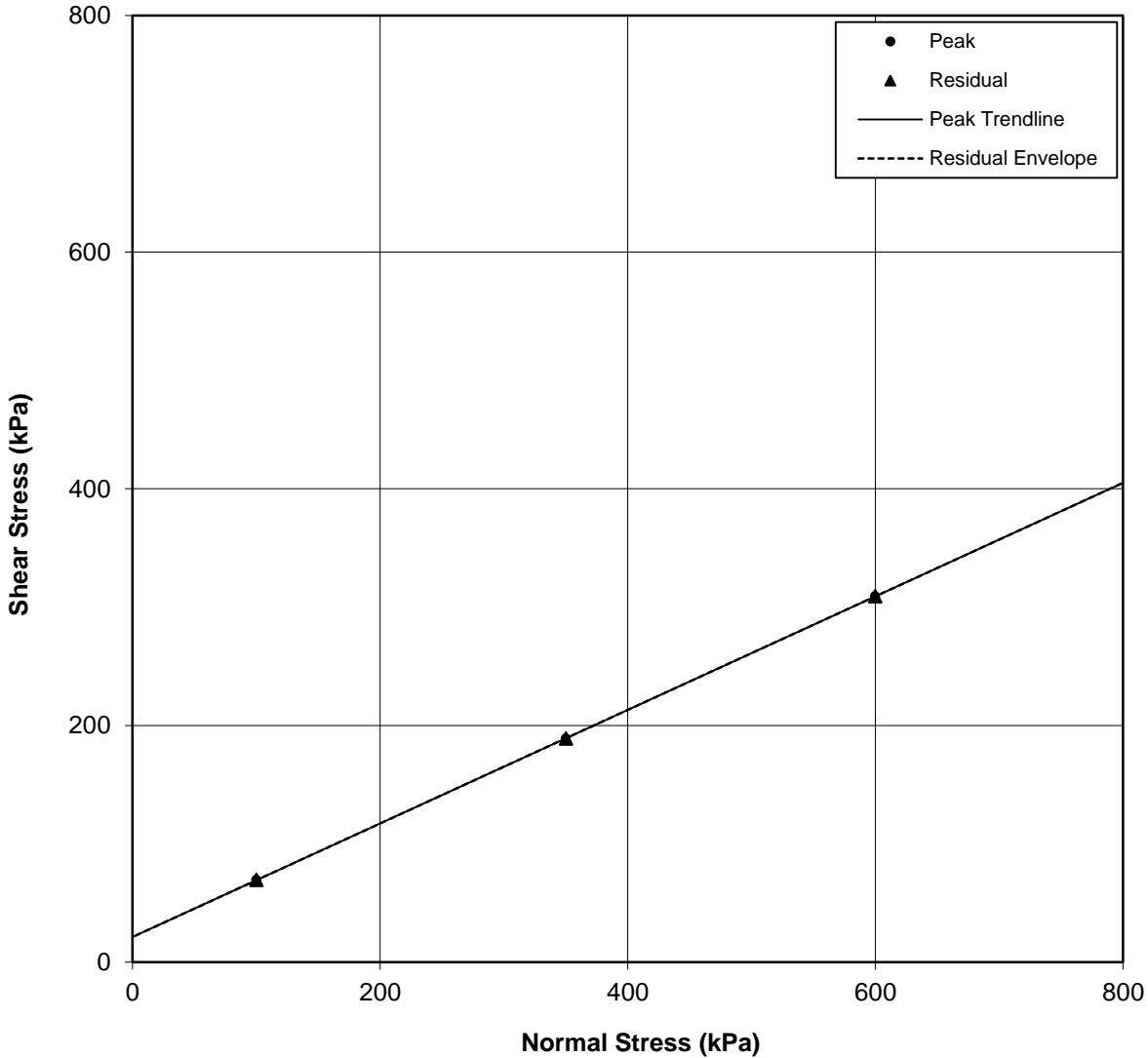
Determination of Shear Strength by Direct Shear on Rock Sample

(large shearbox apparatus)

Borehole No: R71908
 Sample No: 14
 Depth (m): 37.65 - 37.95

Description:
 Strong white well structured CHALK (Grade A).
 Saw cut shear plane perpendicular to core axis.
 Joint roughness coefficient = 0-2.
 Debris is fine angular gravel.

Shear Stress v Normal Stress



Peak: $c' = 21$ **Residual:** $c'r = 21$
 $\phi' = 25.5^\circ$ $\phi'r = 25.5^\circ$

Checked and Approved by



S R Allen (Senior Tech)

Date: 28/10/2020

Project Number:

GEO / 31728

Project Name:

**A303 STONEHENGE
 JFR1451**

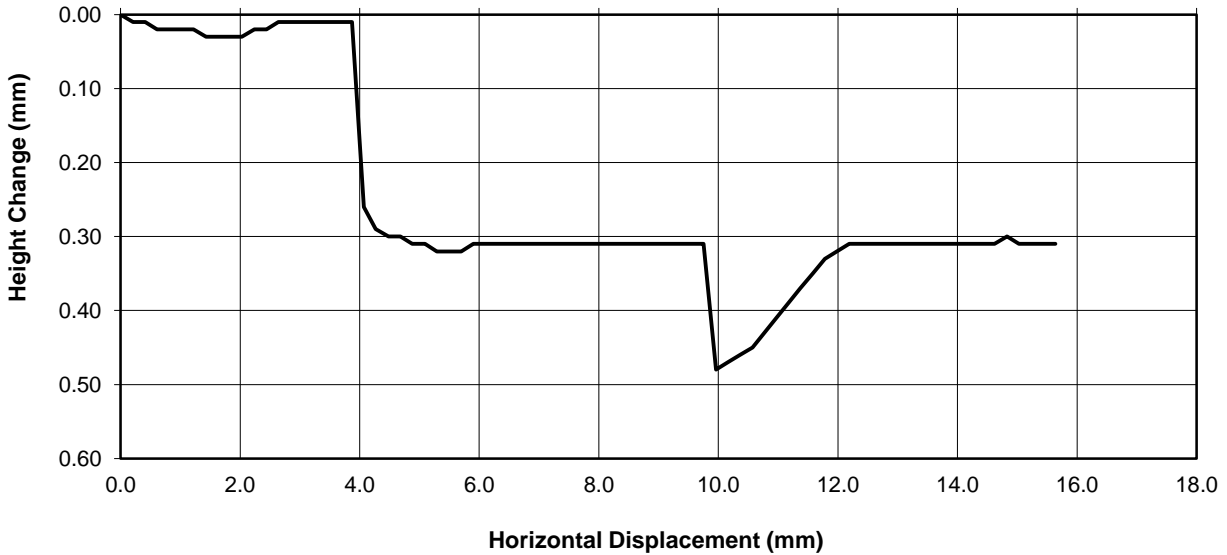


ISRM Suggested Method
Determination of Shear Strength by Direct Shear on Rock Sample
 (large shearbox apparatus)

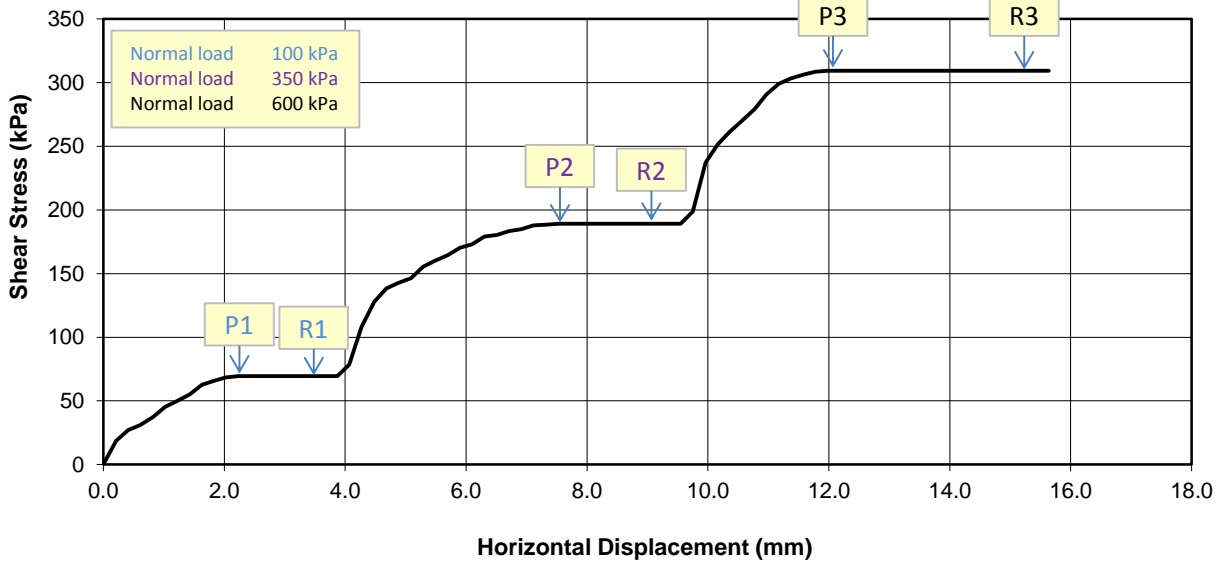
Borehole No: R71908
 Sample No: 14
 Depth (m): 37.65 - 37.95

Description:
 Strong white well structured CHALK (Grade A).
 Saw cut shear plane perpendicular to core axis.
 Joint roughness coefficient = 0-2.
 Debris is fine angular gravel.

Height Change v Horizontal Displacement



Shear Stress v Horizontal Displacement



Checked and Approved by



S R Allen (Senior Tech)

Date: 28/10/2020

Project Number:

GEO / 31728

Project Name:

**A303 STONEHENGE
 JFR1451**



Determination of Shear Strength by Direct Shear on Rock Sample

(large shearbox apparatus)

Borehole No: R71915
 Depth (m): 14.92 - 15.16

Description:

Weak off-white well structured CHALK (Grade A).
 Saw cut shear plane perpendicular to core axis.
 Joint roughness coefficient = 0-2.
 Debris is abundant silt, sand and fine to medium gravel.

Specimen Details

Type of shear plane	Saw cut		
Preparation	Rock core encapsulated in concrete avoiding shear plane then positioned in shearbox with shear plane parallel to interface of top and bottom halves of shearbox.		
Specimen Number	1		
Maximum Length	mm	100.2	
Maximum Width	mm	98.5	
Area	mm ²	7709.3	

Shearing Stage

Normal stress	kPa	100	200	300
Peak Conditions:				
Rate of horizontal displacement	mm/min	0.1	0.1	0.1
Maximum shear stress	kPa	100.8	188.3	289.1
Horizontal displacement at MSS	mm	2.4	12.0	18.1
Residual Conditions:				
Rate of horizontal displacement	mm/min	0.1	0.1	0.1
Residual shear stress	kPa	100.8	188.3	289.1
Final cumulative displacement	mm	21.2		

Duration	day(s)	1
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Shear Strength Parameters**Maximum Condition:**

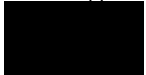
Apparent Cohesion	kPa	4
Angle of Shearing Resistance	degrees	43.5

Residual Condition:

Apparent Cohesion	kPa	4
Angle of Shearing Resistance	degrees	43.5

Notes:

Checked and Approved by



S R Allen (Senior Tech)

Date: 05/11/2020

Project Number:

GEO / 31890

Project Name:

**A303 STONEHENGE
JFR1451****GEOLABS®**

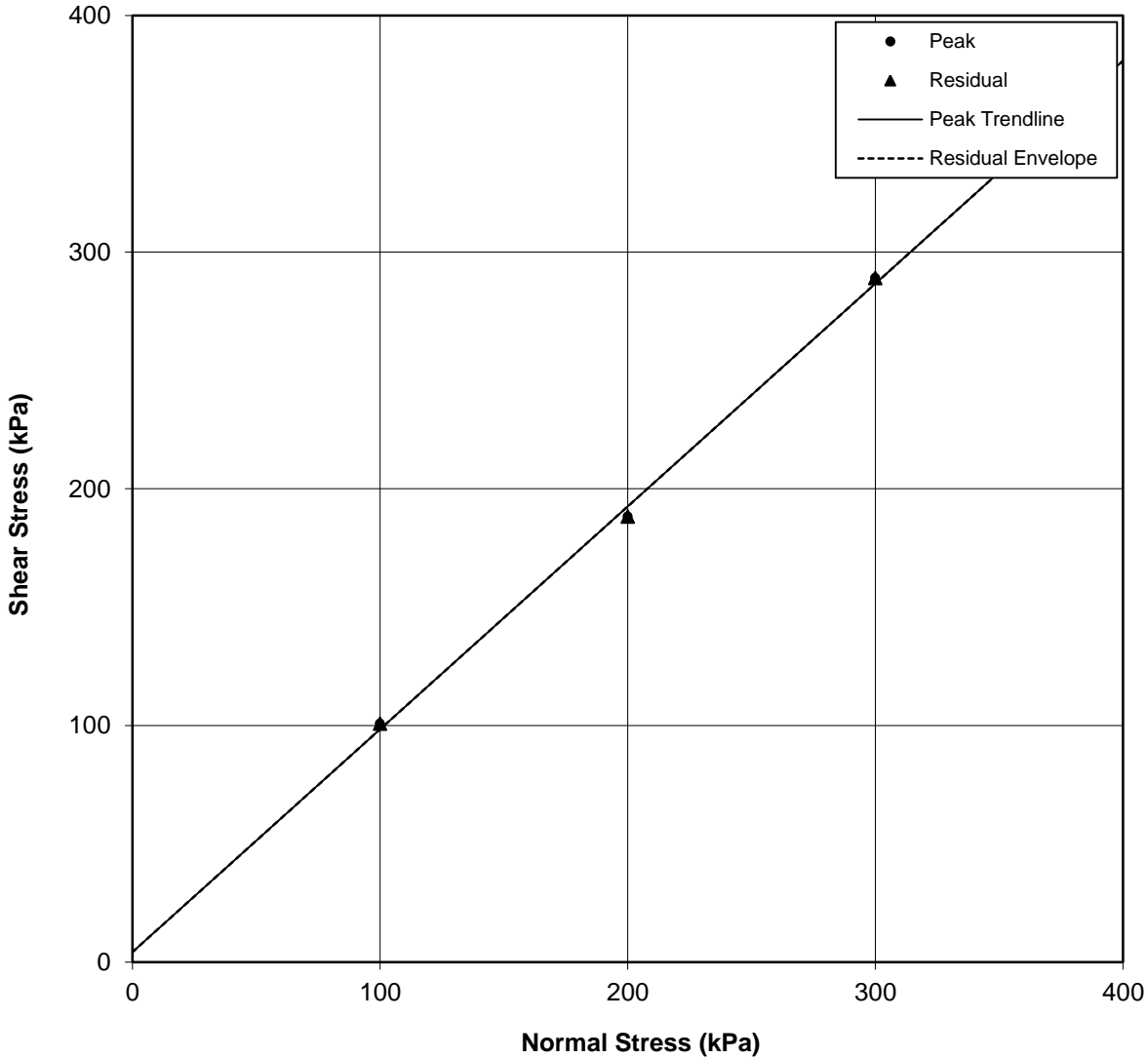
Determination of Shear Strength by Direct Shear on Rock Sample

(large shearbox apparatus)

Borehole No: R71915
 Depth (m): 14.92 - 15.16

Description:
 Weak off-white well structured CHALK (Grade A).
 Saw cut shear plane perpendicular to core axis.
 Joint roughness coefficient = 0-2.
 Debris is abundant silt, sand and fine to medium gravel.

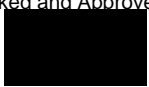
Shear Stress v Normal Stress



Peak: $c' = 4$
 $\phi' = 43.5^\circ$

Residual: $c'r = 4$
 $\phi'r = 43.5^\circ$

Checked and Approved by



S R Allen (Senior Tech)

Date: 05/11/2020

Project Number:

GEO / 31890

Project Name:

**A303 STONEHENGE
 JFR1451**



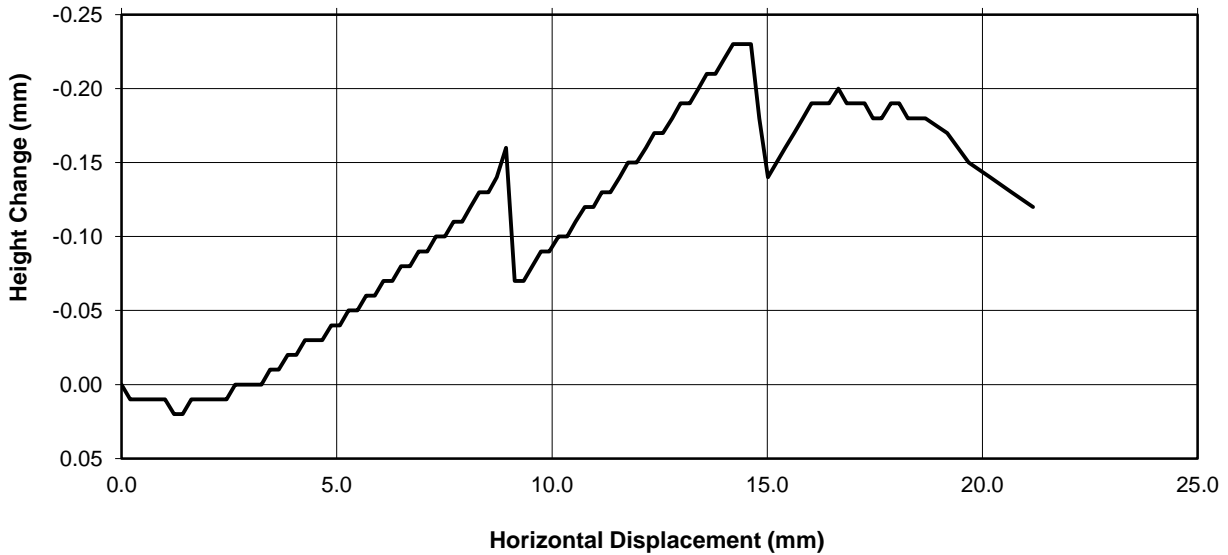
Determination of Shear Strength by Direct Shear on Rock Sample

(large shearbox apparatus)

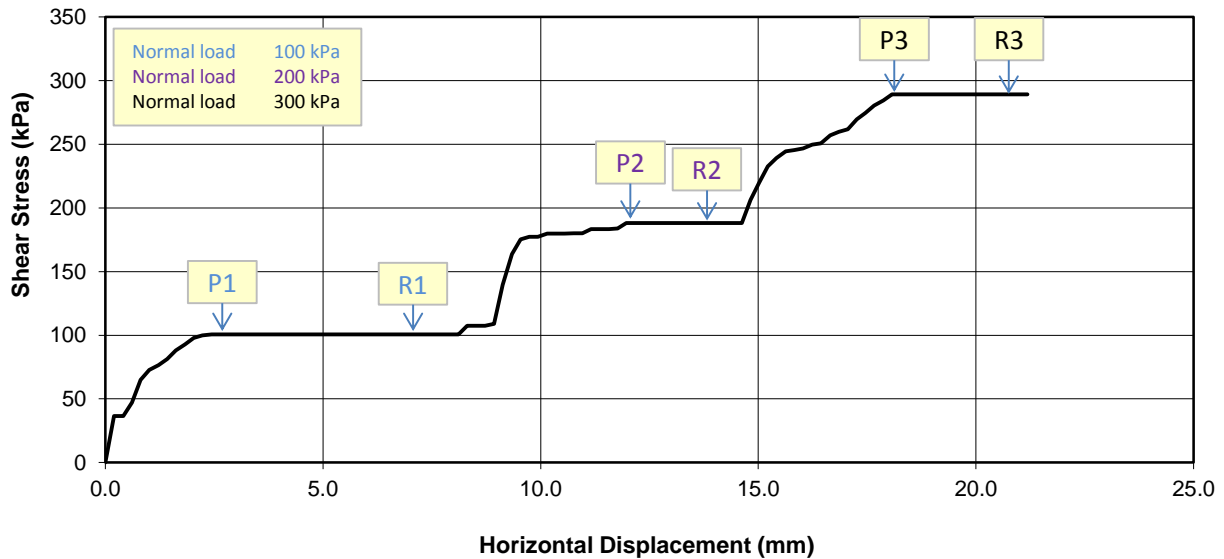
Borehole No: R71915
 Depth (m): 14.92 - 15.16

Description:
 Weak off-white well structured CHALK (Grade A).
 Saw cut shear plane perpendicular to core axis.
 Joint roughness coefficient = 0-2.
 Debris is abundant silt, sand and fine to medium gravel.

Height Change v Horizontal Displacement



Shear Stress v Horizontal Displacement



Checked and Approved by



S R Allen (Senior Tech)

Date: 05/11/2020

Project Number:

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Project Name:

**A303 STONEHENGE
 JFR1451**



Determination of Shear Strength by Direct Shear on Rock Sample

(large shearbox apparatus)

Borehole No: R72004
Depth (m): 15.25 - 15.60

Description:

Weak off-white well structured CHALK (Grade A).
Saw cut shear plane perpendicular to core axis.
Joint roughness coefficient = 0-2.
Debris is silt, sand and fine to medium gravel.

Specimen Details

Type of shear plane	Saw cut		
Preparation	Rock core encapsulated in concrete avoiding shear plane then positioned in shearbox with shear plane parallel to interface of top and bottom halves of shearbox.		
Specimen Number	1		
Maximum Length	mm	99.0	
Maximum Width	mm	66.7	
Area	mm ²	5453.7	

Shearing Stage

Normal stress	kPa	100	250	400
Peak Conditions:				
Rate of horizontal displacement	mm/min	0.1	0.1	0.1
Maximum shear stress	kPa	103.4	203.8	293.3
Horizontal displacement at MSS	mm	2.4	9.9	17.2
Residual Conditions:				
Rate of horizontal displacement	mm/min	0.1	0.1	0.1
Residual shear stress	kPa	103.4	203.2	292.8
Final cumulative displacement	mm	23.7		

Duration day(s) 1

Shear Strength Parameters**Maximum Condition:**

Apparent Cohesion	kPa	42
Angle of Shearing Resistance	degrees	32.5

Residual Condition:

Apparent Cohesion	kPa	42
Angle of Shearing Resistance	degrees	32.5

Notes:

Checked and Approved by



S R Allen (Senior Tech)

Date: 05/11/2020

Project Number:

GEO / 31880

Project Name:

**A303 STONEHENGE
JFR1451****GEOLABS®**

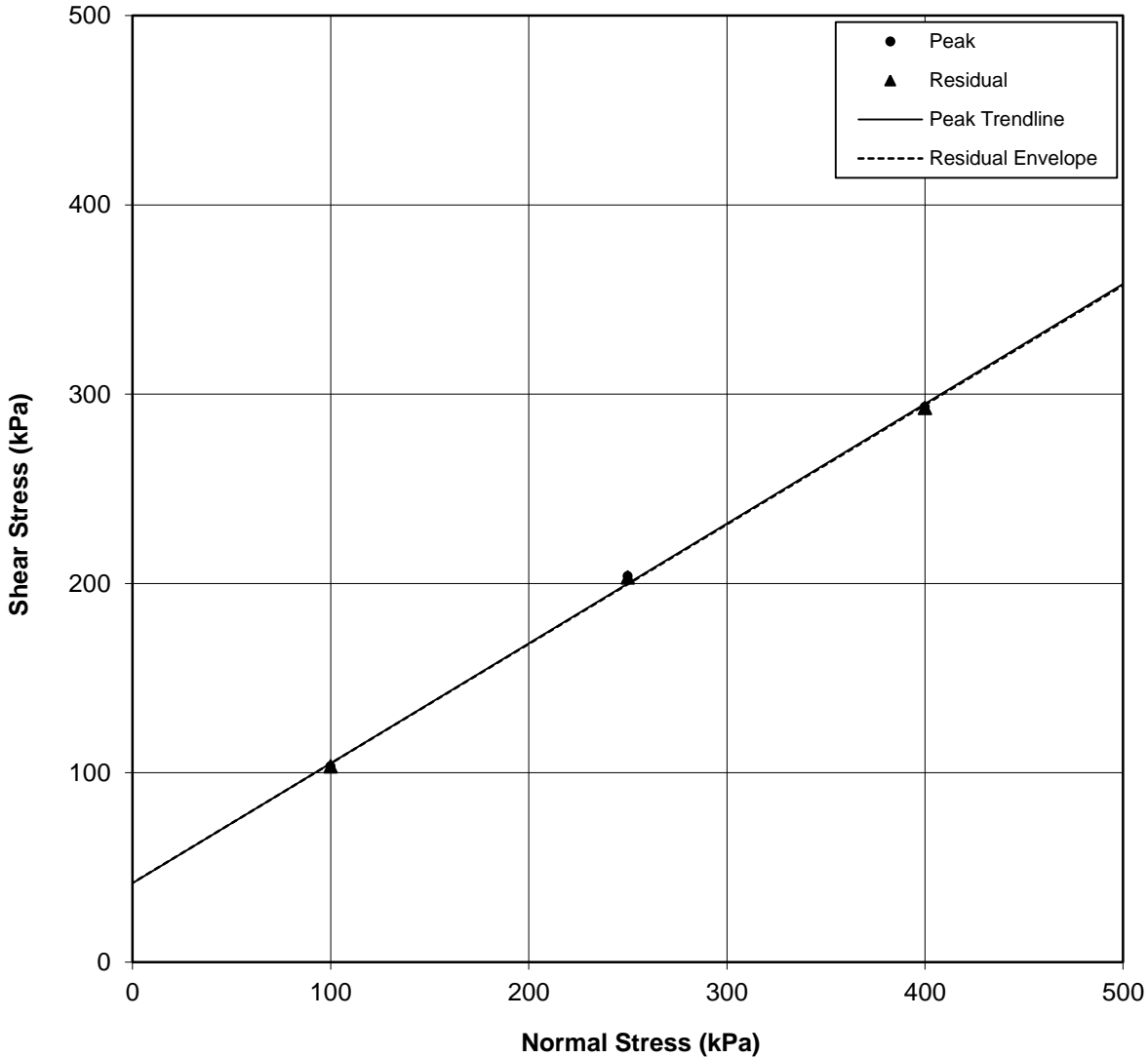
Determination of Shear Strength by Direct Shear on Rock Sample

(large shearbox apparatus)

Borehole No: R72004
 Depth (m): 15.25 - 15.60

Description:
 Weak off-white well structured CHALK (Grade A).
 Saw cut shear plane perpendicular to core axis.
 Joint roughness coefficient = 0-2.
 Debris is silt, sand and fine to medium gravel.

Shear Stress v Normal Stress



Peak: $c' = 42$
 $\phi' = 32.5^\circ$

Residual: $c'r = 42$
 $\phi'r = 32.5^\circ$

Checked and Approved by



S R Allen (Senior Tech)

Date: 05/11/2020

Project Number:

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Project Name:

**A303 STONEHENGE
 JFR1451**



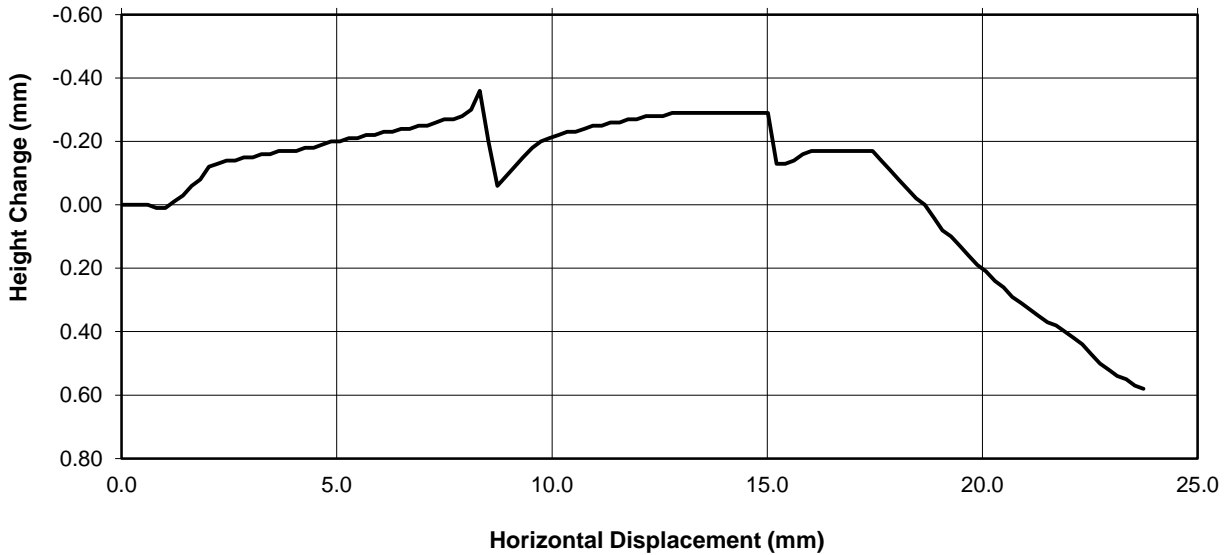
Determination of Shear Strength by Direct Shear on Rock Sample

(large shearbox apparatus)

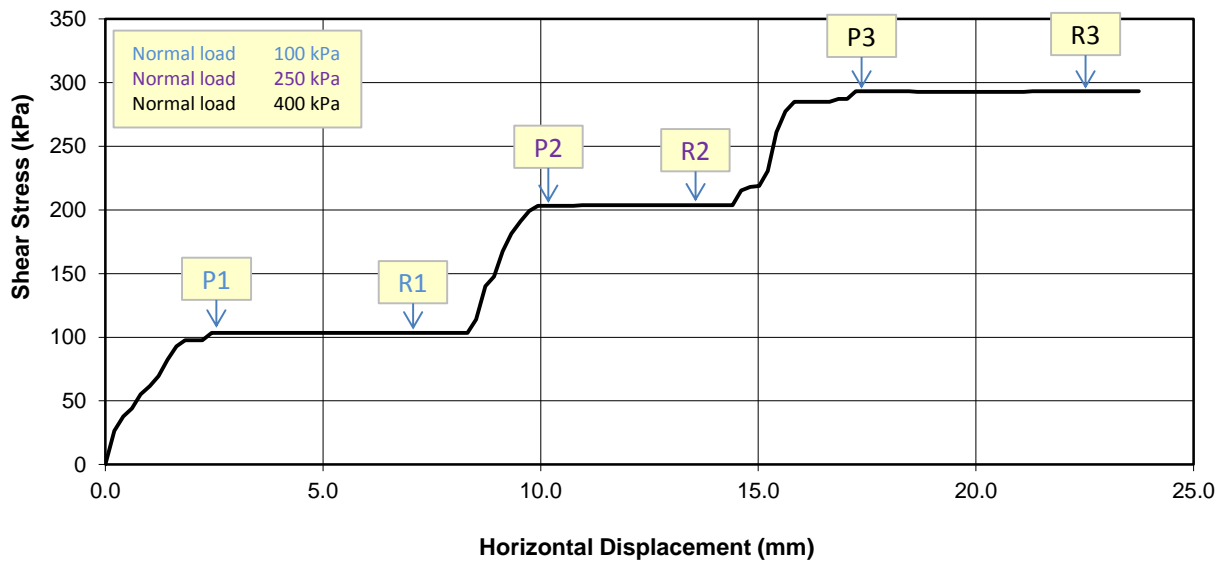
Borehole No: R72004
 Depth (m): 15.25 - 15.60

Description:
 Weak off-white well structured CHALK (Grade A).
 Saw cut shear plane perpendicular to core axis.
 Joint roughness coefficient = 0-2.
 Debris is silt, sand and fine to medium gravel.

Height Change v Horizontal Displacement



Shear Stress v Horizontal Displacement



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S R Allen (Senior Tech)

Date: 05/11/2020

Project Number:

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Project Name:

**A303 STONEHENGE
 JFR1451**



ISRM Suggested Method
Determination of Shear Strength by Direct Shear on Rock Sample
 (large shearbox apparatus)

Borehole No: R71918 Depth (m): 25.47 - 25.70	Description: Weak off-white well structured CHALK (Grade A). Saw cut shear plane perpendicular to core axis. Joint roughness coefficient = 0-2. Debris is abundant silty fine to medium gravel.
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Specimen Details				
Type of shear plane		Saw cut		
Preparation		Rock core encapsulated in concrete avoiding shear plane then positioned in shearbox with shear plane parallel to interface of top and bottom halves of shearbox.		
Specimen Number		1		
Maximum Length	<i>mm</i>	101.3		
Maximum Width	<i>mm</i>	100.9		
Area	<i>mm²</i>	8001.4		
Shearing Stage				
Normal stress	<i>kPa</i>	100	200	350
Peak Conditions:				
Rate of horizontal displacement	<i>mm/min</i>	0.1	0.1	0.1
Maximum shear stress	<i>kPa</i>	103.8	156.1	224.8
Horizontal displacement at MSS	<i>mm</i>	3.9	10.1	13.6
Residual Conditions:				
Rate of horizontal displacement	<i>mm/min</i>	0.1	0.1	0.1
Residual shear stress	<i>kPa</i>	103.8	156.1	224.8
Final cumulative displacement	<i>mm</i>	18.9		
Duration	<i>day(s)</i>	1		
Shear Strength Parameters				
Maximum Condition:				
Apparent Cohesion	<i>kPa</i>	57		
Angle of Shearing Resistance	<i>degrees</i>	25.5		
Residual Condition:				
Apparent Cohesion	<i>kPa</i>	57		
Angle of Shearing Resistance	<i>degrees</i>	25.5		
Notes:				

Checked and Approved by S R Allen (Senior Tech) Date: 21/01/2021	Project Number: GEO / 32382 Project Name: A303 Stonehenge Project Ref.: JFR1451	
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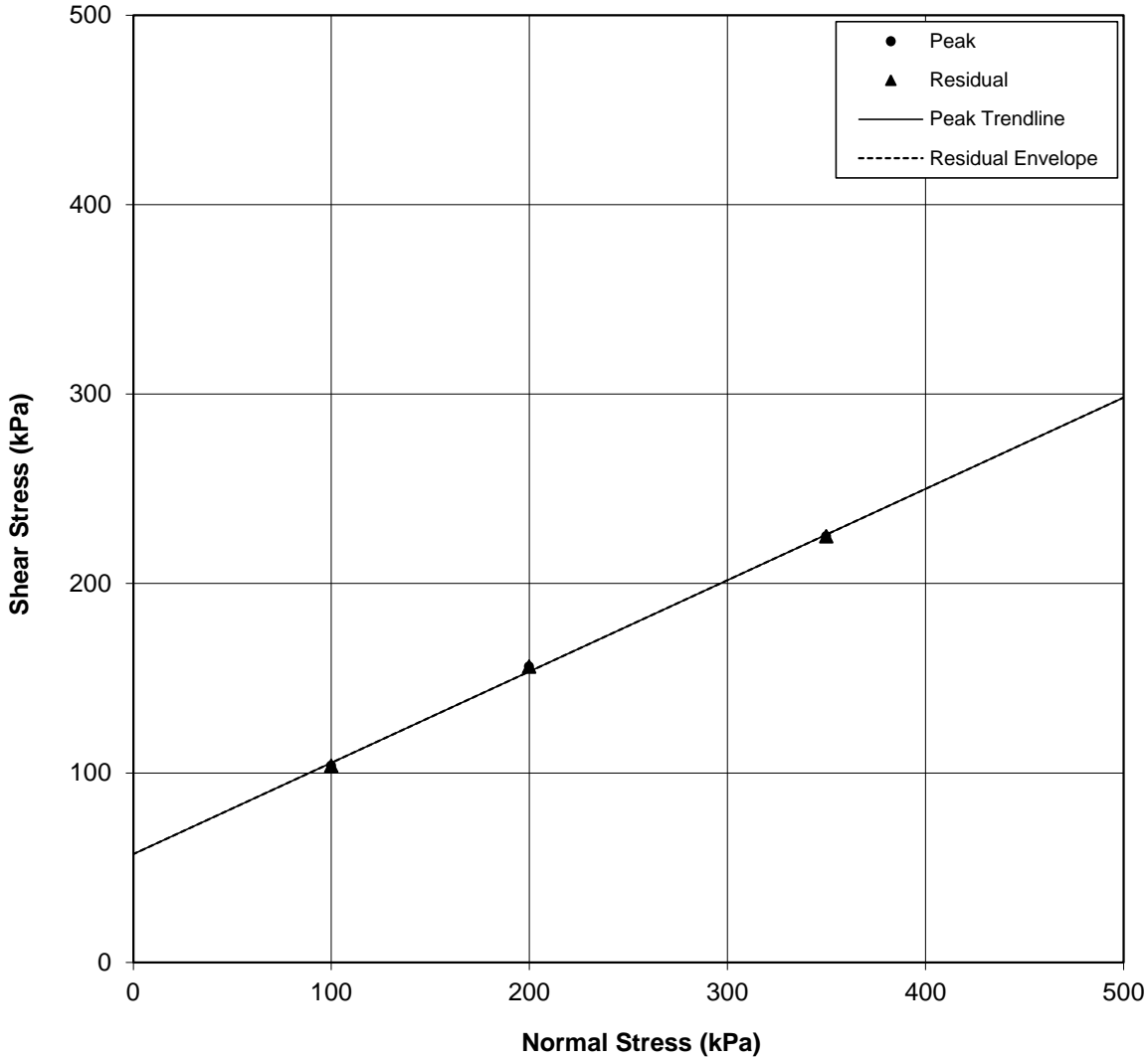
Determination of Shear Strength by Direct Shear on Rock Sample

(large shearbox apparatus)

Borehole No: R71918
 Depth (m): 25.47 - 25.70

Description:
 Weak off-white well structured CHALK (Grade A).
 Saw cut shear plane perpendicular to core axis.
 Joint roughness coefficient = 0-2.
 Debris is abundant silty fine to medium gravel.

Shear Stress v Normal Stress



Peak: $c' = 57$ **Residual:** $c'r = 57$
 $\phi' = 25.5^\circ$ $\phi' r = 25.5^\circ$

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S R Allen (Senior Tech)

Date: 21/01/2021

Project Number:

GEO / 32382

Project Name:

**A303 Stonehenge
 Project Ref.: JFR1451**



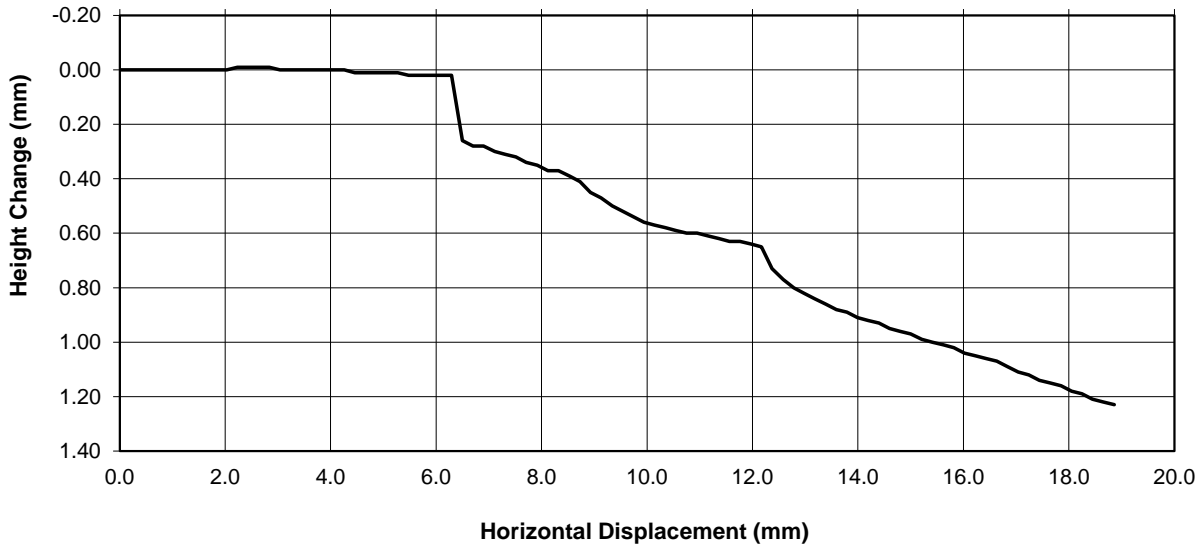
Determination of Shear Strength by Direct Shear on Rock Sample

(large shearbox apparatus)

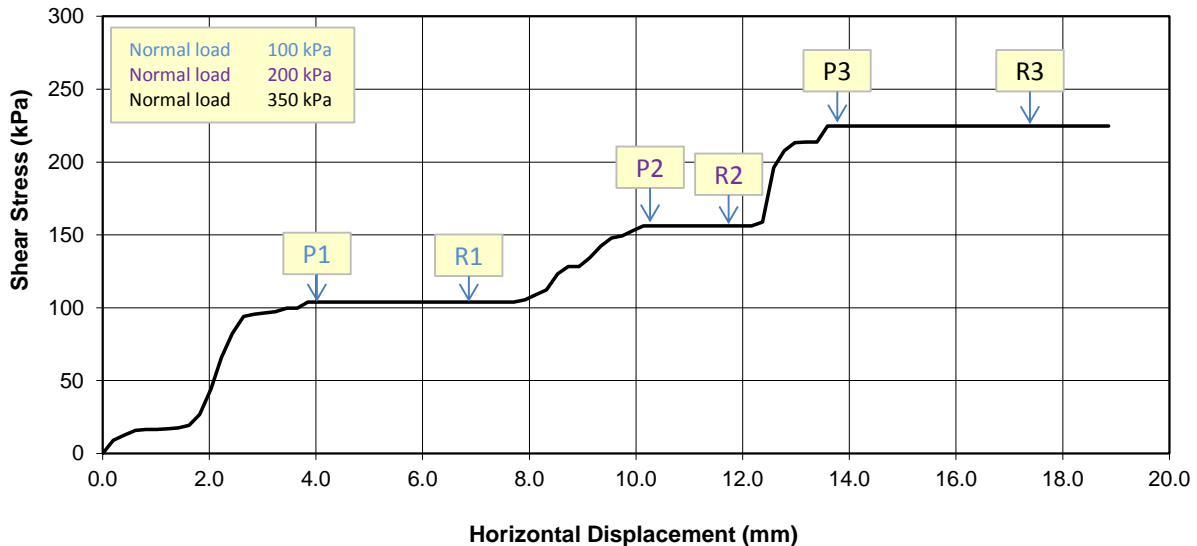
Borehole No: R71918
 Depth (m): 25.47 - 25.70

Description:
 Weak off-white well structured CHALK (Grade A).
 Saw cut shear plane perpendicular to core axis.
 Joint roughness coefficient = 0-2.
 Debris is abundant silty fine to medium gravel.

Height Change v Horizontal Displacement



Shear Stress v Horizontal Displacement



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S R Allen (Senior Tech)

Date: 21/01/2021

Project Number:

GEO / 32382

Project Name:

**A303 Stonehenge
 Project Ref.: JFR1451**



Determination of Shear Strength by Direct Shear on Rock Sample

(large shearbox apparatus)

Borehole No: R71919
 Depth (m): 24.50 - 24.81

Description:

Weak off-white well structured CHALK (Grade A).
 Saw cut shear plane perpendicular to core axis.
 Joint roughness coefficient = 0-2.
 Debris is silt, sand and fine gravel.

Specimen Details

Type of shear plane	Saw cut		
Preparation	Rock core encapsulated in concrete avoiding shear plane then positioned in shearbox with shear plane parallel to interface of top and bottom halves of shearbox.		
Specimen Number	1		
Maximum Length	mm	99.9	
Maximum Width	mm	96.9	
Area	mm ²	7447.1	

Shearing Stage

Normal stress	kPa	100	200	400
Peak Conditions:				
Rate of horizontal displacement	mm/min	0.1	0.1	0.1
Maximum shear stress	kPa	124.5	176.1	281.5
Horizontal displacement at MSS	mm	2.4	7.3	12.0
Residual Conditions:				
Rate of horizontal displacement	mm/min	0.1	0.1	0.1
Residual shear stress	kPa	123.3	176.1	280.7
Final cumulative displacement	mm	14.6		

Duration	day(s)	1
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Shear Strength Parameters**Maximum Condition:**

Apparent Cohesion	kPa	72
Angle of Shearing Resistance	degrees	27.5

Residual Condition:

Apparent Cohesion	kPa	71
Angle of Shearing Resistance	degrees	27.5

Notes:

Checked and Approved by



S R Allen (Senior Tech)

Date: 21/01/2021

Project Number:

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Project Name:

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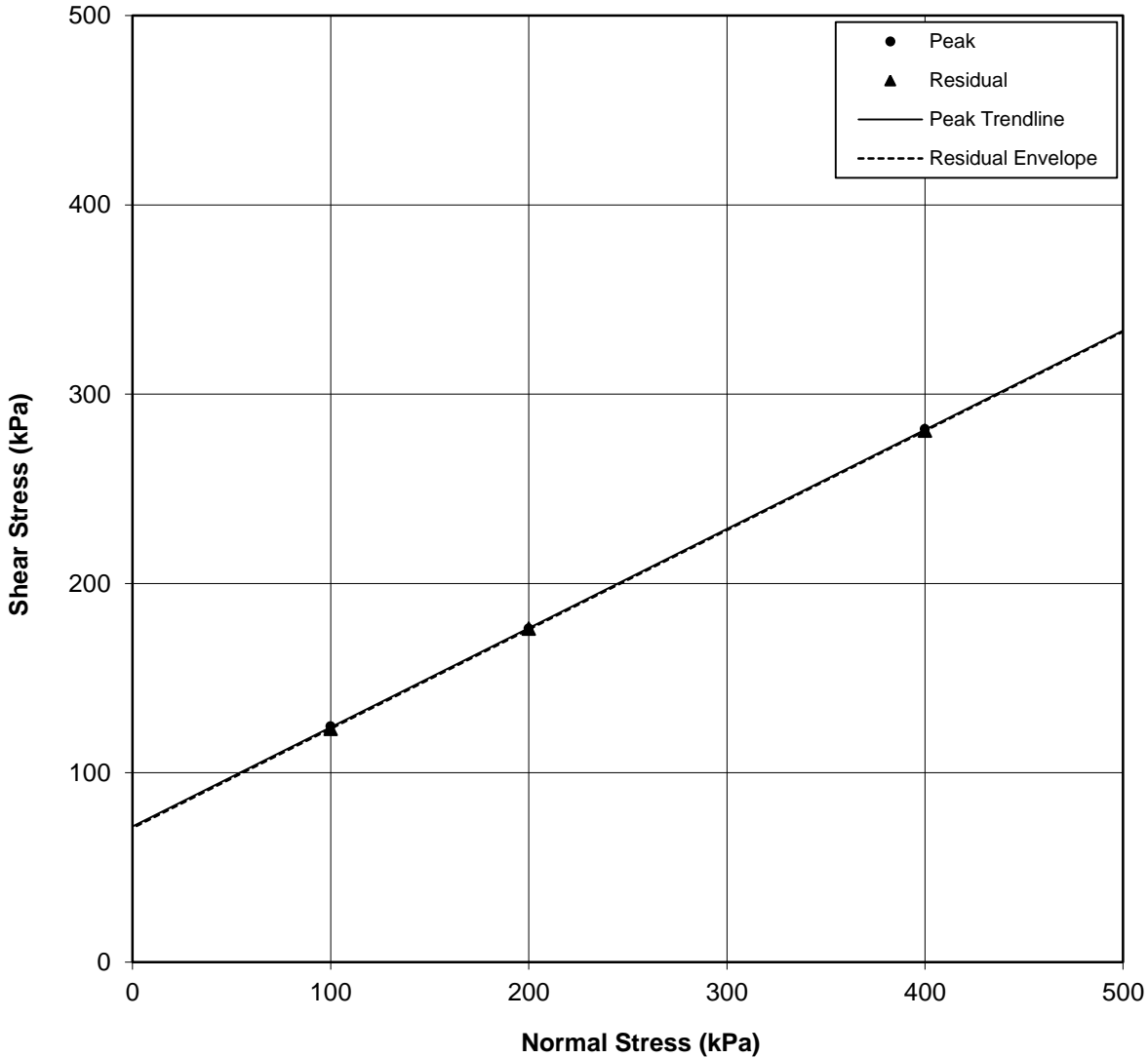
Determination of Shear Strength by Direct Shear on Rock Sample

(large shearbox apparatus)

Borehole No: R71919
 Depth (m): 24.50 - 24.81

Description:
 Weak off-white well structured CHALK (Grade A).
 Saw cut shear plane perpendicular to core axis.
 Joint roughness coefficient = 0-2.
 Debris is silt, sand and fine gravel.

Shear Stress v Normal Stress



Peak: $c' = 72$
 $\phi' = 27.5^\circ$

Residual: $c'r = 71$
 $\phi'r = 27.5^\circ$

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S R Allen (Senior Tech)

Date: 21/01/2021

Project Number:

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Project Name:

**A303 STONEHENGE
 JFR1451**



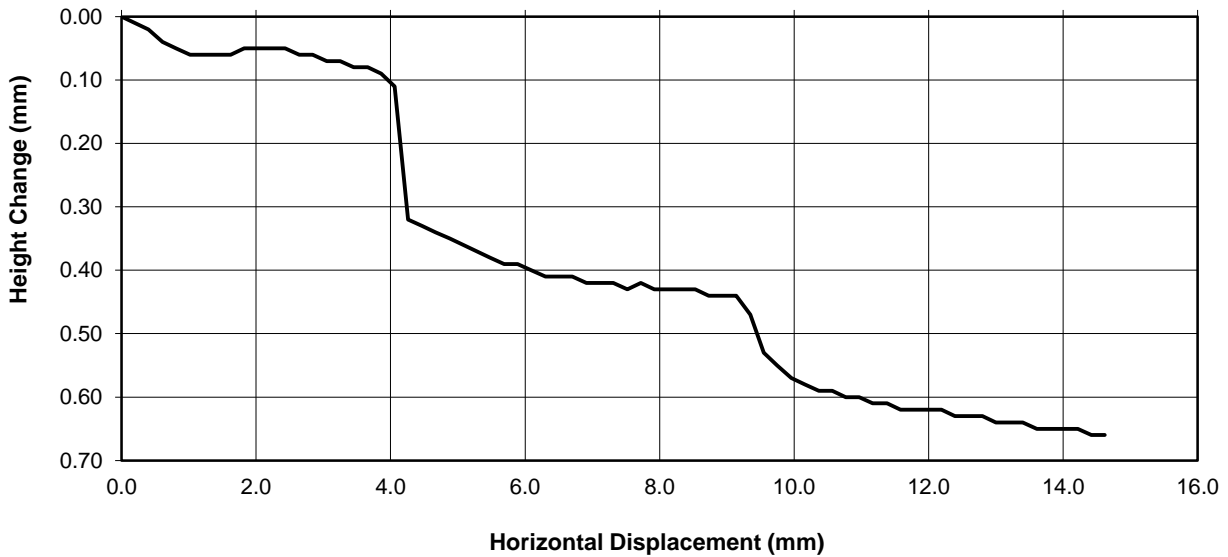
Determination of Shear Strength by Direct Shear on Rock Sample

(large shearbox apparatus)

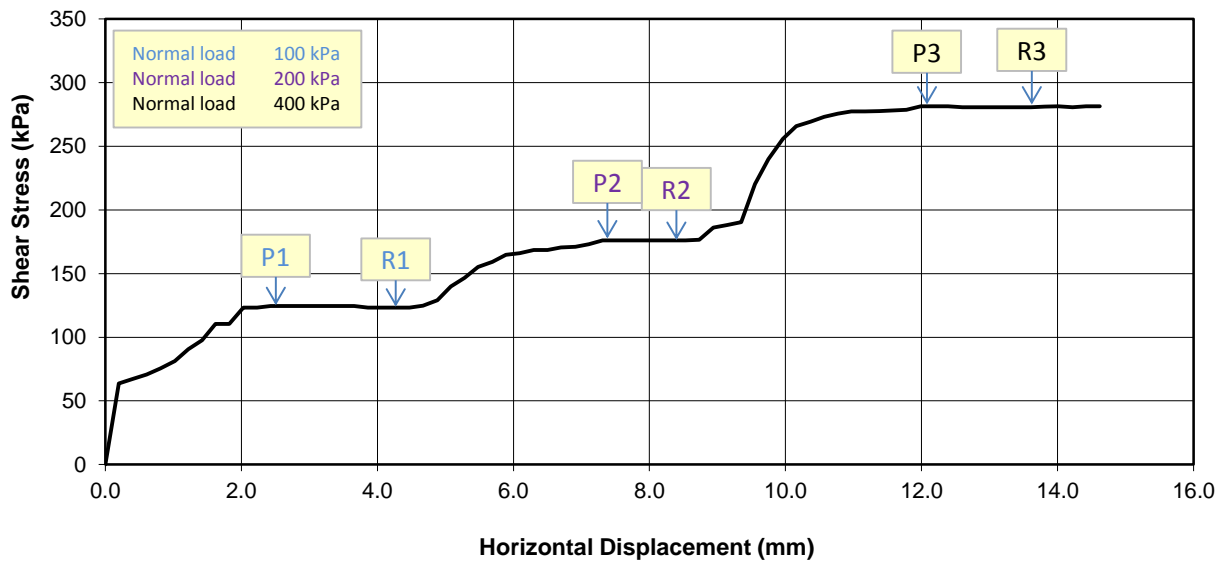
Borehole No: R71919
 Depth (m): 24.50 - 24.81

Description:
 Weak off-white well structured CHALK (Grade A).
 Saw cut shear plane perpendicular to core axis.
 Joint roughness coefficient = 0-2.
 Debris is silt, sand and fine gravel.

Height Change v Horizontal Displacement



Shear Stress v Horizontal Displacement



Checked and Approved by



S R Allen (Senior Tech)

Date: 21/01/2021

Project Number:

GEO / 32382

Project Name:



**A303 STONEHENGE
 JFR1451**



ISRM Suggested Methods – Rock Characterization Testing and Monitoring 1974 - 2006
DETERMINATION OF THE SLAKE-DURABILITY INDEX

Sample details				Water Temp. (°C)	Appearance of fragments after 2 nd cycle	Natural Water Content (%)	1 st Cycle	2 nd Cycle
Borehole Ref.	Sample Ref.	Depth (m)	Description				Slake Durability Index I _{d(1)}	Slake Durability Index I _{d(2)}
DTP70702	11	3.00	White CHALK	20 ± 2	Retained: Retained specimen consist of large and small fragments. Passing: Clayey SILT	20	93.3	90.0



Note: Tap water used as slaking fluid.

Checked and Approved by  C Clergeaud (Snr. Geologist) Date: 03/12/2020	Project Number: GEO / 32137 Project Name: A303 STONEHENGE JFR1451	
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ISRM Suggested Methods – Rock Characterization Testing and Monitoring 1974 - 2006
DETERMINATION OF THE SLAKE-DURABILITY INDEX

Sample details				Water Temp. (°C)	Appearance of fragments after 2 nd cycle	Natural Water Content (%)	1 st Cycle	2 nd Cycle
Borehole Ref.	Sample Ref.	Depth (m)	Description				Slake Durability Index I _{d(1)}	Slake Durability Index I _{d(2)}
R70110	5	6.40-6.62	White CHALK	20 ± 2	Retained: Retained specimen remain virtually unchanged. Passing: Clayey SILT	22	96.1	93.2

Note: Tap water used as slaking fluid.

Checked and Approved by  C Clergeaud (Snr. Geologist) Date: 24/11/2020	Project Number: GEO / 32135 Project Name: A303 STONEHENGE JFR1451	
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DETERMINATION OF THE SLAKE-DURABILITY INDEX

Sample details				Water Temp. (°C)	Appearance of fragments after 2 nd cycle	Natural Water Content (%)	1 st Cycle	2 nd Cycle
Borehole Ref.	Sample Ref.	Depth (m)	Description				Slake Durability Index I _{d(1)}	Slake Durability Index I _{d(2)}
R70106		7.75-7.99	White CHALK	18 ± 2	Retained: Retained specimen remain virtually unchanged. Passing: Clayey SILT	21	95.4	91.8



Note: Tap water used as slaking fluid.

Checked and Approved by C Clergeaud (Snr. Geologist) Date: 07/01/2021	Project Number: GEO / 32370 Project Name: A303 STONEHENGE JFR1451	
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DETERMINATION OF THE SLAKE-DURABILITY INDEX

Sample details				Water Temp. (°C)	Appearance of fragments after 2 nd cycle	Natural Water Content (%)	1 st Cycle	2 nd Cycle
Borehole Ref.	Sample Ref.	Depth (m)	Description				Slake Durability Index I _{d(1)}	Slake Durability Index I _{d(2)}
R71905		18.68-18.88	White CHALK	22 ± 2	Retained: Retained specimen consist of large and small fragments. Passing: Clayey SILT	27	92.9	84.9
R71905		25.60-25.80	White CHALK	21 ± 2	Retained: Retained specimen remain virtually unchanged. Passing: SILT	21	94.5	89.9



Note: Tap water used as slaking fluid.

Checked and Approved by  C Clergeaud (Snr. Geologist) Date: 15/12/2020	Project Number: GEO / 32215 Project Name: A303 STONEHENGE JFR1451	
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ISRM Suggested Methods – Rock Characterization Testing and Monitoring 1974 - 2006
DETERMINATION OF THE SLAKE-DURABILITY INDEX

Sample details				Water Temp. (°C)	Appearance of fragments after 2 nd cycle	Natural Water Content (%)	1 st Cycle	2 nd Cycle
Borehole Ref.	Sample Ref.	Depth (m)	Description				Slake Durability Index I _{d(1)}	Slake Durability Index I _{d(2)}
STP71601		3.00	White CHALK	22 ± 2	Retained: Retained specimen consist of large and small fragments. Passing: Clayey SILT	23	89.9	87.2



Note: Tap water used as slaking fluid.

Checked and Approved by  C Clergeaud (Snr. Geologist) Date: 21/01/2021	Project Number: GEO / 32133 Project Name: A303 STONEHENGE JFR1451	
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ISRM Suggested Methods – Rock Characterization Testing and Monitoring 1974 - 2006
DETERMINATION OF THE SLAKE-DURABILITY INDEX

Sample details				Water Temp. (°C)	Appearance of fragments after 2 nd cycle	Natural Water Content (%)	1 st Cycle	2 nd Cycle
Borehole Ref.	Sample Ref.	Depth (m)	Description				Slake Durability Index I _{d(1)}	Slake Durability Index I _{d(2)}
R70116	11	5.50-5.70	White CHALK	20 ± 2	Retained: Retained specimen remain virtually unchanged. Passing: Clayey SILT	27	93.2	87.7


Note: Tap water used as slaking fluid.

Checked and Approved by  C Clergeaud (Snr. Geologist) Date: 24/11/2020	Project Number: GEO / 32134 Project Name: A303 STONEHENGE JFR1451	
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DETERMINATION OF THE SLAKE-DURABILITY INDEX

Sample details				Water Temp. (°C)	Appearance of fragments after 2 nd cycle	Natural Water Content (%)	1 st Cycle	2 nd Cycle
Borehole Ref.	Sample Ref.	Depth (m)	Description				Slake Durability Index I _{d(1)}	Slake Durability Index I _{d(2)}
R71910		44.70-45.04	White CHALK	20 ± 2	Retained: Retained specimen remain virtually unchanged. Passing: Clayey SILT	29	92.0	85.7
R71910		52.70-53.01	White CHALK	20 ± 2	Retained: Retained specimen remain virtually unchanged. Passing: Clayey SILT	24	92.7	87.7



Note: Tap water used as slaking fluid.

Checked and Approved by <div style="background-color: black; width: 40px; height: 20px; margin: 5px auto;"></div> C Clergeaud (Snr. Geologist) Date: 23/10/2020	Project Number: GEO / 31761 Project Name: A303 STONEHENGE JFR1451	
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DETERMINATION OF THE SLAKE-DURABILITY INDEX

Sample details				Water Temp. (°C)	Appearance of fragments after 2 nd cycle	Natural Water Content (%)	1 st Cycle	2 nd Cycle
Borehole Ref.	Sample Ref.	Depth (m)	Description				Slake Durability Index I _{d(1)}	Slake Durability Index I _{d(2)}
R72102	1	7.72-7.98	White CHALK	20 ± 2	Retained: Retained specimen remain virtually unchanged. Passing: Silty CLAY	27	92.9	88.1


Note: Tap water used as slaking fluid.

Checked and Approved by  C Clergeaud (Snr. Geologist) Date: 12/10/2020	Project Number: GEO / 31760 Project Name: A303 STONEHENGE JFR1451	
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DETERMINATION OF THE SLAKE-DURABILITY INDEX

Sample details				Water Temp. (°C)	Appearance of fragments after 2 nd cycle	Natural Water Content (%)	1 st Cycle	2 nd Cycle
Borehole Ref.	Sample Ref.	Depth (m)	Description				Slake Durability Index I _{d(1)}	Slake Durability Index I _{d(2)}
R71914		8.70-8.93	White CHALK	20 ± 2	Retained: Retained specimen remain virtually unchanged. Passing: Clayey SILT	30	92.6	86.8
R71914		14.65-14.89	White CHALK	20 ± 2	Retained: Retained specimen remain virtually unchanged. Passing: Clayey SILT	28	92.0	86.2



Note: Tap water used as slaking fluid.

Checked and Approved by <div style="background-color: black; width: 40px; height: 20px; margin: 5px auto;"></div> C Clergeaud (Snr. Geologist) Date: 24/11/2020	Project Number: GEO / 32128 Project Name: A303 STONEHENGE JFR1451	
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DETERMINATION OF THE SLAKE-DURABILITY INDEX

Sample details				Water Temp. (°C)	Appearance of fragments after 2 nd cycle	Natural Water Content (%)	1 st Cycle	2 nd Cycle
Borehole Ref.	Sample Ref.	Depth (m)	Description				Slake Durability Index I _{d(1)}	Slake Durability Index I _{d(2)}
R71203		9.37-9.50	White CHALK	22 ± 2	Retained: Retained specimen remain virtually unchanged. Passing: Clayey SILT	23	93.3	88.6

Note: Tap water used as slaking fluid.

Checked and Approved by  C Clergeaud (Snr. Geologist) Date: 24/11/2020	Project Number: GEO / 32140 Project Name: A303 STONEHENGE JFR1451	
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DETERMINATION OF THE SLAKE-DURABILITY INDEX

Sample details				Water Temp. (°C)	Appearance of fragments after 2 nd cycle	Natural Water Content (%)	1 st Cycle	2 nd Cycle
Borehole Ref.	Sample Ref.	Depth (m)	Description				Slake Durability Index I _{d(1)}	Slake Durability Index I _{d(2)}
R71912		27.47-27.68	White CHALK	20 ± 2	Retained: Retained specimen consist of large and small fragments. Passing: Clayey SILT	28	88.9	81.7
R71912		33.30-33.60	White CHALK	20 ± 2	Retained: Retained specimen consist of large and small fragments. Passing: Clayey SILT	22	94.4	89.7

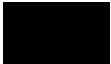

Note: Tap water used as slaking fluid.

Checked and Approved by C Clergeaud (Snr. Geologist) Date: 24/11/2020	Project Number: GEO / 32129 Project Name: A303 STONEHENGE JFR1451	
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ISRM Suggested Methods – Rock Characterization Testing and Monitoring 1974 - 2006
DETERMINATION OF THE SLAKE-DURABILITY INDEX

Sample details				Water Temp. (°C)	Appearance of fragments after 2 nd cycle	Natural Water Content (%)	1 st Cycle	2 nd Cycle
Borehole Ref.	Sample Ref.	Depth (m)	Description				Slake Durability Index I _{d(1)}	Slake Durability Index I _{d(2)}
R72101		7.70-7.92	White CHALK	20 ± 2	Retained: Retained specimen remain virtually unchanged. Passing: Silty CLAY	27	92.7	87.1
R72101		10.60-10.80	White CHALK	20 ± 2	Retained: Retained specimen remain virtually unchanged. Passing: Silty CLAY	27	92.6	87.1


Note: Tap water used as slaking fluid.

Checked and Approved by  C Clergeaud (Snr. Geologist) Date: 16/10/2020	Project Number: GEO / 31881 Project Name: A303 STONEHENGE JFR1451	
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DETERMINATION OF THE SLAKE-DURABILITY INDEX

Sample details				Water Temp. (°C)	Appearance of fragments after 2 nd cycle	Natural Water Content (%)	1 st Cycle	2 nd Cycle
Borehole Ref.	Sample Ref.	Depth (m)	Description				Slake Durability Index I _{d(1)}	Slake Durability Index I _{d(2)}
R71908	11	33.40-33.65	White CHALK	20 ± 2	Retained: Retained specimen remain virtually unchanged. Passing: Silty CLAY	26	90.9	84.4
R71908	15	37.95-38.20	White CHALK	20 ± 2	Retained: Retained specimen remain virtually unchanged. Passing: Silty CLAY	28	92.8	87.1



Note: Tap water used as slaking fluid.

Checked and Approved by <div style="background-color: black; width: 40px; height: 20px; margin: 5px auto;"></div> C Clergeaud (Snr. Geologist) Date: 24/09/2020	Project Number: Project Name:	<p>GEO / 31728</p> <p>A303 STONEHENGE</p> <p>JFR1451</p>	
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ISRM Suggested Methods – Rock Characterization Testing and Monitoring 1974 - 2006
DETERMINATION OF THE SLAKE-DURABILITY INDEX

Sample details				Water Temp. (°C)	Appearance of fragments after 2 nd cycle	Natural Water Content (%)	1 st Cycle	2 nd Cycle
Borehole Ref.	Sample Ref.	Depth (m)	Description				Slake Durability Index I _{d(1)}	Slake Durability Index I _{d(2)}
R71915		10.96-11.06	White CHALK	20 ± 2	Retained: Retained specimen consist of large and small fragments. Passing: Silty CLAY	29	83.0	75.0
R71915		19.47-19.61	White CHALK	20 ± 2	Retained: Retained specimen remain virtually unchanged. Passing: Silty CLAY	28	89.8	82.7



Note: Tap water used as slaking fluid.

Checked and Approved by  C Clergeaud (Snr. Geologist) Date: 22/10/2020	Project Number: GEO / 31890 Project Name: A303 STONEHENGE JFR1451	
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ISRM Suggested Methods – Rock Characterization Testing and Monitoring 1974 - 2006
DETERMINATION OF THE SLAKE-DURABILITY INDEX

Sample details				Water Temp. (°C)	Appearance of fragments after 2 nd cycle	Natural Water Content (%)	1 st Cycle	2 nd Cycle
Borehole Ref.	Sample Ref.	Depth (m)	Description				Slake Durability Index I _{d(1)}	Slake Durability Index I _{d(2)}
R71210	9	11.75-11.94	White CHALK	20 ± 2	Retained: Retained specimen remain virtually unchanged. Passing: Clayey SILT	25	93.2	88.5



Note: Tap water used as slaking fluid.

Checked and Approved by  C Clergeaud (Snr. Geologist) Date: 05/03/2021	Project Number: <p style="text-align: center;">GEO / 32691</p> Project Name: <p style="text-align: center;">A303 STONEHENGE JFR1451</p>	
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ISRM Suggested Methods – Rock Characterization Testing and Monitoring 1974 - 2006
DETERMINATION OF THE SLAKE-DURABILITY INDEX

Sample details				Water Temp. (°C)	Appearance of fragments after 2 nd cycle	Natural Water Content (%)	1 st Cycle	2 nd Cycle
Borehole Ref.	Sample Ref.	Depth (m)	Description				Slake Durability Index I _{d(1)}	Slake Durability Index I _{d(2)}
R71916		34.86-35.11	White CHALK	20 ± 2	Retained: Retained specimen remain virtually unchanged. Passing: Silty clay	24	93.5	88.6
R71918	17	30.12-30.35	White CHLAK	20 ± 2	Retained: Retained specimen remain virtually unchanged. Passing: Silty clay	24	94.6	90.8
R71919	12	29.04-29.35	White CHALK	20 ± 2	Retained: Retained specimen remain virtually unchanged. Passing: Silty clay	27	94.2	89.9

Note: Tap water used as slaking fluid.

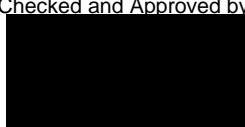
Checked and Approved by  C Clergeaud (Snr. Geologist) Date: 18/01/2021	Project Number: <b style="text-align: center;">GEO / 32382 Project Name: <b style="text-align: center;">A303 STONEHENGE JFR1451	
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SATURATION MOISTURE CONTENT OF CHALK

Location	Depth m	Sample Ref	Sample Type	Description	Water Content BS EN ISO 17892-1 : 2014 %	Bulk Density Mg/m ³	Dry Density Mg/m ³	Saturation Moisture Content %	Porosity %
R70107	4.43-4.71	2	C	White CHALK.	26.0	2.00	1.59	26	41
R70107	9.20-9.35	4	C	White CHALK.	24.3	2.03	1.63	24	40
R70109	4.60-4.73	2	C	White CHALK.	18.5	2.12	1.79	19	34
R70109	6.92-7.15	5	C	White CHALK.	23.1	2.05	1.67	23	38
R70109	8.52-8.72	7	C	White CHALK.	20.7	2.04	1.69	22	37
R70110	4.50-4.60	3	D	White CHALK.	24.0	2.03	1.64	24	39
R70110	8.60-8.70	7	D	White CHALK.	24.0	2.03	1.64	24	39
R70111	5.70-5.88	4	C	White CHALK.	24.7	2.03	1.63	24	40
R70111	10.66-10.80	7	C	White CHALK.	23.1	2.05	1.67	23	38
R70111	12.80-13.04	11	C	White CHALK.	23.2	2.05	1.66	23	39
R70112	8.10-8.20	6	C	White CHALK.	24.7	2.02	1.62	25	40
R70112	10.30-10.59	9	C	White CHALK.	25.3	2.02	1.61	25	40
R70112	14.50-14.72	12	C	White CHALK.	24.9	2.01	1.61	25	40
R70117	3.50-3.60	2	D	White CHALK.	25.0	2.01	1.61	25	40
R70117	6.12-6.30	4	C	White CHALK.	24.6	2.03	1.63	24	40

Notes

Checked and Approved by:

J Sturges - Operations Manager
20/01/2021

Project Number:

GEO / 32135


Project Name:

**A303 STONEHENGE
JFR1451****GEOLABS**®

SATURATION MOISTURE CONTENT OF CHALK

Location	Depth m	Sample Ref	Sample Type	Description	Water Content BS EN ISO 17892-1 : 2014 %	Bulk Density Mg/m ³	Dry Density Mg/m ³	Saturation Moisture Content %	Porosity %
R70117	9.35-9.52	7	C	White CHALK.	22.8	2.05	1.67	23	38

Notes

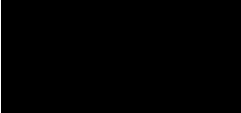
Checked and Approved by: <div style="background-color: black; width: 100px; height: 30px; margin: 5px 0;"></div> J Sturges - Operations Manager 20/01/2021	Project Number: GEO / 32135 Project Name: A303 STONEHENGE JFR1451	
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SATURATION MOISTURE CONTENT OF CHALK

Location	Depth m	Sample Ref	Sample Type	Description	Water Content BS EN ISO 17892-1 : 2014 %	Bulk Density Mg/m ³	Dry Density Mg/m ³	Saturation Moisture Content %	Porosity %
DTP70701	2.00	9	B	White CHALK.	16.0	2.14	1.84	17	32
DTP70701	3.00	11	B	White CHALK.	20.3	2.07	1.72	21	36
DTP70702	1.00	7	B	White CHALK.	19.0	2.08	1.75	20	35
DTP70702	2.00	9	B	White CHALK.	20.3	2.05	1.70	22	37
DTP70703	2.00	11	B	White CHALK.	19.8	2.08	1.74	20	36
DTP70703	4.00	15	B	White CHALK.	20.6	2.07	1.72	21	36
DTP70704	3.00	13	B	White CHALK.	23.7	2.02	1.63	24	40

Notes

Checked and Approved by:



J Sturges - Operations Manager
24/12/2020

Project Number:

GEO / 32137

Project Name:



**A303 STONEHENGE
JFR1451**



SATURATION MOISTURE CONTENT OF CHALK

Location	Depth m	Sample Ref	Sample Type	Description	Water Content BS EN ISO 17892-1 : 2014 %	Bulk Density Mg/m ³	Dry Density Mg/m ³	Saturation Moisture Content %	Porosity %
R70302	4.40-4.50		D	White intact CHALK.	18.9	2.12	1.78	19	34
R70302	8.85-8.95		D	White intact CHALK.	19.7	2.11	1.76	20	35
R70302	12.10-12.20		D	White intact CHALK.	18.0	2.14	1.81	18	33
R70302	14.80-14.95		C	White intact CHALK.	17.8	2.15	1.83	18	32

Notes

Checked and Approved by:  J Sturges - Operations Manager 11/11/2020	Project Number: GEO / 31889 Project Name: A303 STONEHENGE JFR1451	
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SATURATION MOISTURE CONTENT OF CHALK

Location	Depth m	Sample Ref	Sample Type	Description	Water Content BS EN ISO 17892-1 : 2014 %	Bulk Density Mg/m ³	Dry Density Mg/m ³	Saturation Moisture Content %	Porosity %
STP70404	2.00	9	B	White CHALK	16.2	2.16	1.86	17	31
STP70404	3.00	11	B	White CHALK	16.2	2.17	1.87	16	31


Notes

Checked and Approved by: J Sturges - Operations Manager 22/01/2021	Project Number: GEO / 32372 Project Name: A303 STONEHENGE JFR1451	
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SATURATION MOISTURE CONTENT OF CHALK

Location	Depth m	Sample Ref	Sample Type	Description	Water Content BS EN ISO 17892-1 : 2014 %	Bulk Density Mg/m ³	Dry Density Mg/m ³	Saturation Moisture Content %	Porosity %
STP72201	0.90-1.10		B	White CHALK	27.0	1.98	1.56	27	42

Notes

<p>Checked and Approved by:</p> <div style="background-color: black; width: 100px; height: 40px; margin: 5px 0;"></div> <p style="font-size: small;">J Sturges - Operations Manager 22/01/2021</p>	<p>Project Number:</p> <h2 style="text-align: center;">GEO / 32371</h2> <p>Project Name:</p> <h2 style="text-align: center;">A303 STONEHENGE JFR1451</h2>	
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SATURATION MOISTURE CONTENT OF CHALK

Location	Depth m	Sample Ref	Sample Type	Description	Water Content BS EN ISO 17892-1 : 2014 %	Bulk Density Mg/m ³	Dry Density Mg/m ³	Saturation Moisture Content %	Porosity %
R71916	10.00-10.19		C	White CHALK	23.9	2.03	1.64	24	39
R71916	16.57-16.81		C	White CHALK	29.4	1.95	1.51	29	44
R71916	21.44-21.63		C	White CHALK	27.5	1.98	1.55	27	43
R71916	24.29-24.49		C	White CHALK	25.1	2.02	1.61	25	40
R71916	28.91-29.07		C	White CHALK	25.7	2.01	1.60	25	41
R71916	31.78-31.88		C	White CHALK	24.9	2.01	1.61	25	40
R71916	36.40-36.62		C	White CHALK	23.5	2.03	1.64	24	39
R71917	8.50-8.70		D	White CHALK	27.9	1.98	1.55	27	43
R71917	13.32-13.47		D	White CHALK	25.4	2.02	1.61	25	40
R71917	19.80-19.92		C	White CHALK	21.4	2.10	1.73	21	36
R71917	23.50-23.66		C	White CHALK	26.3	1.98	1.57	27	42
R71917	28.80-28.98		C	White CHALK	26.3	1.99	1.58	26	41
R71917	34.70-34.90		D	White CHALK	25.7	2.00	1.59	26	41
R71917	38.50-38.65		C	White CHALK	27.4	1.95	1.53	28	43
R71918	10.60-10.78	6	D	White CHALK	20.9	2.12	1.75	20	35

Notes

Checked and Approved by:

J Sturges - Operations Manager
08/03/2021

Project Number:

GEO / 32382

Project Name:

**A303 STONEHENGE
JFR1451**

SATURATION MOISTURE CONTENT OF CHALK

Location	Depth m	Sample Ref	Sample Type	Description	Water Content BS EN ISO 17892-1 : 2014 %	Bulk Density Mg/m ³	Dry Density Mg/m ³	Saturation Moisture Content %	Porosity %
R71918	14.50-14.65	9	D	White CHALK	25.0	2.02	1.62	25	40
R71918	22.20-22.40	11	D	White CHALK	24.6	2.03	1.63	24	40
R71918	28.20-28.40	16	C	White CHALK	26.3	2.00	1.58	26	41
R71918	32.50-32.70	20	C	White CHALK	24.0	2.02	1.63	24	40
R71918	34.80-35.06	22	C	White CHALK	27.0	1.97	1.55	27	43
R71918	39.60-39.90	25	C	White CHALK	26.9	1.97	1.55	27	43
R71918	45.40-45.64	29	C	White CHALK	19.7	2.08	1.74	20	36
R71919	15.23-15.42	4	C	White CHALK	29.2	1.94	1.50	30	44
R71919	19.10-19.40	6	C	White CHALK	23.4	2.03	1.65	24	39
R71919	24.50-24.81	9	C	White CHALK	25.8	1.97	1.57	27	42
R71919	29.70-30.10	13	C	White CHALK	25.7	1.97	1.57	27	42
R71919	36.40-36.71	17	C	White CHALK	27.4	1.97	1.55	27	43
R71919	42.10-42.45	21	C	White CHALK	25.3	2.02	1.61	25	40
R71919	47.60-47.80	25	C	White CHALK	21.0	2.07	1.71	21	37

Notes

Checked and Approved by:

J Sturges - Operations Manager
08/03/2021

Project Number:

GEO / 32382

Project Name:

**A303 STONEHENGE
JFR1451**

SATURATION MOISTURE CONTENT OF CHALK

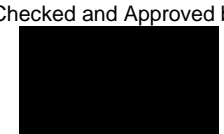

Location	Depth m	Sample Ref	Sample Type	Description	Water Content BS EN ISO 17892-1 : 2014 %	Bulk Density Mg/m ³	Dry Density Mg/m ³	Saturation Moisture Content %	Porosity %
CP72307	3.65-4.20		B	White CHALK.	24.5	2.02	1.62	25	40
CP72308A	5.00-5.50		B	White CHALK.	24.1	2.03	1.64	24	39
CP72310	7.50-8.00		B	White CHALK.	27.2	1.98	1.56	27	42
CP72310	13.50-14.00		B	White CHALK.	28.0	1.97	1.54	28	43
Notes									

Checked and Approved by: J Sturges - Operations Manager 22/01/2021	Project Number: GEO / 32303 Project Name: A303 STONEHENGE JFR1451	
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SATURATION MOISTURE CONTENT OF CHALK

Location	Depth m	Sample Ref	Sample Type	Description	Water Content BS EN ISO 17892-1 : 2014 %	Bulk Density Mg/m ³	Dry Density Mg/m ³	Saturation Moisture Content %	Porosity %
R70106	3.29-3.47		D	White CHALK.	25.2	2.00	1.60	25	41
R70106	6.60-6.89		D	White CHALK.	24.7	1.91	1.53	28	43

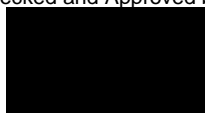
Notes

Checked and Approved by:  J Sturges - Operations Manager 21/01/2021	Project Number: GEO / 32370 Project Name: A303 STONEHENGE JFR1451	
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SATURATION MOISTURE CONTENT OF CHALK

Location	Depth m	Sample Ref	Sample Type	Description	Water Content BS EN ISO 17892-1 : 2014 %	Bulk Density Mg/m ³	Dry Density Mg/m ³	Saturation Moisture Content %	Porosity %
DTP70301	1.00	9	B	White CHALK	21.6	1.96	1.61	25	40
DTP70302	1.00	9	B	White CHALK	16.1	2.02	1.74	20	36
DTP70302	2.00	11	B	White CHALK	17.7	2.11	1.79	19	34
DTP70302	3.00	13	B	White CHALK	17.9	2.10	1.78	19	34
DTP70303	1.00	11	B	White CHALK	17.3	2.10	1.79	19	34
Notes									

Checked and Approved by:

J Sturges - Operations Manager
21/01/2021

Project Number:

GEO / 32138

Project Name:

**A303 STONEHENGE
JFR1451**

SATURATION MOISTURE CONTENT OF CHALK

Location	Depth m	Sample Ref	Sample Type	Description	Water Content BS EN ISO 17892-1 : 2014 %	Bulk Density Mg/m ³	Dry Density Mg/m ³	Saturation Moisture Content %	Porosity %
R70701	9.31-9.52		C	White CHALK	17.8	2.13	1.81	18	33
R70701	16.06-16.28		C	White CHALK	17.8	2.12	1.80	19	33
R70701	19.78-20.03		C	White CHALK	15.6	2.19	1.89	16	30
R70702	10.15-10.40		C	White CHALK	19.3	2.06	1.73	21	36
R70702	15.66-15.89		C	White CHALK	18.8	2.10	1.77	19	34
R70702	17.10-17.30		C	White CHALK	17.4	2.13	1.81	18	33
Notes									

Checked and Approved by:

 J Sturges - Operations Manager
 21/01/2021

Project Number:
GEO / 32369

Project Name:
**A303 STONEHENGE
 JFR1451**



SATURATION MOISTURE CONTENT OF CHALK

Location	Depth m	Sample Ref	Sample Type	Description	Water Content BS EN ISO 17892-1 : 2014 %	Bulk Density Mg/m ³	Dry Density Mg/m ³	Saturation Moisture Content %	Porosity %
R71905	12.06-12.26		C	White CHALK.	28.9	1.94	1.51	29	44
R71905	15.78-16.01		C	White CHALK.	31.6	1.87	1.42	33	47
R71905	18.98-19.17		C	White CHALK.	26.1	1.97	1.56	27	42
R71905	23.60-23.70		C	White CHALK.	19.3	2.09	1.75	20	35
R71905	26.25-26.48		C	White CHALK.	25.0	2.01	1.61	25	40
R71905	33.32-33.46		C	White CHALK.	25.2	1.99	1.59	26	41
R71905	38.00-38.10		C	White CHALK.	25.1	2.01	1.61	25	40
R71905	40.46-40.58		C	White CHALK.	25.7	1.98	1.58	26	41
R72005	3.00-3.15		D	White CHALK.	29.3	1.92	1.48	31	45
R72005	7.57-7.66		D	White CHALK.	27.5	1.96	1.54	28	43
R72005	13.30-13.54		C	White CHALK.	28.0	1.95	1.52	29	44
R72005	17.74-17.95		C	White CHALK.	27.2	1.97	1.55	27	43
R72005	23.50-23.60		C	White CHALK.	25.6	1.99	1.58	26	41
R72005	30.20-30.40		C	White CHALK.	24.8	1.98	1.59	26	41
R72005	36.63		C	White CHALK.	27.3	1.94	1.52	29	44

Notes

Checked and Approved by:

J Sturges - Operations Manager
21/01/2021

Project Number:

GEO / 32215

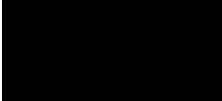

Project Name:

**A303 STONEHENGE
JFR1451**

SATURATION MOISTURE CONTENT OF CHALK

Location	Depth m	Sample Ref	Sample Type	Description	Water Content BS EN ISO 17892-1 : 2014 %	Bulk Density Mg/m ³	Dry Density Mg/m ³	Saturation Moisture Content %	Porosity %
R72005	40.60-40.84		C	White CHALK.	23.4	2.03	1.65	24	39
R72005	45.66-45.85		C	White CHALK.	26.8	1.97	1.55	27	43
R72005	50.62-50.90		C	White CHALK.	20.6	2.07	1.72	21	36
R72005	57.70-58.00		C	White CHALK.	21.0	2.06	1.70	22	37

Notes

Checked and Approved by:  J Sturges - Operations Manager 21/01/2021	Project Number: GEO / 32215 Project Name: A303 STONEHENGE JFR1451	
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SATURATION MOISTURE CONTENT OF CHALK

Location	Depth m	Sample Ref	Sample Type	Description	Water Content BS EN ISO 17892-1 : 2014 %	Bulk Density Mg/m ³	Dry Density Mg/m ³	Saturation Moisture Content %	Porosity %
R72006	2.80-2.95		D	White CHALK.	26.2	1.99	1.58	26	41
R72006	5.80-5.95		C	White CHALK.	27.7	1.97	1.54	28	43
R72006	6.34-6.59		C	White CHALK.	27.6	1.98	1.55	27	43
R72006	11.60-11.81		C	White CHALK.	25.3	2.00	1.60	25	41
R72006	12.45-12.65		C	White CHALK.	25.0	1.92	1.54	28	43
R72006	17.35-17.50		C	White CHALK.	24.4	2.00	1.61	25	40
R72006	21.60-21.84		C	White CHALK.	23.3	2.04	1.65	24	39
R72006	25.15-25.31		C	White CHALK.	24.7	2.04	1.64	24	39
R72006	34.10-34.25		C	White CHALK.	25.8	2.00	1.59	26	41
R72006	37.97-38.24		C	White CHALK.	28.2	1.96	1.53	28	43
R72006	43.00-43.27		C	White CHALK.	22.6	2.05	1.67	23	38

Notes

Checked and Approved by:



J Sturges - Operations Manager
21/01/2021

Project Number:

GEO / 32302

Project Name:

**A303 STONEHENGE
JFR1451**



SATURATION MOISTURE CONTENT OF CHALK

Location	Depth m	Sample Ref	Sample Type	Description	Water Content BS EN ISO 17892-1 : 2014 %	Bulk Density Mg/m ³	Dry Density Mg/m ³	Saturation Moisture Content %	Porosity %
STP70505	1.00		B	White CHALK.	21.1	2.08	1.72	21	36
STP70505	3.00		B	White CHALK.	17.7	2.12	1.80	19	33
STP70602	0.90		B	White CHALK.	21.4	2.05	1.69	22	37
STP70602	3.00		B	White CHALK.	22.9	2.10	1.71	21	37
STP71601	1.00		B	White CHALK.	20.3	2.04	1.70	22	37
STP71601	1.00		D	White CHALK.	20.6	2.08	1.72	21	36
STP71601	3.00		B	White CHALK.	20.9	2.02	1.67	23	38
Notes									

Checked and Approved by:

Project Number:

GEO / 32133

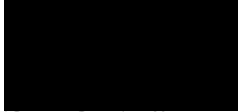

Project Name:

**A303 STONEHENGE
JFR1451****GEOLABS**[®]

SATURATION MOISTURE CONTENT OF CHALK

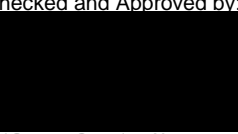

Location	Depth m	Sample Ref	Sample Type	Description	Water Content BS EN ISO 17892-1 : 2014 %	Bulk Density Mg/m ³	Dry Density Mg/m ³	Saturation Moisture Content %	Porosity %
BH72401	11.50-11.65	3	D	White CHALK.	23.6	2.02	1.63	24	40
BH72401	16.10-16.24	7	C	White CHALK.	24.9	2.01	1.61	25	40
BH72401	21.78-21.92	13	C	White CHALK.	27.2	1.97	1.55	27	43
BH72401	25.94-26.05	18	C	White CHALK.	25.1	2.01	1.61	25	40
BH72401	28.30-28.50	21	C	White CHALK.	26.1	2.00	1.59	26	41

Notes

Checked and Approved by:  J Sturges - Operations Manager 20/01/2021	Project Number: <div style="text-align: center;">GEO / 32202</div> Project Name: <div style="text-align: center;">A303 STONEHENGE JFR1451</div>	

SATURATION MOISTURE CONTENT OF CHALK

Location	Depth m	Sample Ref	Sample Type	Description	Water Content BS EN ISO 17892-1 : 2014 %	Bulk Density Mg/m ³	Dry Density Mg/m ³	Saturation Moisture Content %	Porosity %
STP70501	2.00	10	B	White CHALK.	17.1	2.13	1.82	18	33
STP70501	3.00	11	B	White CHALK.	18.7	2.14	1.80	19	33
STP70503	1.00	7	B	White CHALK.	21.0	2.05	1.69	22	37
STP70503	2.00	9	B	White CHALK.	20.6	2.04	1.69	22	37
STP70504	1.00	7	B	White CHALK.	24.5	1.94	1.56	27	42
STP70504	2.00	9	B	White CHALK.	26.0	1.96	1.56	27	42
STP70509	2.00	11	B	White CHALK.	18.9	2.10	1.77	19	34
Notes									

Checked and Approved by:  J Sturges - Operations Manager 20/01/2021	Project Number: GEO / 32139 Project Name: A303 STONEHENGE JFR1451	
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SATURATION MOISTURE CONTENT OF CHALK

Location	Depth m	Sample Ref	Sample Type	Description	Water Content BS EN ISO 17892-1 : 2014 %	Bulk Density Mg/m ³	Dry Density Mg/m ³	Saturation Moisture Content %	Porosity %
R70116	4.60-4.70	3	D	White CHALK.	28.4	1.93	1.50	30	44
R70116	8.30-8.40	6	C	White CHALK.	26.1	1.99	1.58	26	41
R70116	11.30-11.40	12	C	White CHALK.	21.4	2.07	1.71	21	37

Notes

Checked and Approved by:



J Sturges - Operations Manager
20/01/2021

Project Number:

GEO / 32134

Project Name:



**A303 STONEHENGE
JFR1451**



SATURATION MOISTURE CONTENT OF CHALK

Location	Depth m	Sample Ref	Sample Type	Description	Water Content BS EN ISO 17892-1 : 2014 %	Bulk Density Mg/m ³	Dry Density Mg/m ³	Saturation Moisture Content %	Porosity %
R71910	23.30-23.60		C	White intact CHALK.	27.4	1.95	1.53	28	43
R71910	27.12-27.41		C	White intact CHALK.	27.7	1.95	1.53	28	43
R71910	33.35-33.60		C	White intact CHALK.	26.1	1.97	1.56	27	42
R71910	50.50-50.66		C	White intact CHALK.	15.4	2.17	1.88	16	30
R71910	54.37-54.66		C	White intact CHALK.	21.0	2.07	1.71	21	37

Notes

Checked and Approved by:  J Sturges - Operations Manager 11/11/2020	Project Number: GEO / 31761 Project Name: A303 STONEHENGE JFR1451	
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SATURATION MOISTURE CONTENT OF CHALK

Location	Depth m	Sample Ref	Sample Type	Description	Water Content BS EN ISO 17892-1 : 2014 %	Bulk Density Mg/m ³	Dry Density Mg/m ³	Saturation Moisture Content %	Porosity %
STP70601	2.00	9	B	White CHALK.	17.1	2.12	1.81	18	33

Notes

Checked and Approved by: <div style="text-align: center; background-color: black; width: 80px; height: 40px; margin: 5px auto;"></div> J Sturges - Operations Manager 13/05/2021	Project Number: <div style="text-align: center; font-weight: bold; font-size: 1.2em;">GEO / 32141</div> Project Name: <div style="text-align: center; font-weight: bold; font-size: 1.2em;">A303 STONEHENGE JFR1451</div>
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SATURATION MOISTURE CONTENT OF CHALK

Location	Depth m	Sample Ref	Sample Type	Description	Water Content BS EN ISO 17892-1 : 2014 %	Bulk Density Mg/m ³	Dry Density Mg/m ³	Saturation Moisture Content %	Porosity %
STP70506	2.00		D	White CHALK	20.8	2.05	1.70	22	37
STP70506	3.00		B	White CHALK	20.7	2.06	1.71	21	37
STP70507	1.00		B	White CHALK	19.6	1.90	1.59	26	41
STP70507	2.00		B	White CHALK	23.8	2.03	1.64	24	39
STP70508	1.00		D	White CHALK	21.4	1.95	1.61	25	40
STP70508	3.00		B	White CHALK	25.7	1.98	1.58	26	41

Notes

Checked and Approved by:

J Sturges - Operations Manager
11/01/2021

Project Number:

GEO / 32132



Project Name:

A303 STONEHENGE
JFR1451

SATURATION MOISTURE CONTENT OF CHALK

Location	Depth m	Sample Ref	Sample Type	Description	Water Content BS EN ISO 17892-1 : 2014 %	Bulk Density Mg/m ³	Dry Density Mg/m ³	Saturation Moisture Content %	Porosity %
R70113	6.03-6.25		C	White CHALK	22.5	2.05	1.67	23	38
R70113	11.85-12.00		C	White CHALK	23.1	1.95	1.58	26	41
R70113	14.30-14.50		C	White CHALK	21.4	2.07	1.71	21	37
R70114	4.99-5.14		C	White CHALK	23.1	2.04	1.66	23	39
R70114	6.35-6.55		C	White CHALK	25.3	2.00	1.60	25	41
R70114	10.00-10.20		C	White CHALK	25.5	2.00	1.59	26	41
R70114	13.99-14.13		C	White CHALK	23.6	2.02	1.63	24	40
R70115	4.55-4.78		C	White CHALK	28.1	1.96	1.53	28	43
R70115	9.66-9.83		C	White CHALK	25.6	2.00	1.59	26	41
R70115	13.00-13.28		C	White CHALK	26.2	1.99	1.58	26	41
Notes									



Notes

Checked and Approved by:  S Burke - Senior Technician 09/12/2020	Project Number: <p style="text-align: center;">GEO / 32203</p> Project Name: <p style="text-align: center;">A303 STONEHENGE JFR1451</p>	
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SATURATION MOISTURE CONTENT OF CHALK

Location	Depth m	Sample Ref	Sample Type	Description	Water Content BS EN ISO 17892-1 : 2014 %	Bulk Density Mg/m ³	Dry Density Mg/m ³	Saturation Moisture Content %	Porosity %
R72102	1.80-2.20	D5	C	White intact CHALK.	23.9	2.00	1.61	25	40
R72102	3.53-3.64	C01	C	White intact CHALK.	28.5	1.94	1.51	29	44
R72102	5.90-6.04	C02	C	White intact CHALK.	27.6	1.96	1.54	28	43

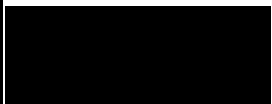
Notes

Checked and Approved by:  J Sturges - Operations Manager 08/10/2020	Project Number: GEO / 31760 Project Name: A303 STONEHENGE JFR1451	
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SATURATION MOISTURE CONTENT OF CHALK

Location	Depth m	Sample Ref	Sample Type	Description	Water Content BS EN ISO 17892-1 : 2014 %	Bulk Density Mg/m ³	Dry Density Mg/m ³	Saturation Moisture Content %	Porosity %
R71914	5.10-5.24		C	White CHALK	24.1	2.02	1.63	24	40
R71914	8.50-8.70		C	White CHALK	28.3	1.96	1.53	28	43
R71914	11.30-11.50		C	White CHALK	28.0	1.97	1.54	28	43
R71914	14.30-14.50		D	White CHALK	28.9	1.93	1.50	30	44
R71914	16.24-16.53		C	White CHALK	28.5	1.91	1.49	30	45
R71914	19.30-19.52		C	White CHALK	25.6	1.99	1.58	26	41
R71914	25.00-25.27		C	White CHALK	28.4	1.96	1.53	28	43
R71914	26.35-26.50		C	White CHALK	28.1	1.92	1.50	30	44
R71914	27.63-27.87		C	White CHALK	22.4	1.94	1.58	26	41
Notes									

Checked and Approved by:

S Burke - Senior Technician
01/12/2020

Project Number:

GEO / 32128

Project Name:


**A303 STONEHENGE
JFR1451****GEOLABS®**

SATURATION MOISTURE CONTENT OF CHALK

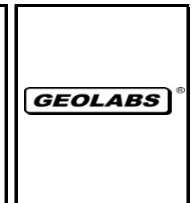
Location	Depth m	Sample Ref	Sample Type	Description	Water Content BS EN ISO 17892-1 : 2014 %	Bulk Density Mg/m³	Dry Density Mg/m³	Saturation Moisture Content %	Porosity %
R71203	6.30-6.43		C	White CHALK	23.2	2.03	1.65	24	39
R71203	14.95-15.18		C	White CHALK	27.1	1.96	1.54	28	43

Notes

Version 18.161209

Checked and Approved by:

 S Burke - Senior Technician
 01/12/2020

Project Number: **GEO / 32140**
 Project Name: **A303 STONEHENGE JFR1451**



SATURATION MOISTURE CONTENT OF CHALK

Location	Depth m	Sample Ref	Sample Type	Description	Water Content BS EN ISO 17892-1 : 2014 %	Bulk Density Mg/m ³	Dry Density Mg/m ³	Saturation Moisture Content %	Porosity %
R70301	3.50-3.60		D	White CHALK.	21.2	2.07	1.71	21	37
R70301	7.62-7.82		C	White CHALK.	20.6	2.08	1.72	21	36
R70301	12.44-12.60		C	White CHALK.	17.1	2.15	1.84	17	32
R70301	14.05-14.30		C	White CHALK.	18.1	2.13	1.80	19	33
Notes									

Checked and Approved by: <small>S Burke - Senior Technician 01/12/2020</small>	Project Number: <p style="text-align: center; font-weight: bold;">GEO / 32130</p> Project Name: <p style="text-align: center; font-weight: bold;">A303 STONEHENGE JFR1451</p>	
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SATURATION MOISTURE CONTENT OF CHALK

Location	Depth m	Sample Ref	Sample Type	Description	Water Content BS EN ISO 17892-1 : 2014 %	Bulk Density Mg/m ³	Dry Density Mg/m ³	Saturation Moisture Content %	Porosity %
R71912	15.50-16.00		C	White CHALK	28.2	1.96	1.53	28	43
R71912	19.76-20.22		C	White CHALK	26.8	1.98	1.56	27	42
R71912	24.04-24.47		C	White CHALK	30.8	1.92	1.47	31	46
R71912	29.05-29.50		C	White CHALK	24.8	2.01	1.61	25	40
R71912	35.16-35.42		C	White CHALK	26.7	1.98	1.56	27	42
R71912	40.57-40.81		C	White CHALK	27.2	1.98	1.56	27	42
R71912	43.55-43.70		C	White CHALK	27.4	1.98	1.55	27	43
R71912	46.60-46.70		D	White CHALK	24.4	2.04	1.64	24	39
R71912	50.50-50.70		C	White CHALK	29.0	1.95	1.51	29	44
Notes									

Checked and Approved by:

Project Number:

GEO / 32129



Project Name:

**A303 STONEHENGE
JFR1451****GEOLABS®**S Burke - Senior Technician
01/12/2020

SATURATION MOISTURE CONTENT OF CHALK

Location	Depth m	Sample Ref	Sample Type	Description	Water Content BS EN ISO 17892-1 : 2014 %	Bulk Density Mg/m ³	Dry Density Mg/m ³	Saturation Moisture Content %	Porosity %
R70108	6.14-6.34	2	C	White CHALK	19.6	2.10	1.76	20	35
R70108	9.85-10.00	4	C	White CHALK	23.0	2.03	1.65	24	39

Notes

Checked and Approved by:  S Burke - Senior Technician 30/11/2020	Project Number: <p style="text-align: center;">GEO / 32136</p> Project Name: <p style="text-align: center;">A303 STONEHENGE JFR1451</p>	
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SATURATION MOISTURE CONTENT OF CHALK

Location	Depth m	Sample Ref	Sample Type	Description	Water Content BS EN ISO 17892-1 : 2014 %	Bulk Density Mg/m ³	Dry Density Mg/m ³	Saturation Moisture Content %	Porosity %
R70105	6.10-6.20		D	White CHALK	26.0	1.96	1.56	27	42
R70105	7.67-7.95		C	White CHALK	25.2	2.00	1.60	25	41
R70105	9.20-9.40		C	White CHALK	22.2	2.05	1.68	22	38
Notes									

Checked and Approved by:



S Burke - Senior Technician
27/11/2020

Project Number:

GEO / 32131

Project Name:

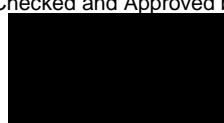

**A303 STONEHENGE
JFR1451**



SATURATION MOISTURE CONTENT OF CHALK

Location	Depth m	Sample Ref	Sample Type	Description	Water Content BS EN ISO 17892-1 : 2014 %	Bulk Density Mg/m ³	Dry Density Mg/m ³	Saturation Moisture Content %	Porosity %
R72001	6.90-7.00		C	White intact CHALK.	27.7	1.95	1.53	28	43
R72001	12.46-12.82		C	White intact CHALK.	26.5	1.97	1.56	27	42
R72001	16.10-16.32		C	White intact CHALK.	29.9	1.91	1.47	31	46
R72001	19.10-19.24		C	White intact CHALK.	23.5	2.01	1.63	24	40
R72001	23.60-23.76		C	White intact CHALK.	24.3	2.01	1.62	25	40
R72001	26.25-26.70		C	White intact CHALK.	24.8	2.00	1.60	25	41
R72001	32.20-32.40		C	White intact CHALK.	28.4	1.95	1.52	29	44
R72001	39.32-39.69		C	White intact CHALK.	26.4	1.97	1.56	27	42
Notes									

Notes

Checked and Approved by:  J Sturges - Operations Manager 11/11/2020	Project Number: <p style="text-align: center;">GEO / 31879</p> Project Name: <p style="text-align: center;">A303 STONEHENGE JFR1451</p>	
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SATURATION MOISTURE CONTENT OF CHALK

Location	Depth m	Sample Ref	Sample Type	Description	Water Content BS EN ISO 17892-1 : 2014	Bulk Density	Dry Density	Saturation Moisture Content	Porosity
					%				
R72101	1.70-1.80		D	White intact CHALK.	27.2	1.99	1.56	27	42
R72101	4.15-4.25		D	White intact CHALK.	27.6	1.97	1.54	28	43
R72101	6.63-6.75		C	White intact CHALK.	26.6	1.99	1.57	27	42

Notes

Checked and Approved by:



11/11/2020

Project Number:

GEO / 31881

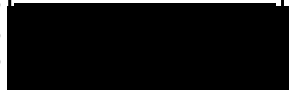

Project Name:

**A303 STONEHENGE
JFR1451**

SATURATION MOISTURE CONTENT OF CHALK

Location	Depth m	Sample Ref	Sample Type	Description	Water Content BS EN ISO 17892-1 : 2014 %	Bulk Density Mg/m ³	Dry Density Mg/m ³	Saturation Moisture Content %	Porosity %
R71908	12.70-13.00	2	C	White CHALK	27.9	1.96	1.53	28	43
R71908	20.07-20.30	4	C	White CHALK	25.3	2.00	1.60	25	41
R71908	26.90-27.47	CD7	C	White CHALK	28.8	1.95	1.51	29	44
R71908	31.75-32.00	10	C	White CHALK	26.5	1.97	1.56	27	42
R71908	39.10-39.40	16	C	White CHALK	29.7	1.93	1.49	30	45
R71908	47.30-47.50	13	CD	White CHALK	28.6	1.95	1.52	29	44
R71908	53.08-53.39	23	C	White CHALK	25.4	2.01	1.60	25	41
R71908	58.60-58.77	CD18	C	White CHALK	24.3	2.03	1.63	24	40
R71908	62.26-62.50	18	C	White CHALK	19.4	2.10	1.76	20	35
Notes									

Notes

Checked and Approved by:  S Burke - Senior Technician 30/09/2020	Project Number: GEO / 31728	
	Project Name: A303 STONEHENGE JFR1451	

SATURATION MOISTURE CONTENT OF CHALK

Location	Depth m	Sample Ref	Sample Type	Description	Water Content BS EN ISO 17892-1 : 2014 %	Bulk Density Mg/m ³	Dry Density Mg/m ³	Saturation Moisture Content %	Porosity %
R71915	3.30-3.50		C	White intact CHALK.	28.5	1.96	1.53	28	43
R71915	7.10-7.30		C	White intact CHALK.	28.8	1.95	1.51	29	44
R71915	12.05-12.19		C	White intact CHALK.	25.7	2.00	1.59	26	41
R71915	16.53-16.70		C	White intact CHALK.	22.2	2.04	1.67	23	38
R71915	23.74-23.89		C	White intact CHALK.	25.5	2.00	1.59	26	41
R71915	28.22-28.79		C	White intact CHALK.	28.9	1.96	1.52	29	44

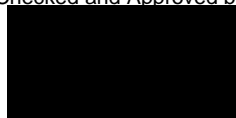
Notes

<p>Checked and Approved by:</p> <div style="background-color: black; width: 100px; height: 30px; margin: 5px;"></div> <p style="font-size: small;">J Sturges - Operations Manager 11/11/2020</p>	<p>Project Number: GEO / 31890</p> <p>Project Name: A303 STONEHENGE JFR1451</p>	
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SATURATION MOISTURE CONTENT OF CHALK

Location	Depth m	Sample Ref	Sample Type	Description	Water Content BS EN ISO 17892-1 : 2014 %	Bulk Density Mg/m ³	Dry Density Mg/m ³	Saturation Moisture Content %	Porosity %
R72004	10.43-10.58		C	White intact CHALK.	26.8	1.96	1.55	27	43
R72004	14.90-15.06		C	White intact CHALK.	27.5	1.95	1.53	28	43
R72004	18.42-18.56		C	White intact CHALK.	25.5	1.95	1.55	27	43
R72004	25.53-25.75		C	White intact CHALK.	26.3	1.97	1.56	27	42
R72004	29.18-29.32		C	White intact CHALK.	27.1	1.97	1.55	27	43
R72004	31.16-31.48		C	White intact CHALK.	25.8	1.99	1.58	26	41
R72004	34.93-35.16		C	White intact CHALK.	26.2	1.98	1.57	27	42
R72004	42.05-42.43		C	White intact CHALK.	23.8	2.00	1.62	25	40
Notes									

Checked and Approved by:

J Sturges - Operations Manager
11/11/2020

Project Number:

GEO / 31880

Project Name:

**A303 STONEHENGE
JFR1451****GEOLABS**[®]

SATURATION MOISTURE CONTENT OF CHALK

Location	Depth m	Sample Ref	Sample Type	Description	Water Content BS EN ISO 17892-1 : 2014 %	Bulk Density Mg/m ³	Dry Density Mg/m ³	Saturation Moisture Content %	Porosity %
R71210	1.90-2.10	1	D	White CHALK	26.6	1.97	1.56	27	42
R71210	4.70-4.80	4	D	White CHALK	26.8	1.97	1.55	27	43
R71210	8.50-8.66	7	C	White CHALK	24.0	2.02	1.63	24	40
R71210	13.44-13.54	11	C	White CHALK	25.5	1.99	1.59	26	41
R71210	14.84-15.07	13	C	White CHALK	24.9	2.01	1.61	25	40

Notes

Checked and Approved by: 	Project Number: GEO / 32691	
S Burke - Senior Technician 04/03/2021	Project Name: A303 STONEHENGE JFR1451	

SATURATION MOISTURE CONTENT OF CHALK

Location	Depth m	Sample Ref	Sample Type	Description	Water Content BS EN ISO 17892-1 : 2014 %	Bulk Density Mg/m ³	Dry Density Mg/m ³	Saturation Moisture Content %	Porosity %
STP70103	1.00	7	B	White CHALK	21.9	1.96	1.61	25	40
STP70103	3.00	12	D	White CHALK	24.5	2.00	1.61	25	40
STP70104	1.00	7	B	White CHALK	19.2	2.11	1.77	19	34
STP70104	2.00	10	D	White CHALK	26.1	1.99	1.58	26	41
STP70402	3.00	11	B	White CHALK	11.9	2.08	1.86	17	31
STP70502	1.00	7	B	White CHALK	23.5	1.98	1.60	25	41
STP70502	3.00	11	B	White CHALK	24.0	2.02	1.63	24	40

Notes

Checked and Approved by:


 J Sturges - Operations Manager
 20/04/2021

Project Number:
GEO / 32903




Project Name:
**A303 STONEHENGE
 JFR1451**



UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Sample details				Density				Uniaxial Compression Test (LF0879C (1000kN) compression frame used)							
Borehole Ref.	Sample Ref.	Depth (m)	Description	MC (%)	Degree of Saturation (%)	Bulk (Mg/m³)	Dry (Mg/m³)	Mean after prep.		H/D Ratio	Load at Failure (kN)	UCS (MPa) <small>3 sig. fig.</small>	Failure Sketch	D. Tested	Remarks
								Diameter (mm)	Height (mm)						
R70110		9.19-9.63	White CHALK	23	89.0	2.04	1.66	101.50	271.30	2.7	25.3	3.13		03/12/20	

Note: The dimensional requirements of flatness (<0.02 mm), perpendicularity (<0.05 / 50 mm) and straightness (0.3 mm deviation) are all met. Specific Gravity used for Degree of Saturation is assumed unless specified by the client.

Checked and Approved by  C Clergeaud (Snr. Geologist) Date: 04/12/2020	Project Number: Project Name:	GEO / 32135 A303 STONEHENGE JFR1451	 
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UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: R70110	Description: White CHALK
Sample Ref.: -	
Depth (m): 9.19-9.63	

Diameter
Height
Bulk Density
Dry Density
Water Content

101.50 mm
271.30 mm
2.04 Mg/m ³
1.66 Mg/m ³
23 %

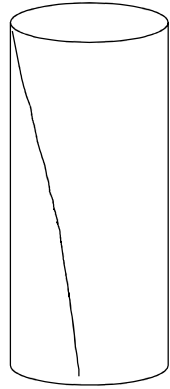
Degree of Saturation: 89.0 % Specific Gravity: 2.9 Mg/m³ (Assumed)

Test results

Unconfined Compressive Strength
Young's Modulus (tangential at 50% failure load)
Poisson's Ratio (tangential at 50% failure load)
Young's Modulus (secant at 10% failure load)
Poisson's Ratio (secant at 10% failure load)




3.13 MPa
n/a
n/a
n/a
n/a

LF0879C (1000kN) compression frame used

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: 80°
Sample type C


Date tested: 03/12/2020

Note: The dimensional requirements of Flatness (<0.02 mm), Perpendicularity (<0.05 / 50 mm) and Straightness (0.3 mm deviation) are all met.




Checked and Approved by  C Clergeaud (Snr. Geologist) Date: 04/12/2020	Project Number: GEO / 32135	 
	Project Name: A303 STONEHENGE JFR1451	

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)							
Borehole Ref.	Sample Ref.	Depth (m)	Description	MC (%)	Degree of Saturation (%)	Bulk (Mg/m ³)	Dry (Mg/m ³)	Mean after prep.		H/D Ratio	Load at Failure (kN)	UCS (MPa) <small>3 sig. fig.</small>	Failure Sketch	D. Tested	Remarks
								Diameter (mm)	Height (mm)						
R70112		9.19-9.63	White CHALK	23	89.0	2.04	1.66	101.50	271.30	2.7	25.3	3.13		03/12/20	

Note: The dimensional requirements of flatness (<0.02 mm), perpendicularity (<0.05 / 50 mm) and straightness (0.3 mm deviation) are all met. Specific Gravity used for Degree of Saturation is assumed unless specified by the client.

Checked and Approved by  C Clergeaud (Snr. Geologist) Date: 04/12/2020	Project Number: Project Name:	GEO / 32135 A303 STONEHENGE JFR1451	 
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UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: R70112
 Sample Ref.: -
 Depth (m): 9.19-9.63

Description:
 White CHALK

Diameter
Height
Bulk Density
Dry Density
Water Content

101.50 mm
271.30 mm
2.04 Mg/m ³
1.66 Mg/m ³
23 %

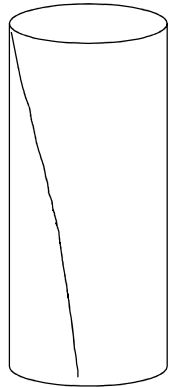
Degree of Saturation: 89.0 % Specific Gravity: 2.9 Mg/m³ (Assumed)

Test results

Unconfined Compressive Strength
Young's Modulus (tangential at 50% failure load)
Poisson's Ratio (tangential at 50% failure load)
Young's Modulus (secant at 10% failure load)
Poisson's Ratio (secant at 10% failure load)

3.13 MPa
n/a
n/a
n/a
n/a

LF0879C (1000kN) compression frame used


Failure Sketch
Mode of failure: Diagonal shearing

Solid lines for material failures. Dashed lines for apparent weakness failure.

Date tested: 03/12/2020

Angle of foliation/Horizontal: n/a
 Angle of shear plane/Horizontal: 80°

Sample type	C
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Note: The dimensional requirements of Flatness (<0.02 mm), Perpendicularity (<0.05 / 50 mm) and Straightness (0.3 mm deviation) are all met.


Checked and Approved by

 C Clergeaud (Snr. Geologist)
 Date: 04/12/2020

Project Number:
GEO / 32135

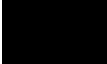


Project Name:
A303 STONEHENGE
JFR1451



UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Sample details				Density				Uniaxial Compression Test (LF0879C (1000kN) compression frame used)							
Borehole Ref.	Sample Ref.	Depth (m)	Description	MC (%)	Degree of Saturation (%)	Bulk (Mg/m³)	Dry (Mg/m³)	Mean after prep.		H/D Ratio	Load at Failure (kN)	UCS (MPa) <small>3 sig. fig.</small>	Failure Sketch	D. Tested	Remarks
								Diameter (mm)	Height (mm)						
R70302		14.20-14.40	White CHALK	14	81.8	2.22	1.96	100.50	202.40	2.0	49.8	6.28		12/10/20	

Note: The dimensional requirements of flatness (<0.02 mm), perpendicularity (<0.05 / 50 mm) and straightness (0.3 mm deviation) are all met. Specific Gravity used for Degree of Saturation is assumed unless specified by the client.

Checked and Approved by  C Clergeaud (Snr. Geologist) Date: 24/06/2020	Project Number: Project Name:	GEO / 31889 A303 STONEHENGE JFR1451	 
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UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: R70302	Description: White CHALK
Sample Ref.: -	
Depth (m): 14.20-14.40	

Diameter
Height
Bulk Density
Dry Density
Water Content

100.50 mm
202.40 mm
2.22 Mg/m ³
1.96 Mg/m ³
14 %

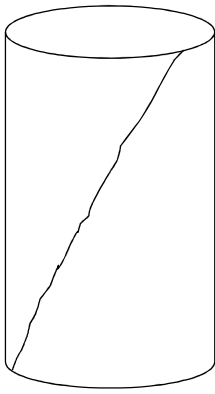
Degree of Saturation: 81.8 % Specific Gravity: 2.9 Mg/m³ (Assumed)

Test results

Unconfined Compressive Strength
Young's Modulus (tangential at 50% failure load)
Poisson's Ratio (tangential at 50% failure load)
Young's Modulus (secant at 10% failure load)
Poisson's Ratio (secant at 10% failure load)




6.28 MPa
n/a
n/a
n/a
n/a

LF0879C (1000kN) compression frame used






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: 110°
Sample type C

Date tested: 12/10/2020




Note: The dimensional requirements of Flatness (<0.02 mm), Perpendicularity (<0.05 / 50 mm) and Straightness (0.3 mm deviation) are all met.

Checked and Approved by  C Clergeaud (Snr. Geologist) Date: 13/10/2020	Project Number: GEO / 31889	 
	Project Name: A303 STONEHENGE JFR1451	

UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Sample details				Density				Uniaxial Compression Test (LF0879C (1000kN) compression frame used)							
Borehole Ref.	Sample Ref.	Depth (m)	Description	MC (%)	Degree of Saturation (%)	Bulk (Mg/m³)	Dry (Mg/m³)	Mean after prep.		H/D Ratio	Load at Failure (kN)	UCS (MPa) <small>3 sig. fig.</small>	Failure Sketch	D. Tested	Remarks
								Diameter (mm)	Height (mm)						
R70701		15.40-15.65	White CHALK	16	83.8	2.17	1.87	101.50	203.10	2.0	33.6	4.15		12/01/21	
R70701		19.78-20.03	White CHALK	14	80.8	2.21	1.94	101.50	230.40	2.3	49.8	6.15		12/01/21	
R70702		1.20-1.65	White CHALK	24	90.5	2.02	1.63	101.70	201.50	2.0	32.5	4		12/01/21	
R70702		16.89-17.10	White CHALK	17	82.9	2.12	1.81	101.60	202.10	2.0	43.7	5.39		12/01/21	
R70702		19.00-19.30	White CHALK	19	97.2	2.21	1.87	101.10	252.20	2.5	45.5	5.67		12/01/21	

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  C Clergeaud (Snr. Geologist) Date: 18/01/2021	Project Number: <b style="text-align: center;">GEO / 32369 Project Name: <b style="text-align: center;">A303 STONEHENGE JFR1451	 
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UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: R70701
 Sample Ref.: -
 Depth (m): 15.40-15.65

Description:
 White CHALK

Diameter
Height
Bulk Density
Dry Density
Water Content

101.50 mm
203.10 mm
2.17 Mg/m ³
1.87 Mg/m ³
16 %

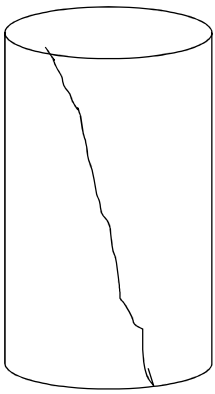
Degree of Saturation: 83.8 % Specific Gravity: 2.9 Mg/m³ (Assumed)

Test results

Unconfined Compressive Strength
Young's Modulus (tangential at 50% failure load)
Poisson's Ratio (tangential at 50% failure load)
Young's Modulus (secant at 10% failure load)
Poisson's Ratio (secant at 10% failure load)

4.15 MPa
n/a
n/a
n/a
n/a

LF0879C (1000kN) compression frame used


Failure Sketch
Mode of failure: Diagonal shearing

Solid lines for material failures. Dashed lines for apparent weakness failure.

Date tested: 12/01/2021

Angle of foliation/Horizontal: n/a
 Angle of shear plane/Horizontal: 75°

Sample type	C
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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

 C Clergeaud (Snr. Geologist)
 Date: 18/01/2021

Project Number:
GEO / 32369

Project Name:
A303 STONEHENGE
JFR1451



UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: R70701	Description: White CHALK
Sample Ref.: -	
Depth (m): 19.78-20.03	

Diameter
Height
Bulk Density
Dry Density
Water Content

101.50 mm
230.40 mm
2.21 Mg/m ³
1.94 Mg/m ³
14 %

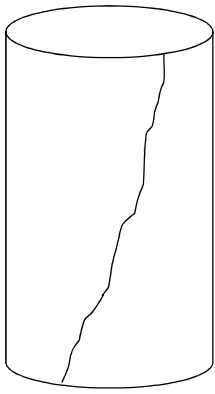
Degree of Saturation: 80.8 % Specific Gravity: 2.9 Mg/m³ (Assumed)

Test results

Unconfined Compressive Strength
Young's Modulus (tangential at 50% failure load)
Poisson's Ratio (tangential at 50% failure load)
Young's Modulus (secant at 10% failure load)
Poisson's Ratio (secant at 10% failure load)




6.15 MPa
n/a
n/a
n/a
n/a

LF0879C (1000kN) compression frame used

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°
Sample type C

Date tested: 12/01/2021

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  C Clergeaud (Snr. Geologist) Date: 18/01/2021	Project Number: GEO / 32369	 
	Project Name: A303 STONEHENGE JFR1451	

UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: R70702	Description: White CHALK
Sample Ref.: -	
Depth (m): 1.20-1.65	

Diameter
Height
Bulk Density
Dry Density
Water Content

101.70 mm
201.50 mm
2.02 Mg/m ³
1.63 Mg/m ³
24 %

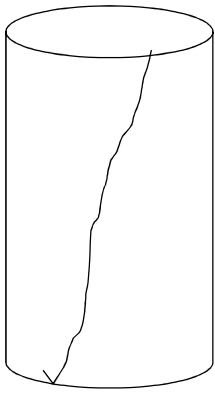
Degree of Saturation: 90.5 % Specific Gravity: 2.9 Mg/m³ (Assumed)

Test results

Unconfined Compressive Strength
Young's Modulus (tangential at 50% failure load)
Poisson's Ratio (tangential at 50% failure load)
Young's Modulus (secant at 10% failure load)
Poisson's Ratio (secant at 10% failure load)



4 MPa
n/a
n/a
n/a
n/a

LF0879C (1000kN) compression frame used

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: 110°
Sample type C

Date tested: 12/01/2021

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  C Clergeaud (Snr. Geologist) Date: 18/01/2021	Project Number: GEO / 32369	
	Project Name: A303 STONEHENGE JFR1451	

UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: R70702	Description: White CHALK
Sample Ref.: -	
Depth (m): 16.89-17.10	

Diameter
Height
Bulk Density
Dry Density
Water Content

101.60 mm
202.10 mm
2.12 Mg/m ³
1.81 Mg/m ³
17 %

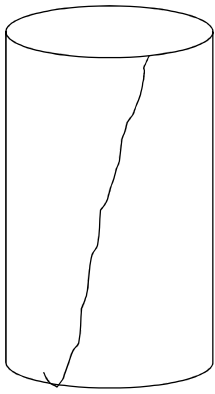
Degree of Saturation: 82.9 % Specific Gravity: 2.9 Mg/m³ (Assumed)

Test results

Unconfined Compressive Strength
Young's Modulus (tangential at 50% failure load)
Poisson's Ratio (tangential at 50% failure load)
Young's Modulus (secant at 10% failure load)
Poisson's Ratio (secant at 10% failure load)




5.39 MPa
n/a
n/a
n/a
n/a

LF0879C (1000kN) compression frame used

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: 110°
Sample type C

Date tested: 12/01/2021

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  C Clergeaud (Snr. Geologist) Date: 18/01/2021	Project Number: GEO / 32369	 
	Project Name: A303 STONEHENGE JFR1451	

UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: R70702
 Sample Ref.: -
 Depth (m): 19.00-19.30

Description:
 White CHALK

Diameter
Height
Bulk Density
Dry Density
Water Content

101.10 mm
252.20 mm
2.21 Mg/m ³
1.87 Mg/m ³
19 %

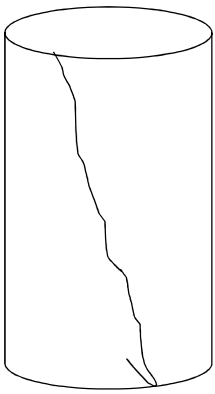
Degree of Saturation: 97.2 % Specific Gravity: 2.9 Mg/m³ (Assumed)

Test results

Unconfined Compressive Strength
Young's Modulus (tangential at 50% failure load)
Poisson's Ratio (tangential at 50% failure load)
Young's Modulus (secant at 10% failure load)
Poisson's Ratio (secant at 10% failure load)

5.67 MPa
n/a
n/a
n/a
n/a

LF0879C (1000kN) compression frame used


Failure Sketch Mode of failure: Diagonal shearing

Solid lines for material failures. Dashed lines for apparent weakness failure.

Date tested: 12/01/2021

Angle of foliation/Horizontal: n/a
 Angle of shear plane/Horizontal: 70°

Sample type	C
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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

 C Clergeaud (Snr. Geologist)
 Date: 18/01/2021

Project Number:
GEO / 32369

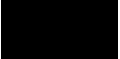


Project Name:
A303 STONEHENGE
JFR1451







UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Sample details				Density				Uniaxial Compression Test (LF0879C (1000kN) compression frame used)							
Borehole Ref.	Sample Ref.	Depth (m)	Description	MC (%)	Degree of Saturation (%)	Bulk (Mg/m ³)	Dry (Mg/m ³)	Mean after prep.		H/D Ratio	Load at Failure (kN)	UCS (MPa) <small>3 sig. fig.</small>	Failure Sketch	D. Tested	Remarks
								Diameter (mm)	Height (mm)						
R71905		24.30-24.55	White CHALK	21	86.8	2.05	1.69	100.50	224.60	2.2	25.8	3.25		27/11/20	
R71905		29.82-30.15	White CHALK	27	89.3	1.95	1.53	100.50	264.30	2.6	12.3	1.55		27/11/20	
R71905		34.06-34.35	White CHALK	23	85.2	2.00	1.63	101.60	239.20	2.4	23.1	2.85		27/11/20	
R71905		37.59-38.00	White CHALK	27	89.1	1.96	1.55	100.60	271.40	2.7	15.8	1.99		27/11/20	
R71905		42.11-42.43	White CHALK	22	92.3	2.09	1.70	73.50	192.30	2.6	14.1	3.32		27/11/20	
R72005		16.26-16.76	White CHALK	28	100	2.11	1.65	100.50	232.60	2.3	14.4	1.82		27/11/20	
R72005		21.09-21.60	White CHALK	27	92.0	2.00	1.58	100.50	267.70	2.7	20.8	2.62		27/11/20	
R72005		25.26-25.65	White CHALK	28	90.8	1.96	1.53	101.50	276.50	2.7	19.3	2.39		27/11/20	
R72005		31.25-51.55	White CHALK	29	91.6	1.95	1.51	100.60	259.20	2.6	20.6	2.59		27/11/20	
R72005		34.84-35.30	White CHALK	28	89.2	1.95	1.52	100.50	260.80	2.6	20.9	2.63		27/11/20	

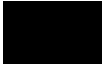


Note: The dimensional requirements of flatness (<0.02 mm), perpendicularity (<0.05 / 50 mm) and straightness (0.3 mm deviation) are all met. Specific Gravity used for Degree of Saturation is assumed unless specified by the client.

Checked and Approved by  C Clergeaud (Snr. Geologist) Date: 04/12/2020	Project Number: Project Name:	GEO / 32215 A303 STONEHENGE JFR1451	 
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UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Sample details				Density				Uniaxial Compression Test (LF0879C (1000kN) compression frame used)							
Borehole Ref.	Sample Ref.	Depth (m)	Description	MC (%)	Degree of Saturation (%)	Bulk (Mg/m ³)	Dry (Mg/m ³)	Mean after prep.		H/D Ratio	Load at Failure (kN)	UCS (MPa) <small>3 sig. fig.</small>	Failure Sketch	D. Tested	Remarks
								Diameter (mm)	Height (mm)						
R72005		41.82-42.34	White CHALK	24	91.2	2.03	1.63	101.70	272.60	2.7	36.4	4.48		27/11/20	
R72005		48.60-48.90	White CHALK	19	88.2	2.12	1.78	100.60	249.60	2.5	58.3	7.33		27/11/20	
R72005		52.17-52.69	White CHALK	16	85.6	2.18	1.88	101.60	278.30	2.7	38.4	4.74		27/11/20	
R72005		55.10-55.48	White CHALK	19	82.6	2.07	1.74	102.10	272.20	2.7	21.8	2.66		27/11/20	

Note: The dimensional requirements of flatness (<0.02 mm), perpendicularity (<0.05 / 50 mm) and straightness (0.3 mm deviation) are all met. Specific Gravity used for Degree of Saturation is assumed unless specified by the client.

Checked and Approved by  C Clergeaud (Snr. Geologist) Date: 04/12/2020	Project Number: Project Name:	GEO / 32215 A303 STONEHENGE JFR1451	 
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UNCONFINED COMPRESSIVE STRENGTH WITH YOUNG'S MODULUS AND POISSON'S RATIO

Borehole Ref.:	R71905	Description: White CHALK
Sample Ref.:	-	
Depth (m):	24.30-24.55	

Diameter	100.50 mm
Height	224.60 mm
Bulk Density	2.05 Mg/m ³
Dry Density	1.69 Mg/m ³
Water Content	21 %
Degree of Saturation: 86.8 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Diagonal shearing

Solid lines for material failures.
Dashed lines for apparent weakness failure.

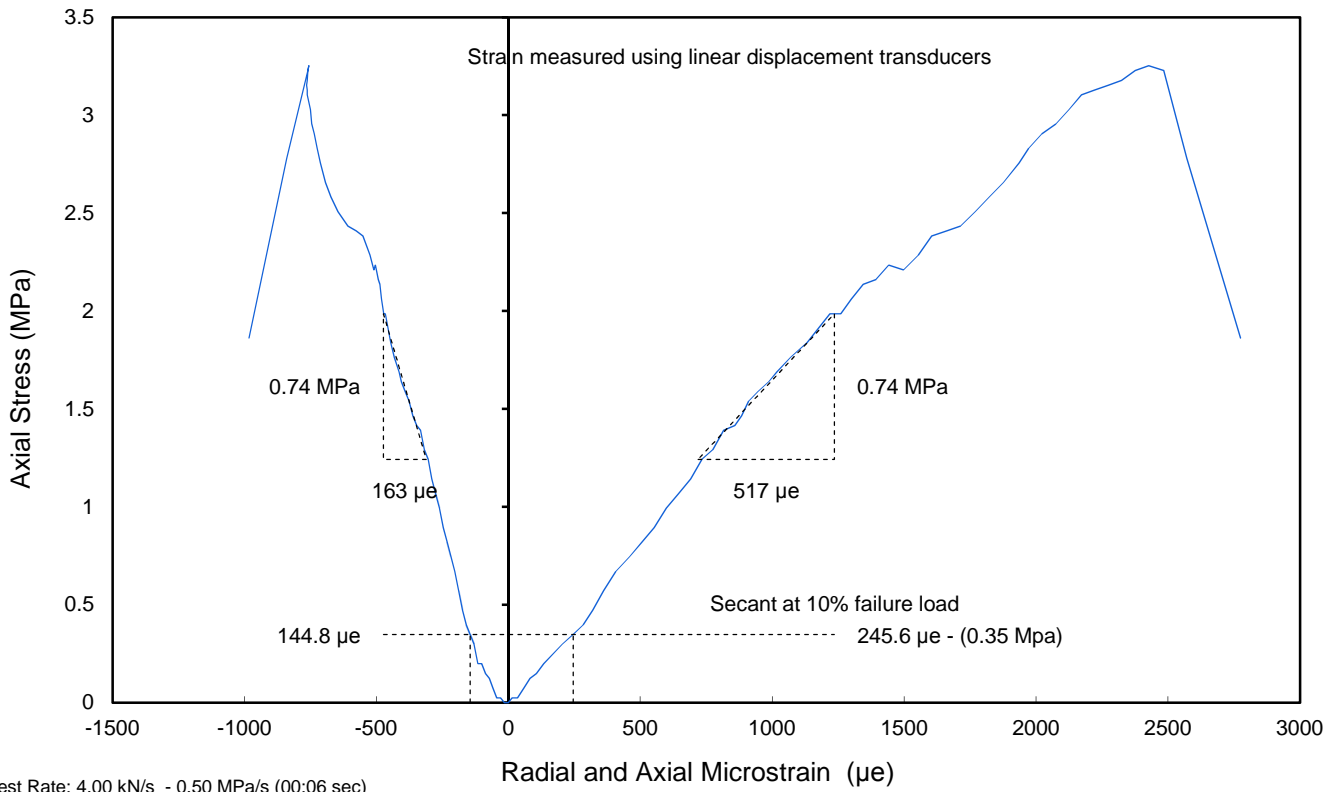
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: n/a

Sample type **C**

Date tested: 27/11/2020

Test results

Unconfined Compressive Strength	3.25 MPa
Young's Modulus (tangential at 50% failure load)	1.44 GPa
Poisson's Ratio (tangential at 50% failure load)	0.32
Young's Modulus (secant at 10% failure load)	1.42 GPa
Poisson's Ratio (secant at 10% failure load)	0.59



Note: The dimensional requirements of Flatness (<0.02 mm), Perpendicularity (<0.05 / 50 mm) and Straightness (0.3 mm deviation) are all met.

Checked and Approved by C Clergeaud (Snr. Geologist) Date: 04/12/2020	Project Number: GEO / 32215 Project Name: A303 STONEHENGE JFR1451	
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UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: R71905	Description: White CHALK
Sample Ref.: -	
Depth (m): 29.82-30.15	

Diameter	100.50 mm
Height	264.30 mm
Bulk Density	1.95 Mg/m ³
Dry Density	1.53 Mg/m ³
Water Content	27 %
Degree of Saturation: 89.3 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Diagonal shearing

Solid lines for material failures.
Dashed lines for apparent weakness failure.

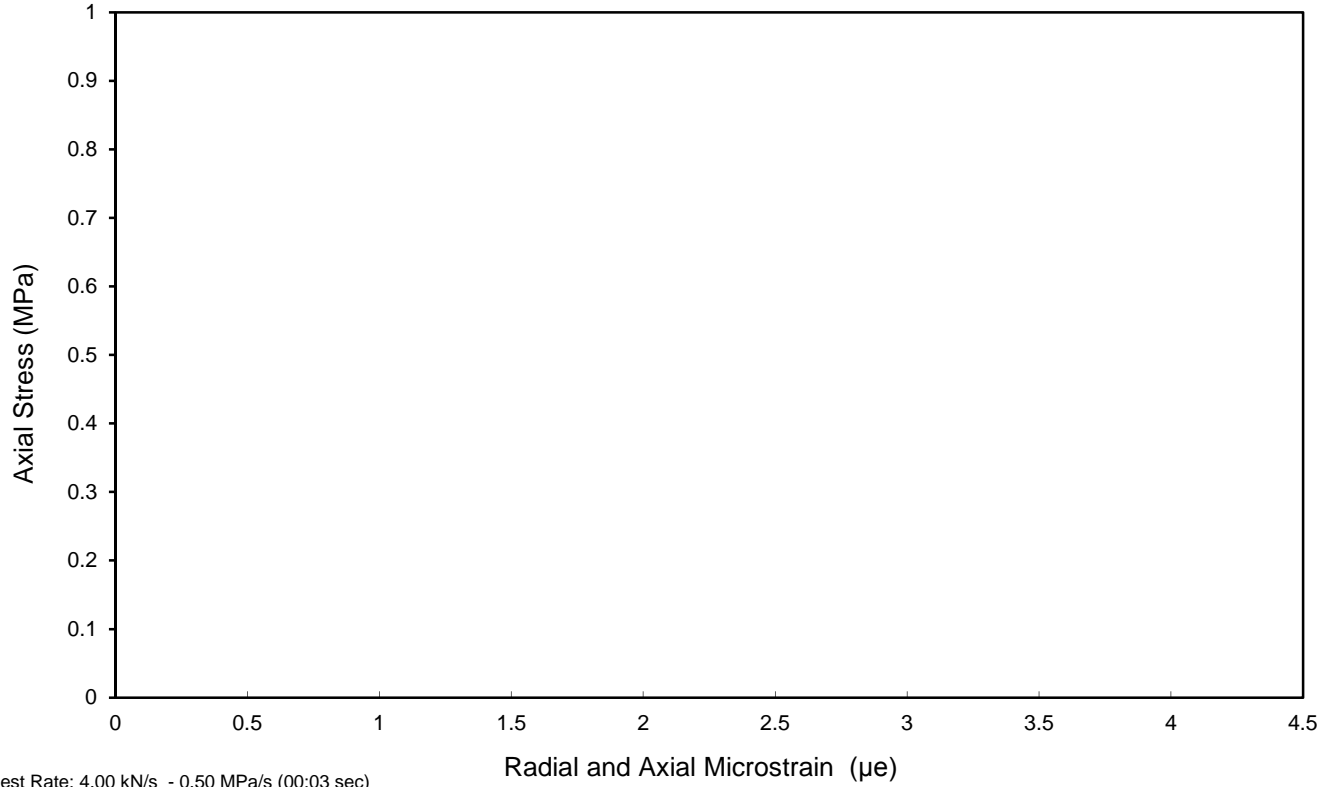
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 105°

Sample type **C**

Date tested: 27/11/2020

Test results

Unconfined Compressive Strength	1.55 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



Note: The dimensional requirements of Flatness (<0.02 mm), Perpendicularity (<0.05 / 50 mm) and Straightness (0.3 mm deviation) are all met.

Checked and Approved by C Clergeaud (Snr. Geologist) Date: 04/12/2020	Project Number: GEO / 32215 Project Name: A303 STONEHENGE JFR1451	
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UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: R71905	Description: White CHALK
Sample Ref.: -	
Depth (m): 34.06-34.35	

Diameter	101.60 mm
Height	239.20 mm
Bulk Density	2.00 Mg/m ³
Dry Density	1.63 Mg/m ³
Water Content	23 %
Degree of Saturation: 85.2 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Diagonal shearing

Solid lines for material failures.
Dashed lines for apparent weakness failure.

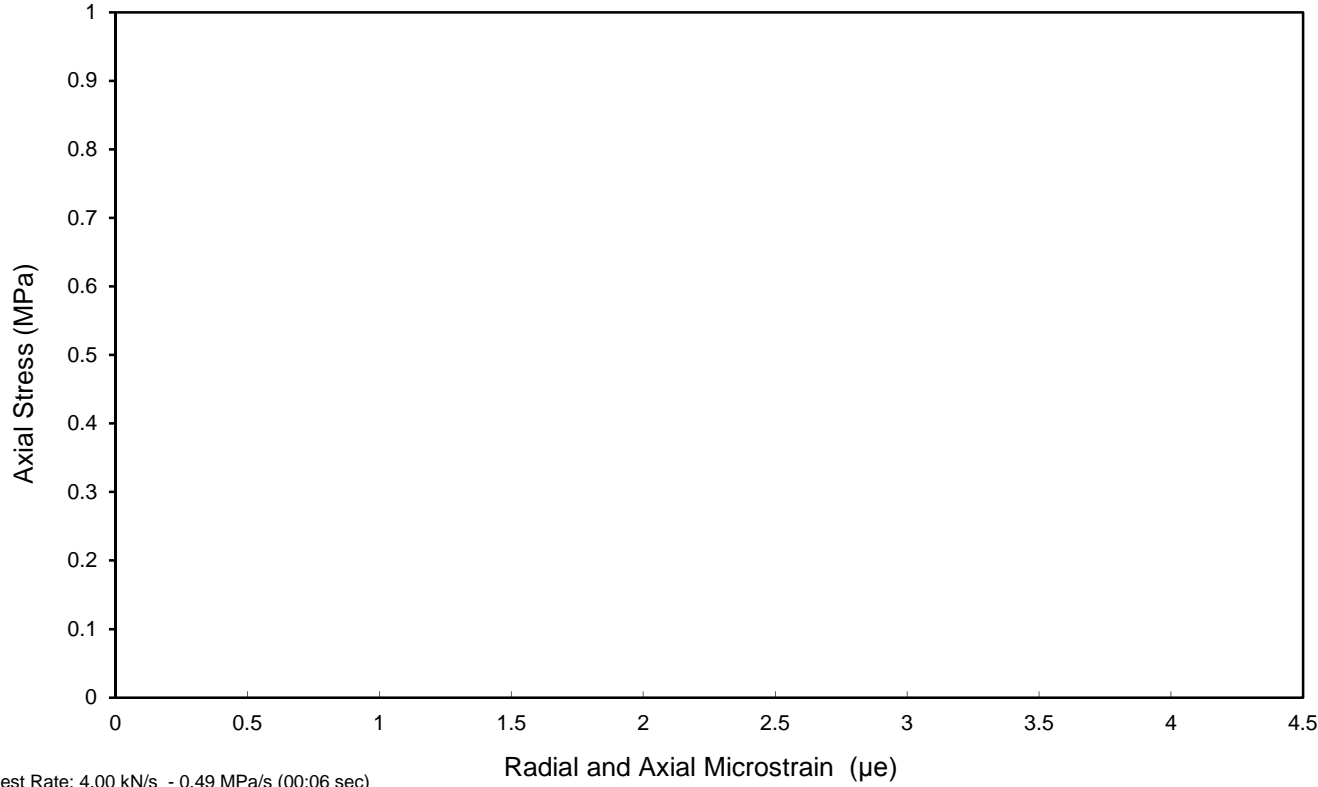
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 120°

Sample type: **C**




Date tested: 27/11/2020

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



Note: The dimensional requirements of Flatness (<0.02 mm), Perpendicularity (<0.05 / 50 mm) and Straightness (0.3 mm deviation) are all met.

Checked and Approved by  C Clergeaud (Snr. Geologist) Date: 04/12/2020	Project Number: <p style="text-align: center;">GEO / 32215</p> Project Name: <p style="text-align: center;">A303 STONEHENGE JFR1451</p>	 
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UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: R71905	Description: White CHALK
Sample Ref.: -	
Depth (m): 37.59-38.00	

Diameter	100.60 mm
Height	271.40 mm
Bulk Density	1.96 Mg/m ³
Dry Density	1.55 Mg/m ³
Water Content	27 %
Degree of Saturation: 89.1 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Diagonal shearing

Solid lines for material failures.
Dashed lines for apparent weakness failure.

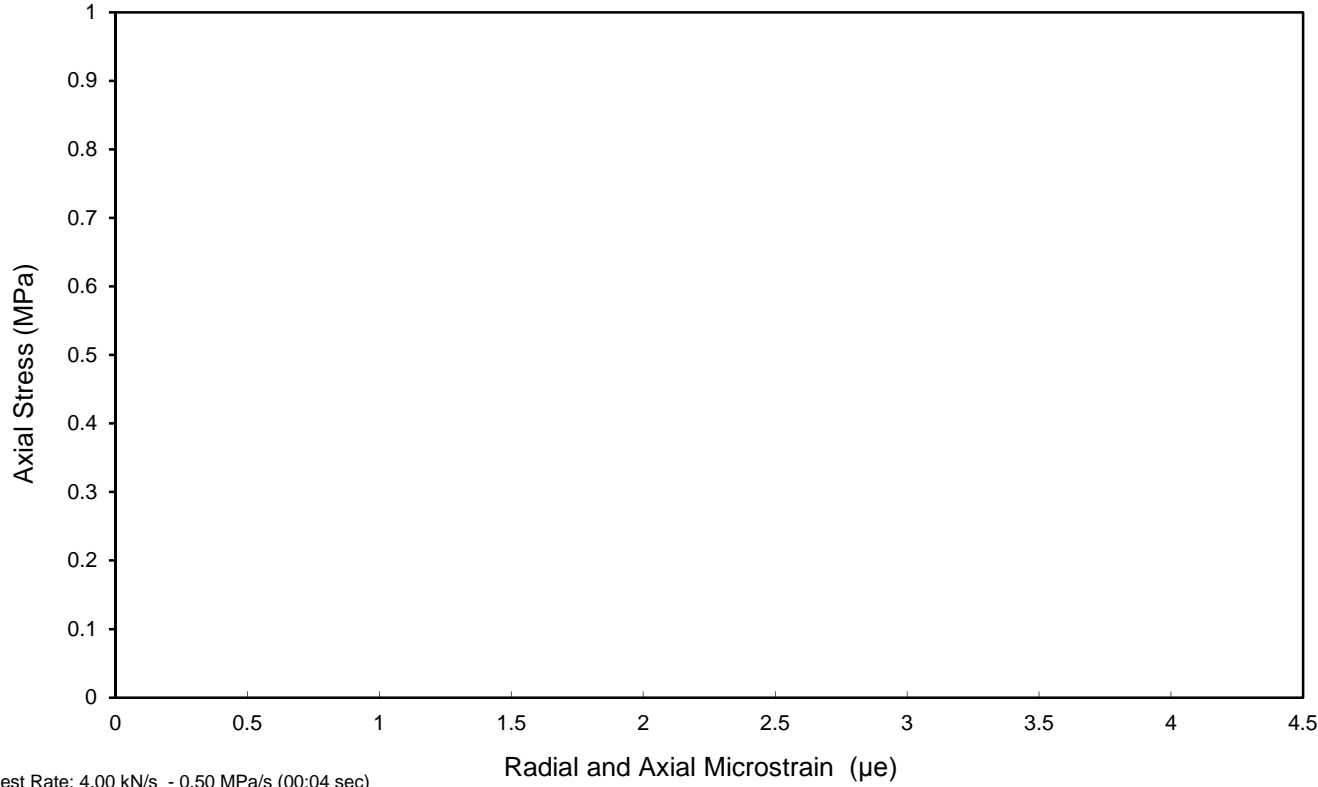
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 70°

Sample type: **C**

Date tested: 27/1/2020

Test results

Unconfined Compressive Strength	1.99 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



Note: The dimensional requirements of Flatness (<0.02 mm), Perpendicularity (<0.05 / 50 mm) and Straightness (0.3 mm deviation) are all met.

Checked and Approved by C Clergeaud (Snr. Geologist) Date: 04/12/2020	Project Number: <p style="text-align: center;">GEO / 32215</p> Project Name: <p style="text-align: center;">A303 STONEHENGE JFR1451</p>	
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UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: R71905	Description: White CHALK
Sample Ref.: -	
Depth (m): 42.11-42.43	

Diameter	73.50 mm
Height	192.30 mm
Bulk Density	2.09 Mg/m ³
Dry Density	1.70 Mg/m ³
Water Content	22 %
Degree of Saturation: 92.3 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Diagonal shearing

Solid lines for material failures.
Dashed lines for apparent weakness failure.

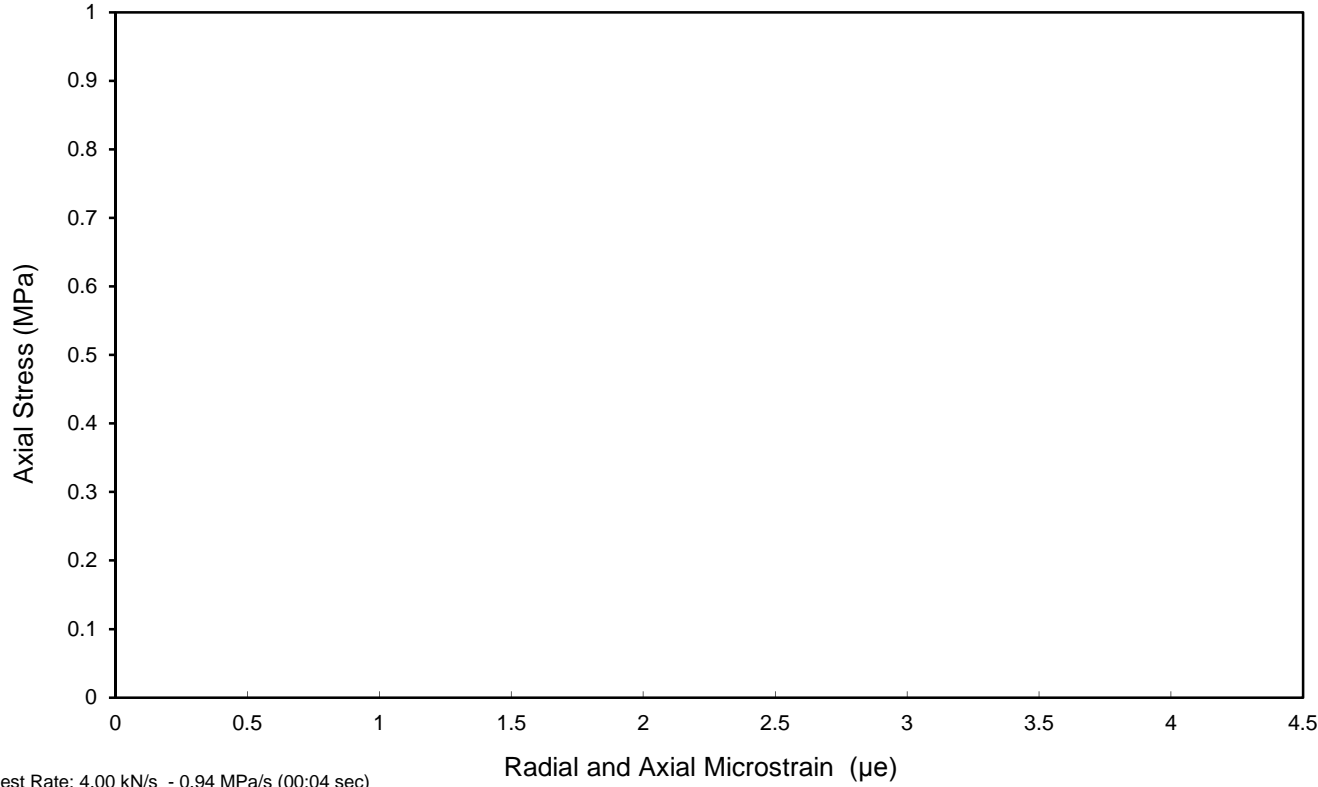
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 105°

Sample type: **C**

Date tested: 27/11/2020

Test results

Unconfined Compressive Strength	3.32 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



Note: The dimensional requirements of Flatness (<0.02 mm), Perpendicularity (<0.05 / 50 mm) and Straightness (0.3 mm deviation) are all met.

Checked and Approved by C Clergeaud (Snr. Geologist) Date: 04/12/2020	Project Number: <p style="text-align: center;">GEO / 32215</p> Project Name: <p style="text-align: center;">A303 STONEHENGE JFR1451</p>	
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UNCONFINED COMPRESSIVE STRENGTH WITH YOUNG'S MODULUS AND POISSON'S RATIO

Borehole Ref.:	R72005	Description: White CHALK
Sample Ref.:	-	
Depth (m):	16.26-16.76	

Diameter	100.50 mm
Height	232.60 mm
Bulk Density	2.11 Mg/m ³
Dry Density	1.65 Mg/m ³
Water Content	28 %
Degree of Saturation: 100 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Diagonal shearing

Solid lines for material failures.
Dashed lines for apparent weakness failure.

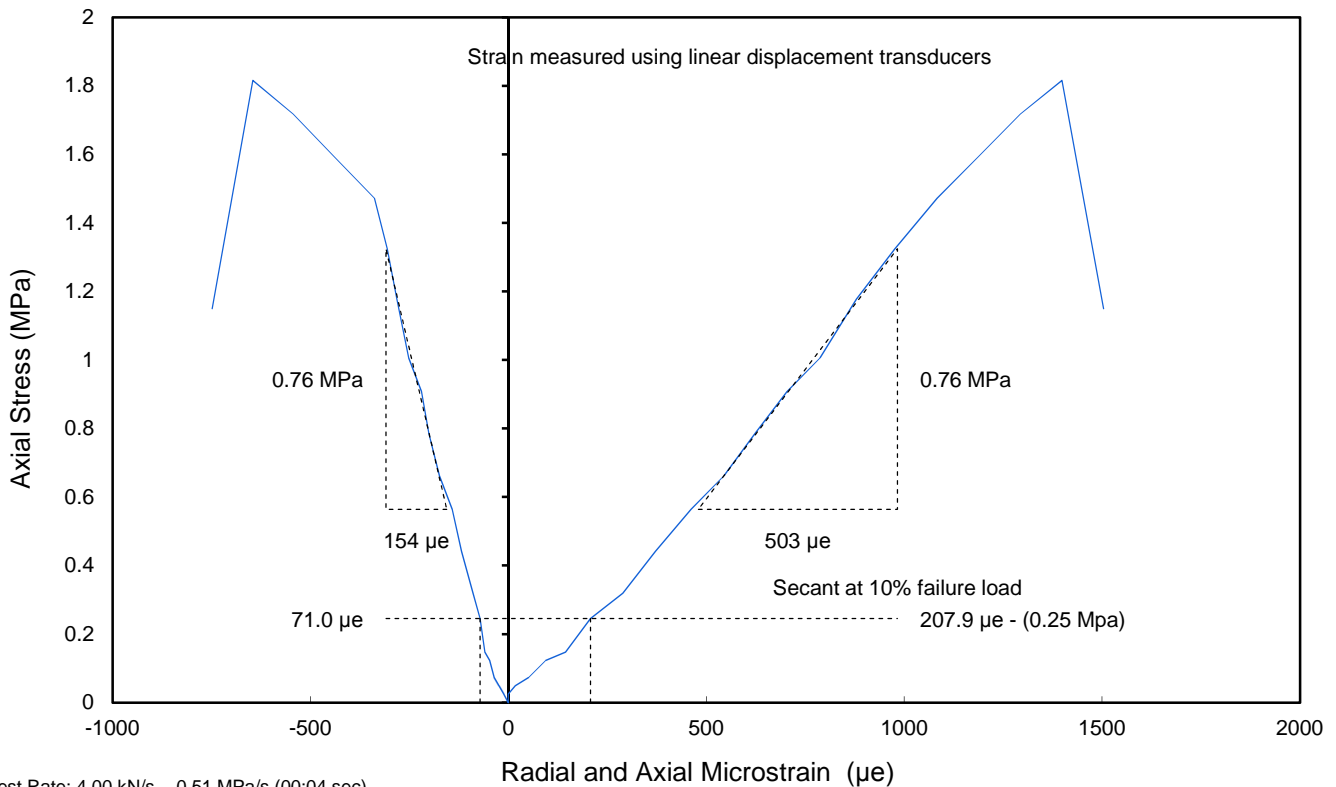
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 105°

Sample type: **C**

Date tested: 27/11/2020

Test results

Unconfined Compressive Strength	1.82 MPa
Young's Modulus (tangential at 50% failure load)	1.51 GPa
Poisson's Ratio (tangential at 50% failure load)	0.31
Young's Modulus (secant at 10% failure load)	1.18 GPa
Poisson's Ratio (secant at 10% failure load)	0.34



Note: The dimensional requirements of Flatness (<0.02 mm), Perpendicularity (<0.05 / 50 mm) and Straightness (0.3 mm deviation) are all met.

Checked and Approved by: C Clergeaud (Snr. Geologist) Date: 04/12/2020	Project Number: GEO / 32215 Project Name: A303 STONEHENGE JFR1451	
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UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: R72005	Description: White CHALK
Sample Ref.: -	
Depth (m): 21.09-21.60	

Diameter	100.50 mm
Height	267.70 mm
Bulk Density	2.00 Mg/m ³
Dry Density	1.58 Mg/m ³
Water Content	27 %
Degree of Saturation: 92.0 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Diagonal shearing

Solid lines for material failures.
Dashed lines for apparent weakness failure.

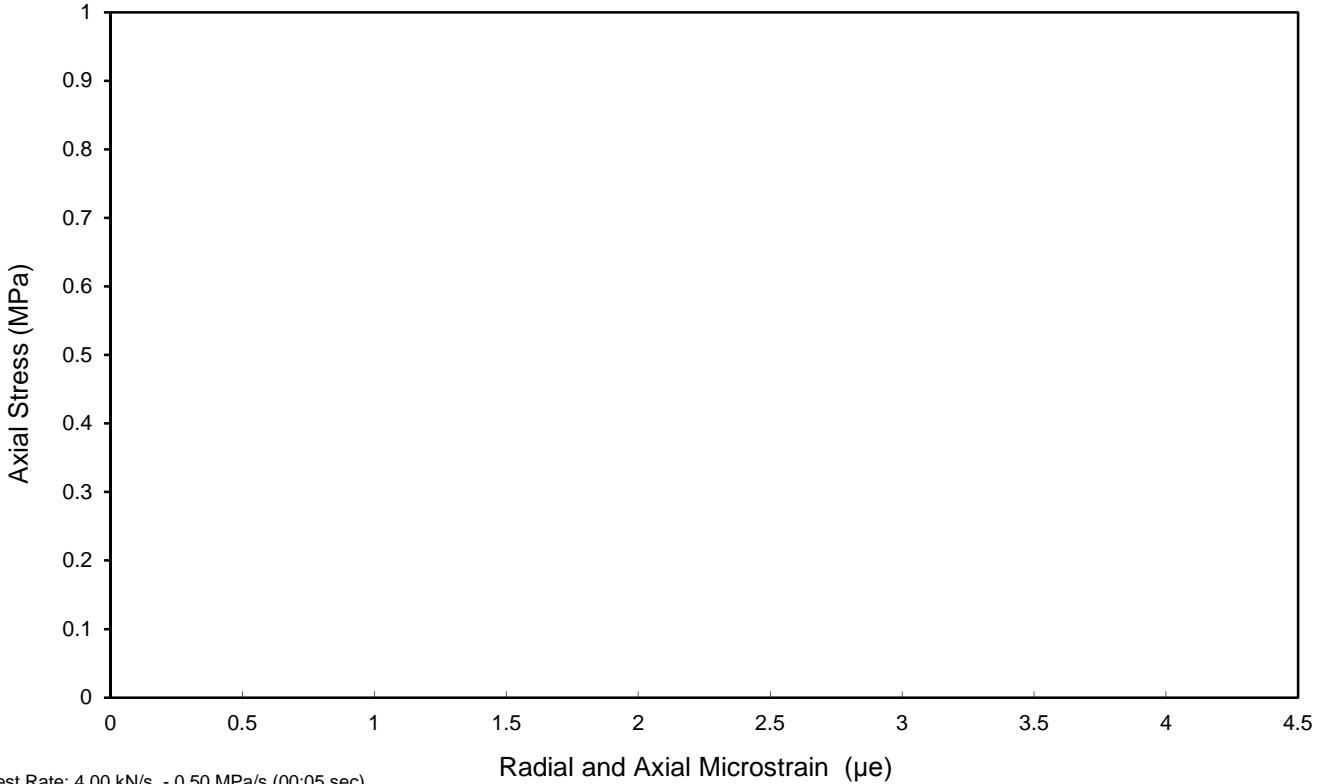
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 70°

Sample type: **C**

Date tested: 27/11/2020

Test results

Unconfined Compressive Strength	2.62 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



Note: The dimensional requirements of Flatness (<0.02 mm), Perpendicularity (<0.05 / 50 mm) and Straightness (0.3 mm deviation) are all met.

Checked and Approved by C Clergeaud (Snr. Geologist) Date: 04/12/2020	Project Number: GEO / 32215 Project Name: A303 STONEHENGE JFR1451	
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UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: R72005	Description: White CHALK
Sample Ref.: -	
Depth (m): 25.26-25.65	

Diameter	101.50 mm
Height	276.50 mm
Bulk Density	1.96 Mg/m ³
Dry Density	1.53 Mg/m ³
Water Content	28 %
Degree of Saturation: 90.8 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Diagonal shearing

Solid lines for material failures.
Dashed lines for apparent weakness failure.

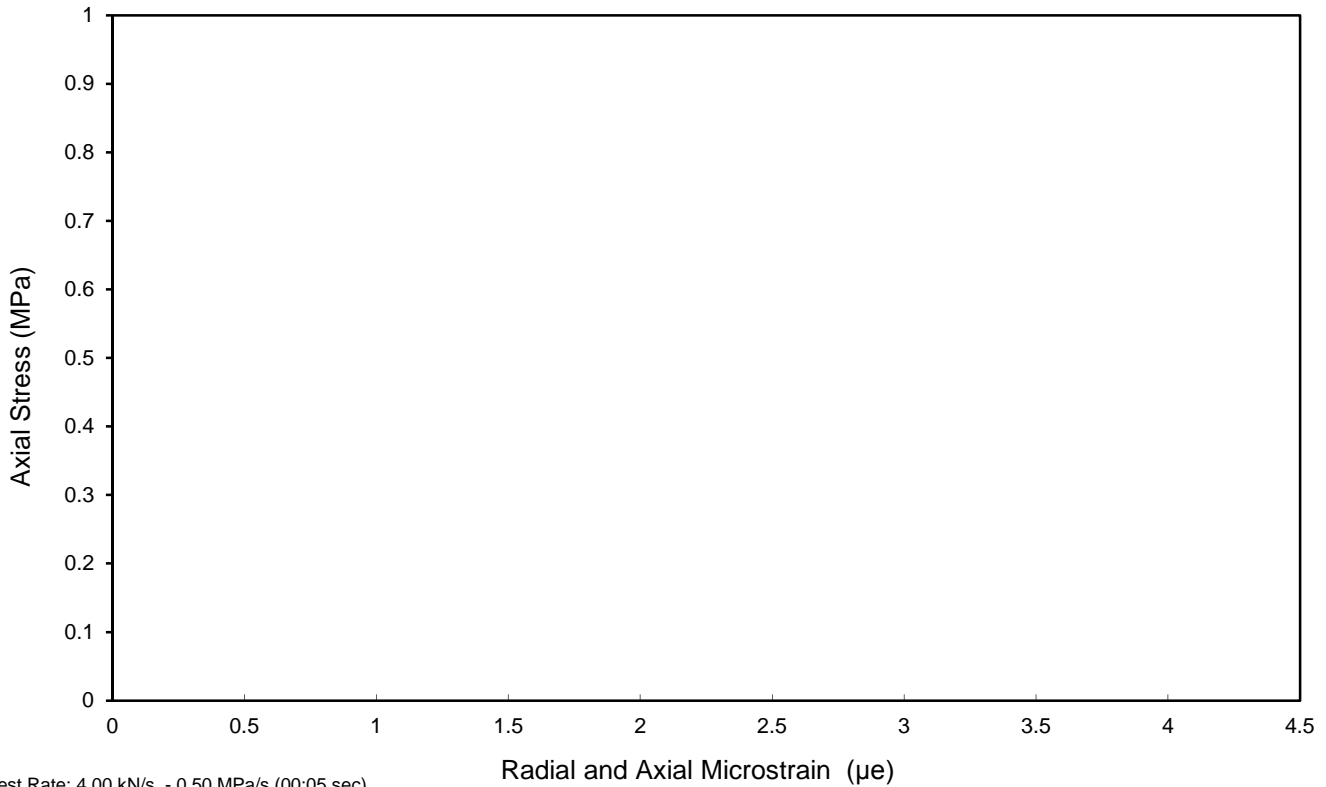
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 85°

Sample type **C**

Date tested: 27/11/2020

Test results

Unconfined Compressive Strength	2.39 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 (00:05 sec)

Note: The dimensional requirements of Flatness (<0.02 mm), Perpendicularity (<0.05 / 50 mm) and Straightness (0.3 mm deviation) are all met.

Checked and Approved by C Clergeaud (Snr. Geologist) Date: 04/12/2020	Project Number: <p style="text-align: center;">GEO / 32215</p> Project Name: <p style="text-align: center;">A303 STONEHENGE JFR1451</p>	
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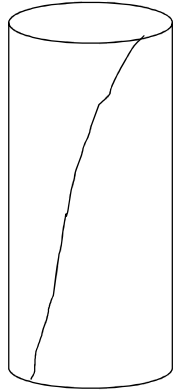
UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: R72005	Description: White CHALK
Sample Ref.: -	
Depth (m): 31.25-51.55	

Diameter	100.60 mm
Height	259.20 mm
Bulk Density	1.95 Mg/m ³
Dry Density	1.51 Mg/m ³
Water Content	29 %
Degree of Saturation: 91.6 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Diagonal shearing



Solid lines for material failures.
Dashed lines for apparent weakness failure.

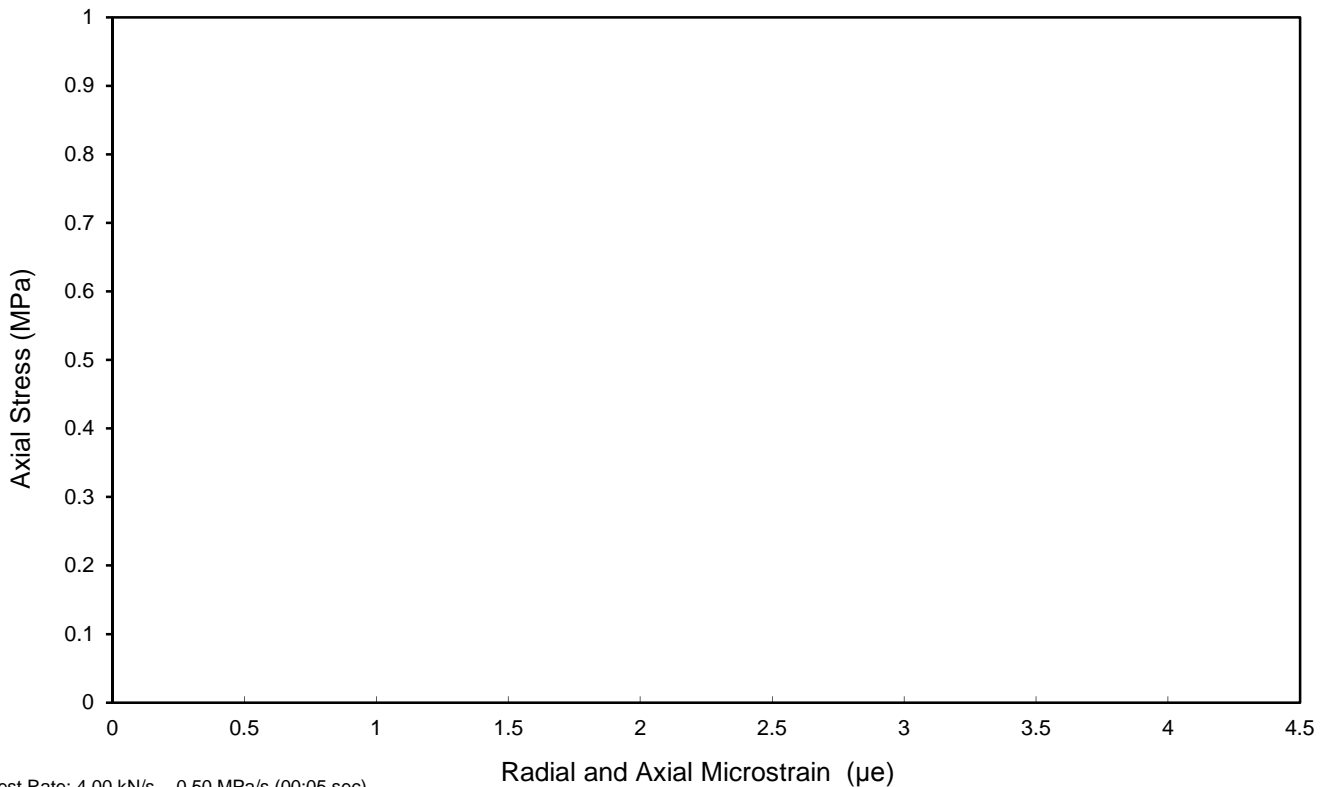
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 105°

Sample type **C**




Date tested: 27/11/2020

Test results

Unconfined Compressive Strength	2.59 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



Note: The dimensional requirements of Flatness (<0.02 mm), Perpendicularity (<0.05 / 50 mm) and Straightness (0.3 mm deviation) are all met.

Checked and Approved by  C Clergeaud (Snr. Geologist) Date: 04/12/2020	Project Number: GEO / 32215 Project Name: A303 STONEHENGE JFR1451	 
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UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: R72005	Description: White CHALK
Sample Ref.: -	
Depth (m): 34.84-35.30	

Diameter	100.50 mm
Height	260.80 mm
Bulk Density	1.95 Mg/m ³
Dry Density	1.52 Mg/m ³
Water Content	28 %
Degree of Saturation: 89.2 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Diagonal shearing

Solid lines for material failures.
Dashed lines for apparent weakness failure.

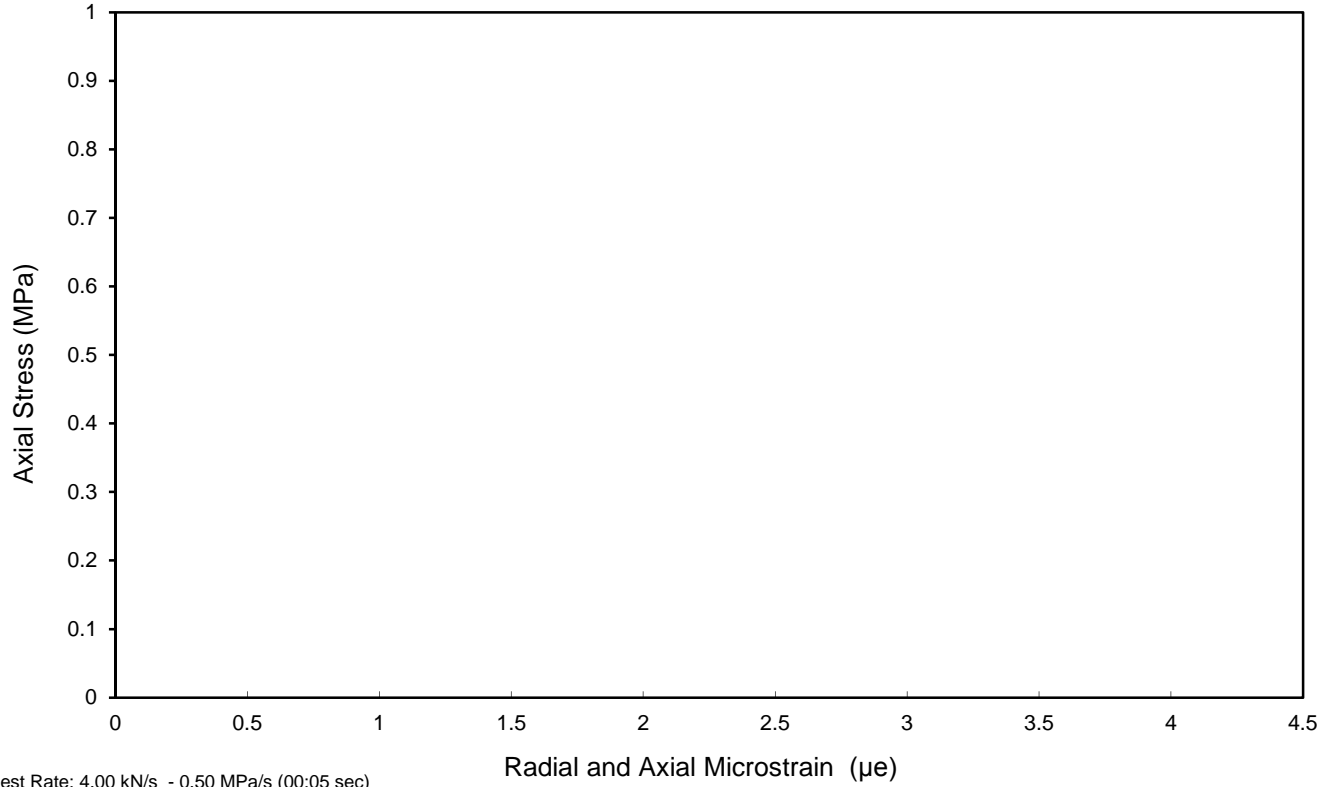
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 105°

Sample type **C**

Date tested: 27/11/2020

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



Note: The dimensional requirements of Flatness (<0.02 mm), Perpendicularity (<0.05 / 50 mm) and Straightness (0.3 mm deviation) are all met.

Checked and Approved by C Clergeaud (Snr. Geologist) Date: 04/12/2020	Project Number: GEO / 32215 Project Name: A303 STONEHENGE JFR1451	
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UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: R72005	Description: White CHALK
Sample Ref.: -	
Depth (m): 41.82-42.34	

Diameter	101.70 mm
Height	272.60 mm
Bulk Density	2.03 Mg/m ³
Dry Density	1.63 Mg/m ³
Water Content	24 %
Degree of Saturation: 91.2 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Diagonal shearing

Solid lines for material failures.
Dashed lines for apparent weakness failure.

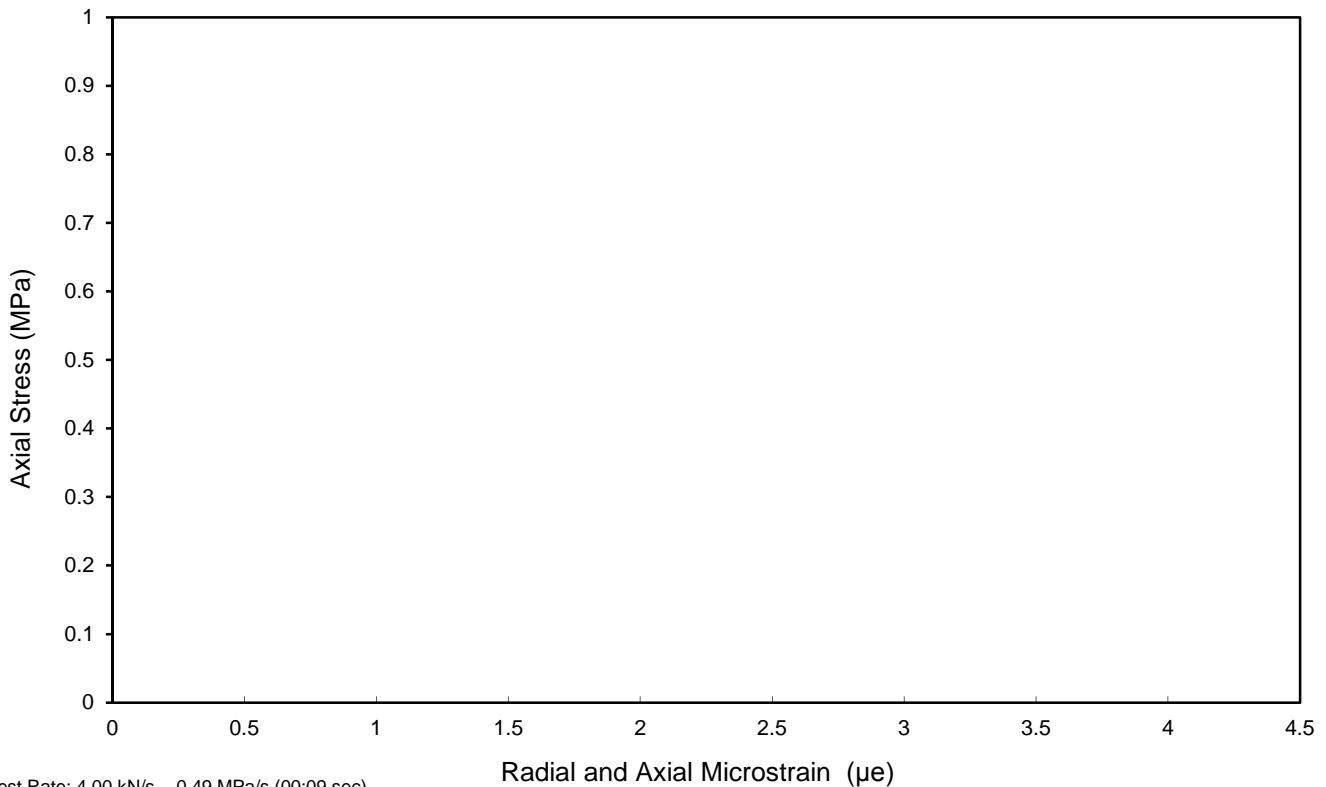
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 75°

Sample type **C**

Date tested: 27/11/2020

Test results

Unconfined Compressive Strength	4.48 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 - 0.49 MPa/s (00:09 sec)

Note: The dimensional requirements of Flatness (<0.02 mm), Perpendicularity (<0.05 / 50 mm) and Straightness (0.3 mm deviation) are all met.

Checked and Approved by C Clergeaud (Snr. Geologist) Date: 04/12/2020	Project Number: <p style="text-align: center;">GEO / 32215</p> Project Name: <p style="text-align: center;">A303 STONEHENGE JFR1451</p>	
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UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: R72005	Description: White CHALK
Sample Ref.: -	
Depth (m): 48.60-48.90	

Diameter	100.60 mm
Height	249.60 mm
Bulk Density	2.12 Mg/m ³
Dry Density	1.78 Mg/m ³
Water Content	19 %
Degree of Saturation: 88.2 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Diagonal shearing

Solid lines for material failures.
Dashed lines for apparent weakness failure.

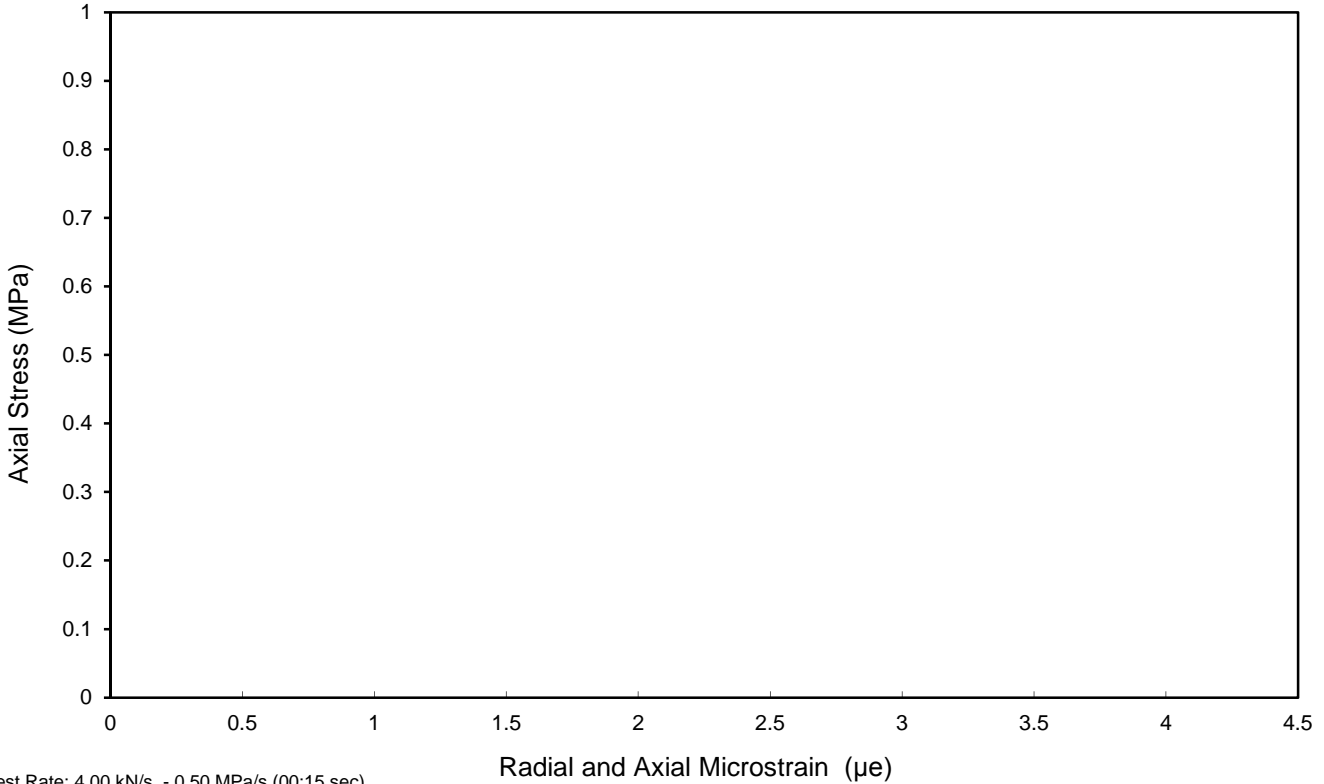
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 100°

Sample type **C**




Date tested: 27/11/2020

Test results

Unconfined Compressive Strength	7.33 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



Note: The dimensional requirements of Flatness (<0.02 mm), Perpendicularity (<0.05 / 50 mm) and Straightness (0.3 mm deviation) are all met.

Checked and Approved by  C Clergeaud (Snr. Geologist) Date: 04/12/2020	Project Number: GEO / 32215 Project Name: A303 STONEHENGE JFR1451	 
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UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: R72005	Description: White CHALK
Sample Ref.: -	
Depth (m): 52.17-52.69	

Diameter	101.60 mm
Height	278.30 mm
Bulk Density	2.18 Mg/m ³
Dry Density	1.88 Mg/m ³
Water Content	16 %
Degree of Saturation: 85.6 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Diagonal shearing

Solid lines for material failures.
Dashed lines for apparent weakness failure.

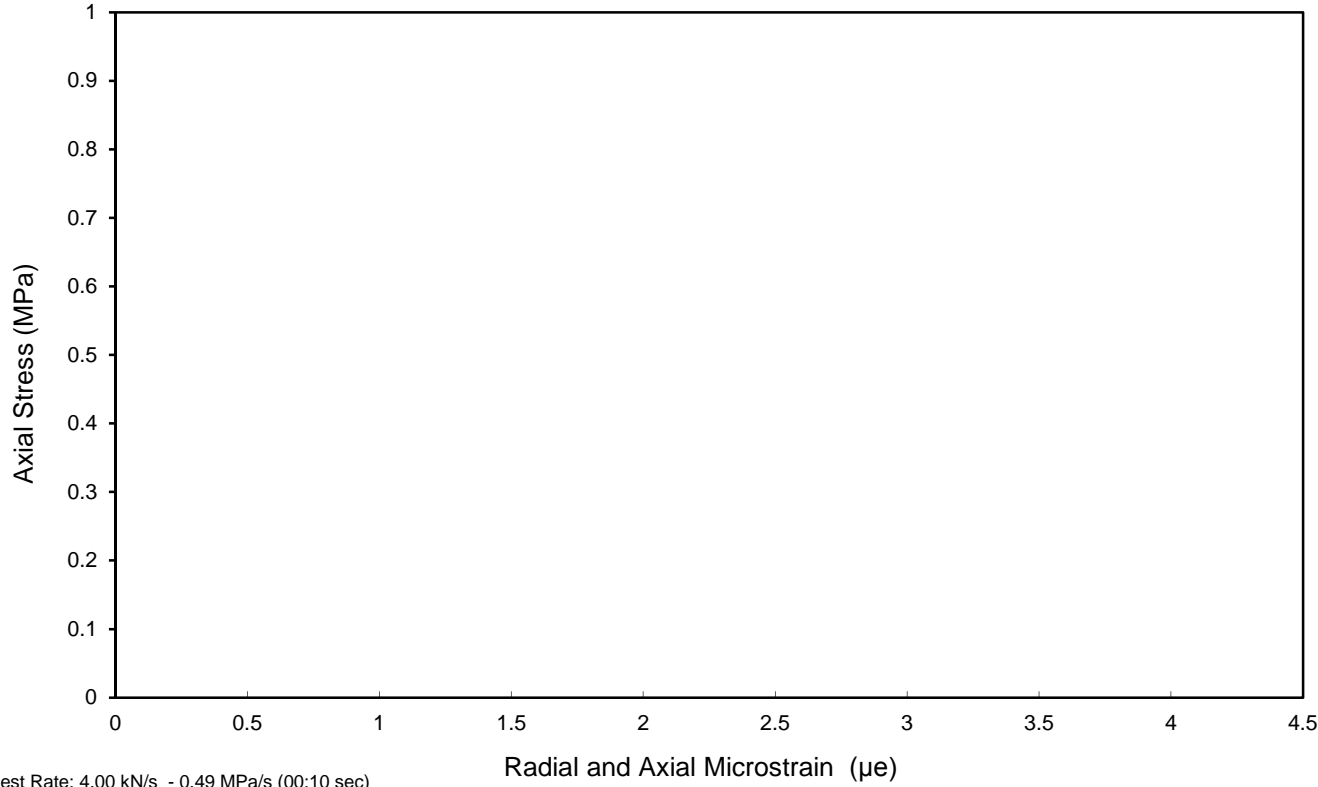
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 75°

Sample type: **C**

Date tested: 27/1/2020

Test results

Unconfined Compressive Strength	4.74 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



Note: The dimensional requirements of Flatness (<0.02 mm), Perpendicularity (<0.05 / 50 mm) and Straightness (0.3 mm deviation) are all met.

Checked and Approved by C Clergeaud (Snr. Geologist) Date: 04/12/2020	Project Number: GEO / 32215 Project Name: A303 STONEHENGE JFR1451	
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UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: R72005	Description: White CHALK
Sample Ref.: -	
Depth (m): 55.10-55.48	

Diameter	102.10 mm
Height	272.20 mm
Bulk Density	2.07 Mg/m ³
Dry Density	1.74 Mg/m ³
Water Content	19 %
Degree of Saturation: 82.6 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Diagonal shearing

Solid lines for material failures.
Dashed lines for apparent weakness failure.

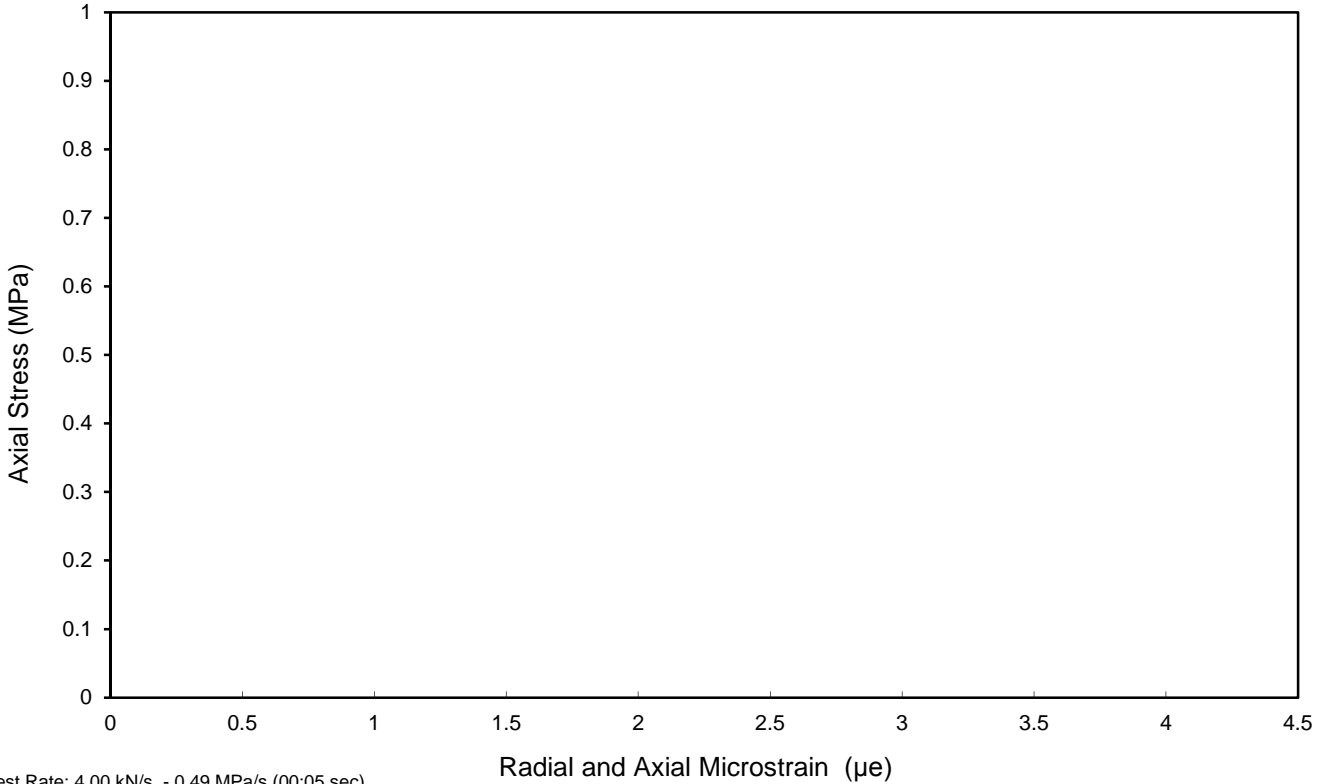
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 100°

Sample type **C**

Date tested: 27/11/2020

Test results

Unconfined Compressive Strength	2.66 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 - 0.49 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 all met.

Checked and Approved by C Clergeaud (Snr. Geologist) Date: 04/12/2020	Project Number: GEO / 32215 Project Name: A303 STONEHENGE JFR1451	
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UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Sample details				Density				Uniaxial Compression Test (LF0879C (1000kN) compression frame used)							
Borehole Ref.	Sample Ref.	Depth (m)	Description	MC (%)	Degree of Saturation (%)	Bulk (Mg/m ³)	Dry (Mg/m ³)	Mean after prep.		H/D Ratio	Load at Failure (kN)	UCS (MPa) <small>3 sig. fig.</small>	Failure Sketch	D. Tested	Remarks
								Diameter (mm)	Height (mm)						
R72006		11.18-11.46	White CHALK	26	86.3	1.95	1.55	102.30	209.70	2.0	16.0	1.95		05/01/21	
R72006		18.03-18.30	White CHALK	26	89.9	1.99	1.58	98.70	220.20	2.2	21.7	2.84		05/01/21	
R72006		20.93-21.23	White CHALK	27	93.5	2.01	1.58	101.50	249.50	2.5	19.0	2.35		05/01/21	
R72006		35.65-36.00	White CHALK	26	92.0	2.00	1.59	101.50	255.20	2.5	23.5	2.9		05/01/21	
R72006		41.50-41.88	White CHALK	25	88.1	1.99	1.59	101.60	268.60	2.6	22.4	2.76		05/01/21	
R72006		43.94-44.21	White CHALK	21	84.8	2.04	1.69	99.10	215.90	2.2	41.0	5.32		05/01/21	

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  C Clergeaud (Snr. Geologist) Date: 08/01/2021	Project Number: <b style="text-align: center;">GEO / 32302 Project Name: <b style="text-align: center;">A303 STONEHENGE JFR1451	 
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UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

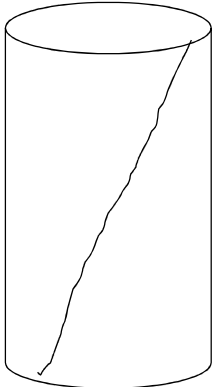
Borehole Ref.: R72006	Description: White CHALK
Sample Ref.: -	
Depth (m): 11.18-11.46	

Diameter	102.30 mm
Height	209.70 mm
Bulk Density	1.95 Mg/m ³
Dry Density	1.55 Mg/m ³
Water Content	26 %
Degree of Saturation: 86.3 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch

Mode of failure: Diagonal shearing



Solid lines for material failures.
Dashed lines for apparent weakness failure.

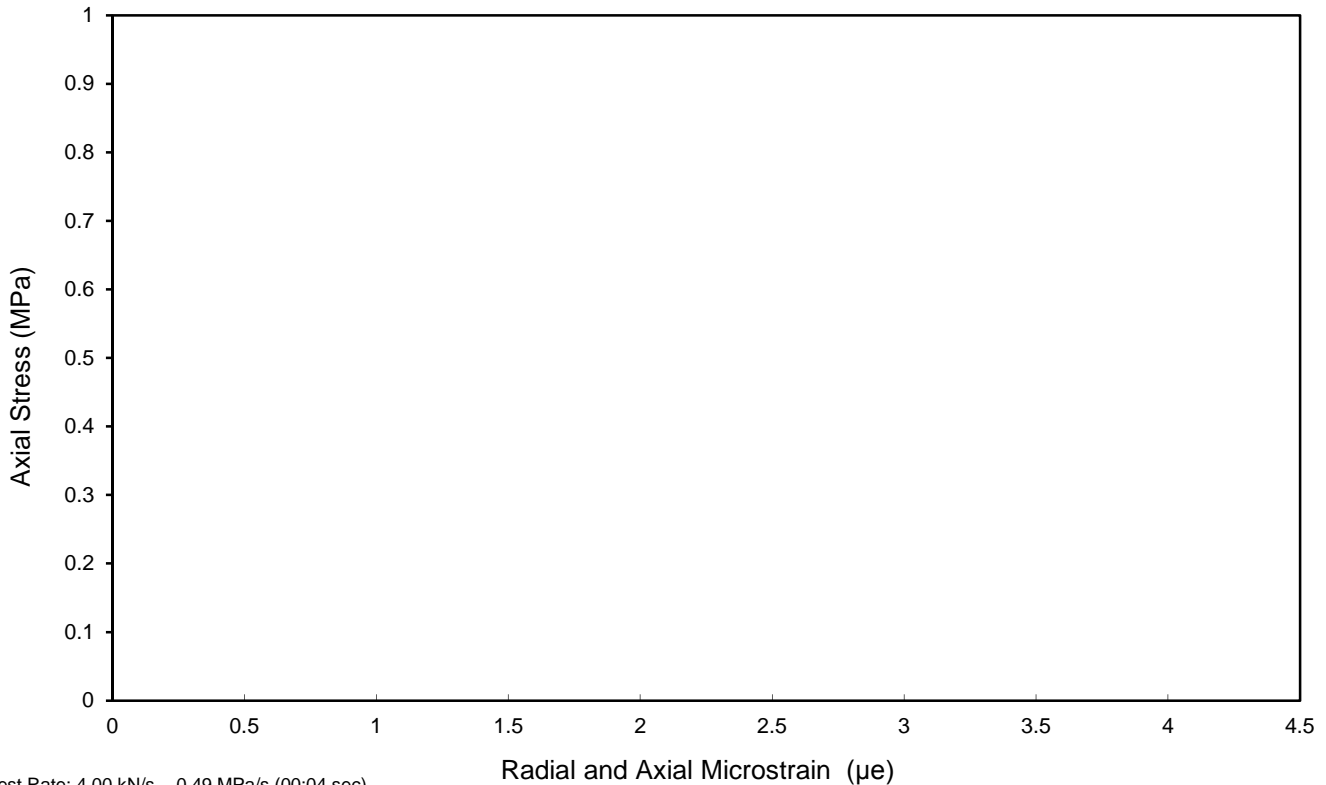
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 110°

Sample type	C
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Date tested: 05/01/2021

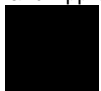


Test results

Unconfined Compressive Strength	1.95 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 - 0.49 MPa/s (00:04 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  C Clergeaud (Snr. Geologist) Date: 08/01/2021	Project Number: GEO / 32302 Project Name: A303 STONEHENGE JFR1451	 
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UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: R72006	Description: White CHALK
Sample Ref.: -	
Depth (m): 18.03-18.30	

Diameter	98.70 mm
Height	220.20 mm
Bulk Density	1.99 Mg/m ³
Dry Density	1.58 Mg/m ³
Water Content	26 %
Degree of Saturation: 89.9 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Diagonal shearing

Solid lines for material failures.
Dashed lines for apparent weakness failure.

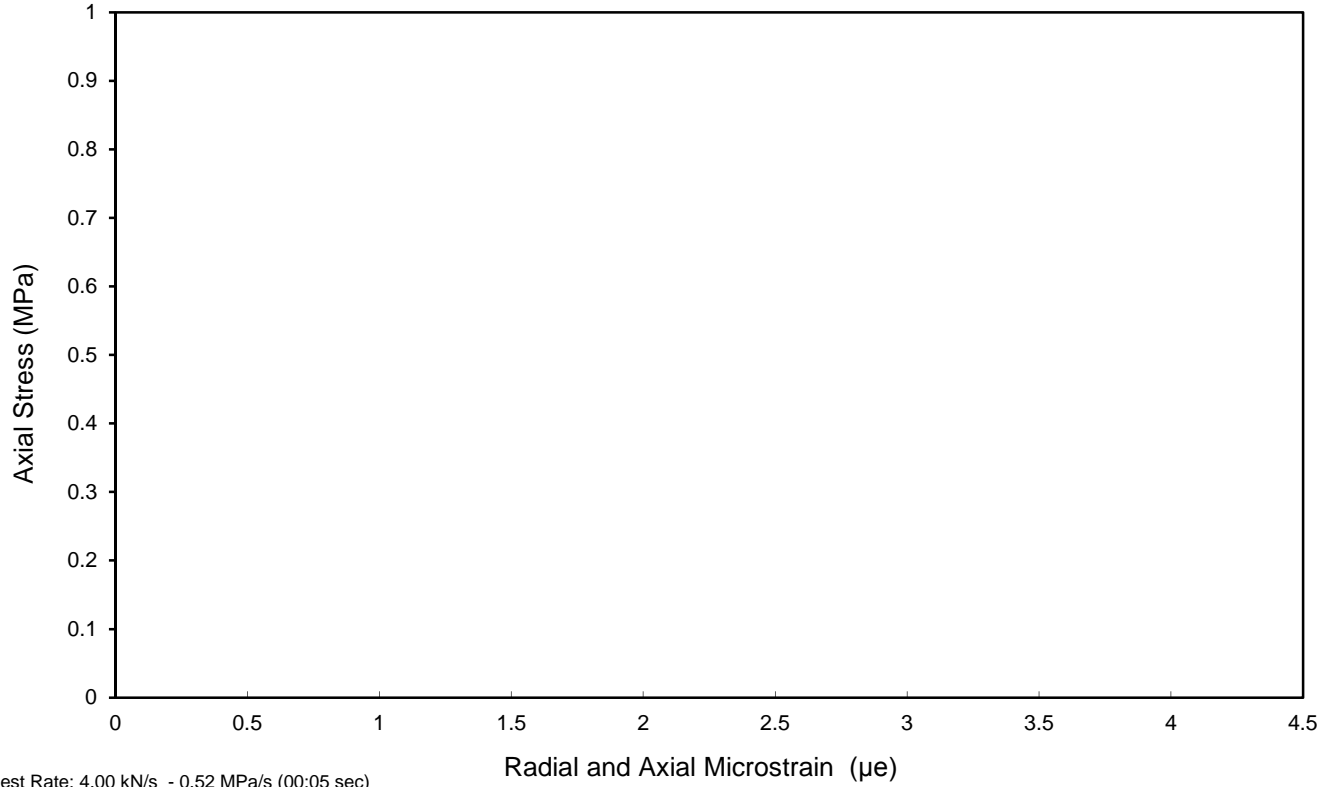
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 70°

Sample type: **C**

Date tested: 05/01/2021

Test results

Unconfined Compressive Strength	2.84 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



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 C Clergeaud (Snr. Geologist) Date: 08/01/2021	Project Number: GEO / 32302 Project Name: A303 STONEHENGE JFR1451	
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UNCONFINED COMPRESSIVE STRENGTH WITH YOUNG'S MODULUS AND POISSON'S RATIO

Borehole Ref.:	R72006	Description: White CHALK
Sample Ref.:	-	
Depth (m):	20.93-21.23	

Diameter	101.50 mm
Height	249.50 mm
Bulk Density	2.01 Mg/m ³
Dry Density	1.58 Mg/m ³
Water Content	27 %
Degree of Saturation: 93.5 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Diagonal shearing

Solid lines for material failures.
Dashed lines for apparent weakness failure.

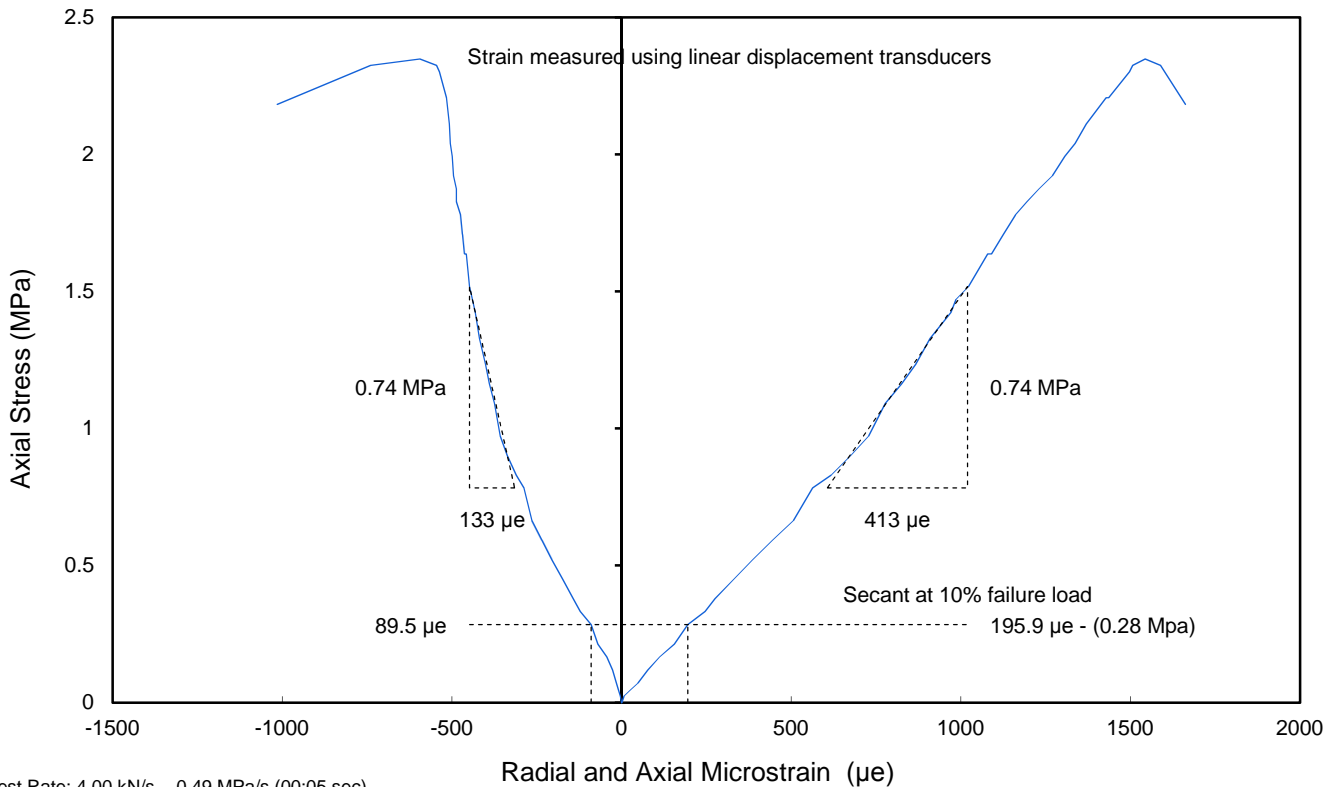
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 110°

Sample type: **C**

Date tested: 05/01/2021

Test results

Unconfined Compressive Strength	2.35 MPa
Young's Modulus (tangential at 50% failure load)	1.78 GPa
Poisson's Ratio (tangential at 50% failure load)	0.32
Young's Modulus (secant at 10% failure load)	1.45 GPa
Poisson's Ratio (secant at 10% failure load)	0.46



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 C Clergeaud (Snr. Geologist) Date: 08/01/2021	Project Number: GEO / 32302	
	Project Name: A303 STONEHENGE JFR1451	

UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: R72006	Description: White CHALK
Sample Ref.: -	
Depth (m): 35.65-36.00	

Diameter	101.50 mm
Height	255.20 mm
Bulk Density	2.00 Mg/m ³
Dry Density	1.59 Mg/m ³
Water Content	26 %
Degree of Saturation: 92.0 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Diagonal shearing

Solid lines for material failures.
Dashed lines for apparent weakness failure.

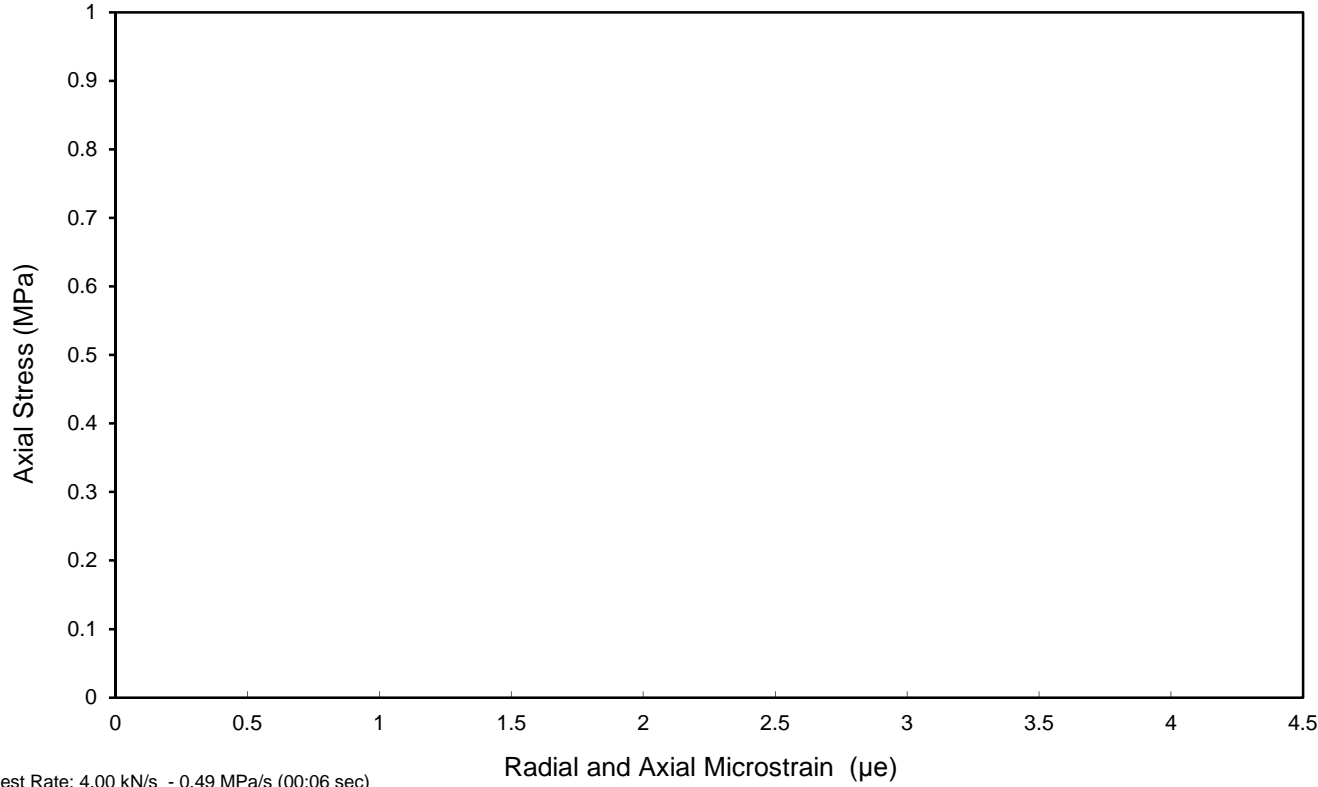
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 70°

Sample type: **C**

Date tested: 05/01/2021

Test results

Unconfined Compressive Strength	2.9 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



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 C Clergeaud (Snr. Geologist) Date: 08/01/2021	Project Number: GEO / 32302 Project Name: A303 STONEHENGE JFR1451	
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UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: R72006	Description: White CHALK
Sample Ref.: -	
Depth (m): 41.50-41.88	

Diameter	101.60 mm
Height	268.60 mm
Bulk Density	1.99 Mg/m ³
Dry Density	1.59 Mg/m ³
Water Content	25 %
Degree of Saturation: 88.1 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Diagonal shearing

Solid lines for material failures.
Dashed lines for apparent weakness failure.

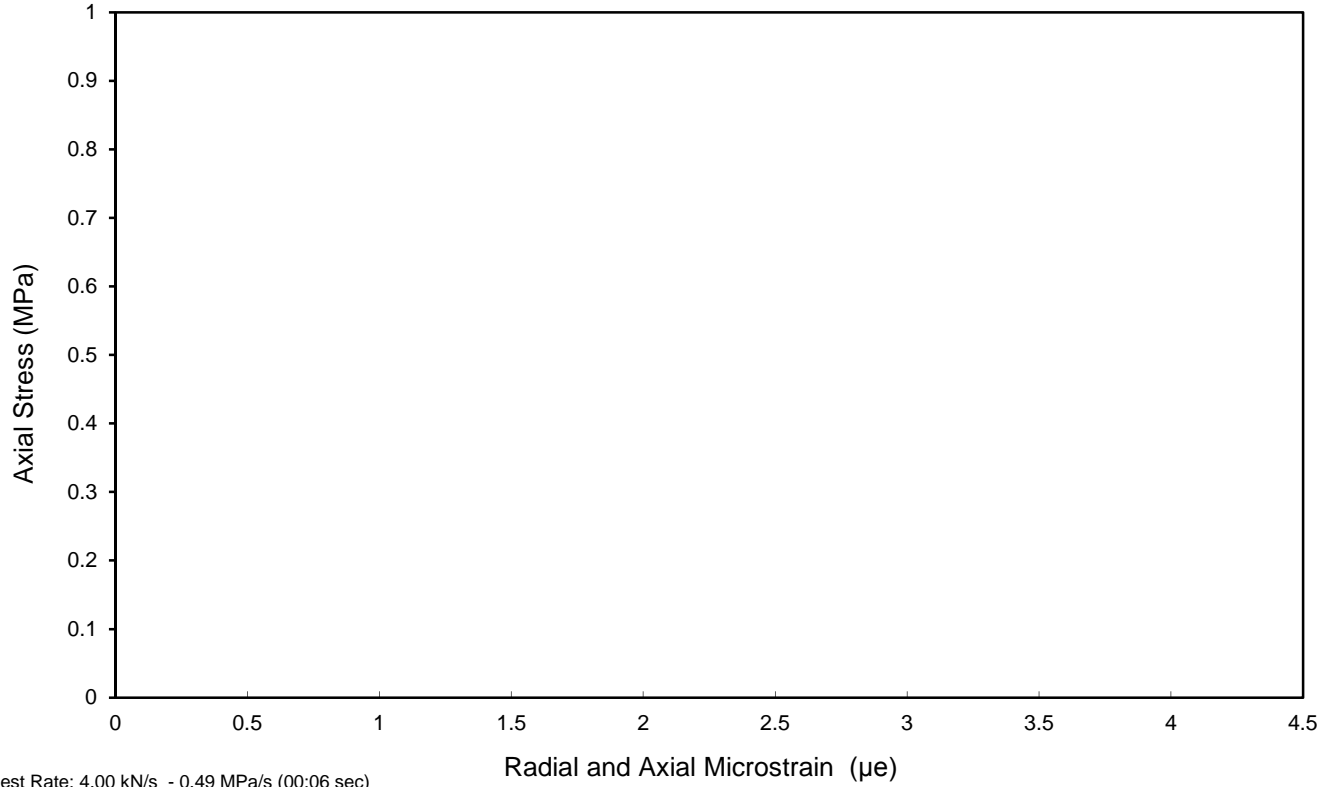
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 110°

Sample type **C**

Date tested: 05/01/2021

Test results

Unconfined Compressive Strength	2.76 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



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 C Clergeaud (Snr. Geologist) Date: 08/01/2021	Project Number: GEO / 32302 Project Name: A303 STONEHENGE JFR1451	
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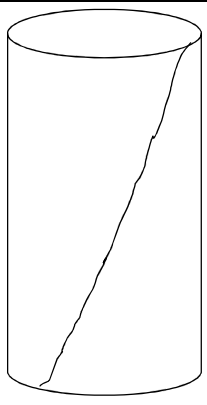
UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: R72006	Description: White CHALK
Sample Ref.: -	
Depth (m): 43.94-44.21	

Diameter	99.10 mm
Height	215.90 mm
Bulk Density	2.04 Mg/m ³
Dry Density	1.69 Mg/m ³
Water Content	21 %
Degree of Saturation: 84.8 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Diagonal shearing



Solid lines for material failures.
Dashed lines for apparent weakness failure.

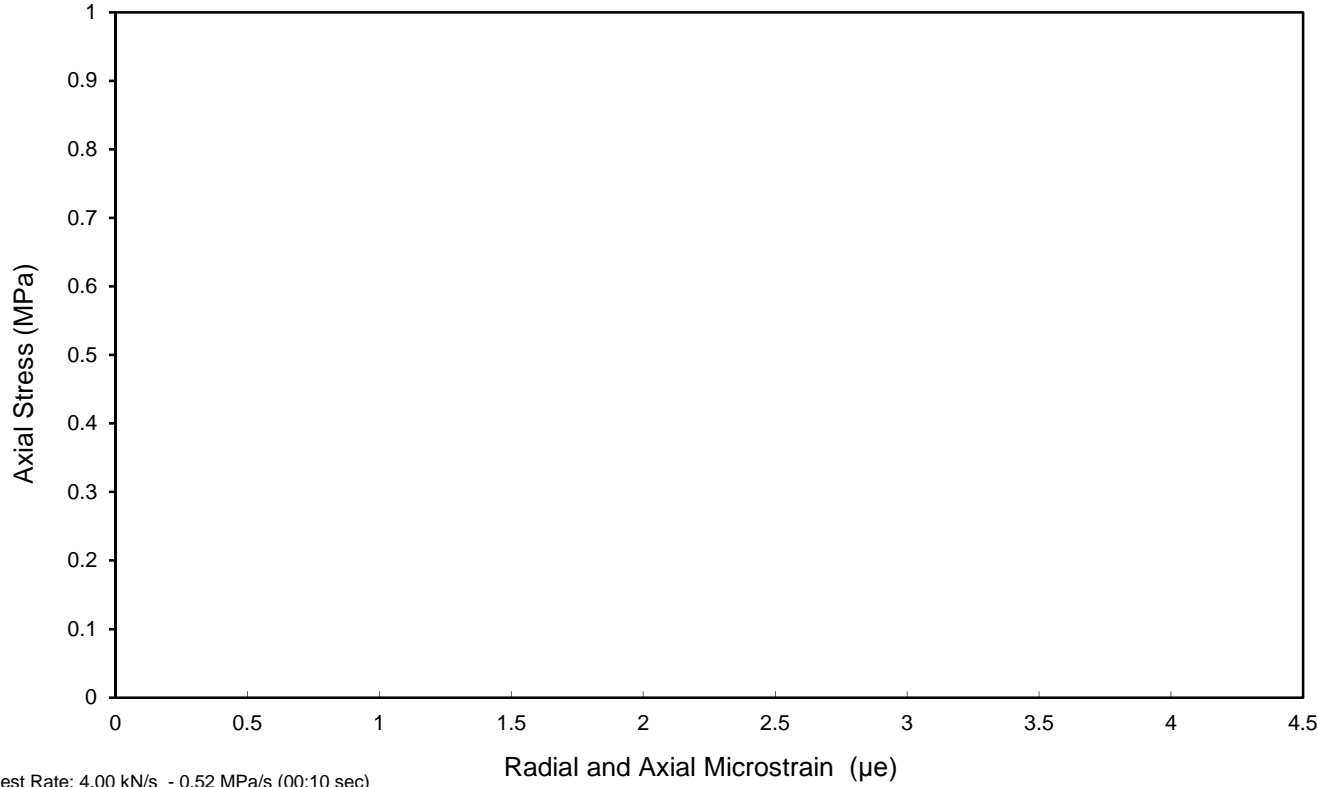
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 110°

Sample type **C**




Date tested: 05/01/2021

Test results

Unconfined Compressive Strength	5.32 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





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  C Clergeaud (Snr. Geologist) Date: 08/01/2021	Project Number: GEO / 32302 Project Name: A303 STONEHENGE JFR1451	 
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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)							
Borehole Ref.	Sample Ref.	Depth (m)	Description	MC (%)	Degree of Saturation (%)	Bulk (Mg/m ³)	Dry (Mg/m ³)	Mean after prep.		H/D Ratio	Load at Failure (kN)	UCS (MPa) <small>3 sig. fig.</small>	Failure Sketch	D. Tested	Remarks
								Diameter (mm)	Height (mm)						
BH72401	13	21.78-21.92	White CHALK	29	96.8	2.01	1.56	100.50	251.70	2.5	13.7	1.73		02/01/00	
BH72401	22	28.62-28.91	White CHALK	28	92.1	1.97	1.54	100.30	225.80	2.3	21.0	2.66		07/12/20	

Note: The dimensional requirements of flatness (<0.02 mm), perpendicularity (<0.05 / 50 mm) and straightness (0.3 mm deviation) are all met. Specific Gravity used for Degree of Saturation is assumed unless specified by the client.

Checked and Approved by  C Clergeaud (Snr. Geologist) Date: 09/12/2020	Project Number: GEO / 32202 Project Name: A303 STONEHENGE JFR1451	 
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UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: BH72401
 Sample Ref.: 13
 Depth (m): 21.78-21.92

Description:
 White CHALK

Diameter
Height
Bulk Density
Dry Density
Water Content

100.50 mm
251.70 mm
2.01 Mg/m ³
1.56 Mg/m ³
29 %

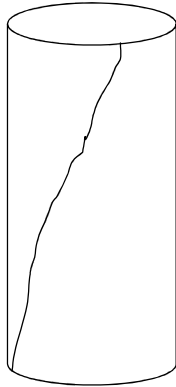
Degree of Saturation: 96.8 % Specific Gravity: 2.9 Mg/m³ (Assumed)

Test results

Unconfined Compressive Strength
Young's Modulus (tangential at 50% failure load)
Poisson's Ratio (tangential at 50% failure load)
Young's Modulus (secant at 10% failure load)
Poisson's Ratio (secant at 10% failure load)


1.73 MPa
n/a
n/a
n/a
n/a

LF0879C (1000kN) compression frame used

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°
Sample type C

Date tested: 02/01/1900

Note: The dimensional requirements of Flatness (<0.02 mm), Perpendicularity (<0.05 / 50 mm) and Straightness (0.3 mm deviation) are all met.

Checked and Approved by

 C Clergeaud (Snr. Geologist)
 Date: 09/12/2020

Project Number:
GEO / 32202

Project Name:
**A303 STONEHENGE
 JFR1451**



UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: Sample Ref.: Depth (m):	BH72401 22 28.62-28.91	Description: White CHALK
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Diameter
Height
Bulk Density
Dry Density
Water Content

100.30 mm
225.80 mm
1.97 Mg/m ³
1.54 Mg/m ³
28 %

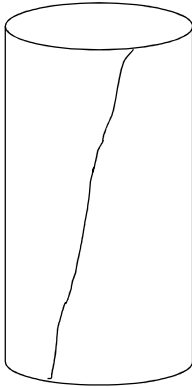
Degree of Saturation: 92.1 % Specific Gravity: 2.9 Mg/m³ (Assumed)

Test results

Unconfined Compressive Strength
Young's Modulus (tangential at 50% failure load)
Poisson's Ratio (tangential at 50% failure load)
Young's Modulus (secant at 10% failure load)
Poisson's Ratio (secant at 10% failure load)




2.66 MPa
n/a
n/a
n/a
n/a

LF0879C (1000kN) compression frame used


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°
Sample type C

Date tested: 07/12/2020




Note: The dimensional requirements of Flatness (<0.02 mm), Perpendicularity (<0.05 / 50 mm) and Straightness (0.3 mm deviation) are all met.

Checked and Approved by  C Clergeaud (Snr. Geologist) Date: 09/12/2020	Project Number: <p style="text-align: center;">GEO / 32202</p> Project Name: <p style="text-align: center;">A303 STONEHENGE JFR1451</p>	 
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UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Sample details				Density				Uniaxial Compression Test (LF0879C (1000kN) compression frame used)							
Borehole Ref.	Sample Ref.	Depth (m)	Description	MC (%)	Degree of Saturation (%)	Bulk (Mg/m ³)	Dry (Mg/m ³)	Mean after prep.		H/D Ratio	Load at Failure (kN)	UCS (MPa) <small>3 sig. fig.</small>	Failure Sketch	D. Tested	Remarks
								Diameter (mm)	Height (mm)						
R70116	9	13.13-13.53	White CHALK	24	86.3	1.99	1.60	101.80	249.40	2.4	15.5	1.9		18/11/20	

Note: The dimensional requirements of flatness (<0.02 mm), perpendicularity (<0.05 / 50 mm) and straightness (0.3 mm deviation) are all met. Specific Gravity used for Degree of Saturation is assumed unless specified by the client.

Checked and Approved by  C Clergeaud (Snr. Geologist) Date: 24/11/2020	Project Number: <b style="text-align: center;">GEO / 32134 Project Name: <b style="text-align: center;">A303 STONEHENGE JFR1451	 
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UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: R70116
 Sample Ref.: 9
 Depth (m): 13.13-13.53

Description:
 White CHALK

Diameter
Height
Bulk Density
Dry Density
Water Content

101.80 mm
249.40 mm
1.99 Mg/m ³
1.60 Mg/m ³
24 %

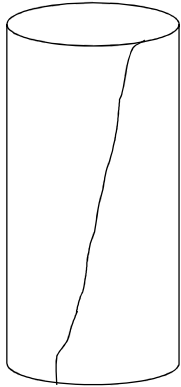
Degree of Saturation: 86.3 % Specific Gravity: 2.9 Mg/m³ (Assumed)

Test results

Unconfined Compressive Strength
Young's Modulus (tangential at 50% failure load)
Poisson's Ratio (tangential at 50% failure load)
Young's Modulus (secant at 10% failure load)
Poisson's Ratio (secant at 10% failure load)


1.9 MPa
n/a
n/a
n/a
n/a

LF0879C (1000kN) compression frame used

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°
Sample type C

Date tested: 18/11/2020

Note: The dimensional requirements of Flatness (<0.02 mm), Perpendicularity (<0.05 / 50 mm) and Straightness (0.3 mm deviation) are all met.







Checked and Approved by

 C Clergeaud (Snr. Geologist)
 Date: 24/11/2020

Project Number:
GEO / 32134




Project Name:
**A303 STONEHENGE
 JFR1451**



UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Sample details				Density				Uniaxial Compression Test (LF0879C (1000kN) compression frame used)							
Borehole Ref.	Sample Ref.	Depth (m)	Description	MC (%)	Degree of Saturation (%)	Bulk (Mg/m ³)	Dry (Mg/m ³)	Mean after prep.		H/D Ratio	Load at Failure (kN)	UCS (MPa) <small>3 sig. fig.</small>	Failure Sketch	D. Tested	Remarks
								Diameter (mm)	Height (mm)						
R71914		10.13-10.43	White CHALK	29	91.3	1.94	1.50	101.60	271.70	2.7	7.3	0.9		14/11/20	
R71914		13.15-13.44	White CHALK	28	91.4	1.97	1.55	101.60	273.30	2.7	17.7	2.18		14/11/20	
R71914		15.30-15.64	White CHALK	29	93.7	1.96	1.52	100.40	271.50	2.7	12.4	1.57		14/11/20	
R71914		19.67-20.02	White CHALK	27	91.0	1.99	1.57	100.50	271.30	2.7	11.3	1.42		14/11/20	
R71914		27.05-27.49	White CHALK	29	92.8	1.96	1.52	101.90	275.10	2.7	15.4	1.89		14/11/20	
R71914		10.43-10.74	White CHALK	27	92.4	2.00	1.58	101.60	273.80	2.7	7.5	0.925		18/11/20	Failed on weakness

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  C Clergeaud (Snr. Geologist) Date: 19/11/2020	Project Number: <b style="text-align: center;">GEO / 32128 Project Name: <b style="text-align: center;">A303 STONEHENGE JFR1451	 
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UNCONFINED COMPRESSIVE STRENGTH WITH YOUNG'S MODULUS AND POISSON'S RATIO

Borehole Ref.: R71914	Description: White CHALK
Sample Ref.: -	
Depth (m): 10.13-10.43	

Diameter	101.60 mm
Height	271.70 mm
Bulk Density	1.94 Mg/m ³
Dry Density	1.50 Mg/m ³
Water Content	29 %
Degree of Saturation: 91.3 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Diagonal shearing

Solid lines for material failures.
Dashed lines for apparent weakness failure.

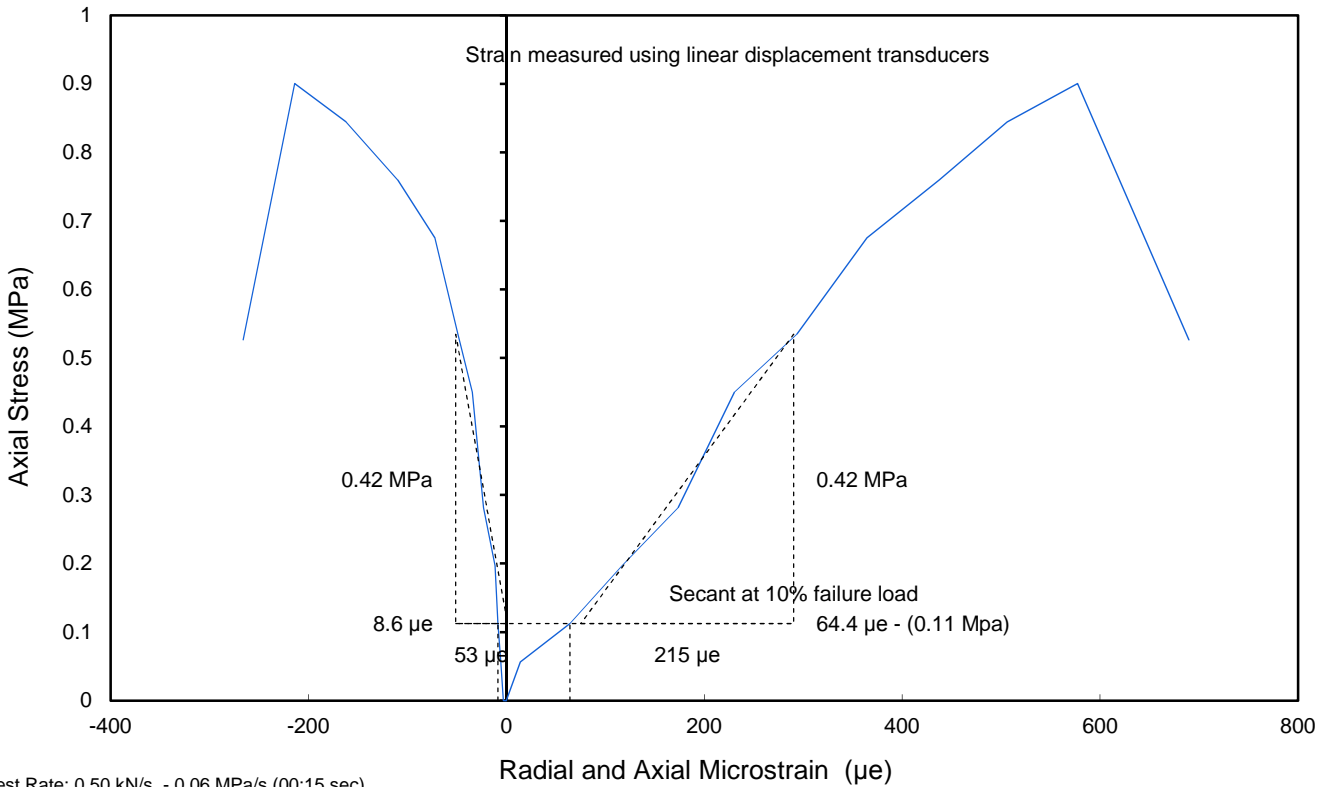
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 110°

Sample type: **C**

Date tested: 14/11/2020

Test results

Unconfined Compressive Strength	0.9 MPa
Young's Modulus (tangential at 50% failure load)	1.96 GPa
Poisson's Ratio (tangential at 50% failure load)	0.24
Young's Modulus (secant at 10% failure load)	1.75 GPa
Poisson's Ratio (secant at 10% failure load)	0.13



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 C Clergeaud (Snr. Geologist) Date: 17/11/2020	Project Number: GEO / 32128 Project Name: A303 STONEHENGE JFR1451	
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UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: R71914	Description: White CHALK
Sample Ref.: -	
Depth (m): 13.15-13.44	

Diameter	101.60 mm
Height	273.30 mm
Bulk Density	1.97 Mg/m ³
Dry Density	1.55 Mg/m ³
Water Content	28 %
Degree of Saturation: 91.4 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Diagonal shearing

Solid lines for material failures.
Dashed lines for apparent weakness failure.

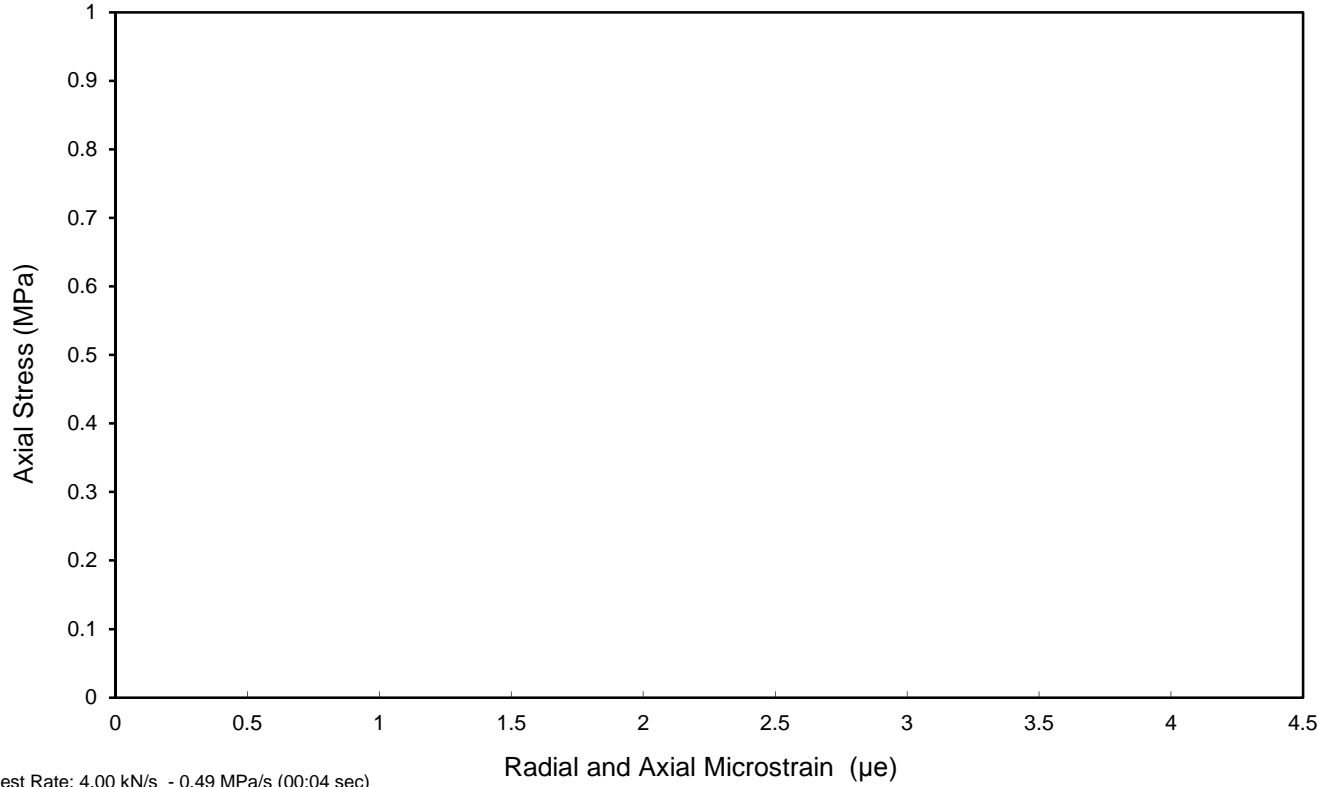
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 75°

Sample type **C**

Date tested: 14/11/2020

Test results

Unconfined Compressive Strength	2.18 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



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 C Clergeaud (Snr. Geologist) Date: 17/11/2020	Project Number: <p style="text-align: center;">GEO / 32128</p> Project Name: <p style="text-align: center;">A303 STONEHENGE JFR1451</p>	
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UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: R71914	Description: White CHALK
Sample Ref.: -	
Depth (m): 15.30-15.64	

Diameter	100.40 mm
Height	271.50 mm
Bulk Density	1.96 Mg/m ³
Dry Density	1.52 Mg/m ³
Water Content	29 %
Degree of Saturation: 93.7 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Diagonal shearing

Solid lines for material failures.
Dashed lines for apparent weakness failure.

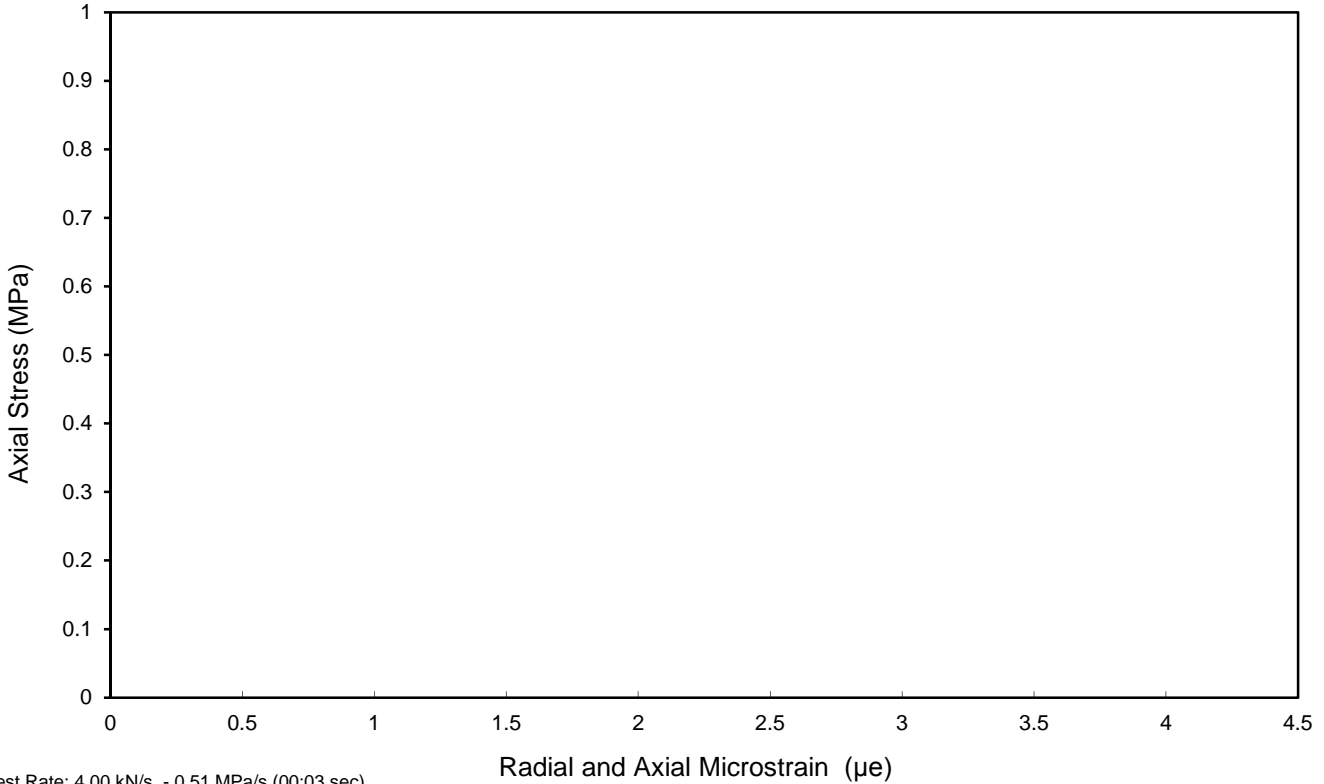
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 70°

Sample type **C**

Date tested: 14/11/2020

Test results

Unconfined Compressive Strength	1.57 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



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 C Clergeaud (Snr. Geologist) Date: 17/11/2020	Project Number: GEO / 32128 Project Name: A303 STONEHENGE JFR1451	
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UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: R71914	Description: White CHALK
Sample Ref.: -	
Depth (m): 19.67-20.02	

Diameter	100.50 mm
Height	271.30 mm
Bulk Density	1.99 Mg/m ³
Dry Density	1.57 Mg/m ³
Water Content	27 %
Degree of Saturation: 91.0 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Diagonal shearing

Solid lines for material failures.
Dashed lines for apparent weakness failure.

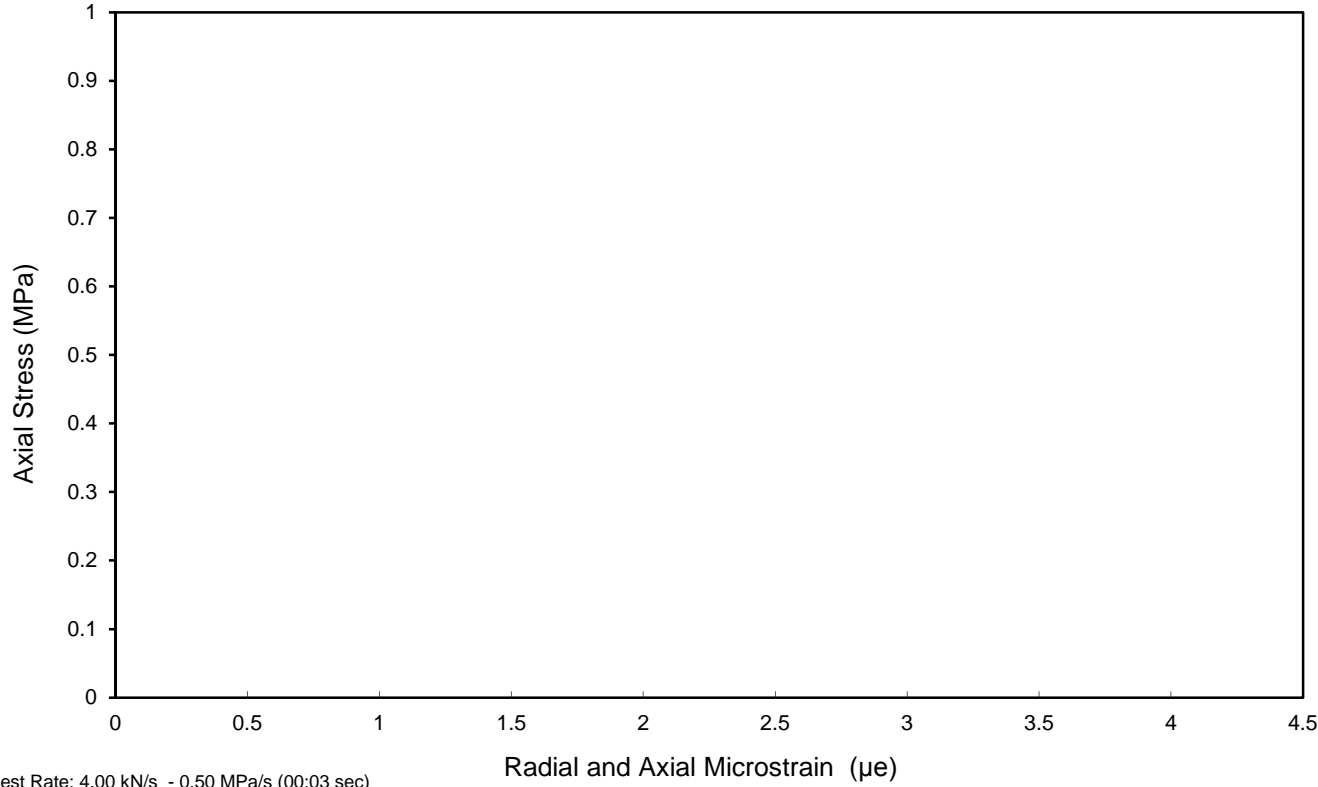
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 80°

Sample type: **C**

Date tested: 14/11/2020

Test results

Unconfined Compressive Strength	1.42 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



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 C Clergeaud (Snr. Geologist) Date: 17/11/2020	Project Number: GEO / 32128 Project Name: A303 STONEHENGE JFR1451	
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UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: R71914	Description: White CHALK
Sample Ref.: -	
Depth (m): 27.05-27.49	

Diameter	101.90 mm
Height	275.10 mm
Bulk Density	1.96 Mg/m ³
Dry Density	1.52 Mg/m ³
Water Content	29 %
Degree of Saturation: 92.8 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Diagonal shearing

Solid lines for material failures.
Dashed lines for apparent weakness failure.

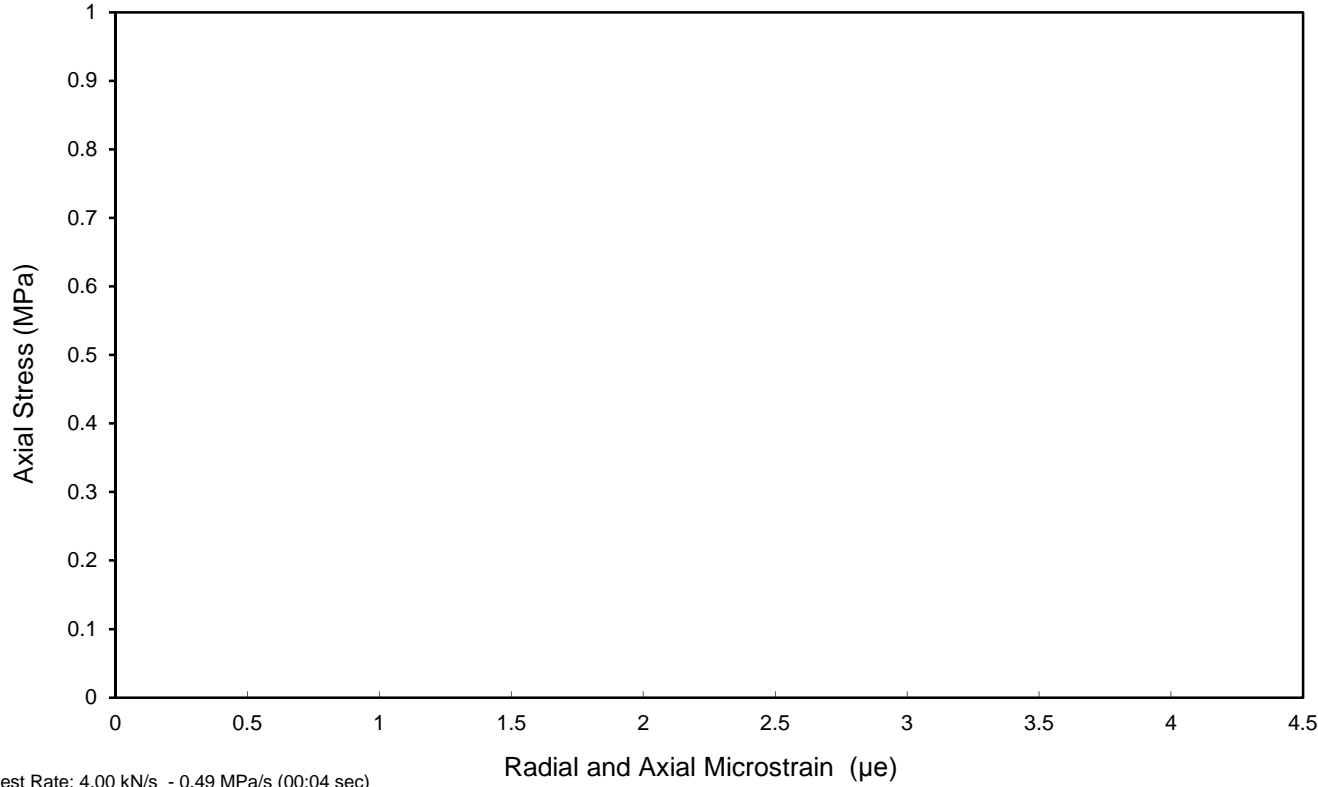
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 80°

Sample type **C**

Date tested: 14/11/2020

Test results

Unconfined Compressive Strength	1.89 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



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 C Clergeaud (Snr. Geologist) Date: 17/11/2020	Project Number: GEO / 32128 Project Name: A303 STONEHENGE JFR1451	
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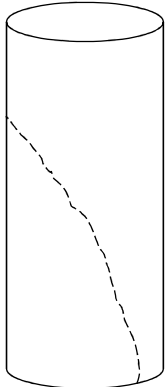
UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: R71914	Description: White CHALK
Sample Ref.: -	
Depth (m): 10.43-10.74	

Diameter	101.60 mm
Height	273.80 mm
Bulk Density	2.00 Mg/m ³
Dry Density	1.58 Mg/m ³
Water Content	27 %
Degree of Saturation: 92.4 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Along foliation



Solid lines for material failures.
Dashed lines for apparent weakness failure.

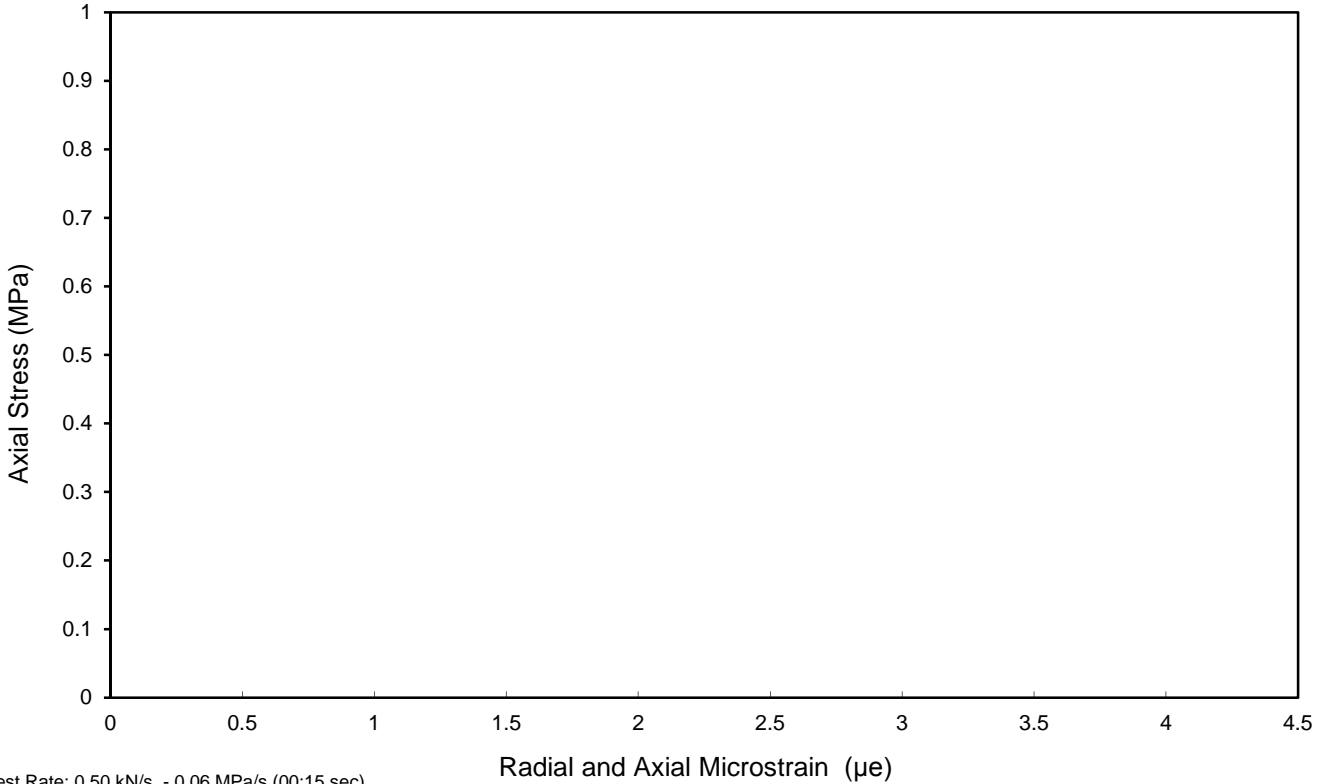
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: n/a

Sample type: **C**

Date tested: 18/11/2020

Test results




Unconfined Compressive Strength	0.925 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: 0.50 kN/s - 0.06 MPa/s (00:15 sec)


Remarks: Failed on weakness

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  C Clergeaud (Snr. Geologist) Date: 17/11/2020	Project Number: <p style="text-align: center;">GEO / 32128</p> Project Name: <p style="text-align: center;">A303 STONEHENGE JFR1451</p>	 
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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)							
Borehole Ref.	Sample Ref.	Depth (m)	Description	MC (%)	Degree of Saturation (%)	Bulk (Mg/m³)	Dry (Mg/m³)	Mean after prep.		H/D Ratio	Load at Failure (kN)	UCS (MPa) <small>3 sig. fig.</small>	Failure Sketch	D. Tested	Remarks
								Diameter (mm)	Height (mm)						
R70301		10.27-10.50	White CHALK	17	87.4	2.17	1.86	100.80	200.20	2.0	40.3	5.05		14/11/20	

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  C Clergeaud (Snr. Geologist) Date: 17/11/2020	Project Number: GEO / 32130 Project Name: A303 STONEHENGE JFR1451	 
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UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: R70301	Description: White CHALK
Sample Ref.: -	
Depth (m): 10.27-10.50	

Diameter	100.80 mm
Height	200.20 mm
Bulk Density	2.17 Mg/m ³
Dry Density	1.86 Mg/m ³
Water Content	17 %
Degree of Saturation: 87.4 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Diagonal shearing

Solid lines for material failures.
Dashed lines for apparent weakness failure.

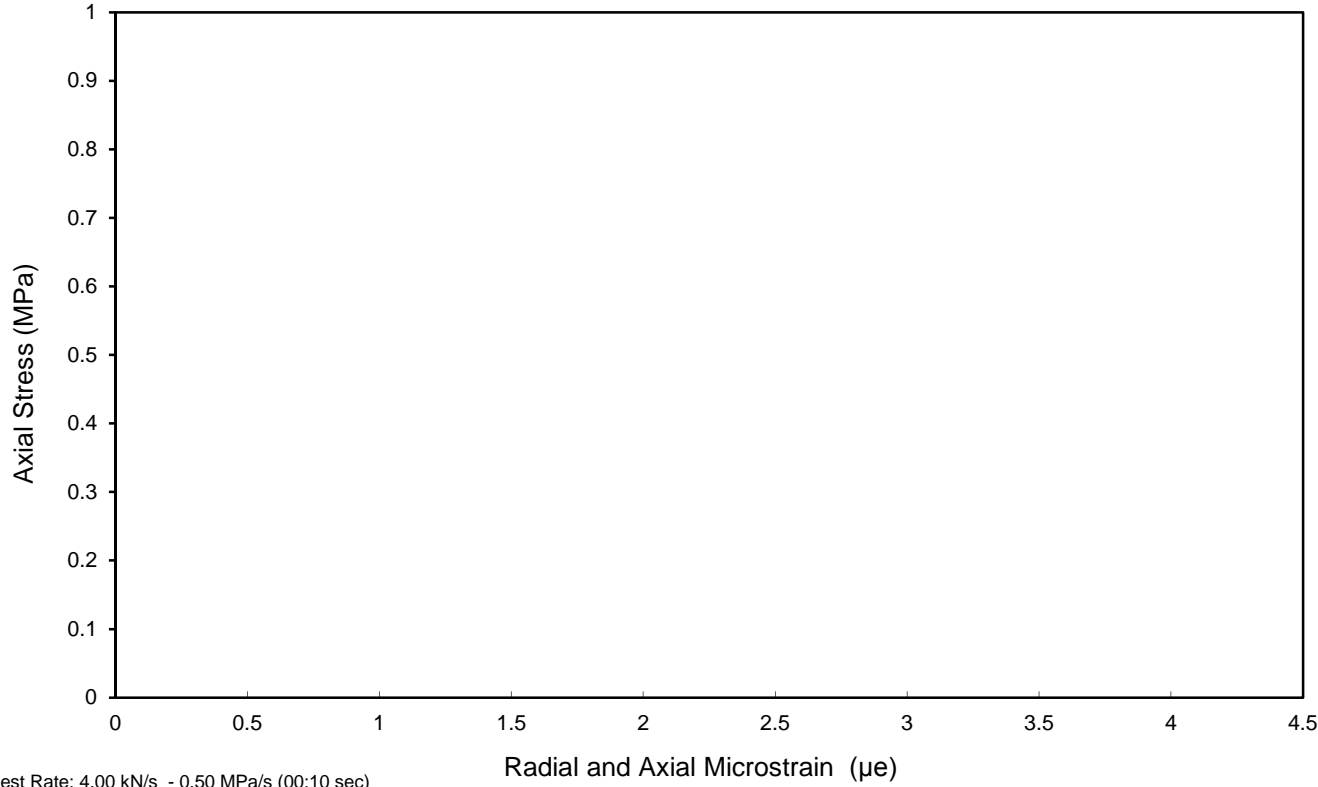
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 75°

Sample type **C**

Date tested: 14/11/2020

Test results








Unconfined Compressive Strength	5.05 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






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 C Clergeaud (Snr. Geologist) Date: 17/11/2020	Project Number: GEO / 32130 Project Name: A303 STONEHENGE JFR1451	
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UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Sample details				Density				Uniaxial Compression Test (LF0879C (1000kN) compression frame used)							
Borehole Ref.	Sample Ref.	Depth (m)	Description	MC (%)	Degree of Saturation (%)	Bulk (Mg/m³)	Dry (Mg/m³)	Mean after prep.		H/D Ratio	Load at Failure (kN)	UCS (MPa) <small>3 sig. fig.</small>	Failure Sketch	D. Tested	Remarks
								Diameter (mm)	Height (mm)						
R71912		21.16-21.65	White CHALK	25	88.5	1.98	1.58	102.20	275.40	2.7	23.1	2.82		14/11/20	
R71912		28.45-28.80	White CHALK	27	90.0	1.96	1.54	100.10	271.30	2.7	23.4	2.97		14/11/20	
R71912		31.00-31.25	White CHALK	28	88.3	1.94	1.52	100.60	236.70	2.4	10.5	1.32		14/11/20	
R71912		36.36-36.65	White CHALK	26	90.5	1.99	1.58	100.30	265.80	2.7	12.3	1.56		14/11/20	
R71912		42.58-42.90	White CHALK	26	88.5	1.97	1.56	101.20	262.40	2.6	8.3	1.03		14/11/20	
R71912		49.15-49.58	White CHALK	26	91.4	2.00	1.58	101.40	271.40	2.7	21.0	2.6		14/11/20	
R71912		25.74-26.07	White CHALK	28	93.5	1.98	1.54	100.50	273.80	2.7	17.4	2.19		18/11/20	

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  C Clergeaud (Snr. Geologist) Date: 19/11/2020	Project Number: <b style="text-align: center;">GEO / 32129 Project Name: <b style="text-align: center;">A303 STONEHENGE JFR1451	 
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UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: R71912	Description: White CHALK
Sample Ref.: -	
Depth (m): 21.16-21.65	

Diameter	102.20 mm
Height	275.40 mm
Bulk Density	1.98 Mg/m ³
Dry Density	1.58 Mg/m ³
Water Content	25 %
Degree of Saturation: 88.5 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Diagonal shearing

Solid lines for material failures.
Dashed lines for apparent weakness failure.

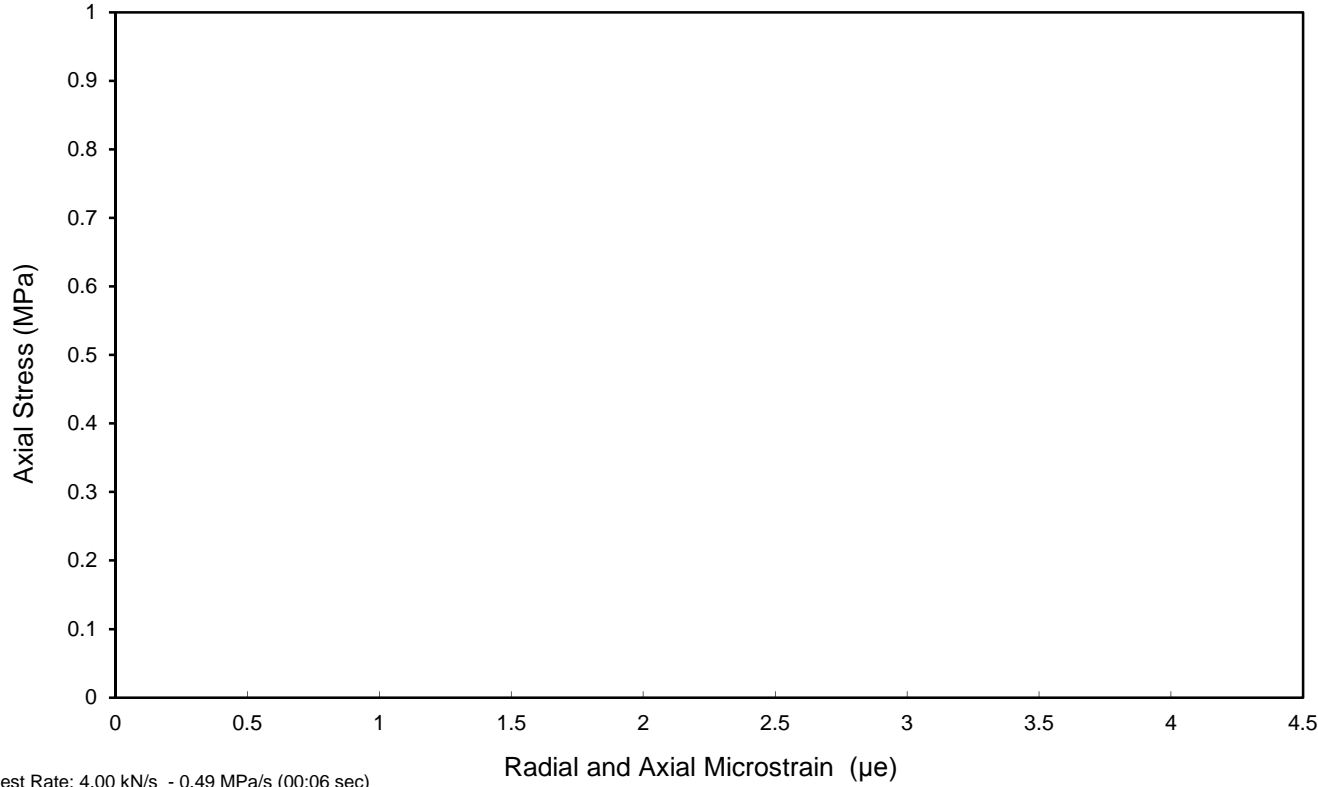
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 105°

Sample type **C**

Date tested: 14/11/2020

Test results

Unconfined Compressive Strength	2.82 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



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 C Clergeaud (Snr. Geologist) Date: 19/11/2020	Project Number: GEO / 32129 Project Name: A303 STONEHENGE JFR1451	
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UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: R71912	Description: White CHALK
Sample Ref.: -	
Depth (m): 28.45-28.80	

Diameter	100.10 mm
Height	271.30 mm
Bulk Density	1.96 Mg/m ³
Dry Density	1.54 Mg/m ³
Water Content	27 %
Degree of Saturation: 90.0 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Diagonal shearing

Solid lines for material failures.
Dashed lines for apparent weakness failure.

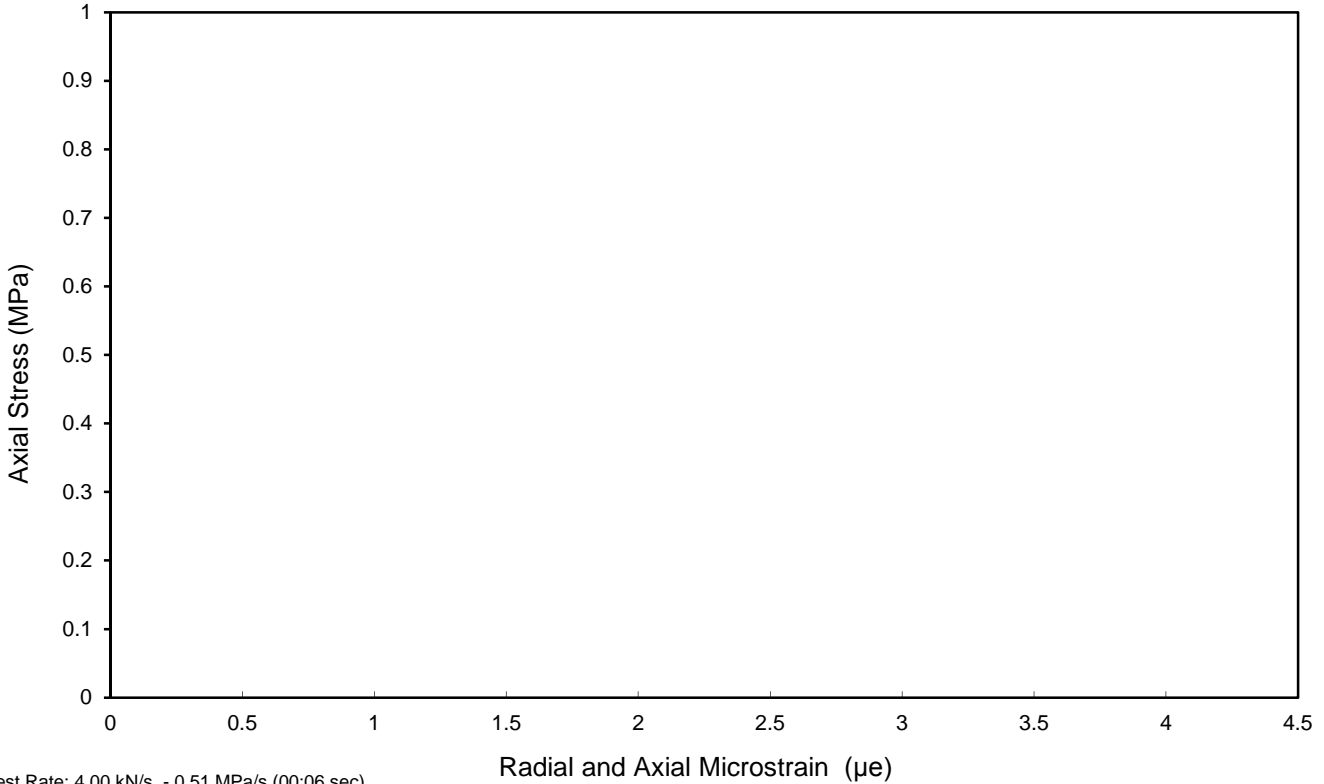
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 80°

Sample type **C**

Date tested: 14/11/2020

Test results

Unconfined Compressive Strength	2.97 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



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 C Clergeaud (Snr. Geologist) Date: 19/11/2020	Project Number: GEO / 32129 Project Name: A303 STONEHENGE JFR1451	
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UNCONFINED COMPRESSIVE STRENGTH WITH YOUNG'S MODULUS AND POISSON'S RATIO

Borehole Ref.:	R71912	Description: White CHALK
Sample Ref.:	-	
Depth (m):	31.00-31.25	

Diameter	100.60 mm
Height	236.70 mm
Bulk Density	1.94 Mg/m ³
Dry Density	1.52 Mg/m ³
Water Content	28 %
Degree of Saturation: 88.3 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Diagonal shearing

Solid lines for material failures.
Dashed lines for apparent weakness failure.

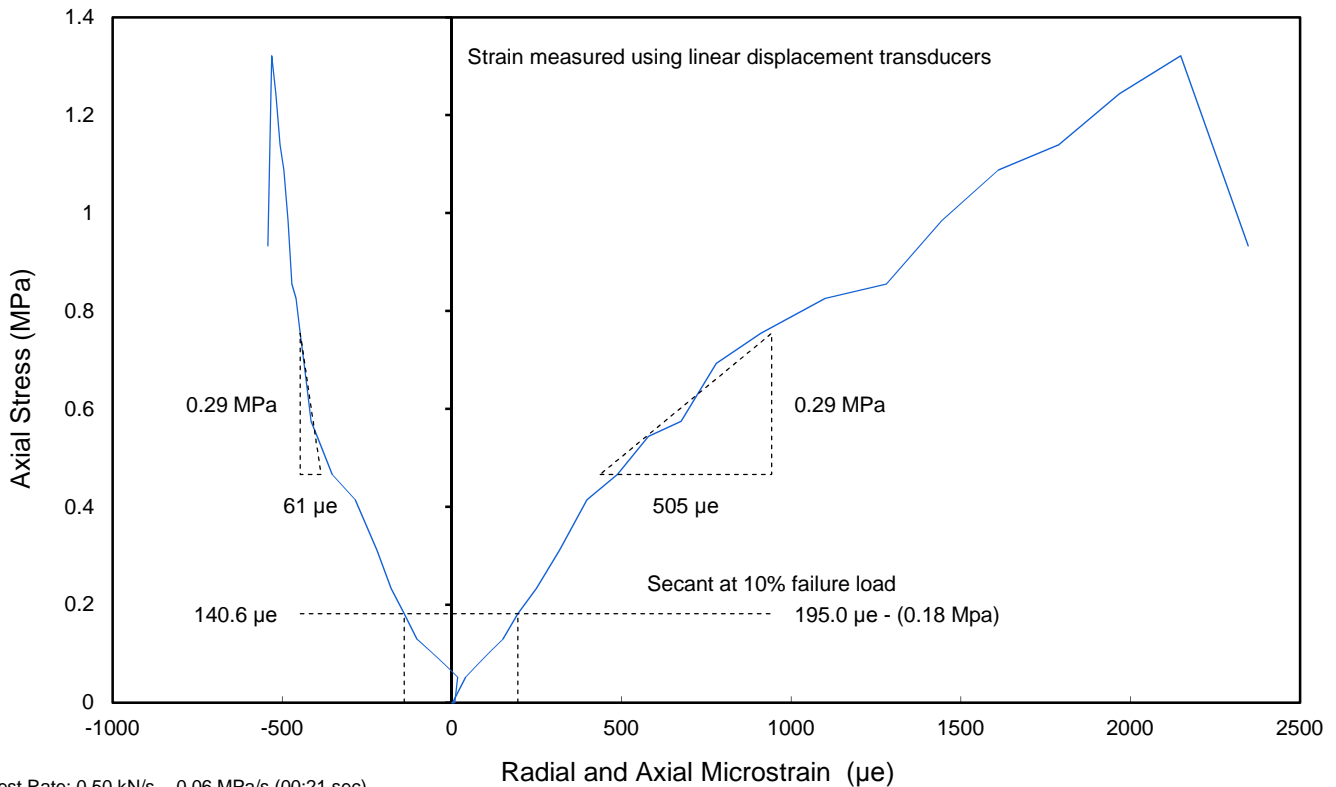
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 75°

Sample type: **C**

Date tested: 14/11/2020

Test results

Unconfined Compressive Strength	1.32 MPa
Young's Modulus (tangential at 47% failure load)	0.57 GPa
Poisson's Ratio (tangential at 47% failure load)	0.12
Young's Modulus (secant at 10% failure load)	0.93 GPa
Poisson's Ratio (secant at 10% failure load)	0.72



Test Rate: 0.50 kN/s - 0.06 MPa/s (00:21 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 C Clergeaud (Snr. Geologist) Date: 19/11/2020	Project Number: GEO / 32129 Project Name: A303 STONEHENGE JFR1451	
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UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: R71912	Description: White CHALK
Sample Ref.: -	
Depth (m): 36.36-36.65	

Diameter	100.30 mm
Height	265.80 mm
Bulk Density	1.99 Mg/m ³
Dry Density	1.58 Mg/m ³
Water Content	26 %
Degree of Saturation: 90.5 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Diagonal shearing

Solid lines for material failures.
Dashed lines for apparent weakness failure.

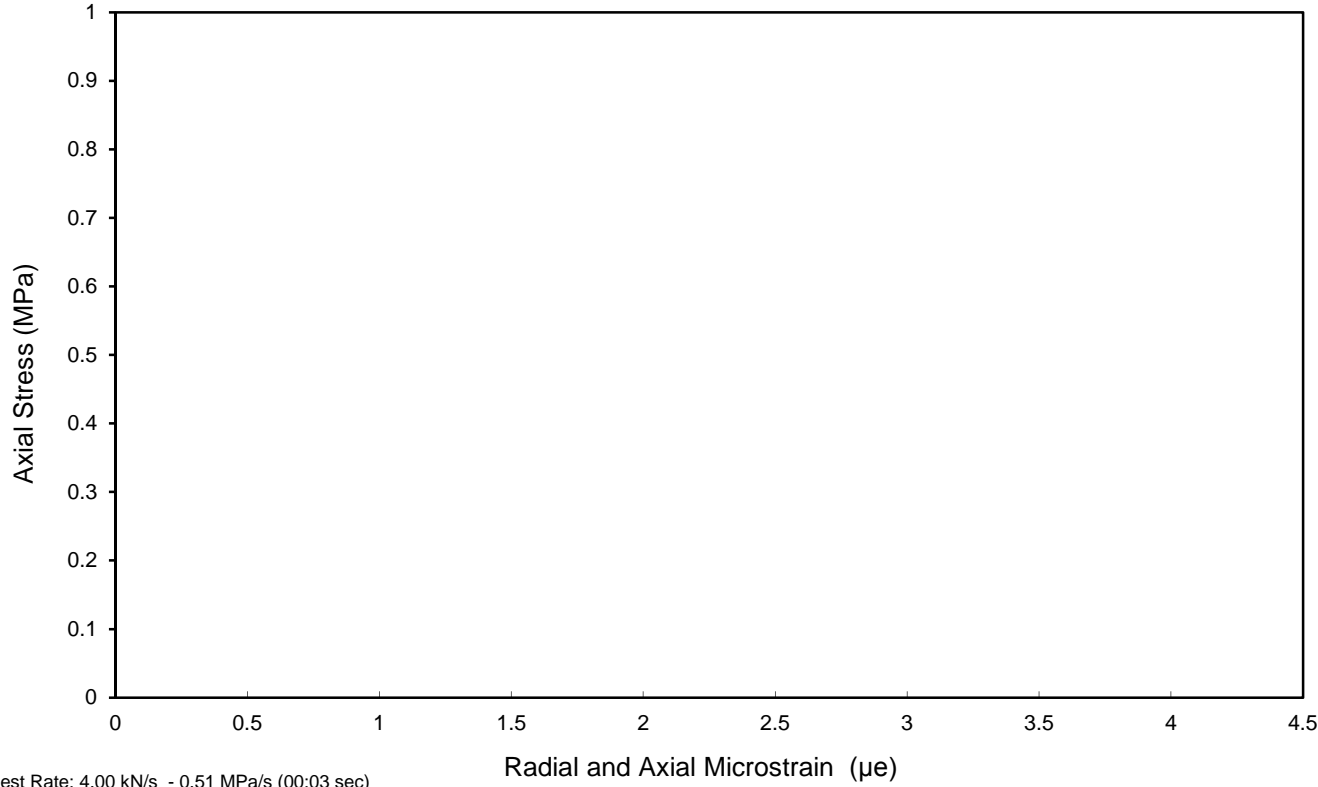
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 80°

Sample type: **C**

Date tested: 14/11/2020

Test results

Unconfined Compressive Strength	1.56 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



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 C Clergeaud (Snr. Geologist) Date: 19/11/2020	Project Number: GEO / 32129 Project Name: A303 STONEHENGE JFR1451	
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UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: R71912	Description: White CHALK
Sample Ref.: -	
Depth (m): 42.58-42.90	

Diameter	101.20 mm
Height	262.40 mm
Bulk Density	1.97 Mg/m ³
Dry Density	1.56 Mg/m ³
Water Content	26 %
Degree of Saturation: 88.5 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Diagonal shearing

Solid lines for material failures.
Dashed lines for apparent weakness failure.

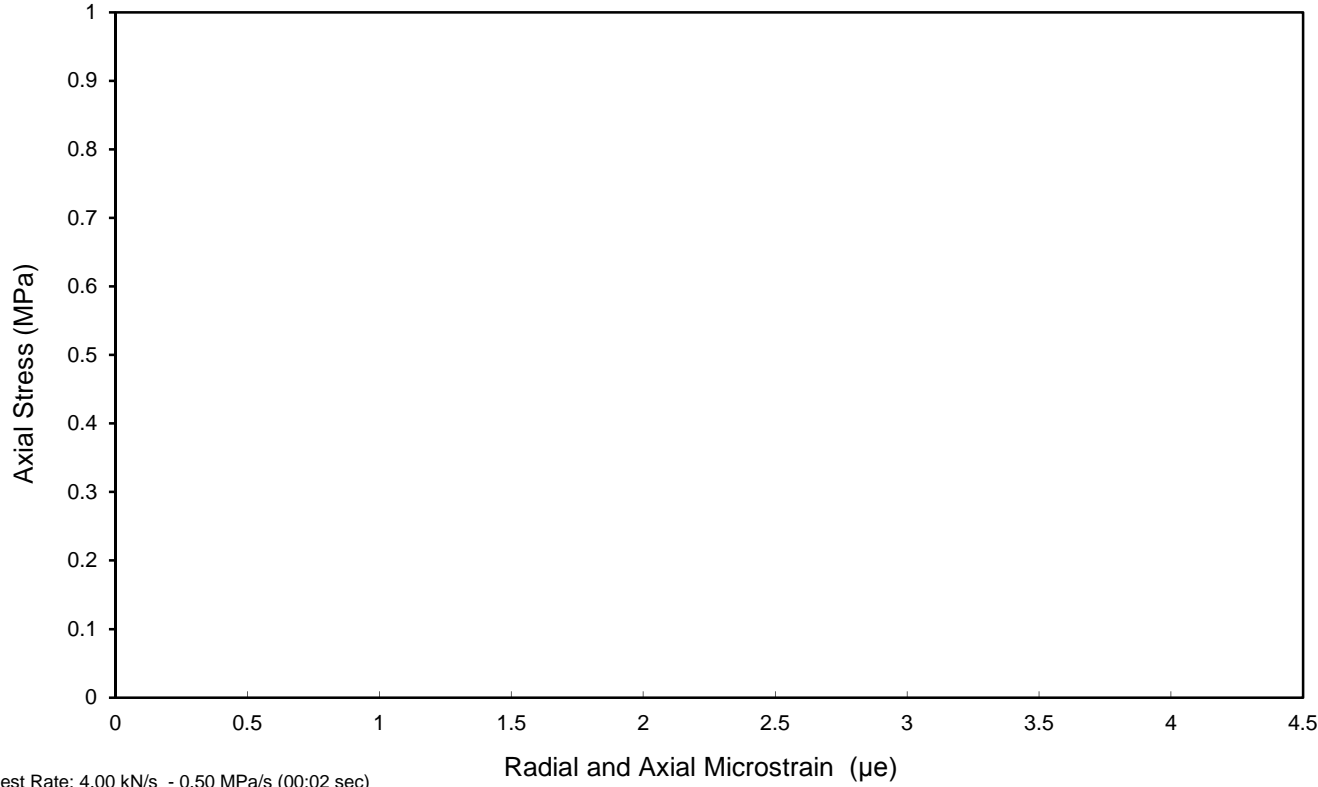
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 120°

Sample type: **C**




Date tested: 14/11/2020

Test results

Unconfined Compressive Strength	1.03 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



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  C Clergeaud (Snr. Geologist) Date: 19/11/2020	Project Number: GEO / 32129 Project Name: A303 STONEHENGE JFR1451	 
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UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: R71912	Description: White CHALK
Sample Ref.: -	
Depth (m): 49.15-49.58	

Diameter	101.40 mm
Height	271.40 mm
Bulk Density	2.00 Mg/m ³
Dry Density	1.58 Mg/m ³
Water Content	26 %
Degree of Saturation: 91.4 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Diagonal shearing

Solid lines for material failures.
Dashed lines for apparent weakness failure.

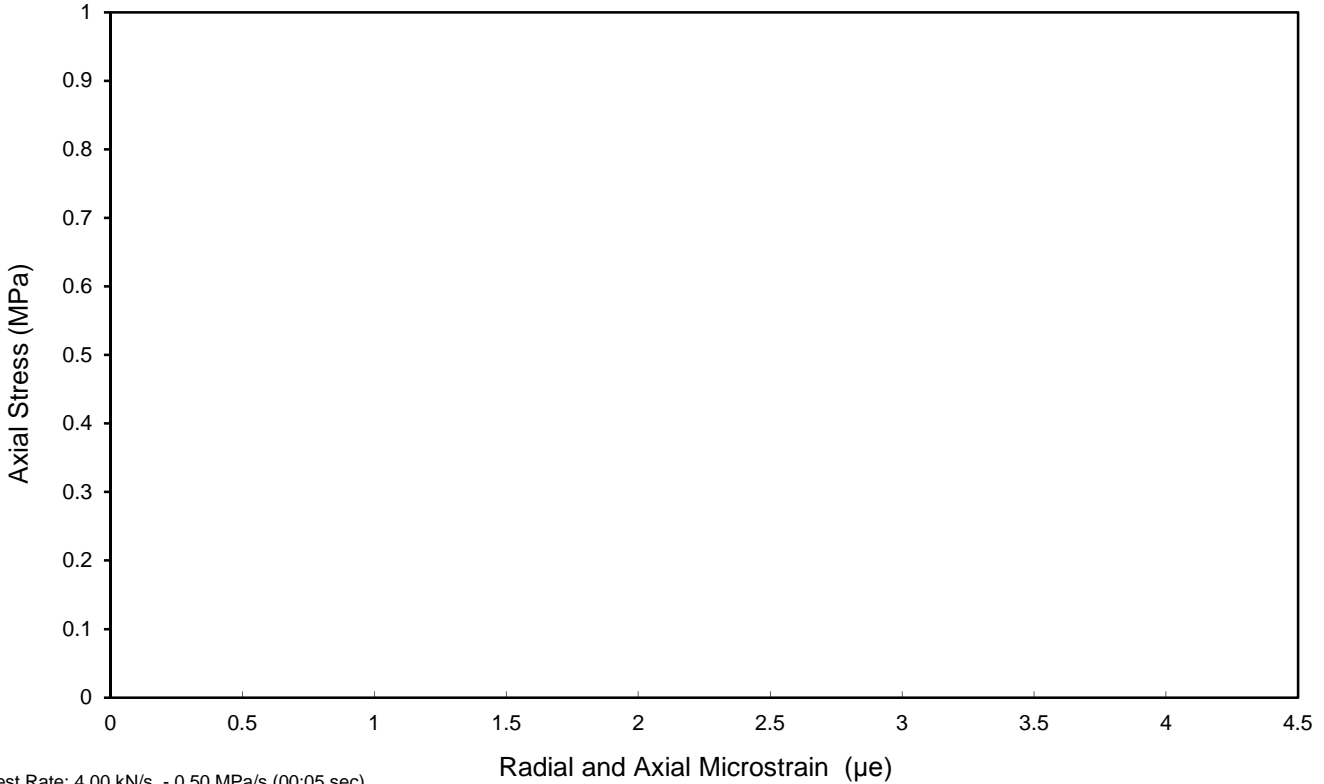
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 80°

Sample type **C**

Date tested: 14/11/2020

Test results

Unconfined Compressive Strength	2.6 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



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 C Clergeaud (Snr. Geologist) Date: 19/11/2020	Project Number: GEO / 32129 Project Name: A303 STONEHENGE JFR1451	
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UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: R71912	Description: White CHALK
Sample Ref.: -	
Depth (m): 25.74-26.07	

Diameter	100.50 mm
Height	273.80 mm
Bulk Density	1.98 Mg/m ³
Dry Density	1.54 Mg/m ³
Water Content	28 %
Degree of Saturation: 93.5 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Diagonal shearing

Solid lines for material failures.
Dashed lines for apparent weakness failure.

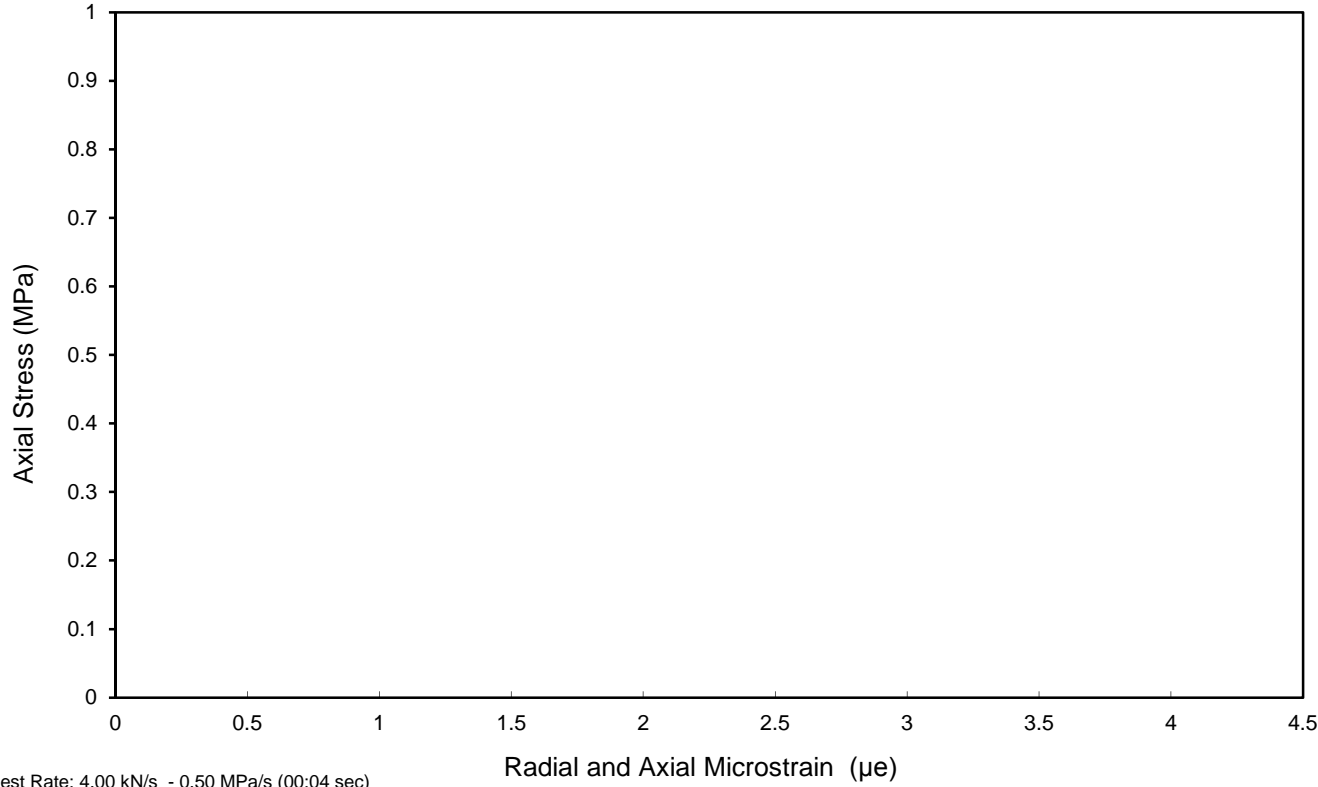
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 75°

Sample type **C**

Date tested: 18/11/2020

Test results









Unconfined Compressive Strength	2.19 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






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 C Clergeaud (Snr. Geologist) Date: 19/11/2020	Project Number: GEO / 32129 Project Name: A303 STONEHENGE JFR1451	
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UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Sample details				Density				Uniaxial Compression Test (LF0879C (1000kN) compression frame used)							
Borehole Ref.	Sample Ref.	Depth (m)	Description	MC (%)	Degree of Saturation (%)	Bulk (Mg/m ³)	Dry (Mg/m ³)	Mean after prep.		H/D Ratio	Load at Failure (kN)	UCS (MPa) <small>3 sig. fig.</small>	Failure Sketch	D. Tested	Remarks
								Diameter (mm)	Height (mm)						
R72001		7.25-7.70	White CHALK	29	91.7	1.95	1.51	101.40	252.50	2.5	12.2	1.51		19/10/20	
R72001		17.80-18.05	White CHALK	26	87.0	1.95	1.54	101.50	220.70	2.2	18.6	2.3		12/11/20	
R72001		18.64-18.90	White CHALK	26	86.4	1.95	1.54	100.60	237.20	2.4	12.5	1.57		19/10/20	
R72001		25.30-25.64	White CHALK	28	88.8	1.95	1.53	101.30	263.60	2.6	22.3	2.77		19/10/20	
R72001		26.66-27.15	White CHALK	26	90.4	1.99	1.57	100.60	260.80	2.6	22.1	2.78		19/10/20	
R72001		31.10-31.39	White CHALK	27	91.1	1.98	1.56	101.60	268.60	2.6	25.1	3.1		19/10/20	
R72001		38.17-38.42	White CHALK	24	91.9	2.04	1.64	101.60	232.60	2.3	30.5	3.76		19/10/20	
R72001		40.08-40.60	White CHALK	26	88.2	1.97	1.56	101.40	232.30	2.3	25.4	3.15		19/10/20	

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  C Clergeaud (Snr. Geologist) Date: 17/11/2020	Project Number: <b style="text-align: center;">GEO / 31879 Project Name: <b style="text-align: center;">A303 STONEHENGE JFR1451	 
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UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

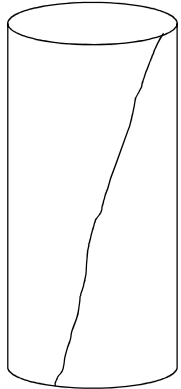
Borehole Ref.: R72001	Description: White CHALK
Sample Ref.: -	
Depth (m): 7.25-7.70	

Diameter	101.40 mm
Height	252.50 mm
Bulk Density	1.95 Mg/m ³
Dry Density	1.51 Mg/m ³
Water Content	29 %
Degree of Saturation: 91.7 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch

Mode of failure: Diagonal shearing



Solid lines for material failures.
Dashed lines for apparent weakness failure.

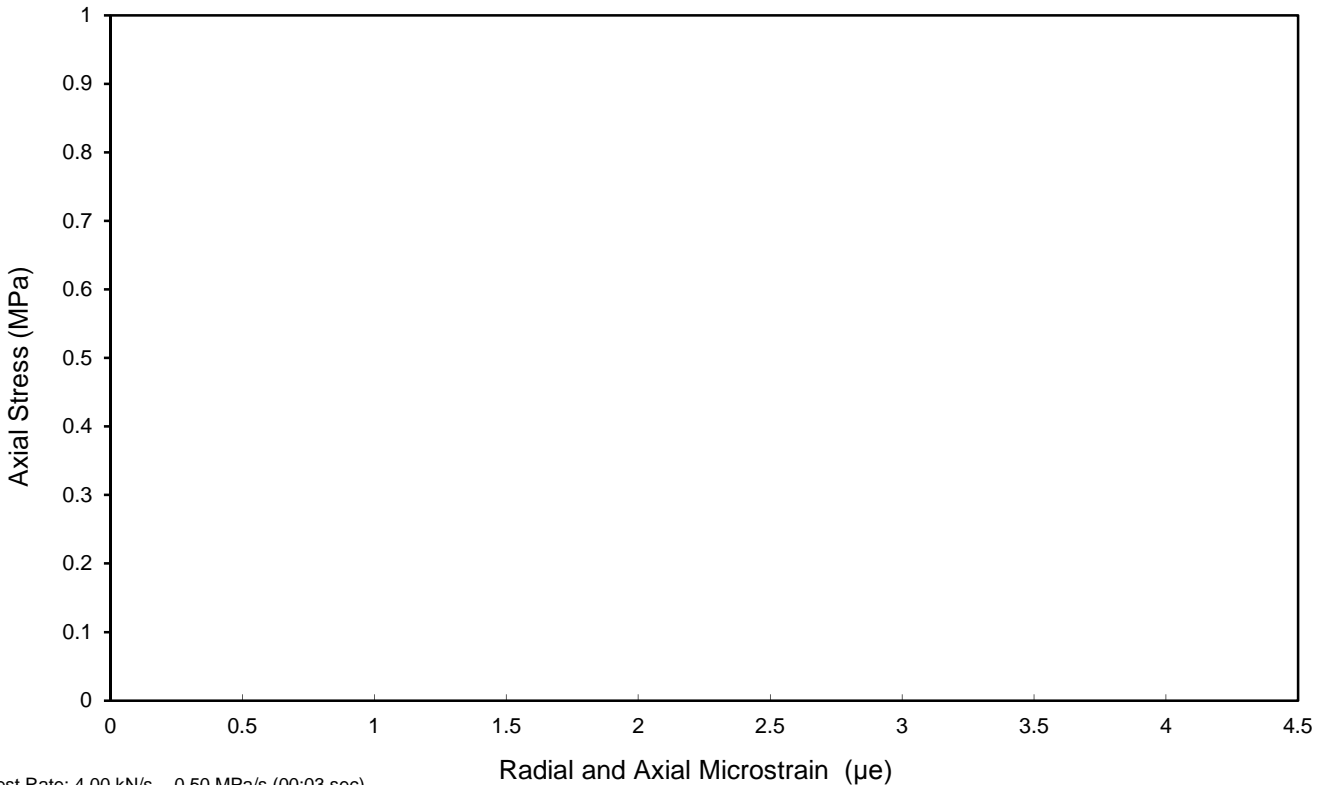
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 110°

Sample type	C
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Date tested: 19/10/2020




Test results

Unconfined Compressive Strength	1.51 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 (00:03 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  C Clergeaud (Snr. Geologist) Date: 20/10/2020	Project Number: GEO / 31879 Project Name: A303 STONEHENGE JFR1451	 
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UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: R72001	Description: White CHALK
Sample Ref.: -	
Depth (m): 17.80-18.05	

Diameter	101.50 mm
Height	220.70 mm
Bulk Density	1.95 Mg/m ³
Dry Density	1.54 Mg/m ³
Water Content	26 %
Degree of Saturation: 87.0 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Diagonal shearing

Solid lines for material failures.
Dashed lines for apparent weakness failure.

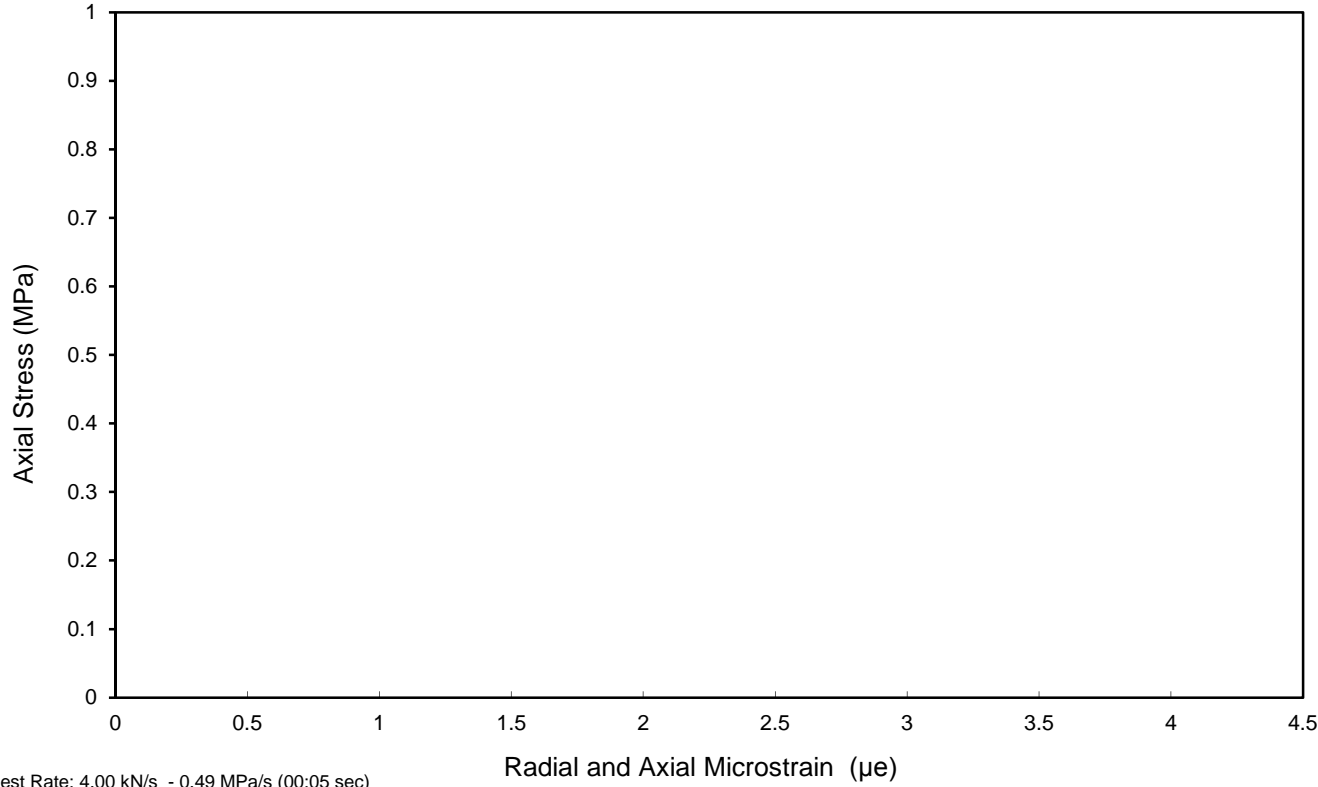
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 110°

Sample type: **C**

Date tested: 12/11/2020

Test results

Unconfined Compressive Strength	2.3 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



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 C Clergeaud (Snr. Geologist) Date: 20/10/2020	Project Number: <p style="text-align: center;">GEO / 31879</p> Project Name: <p style="text-align: center;">A303 STONEHENGE JFR1451</p>	
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UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: R72001	Description: White CHALK
Sample Ref.: -	
Depth (m): 18.64-18.90	

Diameter	100.60 mm
Height	237.20 mm
Bulk Density	1.95 Mg/m ³
Dry Density	1.54 Mg/m ³
Water Content	26 %
Degree of Saturation: 86.4 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Diagonal shearing

Solid lines for material failures.
Dashed lines for apparent weakness failure.

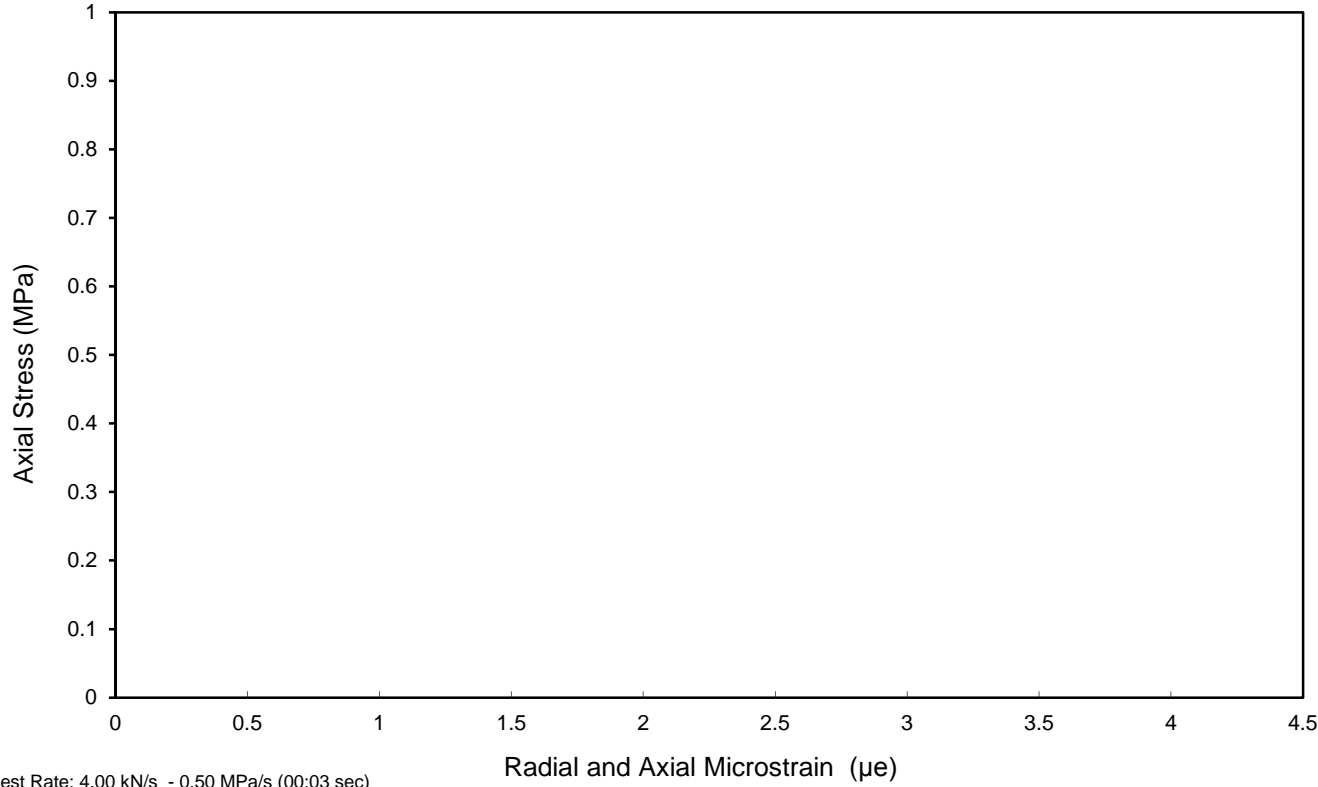
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 65°

Sample type: **C**

Date tested: 19/10/2020

Test results

Unconfined Compressive Strength	1.57 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



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 C Clergeaud (Snr. Geologist) Date: 20/10/2020	Project Number: <p style="text-align: center;">GEO / 31879</p> Project Name: <p style="text-align: center;">A303 STONEHENGE JFR1451</p>	
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UNCONFINED COMPRESSIVE STRENGTH WITH YOUNG'S MODULUS AND POISSON'S RATIO

Borehole Ref.: R72001	Description: White CHALK
Sample Ref.: -	
Depth (m): 25.30-25.64	

Diameter	101.30 mm
Height	263.60 mm
Bulk Density	1.95 Mg/m ³
Dry Density	1.53 Mg/m ³
Water Content	28 %
Degree of Saturation: 88.8 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Diagonal shearing

Solid lines for material failures.
Dashed lines for apparent weakness failure.

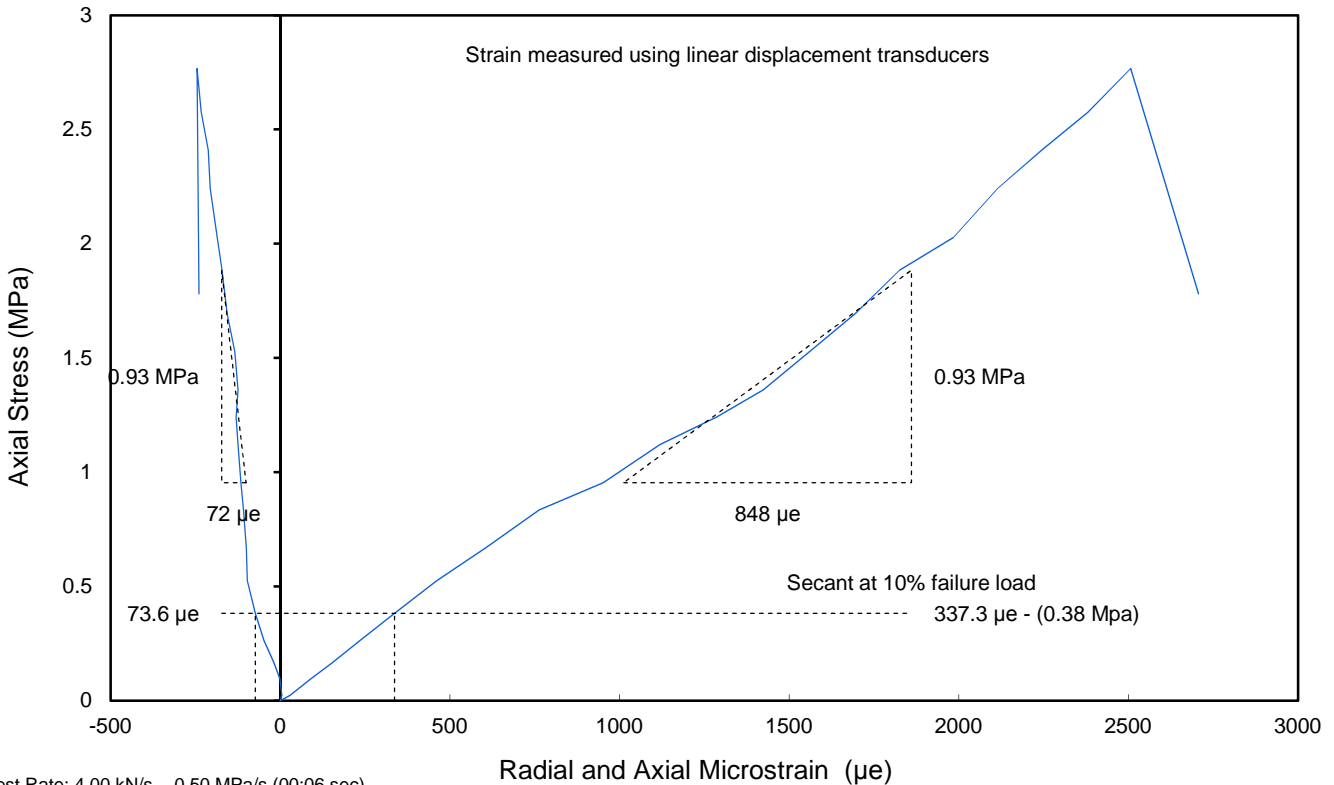
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 65°

Sample type **C**

Date tested: 19/10/2020

Test results

Unconfined Compressive Strength	2.77 MPa
Young's Modulus (tangential at 50% failure load)	1.1 GPa
Poisson's Ratio (tangential at 50% failure load)	0.08
Young's Modulus (secant at 10% failure load)	1.13 GPa
Poisson's Ratio (secant at 10% failure load)	0.22



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 C Clergeaud (Snr. Geologist) Date: 20/10/2020	Project Number: GEO / 31879 Project Name: A303 STONEHENGE JFR1451	
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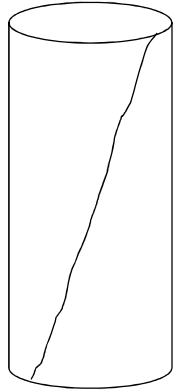
UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: R72001	Description: White CHALK
Sample Ref.: -	
Depth (m): 26.66-27.15	

Diameter	100.60 mm
Height	260.80 mm
Bulk Density	1.99 Mg/m ³
Dry Density	1.57 Mg/m ³
Water Content	26 %
Degree of Saturation: 90.4 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Diagonal shearing



Solid lines for material failures.
Dashed lines for apparent weakness failure.

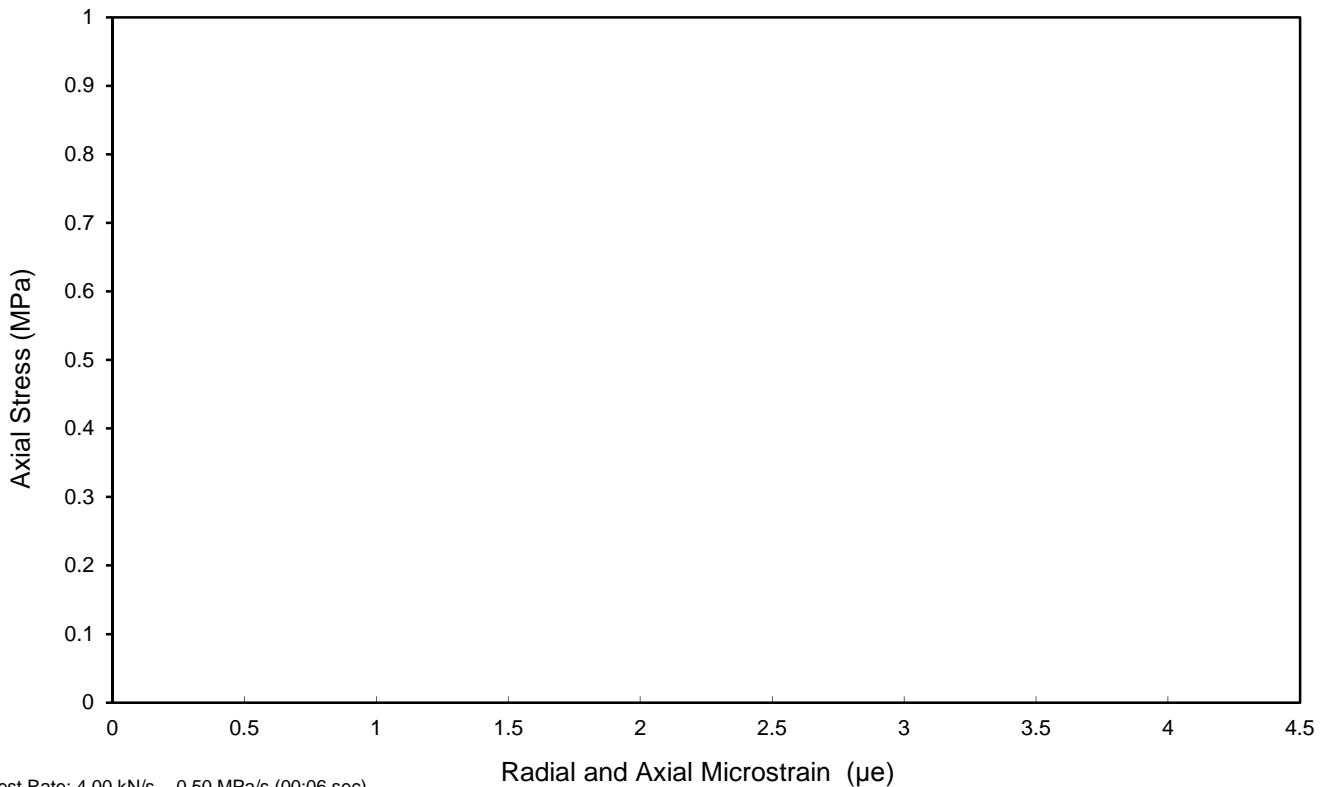
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 115°

Sample type **C**

Date tested: 19/10/2020




Test results

Unconfined Compressive Strength	2.78 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 (00:06 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  C Clergeaud (Snr. Geologist) Date: 20/10/2020	Project Number: <p style="text-align: center;">GEO / 31879</p> Project Name: <p style="text-align: center;">A303 STONEHENGE JFR1451</p>	 
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UNCONFINED COMPRESSIVE STRENGTH WITH YOUNG'S MODULUS AND POISSON'S RATIO

Borehole Ref.: R72001	Description: White CHALK
Sample Ref.: -	
Depth (m): 31.10-31.39	

Diameter	101.60 mm
Height	268.60 mm
Bulk Density	1.98 Mg/m ³
Dry Density	1.56 Mg/m ³
Water Content	27 %
Degree of Saturation: 91.1 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Diagonal shearing

Solid lines for material failures.
Dashed lines for apparent weakness failure.

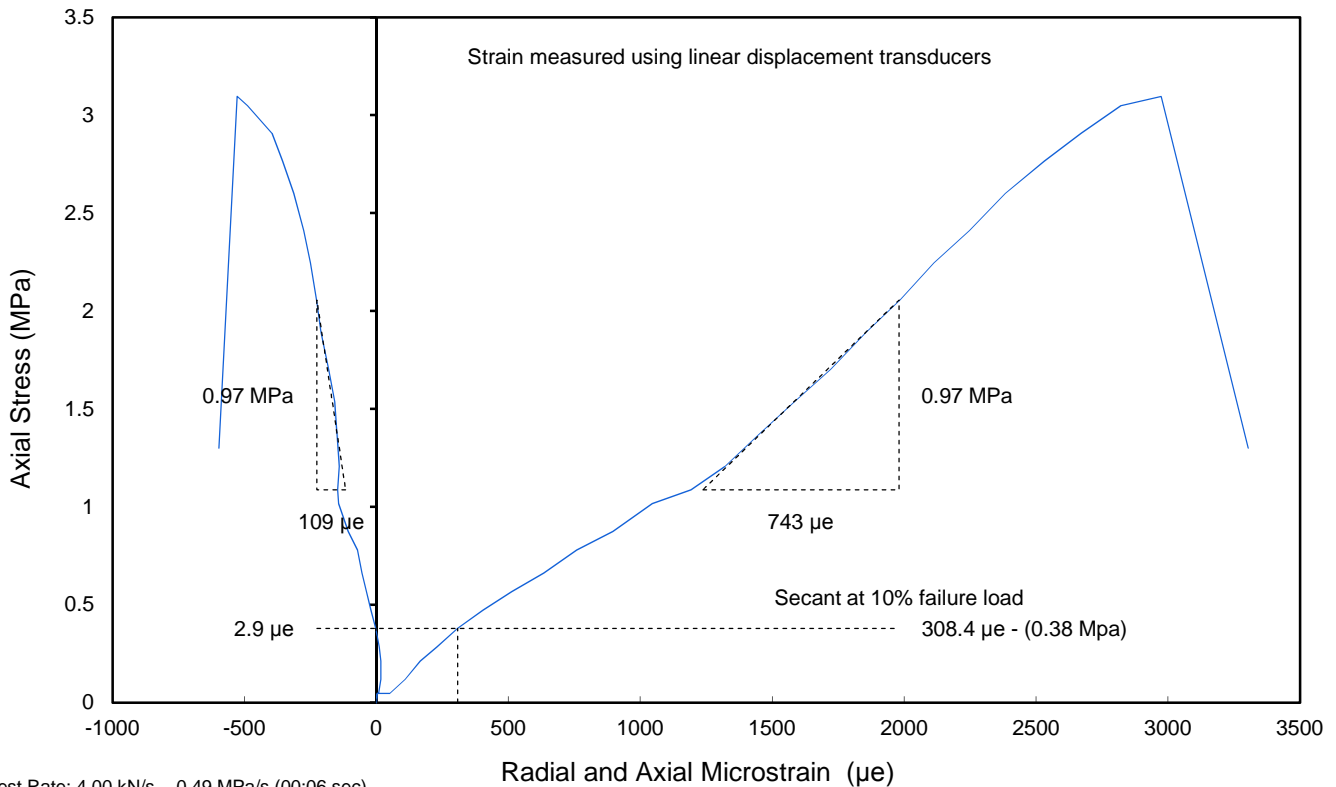
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 100°

Sample type **C**

Date tested: 19/10/2020

Test results

Unconfined Compressive Strength	3.1 MPa
Young's Modulus (tangential at 50% failure load)	1.3 GPa
Poisson's Ratio (tangential at 50% failure load)	0.15
Young's Modulus (secant at 10% failure load)	1.23 GPa
Poisson's Ratio (secant at 10% failure load)	0.01



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 C Clergeaud (Snr. Geologist) Date: 20/10/2020	Project Number: GEO / 31879	
	Project Name: A303 STONEHENGE JFR1451	

UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: R72001	Description: White CHALK
Sample Ref.: -	
Depth (m): 38.17-38.42	

Diameter	101.60 mm
Height	232.60 mm
Bulk Density	2.04 Mg/m ³
Dry Density	1.64 Mg/m ³
Water Content	24 %
Degree of Saturation: 91.9 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Diagonal shearing

Solid lines for material failures.
Dashed lines for apparent weakness failure.

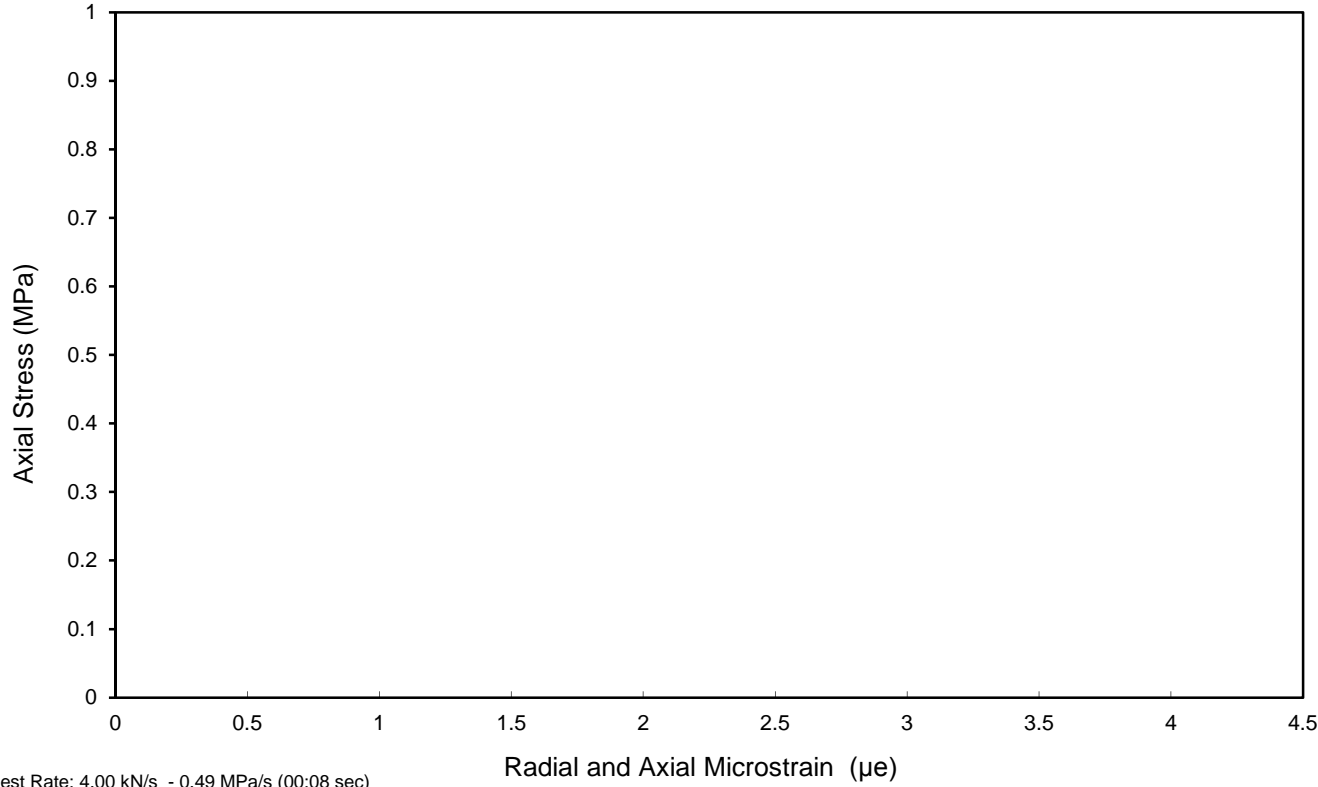
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 115°

Sample type: **C**

Date tested: 19/10/2020

Test results

Unconfined Compressive Strength	3.76 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



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 C Clergeaud (Snr. Geologist) Date: 20/10/2020	Project Number: <p style="text-align: center;">GEO / 31879</p> Project Name: <p style="text-align: center;">A303 STONEHENGE JFR1451</p>	
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UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: R72001	Description: White CHALK
Sample Ref.: -	
Depth (m): 40.08-40.60	

Diameter	101.40 mm
Height	232.30 mm
Bulk Density	1.97 Mg/m ³
Dry Density	1.56 Mg/m ³
Water Content	26 %
Degree of Saturation: 88.2 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Diagonal shearing

Solid lines for material failures.
Dashed lines for apparent weakness failure.

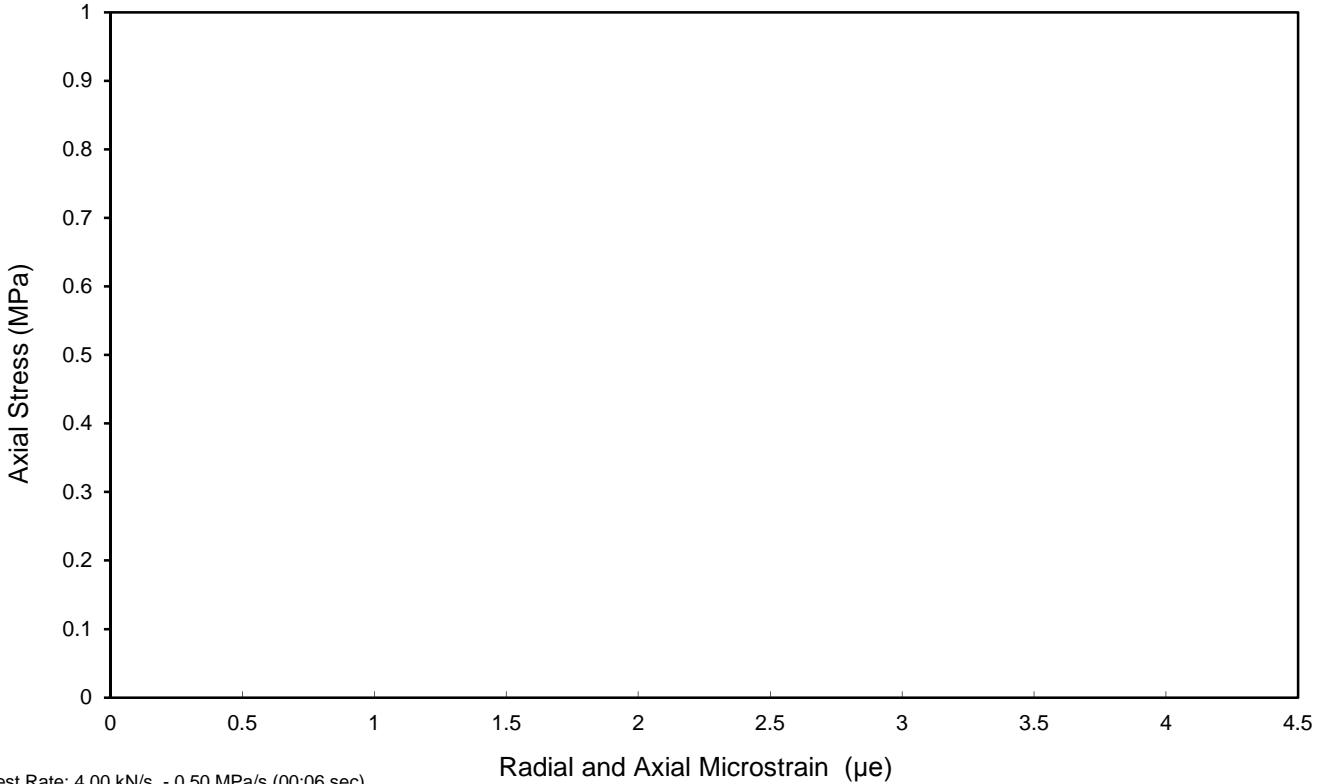
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 115°

Sample type: **C**

Date tested: 19/10/2020

Test results

Unconfined Compressive Strength	3.15 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




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 C Clergeaud (Snr. Geologist) Date: 20/10/2020	Project Number: <p style="text-align: center;">GEO / 31879</p> Project Name: <p style="text-align: center;">A303 STONEHENGE JFR1451</p>	
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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)							
Borehole Ref.	Sample Ref.	Depth (m)	Description	MC (%)	Degree of Saturation (%)	Bulk (Mg/m ³)	Dry (Mg/m ³)	Mean after prep.		H/D Ratio	Load at Failure (kN)	UCS (MPa) <small>3 sig. fig.</small>	Failure Sketch	D. Tested	Remarks
								Diameter (mm)	Height (mm)						
R72101		10.30-10.60	White CHALK	29	89.8	1.93	1.49	98.60	197.90	2.0	5.8	0.76		12/11/20	

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

 C Clergeaud (Snr. Geologist)
 Date: 17/11/2020

Project Number:
GEO / 31881

Project Name:
**A303 STONEHENGE
 JFR1451**



UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: R72101	Description: White CHALK
Sample Ref.: -	
Depth (m): 10.30-10.60	

Diameter	98.60 mm
Height	197.90 mm
Bulk Density	1.93 Mg/m ³
Dry Density	1.49 Mg/m ³
Water Content	29 %
Degree of Saturation: 89.8 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Axial splitting

Solid lines for material failures.
Dashed lines for apparent weakness failure.

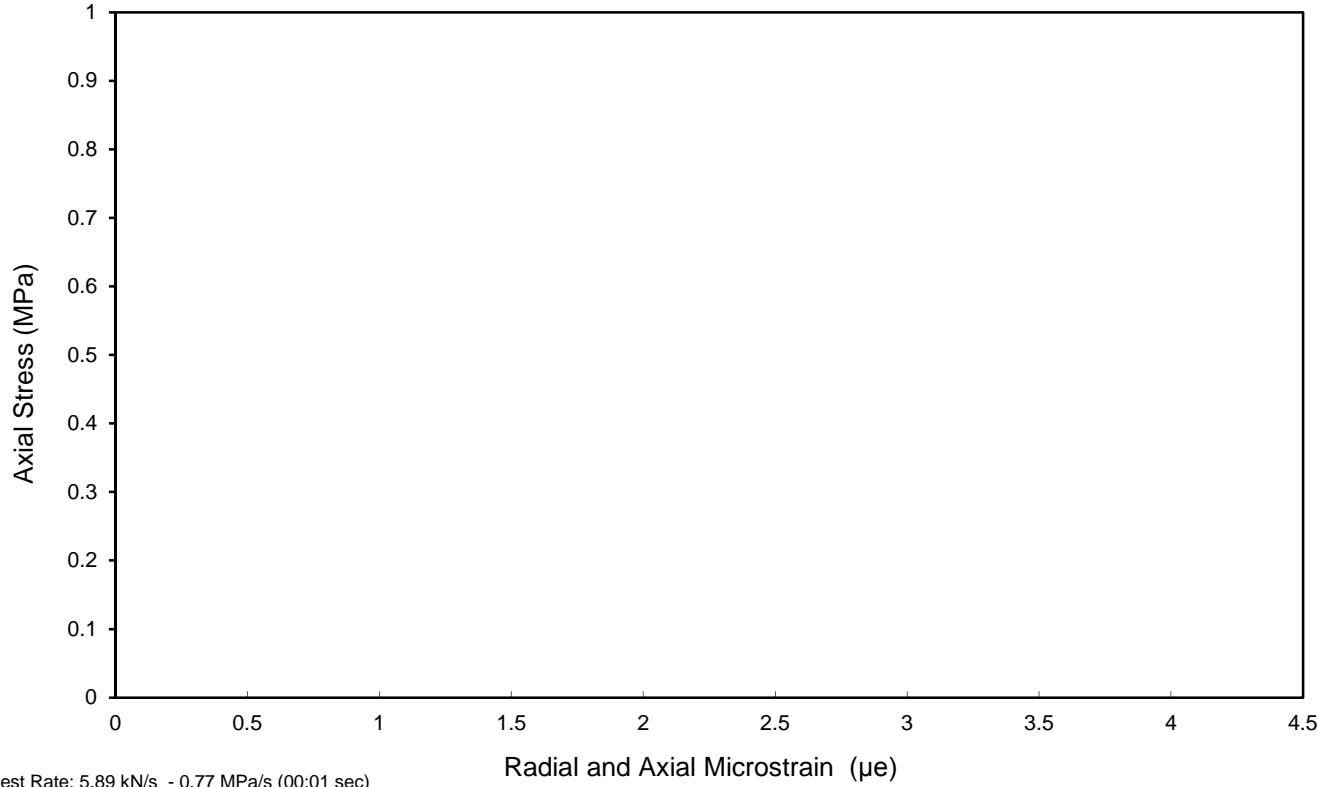
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 85°

Sample type: **C**

Date tested: 12/11/2020

Test results










Unconfined Compressive Strength	0.76 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






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 C Clergeaud (Snr. Geologist) Date: 17/11/2020	Project Number: <p style="text-align: center;">GEO / 31881</p> Project Name: <p style="text-align: center;">A303 STONEHENGE JFR1451</p>	
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UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Sample details				Density				Uniaxial Compression Test (LF0879C (1000kN) compression frame used)							
Borehole Ref.	Sample Ref.	Depth (m)	Description	MC (%)	Degree of Saturation (%)	Bulk (Mg/m³)	Dry (Mg/m³)	Mean after prep.		H/D Ratio	Load at Failure (kN)	UCS (MPa) <small>3 sig. fig.</small>	Failure Sketch	D. Tested	Remarks
								Diameter (mm)	Height (mm)						
R71908	8	28.36-28.80	White CHALK	29	93.1	1.97	1.53	100.10	272.20	2.7	14.8	1.88		21/09/20	
R71908	10	31.75-32.00	White CHALK	27	93.6	2.01	1.58	100.00	255.20	2.6	25.7	3.27		21/09/20	
R71908	12	34.73-35.03	White CHALK	23	89.8	2.05	1.67	100.80	247.60	2.5	20.2	2.53		21/09/20	
R71908	17	44.00-44.30	White CHALK	25	97.1	2.08	1.67	100.20	255.10	2.5	35.8	4.54		21/09/20	
R71908	20	48.65-49.00	White CHALK	28	95.5	2.02	1.58	100.10	271.60	2.7	20.6	2.62		21/09/20	
R71908	22	50.65-50.95	White CHALK	25	90.5	2.01	1.61	100.00	268.10	2.7	29.8	3.79		21/09/20	
R71908	15	55.31-55.58	White CHALK	24	88.0	2.01	1.62	100.10	203.10	2.0	23.9	3.04		21/09/20	
R71908	26	56.96-57.35	White CHALK	22	90.7	2.08	1.71	100.20	271.10	2.7	31.2	3.96		21/09/20	
R71908	28	60.23-60.58	White CHALK	24	94.2	2.07	1.67	98.70	199.80	2.0	26.8	3.5		21/09/20	

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  C Clergeaud (Snr. Geologist) Date: 24/09/2020	Project Number: Project Name:	GEO / 31728 A303 STONEHENGE JFR1451	 
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UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: R71908	Description: White CHALK
Sample Ref.: 8	
Depth (m): 28.36-28.80	

Diameter	100.10 mm
Height	272.20 mm
Bulk Density	1.97 Mg/m ³
Dry Density	1.53 Mg/m ³
Water Content	29 %
Degree of Saturation: 93.1 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Diagonal shearing

Solid lines for material failures.
Dashed lines for apparent weakness failure.

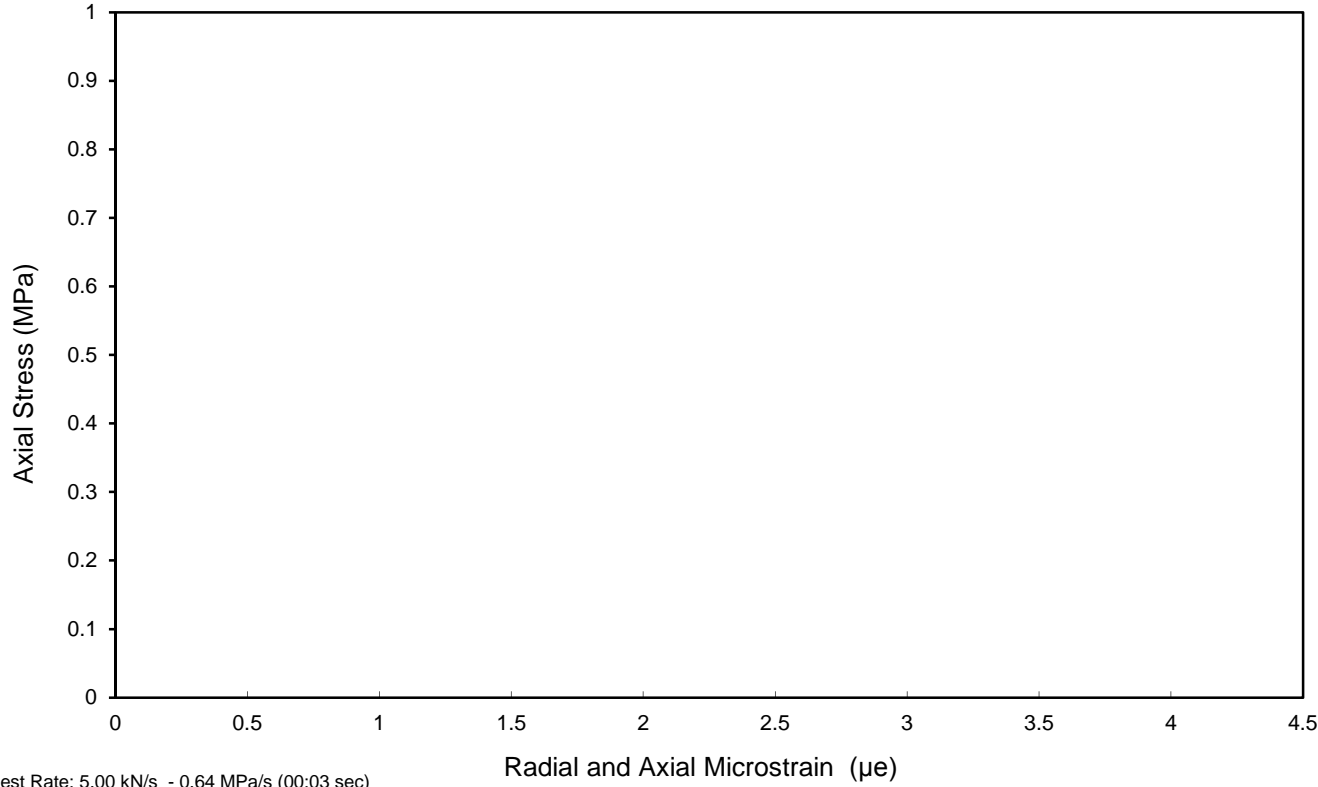
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 75°

Sample type: **C**

Date tested: 21/09/2020

Test results

Unconfined Compressive Strength	1.88 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



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 C Clergeaud (Snr. Geologist) Date: 24/09/2020	Project Number: <p style="text-align: center;">GEO / 31728</p> Project Name: <p style="text-align: center;">A303 STONEHENGE JFR1451</p>	
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UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: R71908	Description: White CHALK
Sample Ref.: 10	
Depth (m): 31.75-32.00	

Diameter	100.00 mm
Height	255.20 mm
Bulk Density	2.01 Mg/m ³
Dry Density	1.58 Mg/m ³
Water Content	27 %
Degree of Saturation: 93.6 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Diagonal shearing

Solid lines for material failures.
Dashed lines for apparent weakness failure.

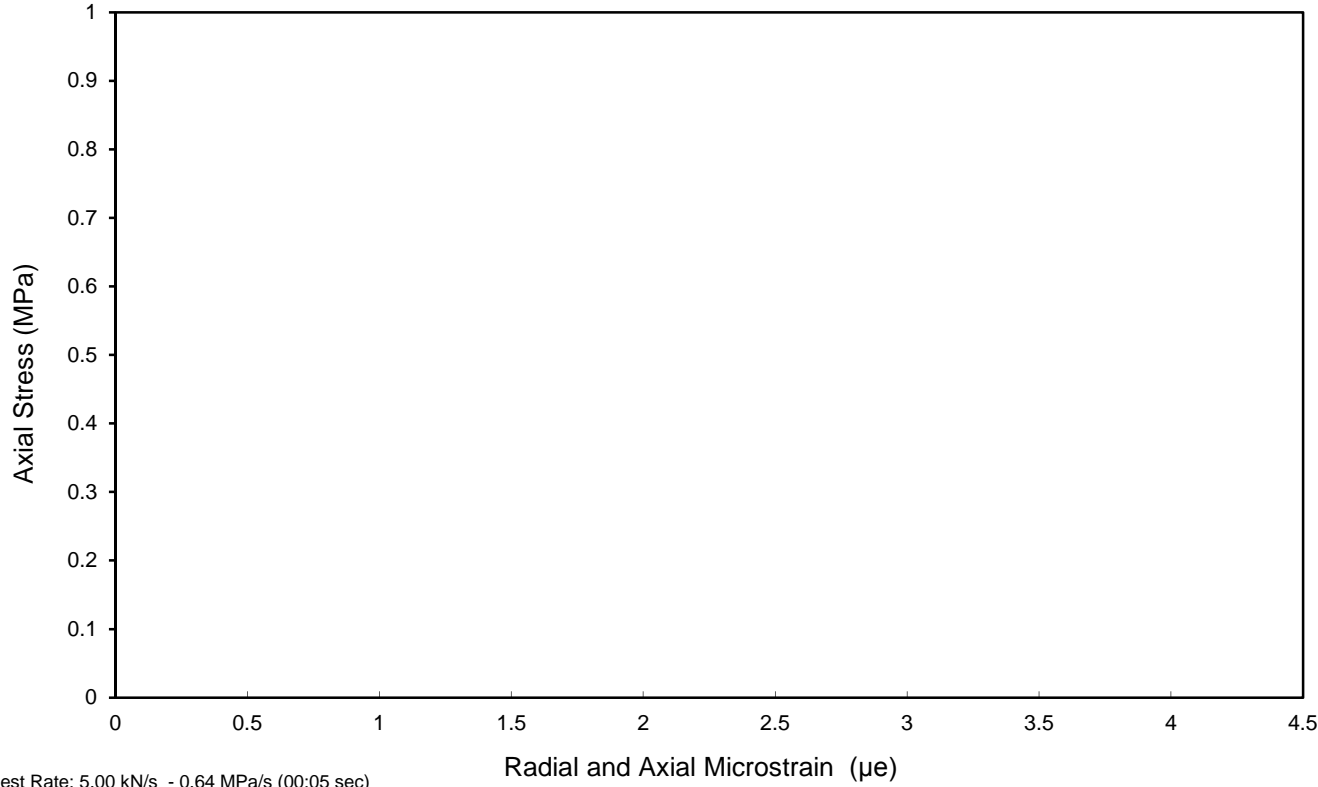
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 60°

Sample type: **C**

Date tested: 21/09/2020

Test results

Unconfined Compressive Strength	3.27 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



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 C Clergeaud (Snr. Geologist) Date: 24/09/2020	Project Number: GEO / 31728 Project Name: A303 STONEHENGE JFR1451	
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UNCONFINED COMPRESSIVE STRENGTH WITH YOUNG'S MODULUS AND POISSON'S RATIO

Borehole Ref.:	R71908	Description: White CHALK
Sample Ref.:	12	
Depth (m):	34.73-35.03	

Diameter	100.80 mm
Height	247.60 mm
Bulk Density	2.05 Mg/m ³
Dry Density	1.67 Mg/m ³
Water Content	23 %
Degree of Saturation: 89.8 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Diagonal shearing

Solid lines for material failures.
Dashed lines for apparent weakness failure.

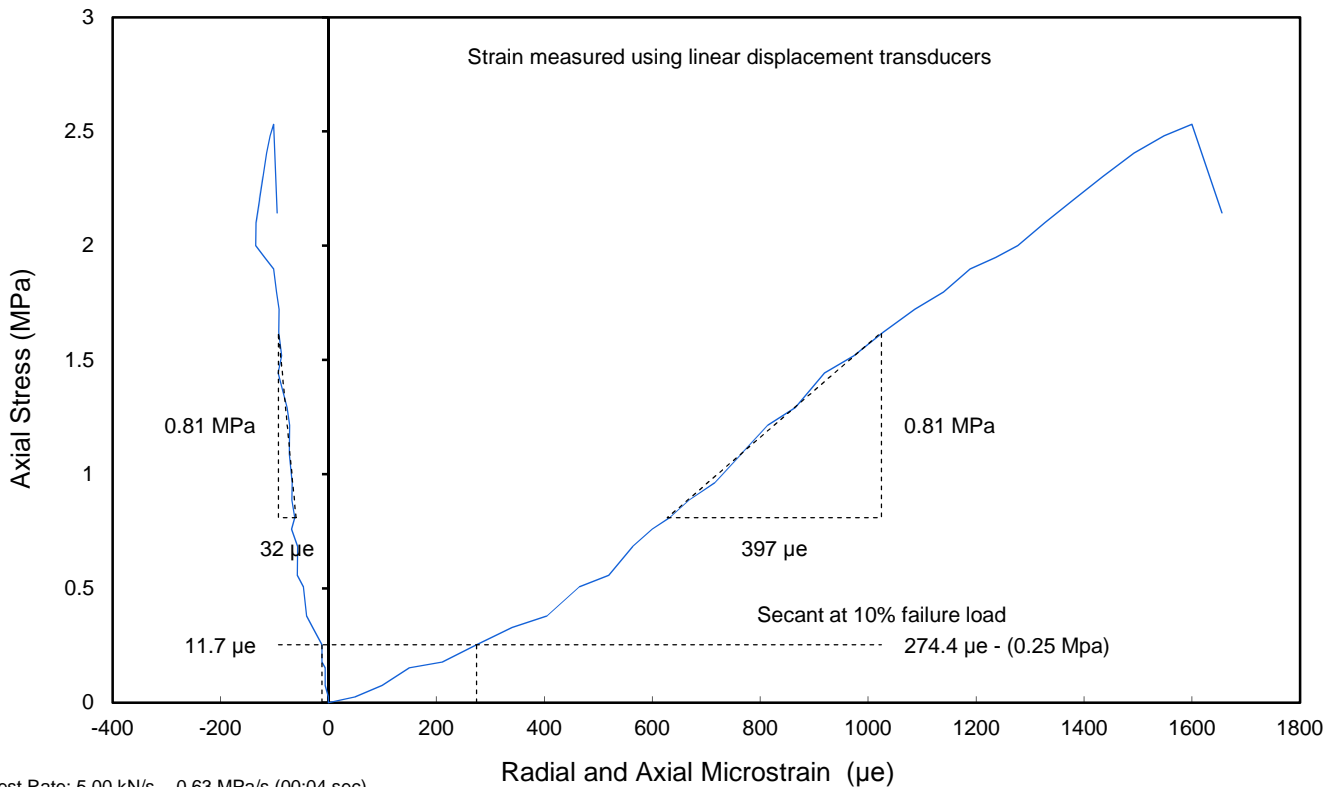
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 110°

Sample type: **C**

Date tested: 21/09/2020

Test results

Unconfined Compressive Strength	2.53 MPa
Young's Modulus (tangential at 50% failure load)	2.04 GPa
Poisson's Ratio (tangential at 50% failure load)	0.08
Young's Modulus (secant at 10% failure load)	0.922 GPa
Poisson's Ratio (secant at 10% failure load)	0.04



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 C Clergeaud (Snr. Geologist) Date: 24/09/2020	Project Number: GEO / 31728 Project Name: A303 STONEHENGE JFR1451	
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UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

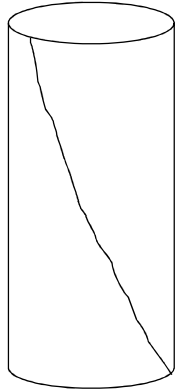
Borehole Ref.: R71908	Description: White CHALK
Sample Ref.: 17	
Depth (m): 44.00-44.30	

Diameter	100.20 mm
Height	255.10 mm
Bulk Density	2.08 Mg/m ³
Dry Density	1.67 Mg/m ³
Water Content	25 %
Degree of Saturation: 97.1 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch

Mode of failure: Diagonal shearing



Solid lines for material failures.
Dashed lines for apparent weakness failure.

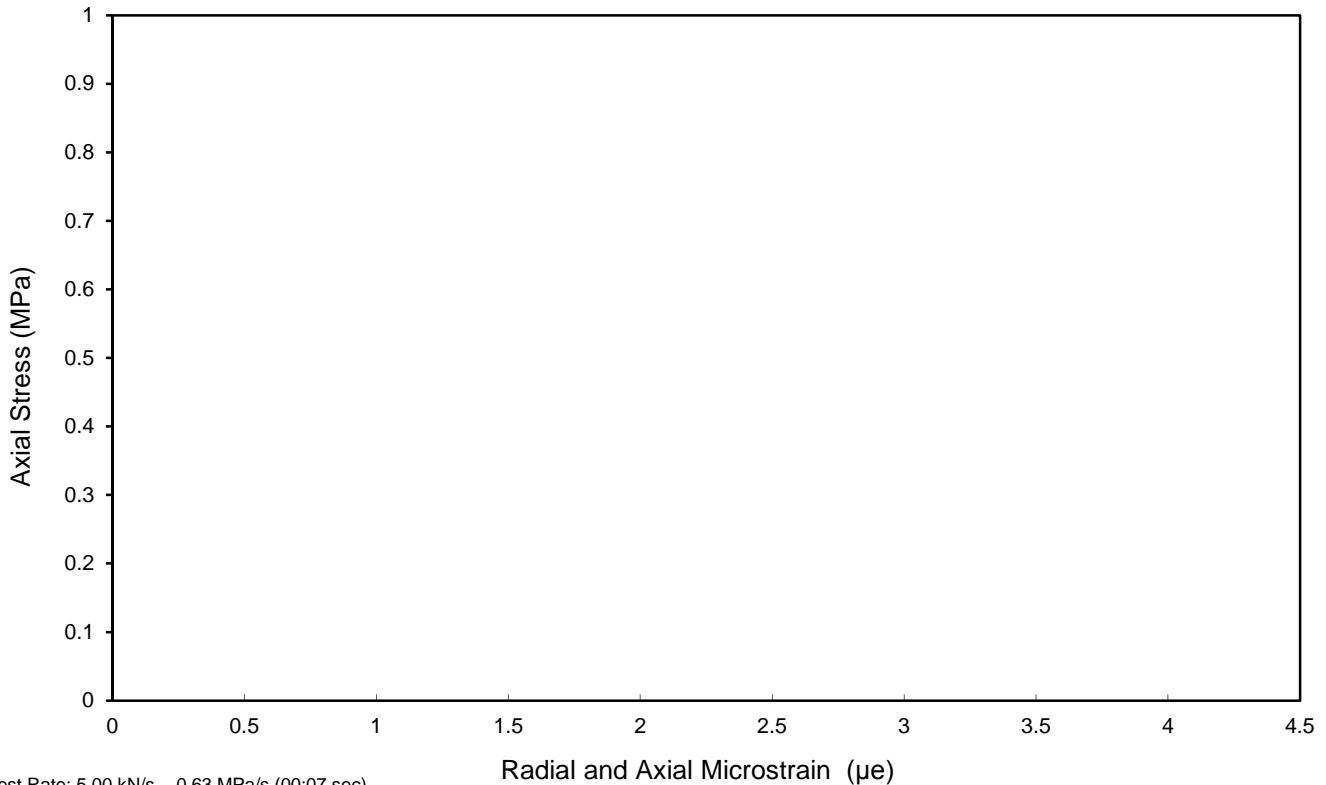
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 70°

Sample type	C
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Date tested: 21/09/2020




Test results

Unconfined Compressive Strength	4.54 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: 5.00 kN/s - 0.63 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  C Clergeaud (Snr. Geologist) Date: 24/09/2020	Project Number: GEO / 31728 Project Name: A303 STONEHENGE JFR1451	 
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UNCONFINED COMPRESSIVE STRENGTH WITH YOUNG'S MODULUS AND POISSON'S RATIO

Borehole Ref.:	R71908	Description: White CHALK
Sample Ref.:	20	
Depth (m):	48.65-49.00	

Diameter	100.10 mm
Height	271.60 mm
Bulk Density	2.02 Mg/m ³
Dry Density	1.58 Mg/m ³
Water Content	28 %
Degree of Saturation: 95.5 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Diagonal shearing

Solid lines for material failures.
Dashed lines for apparent weakness failure.

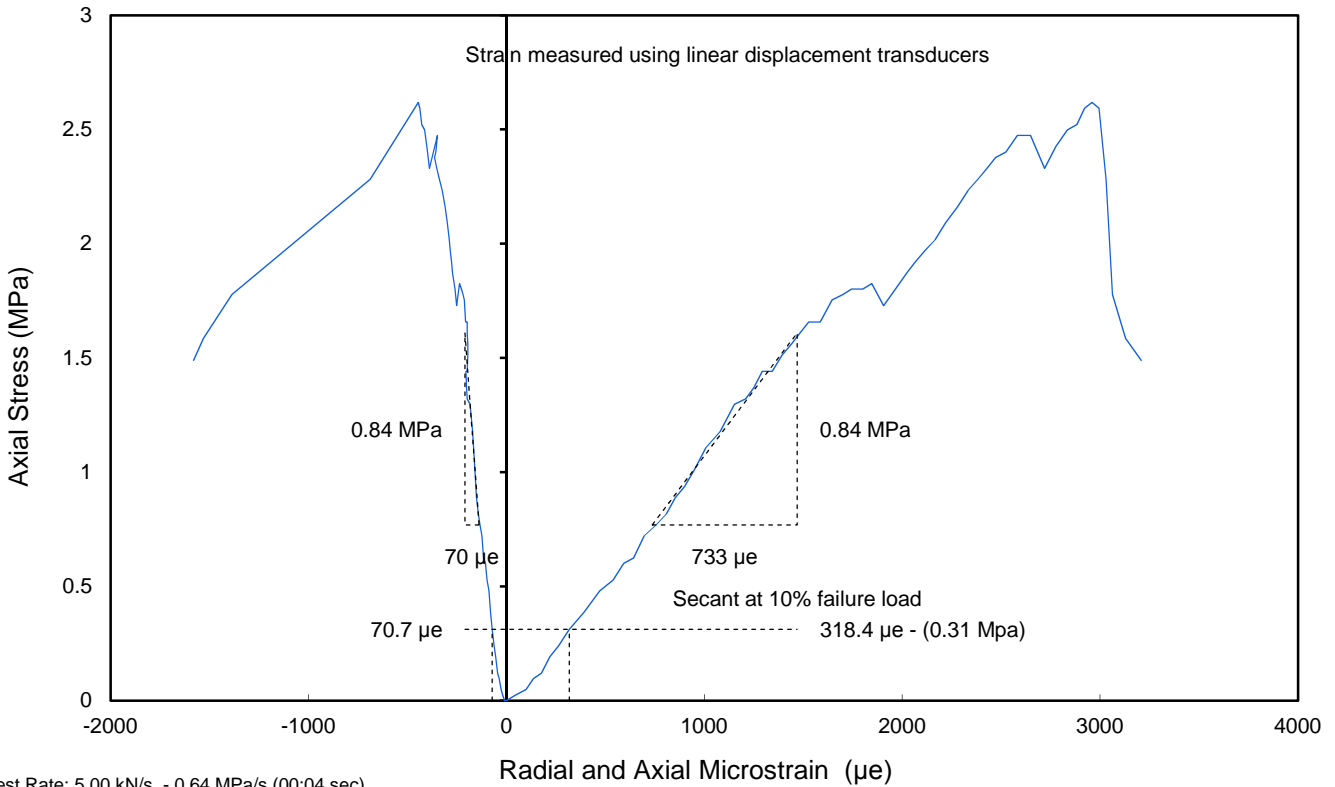
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 110°

Sample type: **C**

Date tested: 21/09/2020

Test results

Unconfined Compressive Strength	2.62 MPa
Young's Modulus (tangential at 50% failure load)	1.15 GPa
Poisson's Ratio (tangential at 50% failure load)	0.10
Young's Modulus (secant at 10% failure load)	0.981 GPa
Poisson's Ratio (secant at 10% failure load)	0.22



Test Rate: 5.00 kN/s - 0.64 MPa/s (00:04 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 C Clergeaud (Snr. Geologist) Date: 24/09/2020	Project Number: GEO / 31728	
	Project Name: A303 STONEHENGE JFR1451	

UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: R71908	Description: White CHALK
Sample Ref.: 22	
Depth (m): 50.65-50.95	

Diameter	100.00 mm
Height	268.10 mm
Bulk Density	2.01 Mg/m ³
Dry Density	1.61 Mg/m ³
Water Content	25 %
Degree of Saturation: 90.5 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Diagonal shearing

Solid lines for material failures.
Dashed lines for apparent weakness failure.

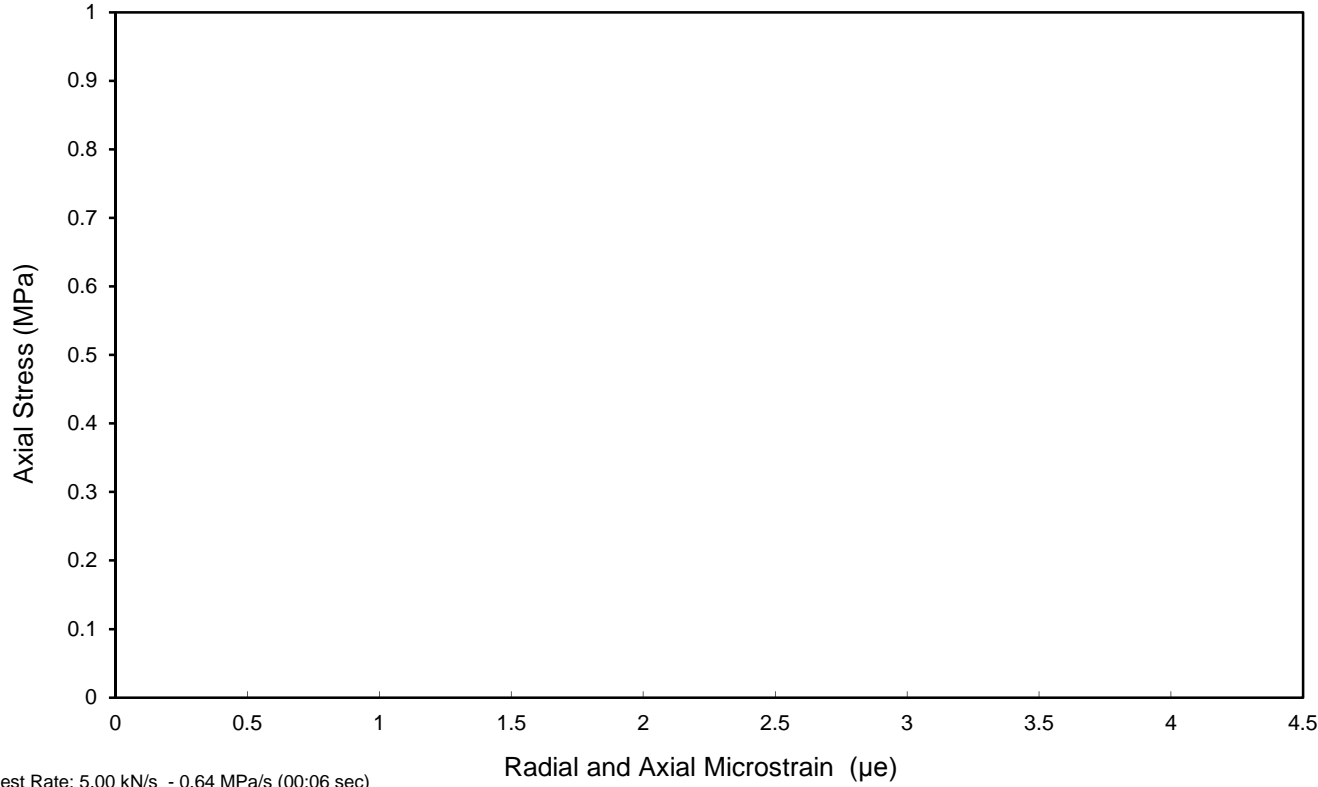
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 70°

Sample type: **C**

Date tested: 21/09/2020

Test results

Unconfined Compressive Strength	3.79 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



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 C Clergeaud (Snr. Geologist) Date: 24/09/2020	Project Number: <p style="text-align: center;">GEO / 31728</p> Project Name: <p style="text-align: center;">A303 STONEHENGE JFR1451</p>	
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UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: R71908	Description: White CHALK
Sample Ref.: 15	
Depth (m): 55.31-55.58	

Diameter	100.10 mm
Height	203.10 mm
Bulk Density	2.01 Mg/m ³
Dry Density	1.62 Mg/m ³
Water Content	24 %
Degree of Saturation: 88.0 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Diagonal shearing

Solid lines for material failures.
Dashed lines for apparent weakness failure.

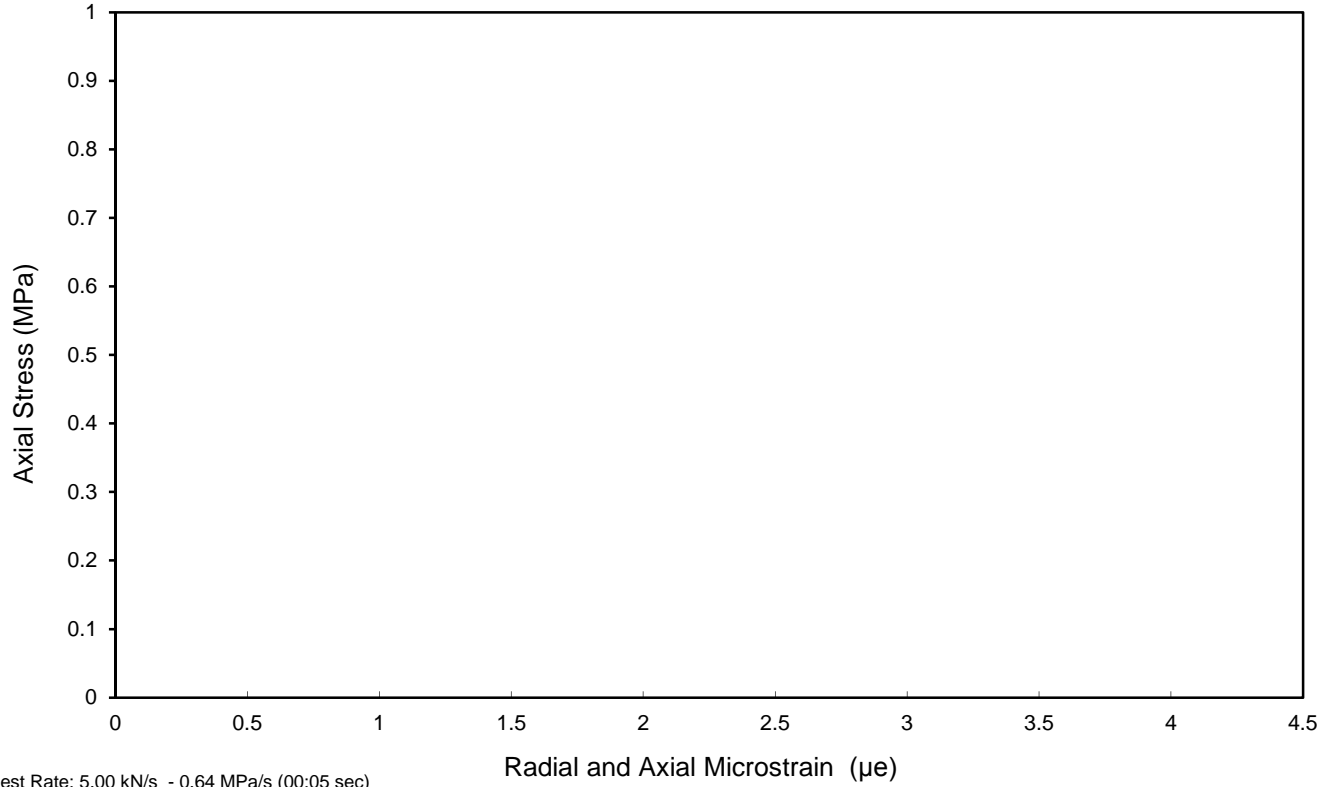
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 105°

Sample type: **C**

Date tested: 21/09/2020

Test results

Unconfined Compressive Strength	3.04 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



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 C Clergeaud (Snr. Geologist) Date: 24/09/2020	Project Number: GEO / 31728	
	Project Name: A303 STONEHENGE JFR1451	

UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: R71908	Description: White CHALK
Sample Ref.: 26	
Depth (m): 56.96-57.35	

Diameter	100.20 mm
Height	271.10 mm
Bulk Density	2.08 Mg/m ³
Dry Density	1.71 Mg/m ³
Water Content	22 %
Degree of Saturation: 90.7 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Diagonal shearing

Solid lines for material failures.
Dashed lines for apparent weakness failure.

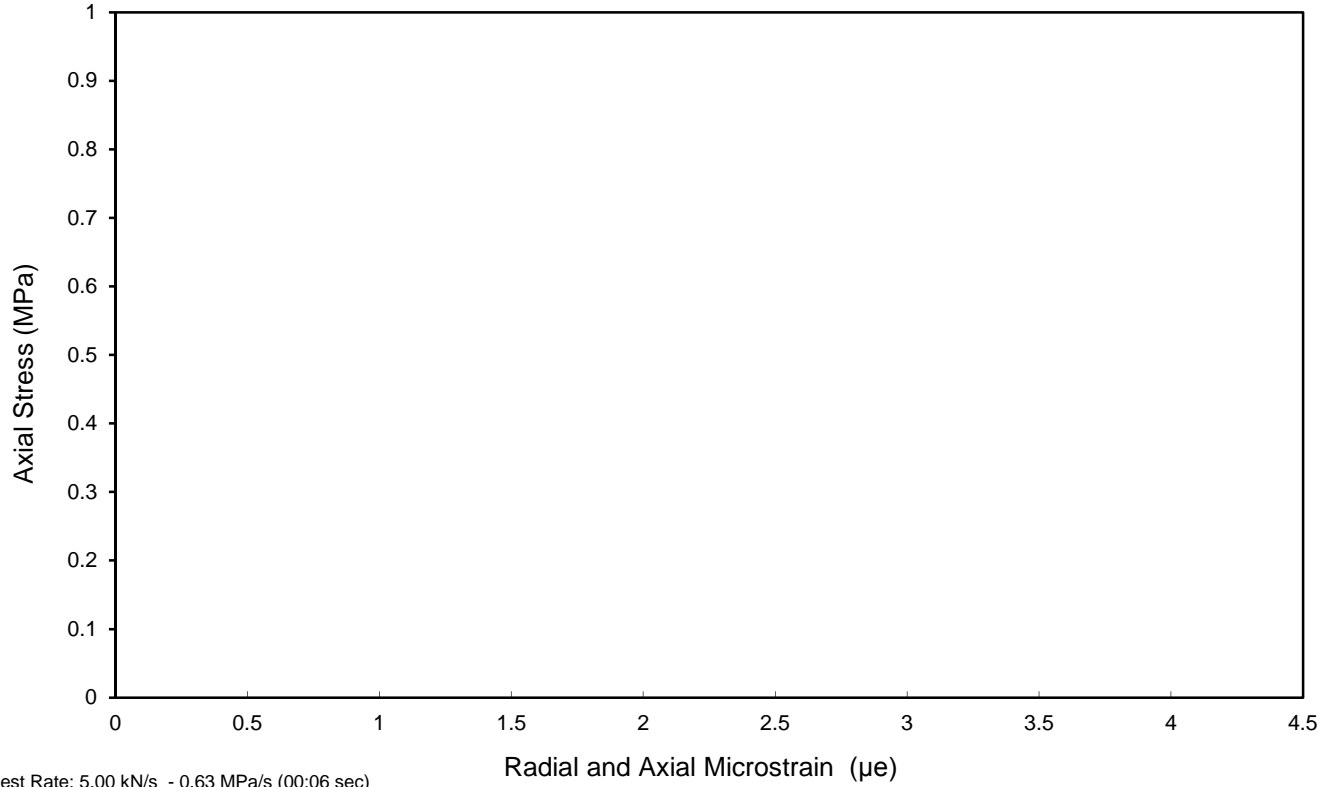
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 65°

Sample type **C**

Date tested: 21/09/2020

Test results

Unconfined Compressive Strength	3.96 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



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 C Clergeaud (Snr. Geologist) Date: 24/09/2020	Project Number: GEO / 31728 Project Name: A303 STONEHENGE JFR1451	
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UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: R71908	Description: White CHALK
Sample Ref.: 28	
Depth (m): 60.23-60.58	

Diameter	98.70 mm
Height	199.80 mm
Bulk Density	2.07 Mg/m ³
Dry Density	1.67 Mg/m ³
Water Content	24 %
Degree of Saturation: 94.2 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Diagonal shearing

Solid lines for material failures.
Dashed lines for apparent weakness failure.

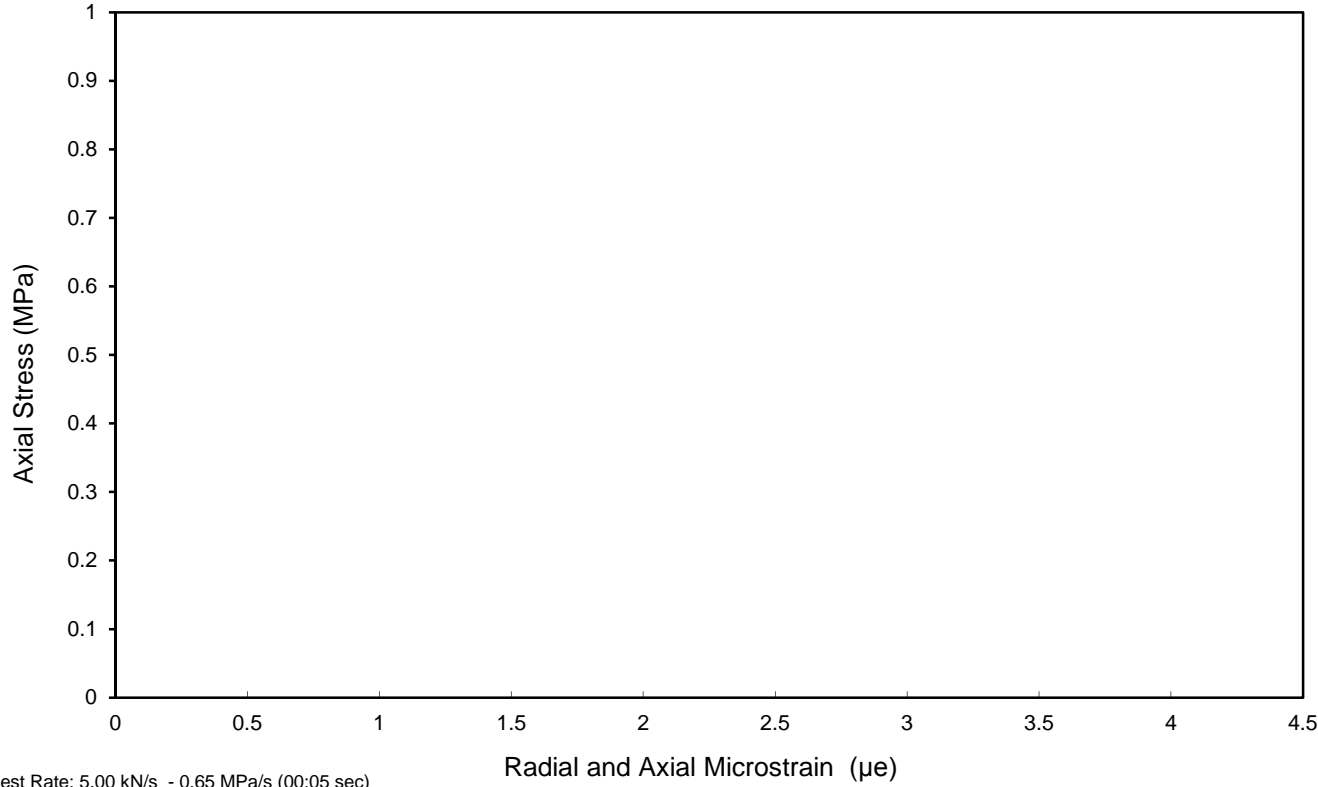
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 60°

Sample type: **C**

Date tested: 21/09/2020

Test results









Unconfined Compressive Strength	3.5 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






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 C Clergeaud (Snr. Geologist) Date: 24/09/2020	Project Number: <p style="text-align: center;">GEO / 31728</p> Project Name: <p style="text-align: center;">A303 STONEHENGE JFR1451</p>	
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UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Sample details				Density				Uniaxial Compression Test (LF0879C (1000kN) compression frame used)							
Borehole Ref.	Sample Ref.	Depth (m)	Description	MC (%)	Degree of Saturation (%)	Bulk (Mg/m ³)	Dry (Mg/m ³)	Mean after prep.		H/D Ratio	Load at Failure (kN)	UCS (MPa) <small>3 sig. fig.</small>	Failure Sketch	D. Tested	Remarks
								Diameter (mm)	Height (mm)						
R71910		29.58-29.98	White CHALK	26	85.8	1.95	1.55	97.50	227.60	2.3	23.7	3.17		21/10/20	
R71910		34.52-34.85	White CHALK	28	88.4	1.93	1.50	100.00	268.50	2.7	10.5	1.34		16/12/20	
R71910		42.48-42.88	White CHALK	24	88.6	2.01	1.62	100.10	240.00	2.4	19.7	2.5		21/10/20	
R71910		50.77-51.02	White CHALK	25	79.3	1.89	1.51	99.80	238.90	2.4	26.7	3.41		21/10/20	
R71910		51.29-51.60	White CHALK	24	84.5	1.97	1.59	101.30	267.40	2.6	16.9	2.1		12/11/20	
R71910		54.09-54.37	White CHALK	22	92.5	2.10	1.72	100.10	231.90	2.3	36.5	4.64		21/10/20	
R71910		56.96-57.38	White CHALK	25	85.3	1.97	1.58	101.00	266.20	2.6	29.0	3.62		21/10/20	
R71910		59.22-59.50	White CHALK	26	88.2	1.97	1.56	99.90	238.50	2.4	16.6	2.12		21/10/20	Failed on weakness

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  C Clergeaud (Snr. Geologist) Date: 17/12/2020	Project Number: Project Name:	GEO / 31761 A303 STONEHENGE JFR1451	 
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UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: R71910	Description: White CHALK
Sample Ref.: -	
Depth (m): 29.58-29.98	

Diameter	97.50 mm
Height	227.60 mm
Bulk Density	1.95 Mg/m ³
Dry Density	1.55 Mg/m ³
Water Content	26 %
Degree of Saturation: 85.8 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Diagonal shearing

Solid lines for material failures.
Dashed lines for apparent weakness failure.

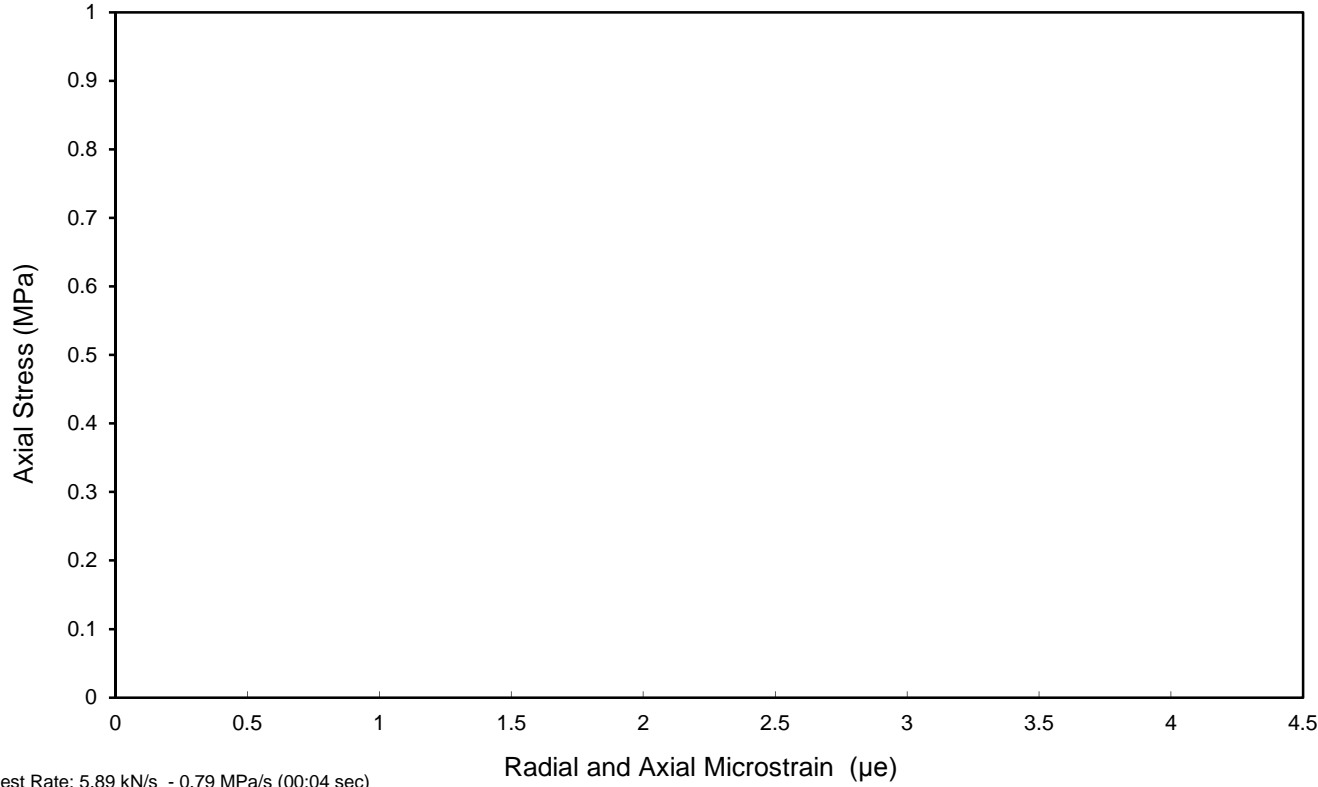
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 70°

Sample type: **C**

Date tested: 21/10/2020

Test results

Unconfined Compressive Strength	3.17 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



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 C Clergeaud (Snr. Geologist) Date: 17/11/2020	Project Number: <p style="text-align: center;">GEO / 31761</p> Project Name: <p style="text-align: center;">A303 STONEHENGE JFR1451</p>	
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UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: R71910	Description: White CHALK
Sample Ref.: -	
Depth (m): 34.52-34.85	

Diameter	100.00 mm
Height	268.50 mm
Bulk Density	1.93 Mg/m ³
Dry Density	1.50 Mg/m ³
Water Content	28 %
Degree of Saturation: 88.4 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Diagonal shearing

Solid lines for material failures.
Dashed lines for apparent weakness failure.

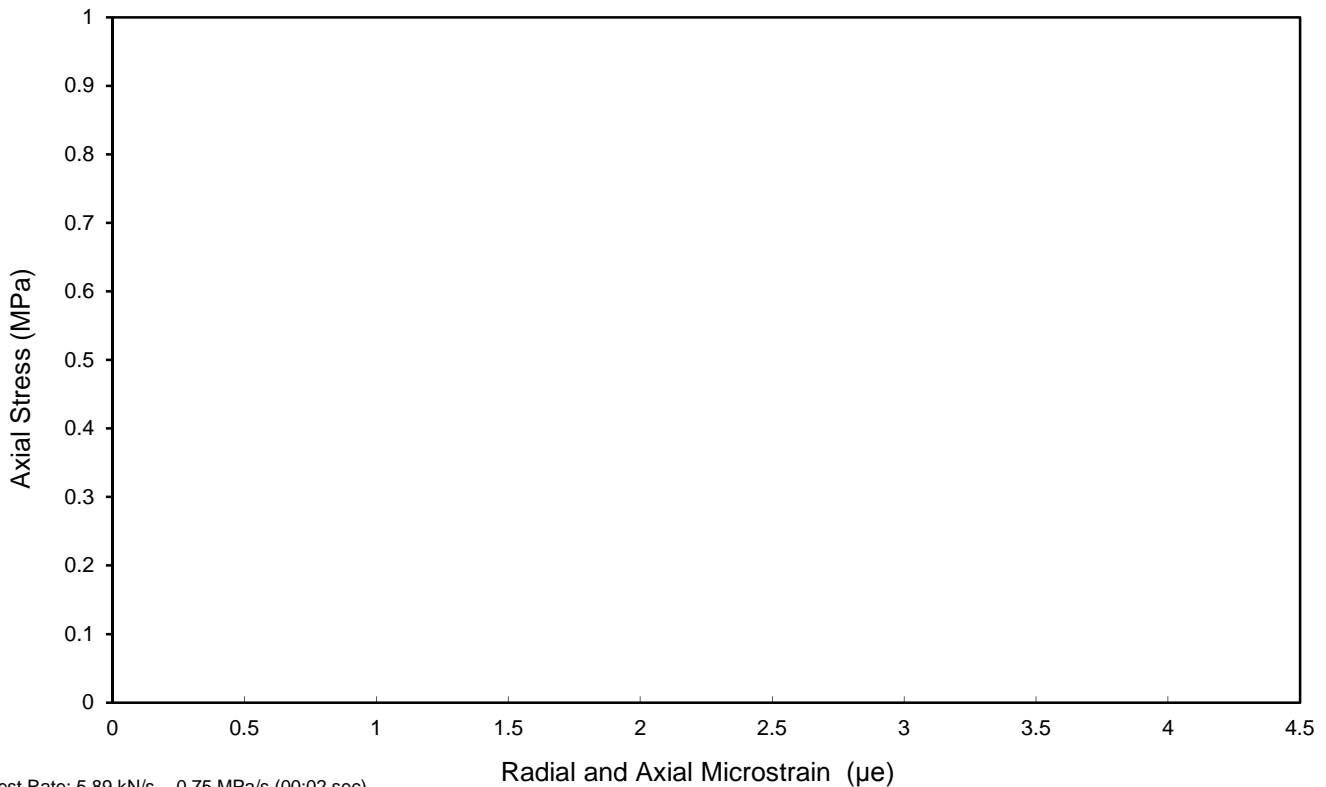
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 75°

Sample type **C**

Date tested: 16/12/2020

Test results

Unconfined Compressive Strength	1.34 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



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 C Clergeaud (Snr. Geologist) Date: 17/11/2020	Project Number: GEO / 31761 Project Name: A303 STONEHENGE JFR1451	
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UNCONFINED COMPRESSIVE STRENGTH WITH YOUNG'S MODULUS AND POISSON'S RATIO

Borehole Ref.: R71910	Description: White CHALK
Sample Ref.: -	
Depth (m): 42.48-42.88	

Diameter	100.10 mm
Height	240.00 mm
Bulk Density	2.01 Mg/m ³
Dry Density	1.62 Mg/m ³
Water Content	24 %
Degree of Saturation: 88.6 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Diagonal shearing

Solid lines for material failures.
Dashed lines for apparent weakness failure.

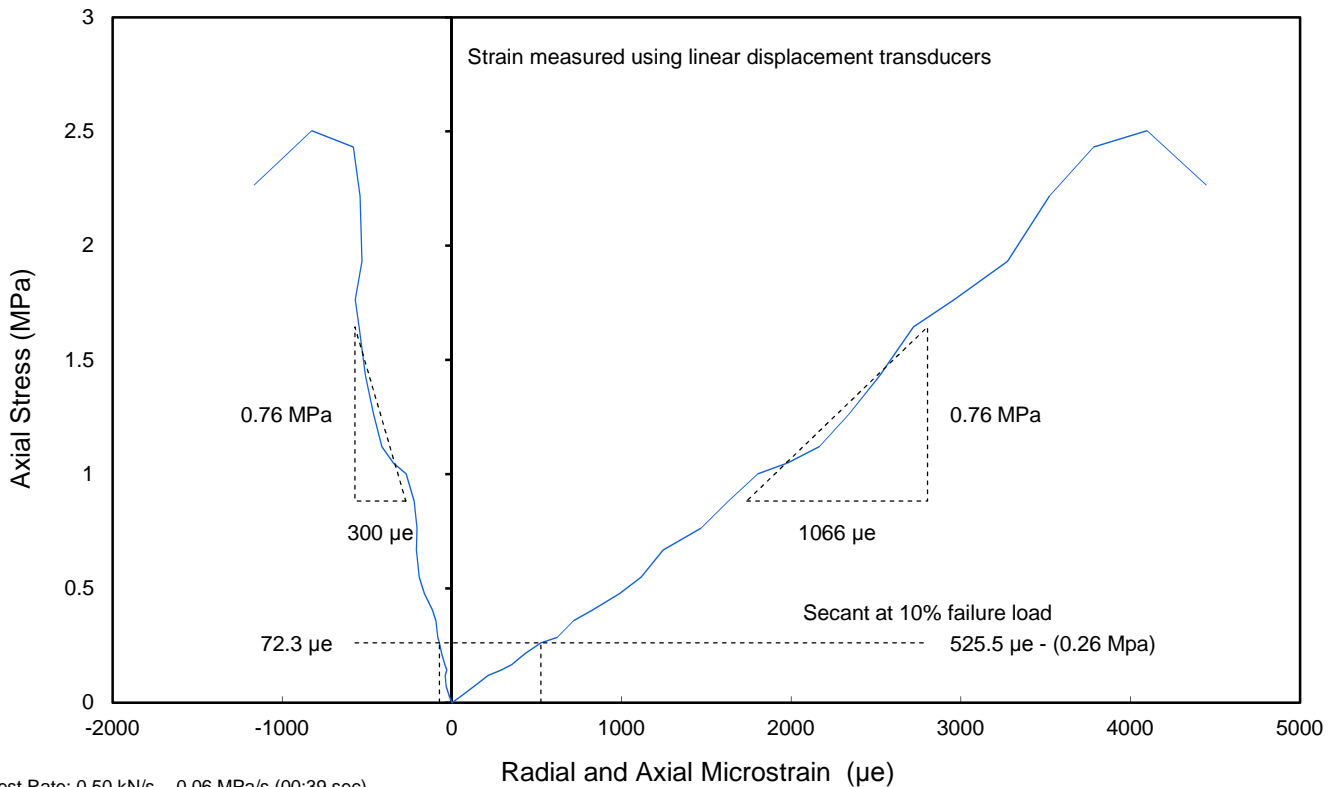
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 100°

Sample type: **C**

Date tested: 21/10/2020

Test results

Unconfined Compressive Strength	2.5 MPa
Young's Modulus (tangential at 50% failure load)	0.716 GPa
Poisson's Ratio (tangential at 50% failure load)	0.28
Young's Modulus (secant at 10% failure load)	0.499 GPa
Poisson's Ratio (secant at 10% failure load)	0.14



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 C Clergeaud (Snr. Geologist) Date: 17/11/2020	Project Number: GEO / 31761 Project Name: A303 STONEHENGE JFR1451	
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UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: R71910	Description: White CHALK
Sample Ref.: -	
Depth (m): 50.77-51.02	

Diameter	99.80 mm
Height	238.90 mm
Bulk Density	1.89 Mg/m ³
Dry Density	1.51 Mg/m ³
Water Content	25 %
Degree of Saturation: 79.3 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Axial splitting

Solid lines for material failures.
Dashed lines for apparent weakness failure.

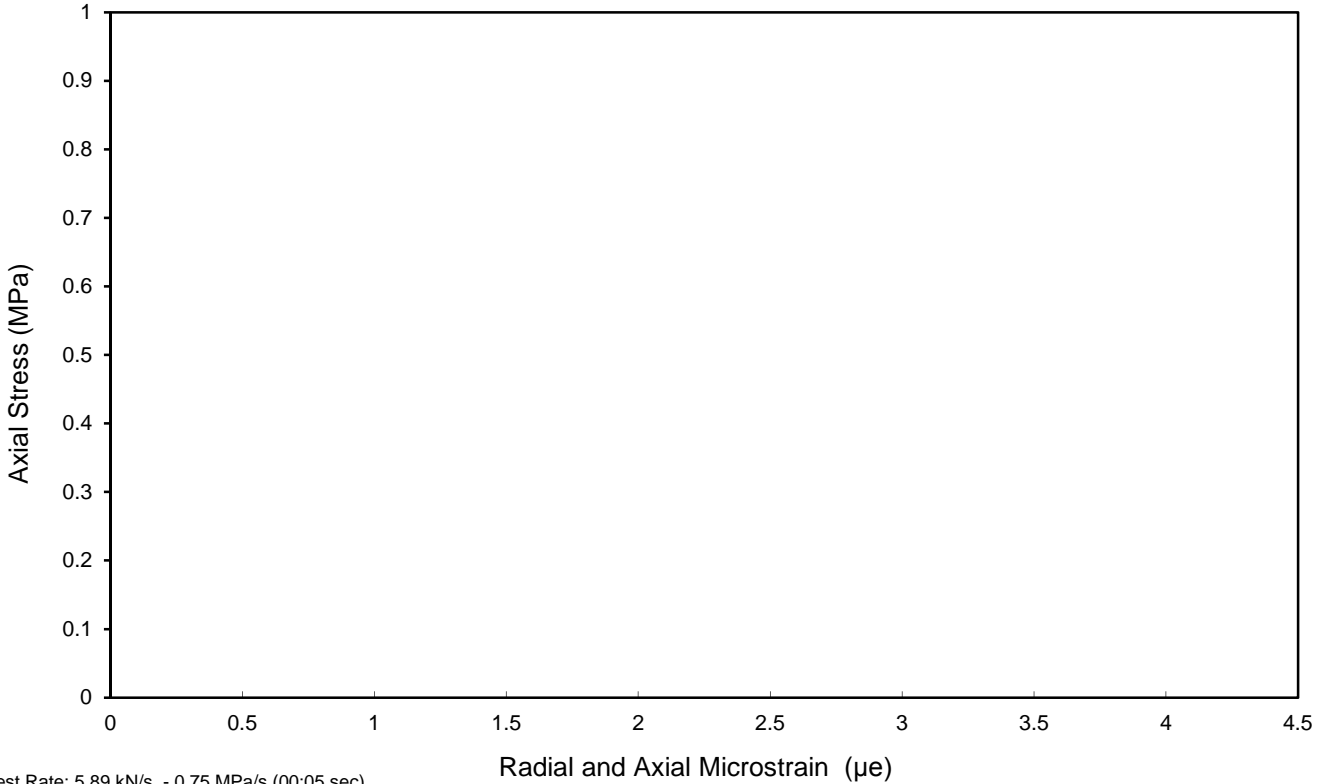
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 90°

Sample type **C**

Date tested: 21/10/2020




Test results

Unconfined Compressive Strength	3.41 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: 5.89 kN/s - 0.75 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  C Clergeaud (Snr. Geologist) Date: 17/11/2020	Project Number: <p style="text-align: center;">GEO / 31761</p> Project Name: <p style="text-align: center;">A303 STONEHENGE JFR1451</p>	 
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UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: R71910	Description: White CHALK
Sample Ref.: -	
Depth (m): 51.29-51.60	

Diameter	101.30 mm
Height	267.40 mm
Bulk Density	1.97 Mg/m ³
Dry Density	1.59 Mg/m ³
Water Content	24 %
Degree of Saturation: 84.5 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Diagonal shearing

Solid lines for material failures.
Dashed lines for apparent weakness failure.

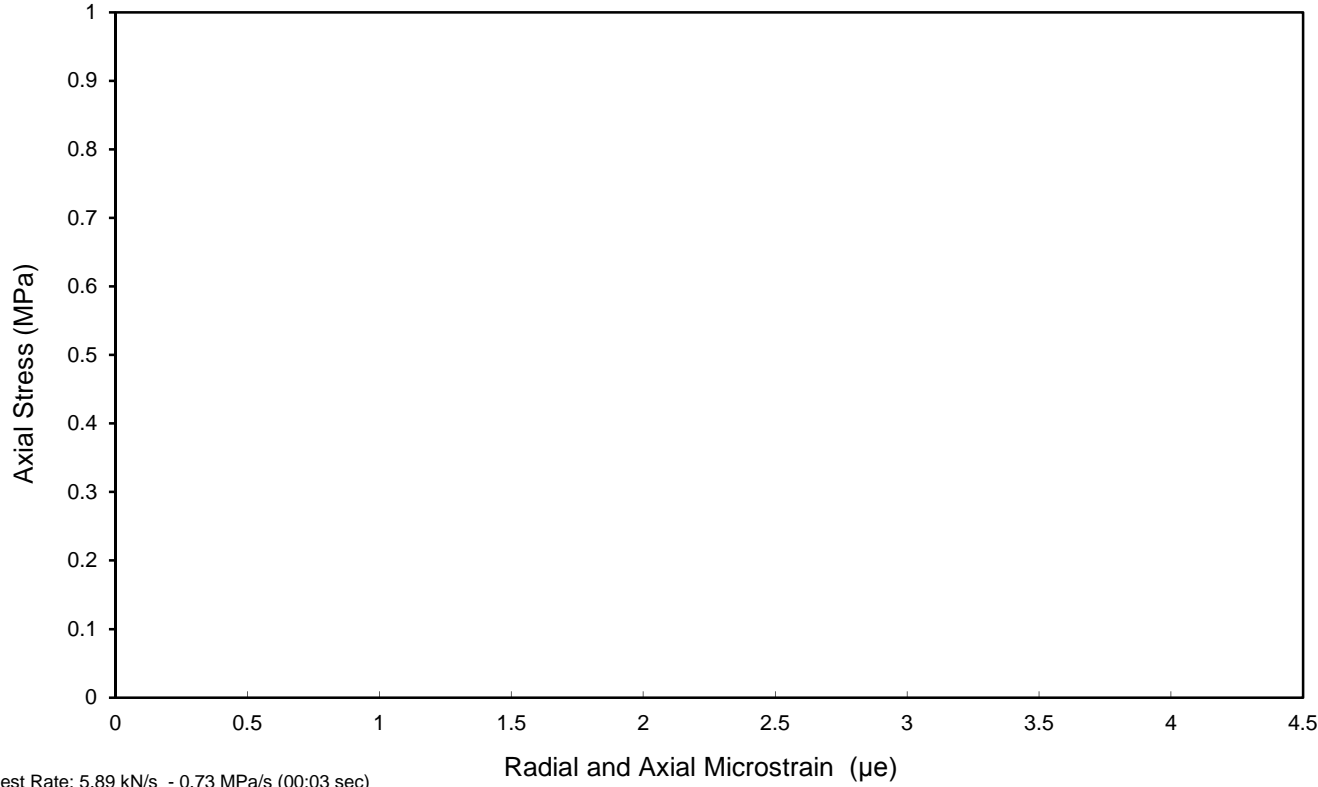
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 110°

Sample type: **C**

Date tested: 12/11/2020

Test results

Unconfined Compressive Strength	2.1 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



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 C Clergeaud (Snr. Geologist) Date: 17/11/2020	Project Number: <p style="text-align: center;">GEO / 31761</p> Project Name: <p style="text-align: center;">A303 STONEHENGE JFR1451</p>	
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UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: R71910	Description: White CHALK
Sample Ref.: -	
Depth (m): 54.09-54.37	

Diameter	100.10 mm
Height	231.90 mm
Bulk Density	2.10 Mg/m ³
Dry Density	1.72 Mg/m ³
Water Content	22 %
Degree of Saturation: 92.5 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Diagonal shearing

Solid lines for material failures.
Dashed lines for apparent weakness failure.

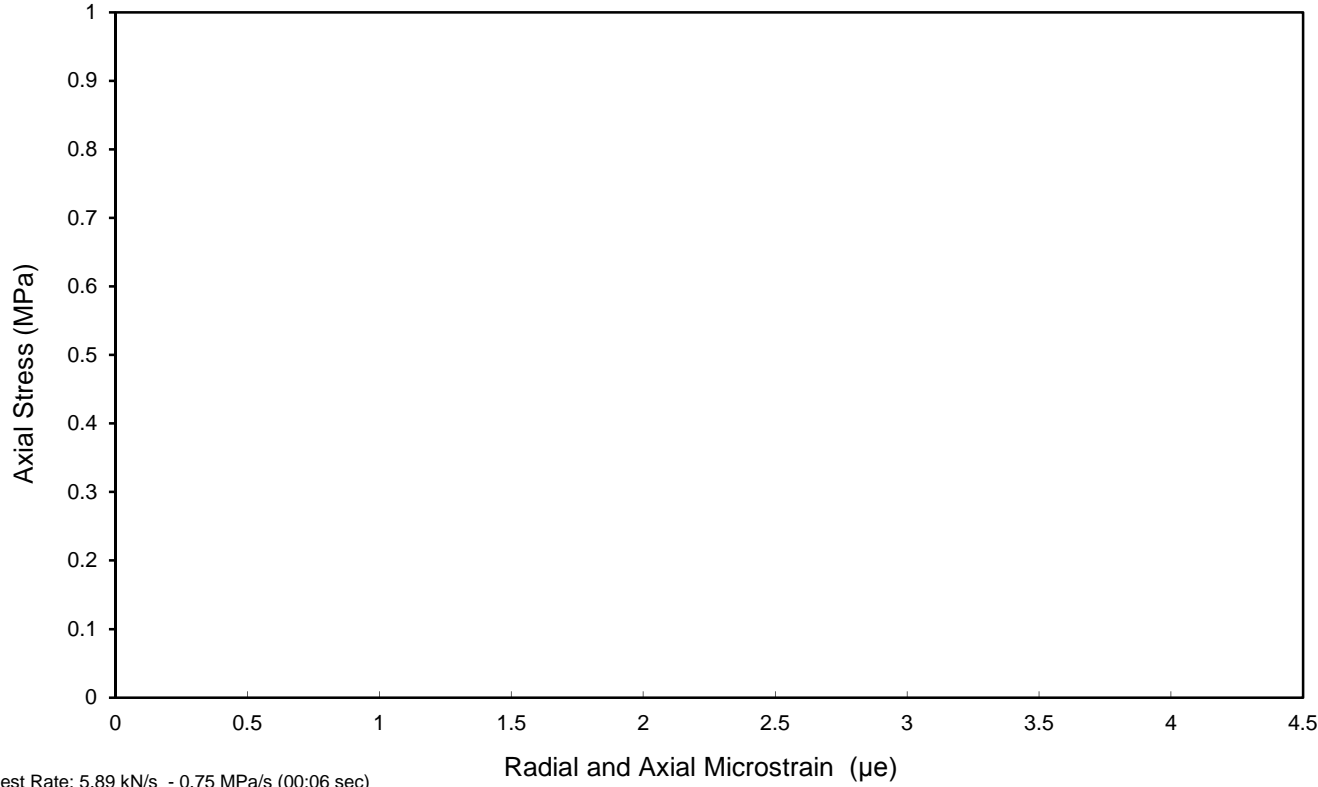
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 100°

Sample type **C**

Date tested: 21/10/2020

Test results

Unconfined Compressive Strength	4.64 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



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 C Clergeaud (Snr. Geologist) Date: 17/11/2020	Project Number: GEO / 31761 Project Name: A303 STONEHENGE JFR1451	
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UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: R71910	Description: White CHALK
Sample Ref.: -	
Depth (m): 56.96-57.38	

Diameter	101.00 mm
Height	266.20 mm
Bulk Density	1.97 Mg/m ³
Dry Density	1.58 Mg/m ³
Water Content	25 %
Degree of Saturation: 85.3 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Diagonal shearing

Solid lines for material failures.
Dashed lines for apparent weakness failure.

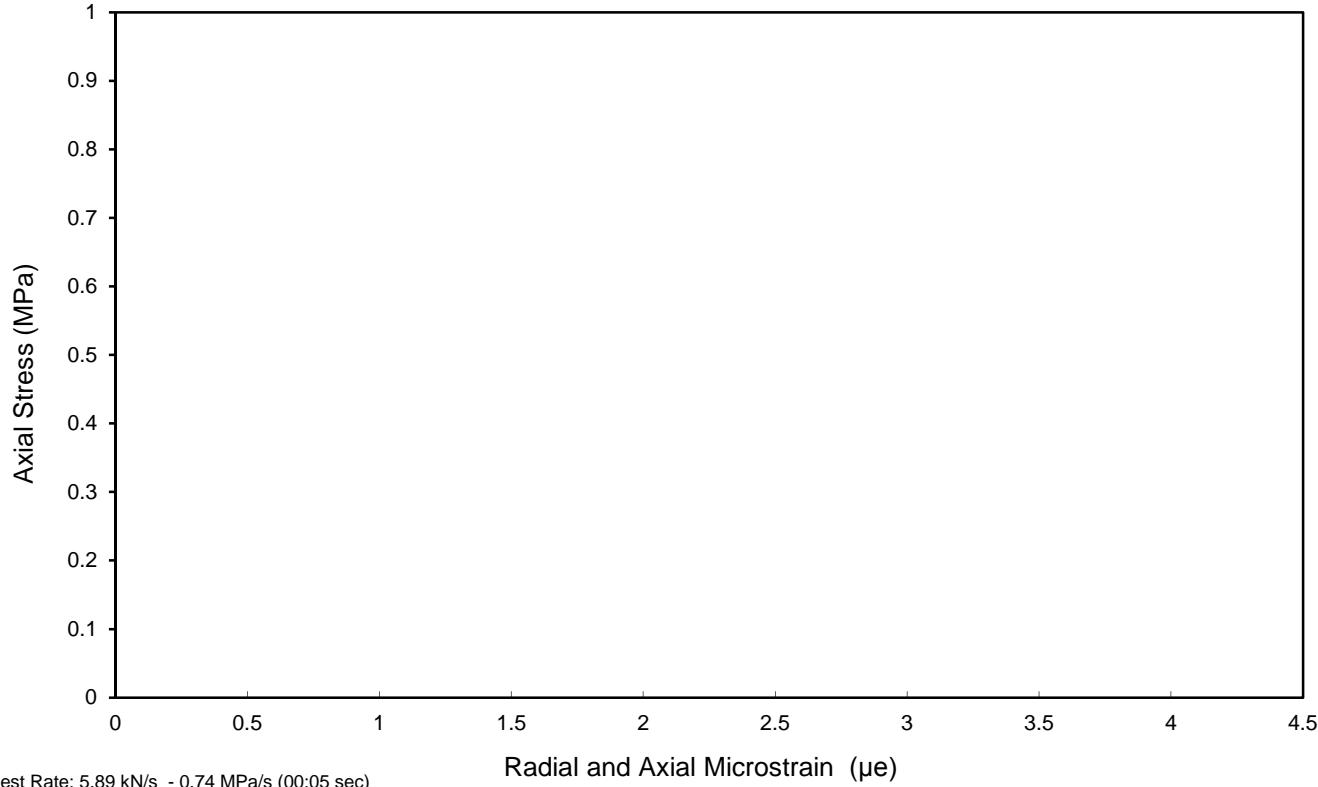
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 85°

Sample type **C**

Date tested: 21/10/2020

Test results

Unconfined Compressive Strength	3.62 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



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 C Clergeaud (Snr. Geologist) Date: 17/11/2020	Project Number: <p style="text-align: center;">GEO / 31761</p> Project Name: <p style="text-align: center;">A303 STONEHENGE JFR1451</p>	
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UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: R71910	Description: White CHALK
Sample Ref.: -	
Depth (m): 59.22-59.50	

Diameter	99.90 mm
Height	238.50 mm
Bulk Density	1.97 Mg/m ³
Dry Density	1.56 Mg/m ³
Water Content	26 %
Degree of Saturation: 88.2 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Along foliation

Solid lines for material failures.
Dashed lines for apparent weakness failure.

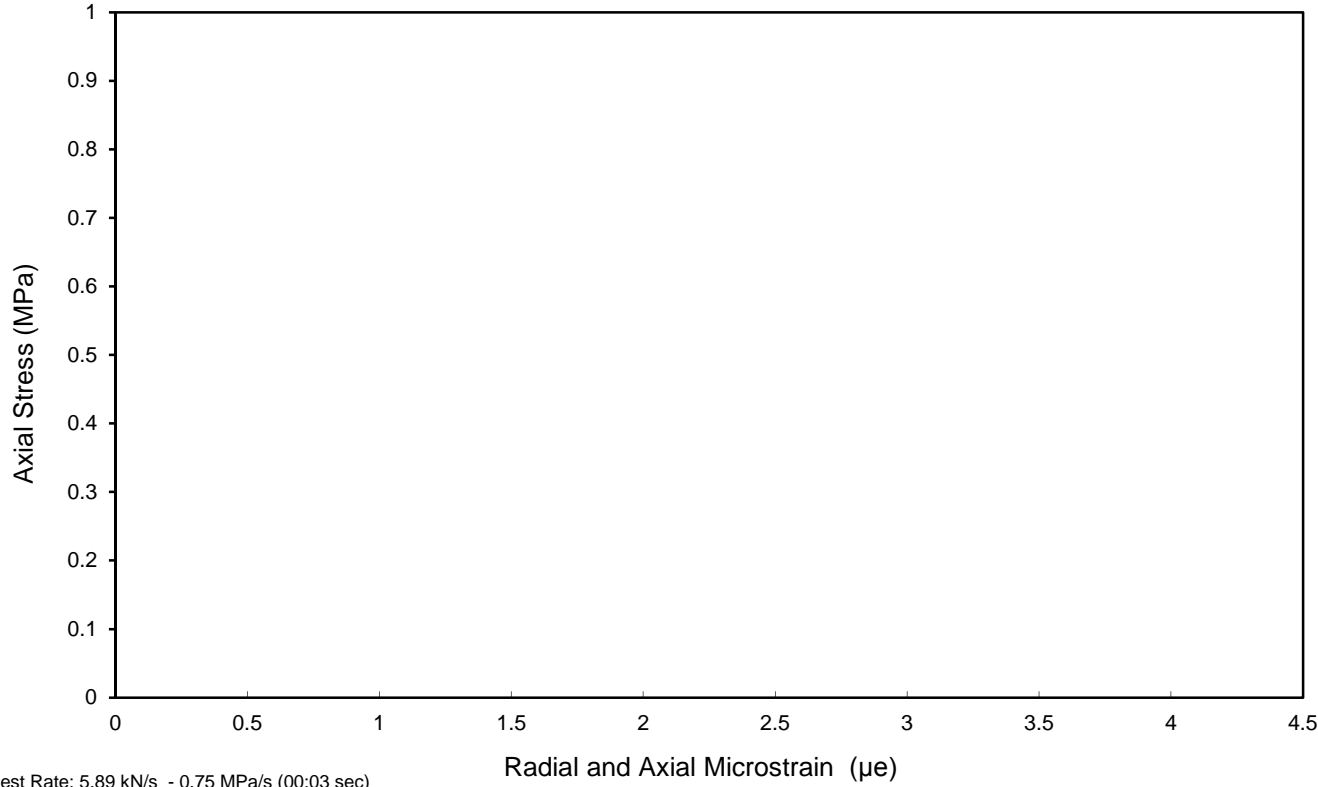
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: n/a

Sample type: **C**

Date tested: 21/10/2020

Test results

Unconfined Compressive Strength	2.12 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: 5.89 kN/s - 0.75 MPa/s (00:03 sec)

Remarks: Failed on weakness

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







C Clergeaud (Snr. Geologist)
Date: 17/11/2020

Project Number:
GEO / 31761




Project Name:
**A303 STONEHENGE
JFR1451**



UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Sample details				Density				Uniaxial Compression Test (LF0879C (1000kN) compression frame used)							
Borehole Ref.	Sample Ref.	Depth (m)	Description	MC (%)	Degree of Saturation (%)	Bulk (Mg/m³)	Dry (Mg/m³)	Mean after prep.		H/D Ratio	Load at Failure (kN)	UCS (MPa) <small>3 sig. fig.</small>	Failure Sketch	D. Tested	Remarks
								Diameter (mm)	Height (mm)						
R71915		13.00-13.28	White CHALK	27	88.6	1.96	1.55	100.30	238.50	2.4	9.4	1.19		19/10/20	
R71915		16.83-17.12	White CHALK	23	87.2	2.02	1.65	100.70	238.20	2.4	23.2	2.91		19/10/20	
R71915		20.83-21.13	White CHALK	24	92.3	2.05	1.65	99.70	225.60	2.3	24.4	3.13		19/10/20	
R71915		22.60-22.96	White CHALK	27	79.7	1.86	1.47	100.60	285.30	2.8	9.7	1.22		19/10/20	Failed on weakness
R71915		26.74-27.04	White CHALK	25	89.4	2.01	1.61	100.60	252.70	2.5	13.1	1.65		19/10/20	
R71915		31.73-32.16	White CHALK	26	89.4	1.97	1.56	101.60	266.50	2.6	9.6	1.18		19/10/20	Failed on weakness

Note: The dimensional requirements of flatness (<0.02 mm), perpendicularity (<0.05 / 50 mm) and straightness (0.3 mm deviation) are all met. Specific Gravity used for Degree of Saturation is assumed unless specified by the client.

Checked and Approved by  C Clergeaud (Snr. Geologist) Date: 22/10/2020	Project Number: Project Name:	GEO / 31890 A303 STONEHENGE JFR1451	 
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UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: R71915	Description: White CHALK
Sample Ref.: -	
Depth (m): 13.00-13.28	

Diameter	100.30 mm
Height	238.50 mm
Bulk Density	1.96 Mg/m ³
Dry Density	1.55 Mg/m ³
Water Content	27 %
Degree of Saturation: 88.6 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Diagonal shearing

Solid lines for material failures.
Dashed lines for apparent weakness failure.

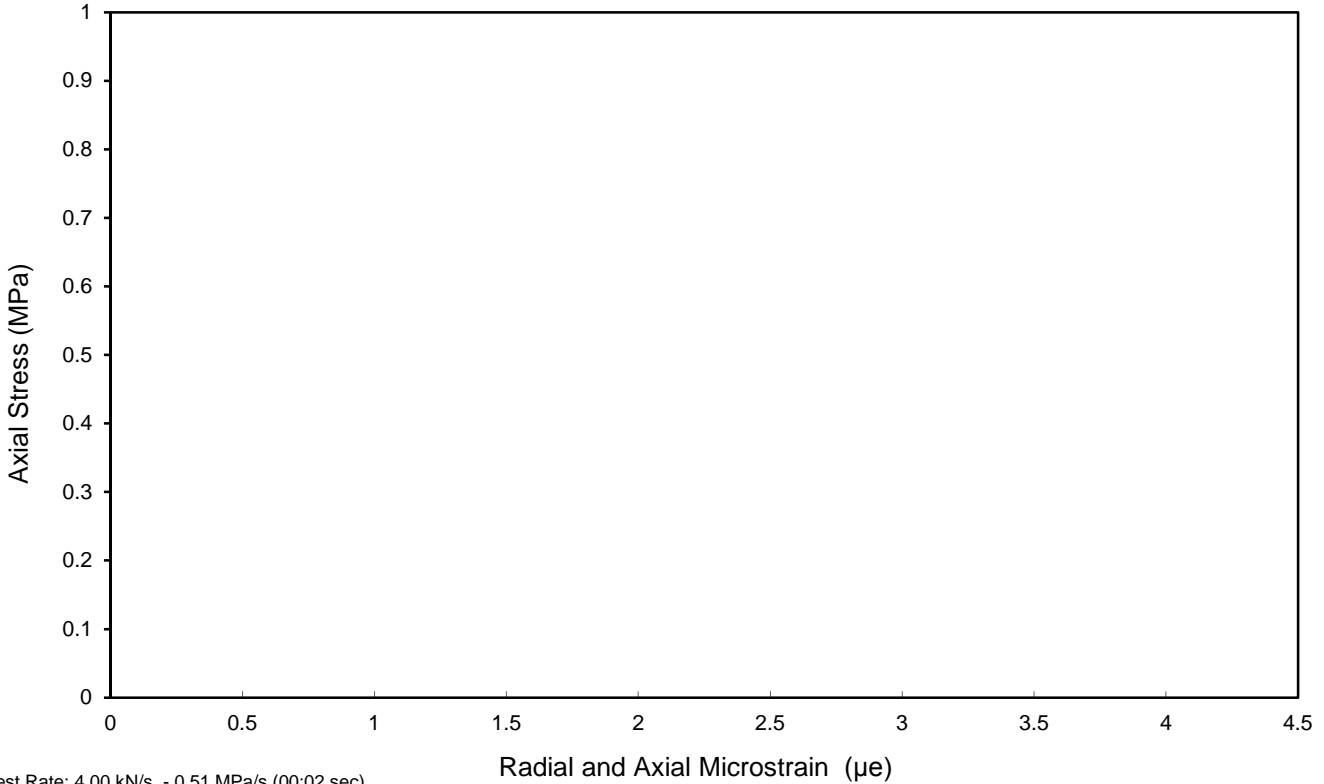
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 65°

Sample type: **C**

Date tested: 19/10/2020

Test results

Unconfined Compressive Strength	1.19 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 (00:02 sec)

Note: The dimensional requirements of Flatness (<0.02 mm), Perpendicularity (<0.05 / 50 mm) and Straightness (0.3 mm deviation) are all met.

Checked and Approved by C Clergeaud (Snr. Geologist) Date: 22/10/2020	Project Number: <p style="text-align: center;">GEO / 31890</p> Project Name: <p style="text-align: center;">A303 STONEHENGE JFR1451</p>	
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UNCONFINED COMPRESSIVE STRENGTH WITH YOUNG'S MODULUS AND POISSON'S RATIO

Borehole Ref.:	R71915	Description: White CHALK
Sample Ref.:	-	
Depth (m):	16.83-17.12	

Diameter	100.70 mm
Height	238.20 mm
Bulk Density	2.02 Mg/m ³
Dry Density	1.65 Mg/m ³
Water Content	23 %
Degree of Saturation: 87.2 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Diagonal shearing

Solid lines for material failures.
Dashed lines for apparent weakness failure.

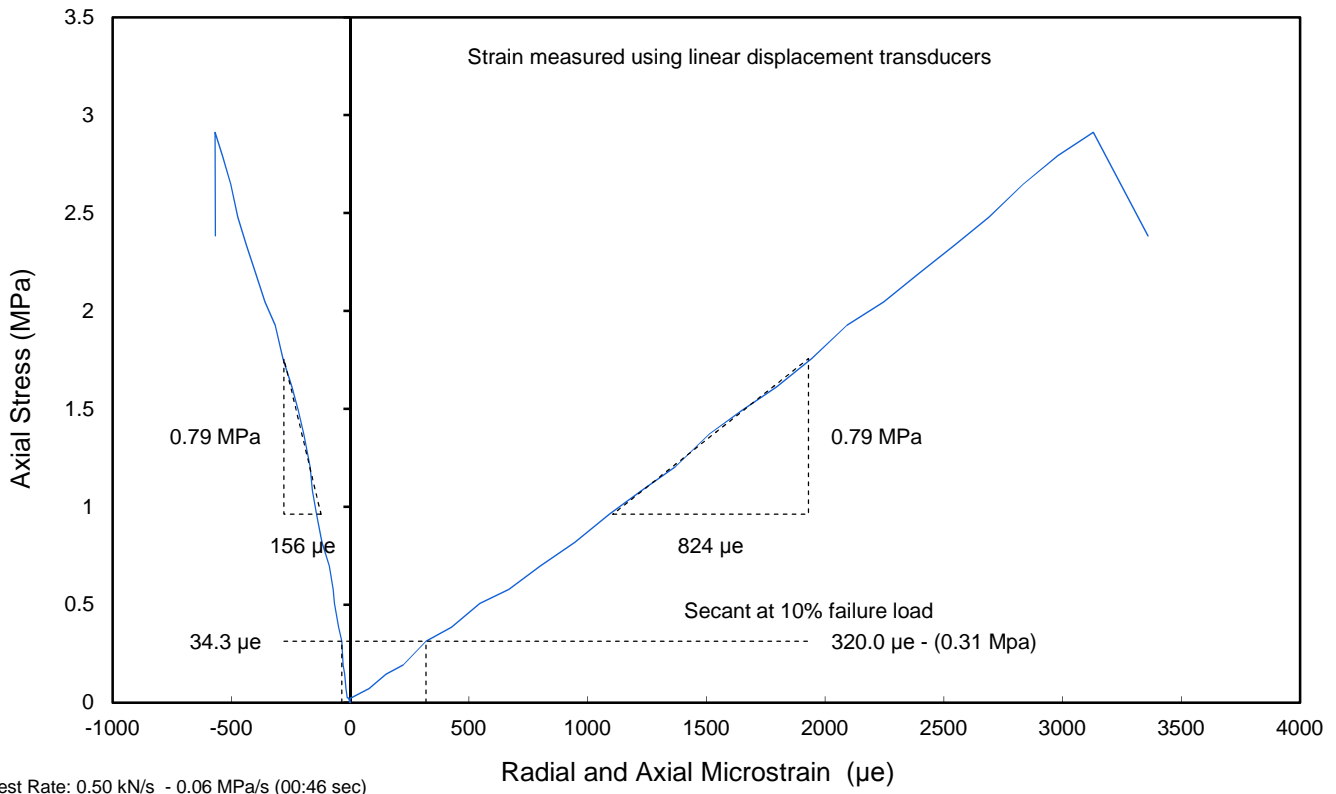
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 70°

Sample type: **C**

Date tested: 19/10/2020

Test results

Unconfined Compressive Strength	2.91 MPa
Young's Modulus (tangential at 50% failure load)	0.964 GPa
Poisson's Ratio (tangential at 50% failure load)	0.19
Young's Modulus (secant at 10% failure load)	0.978 GPa
Poisson's Ratio (secant at 10% failure load)	0.11



Note: The dimensional requirements of Flatness (<0.02 mm), Perpendicularity (<0.05 / 50 mm) and Straightness (0.3 mm deviation) are all met.

Checked and Approved by C Clergeaud (Snr. Geologist) Date: 22/10/2020	Project Number: GEO / 31890	
	Project Name: A303 STONEHENGE JFR1451	

UNCONFINED COMPRESSIVE STRENGTH WITH YOUNG'S MODULUS AND POISSON'S RATIO

Borehole Ref.: R71915	Description: White CHALK
Sample Ref.: -	
Depth (m): 20.83-21.13	

Diameter	99.70 mm
Height	225.60 mm
Bulk Density	2.05 Mg/m ³
Dry Density	1.65 Mg/m ³
Water Content	24 %
Degree of Saturation: 92.3 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Diagonal shearing

Solid lines for material failures.
Dashed lines for apparent weakness failure.

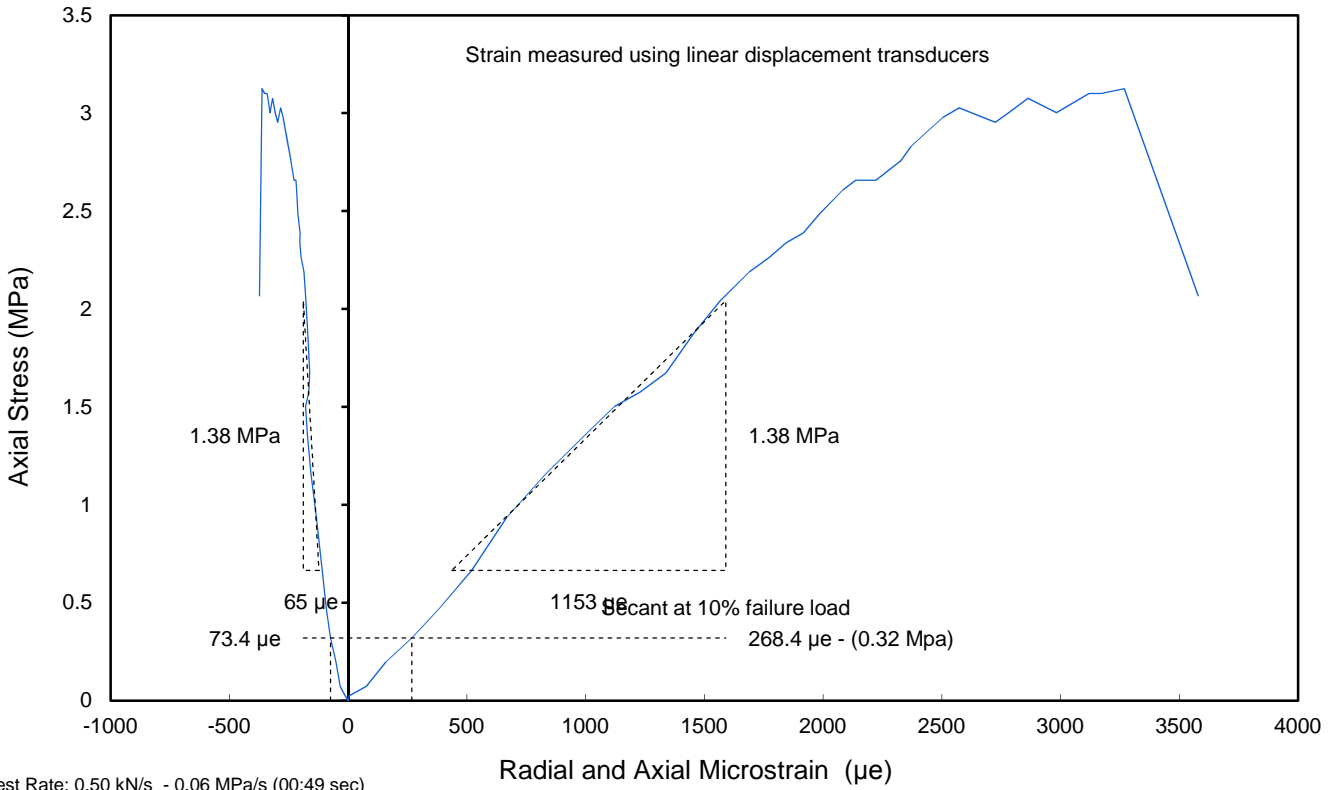
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 70°

Sample type **C**

Date tested: 19/10/2020

Test results

Unconfined Compressive Strength	3.13 MPa
Young's Modulus (tangential at 50% failure load)	1.19 GPa
Poisson's Ratio (tangential at 50% failure load)	0.06
Young's Modulus (secant at 10% failure load)	1.19 GPa
Poisson's Ratio (secant at 10% failure load)	0.27



Note: The dimensional requirements of Flatness (<0.02 mm), Perpendicularity (<0.05 / 50 mm) and Straightness (0.3 mm deviation) are all met.

Checked and Approved by C Clergeaud (Snr. Geologist) Date: 22/10/2020	Project Number: <p style="text-align: center;">GEO / 31890</p> Project Name: <p style="text-align: center;">A303 STONEHENGE JFR1451</p>	

UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: R71915	Description: White CHALK
Sample Ref.: -	
Depth (m): 22.60-22.96	

Diameter	100.60 mm
Height	285.30 mm
Bulk Density	1.86 Mg/m ³
Dry Density	1.47 Mg/m ³
Water Content	27 %
Degree of Saturation: 79.7 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Along foliation

Solid lines for material failures.
Dashed lines for apparent weakness failure.

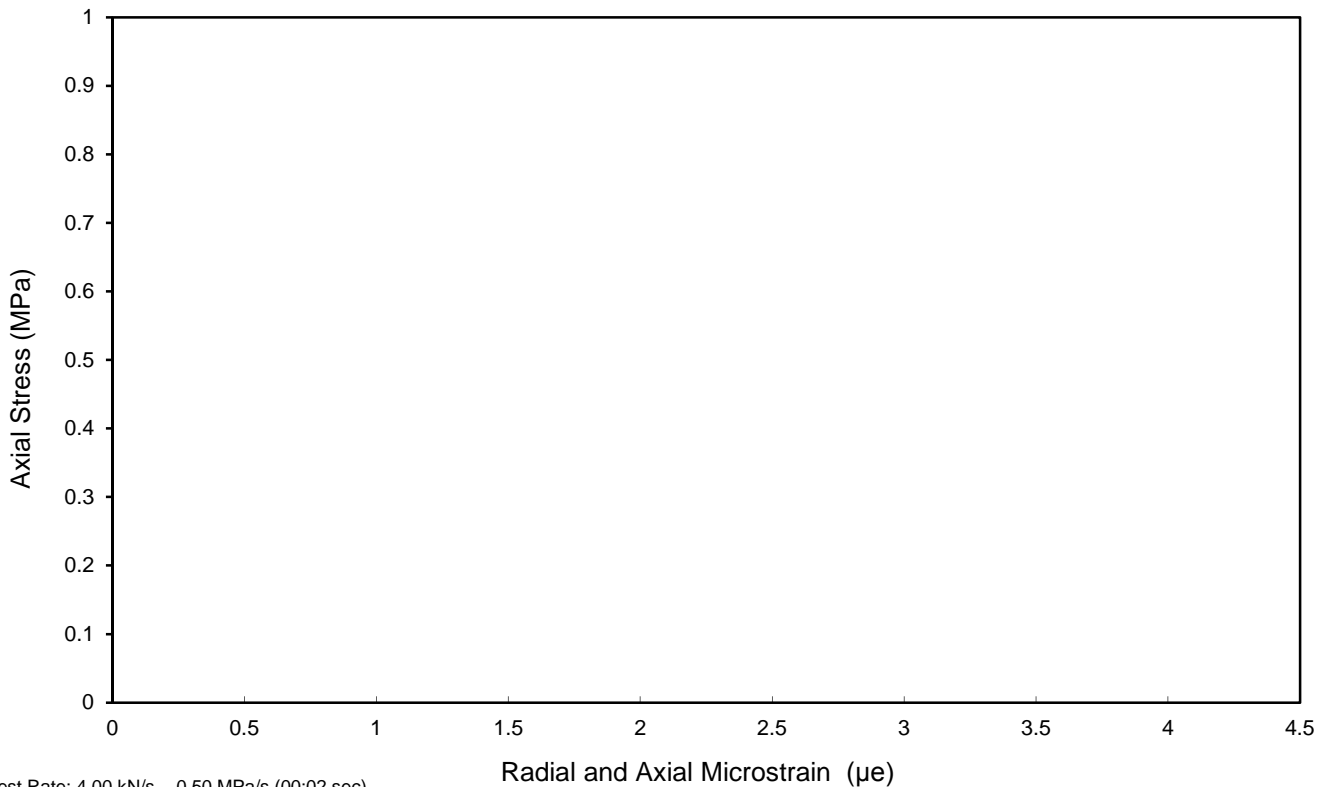
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 50°

Sample type **C**

Date tested: 19/10/2020

Test results

Unconfined Compressive Strength	1.22 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 (00:02 sec)

Remarks: Failed on weakness

Note: The dimensional requirements of Flatness (<0.02 mm), Perpendicularity (<0.05 / 50 mm) and Straightness (0.3 mm deviation) are all met.

Checked and Approved by C Clergeaud (Snr. Geologist) Date: 22/10/2020	Project Number: GEO / 31890	
	Project Name: A303 STONEHENGE JFR1451	

UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: R71915	Description: White CHALK
Sample Ref.: -	
Depth (m): 26.74-27.04	

Diameter	100.60 mm
Height	252.70 mm
Bulk Density	2.01 Mg/m ³
Dry Density	1.61 Mg/m ³
Water Content	25 %

Degree of Saturation: 89.4 % Specific Gravity: 2.9 Mg/m³ (Assumed)

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Diagonal shearing

Solid lines for material failures.
Dashed lines for apparent weakness failure.

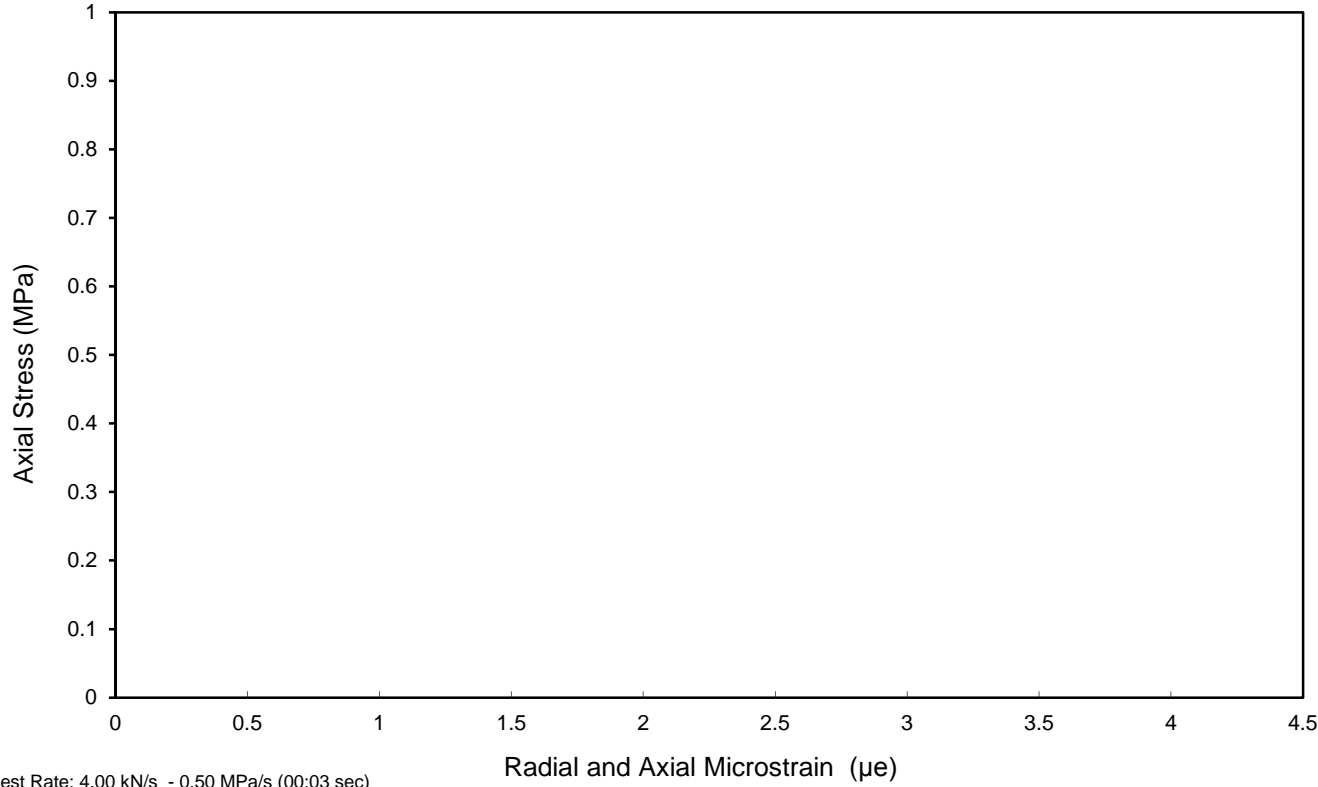
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 110°

Sample type: **C**




Date tested: 19/10/2020

Test results

Unconfined Compressive Strength	1.65 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



Note: The dimensional requirements of Flatness (<0.02 mm), Perpendicularity (<0.05 / 50 mm) and Straightness (0.3 mm deviation) are all met.

Checked and Approved by  C Clergeaud (Snr. Geologist) Date: 22/10/2020	Project Number: GEO / 31890 Project Name: A303 STONEHENGE JFR1451	 
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UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: R71915	Description: White CHALK
Sample Ref.: -	
Depth (m): 31.73-32.16	

Diameter	101.60 mm
Height	266.50 mm
Bulk Density	1.97 Mg/m ³
Dry Density	1.56 Mg/m ³
Water Content	26 %
Degree of Saturation: 89.4 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Along foliation

Solid lines for material failures.
Dashed lines for apparent weakness failure.

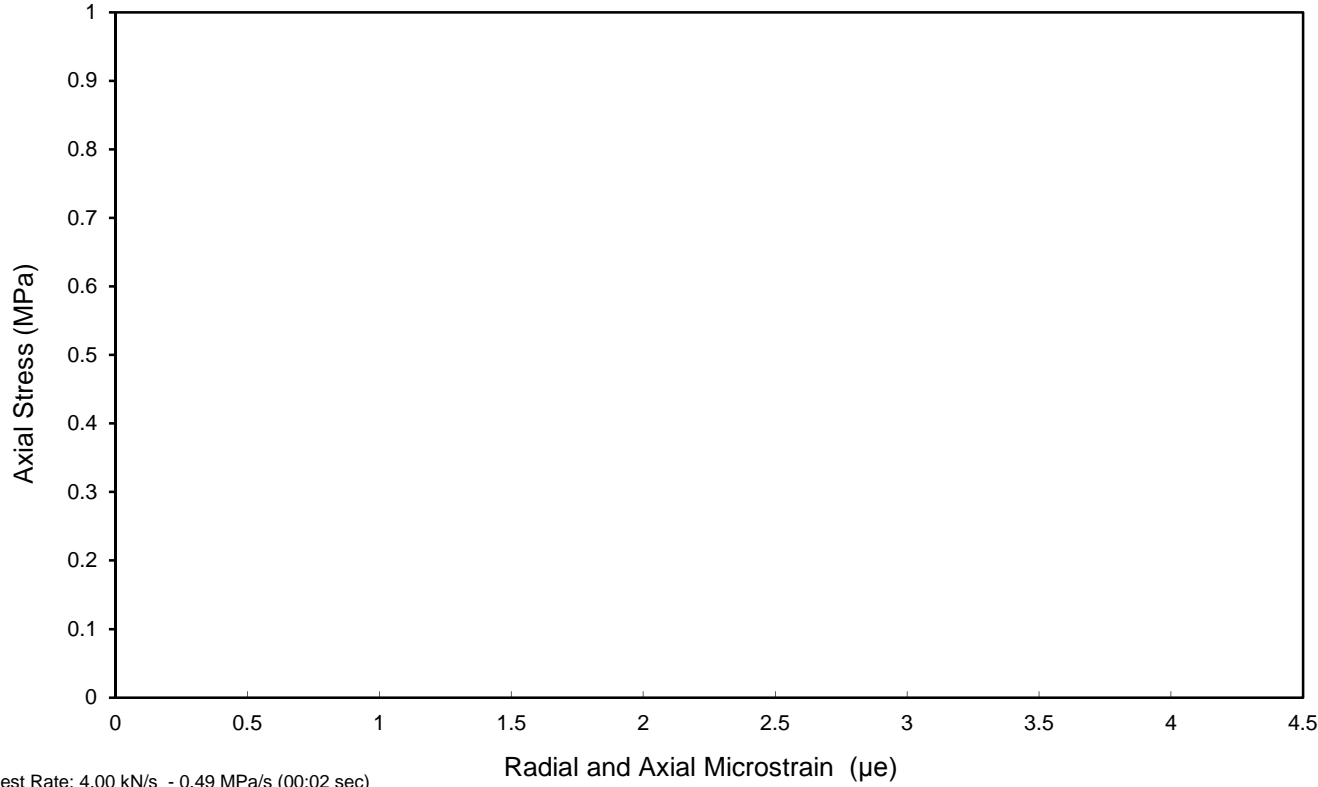
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 115°

Sample type: **C**

Date tested: 19/10/2020

Test results

Unconfined Compressive Strength	1.18 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 - 0.49 MPa/s (00:02 sec)

Remarks: Failed on weakness

Note: The dimensional requirements of Flatness (<0.02 mm), Perpendicularity (<0.05 / 50 mm) and Straightness (0.3 mm deviation) are all met.

Checked and Approved by







C Clergeaud (Snr. Geologist)
Date: 22/10/2020

Project Number:
GEO / 31890

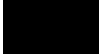


Project Name:
**A303 STONEHENGE
JFR1451**



UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Sample details				Density				Uniaxial Compression Test (LF0879C (1000kN) compression frame used)							
Borehole Ref.	Sample Ref.	Depth (m)	Description	MC (%)	Degree of Saturation (%)	Bulk (Mg/m³)	Dry (Mg/m³)	Mean after prep.		H/D Ratio	Load at Failure (kN)	UCS (MPa) <small>3 sig. fig.</small>	Failure Sketch	D. Tested	Remarks
								Diameter (mm)	Height (mm)						
R72004		17.63-18.04	White CHALK	24	85.0	1.97	1.59	97.60	265.10	2.7	12.0	1.6		15/10/20	
R72004		26.84-27.18	White CHALK	27	87.9	1.95	1.54	98.60	242.50	2.5	25.3	3.31		15/10/20	
R72004		28.55-29.09	White CHALK	28	86.3	1.91	1.49	99.50	260.70	2.6	21.1	2.71		15/10/20	
R72004		32.97-33.29	White CHALK	27	87.4	1.94	1.52	101.50	265.30	2.6	29.5	3.65		15/10/20	
R72004		36.64-36.93	White CHALK	26	96.2	2.05	1.62	98.60	237.60	2.4	35.9	4.7		15/10/20	
R72004		42.62-43.00	White CHALK	23	86.8	2.02	1.65	100.40	264.60	2.6	34.5	4.36		15/10/20	

Note: The dimensional requirements of flatness (<0.02 mm), perpendicularity (<0.05 / 50 mm) and straightness (0.3 mm deviation) are all met. Specific Gravity used for Degree of Saturation is assumed unless specified by the client.

Checked and Approved by  C Clergeaud (Snr. Geologist) Date: 14/10/2020	Project Number: Project Name:	GEO / 31880 A303 STONEHENGE JFR1451	 
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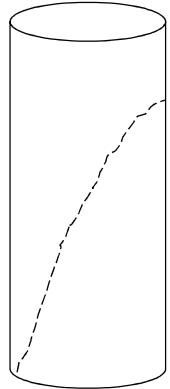
UNCONFINED COMPRESSIVE STRENGTH WITH YOUNG'S MODULUS AND POISSON'S RATIO

Borehole Ref.: R72004	Description: White CHALK
Sample Ref.: -	
Depth (m): 17.63-18.04	

Diameter	97.60 mm
Height	265.10 mm
Bulk Density	1.97 Mg/m ³
Dry Density	1.59 Mg/m ³
Water Content	24 %
Degree of Saturation: 85.0 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Along foliation



Solid lines for material failures.
Dashed lines for apparent weakness failure.

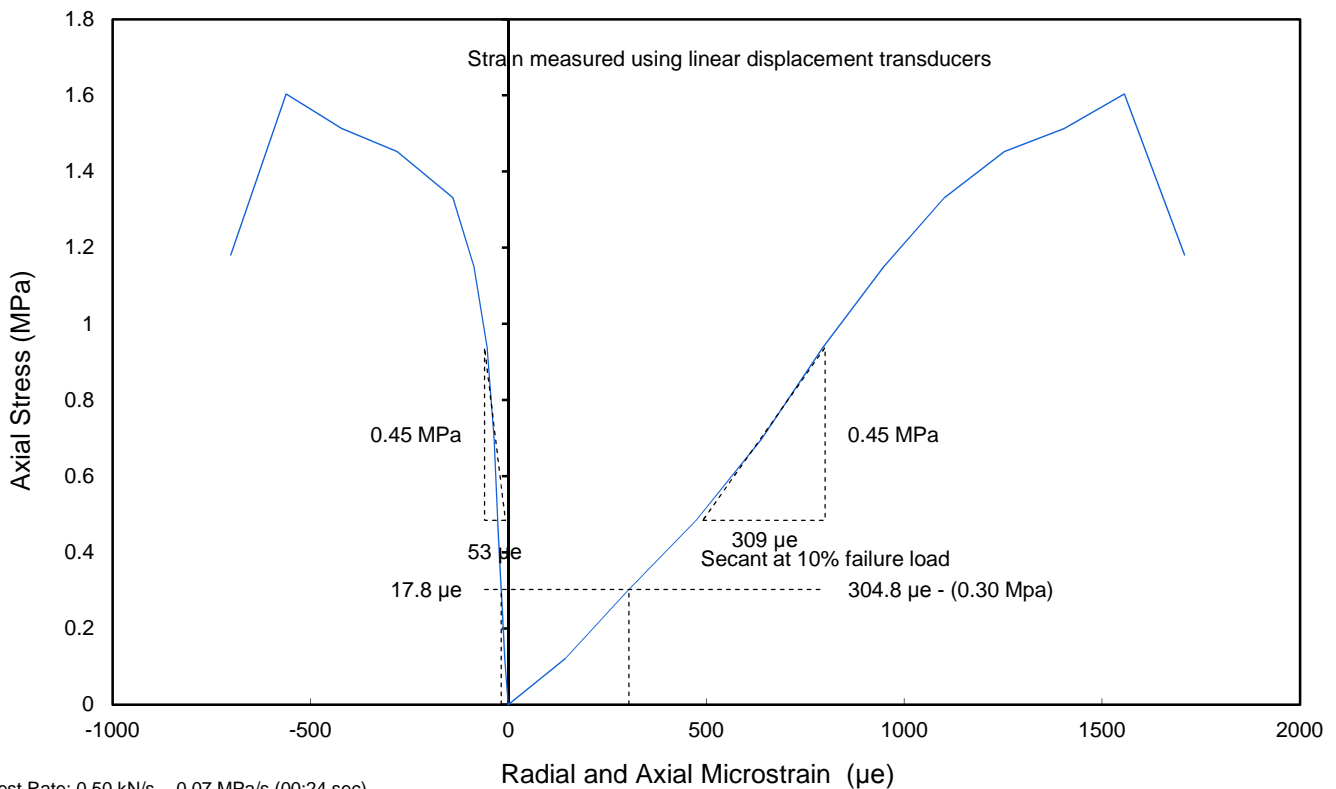
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 105°

Sample type **C**



Date tested: 15/10/2020

Test results

Unconfined Compressive Strength	1.6 MPa
Young's Modulus (tangential at 50% failure load)	1.47 GPa
Poisson's Ratio (tangential at 50% failure load)	0.17
Young's Modulus (secant at 10% failure load)	0.993 GPa
Poisson's Ratio (secant at 10% failure load)	0.06



Note: The dimensional requirements of Flatness (<0.02 mm), Perpendicularity (<0.05 / 50 mm) and Straightness (0.3 mm deviation) are all met.

Checked and Approved by  C Clergeaud (Snr. Geologist) Date: 14/10/2020	Project Number: GEO / 31880 Project Name: A303 STONEHENGE JFR1451	
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UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: R72004	Description: White CHALK
Sample Ref.: -	
Depth (m): 26.84-27.18	

Diameter	98.60 mm
Height	242.50 mm
Bulk Density	1.95 Mg/m ³
Dry Density	1.54 Mg/m ³
Water Content	27 %
Degree of Saturation: 87.9 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Diagonal shearing

Solid lines for material failures.
Dashed lines for apparent weakness failure.

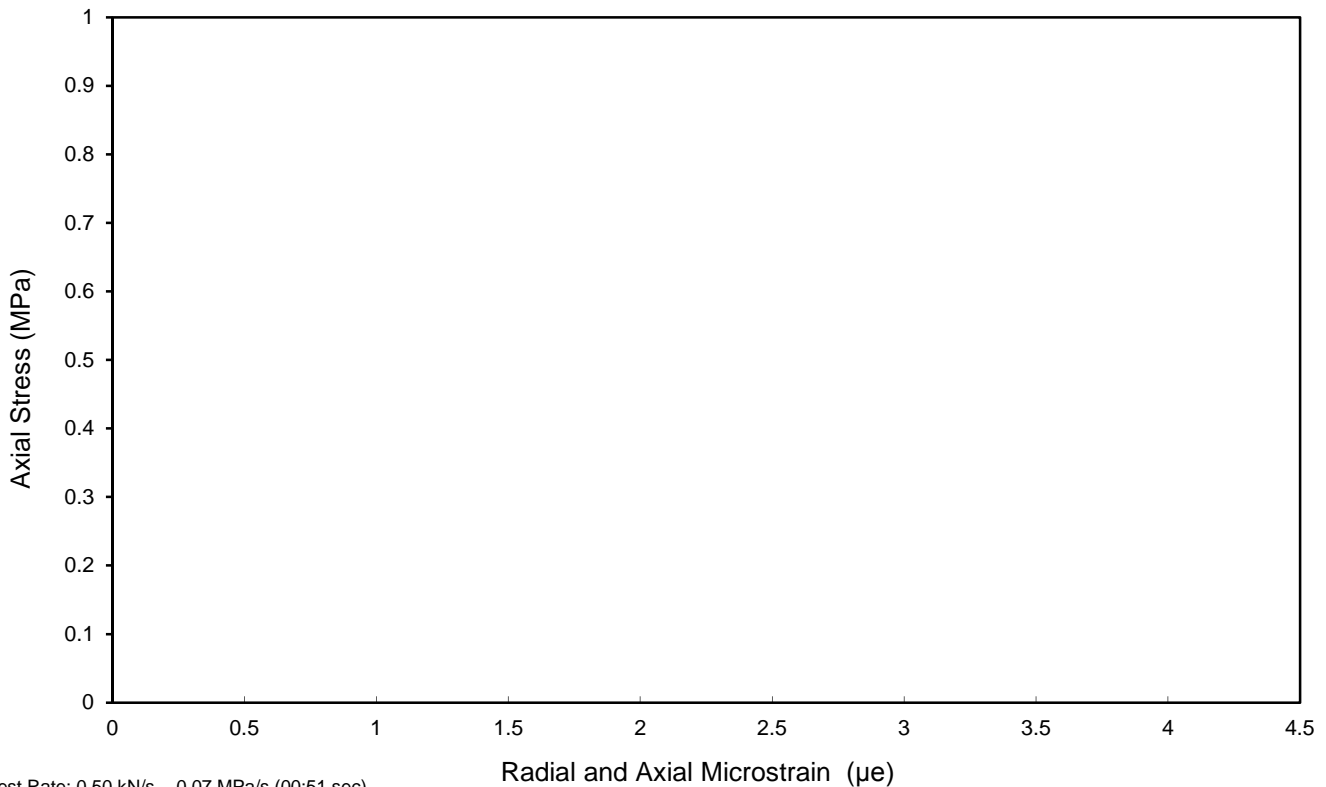
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 105°

Sample type **C**

Date tested: 15/10/2020

Test results

Unconfined Compressive Strength	3.31 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



Note: The dimensional requirements of Flatness (<0.02 mm), Perpendicularity (<0.05 / 50 mm) and Straightness (0.3 mm deviation) are all met.

Checked and Approved by C Clergeaud (Snr. Geologist) Date: 14/10/2020	Project Number: <p style="text-align: center;">GEO / 31880</p> Project Name: <p style="text-align: center;">A303 STONEHENGE JFR1451</p>	
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UNCONFINED COMPRESSIVE STRENGTH WITH YOUNG'S MODULUS AND POISSON'S RATIO

Borehole Ref.:	R72004	Description: White CHALK
Sample Ref.:	-	
Depth (m):	28.55-29.09	

Diameter	99.50 mm
Height	260.70 mm
Bulk Density	1.91 Mg/m ³
Dry Density	1.49 Mg/m ³
Water Content	28 %
Degree of Saturation: 86.3 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Diagonal shearing

Solid lines for material failures.
Dashed lines for apparent weakness failure.

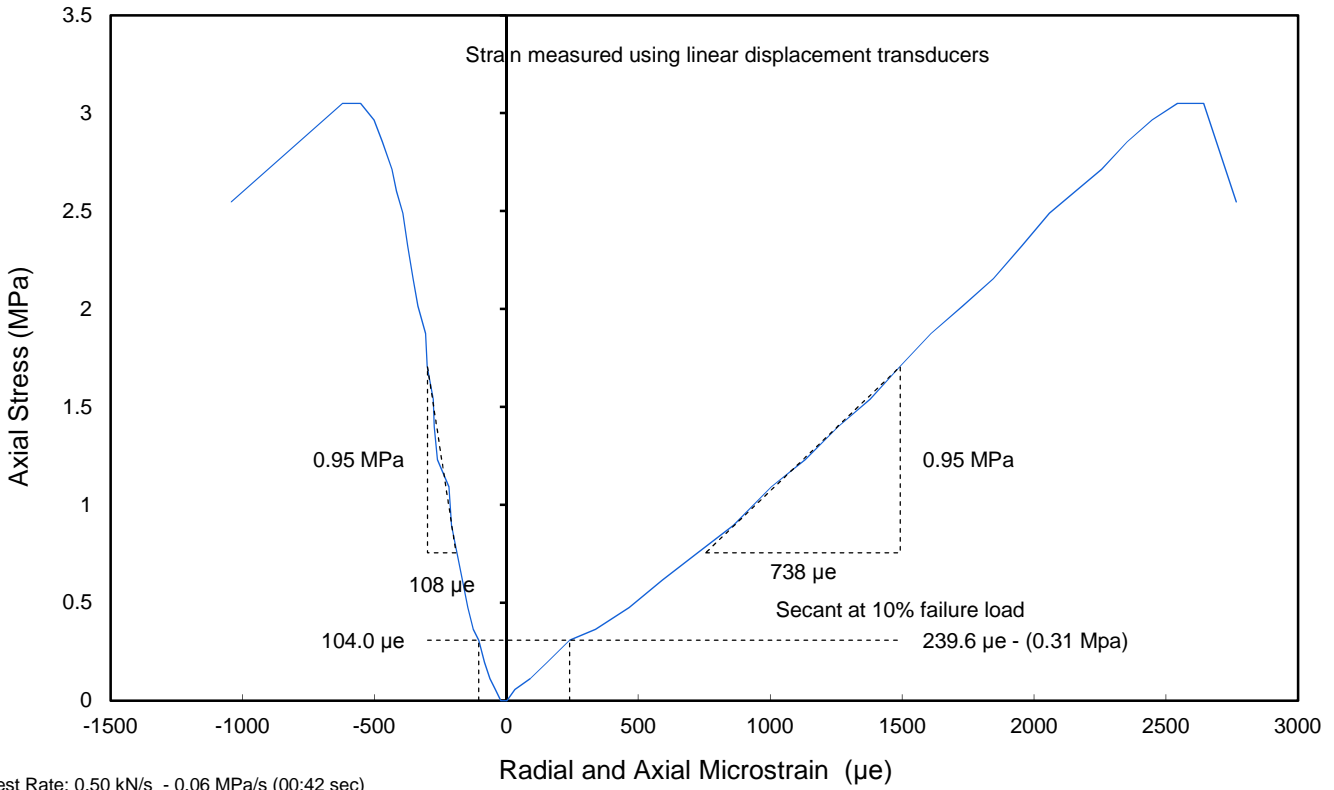
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 120°

Sample type: **C**

Date tested: 15/10/2020

Test results

Unconfined Compressive Strength	2.71 MPa
Young's Modulus (tangential at 50% failure load)	1.29 GPa
Poisson's Ratio (tangential at 50% failure load)	0.15
Young's Modulus (secant at 10% failure load)	1.28 GPa
Poisson's Ratio (secant at 10% failure load)	0.43



Note: The dimensional requirements of Flatness (<0.02 mm), Perpendicularity (<0.05 / 50 mm) and Straightness (0.3 mm deviation) are all met.

Checked and Approved by C Clergeaud (Snr. Geologist) Date: 14/10/2020	Project Number: GEO / 31880	
	Project Name: A303 STONEHENGE JFR1451	

UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: R72004	Description: White CHALK
Sample Ref.: -	
Depth (m): 32.97-33.29	

Diameter	101.50 mm
Height	265.30 mm
Bulk Density	1.94 Mg/m ³
Dry Density	1.52 Mg/m ³
Water Content	27 %
Degree of Saturation: 87.4 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Diagonal shearing

Solid lines for material failures.
Dashed lines for apparent weakness failure.

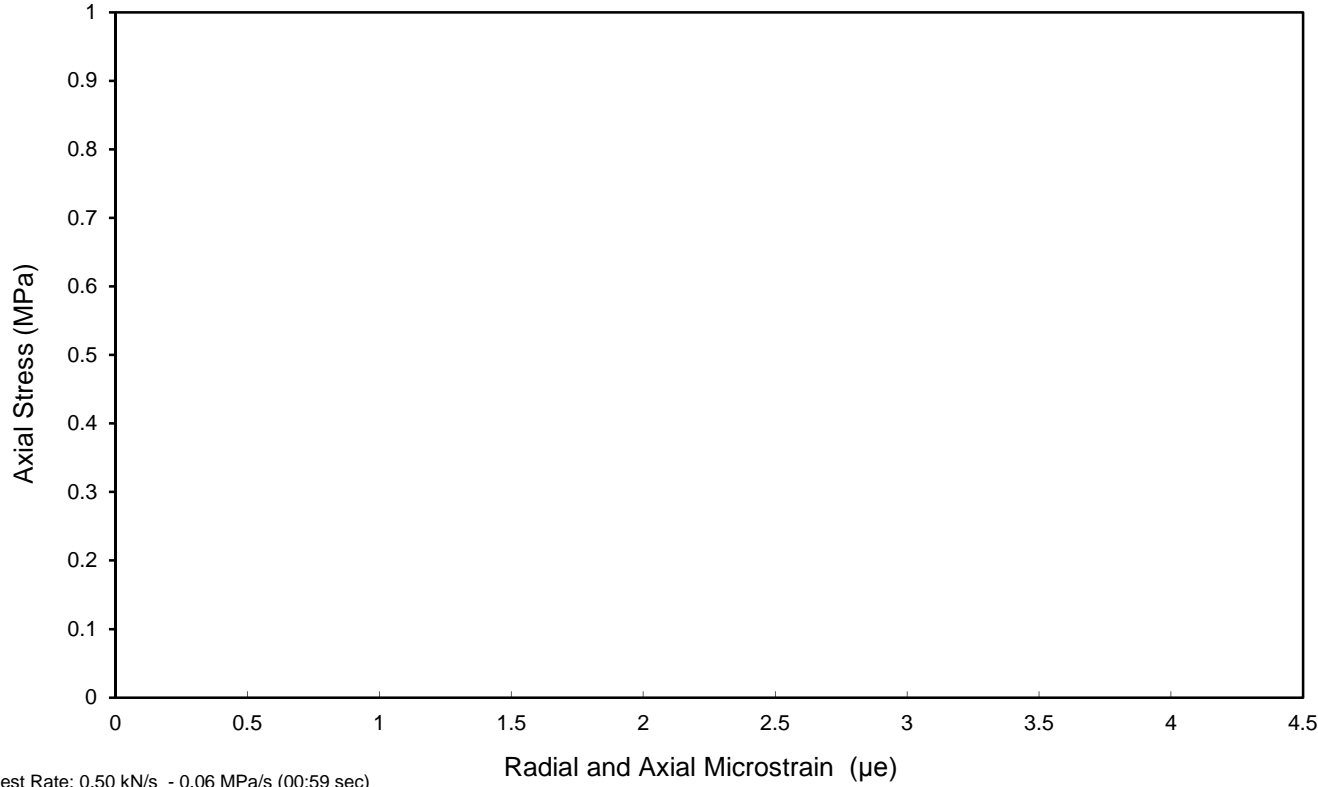
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 100°

Sample type: **C**

Date tested: 15/10/2020

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



Note: The dimensional requirements of Flatness (<0.02 mm), Perpendicularity (<0.05 / 50 mm) and Straightness (0.3 mm deviation) are all met.

Checked and Approved by C Clergeaud (Snr. Geologist) Date: 14/10/2020	Project Number: GEO / 31880 Project Name: A303 STONEHENGE JFR1451	
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UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: R72004	Description: White CHALK
Sample Ref.: -	
Depth (m): 36.64-36.93	

Diameter	98.60 mm
Height	237.60 mm
Bulk Density	2.05 Mg/m ³
Dry Density	1.62 Mg/m ³
Water Content	26 %
Degree of Saturation: 96.2 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Diagonal shearing

Solid lines for material failures.
Dashed lines for apparent weakness failure.

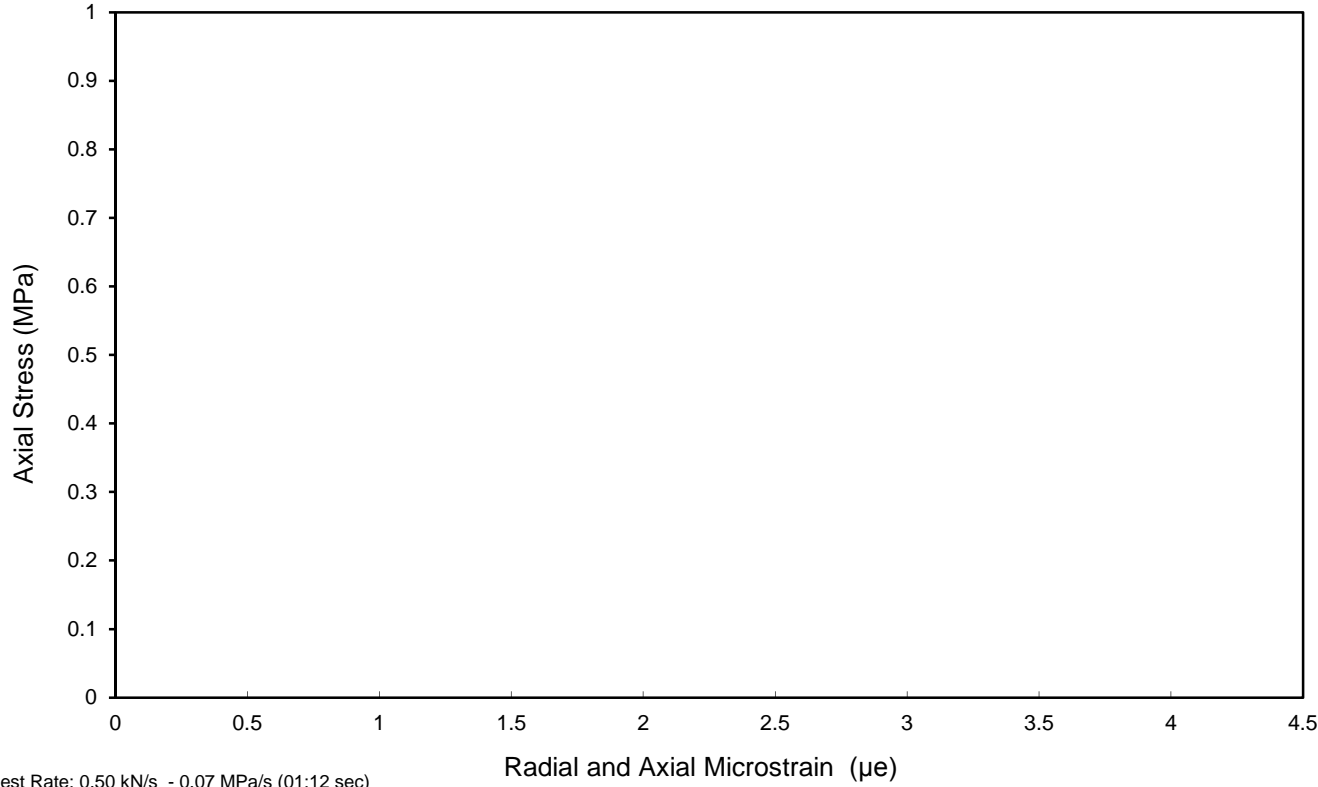
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 70°

Sample type: **C**

Date tested: 15/10/2020

Test results

Unconfined Compressive Strength	4.7 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



Note: The dimensional requirements of Flatness (<0.02 mm), Perpendicularity (<0.05 / 50 mm) and Straightness (0.3 mm deviation) are all met.

Checked and Approved by: C Clergeaud (Snr. Geologist) Date: 14/10/2020	Project Number: GEO / 31880 Project Name: A303 STONEHENGE JFR1451	
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UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: R72004	Description: White CHALK
Sample Ref.: -	
Depth (m): 42.62-43.00	

Diameter	100.40 mm
Height	264.60 mm
Bulk Density	2.02 Mg/m ³
Dry Density	1.65 Mg/m ³
Water Content	23 %
Degree of Saturation: 86.8 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Diagonal shearing

Solid lines for material failures.
Dashed lines for apparent weakness failure.

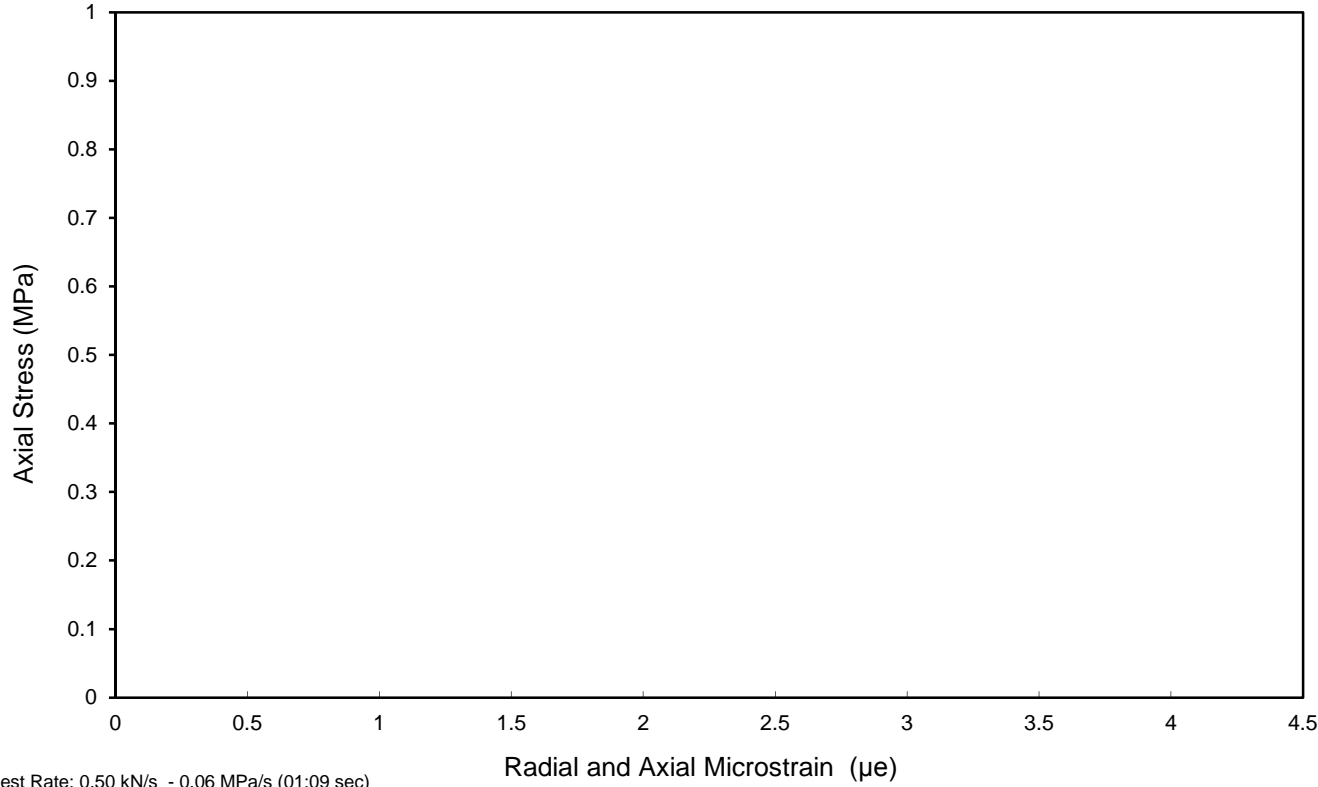
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 120°

Sample type **C**

Date tested: 15/10/2020

Test results

Unconfined Compressive Strength	4.36 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





Note: The dimensional requirements of Flatness (<0.02 mm), Perpendicularity (<0.05 / 50 mm) and Straightness (0.3 mm deviation) are all met.




Checked and Approved by C Clergeaud (Snr. Geologist) Date: 14/10/2020	Project Number: GEO / 31880 Project Name: A303 STONEHENGE JFR1451	
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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)							
Borehole Ref.	Sample Ref.	Depth (m)	Description	MC (%)	Degree of Saturation (%)	Bulk (Mg/m ³)	Dry (Mg/m ³)	Mean after prep.		H/D Ratio	Load at Failure (kN)	UCS (MPa) <small>3 sig. fig.</small>	Failure Sketch	D. Tested	Remarks
								Diameter (mm)	Height (mm)						
BH72503	8	23.49-23.74	White CHALK	25	90.7	2.01	1.61	99.80	222.60	2.2	18.4	2.35		01/03/21	
BH72503	12	27.80-28.12	White CHALK	26	90.9	1.99	1.58	100.80	256.30	2.5	24.0	3.01		02/03/21	

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  C Clergeaud (Snr. Geologist) Date: 03/03/2021	Project Number: GEO / 32695 Project Name: A303 STONEHENGE JFR1451	 
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UNCONFINED COMPRESSIVE STRENGTH WITH YOUNG'S MODULUS AND POISSON'S RATIO

Borehole Ref.: BH72503	Description: White CHALK
Sample Ref.: 8	
Depth (m): 23.49-23.74	

Diameter	99.80 mm
Height	222.60 mm
Bulk Density	2.01 Mg/m ³
Dry Density	1.61 Mg/m ³
Water Content	25 %
Degree of Saturation: 90.7 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Diagonal shearing

Solid lines for material failures.
Dashed lines for apparent weakness failure.

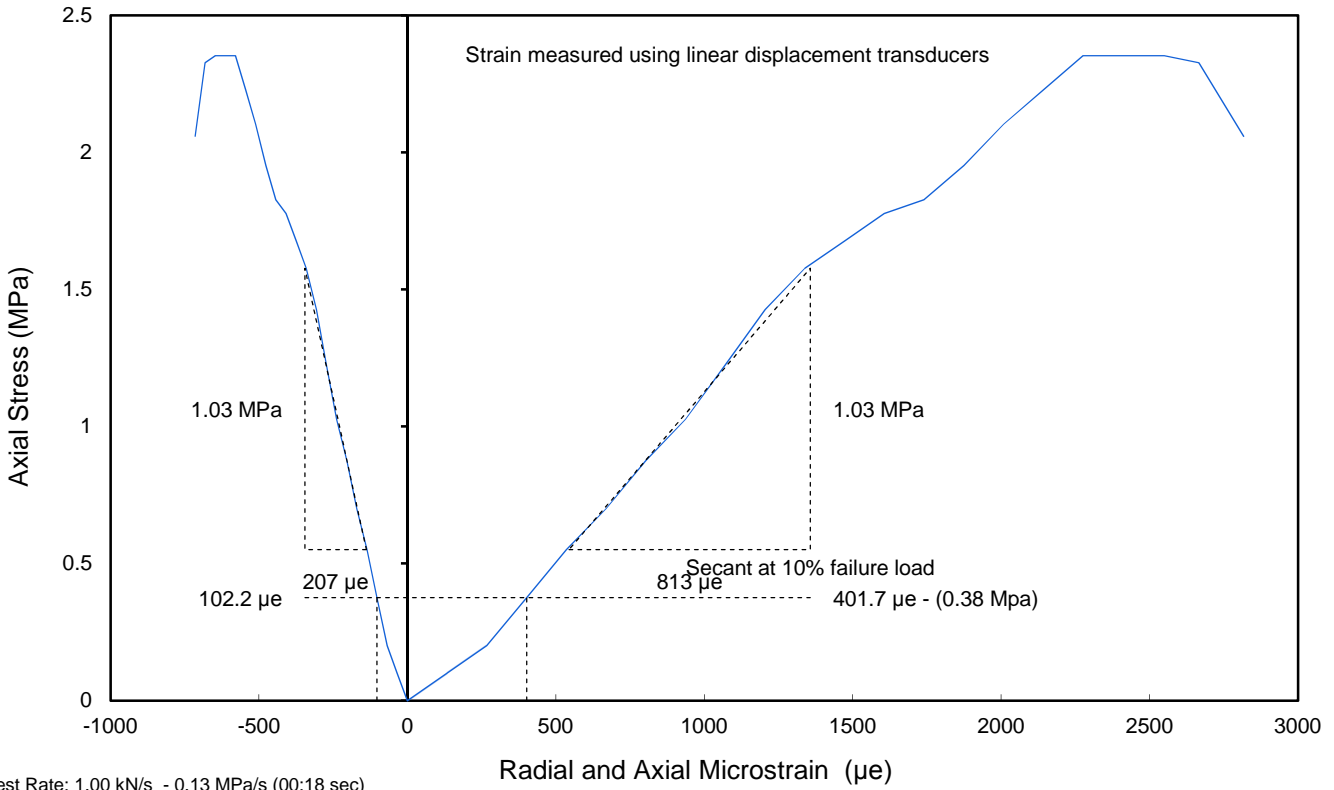
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 110°

Sample type **C**

Date tested: 01/03/2021

Test results

Unconfined Compressive Strength	2.35 MPa
Young's Modulus (tangential at 50% failure load)	1.26 GPa
Poisson's Ratio (tangential at 50% failure load)	0.25
Young's Modulus (secant at 10% failure load)	0.934 GPa
Poisson's Ratio (secant at 10% failure load)	0.25



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 C Clergeaud (Snr. Geologist) Date: 03/03/2021	Project Number: GEO / 32695 Project Name: A303 STONEHENGE JFR1451	
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UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: BH72503	Description: White CHALK
Sample Ref.: 12	
Depth (m): 27.80-28.12	

Diameter	100.80 mm
Height	256.30 mm
Bulk Density	1.99 Mg/m ³
Dry Density	1.58 Mg/m ³
Water Content	26 %
Degree of Saturation: 90.9 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Diagonal shearing

Solid lines for material failures.
Dashed lines for apparent weakness failure.

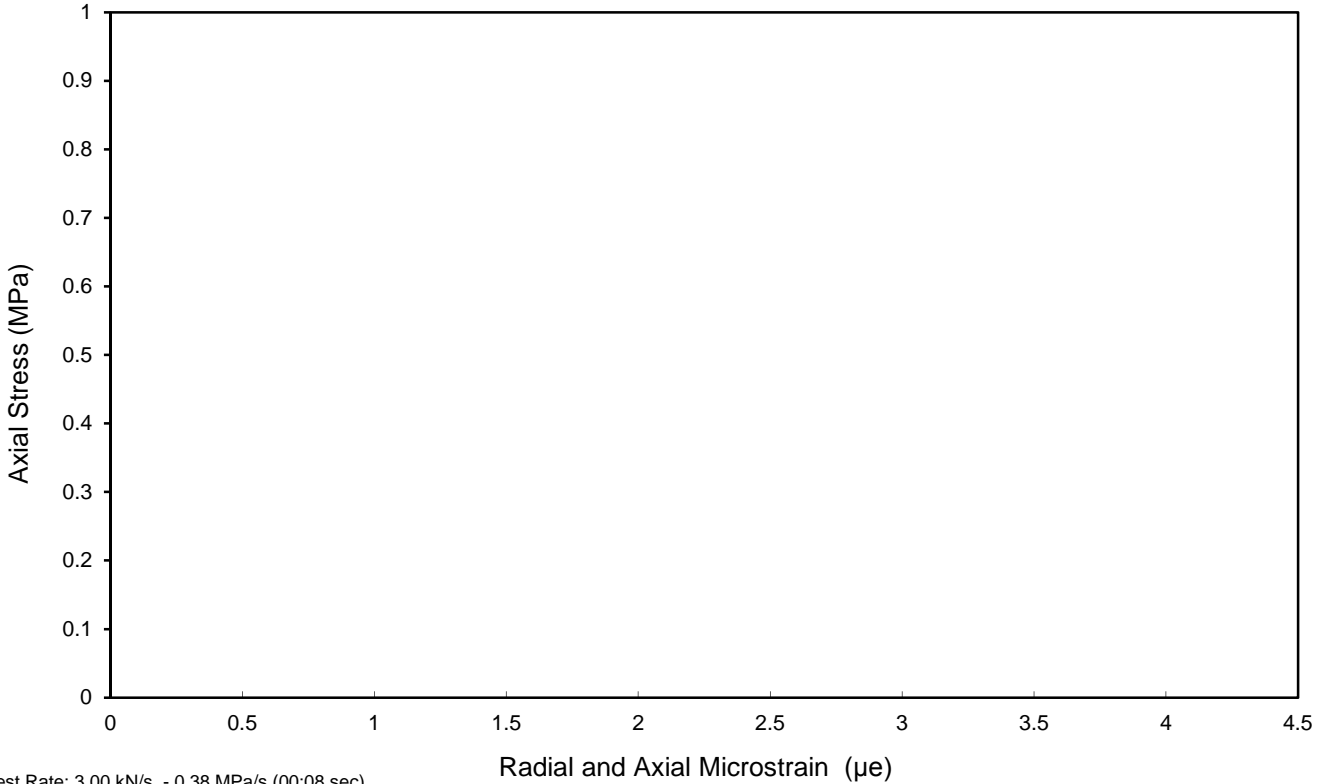
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 80°

Sample type **C**

Date tested: 02/03/2021

Test results

Unconfined Compressive Strength	3.01 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





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 C Clergeaud (Snr. Geologist) Date: 03/03/2021	Project Number: GEO / 32695 Project Name: A303 STONEHENGE JFR1451	
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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)							
Borehole Ref.	Sample Ref.	Depth (m)	Description	MC (%)	Degree of Saturation (%)	Bulk (Mg/m³)	Dry (Mg/m³)	Mean after prep.		H/D Ratio	Load at Failure (kN)	UCS (MPa) <small>3 sig. fig.</small>	Failure Sketch	D. Tested	Remarks
								Diameter (mm)	Height (mm)						
R71210	10	13.18-13.44	White CHALK	24	88.2	2.02	1.63	101.60	229.00	2.3	16.2	2		01/03/21	
R71210	14	15.43-15.75	White CHALK	22	87.4	2.04	1.67	102.10	270.10	2.6	24.4	2.98		01/03/21	

Note: The dimensional requirements of flatness (<0.02 mm), perpendicularity (<0.05 / 50 mm) and straightness (0.3 mm deviation) are all met. Specific Gravity used for Degree of Saturation is assumed unless specified by the client.

Checked and Approved by  C Clergeaud (Snr. Geologist) Date: 05/03/2021	Project Number: GEO / 32691 Project Name: A303 STONEHENGE JFR1451	 
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UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: R71210	Description: White CHALK
Sample Ref.: 10	
Depth (m): 13.18-13.44	

Diameter
Height
Bulk Density
Dry Density
Water Content

101.60 mm
229.00 mm
2.02 Mg/m ³
1.63 Mg/m ³
24 %

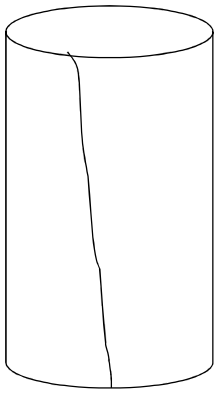
Degree of Saturation: 88.2 % Specific Gravity: 2.9 Mg/m³ (Assumed)

Test results

Unconfined Compressive Strength
Young's Modulus (tangential at 50% failure load)
Poisson's Ratio (tangential at 50% failure load)
Young's Modulus (secant at 10% failure load)
Poisson's Ratio (secant at 10% failure load)




2 MPa
n/a
n/a
n/a
n/a

LF0879C (1000kN) compression frame used

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: 80°
Sample type C

Date tested: 01/03/2021

Note: The dimensional requirements of Flatness (<0.02 mm), Perpendicularity (<0.05 / 50 mm) and Straightness (0.3 mm deviation) are all met.

Checked and Approved by  C Clergeaud (Snr. Geologist) Date: 05/03/2021	Project Number: <p style="text-align: center;">GEO / 32691</p> Project Name: <p style="text-align: center;">A303 STONEHENGE JFR1451</p>	 

UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: R71210
 Sample Ref.: 14
 Depth (m): 15.43-15.75

Description:
 White CHALK

Diameter
Height
Bulk Density
Dry Density
Water Content

102.10 mm
270.10 mm
2.04 Mg/m ³
1.67 Mg/m ³
22 %

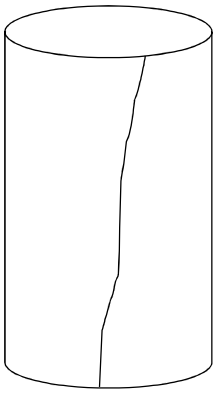
Degree of Saturation: 87.4 % Specific Gravity: 2.9 Mg/m³ (Assumed)

Test results

Unconfined Compressive Strength
Young's Modulus (tangential at 50% failure load)
Poisson's Ratio (tangential at 50% failure load)
Young's Modulus (secant at 10% failure load)
Poisson's Ratio (secant at 10% failure load)


2.98 MPa
n/a
n/a
n/a
n/a

LF0879C (1000kN) compression frame used

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°
Sample type C

Date tested: 01/03/2021











Note: The dimensional requirements of Flatness (<0.02 mm), Perpendicularity (<0.05 / 50 mm) and Straightness (0.3 mm deviation) are all met.

Checked and Approved by

 C Clergeaud (Snr. Geologist)
 Date: 05/03/2021




Project Number:
GEO / 32691
 Project Name:
A303 STONEHENGE
JFR1451



UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS



Sample details				Density				Uniaxial Compression Test (LF0879C (1000kN) compression frame used)							
Borehole Ref.	Sample Ref.	Depth (m)	Description	MC (%)	Degree of Saturation (%)	Bulk (Mg/m³)	Dry (Mg/m³)	Mean after prep.		H/D Ratio	Load at Failure (kN)	UCS (MPa) <small>3 sig. fig.</small>	Failure Sketch	D. Tested	Remarks
								Diameter (mm)	Height (mm)						
R71916		10.42-10.86	White CHALK	23	90.9	2.05	1.66	101.40	245.50	2.4	31.2	3.86		11/01/21	
R71916		18.50-18.75	White CHALK	23	92.9	2.07	1.68	101.50	219.30	2.2	17.4	2.15		11/01/21	
R71916		35.86-36.11	White CHALK	24	93.1	2.06	1.67	96.00	218.80	2.3	29.3	4.05		11/01/21	
R71917	12	16.50-16.80	White CHALK	27	92.1	1.99	1.57	100.40	221.80	2.2	14.5	1.83		11/01/21	
R71917	18	25.40-25.70	White CHALK	48	100	1.96	1.32	101.20	257.70	2.5	13.9	1.73		11/01/21	
R71917	26	37.00-37.26	White CHALK	24	89.2	2.02	1.63	100.80	216.50	2.1	34.7	4.35		11/01/21	
R71918	14	25.20-25.47	White CHALK	30	93.7	1.96	1.51	101.50	237.80	2.3	10.8	1.33		11/01/21	Failed on weakness plane
R71918	23	36.00-36.30	White CHALK	25	87.5	1.98	1.58	100.90	258.30	2.6	30.7	3.84		11/01/21	
R71918	28	43.10-43.73	White CHALK	23	85.0	2.00	1.63	102.10	268.60	2.6	34.6	4.23		11/01/21	
R71919	7	20.60-20.97	White CHALK	25	88.4	2.00	1.61	100.40	254.80	2.5	13.3	1.68		11/01/21	

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  C Clergeaud (Snr. Geologist) Date: 18/01/2021	Project Number: Project Name:	GEO / 32382 A303 STONEHENGE JFR1451	 
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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)							
Borehole Ref.	Sample Ref.	Depth (m)	Description	MC (%)	Degree of Saturation (%)	Bulk (Mg/m ³)	Dry (Mg/m ³)	Mean after prep.		H/D Ratio	Load at Failure (kN)	UCS (MPa) <small>3 sig. fig.</small>	Failure Sketch	D. Tested	Remarks
								Diameter (mm)	Height (mm)						
R71919	13	29.70-30.10	White CHALK	25	88.0	1.99	1.59	101.10	202.40	2.0	26.5	3.3		11/01/21	
R71919	24	46.80-47.20	White CHALK	22	85.1	2.02	1.66	102.00	238.80	2.3	29.3	3.59		11/01/21	

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  C Clergeaud (Snr. Geologist) Date: 18/01/2021	Project Number: Project Name:	GEO / 32382 A303 STONEHENGE JFR1451	 
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UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

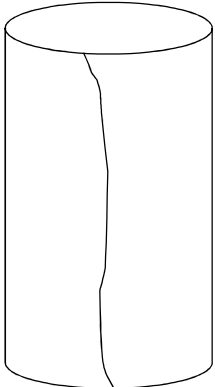
Borehole Ref.: R71916	Description: White CHALK
Sample Ref.: -	
Depth (m): 10.42-10.86	

Diameter	101.40 mm
Height	245.50 mm
Bulk Density	2.05 Mg/m ³
Dry Density	1.66 Mg/m ³
Water Content	23 %
Degree of Saturation: 90.9 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch

Mode of failure: Axial splitting



Solid lines for material failures.
Dashed lines for apparent weakness failure.

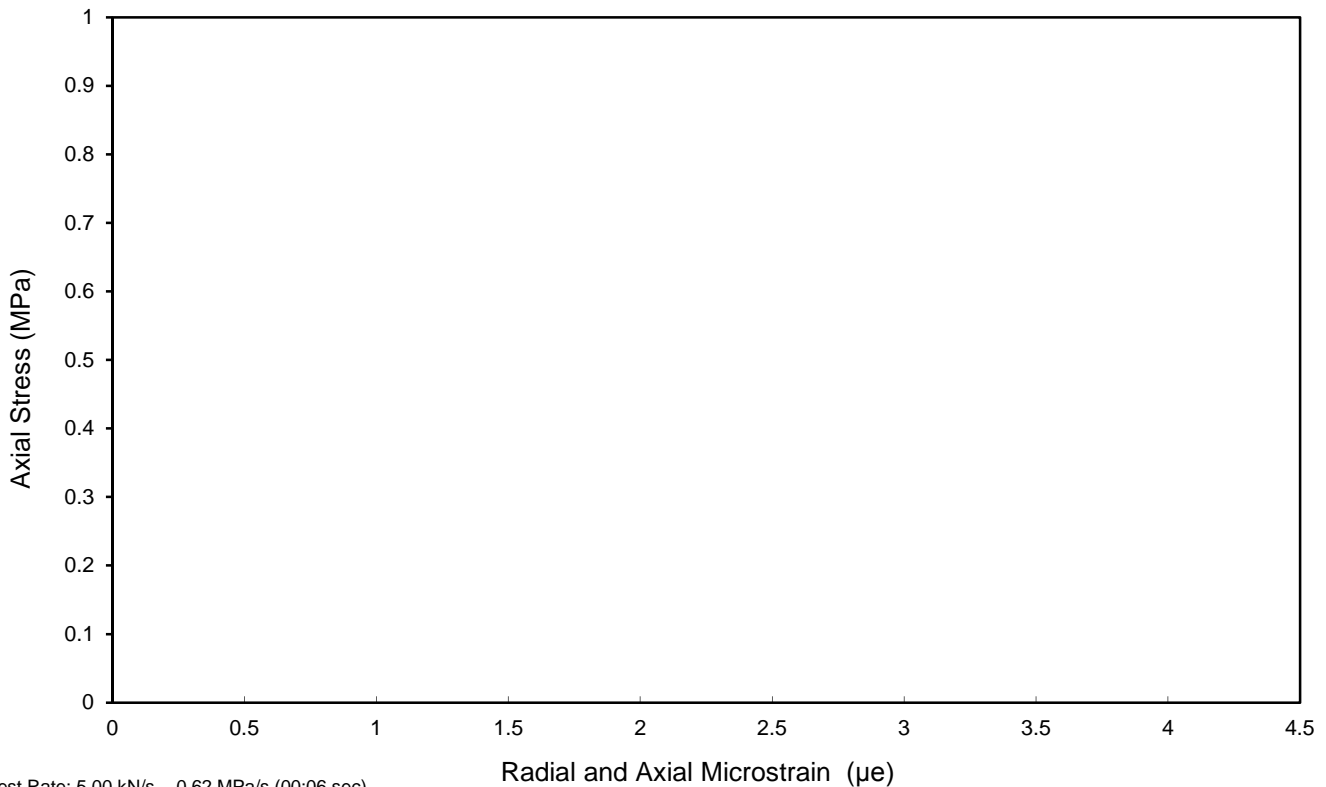
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 90°

Sample type	C
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


Date tested: 11/01/2021

Test results

Unconfined Compressive Strength	3.86 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



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  C Clergeaud (Snr. Geologist) Date: 18/01/2021	Project Number: GEO / 32382 Project Name: A303 STONEHENGE JFR1451	 
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UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: R71916	Description: White CHALK
Sample Ref.: -	
Depth (m): 18.50-18.75	

Diameter	101.50 mm
Height	219.30 mm
Bulk Density	2.07 Mg/m ³
Dry Density	1.68 Mg/m ³
Water Content	23 %
Degree of Saturation: 92.9 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Diagonal shearing

Solid lines for material failures.
Dashed lines for apparent weakness failure.

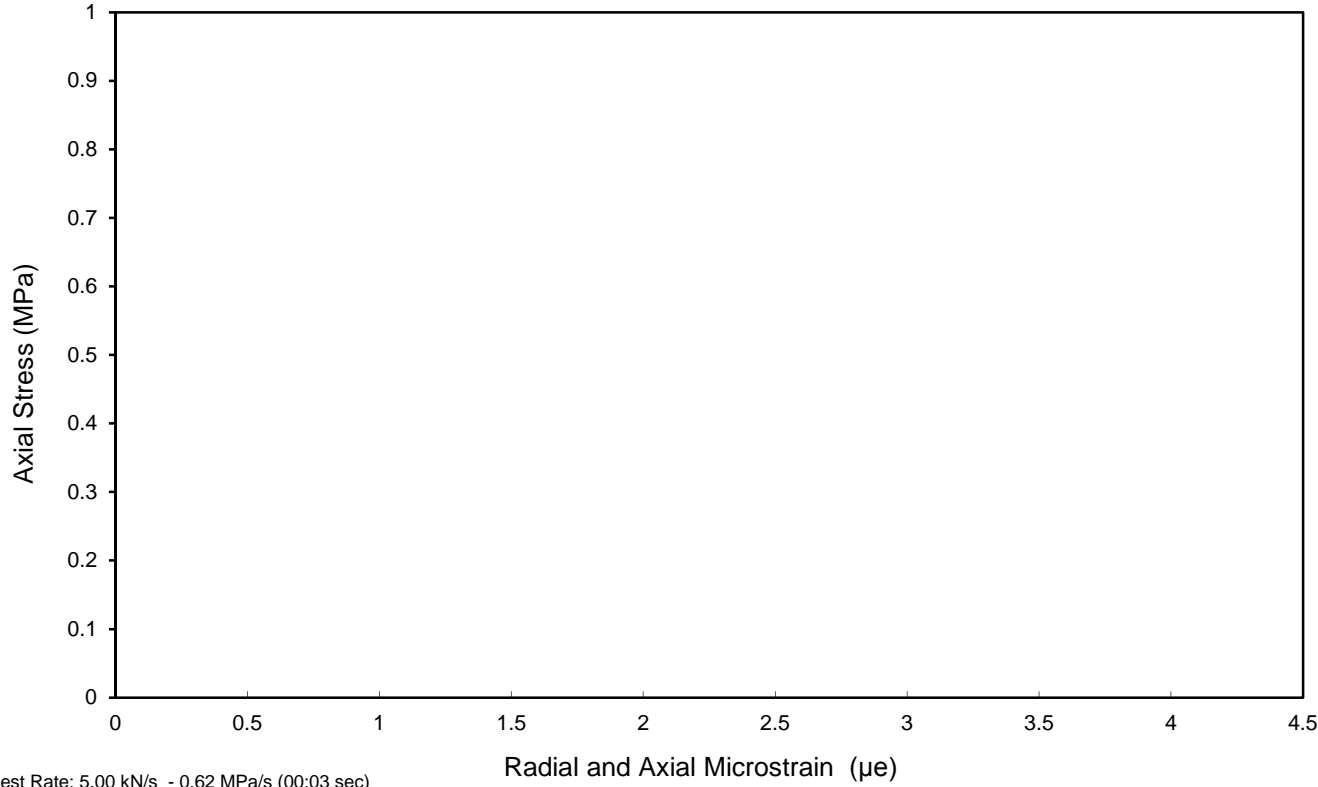
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 65°

Sample type **C**

Date tested: 11/01/2021

Test results

Unconfined Compressive Strength	2.15 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



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 C Clergeaud (Snr. Geologist) Date: 18/01/2021	Project Number: GEO / 32382 Project Name: A303 STONEHENGE JFR1451	
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UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: R71916	Description: White CHALK
Sample Ref.: -	
Depth (m): 35.86-36.11	

Diameter	96.00 mm
Height	218.80 mm
Bulk Density	2.06 Mg/m ³
Dry Density	1.67 Mg/m ³
Water Content	24 %
Degree of Saturation: 93.1 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Diagonal shearing

Solid lines for material failures.
Dashed lines for apparent weakness failure.

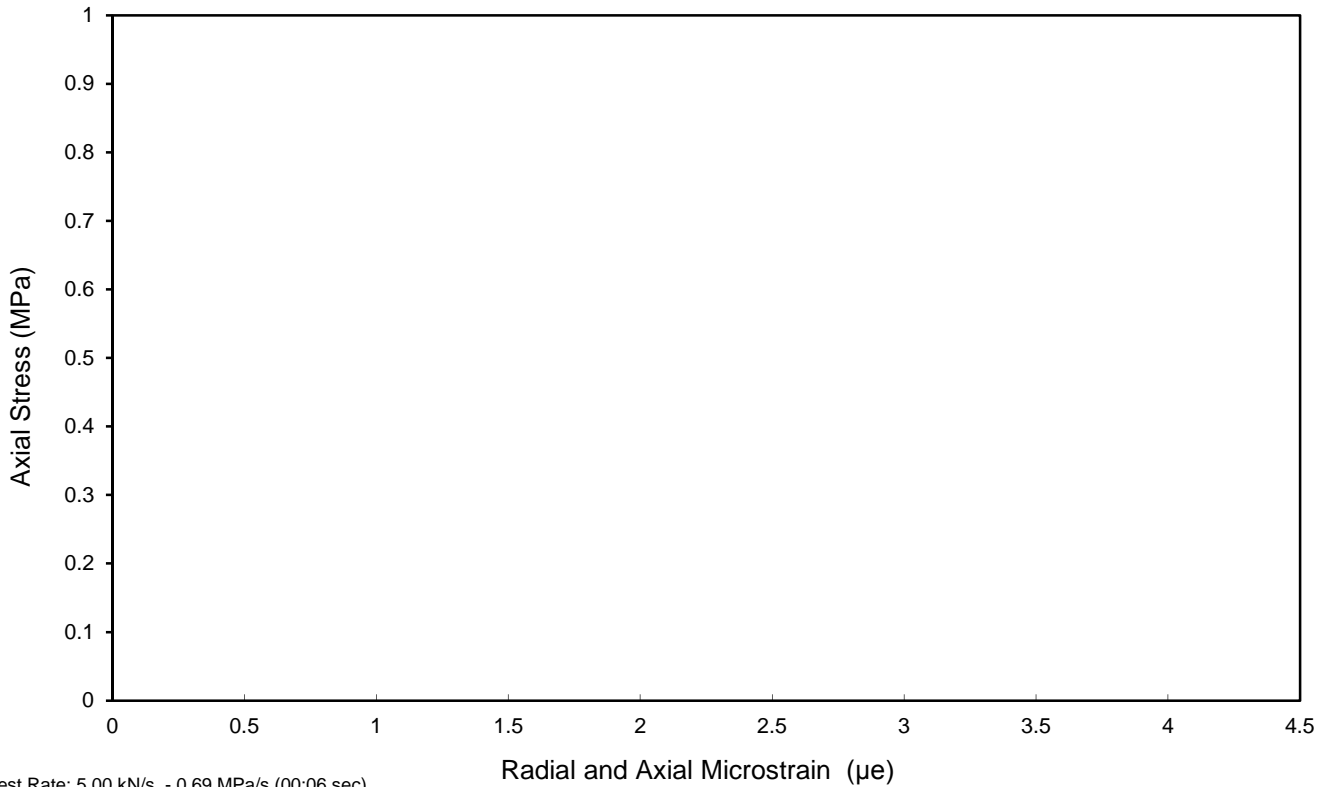
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 105°

Sample type: **C**

Date tested: 11/01/2021

Test results

Unconfined Compressive Strength	4.05 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



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 C Clergeaud (Snr. Geologist) Date: 18/01/2021	Project Number: <p style="text-align: center;">GEO / 32382</p> Project Name: <p style="text-align: center;">A303 STONEHENGE JFR1451</p>	
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UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: R71917	Description: White CHALK
Sample Ref.: 12	
Depth (m): 16.50-16.80	

Diameter	100.40 mm
Height	221.80 mm
Bulk Density	1.99 Mg/m ³
Dry Density	1.57 Mg/m ³
Water Content	27 %
Degree of Saturation: 92.1 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Axial splitting

Solid lines for material failures.
Dashed lines for apparent weakness failure.

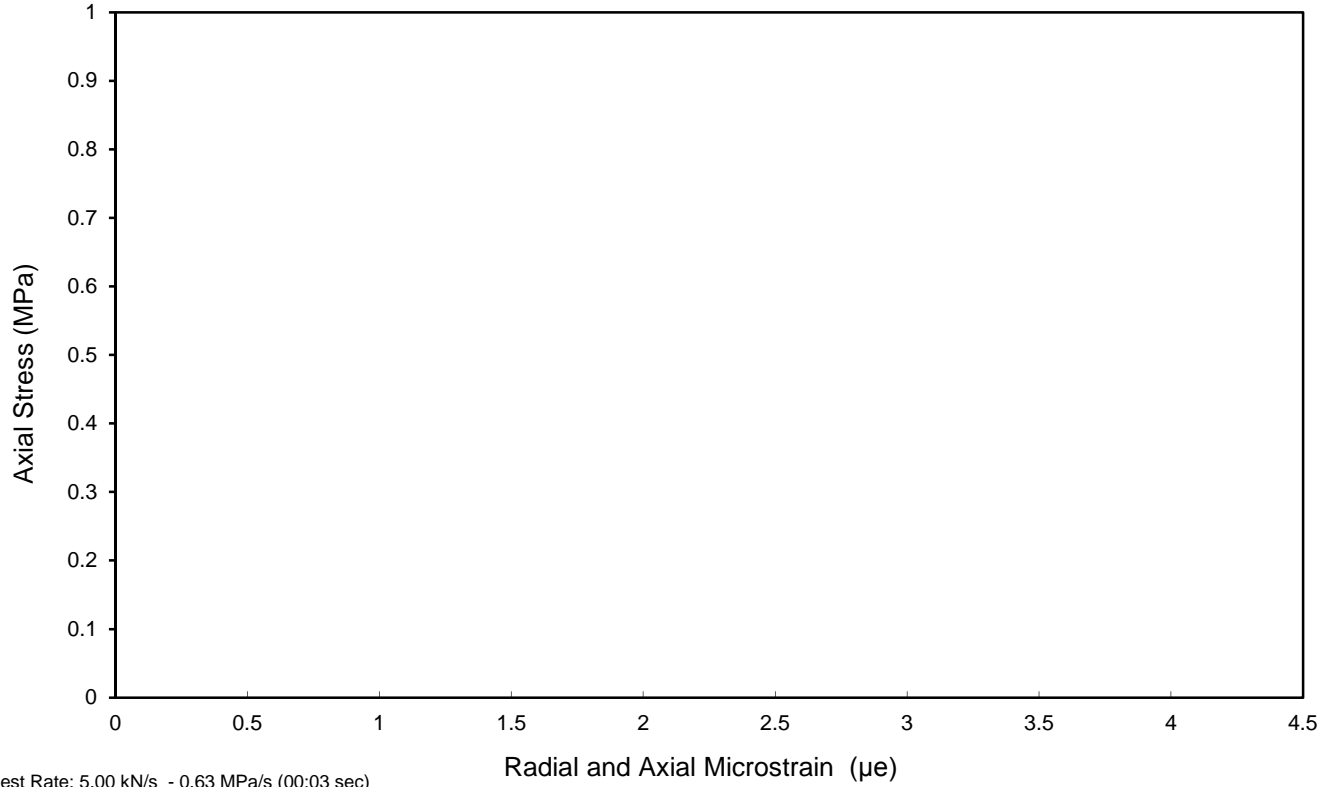
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 90°

Sample type **C**

Date tested: 11/01/2021

Test results

Unconfined Compressive Strength	1.83 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



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 C Clergeaud (Snr. Geologist) Date: 18/01/2021	Project Number: <p style="text-align: center;">GEO / 32382</p> Project Name: <p style="text-align: center;">A303 STONEHENGE JFR1451</p>	
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UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: R71917	Description: White CHALK
Sample Ref.: 18	
Depth (m): 25.40-25.70	

Diameter	101.20 mm
Height	257.70 mm
Bulk Density	1.96 Mg/m ³
Dry Density	1.32 Mg/m ³
Water Content	48 %
Degree of Saturation: 100 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Diagonal shearing

Solid lines for material failures.
Dashed lines for apparent weakness failure.

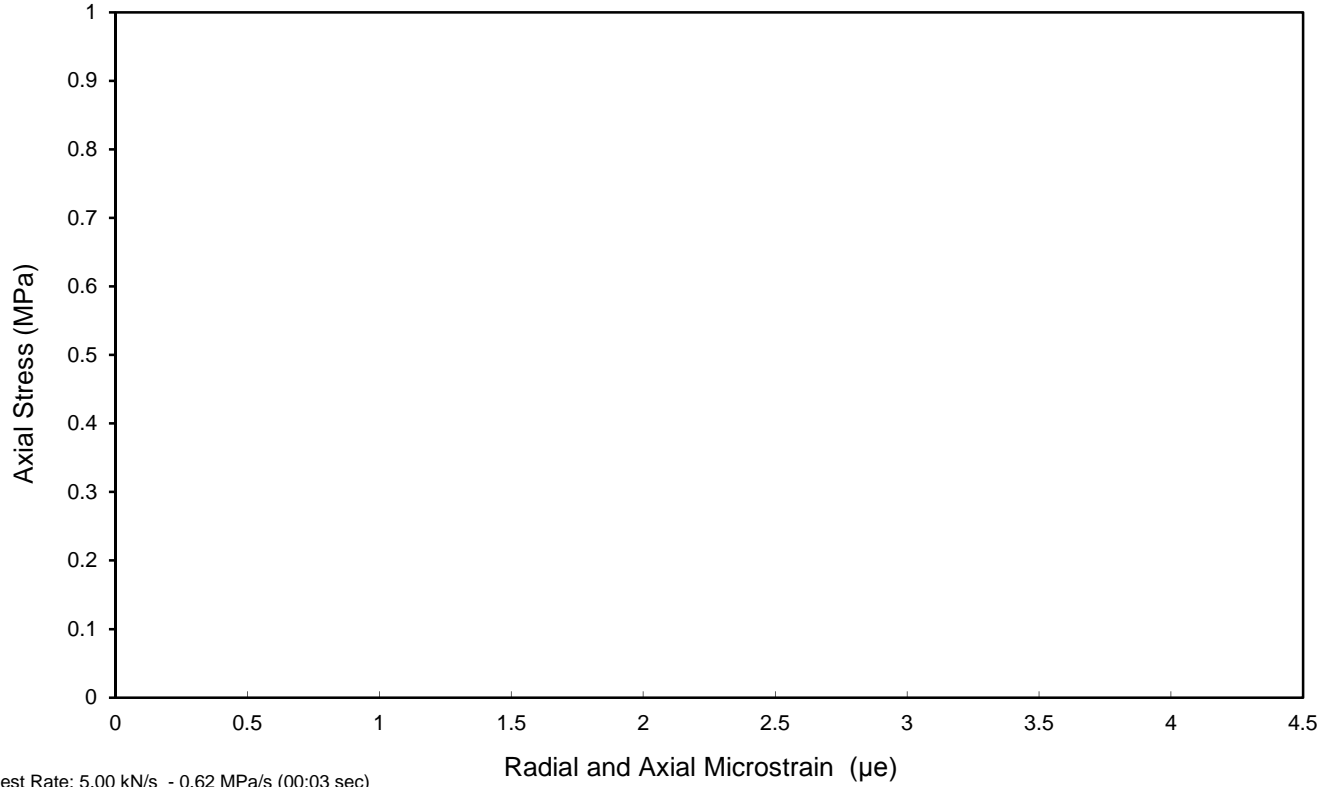
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 105°

Sample type: **C**

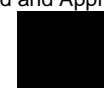


Date tested: 11/01/2021

Test results

Unconfined Compressive Strength	1.73 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



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  C Clergeaud (Snr. Geologist) Date: 18/01/2021	Project Number: <p style="text-align: center;">GEO / 32382</p> Project Name: <p style="text-align: center;">A303 STONEHENGE JFR1451</p>	 
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UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: R71917	Description: White CHALK
Sample Ref.: 26	
Depth (m): 37.00-37.26	

Diameter	100.80 mm
Height	216.50 mm
Bulk Density	2.02 Mg/m ³
Dry Density	1.63 Mg/m ³
Water Content	24 %
Degree of Saturation: 89.2 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Diagonal shearing

Solid lines for material failures.
Dashed lines for apparent weakness failure.

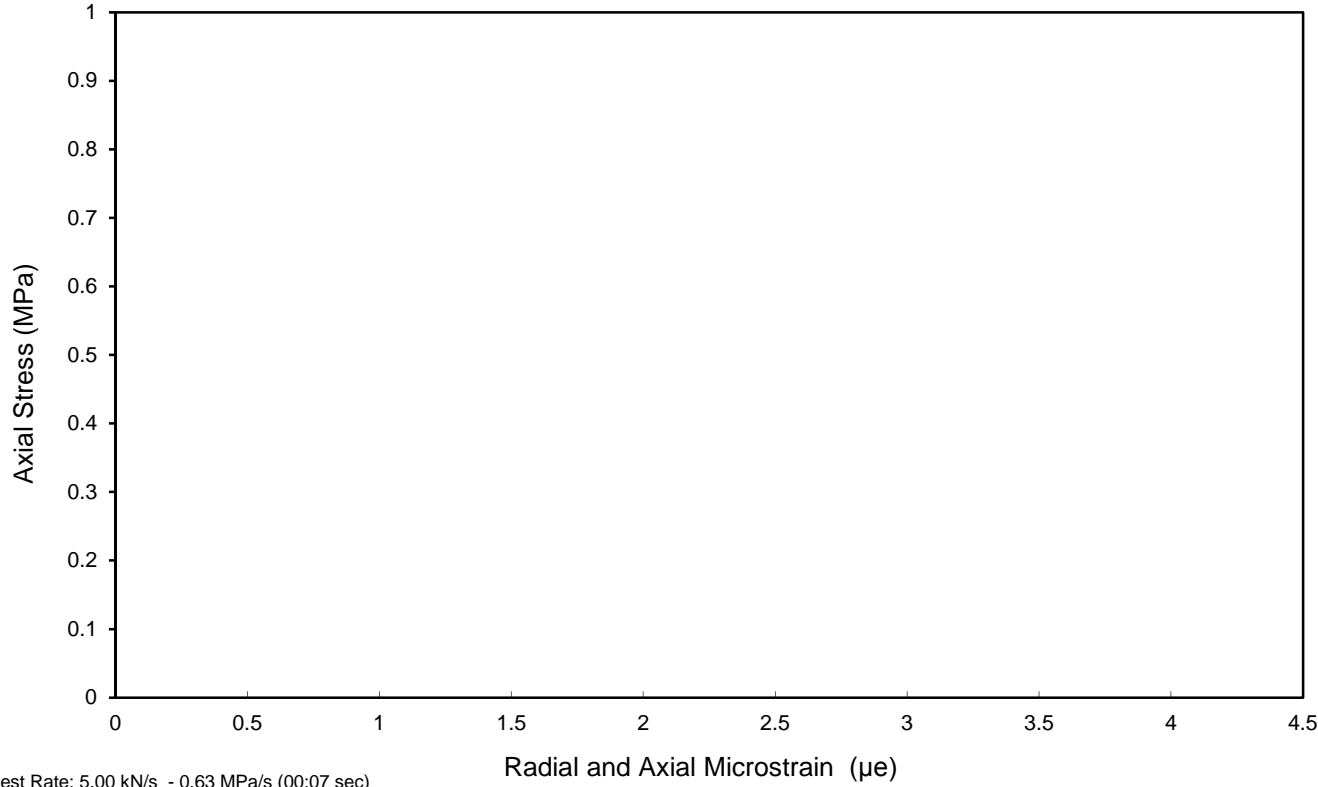
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 85°

Sample type: **C**

Date tested: 11/01/2021

Test results

Unconfined Compressive Strength	4.35 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



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 C Clergeaud (Snr. Geologist) Date: 18/01/2021	Project Number: GEO / 32382 Project Name: A303 STONEHENGE JFR1451	
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UNCONFINED COMPRESSIVE STRENGTH WITH YOUNG'S MODULUS AND POISSON'S RATIO

Borehole Ref.:	R71918	Description: White CHALK
Sample Ref.:	14	
Depth (m):	25.20-25.47	

Diameter	101.50 mm
Height	237.80 mm
Bulk Density	1.96 Mg/m ³
Dry Density	1.51 Mg/m ³
Water Content	30 %
Degree of Saturation: 93.7 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Diagonal shearing

Solid lines for material failures.
Dashed lines for apparent weakness failure.

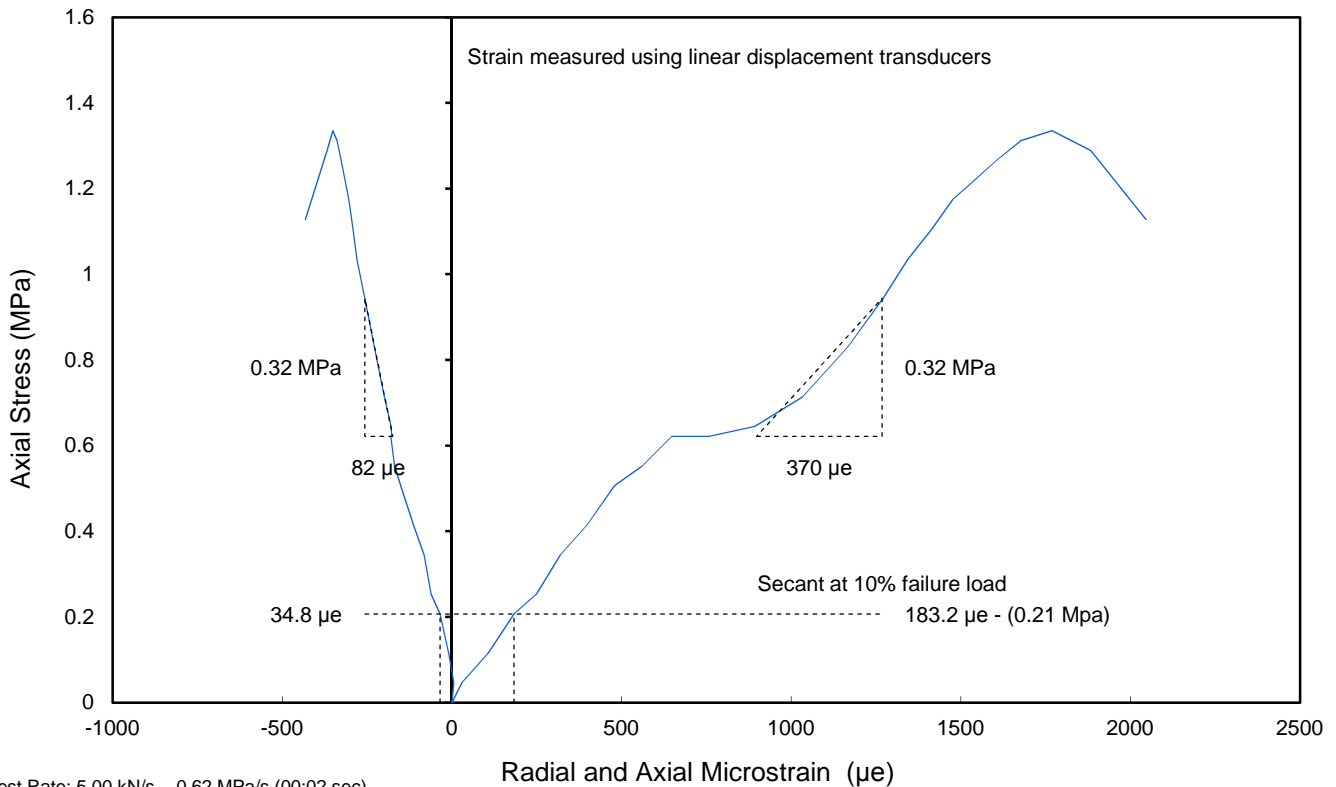
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 100°

Sample type: **C**

Date tested: 11/01/2021

Test results

Unconfined Compressive Strength	1.33 MPa
Young's Modulus (tangential at 60% failure load)	0.871 GPa
Poisson's Ratio (tangential at 60% failure load)	0.22
Young's Modulus (secant at 10% failure load)	1.13 GPa
Poisson's Ratio (secant at 10% failure load)	0.19



Test Rate: 5.00 kN/s - 0.62 MPa/s (00:02 sec)

Remarks: Failed on weakness plane

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 C Clergeaud (Snr. Geologist) Date: 18/01/2021	Project Number: GEO / 32382	
	Project Name: A303 STONEHENGE JFR1451	

UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: R71918	Description: White CHALK
Sample Ref.: 23	
Depth (m): 36.00-36.30	

Diameter	100.90 mm
Height	258.30 mm
Bulk Density	1.98 Mg/m ³
Dry Density	1.58 Mg/m ³
Water Content	25 %
Degree of Saturation: 87.5 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Diagonal shearing

Solid lines for material failures.
Dashed lines for apparent weakness failure.

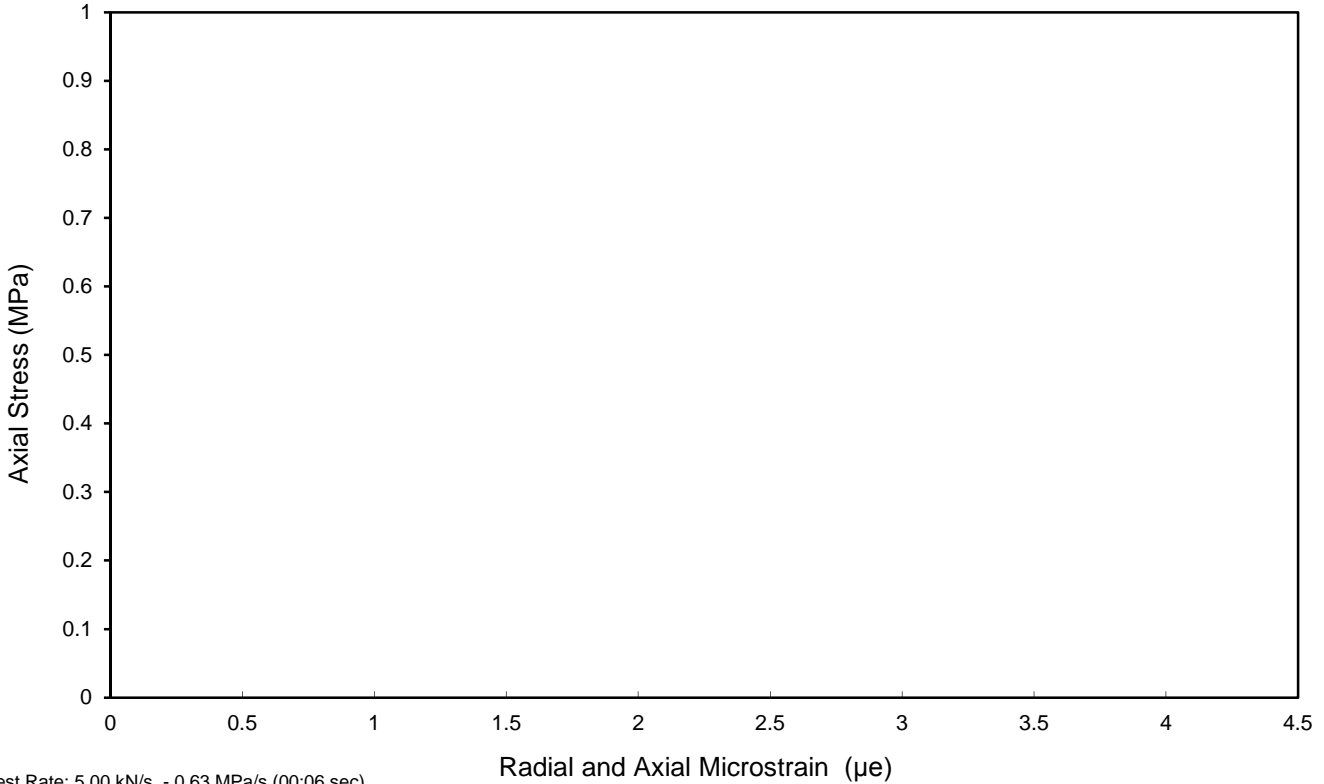
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 105°

Sample type: **C**

Date tested: 11/01/2021

Test results

Unconfined Compressive Strength	3.84 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



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 C Clergeaud (Snr. Geologist) Date: 18/01/2021	Project Number: GEO / 32382 Project Name: A303 STONEHENGE JFR1451	
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UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: R71918	Description: White CHALK
Sample Ref.: 28	
Depth (m): 43.10-43.73	

Diameter	102.10 mm
Height	268.60 mm
Bulk Density	2.00 Mg/m ³
Dry Density	1.63 Mg/m ³
Water Content	23 %
Degree of Saturation: 85.0 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Axial splitting

Solid lines for material failures.
Dashed lines for apparent weakness failure.

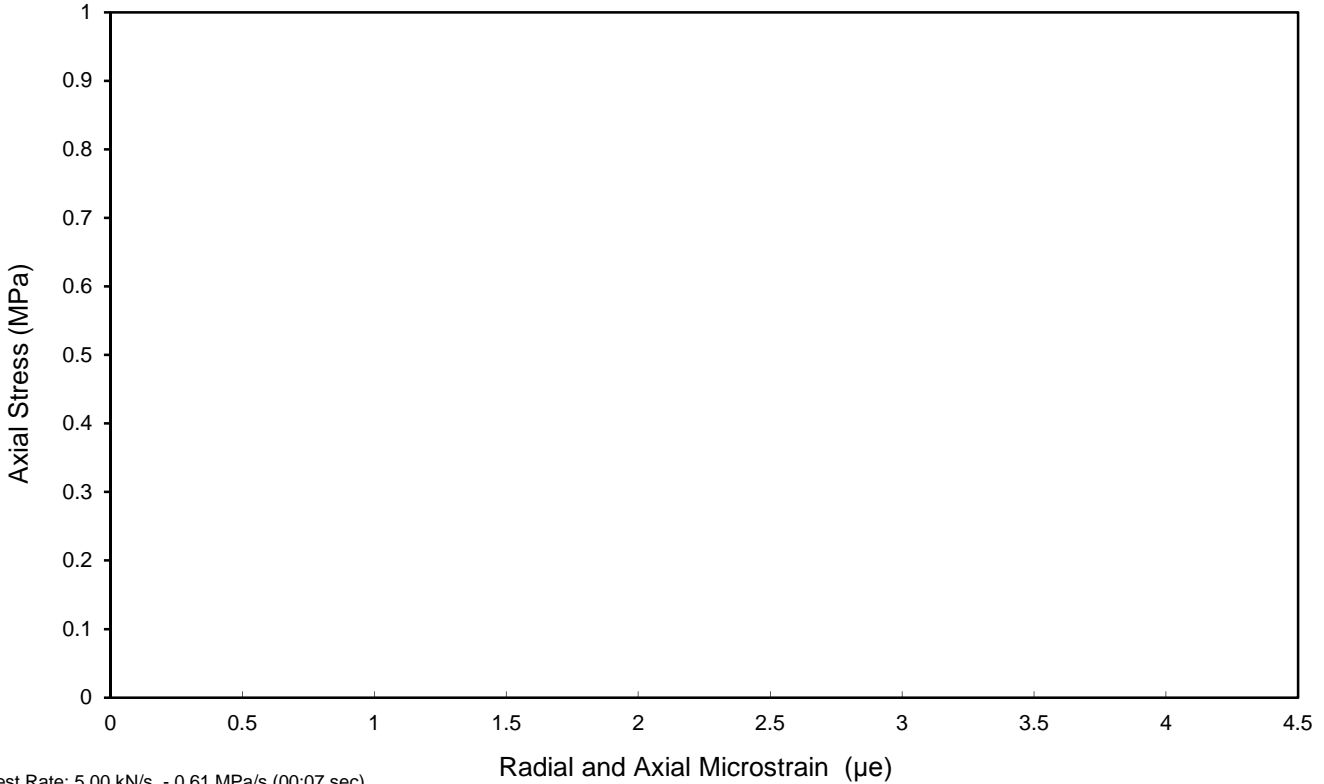
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 90°

Sample type **C**




Date tested: 11/01/2021

Test results

Unconfined Compressive Strength	4.23 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



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  C Clergeaud (Snr. Geologist) Date: 18/01/2021	Project Number: GEO / 32382 Project Name: A303 STONEHENGE JFR1451	 
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UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: R71919	Description: White CHALK
Sample Ref.: 7	
Depth (m): 20.60-20.97	

Diameter	100.40 mm
Height	254.80 mm
Bulk Density	2.00 Mg/m ³
Dry Density	1.61 Mg/m ³
Water Content	25 %
Degree of Saturation: 88.4 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Diagonal shearing

Solid lines for material failures.
Dashed lines for apparent weakness failure.

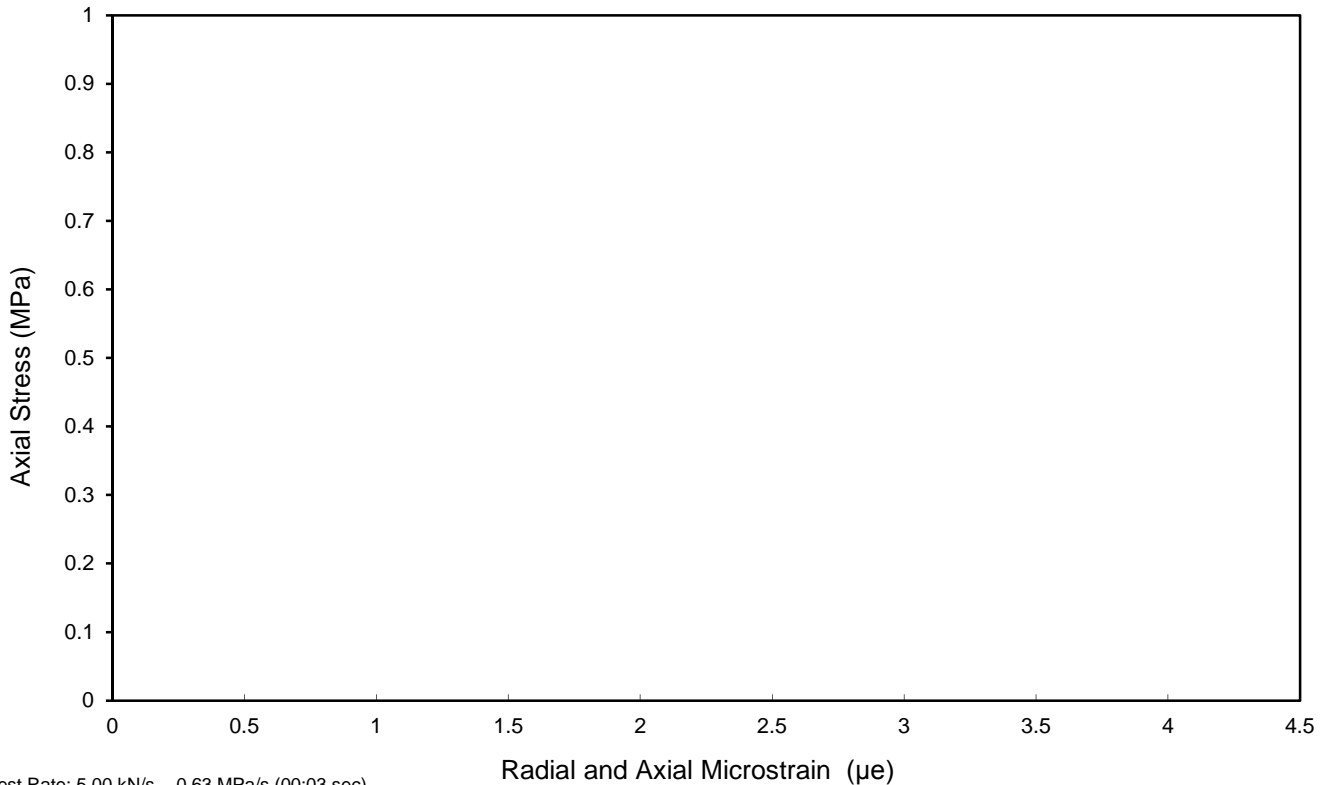
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 120°

Sample type: **C**

Date tested: 11/01/2021

Test results

Unconfined Compressive Strength	1.68 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



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 C Clergeaud (Snr. Geologist) Date: 18/01/2021	Project Number: GEO / 32382 Project Name: A303 STONEHENGE JFR1451	
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UNCONFINED COMPRESSIVE STRENGTH WITH YOUNG'S MODULUS AND POISSON'S RATIO

Borehole Ref.:	R71919	Description: White CHALK
Sample Ref.:	13	
Depth (m):	29.70-30.10	

Diameter	101.10 mm
Height	202.40 mm
Bulk Density	1.99 Mg/m ³
Dry Density	1.59 Mg/m ³
Water Content	25 %
Degree of Saturation: 88.0 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Diagonal shearing

Solid lines for material failures.
Dashed lines for apparent weakness failure.

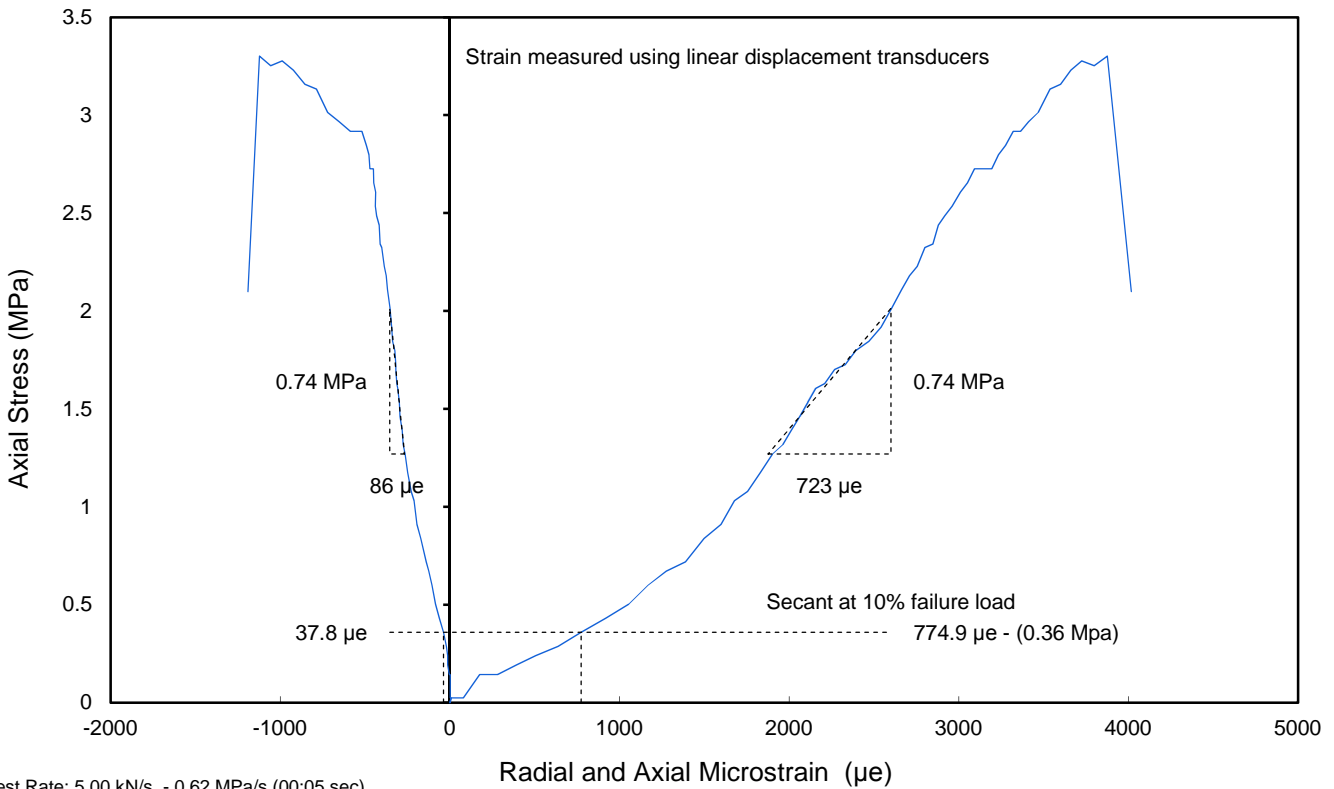
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 105°

Sample type: **C**

Date tested: 11/01/2021

Test results

Unconfined Compressive Strength	3.3 MPa
Young's Modulus (tangential at 50% failure load)	1.03 GPa
Poisson's Ratio (tangential at 50% failure load)	0.12
Young's Modulus (secant at 10% failure load)	0.464 GPa
Poisson's Ratio (secant at 10% failure load)	0.05



Test Rate: 5.00 kN/s - 0.62 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: C Clergeaud (Snr. Geologist) Date: 18/01/2021	Project Number: GEO / 32382 Project Name: A303 STONEHENGE JFR1451	
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UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: R71919	Description: White CHALK
Sample Ref.: 24	
Depth (m): 46.80-47.20	

Diameter	102.00 mm
Height	238.80 mm
Bulk Density	2.02 Mg/m ³
Dry Density	1.66 Mg/m ³
Water Content	22 %
Degree of Saturation: 85.1 % Specific Gravity: 2.9 Mg/m ³ (Assumed)	

LF0879C (1000kN) compression frame used

Failure Sketch
Mode of failure: Diagonal shearing

Solid lines for material failures.
Dashed lines for apparent weakness failure.

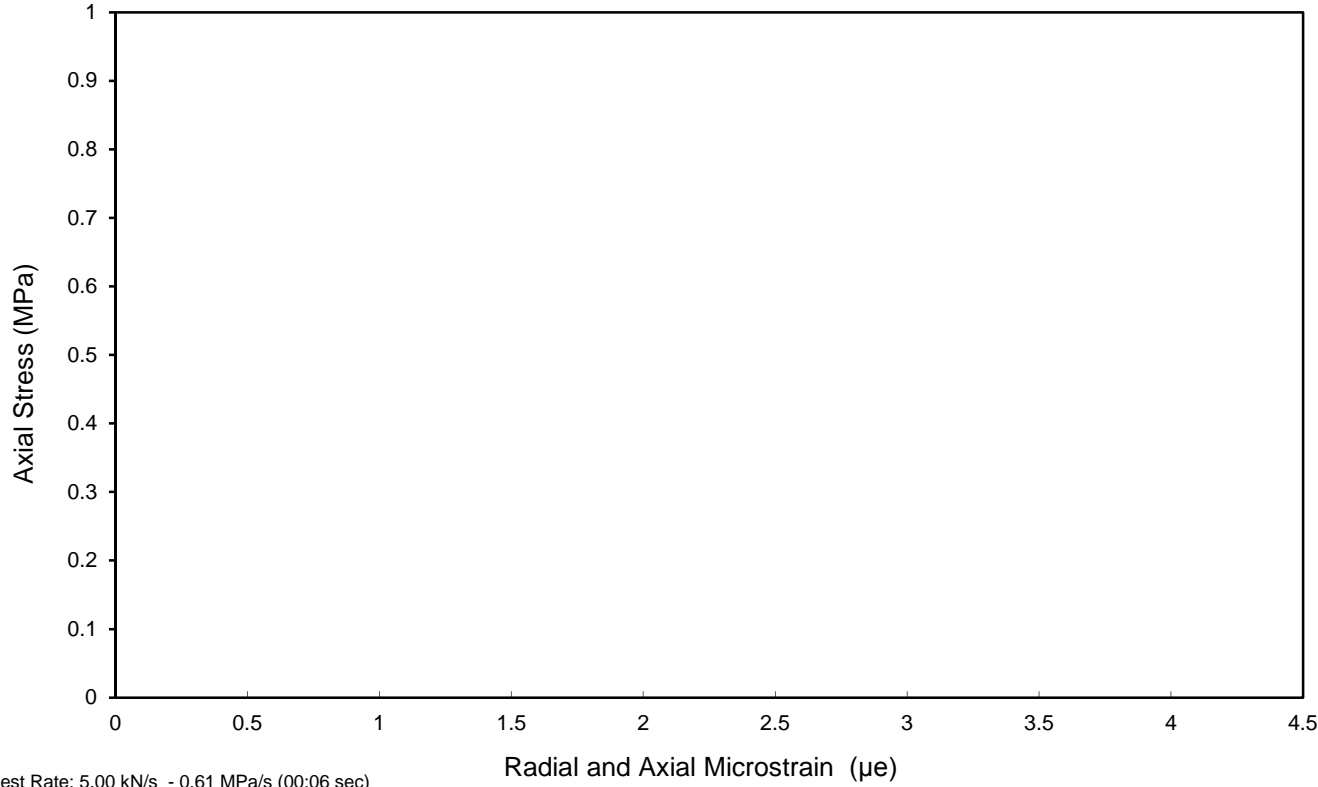
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 80°

Sample type: **C**

Date tested: 11/01/2021

Test results

Unconfined Compressive Strength	3.59 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



Note: The dimensional requirements of Flatness (<0.02 mm), Perpendicularity (<0.05 / 50 mm) and Straightness (0.3 mm deviation) are not met.

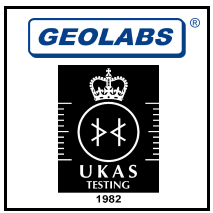
Checked and Approved by C Clergeaud (Snr. Geologist) Date: 18/01/2021	Project Number: GEO / 32382 Project Name: A303 STONEHENGE JFR1451	
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DETERMINATION OF THE WATER CONTENT OF A ROCK SAMPLE

Sample details				Test results		Remarks
Borehole Ref.	Sample Ref.	Depth (m)	Description	Water Content (%)	Oven Temp. (°C)	
R70110	5	6.40-6.62	White CHALK	21.9	105°	

Note: Water Content in a rock sample as received

Checked and Approved by <div style="background-color: black; width: 40px; height: 20px; margin: 5px 0;"></div> C Clergeaud (Snr. Geologist) Date: 24/11/2020	Project Number: <div style="text-align: center; font-weight: bold; font-size: 1.2em;">GEO / 32135</div> Project Name: <div style="text-align: center; font-weight: bold; font-size: 1.2em;">A303 STONEHENGE</div> <div style="text-align: center; font-weight: bold; font-size: 1.2em;">JFR1451</div>
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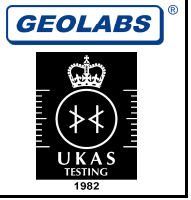


DETERMINATION OF THE WATER CONTENT OF A ROCK SAMPLE

Sample details				Test results		Remarks
Borehole Ref.	Sample Ref.	Depth (m)	Description	Water Content (%)	Oven Temp. (°C)	
R70106		7.75-7.99	White CHALK	26.8	105°	

Note: Water Content in a rock sample as received

Checked and Approved by C Clergeaud (Snr. Geologist) Date: 07/01/2021	Project Number: <div style="text-align: center; font-weight: bold; font-size: 1.2em;">GEO / 32370</div> Project Name: <div style="text-align: center; font-weight: bold; font-size: 1.2em;">A303 STONEHENGE JFR1451</div>
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DETERMINATION OF THE WATER CONTENT OF A ROCK SAMPLE

Sample details				Test results		Remarks
Borehole Ref.	Sample Ref.	Depth (m)	Description	Water Content (%)	Oven Temp. (°C)	
R70701		15.40-15.65	White CHALK	19.9	105°	
R70702		1.20-1.65	White CHALK	23.6	105°	

Note: Water Content in a rock sample as received

Checked and Approved by <div style="background-color: black; width: 40px; height: 20px; margin: 5px 0;"></div> C Clergeaud (Snr. Geologist) Date: 18/01/2021	Project Number: GEO / 32369 Project Name: A303 STONEHENGE JFR1451
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DETERMINATION OF THE WATER CONTENT OF A ROCK SAMPLE

Sample details				Test results		Remarks
Borehole Ref.	Sample Ref.	Depth (m)	Description	Water Content (%)	Oven Temp. (°C)	
R71905		18.68-18.88	White CHALK	28.1	105°	
R71905		25.60-25.80	White CHALK	20.9	105°	

Note: Water Content in a rock sample as received




Checked and Approved by <div style="background-color: black; width: 40px; height: 20px; margin: 5px auto;"></div> C Clergeaud (Snr. Geologist) Date: 15/12/2020	Project Number: GEO / 32215 Project Name: A303 STONEHENGE JFR1451
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DETERMINATION OF THE WATER CONTENT OF A ROCK SAMPLE

Sample details				Test results		Remarks
Borehole Ref.	Sample Ref.	Depth (m)	Description	Water Content (%)	Oven Temp. (°C)	
R70116	11	5.50-5.70	White CHALK	27.5	105°	

Note: Water Content in a rock sample as received

Checked and Approved by  C Clergeaud (Snr. Geologist) Date: 24/11/2020	Project Number: GEO / 32134 Project Name: A303 STONEHENGE JFR1451	 
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DETERMINATION OF THE WATER CONTENT OF A ROCK SAMPLE

Sample details				Test results		Remarks
Borehole Ref.	Sample Ref.	Depth (m)	Description	Water Content (%)	Oven Temp. (°C)	
R71910		44.70-45.04	White CHALK	27.9	105°	
R71910		52.70-53.01	White CHALK	25.2	105°	

Note: Water Content in a rock sample as received

Checked and Approved by C Clergeaud (Snr. Geologist) Date: 22/10/2020	Project Number: GEO / 31761 Project Name: A303 STONEHENGE JFR1451
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DETERMINATION OF THE WATER CONTENT OF A ROCK SAMPLE

Sample details				Test results		Remarks
Borehole Ref.	Sample Ref.	Depth (m)	Description	Water Content (%)	Oven Temp. (°C)	
R72102	1	7.72-7.98	White CHALK	27.9	105°	

Note: Water Content in a rock sample as received

Checked and Approved by <div style="background-color: black; width: 40px; height: 20px; margin: 5px auto;"></div> C Clergeaud (Snr. Geologist) Date: 12/10/2020	Project Number: <div style="text-align: center; font-weight: bold; font-size: 1.2em;">GEO / 31760</div> Project Name: <div style="text-align: center; font-weight: bold; font-size: 1.2em;">A303 STONEHENGE JFR1451</div>
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DETERMINATION OF THE WATER CONTENT OF A ROCK SAMPLE

Sample details				Test results		Remarks
Borehole Ref.	Sample Ref.	Depth (m)	Description	Water Content (%)	Oven Temp. (°C)	
R71914		8.70-8.93		26.5	105°	
R71914		14.65-14.89		28.2	105°	

Note: Water Content in a rock sample as received


Checked and Approved by <div style="background-color: black; width: 40px; height: 20px; margin: 5px auto;"></div> C Clergeaud (Snr. Geologist) Date: 17/11/2020	Project Number: GEO / 32128 Project Name: A303 STONEHENGE JFR1451
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DETERMINATION OF THE WATER CONTENT OF A ROCK SAMPLE

Sample details				Test results		Remarks
Borehole Ref.	Sample Ref.	Depth (m)	Description	Water Content (%)	Oven Temp. (°C)	
R71203		9.37-9.50	White CHALK	25.4	105°	

Note: Water Content in a rock sample as received

Checked and Approved by

 C Clergeaud (Snr. Geologist)
 Date: 24/11/2020

Project Number:

 Project Name:

GEO / 32140

A303 STONEHENGE
JFR1451



DETERMINATION OF THE WATER CONTENT OF A ROCK SAMPLE

Sample details				Test results		Remarks
Borehole Ref.	Sample Ref.	Depth (m)	Description	Water Content (%)	Oven Temp. (°C)	
R71912		27.47-27.68	White CHALK	27.0	105°	
R71912		33.30-33.60	White CHALK	24.9	105°	

Note: Water Content in a rock sample as received

Checked and Approved by C Clergeaud (Snr. Geologist) Date: 17/11/2020	Project Number: GEO / 32129 Project Name: A303 STONEHENGE JFR1451
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DETERMINATION OF THE WATER CONTENT OF A ROCK SAMPLE

Sample details				Test results		Remarks
Borehole Ref.	Sample Ref.	Depth (m)	Description	Water Content (%)	Oven Temp. (°C)	
R72101		7.70-7.92	White CHALK	27.7	105°	
R72101		10.60-10.80	White CHALK	28.1	105°	

Note: Water Content in a rock sample as received

Checked and Approved by <div style="background-color: black; width: 40px; height: 20px; margin: 5px 0;"></div> C Clergeaud (Snr. Geologist) Date: 16/10/2020	Project Number: GEO / 31881 Project Name: A303 STONEHENGE JFR1451
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DETERMINATION OF THE WATER CONTENT OF A ROCK SAMPLE

Sample details				Test results		Remarks
Borehole Ref.	Sample Ref.	Depth (m)	Description	Water Content (%)	Oven Temp. (°C)	
R71908	11	33.40-33.65	White CHALK	25.8	105°	
R71908	15	37.95-38.20	White CHALK	28.4	105°	

Note: Water Content in a rock sample as received

Checked and Approved by <div style="background-color: black; width: 40px; height: 20px; margin: 5px auto;"></div> C Clergeaud (Snr. Geologist) Date: 24/09/2020	Project Number: <div style="text-align: center; font-weight: bold; font-size: 1.2em;">GEO / 31728</div> Project Name: <div style="text-align: center; font-weight: bold; font-size: 1.2em;">A303 STONEHENGE JFR1451</div>
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DETERMINATION OF THE WATER CONTENT OF A ROCK SAMPLE

Sample details				Test results		Remarks
Borehole Ref.	Sample Ref.	Depth (m)	Description	Water Content (%)	Oven Temp. (°C)	
R71915		10.96-11.06	White CHALK	30.1	105°	
R71915		19.47-19.61	White CHALK	28.5	105°	

Note: Water Content in a rock sample as received

Checked and Approved by <div style="background-color: black; width: 40px; height: 20px; margin: 5px 0;"></div> C Clergeaud (Snr. Geologist) Date: 22/10/2020	Project Number: Project Name:	<p>GEO / 31890</p> <p>A303 STONEHENGE</p> <p>JFR1451</p>
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DETERMINATION OF THE WATER CONTENT OF A ROCK SAMPLE

Sample details				Test results		Remarks
Borehole Ref.	Sample Ref.	Depth (m)	Description	Water Content (%)	Oven Temp. (°C)	
R71210	9	11.75-11.94	White CHALK	23.9	105°	
R71210	10	13.18-13.44	White CHALK	24.3	105°	

Note: Water Content in a rock sample as received


Checked and Approved by <div style="background-color: black; width: 40px; height: 20px; margin: 5px auto;"></div> C Clergeaud (Snr. Geologist) Date: 05/03/2021	Project Number: GEO / 32691 Project Name: A303 STONEHENGE JFR1451
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DETERMINATION OF THE WATER CONTENT OF A ROCK SAMPLE

Sample details				Test results		Remarks
Borehole Ref.	Sample Ref.	Depth (m)	Description	Water Content (%)	Oven Temp. (°C)	
R71916		34.86-35.11	White CHALK	25.0	105°	
R71918	17	30.12-30.35	White CHLAK	22.7	105°	
R71919	12	29.04-29.35	White CHALK	25.7	105°	

Note: Water Content in a rock sample as received

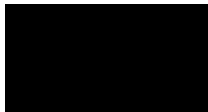

Checked and Approved by  C Clergeaud (Snr. Geologist) Date: 18/01/2021	Project Number: <p style="text-align: center;">GEO / 32382</p> Project Name: <p style="text-align: center;">A303 STONEHENGE JFR1451</p>
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SUMMARY OF CHEMICAL TESTS ON SOIL

Location	Depth m	Sample Ref	Sample Type	pH Value	Total Acid Soluble Sulphate as SO ₄ %	Water Soluble Sulphate as SO ₄ 2:1 Water:Soil Extract g/l	Total Sulphur %	Water Soluble Chloride g/l	Water Soluble Nitrate g/l	Magnesium g/l	Organic Content %	Mass Loss on Ignition %	Carbonate Content %
R70107	1.98-2.13	1	D	9.0	-	< 0.010	-	-	-	-	-	-	-

Tested by Chemtest Ltd : MCERTS / UKAS No 2183

Checked and Approved by:  J Sturges - Operations Manager 17/12/2020	Project Number: <p style="text-align: center;">GEO / 32135</p> Project Name: <p style="text-align: center;">A303 STONEHENGE JFR1451</p>	
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SUMMARY OF CHEMICAL TESTS ON SOIL

Location	Depth m	Sample Ref	Sample Type	pH Value	Total Acid Soluble Sulphate as SO4 %	Water Soluble Sulphate as SO4 2:1 Water:Soil Extract g/l	Total Sulphur %	Water Soluble Chloride g/l	Water Soluble Nitrate g/l	Magnesium g/l	Organic Content %	Mass Loss on Ignition %	Carbonate Content %
STP70104	1.00	7	B	9.1	-	< 0.010	-	-	-	-	-	-	-

Tested by Chemtest Ltd : MCERTS / UKAS No 2183

Checked and Approved by:

 J Sturges - Operations Manager
 20/04/2021

Project Number:
GEO / 32903

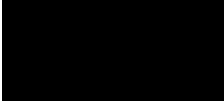

Project Name:
**A303 STONEHENGE
 JFR1451**



SUMMARY OF CHEMICAL TESTS ON SOIL

Location	Depth m	Sample Ref	Sample Type	pH Value	Total Acid Soluble Sulphate as SO4 %	Water Soluble Sulphate as SO4 2:1 Water:Soil Extract g/l	Total Sulphur %	Water Soluble Chloride g/l	Water Soluble Nitrate g/l	Magnesium g/l	Organic Content %	Mass Loss on Ignition %	Carbonate Content %
DTP70701	1.00	7	B	8.9	-	<0.01	-	-	-	-	-	-	-
DTP70703	2.00	11	B	8.9	-	<0.01	-	-	-	-	-	-	-

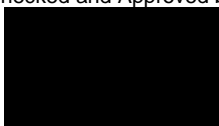

Tested by Chemtest Ltd : MCERTS / UKAS No 2183

Checked and Approved by:  J Sturges - Operations Manager 24/12/2020	Project Number: GEO / 32137 Project Name: A303 STONEHENGE JFR1451	
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SUMMARY OF CHEMICAL TESTS ON SOIL

Location	Depth m	Sample Ref	Sample Type	pH Value	Total Acid Soluble Sulphate as SO ₄ %	Water Soluble Sulphate as SO ₄ 2:1 Water:Soil Extract g/l	Total Sulphur %	Water Soluble Chloride g/l	Water Soluble Nitrate g/l	Magnesium g/l	Organic Content %	Mass Loss on Ignition %	Carbonate Content %
R71918	16.80-17.00	10	D	8.8	-	< 0.010	-	-	-	-	-	-	-

Tested by Chemtest Ltd : MCERTS / UKAS No 2183

Checked and Approved by:  J Sturges - Operations Manager 22/01/2021	Project Number: <p style="text-align: center;">GEO / 32382</p> Project Name: <p style="text-align: center;">A303 STONEHENGE JFR1451</p>	
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SUMMARY OF CHEMICAL TESTS ON SOIL

Location	Depth m	Sample Ref	Sample Type	pH Value	Total Acid Soluble Sulphate as SO4 %	Water Soluble Sulphate as SO4 2:1 Water:Soil Extract g/l	Total Sulphur %	Water Soluble Chloride g/l	Water Soluble Nitrate g/l	Magnesium g/l	Organic Content %	Mass Loss on Ignition %	Carbonate Content %
STP70118	1.00	8	D	9.0	-	0.081	-	-	-	-	-	-	-

Tested by Chemtest Ltd : MCERTS / UKAS No 2183

Checked and Approved by:

 J Sturges - Operations Manager
 22/01/2021

Project Number:
GEO / 32180

Project Name:
**A303 STONEHENGE
 JFR1451**



SUMMARY OF CHEMICAL TESTS ON SOIL

Location	Depth m	Sample Ref	Sample Type	pH Value	Total Acid Soluble Sulphate as SO ₄ %	Water Soluble Sulphate as SO ₄ 2:1 Water:Soil Extract g/l	Total Sulphur %	Water Soluble Chloride g/l	Water Soluble Nitrate g/l	Magnesium g/l	Organic Content %	Mass Loss on Ignition %	Carbonate Content %
R71905	10.80-11.02		D	9.1	-	< 0.010	-	-	-	-	-	-	-
R72005	8.85-8.98		C	9.0	-	< 0.010	-	-	-	-	-	-	-

Tested by Chemtest Ltd : MCERTS / UKAS No 2183

Checked and Approved by: <div style="background-color: black; width: 100px; height: 30px; margin: 5px 0;"></div> <p style="font-size: small; margin: 0;">J Sturges - Operations Manager 21/01/2021</p>	Project Number: GEO / 32215 Project Name: A303 STONEHENGE JFR1451	
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SUMMARY OF CHEMICAL TESTS ON SOIL

Location	Depth m	Sample Ref	Sample Type	pH Value	Total Acid Soluble Sulphate as SO4 %	Water Soluble Sulphate as SO4 2:1 Water:Soil Extract g/l	Total Sulphur %	Water Soluble Chloride g/l	Water Soluble Nitrate g/l	Magnesium g/l	Organic Content %	Mass Loss on Ignition %	Carbonate Content %
CP72602	4.50-4.95		D	8.5	0.16	0.12	0.075	0.020	< 0.010	-	-	-	-

Tested by Chemtest Ltd : MCERTS / UKAS No 2183

Checked and Approved by: J Sturges - Operations Manager 22/01/2021	Project Number: GEO / 32303 Project Name: A303 STONEHENGE JFR1451	
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SUMMARY OF CHEMICAL TESTS ON SOIL

Location	Depth m	Sample Ref	Sample Type	pH Value	Total Acid Soluble Sulphate as SO4 %	Water Soluble Sulphate as SO4 2:1 Water:Soil Extract g/l	Total Sulphur %	Water Soluble Chloride g/l	Water Soluble Nitrate g/l	Magnesium g/l	Organic Content %	Mass Loss on Ignition %	Carbonate Content %
R72006	6.59-6.74		C	8.7	0.075	0.12	0.070	0.021	< 0.010	-	-	-	-

Tested by Chemtest Ltd : MCERTS / UKAS No 2183

Checked and Approved by:

 J Sturges - Operations Manager
 21/01/2021

Project Number:
GEO / 32302

Project Name:
**A303 STONEHENGE
 JFR1451**



SUMMARY OF CHEMICAL TESTS ON SOIL

Location	Depth m	Sample Ref	Sample Type	pH Value	Total Acid Soluble Sulphate as SO4 %	Water Soluble Sulphate as SO4 2:1 Water:Soil Extract g/l	Total Sulphur %	Water Soluble Chloride g/l	Water Soluble Nitrate g/l	Magnesium g/l	Organic Content %	Mass Loss on Ignition %	Carbonate Content %
STP71601	0.30		B	-	-	-	-	-	-	-	-	8.0	-
STP71601	0.50		B	8.2	-	< 0.010	-	-	-	-	-	-	-

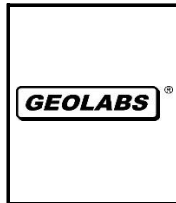
Tested by Chemtest Ltd : MCERTS / UKAS No 2183

Checked and Approved by:

 J Sturges - Operations Manager
 21/01/2021

Project Number:
GEO / 32133

Project Name:
**A303 STONEHENGE
 JFR1451**



SUMMARY OF CHEMICAL TESTS ON SOIL

Location	Depth m	Sample Ref	Sample Type	pH Value	Total Acid Soluble Sulphate as SO4 %	Water Soluble Sulphate as SO4 2:1 Water:Soil Extract g/l	Total Sulphur %	Water Soluble Chloride g/l	Water Soluble Nitrate g/l	Magnesium g/l	Organic Content %	Mass Loss on Ignition %	Carbonate Content %
R72102	0.30	2	C	-	-	-	-	-	-	-	-	2.5	-

Tested by Chemtest Ltd : MCERTS / UKAS No 2183

Checked and Approved by:

J Sturges - Operations Manager
08/10/2020

Project Number: **GEO / 31760**

Project Name: **A303 STONEHENGE
JFR1451**



SUMMARY OF GEOTECHNICAL TESTING

Sample details					Classification Tests					Density Tests		Undrained Triaxial Compression			Chemical Tests			Other tests and comments	
Location	Depth (m)	Sample Ref	Type	Description	WC %	LL %	PL %	PI %	<425 µm %	Bulk Mg/m³	Dry Mg/m³	Condition	Cell Pressure kPa	Deviator Stress kPa	Shear Stress kPa	pH	2:1 W/S SO4 g/L		W/S Mg mg/L
R70113	1.20-1.30		D													8.8	< 0.010		
R70113	7.60-7.83		C	White CHALK.															Chalk Crushing Value
R70114	7.00-7.25		C	White CHALK.															Chalk Crushing Value
R70115	1.60-1.70		D	White fine to coarse CHALK gravel.	22.8		NP		59										
R70115	7.30-7.70		B	White CHALK.															Chalk Crushing Value

Sample type: B (Bulk disturb.) BLK (Block) C (Core) D (Disturbed) LB (Large Bulk dist.) U (Undisturbed)

NP=Non Plastic

Checked and Approved by S Burke - Senior Technician 09/12/2020	Project Number: GEO / 32203 Project Name: A303 STONEHENGE JFR1451	
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APPENDIX G

ENVIRONMENTAL LABORATORY DATA



Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US

Tel: (01244) 528700

Fax: (01244) 528701

email: hawardencustomerservices@alsglobal.com

Website: www.alsenvironmental.co.uk

RPS Consultants Ltd
260 Park Avenue
Aztec West
Almondsbury
Bristol
BS32 4SY

Attention: Gary Riches

CERTIFICATE OF ANALYSIS

Date of report Generation: 09 September 2020
Customer: RPS Consultants Ltd
Sample Delivery Group (SDG): 200827-54
Your Reference: JFR1451
Location: A303 Stonehenge
Report No: 566566

This report has been revised and directly supersedes 566326 in its entirety.

We received 4 samples on Thursday August 27, 2020 and 1 of these samples were scheduled for analysis which was completed on Tuesday September 08, 2020. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

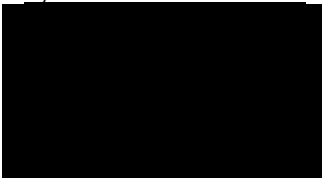
Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:



Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 200827-54 **Client Reference:** JFR1451 **Report Number:** 566566
Location: A303 Stonehenge **Order Number:** PQ20-583 **Superseded Report:** 566326

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
22727733	R71908		0.00 - 0.10	24/08/2020
22727734	R71908		0.30 - 0.40	24/08/2020
22727735	R71908		0.50 - 0.60	24/08/2020
22727736	R71908		1.00 - 1.10	24/08/2020

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG:	200827-54	Client Reference:	JFR1451	Report Number:	566566
Location:	A303 Stonehenge	Order Number:	PO20-583	Superseded Report:	566326

Results Legend <div style="display: flex; flex-direction: column; gap: 5px;"> <div style="display: flex; align-items: center;"> <div style="width: 15px; height: 15px; background-color: yellow; border: 1px solid black; margin-right: 5px;"></div> Test </div> <div style="display: flex; align-items: center;"> <div style="width: 15px; height: 15px; background-color: red; color: white; border: 1px solid black; margin-right: 5px; display: flex; align-items: center; justify-content: center;">N</div> No Determination Possible </div> </div> Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other	Lab Sample No(s)				22727734
	Customer Sample Reference				R71908
	AGS Reference				
	Depth (m)				0.30 - 0.40
	Container	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	
		S	S	S	
	Sample Type				
Ammonium Soil by Titration	All	NDPs: 0 Tests: 1	X		
Anions by Kone (soil)	All	NDPs: 0 Tests: 1	X		
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 1	X		
Chromium III	All	NDPs: 0 Tests: 1	X		
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 1	X		
EPH CWG GC (S)	All	NDPs: 0 Tests: 1	X		
GRO by GC-FID (S)	All	NDPs: 0 Tests: 1		X	
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 1	X		
Metals in solid samples by OES	All	NDPs: 0 Tests: 1	X		
OC OP Pesticides and Triazine Herb	All	NDPs: 0 Tests: 1	X		
PAH by GCMS	All	NDPs: 0 Tests: 1	X		
pH	All	NDPs: 0 Tests: 1	X		
Phenols by HPLC (S)	All	NDPs: 0 Tests: 1	X		
Sample description	All	NDPs: 0 Tests: 1	X		
Total Organic Carbon	All	NDPs: 0 Tests: 1	X		



CERTIFICATE OF ANALYSIS

Validated

SDG:	200827-54	Client Reference:	JFR1451	Report Number:	566566
Location:	A303 Stonehenge	Order Number:	PO20-583	Superseded Report:	566326

Results Legend <div style="display: flex; align-items: center; margin-bottom: 5px;"> <div style="width: 15px; height: 15px; background-color: yellow; border: 1px solid black; margin-right: 5px; text-align: center; line-height: 15px;">X</div> Test </div> <div style="display: flex; align-items: center; margin-bottom: 5px;"> <div style="width: 15px; height: 15px; background-color: red; color: white; border: 1px solid black; margin-right: 5px; text-align: center; line-height: 15px;">N</div> No Determination Possible </div> Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other	Lab Sample No(s)	22727734			
	Customer Sample Reference	R71908			
	AGS Reference				
	Depth (m)	0.30 - 0.40			
	Container	1kg TUB with Handle (ALE280)	250g Amber Jar (ALE210)	60g VOC (ALE215)	
	Sample Type	S	S	S	
	TPH CWG GC (S)	All	NDPs: 0 Tests: 1	X	
VOC MS (S)	All	NDPs: 0 Tests: 1		X	



CERTIFICATE OF ANALYSIS

Validated

SDG:	200827-54	Client Reference:	JFR1451	Report Number:	566566
Location:	A303 Stonehenge	Order Number:	PO20-583	Superseded Report:	566326

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm
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Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
22727734	R71908	0.30 - 0.40	Cream	Sand	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.



CERTIFICATE OF ANALYSIS

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SDG:	200827-54	Client Reference:	JFR1451	Report Number:	566566
Location:	A303 Stonehenge	Order Number:	PO20-583	Superseded Report:	566326

#	ISO17025 accredited.	Customer Sample Ref.	R71908			
Results Legend		Depth (m)	0.30 - 0.40			
M mCERTS accredited.		Sample Type	Soil/Solid (S)			
aq Aqueous / settled sample.		Date Sampled	24/08/2020			
diss.filt Dissolved / filtered sample.		Sampled Time				
tot.unfilt Total / unfiltered sample.		Date Received	27/08/2020			
* Subcontracted - refer to subcontractor report for accreditation status.		SDG Ref	200827-54			
** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		Lab Sample No.(s)	22727734			
(F) Trigger breach confirmed		AGS Reference				
1-3*§@ Sample deviation (see appendix)						
Component	LOD/Units	Method				
Moisture Content Ratio (% of as received sample)	%	PM024	17			
Exchangeable Ammonia as N	<12 mg/kg	TM024	<12	M		
Phenol	<0.01 mg/kg	TM062 (S)	<0.01	M		
Organic Carbon, Total	<0.2 %	TM132	0.334	M		
pH	1 pH Units	TM133	8.98	M		
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6	#		
Cyanide, Total	<1 mg/kg	TM153	<1	M		
Cyanide, Free	<1 mg/kg	TM153	<1	M		
Chromium, Trivalent	<0.9 mg/kg	TM181	2.14			
Antimony	<0.6 mg/kg	TM181	<0.6	#		
Arsenic	<0.6 mg/kg	TM181	2.46	M		
Beryllium	<0.01 mg/kg	TM181	0.121	M		
Boron	<0.7 mg/kg	TM181	1.97	#		
Cadmium	<0.02 mg/kg	TM181	0.419	M		
Chromium	<0.9 mg/kg	TM181	2.14	M		
Copper	<1.4 mg/kg	TM181	7.68	M		
Iron	<1000 mg/kg	TM181	2460	#		
Lead	<0.7 mg/kg	TM181	23.7	M		
Manganese	<0.13 mg/kg	TM181	217	M		
Mercury	<0.14 mg/kg	TM181	<0.14	M		
Molybdenum	<0.1 mg/kg	TM181	0.17	#		
Nickel	<0.2 mg/kg	TM181	3.39	M		
Phosphorus	<1 mg/kg	TM181	465			
Selenium	<1 mg/kg	TM181	<1	#		
Zinc	<1.9 mg/kg	TM181	42.7	M		
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243	0.043	M		



CERTIFICATE OF ANALYSIS

Validated

SDG:	200827-54	Client Reference:	JFR1451	Report Number:	566566
Location:	A303 Stonehenge	Order Number:	PO20-583	Superseded Report:	566326

OC OP Pesticides and Triazine Herb

#	Customer Sample Ref.	R71908			
<div style="font-size: small; margin-bottom: 5px;"> Results Legend # ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.fit Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-34\$@ Sample deviation (see appendix) </div>					
		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.30 - 0.40 Soil/Solid (S) 24/08/2020 27/08/2020 200827-54 22727734		
Component	LOD/Units	Method			
Dichlorvos	<50 µg/kg	TM073	<50		
Mevinphos	<50 µg/kg	TM073	<50		
Phorate	<50 µg/kg	TM073	<50		
alpha-Hexachlorocyclohexane (HCH)	<50 µg/kg	TM073	<50		
Diazinon	<50 µg/kg	TM073	<50		
gamma-Hexachlorocyclohexane (HCH / Lindane)	<50 µg/kg	TM073	<50		
Atrazine	<50 µg/kg	TM073	<50		
Simazine	<50 µg/kg	TM073	<50		
Disulfoton	<50 µg/kg	TM073	<50		
Heptachlor	<50 µg/kg	TM073	<50		
Aldrin	<50 µg/kg	TM073	<50		
beta-Hexachlorocyclohexane (HCH)	<50 µg/kg	TM073	<50		
Methyl parathion	<50 µg/kg	TM073	<50		
Malathion	<50 µg/kg	TM073	<50		
Fenitrothion	<50 µg/kg	TM073	<50		
Heptachlor epoxide	<50 µg/kg	TM073	<50		
Parathion	<50 µg/kg	TM073	<50		
Endosulphan I	<50 µg/kg	TM073	<50		
p,p-DDE	<50 µg/kg	TM073	<50		
Dieldrin	<50 µg/kg	TM073	<50		
o,p'-DDD (TDE)	<50 µg/kg	TM073	<50		
Endrin	<50 µg/kg	TM073	<50		
p,p-TDE (DDD)	<50 µg/kg	TM073	<50		
Ethion	<50 µg/kg	TM073	<50		
Endosulphan II	<50 µg/kg	TM073	<50		
p,p-DDT	<50 µg/kg	TM073	<50		
p,p-Methoxychlor	<50 µg/kg	TM073	<50		
Endosulphan sulphate	<50 µg/kg	TM073	<50		
Azinphos-methyl	<50 µg/kg	TM073	<50		



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SDG: 200827-54 Client Reference: JFR1451 Report Number: 566566
Location: A303 Stonehenge Order Number: PO20-583 Superseded Report: 566326

PAH by GCMS

Table with 8 columns: #, M, aq, diss.filt, tot.unfilt, *, **, (F), 1-34, @. Headers include Component, LOD/Units, Method, Customer Sample Ref., Depth (m), Sample Type, Date Sampled, Sampled Time, Date Received, SDG Ref, Lab Sample No.(s), and AGS Reference. Rows list various PAHs like Naphthalene-d8, Acenaphthene-d10, Phenanthrene-d10, Chrysene-d12, Perylene-d12, Naphthalene, Acenaphthylene, Acenaphthene, Fluorene, Phenanthrene, Anthracene, Fluoranthene, Pyrene, Benz(a)anthracene, Chrysene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Indeno(1,2,3-cd)pyrene, Dibenzo(a,h)anthracene, Benzo(g,h,i)perylene, and PAH, Total Detected USEPA 16.



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SDG: 200827-54
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TPH CWG (S)

Table with 8 columns: #, LOD/Units, Method, Customer Sample Ref., Depth (m), Sample Type, Date Sampled, Date Received, SDG Ref, Lab Sample No.(s), AGS Reference. Rows include GRO Surrogate % recovery, Aliphatics >C5-C6, Aliphatics >C6-C8, Aliphatics >C8-C10, Aliphatics >C10-C12, Aliphatics >C12-C16, Aliphatics >C16-C21, Aliphatics >C21-C35, Aliphatics >C35-C44, Total Aliphatics >C10-C44, Total Aliphatics & Aromatics >C10-C44, Aromatics >EC5-EC7, Aromatics >EC7-EC8, Aromatics >EC8-EC10, Aromatics > EC10-EC12, Aromatics > EC12-EC16, Aromatics > EC16-EC21, Aromatics > EC21-EC35, Aromatics >EC35-EC44, Aromatics > EC40-EC44, Total Aromatics > EC10-EC44, Total Aliphatics & Aromatics >C5-C44, Total Aliphatics >C5-C10, Total Aromatics >EC5-EC10, GRO >C5-C10.



CERTIFICATE OF ANALYSIS

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SDG: 200827-54
Location: A303 Stonehenge

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Order Number: PO20-583

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VOC MS (S)

Table with 8 columns: Component, LOD/Units, Method, and numerical data columns. Includes rows for Dibromofluoromethane, Toluene, Benzene, etc.



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SDG: 200827-54
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Asbestos Identification - Solid Samples

Results Legend

- # ISO17025 accredited.
- M mCERTS accredited.
- * Subcontracted test.
- (F) Trigger breach confirmed
- 1-5&*§@ Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref.	R71908	03/09/2020	Christian Hallam	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Depth (m)	0.30 - 0.40										
Sample Type	SOLID										
Date Sampled	24/08/2020 00:00:00										
Date Received	27/08/2020 05:00:00										
SDG	200827-54										
Original Sample Method Number	22727734 TM048										



CERTIFICATE OF ANALYSIS

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SDG:	200827-54	Client Reference:	JFR1451	Report Number:	566566
Location:	A303 Stonehenge	Order Number:	PO20-583	Superseded Report:	566326

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM073	MEWAM BOOK 60 1980,95 1985, HMSO / Modified: US EPA Method 8081A & 8141A	Determination of organochlorine and organophosphorous pesticides by GCMS
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM243		Mixed Anions In Soils By Kone
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).



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SDG: 200827-54
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PQ20-583

Report Number: 566566
Superseded Report: 566326

Test Completion Dates

Lab Sample No(s)	22727734
Customer Sample Ref.	R71908
AGS Ref.	
Depth	0.30 - 0.40
Type	Soil/Solid (S)

Ammonium Soil by Titration	04-Sep-2020
Anions by Kone (soil)	04-Sep-2020
Asbestos ID in Solid Samples	03-Sep-2020
Chromium III	07-Sep-2020
Cyanide Comp/Free/Total/Thiocyanate	07-Sep-2020
EPH CWG GC (S)	04-Sep-2020
GRO by GC-FID (S)	05-Sep-2020
Hexavalent Chromium (s)	07-Sep-2020
Metals in solid samples by OES	07-Sep-2020
OC OP Pesticides and Triazine Herb	07-Sep-2020
PAH by GCMS	05-Sep-2020
pH	08-Sep-2020
Phenols by HPLC (S)	07-Sep-2020
Sample description	02-Sep-2020
Total Organic Carbon	07-Sep-2020
TPH CWG GC (S)	05-Sep-2020
VOC MS (S)	07-Sep-2020



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SDG: 200827-54
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PO20-583

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Superseded Report: 566326

ASSOCIATED AQC DATA

Ammonium Soil by Titration

Component	Method Code	QC 2221
Exchangeable Ammonium as NH4	TM024	93.53 76.20 : 110.13

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2250
Free Cyanide	TM153	91.78 78.61 : 114.43
Thiocyanate	TM153	102.56 90.48 : 109.52
Total Cyanide	TM153	92.31 76.80 : 112.96

EPH CWG GC (S)

Component	Method Code	QC 2245
EPH >C8-C40 Raw	TM414	102.5 58.74 : 124.10
Total Aliphatics Raw	TM414	109.99 64.15 : 136.53
Total Aromatics Raw	TM414	106.26 57.33 : 145.15

GRO by GC-FID (S)

Component	Method Code	QC 2205
QC	TM089	83.25 70.75 : 114.19

Hexavalent Chromium (s)

Component	Method Code	QC 2267
Hexavalent Chromium	TM151	102.0 95.60 : 107.60

Metals in solid samples by OES

Component	Method Code	QC 2288
Aluminium	TM181	82.12 73.56 : 108.85
Antimony	TM181	99.59 76.89 : 111.24
Arsenic	TM181	102.62 88.53 : 111.01



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Metals in solid samples by OES

		QC 2288
Barium	TM181	85.69 77.67 : 105.35
Beryllium	TM181	101.12 85.44 : 109.61
Boron	TM181	87.11 73.51 : 104.66
Cadmium	TM181	90.95 77.67 : 104.12
Chromium	TM181	96.96 86.11 : 106.21
Cobalt	TM181	94.03 84.60 : 104.13
Copper	TM181	92.43 82.40 : 105.45
Iron	TM181	95.24 82.95 : 110.58
Lead	TM181	90.99 78.24 : 104.05
Manganese	TM181	108.33 94.29 : 119.51
Mercury	TM181	96.38 83.16 : 107.81
Molybdenum	TM181	100.0 87.11 : 106.87
Nickel	TM181	94.38 80.26 : 102.28
Phosphorus	TM181	109.49 94.56 : 124.28
Selenium	TM181	101.96 82.28 : 110.48
Strontium	TM181	87.53 79.13 : 102.79
Thallium	TM181	100.88 82.94 : 111.86
Tin	TM181	98.1 86.72 : 110.03
Titanium	TM181	83.21 66.23 : 102.06
Vanadium	TM181	96.34 86.19 : 109.45
Zinc	TM181	98.15 84.68 : 113.99

OC OP Pesticides and Triazine Herb

Component	Method Code	QC 2263
Atrazine (Raw)	TM073	100.25 78.55 : 119.92
Azinphos methyl (Raw)	TM073	102.52 58.68 : 154.71
cis-Chlordane (Raw)	TM073	101.64 71.90 : 129.99
Diazinon (Raw)	TM073	99.64 70.00 : 130.00



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OC OP Pesticides and Triazine Herb

		QC 2263
Dichlorvos (Raw)	TM073	98.17 70.00 : 130.00
Dieldrin (Raw)	TM073	105.15 70.00 : 130.00
gamma-HCH (Lindane) (Raw)	TM073	107.11 71.48 : 129.99
Heptachlor (Raw)	TM073	100.77 66.39 : 134.63
Hexachlorobenzene (Raw)	TM073	101.65 47.15 : 124.32
Malathion (Raw)	TM073	102.96 70.00 : 130.00
p,p-DDT (Raw)	TM073	90.68 70.00 : 130.00
Parathion (Raw)	TM073	101.3 64.13 : 127.88

PAH by GCMS

Component	Method Code	QC 2299
Acenaphthene	TM218	90.0 80.97 : 105.99
Acenaphthylene	TM218	89.5 74.76 : 107.36
Anthracene	TM218	87.5 73.04 : 106.97
Benz(a)anthracene	TM218	90.5 68.79 : 119.64
Benzo(a)pyrene	TM218	85.0 66.17 : 117.52
Benzo(b)fluoranthene	TM218	83.0 66.40 : 118.34
Benzo(ghi)perylene	TM218	88.5 67.68 : 112.07
Benzo(k)fluoranthene	TM218	92.5 72.84 : 114.66
Chrysene	TM218	91.5 68.39 : 115.56
Dibenzo(ah)anthracene	TM218	89.5 69.03 : 110.45
Fluoranthene	TM218	89.0 69.37 : 117.19
Fluorene	TM218	89.5 75.38 : 105.98
Indeno(123cd)pyrene	TM218	82.5 65.91 : 113.61
Naphthalene	TM218	86.0 71.40 : 105.87
Phenanthrene	TM218	90.5 74.04 : 109.30
Pyrene	TM218	89.0 69.68 : 115.27

pH



CERTIFICATE OF ANALYSIS

Validated

SDG: 200827-54
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PO20-583

Report Number: 566566
Superseded Report: 566326

pH

Component	Method Code	QC 2286
pH	TM133	101.85 98.68 : 102.65

Phenols by HPLC (S)

Component	Method Code	QC 2205
2,3,5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	110.39 83.23 : 109.71
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	86.55 76.34 : 104.11
Catechol by HPLC (S)	TM062 (S)	11.43 22.43 : 157.02
Cresols by HPLC (S)	TM062 (S)	91.02 90.22 : 116.89
Naphthol by HPLC (S)	TM062 (S)	90.0 75.62 : 124.38
Phenol by HPLC (S)	TM062 (S)	113.25 79.53 : 120.47
Resorcinol HPLC (S)	TM062 (S)	108.81 71.43 : 129.59
Xylenols by HPLC (S)	TM062 (S)	96.98 89.90 : 107.23

Total Organic Carbon

Component	Method Code	QC 2266
Total Organic Carbon	TM132	98.83 87.02 : 113.45

VOC MS (S)

Component	Method Code	QC 2280
1,1,1,2-tetrachloroethane	TM116	103.6 79.10 : 119.66
1,1,1-Trichloroethane	TM116	101.0 87.51 : 115.37
1,1,2-Trichloroethane	TM116	101.2 75.16 : 112.70
1,1-Dichloroethane	TM116	104.2 86.77 : 122.11
1,2-Dichloroethane	TM116	116.0 90.04 : 132.28
1,4-Dichlorobenzene	TM116	96.0 80.81 : 125.07
2-Chlorotoluene	TM116	96.2 73.76 : 115.43
4-Chlorotoluene	TM116	97.4 72.48 : 112.82



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Validated

SDG: 200827-54
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PO20-583

Report Number: 566566
Superseded Report: 566326

VOC MS (S)

		QC 2280
Benzene	TM116	96.4 84.29 : 112.22
Carbon Disulphide	TM116	97.2 75.11 : 124.81
Carbontetrachloride	TM116	101.6 82.35 : 126.46
Chlorobenzene	TM116	101.0 82.88 : 122.42
Chloroform	TM116	108.6 90.35 : 120.38
Chloromethane	TM116	102.2 65.80 : 138.88
Cis-1,2-Dichloroethene	TM116	104.8 78.27 : 128.90
Dibromomethane	TM116	108.0 76.00 : 120.73
Dichloromethane	TM116	116.8 91.49 : 127.63
Ethylbenzene	TM116	93.6 70.95 : 113.07
Hexachlorobutadiene	TM116	62.8 14.55 : 147.92
Isopropylbenzene	TM116	88.0 52.00 : 108.19
Naphthalene	TM116	103.0 80.29 : 135.77
o-Xylene	TM116	92.6 64.92 : 98.85
p/m-Xylene	TM116	96.3 72.04 : 104.04
Sec-Butylbenzene	TM116	70.0 27.03 : 135.73
Tetrachloroethene	TM116	104.6 81.43 : 126.65
Toluene	TM116	92.4 82.44 : 103.50
Trichloroethene	TM116	92.8 79.80 : 112.33
Trichlorofluoromethane	TM116	104.6 86.68 : 126.82
Vinyl Chloride	TM116	99.2 69.66 : 136.55

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.

The figure detailed is the percentage recovery result for the AQC.

The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.



CERTIFICATE OF ANALYSIS

Validated

SDG: 200827-54
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PQ20-583

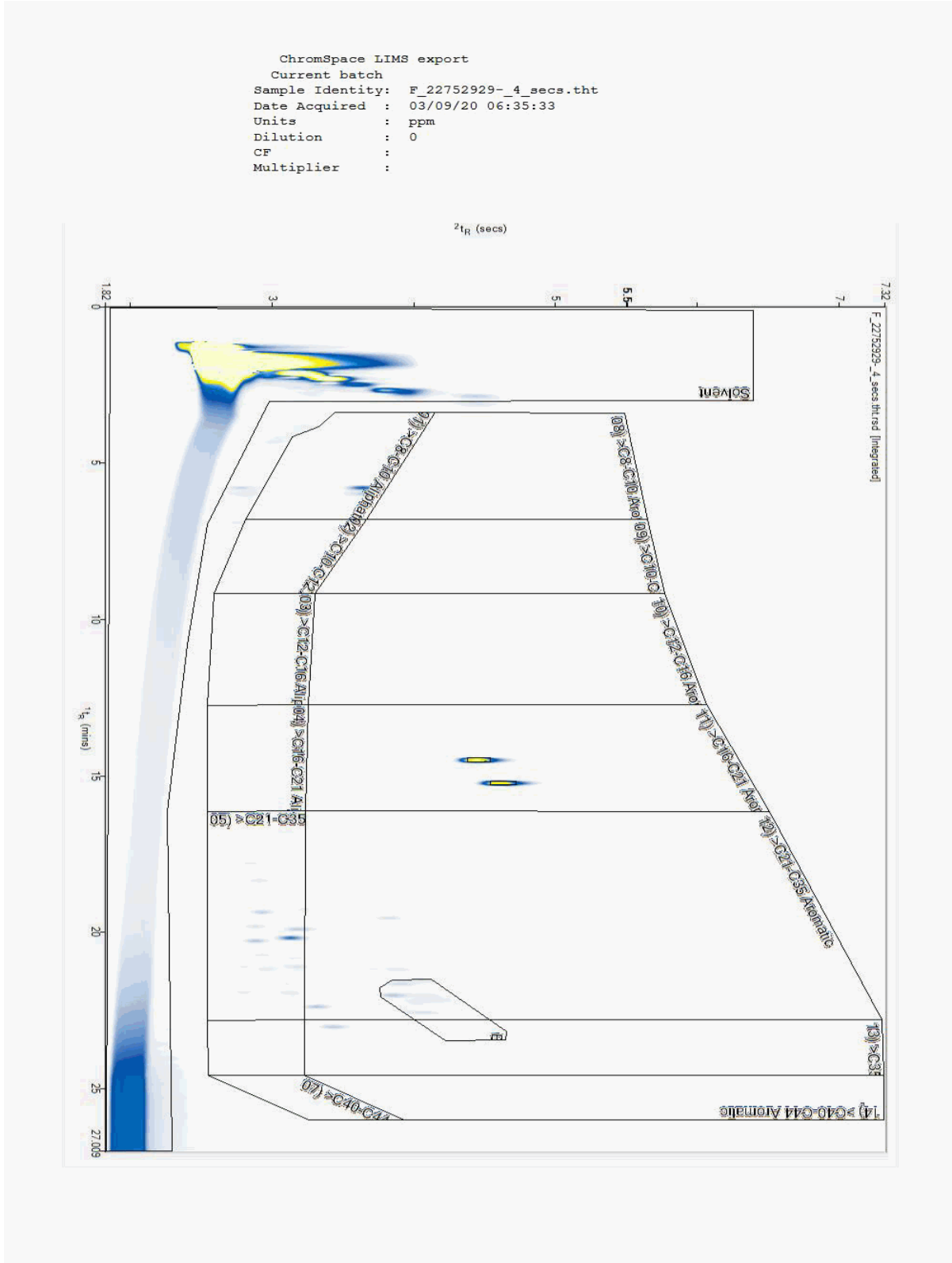
Report Number: 566566
Superseded Report: 566326

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 22752929
Sample ID : R71908

Depth : 0.30 - 0.40





CERTIFICATE OF ANALYSIS

Validated

SDG: 200827-54
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PQ20-583

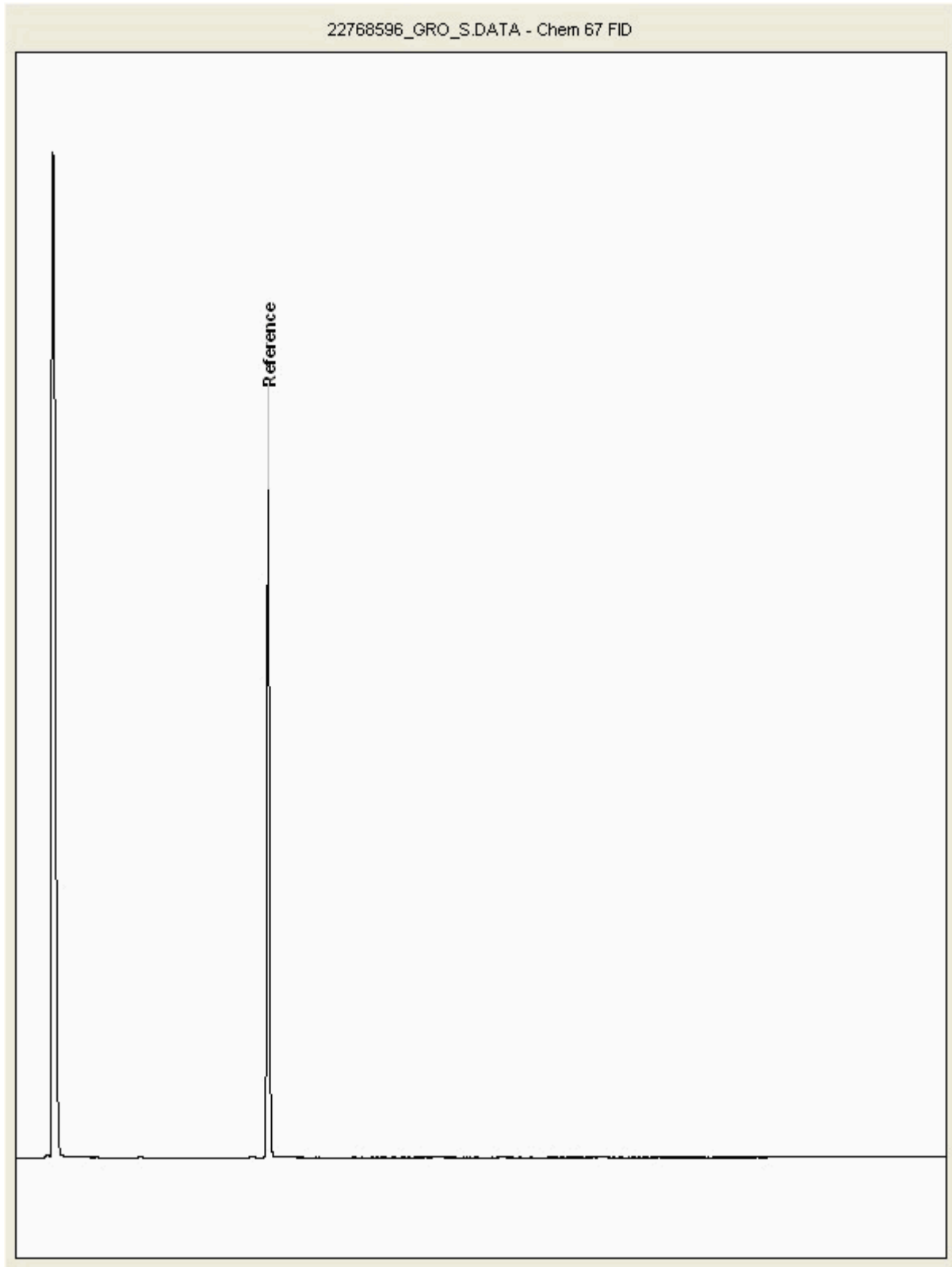
Report Number: 566566
Superseded Report: 566326

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 22768596
Sample ID : R71908

Depth : 0.30 - 0.40





CERTIFICATE OF ANALYSIS

SDG: 200827-54	Client Reference: JFR1451	Report Number: 566566
Location: A303 Stonehenge	Order Number: PO20-583	Superseded Report: 566326

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH₄ by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
§	Sampled on date not provided
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples

19. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung. Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017)*.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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Website: www.alsenvironmental.co.uk

RPS Consultants Ltd
260 Park Avenue
Aztec West
Almondsbury
Bristol
BS32 4SY

Attention: Gary Riches

CERTIFICATE OF ANALYSIS

Date of report Generation: 08 September 2020
Customer: RPS Consultants Ltd
Sample Delivery Group (SDG): 200829-4
Your Reference: JFR1451
Location: A303 Stonehenge
Report No: 566438

We received 7 samples on Friday August 28, 2020 and 2 of these samples were scheduled for analysis which was completed on Tuesday September 08, 2020. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

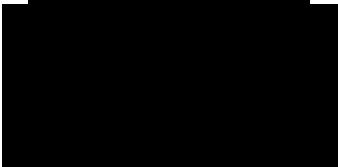
Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:



Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 200829-4
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: P020-582

Report Number: 566438
Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
22740949	R72001		0.00 - 0.10	26/08/2020
22740950	R72001		0.50	26/08/2020
22740951	R72001		1.00	26/08/2020
22740952	R72004		0.00 - 0.10	26/08/2020
22740953	R72004		0.30	26/08/2020
22740954	R72004		0.50	26/08/2020
22740955	R72004		1.00	26/08/2020

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG:	200829-4	Client Reference:	JFR1451	Report Number:	566438
Location:	A303 Stonehenge	Order Number:	P020-582	Superseded Report:	

Results Legend <div style="display: flex; flex-direction: column; gap: 5px;"> <div style="display: flex; align-items: center;">X Test</div> <div style="display: flex; align-items: center;">N No Determination Possible</div> </div> Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other	Lab Sample No(s)	22740951	22740954	
	Customer Sample Reference	R72001	R72004	
	AGS Reference			
	Depth (m)	1.00	0.50	
	Container	250g Amber Jar (ALE210)	60g VOC (ALE215)	250g Amber Jar (ALE210)
	Sample Type	S	S	S
	60g VOC (ALE215)	S	S	S
Ammonium Soil by Titration	All	NDPs: 0 Tests: 2	X	X
Anions by Kone (soil)	All	NDPs: 0 Tests: 2	X	X
Chromium III	All	NDPs: 0 Tests: 2	X	X
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 2	X	X
EPH CWG GC (S)	All	NDPs: 0 Tests: 2	X	X
GRO by GC-FID (S)	All	NDPs: 0 Tests: 2	X	X
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 2	X	X
Metals in solid samples by OES	All	NDPs: 0 Tests: 2	X	X
PAH by GCMS	All	NDPs: 0 Tests: 2	X	X
Phenols by HPLC (S)	All	NDPs: 0 Tests: 2	X	X
Sample description	All	NDPs: 0 Tests: 2	X	X
Total Organic Carbon	All	NDPs: 0 Tests: 2	X	X
TPH CWG GC (S)	All	NDPs: 0 Tests: 2	X	X
VOC MS (S)	All	NDPs: 0 Tests: 2	X	X



CERTIFICATE OF ANALYSIS

Validated

SDG: 200829-4
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: P020-582

Report Number: 566438
Superseded Report:

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm
-----------	----------	------	-----------------	--------	-------------	--------	------------	-------------	-------

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
22740951	R72001	1.00	Cream	Chalk	Vegetation	Stones
22740954	R72004	0.50	Dark Brown	Sandy Loam	Stones	Vegetation

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.



CERTIFICATE OF ANALYSIS

Validated

SDG:	200829-4	Client Reference:	JFR1451	Report Number:	566438
Location:	A303 Stonehenge	Order Number:	P020-582	Superseded Report:	

#	Customer Sample Ref.	R72001	R72004										
<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%; vertical-align: top;"> Results Legend # ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.fit Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-3*§@ Sample deviation (see appendix) </td> <td style="width: 20%; vertical-align: top;"> Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference </td> <td style="width: 10%; vertical-align: top;"> 1.00 Soil/Solid (S) 26/08/2020 28/08/2020 200829-4 22740951 </td> <td style="width: 10%; vertical-align: top;"> 0.50 Soil/Solid (S) 26/08/2020 28/08/2020 200829-4 22740954 </td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> </tr> </table>							Results Legend # ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.fit Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-3*§@ Sample deviation (see appendix)	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	1.00 Soil/Solid (S) 26/08/2020 28/08/2020 200829-4 22740951	0.50 Soil/Solid (S) 26/08/2020 28/08/2020 200829-4 22740954			
Results Legend # ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.fit Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-3*§@ Sample deviation (see appendix)	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	1.00 Soil/Solid (S) 26/08/2020 28/08/2020 200829-4 22740951	0.50 Soil/Solid (S) 26/08/2020 28/08/2020 200829-4 22740954										
Component	LOD/Units	Method											
Moisture Content Ratio (% of as received sample)	%	PM024	20	13									
Exchangeable Ammonia as N	<12 mg/kg	TM024	<12	<12	#	M							
Phenol	<0.01 mg/kg	TM062 (S)	<0.01	<0.01	#	M							
Organic Carbon, Total	<0.2 %	TM132	<0.2	0.961	#	M							
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6	<0.6	#	#							
Cyanide, Total	<1 mg/kg	TM153	<1	<1	#	M							
Cyanide, Free	<1 mg/kg	TM153	<1	<1	#	M							
Chromium, Trivalent	<0.9 mg/kg	TM181	1.12	12.3	#	#							
Antimony	<0.6 mg/kg	TM181	<0.6	<0.6	#	#							
Arsenic	<0.6 mg/kg	TM181	0.641	4.42	#	M							
Beryllium	<0.01 mg/kg	TM181	0.0622	0.626	#	M							
Boron	<0.7 mg/kg	TM181	1.73	7.74	#	#							
Cadmium	<0.02 mg/kg	TM181	0.19	0.734	#	M							
Chromium	<0.9 mg/kg	TM181	1.12	12.3	#	M							
Copper	<1.4 mg/kg	TM181	<1.4	5.86	#	M							
Iron	<1000 mg/kg	TM181	<1000	12200	#	#							
Lead	<0.7 mg/kg	TM181	0.704	12.2	#	M							
Manganese	<0.13 mg/kg	TM181	157	895	#	M							
Mercury	<0.14 mg/kg	TM181	<0.14	<0.14	#	M							
Molybdenum	<0.1 mg/kg	TM181	<0.1	<0.1	#	#							
Nickel	<0.2 mg/kg	TM181	1.6	11.6	#	M							
Phosphorus	<1 mg/kg	TM181	429	1170	#	#							
Selenium	<1 mg/kg	TM181	<1	<1	#	#							
Zinc	<1.9 mg/kg	TM181	10	50	#	M							
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243	0.0314	0.0394	#	M							



CERTIFICATE OF ANALYSIS

Validated

SDG: 200829-4
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: P020-582

Report Number: 566438
Superseded Report:

PAH by GCMS

Results Legend		Customer Sample Ref.	R72001	R72004				
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	1.00	0.50				
M	mCERTS accredited.		Soil/Solid (S)	Soil/Solid (S)				
aq	Aqueous / settled sample.		26/08/2020	26/08/2020				
diss.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.		28/08/2020	28/08/2020				
*	Subcontracted - refer to subcontractor report for accreditation status.		200829-4	200829-4				
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		22740951	22740954				
(F)	Trigger breach confirmed							
1-343@	Sample deviation (see appendix)							
Component	LOD/Units		Method					
Naphthalene-d8 % recovery**	%		TM218	83.8	88.7			
Acenaphthene-d10 % recovery**	%		TM218	85.6	89.1			
Phenanthrene-d10 % recovery**	%		TM218	87.2	91.3			
Chrysene-d12 % recovery**	%	TM218	77.6	84.9				
Perylene-d12 % recovery**	%	TM218	82.4	89.1				
Naphthalene	<9 µg/kg	TM218	<9	<9	#	M		
Acenaphthylene	<12 µg/kg	TM218	<12	<12	#	M		
Acenaphthene	<8 µg/kg	TM218	<8	<8	#	M		
Fluorene	<10 µg/kg	TM218	<10	<10	#	M		
Phenanthrene	<15 µg/kg	TM218	<15	<15	#	M		
Anthracene	<16 µg/kg	TM218	<16	<16	#	M		
Fluoranthene	<17 µg/kg	TM218	<17	<17	#	M		
Pyrene	<15 µg/kg	TM218	<15	<15	#	M		
Benz(a)anthracene	<14 µg/kg	TM218	<14	<14	#	M		
Chrysene	<10 µg/kg	TM218	<10	11.6	#	M		
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15	<15	#	M		
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14	<14	#	M		
Benzo(a)pyrene	<15 µg/kg	TM218	<15	<15	#	M		
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18	<18	#	M		
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23	<23	#	M		
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24	<24	#	M		
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118				



CERTIFICATE OF ANALYSIS

Validated

SDG: 200829-4
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: P020-582

Report Number: 566438
Superseded Report:

TPH CWG (S)

Table with columns: Results Legend, Customer Sample Ref., Depth (m), Sample Type, Date Sampled, Sampled Time, Date Received, SDG Ref, Lab Sample No.(s), AGS Reference, Component, LOD/Units, Method, and numerical data for various TPH components across two sample types (R72001 and R72004).



CERTIFICATE OF ANALYSIS

Validated

SDG:	200829-4	Client Reference:	JFR1451	Report Number:	566438
Location:	A303 Stonehenge	Order Number:	P020-582	Superseded Report:	

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	In - house Method	ELTRA CS800 Operators Guide
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM243		Mixed Anions In Soils By Kone
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).



CERTIFICATE OF ANALYSIS

Validated

SDG: 200829-4
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: P020-582

Report Number: 566438
Superseded Report:

Test Completion Dates

Lab Sample No(s)	22740951	22740954
Customer Sample Ref.	R72001	R72004
AGS Ref.		
Depth	1.00	0.50
Type	Soil/Solid (S)	Soil/Solid (S)

Ammonium Soil by Titration	08-Sep-2020	08-Sep-2020
Anions by Kone (soil)	08-Sep-2020	08-Sep-2020
Chromium III	08-Sep-2020	08-Sep-2020
Cyanide Comp/Free/Total/Thiocyanate	07-Sep-2020	07-Sep-2020
EPH CWG GC (S)	07-Sep-2020	07-Sep-2020
GRO by GC-FID (S)	08-Sep-2020	08-Sep-2020
Hexavalent Chromium (s)	08-Sep-2020	08-Sep-2020
Metals in solid samples by OES	08-Sep-2020	08-Sep-2020
PAH by GCMS	05-Sep-2020	05-Sep-2020
Phenols by HPLC (S)	08-Sep-2020	08-Sep-2020
Sample description	03-Sep-2020	03-Sep-2020
Total Organic Carbon	07-Sep-2020	08-Sep-2020
TPH CWG GC (S)	08-Sep-2020	08-Sep-2020
VOC MS (S)	08-Sep-2020	08-Sep-2020



CERTIFICATE OF ANALYSIS

Validated

SDG: 200829-4
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: P020-582

Report Number: 566438
Superseded Report:

ASSOCIATED AQC DATA

Ammonium Soil by Titration

Component	Method Code	QC 2279
Exchangeable Ammonium as NH4	TM024	82.59 76.20 : 110.13

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2227
Free Cyanide	TM153	88.81 78.61 : 114.43
Thiocyanate	TM153	91.67 90.48 : 109.52
Total Cyanide	TM153	79.72 76.80 : 112.96

GRO by GC-FID (S)

Component	Method Code	QC 2276
QC	TM089	85.51 70.75 : 114.19

Hexavalent Chromium (s)

Component	Method Code	QC 2237
Hexavalent Chromium	TM151	106.0 95.60 : 107.60

Metals in solid samples by OES

Component	Method Code	QC 2219
Aluminium	TM181	97.35 73.56 : 108.85
Antimony	TM181	89.02 76.89 : 111.24
Arsenic	TM181	98.26 88.53 : 111.01
Barium	TM181	94.5 77.67 : 105.35
Beryllium	TM181	98.88 85.44 : 109.61
Boron	TM181	93.12 73.51 : 104.66
Cadmium	TM181	86.42 77.67 : 104.12



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SDG: 200829-4
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: P020-582

Report Number: 566438
Superseded Report:

Metals in solid samples by OES

		QC 2219
Chromium	TM181	95.54 86.11 : 106.21
Cobalt	TM181	89.31 84.60 : 104.13
Copper	TM181	92.61 82.40 : 105.45
Iron	TM181	103.97 82.95 : 110.58
Lead	TM181	88.74 78.24 : 104.05
Manganese	TM181	109.72 94.29 : 119.51
Mercury	TM181	91.06 83.16 : 107.81
Molybdenum	TM181	92.59 87.11 : 106.87
Nickel	TM181	90.71 80.26 : 102.28
Phosphorus	TM181	109.09 94.56 : 124.28
Selenium	TM181	96.08 82.28 : 110.48
Strontium	TM181	91.54 79.13 : 102.79
Thallium	TM181	96.9 82.94 : 111.86
Tin	TM181	95.82 86.72 : 110.03
Titanium	TM181	88.55 66.23 : 102.06
Vanadium	TM181	98.9 86.19 : 109.45
Zinc	TM181	95.48 84.68 : 113.99

PAH by GCMS

Component	Method Code	QC 2220
Acenaphthene	TM218	94.5 80.97 : 105.99
Acenaphthylene	TM218	93.0 74.76 : 107.36
Anthracene	TM218	93.5 73.04 : 106.97
Benz(a)anthracene	TM218	93.5 68.79 : 119.64
Benzo(a)pyrene	TM218	87.5 66.17 : 117.52
Benzo(b)fluoranthene	TM218	93.5 66.40 : 118.34
Benzo(ghi)perylene	TM218	90.5 67.68 : 112.07
Benzo(k)fluoranthene	TM218	101.0 72.84 : 114.66



CERTIFICATE OF ANALYSIS

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SDG: 200829-4
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: P020-582

Report Number: 566438
Superseded Report:

PAH by GCMS

		QC 2220
Chrysene	TM218	94.5 68.39 : 115.56
Dibenzo(ah)anthracene	TM218	88.0 69.03 : 110.45
Fluoranthene	TM218	95.0 69.37 : 117.19
Fluorene	TM218	95.0 75.38 : 105.98
Indeno(123cd)pyrene	TM218	90.5 65.91 : 113.61
Naphthalene	TM218	87.0 71.40 : 105.87
Phenanthrene	TM218	94.0 74.04 : 109.30
Pyrene	TM218	95.0 69.68 : 115.27

Phenols by HPLC (S)

Component	Method Code	QC 2229	QC 2256
2,3,5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	128.57 83.23 : 109.71	110.39 83.23 : 109.71
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	97.66 76.34 : 104.11	93.57 76.34 : 104.11
Catechol by HPLC (S)	TM062 (S)	13.33 22.43 : 157.02	0.95 22.43 : 157.02
Cresols by HPLC (S)	TM062 (S)	96.24 90.22 : 116.89	92.07 90.22 : 116.89
Naphthol by HPLC (S)	TM062 (S)	113.57 75.62 : 124.38	107.14 75.62 : 124.38
Phenol by HPLC (S)	TM062 (S)	125.83 79.53 : 120.47	116.56 79.53 : 120.47
Resorcinol HPLC (S)	TM062 (S)	119.5 71.43 : 129.59	118.87 71.43 : 129.59
Xylenols by HPLC (S)	TM062 (S)	107.29 89.90 : 107.23	104.17 89.90 : 107.23

Total Organic Carbon

Component	Method Code	QC 2272	QC 2273
Total Organic Carbon	TM132	98.83 87.02 : 113.45	92.97 87.02 : 113.45

VOC MS (S)

Component	Method Code	QC 2290
1,1,1,2-tetrachloroethane	TM116	101.6 79.10 : 119.66
1,1,1-Trichloroethane	TM116	96.0 87.51 : 115.37
1,1,2-Trichloroethane	TM116	93.6 75.16 : 112.70



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Superseded Report:

VOC MS (S)

		QC 2290
1,1-Dichloroethane	TM116	102.8 86.77 : 122.11
1,2-Dichloroethane	TM116	108.8 90.04 : 132.28
1,4-Dichlorobenzene	TM116	101.6 80.81 : 125.07
2-Chlorotoluene	TM116	84.2 73.76 : 115.43
4-Chlorotoluene	TM116	81.8 72.48 : 112.82
Benzene	TM116	94.6 84.29 : 112.22
Carbon Disulphide	TM116	93.6 75.11 : 124.81
Carbon tetrachloride	TM116	104.4 82.35 : 126.46
Chlorobenzene	TM116	97.4 82.88 : 122.42
Chloroform	TM116	103.8 90.35 : 120.38
Chloromethane	TM116	106.0 65.80 : 138.88
Cis-1,2-Dichloroethene	TM116	101.0 78.27 : 128.90
Dibromomethane	TM116	101.2 76.00 : 120.73
Dichloromethane	TM116	109.6 91.49 : 127.63
Ethylbenzene	TM116	86.6 70.95 : 113.07
Hexachlorobutadiene	TM116	61.2 14.55 : 147.92
Isopropylbenzene	TM116	66.2 52.00 : 108.19
Naphthalene	TM116	107.4 80.29 : 135.77
o-Xylene	TM116	80.4 64.92 : 98.85
p/m-Xylene	TM116	83.0 72.04 : 104.04
Sec-Butylbenzene	TM116	54.0 27.03 : 135.73
Tetrachloroethene	TM116	99.8 81.43 : 126.65
Toluene	TM116	88.4 82.44 : 103.50
Trichloroethene	TM116	100.8 79.80 : 112.33
Trichlorofluoromethane	TM116	116.2 86.68 : 126.82
Vinyl Chloride	TM116	108.2 69.66 : 136.55



CERTIFICATE OF ANALYSIS

Validated

SDG:	200829-4	Client Reference:	JFR1451	Report Number:	566438
Location:	A303 Stonehenge	Order Number:	P020-582	Superseded Report:	

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis .

The figure detailed is the percentage recovery result for the AQC .

The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control .



CERTIFICATE OF ANALYSIS

Validated

SDG: 200829-4
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: P020-582

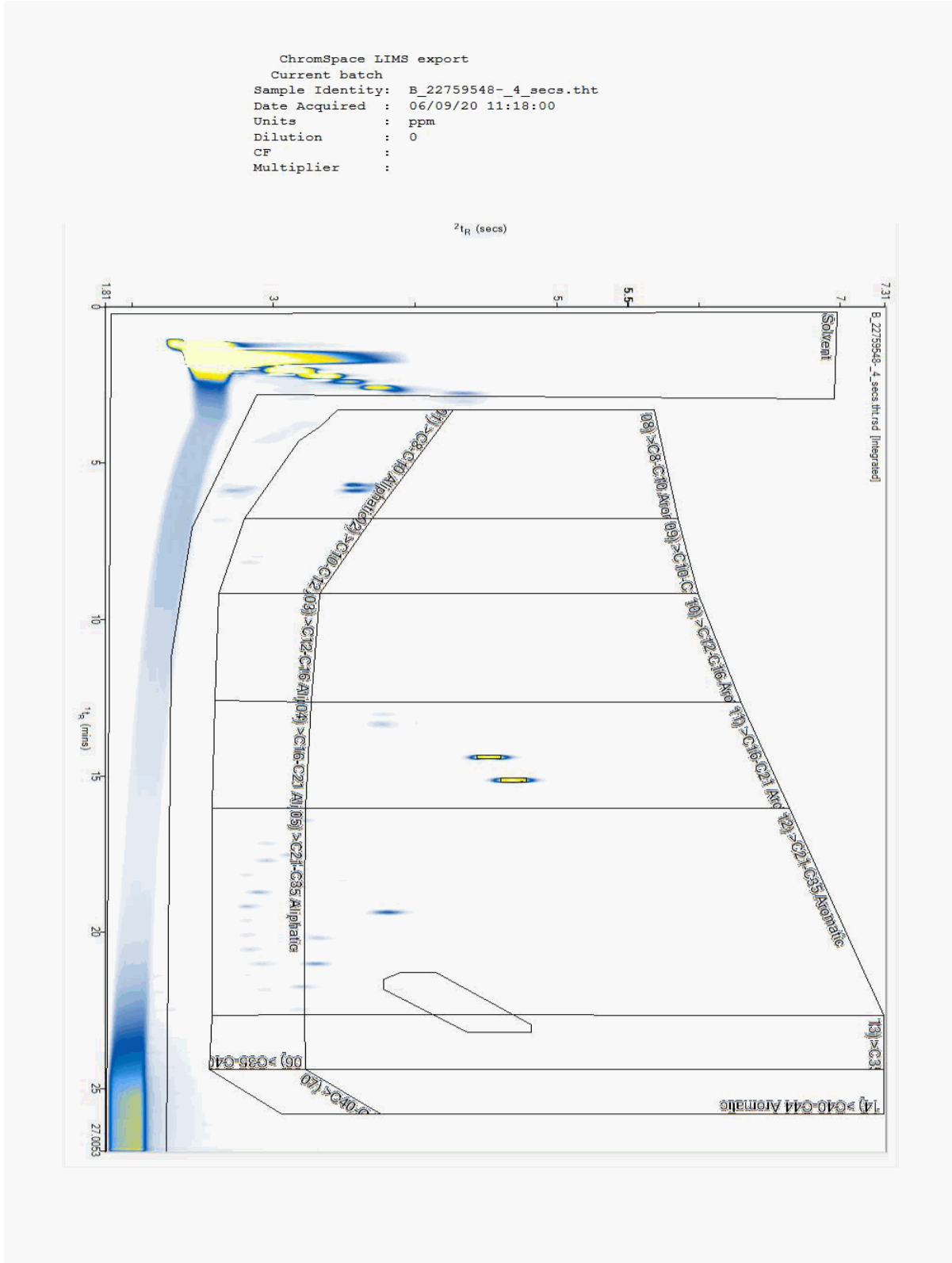
Report Number: 566438
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 22759548
Sample ID : R72001

Depth : 1.00





CERTIFICATE OF ANALYSIS

Validated

SDG: 200829-4
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: P020-582

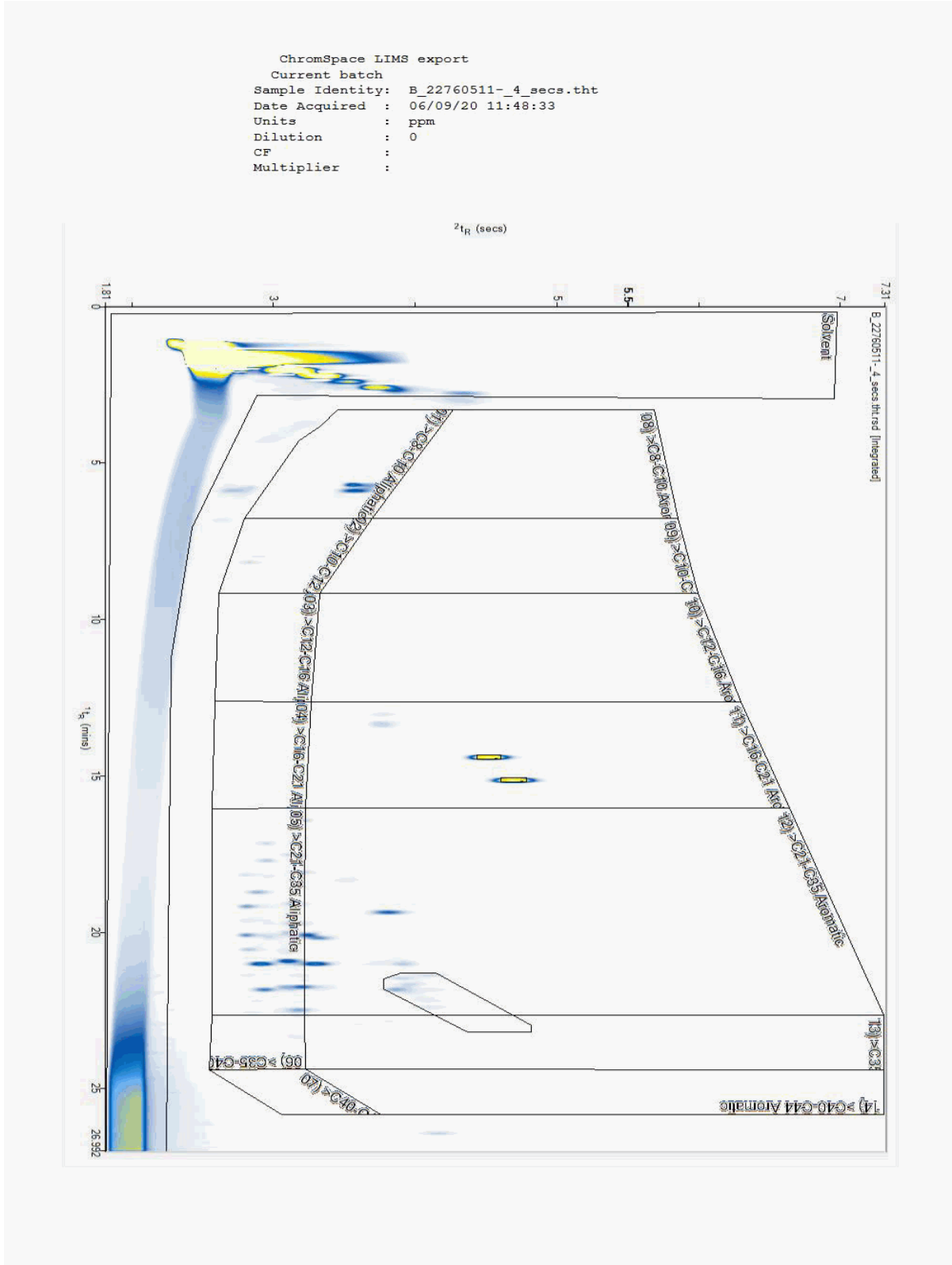
Report Number: 566438
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 22760511
Sample ID : R72004

Depth : 0.50





CERTIFICATE OF ANALYSIS

Validated

SDG: 200829-4
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: P020-582

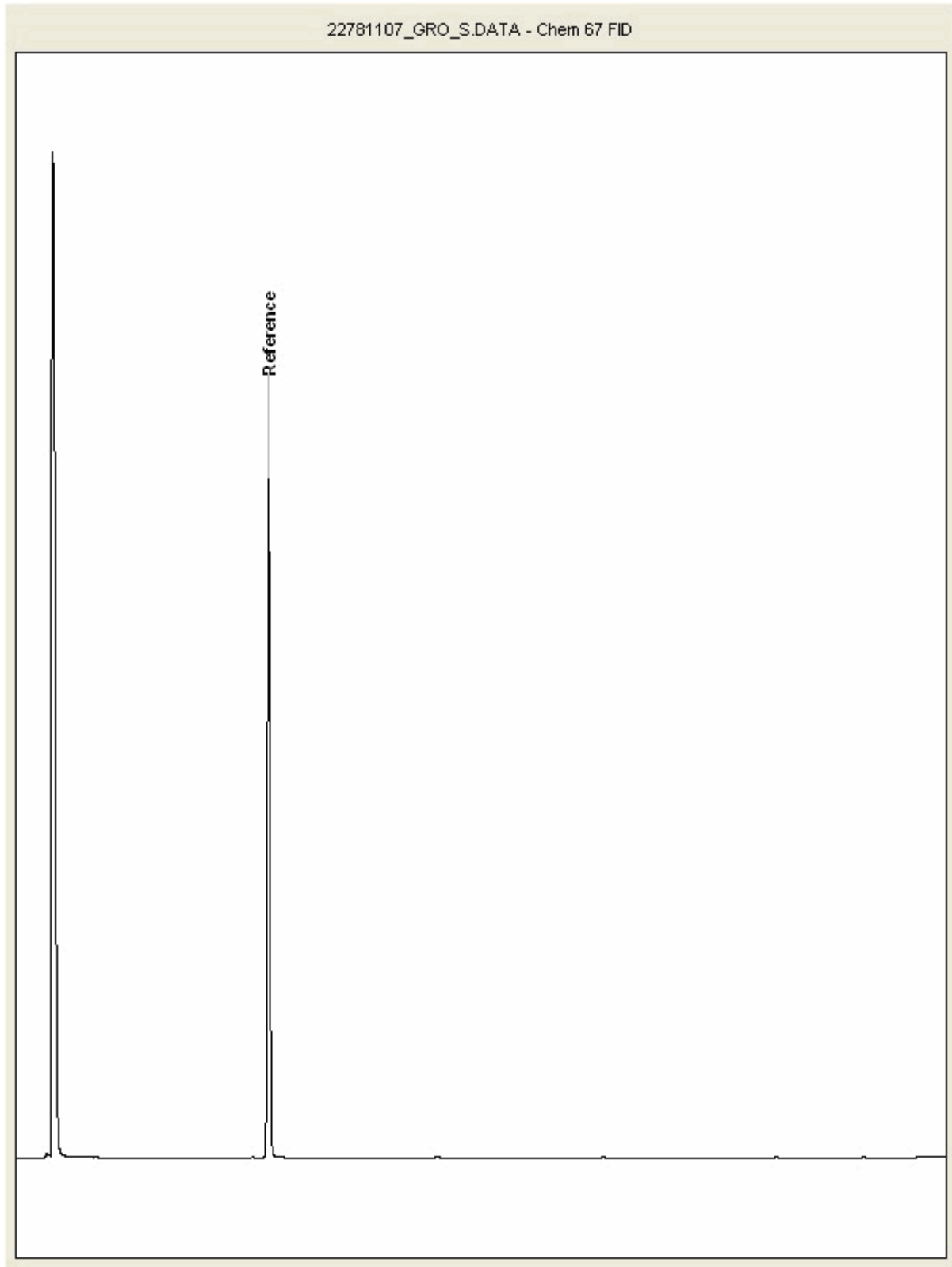
Report Number: 566438
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 22781107
Sample ID : R72004

Depth : 0.50





CERTIFICATE OF ANALYSIS

Validated

SDG: 200829-4
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: P020-582

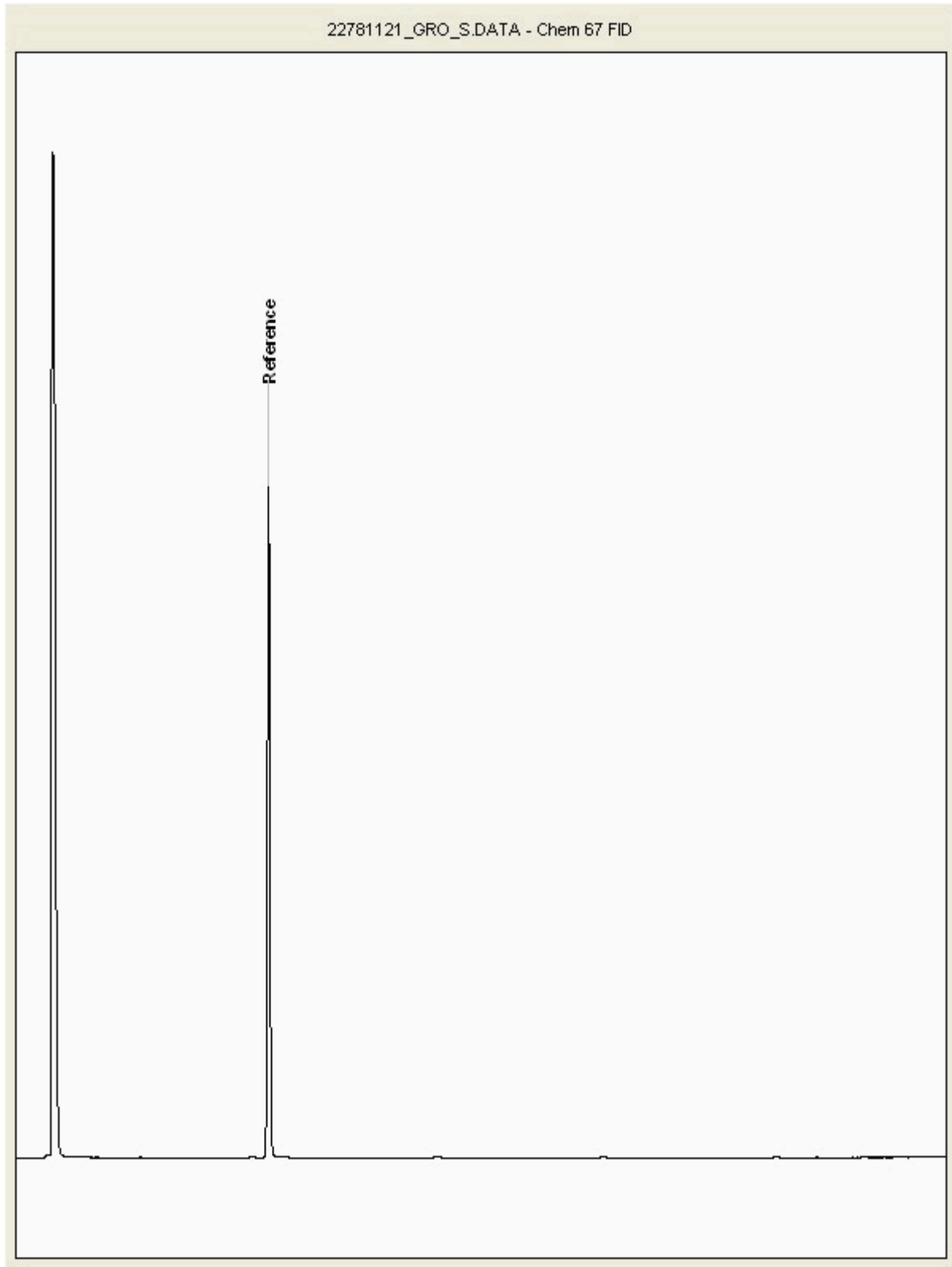
Report Number: 566438
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 22781121
Sample ID : R72001

Depth : 1.00





CERTIFICATE OF ANALYSIS

SDG: 200829-4	Client Reference: JFR1451	Report Number: 566438
Location: A303 Stonehenge	Order Number: P020-582	Superseded Report:

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH₄ by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
§	Sampled on date not provided
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples

19. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017)*.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



Unit 7-8 Hawarden Business Park
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email: hawardencustomerservices@alsglobal.com

Website: www.alsenvironmental.co.uk

RPS Consultants Ltd
260 Park Avenue
Aztec West
Almondsbury
Bristol
BS32 4SY

Attention: Gary Riches

CERTIFICATE OF ANALYSIS

Date of report Generation: 14 September 2020
Customer: RPS Consultants Ltd
Sample Delivery Group (SDG): 200903-121
Your Reference: JFR1451
Location: A303 Stonehenge
Report No: 567147

We received 9 samples on Thursday September 03, 2020 and 3 of these samples were scheduled for analysis which was completed on Monday September 14, 2020. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

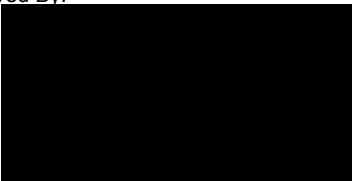
Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:



Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 200903-121
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 567147
Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
22762418	R71910		1.50 - 2.00	01/09/2020
22762414	R71915		0.00 - 0.10	01/09/2020
22762415	R71915		0.25	01/09/2020
22762416	R71915		0.50	01/09/2020
22762417	R71915		1.00	01/09/2020
22762409	R72102		0.00 - 0.10	01/09/2020
22762410	R72102		0.30	01/09/2020
22762411	R72102		0.50	01/09/2020
22762412	R72102		1.00	01/09/2020

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG:	200903-121	Client Reference:	JFR1451	Report Number:	567147
Location:	A303 Stonehenge	Order Number:		Superseded Report:	

Results Legend

- X Test
- N No Determination Possible

Sample Types -

- S - Soil/Solid
- UNS - Unspecified Solid
- GW - Ground Water
- SW - Surface Water
- LE - Land Leachate
- PL - Prepared Leachate
- PR - Process Water
- SA - Saline Water
- TE - Trade Effluent
- TS - Treated Sewage
- US - Untreated Sewage
- RE - Recreational Water
- DW - Drinking Water Non-regulatory
- UNL - Unspecified Liquid
- SL - Sludge
- G - Gas
- OTH - Other

Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container			Sample Type
				1kg TUB with Handle (ALE280)	250g Amber Jar (ALE210)	60g VOC (ALE215)	
22762416	R71915		0.50		250g Amber Jar (ALE210)	60g VOC (ALE215)	S
22762410	R72102		0.30		250g Amber Jar (ALE215)	60g VOC (ALE210)	S
22762412	R72102		1.00		250g Amber Jar (ALE215)	60g VOC (ALE215)	S
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 1		X			
Ammonium Soil by Titration	All	NDPs: 0 Tests: 3			X	X	X
Anions by Kone (soil)	All	NDPs: 0 Tests: 3			X	X	X
Anions by Kone (w)	All	NDPs: 0 Tests: 1		X			
CEN Readings	All	NDPs: 0 Tests: 1		X			
Chromium III	All	NDPs: 0 Tests: 4		X	X	X	X
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 4		X	X	X	X
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 1		X			
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 1		X			
EPH CWG (Aliphatic) Filtered GC (W)	All	NDPs: 0 Tests: 1		X			
EPH CWG (Aromatic) Filtered GC (W)	All	NDPs: 0 Tests: 1		X			
EPH CWG GC (S)	All	NDPs: 0 Tests: 3			X	X	X
GRO by GC-FID (S)	All	NDPs: 0 Tests: 3				X	X
GRO by GC-FID (W)	All	NDPs: 0 Tests: 1		X			
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 3			X	X	X



CERTIFICATE OF ANALYSIS

Validated

SDG:	200903-121	Client Reference:	JFR1451	Report Number:	567147
Location:	A303 Stonehenge	Order Number:		Superseded Report:	

Results Legend <div style="display: flex; flex-direction: column; gap: 5px;"> <div style="display: flex; align-items: center;">X Test</div> <div style="display: flex; align-items: center;">N No Determination Possible</div> </div> Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type	
		22762416	R71915		0.50	1kg TUB with Handle (ALE280)	S
		22762410	R72102		0.30	250g Amber Jar (ALE210)	S
		22762412	R72102		1.00	60g VOC (ALE215)	S
						250g Amber Jar (ALE210)	S
						60g VOC (ALE215)	S
						250g Amber Jar (ALE210)	S
Hexavalent Chromium (w)	All				NDPs: 0 Tests: 1	X	
Mercury Dissolved	All				NDPs: 0 Tests: 1	X	
Metals in solid samples by OES	All				NDPs: 0 Tests: 3	X X X	
OC OP Pesticides and Triazine Herb	All				NDPs: 0 Tests: 3	X X X	
PAH by GCMS	All				NDPs: 0 Tests: 3	X X X	
PAH in waters by GC-MS (diss.filt)	All				NDPs: 0 Tests: 1	X	
pH	All				NDPs: 0 Tests: 3	X X X	
pH Value of Filtered Water	All				NDPs: 0 Tests: 1	X	
Phenols by HPLC (S)	All				NDPs: 0 Tests: 3	X X X	
Phenols by HPLC (W)	All				NDPs: 0 Tests: 1	X	
Sample description	All				NDPs: 0 Tests: 3	X X X	
Semi Volatile Organic Compounds	All				NDPs: 0 Tests: 3	X X X	
Total Organic Carbon	All				NDPs: 0 Tests: 3	X X X	
TPH CWG Filtered (W)	All				NDPs: 0 Tests: 1	X	
TPH CWG GC (S)	All				NDPs: 0 Tests: 3	X X X	



CERTIFICATE OF ANALYSIS

Validated

SDG:	200903-121	Client Reference:	JFR1451	Report Number:	567147
Location:	A303 Stonehenge	Order Number:		Superseded Report:	

Results Legend

- X Test
- N No Determination Possible

Sample Types -

- S - Soil/Solid
- UNS - Unspecified Solid
- GW - Ground Water
- SW - Surface Water
- LE - Land Leachate
- PL - Prepared Leachate
- PR - Process Water
- SA - Saline Water
- TE - Trade Effluent
- TS - Treated Sewage
- US - Untreated Sewage
- RE - Recreational Water
- DW - Drinking Water Non-regulatory
- UNL - Unspecified Liquid
- SL - Sludge
- G - Gas
- OTH - Other

	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type
	22762416	R71915		0.50	1kg TUBS with Handle (ALE280)	S
	22762410	R72102		0.30	250g Amber Jar (ALE210)	S
	22762412	R72102		1.00	60g VOC (ALE215)	S
					250g Amber Jar (ALE210)	S
					60g VOC (ALE215)	S
					250g Amber Jar (ALE210)	S
					60g VOC (ALE215)	S
VOC MS (S)	All				NDPs: 0 Tests: 3	
						X
						X
						X



CERTIFICATE OF ANALYSIS

Validated

SDG: 200903-121
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 567147
Superseded Report:

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm
------------------	----------	-------------	-----------------	---------------	-------------	---------------	------------	--------------------	-------

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
22762416	R71915	0.50	Cream	Sand	Vegetation	Stones
22762410	R72102	0.30	Dark Brown	Sandy Loam	Stones	Vegetation
22762412	R72102	1.00	White	Sand	Vegetation	Stones

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.



CERTIFICATE OF ANALYSIS

Validated

SDG:	200903-121	Client Reference:	JFR1451	Report Number:	567147
Location:	A303 Stonehenge	Order Number:		Superseded Report:	

Results Legend			Customer Sample Ref.	R71915	R72102	R72102			
#	ISO17025 accredited.								
M	mCERTS accredited.								
aq	Aqueous / settled sample.								
diss.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted - refer to subcontractor report for accreditation status.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery								
(F)	Trigger breach confirmed								
1-3*§@	Sample deviation (see appendix)								
		Depth (m)							
		Sample Type							
		Date Sampled							
		Sampled Time							
		Date Received							
		SDG Ref							
		Lab Sample No.(s)							
		AGS Reference							
Component	LOD/Units	Method							
Moisture Content Ratio (% of as received sample)	%	PM024	21	17	18				
Exchangeable Ammonia as N	<12 mg/kg	TM024	<12 M	<12 M	<12 M				
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M				
Organic Carbon, Total	<0.2 %	TM132	<0.2 M	1.53 M	<0.2 M				
pH	1 pH Units	TM133	8.78 M	8.58 M	9.12 M				
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 #	<0.6 #	<0.6 #				
Cyanide, Total	<1 mg/kg	TM153	<1 M	<1 M	<1 M				
Cyanide, Free	<1 mg/kg	TM153	<1 M	<1 M	<1 M				
Chromium, Trivalent	<0.9 mg/kg	TM181	1.39	9.3	1.47				
Antimony	<0.6 mg/kg	TM181	<0.6 #	<0.6 #	<0.6 #				
Arsenic	<0.6 mg/kg	TM181	<0.6 M	4.25 M	<0.6 M				
Beryllium	<0.01 mg/kg	TM181	0.0631 M	0.147 M	0.0491 M				
Boron	<0.7 mg/kg	TM181	2.12 #	7.42 #	2.06 #				
Cadmium	<0.02 mg/kg	TM181	0.273 M	0.601 M	0.248 M				
Chromium	<0.9 mg/kg	TM181	1.39 M	9.3 M	1.47 M				
Copper	<1.4 mg/kg	TM181	<1.4 M	6.66 M	<1.4 M				
Iron	<1000 mg/kg	TM181	<1000 #	8790 #	<1000 #				
Lead	<0.7 mg/kg	TM181	<0.7 M	14.1 M	<0.7 M				
Manganese	<0.13 mg/kg	TM181	169 M	645 M	205 M				
Mercury	<0.14 mg/kg	TM181	<0.14 M	<0.14 M	<0.14 M				
Molybdenum	<0.1 mg/kg	TM181	<0.1 #	0.226 #	<0.1 #				
Nickel	<0.2 mg/kg	TM181	1.44 M	7.99 M	2.41 M				
Phosphorus	<1 mg/kg	TM181	572	1370	503				
Selenium	<1 mg/kg	TM181	<1 #	<1 #	<1 #				
Zinc	<1.9 mg/kg	TM181	10.6 M	48.1 M	15 M				
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243	0.0102 M	0.0184 M	0.0074 M				



CERTIFICATE OF ANALYSIS

Validated

SDG: 200903-121
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:
Report Number: 567147
Superseded Report:

OC OP Pesticides and Triazine Herb

Results Legend		Customer Sample Ref.	R71915	R72102	R72102			
# ISO17025 accredited.								
M mCERTS accredited.								
aq Aqueous / settled sample.								
diss.fit Dissolved / filtered sample.								
tot.unfilt Total / unfiltered sample.								
* Subcontracted - refer to subcontractor report for accreditation status.								
** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery								
(F) Trigger breach confirmed								
1-345@ Sample deviation (see appendix)								
		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.50 Soil/Solid (S) 01/09/2020 03/09/2020 200903-121 22762416	0.30 Soil/Solid (S) 01/09/2020 03/09/2020 200903-121 22762410	1.00 Soil/Solid (S) 01/09/2020 03/09/2020 200903-121 22762412			
Component	LOD/Units	Method						
Dichlorvos	<50 µg/kg	TM073	<50	<50	<50			
Mevinphos	<50 µg/kg	TM073	<50	<50	<50			
Phorate	<50 µg/kg	TM073	<50	<50	<50			
alpha-Hexachlorocyclohexane (HCH)	<50 µg/kg	TM073	<50	<50	<50			
Diazinon	<50 µg/kg	TM073	<50	<50	<50			
gamma-Hexachlorocyclohexane (HCH / Lindane)	<50 µg/kg	TM073	<50	<50	<50			
Atrazine	<50 µg/kg	TM073	<50	<50	<50			
Simazine	<50 µg/kg	TM073	<50	<50	<50			
Disulfoton	<50 µg/kg	TM073	<50	<50	<50			
Heptachlor	<50 µg/kg	TM073	<50	<50	<50			
Aldrin	<50 µg/kg	TM073	<50	<50	<50			
beta-Hexachlorocyclohexane (HCH)	<50 µg/kg	TM073	<50	<50	<50			
Methyl parathion	<50 µg/kg	TM073	<50	<50	<50			
Malathion	<50 µg/kg	TM073	<50	<50	<50			
Fenitrothion	<50 µg/kg	TM073	<50	<50	<50			
Heptachlor epoxide	<50 µg/kg	TM073	<50	<50	<50			
Parathion	<50 µg/kg	TM073	<50	<50	<50			
Endosulphan I	<50 µg/kg	TM073	<50	<50	<50			
p,p-DDE	<50 µg/kg	TM073	<50	<50	<50			
Dieldrin	<50 µg/kg	TM073	<50	<50	<50			
o,p'-DDD (TDE)	<50 µg/kg	TM073	<50	<50	<50			
Endrin	<50 µg/kg	TM073	<50	<50	<50			
p,p-TDE (DDD)	<50 µg/kg	TM073	<50	<50	<50			
Ethion	<50 µg/kg	TM073	<50	<50	<50			
Endosulphan II	<50 µg/kg	TM073	<50	<50	<50			
p,p-DDT	<50 µg/kg	TM073	<50	<50	<50			
p,p-Methoxychlor	<50 µg/kg	TM073	<50	<50	<50			
Endosulphan sulphate	<50 µg/kg	TM073	<50	<50	<50			
Azinphos-methyl	<50 µg/kg	TM073	<50	<50	<50			



CERTIFICATE OF ANALYSIS

Validated

SDG: 200903-121 **Client Reference:** JFR1451 **Report Number:** 567147
Location: A303 Stonehenge **Order Number:** **Superseded Report:**

PAH by GCMS

Results Legend		Customer Sample Ref.	R71915	R72102	R72102			
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.50	0.30	1.00			
M	mCERTS accredited.		Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
aq	Aqueous / settled sample.		01/09/2020	01/09/2020	01/09/2020			
diss.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.		03/09/2020	03/09/2020	03/09/2020			
*	Subcontracted - refer to subcontractor report for accreditation status.		200903-121	200903-121	200903-121			
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		22762416	22762410	22762412			
(F)	Trigger breach confirmed							
1-3*5@	Sample deviation (see appendix)							
Component	LOD/Units		Method					
Naphthalene-d8 % recovery**	%	TM218	85.3	83.9	86.2			
Acenaphthene-d10 % recovery**	%	TM218	93.1	86.3	89.2			
Phenanthrene-d10 % recovery**	%	TM218	93.5	86.9	86.8			
Chrysene-d12 % recovery**	%	TM218	85.7	86.3	82.5			
Perylene-d12 % recovery**	%	TM218	84.8	86.4	84.2			
Naphthalene	<9 µg/kg	TM218	<9 M	<9 M	<9 M			
Acenaphthylene	<12 µg/kg	TM218	<12 M	<12 M	<12 M			
Acenaphthene	<8 µg/kg	TM218	<8 M	<8 M	<8 M			
Fluorene	<10 µg/kg	TM218	<10 M	<10 M	<10 M			
Phenanthrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M			
Anthracene	<16 µg/kg	TM218	<16 M	<16 M	<16 M			
Fluoranthene	<17 µg/kg	TM218	<17 M	29.1 M	<17 M			
Pyrene	<15 µg/kg	TM218	<15 M	24.7 M	<15 M			
Benz(a)anthracene	<14 µg/kg	TM218	<14 M	<14 M	<14 M			
Chrysene	<10 µg/kg	TM218	<10 M	18.9 M	<10 M			
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 M	29.4 M	<15 M			
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 M	<14 M	<14 M			
Benzo(a)pyrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M			
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 M	<18 M	<18 M			
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 M	<23 M	<23 M			
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 M	<24 M	<24 M			
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118	<118			



CERTIFICATE OF ANALYSIS

Validated

SDG: 200903-121
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 567147
Superseded Report:

Semi Volatile Organic Compounds

Results Legend			Customer Sample Ref.	R71915	R72102	R72102			
#	ISO17025 accredited.								
M	mCERTS accredited.								
aq	Aqueous / settled sample.								
diss.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted - refer to subcontractor report for accreditation status.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery								
(F)	Trigger breach confirmed								
1-3*5@	Sample deviation (see appendix)								
Component	LOD/Units	Method	Depth (m)	0.50	0.30	1.00			
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
			Date Sampled	01/09/2020	01/09/2020	01/09/2020			
			Sampled Time						
			Date Received	03/09/2020	03/09/2020	03/09/2020			
			SDG Ref	200903-121	200903-121	200903-121			
			Lab Sample No.(s)	22762416	22762410	22762412			
			AGS Reference						
Phenol	<100 µg/kg	TM157		<100	<100	<100			
Pentachlorophenol	<100 µg/kg	TM157		<100	<100	<100			
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157		<100	<100	<100			
Nitrobenzene	<100 µg/kg	TM157		<100	<100	<100			
Isophorone	<100 µg/kg	TM157		<100	<100	<100			
Hexachloroethane	<100 µg/kg	TM157		<100	<100	<100			
Hexachlorocyclopentadiene	<100 µg/kg	TM157		<200	<200	<200			
Hexachlorobutadiene	<100 µg/kg	TM157		<100	<100	<100			
Hexachlorobenzene	<100 µg/kg	TM157		<100	<100	<100			
n-Dioctyl phthalate	<100 µg/kg	TM157		<100	<100	<100			
Dimethyl phthalate	<100 µg/kg	TM157		<100	<100	<100			
Diethyl phthalate	<100 µg/kg	TM157		<100	<100	<100			
n-Dibutyl phthalate	<100 µg/kg	TM157		<100	<100	<100			
Dibenzofuran	<100 µg/kg	TM157		<100	<100	<100			
Carbazole	<100 µg/kg	TM157		<100	<100	<100			
Butylbenzyl phthalate	<100 µg/kg	TM157		<100	<100	<100			
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157		<100	<100	<100			
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157		<100	<100	<100			
bis(2-Chloroethyl)ether	<100 µg/kg	TM157		<100	<100	<100			
Azobenzene	<100 µg/kg	TM157		<100	<100	<100			
4-Nitrophenol	<100 µg/kg	TM157		<100	<100	<100			
4-Nitroaniline	<100 µg/kg	TM157		<100	<100	<100			
4-Methylphenol	<100 µg/kg	TM157		<100	<100	<100			
4-Chlorophenylphenylether	<100 µg/kg	TM157		<100	<100	<100			
4-Chloroaniline	<100 µg/kg	TM157		<100	<100	<100			
4-Chloro-3-methylphenol	<100 µg/kg	TM157		<100	<100	<100			
4-Bromophenylphenylether	<100 µg/kg	TM157		<100	<100	<100			
3-Nitroaniline	<100 µg/kg	TM157		<100	<100	<100			
2-Nitrophenol	<100 µg/kg	TM157		<100	<100	<100			
2-Nitroaniline	<100 µg/kg	TM157		<100	<100	<100			
2-Methylphenol	<100 µg/kg	TM157		<100	<100	<100			
1,2,4-Trichlorobenzene	<100 µg/kg	TM157		<100	<100	<100			



CERTIFICATE OF ANALYSIS

Validated

SDG: 200903-121
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 567147
Superseded Report:

Semi Volatile Organic Compounds

Results Legend			Customer Sample Ref.	R71915	R72102	R72102			
#	ISO17025 accredited.								
M	mCERTS accredited.								
aq	Aqueous / filtered sample.								
dis.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted - refer to subcontractor report for accreditation status.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery								
(F)	Trigger breach confirmed								
1-3*5@	Sample deviation (see appendix)								
		Customer Sample Ref.	R71915	R72102	R72102				
		Depth (m)	0.50	0.30	1.00				
		Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)				
		Date Sampled	01/09/2020	01/09/2020	01/09/2020				
		Sampled Time							
		Date Received	03/09/2020	03/09/2020	03/09/2020				
		SDG Ref	200903-121	200903-121	200903-121				
		Lab Sample No.(s)	22762416	22762410	22762412				
		AGS Reference							
Component	LOD/Units	Method							
2-Chlorophenol	<100 µg/kg	TM157	<100	<100	<100				
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100				
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100				
2,4-Dimethylphenol	<100 µg/kg	TM157	<100	<100	<100				
2,4-Dichlorophenol	<100 µg/kg	TM157	<100	<100	<100				
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100				
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100				
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100				
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100				
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100				
2-Chloronaphthalene	<100 µg/kg	TM157	<100	<100	<100				
2-Methylnaphthalene	<100 µg/kg	TM157	<100	<100	<100				
Acenaphthylene	<100 µg/kg	TM157	<100	<100	<100				
Acenaphthene	<100 µg/kg	TM157	<100	<100	<100				
Anthracene	<100 µg/kg	TM157	<100	<100	<100				
Benzo(a)anthracene	<100 µg/kg	TM157	<100	<100	<100				
Benzo(b)fluoranthene	<100 µg/kg	TM157	<100	<100	<100				
Benzo(k)fluoranthene	<100 µg/kg	TM157	<100	<100	<100				
Benzo(a)pyrene	<100 µg/kg	TM157	<100	<100	<100				
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<100	<100	<100				
Chrysene	<100 µg/kg	TM157	<100	<100	<100				
Fluoranthene	<100 µg/kg	TM157	<100	<100	<100				
Fluorene	<100 µg/kg	TM157	<100	<100	<100				
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<100	<100	<100				
Phenanthrene	<100 µg/kg	TM157	<100	<100	<100				
Pyrene	<100 µg/kg	TM157	<100	<100	<100				
Naphthalene	<100 µg/kg	TM157	<100	<100	<100				
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100	<100	<100				
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100	<100	<100				
TIC report		TM157	Not Detected	Not Detected	Not Detected				
Total SVOC TIC	<100 µg/kg	TM157	<1000	<1000	<1000				



CERTIFICATE OF ANALYSIS

Validated

SDG: 200903-121
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 567147
Superseded Report:

TPH CWG (S)

Results Legend			Customer Sample Ref.	R71915	R72102	R72102			
#	ISO17025 accredited.								
M	mCERTS accredited.								
aq	Aqueous / settled sample.								
diss.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted - refer to subcontractor report for accreditation status.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery								
(F)	Trigger breach confirmed								
1-3*§@	Sample deviation (see appendix)								
		Depth (m)	0.50	0.30	1.00				
		Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)				
		Date Sampled	01/09/2020	01/09/2020	01/09/2020				
		Sampled Time							
		Date Received	03/09/2020	03/09/2020	03/09/2020				
		SDG Ref	200903-121	200903-121	200903-121				
		Lab Sample No.(s)	22762416	22762410	22762412				
		AGS Reference							
Component	LOD/Units	Method							
GRO Surrogate % recovery**	%	TM089	98.7	95.7	104				
Aliphatics >C5-C6	<10 µg/kg	TM089	<10	<10	<10				
Aliphatics >C6-C8	<10 µg/kg	TM089	<10	<10	<10				
Aliphatics >C8-C10	<10 µg/kg	TM089	<10	<10	<10				
Aliphatics >C10-C12	<1000 µg/kg	TM414	<1000	<1000	<1000				
Aliphatics >C12-C16	<1000 µg/kg	TM414	<1000	<1000	<1000				
Aliphatics >C16-C21	<1000 µg/kg	TM414	<1000	<1000	<1000				
Aliphatics >C21-C35	<1000 µg/kg	TM414	<1000	9260	<1000				
Aliphatics >C35-C44	<1000 µg/kg	TM414	<1000	<1000	<1000				
Total Aliphatics >C10-C44	<5000 µg/kg	TM414	<5000	9930	<5000				
Total Aliphatics & Aromatics >C10-C44	<10000 µg/kg	TM414	<10000	14100	<10000				
Aromatics >EC5-EC7	<10 µg/kg	TM089	<10	<10	<10				
Aromatics >EC7-EC8	<10 µg/kg	TM089	<10	<10	<10				
Aromatics >EC8-EC10	<10 µg/kg	TM089	<10	<10	<10				
Aromatics > EC10-EC12	<1000 µg/kg	TM414	<1000	<1000	<1000				
Aromatics > EC12-EC16	<1000 µg/kg	TM414	<1000	<1000	<1000				
Aromatics > EC16-EC21	<1000 µg/kg	TM414	<1000	<1000	<1000				
Aromatics > EC21-EC35	<1000 µg/kg	TM414	<1000	3100	<1000				
Aromatics >EC35-EC44	<1000 µg/kg	TM414	<1000	<1000	<1000				
Aromatics > EC40-EC44	<1000 µg/kg	TM414	<1000	<1000	<1000				
Total Aromatics > EC10-EC44	<5000 µg/kg	TM414	<5000	<5000	<5000				
Total Aliphatics & Aromatics >C5-C44	<10000 µg/kg	TM414	<10000	<10000	<10000				
Total Aliphatics >C5-C10	<50 µg/kg	TM089	<50	<50	<50				
Total Aromatics >EC5-EC10	<50 µg/kg	TM089	<50	<50	<50				
GRO >C5-C10	<20 µg/kg	TM089	<20	<20	<20				



CERTIFICATE OF ANALYSIS

Validated

SDG:	200903-121	Client Reference:	JFR1451	Report Number:	567147
Location:	A303 Stonehenge	Order Number:		Superseded Report:	

VOC MS (S)

Results Legend		Customer Sample Ref.	R71915	R72102	R72102			
# ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference						
M mCERTS accredited.			0.50	0.30	1.00			
aq Aqueous / settled sample.			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
diss.fit Dissolved / filtered sample.			01/09/2020	01/09/2020	01/09/2020			
tot.unfit Total / unfiltered sample.								
* Subcontracted - refer to subcontractor report for accreditation status.			03/09/2020	03/09/2020	03/09/2020			
** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery			200903-121	200903-121	200903-121			
(F) Trigger breach confirmed			22762416	22762410	22762412			
1-3*§@ Sample deviation (see appendix)								
Component	LOD/Units		Method					
Dibromofluoromethane**	%	TM116	136	115	115			
Toluene-d8**	%	TM116	101	93.7	100			
4-Bromofluorobenzene**	%	TM116	97.1	78.2	95.4			
Dichlorodifluoromethane	<6 µg/kg	TM116	<6 3 M	<6 M	<6 3 M			
Chloromethane	<7 µg/kg	TM116	<7 #	<7 #	<7 #			
Vinyl Chloride	<6 µg/kg	TM116	<6 3 M	<6 M	<6 3 M			
Bromomethane	<10 µg/kg	TM116	<10 M	<10 M	<10 M			
Chloroethane	<10 µg/kg	TM116	<10 M	<10 M	<10 M			
Trichlorofluoromethane	<6 µg/kg	TM116	<6 M	<6 M	<6 M			
1,1-Dichloroethene	<10 µg/kg	TM116	<10 #	<10 #	<10 #			
Carbon Disulphide	<7 µg/kg	TM116	<7 M	<7 M	<7 M			
Dichloromethane	<10 µg/kg	TM116	<10 #	<10 #	<10 #			
Methyl Tertiary Butyl Ether	<10 µg/kg	TM116	<10 M	<10 M	<10 M			
trans-1,2-Dichloroethene	<10 µg/kg	TM116	<10 M	<10 M	<10 M			
1,1-Dichloroethane	<8 µg/kg	TM116	<8 M	<8 M	<8 M			
cis-1,2-Dichloroethene	<6 µg/kg	TM116	<6 M	<6 M	<6 M			
2,2-Dichloropropane	<10 µg/kg	TM116	<10 M	<10 M	<10 M			
Bromochloromethane	<10 µg/kg	TM116	<10 M	<10 M	<10 M			
Chloroform	<8 µg/kg	TM116	<8 M	<8 M	<8 M			
1,1,1-Trichloroethane	<7 µg/kg	TM116	<7 M	<7 M	<7 M			
1,1-Dichloropropene	<10 µg/kg	TM116	<10 M	<10 M	<10 M			
Carbontetrachloride	<10 µg/kg	TM116	<10 M	<10 M	<10 M			
1,2-Dichloroethane	<5 µg/kg	TM116	<5 M	<5 M	<5 M			
Benzene	<9 µg/kg	TM116	<9 M	<9 M	<9 M			
Trichloroethene	<9 µg/kg	TM116	<9 #	<9 #	<9 #			
1,2-Dichloropropane	<10 µg/kg	TM116	<10 M	<10 M	<10 M			
Dibromomethane	<9 µg/kg	TM116	<9 M	<9 M	<9 M			
Bromodichloromethane	<7 µg/kg	TM116	<7 M	<7 M	<7 M			
cis-1,3-Dichloropropene	<10 µg/kg	TM116	<10 M	<10 M	<10 M			
Toluene	<7 µg/kg	TM116	<7 M	<7 M	<7 M			
trans-1,3-Dichloropropene	<10 µg/kg	TM116	<10 M	<10 M	<10 M			
1,1,2-Trichloroethane	<10 µg/kg	TM116	<10 M	<10 M	<10 M			



CERTIFICATE OF ANALYSIS

Validated

SDG:	200903-121	Client Reference:	JFR1451	Report Number:	567147
Location:	A303 Stonehenge	Order Number:		Superseded Report:	

VOC MS (S)

Results Legend		Customer Sample Ref.	R71915	R72102	R72102			
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.50	0.30	1.00			
M	mCERTS accredited.		Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
sq	Aqueous / filtered sample.		01/09/2020	01/09/2020	01/09/2020			
dis.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
*	Subcontracted - refer to subcontractor report for accreditation status.							
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		03/09/2020	03/09/2020	03/09/2020			
(F)	Trigger breach confirmed		200903-121	200903-121	200903-121			
1-3*5@	Sample deviation (see appendix)		22762416	22762410	22762412			
Component	LOD/Units		Method					
1,3-Dichloropropane	<7 µg/kg	TM116	<7 M	<7 M	<7 M			
Tetrachloroethene	<5 µg/kg	TM116	<5 M	<5 M	<5 M			
Dibromochloromethane	<10 µg/kg	TM116	<10 M	<10 M	<10 M			
1,2-Dibromoethane	<10 µg/kg	TM116	<10 M	<10 M	<10 M			
Chlorobenzene	<5 µg/kg	TM116	<5 M	<5 M	<5 M			
1,1,1,2-Tetrachloroethane	<10 µg/kg	TM116	<10 M	<10 M	<10 M			
Ethylbenzene	<4 µg/kg	TM116	<4 M	<4 M	<4 M			
p/m-Xylene	<10 µg/kg	TM116	<10 #	<10 #	<10 #			
o-Xylene	<10 µg/kg	TM116	<10 M	<10 M	<10 M			
Styrene	<10 µg/kg	TM116	<10 #	<10 #	<10 #			
Bromoform	<10 µg/kg	TM116	<10 M	<10 M	<10 M			
Isopropylbenzene	<5 µg/kg	TM116	<5 #	<5 #	<5 #			
1,1,2,2-Tetrachloroethane	<10 µg/kg	TM116	<10 #	<10 #	<10 #			
1,2,3-Trichloropropane	<16 µg/kg	TM116	<16 M	<16 M	<16 M			
Bromobenzene	<10 µg/kg	TM116	<10 M	<10 M	<10 M			
Propylbenzene	<10 µg/kg	TM116	<10 M	<10 M	<10 M			
2-Chlorotoluene	<9 µg/kg	TM116	<9 M	<9 M	<9 M			
1,3,5-Trimethylbenzene	<8 µg/kg	TM116	<8 M	<8 M	<8 M			
4-Chlorotoluene	<10 µg/kg	TM116	<10 M	<10 M	<10 M			
tert-Butylbenzene	<14 µg/kg	TM116	<14 M	<14 M	<14 M			
1,2,4-Trimethylbenzene	<9 µg/kg	TM116	<9 #	<9 #	<9 #			
sec-Butylbenzene	<10 µg/kg	TM116	<10 M	<10 M	<10 M			
4-Isopropyltoluene	<10 µg/kg	TM116	<10 M	<10 M	<10 M			
1,3-Dichlorobenzene	<8 µg/kg	TM116	<8 M	<8 M	<8 M			
1,4-Dichlorobenzene	<5 µg/kg	TM116	<5 M	<5 M	<5 M			
n-Butylbenzene	<11 µg/kg	TM116	<11 M	<11 M	<11 M			
1,2-Dichlorobenzene	<10 µg/kg	TM116	<10 M	<10 M	<10 M			
1,2-Dibromo-3-chloropropane	<14 µg/kg	TM116	<14 M	<14 M	<14 M			
Tert-amyl methyl ether	<10 µg/kg	TM116	<10 #	<10 #	<10 #			
1,2,4-Trichlorobenzene	<20 µg/kg	TM116	<20 M	<20 M	<20 M			
Hexachlorobutadiene	<20 µg/kg	TM116	<20 M	<20 M	<20 M			
Naphthalene	<13 µg/kg	TM116	<13 M	<13 M	<13 M			



CERTIFICATE OF ANALYSIS

Validated

SDG: 200903-121	Client Reference: JFR1451	Report Number: 567147
Location: A303 Stonehenge	Order Number:	Superseded Report:

VOC MS (S)

Results Legend			Customer Sample Ref.	R71915	R72102	R72102
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / filtered sample. diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery. (F) Trigger breach confirmed 1-3*5@ Sample deviation (see appendix)	Customer Sample Ref.	R71915	R72102	R72102		
Depth (m)		0.50	0.30	1.00		
Sample Type		Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
Date Sampled		01/09/2020	01/09/2020	01/09/2020		
Sampled Time		-	-	-		
Date Received		03/09/2020	03/09/2020	03/09/2020		
SDG Ref		200903-121	200903-121	200903-121		
Lab Sample No.(s)		22762416	22762410	22762412		
AGS Reference						
Component	LOD/Units	Method				
1,2,3-Trichlorobenzene	<20 µg/kg	TM116	<20 #	<20 #	<20 #	
VOC TIC		TM116	Not Detected	Not Detected	Not Detected	
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.02	<0.02	<0.02	
Sum of BTEX	<40 µg/kg	TM116	<40	<40	<40	
Total VOC TIC	<50 µg/kg	TM116	<50	<50	<50	



CERTIFICATE OF ANALYSIS

Validated

SDG: 200903-121
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 567147
Superseded Report:

CEN 2:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/

Client Reference		Site Location	A303 Stonehenge
Mass Sample taken (kg)	0.221	Natural Moisture Content (%)	26
Mass of dry sample (kg)	0.175	Dry Matter Content (%)	79.4
Particle Size <4mm	>95%		

Case	
SDG	200903-121
Lab Sample Number(s)	22762416
Sampled Date	01-Sep-2020
Customer Sample Ref.	R71915
Depth (m)	0.50

Eluate Analysis	Conc ⁿ in 2:1 eluate (mg/l)		2:1 conc ⁿ leached (mg/kg)	
	Result	Limit of Detection	Result	Limit of Detection
Aliphatics >C12-C16	<0.01	<0.01	<0.02	<0.02
Aliphatics >C16-C21	<0.01	<0.01	<0.02	<0.02
Aliphatics >C21-C35	<0.01	<0.01	<0.02	<0.02
Total Aliphatics >C12-C35	<0.01	<0.01	<0.02	<0.02
Aromatics >EC12-EC16	<0.01	<0.01	<0.02	<0.02
Aromatics >EC16-EC21	<0.01	<0.01	<0.02	<0.02
Aromatics >EC21-EC35	<0.01	<0.01	<0.02	<0.02
Aromatics >EC16-EC35	<0.01	<0.01	<0.02	<0.02
Total Aromatics >EC12-EC35	<0.01	<0.01	<0.02	<0.02
TPH (Total Aliphatics + Total Aromatics) >C5-C35	<0.01	<0.01	<0.02	<0.02
Ammoniacal Nitrogen as N	<0.2	<0.2	<0.4	<0.4
Chromium III	<0.03	<0.03	<0.06	<0.06
Hexavalent Chromium	<0.03	<0.03	<0.06	<0.06
Sulphate (soluble)	4.6	<2	9.2	<4
Dissolved Organic Carbon	5.16	<3	10.3	<6
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.00002	<0.00002
Antimony	<0.001	<0.001	<0.002	<0.002
Naphthalene (diss.filt)	0.0000165	<0.00001	0.000033	<0.00002
Total Cyanide (W)	<0.05	<0.05	<0.1	<0.1
Acenaphthene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Arsenic	0.000518	<0.0005	0.00104	<0.001
Free Cyanide (W)	<0.05	<0.05	<0.1	<0.1
Acenaphthylene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Phenol by HPLC (W)	<0.002	<0.002	<0.004	<0.004
Beryllium	<0.0001	<0.0001	<0.0002	<0.0002
Fluoranthene (diss.filt)	0.00000937	<0.000005	0.0000187	<0.00001
Anthracene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Boron	0.0169	<0.01	0.0338	<0.02
Phenanthrene (diss.filt)	0.0000205	<0.000005	0.000041	<0.00001
Cadmium	<0.00008	<0.00008	<0.00016	<0.00016
Fluorene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Chrysene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Pyrene (diss.filt)	0.00000703	<0.000005	0.0000141	<0.00001
Benzo(a)anthracene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Chromium	<0.001	<0.001	<0.002	<0.002

Leach Test Information

Date Prepared	07-Sep-2020
pH (pH Units)	8.23
Conductivity (µS/cm)	146.00
Temperature (°C)	22.30
Volume Leachant (Litres)	0.303
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates

14/09/2020 16:17:33

16:17:13 14/09/2020



CERTIFICATE OF ANALYSIS

Validated

SDG: 200903-121
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 567147
Superseded Report:

CEN 2:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/'

Client Reference	
Mass Sample taken (kg)	0.221
Mass of dry sample (kg)	0.175
Particle Size <4mm	>95%

Site Location	A303 Stonehenge
Natural Moisture Content (%)	26
Dry Matter Content (%)	79.4

Case	
SDG	200903-121
Lab Sample Number(s)	22762416
Sampled Date	01-Sep-2020
Customer Sample Ref.	R71915
Depth (m)	0.50

Eluate Analysis	Conc ⁿ in 2:1 eluate (mg/l)		2:1 conc ⁿ leached (mg/kg)	
	Result	Limit of Detection	Result	Limit of Detection
Benzo(b)fluoranthene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Benzo(k)fluoranthene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Benzo(a)pyrene (diss.filt)	<0.000002	<0.000002	<0.000004	<0.000004
Copper	0.00317	<0.0003	0.00634	<0.0006
Dibenzo(a,h)anthracene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Lead	<0.0002	<0.0002	<0.0004	<0.0004
Benzo(g,h,i)perylene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Indeno(1,2,3-cd)pyrene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Manganese	<0.003	<0.003	<0.006	<0.006
Molybdenum	<0.003	<0.003	<0.006	<0.006
PAH 16 EPA Total by GCMS (diss.filt)	<0.000082	<0.000082	<0.000164	<0.000164
Nickel	0.000761	<0.0004	0.00152	<0.0008
Phosphorus	0.0412	<0.01	0.0824	<0.02
Selenium	<0.001	<0.001	<0.002	<0.002
Zinc	0.00211	<0.001	0.00422	<0.002
Calcium (Dis.Filt) mg/l	29.6	<0.2	59.2	<0.4
Iron (Dis.Filt) mg/l	<0.019	<0.019	<0.038	<0.038
TPH CWG (W)				
Surrogate Recovery	-	-	-	-
GRO TOT (C5-C12)	<0.05	<0.05	<0.1	<0.1
Aliphatics C5-C6	<0.01	<0.01	<0.02	<0.02
Aliphatics >C6-C8	<0.01	<0.01	<0.02	<0.02
Aliphatics >C8-C10	<0.01	<0.01	<0.02	<0.02
Aliphatics >C10-C12	<0.01	<0.01	<0.02	<0.02
Aromatics C6-C7	<0.01	<0.01	<0.02	<0.02
Aromatics >C7-C8	<0.01	<0.01	<0.02	<0.02
MTBE GC-FID	<0.003	<0.003	<0.006	<0.006
Aromatics >EC8 -EC10	<0.01	<0.01	<0.02	<0.02
Aromatics >EC10-EC12	<0.01	<0.01	<0.02	<0.02
Benzene by GC	<0.007	<0.007	<0.014	<0.014
Toluene by GC	<0.004	<0.004	<0.008	<0.008
Ethylbenzene by GC	<0.005	<0.005	<0.01	<0.01
m & p Xylene by GC	<0.008	<0.008	<0.016	<0.016
o Xylene by GC	<0.003	<0.003	<0.006	<0.006
Sum m&p and o Xylene by GC	<0.011	<0.011	<0.022	<0.022
Sum of BTEX by GC	<0.028	<0.028	<0.056	<0.056

Leach Test Information

Date Prepared	07-Sep-2020
pH (pH Units)	8.23
Conductivity (µS/cm)	146.00
Temperature (°C)	22.30
Volume Leachant (Litres)	0.303
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

Validated

SDG: 200903-121 Client Reference: JFR1451 Report Number: 567147
 Location: A303 Stonehenge Order Number: Superseded Report:

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM073	MEWAM BOOK 60 1980,95 1985, HMSO / Modified: US EPA Method 8081A & 8141A	Determination of organochlorine and organophosphorous pesticides by GCMS
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM174	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID
TM178	Modified: US EPA Method 8100	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS in Waters
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser
TM243		Mixed Anions In Soils By Kone
TM245	By GC-FID	Determination of GRO by Headspace in waters
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).



CERTIFICATE OF ANALYSIS

Validated

SDG: 200903-121	Client Reference: JFR1451	Report Number: 567147	
Location: A303 Stonehenge	Order Number:	Superseded Report:	

Test Completion Dates

Lab Sample No(s)	22762416	22762410	22762412
Customer Sample Ref.	R71915	R72102	R72102
AGS Ref.			
Depth	0.50	0.30	1.00
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Ammoniacal Nitrogen	10-Sep-2020		
Ammonium Soil by Titration	10-Sep-2020	11-Sep-2020	10-Sep-2020
Anions by Kone (soil)	10-Sep-2020	10-Sep-2020	10-Sep-2020
Anions by Kone (w)	10-Sep-2020		
CEN 2:1 Leachate (1 Stage)	08-Sep-2020		
CEN Readings	11-Sep-2020		
Chromium III	11-Sep-2020	11-Sep-2020	11-Sep-2020
Cyanide Comp/Free/Total/Thiocyanate	11-Sep-2020	11-Sep-2020	11-Sep-2020
Dissolved Metals by ICP-MS	10-Sep-2020		
Dissolved Organic/Inorganic Carbon	11-Sep-2020		
EPH CWG (Aliphatic) Filtered GC (W)	12-Sep-2020		
EPH CWG (Aromatic) Filtered GC (W)	12-Sep-2020		
EPH CWG GC (S)	14-Sep-2020	11-Sep-2020	14-Sep-2020
GRO by GC-FID (S)	11-Sep-2020	11-Sep-2020	11-Sep-2020
GRO by GC-FID (W)	10-Sep-2020		
Hexavalent Chromium (s)	10-Sep-2020	10-Sep-2020	10-Sep-2020
Hexavalent Chromium (w)	10-Sep-2020		
Mercury Dissolved	11-Sep-2020		
Metals in solid samples by OES	11-Sep-2020	14-Sep-2020	11-Sep-2020
Moisture at 105C	07-Sep-2020		
OC OP Pesticides and Triazine Herb	08-Sep-2020	08-Sep-2020	08-Sep-2020
PAH by GCMS	10-Sep-2020	10-Sep-2020	10-Sep-2020
PAH in waters by GC-MS (diss.filt)	11-Sep-2020		
pH	08-Sep-2020	08-Sep-2020	08-Sep-2020
pH Value of Filtered Water	10-Sep-2020		
Phenols by HPLC (S)	11-Sep-2020	10-Sep-2020	10-Sep-2020
Phenols by HPLC (W)	11-Sep-2020		
Sample description	07-Sep-2020	07-Sep-2020	07-Sep-2020
Semi Volatile Organic Compounds	11-Sep-2020	11-Sep-2020	11-Sep-2020
Total Organic Carbon	10-Sep-2020	10-Sep-2020	10-Sep-2020
TPH CWG Filtered (W)	12-Sep-2020		
TPH CWG GC (S)	14-Sep-2020	11-Sep-2020	14-Sep-2020
VOC MS (S)	10-Sep-2020	11-Sep-2020	10-Sep-2020



CERTIFICATE OF ANALYSIS

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SDG: 200903-121
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 567147
Superseded Report:

ASSOCIATED AQC DATA

Ammoniacal Nitrogen

Component	Method Code	QC 2212
Ammoniacal Nitrogen as N	TM099	101.6 93.14 : 108.60

Ammonium Soil by Titration

Component	Method Code	QC 2227	QC 2289
Exchangeable Ammonium as NH4	TM024	81.09 76.20 : 110.13	84.58 76.20 : 110.13

Anions by Kone (w)

Component	Method Code	QC 2289
Chloride	TM184	102.0 92.93 : 115.43
Sulphate (soluble)	TM184	99.2 90.53 : 113.03

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2266	QC 2286
Free Cyanide	TM153	92.57 78.61 : 114.43	
Free Cyanide (W)	TM227		98.5 90.50 : 114.50
Thiocyanate	TM153	113.46 90.48 : 109.52	
Thiocyanate (W)	TM227		101.0 90.50 : 113.00
Total Cyanide	TM153	95.1 76.80 : 112.96	
Total Cyanide (W)	TM227		101.25 91.75 : 112.75

Dissolved Metals by ICP-MS

Component	Method Code	QC 2221
Aluminium	TM152	104.33 90.78 : 110.89
Antimony	TM152	105.67 77.22 : 119.42
Arsenic	TM152	104.83 86.77 : 107.67
Barium	TM152	105.17 87.86 : 110.23



CERTIFICATE OF ANALYSIS

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Dissolved Metals by ICP-MS

		QC 2221
Beryllium	TM152	103.5 86.19 : 112.98
Bismuth	TM152	103.5 84.06 : 106.46
Borate	TM152	106.17 88.00 : 112.00
Boron	TM152	106.0 83.92 : 114.90
Cadmium	TM152	105.0 88.89 : 106.69
Calcium	TM152	102.67 80.24 : 117.95
Chromium	TM152	103.0 83.22 : 110.16
Cobalt	TM152	101.83 82.49 : 112.36
Copper	TM152	102.33 83.14 : 113.00
Iron	TM152	104.67 88.40 : 109.24
Lead	TM152	104.33 83.71 : 109.58
Lithium	TM152	103.33 84.50 : 114.28
Magnesium	TM152	98.67 87.56 : 114.57
Manganese	TM152	107.17 93.05 : 112.42
Molybdenum	TM152	98.83 85.53 : 107.42
Nickel	TM152	104.17 88.05 : 106.42
Phosphorus	TM152	99.17 82.76 : 107.72
Potassium	TM152	102.0 88.45 : 106.42
Selenium	TM152	108.5 85.61 : 111.03
Silver	TM152	114.33 95.35 : 113.25
Sodium	TM152	98.67 88.32 : 106.30
Strontium	TM152	100.33 83.77 : 107.87
Tellurium	TM152	102.33 82.83 : 104.73
Thallium	TM152	102.33 77.47 : 113.87
Tin	TM152	103.67 91.00 : 109.00
Titanium	TM152	107.17 87.29 : 108.31
Tungsten	TM152	100.67 68.27 : 122.97



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Dissolved Metals by ICP-MS

		QC 2221
Uranium	TM152	102.67 82.46 : 105.16
Vanadium	TM152	103.33 88.43 : 114.30
Zinc	TM152	106.67 85.57 : 114.31

Dissolved Organic/Inorganic Carbon

Component	Method Code	QC 2268
Dissolved Inorganic Carbon	TM090	101.67 93.58 : 112.28
Dissolved Organic Carbon	TM090	103.33 96.28 : 110.58

EPH CWG (Aliphatic) Filtered GC (W)

Component	Method Code	QC 2225
Total Aliphatics >C10-C40	TM174	114.85 71.82 : 134.09

GRO by GC-FID (S)

Component	Method Code	QC 2237
QC	TM089	79.23 70.75 : 114.19

GRO by GC-FID (W)

Component	Method Code	QC 2231
Benzene by GC	TM245	91.5 83.48 : 117.21
Ethylbenzene by GC	TM245	91.0 84.11 : 114.89
m & p Xylene by GC	TM245	91.75 83.73 : 116.33
MTBE GC-FID	TM245	90.0 84.42 : 117.50
o Xylene by GC	TM245	93.5 85.03 : 117.59
QC	TM245	98.22 60.71 : 137.65
Toluene by GC	TM245	91.0 84.73 : 116.85

Hexavalent Chromium (s)



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Hexavalent Chromium (s)

Component	Method Code	QC 2206	QC 2288
Hexavalent Chromium	TM151	98.0 95.60 : 107.60	100.0 95.60 : 107.60

Hexavalent Chromium (w)

Component	Method Code	QC 2227
Hexavalent Chromium	TM241	99.8 94.17 : 106.17

Mercury Dissolved

Component	Method Code	QC 2264
Mercury Dissolved (CVAf)	TM183	104.0 69.30 : 128.70

Metals in solid samples by OES

Component	Method Code	QC 2278
Aluminium	TM181	100.0 77.46 : 123.98
Antimony	TM181	94.31 87.04 : 111.16
Arsenic	TM181	101.74 87.34 : 110.87
Barium	TM181	97.25 80.73 : 115.16
Beryllium	TM181	102.24 89.47 : 112.97
Boron	TM181	90.83 76.57 : 104.15
Cadmium	TM181	90.53 78.94 : 102.43
Chromium	TM181	92.9 77.55 : 104.47
Cobalt	TM181	93.08 82.95 : 107.41
Copper	TM181	95.6 84.36 : 106.14
Iron	TM181	103.97 81.43 : 115.79
Lead	TM181	93.24 81.95 : 107.63
Manganese	TM181	106.94 94.29 : 119.51



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Metals in solid samples by OES

		QC 2278
Mercury	TM181	93.0 82.73 : 106.36
Molybdenum	TM181	100.41 86.61 : 111.07
Nickel	TM181	91.2 79.72 : 103.80
Phosphorus	TM181	105.66 92.65 : 125.47
Selenium	TM181	101.57 88.36 : 111.25
Strontium	TM181	92.87 83.94 : 111.48
Thallium	TM181	100.44 88.60 : 116.73
Tin	TM181	97.72 89.77 : 112.62
Titanium	TM181	87.02 66.29 : 105.96
Vanadium	TM181	94.51 75.51 : 108.87
Zinc	TM181	100.82 84.02 : 111.24

OC OP Pesticides and Triazine Herb

Component	Method Code	QC 2253
Atrazine (Raw)	TM073	105.08 78.55 : 119.92
Azinphos methyl (Raw)	TM073	112.31 58.68 : 154.71
cis-Chlordane (Raw)	TM073	98.67 71.90 : 129.99
Diazinon (Raw)	TM073	96.07 70.00 : 130.00
Dichlorvos (Raw)	TM073	99.23 70.00 : 130.00
Dieldrin (Raw)	TM073	104.49 70.00 : 130.00
gamma-HCH (Lindane) (Raw)	TM073	100.96 71.48 : 129.99
Heptachlor (Raw)	TM073	97.86 66.39 : 134.63
Hexachlorobenzene (Raw)	TM073	103.02 47.15 : 124.32
Malathion (Raw)	TM073	95.59 70.00 : 130.00
p,p-DDT (Raw)	TM073	89.9 70.00 : 130.00
Parathion (Raw)	TM073	94.27 64.13 : 127.88

PAH by GCMS



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PAH by GCMS

Component	Method Code	QC 2236
Acenaphthene	TM218	99.0 73.47 : 109.80
Acenaphthylene	TM218	96.5 70.00 : 130.00
Anthracene	TM218	96.5 68.68 : 111.89
Benz(a)anthracene	TM218	95.5 68.12 : 118.39
Benzo(a)pyrene	TM218	98.0 71.72 : 115.31
Benzo(b)fluoranthene	TM218	95.5 66.89 : 120.40
Benzo(ghi)perylene	TM218	96.0 67.82 : 118.49
Benzo(k)fluoranthene	TM218	100.5 73.10 : 117.03
Chrysene	TM218	94.0 69.58 : 115.47
Dibenzo(ah)anthracene	TM218	95.5 67.32 : 121.35
Fluoranthene	TM218	94.5 75.16 : 117.28
Fluorene	TM218	99.5 73.81 : 108.66
Indeno(123cd)pyrene	TM218	93.5 68.91 : 117.62
Naphthalene	TM218	90.0 72.12 : 106.18
Phenanthrene	TM218	97.5 69.01 : 113.72
Pyrene	TM218	94.0 75.68 : 119.23

PAH in waters by GC-MS (diss.filt)

Component	Method Code	QC 2283
Acenaphthene (diss.filt)	TM178	105.2 94.00 : 120.40
Acenaphthylene (diss.filt)	TM178	99.6 91.20 : 117.60
Anthracene (diss.filt)	TM178	101.2 91.20 : 112.80
Benzo(a)anthracene (diss.filt)	TM178	96.8 86.80 : 115.60
Benzo(a)pyrene (diss.filt)	TM178	95.2 85.20 : 114.00
Benzo(b)fluoranthene (diss.filt)	TM178	92.8 86.40 : 117.60
Benzo(g,h,i)perylene (diss.filt)	TM178	107.2 87.60 : 121.20
Benzo(k)fluoranthene (diss.filt)	TM178	99.2 91.20 : 124.80
Chrysene (diss.filt)	TM178	104.0 95.20 : 124.00



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PAH in waters by GC-MS (diss.filt)

		QC 2283
Dibenzo(a,h)anthracene (diss.filt)	TM178	98.8 84.80 : 118.40
Fluoranthene (diss.filt)	TM178	97.6 91.20 : 120.00
Fluorene (diss.filt)	TM178	100.4 93.20 : 119.60
Indeno(1,2,3-cd)pyrene (diss.filt)	TM178	101.2 86.80 : 115.60
Naphthalene (diss.filt)	TM178	106.8 90.40 : 126.40
Phenanthrene (diss.filt)	TM178	104.4 94.40 : 118.40
Pyrene (diss.filt)	TM178	101.2 93.60 : 120.00

pH

Component	Method Code	QC 2256	QC 2286
pH	TM133	101.32 98.68 : 102.65	101.85 98.68 : 102.65

pH Value of Filtered Water

Component	Method Code	QC 2295
pH	TM256	101.75 100.13 : 103.37

Phenols by HPLC (S)

Component	Method Code	QC 2222	QC 2202
2,3,5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	103.25 65.50 : 89.50	100.0 83.23 : 109.71
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	86.55 84.00 : 124.00	86.55 76.34 : 104.11
Catechol by HPLC (S)	TM062 (S)	89.52 19.39 : 135.70	93.33 22.43 : 157.02
Cresols by HPLC (S)	TM062 (S)	93.74 81.00 : 112.20	85.8 85.78 : 116.44
Naphthol by HPLC (S)	TM062 (S)	120.71 57.50 : 102.50	122.14 75.62 : 124.38
Phenol by HPLC (S)	TM062 (S)	101.99 88.67 : 124.67	109.27 79.53 : 120.47
Resorcinol HPLC (S)	TM062 (S)	93.08 69.99 : 127.22	105.66 71.43 : 129.59
Xylenols by HPLC (S)	TM062 (S)	97.08 95.22 : 115.89	95.83 89.90 : 107.23

Phenols by HPLC (W)



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Phenols by HPLC (W)

Component	Method Code	QC 2291
2,3,5 Trimethyl-Phenol by HPLC (W)	TM259	101.0 91.00 : 109.00
2-Isopropyl Phenol by HPLC (W)	TM259	96.0 85.00 : 109.00
Cresols by HPLC (W)	TM259	100.33 93.00 : 115.00
Naphthol by HPLC (W)	TM259	111.0 86.00 : 128.00
Phenol by HPLC (W)	TM259	103.0 88.24 : 111.76
Xylenols by HPLC (W)	TM259	104.17 93.33 : 107.33

Semi Volatile Organic Compounds

Component	Method Code	QC 2278
4-Bromophenylphenylether (Soil)	TM157	92.5 66.75 : 125.25
Benzo(a)anthracene (Soil)	TM157	101.0 67.40 : 120.50
Hexachlorobutadiene (Soil)	TM157	98.0 68.25 : 126.75
Naphthalene (Soil)	TM157	97.0 67.55 : 125.45
Nitrobenzene (Soil)	TM157	96.5 66.50 : 123.50
Phenol (Soil)	TM157	100.0 69.92 : 114.02

Total Organic Carbon

Component	Method Code	QC 2239	QC 2240
Total Organic Carbon	TM132	100.39 87.02 : 113.45	98.83 87.02 : 113.45

VOC MS (S)

Component	Method Code	QC 2262	QC 2298
1,1,1,2-tetrachloroethane	TM116	97.8 84.84 : 116.25	98.0 84.84 : 116.25
1,1,1-Trichloroethane	TM116	92.0 73.73 : 118.05	92.2 73.73 : 118.05
1,1,2-Trichloroethane	TM116	98.4 77.12 : 116.04	99.8 77.12 : 116.04
1,1-Dichloroethane	TM116	97.0 74.46 : 129.15	98.0 74.46 : 129.15
1,2-Dichloroethane	TM116	105.8 92.38 : 131.65	107.6 92.38 : 131.65
1,4-Dichlorobenzene	TM116	94.6 83.64 : 126.18	97.2 83.64 : 126.18
2-Chlorotoluene	TM116	90.2 75.26 : 110.11	93.0 75.26 : 110.11



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VOC MS (S)

		QC 2262	QC 2298
4-Chlorotoluene	TM116	86.6 66.90 : 112.46	91.2 66.90 : 112.46
Benzene	TM116	98.0 88.60 : 113.80	99.2 88.60 : 113.80
Carbon Disulphide	TM116	95.6 74.91 : 122.14	93.8 74.91 : 122.14
Carbontetrachloride	TM116	96.8 80.31 : 124.50	97.2 80.31 : 124.50
Chlorobenzene	TM116	100.8 83.81 : 114.18	101.4 83.81 : 114.18
Chloroform	TM116	100.0 87.40 : 122.49	99.8 87.40 : 122.49
Chloromethane	TM116	115.0 65.89 : 136.93	115.6 65.89 : 136.93
Cis-1,2-Dichloroethene	TM116	96.2 80.67 : 126.72	97.8 80.67 : 126.72
Dibromomethane	TM116	82.8 76.06 : 125.74	84.2 73.23 : 118.35
Dichloromethane	TM116	104.0 81.11 : 133.25	104.0 81.11 : 133.25
Ethylbenzene	TM116	91.0 75.92 : 110.41	95.0 75.92 : 110.41
Hexachlorobutadiene	TM116	82.4 12.82 : 152.73	75.2 12.82 : 152.73
Isopropylbenzene	TM116	72.6 55.79 : 97.59	77.8 55.79 : 97.59
Naphthalene	TM116	104.6 80.86 : 128.81	106.6 80.86 : 128.81
o-Xylene	TM116	85.4 69.99 : 108.74	87.2 69.99 : 108.74
p/m-Xylene	TM116	89.0 68.32 : 108.91	92.9 68.32 : 108.91
Sec-Butylbenzene	TM116	73.8 38.50 : 101.50	77.4 38.50 : 101.50
Tetrachloroethene	TM116	98.0 76.95 : 121.02	98.4 76.95 : 121.02
Toluene	TM116	93.0 74.24 : 107.42	95.0 74.24 : 107.42
Trichloroethene	TM116	96.4 77.61 : 111.54	98.2 77.61 : 111.54
Trichlorofluoromethane	TM116	110.8 84.55 : 133.27	108.0 84.55 : 133.27
Vinyl Chloride	TM116	132.8 68.02 : 143.37	125.2 68.02 : 143.37

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis .

The figure detailed is the percentage recovery result for the AQC .

The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control .



CERTIFICATE OF ANALYSIS

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SDG: 200903-121
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 567147
Superseded Report:

Chromatogram

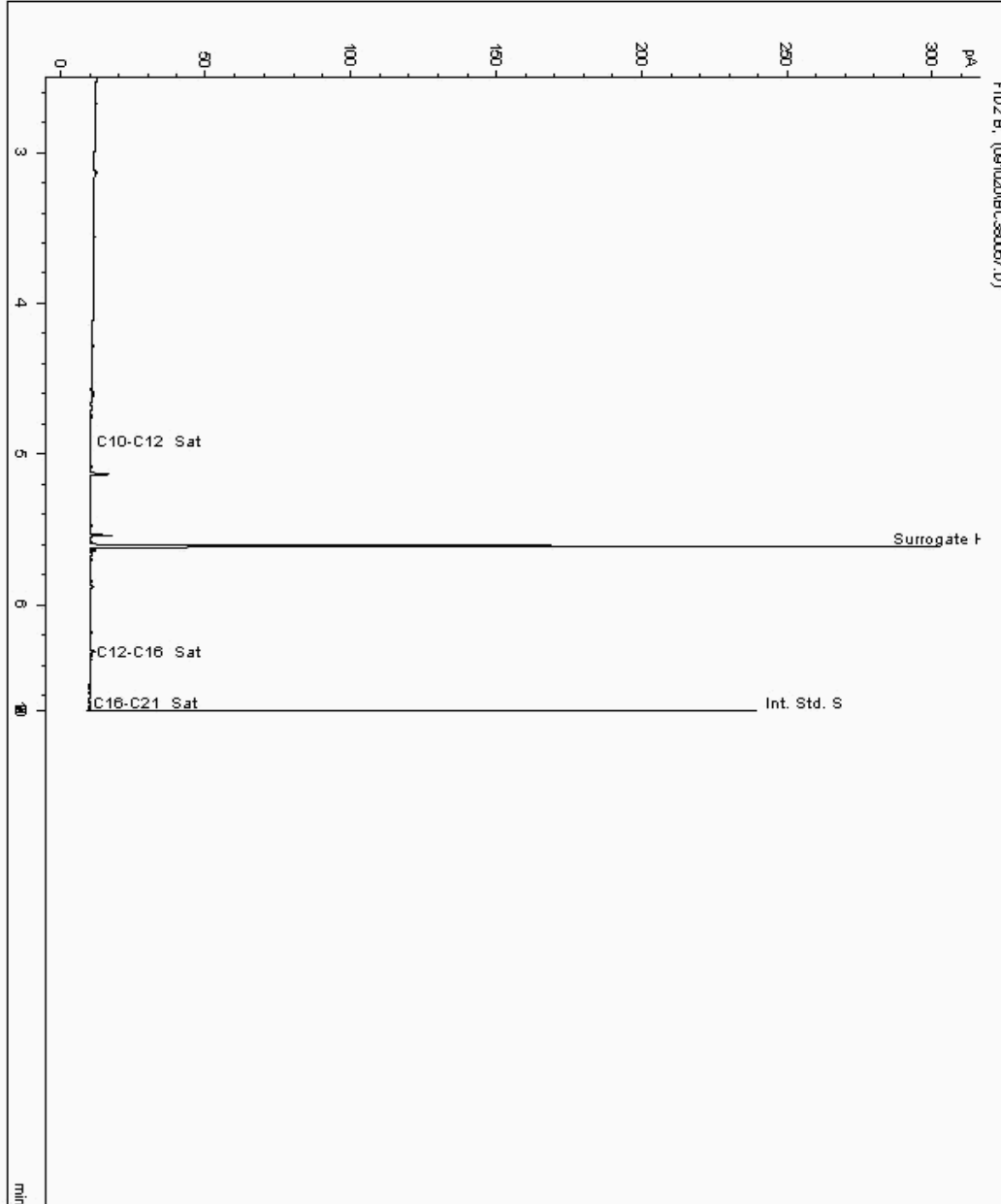
Analysis: EPH CWG (Aliphatic) Filtered GC (W)

Sample No : 22795373
Sample ID : R71915

Depth : 0.50

Speciated TPH - SATS (C12 - C40)

Sample Identity: 21384138-
Date Acquired : 11/09/20 10:59:52 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025





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Client Reference: JFR1451
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Report Number: 567147
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Chromatogram

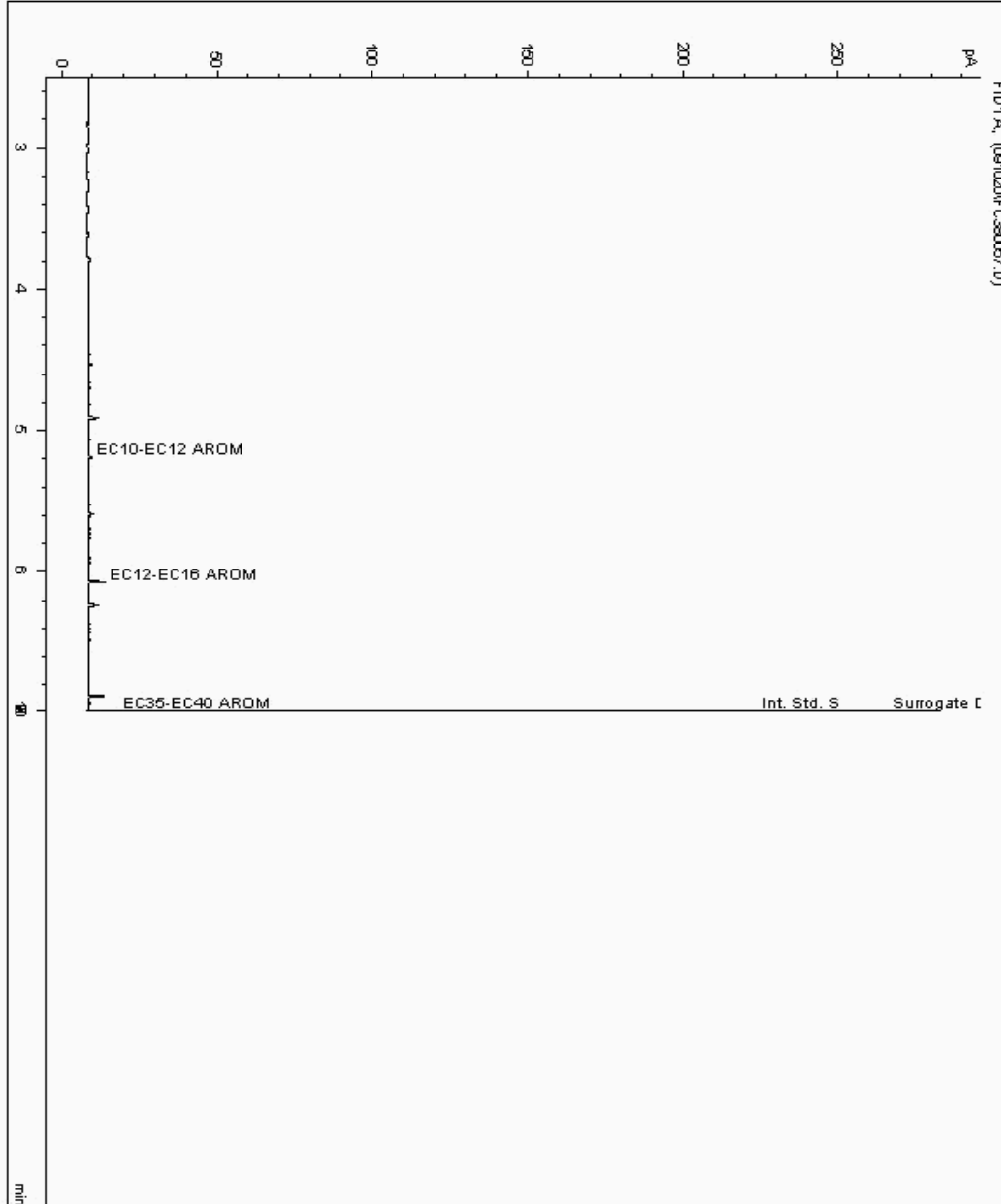
Analysis: EPH CWG (Aromatic) Filtered GC (W)

Sample No : 22795373
Sample ID : R71915

Depth : 0.50

Speciated TPH - AROM (C12 - C40)

Sample Identity: 21384139-
Date Acquired : 11/09/20 10:59:52 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025





CERTIFICATE OF ANALYSIS

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SDG: 200903-121
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

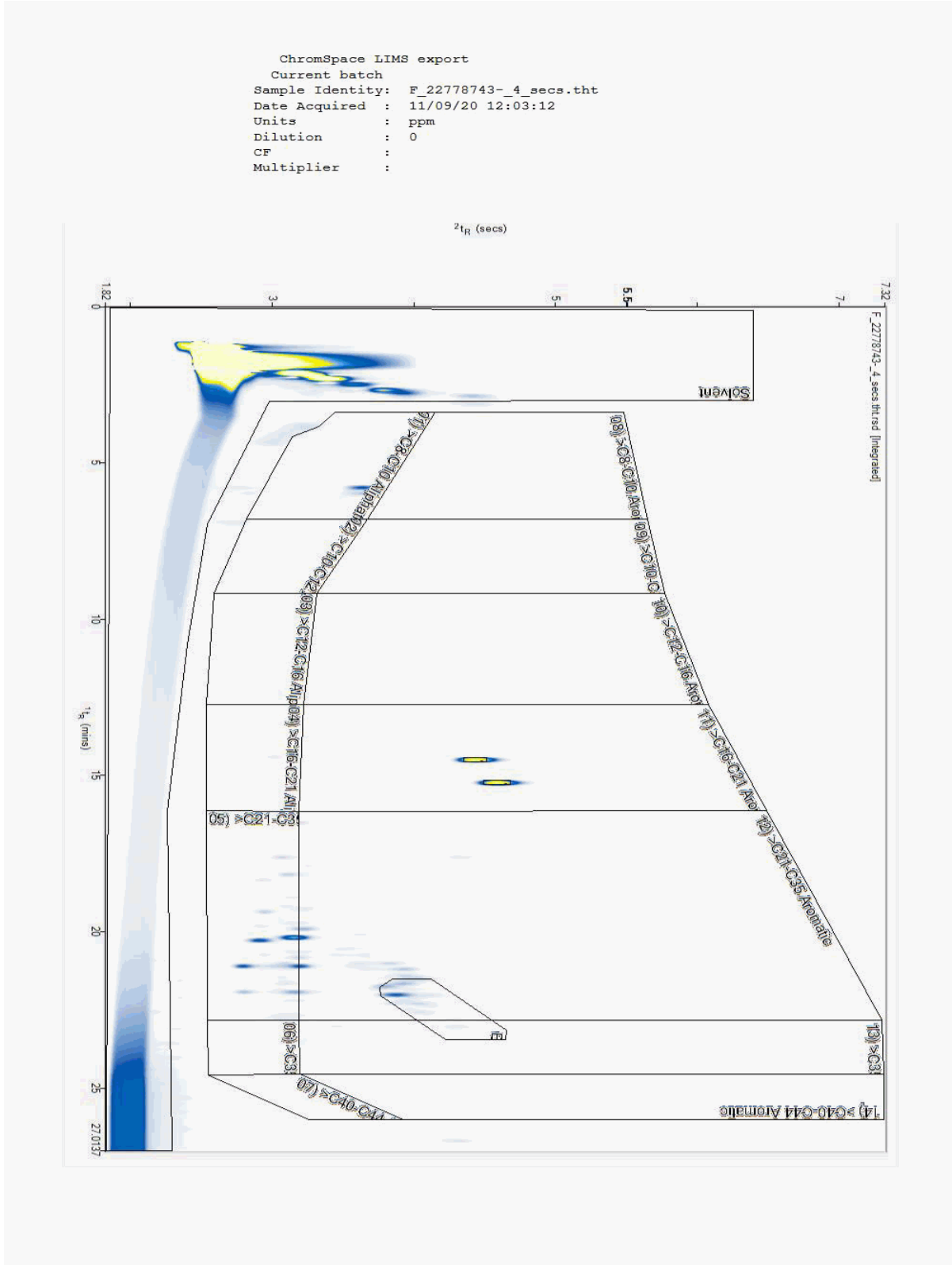
Report Number: 567147
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 22778743
Sample ID : R72102

Depth : 0.30





CERTIFICATE OF ANALYSIS

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SDG: 200903-121
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

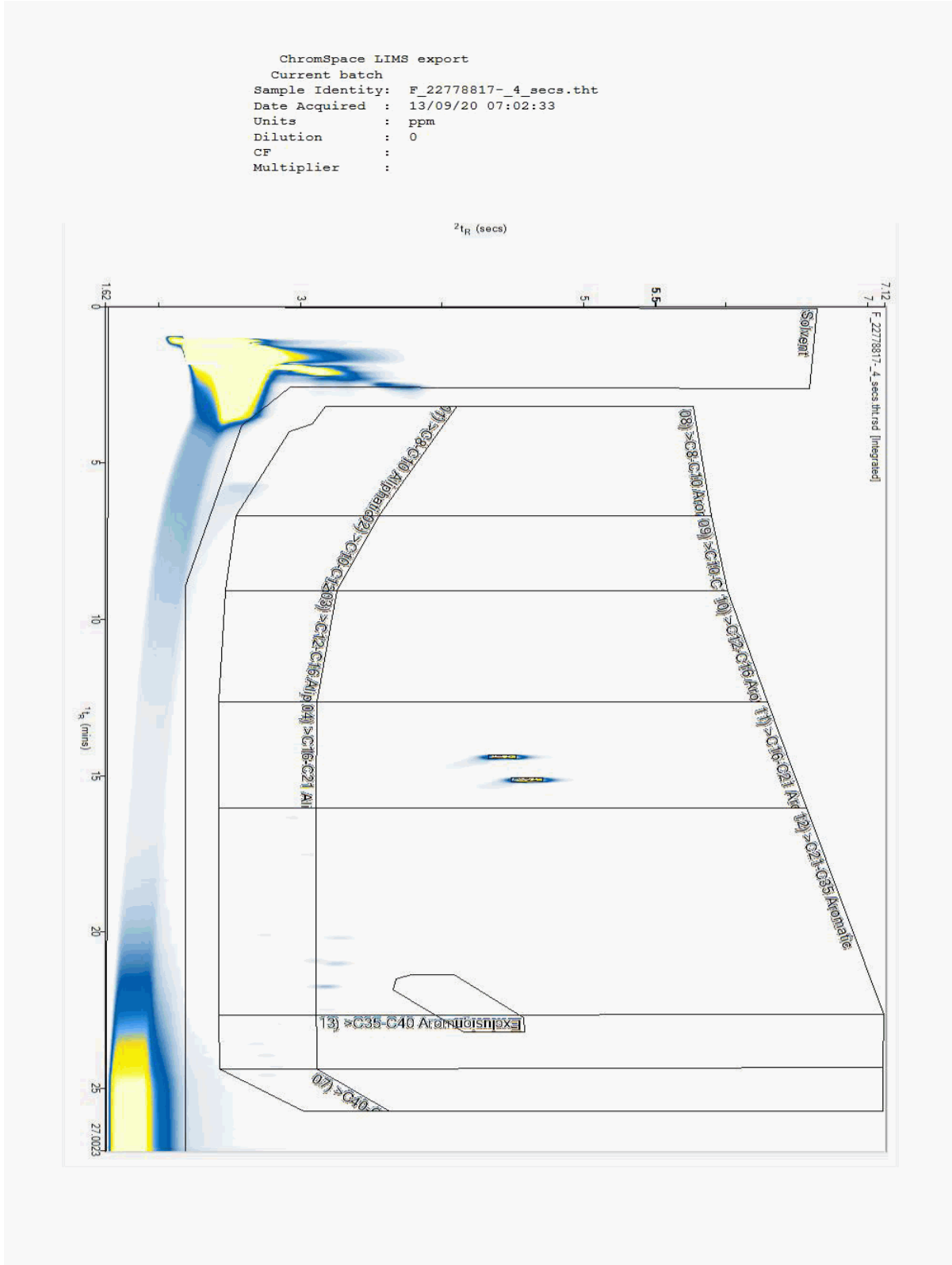
Report Number: 567147
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 22778817
Sample ID : R71915

Depth : 0.50





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SDG: 200903-121
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

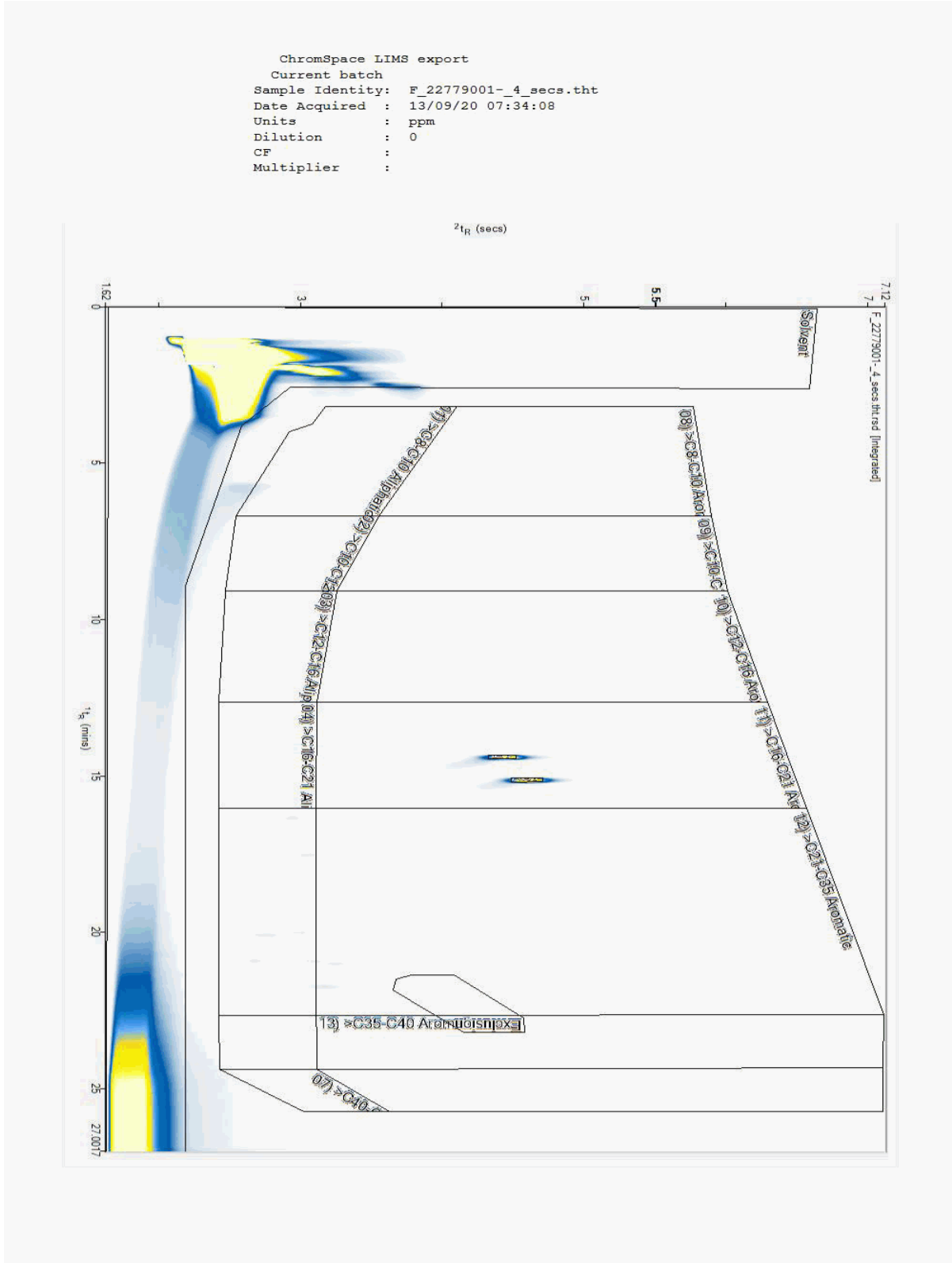
Report Number: 567147
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 22779001
Sample ID : R72102

Depth : 1.00





CERTIFICATE OF ANALYSIS

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Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

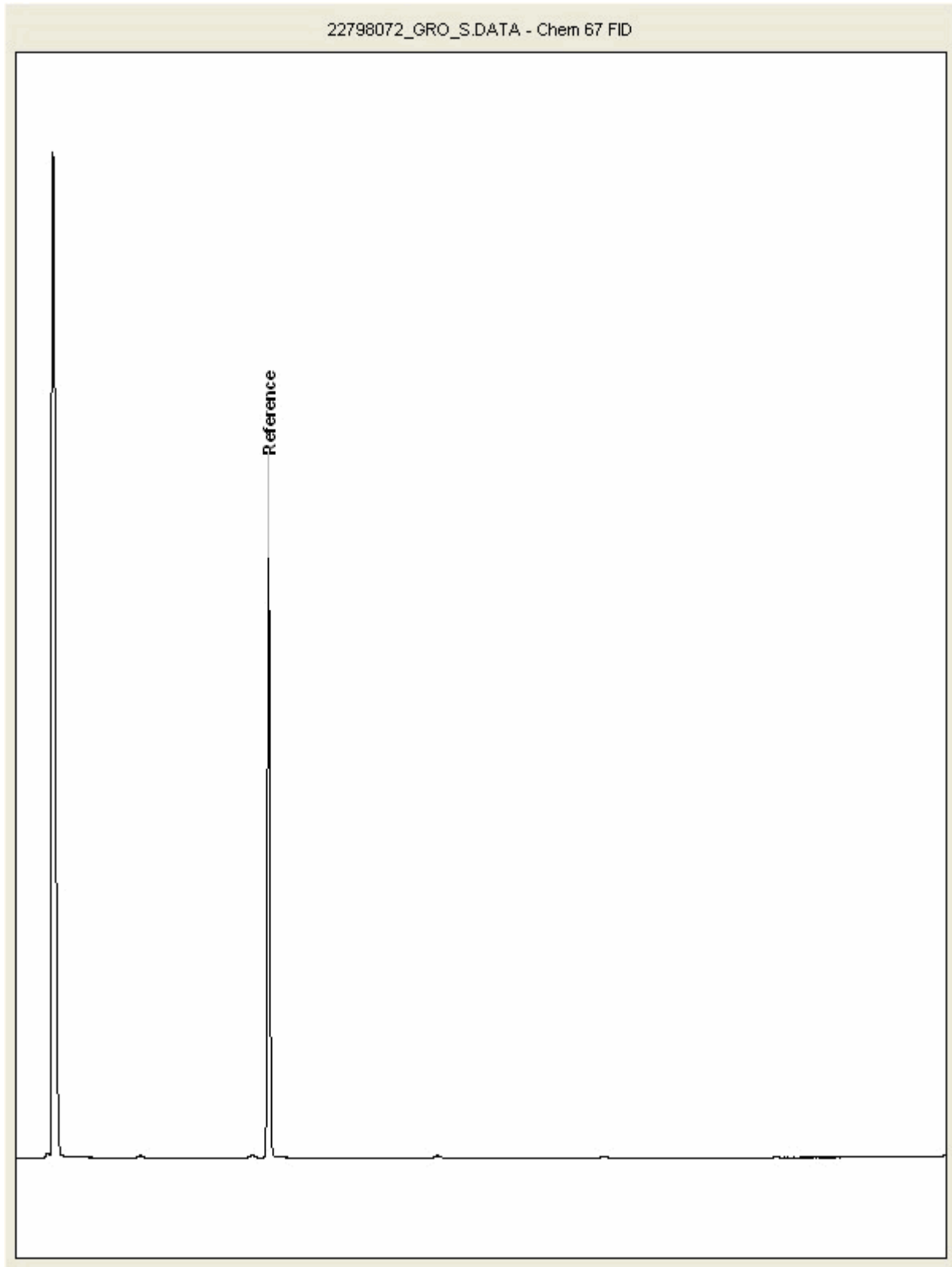
Report Number: 567147
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 22798072
Sample ID : R71915

Depth : 0.50





CERTIFICATE OF ANALYSIS

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SDG: 200903-121
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

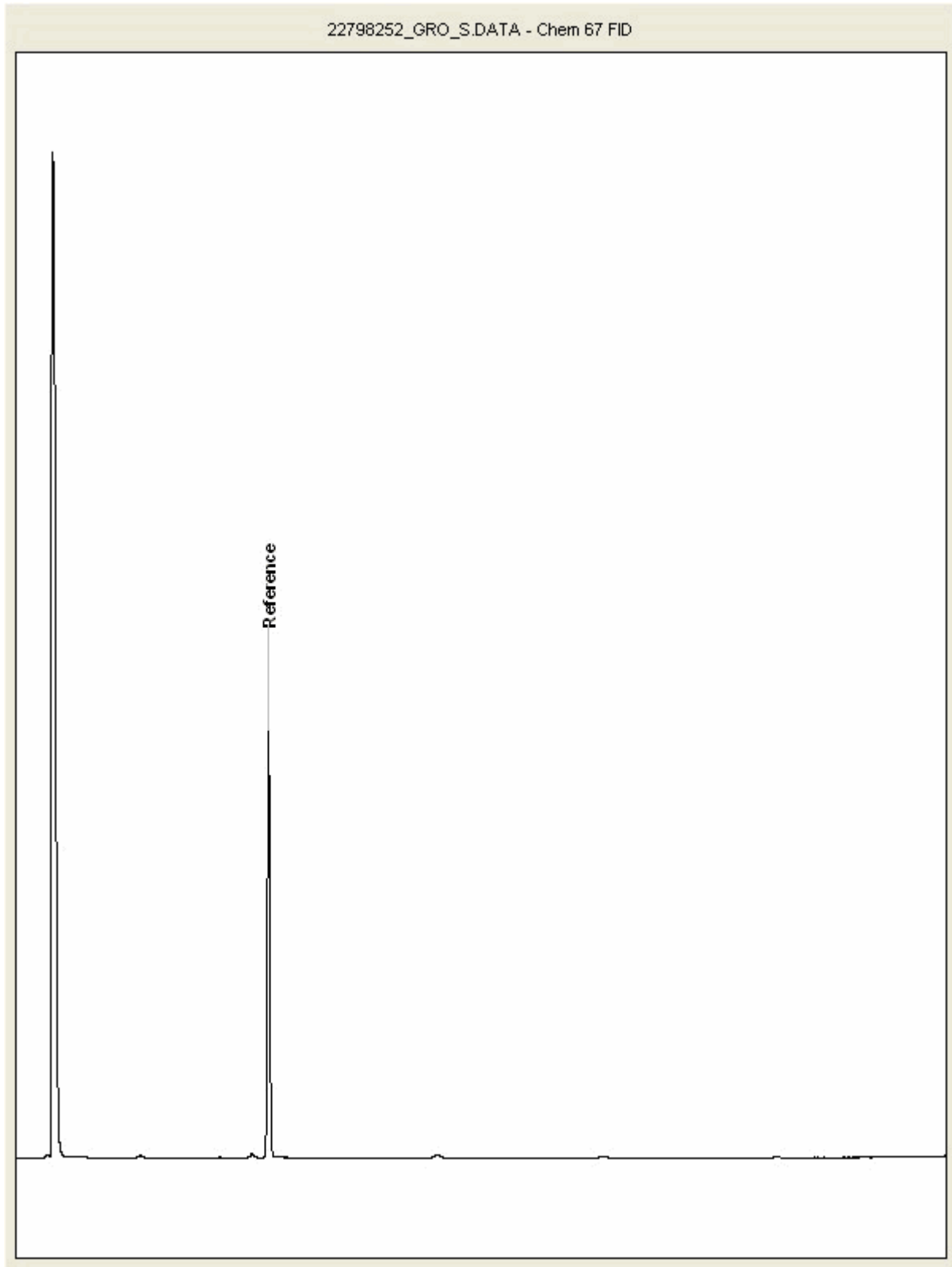
Report Number: 567147
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 22798252
Sample ID : R72102

Depth : 0.30





CERTIFICATE OF ANALYSIS

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Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

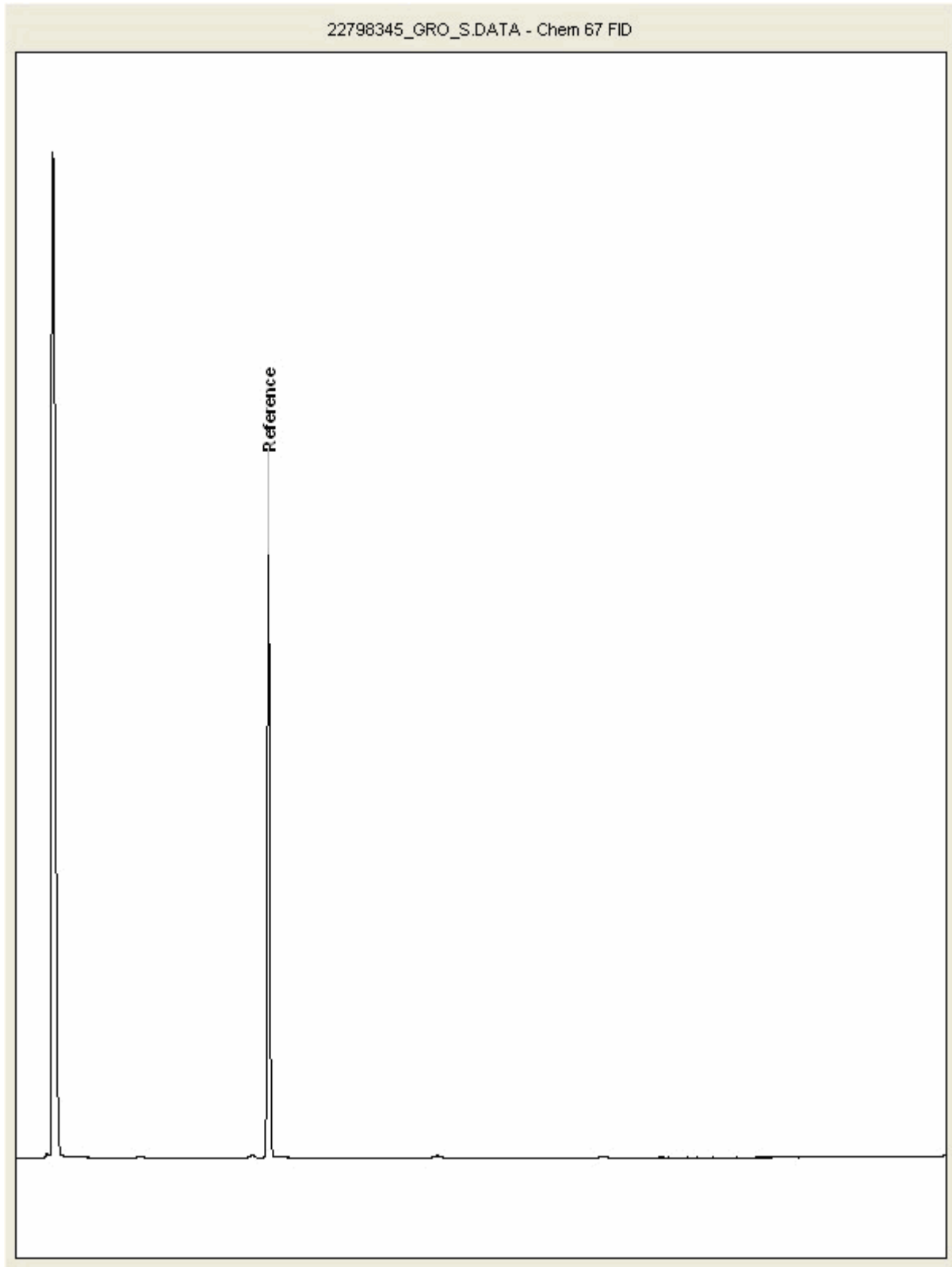
Report Number: 567147
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 22798345
Sample ID : R72102

Depth : 1.00





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SDG: 200903-121
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

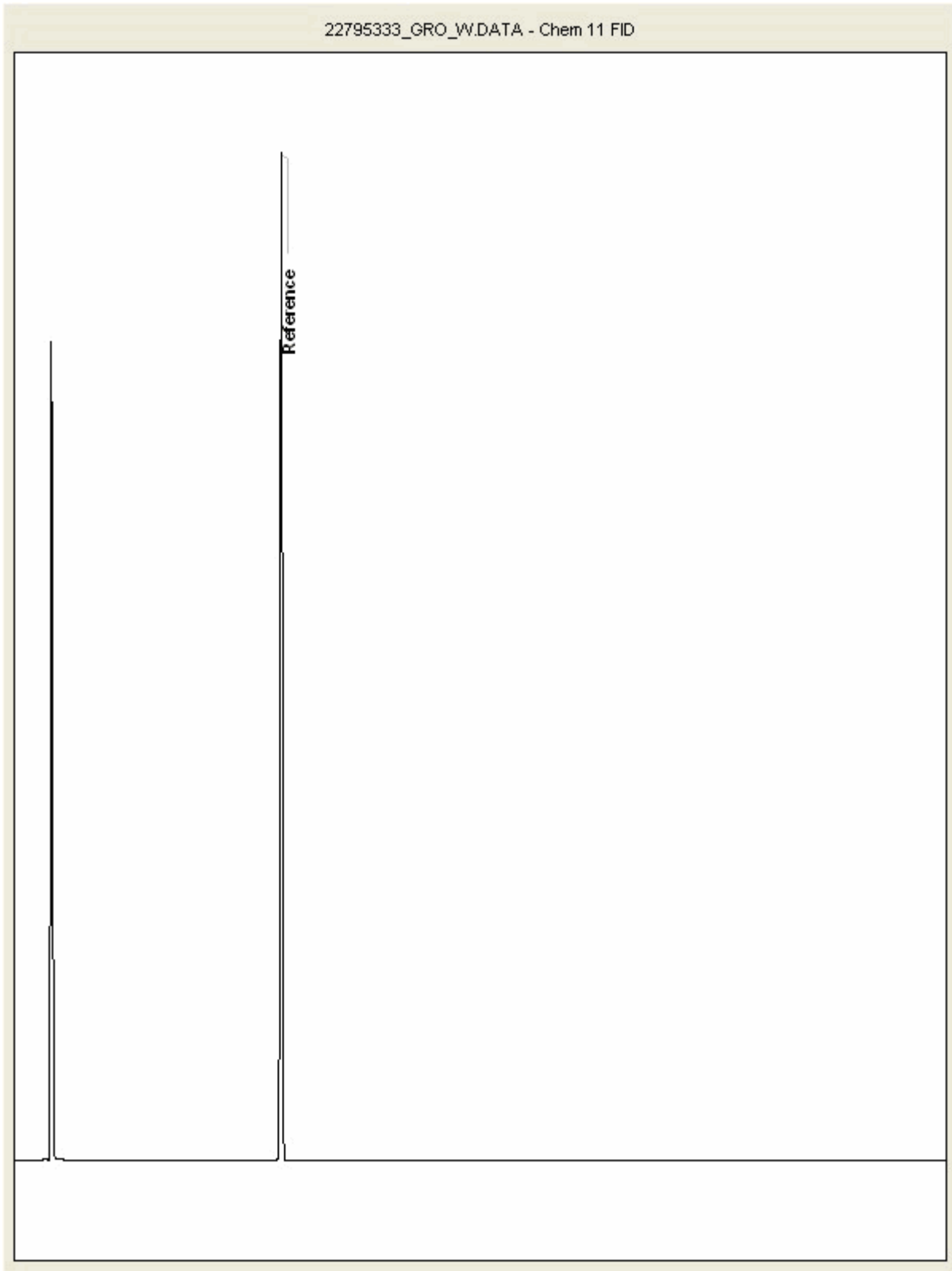
Report Number: 567147
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 22795333
Sample ID : R71915

Depth : 0.50





CERTIFICATE OF ANALYSIS

SDG: 200903-121 Client Reference: JFR1451 Report Number: 567147
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Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH₄ by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
§	Sampled on date not provided
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples

19. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung. Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017)*.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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Website: www.alsenvironmental.co.uk

RPS Consultants Ltd
260 Park Avenue
Aztec West
Almondsbury
Bristol
BS32 4SY

Attention: Gary Riches

CERTIFICATE OF ANALYSIS

Date of report Generation: 25 September 2020
Customer: RPS Consultants Ltd
Sample Delivery Group (SDG): 200908-75
Your Reference: JFR1451
Location: A303 Stonehenge
Report No: 568519

We received 4 samples on Tuesday September 08, 2020 and 1 of these samples were scheduled for analysis which was completed on Thursday September 24, 2020. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

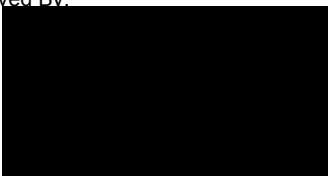
Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:



Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 200908-75
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 568519
Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
22785876	R72101		0.00 - 0.10	03/09/2020
22785877	R72101		0.25	03/09/2020
22785878	R72101		0.50	03/09/2020
22785879	R72101		1.00	03/09/2020

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG:	200908-75	Client Reference:	JFR1451	Report Number:	568519
Location:	A303 Stonehenge	Order Number:		Superseded Report:	

Results Legend <div style="display: flex; flex-direction: column; gap: 5px;"> <div style="display: flex; align-items: center;">X Test</div> <div style="display: flex; align-items: center;">N No Determination Possible</div> </div> Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other	Lab Sample No(s)				22786877
	Customer Sample Reference				R72101
	AGS Reference				
	Depth (m)				0.25
	Container	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	
	Sample Type	S	S	S	
	Ammoniacal Nitrogen	All	NDPs: 0 Tests: 1	X	
Ammonium Soil by Titration	All	NDPs: 0 Tests: 1		X	
Anions by Kone (soil)	All	NDPs: 0 Tests: 1		X	
Anions by Kone (w)	All	NDPs: 0 Tests: 1	X		
CEN Readings	All	NDPs: 0 Tests: 1	X		
Chromium III	All	NDPs: 0 Tests: 2	X	X	
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 2	X	X	
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 1	X		
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 1	X		
EPH CWG (Aliphatic) Filtered GC (W)	All	NDPs: 0 Tests: 1	X		
EPH CWG (Aromatic) Filtered GC (W)	All	NDPs: 0 Tests: 1	X		
EPH CWG GC (S)	All	NDPs: 0 Tests: 1	X		
GRO by GC-FID (S)	All	NDPs: 0 Tests: 1			X
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 1		X	
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 1	X		



CERTIFICATE OF ANALYSIS

Validated

SDG:	200908-75	Client Reference:	JFR1451	Report Number:	568519
Location:	A303 Stonehenge	Order Number:		Superseded Report:	

Results Legend <div style="display: flex; align-items: center; margin-bottom: 5px;"> <div style="width: 15px; height: 15px; background-color: yellow; border: 1px solid black; margin-right: 5px; display: flex; align-items: center; justify-content: center; font-size: 8px;">X</div> Test </div> <div style="display: flex; align-items: center; margin-bottom: 5px;"> <div style="width: 15px; height: 15px; background-color: red; border: 1px solid black; margin-right: 5px; display: flex; align-items: center; justify-content: center; font-size: 8px;">N</div> No Determination Possible </div> Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other	Lab Sample No(s)				22785877	
	Customer Sample Reference				R72101	
	AGS Reference					
	Depth (m)				0.25	
	Container	1kg TUB with Handle (ALE280)	250g Amber Jar (ALEZ10)	60g VOC (ALEZ15)		
	Sample Type	S	S	S		
Mercury Dissolved	All	NDPs: 0 Tests: 1	X			
Metals in solid samples by OES	All	NDPs: 0 Tests: 1		X		
PAH by GCMS	All	NDPs: 0 Tests: 1	X			
PAH in waters by GC-MS (diss.filt)	All	NDPs: 0 Tests: 1	X			
pH	All	NDPs: 0 Tests: 1		X		
pH Value of Filtered Water	All	NDPs: 0 Tests: 1	X			
Phenols by HPLC (S)	All	NDPs: 0 Tests: 1		X		
Sample description	All	NDPs: 0 Tests: 1		X		
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 1		X		
Total Organic Carbon	All	NDPs: 0 Tests: 1		X		
TPH CWG GC (S)	All	NDPs: 0 Tests: 1		X		
VOC MS (S)	All	NDPs: 0 Tests: 1			X	



CERTIFICATE OF ANALYSIS

Validated

SDG: 200908-75
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 568519
Superseded Report:

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm
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Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
22785877	R72101	0.25	Light Brown	Silt Loam	Stones	Vegetation

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.



CERTIFICATE OF ANALYSIS

Validated

SDG: 200908-75 Client Reference: JFR1451 Report Number: 568519
 Location: A303 Stonehenge Order Number: Superseded Report:

Results Legend		Customer Sample Ref.	R72101				
#	ISO17025 accredited.						
M	mCERTS accredited.						
aq	Aqueous / settled sample.						
diss.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.						
*	Subcontracted - refer to subcontractor report for accreditation status.						
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery						
(F)	Trigger breach confirmed						
1-3*5@	Sample deviation (see appendix)						
		Depth (m)	0.25				
		Sample Type	Soil/Solid (S)				
		Date Sampled	03/09/2020				
		Sampled Time					
		Date Received	08/09/2020				
		SDG Ref	200908-75				
		Lab Sample No.(s)	22785877				
		AGS Reference					
Component	LOD/Units	Method					
Moisture Content Ratio (% of as received sample)	%	PM024	17				
Exchangeable Ammonia as N	<12 mg/kg	TM024	<12	M			
Phenol	<0.01 mg/kg	TM062 (S)	<0.01	M			
Organic Carbon, Total	<0.2 %	TM132	1.12	M			
pH	1 pH Units	TM133	8.33	M			
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6	#			
Cyanide, Total	<1 mg/kg	TM153	<1	M			
Cyanide, Free	<1 mg/kg	TM153	<1	M			
Chromium, Trivalent	<0.9 mg/kg	TM181	6.9				
Antimony	<0.6 mg/kg	TM181	<0.6	#			
Arsenic	<0.6 mg/kg	TM181	3	M			
Beryllium	<0.01 mg/kg	TM181	0.177	M			
Boron	<0.7 mg/kg	TM181	5.65	#			
Cadmium	<0.02 mg/kg	TM181	0.456	M			
Chromium	<0.9 mg/kg	TM181	6.9	M			
Copper	<1.4 mg/kg	TM181	6.64	M			
Iron	<1000 mg/kg	TM181	4490	#			
Lead	<0.7 mg/kg	TM181	10.1	M			
Manganese	<0.13 mg/kg	TM181	360	M			
Mercury	<0.14 mg/kg	TM181	<0.14	M			
Molybdenum	<0.1 mg/kg	TM181	<0.1	#			
Nickel	<0.2 mg/kg	TM181	5.41	M			
Phosphorus	<1 mg/kg	TM181	1200				
Selenium	<1 mg/kg	TM181	<1	#			
Zinc	<1.9 mg/kg	TM181	34.4	M			
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243	0.0252	M			



CERTIFICATE OF ANALYSIS

Validated

SDG: 200908-75
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 568519
Superseded Report:

PAH by GCMS

Results Legend		Customer Sample Ref.	R72101				
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.25				
M	mCERTS accredited.		Soil/Solid (S)				
aq	Aqueous / settled sample.		03/09/2020				
diss.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.		08/09/2020				
*	Subcontracted - refer to subcontractor report for accreditation status.		200908-75				
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		22785877				
(F)	Trigger breach confirmed						
1-343@	Sample deviation (see appendix)						
Component	LOD/Units		Method				
Naphthalene-d8 % recovery**	%	TM218	96.5				
Acenaphthene-d10 % recovery**	%	TM218	94.8				
Phenanthrene-d10 % recovery**	%	TM218	92.3				
Chrysene-d12 % recovery**	%	TM218	91.5				
Perylene-d12 % recovery**	%	TM218	94				
Naphthalene	<9 µg/kg	TM218	<9	@ M			
Acenaphthylene	<12 µg/kg	TM218	<12	@ M			
Acenaphthene	<8 µg/kg	TM218	<8	@ M			
Fluorene	<10 µg/kg	TM218	<10	@ M			
Phenanthrene	<15 µg/kg	TM218	<15	@ M			
Anthracene	<16 µg/kg	TM218	<16	@ M			
Fluoranthene	<17 µg/kg	TM218	<17	@ M			
Pyrene	<15 µg/kg	TM218	<15	@ M			
Benz(a)anthracene	<14 µg/kg	TM218	<14	@ M			
Chrysene	<10 µg/kg	TM218	<10	@ M			
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15	@ M			
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14	@ M			
Benzo(a)pyrene	<15 µg/kg	TM218	<15	@ M			
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18	@ M			
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23	@ M			
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24	@ M			
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118				



CERTIFICATE OF ANALYSIS

Validated

SDG: 200908-75
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 568519
Superseded Report:

Semi Volatile Organic Compounds

Results Legend		Customer Sample Ref.	R72101				
#	ISO17025 accredited.	Depth (m)	0.25				
M	mCERTS accredited.	Sample Type	Soil/Solid (S)				
aq	Aqueous / settled sample.	Date Sampled	03/09/2020				
diss.filt	Dissolved / filtered sample.	Sampled Time	08/09/2020				
tot.unfilt	Total / unfiltered sample.	Date Received	200908-75				
*	Subcontracted - refer to subcontractor report for accreditation status.	SDG Ref	22785877				
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery	Lab Sample No.(s)					
(F)	Trigger breach confirmed	AGS Reference					
1-3*5@	Sample deviation (see appendix)						
Component	LOD/Units	Method	<100				
Phenol	<100 µg/kg	TM157	<100				
Pentachlorophenol	<100 µg/kg	TM157	<100				
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100				
Nitrobenzene	<100 µg/kg	TM157	<100				
Isophorone	<100 µg/kg	TM157	<100				
Hexachloroethane	<100 µg/kg	TM157	<100				
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100				
Hexachlorobutadiene	<100 µg/kg	TM157	<100				
Hexachlorobenzene	<100 µg/kg	TM157	<100				
n-Dioctyl phthalate	<100 µg/kg	TM157	<100				
Dimethyl phthalate	<100 µg/kg	TM157	<100				
Diethyl phthalate	<100 µg/kg	TM157	<100				
n-Dibutyl phthalate	<100 µg/kg	TM157	<100				
Dibenzofuran	<100 µg/kg	TM157	<100				
Carbazole	<100 µg/kg	TM157	<100				
Butylbenzyl phthalate	<100 µg/kg	TM157	<100				
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100				
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100				
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100				
Azobenzene	<100 µg/kg	TM157	<100				
4-Nitrophenol	<100 µg/kg	TM157	<100				
4-Nitroaniline	<100 µg/kg	TM157	<100				
4-Methylphenol	<100 µg/kg	TM157	<100				
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100				
4-Chloroaniline	<100 µg/kg	TM157	<100				
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100				
4-Bromophenylphenylether	<100 µg/kg	TM157	<100				
3-Nitroaniline	<100 µg/kg	TM157	<100				
2-Nitrophenol	<100 µg/kg	TM157	<100				
2-Nitroaniline	<100 µg/kg	TM157	<100				
2-Methylphenol	<100 µg/kg	TM157	<100				
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100				



CERTIFICATE OF ANALYSIS

Validated

SDG: 200908-75
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 568519
Superseded Report:

Semi Volatile Organic Compounds

Results Legend		Customer Sample Ref.	R72101				
#	ISO17025 accredited.						
M	mCERTS accredited.						
aq	Aqueous / filtered sample.						
dis.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.						
*	Subcontracted - refer to subcontractor report for accreditation status.						
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery						
(F)	Trigger breach confirmed						
1-3*5@	Sample deviation (see appendix)						
		Depth (m)	0.25				
		Sample Type	Soil/Solid (S)				
		Date Sampled	03/09/2020				
		Sampled Time					
		Date Received	08/09/2020				
		SDG Ref	200908-75				
		Lab Sample No.(s)	22785877				
		AGS Reference					
Component	LOD/Units	Method					
2-Chlorophenol	<100 µg/kg	TM157	<100				
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100				
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100				
2,4-Dimethylphenol	<100 µg/kg	TM157	<100				
2,4-Dichlorophenol	<100 µg/kg	TM157	<100				
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100				
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100				
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100				
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100				
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100				
2-Chloronaphthalene	<100 µg/kg	TM157	<100				
2-Methylnaphthalene	<100 µg/kg	TM157	<100				
Acenaphthylene	<100 µg/kg	TM157	<100				
Acenaphthene	<100 µg/kg	TM157	<100				
Anthracene	<100 µg/kg	TM157	<100				
Benzo(a)anthracene	<100 µg/kg	TM157	<100				
Benzo(b)fluoranthene	<100 µg/kg	TM157	<100				
Benzo(k)fluoranthene	<100 µg/kg	TM157	<100				
Benzo(a)pyrene	<100 µg/kg	TM157	<100				
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<100				
Chrysene	<100 µg/kg	TM157	<100				
Fluoranthene	<100 µg/kg	TM157	<100				
Fluorene	<100 µg/kg	TM157	<100				
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<100				
Phenanthrene	<100 µg/kg	TM157	<100				
Pyrene	<100 µg/kg	TM157	<100				
Naphthalene	<100 µg/kg	TM157	<100				
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100				
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100				
TIC report		TM157	Not Detected				
Total SVOC TIC	<100 µg/kg	TM157	<1000				



CERTIFICATE OF ANALYSIS

Validated

SDG: 200908-75
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 568519
Superseded Report:

TPH CWG (S)

Results Legend		Customer Sample Ref.	R72101				
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.25				
M	mCERTS accredited.		Soil/Solid (S)				
aq	Aqueous / settled sample.		03/09/2020				
diss.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.		08/09/2020				
*	Subcontracted - refer to subcontractor report for accreditation status.		200908-75				
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		22785877				
(F)	Trigger breach confirmed						
1-343@	Sample deviation (see appendix)						
Component	LOD/Units		Method				
GRO Surrogate % recovery**	%	TM089	102				
Aliphatics >C5-C6	<10 µg/kg	TM089	<10				
Aliphatics >C6-C8	<10 µg/kg	TM089	<10				
Aliphatics >C8-C10	<10 µg/kg	TM089	<10				
Aliphatics >C10-C12	<1000 µg/kg	TM414	<1000				
Aliphatics >C12-C16	<1000 µg/kg	TM414	<1000				
Aliphatics >C16-C21	<1000 µg/kg	TM414	<1000				
Aliphatics >C21-C35	<1000 µg/kg	TM414	<1000				
Aliphatics >C35-C44	<1000 µg/kg	TM414	<1000				
Total Aliphatics >C10-C44	<5000 µg/kg	TM414	<5000				
Total Aliphatics & Aromatics >C10-C44	<10000 µg/kg	TM414	<10000				
Aromatics >EC5-EC7	<10 µg/kg	TM089	<10				
Aromatics >EC7-EC8	<10 µg/kg	TM089	<10				
Aromatics >EC8-EC10	<10 µg/kg	TM089	<10				
Aromatics > EC10-EC12	<1000 µg/kg	TM414	<1000				
Aromatics > EC12-EC16	<1000 µg/kg	TM414	<1000				
Aromatics > EC16-EC21	<1000 µg/kg	TM414	<1000				
Aromatics > EC21-EC35	<1000 µg/kg	TM414	<1000				
Aromatics >EC35-EC44	<1000 µg/kg	TM414	<1000				
Aromatics > EC40-EC44	<1000 µg/kg	TM414	<1000				
Total Aromatics > EC10-EC44	<5000 µg/kg	TM414	<5000				
Total Aliphatics & Aromatics >C5-C44	<10000 µg/kg	TM414	<10000				
Total Aliphatics >C5-C10	<50 µg/kg	TM089	<50				
Total Aromatics >EC5-EC10	<50 µg/kg	TM089	<50				
GRO >C5-C10	<20 µg/kg	TM089	<20				



CERTIFICATE OF ANALYSIS

Validated

SDG:	200908-75	Client Reference:	JFR1451	Report Number:	568519
Location:	A303 Stonehenge	Order Number:		Superseded Report:	

VOC MS (S)

#	ISO17025 accredited.	Customer Sample Ref.	R72101			
Results Legend						
M	mCERTS accredited.	Depth (m)	0.25			
aq	Aqueous / settled sample.	Sample Type	Soil/Solid (S)			
diss.filt	Dissolved / filtered sample.	Date Sampled	03/09/2020			
tot.unfilt	Total / unfiltered sample.	Sampled Time				
*	Subcontracted - refer to subcontractor report for accreditation status.	Date Received	08/09/2020			
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery	SDG Ref	200908-75			
(F)	Trigger breach confirmed	Lab Sample No.(s)	22785877			
1-3*§@	Sample deviation (see appendix)	AGS Reference				
Component	LOD/Units	Method				
Dibromofluoromethane**	%	TM116	116			
Toluene-d8**	%	TM116	94.3			
4-Bromofluorobenzene**	%	TM116	82.2			
Dichlorodifluoromethane	<6 µg/kg	TM116	<6	M		
Chloromethane	<7 µg/kg	TM116	<7	#		
Vinyl Chloride	<6 µg/kg	TM116	<6	M		
Bromomethane	<10 µg/kg	TM116	<10	M		
Chloroethane	<10 µg/kg	TM116	<10	M		
Trichlorofluoromethane	<6 µg/kg	TM116	<6	M		
1,1-Dichloroethene	<10 µg/kg	TM116	<10	#		
Carbon Disulphide	<7 µg/kg	TM116	<7	M		
Dichloromethane	<10 µg/kg	TM116	<10	#		
Methyl Tertiary Butyl Ether	<10 µg/kg	TM116	<10	M		
trans-1,2-Dichloroethene	<10 µg/kg	TM116	<10	M		
1,1-Dichloroethane	<8 µg/kg	TM116	<8	M		
cis-1,2-Dichloroethene	<6 µg/kg	TM116	<6	M		
2,2-Dichloropropane	<10 µg/kg	TM116	<10			
Bromochloromethane	<10 µg/kg	TM116	<10	M		
Chloroform	<8 µg/kg	TM116	<8	M		
1,1,1-Trichloroethane	<7 µg/kg	TM116	<7	M		
1,1-Dichloropropene	<10 µg/kg	TM116	<10	M		
Carbontetrachloride	<10 µg/kg	TM116	<10	M		
1,2-Dichloroethane	<5 µg/kg	TM116	<5	M		
Benzene	<9 µg/kg	TM116	<9	M		
Trichloroethene	<9 µg/kg	TM116	<9	#		
1,2-Dichloropropane	<10 µg/kg	TM116	<10	M		
Dibromomethane	<9 µg/kg	TM116	<9	M		
Bromodichloromethane	<7 µg/kg	TM116	<7	M		
cis-1,3-Dichloropropene	<10 µg/kg	TM116	<10	M		
Toluene	<7 µg/kg	TM116	<7	M		
trans-1,3-Dichloropropene	<10 µg/kg	TM116	<10			
1,1,2-Trichloroethane	<10 µg/kg	TM116	<10	M		



CERTIFICATE OF ANALYSIS

Validated

SDG: 200908-75	Client Reference: JFR1451	Report Number: 568519
Location: A303 Stonehenge	Order Number:	Superseded Report:

VOC MS (S)

Results Legend		Customer Sample Ref.	R72101				
# ISO17025 accredited. M mCERTS accredited. sq Aqueous / filtered sample. diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery. (F) Trigger breach confirmed 1-3*5@ Sample deviation (see appendix)		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.25 Soil/Solid (S) 03/09/2020 . 08/09/2020 200908-75 22785877				
Component	LOD/Units	Method					
1,3-Dichloropropane	<7 µg/kg	TM116	<7	M			
Tetrachloroethene	<5 µg/kg	TM116	<5	M			
Dibromochloromethane	<10 µg/kg	TM116	<10	M			
1,2-Dibromoethane	<10 µg/kg	TM116	<10	M			
Chlorobenzene	<5 µg/kg	TM116	<5	M			
1,1,1,2-Tetrachloroethane	<10 µg/kg	TM116	<10	M			
Ethylbenzene	<4 µg/kg	TM116	<4	M			
p/m-Xylene	<10 µg/kg	TM116	<10	#			
o-Xylene	<10 µg/kg	TM116	<10	M			
Styrene	<10 µg/kg	TM116	<10	#			
Bromoform	<10 µg/kg	TM116	<10	M			
Isopropylbenzene	<5 µg/kg	TM116	<5	#			
1,1,2,2-Tetrachloroethane	<10 µg/kg	TM116	<10	#			
1,2,3-Trichloropropane	<16 µg/kg	TM116	<16	M			
Bromobenzene	<10 µg/kg	TM116	<10	M			
Propylbenzene	<10 µg/kg	TM116	<10	M			
2-Chlorotoluene	<9 µg/kg	TM116	<9	M			
1,3,5-Trimethylbenzene	<8 µg/kg	TM116	<8	M			
4-Chlorotoluene	<10 µg/kg	TM116	<10	M			
tert-Butylbenzene	<14 µg/kg	TM116	<14	M			
1,2,4-Trimethylbenzene	<9 µg/kg	TM116	<9	#			
sec-Butylbenzene	<10 µg/kg	TM116	<10				
4-Isopropyltoluene	<10 µg/kg	TM116	<10	M			
1,3-Dichlorobenzene	<8 µg/kg	TM116	<8	M			
1,4-Dichlorobenzene	<5 µg/kg	TM116	<5	M			
n-Butylbenzene	<11 µg/kg	TM116	<11				
1,2-Dichlorobenzene	<10 µg/kg	TM116	<10	M			
1,2-Dibromo-3-chloropropane	<14 µg/kg	TM116	<14	M			
Tert-amyl methyl ether	<10 µg/kg	TM116	<10	#			
1,2,4-Trichlorobenzene	<20 µg/kg	TM116	<20				
Hexachlorobutadiene	<20 µg/kg	TM116	<20				
Naphthalene	<13 µg/kg	TM116	<13	M			



CERTIFICATE OF ANALYSIS

Validated

SDG: 200908-75
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 568519
Superseded Report:

CEN 2:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/

Client Reference		Site Location	A303 Stonehenge
Mass Sample taken (kg)	0.218	Natural Moisture Content (%)	25.3
Mass of dry sample (kg)	0.175	Dry Matter Content (%)	79.8
Particle Size <4mm	>95%		

Case	
SDG	200908-75
Lab Sample Number(s)	22785877
Sampled Date	03-Sep-2020
Customer Sample Ref.	R72101
Depth (m)	0.25

Eluate Analysis	Conc ⁿ in 2:1 eluate (mg/l)		2:1 conc ⁿ leached (mg/kg)	
	Result	Limit of Detection	Result	Limit of Detection
Aliphatics >C12-C16	<0.01	<0.01	<0.02	<0.02
Aliphatics >C16-C21	<0.01	<0.01	<0.02	<0.02
Aliphatics >C21-C35	<0.01	<0.01	<0.02	<0.02
Total Aliphatics >C12-C35	<0.01	<0.01	<0.02	<0.02
Aromatics >EC12-EC16	<0.01	<0.01	<0.02	<0.02
Aromatics >EC16-EC21	<0.01	<0.01	<0.02	<0.02
Aromatics >EC21-EC35	<0.01	<0.01	<0.02	<0.02
Aromatics >EC16-EC35	<0.01	<0.01	<0.02	<0.02
Total Aromatics >EC12-EC35	<0.01	<0.01	<0.02	<0.02
Ammoniacal Nitrogen as N	0.236	<0.2	0.472	<0.4
Chromium III	<0.03	<0.03	<0.06	<0.06
Hexavalent Chromium	<0.03	<0.03	<0.06	<0.06
Sulphate (soluble)	15.5	<2	31	<4
Dissolved Organic Carbon	10.1	<3	20.2	<6
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.00002	<0.00002
Antimony	<0.001	<0.001	<0.002	<0.002
Naphthalene (diss.filt)	<0.00001	<0.00001	<0.00002	<0.00002
Total Cyanide (W)	<0.05	<0.05	<0.1	<0.1
Acenaphthene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Arsenic	0.00124	<0.0005	0.00248	<0.001
Free Cyanide (W)	<0.05	<0.05	<0.1	<0.1
Acenaphthylene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Beryllium	<0.0001	<0.0001	<0.0002	<0.0002
Fluoranthene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Anthracene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Boron	0.0259	<0.01	0.0518	<0.02
Phenanthrene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Cadmium	<0.00008	<0.00008	<0.00016	<0.00016
Fluorene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Chrysene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Pyrene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Benzo(a)anthracene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Chromium	<0.001	<0.001	<0.002	<0.002
Benzo(b)fluoranthene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Benzo(k)fluoranthene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001

Leach Test Information

Date Prepared	11-Sep-2020
pH (pH Units)	8.16
Conductivity (µS/cm)	292.00
Temperature (°C)	18.10
Volume Leachant (Litres)	0.306
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates

25/09/2020 05:05:11



CERTIFICATE OF ANALYSIS

Validated

SDG: 200908-75
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 568519
Superseded Report:

CEN 2:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/

Client Reference	
Mass Sample taken (kg)	0.218
Mass of dry sample (kg)	0.175
Particle Size <4mm	>95%

Site Location	A303 Stonehenge
Natural Moisture Content (%)	25.3
Dry Matter Content (%)	79.8

Case	
SDG	200908-75
Lab Sample Number(s)	22785877
Sampled Date	03-Sep-2020
Customer Sample Ref.	R72101
Depth (m)	0.25

Eluate Analysis	Conc ⁿ in 2:1 eluate (mg/l)		2:1 conc ⁿ leached (mg/kg)	
	Result	Limit of Detection	Result	Limit of Detection
Benzo(a)pyrene (diss.filt)	<0.000002	<0.000002	<0.000004	<0.000004
Copper	0.00544	<0.0003	0.0109	<0.0006
Dibenzo(a,h)anthracene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Lead	<0.0002	<0.0002	<0.0004	<0.0004
Benzo(g,h,i)perylene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Indeno(1,2,3-cd)pyrene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Manganese	<0.003	<0.003	<0.006	<0.006
Molybdenum	0.00366	<0.003	0.00732	<0.006
PAH 16 EPA Total by GCMS (diss.filt)	<0.000082	<0.000082	<0.000164	<0.000164
Nickel	0.00206	<0.0004	0.00412	<0.0008
Phosphorus	0.189	<0.01	0.378	<0.02
Selenium	<0.001	<0.001	<0.002	<0.002
Zinc	0.00513	<0.001	0.0103	<0.002
Calcium (Dis.Filt) mg/l	60	<0.2	120	<0.4
Iron (Dis.Filt) mg/l	<0.019	<0.019	<0.038	<0.038

Leach Test Information

Date Prepared	11-Sep-2020
pH (pH Units)	8.16
Conductivity (µS/cm)	292.00
Temperature (°C)	18.10
Volume Leachant (Litres)	0.306
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
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Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM174	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID
TM178	Modified: US EPA Method 8100	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS in Waters
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser
TM243		Mixed Anions In Soils By Kone
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).



CERTIFICATE OF ANALYSIS

Validated

SDG: 200908-75
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 568519
Superseded Report:

Test Completion Dates

Lab Sample No(s)	22785877
Customer Sample Ref.	R72101
AGS Ref.	
Depth	0.25
Type	Soil/Solid (S)

Ammoniacal Nitrogen	16-Sep-2020
Ammonium Soil by Titration	15-Sep-2020
Anions by Kone (soil)	14-Sep-2020
Anions by Kone (w)	16-Sep-2020
CEN 2:1 Leachate (1 Stage)	14-Sep-2020
CEN Readings	15-Sep-2020
Chromium III	17-Sep-2020
Cyanide Comp/Free/Total/Thiocyanate	16-Sep-2020
Dissolved Metals by ICP-MS	16-Sep-2020
Dissolved Organic/Inorganic Carbon	16-Sep-2020
EPH CWG (Aliphatic) Filtered GC (W)	18-Sep-2020
EPH CWG (Aromatic) Filtered GC (W)	18-Sep-2020
EPH CWG GC (S)	24-Sep-2020
GRO by GC-FID (S)	16-Sep-2020
Hexavalent Chromium (s)	15-Sep-2020
Hexavalent Chromium (w)	16-Sep-2020
Mercury Dissolved	16-Sep-2020
Metals in solid samples by OES	19-Sep-2020
Moisture at 105C	11-Sep-2020
PAH by GCMS	17-Sep-2020
PAH in waters by GC-MS (diss.filt)	16-Sep-2020
pH	13-Sep-2020
pH Value of Filtered Water	16-Sep-2020
Phenols by HPLC (S)	15-Sep-2020
Sample description	10-Sep-2020
Semi Volatile Organic Compounds	16-Sep-2020
Total Organic Carbon	16-Sep-2020
TPH CWG GC (S)	24-Sep-2020
VOC MS (S)	16-Sep-2020



CERTIFICATE OF ANALYSIS

Validated

SDG: 200908-75
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 568519
Superseded Report:

ASSOCIATED AQC DATA

Ammoniacal Nitrogen

Component	Method Code	QC 2247
Ammoniacal Nitrogen as N	TM099	101.2 93.14 : 108.60

Ammonium Soil by Titration

Component	Method Code	QC 2214
Exchangeable Ammonium as NH4	TM024	89.05 76.20 : 110.13

Anions by Kone (w)

Component	Method Code	QC 2262
Chloride	TM184	104.0 92.93 : 115.43
Sulphate (soluble)	TM184	102.0 90.53 : 113.03

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2268
Free Cyanide	TM153	93.07 78.61 : 114.43
Thiocyanate	TM153	99.36 90.48 : 109.52
Total Cyanide	TM153	99.3 76.80 : 112.96

Dissolved Metals by ICP-MS

Component	Method Code	QC 2234
Aluminium	TM152	102.33 90.78 : 110.89
Antimony	TM152	101.5 77.22 : 119.42
Arsenic	TM152	103.83 86.77 : 107.67
Barium	TM152	101.5 87.86 : 110.23
Beryllium	TM152	98.83 86.19 : 112.98
Bismuth	TM152	100.17 84.06 : 106.46
Borate	TM152	105.56 88.00 : 112.00



CERTIFICATE OF ANALYSIS

Validated

SDG: 200908-75
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 568519
Superseded Report:

Dissolved Metals by ICP-MS

		QC 2234
Boron	TM152	105.33 83.92 : 114.90
Cadmium	TM152	102.67 88.89 : 106.69
Calcium	TM152	103.33 80.24 : 117.95
Chromium	TM152	105.33 83.22 : 110.16
Cobalt	TM152	100.67 82.49 : 112.36
Copper	TM152	105.5 83.14 : 113.00
Iron	TM152	104.0 88.40 : 109.24
Lead	TM152	104.83 83.71 : 109.58
Lithium	TM152	102.5 84.50 : 114.28
Magnesium	TM152	100.0 87.56 : 114.57
Manganese	TM152	105.33 93.05 : 112.42
Molybdenum	TM152	98.5 85.53 : 107.42
Nickel	TM152	105.5 88.05 : 106.42
Phosphorus	TM152	104.0 82.76 : 107.72
Potassium	TM152	102.67 88.45 : 106.42
Selenium	TM152	104.0 85.61 : 111.03
Silver	TM152	106.83 95.35 : 113.25
Sodium	TM152	100.0 88.32 : 106.30
Strontium	TM152	102.67 83.77 : 107.87
Tellurium	TM152	101.0 82.83 : 104.73
Thallium	TM152	102.67 77.47 : 113.87
Tin	TM152	102.17 91.00 : 109.00
Titanium	TM152	104.0 87.29 : 108.31
Tungsten	TM152	99.83 68.27 : 122.97
Uranium	TM152	96.33 82.46 : 105.16
Vanadium	TM152	107.33 88.43 : 114.30
Zinc	TM152	107.67 85.57 : 114.31



CERTIFICATE OF ANALYSIS

Validated

SDG: 200908-75
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 568519
Superseded Report:

Dissolved Organic/Inorganic Carbon

Component	Method Code	QC 2246
Dissolved Inorganic Carbon	TM090	109.0 93.58 : 112.28
Dissolved Organic Carbon	TM090	102.33 96.28 : 110.58

EPH CWG (Aromatic) Filtered GC (W)

Component	Method Code	QC 2243
Total Aromatics >EC10-EC40	TM174	86.1 73.75 : 120.32

GRO by GC-FID (S)

Component	Method Code	QC 2227
QC	TM089	100.03 70.34 : 111.95

Hexavalent Chromium (s)

Component	Method Code	QC 2284
Hexavalent Chromium	TM151	104.0 95.60 : 107.60

Hexavalent Chromium (w)

Component	Method Code	QC 2244
Hexavalent Chromium	TM241	101.6 94.17 : 106.17

Mercury Dissolved

Component	Method Code	QC 2222
Mercury Dissolved (CVAf)	TM183	97.4 69.30 : 128.70

Metals in solid samples by OES



CERTIFICATE OF ANALYSIS

Validated

SDG: 200908-75
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 568519
Superseded Report:

Metals in solid samples by OES

Component	Method Code	QC 2201	QC 2204
Aluminium	TM181	99.12 77.46 : 123.98	80.97 77.46 : 123.98
Antimony	TM181	78.86 87.04 : 111.16	87.8 87.04 : 111.16
Arsenic	TM181	89.24 87.34 : 110.87	93.02 87.34 : 110.87
Barium	TM181	88.99 80.73 : 115.16	84.13 80.73 : 115.16
Beryllium	TM181	89.18 89.47 : 112.97	89.93 89.47 : 112.97
Boron	TM181	89.11 76.57 : 104.15	80.52 76.57 : 104.15
Cadmium	TM181	79.84 78.94 : 102.43	82.3 78.94 : 102.43
Chromium	TM181	86.82 77.55 : 104.47	85.6 77.55 : 104.47
Cobalt	TM181	83.02 82.95 : 107.41	83.33 82.95 : 107.41
Copper	TM181	85.92 84.36 : 106.14	87.15 84.36 : 106.14
Iron	TM181	91.27 81.43 : 115.79	88.1 81.43 : 115.79
Lead	TM181	81.08 81.95 : 107.63	87.61 81.95 : 107.63
Manganese	TM181	98.89 94.29 : 119.51	102.22 94.29 : 119.51
Mercury	TM181	82.37 82.73 : 106.36	85.27 82.73 : 106.36
Molybdenum	TM181	84.77 86.61 : 111.07	91.36 86.61 : 111.07
Nickel	TM181	81.91 79.72 : 103.80	83.62 79.72 : 103.80
Phosphorus	TM181	97.58 92.65 : 125.47	100.2 92.65 : 125.47
Selenium	TM181	89.02 88.36 : 111.25	92.55 88.36 : 111.25
Strontium	TM181	83.52 83.94 : 111.48	83.3 83.94 : 111.48
Thallium	TM181	89.82 88.60 : 116.73	93.81 88.60 : 116.73
Tin	TM181	86.31 89.77 : 112.62	90.11 89.77 : 112.62
Titanium	TM181	90.08 66.29 : 105.96	75.73 66.29 : 105.96
Vanadium	TM181	89.01 75.51 : 108.87	87.55 75.51 : 108.87
Zinc	TM181	89.73 84.02 : 111.24	90.97 84.02 : 111.24

PAH by GCMS



CERTIFICATE OF ANALYSIS

Validated

SDG: 200908-75
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 568519
Superseded Report:

PAH by GCMS

Component	Method Code	QC 2292
Acenaphthene	TM218	101.0 73.47 : 109.80
Acenaphthylene	TM218	100.0 70.00 : 130.00
Anthracene	TM218	104.5 68.68 : 111.89
Benz(a)anthracene	TM218	104.5 68.12 : 118.39
Benzo(a)pyrene	TM218	99.5 71.72 : 115.31
Benzo(b)fluoranthene	TM218	97.0 66.89 : 120.40
Benzo(ghi)perylene	TM218	98.0 67.82 : 118.49
Benzo(k)fluoranthene	TM218	106.0 73.10 : 117.03
Chrysene	TM218	101.5 69.58 : 115.47
Dibenzo(ah)anthracene	TM218	98.5 67.32 : 121.35
Fluoranthene	TM218	102.5 75.16 : 117.28
Fluorene	TM218	102.0 73.81 : 108.66
Indeno(123cd)pyrene	TM218	89.5 68.91 : 117.62
Naphthalene	TM218	94.5 72.12 : 106.18
Phenanthrene	TM218	104.5 69.01 : 113.72
Pyrene	TM218	103.5 75.68 : 119.23

PAH in waters by GC-MS (diss.filt)

Component	Method Code	QC 2263
Acenaphthene (diss.filt)	TM178	104.8 94.00 : 120.40
Acenaphthylene (diss.filt)	TM178	99.6 91.20 : 117.60
Anthracene (diss.filt)	TM178	102.8 91.20 : 112.80
Benzo(a)anthracene (diss.filt)	TM178	96.0 86.80 : 115.60
Benzo(a)pyrene (diss.filt)	TM178	98.4 85.20 : 114.00
Benzo(b)fluoranthene (diss.filt)	TM178	92.4 86.40 : 117.60
Benzo(g,h,i)perylene (diss.filt)	TM178	106.8 87.60 : 121.20
Benzo(k)fluoranthene (diss.filt)	TM178	101.6 91.20 : 124.80
Chrysene (diss.filt)	TM178	104.8 95.20 : 124.00



CERTIFICATE OF ANALYSIS

Validated

SDG: 200908-75
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 568519
Superseded Report:

PAH in waters by GC-MS (diss.filt)

Component	Method Code	QC 2263
Dibenzo(a,h)anthracene (diss.filt)	TM178	94.8 84.80 : 118.40
Fluoranthene (diss.filt)	TM178	102.4 91.20 : 120.00
Fluorene (diss.filt)	TM178	101.2 93.20 : 119.60
Indeno(1,2,3-cd)pyrene (diss.filt)	TM178	95.6 86.80 : 115.60
Naphthalene (diss.filt)	TM178	104.4 90.40 : 126.40
Phenanthrene (diss.filt)	TM178	104.8 94.40 : 118.40
Pyrene (diss.filt)	TM178	108.0 93.60 : 120.00

pH

Component	Method Code	QC 2283
pH	TM133	102.38 99.74 : 102.91

pH Value of Filtered Water

Component	Method Code	QC 2253
pH	TM256	102.16 100.00 : 102.43

Phenols by HPLC (S)

Component	Method Code	QC 2261
2,3,5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	105.19 65.50 : 89.50
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	90.06 84.00 : 124.00
Catechol by HPLC (S)	TM062 (S)	92.38 19.39 : 135.70
Cresols by HPLC (S)	TM062 (S)	96.03 81.00 : 112.20
Naphthol by HPLC (S)	TM062 (S)	127.86 57.50 : 102.50
Phenol by HPLC (S)	TM062 (S)	103.97 88.67 : 124.67
Resorcinol HPLC (S)	TM062 (S)	94.97 69.99 : 127.22
Xylenols by HPLC (S)	TM062 (S)	99.69 95.22 : 115.89

Semi Volatile Organic Compounds



CERTIFICATE OF ANALYSIS

Validated

SDG: 200908-75
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 568519
Superseded Report:

Semi Volatile Organic Compounds

Component	Method Code	QC 2247
4-Bromophenylphenylether (Soil)	TM157	103.5 66.75 : 125.25
Benzo(a)anthracene (Soil)	TM157	101.5 67.40 : 120.50
Hexachlorobutadiene (Soil)	TM157	104.0 68.25 : 126.75
Naphthalene (Soil)	TM157	102.0 67.55 : 125.45
Nitrobenzene (Soil)	TM157	98.5 66.50 : 123.50
Phenol (Soil)	TM157	102.0 69.92 : 114.02

Total Organic Carbon

Component	Method Code	QC 2252
Total Organic Carbon	TM132	98.05 87.02 : 113.45

VOC MS (S)

Component	Method Code	QC 2225
1,1,1,2-tetrachloroethane	TM116	103.2 79.10 : 119.66
1,1,1-Trichloroethane	TM116	99.4 87.51 : 115.37
1,1,2-Trichloroethane	TM116	105.6 75.16 : 112.70
1,1-Dichloroethane	TM116	103.8 86.77 : 122.11
1,2-Dichloroethane	TM116	107.0 90.04 : 132.28
1,4-Dichlorobenzene	TM116	102.2 80.81 : 125.07
2-Chlorotoluene	TM116	99.4 73.76 : 115.43
4-Chlorotoluene	TM116	90.4 72.48 : 112.82
Benzene	TM116	100.0 84.29 : 112.22
Carbon Disulphide	TM116	95.6 75.11 : 124.81
Carbontetrachloride	TM116	99.2 82.35 : 126.46
Chlorobenzene	TM116	103.2 82.88 : 122.42
Chloroform	TM116	101.2 90.35 : 120.38
Chloromethane	TM116	105.6 65.80 : 138.88



CERTIFICATE OF ANALYSIS

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SDG: 200908-75
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 568519
Superseded Report:

VOC MS (S)

		QC 2225
Cis-1,2-Dichloroethene	TM116	100.0 78.27 : 128.90
Dibromomethane	TM116	97.2 76.00 : 120.73
Dichloromethane	TM116	116.2 91.49 : 127.63
Ethylbenzene	TM116	94.6 70.95 : 113.07
Hexachlorobutadiene	TM116	71.4 14.55 : 147.92
Isopropylbenzene	TM116	81.2 52.00 : 108.19
Naphthalene	TM116	108.6 80.29 : 135.77
o-Xylene	TM116	91.4 64.92 : 98.85
p/m-Xylene	TM116	92.4 72.04 : 104.04
Sec-Butylbenzene	TM116	80.6 27.03 : 135.73
Tetrachloroethene	TM116	104.6 81.43 : 126.65
Toluene	TM116	92.6 82.44 : 103.50
Trichloroethene	TM116	97.2 79.80 : 112.33
Trichlorofluoromethane	TM116	107.2 86.68 : 126.82
Vinyl Chloride	TM116	110.6 69.66 : 136.55

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.

The figure detailed is the percentage recovery result for the AQC.

The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.



CERTIFICATE OF ANALYSIS

Validated

SDG: 200908-75
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 568519
Superseded Report:

Chromatogram

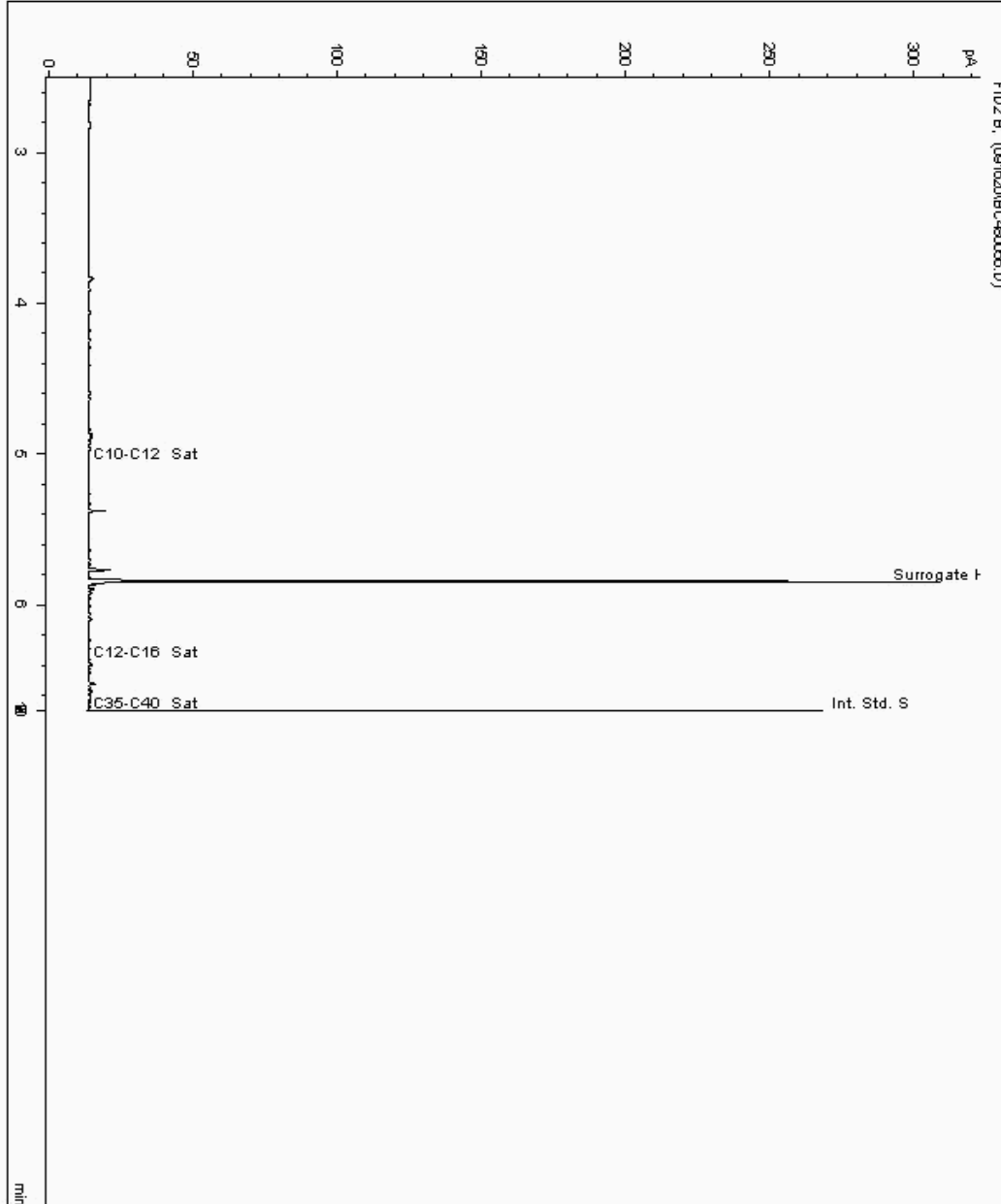
Analysis: EPH CWG (Aliphatic) Filtered GC (W)

Sample No : 22828456
Sample ID : R72101

Depth : 0.25

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 21407678-
Date Acquired : 17/09/2020 18:33:38 PM
Units : ppb
Dilution : R72101 [0.25] CEN 2 1 ->
CF : 1
Multiplier : 0.025





CERTIFICATE OF ANALYSIS

Validated

SDG: 200908-75
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 568519
Superseded Report:

Chromatogram

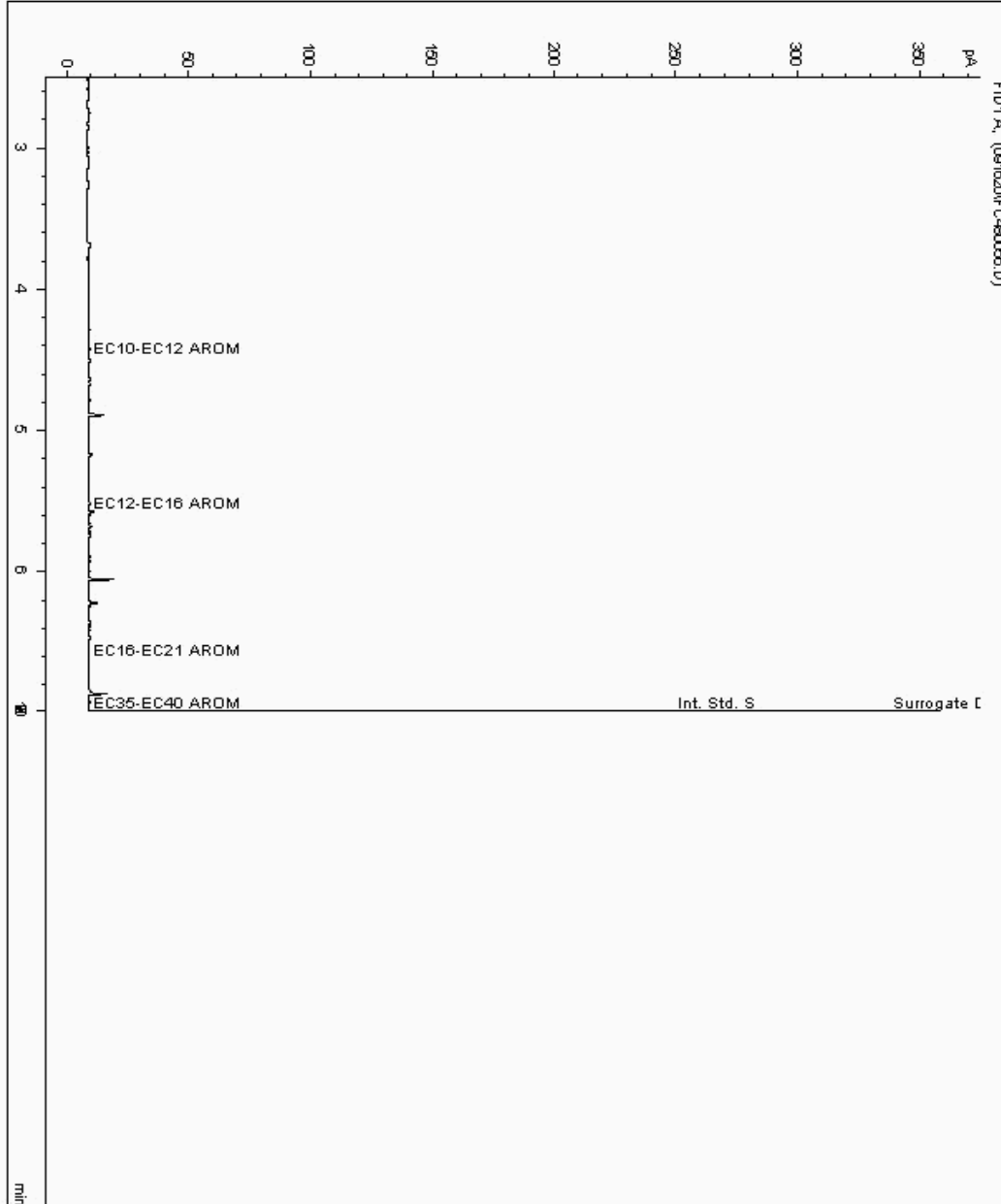
Analysis: EPH CWG (Aromatic) Filtered GC (W)

Sample No : 22828456
Sample ID : R72101

Depth : 0.25

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 21407679-
Date Acquired : 17/09/2020 18:33:39 PM
Units : ppb
Dilution : R72101 [0.25] CEN 2 1 ->
CF : 1
Multiplier : 0.025





CERTIFICATE OF ANALYSIS

Validated

SDG: 200908-75
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

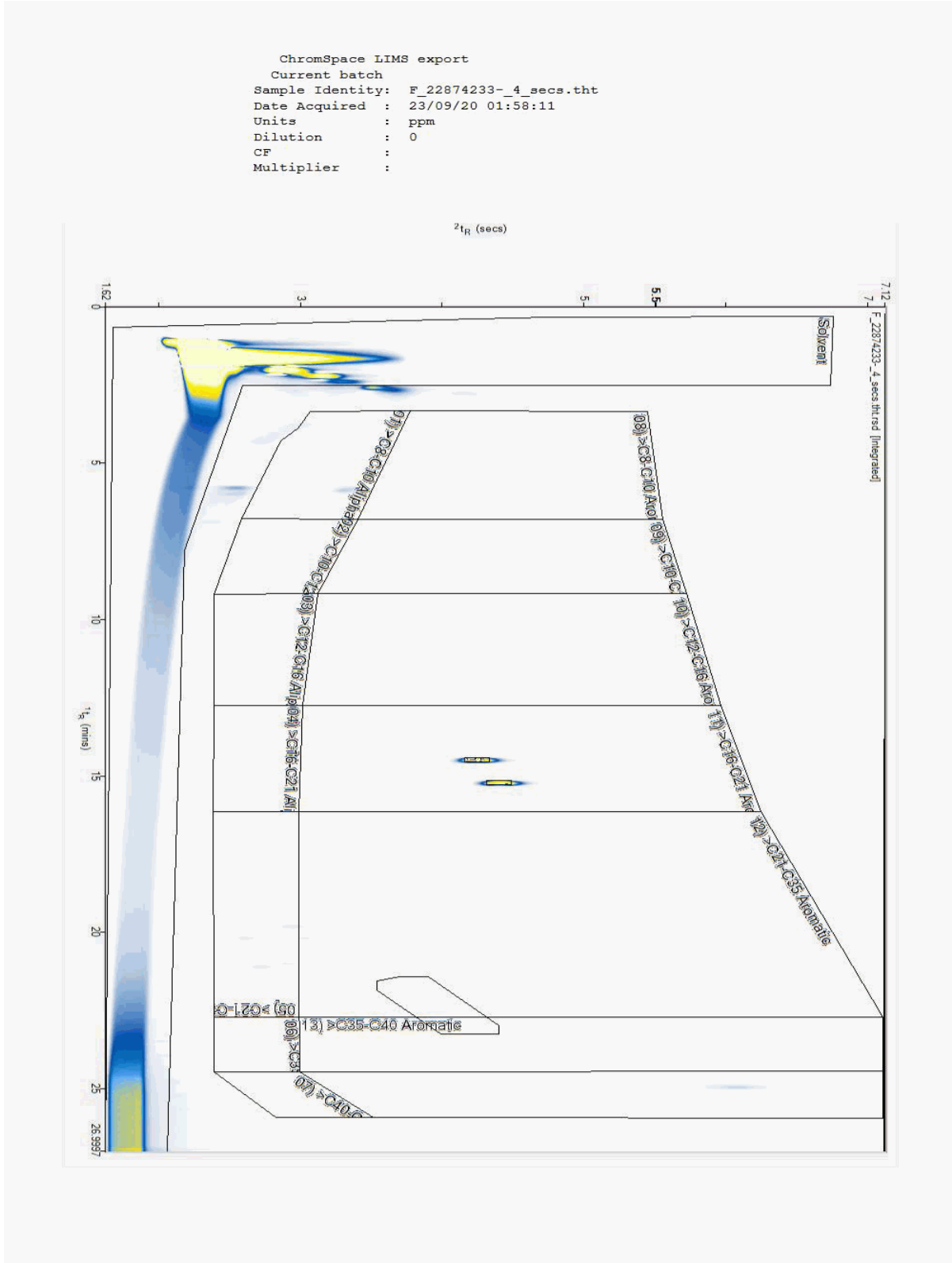
Report Number: 568519
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 22874233
Sample ID : R72101

Depth : 0.25





CERTIFICATE OF ANALYSIS

Validated

SDG: 200908-75
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

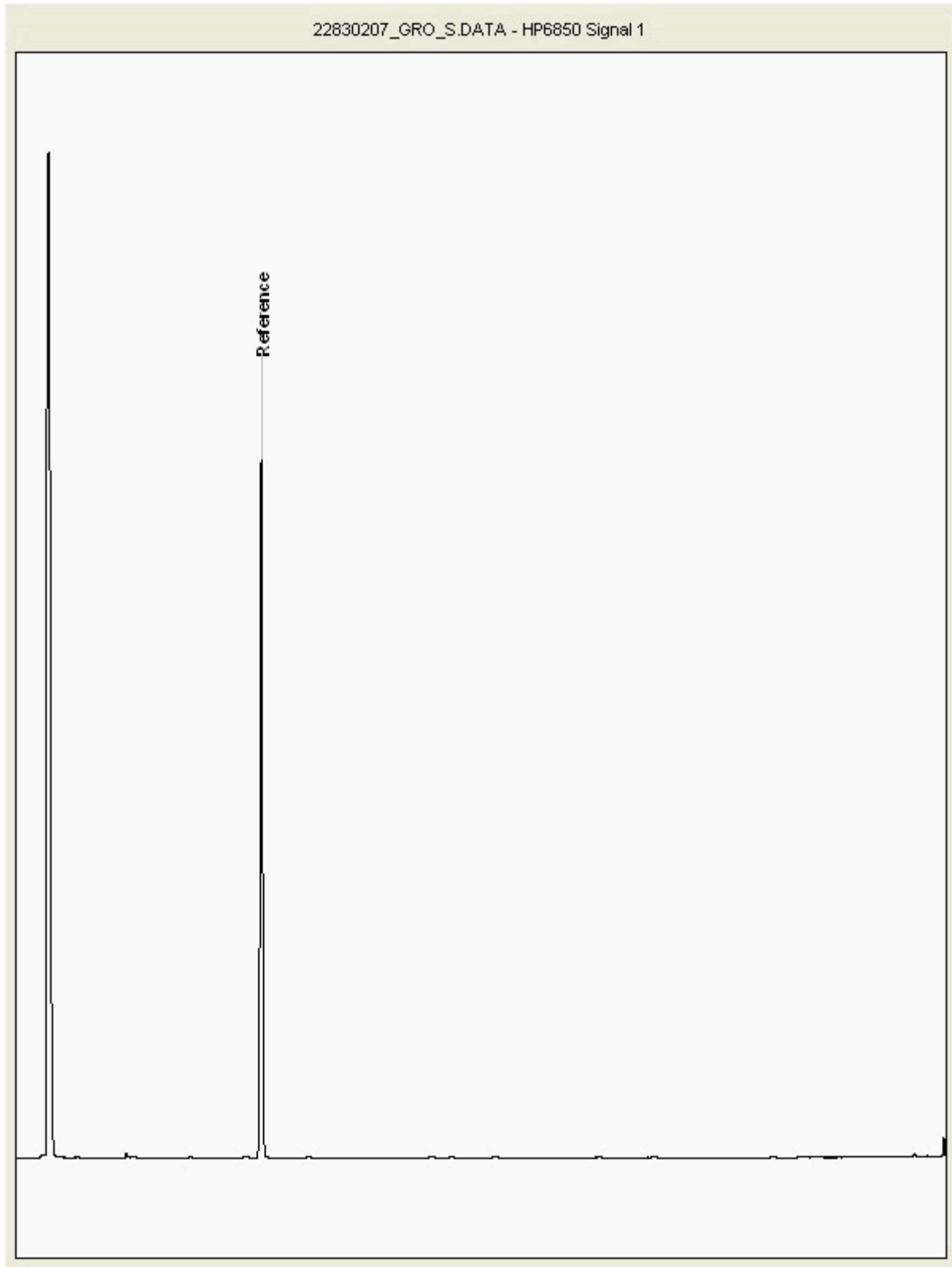
Report Number: 568519
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 22830207
Sample ID : R72101

Depth : 0.25





CERTIFICATE OF ANALYSIS

SDG: 200908-75 Client Reference: JFR1451 Report Number: 568519
 Location: A303 Stonehenge Order Number: Superseded Report:

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH₄ by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
§	Sampled on date not provided
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples

19. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung. Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017)*.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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RPS Consultants Ltd
260 Park Avenue
Aztec West
Almondsbury
Bristol
BS32 4SY

Attention: Gary Riches

CERTIFICATE OF ANALYSIS

Date of report Generation: 14 November 2020
Customer: RPS Consultants Ltd
Sample Delivery Group (SDG): 200916-16
Your Reference: JFR1451
Location: A303 Stonehenge
Report No: 575650

This report has been revised and directly supersedes 569011 in its entirety.

We received 16 samples on Tuesday September 15, 2020 and 3 of these samples were scheduled for analysis which was completed on Saturday November 14, 2020. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

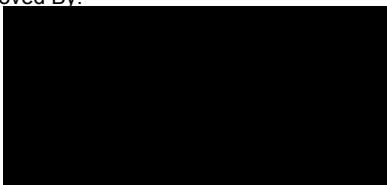
Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:



Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 200916-16
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PQ20-647

Report Number: 575650
Superseded Report: 569011

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
22830949	R70301	ES1	0.00 - 0.10	11/09/2020
22830951	R70301	ES2	0.30	11/09/2020
22830953	R70301	ES3	0.60	11/09/2020
22830955	R70301	ES4	1.00	11/09/2020
22830944	STP70506	ES1	0.00	09/09/2020
22830945	STP70506	ES2	0.30	09/09/2020
22830946	STP70506	ES3	0.50	09/09/2020
22830948	STP70506	ES4	1.00	09/09/2020
22830940	STP70507	ES1	0.00	10/09/2020
22830941	STP70507	ES2	0.30	10/09/2020
22830942	STP70507	ES3	0.50	10/09/2020
22830943	STP70507	ES4	1.00	10/09/2020
22830936	STP70508	ES1	0.00	11/09/2020
22830937	STP70508	ES2	0.30	11/09/2020
22830938	STP70508	ES3	0.50	11/09/2020
22830939	STP70508	ES4	1.00	11/09/2020

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG:	200916-16	Client Reference:	JFR1451	Report Number:	575650
Location:	A303 Stonehenge	Order Number:	PO20-647	Superseded Report:	569011

Results Legend

- X Test
- N No Determination Possible

Sample Types -

- S - Soil/Solid
- UNS - Unspecified Solid
- GW - Ground Water
- SW - Surface Water
- LE - Land Leachate
- PL - Prepared Leachate
- PR - Process Water
- SA - Saline Water
- TE - Trade Effluent
- TS - Treated Sewage
- US - Untreated Sewage
- RE - Recreational Water
- DW - Drinking Water Non-regulatory
- UNL - Unspecified Liquid
- SL - Sludge
- G - Gas
- OTH - Other

	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type
					60g VOC (ALE215) 250g Amber Jar (ALE210) 1kg TUB with Handle (ALE260) 60g VOC (ALE215) 250g Amber Jar (ALE210)	
	22830953	R70301	ES3	0.60	250g Amber Jar (ALE210)	S
	22830946	STP70506	ES3	0.50	60g VOC (ALE215)	S
	22830938	STP70508	ES3	0.50	60g VOC (ALE215)	S
Ammoniacal Nitrogen	All				NDPs: 0 Tests: 2	
						X
						X
Ammonium Soil by Titration	All				NDPs: 0 Tests: 3	
						X
						X
						X
Anions by Kone (soil)	All				NDPs: 0 Tests: 3	
						X
						X
Anions by Kone (w)	All				NDPs: 0 Tests: 2	
						X
						X
CEN Readings	All				NDPs: 0 Tests: 2	
						X
						X
Chromium III	All				NDPs: 0 Tests: 5	
						X
						X
						X
						X
						X
Coronene	All				NDPs: 0 Tests: 1	
						X
Cyanide Comp/Free/Total/Thiocyanate	All				NDPs: 0 Tests: 5	
						X
						X
						X
						X
Dissolved Metals by ICP-MS	All				NDPs: 0 Tests: 2	
						X
						X
Dissolved Organic/Inorganic Carbon	All				NDPs: 0 Tests: 2	
						X
						X
EPH by GCxGC-FID	All				NDPs: 0 Tests: 1	
						X
EPH CWG GC (S)	All				NDPs: 0 Tests: 3	
						X
						X
						X
Fluoride	All				NDPs: 0 Tests: 1	
						X
GRO by GC-FID (S)	All				NDPs: 0 Tests: 3	
						X
						X
						X
Hexavalent Chromium (s)	All				NDPs: 0 Tests: 3	
						X
						X
						X



CERTIFICATE OF ANALYSIS

Validated

SDG:	200916-16	Client Reference:	JFR1451	Report Number:	575650
Location:	A303 Stonehenge	Order Number:	PO20-647	Superseded Report:	569011

Results Legend <div style="display: flex; flex-direction: column; gap: 5px;"> <div style="display: flex; align-items: center;">X Test</div> <div style="display: flex; align-items: center;">N No Determination Possible</div> </div> Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type	
		22830953	R70301	ES3	0.60	1kg TUB	S
		22830946	STP70506	ES3	0.50	250g Amber Jar (ALE219)	S
		22830938	STP70508	ES3	0.50	60g VOC (ALE215)	S
						250g Amber Jar (ALE210)	S
						60g VOC (ALE215)	S
						1kg TUB with Handle (ALE280)	S
Hexavalent Chromium (w)	All		NDPs: 0 Tests: 2				
						X	
						X	
Mercury Dissolved	All		NDPs: 0 Tests: 2				
						X	
						X	
Metals in solid samples by OES	All		NDPs: 0 Tests: 3				
						X	
						X	
OC OP Pesticides and Triazine Herb	All		NDPs: 0 Tests: 2				
						X	
						X	
PAH 16 & 17 Calc	All		NDPs: 0 Tests: 1				
						X	
PAH by GCMS	All		NDPs: 0 Tests: 3				
						X	
						X	
PAH in waters by GC-MS (diss.filt)	All		NDPs: 0 Tests: 2				
						X	
						X	
PCBs by GCMS	All		NDPs: 0 Tests: 1				
						X	
pH	All		NDPs: 0 Tests: 3				
						X	
						X	
pH Value of Filtered Water	All		NDPs: 0 Tests: 2				
						X	
						X	
Phenols by HPLC (S)	All		NDPs: 0 Tests: 3				
						X	
						X	
Phenols by HPLC (W)	All		NDPs: 0 Tests: 1				
						X	
Sample description	All		NDPs: 0 Tests: 2				
						X	
						X	
Semi Volatile Organic Compounds	All		NDPs: 0 Tests: 1				
						X	
Total Dissolved Solids	All		NDPs: 0 Tests: 1				
						X	



CERTIFICATE OF ANALYSIS

Validated

SDG:	200916-16	Client Reference:	JFR1451	Report Number:	575650
Location:	A303 Stonehenge	Order Number:	PO20-647	Superseded Report:	569011

Results Legend

- X Test
- N No Determination Possible

Sample Types -

- S - Soil/Solid
- UNS - Unspecified Solid
- GW - Ground Water
- SW - Surface Water
- LE - Land Leachate
- PL - Prepared Leachate
- PR - Process Water
- SA - Saline Water
- TE - Trade Effluent
- TS - Treated Sewage
- US - Untreated Sewage
- RE - Recreational Water
- DW - Drinking Water Non-regulatory
- UNL - Unspecified Liquid
- SL - Sludge
- G - Gas
- OTH - Other

	Lab Sample No(s)							
		22830953	22830946		22830938			
	Customer Sample Reference	R70301	STP70506		STP70508			
	AGS Reference	ES3	ES3		ES3			
	Depth (m)	0.60	0.50		0.50			
	Container	1kg TUB	250g Amber Jar (ALEZ10)	60g VOC (ALEZ15)	250g Amber Jar (ALEZ10)	60g VOC (ALEZ15)	1kg TUB with Handle (ALEZ80)	250g Amber Jar (ALEZ10)
	Sample Type	S	S	S	S	S	S	S
Total Organic Carbon	All	NDPs: 0 Tests: 3						
			X	X		X		
TPH CWG GC (S)	All	NDPs: 0 Tests: 3						
			X	X		X		
VOC MS (S)	All	NDPs: 0 Tests: 3						
				X	X			X



CERTIFICATE OF ANALYSIS

Validated

SDG: 200916-16
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PQ20-647

Report Number: 575650
Superseded Report: 569011

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm
------------------	----------	-------------	-----------------	---------------	-------------	---------------	------------	--------------------	-------

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
22830953	R70301	0.60	Beige	Sandy Clay Loam	Vegetation	None
22830946	STP70506	0.50	Beige	Loamy Sand	Stones	None
22830938	STP70508	0.50	Light Brown	Loamy Sand	Stones	N/A

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.



CERTIFICATE OF ANALYSIS

Validated

SDG:	200916-16	Client Reference:	JFR1451	Report Number:	575650
Location:	A303 Stonehenge	Order Number:	PO20-647	Superseded Report:	569011

Results Legend		Customer Sample Ref.	R70301	STP70506	STP70508			
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.60	0.50	0.50			
M	mCERTS accredited.		Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
aq	Aqueous / settled sample.		11/09/2020	09/09/2020	11/09/2020			
diss.fit	Dissolved / filtered sample.							
tot.unfit	Total / unfiltered sample.							
*	Subcontracted - refer to subcontractor report for accreditation status.		15/09/2020	15/09/2020	15/09/2020			
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		200916-16	200916-16	200916-16			
(F)	Trigger breach confirmed		22830953	22830946	22830938			
1-4*3@	Sample deviation (see appendix)		ES3	ES3	ES3			
Component	LOD/Units	Method						
Moisture Content Ratio (% of as received sample)	%	PM024	12	17	14			
Exchangeable Ammonia as N	<12 mg/kg	TM024	<12	<12	88.2			
Phenol	<0.01 mg/kg	TM062 (S)	<0.01	<0.01	<0.01			
Organic Carbon, Total	<0.2 %	TM132	0.387	0.608	0.414			
pH	1 pH Units	TM133	8.67	8.35	8.62			
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6	<0.6	<0.6			
Cyanide, Total	<1 mg/kg	TM153	<1	<1	<1			
Cyanide, Free	<1 mg/kg	TM153	<1	<1	<1			
PCB congener 28	<3 µg/kg	TM168	<3					
PCB congener 52	<3 µg/kg	TM168	<3					
PCB congener 101	<3 µg/kg	TM168	<3					
PCB congener 118	<3 µg/kg	TM168	<3					
PCB congener 138	<3 µg/kg	TM168	<3					
PCB congener 153	<3 µg/kg	TM168	<3					
PCB congener 180	<3 µg/kg	TM168	<3					
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21					
Chromium, Trivalent	<0.9 mg/kg	TM181	5.43	3.93	4.69			
Antimony	<0.6 mg/kg	TM181	<0.6	<0.6	<0.6			
Arsenic	<0.6 mg/kg	TM181	2.11	1.45	1.55			
Beryllium	<0.01 mg/kg	TM181	0.171	0.149	0.178			
Boron	<0.7 mg/kg	TM181	3.92	4.03	3.48			
Cadmium	<0.02 mg/kg	TM181	0.127	0.199	0.209			
Chromium	<0.9 mg/kg	TM181	5.43	3.93	4.69			
Copper	<1.4 mg/kg	TM181	3.15	2.32	2.18			
Iron	<1000 mg/kg	TM181	5290	2960	3580			
Lead	<0.7 mg/kg	TM181	1.44	1.1	<0.7			
Manganese	<0.13 mg/kg	TM181	324	319	347			
Mercury	<0.14 mg/kg	TM181	<0.14	<0.14	<0.14			
Molybdenum	<0.1 mg/kg	TM181	<0.1	<0.1	<0.1			
Nickel	<0.2 mg/kg	TM181	5.93	3.5	4.33			
Phosphorus	<1 mg/kg	TM181	659	768	752			
Selenium	<1 mg/kg	TM181	<1	<1	<1			



CERTIFICATE OF ANALYSIS

Validated

SDG:	200916-16	Client Reference:	JFR1451	Report Number:	575650
Location:	A303 Stonehenge	Order Number:	PO20-647	Superseded Report:	569011

OC OP Pesticides and Triazine Herb

#	Customer Sample Ref.	R70301	STP70506		
Results Legend # ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.fit Dissolved / filtered sample. tot.unfit Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4*\$@ Sample deviation (see appendix)	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.60 Soil/Solid (S) 11/09/2020 . 15/09/2020 200916-16 22830953 ES3	0.50 Soil/Solid (S) 09/09/2020 . 15/09/2020 200916-16 22830946 ES3		
Component	LOD/Units	Method			
Dichlorvos	<50 µg/kg	TM073	<50	<50	
Mevinphos	<50 µg/kg	TM073	<50	<50	
Phorate	<50 µg/kg	TM073	<50	<50	
alpha-Hexachlorocyclohexane (HCH)	<50 µg/kg	TM073	<50	<50	
Diazinon	<50 µg/kg	TM073	<50	<50	
gamma-Hexachlorocyclohexane (HCH / Lindane)	<50 µg/kg	TM073	<50	<50	
Atrazine	<50 µg/kg	TM073	<50	<50	
Simazine	<50 µg/kg	TM073	<50	<50	
Disulfoton	<50 µg/kg	TM073	<50	<50	
Heptachlor	<50 µg/kg	TM073	<50	<50	
Aldrin	<50 µg/kg	TM073	<50	<50	
beta-Hexachlorocyclohexane (HCH)	<50 µg/kg	TM073	<50	<50	
Methyl parathion	<50 µg/kg	TM073	<50	<50	
Malathion	<50 µg/kg	TM073	<50	<50	
Fenitrothion	<50 µg/kg	TM073	<50	<50	
Heptachlor epoxide	<50 µg/kg	TM073	<50	<50	
Parathion	<50 µg/kg	TM073	<50	<50	
Endosulphan I	<50 µg/kg	TM073	<50	<50	
p,p-DDE	<50 µg/kg	TM073	<50	<50	
Dieldrin	<50 µg/kg	TM073	<50	<50	
o,p'-DDD (TDE)	<50 µg/kg	TM073	<50	<50	
Endrin	<50 µg/kg	TM073	<50	<50	
p,p-TDE (DDD)	<50 µg/kg	TM073	<50	<50	
Ethion	<50 µg/kg	TM073	<50	<50	
Endosulphan II	<50 µg/kg	TM073	<50	<50	
p,p-DDT	<50 µg/kg	TM073	<50	<50	
p,p-Methoxychlor	<50 µg/kg	TM073	<50	<50	
Endosulphan sulphate	<50 µg/kg	TM073	<50	<50	
Azinphos-methyl	<50 µg/kg	TM073	<50	<50	



CERTIFICATE OF ANALYSIS

Validated

SDG: 200916-16	Client Reference: JFR1451	Report Number: 575650	575650
Location: A303 Stonehenge	Order Number: PO20-647	Superseded Report:	569011

PAH by GCMS

Results Legend		Customer Sample Ref.	R70301	STP70506	STP70508			
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.60	0.50	0.50			
M	mCERTS accredited.		Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
aq	Aqueous / settled sample.		11/09/2020	09/09/2020	11/09/2020			
diss.filt	Dissolved / filtered sample.		15/09/2020	15/09/2020	15/09/2020			
tot.unfilt	Total / unfiltered sample.		200916-16	200916-16	200916-16			
*	Subcontracted - refer to subcontractor report for accreditation status.		22830953	22830946	22830938			
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		ES3	ES3	ES3			
(F)	Trigger breach confirmed							
1-4*\$@	Sample deviation (see appendix)							
Component	LOD/Units		Method					
Naphthalene-d8 % recovery**	%	TM218	91.7	87.8	88.6			
Acenaphthene-d10 % recovery**	%	TM218	87.2	88.1	85.1			
Phenanthrene-d10 % recovery**	%	TM218	86.5	85.6	83.9			
Chrysene-d12 % recovery**	%	TM218	81.9	89.2	74.9			
Perylene-d12 % recovery**	%	TM218	81.4	85.8	72.2			
Naphthalene	<9 µg/kg	TM218	<9 M	<9 M	<9 M			
Acenaphthylene	<12 µg/kg	TM218	<12 M	<12 M	<12 M			
Acenaphthene	<8 µg/kg	TM218	<8 M	<8 M	<8 M			
Fluorene	<10 µg/kg	TM218	<10 M	<10 M	<10 M			
Phenanthrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M			
Anthracene	<16 µg/kg	TM218	<16 M	<16 M	<16 M			
Fluoranthene	<17 µg/kg	TM218	<17 M	<17 M	<17 M			
Pyrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M			
Benz(a)anthracene	<14 µg/kg	TM218	<14 M	<14 M	<14 M			
Chrysene	<10 µg/kg	TM218	<10 M	<10 M	<10 M			
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 M	<15 M	<15 M			
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 M	<14 M	<14 M			
Benzo(a)pyrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M			
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 M	<18 M	<18 M			
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 M	<23 M	<23 M			
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 M	<24 M	<24 M			
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118	<118			



CERTIFICATE OF ANALYSIS

Validated

SDG:	200916-16	Client Reference:	JFR1451	Report Number:	575650
Location:	A303 Stonehenge	Order Number:	PO20-647	Superseded Report:	569011

Semi Volatile Organic Compounds

#	M	aq	diss.fit	tot.unfit	*	**	(F)	1-4*3@	Customer Sample Ref.	STP70508	Depth (m)	Sample Type	Date Sampled	Sampled Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
Results Legend																		
ISO17025 accredited. mCERTS accredited. Aqueous / settled sample. Dissolved / filtered sample. Total / unfiltered sample. Subcontracted - refer to subcontractor report for accreditation status. % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery Trigger breach confirmed Sample deviation (see appendix)																		
Component	LOD/Units	Method																
Phenol	<100 µg/kg	TM157	<100															
Pentachlorophenol	<100 µg/kg	TM157	<100															
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100															
Nitrobenzene	<100 µg/kg	TM157	<100															
Isophorone	<100 µg/kg	TM157	<100															
Hexachloroethane	<100 µg/kg	TM157	<100															
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100															
Hexachlorobutadiene	<100 µg/kg	TM157	<100															
Hexachlorobenzene	<100 µg/kg	TM157	<100															
n-Dioctyl phthalate	<100 µg/kg	TM157	<100															
Dimethyl phthalate	<100 µg/kg	TM157	<100															
Diethyl phthalate	<100 µg/kg	TM157	<100															
n-Dibutyl phthalate	<100 µg/kg	TM157	<100															
Dibenzofuran	<100 µg/kg	TM157	<100															
Carbazole	<100 µg/kg	TM157	<100															
Butylbenzyl phthalate	<100 µg/kg	TM157	<100															
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100															
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100															
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100															
Azobenzene	<100 µg/kg	TM157	<100															
4-Nitrophenol	<100 µg/kg	TM157	<100															
4-Nitroaniline	<100 µg/kg	TM157	<100															
4-Methylphenol	<100 µg/kg	TM157	<100															
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100															
4-Chloroaniline	<100 µg/kg	TM157	<100															
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100															
4-Bromophenylphenylether	<100 µg/kg	TM157	<100															
3-Nitroaniline	<100 µg/kg	TM157	<100															
2-Nitrophenol	<100 µg/kg	TM157	<100															
2-Nitroaniline	<100 µg/kg	TM157	<100															
2-Methylphenol	<100 µg/kg	TM157	<100															
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100															



CERTIFICATE OF ANALYSIS

Validated

SDG:	200916-16	Client Reference:	JFR1451	Report Number:	575650
Location:	A303 Stonehenge	Order Number:	PO20-647	Superseded Report:	569011

Semi Volatile Organic Compounds

Results Legend		Customer Sample Ref.	STP70508				
#	ISO17025 accredited.	Depth (m)	0.50				
M	mCERTS accredited.	Sample Type	Soil/Solid (S)				
aq	Aqueous / settled sample.	Date Sampled	11/09/2020				
dis.filt	Dissolved / filtered sample.	Sampled Time	.				
tot.unfilt	Total / unfiltered sample.	Date Received	15/09/2020				
*	Subcontracted - refer to subcontractor report for accreditation status.	SDG Ref	200916-16				
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery	Lab Sample No.(s)	22830938				
(F)	Trigger breach confirmed	AGS Reference	ES3				
1-4*5@	Sample deviation (see appendix)						
Component	LOD/Units	Method					
2-Chlorophenol	<100 µg/kg	TM157	<100				
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100				
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100				
2,4-Dimethylphenol	<100 µg/kg	TM157	<100				
2,4-Dichlorophenol	<100 µg/kg	TM157	<100				
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100				
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100				
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100				
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100				
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100				
2-Chloronaphthalene	<100 µg/kg	TM157	<100				
2-Methylnaphthalene	<100 µg/kg	TM157	<100				
Acenaphthylene	<100 µg/kg	TM157	<100				
Acenaphthene	<100 µg/kg	TM157	<100				
Anthracene	<100 µg/kg	TM157	<100				
Benzo(a)anthracene	<100 µg/kg	TM157	<100				
Benzo(b)fluoranthene	<100 µg/kg	TM157	<100				
Benzo(k)fluoranthene	<100 µg/kg	TM157	<100				
Benzo(a)pyrene	<100 µg/kg	TM157	<100				
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<100				
Chrysene	<100 µg/kg	TM157	<100				
Fluoranthene	<100 µg/kg	TM157	<100				
Fluorene	<100 µg/kg	TM157	<100				
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<100				
Phenanthrene	<100 µg/kg	TM157	<100				
Pyrene	<100 µg/kg	TM157	<100				
Naphthalene	<100 µg/kg	TM157	<100				
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100				
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100				
TIC report		TM157	Not Detected				
Total SVOC TIC	<100 µg/kg	TM157	<1000				



CERTIFICATE OF ANALYSIS

Validated

SDG: 200916-16
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PO20-647

Report Number: 575650
Superseded Report: 569011

TPH CWG (S)

Results Legend		Customer Sample Ref.	R70301	STP70506	STP70508			
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.60	0.50	0.50			
M	mCERTS accredited.		Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
aq	Aqueous / settled sample.		11/09/2020	09/09/2020	11/09/2020			
diss.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
*	Subcontracted - refer to subcontractor report for accreditation status.		15/09/2020	15/09/2020	15/09/2020			
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		200916-16	200916-16	200916-16			
(F)	Trigger breach confirmed		22830953	22830946	22830938			
1-4*\$@	Sample deviation (see appendix)		ES3	ES3	ES3			
Component	LOD/Units		Method					
GRO Surrogate % recovery**	%	TM089	111	98.1	104			
Aliphatics >C5-C6	<10 µg/kg	TM089	<10	<10	<10			
Aliphatics >C6-C8	<10 µg/kg	TM089	<10	<10	<10			
Aliphatics >C8-C10	<10 µg/kg	TM089	<10	<10	<10			
Aliphatics >C10-C12	<1000 µg/kg	TM414	<1000	<1000	<1000			
Aliphatics >C12-C16	<1000 µg/kg	TM414	<1000	<1000	<1000			
Aliphatics >C16-C21	<1000 µg/kg	TM414	<1000	<1000	<1000			
Aliphatics >C21-C35	<1000 µg/kg	TM414	2020	4240	1310			
Aliphatics >C35-C44	<1000 µg/kg	TM414	<1000	<1000	<1000			
Total Aliphatics >C10-C44	<5000 µg/kg	TM414	<5000	<5000	<5000			
Total Aliphatics & Aromatics >C10-C44	<10000 µg/kg	TM414	<10000	<10000	<10000			
Aromatics >EC5-EC7	<10 µg/kg	TM089	<10	<10	<10			
Aromatics >EC7-EC8	<10 µg/kg	TM089	<10	<10	<10			
Aromatics >EC8-EC10	<10 µg/kg	TM089	<10	<10	<10			
Aromatics > EC10-EC12	<1000 µg/kg	TM414	<1000	<1000	<1000			
Aromatics > EC12-EC16	<1000 µg/kg	TM414	<1000	<1000	<1000			
Aromatics > EC16-EC21	<1000 µg/kg	TM414	<1000	<1000	<1000			
Aromatics > EC21-EC35	<1000 µg/kg	TM414	<1000	1180	<1000			
Aromatics >EC35-EC44	<1000 µg/kg	TM414	<1000	<1000	<1000			
Aromatics > EC40-EC44	<1000 µg/kg	TM414	<1000	<1000	<1000			
Total Aromatics > EC10-EC44	<5000 µg/kg	TM414	<5000	<5000	<5000			
Total Aliphatics & Aromatics >C5-C44	<10000 µg/kg	TM414	<10000	<10000	<10000			
Total Aliphatics >C5-C10	<50 µg/kg	TM089	<50	<50	<50			
Total Aromatics >EC5-EC10	<50 µg/kg	TM089	<50	<50	<50			
GRO >C5-C10	<20 µg/kg	TM089	<20	<20	<20			



CERTIFICATE OF ANALYSIS

Validated

SDG:	200916-16	Client Reference:	JFR1451	Report Number:	575650
Location:	A303 Stonehenge	Order Number:	PO20-647	Superseded Report:	569011

VOC MS (S)

Results Legend		Customer Sample Ref.	R70301	STP70506	STP70508			
# ISO17025 accredited.								
M mCERTS accredited.								
aq Aqueous / settled sample.								
diss.fit Dissolved / filtered sample.								
tot.unfit Total / unfiltered sample.								
* Subcontracted - refer to subcontractor report for accreditation status.								
** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery								
(F) Trigger breach confirmed								
1-4*§@ Sample deviation (see appendix)								
		Depth (m)	0.60	0.50	0.50			
		Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
		Date Sampled	11/09/2020	09/09/2020	11/09/2020			
		Sampled Time						
		Date Received	15/09/2020	15/09/2020	15/09/2020			
		SDG Ref	200916-16	200916-16	200916-16			
		Lab Sample No.(s)	22830953	22830946	22830938			
		AGS Reference	ES3	ES3	ES3			
Component	LOD/Units	Method						
Dibromofluoromethane**	%	TM116	103	108	105			
				@				
Toluene-d8**	%	TM116	108	102	104			
				@				
4-Bromofluorobenzene**	%	TM116	88.1	79.4	79.4			
				@				
Dichlorodifluoromethane	<6 µg/kg	TM116			<6			M
Chloromethane	<7 µg/kg	TM116			<7			#
Vinyl Chloride	<6 µg/kg	TM116			<6			M
Bromomethane	<10 µg/kg	TM116			<10			M
Chloroethane	<10 µg/kg	TM116			<10			M
Trichlorofluoromethane	<6 µg/kg	TM116			<6			M
1,1-Dichloroethene	<10 µg/kg	TM116			<10			#
Carbon Disulphide	<7 µg/kg	TM116			<7			M
Dichloromethane	<10 µg/kg	TM116			<10			#
Methyl Tertiary Butyl Ether	<10 µg/kg	TM116	<10	<10	<10			M
			M	@ M				
trans-1,2-Dichloroethene	<10 µg/kg	TM116			<10			M
1,1-Dichloroethane	<8 µg/kg	TM116			<8			M
cis-1,2-Dichloroethene	<6 µg/kg	TM116			<6			M
2,2-Dichloropropane	<10 µg/kg	TM116			<10			
Bromochloromethane	<10 µg/kg	TM116			<10			M
Chloroform	<8 µg/kg	TM116			<8			M
1,1,1-Trichloroethane	<7 µg/kg	TM116			<7			M
1,1-Dichloropropene	<10 µg/kg	TM116			<10			M
Carbontetrachloride	<10 µg/kg	TM116			<10			M
1,2-Dichloroethane	<5 µg/kg	TM116			<5			M
Benzene	<9 µg/kg	TM116	<9	<9	<9			M
			M	@ M				
Trichloroethene	<9 µg/kg	TM116			<9			#
1,2-Dichloropropane	<10 µg/kg	TM116			<10			M
Dibromomethane	<9 µg/kg	TM116			<9			M
Bromodichloromethane	<7 µg/kg	TM116			<7			M
cis-1,3-Dichloropropene	<10 µg/kg	TM116			<10			M
Toluene	<7 µg/kg	TM116	<7	<7	<7			M
			M	@ M				
trans-1,3-Dichloropropene	<10 µg/kg	TM116			<10			
1,1,2-Trichloroethane	<10 µg/kg	TM116			<10			M



CERTIFICATE OF ANALYSIS

Validated

SDG:	200916-16	Client Reference:	JFR1451	Report Number:	575650
Location:	A303 Stonehenge	Order Number:	PO20-647	Superseded Report:	569011

VOC MS (S)

Results Legend		Customer Sample Ref.	R70301	STP70506	STP70508			
# ISO17025 accredited.		Depth (m)	0.60	0.50	0.50			
M mCERTS accredited.		Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
sg Aqueous / filtered sample.		Date Sampled	11/09/2020	09/09/2020	11/09/2020			
dis.fit Dissolved / filtered sample.		Sampled Time	.	.	.			
tot.unfit Total / unfiltered sample.		Date Received	15/09/2020	15/09/2020	15/09/2020			
* Subcontracted - refer to subcontractor report for accreditation status.		SDG Ref	200916-16	200916-16	200916-16			
** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		Lab Sample No.(s)	22830953	22830946	22830938			
(F) Trigger breach confirmed		AGS Reference	ES3	ES3	ES3			
1.4.4.6@ Sample deviation (see appendix)								
Component	LOD/Units	Method						
1,3-Dichloropropane	<7 µg/kg	TM116			<7	M		
Tetrachloroethene	<5 µg/kg	TM116			<5	M		
Dibromochloromethane	<10 µg/kg	TM116			<10	M		
1,2-Dibromoethane	<10 µg/kg	TM116			<10	M		
Chlorobenzene	<5 µg/kg	TM116			<5	M		
1,1,1,2-Tetrachloroethane	<10 µg/kg	TM116			<10	M		
Ethylbenzene	<4 µg/kg	TM116	<4	<4	<4	M @ M		
p/m-Xylene	<10 µg/kg	TM116	<10	<10	<10	# @ #		
o-Xylene	<10 µg/kg	TM116	<10	<10	<10	M @ M		
Styrene	<10 µg/kg	TM116			<10	#		
Bromoform	<10 µg/kg	TM116			<10	M		
Isopropylbenzene	<5 µg/kg	TM116			<5	#		
1,1,2,2-Tetrachloroethane	<10 µg/kg	TM116			<10	#		
1,2,3-Trichloropropane	<16 µg/kg	TM116			<16	M		
Bromobenzene	<10 µg/kg	TM116			<10	M		
Propylbenzene	<10 µg/kg	TM116			<10	M		
2-Chlorotoluene	<9 µg/kg	TM116			<9	M		
1,3,5-Trimethylbenzene	<8 µg/kg	TM116			<8	M		
4-Chlorotoluene	<10 µg/kg	TM116			<10	M		
tert-Butylbenzene	<14 µg/kg	TM116			<14	M		
1,2,4-Trimethylbenzene	<9 µg/kg	TM116			<9	#		
sec-Butylbenzene	<10 µg/kg	TM116			<10			
4-Isopropyltoluene	<10 µg/kg	TM116			<10	M		
1,3-Dichlorobenzene	<8 µg/kg	TM116			<8	M		
1,4-Dichlorobenzene	<5 µg/kg	TM116			<5	M		
n-Butylbenzene	<11 µg/kg	TM116			<11			
1,2-Dichlorobenzene	<10 µg/kg	TM116			<10	M		
1,2-Dibromo-3-chloropropane	<14 µg/kg	TM116			<14	M		
Tert-amyl methyl ether	<10 µg/kg	TM116			<10	#		
1,2,4-Trichlorobenzene	<20 µg/kg	TM116			<20			
Hexachlorobutadiene	<20 µg/kg	TM116			<20			
Naphthalene	<13 µg/kg	TM116			<13	M		



CERTIFICATE OF ANALYSIS

Validated

SDG:	200916-16	Client Reference:	JFR1451	Report Number:	575650
Location:	A303 Stonehenge	Order Number:	PO20-647	Superseded Report:	569011

CEN 2:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/

Client Reference		Site Location	A303 Stonehenge
Mass Sample taken (kg)	0.203	Natural Moisture Content (%)	16.9
Mass of dry sample (kg)	0.175	Dry Matter Content (%)	85.6
Particle Size <4mm	>95%		

Case	
SDG	200916-16
Lab Sample Number(s)	22830938
Sampled Date	11-Sep-2020
Customer Sample Ref.	STP70508 ES3
Depth (m)	0.50

Eluate Analysis	Conc ⁿ in 2:1 eluate (mg/l)		2:1 conc ⁿ leached (mg/kg)	
	Result	Limit of Detection	Result	Limit of Detection
Ammoniacal Nitrogen as N	<0.2	<0.2	<0.4	<0.4
Chromium III	<0.03	<0.03	<0.06	<0.06
Hexavalent Chromium	<0.03	<0.03	<0.06	<0.06
Sulphate (soluble)	<2	<2	<4	<4
Dissolved Organic Carbon	6.39	<3	12.8	<6
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.00002	<0.00002
Antimony	<0.001	<0.001	<0.002	<0.002
Naphthalene (diss.filt)	<0.00001	<0.00001	<0.00002	<0.00002
Total Cyanide (W)	<0.05	<0.05	<0.1	<0.1
Acenaphthene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Arsenic	<0.0005	<0.0005	<0.001	<0.001
Free Cyanide (W)	<0.05	<0.05	<0.1	<0.1
Acenaphthylene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Beryllium	<0.0001	<0.0001	<0.0002	<0.0002
Fluoranthene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Anthracene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Boron	<0.01	<0.01	<0.02	<0.02
Phenanthrene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Cadmium	<0.00008	<0.00008	<0.00016	<0.00016
Fluorene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Chrysene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Pyrene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Benzo(a)anthracene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Chromium	0.00158	<0.001	0.00316	<0.002
Benzo(b)fluoranthene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Benzo(k)fluoranthene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Benzo(a)pyrene (diss.filt)	<0.000002	<0.000002	<0.000004	<0.000004
Copper	0.00315	<0.0003	0.0063	<0.0006
Dibenzo(a,h)anthracene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Lead	<0.0002	<0.0002	<0.0004	<0.0004
Benzo(g,h,i)perylene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Indeno(1,2,3-cd)pyrene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Manganese	<0.003	<0.003	<0.006	<0.006
Molybdenum	<0.003	<0.003	<0.006	<0.006
PAH 16 EPA Total by GCMS (diss.filt)	<0.000082	<0.000082	<0.000164	<0.000164

Leach Test Information

Date Prepared	19-Sep-2020
pH (pH Units)	8.41
Conductivity (µS/cm)	160.00
Temperature (°C)	20.80
Volume Leachant (Litres)	0.321
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
 Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
 Mcerts Certification does not apply to leachates

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14:56:37 14/11/2020



CERTIFICATE OF ANALYSIS

Validated

SDG: 200916-16	Client Reference: JFR1451	Report Number: 575650
Location: A303 Stonehenge	Order Number: PQ20-647	Superseded Report: 569011

CEN 2:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/

Client Reference		Site Location	A303 Stonehenge
Mass Sample taken (kg)	0.203	Natural Moisture Content (%)	16.9
Mass of dry sample (kg)	0.175	Dry Matter Content (%)	85.6
Particle Size <4mm	>95%		

Case

SDG	200916-16
Lab Sample Number(s)	22830938
Sampled Date	11-Sep-2020
Customer Sample Ref.	STP70508 ES3
Depth (m)	0.50

Eluate Analysis	Conc ⁿ in 2:1 eluate (mg/l)		2:1 conc ⁿ leached (mg/kg)	
	Result	Limit of Detection	Result	Limit of Detection
Nickel	0.000686	<0.0004	0.00137	<0.0008
Phosphorus	0.0445	<0.01	0.089	<0.02
Selenium	<0.001	<0.001	<0.002	<0.002
Zinc	<0.001	<0.001	<0.002	<0.002
Calcium (Dis.Filt) mg/l	36.4	<0.2	72.8	<0.4
Iron (Dis.Filt) mg/l	0.516	<0.019	1.03	<0.038

Leach Test Information

Date Prepared	19-Sep-2020
pH (pH Units)	8.41
Conductivity (µS/cm)	160.00
Temperature (°C)	20.80
Volume Leachant (Litres)	0.321
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
 Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
 Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

Validated

SDG: 200916-16	Client Reference: JFR1451	Report Number: 575650
Location: A303 Stonehenge	Order Number: PO20-647	Superseded Report: 569011

CEN 2:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/

Client Reference		Site Location	A303 Stonehenge
Mass Sample taken (kg)	0.103	Natural Moisture Content (%)	15.4
Mass of dry sample (kg)	0.175	Dry Matter Content (%)	86.7
Particle Size <4mm	>95%		

Case	
SDG	200916-16
Lab Sample Number(s)	22830953
Sampled Date	11-Sep-2020
Customer Sample Ref.	R70301 ES3
Depth (m)	0.60

Eluate Analysis	Conc ⁿ in 2:1 eluate (mg/l)		2:1 conc ⁿ leached (mg/kg)	
	Result	Limit of Detection	Result	Limit of Detection
Ammoniacal Nitrogen as N	<0.2	<0.2	<0.4	<0.4
Chromium III	<0.03	<0.03	<0.06	<0.06
Hexavalent Chromium	<0.03	<0.03	<0.06	<0.06
Sulphate (soluble)	3.1	<2	6.2	<4
Dissolved Organic Carbon	4.7	<3	9.4	<6
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.00002	<0.00002
Antimony	<0.001	<0.001	<0.002	<0.002
Naphthalene (diss.filt)	<0.00001	<0.00001	<0.00002	<0.00002
Total Cyanide (W)	<0.05	<0.05	<0.1	<0.1
Acenaphthene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Arsenic	<0.0005	<0.0005	<0.001	<0.001
Free Cyanide (W)	<0.05	<0.05	<0.1	<0.1
Acenaphthylene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Beryllium	<0.0001	<0.0001	<0.0002	<0.0002
Fluoranthene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Anthracene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Boron	<0.01	<0.01	<0.02	<0.02
Phenanthrene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Cadmium	<0.00008	<0.00008	<0.00016	<0.00016
Fluorene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Chrysene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Pyrene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Benzo(a)anthracene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Chromium	<0.001	<0.001	<0.002	<0.002
Benzo(b)fluoranthene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Benzo(k)fluoranthene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Benzo(a)pyrene (diss.filt)	<0.000002	<0.000002	<0.000004	<0.000004
Copper	0.00363	<0.0003	0.00726	<0.0006
Dibenzo(a,h)anthracene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Lead	<0.0002	<0.0002	<0.0004	<0.0004
Benzo(g,h,i)perylene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Indeno(1,2,3-cd)pyrene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Manganese	<0.003	<0.003	<0.006	<0.006
Molybdenum	<0.003	<0.003	<0.006	<0.006
PAH 16 EPA Total by GCMS (diss.filt)	<0.000082	<0.000082	<0.000164	<0.000164

Leach Test Information

Date Prepared	20-Sep-2020
pH (pH Units)	8.36
Conductivity (µS/cm)	189.00
Temperature (°C)	20.60
Volume Leachant (Litres)	0.324
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
 Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
 Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

Validated

SDG:	200916-16	Client Reference:	JFR1451	Report Number:	575650
Location:	A303 Stonehenge	Order Number:	PO20-647	Superseded Report:	569011

CEN 2:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/

Client Reference		Site Location	A303 Stonehenge
Mass Sample taken (kg)	0.103	Natural Moisture Content (%)	15.4
Mass of dry sample (kg)	0.175	Dry Matter Content (%)	86.7
Particle Size <4mm	>95%		

Case

SDG	200916-16
Lab Sample Number(s)	22830953
Sampled Date	11-Sep-2020
Customer Sample Ref.	R70301 ES3
Depth (m)	0.60

Eluate Analysis	Conc ⁿ in 2:1 eluate (mg/l)		2:1 conc ⁿ leached (mg/kg)	
	Result	Limit of Detection	Result	Limit of Detection
Nickel	0.000696	<0.0004	0.00139	<0.0008
Phosphorus	0.018	<0.01	0.036	<0.02
Selenium	<0.001	<0.001	<0.002	<0.002
Zinc	<0.001	<0.001	<0.002	<0.002
Calcium (Dis.Filt) mg/l	41.7	<0.2	83.4	<0.4
Iron (Dis.Filt) mg/l	0.241	<0.019	0.482	<0.038

Leach Test Information

Date Prepared	20-Sep-2020
pH (pH Units)	8.36
Conductivity (µS/cm)	189.00
Temperature (°C)	20.60
Volume Leachant (Litres)	0.324
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
 Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
 Mcerts Certification does not apply to leachates

14/11/2020 14:56:48



CERTIFICATE OF ANALYSIS

Validated

SDG: 200916-16	Client Reference: JFR1451	Report Number: 575650	Superseded Report: 569011
Location: A303 Stonehenge	Order Number: PO20-647		

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference	A303 Stonehenge	Site Location	A303 Stonehenge
Mass Sample taken (kg)	0.103	Natural Moisture Content (%)	15.4
Mass of dry sample (kg)	0.090	Dry Matter Content (%)	86.7
Particle Size <4mm	>95%		

Case	
SDG	200916-16
Lab Sample Number(s)	22830953
Sampled Date	11-Sep-2020
Customer Sample Ref.	R70301 ES3
Depth (m)	0.60

Landfill Waste Acceptance Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	-
6	-	-
1	-	-
500	-	-
100	-	-
-	>6	-
-	-	-
-	-	-

Solid Waste Analysis	Result
Total Organic Carbon (%)	0.387
Loss on Ignition (%)	-
Sum of BTEX (mg/kg)	<0.04
Sum of 7 PCBs (mg/kg)	<0.021
Mineral Oil (mg/kg)	<5
PAH Sum of 17 (mg/kg)	<10
pH (pH Units)	8.67
ANC to pH 6 (mol/kg)	-
ANC to pH 4 (mol/kg)	-

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection	Inert	Stable	Hazardous
Arsenic	<0.0005	<0.0005	<0.005	<0.005	0.5	2	25
Barium	0.00227	<0.0002	0.0227	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00198	<0.0003	0.0198	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.000437	<0.0004	0.00437	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	<0.001	<0.001	<0.01	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	62.2	<5	622	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	3.55	<3	35.5	<30	500	800	1000

Leach Test Information

Date Prepared	10-Nov-2020
pH (pH Units)	8.49
Conductivity (µS/cm)	78.10
Temperature (°C)	21.20
Volume Leachant (Litres)	0.887

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
 Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
 Mcerts Certification does not apply to leachates

14/11/2020 14:56:56



CERTIFICATE OF ANALYSIS

Validated

SDG:	200916-16	Client Reference:	JFR1451	Report Number:	575650
Location:	A303 Stonehenge	Order Number:	PO20-647	Superseded Report:	569011

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM073	MEWAM BOOK 60 1980,95 1985, HMSO / Modified: US EPA Method 8081A & 8141A	Determination of organochlorine and organophosphorous pesticides by GCMS
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM104	Method 4500F, AWWA/APHA, 20th Ed., 1999	Determination of Fluoride using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM123	BS 2690: Part 121:1981	The Determination of Total Dissolved Solids in Water
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM178	Modified: US EPA Method 8100	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS in Waters
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser
TM243		Mixed Anions In Soils By Kone
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC
TM410	Shaker extraction-In house coronene method	Determination of Coronene in soils by GCMS
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).



CERTIFICATE OF ANALYSIS

Validated

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Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PQ20-647

Report Number: 575650
Superseded Report: 569011

Test Completion Dates

Lab Sample No(s) Customer Sample Ref.	22830953	22830946	22830938
	R70301	STP70506	STP70508
AGS Ref. Depth Type	ES3	ES3	ES3
	0.60	0.50	0.50
	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Ammoniacal Nitrogen	23-Sep-2020		23-Sep-2020
Ammonium Soil by Titration	23-Sep-2020	23-Sep-2020	23-Sep-2020
Anions by Kone (soil)	23-Sep-2020	23-Sep-2020	23-Sep-2020
Anions by Kone (w)	12-Nov-2020		24-Sep-2020
CEN 10:1 Leachate (1 Stage)	10-Nov-2020		
CEN 2:1 Leachate (1 Stage)	20-Sep-2020		19-Sep-2020
CEN Readings	12-Nov-2020		22-Sep-2020
Chromium III	24-Sep-2020	24-Sep-2020	24-Sep-2020
Coronene	11-Nov-2020		
Cyanide Comp/Free/Total/Thiocyanate	24-Sep-2020	23-Sep-2020	24-Sep-2020
Dissolved Metals by ICP-MS	14-Nov-2020		24-Sep-2020
Dissolved Organic/Inorganic Carbon	12-Nov-2020		25-Sep-2020
EPH by GCxGC-FID	13-Nov-2020		
EPH CWG GC (S)	24-Sep-2020	24-Sep-2020	24-Sep-2020
Fluoride	12-Nov-2020		
GRO by GC-FID (S)	25-Sep-2020	25-Sep-2020	25-Sep-2020
Hexavalent Chromium (s)	23-Sep-2020	23-Sep-2020	23-Sep-2020
Hexavalent Chromium (w)	23-Sep-2020		23-Sep-2020
Mercury Dissolved	13-Nov-2020		22-Sep-2020
Metals in solid samples by OES	23-Sep-2020	24-Sep-2020	24-Sep-2020
Moisture at 105C	20-Sep-2020		19-Sep-2020
OC OP Pesticides and Triazine Herb	29-Sep-2020	29-Sep-2020	
PAH 16 & 17 Calc	11-Nov-2020		
PAH by GCMS	11-Nov-2020	23-Sep-2020	23-Sep-2020
PAH in waters by GC-MS (diss.filt)	28-Sep-2020		28-Sep-2020
PCBs by GCMS	12-Nov-2020		
pH	22-Sep-2020	22-Sep-2020	23-Sep-2020
pH Value of Filtered Water	23-Sep-2020		23-Sep-2020
Phenols by HPLC (S)	23-Sep-2020	23-Sep-2020	23-Sep-2020
Phenols by HPLC (W)	13-Nov-2020		
Sample description	21-Sep-2020	18-Sep-2020	21-Sep-2020
Semi Volatile Organic Compounds			24-Sep-2020
Total Dissolved Solids	11-Nov-2020		
Total Organic Carbon	24-Sep-2020	24-Sep-2020	23-Sep-2020
TPH CWG GC (S)	25-Sep-2020	25-Sep-2020	25-Sep-2020
VOC MS (S)	24-Sep-2020	24-Sep-2020	24-Sep-2020



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ASSOCIATED AQC DATA

Ammoniacal Nitrogen

Component	Method Code	QC 2245
Ammoniacal Nitrogen as N	TM099	98.8 93.14 : 108.60

Ammonium Soil by Titration

Component	Method Code	QC 2274
Exchangeable Ammonium as NH4	TM024	87.06 76.20 : 110.13

Anions by Kone (soil)

Component	Method Code	QC 2264
Chloride (soluble)	TM243	165.8 91.77 : 114.35
Water Soluble Sulphate as SO4 2:1 Extract	TM243	186.45 70.00 : 130.00

Anions by Kone (w)

Component	Method Code	QC 2214	QC 2359
Chloride	TM184		105.0 94.04 : 108.61
Sulphate (soluble)	TM184	102.0 90.53 : 113.03	102.0 91.99 : 109.30
TON as NO3	TM184	108.0 94.00 : 111.10	

Coronene

Component	Method Code	QC 2398
Coronene RAW	TM410	115.5 79.43 : 137.78

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2243	QC 2274	QC 2276
Free Cyanide	TM153	92.97 78.61 : 114.43	95.05 78.61 : 114.43	
Free Cyanide (W)	TM227			106.0 90.50 : 114.50
Thiocyanate	TM153	99.36 90.48 : 109.52	103.21 90.48 : 109.52	



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Cyanide Comp/Free/Total/Thiocyanate

		QC 2243	QC 2274	QC 2276
Thiocyanate (W)	TM227			104.25 90.50 : 113.00
Total Cyanide	TM153	102.1 76.80 : 112.96	98.6 76.80 : 112.96	
Total Cyanide (W)	TM227			105.0 91.75 : 112.75

Dissolved Metals by ICP-MS

Component	Method Code	QC 2267	QC 2376
Aluminium	TM152	104.33 94.21 : 111.52	105.67 94.21 : 111.52
Antimony	TM152	102.83 88.37 : 130.57	104.5 88.37 : 130.57
Arsenic	TM152	104.83 92.62 : 113.52	103.5 92.62 : 113.52
Barium	TM152	108.67 88.62 : 113.14	97.17 88.62 : 113.14
Beryllium	TM152	95.0 89.98 : 116.88	111.33 87.08 : 111.38
Bismuth	TM152	103.67 92.62 : 115.02	104.33 92.62 : 115.02
Boron	TM152	101.67 86.31 : 120.88	106.0 86.31 : 120.88
Cadmium	TM152	103.83 93.85 : 111.65	107.0 93.85 : 111.65
Calcium	TM152	106.67 89.20 : 126.91	101.33 89.20 : 126.91
Chromium	TM152	105.67 92.22 : 109.85	101.83 92.22 : 109.85
Cobalt	TM152	104.33 85.01 : 114.87	99.67 85.01 : 114.87
Copper	TM152	108.0 89.87 : 119.73	104.0 89.87 : 119.73
Iron	TM152	106.67 93.02 : 113.86	101.33 93.02 : 113.86
Lead	TM152	108.5 91.11 : 116.98	102.67 91.11 : 116.98
Lithium	TM152	100.67 91.30 : 123.00	109.67 91.30 : 123.00
Magnesium	TM152	101.33 89.60 : 116.61	108.0 89.60 : 116.61
Manganese	TM152	106.33 93.97 : 112.46	99.67 93.97 : 112.46
Molybdenum	TM152	104.0 89.07 : 110.96	100.17 89.07 : 110.96
Nickel	TM152	105.83 93.70 : 112.15	99.67 93.70 : 112.15
Phosphorus	TM152	104.5 89.24 : 114.18	103.83 89.24 : 114.18
Potassium	TM152	106.67 93.20 : 115.55	102.67 93.20 : 115.55
Selenium	TM152	102.17 91.69 : 117.12	103.67 91.69 : 117.12



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Dissolved Metals by ICP-MS

		QC 2267	QC 2376
Silver	TM152	107.67 90.93 : 121.73	98.33 90.93 : 121.73
Sodium	TM152	104.0 92.42 : 113.24	106.67 92.42 : 113.24
Strontium	TM152	109.0 92.14 : 116.24	100.33 92.14 : 116.24
Tellurium	TM152	102.33 89.88 : 111.78	92.17 89.88 : 111.78
Thallium	TM152	100.17 82.43 : 113.83	89.67 82.43 : 113.83
Tin	TM152	105.5 94.62 : 107.79	99.33 94.62 : 107.79
Titanium	TM152	101.83 90.29 : 115.23	98.33 90.29 : 115.23
Tungsten	TM152	105.5 77.61 : 132.31	99.0 77.61 : 132.31
Uranium	TM152	102.67 86.97 : 115.76	99.17 86.97 : 115.76
Vanadium	TM152	105.0 89.61 : 115.48	105.0 89.61 : 115.48
Zinc	TM152	105.67 87.51 : 116.26	109.67 87.51 : 116.26

Dissolved Organic/Inorganic Carbon

Component	Method Code	QC 2202	QC 2241	QC 2380
Dissolved Inorganic Carbon	TM090	99.33 91.27 : 109.87	98.5 91.27 : 109.87	104.0 93.58 : 112.28
Dissolved Organic Carbon	TM090	99.0 96.58 : 107.98	98.83 96.58 : 107.98	101.0 96.28 : 110.58

Fluoride

Component	Method Code	QC 2340
Fluoride	TM104	103.33 95.51 : 107.24

GRO by GC-FID (S)

Component	Method Code	QC 2290
QC	TM089	104.11 70.34 : 111.95

Hexavalent Chromium (s)



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Hexavalent Chromium (s)

Component	Method Code	QC 2214	QC 2205
Hexavalent Chromium	TM151	102.0 95.60 : 107.60	98.0 95.60 : 107.60

Hexavalent Chromium (w)

Component	Method Code	QC 2217
Hexavalent Chromium	TM241	100.8 94.17 : 106.17

Mercury Dissolved

Component	Method Code	QC 2323
Mercury Dissolved (CVAf)	TM183	97.4 69.30 : 128.70

Metals in solid samples by OES

Component	Method Code	QC 2229	QC 2298	QC 2260
Aluminium	TM181	91.15 77.46 : 123.98	104.42 77.46 : 123.98	96.46 77.46 : 123.98
Antimony	TM181	92.68 87.04 : 111.16	100.0 87.04 : 111.16	100.81 87.04 : 111.16
Arsenic	TM181	100.87 87.34 : 110.87	104.36 87.34 : 110.87	100.58 87.34 : 110.87
Barium	TM181	93.58 80.73 : 115.16	100.92 80.73 : 115.16	90.09 80.73 : 115.16
Beryllium	TM181	96.27 89.47 : 112.97	102.61 89.47 : 112.97	101.87 89.47 : 112.97
Boron	TM181	86.82 76.57 : 104.15	93.7 76.57 : 104.15	89.97 76.57 : 104.15
Cadmium	TM181	89.71 78.94 : 102.43	95.88 78.94 : 102.43	91.77 78.94 : 102.43
Chromium	TM181	91.68 77.55 : 104.47	100.2 77.55 : 104.47	99.8 77.55 : 104.47
Cobalt	TM181	90.57 82.95 : 107.41	94.97 82.95 : 107.41	92.45 82.95 : 107.41
Copper	TM181	94.37 84.36 : 106.14	98.59 84.36 : 106.14	99.47 84.36 : 106.14
Iron	TM181	92.86 81.43 : 115.79	101.59 81.43 : 115.79	96.83 81.43 : 115.79
Lead	TM181	90.54 81.95 : 107.63	96.17 81.95 : 107.63	91.89 81.95 : 107.63
Manganese	TM181	109.17 94.29 : 119.51	111.67 94.29 : 119.51	107.78 94.29 : 119.51



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Metals in solid samples by OES

		QC 2229	QC 2298	QC 2260
Mercury	TM181	92.75 82.73 : 106.36	95.41 82.73 : 106.36	94.93 82.73 : 106.36
Molybdenum	TM181	98.35 86.61 : 111.07	100.82 86.61 : 111.07	97.94 86.61 : 111.07
Nickel	TM181	90.22 79.72 : 103.80	96.33 79.72 : 103.80	94.38 79.72 : 103.80
Phosphorus	TM181	110.1 92.65 : 125.47	112.93 92.65 : 125.47	113.74 92.65 : 125.47
Selenium	TM181	101.18 88.36 : 111.25	103.14 88.36 : 111.25	101.18 88.36 : 111.25
Strontium	TM181	86.64 83.94 : 111.48	93.54 78.06 : 99.91	93.99 78.06 : 99.91
Thallium	TM181	98.23 88.60 : 116.73	103.54 88.60 : 116.73	100.44 88.60 : 116.73
Tin	TM181	98.1 89.77 : 112.62	103.04 89.77 : 112.62	102.66 89.77 : 112.62
Titanium	TM181	82.44 66.29 : 105.96	83.21 66.29 : 105.96	80.92 66.29 : 105.96
Vanadium	TM181	93.77 75.51 : 108.87	98.53 75.51 : 108.87	94.87 75.51 : 108.87
Zinc	TM181	93.22 84.02 : 111.24	101.85 84.02 : 111.24	100.62 84.02 : 111.24

OC OP Pesticides and Triazine Herb

Component	Method Code	QC 2204
Atrazine (Raw)	TM073	145.77 78.55 : 119.92
Azinphos methyl (Raw)	TM073	173.36 58.68 : 154.71
cis-Chlordane (Raw)	TM073	136.91 71.90 : 129.99
Diazinon (Raw)	TM073	136.24 70.00 : 130.00
Dichlorvos (Raw)	TM073	156.6 70.00 : 130.00
Dieldrin (Raw)	TM073	141.4 70.00 : 130.00
gamma-HCH (Lindane) (Raw)	TM073	144.09 71.48 : 129.99
Heptachlor (Raw)	TM073	140.27 66.39 : 134.63
Hexachlorobenzene (Raw)	TM073	147.48 47.15 : 124.32
Malathion (Raw)	TM073	141.36 70.00 : 130.00
p,p-DDT (Raw)	TM073	124.63 70.00 : 130.00
Parathion (Raw)	TM073	133.8 64.13 : 127.88

PAH by GCMS



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PAH by GCMS

Component	Method Code	QC 2292	QC 2253	QC 2385
Acenaphthene	TM218	86.0 76.79 : 103.90	89.5 80.97 : 105.99	89.5 76.79 : 103.90
Acenaphthylene	TM218	83.5 78.40 : 108.66	87.5 74.76 : 107.36	90.0 78.40 : 108.66
Anthracene	TM218	81.0 70.90 : 109.22	87.0 73.04 : 106.97	88.0 70.90 : 109.22
Benz(a)anthracene	TM218	90.0 73.77 : 119.26	89.5 68.79 : 119.64	88.0 73.77 : 119.26
Benzo(a)pyrene	TM218	87.5 73.20 : 114.18	92.0 66.17 : 117.52	83.5 73.20 : 114.18
Benzo(b)fluoranthene	TM218	88.5 75.36 : 117.58	87.0 66.40 : 118.34	84.0 75.36 : 117.58
Benzo(ghi)perylene	TM218	85.0 70.73 : 116.12	93.5 67.68 : 112.07	79.0 70.73 : 116.12
Benzo(k)fluoranthene	TM218	90.5 75.98 : 116.59	91.0 72.84 : 114.66	83.0 75.98 : 116.59
Chrysene	TM218	90.0 74.82 : 114.18	91.5 68.39 : 115.56	85.5 74.82 : 114.18
Dibenzo(ah)anthracene	TM218	86.5 69.17 : 115.30	93.5 69.03 : 110.45	81.5 69.17 : 115.30
Fluoranthene	TM218	89.5 75.88 : 112.84	89.0 69.37 : 117.19	89.5 75.88 : 112.84
Fluorene	TM218	86.0 76.66 : 107.56	87.5 75.38 : 105.98	90.5 76.66 : 107.56
Indeno(123cd)pyrene	TM218	80.5 70.26 : 117.95	88.5 65.91 : 113.61	81.0 70.26 : 117.95
Naphthalene	TM218	82.5 74.70 : 101.83	89.5 71.40 : 105.87	82.0 74.70 : 101.83
Phenanthrene	TM218	84.0 73.62 : 109.34	88.0 74.04 : 109.30	91.0 73.62 : 109.34
Pyrene	TM218	86.5 71.46 : 117.00	88.0 69.68 : 115.27	86.0 71.46 : 117.00

PAH in waters by GC-MS (diss.filt)

Component	Method Code	QC 2204
Acenaphthene (diss.filt)	TM178	105.2 93.20 : 119.60
Acenaphthylene (diss.filt)	TM178	104.0 92.00 : 118.40
Anthracene (diss.filt)	TM178	104.8 90.80 : 114.80
Benzo(a)anthracene (diss.filt)	TM178	100.4 91.60 : 115.60
Benzo(a)pyrene (diss.filt)	TM178	102.8 91.20 : 120.00
Benzo(b)fluoranthene (diss.filt)	TM178	107.2 86.80 : 120.40
Benzo(g,h,i)perylene (diss.filt)	TM178	104.0 89.20 : 118.00
Benzo(k)fluoranthene (diss.filt)	TM178	107.6 94.40 : 125.60
Chrysene (diss.filt)	TM178	106.4 96.40 : 122.80



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PAH in waters by GC-MS (diss.filt)

		QC 2204
Dibenzo(a,h)anthracene (diss.filt)	TM178	109.6 93.60 : 132.00
Fluoranthene (diss.filt)	TM178	107.6 92.80 : 121.60
Fluorene (diss.filt)	TM178	110.8 93.60 : 120.00
Indeno(1,2,3-cd)pyrene (diss.filt)	TM178	102.8 82.40 : 120.80
Naphthalene (diss.filt)	TM178	108.8 88.40 : 126.80
Phenanthrene (diss.filt)	TM178	103.2 92.40 : 118.80
Pyrene (diss.filt)	TM178	102.4 90.40 : 124.00

PCBs by GCMS

Component	Method Code	QC 2303
PCB congener 101	TM168	85.2 79.46 : 109.70
PCB congener 105	TM168	73.2 66.33 : 105.75
PCB congener 114	TM168	72.5 66.41 : 106.49
PCB congener 118	TM168	76.3 70.33 : 110.29
PCB congener 123	TM168	81.0 65.01 : 99.81
PCB congener 126	TM168	74.7 59.31 : 109.23
PCB congener 138	TM168	70.7 63.95 : 107.63
PCB congener 153	TM168	72.9 62.65 : 108.85
PCB congener 156	TM168	73.6 61.69 : 112.27
PCB congener 157	TM168	74.6 67.15 : 109.93
PCB congener 167	TM168	70.5 65.58 : 109.14
PCB congener 169	TM168	67.2 56.84 : 112.10
PCB congener 180	TM168	76.0 66.99 : 111.63
PCB congener 189	TM168	66.8 57.75 : 112.59
PCB congener 28	TM168	76.8 73.68 : 105.96
PCB congener 52	TM168	74.9 67.24 : 107.62
PCB congener 77	TM168	73.2 64.87 : 108.49
PCB congener 81	TM168	77.2 70.78 : 110.80



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pH

Component	Method Code	QC 2268	QC 2298	QC 2213
pH	TM133	100.79 99.74 : 102.91	99.47 98.47 : 102.33	100.79 99.74 : 102.91

pH Value of Filtered Water

Component	Method Code	QC 2242
pH	TM256	101.75 100.13 : 103.37

Phenols by HPLC (S)

Component	Method Code	QC 2283
2,3,5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	109.09 83.23 : 109.71
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	86.55 76.34 : 104.11
Catechol by HPLC (S)	TM062 (S)	13.33 22.43 : 157.02
Cresols by HPLC (S)	TM062 (S)	88.31 85.78 : 116.44
Naphthol by HPLC (S)	TM062 (S)	104.29 75.62 : 124.38
Phenol by HPLC (S)	TM062 (S)	99.34 79.53 : 120.47
Resorcinol HPLC (S)	TM062 (S)	93.08 71.43 : 129.59
Xylenols by HPLC (S)	TM062 (S)	96.04 89.90 : 107.23

Phenols by HPLC (W)

Component	Method Code	QC 2355
2,3,5 Trimethyl-Phenol by HPLC (W)	TM259	99.0 91.00 : 109.00
2-Isopropyl Phenol by HPLC (W)	TM259	96.0 85.00 : 109.00
Cresols by HPLC (W)	TM259	100.0 93.00 : 115.00
Naphthol by HPLC (W)	TM259	104.0 86.00 : 128.00
Phenol by HPLC (W)	TM259	100.0 88.24 : 111.76
Xylenols by HPLC (W)	TM259	101.17 94.83 : 110.83

Semi Volatile Organic Compounds



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Semi Volatile Organic Compounds

Component	Method Code	QC 2220
4-Bromophenylphenylether (Soil)	TM157	95.0 63.50 : 114.50
Benzo(a)anthracene (Soil)	TM157	108.0 71.89 : 120.91
Hexachlorobutadiene (Soil)	TM157	102.0 69.80 : 117.77
Naphthalene (Soil)	TM157	100.5 70.00 : 115.00
Nitrobenzene (Soil)	TM157	93.0 70.00 : 118.00
Phenol (Soil)	TM157	100.0 72.00 : 117.00

Total Dissolved Solids

Component	Method Code	QC 2314
Total Dissolved Solids	TM123	99.2 97.30 : 100.92

Total Organic Carbon

Component	Method Code	QC 2261	QC 2210	QC 2232
Total Organic Carbon	TM132	95.31 87.02 : 113.45	97.66 87.02 : 113.45	97.66 87.02 : 113.45

VOC MS (S)

Component	Method Code	QC 2251
1,1,1,2-tetrachloroethane	TM116	102.2 86.59 : 118.97
1,1,1-Trichloroethane	TM116	97.8 86.26 : 117.53
1,1,2-Trichloroethane	TM116	100.0 75.16 : 112.70
1,1-Dichloroethane	TM116	98.0 83.27 : 122.16
1,2-Dichloroethane	TM116	104.2 89.30 : 133.10
1,4-Dichlorobenzene	TM116	109.4 82.59 : 123.23
2-Chlorotoluene	TM116	98.4 66.81 : 118.43
4-Chlorotoluene	TM116	93.6 65.88 : 114.76
Benzene	TM116	97.8 93.16 : 123.63
Carbon Disulphide	TM116	97.0 75.11 : 124.81



CERTIFICATE OF ANALYSIS

Validated

SDG: 200916-16
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PO20-647

Report Number: 575650
Superseded Report: 569011

VOC MS (S)

		QC 2251
Carbontetrachloride	TM116	104.4 82.35 : 126.46
Chlorobenzene	TM116	98.6 85.07 : 118.13
Chloroform	TM116	100.2 88.13 : 122.71
Chloromethane	TM116	90.0 55.37 : 133.35
Cis-1,2-Dichloroethene	TM116	100.8 78.27 : 128.90
Dibromomethane	TM116	94.8 77.47 : 121.29
Dichloromethane	TM116	106.0 87.89 : 134.72
Ethylbenzene	TM116	96.0 79.92 : 110.05
Hexachlorobutadiene	TM116	113.6 16.78 : 153.29
Isopropylbenzene	TM116	97.8 69.92 : 116.39
Naphthalene	TM116	116.2 79.29 : 125.59
o-Xylene	TM116	92.6 74.57 : 112.73
p/m-Xylene	TM116	92.1 76.47 : 108.99
Sec-Butylbenzene	TM116	100.8 44.71 : 117.87
Tetrachloroethene	TM116	102.6 85.86 : 122.95
Toluene	TM116	92.0 87.82 : 116.21
Trichloroethene	TM116	95.2 79.80 : 112.33
Trichlorofluoromethane	TM116	105.0 80.52 : 132.12
Vinyl Chloride	TM116	110.8 68.07 : 137.84

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.

The figure detailed is the percentage recovery result for the AQC.

The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.



CERTIFICATE OF ANALYSIS

Validated

SDG: 200916-16
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PQ20-647

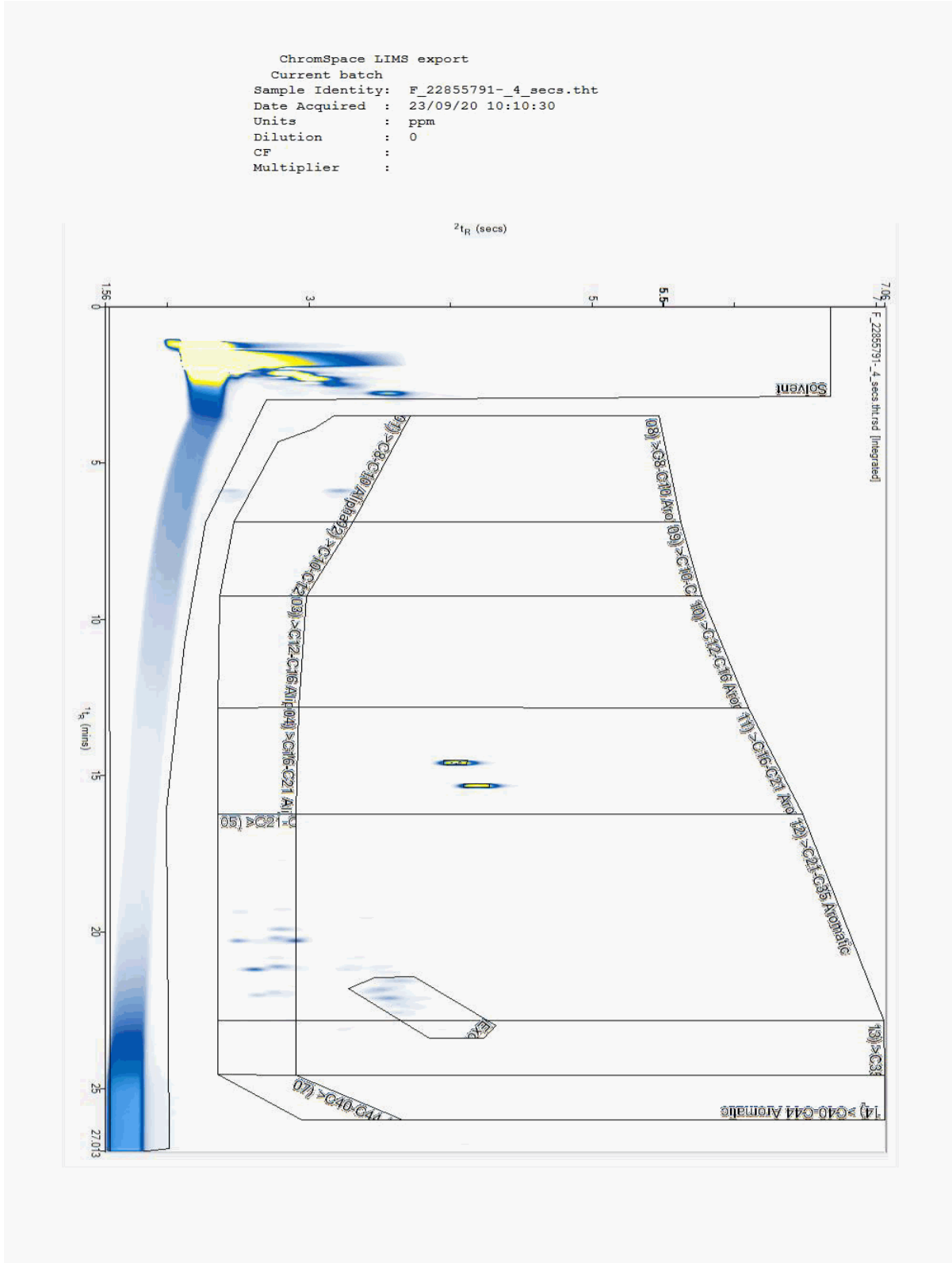
Report Number: 575650
Superseded Report: 569011

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 22855791
Sample ID : STP70506

Depth : 0.50





CERTIFICATE OF ANALYSIS

Validated

SDG: 200916-16
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PO20-647

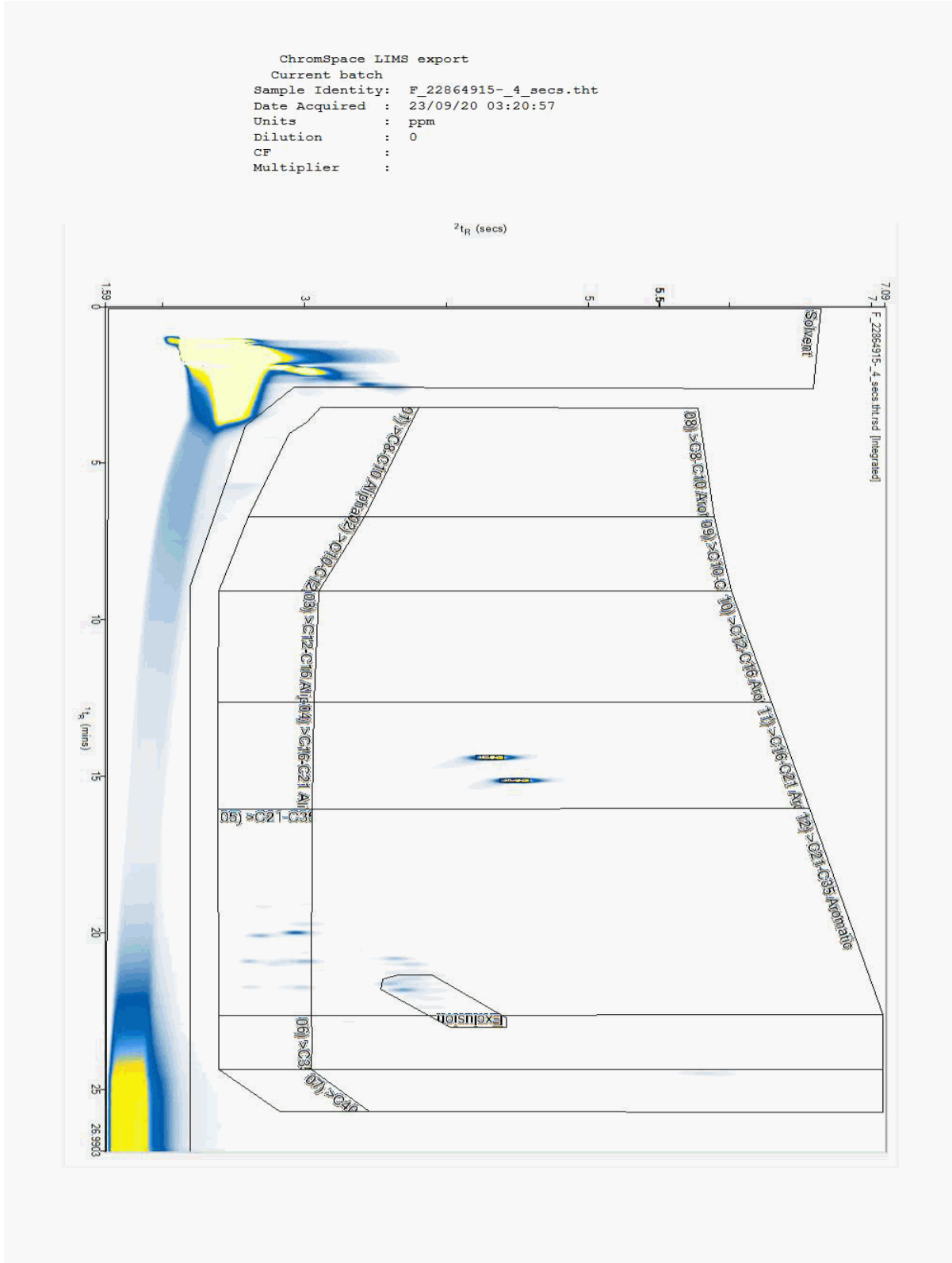
Report Number: 575650
Superseded Report: 569011

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 22864915
Sample ID : R70301

Depth : 0.60





CERTIFICATE OF ANALYSIS

Validated

SDG: 200916-16
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PO20-647

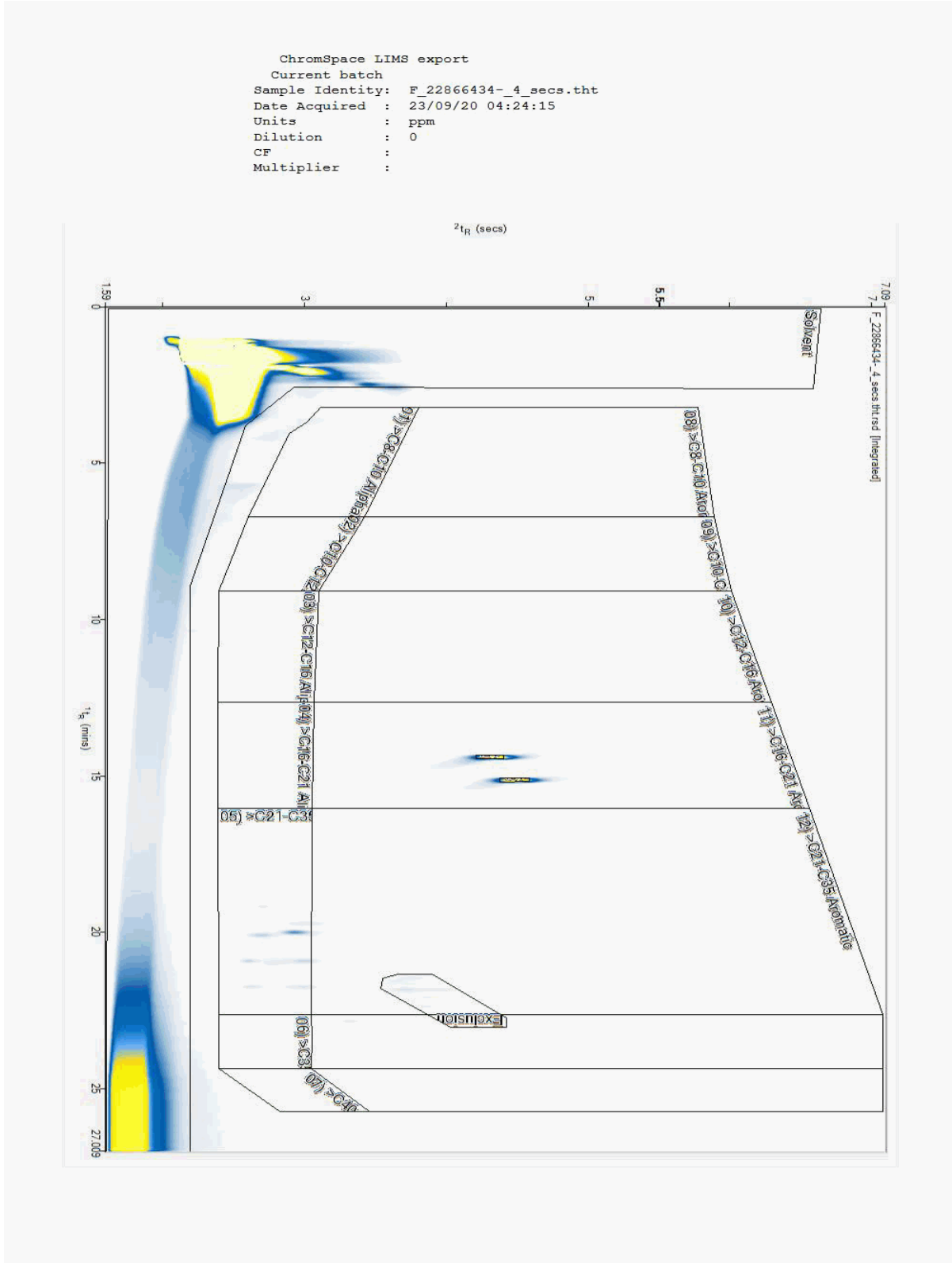
Report Number: 575650
Superseded Report: 569011

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 22866434
Sample ID : STP70508

Depth : 0.50





CERTIFICATE OF ANALYSIS

Validated

SDG: 200916-16
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PQ20-647

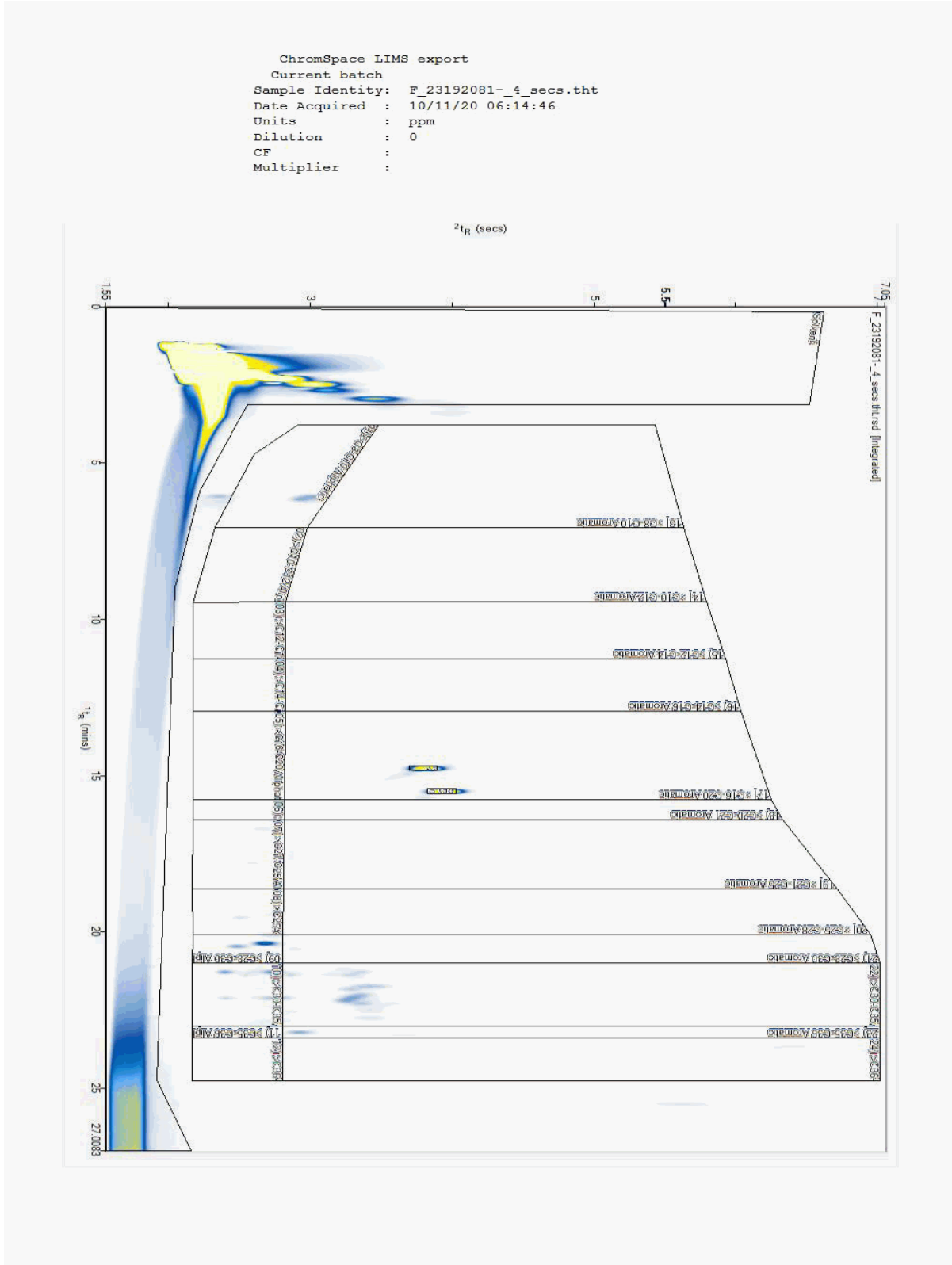
Report Number: 575650
Superseded Report: 569011

Chromatogram

Analysis: EPH by GCxGC-FID

Sample No : 23192081
Sample ID : R70301

Depth : 0.60





CERTIFICATE OF ANALYSIS

Validated

SDG: 200916-16
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PQ20-647

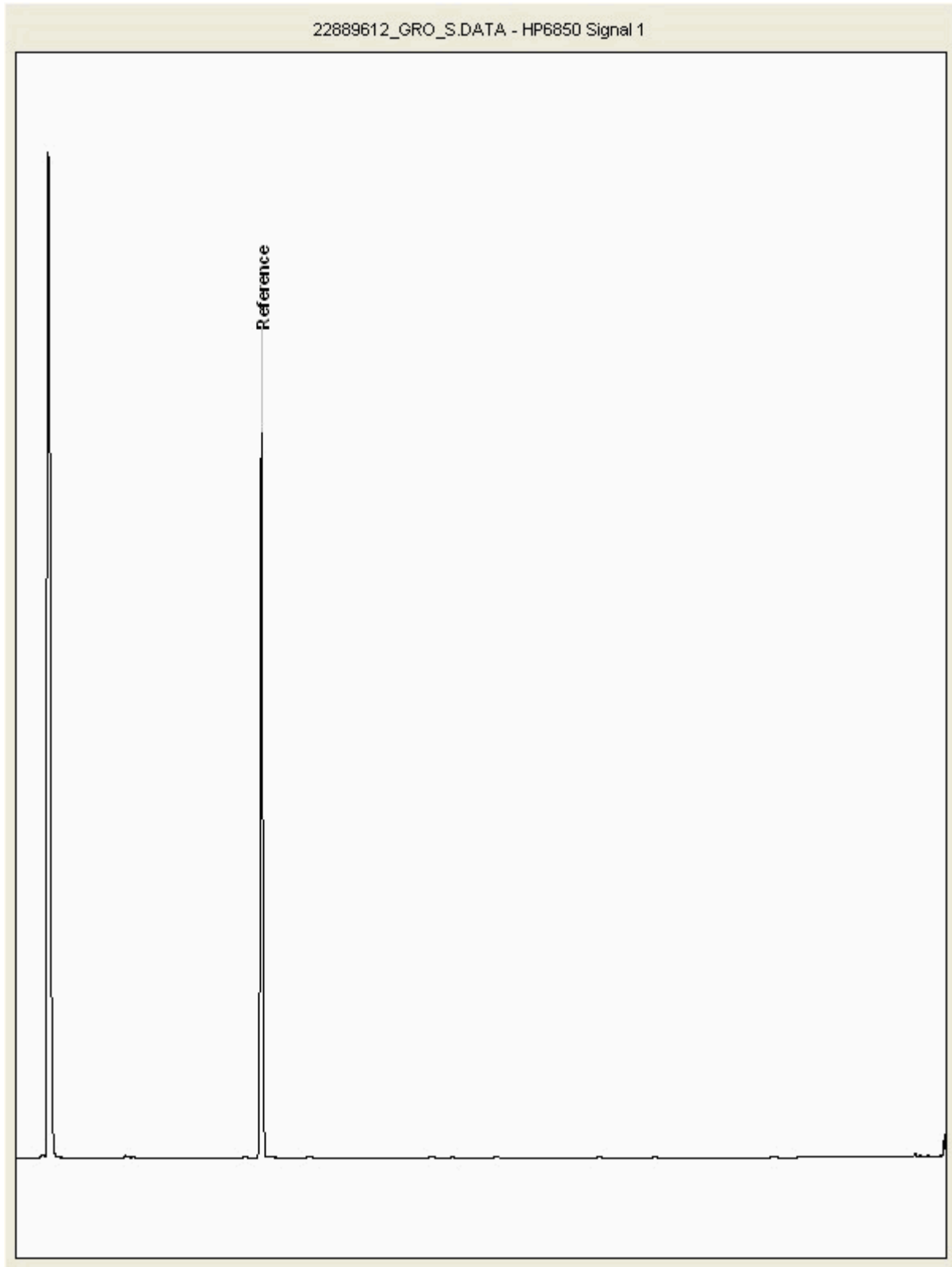
Report Number: 575650
Superseded Report: 569011

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 22889612
Sample ID : R70301

Depth : 0.60





CERTIFICATE OF ANALYSIS

Validated

SDG: 200916-16
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PQ20-647

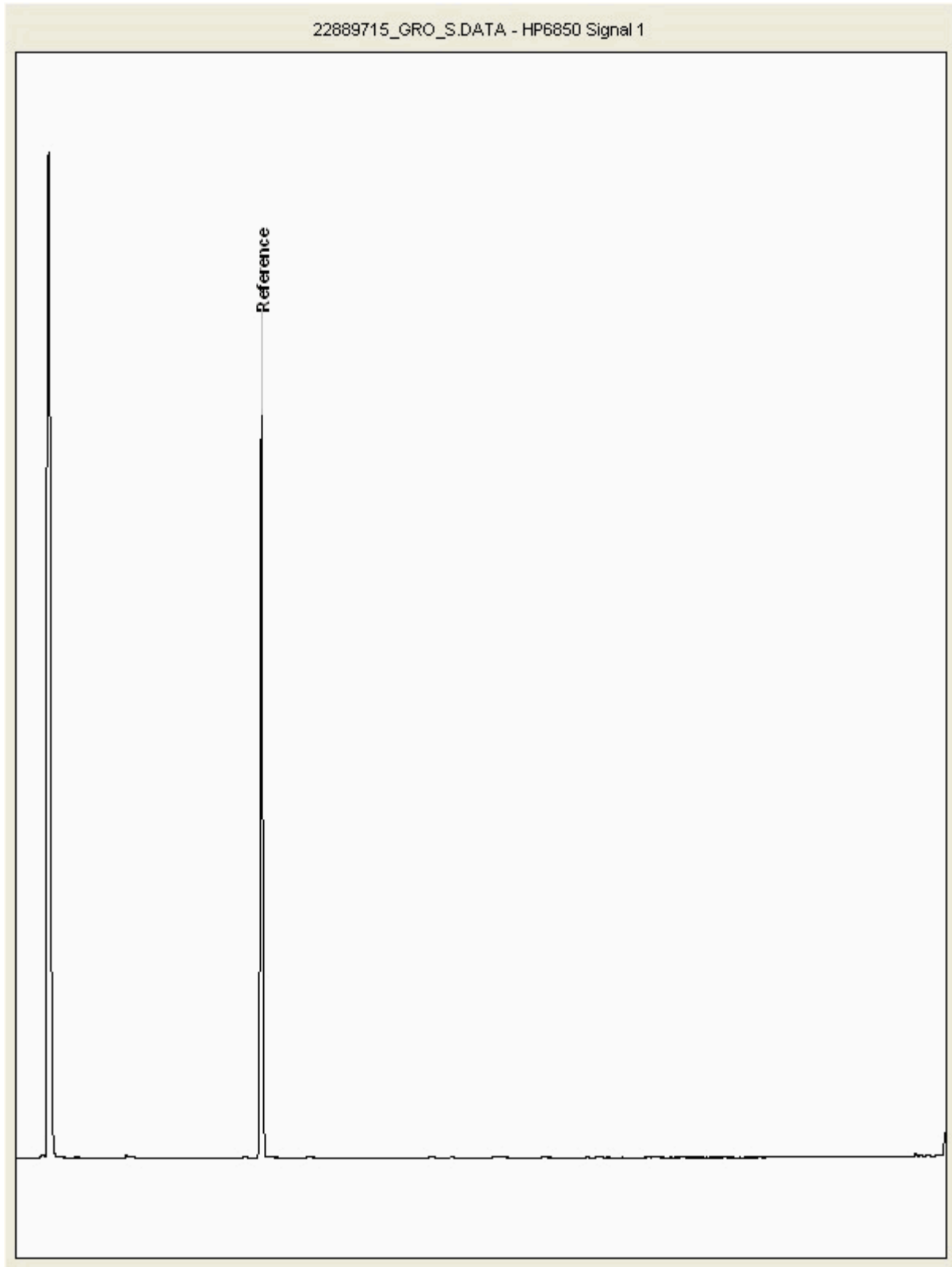
Report Number: 575650
Superseded Report: 569011

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 22889715
Sample ID : STP70508

Depth : 0.50





CERTIFICATE OF ANALYSIS

Validated

SDG: 200916-16
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PQ20-647

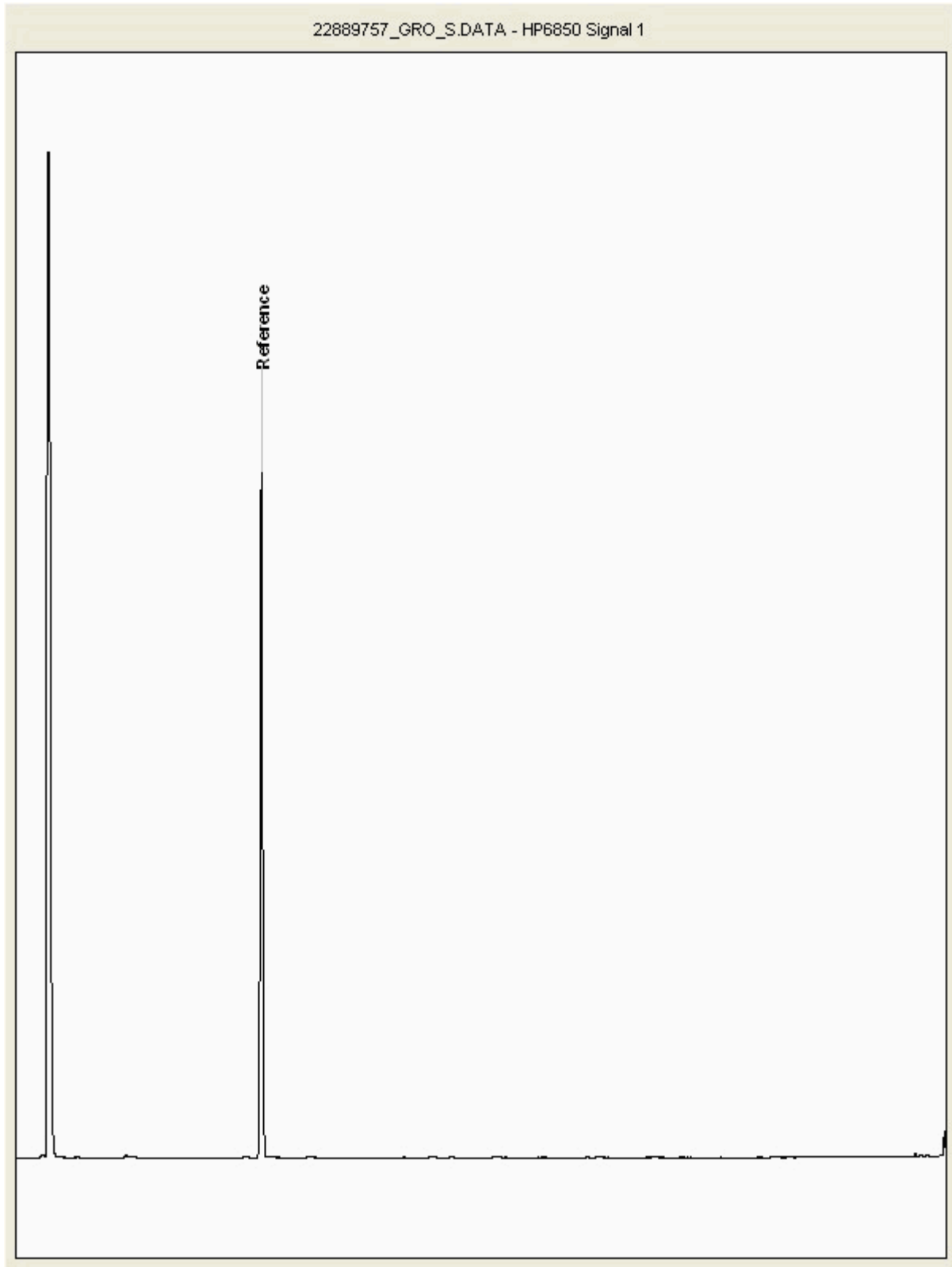
Report Number: 575650
Superseded Report: 569011

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 22889757
Sample ID : STP70506

Depth : 0.50





CERTIFICATE OF ANALYSIS

SDG:	200916-16	Client Reference:	JFR1451	Report Number:	575650
Location:	A303 Stonehenge	Order Number:	PO20-647	Superseded Report:	569011

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

19. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung. Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017)*.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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Website: www.alsenvironmental.co.uk

RPS Consultants Ltd
260 Park Avenue
Aztec West
Almondsbury
Bristol
BS32 4SY

Attention: Gary Riches

CERTIFICATE OF ANALYSIS

Date of report Generation: 14 October 2020
Customer: RPS Consultants Ltd
Sample Delivery Group (SDG): 200918-15
Your Reference: JFR1451
Location: A303 Stonehenge
Report No: 571081

We received 6 samples on Thursday September 17, 2020 and 1 of these samples were scheduled for analysis which was completed on Wednesday October 14, 2020. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

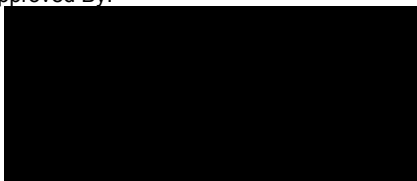
Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:



Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 200918-15 **Client Reference:** JFR1451 **Report Number:** 571081
Location: A303 Stonehenge **Order Number:** **Superseded Report:**

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
22849444	DTP70702		0.00 - 0.00	15/09/2020
22849446	DTP70702		0.00 - 0.30	15/09/2020
22849447	DTP70702		0.00 - 0.50	15/09/2020
22849448	DTP70702		0.00 - 1.00	15/09/2020
22849450	R70302		1.70 - 2.00	15/09/2020
22849449	R71915		1.50 - 1.70	15/09/2020

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 200918-15	Client Reference: JFR1451	Report Number: 571081
Location: A303 Stonehenge	Order Number:	Superseded Report:

Results Legend <div style="display: flex; align-items: center; margin-bottom: 5px;"> <div style="border: 1px solid black; background-color: yellow; width: 20px; height: 20px; display: flex; align-items: center; justify-content: center; margin-right: 5px;">X</div> Test </div> <div style="display: flex; align-items: center; margin-bottom: 5px;"> <div style="border: 1px solid black; background-color: red; width: 20px; height: 20px; display: flex; align-items: center; justify-content: center; margin-right: 5px;">N</div> No Determination Possible </div> Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other	Lab Sample No(s)	22849446	
	Customer Sample Reference	DTP70702	
	AGS Reference		
	Depth (m)	0.00 - 0.30	
	Container	250g Amber Jar (ALE210)	
	Sample Type	S	
Ammonium Soil by Titration	All	NDPs: 0 Tests: 1	X
Anions by Kone (soil)	All	NDPs: 0 Tests: 1	X
Chromium III	All	NDPs: 0 Tests: 1	X
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 1	X
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 1	X
Metals in solid samples by OES	All	NDPs: 0 Tests: 1	X
pH	All	NDPs: 0 Tests: 1	X
Sample description	All	NDPs: 0 Tests: 1	X
Total Organic Carbon	All	NDPs: 0 Tests: 1	X



CERTIFICATE OF ANALYSIS

Validated

SDG: 200918-15
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 571081
Superseded Report:

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm
-----------	----------	------	-----------------	--------	-------------	--------	------------	-------------	-------

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
22849446	DTP70702	0.00 - 0.30	Dark Brown	Loamy Sand	Stones	Vegetation

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.



CERTIFICATE OF ANALYSIS

Validated

SDG: 200918-15
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 571081
Superseded Report:

Results Legend		Customer Sample Ref.	DTP70702				
#	ISO17025 accredited.						
M	mCERTS accredited.						
aq	Aqueous / settled sample.						
diss.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.						
-	Subcontracted - refer to subcontractor report for accreditation status.						
--	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery						
(F)	Trigger breach confirmed						
1-4*\$@	Sample deviation (see appendix)						
		Depth (m)	0.00 - 0.30				
		Sample Type	Soil/Solid (S)				
		Date Sampled	15/09/2020				
		Sample Time					
		Date Received	17/09/2020				
		SDG Ref	200918-15				
		Lab Sample No.(s)	22849446				
		AGS Reference					
Component	LOD/Units	Method					
Moisture Content Ratio (% of as received sample)	%	PM024	14				
Exchangeable Ammonia as N	<12 mg/kg	TM024	<12	@ M			
Organic Carbon, Total	<0.2 %	TM132	1.37	@ M			
pH	1 pH Units	TM133	8.24	@ M			
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6	#			
Cyanide, Total	<1 mg/kg	TM153	<1	@ M			
Cyanide, Free	<1 mg/kg	TM153	<1	@ M			
Chromium, Trivalent	<0.9 mg/kg	TM181	10.8				
Antimony	<0.6 mg/kg	TM181	<0.6	#			
Arsenic	<0.6 mg/kg	TM181	4.94	M			
Beryllium	<0.01 mg/kg	TM181	0.438	M			
Boron	<0.7 mg/kg	TM181	6.89	#			
Cadmium	<0.02 mg/kg	TM181	0.373	M			
Chromium	<0.9 mg/kg	TM181	10.8	M			
Copper	<1.4 mg/kg	TM181	6.23	M			
Iron	<1000 mg/kg	TM181	10800	#			
Lead	<0.7 mg/kg	TM181	14.6	M			
Manganese	<0.13 mg/kg	TM181	642	M			
Mercury	<0.14 mg/kg	TM181	<0.14	@ M			
Molybdenum	<0.1 mg/kg	TM181	0.182	#			
Nickel	<0.2 mg/kg	TM181	12.2	M			
Phosphorus	<1 mg/kg	TM181	968				
Selenium	<1 mg/kg	TM181	<1	#			
Zinc	<1.9 mg/kg	TM181	52.1	M			
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243	<0.004	@ M			



CERTIFICATE OF ANALYSIS

Validated

SDG: 200918-15 **Client Reference:** JFR1451 **Report Number:** 571081
Location: A303 Stonehenge **Order Number:** **Superseded Report:**

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM243		Mixed Anions In Soils By Kone

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).



CERTIFICATE OF ANALYSIS

Validated

SDG: 200918-15
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 571081
Superseded Report:

Test Completion Dates

Lab Sample No(s)	22849446
Customer Sample Ref.	DTP70702
AGS Ref.	
Depth	0.00 - 0.30
Type	Soil/Solid (S)

Ammonium Soil by Titration	14-Oct-2020
Anions by Kone (soil)	14-Oct-2020
Chromium III	14-Oct-2020
Cyanide Comp/Free/Total/Thiocyanate	14-Oct-2020
Hexavalent Chromium (s)	14-Oct-2020
Metals in solid samples by OES	14-Oct-2020
pH	13-Oct-2020
Sample description	09-Oct-2020
Total Organic Carbon	14-Oct-2020



CERTIFICATE OF ANALYSIS

Validated

SDG: 200918-15
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 571081
Superseded Report:

ASSOCIATED AQC DATA

Ammonium Soil by Titration

Component	Method Code	QC 2326
Exchangeable Ammonium as NH4	TM024	86.57 76.20 : 110.13

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2394
Free Cyanide	TM153	88.51 78.61 : 114.43
Thiocyanate	TM153	98.72 90.48 : 109.52
Total Cyanide	TM153	97.9 76.80 : 112.96

Hexavalent Chromium (s)

Component	Method Code	QC 2349
Hexavalent Chromium	TM151	102.0 95.60 : 107.60

Metals in solid samples by OES

Component	Method Code	QC 2354
Aluminium	TM181	92.04 73.56 : 108.85
Antimony	TM181	93.9 76.89 : 111.24
Arsenic	TM181	96.8 88.53 : 111.01
Barium	TM181	94.5 77.67 : 105.35
Beryllium	TM181	97.39 85.44 : 109.61
Boron	TM181	86.82 73.51 : 104.66
Cadmium	TM181	85.6 77.67 : 104.12
Chromium	TM181	92.7 86.11 : 106.21
Cobalt	TM181	88.36 84.60 : 104.13
Copper	TM181	88.38 82.40 : 105.45
Iron	TM181	93.65 82.95 : 110.58
Lead	TM181	89.64 78.24 : 104.05



CERTIFICATE OF ANALYSIS

Validated

SDG: 200918-15
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 571081
Superseded Report:

Metals in solid samples by OES

		QC 2354
Manganese	TM181	108.61 94.29 : 119.51
Mercury	TM181	91.06 83.16 : 107.81
Molybdenum	TM181	94.65 87.11 : 106.87
Nickel	TM181	88.75 80.26 : 102.28
Phosphorus	TM181	108.69 94.56 : 124.28
Selenium	TM181	96.08 82.28 : 110.48
Strontium	TM181	87.53 79.13 : 102.79
Thallium	TM181	94.69 82.94 : 111.86
Tin	TM181	96.2 86.72 : 110.03
Titanium	TM181	82.44 66.23 : 102.06
Vanadium	TM181	93.04 86.19 : 109.45
Zinc	TM181	96.51 84.68 : 113.99

pH

Component	Method Code	QC 2337
pH	TM133	100.79 98.47 : 102.33

Total Organic Carbon

Component	Method Code	QC 2365
Total Organic Carbon	TM132	107.81 87.02 : 113.45

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis .

The figure detailed is the percentage recovery result for the AQC .

The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control .



CERTIFICATE OF ANALYSIS

SDG: 200918-15 Client Reference: JFR1451 Report Number: 571081
 Location: A303 Stonehenge Order Number: Superseded Report:

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

19. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung. Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017)*.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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RPS Consultants Ltd
260 Park Avenue
Aztec West
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Bristol
BS32 4SY

Attention: Gary Riches

CERTIFICATE OF ANALYSIS

Date of report Generation: 02 October 2020
Customer: RPS Consultants Ltd
Sample Delivery Group (SDG): 200919-59
Your Reference: JFR1451
Location: A303 Stonehenge
Report No: 569678

We received 5 samples on Friday September 18, 2020 and 2 of these samples were scheduled for analysis which was completed on Friday October 02, 2020. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

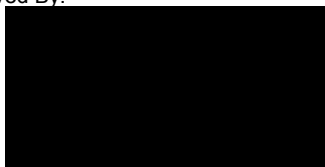
Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:



Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 200919-59 **Client Reference:** JFR1451 **Report Number:** 569678
Location: A303 Stonehenge **Order Number:**

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
22860155	DTP70703		0.00	16/09/2020
22860156	DTP70703		0.30	16/09/2020
22860158	DTP70703		0.50	16/09/2020
22860159	DTP70703		1.00	16/09/2020
22860160	DTP70703		1.50	16/09/2020

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG:	200919-59	Client Reference:	JFR1451	Report Number:	569678
Location:	A303 Stonehenge	Order Number:		Superseded Report:	

Results Legend <div style="display: flex; gap: 5px;"> <div style="border: 1px solid black; background-color: yellow; width: 15px; height: 15px; display: flex; align-items: center; justify-content: center; font-size: 8px;">X</div> Test <div style="border: 1px solid black; background-color: red; width: 15px; height: 15px; display: flex; align-items: center; justify-content: center; font-size: 8px; margin-left: 10px;">N</div> No Determination Possible </div> Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other	Lab Sample No(s)	22860158	22860160	DTP70703	DTP70703	AGS Reference	Depth (m)	Container	Sample Type	
								0.50	1.50	250g Amber Jar (ALE210) 60g VOC (ALE215) 250g Amber Jar (ALE210) 60g VOC (ALE215)
										S S S S
	Ammonium Soil by Titration	All	NDPs: 0 Tests: 2	X	X					
	Anions by Kone (soil)	All	NDPs: 0 Tests: 2	X	X					
	Chromium III	All	NDPs: 0 Tests: 2	X	X					
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 2	X	X						
EPH CWG GC (S)	All	NDPs: 0 Tests: 2	X	X						
GRO by GC-FID (S)	All	NDPs: 0 Tests: 2			X			X		
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 2	X	X						
Metals in solid samples by OES	All	NDPs: 0 Tests: 2	X	X						
PAH by GCMS	All	NDPs: 0 Tests: 2	X	X						
pH	All	NDPs: 0 Tests: 2	X	X						
Phenols by HPLC (S)	All	NDPs: 0 Tests: 2	X	X						
Total Organic Carbon	All	NDPs: 0 Tests: 2	X	X						
TPH CWG GC (S)	All	NDPs: 0 Tests: 2	X	X						
VOC MS (S)	All	NDPs: 0 Tests: 2			X			X		



CERTIFICATE OF ANALYSIS

Validated

SDG: 200919-59 Client Reference: JFR1451 Report Number: 569678
 Location: A303 Stonehenge Order Number: Superseded Report:

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm
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Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
22860158	DTP70703	0.50	Light Brown	Clay	Vegetation	Stones
22860160	DTP70703	1.50	Light Brown	Clay	N/A	N/A

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.



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SDG:	200919-59	Client Reference:	JFR1451	Report Number:	569678
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CERTIFICATE OF ANALYSIS

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SDG:	200919-59	Client Reference:	JFR1451	Report Number:	569678
Location:	A303 Stonehenge	Order Number:		Superseded Report:	

DTP70703 0.50 Soil/Solid (S) 16/09/2020 18/09/2020 200919-59 22860158	DTP70703 1.50 Soil/Solid (S) 16/09/2020 18/09/2020 200919-59 22860160
---	---

Parameter	Units	Method	DTP70703 (0.50)	DTP70703 (1.50)
Moisture Content Ratio (% of as received sample)	%	PM024	12	17
Exchangeable Ammonia as N	<12 mg/kg	TM024	<12 M	<12 M
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M
Organic Carbon, Total	<0.2 %	TM132	0.21 M	<0.2 M
pH	1 pH Units	TM133	8.95 M	8.99 M
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 #	<0.6 #
Cyanide, Total	<1 mg/kg	TM153	<1 M	<1 M
Cyanide, Free	<1 mg/kg	TM153	<1 M	<1 M
Chromium, Trivalent	<0.9 mg/kg	TM181	4.56	1.51
Antimony	<0.6 mg/kg	TM181	<0.6 #	<0.6 #
Arsenic	<0.6 mg/kg	TM181	1.6 M	0.75 M
Beryllium	<0.01 mg/kg	TM181	0.217 M	0.0849 M
Boron	<0.7 mg/kg	TM181	2.56 #	1.6 #
Cadmium	<0.02 mg/kg	TM181	0.132 M	0.0711 M
Chromium	<0.9 mg/kg	TM181	4.56 M	1.51 M
Copper	<1.4 mg/kg	TM181	2.2 M	1.68 M
Iron	<1000 mg/kg	TM181	4500 #	1330 #
Lead	<0.7 mg/kg	TM181	2.96 M	0.769 M
Manganese	<0.13 mg/kg	TM181	250 M	180 M
Mercury	<0.14 mg/kg	TM181	<0.14 M	<0.14 M
Molybdenum	<0.1 mg/kg	TM181	<0.1 #	<0.1 #
Nickel	<0.2 mg/kg	TM181	5.7 M	3.54 M
Phosphorus	<1 mg/kg	TM181	454	337
Selenium	<1 mg/kg	TM181	<1 #	<1 #
Zinc	<1.9 mg/kg	TM181	18.3 M	10.4 M
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243	0.0071 M	0.0125 M



PAH by GCMS

CERTIFICATE OF ANALYSIS

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SDG:	200919-59	Client Reference:	JFR1451	Report Number:	569678
Location:	A303 Stonehenge	Order Number:		Superseded Report:	



CERTIFICATE OF ANALYSIS

Validated

SDG: 200919-59 Client Reference: JFR1451 Report Number: 569678
Location: A303 Stonehenge Order Number: Superseded Report:

PAH by GCMS

Table with columns: Results Legend, Customer Sample Ref., Component, LOD/Units, Method. Includes a legend for sample types and accreditation, and a large data grid for component analysis.



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SDG:	200919-59	Client Reference:	JFR1451	Report Number:	569678
Location:	A303 Stonehenge	Order Number:		Superseded Report:	

PAH by GCMS

DTP70703	DTP70703
0.50	1.50
Soil/Solid (S)	Soil/Solid (S)
16/09/2020	16/09/2020
18/09/2020	18/09/2020
200919-59	200919-59
22860158	22860160

Compound	Unit	Location	DTP70703	DTP70703
Naphthalene-d8 % recovery**	%	TM218	87.7	89.3
Acenaphthene-d10 % recovery**	%	TM218	85.8	85.2
Phenanthrene-d10 % recovery**	%	TM218	84.2	83.8
Chrysene-d12 % recovery**	%	TM218	78.5	74.7
Perylene-d12 % recovery**	%	TM218	79.2	79.2
Naphthalene	<9 µg/kg	TM218	<9 M	<9 M
Acenaphthylene	<12 µg/kg	TM218	<12 M	<12 M
Acenaphthene	<8 µg/kg	TM218	<8 M	<8 M
Fluorene	<10 µg/kg	TM218	<10 M	<10 M
Phenanthrene	<15 µg/kg	TM218	<15 M	<15 M
Anthracene	<16 µg/kg	TM218	<16 M	<16 M
Fluoranthene	<17 µg/kg	TM218	<17 M	<17 M
Pyrene	<15 µg/kg	TM218	<15 M	<15 M
Benz(a)anthracene	<14 µg/kg	TM218	<14 M	<14 M
Chrysene	<10 µg/kg	TM218	<10 M	<10 M
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 M	<15 M
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 M	<14 M
Benzo(a)pyrene	<15 µg/kg	TM218	<15 M	<15 M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 M	<18 M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 M	<23 M
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 M	<24 M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118



TPH CWG (S)

CERTIFICATE OF ANALYSIS

Validated

SDG:	200919-59	Client Reference:	JFR1451	Report Number:	569678
Location:	A303 Stonehenge	Order Number:		Superseded Report:	



CERTIFICATE OF ANALYSIS

Validated

SDG: 200919-59 **Client Reference:** JFR1451 **Report Number:** 569678
Location: A303 Stonehenge **Order Number:**

TPH CWG (S)

DTP70703	DTP70703
0.50	1.50
Soil/Solid (S)	Soil/Solid (S)
16/09/2020	16/09/2020
18/09/2020	18/09/2020
200919-59	200919-59
22860158	22860160

			DTP70703	DTP70703
GRO Surrogate % recovery**	%	TM089	106	107
			@	@
Aliphatics >C5-C6	<10 µg/kg	TM089	<10	<10
			@	@
Aliphatics >C6-C8	<10 µg/kg	TM089	<10	<10
			@	@
Aliphatics >C8-C10	<10 µg/kg	TM089	<10	<10
			@	@
Aliphatics >C10-C12	<1000 µg/kg	TM414	<1000	<1000
Aliphatics >C12-C16	<1000 µg/kg	TM414	<1000	<1000
Aliphatics >C16-C21	<1000 µg/kg	TM414	<1000	<1000
Aliphatics >C21-C35	<1000 µg/kg	TM414	<1000	<1000
Aliphatics >C35-C44	<1000 µg/kg	TM414	<1000	<1000
Total Aliphatics >C10-C44	<5000 µg/kg	TM414	<5000	<5000
Total Aliphatics & Aromatics >C10-C44	<10000 µg/kg	TM414	<10000	<10000
Aromatics >EC5-EC7	<10 µg/kg	TM089	<10	<10
			@	@
Aromatics >EC7-EC8	<10 µg/kg	TM089	<10	<10
			@	@
Aromatics >EC8-EC10	<10 µg/kg	TM089	<10	<10
			@	@
Aromatics > EC10-EC12	<1000 µg/kg	TM414	<1000	<1000
Aromatics > EC12-EC16	<1000 µg/kg	TM414	<1000	<1000
Aromatics > EC16-EC21	<1000 µg/kg	TM414	<1000	<1000
Aromatics > EC21-EC35	<1000 µg/kg	TM414	<1000	<1000
Aromatics >EC35-EC44	<1000 µg/kg	TM414	<1000	<1000
Aromatics > EC40-EC44	<1000 µg/kg	TM414	<1000	<1000
Total Aromatics > EC10-EC44	<5000 µg/kg	TM414	<5000	<5000
Total Aliphatics & Aromatics >C5-C44	<10000 µg/kg	TM414	<10000	<10000
Total Aliphatics >C5-C10	<50 µg/kg	TM089	<50	<50
			@	@
Total Aromatics >EC5-EC10	<50 µg/kg	TM089	<50	<50
			@	@
GRO >C5-C10	<20 µg/kg	TM089	<20	<20
			@	@



VOC MS (S)

CERTIFICATE OF ANALYSIS

Validated

SDG:	200919-59	Client Reference:	JFR1451	Report Number:	569678
Location:	A303 Stonehenge	Order Number:		Superseded Report:	



CERTIFICATE OF ANALYSIS

Validated

SDG:	200919-59	Client Reference:	JFR1451	Report Number:	569678
Location:	A303 Stonehenge	Order Number:		Superseded Report:	

VOC MS (S)

DTP70703	DTP70703
0.50	1.50
Soil/Solid (S)	Soil/Solid (S)
16/09/2020	16/09/2020
18/09/2020	18/09/2020
200919-59	200919-59
22860158	22860160

Component	Unit	Location	DTP70703	DTP70703
Dibromofluoromethane**	%	TM116	99.8 @	102 @
Toluene-d8**	%	TM116	97.6 @	98.6 @
4-Bromofluorobenzene**	%	TM116	98 @	102 @
Methyl Tertiary Butyl Ether	<10 µg/kg	TM116	<10 @ M	<10 @ M
Benzene	<9 µg/kg	TM116	<9 @ M	<9 @ M
Toluene	<7 µg/kg	TM116	<7 @ M	<7 @ M
Ethylbenzene	<4 µg/kg	TM116	<4 @ M	<4 @ M
p/m-Xylene	<10 µg/kg	TM116	<10 @ #	<10 @ #
o-Xylene	<10 µg/kg	TM116	<10 @ M	<10 @ M
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.02 @	<0.02 @
Sum of BTEX	<40 µg/kg	TM116	<40 @	<40 @



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SDG:	200919-59	Client Reference:	JFR1451	Report Number:	569678
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CERTIFICATE OF ANALYSIS

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SDG: 200919-59 Client Reference: JFR1451 Report Number: 569678
 Location: A303 Stonehenge Order Number: Superseded Report:

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM243		Mixed Anions In Soils By Kone
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).



CERTIFICATE OF ANALYSIS

Validated

SDG: 200919-59 Client Reference: JFR1451 Report Number: 569678
 Location: A303 Stonehenge Order Number: Superseded Report:

Test Completion Dates

Lab Sample No(s) Customer Sample Ref.	22860158	22860160
	DTP70703	DTP70703
AGS Ref.		
Depth	0.50	1.50
Type	Soil/Solid (S)	Soil/Solid (S)
Ammonium Soil by Titration	29-Sep-2020	29-Sep-2020
Anions by Kone (soil)	30-Sep-2020	30-Sep-2020
Chromium III	01-Oct-2020	01-Oct-2020
Cyanide Comp/Free/Total/Thiocyanate	29-Sep-2020	29-Sep-2020
EPH CWG GC (S)	30-Sep-2020	30-Sep-2020
GRO by GC-FID (S)	01-Oct-2020	01-Oct-2020
Hexavalent Chromium (s)	30-Sep-2020	30-Sep-2020
Metals in solid samples by OES	02-Oct-2020	02-Oct-2020
PAH by GCMS	29-Sep-2020	
pH	25-Sep-2020	25-Sep-2020
Phenols by HPLC (S)	29-Sep-2020	29-Sep-2020
Sample description	24-Sep-2020	24-Sep-2020
Total Organic Carbon	29-Sep-2020	29-Sep-2020
TPH CWG GC (S)	01-Oct-2020	01-Oct-2020
VOC MS (S)	30-Sep-2020	30-Sep-2020



CERTIFICATE OF ANALYSIS

Validated

SDG: 200919-59 Client Reference: JFR1451 Report Number: 569678
 Location: A303 Stonehenge Order Number: Superseded Report:

ASSOCIATED QC DATA

Ammonium Soil by Titration

Component	Method Code	QC 2263
Exchangeable Ammonium as NH4	TM024	95.02 76.20 : 110.13

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2218
Free Cyanide	TM153	84.16 78.61 : 114.43
Thiocyanate	TM153	96.79 90.48 : 109.52
Total Cyanide	TM153	88.81 76.80 : 112.96

GRO by GC-FID (S)

Component	Method Code	QC 2211
QC	TM089	83.13 70.34 : 111.95

Hexavalent Chromium (s)

Component	Method Code	QC 2292
Hexavalent Chromium	TM151	98.0 95.60 : 107.60

Metals in solid samples by OES

Component	Method Code	QC 2293
Aluminium	TM181	74.69 77.46 : 123.98
Antimony	TM181	95.12 87.04 : 111.16
Arsenic	TM181	93.6 87.34 : 110.87
Barium	TM181	85.78 80.73 : 115.16
Beryllium	TM181	96.27 89.47 : 112.97
Boron	TM181	79.37 76.57 : 104.15
Cadmium	TM181	84.77 78.94 : 102.43



CERTIFICATE OF ANALYSIS

Validated

SDG:	200919-59	Client Reference:	JFR1451
Location:	A303 Stonehenge	Order Number:	

Report Number:	569678
Superseded Report:	

Metals in solid samples by OES

		QC 2293
Chromium	TM181	92.09 77.55 : 104.47
Cobalt	TM181	88.68 82.95 : 107.41
Copper	TM181	89.79 84.36 : 106.14
Iron	TM181	97.62 81.43 : 115.79
Lead	TM181	90.32 81.95 : 107.63
Manganese	TM181	109.17 94.29 : 119.51
Mercury	TM181	88.41 82.73 : 106.36
Molybdenum	TM181	94.24 86.61 : 111.07
Nickel	TM181	87.53 79.72 : 103.80
Phosphorus	TM181	109.49 92.65 : 125.47
Selenium	TM181	94.12 88.36 : 111.25
Strontium	TM181	83.3 78.06 : 99.91
Thallium	TM181	95.13 88.60 : 116.73
Tin	TM181	94.68 89.77 : 112.62
Titanium	TM181	68.24 66.29 : 105.96
Vanadium	TM181	87.55 75.51 : 108.87
Zinc	TM181	92.81 84.02 : 111.24

PAH by GCMS

Component	Method Code	QC 2268	QC 2294
		88.5 80.97 : 105.99	99.0 80.97 : 105.99
Acenaphthylene	TM218	86.0 74.76 : 107.36	95.0 74.76 : 107.36
Anthracene	TM218	88.0 73.04 : 106.97	97.0 73.04 : 106.97
Benz(a)anthracene	TM218	93.0 68.79 : 119.64	97.5 68.79 : 119.64
Benzo(a)pyrene	TM218	92.0 66.17 : 117.52	96.5 66.17 : 117.52
Benzo(b)fluoranthene	TM218	97.0 66.40 : 118.34	92.0 66.40 : 118.34
Benzo(ghi)perylene	TM218	95.5 67.68 : 112.07	100.5 67.68 : 112.07



CERTIFICATE OF ANALYSIS

Validated

SDG: 200919-59	Client Reference: JFR1451	Report Number: 569678
Location: A303 Stonehenge	Order Number:	Superseded Report:

PAH by GCMS

		QC 2268	QC 2294
Benzo(k)fluoranthene	TM218	86.0 72.84 : 114.66	104.0 72.84 : 114.66
Chrysene	TM218	96.5 68.39 : 115.56	92.0 68.39 : 115.56
Dibenzo(ah)anthracene	TM218	94.5 69.03 : 110.45	96.0 69.03 : 110.45
Fluoranthene	TM218	96.5 69.37 : 117.19	105.5 69.37 : 117.19
Fluorene	TM218	88.5 75.38 : 105.98	97.5 75.38 : 105.98
Indeno(123cd)pyrene	TM218	99.0 65.91 : 113.61	87.5 65.91 : 113.61
Naphthalene	TM218	84.0 71.40 : 105.87	96.5 71.40 : 105.87
Phenanthrene	TM218	93.0 74.04 : 109.30	102.5 74.04 : 109.30
Pyrene	TM218	94.0 69.68 : 115.27	100.5 69.68 : 115.27

pH

Component	Method Code	QC 2238
pH	TM133	101.32 99.74 : 102.91

Phenols by HPLC (S)

Component	Method Code	QC 2288
2,3,5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	104.55 65.50 : 89.50
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	85.96 84.00 : 124.00
Catechol by HPLC (S)	TM062 (S)	72.38 19.39 : 135.70
Cresols by HPLC (S)	TM062 (S)	96.03 81.00 : 112.20
Naphthol by HPLC (S)	TM062 (S)	117.86 57.50 : 102.50
Phenol by HPLC (S)	TM062 (S)	102.65 88.67 : 124.67
Resorcinol HPLC (S)	TM062 (S)	93.08 69.99 : 127.22
Xylenols by HPLC (S)	TM062 (S)	97.6 95.22 : 115.89

Total Organic Carbon



CERTIFICATE OF ANALYSIS

Validated

SDG: 200919-59 Client Reference: JFR1451 Report Number: 569678
 Location: A303 Stonehenge Order Number: Superseded Report:

Total Organic Carbon

Component	Method Code	QC 2268
Total Organic Carbon	TM132	89.45 87.02 : 113.45

VOC MS (S)

Component	Method Code	QC 2231
1,1,1,2-tetrachloroethane	TM116	102.8 86.59 : 118.97
1,1,1-Trichloroethane	TM116	95.4 86.26 : 117.53
1,1,2-Trichloroethane	TM116	95.8 75.16 : 112.70
1,1-Dichloroethane	TM116	96.2 83.27 : 122.16
1,2-Dichloroethane	TM116	105.4 89.30 : 133.10
1,4-Dichlorobenzene	TM116	108.8 82.59 : 123.23
2-Chlorotoluene	TM116	105.2 66.81 : 118.43
4-Chlorotoluene	TM116	104.2 65.88 : 114.76
Benzene	TM116	101.0 93.16 : 123.63
Carbon Disulphide	TM116	98.8 75.11 : 124.81
Carbontetrachloride	TM116	105.0 82.35 : 126.46
Chlorobenzene	TM116	103.6 85.07 : 118.13
Chloroform	TM116	99.6 88.13 : 122.71
Chloromethane	TM116	116.6 55.37 : 133.35
Cis-1,2-Dichloroethene	TM116	103.4 78.27 : 128.90
Dibromomethane	TM116	98.0 77.47 : 121.29
Dichloromethane	TM116	106.6 87.89 : 134.72
Ethylbenzene	TM116	99.2 79.92 : 110.05
Hexachlorobutadiene	TM116	82.8 16.78 : 153.29
Isopropylbenzene	TM116	91.6 69.92 : 116.39
Naphthalene	TM116	105.4 79.29 : 125.59



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Validated

SDG: 200919-59 **Client Reference:** JFR1451 **Report Number:** 569678
Location: A303 Stonehenge **Order Number:** **Superseded Report:**

VOC MS (S)

		QC 2231
o-Xylene	TM116	95.6 74.57 : 112.73
p/m-Xylene	TM116	98.1 76.47 : 108.99
Sec-Butylbenzene	TM116	97.2 44.71 : 117.87
Tetrachloroethene	TM116	109.8 85.86 : 122.95
Toluene	TM116	93.4 87.82 : 116.21
Trichloroethene	TM116	98.6 79.80 : 112.33
Trichlorofluoromethane	TM116	101.2 80.52 : 132.12
Vinyl Chloride	TM116	92.2 68.07 : 137.84

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.

The figure detailed is the percentage recovery result for the AQC.

The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.



CERTIFICATE OF ANALYSIS

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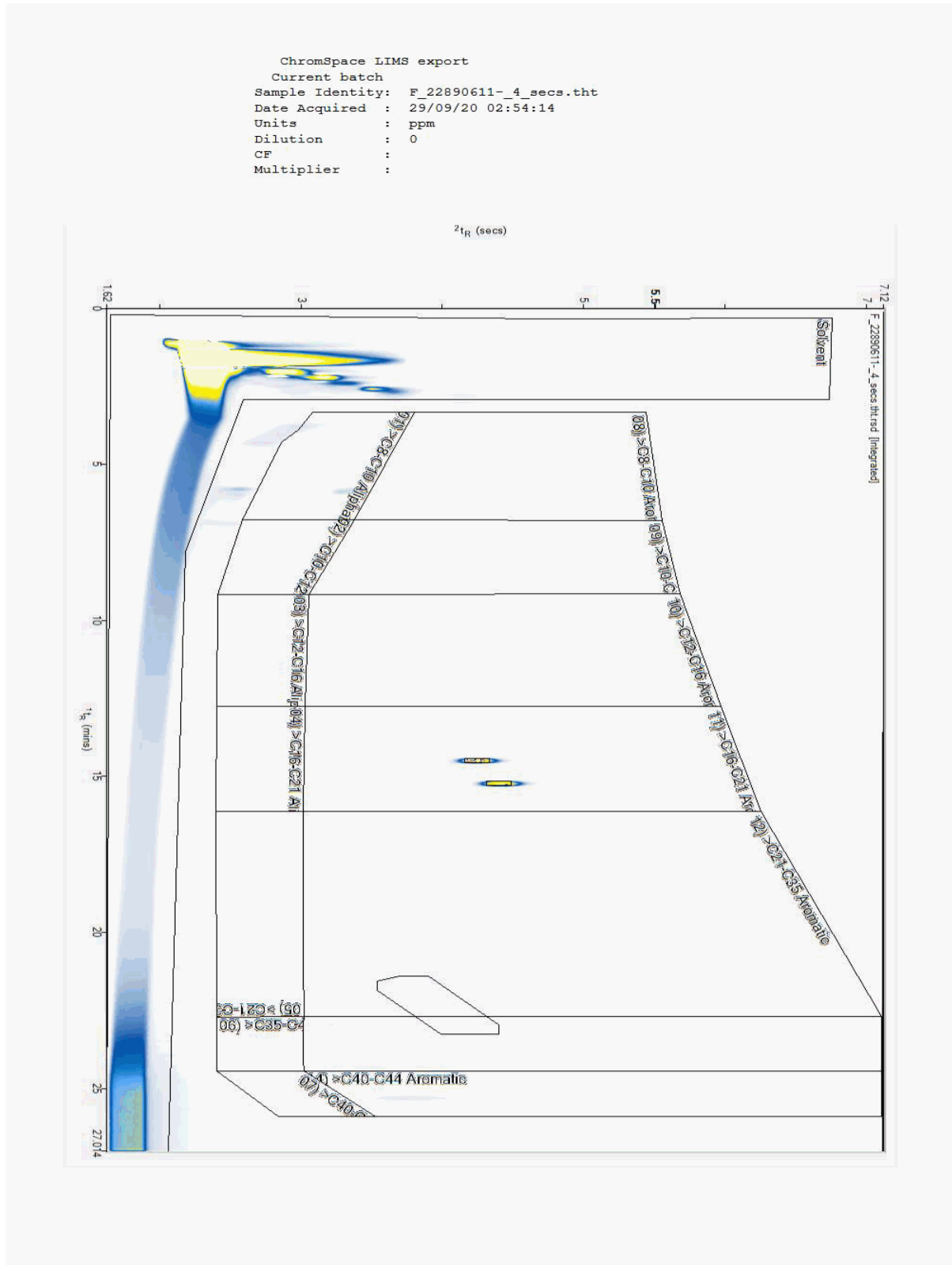
SDG: 200919-59 Client Reference: JFR1451 Report Number: 569678
Location: A303 Stonehenge Order Number: Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 22890611
Sample ID : DTP70703

Depth : 1.50





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SDG: 200919-59
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

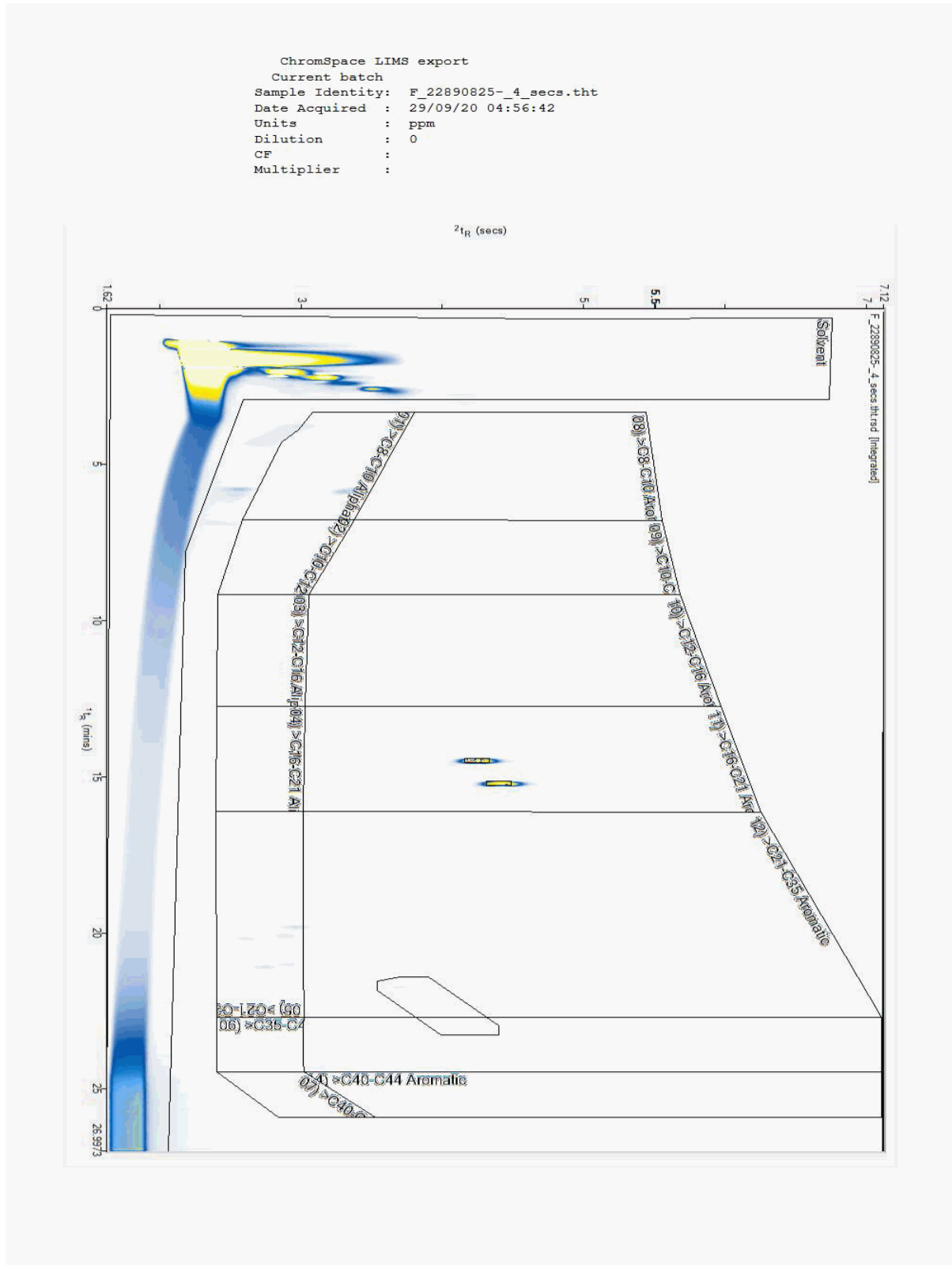
Report Number: 569678
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 22890825
Sample ID : DTP70703

Depth : 0.50





CERTIFICATE OF ANALYSIS

Validated

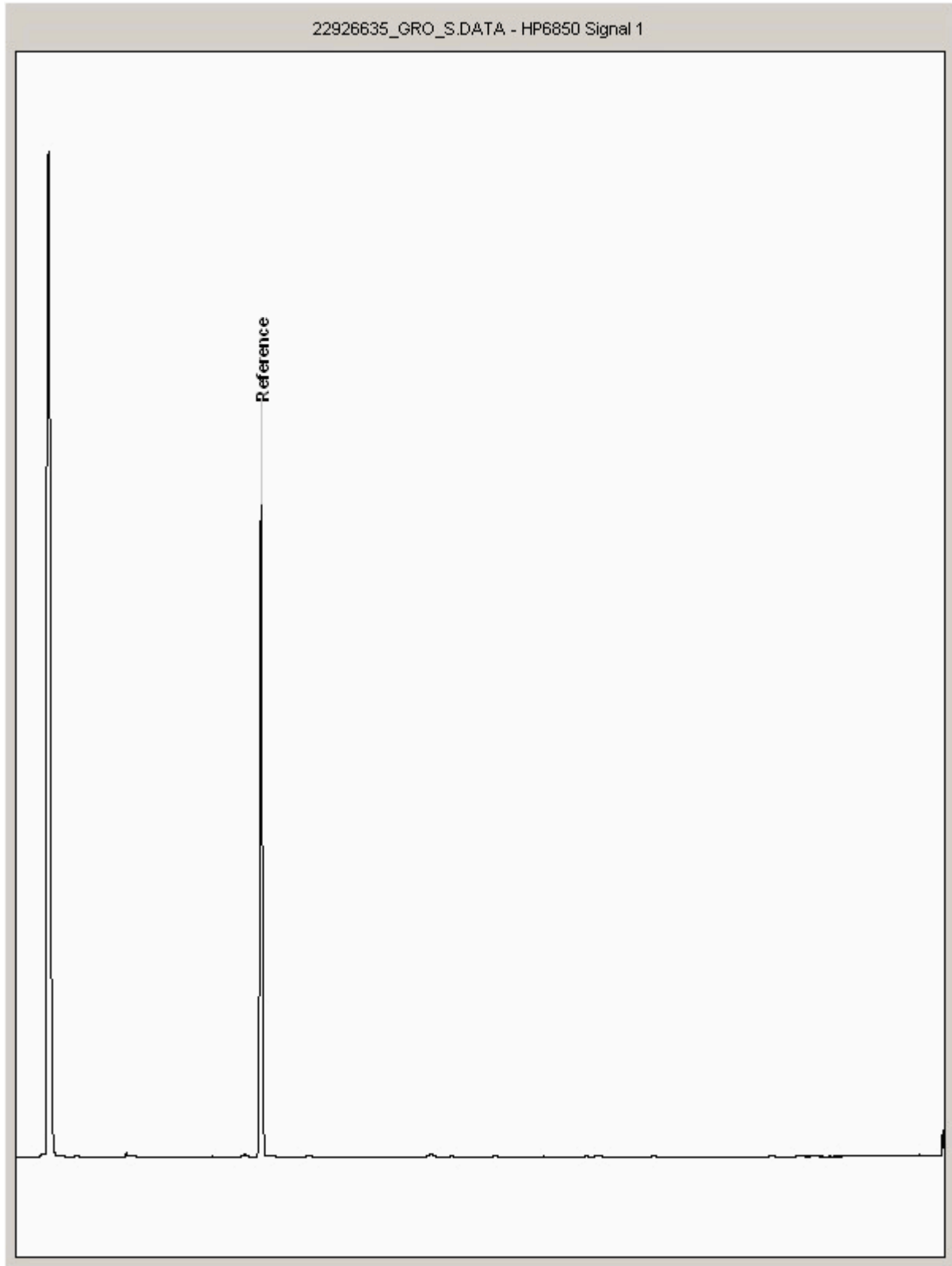
SDG: 200919-59 Client Reference: JFR1451 Report Number: 569678
Location: A303 Stonehenge Order Number: Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 22926635
Sample ID : DTP70703

Depth : 1.50





CERTIFICATE OF ANALYSIS

Validated

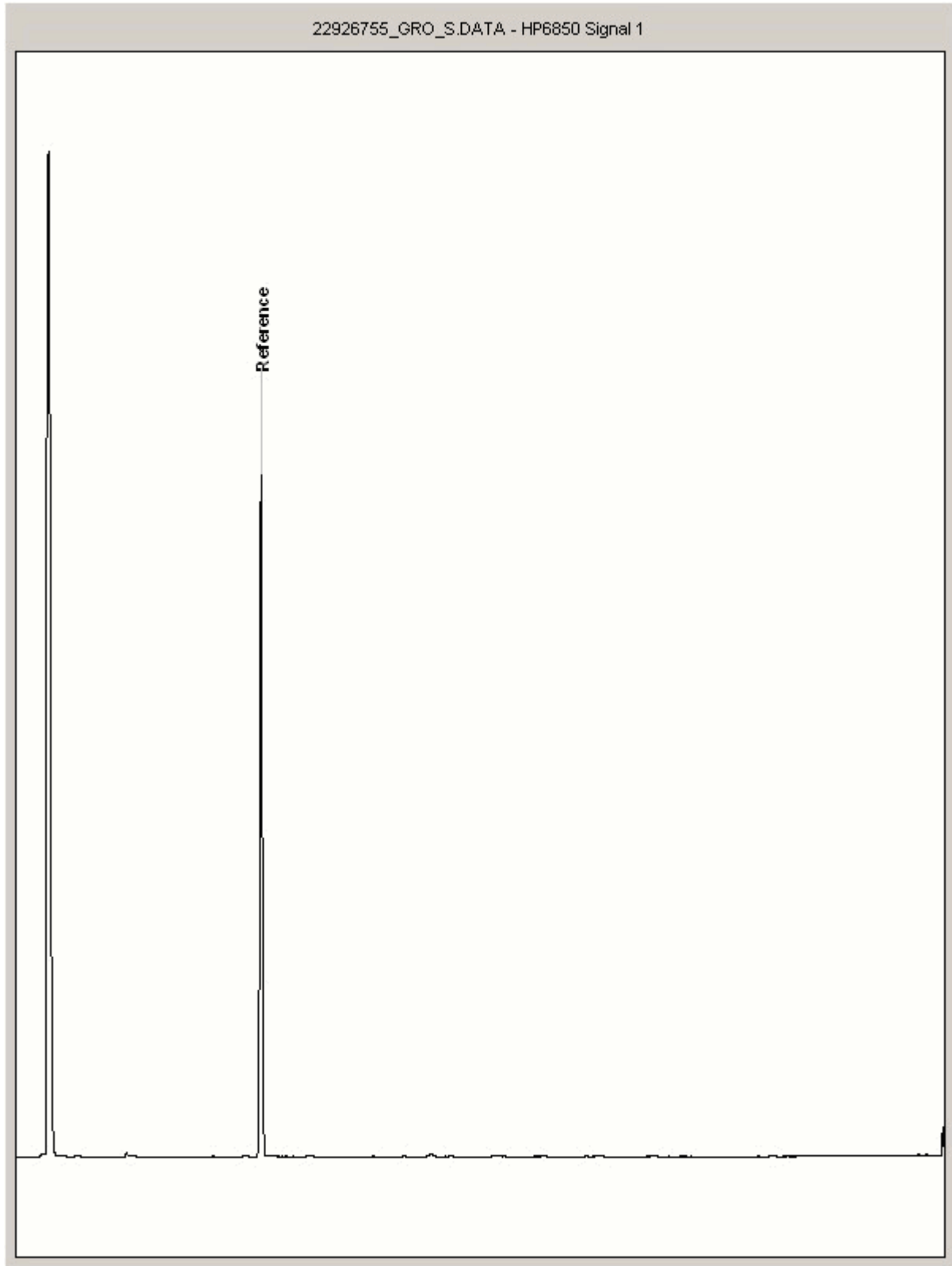
SDG: 200919-59 Client Reference: JFR1451 Report Number: 569678
Location: A303 Stonehenge Order Number: Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 22926755
Sample ID : DTP70703

Depth : 0.50





CERTIFICATE OF ANALYSIS

SDG: 200919-59 Client Reference: JFR1451 Report Number: 569678
 Location: A303 Stonehenge Order Number: Superseded Report:

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH₄ by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
§	Sampled on date not provided
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples

19. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung. Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017)*.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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Website: www.alsenvironmental.co.uk

RPS Consultants Ltd
260 Park Avenue
Aztec West
Almondsbury
Bristol
BS32 4SY

Attention: Gary Riches

CERTIFICATE OF ANALYSIS

Date of report Generation: 18 November 2020
Customer: RPS Consultants Ltd
Sample Delivery Group (SDG): 200919-125
Your Reference: JFR1451
Location: A303 Stonehenge
Report No: 576005

This report has been revised and directly supersedes 574697 in its entirety.

We received 4 samples on Saturday September 19, 2020 and 3 of these samples were scheduled for analysis which was completed on Wednesday November 18, 2020. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

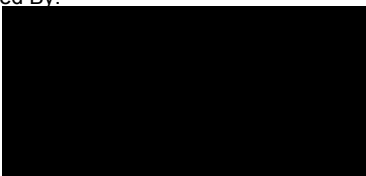
Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:



Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 200919-125 **Client Reference:** JFR1451 **Report Number:** 576005
Location: A303 Stonehenge **Order Number:** **Superseded Report:** 574697

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
22862968	R71203		0.00 - 0.10	18/09/2020
22862969	R71203		0.30 - 0.40	18/09/2020
22862970	R71203		0.50 - 0.60	18/09/2020
22862972	R71203		1.00 - 1.10	18/09/2020

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG:	200919-125	Client Reference:	JFR1451	Report Number:	576005
Location:	A303 Stonehenge	Order Number:		Superseded Report:	574697

Results Legend

- X Test
- N No Determination Possible

Sample Types -

- S - Soil/Solid
- UNS - Unspecified Solid
- GW - Ground Water
- SW - Surface Water
- LE - Land Leachate
- PL - Prepared Leachate
- PR - Process Water
- SA - Saline Water
- TE - Trade Effluent
- TS - Treated Sewage
- US - Untreated Sewage
- RE - Recreational Water
- DW - Drinking Water Non-regulatory
- UNL - Unspecified Liquid
- SL - Sludge
- G - Gas
- OTH - Other

	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type
	22862968	R71203		0.00 - 0.10	250g Amber Jar (ALE210)	S
	22862969	R71203		0.30 - 0.40	60g VOC (ALE215)	S
	22862972	R71203		1.00 - 1.10	1kg TUB with Handle (ALE260)	S
					250g Amber Jar (ALE215)	S
					60g VOC (ALE215)	S
					1kg TUB with Handle (ALE260)	S
					250g Amber Jar (ALE215)	S
					60g VOC (ALE215)	S
					1kg TUB with Handle (ALE260)	S
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					1kg TUB with Handle (ALE260)	S
					250g Amber Jar (ALE215)	S
					60g VOC (ALE215)	S
					1kg TUB with Handle (ALE260)	S
					250g Amber Jar (ALE215)	S
					60g VOC (ALE215)	S
					1kg TUB with Handle (ALE260)	S
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					60g VOC (ALE215)	S
					1kg TUB with Handle (ALE260)	S
					250g Amber Jar (ALE215)	S
					60g VOC (ALE215)	S
					1kg TUB with Handle (ALE260)	S
					250g Amber Jar (ALE215)	S
					60g VOC (ALE215)	S
					1kg TUB with Handle (ALE260)	



CERTIFICATE OF ANALYSIS

Validated

SDG:	200919-125	Client Reference:	JFR1451	Report Number:	576005
Location:	A303 Stonehenge	Order Number:		Superseded Report:	574697

Results Legend <div style="display: flex; flex-direction: column; gap: 5px;"> <div style="display: flex; align-items: center;">X Test</div> <div style="display: flex; align-items: center;">N No Determination Possible</div> </div> Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type	
		22862968	R71203		0.00 - 0.10	250g Amber Jar (ALE210)	S
		22862969	R71203		0.30 - 0.40	60g VOC (ALE219)	S
		22862972	R71203		1.00 - 1.10	60g VOC (ALE215)	S
						250g Amber Jar (ALE210)	S
						1kg TUB with Handle (ALE280)	S
						1kg TUB with Handle (ALE280)	S
GRO by GC-FID (S)	All	NDPs: 0 Tests: 2				X	
GRO by GC-FID (W)	All	NDPs: 0 Tests: 1				X	
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 2				X	
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 1				X	
Mercury Dissolved	All	NDPs: 0 Tests: 2				X	
Metals in solid samples by OES	All	NDPs: 0 Tests: 2				X	
PAH 16 & 17 Calc	All	NDPs: 0 Tests: 1				X	
PAH by GCMS	All	NDPs: 0 Tests: 3				X	
PAH in waters by GC-MS (diss.filt)	All	NDPs: 0 Tests: 1				X	
PCBs by GCMS	All	NDPs: 0 Tests: 1				X	
pH	All	NDPs: 0 Tests: 2				X	
pH Value of Filtered Water	All	NDPs: 0 Tests: 1				X	
Phenols by HPLC (S)	All	NDPs: 0 Tests: 2				X	
Phenols by HPLC (W)	All	NDPs: 0 Tests: 2				X	
Sample description	All	NDPs: 0 Tests: 3				X	



CERTIFICATE OF ANALYSIS

Validated

SDG:	200919-125	Client Reference:	JFR1451	Report Number:	576005
Location:	A303 Stonehenge	Order Number:		Superseded Report:	574697

Results Legend <div style="display: flex; flex-direction: column; gap: 5px;"> <div style="display: flex; align-items: center;">X Test</div> <div style="display: flex; align-items: center;">N No Determination Possible</div> </div> Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type	
		22862968	R71203		0.00 - 0.10	250g Amber Jar (ALE210)	S
		22862969	R71203		0.30 - 0.40	60g VOC (ALE219)	S
		22862972	R71203		1.00 - 1.10	60g VOC (ALE215)	S
						250g Amber Jar (ALE210)	S
						1kg TUB with Handle (ALE280)	S
						250g Amber Jar (ALE219)	S
					60g VOC (ALE215)	S	
					1kg TUB with Handle (ALE280)	S	
					250g Amber Jar (ALE210)	S	
					60g VOC (ALE215)	S	
					1kg TUB with Handle (ALE280)	S	
					250g Amber Jar (ALE210)	S	
					60g VOC (ALE215)	S	
					1kg TUB with Handle (ALE280)	S	
					250g Amber Jar (ALE210)	S	
					60g VOC (ALE215)	S	
					1kg TUB with Handle (ALE280)	S	
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					1kg TUB with Handle (ALE280)	S	
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					1kg TUB with Handle (ALE280)	S	
					250g Amber Jar (ALE210)	S	
					60g VOC (ALE215)	S	
					1kg TUB with Handle (ALE280)	S	
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					1kg TUB with Handle (ALE280)	S	
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					1kg TUB with Handle (ALE280)	S	
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					1kg TUB with Handle (ALE280)	S	
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					1kg TUB with Handle (ALE280)	S	
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					1kg TUB with Handle (ALE280)	S	
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					1kg TUB with Handle (ALE280)	S	
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					1kg TUB with Handle (ALE280)	S	
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					1kg TUB with Handle (ALE280)	S	
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					60g VOC (ALE215)	S	
					1kg TUB with Handle (ALE280)	S	
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					60g VOC (ALE215)	S	
					1kg TUB with Handle (ALE280)	S	
					250g Amber Jar (ALE210)	S	
					60g VOC (ALE215)	S	
					1kg TUB with Handle (ALE280)	S	
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					60g VOC (ALE215)	S	
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					60g VOC (ALE215)	S	
					1kg TUB with Handle (ALE280)	S	
					250g Amber Jar (ALE210)	S	
					60g VOC (ALE215)	S	
					1kg TUB with Handle (ALE280)	S	
					250g Amber Jar (ALE210)	S	



CERTIFICATE OF ANALYSIS

Validated

SDG: 200919-125
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 576005
Superseded Report: 574697

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm
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Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
22862968	R71203	0.00 - 0.10	Dark Brown	Loamy Sand	Stones	Vegetation
22862969	R71203	0.30 - 0.40	Cream	Sand	None	Stones
22862972	R71203	1.00 - 1.10	Cream	Sand	Stones	Vegetation

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.



CERTIFICATE OF ANALYSIS

Validated

SDG: 200919-125	Client Reference: JFR1451	Report Number: 576005
Location: A303 Stonehenge	Order Number:	Superseded Report: 574697

Results Legend		Customer Sample Ref.	R71203	R71203	R71203
#	ISO17025 accredited.				
M	mCERTS accredited.				
aq	Aqueous / settled sample.				
diss.fit	Dissolved / filtered sample.				
tot.unfit	Total / unfiltered sample.				
*	Subcontracted - refer to subcontractor report for accreditation status.				
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery				
(F)	Trigger breach confirmed				
1-4-3@	Sample deviation (see appendix)				
		Depth (m)	0.00 - 0.10	0.30 - 0.40	1.00 - 1.10
		Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
		Date Sampled	18/09/2020	18/09/2020	18/09/2020
		Sampled Time			
		Date Received	19/09/2020	19/09/2020	19/09/2020
		SDG Ref	200919-125	200919-125	200919-125
		Lab Sample No.(s)	22862968	22862969	22862972
		AGS Reference			
Component	LOD/Units	Method			
Moisture Content Ratio (% of as received sample)	%	PM024	11	11	7.8
Exchangeable Ammonia as N	<12 mg/kg	TM024	<12 @ M		<12 @ M
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 @ M		<0.01 @ M
Organic Carbon, Total	<0.2 %	TM132	2.29 @ M	0.432 @ M	<0.2 @ M
pH	1 pH Units	TM133	7.99 @ M		8.7 @ M
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 @ #		<0.6 @ #
Cyanide, Total	<1 mg/kg	TM153	<1 @ M		<1 @ M
Cyanide, Free	<1 mg/kg	TM153	<1 @ M		<1 @ M
PCB congener 28	<3 µg/kg	TM168		<3 @ M	
PCB congener 52	<3 µg/kg	TM168		<3 @ M	
PCB congener 101	<3 µg/kg	TM168		<3 @ M	
PCB congener 118	<3 µg/kg	TM168		<3 @ M	
PCB congener 138	<3 µg/kg	TM168		<3 @ M	
PCB congener 153	<3 µg/kg	TM168		<3 @ M	
PCB congener 180	<3 µg/kg	TM168		<3 @ M	
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168		<21	
Chromium, Trivalent	<0.9 mg/kg	TM181	13.8		2.59
Antimony	<0.6 mg/kg	TM181	<0.6 #		<0.6 #
Arsenic	<0.6 mg/kg	TM181	5.83 M		0.659 M
Beryllium	<0.01 mg/kg	TM181	0.509 M		0.111 M
Boron	<0.7 mg/kg	TM181	8.73 #		2.5 #
Cadmium	<0.02 mg/kg	TM181	0.59 M		0.18 M
Chromium	<0.9 mg/kg	TM181	13.8 M		2.59 M
Copper	<1.4 mg/kg	TM181	9.74 M		1.73 M
Iron	<1000 mg/kg	TM181	12200 #		2240 #
Lead	<0.7 mg/kg	TM181	15.2 M		1.06 M
Manganese	<0.13 mg/kg	TM181	747 M		208 M
Mercury	<0.14 mg/kg	TM181	<0.14 @ M		<0.14 @ M
Molybdenum	<0.1 mg/kg	TM181	0.229 #		<0.1 #
Nickel	<0.2 mg/kg	TM181	12.6 M		3.54 M
Phosphorus	<1 mg/kg	TM181	1300		421
Selenium	<1 mg/kg	TM181	<1 #		<1 #



CERTIFICATE OF ANALYSIS

Validated

SDG: 200919-125
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 576005
Superseded Report: 574697

Results Legend			Customer Sample Ref.	R71203	R71203	R71203			
#	ISO17025 accredited.		Depth (m)	0.00 - 0.10	0.30 - 0.40	1.00 - 1.10			
M	mCERTS accredited.		Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
aq	Aqueous / filtered sample.		Date Sampled	18/09/2020	18/09/2020	18/09/2020			
dis.filt	Dissolved / filtered sample.		Sampled Time	.	.	.			
tot.unfilt	Total / unfiltered sample.		Date Received	19/09/2020	19/09/2020	19/09/2020			
*	Subcontracted - refer to subcontractor report for accreditation status.		SDG Ref	200919-125	200919-125	200919-125			
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		Lab Sample No.(s)	22862968	22862969	22862972			
(F)	Trigger breach confirmed		AGS Reference						
1-4*5@	Sample deviation (see appendix)								
Component	LOD/Units	Method							
Zinc	<1.9 mg/kg	TM181	62.8		18.4				
				M		M			
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243	0.0362		0.0069				
				@ M		@ M			
PAH Total 17 (inc Coronene) Moisture Corrected	<10 mg/kg	TM410		<10					
Coronene	<200 µg/kg	TM410		<200					
EPH Surrogate % recovery**	%	TM415		95.4					
Mineral Oil >C10-C40	<5 mg/kg	TM415		<5					



CERTIFICATE OF ANALYSIS

Validated

SDG: 200919-125
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 576005
Superseded Report: 574697

TPH CWG (S)

Results Legend		Customer Sample Ref.	R71203	R71203			
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.10	1.00 - 1.10			
M	mCERTS accredited.		Soil/Solid (S)	Soil/Solid (S)			
aq	Aqueous / settled sample.		18/09/2020	18/09/2020			
diss.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.		19/09/2020	19/09/2020			
*	Subcontracted - refer to subcontractor report for accreditation status.		200919-125	200919-125			
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		22862968	22862972			
(F)	Trigger breach confirmed						
1-4*\$@	Sample deviation (see appendix)						
Component	LOD/Units		Method				
GRO Surrogate % recovery**	%	TM089	93 @	110 @			
Aliphatics >C5-C6	<10 µg/kg	TM089	<10 @	<10 @			
Aliphatics >C6-C8	<10 µg/kg	TM089	<10 @	<10 @			
Aliphatics >C8-C10	<10 µg/kg	TM089	<10 @	<10 @			
Aliphatics >C10-C12	<1000 µg/kg	TM414	<1000	<1000			
Aliphatics >C12-C16	<1000 µg/kg	TM414	<1000	<1000			
Aliphatics >C16-C21	<1000 µg/kg	TM414	<1000	<1000			
Aliphatics >C21-C35	<1000 µg/kg	TM414	5680	<1000			
Aliphatics >C35-C44	<1000 µg/kg	TM414	<1000	<1000			
Total Aliphatics >C10-C44	<5000 µg/kg	TM414	6210	<5000			
Total Aliphatics & Aromatics >C10-C44	<10000 µg/kg	TM414	14900	<10000			
Aromatics >EC5-EC7	<10 µg/kg	TM089	<10 @	<10 @			
Aromatics >EC7-EC8	<10 µg/kg	TM089	<10 @	<10 @			
Aromatics >EC8-EC10	<10 µg/kg	TM089	<10 @	<10 @			
Aromatics > EC10-EC12	<1000 µg/kg	TM414	<1000	<1000			
Aromatics > EC12-EC16	<1000 µg/kg	TM414	<1000	<1000			
Aromatics > EC16-EC21	<1000 µg/kg	TM414	<1000	<1000			
Aromatics > EC21-EC35	<1000 µg/kg	TM414	7140	<1000			
Aromatics >EC35-EC44	<1000 µg/kg	TM414	<1000	<1000			
Aromatics > EC40-EC44	<1000 µg/kg	TM414	<1000	<1000			
Total Aromatics > EC10-EC44	<5000 µg/kg	TM414	8680	<5000			
Total Aliphatics & Aromatics >C5-C44	<10000 µg/kg	TM414	14900	<10000			
Total Aliphatics >C5-C10	<50 µg/kg	TM089	<50 @	<50 @			
Total Aromatics >EC5-EC10	<50 µg/kg	TM089	<50 @	<50 @			
GRO >C5-C10	<20 µg/kg	TM089	<20 @	<20 @			



CERTIFICATE OF ANALYSIS

Validated

SDG: 200919-125
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 576005
Superseded Report: 574697

CEN 2:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/

Client Reference		Site Location	A303 Stonehenge
Mass Sample taken (kg)	0.206	Natural Moisture Content (%)	17.6
Mass of dry sample (kg)	0.175	Dry Matter Content (%)	85
Particle Size <4mm	>95%		

Case	
SDG	200919-125
Lab Sample Number(s)	22862972
Sampled Date	18-Sep-2020
Customer Sample Ref.	R71203
Depth (m)	1.00 - 1.10

Eluate Analysis	Conc ⁿ in 2:1 eluate (mg/l)		2:1 conc ⁿ leached (mg/kg)	
	Result	Limit of Detection	Result	Limit of Detection
Aliphatics >C12-C16	<0.01	<0.01	<0.02	<0.02
Aliphatics >C16-C21	<0.01	<0.01	<0.02	<0.02
Aliphatics >C21-C35	<0.01	<0.01	<0.02	<0.02
Total Aliphatics >C12-C35	<0.01	<0.01	<0.02	<0.02
Aromatics >EC12-EC16	<0.01	<0.01	<0.02	<0.02
Aromatics >EC16-EC21	<0.01	<0.01	<0.02	<0.02
Aromatics >EC21-EC35	<0.01	<0.01	<0.02	<0.02
Aromatics >EC16-EC35	<0.01	<0.01	<0.02	<0.02
Total Aromatics >EC12-EC35	<0.01	<0.01	<0.02	<0.02
TPH (Total Aliphatics + Total Aromatics) >C5-C35	<0.01	<0.01	<0.02	<0.02
Ammoniacal Nitrogen as N	<0.2	<0.2	<0.4	<0.4
Chromium III	<0.03	<0.03	<0.06	<0.06
Hexavalent Chromium	<0.03	<0.03	<0.06	<0.06
Sulphate (soluble)	<2	<2	<4	<4
Dissolved Organic Carbon	3.36	<3	6.72	<6
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.00002	<0.00002
Antimony	<0.001	<0.001	<0.002	<0.002
Naphthalene (diss.filt)	<0.00001	<0.00001	<0.00002	<0.00002
Total Cyanide (W)	<0.05	<0.05	<0.1	<0.1
Acenaphthene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Arsenic	<0.0005	<0.0005	<0.001	<0.001
Free Cyanide (W)	<0.05	<0.05	<0.1	<0.1
Acenaphthylene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Phenol by HPLC (W)	<0.002	<0.002	<0.004	<0.004
Beryllium	<0.0001	<0.0001	<0.0002	<0.0002
Fluoranthene (diss.filt)	0.0000156	<0.000005	0.0000312	<0.00001
Anthracene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Boron	0.0118	<0.01	0.0236	<0.02
Phenanthrene (diss.filt)	0.0000156	<0.000005	0.0000312	<0.00001
Cadmium	<0.00008	<0.00008	<0.00016	<0.00016
Fluorene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Chrysene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Pyrene (diss.filt)	0.00000683	<0.000005	0.0000137	<0.00001
Benzo(a)anthracene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Chromium	<0.001	<0.001	<0.002	<0.002

Leach Test Information

Date Prepared	02-Nov-2020
pH (pH Units)	8.32
Conductivity (µS/cm)	98.50
Temperature (°C)	21.60
Volume Leachant (Litres)	0.319
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates

18/11/2020 11:54:10

11:53:51 18/11/2020



CERTIFICATE OF ANALYSIS

Validated

SDG: 200919-125
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 576005
Superseded Report: 574697

CEN 2:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/

Client Reference	
Mass Sample taken (kg)	0.206
Mass of dry sample (kg)	0.175
Particle Size <4mm	>95%

Site Location	A303 Stonehenge
Natural Moisture Content (%)	17.6
Dry Matter Content (%)	85

Case	
SDG	200919-125
Lab Sample Number(s)	22862972
Sampled Date	18-Sep-2020
Customer Sample Ref.	R71203
Depth (m)	1.00 - 1.10

Eluate Analysis	Conc ⁿ in 2:1 eluate (mg/l)		2:1 conc ⁿ leached (mg/kg)	
	Result	Limit of Detection	Result	Limit of Detection
Benzo(b)fluoranthene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Benzo(k)fluoranthene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Benzo(a)pyrene (diss.filt)	<0.000002	<0.000002	<0.000004	<0.000004
Copper	0.00238	<0.0003	0.00476	<0.0006
Dibenzo(a,h)anthracene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Lead	<0.0002	<0.0002	<0.0004	<0.0004
Benzo(g,h,i)perylene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Indeno(1,2,3-cd)pyrene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Manganese	<0.003	<0.003	<0.006	<0.006
Molybdenum	<0.003	<0.003	<0.006	<0.006
PAH 16 EPA Total by GCMS (diss.filt)	<0.000082	<0.000082	<0.000164	<0.000164
Nickel	0.000457	<0.0004	0.000914	<0.0008
Phosphorus	0.0242	<0.01	0.0484	<0.02
Selenium	<0.001	<0.001	<0.002	<0.002
Zinc	0.00164	<0.001	0.00328	<0.002
Calcium (Dis.Filt) mg/l	17.6	<0.2	35.2	<0.4
Iron (Dis.Filt) mg/l	<0.019	<0.019	<0.038	<0.038
TPH CWG (W)				
Surrogate Recovery	-	-	-	-
GRO TOT (C5-C12)	<0.05	<0.05	<0.1	<0.1
Aliphatics C5-C6	<0.01	<0.01	<0.02	<0.02
Aliphatics >C6-C8	<0.01	<0.01	<0.02	<0.02
Aliphatics >C8-C10	<0.01	<0.01	<0.02	<0.02
Aliphatics >C10-C12	<0.01	<0.01	<0.02	<0.02
Aromatics C6-C7	<0.01	<0.01	<0.02	<0.02
Aromatics >C7-C8	<0.01	<0.01	<0.02	<0.02
MTBE GC-FID	<0.003	<0.003	<0.006	<0.006
Aromatics >EC8 -EC10	<0.01	<0.01	<0.02	<0.02
Aromatics >EC10-EC12	<0.01	<0.01	<0.02	<0.02
Benzene by GC	<0.007	<0.007	<0.014	<0.014
Toluene by GC	<0.004	<0.004	<0.008	<0.008
Ethylbenzene by GC	<0.005	<0.005	<0.01	<0.01
m & p Xylene by GC	<0.008	<0.008	<0.016	<0.016
o Xylene by GC	<0.003	<0.003	<0.006	<0.006
Sum m&p and o Xylene by GC	<0.011	<0.011	<0.022	<0.022
Sum of BTEX by GC	<0.028	<0.028	<0.056	<0.056

Leach Test Information

Date Prepared	02-Nov-2020
pH (pH Units)	8.32
Conductivity (µS/cm)	98.50
Temperature (°C)	21.60
Volume Leachant (Litres)	0.319
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
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18/11/2020 11:54:10



CERTIFICATE OF ANALYSIS

Validated

SDG: 200919-125	Client Reference: JFR1451	Report Number: 576005	Superseded Report: 574697
Location: A303 Stonehenge	Order Number:		

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference	A303 Stonehenge	Site Location	A303 Stonehenge
Mass Sample taken (kg)	0.098	Natural Moisture Content (%)	8.91
Mass of dry sample (kg)	0.090	Dry Matter Content (%)	91.8
Particle Size <4mm	>95%		

Case	
SDG	200919-125
Lab Sample Number(s)	22862969
Sampled Date	18-Sep-2020
Customer Sample Ref.	R71203
Depth (m)	0.30 - 0.40

Landfill Waste Acceptance Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	-
-	-	-
1	-	-
500	-	-
100	-	-
-	-	-
-	-	-
-	-	-

Solid Waste Analysis	Result
Total Organic Carbon (%)	0.432
Loss on Ignition (%)	-
Sum of BTEX (mg/kg)	-
Sum of 7 PCBs (mg/kg)	<0.021
Mineral Oil (mg/kg)	<5
PAH Sum of 17 (mg/kg)	<10
pH (pH Units)	-
ANC to pH 6 (mol/kg)	-
ANC to pH 4 (mol/kg)	-

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection	Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Arsenic	<0.0005	<0.0005	<0.005	<0.005	0.5	2	25
Barium	0.00263	<0.0002	0.0263	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00197	<0.0003	0.0197	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.000549	<0.0004	0.00549	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00107	<0.001	0.0107	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	0.533	<0.5	5.33	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	60.2	<5	602	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	3.79	<3	37.9	<30	500	800	1000

Leach Test Information

Date Prepared	06-Nov-2020
pH (pH Units)	8.43
Conductivity (µS/cm)	80.50
Temperature (°C)	20.50
Volume Leachant (Litres)	0.892

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
 Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
 Mcerts Certification does not apply to leachates

18/11/2020 11:54:15



CERTIFICATE OF ANALYSIS

Validated

SDG:	200919-125	Client Reference:	JFR1451	Report Number:	576005
Location:	A303 Stonehenge	Order Number:		Superseded Report:	574697

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM104	Method 4500F, AWWA/APHA, 20th Ed., 1999	Determination of Fluoride using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM123	BS 2690: Part 121:1981	The Determination of Total Dissolved Solids in Water
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990:BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM174	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID
TM178	Modified: US EPA Method 8100	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS in Waters
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser
TM243		Mixed Anions In Soils By Kone
TM245	By GC-FID	Determination of GRO by Headspace in waters
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC
TM410	Shaker extraction-In house coronene method	Determination of Coronene in soils by GCMS
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).



CERTIFICATE OF ANALYSIS

Validated

SDG: 200919-125	Client Reference: JFR1451	Report Number: 576005	
Location: A303 Stonehenge	Order Number:	Superseded Report: 574697	

Test Completion Dates

Lab Sample No(s)	22862968	22862969	22862972
Customer Sample Ref.	R71203	R71203	R71203
AGS Ref.			
Depth	0.00 - 0.10	0.30 - 0.40	1.00 - 1.10
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Ammoniacal Nitrogen			05-Nov-2020
Ammonium Soil by Titration	05-Nov-2020		05-Nov-2020
Anions by Kone (soil)	06-Nov-2020		06-Nov-2020
Anions by Kone (w)		12-Nov-2020	06-Nov-2020
CEN 10:1 Leachate (1 Stage)		10-Nov-2020	
CEN 2:1 Leachate (1 Stage)			03-Nov-2020
CEN Readings		11-Nov-2020	05-Nov-2020
Chromium III	06-Nov-2020		09-Nov-2020
Coronene		10-Nov-2020	
Cyanide Comp/Free/Total/Thiocyanate	05-Nov-2020		06-Nov-2020
Dissolved Metals by ICP-MS		18-Nov-2020	09-Nov-2020
Dissolved Organic/Inorganic Carbon		12-Nov-2020	06-Nov-2020
EPH by GCxGC-FID		13-Nov-2020	
EPH CWG (Aliphatic) Filtered GC (W)			07-Nov-2020
EPH CWG (Aromatic) Filtered GC (W)			07-Nov-2020
EPH CWG GC (S)	06-Nov-2020		06-Nov-2020
Fluoride		12-Nov-2020	
GRO by GC-FID (S)	03-Nov-2020		03-Nov-2020
GRO by GC-FID (W)			06-Nov-2020
Hexavalent Chromium (s)	06-Nov-2020		06-Nov-2020
Hexavalent Chromium (w)			06-Nov-2020
Mercury Dissolved		13-Nov-2020	06-Nov-2020
Metals in solid samples by OES	05-Nov-2020		06-Nov-2020
Moisture at 105C		06-Nov-2020	02-Nov-2020
PAH 16 & 17 Calc		10-Nov-2020	
PAH by GCMS	05-Nov-2020	10-Nov-2020	05-Nov-2020
PAH in waters by GC-MS (diss.fit)			06-Nov-2020
PCBs by GCMS		11-Nov-2020	
pH	04-Nov-2020		04-Nov-2020
pH Value of Filtered Water			06-Nov-2020
Phenols by HPLC (S)	06-Nov-2020		09-Nov-2020
Phenols by HPLC (W)		13-Nov-2020	09-Nov-2020
Sample description	02-Nov-2020	06-Nov-2020	31-Oct-2020
Total Dissolved Solids		11-Nov-2020	
Total Organic Carbon	05-Nov-2020	12-Nov-2020	06-Nov-2020
TPH CWG Filtered (W)			07-Nov-2020
TPH CWG GC (S)	06-Nov-2020		06-Nov-2020
VOC MS (S)	03-Nov-2020	09-Nov-2020	04-Nov-2020



CERTIFICATE OF ANALYSIS

Validated

SDG: 200919-125
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 576005
Superseded Report: 574697

ASSOCIATED AQC DATA

Ammoniacal Nitrogen

Component	Method Code	QC 2309
Ammoniacal Nitrogen as N	TM099	97.6 93.14 : 108.60

Ammonium Soil by Titration

Component	Method Code	QC 2379
Exchangeable Ammonium as NH4	TM024	84.08 76.20 : 110.13

Anions by Kone (soil)

Component	Method Code	QC 2320
Chloride (soluble)	TM243	142.49 86.68 : 115.67
Water Soluble Sulphate as SO4 2:1 Extract	TM243	159.81 70.00 : 130.00

Anions by Kone (w)

Component	Method Code	QC 2364	QC 2359
Chloride	TM184	98.8 92.93 : 115.43	105.0 94.04 : 108.61
Sulphate (soluble)	TM184	101.2 90.53 : 113.03	102.0 91.99 : 109.30

Coronene

Component	Method Code	QC 2342
Coronene RAW	TM410	124.0 79.43 : 137.78

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2395	QC 2368
Free Cyanide	TM153	94.85 78.61 : 114.43	
Free Cyanide (W)	TM227		100.75 90.50 : 114.50
Thiocyanate	TM153	100.64 90.48 : 109.52	



CERTIFICATE OF ANALYSIS

Validated

SDG:	200919-125	Client Reference:	JFR1451	Report Number:	576005
Location:	A303 Stonehenge	Order Number:		Superseded Report:	574697

Cyanide Comp/Free/Total/Thiocyanate

		QC 2395	QC 2368
Thiocyanate (W)	TM227		102.0 90.50 : 113.00
Total Cyanide	TM153	95.8 76.80 : 112.96	
Total Cyanide (W)	TM227		101.0 91.75 : 112.75

Dissolved Metals by ICP-MS

Component	Method Code	QC 2368	QC 2386	QC 2342
Aluminium	TM152	100.67 94.21 : 111.52	106.67 94.21 : 111.52	106.67 94.21 : 111.52
Antimony	TM152	96.5 88.37 : 130.57	107.5 88.37 : 130.57	106.17 88.37 : 130.57
Arsenic	TM152	97.83 92.62 : 113.52	106.83 92.62 : 113.52	108.17 92.62 : 113.52
Barium	TM152	97.0 88.62 : 113.14	101.17 88.62 : 113.14	106.0 88.62 : 113.14
Beryllium	TM152	100.5 87.08 : 111.38	112.0 87.08 : 111.38	103.33 87.08 : 111.38
Bismuth	TM152	96.0 92.62 : 115.02	109.5 92.62 : 115.02	104.17 92.62 : 115.02
Boron	TM152	91.33 86.31 : 120.88	100.33 86.31 : 120.88	102.67 86.31 : 120.88
Cadmium	TM152	101.5 93.85 : 111.65	109.0 93.85 : 111.65	106.0 93.85 : 111.65
Calcium	TM152	96.67 89.20 : 126.91	105.33 89.20 : 126.91	106.67 89.20 : 126.91
Chromium	TM152	97.67 92.22 : 109.85	105.5 92.22 : 109.85	105.5 92.22 : 109.85
Cobalt	TM152	97.67 85.01 : 114.87	103.5 85.01 : 114.87	105.83 85.01 : 114.87
Copper	TM152	99.0 89.87 : 119.73	108.17 89.87 : 119.73	106.5 89.87 : 119.73
Iron	TM152	98.0 93.02 : 113.86	105.33 93.02 : 113.86	106.0 93.02 : 113.86
Lead	TM152	96.33 91.11 : 116.98	107.0 91.11 : 116.98	103.67 91.11 : 116.98
Lithium	TM152	99.33 91.30 : 123.00	111.83 91.30 : 123.00	101.17 91.30 : 123.00
Magnesium	TM152	94.67 89.60 : 116.61	111.33 89.60 : 116.61	97.33 89.60 : 116.61
Manganese	TM152	96.0 93.97 : 112.46	101.83 93.97 : 112.46	106.83 93.97 : 112.46
Molybdenum	TM152	95.0 89.07 : 110.96	103.67 89.07 : 110.96	102.33 89.07 : 110.96
Nickel	TM152	98.83 93.70 : 112.15	103.17 93.70 : 112.15	106.5 93.70 : 112.15
Phosphorus	TM152	97.83 89.24 : 114.18	110.17 89.24 : 114.18	104.17 89.24 : 114.18
Potassium	TM152	98.0 93.20 : 115.55	104.67 93.20 : 115.55	106.67 93.20 : 115.55
Selenium	TM152	100.83 91.69 : 117.12	109.17 91.69 : 117.12	109.17 91.69 : 117.12



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Dissolved Metals by ICP-MS

		QC 2368	QC 2386	QC 2342
Silver	TM152	92.5 90.93 : 121.73	100.83 90.93 : 121.73	104.67 90.93 : 121.73
Sodium	TM152	94.0 92.42 : 113.24	108.67 92.42 : 113.24	98.0 92.42 : 113.24
Strontium	TM152	99.0 92.14 : 116.24	103.67 92.14 : 116.24	109.0 92.14 : 116.24
Tellurium	TM152	93.5 89.88 : 111.78	95.33 89.88 : 111.78	103.33 89.88 : 111.78
Thallium	TM152	88.17 82.43 : 113.83	91.5 82.43 : 113.83	105.33 82.43 : 113.83
Tin	TM152	96.0 94.62 : 107.79	103.17 94.62 : 107.79	105.67 94.62 : 107.79
Titanium	TM152	102.33 90.29 : 115.23	105.0 90.29 : 115.23	104.83 90.29 : 115.23
Tungsten	TM152	94.5 77.61 : 132.31	102.67 77.61 : 132.31	100.83 77.61 : 132.31
Uranium	TM152	93.67 86.97 : 115.76	102.5 86.97 : 115.76	101.33 86.97 : 115.76
Vanadium	TM152	90.17 89.61 : 115.48	115.33 89.61 : 115.48	110.67 89.61 : 115.48
Zinc	TM152	99.33 87.51 : 116.26	113.67 87.51 : 116.26	106.0 87.51 : 116.26

Dissolved Organic/Inorganic Carbon

Component	Method Code	QC 2324	QC 2380
Dissolved Inorganic Carbon	TM090	101.5 91.27 : 109.87	104.0 93.58 : 112.28
Dissolved Organic Carbon	TM090	101.67 96.58 : 107.98	101.0 96.28 : 110.58

EPH CWG GC (S)

Component	Method Code	QC 2320
EPH >C8-C40 Raw	TM414	87.56 56.39 : 129.94
Total Aliphatics Raw	TM414	94.13 62.55 : 133.12
Total Aromatics Raw	TM414	89.55 57.00 : 150.27

Fluoride

Component	Method Code	QC 2391
Fluoride	TM104	101.33 95.51 : 107.24

GRO by GC-FID (S)



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GRO by GC-FID (S)

Component	Method Code	QC 2336
QC	TM089	88.0 70.75 : 114.19

GRO by GC-FID (W)

Component	Method Code	QC 2387
Benzene by GC	TM245	99.0 81.54 : 119.70
Ethylbenzene by GC	TM245	102.0 80.99 : 121.09
m & p Xylene by GC	TM245	101.75 82.77 : 123.19
MTBE GC-FID	TM245	97.5 80.06 : 123.27
o Xylene by GC	TM245	102.0 84.26 : 121.50
QC	TM245	99.93 76.13 : 145.89
Toluene by GC	TM245	100.5 82.78 : 121.99

Hexavalent Chromium (s)

Component	Method Code	QC 2323	QC 2365
Hexavalent Chromium	TM151	100.0 92.00 : 111.20	106.0 92.00 : 111.20

Mercury Dissolved

Component	Method Code	QC 2384	QC 2323
Mercury Dissolved (CVAf)	TM183	115.0 0.00 : 0.00	97.4 69.30 : 128.70

Metals in solid samples by OES

Component	Method Code	QC 2329	QC 2361
Aluminium	TM181	97.35 73.56 : 108.85	92.92 73.56 : 108.85
Antimony	TM181	100.0 76.89 : 111.24	96.34 76.89 : 111.24
Arsenic	TM181	105.52 88.53 : 111.01	99.71 88.53 : 111.01
Barium	TM181	99.08 77.67 : 105.35	96.33 77.67 : 105.35



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Metals in solid samples by OES

		QC 2329	QC 2361
Beryllium	TM181	101.87 85.44 : 109.61	98.13 85.44 : 109.61
Boron	TM181	94.56 73.51 : 104.66	89.68 73.51 : 104.66
Cadmium	TM181	97.53 77.67 : 104.12	85.19 77.67 : 104.12
Chromium	TM181	97.97 86.11 : 106.21	92.7 86.11 : 106.21
Cobalt	TM181	94.97 84.60 : 104.13	89.31 84.60 : 104.13
Copper	TM181	97.89 82.40 : 105.45	92.78 82.40 : 105.45
Iron	TM181	100.79 82.95 : 110.58	94.44 82.95 : 110.58
Lead	TM181	95.5 78.24 : 104.05	89.41 78.24 : 104.05
Manganese	TM181	113.06 94.29 : 119.51	105.0 94.29 : 119.51
Mercury	TM181	97.83 83.16 : 107.81	95.89 83.16 : 107.81
Molybdenum	TM181	101.23 87.11 : 106.87	97.53 87.11 : 106.87
Nickel	TM181	95.6 80.26 : 102.28	90.95 80.26 : 102.28
Phosphorus	TM181	110.91 94.56 : 124.28	107.47 94.56 : 124.28
Selenium	TM181	104.31 82.28 : 110.48	99.61 82.28 : 110.48
Strontium	TM181	93.1 79.13 : 102.79	90.65 79.13 : 102.79
Thallium	TM181	100.44 82.94 : 111.86	96.9 82.94 : 111.86
Tin	TM181	104.56 86.72 : 110.03	98.86 86.72 : 110.03
Titanium	TM181	88.55 66.23 : 102.06	84.73 66.23 : 102.06
Vanadium	TM181	101.1 86.19 : 109.45	97.44 86.19 : 109.45
Zinc	TM181	101.23 84.68 : 113.99	97.95 84.68 : 113.99

PAH by GCMS

Component	Method Code	QC 2305	QC 2337
Acenaphthene	TM218	85.5 80.97 : 105.99	97.5 76.79 : 103.90
Acenaphthylene	TM218	84.0 74.76 : 107.36	98.5 78.40 : 108.66
Anthracene	TM218	84.5 73.04 : 106.97	94.0 70.90 : 109.22
Benz(a)anthracene	TM218	90.5 68.79 : 119.64	94.0 73.77 : 119.26
Benzo(a)pyrene	TM218	87.0 66.17 : 117.52	88.0 73.20 : 114.18



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PAH by GCMS

		QC 2305	QC 2337
Benzo(b)fluoranthene	TM218	85.0 66.40 : 118.34	92.0 75.36 : 117.58
Benzo(ghi)perylene	TM218	84.5 67.68 : 112.07	88.5 70.73 : 116.12
Benzo(k)fluoranthene	TM218	93.0 72.84 : 114.66	90.5 75.98 : 116.59
Chrysene	TM218	92.0 68.39 : 115.56	98.0 74.82 : 114.18
Dibenzo(ah)anthracene	TM218	86.0 69.03 : 110.45	90.0 69.17 : 115.30
Fluoranthene	TM218	88.0 69.37 : 117.19	100.5 75.88 : 112.84
Fluorene	TM218	85.0 75.38 : 105.98	97.5 76.66 : 107.56
Indeno(123cd)pyrene	TM218	94.0 65.91 : 113.61	85.5 70.26 : 117.95
Naphthalene	TM218	81.5 71.40 : 105.87	95.5 74.70 : 101.83
Phenanthrene	TM218	86.0 74.04 : 109.30	98.5 73.62 : 109.34
Pyrene	TM218	87.0 69.68 : 115.27	97.0 71.46 : 117.00

PAH in waters by GC-MS (diss.filt)

Component	Method Code	QC 2331
Acenaphthene (diss.filt)	TM178	108.8 94.00 : 120.40
Acenaphthylene (diss.filt)	TM178	98.4 91.20 : 117.60
Anthracene (diss.filt)	TM178	104.0 91.20 : 112.80
Benzo(a)anthracene (diss.filt)	TM178	101.2 86.80 : 115.60
Benzo(a)pyrene (diss.filt)	TM178	100.0 85.20 : 114.00
Benzo(b)fluoranthene (diss.filt)	TM178	101.2 86.40 : 117.60
Benzo(g,h,i)perylene (diss.filt)	TM178	110.8 87.60 : 121.20
Benzo(k)fluoranthene (diss.filt)	TM178	108.8 91.20 : 124.80
Chrysene (diss.filt)	TM178	111.2 95.20 : 124.00
Dibenzo(a,h)anthracene (diss.filt)	TM178	103.2 84.80 : 118.40
Fluoranthene (diss.filt)	TM178	110.8 91.20 : 120.00
Fluorene (diss.filt)	TM178	112.0 93.20 : 119.60
Indeno(1,2,3-cd)pyrene (diss.filt)	TM178	100.8 86.80 : 115.60
Naphthalene (diss.filt)	TM178	108.4 90.40 : 126.40



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PAH in waters by GC-MS (diss.filt)

		QC 2331
Phenanthrene (diss.filt)	TM178	103.2 94.40 : 118.40
Pyrene (diss.filt)	TM178	112.8 93.60 : 120.00

PCBs by GCMS

Component	Method Code	QC 2348
PCB congener 101	TM168	96.3 79.46 : 109.70
PCB congener 105	TM168	84.6 66.33 : 105.75
PCB congener 114	TM168	85.9 66.41 : 106.49
PCB congener 118	TM168	89.2 70.33 : 110.29
PCB congener 123	TM168	82.1 65.01 : 99.81
PCB congener 126	TM168	81.9 59.31 : 109.23
PCB congener 138	TM168	84.6 63.95 : 107.63
PCB congener 153	TM168	84.6 62.65 : 108.85
PCB congener 156	TM168	85.2 61.69 : 112.27
PCB congener 157	TM168	83.8 67.15 : 109.93
PCB congener 167	TM168	84.5 65.58 : 109.14
PCB congener 169	TM168	76.6 56.84 : 112.10
PCB congener 180	TM168	87.3 66.99 : 111.63
PCB congener 189	TM168	79.3 57.75 : 112.59
PCB congener 28	TM168	91.9 73.68 : 105.96
PCB congener 52	TM168	87.8 67.24 : 107.62
PCB congener 77	TM168	83.5 64.87 : 108.49
PCB congener 81	TM168	87.8 70.78 : 110.80

pH

Component	Method Code	QC 2377
pH	TM133	100.4 98.47 : 102.33



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pH Value of Filtered Water

Component	Method Code	QC 2324
pH	TM256	101.2 99.33 : 102.54

Phenols by HPLC (S)

Component	Method Code	QC 2336	QC 2367
2,3,5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	109.74 65.50 : 89.50	109.74 65.50 : 89.50
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	95.91 84.00 : 124.00	94.74 84.00 : 124.00
Catechol by HPLC (S)	TM062 (S)	92.38 19.39 : 135.70	75.24 19.39 : 135.70
Cresols by HPLC (S)	TM062 (S)	99.79 81.00 : 112.20	100.63 81.00 : 112.20
Naphthol by HPLC (S)	TM062 (S)	122.14 57.50 : 102.50	120.71 57.50 : 102.50
Phenol by HPLC (S)	TM062 (S)	105.96 88.67 : 124.67	106.62 88.67 : 124.67
Resorcinol HPLC (S)	TM062 (S)	101.26 69.99 : 127.22	101.89 69.99 : 127.22
Xylenols by HPLC (S)	TM062 (S)	106.25 95.22 : 115.89	106.25 95.22 : 115.89

Phenols by HPLC (W)

Component	Method Code	QC 2355
2,3,5 Trimethyl-Phenol by HPLC (W)	TM259	99.0 91.00 : 109.00
2-Isopropyl Phenol by HPLC (W)	TM259	96.0 85.00 : 109.00
Cresols by HPLC (W)	TM259	100.0 93.00 : 115.00
Naphthol by HPLC (W)	TM259	104.0 86.00 : 128.00
Phenol by HPLC (W)	TM259	100.0 88.24 : 111.76
Xylenols by HPLC (W)	TM259	101.17 94.83 : 110.83

Total Dissolved Solids

Component	Method Code	QC 2314
Total Dissolved Solids	TM123	99.2 97.30 : 100.92

Total Organic Carbon



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Total Organic Carbon

Component	Method Code	QC 2300	QC 2368	QC 2330
Total Organic Carbon	TM132	96.09 87.02 : 113.45	106.25 87.02 : 113.45	104.3 87.02 : 113.45

VOC MS (S)

Component	Method Code	QC 2307	QC 2349
1,1,1,2-tetrachloroethane	TM116	93.6 86.59 : 118.97	103.4 84.84 : 116.25
1,1,1-Trichloroethane	TM116	101.6 86.26 : 117.53	99.4 73.73 : 118.05
1,1,2-Trichloroethane	TM116	96.0 75.16 : 112.70	100.8 77.12 : 116.04
1,1-Dichloroethane	TM116	103.4 83.27 : 122.16	107.4 74.46 : 129.15
1,2-Dichloroethane	TM116	107.2 89.30 : 133.10	114.6 92.38 : 131.65
1,4-Dichlorobenzene	TM116	98.8 82.59 : 123.23	101.2 83.64 : 126.18
2-Chlorotoluene	TM116	92.6 66.81 : 118.43	85.0 76.03 : 113.25
4-Chlorotoluene	TM116	90.8 65.88 : 114.76	84.0 66.90 : 112.46
Benzene	TM116	95.2 93.16 : 123.63	100.2 88.60 : 113.80
Carbon Disulphide	TM116	102.8 75.11 : 124.81	97.8 74.91 : 122.14
Carbontetrachloride	TM116	103.2 82.35 : 126.46	103.0 80.31 : 124.50
Chlorobenzene	TM116	93.2 85.07 : 118.13	99.4 83.81 : 114.18
Chloroform	TM116	105.0 88.13 : 122.71	109.6 87.40 : 122.49
Chloromethane	TM116	113.8 55.37 : 133.35	102.2 65.89 : 136.93
Cis-1,2-Dichloroethene	TM116	102.0 78.27 : 128.90	103.0 80.67 : 126.72
Dibromomethane	TM116	95.2 77.47 : 121.29	109.6 73.23 : 118.35
Dichloromethane	TM116	111.2 87.89 : 134.72	115.8 81.11 : 133.25
Ethylbenzene	TM116	80.6 79.92 : 110.05	89.8 75.92 : 110.41
Hexachlorobutadiene	TM116	51.4 16.78 : 153.29	85.4 12.82 : 152.73
Isopropylbenzene	TM116	64.8 64.20 : 119.59	69.8 55.79 : 97.59
Naphthalene	TM116	107.0 79.29 : 125.59	102.2 80.86 : 128.81
o-Xylene	TM116	82.4 74.57 : 112.73	83.6 69.99 : 108.74



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VOC MS (S)

		QC 2307	QC 2349
p/m-Xylene	TM116	77.4 76.47 : 108.99	85.8 68.32 : 108.91
Sec-Butylbenzene	TM116	52.8 44.71 : 117.87	60.0 38.50 : 101.50
Tetrachloroethene	TM116	87.8 85.86 : 122.95	101.6 76.95 : 121.02
Toluene	TM116	88.6 87.82 : 116.21	91.6 74.24 : 107.42
Trichloroethene	TM116	94.8 79.80 : 112.33	96.0 77.61 : 111.54
Trichlorofluoromethane	TM116	104.2 80.52 : 132.12	114.8 84.55 : 133.27
Vinyl Chloride	TM116	103.2 68.07 : 137.84	102.0 68.02 : 143.37

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis .

The figure detailed is the percentage recovery result for the AQC .

The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control .



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Chromatogram

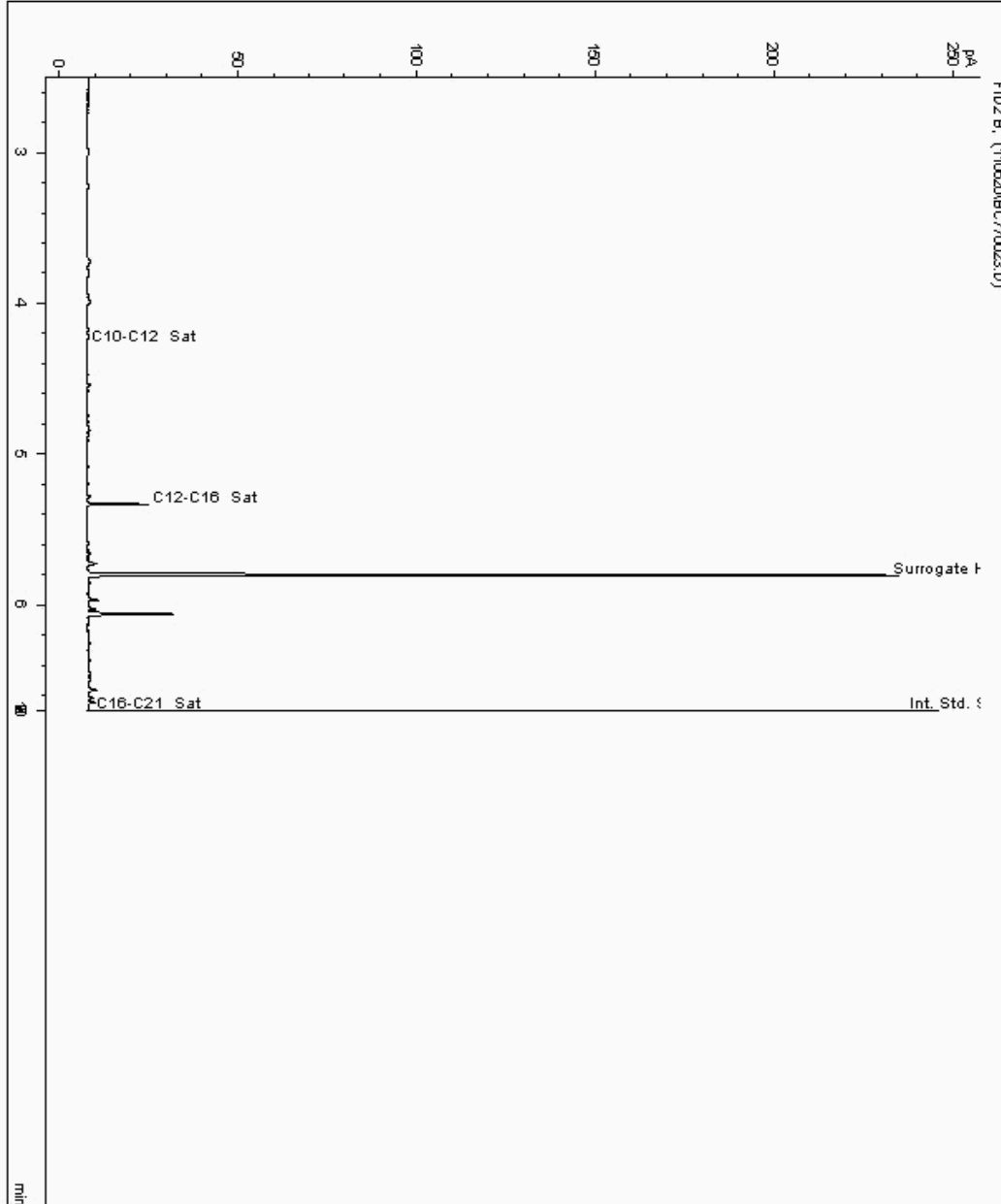
Analysis: EPH CWG (Aliphatic) Filtered GC (W)

Sample No : 23186821
Sample ID : R71203

Depth : 1.00 - 1.10

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 21721571-
Date Acquired : 11/7/2020 6:00:29 AM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025





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Chromatogram

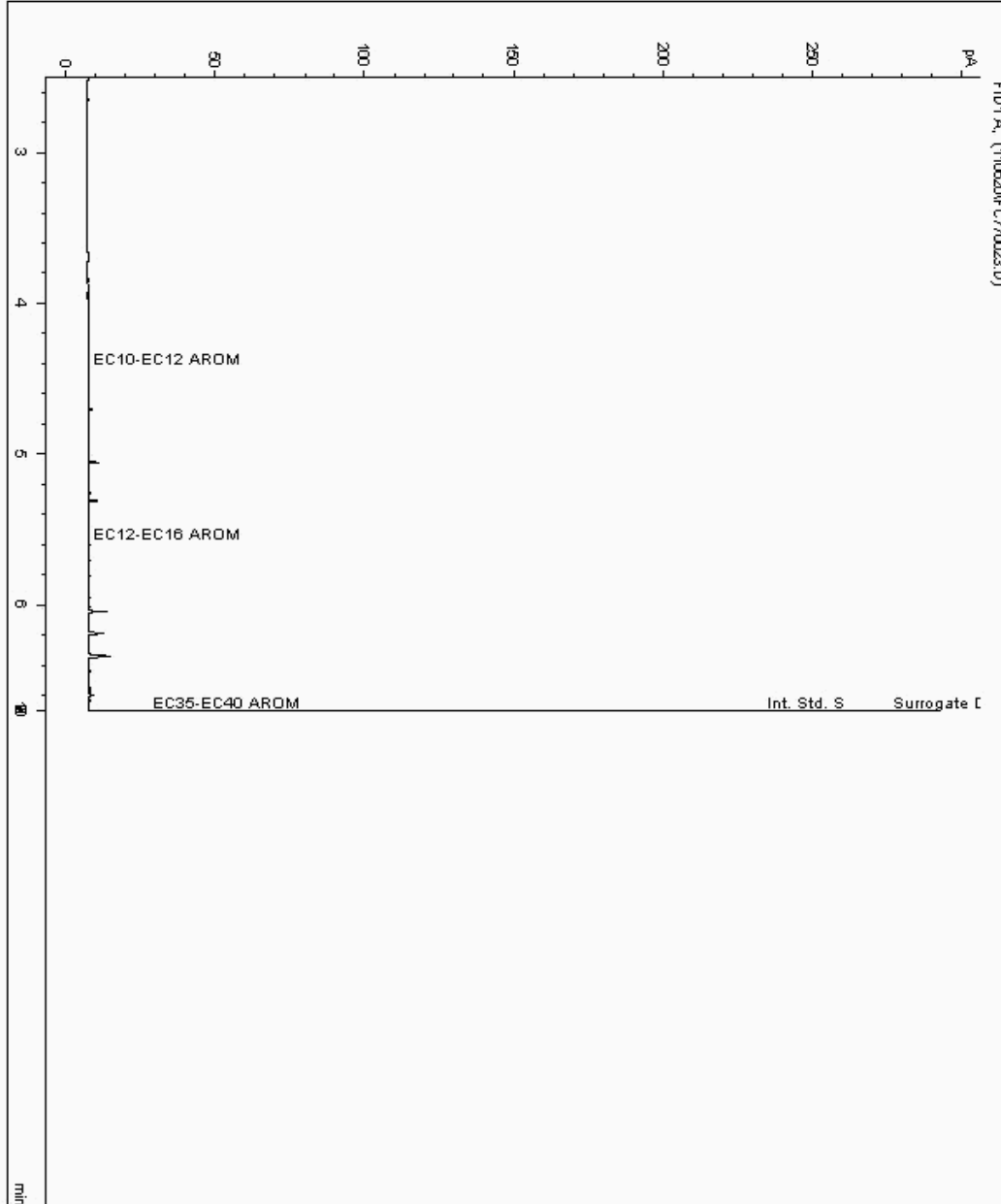
Analysis: EPH CWG (Aromatic) Filtered GC (W)

Sample No : 23186821
Sample ID : R71203

Depth : 1.00 - 1.10

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 21721572-
Date Acquired : 11/7/2020 6:00:29 AM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025





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SDG: 200919-125
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

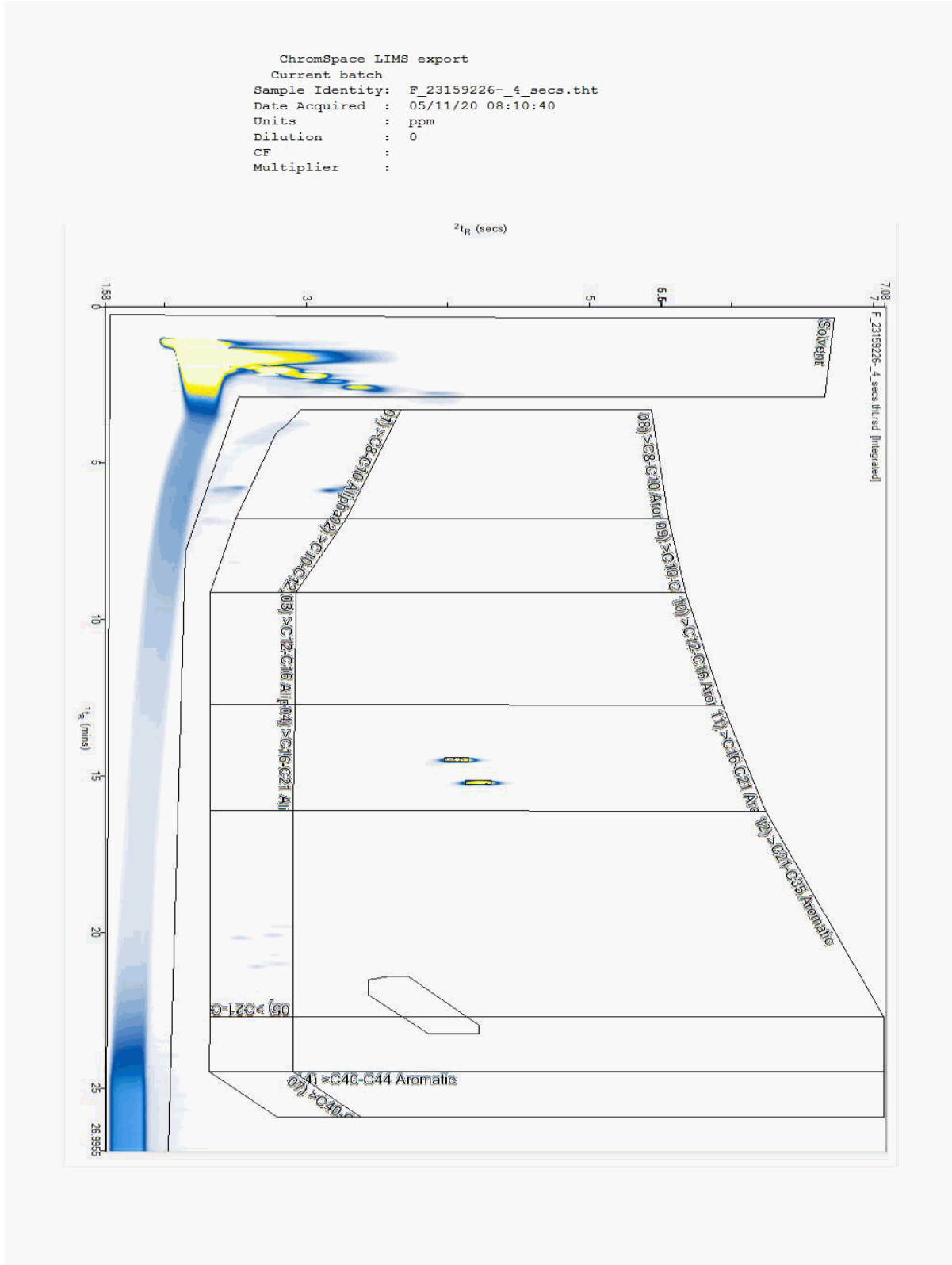
Report Number: 576005
Superseded Report: 574697

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23159226
Sample ID : R71203

Depth : 1.00 - 1.10





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Client Reference: JFR1451
Order Number:

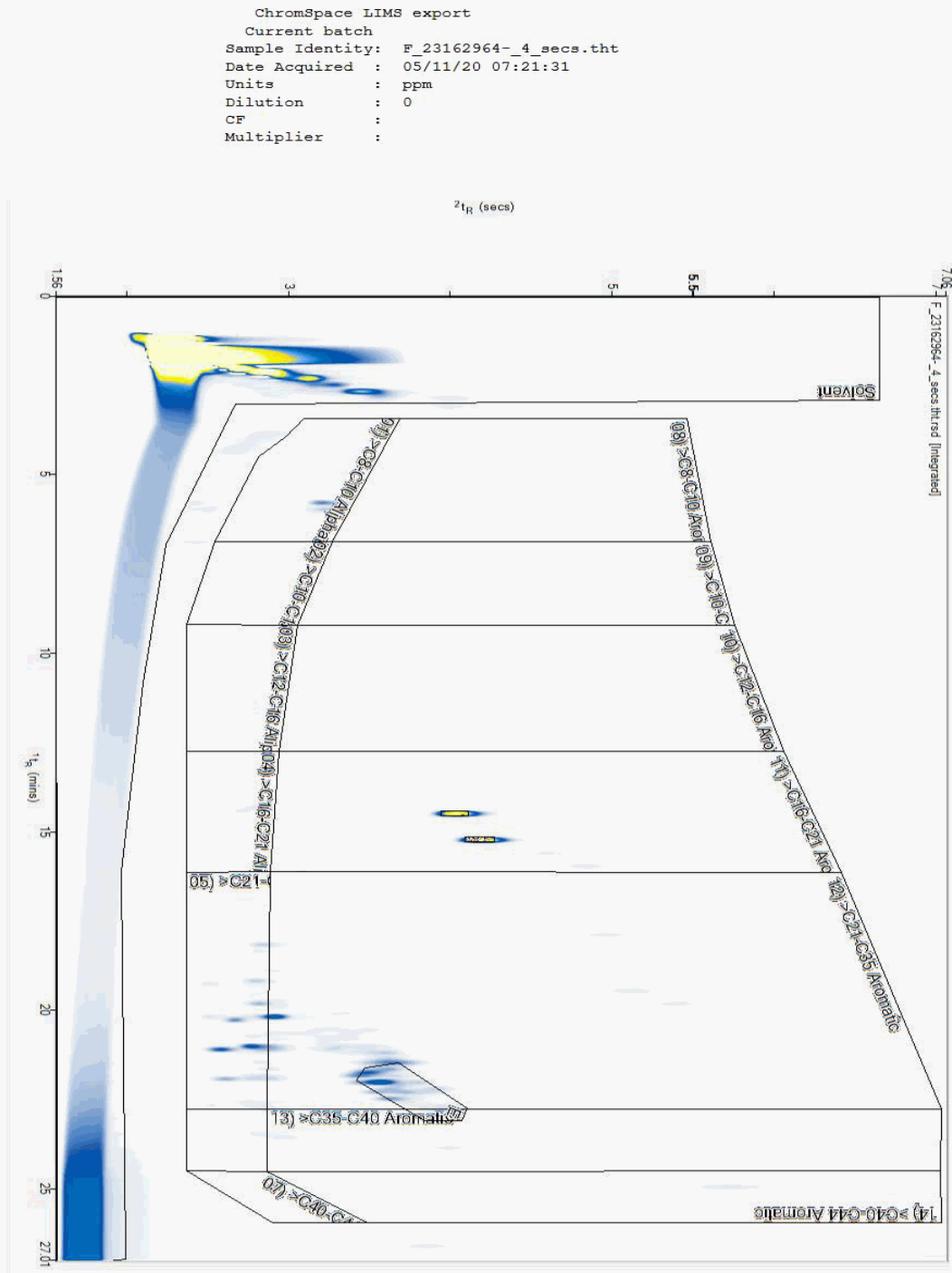
Report Number: 576005
Superseded Report: 574697

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23162964
Sample ID : R71203

Depth : 0.00 - 0.10





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Client Reference: JFR1451
Order Number:

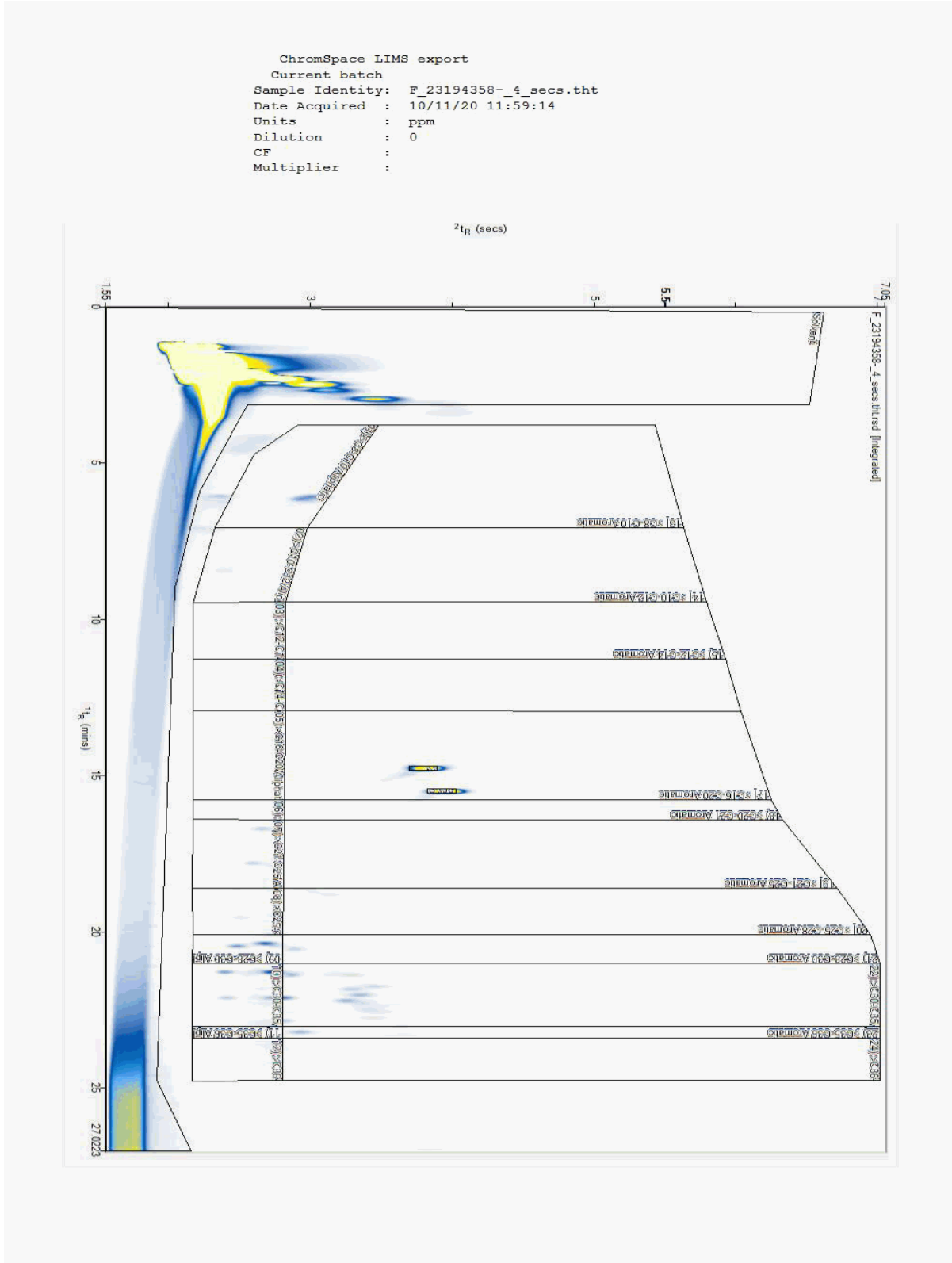
Report Number: 576005
Superseded Report: 574697

Chromatogram

Analysis: EPH by GCxGC-FID

Sample No : 23194358
Sample ID : R71203

Depth : 0.30 - 0.40





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Client Reference: JFR1451
Order Number:

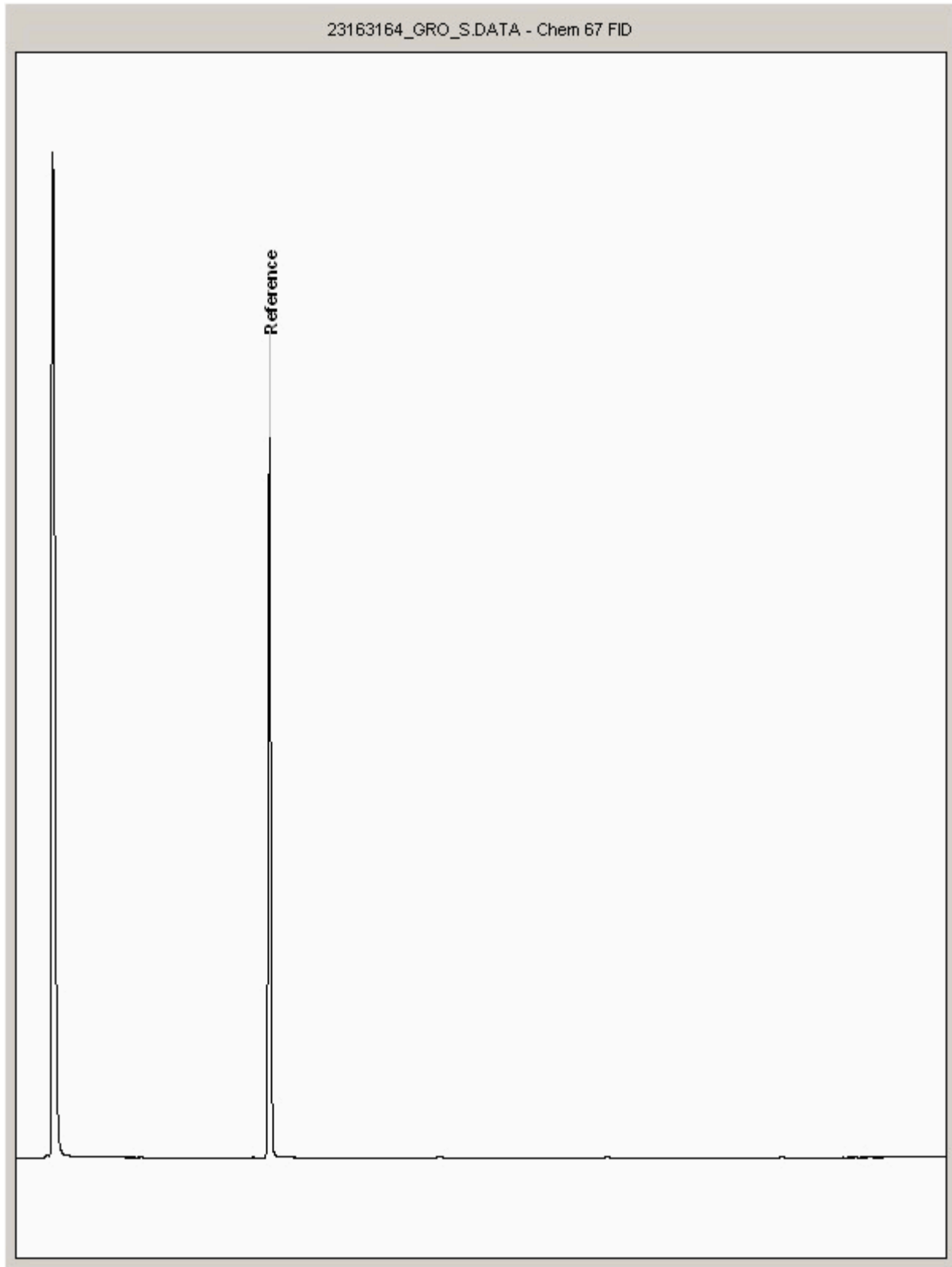
Report Number: 576005
Superseded Report: 574697

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23163164
Sample ID : R71203

Depth : 1.00 - 1.10





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Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

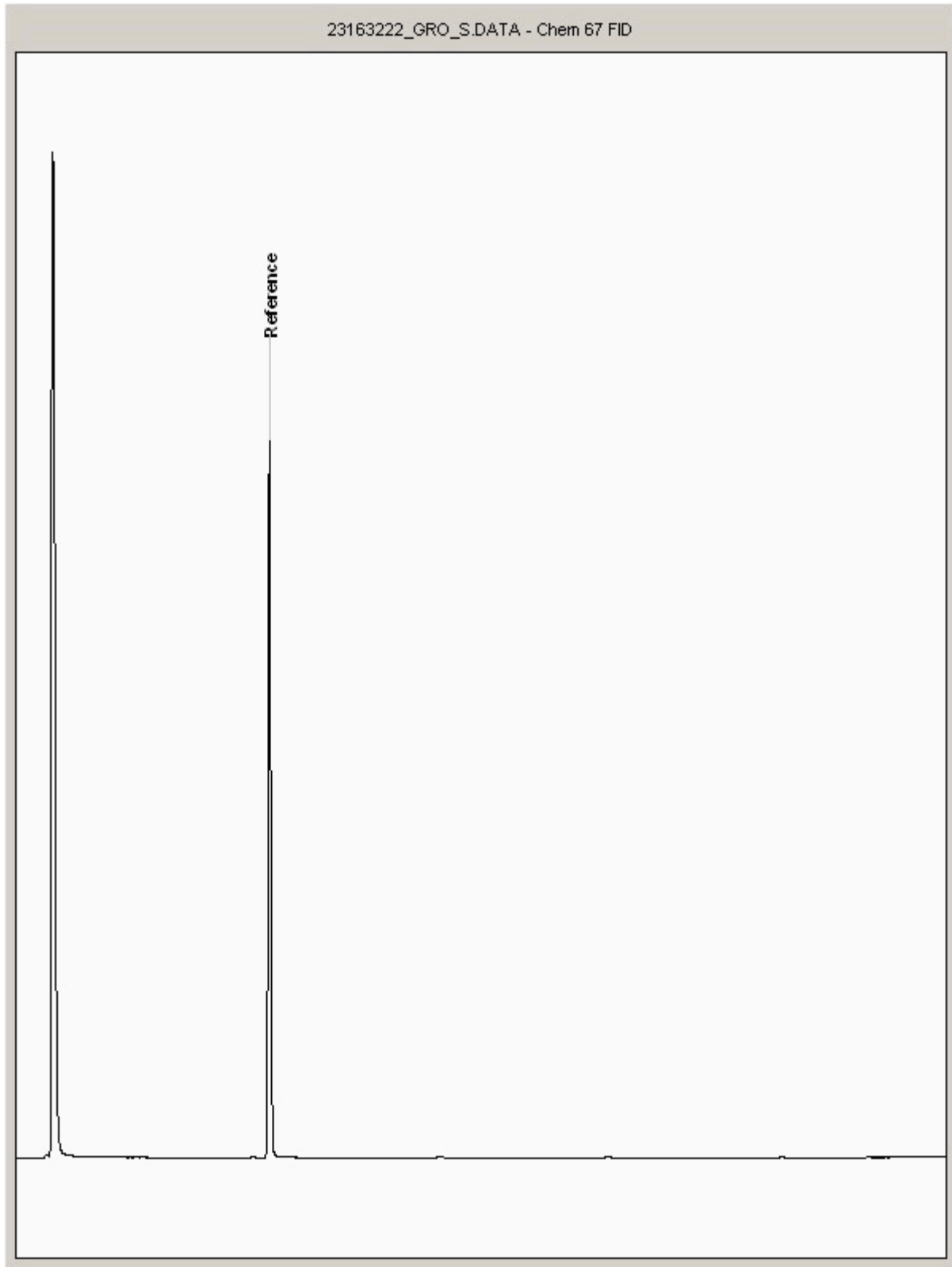
Report Number: 576005
Superseded Report: 574697

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23163222
Sample ID : R71203

Depth : 0.00 - 0.10





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Client Reference: JFR1451
Order Number:

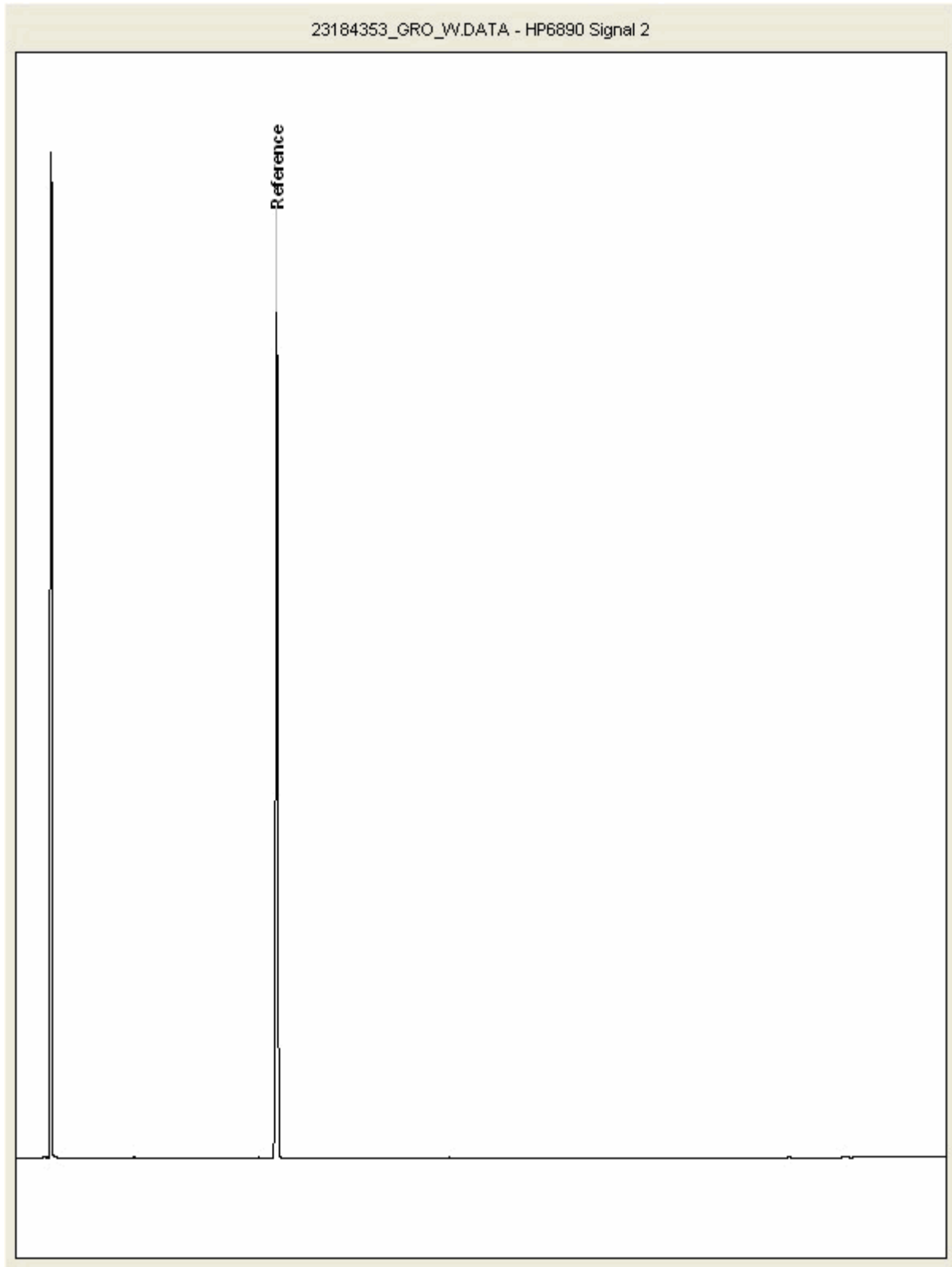
Report Number: 576005
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Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 23184353
Sample ID : R71203

Depth : 1.00 - 1.10





CERTIFICATE OF ANALYSIS

SDG:	200919-125	Client Reference:	JFR1451	Report Number:	576005
Location:	A303 Stonehenge	Order Number:		Superseded Report:	574697

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH₄ by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

19. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung. Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017)*.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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Hawarden

Deeside

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RPS Consultants Ltd
260 Park Avenue
Aztec West
Almondsbury
Bristol
BS32 4SY

Attention: Gary Riches

CERTIFICATE OF ANALYSIS

Date of report Generation: 02 October 2020
Customer: RPS Consultants Ltd
Sample Delivery Group (SDG): 200919-127
Your Reference: JFR1451
Location: A303 Stonehenge
Report No: 569578

We received 5 samples on Saturday September 19, 2020 and 1 of these samples were scheduled for analysis which was completed on Friday October 02, 2020. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

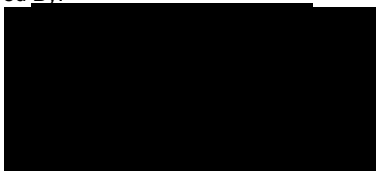
Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:



Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 200919-127 **Client Reference:** JFR1451 **Report Number:** 569578
Location: A303 Stonehenge **Order Number:** PO20-659 **Superseded Report:**

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
22863068	DPT70402		0.00	17/09/2020
22863069	DPT70402		0.30	17/09/2020
22863071	DPT70402		0.50	17/09/2020
22863072	DPT70402		1.00	17/09/2020
22863073	DPT70402		2.00	17/09/2020

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG:	200919-127	Client Reference:	JFR1451	Report Number:	569578
Location:	A303 Stonehenge	Order Number:	PO20-659	Superseded Report:	

Results Legend	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type
<p>X Test</p> <p>N No Determination Possible</p> <p>Sample Types -</p> <p>S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other</p>	22863069	DP770402		0.30	250g Amber Jar (ALE210)	60g VOC (ALE215)
					S	S
Ammonium Soil by Titration	All				NDPs: 0 Tests: 1	X
Anions by Kone (soil)	All				NDPs: 0 Tests: 1	X
Chromium III	All				NDPs: 0 Tests: 1	X
Cyanide Comp/Free/Total/Thiocyanate	All				NDPs: 0 Tests: 1	X
EPH CWG GC (S)	All				NDPs: 0 Tests: 1	X
GRO by GC-FID (S)	All				NDPs: 0 Tests: 1	X
Hexavalent Chromium (s)	All				NDPs: 0 Tests: 1	X
Metals in solid samples by OES	All				NDPs: 0 Tests: 1	X
OC OP Pesticides and Triazine Herb	All				NDPs: 0 Tests: 1	X
PAH by GCMS	All				NDPs: 0 Tests: 1	X
pH	All				NDPs: 0 Tests: 1	X
Phenols by HPLC (S)	All				NDPs: 0 Tests: 1	X
Sample description	All				NDPs: 0 Tests: 1	X
Total Organic Carbon	All				NDPs: 0 Tests: 1	X
TPH CWG GC (S)	All				NDPs: 0 Tests: 1	X



CERTIFICATE OF ANALYSIS

Validated

SDG:	200919-127	Client Reference:	JFR1451	Report Number:	569578
Location:	A303 Stonehenge	Order Number:	PO20-659	Superseded Report:	

Results Legend <div style="display: flex; align-items: center; margin-bottom: 5px;"> <div style="width: 15px; height: 15px; background-color: yellow; border: 1px solid black; margin-right: 5px; text-align: center; line-height: 15px;">X</div> Test </div> <div style="display: flex; align-items: center; margin-bottom: 5px;"> <div style="width: 15px; height: 15px; background-color: red; color: white; border: 1px solid black; margin-right: 5px; text-align: center; line-height: 15px;">N</div> No Determination Possible </div> Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other	Lab Sample No(s)	22863069			
	Customer Sample Reference	DPT70402			
	AGS Reference				
	Depth (m)	0.30			
	Container	250g Amber Jar (ALE210)	60g VOC (ALE215)		
	Sample Type	S	S		
VOC MS (S)	All	NDPs: 0 Tests: 1	X		



CERTIFICATE OF ANALYSIS

Validated

SDG: 200919-127	Client Reference: JFR1451	Report Number: 569578
Location: A303 Stonehenge	Order Number: PO20-659	Superseded Report:

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm
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Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
22863069	DPT70402	0.30	Light Brown	Sandy Loam	Vegetation	Stones

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.



CERTIFICATE OF ANALYSIS

Validated

SDG:	200919-127	Client Reference:	JFR1451	Report Number:	569578
Location:	A303 Stonehenge	Order Number:	PO20-659	Superseded Report:	





CERTIFICATE OF ANALYSIS

Validated

SDG:	200919-127	Client Reference:	JFR1451	Report Number:	569578
Location:	A303 Stonehenge	Order Number:	PO20-659	Superseded Report:	

DPT70402

0.30
Soil/Solid (S)
17/09/2020

19/09/2020
200919-127
22863069

Moisture Content Ratio (% of as received sample)	%	PM024	17	
Exchangeable Ammonia as N	<12 mg/kg	TM024	<12	M
Phenol	<0.01 mg/kg	TM062 (S)	<0.01	M
Organic Carbon, Total	<0.2 %	TM132	2.02	M
pH	1 pH Units	TM133	8.3	M
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6	#
Cyanide, Total	<1 mg/kg	TM153	<1	M
Cyanide, Free	<1 mg/kg	TM153	<1	M
Chromium, Trivalent	<0.9 mg/kg	TM181	9.36	
Antimony	<0.6 mg/kg	TM181	<0.6	#
Arsenic	<0.6 mg/kg	TM181	4.07	M
Beryllium	<0.01 mg/kg	TM181	0.327	M
Boron	<0.7 mg/kg	TM181	7.91	#
Cadmium	<0.02 mg/kg	TM181	0.396	M
Chromium	<0.9 mg/kg	TM181	9.36	M
Copper	<1.4 mg/kg	TM181	6.93	M
Iron	<1000 mg/kg	TM181	7210	#
Lead	<0.7 mg/kg	TM181	8.84	M
Manganese	<0.13 mg/kg	TM181	610	M
Mercury	<0.14 mg/kg	TM181	<0.14	M
Molybdenum	<0.1 mg/kg	TM181	0.137	#
Nickel	<0.2 mg/kg	TM181	8.04	M
Phosphorus	<1 mg/kg	TM181	1230	
Selenium	<1 mg/kg	TM181	<1	#
Zinc	<1.9 mg/kg	TM181	47.5	M
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243	<0.02	M



CERTIFICATE OF ANALYSIS

Validated

SDG:	200919-127	Client Reference:	JFR1451	Report Number:	569578
Location:	A303 Stonehenge	Order Number:	PO20-659	Superseded Report:	

OC OP Pesticides and Triazine Herb



CERTIFICATE OF ANALYSIS

Validated

SDG: 200919-127
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PO20-659

Report Number: 569578
Superseded Report:

OC OP Pesticides and Triazine Herb

DPT70402

0.30
Soil/Solid (S)
17/09/2020

19/09/2020
200919-127
22863069

Dichlorvos	<50 µg/kg	TM073	<50
Mevinphos	<50 µg/kg	TM073	<50
Phorate	<50 µg/kg	TM073	<50
alpha-Hexachlorocyclohexane (HCH)	<50 µg/kg	TM073	<50
Diazinon	<50 µg/kg	TM073	<50
gamma-Hexachlorocyclohexane (HCH / Lindane)	<50 µg/kg	TM073	<50
Atrazine	<50 µg/kg	TM073	<50
Simazine	<50 µg/kg	TM073	<50
Disulfoton	<50 µg/kg	TM073	<50
Heptachlor	<50 µg/kg	TM073	<50
Aldrin	<50 µg/kg	TM073	<50
beta-Hexachlorocyclohexane (HCH)	<50 µg/kg	TM073	<50
Methyl parathion	<50 µg/kg	TM073	<50
Malathion	<50 µg/kg	TM073	<50
Fenitrothion	<50 µg/kg	TM073	<50
Heptachlor epoxide	<50 µg/kg	TM073	<50
Parathion	<50 µg/kg	TM073	<50
Endosulphan I	<50 µg/kg	TM073	<50
p,p-DDE	<50 µg/kg	TM073	<50
Dieldrin	<50 µg/kg	TM073	<50
o,p'-DDD (TDE)	<50 µg/kg	TM073	<50
Endrin	<50 µg/kg	TM073	<50
p,p-TDE (DDD)	<50 µg/kg	TM073	<50
Ethion	<50 µg/kg	TM073	<50
Endosulphan II	<50 µg/kg	TM073	<50
p,p-DDT	<50 µg/kg	TM073	<100
p,p-Methoxychlor	<50 µg/kg	TM073	<50
Endosulphan sulphate	<50 µg/kg	TM073	<50
Azinphos-methyl	<50 µg/kg	TM073	<100



PAH by GCMS

CERTIFICATE OF ANALYSIS

Validated

SDG:	200919-127	Client Reference:	JFR1451	Report Number:	569578
Location:	A303 Stonehenge	Order Number:	PO20-659	Superseded Report:	



CERTIFICATE OF ANALYSIS

Validated

SDG: 200919-127 **Client Reference:** JFR1451 **Report Number:** 569578
Location: A303 Stonehenge **Order Number:** PO20-659 **Superseded Report:**

PAH by GCMS

DPT70402

0.30
Soil/Solid (S)
17/09/2020

19/09/2020
200919-127
22863069

Naphthalene-d8 % recovery**	%	TM218	85.4
Acenaphthene-d10 % recovery**	%	TM218	84.3
Phenanthrene-d10 % recovery**	%	TM218	81.1
Chrysene-d12 % recovery**	%	TM218	72
Perylene-d12 % recovery**	%	TM218	74.2
Naphthalene	<9 µg/kg	TM218	<9 M
Acenaphthylene	<12 µg/kg	TM218	<12 M
Acenaphthene	<8 µg/kg	TM218	<8 M
Fluorene	<10 µg/kg	TM218	<10 M
Phenanthrene	<15 µg/kg	TM218	<15 M
Anthracene	<16 µg/kg	TM218	<16 M
Fluoranthene	<17 µg/kg	TM218	<17 M
Pyrene	<15 µg/kg	TM218	<15 M
Benz(a)anthracene	<14 µg/kg	TM218	<14 M
Chrysene	<10 µg/kg	TM218	<10 M
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 M
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 M
Benzo(a)pyrene	<15 µg/kg	TM218	<15 M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 M
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118



TPH CWG (S)

CERTIFICATE OF ANALYSIS

Validated

SDG:	200919-127	Client Reference:	JFR1451	Report Number:	569578
Location:	A303 Stonehenge	Order Number:	PO20-659	Superseded Report:	



CERTIFICATE OF ANALYSIS

Validated

SDG:	200919-127	Client Reference:	JFR1451	Report Number:	569578
Location:	A303 Stonehenge	Order Number:	PO20-659	Superseded Report:	

TPH CWG (S)

DPT70402

0.30
Soil/Solid (S)
17/09/2020

19/09/2020
200919-127
22863069

GRO Surrogate % recovery**	%	TM089	121
Aliphatics >C5-C6	<10 µg/kg	TM089	<10
Aliphatics >C6-C8	<10 µg/kg	TM089	<10
Aliphatics >C8-C10	<10 µg/kg	TM089	<10
Aliphatics >C10-C12	<1000 µg/kg	TM414	<1000
Aliphatics >C12-C16	<1000 µg/kg	TM414	<1000
Aliphatics >C16-C21	<1000 µg/kg	TM414	<1000
Aliphatics >C21-C35	<1000 µg/kg	TM414	9380
Aliphatics >C35-C44	<1000 µg/kg	TM414	<1000
Total Aliphatics >C10-C44	<5000 µg/kg	TM414	9690
Total Aliphatics & Aromatics >C10-C44	<10000 µg/kg	TM414	13800
Aromatics >EC5-EC7	<10 µg/kg	TM089	<10
Aromatics >EC7-EC8	<10 µg/kg	TM089	<10
Aromatics >EC8-EC10	<10 µg/kg	TM089	<10
Aromatics > EC10-EC12	<1000 µg/kg	TM414	<1000
Aromatics > EC12-EC16	<1000 µg/kg	TM414	<1000
Aromatics > EC16-EC21	<1000 µg/kg	TM414	<1000
Aromatics > EC21-EC35	<1000 µg/kg	TM414	3020
Aromatics >EC35-EC44	<1000 µg/kg	TM414	<1000
Aromatics > EC40-EC44	<1000 µg/kg	TM414	<1000
Total Aromatics > EC10-EC44	<5000 µg/kg	TM414	<5000
Total Aliphatics & Aromatics >C5-C44	<10000 µg/kg	TM414	<10000
Total Aliphatics >C5-C10	<50 µg/kg	TM089	<50
Total Aromatics >EC5-EC10	<50 µg/kg	TM089	<50
GRO >C5-C10	<20 µg/kg	TM089	<20



VOC MS (S)

CERTIFICATE OF ANALYSIS

Validated

SDG:	200919-127	Client Reference:	JFR1451	Report Number:	569578
Location:	A303 Stonehenge	Order Number:	PO20-659	Superseded Report:	



CERTIFICATE OF ANALYSIS

Validated

SDG: 200919-127 Client Reference: JFR1451 Report Number: 569578
 Location: A303 Stonehenge Order Number: PO20-659 Superseded Report:

VOC MS (S)

DPT70402
 0.30
 Soil/Solid (S)
 17/09/2020
 19/09/2020
 200919-127
 22863069

Dibromofluoromethane**	%	TM116	112
Toluene-d8**	%	TM116	89.4
4-Bromofluorobenzene**	%	TM116	80.2
Methyl Tertiary Butyl Ether	<10 µg/kg	TM116	<10 M
Benzene	<9 µg/kg	TM116	<9 M
Toluene	<7 µg/kg	TM116	<7 M
Ethylbenzene	<4 µg/kg	TM116	<4 M
p/m-Xylene	<10 µg/kg	TM116	<10 #
o-Xylene	<10 µg/kg	TM116	<10 M
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.02
Sum of BTEX	<40 µg/kg	TM116	<40



CERTIFICATE OF ANALYSIS

Validated

SDG:	200919-127	Client Reference:	JFR1451	Report Number:	569578
Location:	A303 Stonehenge	Order Number:	PO20-659	Superseded Report:	



CERTIFICATE OF ANALYSIS

Validated

SDG:	200919-127	Client Reference:	JFR1451	Report Number:	569578
Location:	A303 Stonehenge	Order Number:	PO20-659	Superseded Report:	



CERTIFICATE OF ANALYSIS

Validated

SDG:	200919-127	Client Reference:	JFR1451	Report Number:	569578
Location:	A303 Stonehenge	Order Number:	PO20-659	Superseded Report:	



CERTIFICATE OF ANALYSIS

Validated

SDG:	200919-127	Client Reference:	JFR1451	Report Number:	569578
Location:	A303 Stonehenge	Order Number:	PO20-659	Superseded Report:	



CERTIFICATE OF ANALYSIS

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SDG:	200919-127	Client Reference:	JFR1451	Report Number:	569578
Location:	A303 Stonehenge	Order Number:	PO20-659	Superseded Report:	



CERTIFICATE OF ANALYSIS

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SDG:	200919-127	Client Reference:	JFR1451	Report Number:	569578
Location:	A303 Stonehenge	Order Number:	PO20-659	Superseded Report:	



CERTIFICATE OF ANALYSIS

Validated

SDG:	200919-127	Client Reference:	JFR1451	Report Number:	569578
Location:	A303 Stonehenge	Order Number:	PO20-659	Superseded Report:	



CERTIFICATE OF ANALYSIS

Validated

SDG: 200919-127 Client Reference: JFR1451 Report Number: 569578
 Location: A303 Stonehenge Order Number: PO20-659 Superseded Report:

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM073	MEWAM BOOK 60 1980,95 1985, HMSO / Modified: US EPA Method 8081A & 8141A	Determination of organochlorine and organophosphorous pesticides by GCMS
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM243		Mixed Anions In Soils By Kone
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).



CERTIFICATE OF ANALYSIS

Validated

SDG: 200919-127 Client Reference: JFR1451 Report Number: 569578
 Location: A303 Stonehenge Order Number: PO20-659 Superseded Report:

Test Completion Dates

Lab Sample No(s)	22863069
Customer Sample Ref.	DPT70402
AGS Ref.	
Depth	0.30
Type	Soil/Solid (S)

Ammonium Soil by Titration	29-Sep-2020
Anions by Kone (soil)	30-Sep-2020
Chromium III	01-Oct-2020
Cyanide Comp/Free/Total/Thiocyanate	29-Sep-2020
EPH CWG GC (S)	30-Sep-2020
GRO by GC-FID (S)	01-Oct-2020
Hexavalent Chromium (s)	29-Sep-2020
Metals in solid samples by OES	02-Oct-2020
OC OP Pesticides and Triazine Herb	29-Sep-2020
PAH by GCMS	29-Sep-2020
pH	29-Sep-2020
Phenols by HPLC (S)	29-Sep-2020
Sample description	24-Sep-2020
Total Organic Carbon	29-Sep-2020
TPH CWG GC (S)	01-Oct-2020
VOC MS (S)	30-Sep-2020



CERTIFICATE OF ANALYSIS

Validated

SDG: 200919-127 Client Reference: JFR1451 Report Number: 569578
 Location: A303 Stonehenge Order Number: PO20-659 Superseded Report:

ASSOCIATED QC DATA

Ammonium Soil by Titration

Component	Method Code	QC 2263
Exchangeable Ammonium as NH4	TM024	95.02 76.20 : 110.13

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2218
Free Cyanide	TM153	84.16 78.61 : 114.43
Thiocyanate	TM153	96.79 90.48 : 109.52
Total Cyanide	TM153	88.81 76.80 : 112.96

GRO by GC-FID (S)

Component	Method Code	QC 2211
QC	TM089	83.13 70.34 : 111.95

Hexavalent Chromium (s)

Component	Method Code	QC 2263
Hexavalent Chromium	TM151	98.0 95.60 : 107.60

Metals in solid samples by OES

Component	Method Code	QC 2236
Aluminium	TM181	94.69 77.46 : 123.98
Antimony	TM181	104.47 87.04 : 111.16
Arsenic	TM181	103.78 87.34 : 110.87
Barium	TM181	97.25 80.73 : 115.16
Beryllium	TM181	102.99 89.47 : 112.97
Boron	TM181	92.26 76.57 : 104.15
Cadmium	TM181	93.42 78.94 : 102.43



CERTIFICATE OF ANALYSIS

Validated

SDG:	200919-127	Client Reference:	JFR1451	Report Number:	569578
Location:	A303 Stonehenge	Order Number:	PO20-659	Superseded Report:	

Metals in solid samples by OES

		QC 2236
Chromium	TM181	97.97 77.55 : 104.47
Cobalt	TM181	94.65 82.95 : 107.41
Copper	TM181	100.7 84.36 : 106.14
Iron	TM181	98.41 81.43 : 115.79
Lead	TM181	92.79 81.95 : 107.63
Manganese	TM181	110.28 94.29 : 119.51
Mercury	TM181	93.96 82.73 : 106.36
Molybdenum	TM181	98.77 86.61 : 111.07
Nickel	TM181	94.87 79.72 : 103.80
Phosphorus	TM181	109.29 92.65 : 125.47
Selenium	TM181	102.35 88.36 : 111.25
Strontium	TM181	95.55 78.06 : 99.91
Thallium	TM181	101.33 88.60 : 116.73
Tin	TM181	100.0 89.77 : 112.62
Titanium	TM181	81.68 66.29 : 105.96
Vanadium	TM181	97.44 75.51 : 108.87
Zinc	TM181	102.26 84.02 : 111.24

OC OP Pesticides and Triazine Herb

Component	Method Code	QC 2204
Atrazine (Raw)	TM073	145.77 78.55 : 119.92
Azinphos methyl (Raw)	TM073	173.36 58.68 : 154.71
cis-Chlordane (Raw)	TM073	136.91 71.90 : 129.99
Diazinon (Raw)	TM073	136.24 70.00 : 130.00
Dichlorvos (Raw)	TM073	156.6 70.00 : 130.00
Dieldrin (Raw)	TM073	141.4 70.00 : 130.00
gamma-HCH (Lindane) (Raw)	TM073	144.09 71.48 : 129.99



CERTIFICATE OF ANALYSIS

Validated

SDG: 200919-127 Client Reference: JFR1451 Report Number: 569578
 Location: A303 Stonehenge Order Number: PO20-659 Superseded Report:

OC OP Pesticides and Triazine Herb

		QC 2204
Heptachlor (Raw)	TM073	140.27 66.39 : 134.63
Hexachlorobenzene (Raw)	TM073	147.48 47.15 : 124.32
Malathion (Raw)	TM073	141.36 70.00 : 130.00
p,p-DDT (Raw)	TM073	124.63 70.00 : 130.00
Parathion (Raw)	TM073	133.8 64.13 : 127.88

PAH by GCMS

Component	Method Code	QC 2245
Acenaphthene	TM218	88.0 73.47 : 109.80
Acenaphthylene	TM218	85.5 70.00 : 130.00
Anthracene	TM218	83.0 68.68 : 111.89
Benz(a)anthracene	TM218	80.5 68.12 : 118.39
Benzo(a)pyrene	TM218	82.0 71.72 : 115.31
Benzo(b)fluoranthene	TM218	82.0 66.89 : 120.40
Benzo(ghi)perylene	TM218	89.0 67.82 : 118.49
Benzo(k)fluoranthene	TM218	77.5 73.10 : 117.03
Chrysene	TM218	76.5 69.58 : 115.47
Dibenzo(ah)anthracene	TM218	82.5 67.32 : 121.35
Fluoranthene	TM218	81.5 75.16 : 117.28
Fluorene	TM218	87.0 73.81 : 108.66
Indeno(123cd)pyrene	TM218	82.0 68.91 : 117.62
Naphthalene	TM218	82.5 72.12 : 106.18
Phenanthrene	TM218	84.5 69.01 : 113.72
Pyrene	TM218	80.0 75.68 : 119.23

pH



CERTIFICATE OF ANALYSIS

Validated

SDG: 200919-127 Client Reference: JFR1451 Report Number: 569578
 Location: A303 Stonehenge Order Number: PO20-659 Superseded Report:

pH

Component	Method Code	QC 2286
pH	TM133	100.13 98.47 : 102.33

Phenols by HPLC (S)

Component	Method Code	QC 2288
2,3,5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	104.55 65.50 : 89.50
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	85.96 84.00 : 124.00
Catechol by HPLC (S)	TM062 (S)	72.38 19.39 : 135.70
Cresols by HPLC (S)	TM062 (S)	96.03 81.00 : 112.20
Naphthol by HPLC (S)	TM062 (S)	117.86 57.50 : 102.50
Phenol by HPLC (S)	TM062 (S)	102.65 88.67 : 124.67
Resorcinol HPLC (S)	TM062 (S)	93.08 69.99 : 127.22
Xylenols by HPLC (S)	TM062 (S)	97.6 95.22 : 115.89

Total Organic Carbon

Component	Method Code	QC 2268
Total Organic Carbon	TM132	89.45 87.02 : 113.45

VOC MS (S)

Component	Method Code	QC 2231
1,1,1,2-tetrachloroethane	TM116	102.8 86.59 : 118.97
1,1,1-Trichloroethane	TM116	95.4 86.26 : 117.53
1,1,2-Trichloroethane	TM116	95.8 75.16 : 112.70
1,1-Dichloroethane	TM116	96.2 83.27 : 122.16
1,2-Dichloroethane	TM116	105.4 89.30 : 133.10
1,4-Dichlorobenzene	TM116	108.8 82.59 : 123.23
2-Chlorotoluene	TM116	105.2 66.81 : 118.43



CERTIFICATE OF ANALYSIS

Validated

SDG: 200919-127 Client Reference: JFR1451 Report Number: 569578
 Location: A303 Stonehenge Order Number: PO20-659 Superseded Report:

VOC MS (S)

		QC 2231
4-Chlorotoluene	TM116	104.2 65.88 : 114.76
Benzene	TM116	101.0 93.16 : 123.63
Carbon Disulphide	TM116	98.8 75.11 : 124.81
Carbontetrachloride	TM116	105.0 82.35 : 126.46
Chlorobenzene	TM116	103.6 85.07 : 118.13
Chloroform	TM116	99.6 88.13 : 122.71
Chloromethane	TM116	116.6 55.37 : 133.35
Cis-1,2-Dichloroethene	TM116	103.4 78.27 : 128.90
Dibromomethane	TM116	98.0 77.47 : 121.29
Dichloromethane	TM116	106.6 87.89 : 134.72
Ethylbenzene	TM116	99.2 79.92 : 110.05
Hexachlorobutadiene	TM116	82.8 16.78 : 153.29
Isopropylbenzene	TM116	91.6 69.92 : 116.39
Naphthalene	TM116	105.4 79.29 : 125.59
o-Xylene	TM116	95.6 74.57 : 112.73
p/m-Xylene	TM116	98.1 76.47 : 108.99
Sec-Butylbenzene	TM116	97.2 44.71 : 117.87
Tetrachloroethene	TM116	109.8 85.86 : 122.95
Toluene	TM116	93.4 87.82 : 116.21
Trichloroethene	TM116	98.6 79.80 : 112.33
Trichlorofluoromethane	TM116	101.2 80.52 : 132.12
Vinyl Chloride	TM116	92.2 68.07 : 137.84

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis .

The figure detailed is the percentage recovery result for the AQC .

The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control .



CERTIFICATE OF ANALYSIS

Validated

SDG: 200919-127
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PO20-659

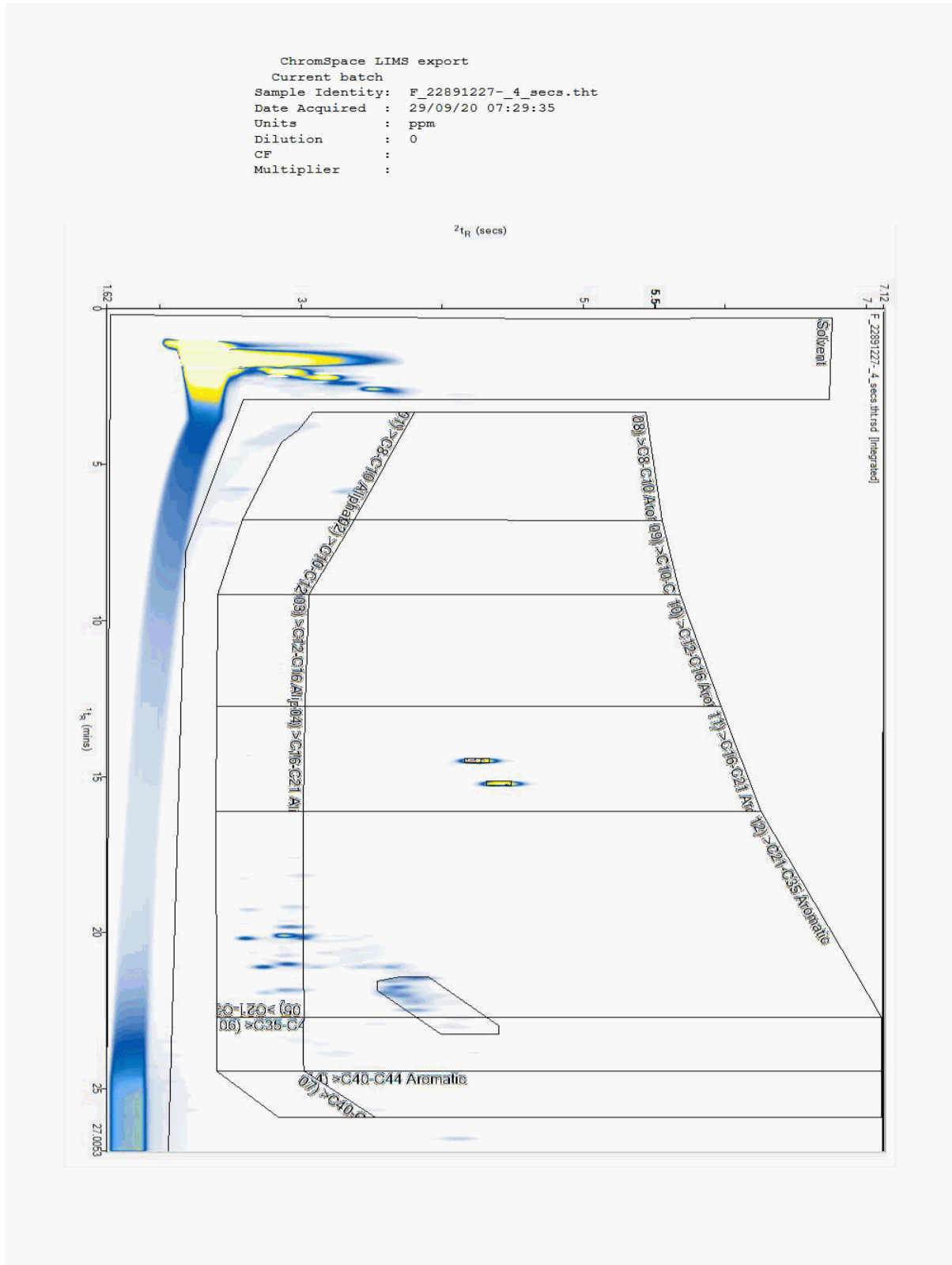
Report Number: 569578
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 22891227
Sample ID : DPT70402

Depth : 0.30





CERTIFICATE OF ANALYSIS

Validated

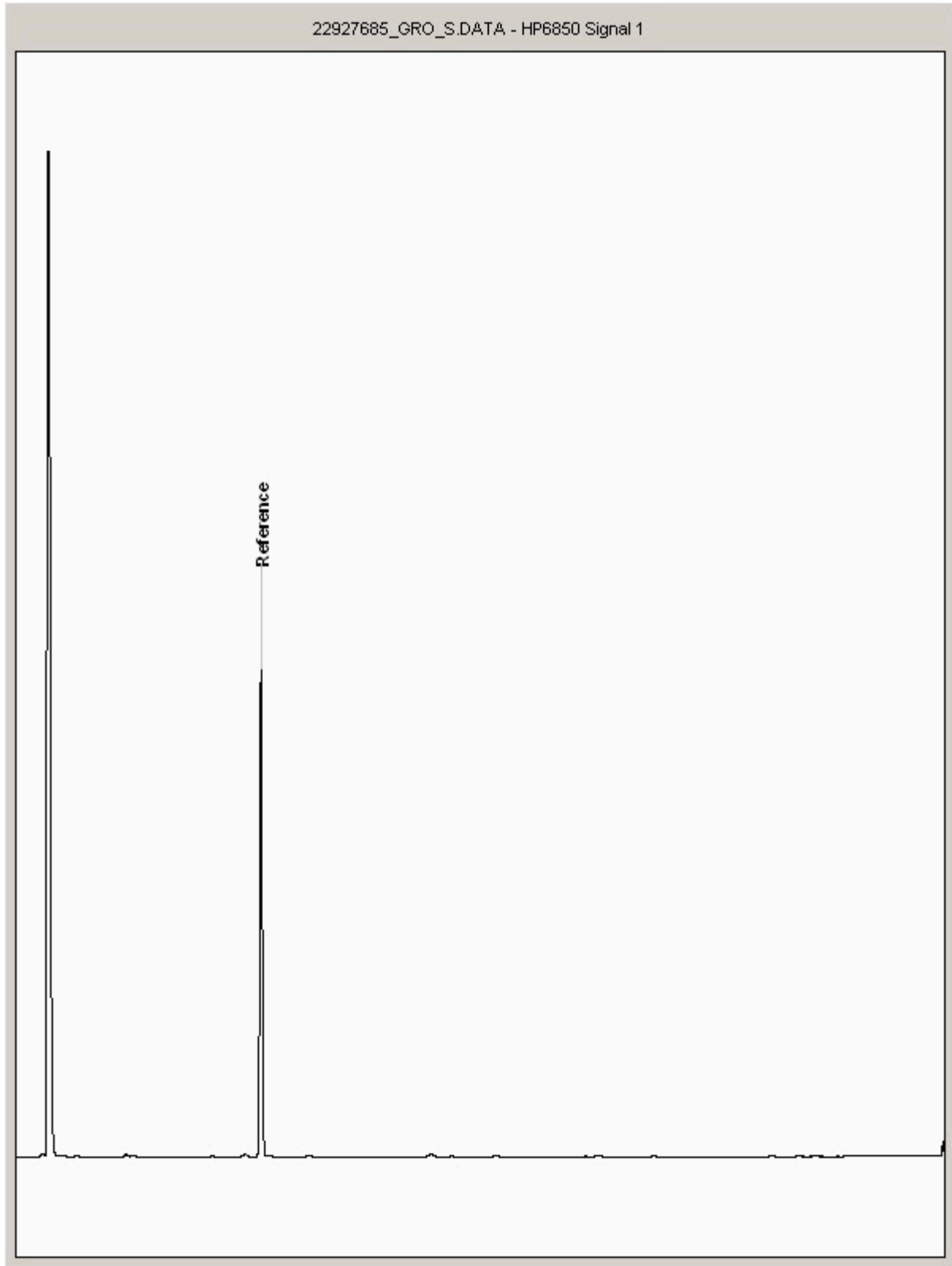
SDG:	200919-127	Client Reference:	JFR1451	Report Number:	569578
Location:	A303 Stonehenge	Order Number:	PO20-659	Superseded Report:	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 22927685
Sample ID : DPT70402

Depth : 0.30





CERTIFICATE OF ANALYSIS

SDG: 200919-127	Client Reference: JFR1451	Report Number: 569578
Location: A303 Stonehenge	Order Number: PO20-659	Superseded Report:

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH₄ by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
§	Sampled on date not provided
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples

19. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung. Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017)*.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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Hawarden

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Website: www.alsenvironmental.co.uk

RPS Consultants Ltd
260 Park Avenue
Aztec West
Almondsbury
Bristol
BS32 4SY

Attention: Gary Riches

CERTIFICATE OF ANALYSIS

Date of report Generation: 02 October 2020
Customer: RPS Consultants Ltd
Sample Delivery Group (SDG): 200919-128
Your Reference: JFR1451
Location: A303 Stonehenge
Report No: 569585

We received 5 samples on Saturday September 19, 2020 and 1 of these samples were scheduled for analysis which was completed on Friday October 02, 2020. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

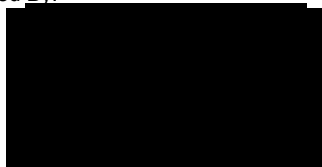
Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:



Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 200919-128 **Client Reference:** JFR1451 **Report Number:** 569585
Location: A303 Stonehenge **Order Number:**

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
22863201	BH72503		0.00 - 0.10	17/09/2020
22863202	BH72503		0.20 - 0.30	17/09/2020
22863203	BH72503		0.40 - 0.50	17/09/2020
22863204	BH72503		1.00 - 1.10	17/09/2020
22863200	WS72401		0.00 - 0.15	17/09/2020

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 200919-128 **Client Reference:** JFR1451 **Report Number:** 569585
Location: A303 Stonehenge **Order Number:** **Superseded Report:**

Results Legend	Lab Sample No(s)			
X Test N No Determination Possible	22863203			
	Customer Sample Reference			BH72503
	AGS Reference			
Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other	Depth (m)			0.40 - 0.50
	Container	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
	Sample Type	S	S	S
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 1	X	
Ammonium Soil by Titration	All	NDPs: 0 Tests: 1		X
Anions by Kone (soil)	All	NDPs: 0 Tests: 1		X
Anions by Kone (w)	All	NDPs: 0 Tests: 1	X	
CEN Readings	All	NDPs: 0 Tests: 1	X	
Chromium III	All	NDPs: 0 Tests: 2	X	X
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 2	X	X
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 1	X	
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 1	X	
EPH CWG (Aliphatic) Filtered GC (W)	All	NDPs: 0 Tests: 1	X	
EPH CWG (Aromatic) Filtered GC (W)	All	NDPs: 0 Tests: 1	X	
EPH CWG GC (S)	All	NDPs: 0 Tests: 1		X
GRO by GC-FID (S)	All	NDPs: 0 Tests: 1		X
GRO by GC-FID (W)	All	NDPs: 0 Tests: 1	X	
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 1		X



CERTIFICATE OF ANALYSIS

Validated

SDG: 200919-128 **Client Reference:** JFR1451 **Report Number:** 569585
Location: A303 Stonehenge **Order Number:** **Superseded Report:**

Results Legend	Lab Sample No(s)			
X Test N No Determination Possible	22863203			
	Customer Sample Reference			BH72503
	AGS Reference			
	Depth (m)			0.40 - 0.50
	Container	1kg Tub with Handle (ALE250)	250g Amber Jar (ALE210)	60g VOC (ALE215)
	Sample Type	S	S	S
Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other				
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 1	X	
Mercury Dissolved	All	NDPs: 0 Tests: 1	X	
Metals in solid samples by OES	All	NDPs: 0 Tests: 1		X
PAH by GCMS	All	NDPs: 0 Tests: 1		X
PAH in waters by GC-MS (diss.filt)	All	NDPs: 0 Tests: 1	X	
pH	All	NDPs: 0 Tests: 1		X
pH Value of Filtered Water	All	NDPs: 0 Tests: 1	X	
Phenols by HPLC (S)	All	NDPs: 0 Tests: 1		X
Phenols by HPLC (W)	All	NDPs: 0 Tests: 1	X	
Sample description	All	NDPs: 0 Tests: 1		X
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 1		X
Total Organic Carbon	All	NDPs: 0 Tests: 1		X
TPH CWG Filtered (W)	All	NDPs: 0 Tests: 1	X	
TPH CWG GC (S)	All	NDPs: 0 Tests: 1		X
VOC MS (S)	All	NDPs: 0 Tests: 1		X



CERTIFICATE OF ANALYSIS

Validated

SDG: 200919-128 Client Reference: JFR1451 Report Number: 569585
 Location: A303 Stonehenge Order Number: Superseded Report:

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm
-----------	----------	------	-----------------	--------	-------------	--------	------------	-------------	-------

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
22863203	BH72503	0.40 - 0.50	Grey	Sand	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.



CERTIFICATE OF ANALYSIS

Validated

SDG:	200919-128	Client Reference:	JFR1451	Report Number:	569585
Location:	A303 Stonehenge	Order Number:		Superseded Report:	





CERTIFICATE OF ANALYSIS

Validated

SDG:	200919-128	Client Reference:	JFR1451
Location:	A303 Stonehenge	Order Number:	Report Number: 569585
			Superseded Report:

BH72503

0.40 - 0.50
Soil/Solid (S)
17/09/2020

19/09/2020
200919-128
22863203

Moisture Content Ratio (% of as received sample)	%	PM024	13
Exchangeable Ammonia as N	<12 mg/kg	TM024	<12 M
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M
Organic Carbon, Total	<0.2 %	TM132	<0.2 M
pH	1 pH Units	TM133	8.87 M
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 #
Cyanide, Total	<1 mg/kg	TM153	<1 M
Cyanide, Free	<1 mg/kg	TM153	<1 M
Chromium, Trivalent	<0.9 mg/kg	TM181	3.52
Antimony	<0.6 mg/kg	TM181	<0.6 #
Arsenic	<0.6 mg/kg	TM181	1.33 M
Beryllium	<0.01 mg/kg	TM181	0.167 M
Boron	<0.7 mg/kg	TM181	4.44 #
Cadmium	<0.02 mg/kg	TM181	0.209 M
Chromium	<0.9 mg/kg	TM181	3.52 M
Copper	<1.4 mg/kg	TM181	1.83 M
Iron	<1000 mg/kg	TM181	4060 #
Lead	<0.7 mg/kg	TM181	3.02 M
Manganese	<0.13 mg/kg	TM181	237 M
Mercury	<0.14 mg/kg	TM181	<0.14 M
Molybdenum	<0.1 mg/kg	TM181	<0.1 #
Nickel	<0.2 mg/kg	TM181	4.14 M
Phosphorus	<1 mg/kg	TM181	791
Selenium	<1 mg/kg	TM181	<1 #
Zinc	<1.9 mg/kg	TM181	17.7 M
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243	0.0161 M



PAH by GCMS

CERTIFICATE OF ANALYSIS

Validated

SDG:	200919-128	Client Reference:	JFR1451	Report Number:	569585
Location:	A303 Stonehenge	Order Number:		Superseded Report:	



CERTIFICATE OF ANALYSIS

Validated

SDG:	200919-128	Client Reference:	JFR1451	Report Number:	569585
Location:	A303 Stonehenge	Order Number:		Superseded Report:	

PAH by GCMS

BH72503

0.40 - 0.50
Soil/Solid (S)
17/09/2020

19/09/2020
200919-128
22863203

Naphthalene-d8 % recovery**	%	TM218	82.7	
Acenaphthene-d10 % recovery**	%	TM218	83.5	
Phenanthrene-d10 % recovery**	%	TM218	79.7	
Chrysene-d12 % recovery**	%	TM218	74.6	
Perylene-d12 % recovery**	%	TM218	80.2	
Naphthalene	<9 µg/kg	TM218	<9	M
Acenaphthylene	<12 µg/kg	TM218	44.1	M
Acenaphthene	<8 µg/kg	TM218	20.7	M
Fluorene	<10 µg/kg	TM218	20.6	M
Phenanthrene	<15 µg/kg	TM218	278	M
Anthracene	<16 µg/kg	TM218	99.5	M
Fluoranthene	<17 µg/kg	TM218	812	M
Pyrene	<15 µg/kg	TM218	808	M
Benz(a)anthracene	<14 µg/kg	TM218	461	M
Chrysene	<10 µg/kg	TM218	447	M
Benzo(b)fluoranthene	<15 µg/kg	TM218	694	M
Benzo(k)fluoranthene	<14 µg/kg	TM218	245	M
Benzo(a)pyrene	<15 µg/kg	TM218	598	M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	492	M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	74.3	M
Benzo(g,h,i)perylene	<24 µg/kg	TM218	490	M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	5580	



CERTIFICATE OF ANALYSIS

Validated

SDG:	200919-128	Client Reference:	JFR1451	Report Number:	569585
Location:	A303 Stonehenge	Order Number:		Superseded Report:	

Semi Volatile Organic Compounds



CERTIFICATE OF ANALYSIS

Validated

SDG: 200919-128
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 569585
Superseded Report:

Semi Volatile Organic Compounds

Table with columns: Component, LOD/Units, Method, Customer Sample Ref., Depth (m), Sample Type, Date Sampled, Sampled Time, Date Received, SDG Ref, Lab Sample No.(s), AGS Reference. Includes a Results Legend sub-table.



CERTIFICATE OF ANALYSIS

Validated

SDG: 200919-128
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 569585
Superseded Report:

Semi Volatile Organic Compounds

BH72503

0.40 - 0.50
Soil/Solid (S)
17/09/2020

19/09/2020
200919-128
22863203

Phenol	<100 µg/kg	TM157	<100
Pentachlorophenol	<100 µg/kg	TM157	<100
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100
Nitrobenzene	<100 µg/kg	TM157	<100
Isophorone	<100 µg/kg	TM157	<100
Hexachloroethane	<100 µg/kg	TM157	<100
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<200
Hexachlorobutadiene	<100 µg/kg	TM157	<100
Hexachlorobenzene	<100 µg/kg	TM157	<100
n-Dioctyl phthalate	<100 µg/kg	TM157	<100
Dimethyl phthalate	<100 µg/kg	TM157	<100
Diethyl phthalate	<100 µg/kg	TM157	<100
n-Dibutyl phthalate	<100 µg/kg	TM157	<100
Dibenzofuran	<100 µg/kg	TM157	<100
Carbazole	<100 µg/kg	TM157	<100
Butylbenzyl phthalate	<100 µg/kg	TM157	<100
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100
Azobenzene	<100 µg/kg	TM157	<100
4-Nitrophenol	<100 µg/kg	TM157	<100
4-Nitroaniline	<100 µg/kg	TM157	<100
4-Methylphenol	<100 µg/kg	TM157	<100
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100
4-Chloroaniline	<100 µg/kg	TM157	<100
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100
4-Bromophenylphenylether	<100 µg/kg	TM157	<100
3-Nitroaniline	<100 µg/kg	TM157	<100
2-Nitrophenol	<100 µg/kg	TM157	<100
2-Nitroaniline	<100 µg/kg	TM157	<100
2-Methylphenol	<100 µg/kg	TM157	<100



CERTIFICATE OF ANALYSIS

Validated

SDG: 200919-128 Client Reference: JFR1451 Report Number: 569585
 Location: A303 Stonehenge Order Number: Superseded Report:

BH72503

 0.40 - 0.50
 Soil/Solid (S)
 17/09/2020

 19/09/2020
 200919-128
 22863203

1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100
2-Chlorophenol	<100 µg/kg	TM157	<100
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100
2,4-Dimethylphenol	<100 µg/kg	TM157	<100
2,4-Dichlorophenol	<100 µg/kg	TM157	<100
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100
2-Chloronaphthalene	<100 µg/kg	TM157	<100
2-Methylnaphthalene	<100 µg/kg	TM157	<100
Acenaphthylene	<100 µg/kg	TM157	<100
Acenaphthene	<100 µg/kg	TM157	<100
Anthracene	<100 µg/kg	TM157	<100
Benzo(a)anthracene	<100 µg/kg	TM157	343
Benzo(b)fluoranthene	<100 µg/kg	TM157	276
Benzo(k)fluoranthene	<100 µg/kg	TM157	339
Benzo(a)pyrene	<100 µg/kg	TM157	392
Benzo(g,h,i)perylene	<100 µg/kg	TM157	232
Chrysene	<100 µg/kg	TM157	408
Fluoranthene	<100 µg/kg	TM157	554
Fluorene	<100 µg/kg	TM157	<100
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	210
Phenanthrene	<100 µg/kg	TM157	193
Pyrene	<100 µg/kg	TM157	617
Naphthalene	<100 µg/kg	TM157	<100
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100
TIC report		TM157	Not Detected
Total SVOC TIC	<100 µg/kg	TM157	<1000



TPH CWG (S)

CERTIFICATE OF ANALYSIS

Validated

SDG:	200919-128	Client Reference:	JFR1451	Report Number:	569585
Location:	A303 Stonehenge	Order Number:		Superseded Report:	



CERTIFICATE OF ANALYSIS

Validated

SDG: 200919-128
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 569585
Superseded Report:

TPH CWG (S)

Table with multiple columns including Component, LOD/Units, Method, and various metadata fields like Depth, Date Sampled, and Date Received. The table is mostly empty.



CERTIFICATE OF ANALYSIS

Validated

SDG:	200919-128	Client Reference:	JFR1451	Report Number:	569585
Location:	A303 Stonehenge	Order Number:		Superseded Report:	

TPH CWG (S)

BH72503

0.40 - 0.50
Soil/Solid (S)
17/09/2020

19/09/2020
200919-128
22863203

GRO Surrogate % recovery**	%	TM089	108
Aliphatics >C5-C6	<10 µg/kg	TM089	<10
Aliphatics >C6-C8	<10 µg/kg	TM089	<10
Aliphatics >C8-C10	<10 µg/kg	TM089	<10
Aliphatics >C10-C12	<1000 µg/kg	TM414	<1000
Aliphatics >C12-C16	<1000 µg/kg	TM414	<1000
Aliphatics >C16-C21	<1000 µg/kg	TM414	<1000
Aliphatics >C21-C35	<1000 µg/kg	TM414	12600
Aliphatics >C35-C44	<1000 µg/kg	TM414	3750
Total Aliphatics >C10-C44	<5000 µg/kg	TM414	17200
Total Aliphatics & Aromatics >C10-C44	<10000 µg/kg	TM414	26600
Aromatics >EC5-EC7	<10 µg/kg	TM089	<10
Aromatics >EC7-EC8	<10 µg/kg	TM089	<10
Aromatics >EC8-EC10	<10 µg/kg	TM089	<10
Aromatics > EC10-EC12	<1000 µg/kg	TM414	<1000
Aromatics > EC12-EC16	<1000 µg/kg	TM414	<1000
Aromatics > EC16-EC21	<1000 µg/kg	TM414	1120
Aromatics > EC21-EC35	<1000 µg/kg	TM414	7000
Aromatics >EC35-EC44	<1000 µg/kg	TM414	1030
Aromatics > EC40-EC44	<1000 µg/kg	TM414	<1000
Total Aromatics > EC10-EC44	<5000 µg/kg	TM414	9460
Total Aliphatics & Aromatics >C5-C44	<10000 µg/kg	TM414	26600
Total Aliphatics >C5-C10	<50 µg/kg	TM089	<50
Total Aromatics >EC5-EC10	<50 µg/kg	TM089	<50
GRO >C5-C10	<20 µg/kg	TM089	<20



VOC MS (S)

CERTIFICATE OF ANALYSIS

Validated

SDG:	200919-128	Client Reference:	JFR1451	Report Number:	569585
Location:	A303 Stonehenge	Order Number:		Superseded Report:	



CERTIFICATE OF ANALYSIS

Validated

SDG: 200919-128	Client Reference: JFR1451	Report Number: 569585
Location: A303 Stonehenge	Order Number:	Superseded Report:

VOC MS (S)

BH72503

0.40 - 0.50
Soil/Solid (S)
17/09/2020

19/09/2020
200919-128
22863203

Dibromofluoromethane**	%	TM116	101
Toluene-d8**	%	TM116	95.1
4-Bromofluorobenzene**	%	TM116	95.8
Dichlorodifluoromethane	<6 µg/kg	TM116	<6 M
Chloromethane	<7 µg/kg	TM116	<7 #
Vinyl Chloride	<6 µg/kg	TM116	<6 M
Bromomethane	<10 µg/kg	TM116	<10 M
Chloroethane	<10 µg/kg	TM116	<10 M
Trichlorofluoromethane	<6 µg/kg	TM116	<6 M
1,1-Dichloroethene	<10 µg/kg	TM116	<10 #
Carbon Disulphide	<7 µg/kg	TM116	<7 M
Dichloromethane	<10 µg/kg	TM116	<10 #
Methyl Tertiary Butyl Ether	<10 µg/kg	TM116	<10 M
trans-1,2-Dichloroethene	<10 µg/kg	TM116	<10 M
1,1-Dichloroethane	<8 µg/kg	TM116	<8 M
cis-1,2-Dichloroethene	<6 µg/kg	TM116	<6 M
2,2-Dichloropropane	<10 µg/kg	TM116	<10
Bromochloromethane	<10 µg/kg	TM116	<10 M
Chloroform	<8 µg/kg	TM116	<8 M
1,1,1-Trichloroethane	<7 µg/kg	TM116	<7 M
1,1-Dichloropropene	<10 µg/kg	TM116	<10 M
Carbontetrachloride	<10 µg/kg	TM116	<10 M
1,2-Dichloroethane	<5 µg/kg	TM116	<5 M
Benzene	<9 µg/kg	TM116	<9 M
Trichloroethene	<9 µg/kg	TM116	<9 #
1,2-Dichloropropane	<10 µg/kg	TM116	<10 M
Dibromomethane	<9 µg/kg	TM116	<9 M
Bromodichloromethane	<7 µg/kg	TM116	<7 M
cis-1,3-Dichloropropene	<10 µg/kg	TM116	<10 M
Toluene	<7 µg/kg	TM116	<7 M
trans-1,3-Dichloropropene	<10 µg/kg	TM116	<10



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BH72503

0.40 - 0.50
Soil/Solid (S)
17/09/2020

19/09/2020
200919-128
22863203

1,1,2-Trichloroethane	<10 µg/kg	TM116	<10	M
1,3-Dichloropropane	<7 µg/kg	TM116	<7	M
Tetrachloroethene	<5 µg/kg	TM116	<5	M
Dibromochloromethane	<10 µg/kg	TM116	<10	M
1,2-Dibromoethane	<10 µg/kg	TM116	<10	M
Chlorobenzene	<5 µg/kg	TM116	<5	M
1,1,1,2-Tetrachloroethane	<10 µg/kg	TM116	<10	M
Ethylbenzene	<4 µg/kg	TM116	<4	M
p/m-Xylene	<10 µg/kg	TM116	<10	#
o-Xylene	<10 µg/kg	TM116	<10	M
Styrene	<10 µg/kg	TM116	<10	#
Bromoform	<10 µg/kg	TM116	<10	M
Isopropylbenzene	<5 µg/kg	TM116	<5	#
1,1,2,2-Tetrachloroethane	<10 µg/kg	TM116	<10	#
1,2,3-Trichloropropane	<16 µg/kg	TM116	<16	M
Bromobenzene	<10 µg/kg	TM116	<10	M
Propylbenzene	<10 µg/kg	TM116	<10	M
2-Chlorotoluene	<9 µg/kg	TM116	<9	M
1,3,5-Trimethylbenzene	<8 µg/kg	TM116	<8	M
4-Chlorotoluene	<10 µg/kg	TM116	<10	M
tert-Butylbenzene	<14 µg/kg	TM116	<14	M
1,2,4-Trimethylbenzene	<9 µg/kg	TM116	<9	#
sec-Butylbenzene	<10 µg/kg	TM116	<10	
4-Isopropyltoluene	<10 µg/kg	TM116	<10	M
1,3-Dichlorobenzene	<8 µg/kg	TM116	<8	M
1,4-Dichlorobenzene	<5 µg/kg	TM116	<5	M
n-Butylbenzene	<11 µg/kg	TM116	<11	
1,2-Dichlorobenzene	<10 µg/kg	TM116	<10	M
1,2-Dibromo-3-chloropropane	<14 µg/kg	TM116	<14	M
Tert-amyl methyl ether	<10 µg/kg	TM116	<10	#
1,2,4-Trichlorobenzene	<20 µg/kg	TM116	<20	
Hexachlorobutadiene	<20 µg/kg	TM116	<20	



CERTIFICATE OF ANALYSIS

Validated

SDG: 200919-128 **Client Reference:** JFR1451 **Report Number:** 569585
Location: A303 Stonehenge **Order Number:** **Superseded Report:**

BH72503

 0.40 - 0.50
 Soil/Solid (S)
 17/09/2020

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 200919-128
 22863203

Naphthalene	<13 µg/kg	TM116	<13 M
1,2,3-Trichlorobenzene	<20 µg/kg	TM116	<20 #
VOC TIC		TM116	Not Detected
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.02
Sum of BTEX	<40 µg/kg	TM116	<40
Total VOC TIC	<50 µg/kg	TM116	<50



CERTIFICATE OF ANALYSIS

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SDG:	200919-128	Client Reference:	JFR1451	Report Number:	569585
Location:	A303 Stonehenge	Order Number:		Superseded Report:	



CERTIFICATE OF ANALYSIS

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SDG:	200919-128	Client Reference:	JFR1451	Report Number:	569585
Location:	A303 Stonehenge	Order Number:		Superseded Report:	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
 Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
 Mcerts Certification does not apply to leachates
 02/10/2020 10:03:04

Aliphatics >C12-C16	<0.01	<0.01	<0.02	<0.02
Aliphatics >C16-C21	<0.01	<0.01	<0.02	<0.02
Aliphatics >C21-C35	<0.01	<0.01	<0.02	<0.02
Total Aliphatics >C12-C35	<0.01	<0.01	<0.02	<0.02
Aromatics >EC12-EC16	<0.01	<0.01	<0.02	<0.02
Aromatics >EC16-EC21	<0.01	<0.01	<0.02	<0.02
Aromatics >EC21-EC35	<0.01	<0.01	<0.02	<0.02
Aromatics >EC16-EC35	<0.01	<0.01	<0.02	<0.02
Total Aromatics >EC12-EC35	<0.01	<0.01	<0.02	<0.02
TPH (Total Aliphatics + Total Aromatics) >C5-C35	<0.01	<0.01	<0.02	<0.02
Ammoniacal Nitrogen as N	<0.2	<0.2	<0.4	<0.4
Chromium III	<0.03	<0.03	<0.06	<0.06
Hexavalent Chromium	<0.03	<0.03	<0.06	<0.06
Sulphate (soluble)	8.2	<2	16.4	<4
Dissolved Organic Carbon	3.74	<3	7.48	<6
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.00002	<0.00002
Antimony	<0.001	<0.001	<0.002	<0.002
Naphthalene (diss.filt)	<0.00001	<0.00001	<0.00002	<0.00002
Total Cyanide (W)	<0.05	<0.05	<0.1	<0.1
Acenaphthene (diss.filt)	0.0000237	<0.000005	0.0000474	<0.00001
Arsenic	<0.0005	<0.0005	<0.001	<0.001
Free Cyanide (W)	<0.05	<0.05	<0.1	<0.1
Acenaphthylene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Phenol by HPLC (W)	<0.002	<0.002	<0.004	<0.004
Beryllium	<0.0001	<0.0001	<0.0002	<0.0002
Fluoranthene (diss.filt)	0.000166	<0.000005	0.000332	<0.00001
Anthracene (diss.filt)	0.0000262	<0.000005	0.0000524	<0.00001
Boron	<0.01	<0.01	<0.02	<0.02
Phenanthrene (diss.filt)	0.0000715	<0.000005	0.000143	<0.00001
Cadmium	<0.00008	<0.00008	<0.00016	<0.00016
Fluorene (diss.filt)	0.00000958	<0.000005	0.0000192	<0.00001
Chrysene (diss.filt)	0.0000153	<0.000005	0.0000306	<0.00001
Pyrene (diss.filt)	0.000148	<0.000005	0.000296	<0.00001
Benzo(a)anthracene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Chromium	<0.001	<0.001	<0.002	<0.002



CERTIFICATE OF ANALYSIS

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Location:	A303 Stonehenge	Order Number:		Superseded Report:	

Benzo(b)fluoranthene (diss.filt)	0.0000133	<0.000005	0.0000266	<0.00001
Benzo(k)fluoranthene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Benzo(a)pyrene (diss.filt)	<0.000002	<0.000002	<0.000004	<0.000004
Copper	0.00278	<0.0003	0.00556	<0.0006
Dibenzo(a,h)anthracene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Lead	<0.0002	<0.0002	<0.0004	<0.0004
Benzo(g,h,i)perylene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Indeno(1,2,3-cd)pyrene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Manganese	<0.003	<0.003	<0.006	<0.006
Molybdenum	<0.003	<0.003	<0.006	<0.006
PAH 16 EPA Total by GCMS (diss.filt)	0.000473	<0.000082	0.000946	<0.000164
Nickel	0.000583	<0.0004	0.00117	<0.0008
Phosphorus	0.015	<0.01	0.03	<0.02
Selenium	<0.001	<0.001	<0.002	<0.002
Zinc	<0.001	<0.001	<0.002	<0.002
Calcium (Dis.Filt) mg/l	19.2	<0.2	38.4	<0.4
Iron (Dis.Filt) mg/l	<0.019	<0.019	<0.038	<0.038
TPH CWG (W)				
Surrogate Recovery	-	-	-	-
GRO TOT (C5-C12)	<0.05	<0.05	<0.1	<0.1
Aliphatics C5-C6	<0.01	<0.01	<0.02	<0.02
Aliphatics >C6-C8	<0.01	<0.01	<0.02	<0.02
Aliphatics >C8-C10	<0.01	<0.01	<0.02	<0.02
Aliphatics >C10-C12	<0.01	<0.01	<0.02	<0.02
Aromatics C6-C7	<0.01	<0.01	<0.02	<0.02
Aromatics >C7-C8	<0.01	<0.01	<0.02	<0.02
MTBE GC-FID	<0.003	<0.003	<0.006	<0.006
Aromatics >EC8 -EC10	<0.01	<0.01	<0.02	<0.02
Aromatics >EC10-EC12	<0.01	<0.01	<0.02	<0.02
Benzene by GC	<0.007	<0.007	<0.014	<0.014
Toluene by GC	<0.004	<0.004	<0.008	<0.008
Ethylbenzene by GC	<0.005	<0.005	<0.01	<0.01
m & p Xylene by GC	<0.008	<0.008	<0.016	<0.016
o Xylene by GC	<0.003	<0.003	<0.006	<0.006
Sum m&p and o Xylene by GC	<0.011	<0.011	<0.022	<0.022
Sum of BTEX by GC	<0.028	<0.028	<0.056	<0.056



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Validated

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Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM174	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID
TM178	Modified: US EPA Method 8100	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS in Waters
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser
TM243		Mixed Anions In Soils By Kone
TM245	By GC-FID	Determination of GRO by Headspace in waters
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).



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Test Completion Dates

Lab Sample No(s)	22863203
Customer Sample Ref.	BH72503
AGS Ref.	
Depth	0.40 - 0.50
Type	Soil/Solid (S)
Ammoniacal Nitrogen	30-Sep-2020
Ammonium Soil by Titration	29-Sep-2020
Anions by Kone (soil)	30-Sep-2020
Anions by Kone (w)	30-Sep-2020
CEN 2:1 Leachate (1 Stage)	25-Sep-2020
CEN Readings	30-Sep-2020
Chromium III	01-Oct-2020
Cyanide Comp/Free/Total/Thiocyanate	30-Sep-2020
Dissolved Metals by ICP-MS	30-Sep-2020
Dissolved Organic/Inorganic Carbon	01-Oct-2020
EPH CWG (Aliphatic) Filtered GC (W)	01-Oct-2020
EPH CWG (Aromatic) Filtered GC (W)	01-Oct-2020
EPH CWG GC (S)	30-Sep-2020
GRO by GC-FID (S)	01-Oct-2020
GRO by GC-FID (W)	30-Sep-2020
Hexavalent Chromium (s)	30-Sep-2020
Hexavalent Chromium (w)	30-Sep-2020
Mercury Dissolved	30-Sep-2020
Metals in solid samples by OES	02-Oct-2020
Moisture at 105C	24-Sep-2020
PAH by GCMS	28-Sep-2020
PAH in waters by GC-MS (diss.filt)	30-Sep-2020
pH	25-Sep-2020
pH Value of Filtered Water	29-Sep-2020
Phenols by HPLC (S)	29-Sep-2020
Phenols by HPLC (W)	30-Sep-2020
Sample description	24-Sep-2020
Semi Volatile Organic Compounds	30-Sep-2020
Total Organic Carbon	29-Sep-2020
TPH CWG Filtered (W)	02-Oct-2020
TPH CWG GC (S)	01-Oct-2020
VOC MS (S)	01-Oct-2020



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SDG: 200919-128 Client Reference: JFR1451 Report Number: 569585
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ASSOCIATED QC DATA

Ammoniacal Nitrogen

Component	Method Code	QC 2221
Ammoniacal Nitrogen as N	TM099	103.6 93.14 : 108.60

Ammonium Soil by Titration

Component	Method Code	QC 2263
Exchangeable Ammonium as NH4	TM024	95.02 76.20 : 110.13

Anions by Kone (w)

Component	Method Code	QC 2237
Chloride	TM184	103.0 92.93 : 115.43
Sulphate (soluble)	TM184	100.8 90.53 : 113.03

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2218	QC 2236
Free Cyanide	TM153	84.16 78.61 : 114.43	
Free Cyanide (W)	TM227		99.75 90.50 : 114.50
Thiocyanate	TM153	96.79 90.48 : 109.52	
Thiocyanate (W)	TM227		98.25 90.50 : 113.00
Total Cyanide	TM153	88.81 76.80 : 112.96	
Total Cyanide (W)	TM227		100.5 91.75 : 112.75

Dissolved Metals by ICP-MS

Component	Method Code	QC 2227
Aluminium	TM152	107.67 94.21 : 111.52
Antimony	TM152	103.33 88.37 : 130.57
Arsenic	TM152	106.0 92.62 : 113.52
Barium	TM152	108.33 88.62 : 113.14



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Dissolved Metals by ICP-MS

		QC 2227
Beryllium	TM152	103.0 87.08 : 111.38
Bismuth	TM152	102.67 92.62 : 115.02
Boron	TM152	107.67 86.31 : 120.88
Cadmium	TM152	107.0 93.85 : 111.65
Calcium	TM152	106.67 89.20 : 126.91
Chromium	TM152	108.0 92.22 : 109.85
Cobalt	TM152	106.33 85.01 : 114.87
Copper	TM152	109.0 89.87 : 119.73
Iron	TM152	108.0 93.02 : 113.86
Lead	TM152	108.33 91.11 : 116.98
Lithium	TM152	106.33 91.30 : 123.00
Magnesium	TM152	104.0 89.60 : 116.61
Manganese	TM152	108.0 93.97 : 112.46
Molybdenum	TM152	102.83 89.07 : 110.96
Nickel	TM152	107.67 93.70 : 112.15
Phosphorus	TM152	107.0 89.24 : 114.18
Potassium	TM152	105.33 93.20 : 115.55
Selenium	TM152	105.17 91.69 : 117.12
Silver	TM152	136.83 90.93 : 121.73
Sodium	TM152	104.67 92.42 : 113.24
Strontium	TM152	107.0 92.14 : 116.24
Tellurium	TM152	99.67 89.88 : 111.78
Thallium	TM152	103.17 82.43 : 113.83
Tin	TM152	104.83 94.62 : 107.79
Titanium	TM152	103.17 90.29 : 115.23
Tungsten	TM152	103.17 77.61 : 132.31



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Dissolved Metals by ICP-MS

		QC 2227
Uranium	TM152	104.33 86.97 : 115.76
Vanadium	TM152	105.5 89.61 : 115.48
Zinc	TM152	109.0 87.51 : 116.26

Dissolved Organic/Inorganic Carbon

Component	Method Code	QC 2257
Dissolved Inorganic Carbon	TM090	105.67 91.27 : 109.87
Dissolved Organic Carbon	TM090	101.67 96.58 : 107.98

EPH CWG (Aromatic) Filtered GC (W)

Component	Method Code	QC 2273
Total Aromatics >EC10-EC40	TM174	97.8 73.75 : 120.32

GRO by GC-FID (S)

Component	Method Code	QC 2211
QC	TM089	83.13 70.34 : 111.95

GRO by GC-FID (W)

Component	Method Code	QC 2260
Benzene by GC	TM245	94.5 83.48 : 117.21
Ethylbenzene by GC	TM245	100.5 84.11 : 114.89
m & p Xylene by GC	TM245	99.0 83.73 : 116.33
MTBE GC-FID	TM245	95.5 84.42 : 117.50
o Xylene by GC	TM245	99.0 85.03 : 117.59
QC	TM245	105.53 60.71 : 137.65
Toluene by GC	TM245	96.5 84.73 : 116.85



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Hexavalent Chromium (s)

Component	Method Code	QC 2292
Hexavalent Chromium	TM151	98.0 95.60 : 107.60

Hexavalent Chromium (w)

Component	Method Code	QC 2292
Hexavalent Chromium	TM241	98.8 94.17 : 106.17

Mercury Dissolved

Component	Method Code	QC 2201
Mercury Dissolved (CVAF)	TM183	102.0 69.30 : 128.70

Metals in solid samples by OES

Component	Method Code	QC 2268
Aluminium	TM181	74.07 77.46 : 123.98
Antimony	TM181	100.0 87.04 : 111.16
Arsenic	TM181	97.38 87.34 : 110.87
Barium	TM181	85.78 80.73 : 115.16
Beryllium	TM181	101.12 89.47 : 112.97
Boron	TM181	79.94 76.57 : 104.15
Cadmium	TM181	84.36 78.94 : 102.43
Chromium	TM181	95.94 77.55 : 104.47
Cobalt	TM181	90.25 82.95 : 107.41
Copper	TM181	92.61 84.36 : 106.14
Iron	TM181	99.21 81.43 : 115.79
Lead	TM181	95.27 81.95 : 107.63



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Metals in solid samples by OES

		QC 2268
Manganese	TM181	111.94 94.29 : 119.51
Mercury	TM181	96.14 82.73 : 106.36
Molybdenum	TM181	97.53 86.61 : 111.07
Nickel	TM181	89.73 79.72 : 103.80
Phosphorus	TM181	113.54 92.65 : 125.47
Selenium	TM181	97.65 88.36 : 111.25
Strontium	TM181	86.41 78.06 : 99.91
Thallium	TM181	103.98 88.60 : 116.73
Tin	TM181	99.24 89.77 : 112.62
Titanium	TM181	68.93 66.29 : 105.96
Vanadium	TM181	91.58 75.51 : 108.87
Zinc	TM181	96.1 84.02 : 111.24

PAH by GCMS

Component	Method Code	QC 2289
Acenaphthene	TM218	88.5 73.47 : 109.80
Acenaphthylene	TM218	87.0 70.00 : 130.00
Anthracene	TM218	84.5 68.68 : 111.89
Benz(a)anthracene	TM218	84.0 68.12 : 118.39
Benzo(a)pyrene	TM218	84.0 71.72 : 115.31
Benzo(b)fluoranthene	TM218	80.5 66.89 : 120.40
Benzo(ghi)perylene	TM218	90.5 67.82 : 118.49
Benzo(k)fluoranthene	TM218	84.0 73.10 : 117.03
Chrysene	TM218	80.0 69.58 : 115.47
Dibenzo(ah)anthracene	TM218	85.0 67.32 : 121.35
Fluoranthene	TM218	83.0 75.16 : 117.28
Fluorene	TM218	88.5 73.81 : 108.66



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PAH by GCMS

		QC 2289
Indeno(123cd)pyrene	TM218	84.0 68.91 : 117.62
Naphthalene	TM218	82.5 72.12 : 106.18
Phenanthrene	TM218	85.5 69.01 : 113.72
Pyrene	TM218	84.0 75.68 : 119.23

PAH in waters by GC-MS (diss.filt)

Component	Method Code	QC 2284
Acenaphthene (diss.filt)	TM178	113.6 93.20 : 119.60
Acenaphthylene (diss.filt)	TM178	112.8 92.00 : 118.40
Anthracene (diss.filt)	TM178	113.6 90.80 : 114.80
Benzo(a)anthracene (diss.filt)	TM178	108.0 91.60 : 115.60
Benzo(a)pyrene (diss.filt)	TM178	106.4 91.20 : 120.00
Benzo(b)fluoranthene (diss.filt)	TM178	97.6 86.80 : 120.40
Benzo(g,h,i)perylene (diss.filt)	TM178	108.0 89.20 : 118.00
Benzo(k)fluoranthene (diss.filt)	TM178	104.0 94.40 : 125.60
Chrysene (diss.filt)	TM178	108.0 96.40 : 122.80
Dibenzo(a,h)anthracene (diss.filt)	TM178	111.2 93.60 : 132.00
Fluoranthene (diss.filt)	TM178	104.0 92.80 : 121.60
Fluorene (diss.filt)	TM178	111.6 93.60 : 120.00
Indeno(1,2,3-cd)pyrene (diss.filt)	TM178	110.8 82.40 : 120.80
Naphthalene (diss.filt)	TM178	112.0 88.40 : 126.80
Phenanthrene (diss.filt)	TM178	110.0 92.40 : 118.80
Pyrene (diss.filt)	TM178	104.4 90.40 : 124.00

pH

Component	Method Code	QC 2238
pH	TM133	101.32 99.74 : 102.91



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pH Value of Filtered Water

Component	Method Code	QC 2211
pH	TM256	101.07 99.20 : 101.60

Phenols by HPLC (S)

Component	Method Code	QC 2255
2,3,5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	102.6 83.23 : 109.71
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	88.89 76.34 : 104.11
Catechol by HPLC (S)	TM062 (S)	91.43 22.43 : 157.02
Cresols by HPLC (S)	TM062 (S)	91.65 85.78 : 116.44
Naphthol by HPLC (S)	TM062 (S)	120.71 75.62 : 124.38
Phenol by HPLC (S)	TM062 (S)	109.27 79.53 : 120.47
Resorcinol HPLC (S)	TM062 (S)	105.66 71.43 : 129.59
Xylenols by HPLC (S)	TM062 (S)	98.23 89.90 : 107.23

Phenols by HPLC (W)

Component	Method Code	QC 2297
2,3,5 Trimethyl-Phenol by HPLC (W)	TM259	102.0 84.50 : 111.50
2-Isopropyl Phenol by HPLC (W)	TM259	99.0 84.55 : 110.90
Cresols by HPLC (W)	TM259	104.67 90.00 : 112.00
Naphthol by HPLC (W)	TM259	114.0 82.00 : 124.00
Phenol by HPLC (W)	TM259	101.0 86.80 : 112.60
Xylenols by HPLC (W)	TM259	103.5 94.74 : 115.71

Semi Volatile Organic Compounds

Component	Method Code	QC 2258
4-Bromophenylphenylether (Soil)	TM157	87.0 63.50 : 114.50
Benzo(a)anthracene (Soil)	TM157	95.0 71.89 : 120.91
Hexachlorobutadiene (Soil)	TM157	96.0 69.80 : 117.77
Naphthalene (Soil)	TM157	93.5 70.00 : 115.00



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Semi Volatile Organic Compounds

		QC 2258
Nitrobenzene (Soil)	TM157	89.0 70.00 : 118.00
Phenol (Soil)	TM157	101.0 72.00 : 117.00

Total Organic Carbon

Component	Method Code	QC 2268
Total Organic Carbon	TM132	89.45 87.02 : 113.45

VOC MS (S)

Component	Method Code	QC 2231
1,1,1,2-tetrachloroethane	TM116	102.8 86.59 : 118.97
1,1,1-Trichloroethane	TM116	95.4 86.26 : 117.53
1,1,2-Trichloroethane	TM116	95.8 75.16 : 112.70
1,1-Dichloroethane	TM116	96.2 83.27 : 122.16
1,2-Dichloroethane	TM116	105.4 89.30 : 133.10
1,4-Dichlorobenzene	TM116	108.8 82.59 : 123.23
2-Chlorotoluene	TM116	105.2 66.81 : 118.43
4-Chlorotoluene	TM116	104.2 65.88 : 114.76
Benzene	TM116	101.0 93.16 : 123.63
Carbon Disulphide	TM116	98.8 75.11 : 124.81
Carbontetrachloride	TM116	105.0 82.35 : 126.46
Chlorobenzene	TM116	103.6 85.07 : 118.13
Chloroform	TM116	99.6 88.13 : 122.71
Chloromethane	TM116	116.6 55.37 : 133.35
Cis-1,2-Dichloroethene	TM116	103.4 78.27 : 128.90
Dibromomethane	TM116	98.0 77.47 : 121.29
Dichloromethane	TM116	106.6 87.89 : 134.72
Ethylbenzene	TM116	99.2 79.92 : 110.05



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VOC MS (S)

		QC 2231
Hexachlorobutadiene	TM116	82.8 16.78 : 153.29
Isopropylbenzene	TM116	91.6 69.92 : 116.39
Naphthalene	TM116	105.4 79.29 : 125.59
o-Xylene	TM116	95.6 74.57 : 112.73
p/m-Xylene	TM116	98.1 76.47 : 108.99
Sec-Butylbenzene	TM116	97.2 44.71 : 117.87
Tetrachloroethene	TM116	109.8 85.86 : 122.95
Toluene	TM116	93.4 87.82 : 116.21
Trichloroethene	TM116	98.6 79.80 : 112.33
Trichlorofluoromethane	TM116	101.2 80.52 : 132.12
Vinyl Chloride	TM116	92.2 68.07 : 137.84

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis .

The figure detailed is the percentage recovery result for the AQC .

The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control .



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SDG: 200919-128 Client Reference: JFR1451 Report Number: 569585
Location: A303 Stonehenge Order Number: Superseded Report:

Chromatogram

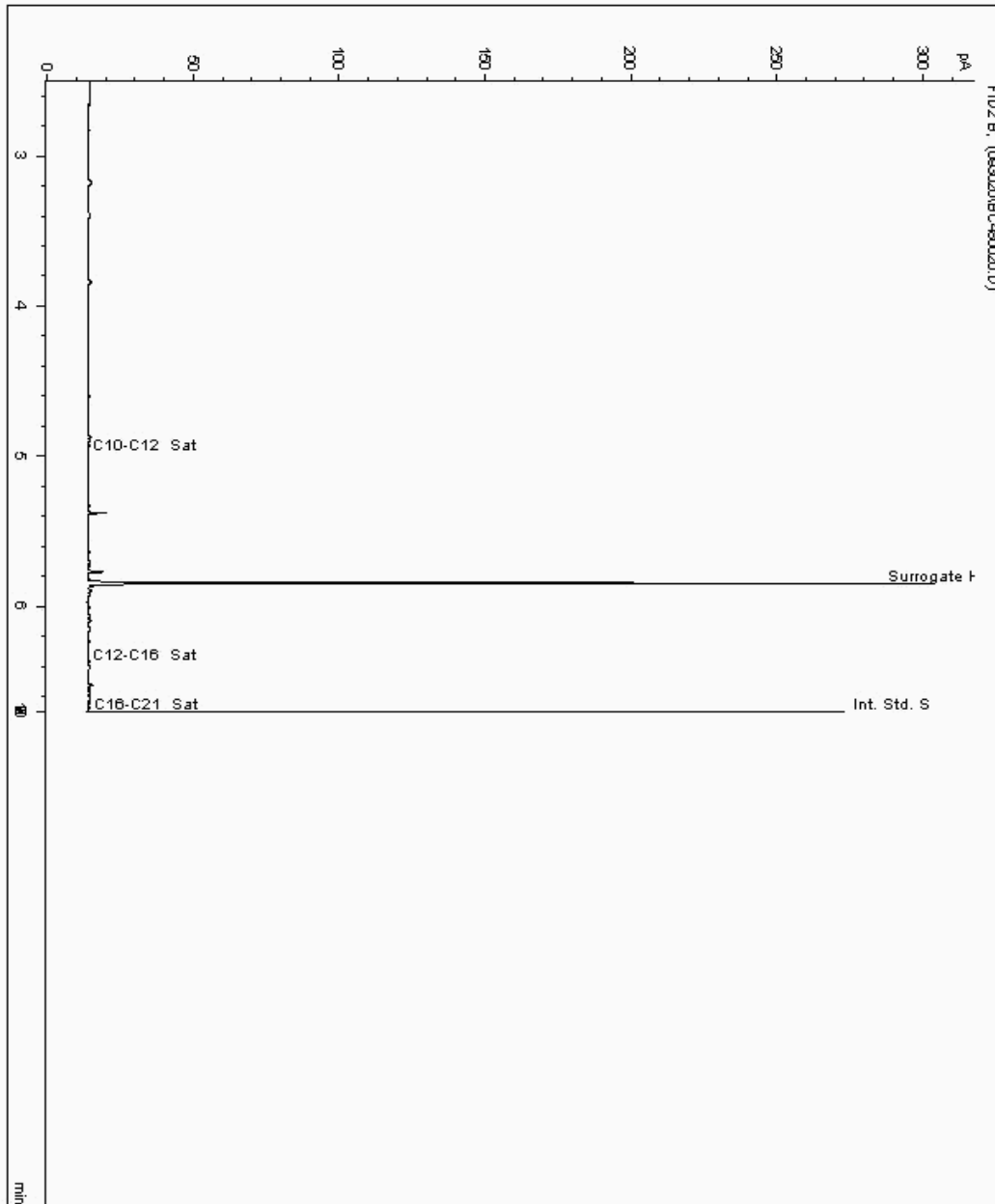
Analysis: EPH CWG (Aliphatic) Filtered GC (W)

Sample No : 22921196
Sample ID : BH72503

Depth : 0.40 - 0.50

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 21495762-
Date Acquired : 01/10/2020 01:08:22 PM
Units : pbb
Dilution : BH72503 [0.40 - 0.50] CEN ->
CF : 1
Multiplier : 0.025





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Chromatogram

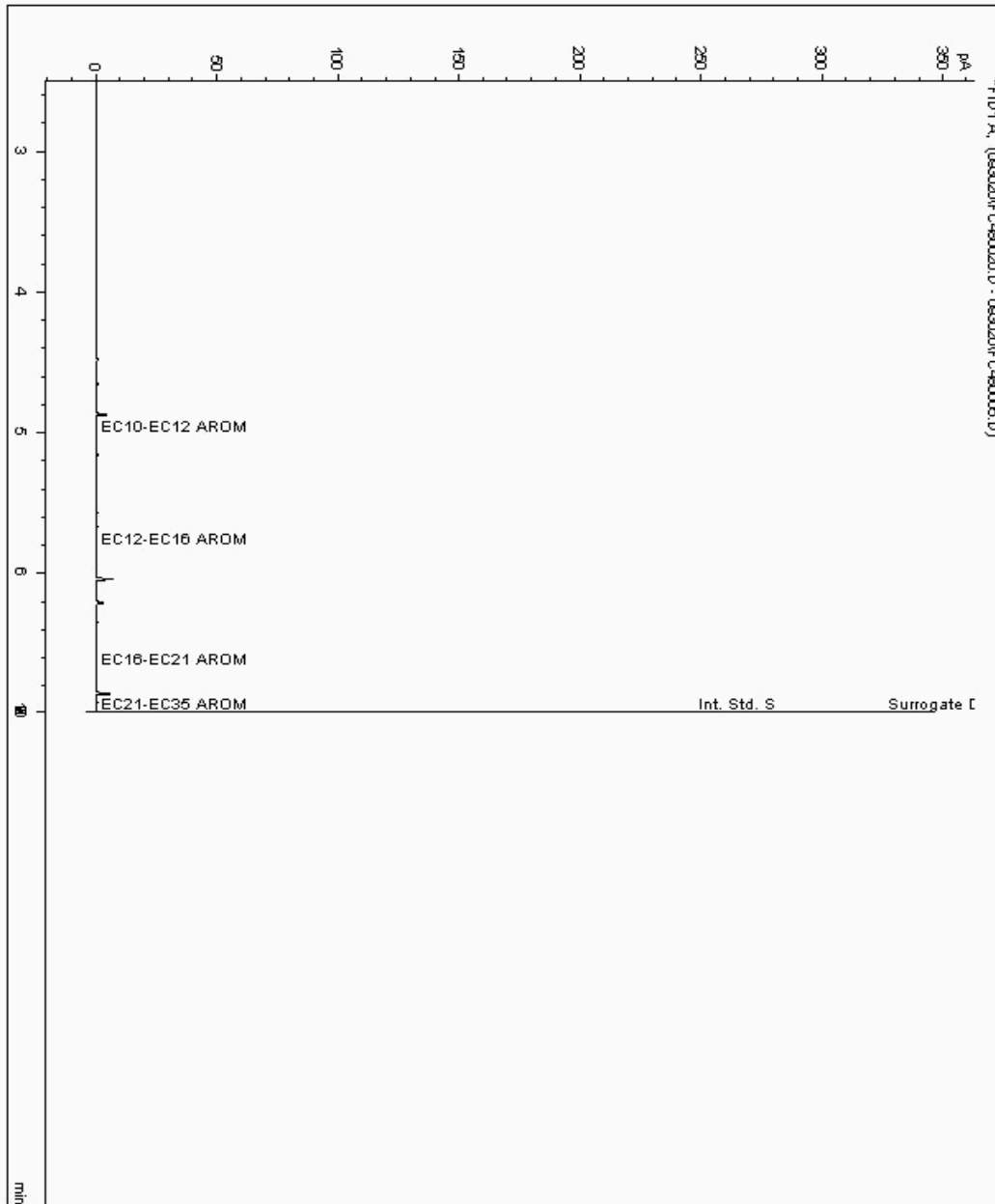
Analysis: EPH CWG (Aromatic) Filtered GC (W)

Sample No : 22921196
Sample ID : BH72503

Depth : 0.40 - 0.50

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 21495763-
Date Acquired : 01/10/2020 01:08:22 PM
Units : ppb
Dilution : BH72503 [0.40 - 0.50] CEN ->
CF : 1
Multiplier : 0.025





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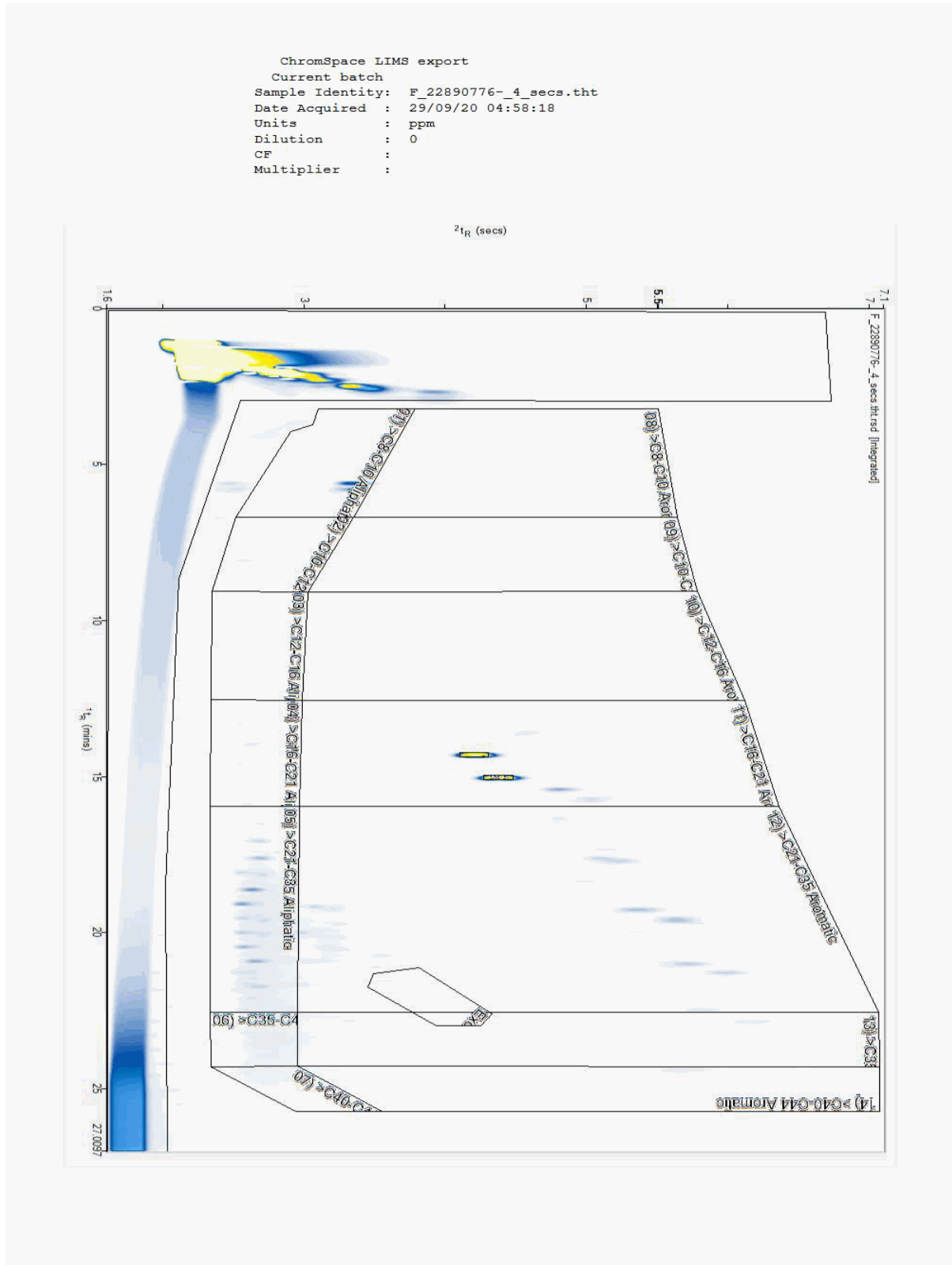
SDG: 200919-128 Client Reference: JFR1451 Report Number: 569585
Location: A303 Stonehenge Order Number: Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 22890776
Sample ID : BH72503

Depth : 0.40 - 0.50





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Validated

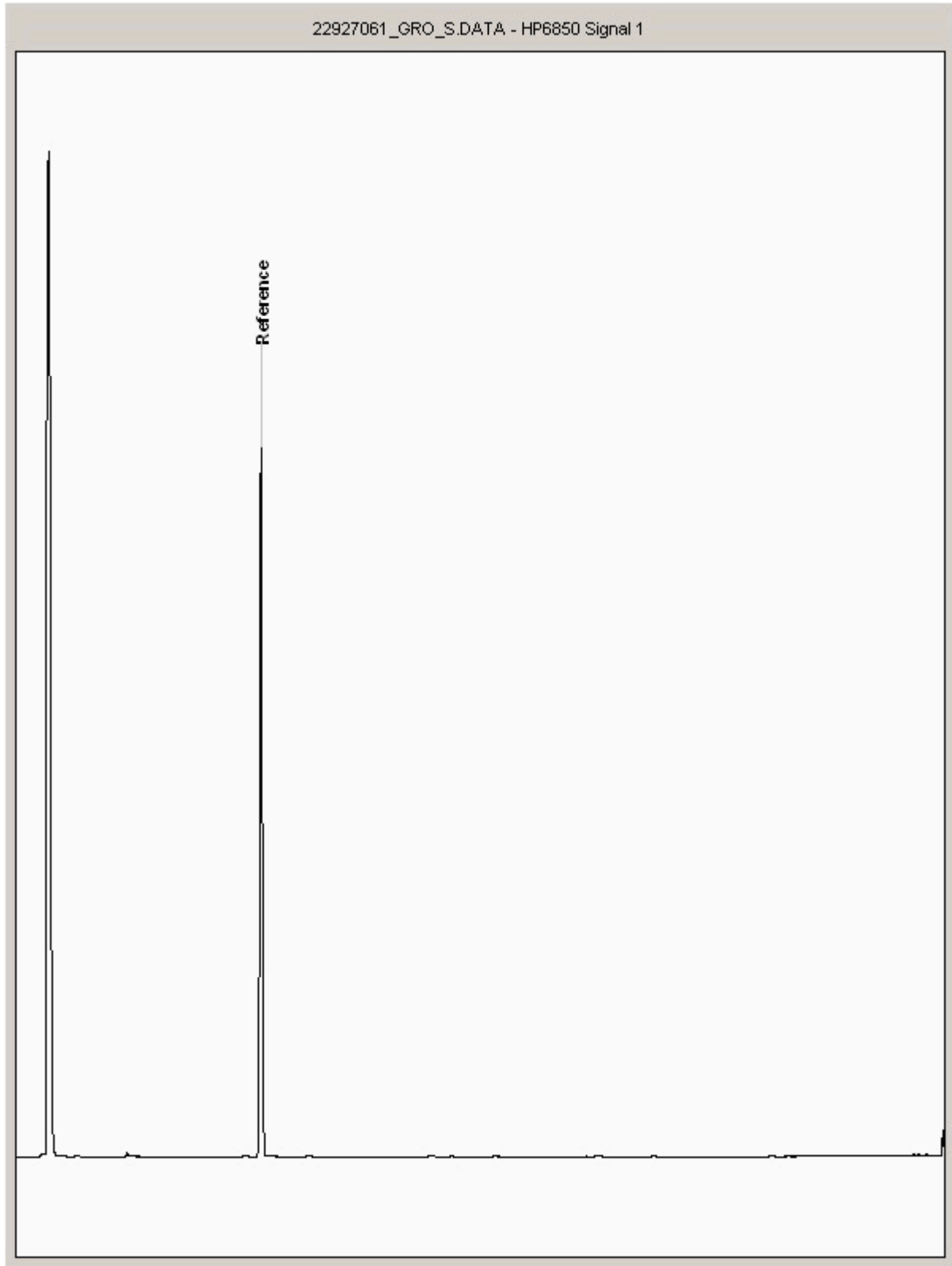
SDG: 200919-128 Client Reference: JFR1451 Report Number: 569585
Location: A303 Stonehenge Order Number: Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 22927061
Sample ID : BH72503

Depth : 0.40 - 0.50





CERTIFICATE OF ANALYSIS

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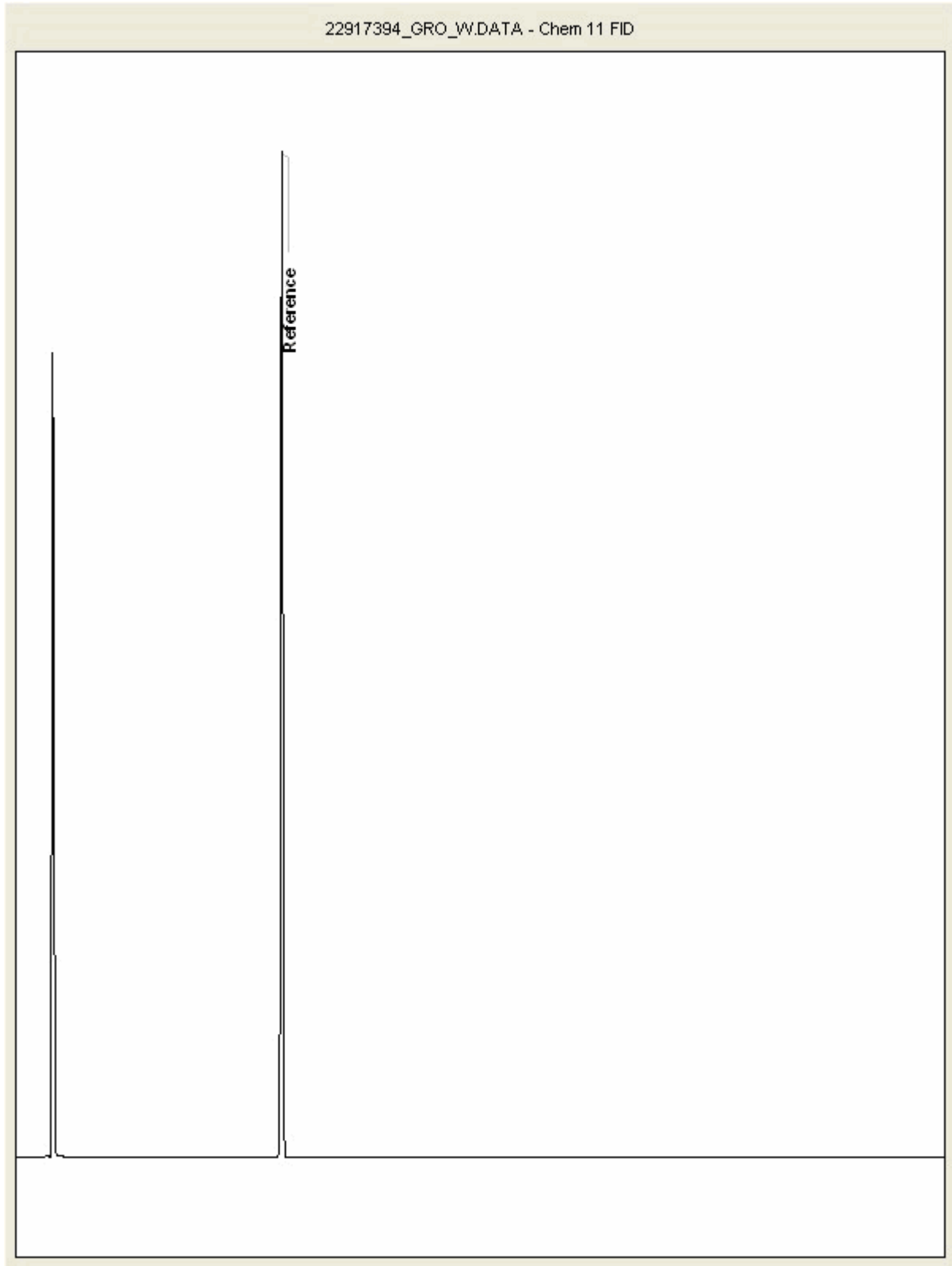
SDG: 200919-128 Client Reference: JFR1451 Report Number: 569585
Location: A303 Stonehenge Order Number: Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 22917394
Sample ID : BH72503

Depth : 0.40 - 0.50





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 Location: A303 Stonehenge Order Number: Superseded Report:

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with HeadSpace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
§	Sampled on date not provided
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples

19. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017)*.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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RPS Consultants Ltd
260 Park Avenue
Aztec West
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Bristol
BS32 4SY

Attention: Gary Riches

CERTIFICATE OF ANALYSIS

Date of report Generation: 18 December 2020
Customer: RPS Consultants Ltd
Sample Delivery Group (SDG): 200919-132
Your Reference: JFR1451
Location: A303 Stonehenge
Report No: 580777

We received 5 samples on Saturday September 19, 2020 and 2 of these samples were scheduled for analysis which was completed on Friday December 18, 2020. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

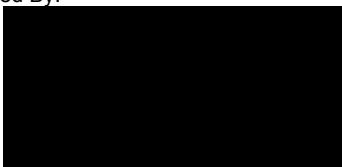
Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:



Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 200919-132 **Client Reference:** JFR1451 **Report Number:** 580777
Location: A303 Stonehenge **Order Number:** PQ20-951 **Superseded Report:**

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
22863314	BH72401		0.00	16/09/2020
22863315	BH72401		0.30	16/09/2020
22863316	BH72401		0.50	16/09/2020
22863317	BH72401		1.00	16/09/2020
22863319	WS72401		0.00 - 0.30	15/09/2020

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG:	200919-132	Client Reference:	JFR1451	Report Number:	580777
Location:	A303 Stonehenge	Order Number:	PO20-951	Superseded Report:	

Results Legend <div style="display: flex; flex-direction: column; gap: 5px;"> <div style="display: flex; align-items: center;">X Test</div> <div style="display: flex; align-items: center;">N No Determination Possible</div> </div> Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other	Lab Sample No(s)			22863316	22863317			
	Customer Sample Reference			BH72401	BH72401			
	AGS Reference							
	Depth (m)			0.50	1.00			
	Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)
	Sample Type			S	S	S	S	S
				S	S	S	S	S
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 1	X					
Ammonium Soil by Titration	All	NDPs: 0 Tests: 2		X		X		
Anions by Kone (soil)	All	NDPs: 0 Tests: 2		X		X		
Anions by Kone (w)	All	NDPs: 0 Tests: 1	X					
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 2	X		X			
CEN Readings	All	NDPs: 0 Tests: 1	X					
Chromium III	All	NDPs: 0 Tests: 3	X	X			X	
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 3	X	X			X	
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 1	X					
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 1	X					
EPH CWG (Aliphatic) Filtered GC (W)	All	NDPs: 0 Tests: 1	X					
EPH CWG (Aromatic) Filtered GC (W)	All	NDPs: 0 Tests: 1	X					
EPH CWG GC (S)	All	NDPs: 0 Tests: 2		X			X	
GRO by GC-FID (S)	All	NDPs: 0 Tests: 2			X		X	
GRO by GC-FID (W)	All	NDPs: 0 Tests: 1	X					



CERTIFICATE OF ANALYSIS

Validated

SDG:	200919-132	Client Reference:	JFR1451	Report Number:	580777
Location:	A303 Stonehenge	Order Number:	PO20-951	Superseded Report:	

Results Legend <div style="display: flex; flex-direction: column; gap: 5px;"> <div style="display: flex; align-items: center;">X Test</div> <div style="display: flex; align-items: center;">N No Determination Possible</div> </div> Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type	
		22863316	BHT2401		0.50	60g VOC (ALEZ15) 250g Amber Jar (ALEZ10) 1kg TUB with Handle (ALEZ80)	S
		22863317	BHT2401		1.00	60g VOC (ALEZ15) 250g Amber Jar (ALEZ10) 1kg TUB with Handle (ALEZ80)	S
	Hexavalent Chromium (s)	All				NDPs: 0 Tests: 2	X X
	Hexavalent Chromium (w)	All				NDPs: 0 Tests: 1	X
	Mercury Dissolved	All				NDPs: 0 Tests: 1	X
	Metals in solid samples by OES	All				NDPs: 0 Tests: 2	X X
PAH by GCMS	All				NDPs: 0 Tests: 2	X X	
PAH in waters by GC-MS (diss.filt)	All				NDPs: 0 Tests: 1	X	
pH	All				NDPs: 0 Tests: 2	X X	
pH Value of Filtered Water	All				NDPs: 0 Tests: 1	X	
Phenols by HPLC (S)	All				NDPs: 0 Tests: 2	X X	
Phenols by HPLC (W)	All				NDPs: 0 Tests: 1	X	
Sample description	All				NDPs: 0 Tests: 2	X X	
Semi Volatile Organic Compounds	All				NDPs: 0 Tests: 1	X	
Total Organic Carbon	All				NDPs: 0 Tests: 2	X X	
TPH CWG Filtered (W)	All				NDPs: 0 Tests: 1	X	
TPH CWG GC (S)	All				NDPs: 0 Tests: 2	X X	



CERTIFICATE OF ANALYSIS

Validated

SDG:	200919-132	Client Reference:	JFR1451	Report Number:	580777
Location:	A303 Stonehenge	Order Number:	PO20-951	Superseded Report:	

Results Legend

- X Test
- N No Determination Possible

Sample Types -

- S - Soil/Solid
- UNS - Unspecified Solid
- GW - Ground Water
- SW - Surface Water
- LE - Land Leachate
- PL - Prepared Leachate
- PR - Process Water
- SA - Saline Water
- TE - Trade Effluent
- TS - Treated Sewage
- US - Untreated Sewage
- RE - Recreational Water
- DW - Drinking Water Non-regulatory
- UNL - Unspecified Liquid
- SL - Sludge
- G - Gas
- OTH - Other

	Lab Sample No(s)			22863316	22863317				
	Customer Sample Reference			BH72401	BH72401				
	AGS Reference								
	Depth (m)			0.50	1.00				
	Container			1kg TUB with Handle (ALE280)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE280)	250g Amber Jar (ALE210)	60g VOC (ALE215)
	Sample Type			S	S	S	S	S	S
	VOC MS (S)	All	NDPs: 0 Tests: 2			X			X



CERTIFICATE OF ANALYSIS

Validated

SDG: 200919-132
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PQ20-951

Report Number: 580777
Superseded Report:

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm
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Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
22863316	BH72401	0.50	Cream	N/A	Stones	Vegetation
22863317	BH72401	1.00	Cream	Chalk	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.



CERTIFICATE OF ANALYSIS

Validated

SDG:	200919-132	Client Reference:	JFR1451	Report Number:	580777
Location:	A303 Stonehenge	Order Number:	PO20-951	Superseded Report:	

#	Customer Sample Ref.	BH72401	BH72401										
<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%; border: none;"> Results Legend # ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4*\$@ Sample deviation (see appendix) </td> <td style="width: 20%; border: none;"> Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference </td> <td style="width: 10%; border: none;"> 0.50 Soil/Solid (S) 16/09/2020 15:00:00 19/09/2020 200919-132 22863316 </td> <td style="width: 10%; border: none;"> 1.00 Soil/Solid (S) 16/09/2020 15:00:00 19/09/2020 200919-132 22863317 </td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> </tr> </table>							Results Legend # ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4*\$@ Sample deviation (see appendix)	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.50 Soil/Solid (S) 16/09/2020 15:00:00 19/09/2020 200919-132 22863316	1.00 Soil/Solid (S) 16/09/2020 15:00:00 19/09/2020 200919-132 22863317			
Results Legend # ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4*\$@ Sample deviation (see appendix)	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.50 Soil/Solid (S) 16/09/2020 15:00:00 19/09/2020 200919-132 22863316	1.00 Soil/Solid (S) 16/09/2020 15:00:00 19/09/2020 200919-132 22863317										
Component	LOD/Units	Method											
Moisture Content Ratio (% of as received sample)	%	PM024	6.4	13									
Exchangeable Ammonia as N	<12 mg/kg	TM024	<12 @ M	<12 @ #									
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 @ #	<0.01 @ #									
Organic Carbon, Total	<0.2 %	TM132	<0.2 @ M	<0.2 @ #									
pH	1 pH Units	TM133	9.23 @ #	9.18 @ #									
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 @ #	<0.6 @ #									
Cyanide, Total	<1 mg/kg	TM153	<1 @ M	<1 @ #									
Cyanide, Free	<1 mg/kg	TM153	<1 @ M	<1 @ #									
Chromium, Trivalent	<0.9 mg/kg	TM181	1.74	2.05									
Antimony	<0.6 mg/kg	TM181	<0.6 #	<0.6 #									
Arsenic	<0.6 mg/kg	TM181	<0.6 #	<0.6 #									
Beryllium	<0.01 mg/kg	TM181	0.0819 #	0.0831 #									
Boron	<0.7 mg/kg	TM181	2.57 #	3.01 #									
Cadmium	<0.02 mg/kg	TM181	0.309 #	0.271 #									
Chromium	<0.9 mg/kg	TM181	1.74 #	2.05 #									
Copper	<1.4 mg/kg	TM181	1.53 #	2.45 #									
Iron	<1000 mg/kg	TM181	1080 #	1300 #									
Lead	<0.7 mg/kg	TM181	1.75 #	1.56 #									
Manganese	<0.13 mg/kg	TM181	232 #	271 #									
Mercury	<0.14 mg/kg	TM181	<0.14 @ #	<0.14 @ #									
Molybdenum	<0.1 mg/kg	TM181	0.111 #	0.262 #									
Nickel	<0.2 mg/kg	TM181	3.24 #	4.39 #									
Phosphorus	<1 mg/kg	TM181	547	651									
Selenium	<1 mg/kg	TM181	<1 #	<1 #									
Zinc	<1.9 mg/kg	TM181	18.5 #	17.3 #									
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243	0.0678 @ M	0.0065 @ #									



CERTIFICATE OF ANALYSIS

Validated

SDG:	200919-132	Client Reference:	JFR1451	Report Number:	580777
Location:	A303 Stonehenge	Order Number:	PO20-951	Superseded Report:	

Semi Volatile Organic Compounds

#	M	aq	diss.filt	tot.unfilt	*	**	(F)	1-4*§@	Customer Sample Ref.	Depth (m)	Sample Type	Date Sampled	Sampled Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference								
Results Legend ISO17025 accredited. mCERTS accredited. Aqueous / settled sample. Dissolved / filtered sample. Total / unfiltered sample. Subcontracted - refer to subcontractor report for accreditation status. % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery Trigger breach confirmed Sample deviation (see appendix)									BH72401	1.00	Soil/Solid (S)	16/09/2020	15:00:00	19/09/2020	200919-132	22863317									
Component	LOD/Units	Method																							
Phenol	<100 µg/kg	TM157	<100																						
Pentachlorophenol	<100 µg/kg	TM157	<100																						
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100																						
Nitrobenzene	<100 µg/kg	TM157	<100																						
Isophorone	<100 µg/kg	TM157	<100																						
Hexachloroethane	<100 µg/kg	TM157	<100																						
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<200																						
Hexachlorobutadiene	<100 µg/kg	TM157	<100																						
Hexachlorobenzene	<100 µg/kg	TM157	<100																						
n-Dioctyl phthalate	<100 µg/kg	TM157	<100																						
Dimethyl phthalate	<100 µg/kg	TM157	<100																						
Diethyl phthalate	<100 µg/kg	TM157	<100																						
n-Dibutyl phthalate	<100 µg/kg	TM157	<100																						
Dibenzofuran	<100 µg/kg	TM157	<100																						
Carbazole	<100 µg/kg	TM157	<100																						
Butylbenzyl phthalate	<100 µg/kg	TM157	<100																						
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100																						
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100																						
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100																						
Azobenzene	<100 µg/kg	TM157	<100																						
4-Nitrophenol	<100 µg/kg	TM157	<100																						
4-Nitroaniline	<100 µg/kg	TM157	<100																						
4-Methylphenol	<100 µg/kg	TM157	<100																						
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100																						
4-Chloroaniline	<100 µg/kg	TM157	<100																						
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100																						
4-Bromophenylphenylether	<100 µg/kg	TM157	<100																						
3-Nitroaniline	<100 µg/kg	TM157	<100																						
2-Nitrophenol	<100 µg/kg	TM157	<100																						
2-Nitroaniline	<100 µg/kg	TM157	<100																						
2-Methylphenol	<100 µg/kg	TM157	<100																						
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100																						



CERTIFICATE OF ANALYSIS

Validated

SDG:	200919-132	Client Reference:	JFR1451	Report Number:	580777
Location:	A303 Stonehenge	Order Number:	PO20-951	Superseded Report:	

Semi Volatile Organic Compounds

Results Legend		Customer Sample Ref.	BH72401				
# ISO17025 accredited.		Depth (m)	1.00				
M mCERTS accredited.		Sample Type	Soil/Solid (S)				
sg Aqueous / filtered sample.		Date Sampled	16/09/2020				
dis.filt Dissolved / filtered sample.		Sampled Time	15:00:00				
tot.unfilt Total / unfiltered sample.		Date Received	19/09/2020				
* Subcontracted - refer to subcontractor report for accreditation status.		SDG Ref	200919-132				
** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		Lab Sample No.(s)	22863317				
(F) Trigger breach confirmed		AGS Reference					
1.4.4.6@ Sample deviation (see appendix)							
Component	LOD/Units	Method					
2-Chlorophenol	<100 µg/kg	TM157	<100				
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100				
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100				
2,4-Dimethylphenol	<100 µg/kg	TM157	<100				
2,4-Dichlorophenol	<100 µg/kg	TM157	<100				
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100				
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100				
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100				
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100				
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100				
2-Chloronaphthalene	<100 µg/kg	TM157	<100				
2-Methylnaphthalene	<100 µg/kg	TM157	<100				
Acenaphthylene	<100 µg/kg	TM157	<100				
Acenaphthene	<100 µg/kg	TM157	<100				
Anthracene	<100 µg/kg	TM157	<100				
Benzo(a)anthracene	<100 µg/kg	TM157	115				
Benzo(b)fluoranthene	<100 µg/kg	TM157	<100				
Benzo(k)fluoranthene	<100 µg/kg	TM157	<100				
Benzo(a)pyrene	<100 µg/kg	TM157	<100				
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<100				
Chrysene	<100 µg/kg	TM157	<100				
Fluoranthene	<100 µg/kg	TM157	173				
Fluorene	<100 µg/kg	TM157	<100				
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<100				
Phenanthrene	<100 µg/kg	TM157	<100				
Pyrene	<100 µg/kg	TM157	184				
Naphthalene	<100 µg/kg	TM157	<100				
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100				
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100				
TIC report		TM157	Not Detected				
Total SVOC TIC	<100 µg/kg	TM157	<1000				



CERTIFICATE OF ANALYSIS

Validated

SDG: 200919-132
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PO20-951

Report Number: 580777
Superseded Report:

TPH CWG (S)

Results Legend		Customer Sample Ref.	BH72401	BH72401			
# ISO17025 accredited.							
M mCERTS accredited.							
aq Aqueous / settled sample.							
diss.filt Dissolved / filtered sample.							
tot.unfilt Total / unfiltered sample.							
* Subcontracted - refer to subcontractor report for accreditation status.							
** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery							
(F) Trigger breach confirmed							
1-4*\$@ Sample deviation (see appendix)							
		Depth (m)	0.50	1.00			
		Sample Type	Soil/Solid (S)	Soil/Solid (S)			
		Date Sampled	16/09/2020	16/09/2020			
		Sampled Time	15:00:00	15:00:00			
		Date Received	19/09/2020	19/09/2020			
		SDG Ref	200919-132	200919-132			
		Lab Sample No.(s)	22863316	22863317			
		AGS Reference					
Component	LOD/Units	Method					
GRO Surrogate % recovery**	%	TM089	111	113			
			@	@			
Aliphatics >C5-C6	<10 µg/kg	TM089	<10	<10			
			@	@			
Aliphatics >C6-C8	<10 µg/kg	TM089	<10	<10			
			@	@			
Aliphatics >C8-C10	<10 µg/kg	TM089	<10	<10			
			@	@			
Aliphatics >C10-C12	<1000 µg/kg	TM414	<1000	<1000			
Aliphatics >C12-C16	<1000 µg/kg	TM414	<1000	<1000			
Aliphatics >C16-C21	<1000 µg/kg	TM414	<1000	<1000			
Aliphatics >C21-C35	<1000 µg/kg	TM414	16100	1440			
Aliphatics >C35-C44	<1000 µg/kg	TM414	1790	<1000			
Total Aliphatics >C10-C44	<5000 µg/kg	TM414	18600	<5000			
Total Aliphatics & Aromatics >C10-C44	<10000 µg/kg	TM414	36300	11200			
Aromatics >EC5-EC7	<10 µg/kg	TM089	<10	<10			
			@	@			
Aromatics >EC7-EC8	<10 µg/kg	TM089	<10	<10			
			@	@			
Aromatics >EC8-EC10	<10 µg/kg	TM089	<10	<10			
			@	@			
Aromatics > EC10-EC12	<1000 µg/kg	TM414	<1000	<1000			
Aromatics > EC12-EC16	<1000 µg/kg	TM414	<1000	<1000			
Aromatics > EC16-EC21	<1000 µg/kg	TM414	4030	1950			
Aromatics > EC21-EC35	<1000 µg/kg	TM414	12400	6380			
Aromatics >EC35-EC44	<1000 µg/kg	TM414	1220	<1000			
Aromatics > EC40-EC44	<1000 µg/kg	TM414	<1000	<1000			
Total Aromatics > EC10-EC44	<5000 µg/kg	TM414	17700	9470			
Total Aliphatics & Aromatics >C5-C44	<10000 µg/kg	TM414	36300	<10000			
Total Aliphatics >C5-C10	<50 µg/kg	TM089	<50	<50			
			@	@			
Total Aromatics >EC5-EC10	<50 µg/kg	TM089	<50	<50			
			@	@			
GRO >C5-C10	<20 µg/kg	TM089	<20	<20			
			@	@			



CERTIFICATE OF ANALYSIS

Validated

SDG: 200919-132
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PO20-951

Report Number: 580777
Superseded Report:

VOC MS (S)

Results Legend		Customer Sample Ref.	BH72401	BH72401			
#	ISO17025 accredited.						
M	mCERTS accredited.						
aq	Aqueous / settled sample.						
diss.fit	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.						
*	Subcontracted - refer to subcontractor report for accreditation status.						
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery						
(F)	Trigger breach confirmed						
1-4*\$@	Sample deviation (see appendix)						
		Depth (m)	0.50	1.00			
		Sample Type	Soil/Solid (S)	Soil/Solid (S)			
		Date Sampled	16/09/2020	16/09/2020			
		Sampled Time	15:00:00	15:00:00			
		Date Received	19/09/2020	19/09/2020			
		SDG Ref	200919-132	200919-132			
		Lab Sample No.(s)	22863316	22863317			
		AGS Reference					
Component	LOD/Units	Method					
Dibromofluoromethane**	%	TM116	112 @	111 @			
Toluene-d8**	%	TM116	104 @	102 @			
4-Bromofluorobenzene**	%	TM116	86 @	83.4 @			
Dichlorodifluoromethane	<6 µg/kg	TM116		<6 @ #			
Chloromethane	<7 µg/kg	TM116		<7 @ #			
Vinyl Chloride	<6 µg/kg	TM116		<6 @ #			
Bromomethane	<10 µg/kg	TM116		<10 @ #			
Chloroethane	<10 µg/kg	TM116		<10 @ #			
Trichlorofluoromethane	<6 µg/kg	TM116		<6 @ #			
1,1-Dichloroethene	<10 µg/kg	TM116		<10 @ #			
Carbon Disulphide	<7 µg/kg	TM116		<7 @ #			
Dichloromethane	<10 µg/kg	TM116		<10 @ #			
Methyl Tertiary Butyl Ether	<10 µg/kg	TM116	<10 @ M	<10 @ #			
trans-1,2-Dichloroethene	<10 µg/kg	TM116		<10 @ #			
1,1-Dichloroethane	<8 µg/kg	TM116		<8 @ #			
cis-1,2-Dichloroethene	<6 µg/kg	TM116		<6 @ #			
2,2-Dichloropropane	<10 µg/kg	TM116		<10 @			
Bromochloromethane	<10 µg/kg	TM116		<10 @ #			
Chloroform	<8 µg/kg	TM116		<8 @ #			
1,1,1-Trichloroethane	<7 µg/kg	TM116		<7 @ #			
1,1-Dichloropropene	<10 µg/kg	TM116		<10 @ #			
Carbontetrachloride	<10 µg/kg	TM116		<10 @ #			
1,2-Dichloroethane	<5 µg/kg	TM116		<5 @ #			
Benzene	<9 µg/kg	TM116	<9 @ M	<9 @ #			
Trichloroethene	<9 µg/kg	TM116		<9 @ #			
1,2-Dichloropropane	<10 µg/kg	TM116		<10 @ #			
Dibromomethane	<9 µg/kg	TM116		<9 @ #			
Bromodichloromethane	<7 µg/kg	TM116		<7 @ #			
cis-1,3-Dichloropropene	<10 µg/kg	TM116		<10 @ #			
Toluene	<7 µg/kg	TM116	<7 @ M	<7 @ #			
trans-1,3-Dichloropropene	<10 µg/kg	TM116		<10 @			
1,1,2-Trichloroethane	<10 µg/kg	TM116		<10 @ #			



CERTIFICATE OF ANALYSIS

Validated

SDG: 200919-132
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PO20-951

Report Number: 580777
Superseded Report:

VOC MS (S)

Results Legend		Customer Sample Ref.	BH72401	BH72401			
# ISO17025 accredited.							
M mCERTS accredited.							
aq Aqueous / settled sample.							
dis.filt Dissolved / filtered sample.							
tot.unfilt Total / unfiltered sample.							
* Subcontracted - refer to subcontractor report for accreditation status.							
** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery							
(F) Trigger breach confirmed							
1-4* @ Sample deviation (see appendix)							
		Depth (m)	0.50	1.00			
		Sample Type	Soil/Solid (S)	Soil/Solid (S)			
		Date Sampled	16/09/2020	16/09/2020			
		Sampled Time	15:00:00	15:00:00			
		Date Received	19/09/2020	19/09/2020			
		SDG Ref	200919-132	200919-132			
		Lab Sample No.(s)	22863316	22863317			
		AGS Reference					
Component	LOD/Units	Method					
1,3-Dichloropropane	<7 µg/kg	TM116		<7 @ #			
Tetrachloroethene	<5 µg/kg	TM116		<5 @ #			
Dibromochloromethane	<10 µg/kg	TM116		<10 @ #			
1,2-Dibromoethane	<10 µg/kg	TM116		<10 @ #			
Chlorobenzene	<5 µg/kg	TM116		<5 @ #			
1,1,1,2-Tetrachloroethane	<10 µg/kg	TM116		<10 @ #			
Ethylbenzene	<4 µg/kg	TM116	<4 @ M	<4 @ #			
p/m-Xylene	<10 µg/kg	TM116	<10 @ #	<10 @ #			
o-Xylene	<10 µg/kg	TM116	<10 @ M	<10 @ #			
Styrene	<10 µg/kg	TM116		<10 @ #			
Bromoform	<10 µg/kg	TM116		<10 @ #			
Isopropylbenzene	<5 µg/kg	TM116		<5 @ #			
1,1,2,2-Tetrachloroethane	<10 µg/kg	TM116		<10 @ #			
1,2,3-Trichloropropane	<16 µg/kg	TM116		<16 @ #			
Bromobenzene	<10 µg/kg	TM116		<10 @ #			
Propylbenzene	<10 µg/kg	TM116		<10 @ #			
2-Chlorotoluene	<9 µg/kg	TM116		<9 @ #			
1,3,5-Trimethylbenzene	<8 µg/kg	TM116		<8 @ #			
4-Chlorotoluene	<10 µg/kg	TM116		<10 @ #			
tert-Butylbenzene	<14 µg/kg	TM116		<14 @ #			
1,2,4-Trimethylbenzene	<9 µg/kg	TM116		<9 @ #			
sec-Butylbenzene	<10 µg/kg	TM116		<10 @			
4-Isopropyltoluene	<10 µg/kg	TM116		<10 @ #			
1,3-Dichlorobenzene	<8 µg/kg	TM116		<8 @ #			
1,4-Dichlorobenzene	<5 µg/kg	TM116		<5 @ #			
n-Butylbenzene	<11 µg/kg	TM116		<11 @			
1,2-Dichlorobenzene	<10 µg/kg	TM116		<10 @ #			
1,2-Dibromo-3-chloropropane	<14 µg/kg	TM116		<14 @ #			
Tert-amyl methyl ether	<10 µg/kg	TM116		<10 @ #			
1,2,4-Trichlorobenzene	<20 µg/kg	TM116		<20 @			
Hexachlorobutadiene	<20 µg/kg	TM116		<20 @			
Naphthalene	<13 µg/kg	TM116		<13 @ #			



CERTIFICATE OF ANALYSIS

Validated

SDG:	200919-132	Client Reference:	JFR1451	Report Number:	580777
Location:	A303 Stonehenge	Order Number:	PO20-951	Superseded Report:	

Asbestos Identification - Solid Samples

Results Legend

- # ISO17025 accredited.
- M mCERTS accredited.
- * Subcontracted test.
- (F) Trigger breach confirmed
- 1-5&*§@ Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	BH72401 0.50 SOLID 16/09/2020 00:00:00 19/09/2020 06:00:00 200919-132 22863316 TM048	17/12/2020	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	BH72401 1.00 SOLID 16/09/2020 00:00:00 19/09/2020 06:00:00 200919-132 22863317 TM048	16/12/2020	Barbara Urbanek-Walsh	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected



CERTIFICATE OF ANALYSIS

Validated

SDG: 200919-132
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PO20-951

Report Number: 580777
Superseded Report:

CEN 2:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/

Client Reference		Site Location	A303 Stonehenge
Mass Sample taken (kg)	0.190	Natural Moisture Content (%)	8.64
Mass of dry sample (kg)	0.175	Dry Matter Content (%)	92
Particle Size <4mm	>95%		

Case	
SDG	200919-132
Lab Sample Number(s)	22863316
Sampled Date	16-Sep-2020
Customer Sample Ref.	BH72401
Depth (m)	0.50

Eluate Analysis	Conc ⁿ in 2:1 eluate (mg/l)		2:1 conc ⁿ leached (mg/kg)	
	Result	Limit of Detection	Result	Limit of Detection
Aliphatics >C12-C16	<0.01	<0.01	<0.02	<0.02
Aliphatics >C16-C21	<0.01	<0.01	<0.02	<0.02
Aliphatics >C21-C35	<0.01	<0.01	<0.02	<0.02
Total Aliphatics >C12-C35	<0.01	<0.01	<0.02	<0.02
Aromatics >EC12-EC16	<0.01	<0.01	<0.02	<0.02
Aromatics >EC16-EC21	<0.01	<0.01	<0.02	<0.02
Aromatics >EC21-EC35	<0.01	<0.01	<0.02	<0.02
Aromatics >EC16-EC35	<0.01	<0.01	<0.02	<0.02
Total Aromatics >EC12-EC35	<0.01	<0.01	<0.02	<0.02
TPH (Total Aliphatics + Total Aromatics) >C5-C35	<0.01	<0.01	<0.02	<0.02
Ammoniacal Nitrogen as N	<0.2	<0.2	<0.4	<0.4
Chromium III	<0.03	<0.03	<0.06	<0.06
Hexavalent Chromium	<0.03	<0.03	<0.06	<0.06
Sulphate (soluble)	<2	<2	<4	<4
Dissolved Organic Carbon	3.98	<3	7.96	<6
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.00002	<0.00002
Antimony	<0.001	<0.001	<0.002	<0.002
Naphthalene (diss.filt)	<0.00001	<0.00001	<0.00002	<0.00002
Total Cyanide (W)	<0.05	<0.05	<0.1	<0.1
Acenaphthene (diss.filt)	0.0000369	<0.000005	0.0000738	<0.00001
Arsenic	<0.0005	<0.0005	<0.001	<0.001
Free Cyanide (W)	<0.05	<0.05	<0.1	<0.1
Acenaphthylene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Phenol by HPLC (W)	<0.002	<0.002	<0.004	<0.004
Beryllium	<0.0001	<0.0001	<0.0002	<0.0002
Fluoranthene (diss.filt)	0.00037	<0.000005	0.00074	<0.00001
Anthracene (diss.filt)	0.0000765	<0.000005	0.000153	<0.00001
Boron	<0.01	<0.01	<0.02	<0.02
Phenanthrene (diss.filt)	0.000308	<0.000005	0.000616	<0.00001
Cadmium	<0.00008	<0.00008	<0.00016	<0.00016
Fluorene (diss.filt)	0.0000271	<0.000005	0.0000542	<0.00001
Chrysene (diss.filt)	0.0000225	<0.000005	0.000045	<0.00001
Pyrene (diss.filt)	0.000248	<0.000005	0.000496	<0.00001
Benzo(a)anthracene (diss.filt)	0.000022	<0.000005	0.000044	<0.00001
Chromium	<0.001	<0.001	<0.002	<0.002

Leach Test Information

Date Prepared	11-Dec-2020
pH (pH Units)	7.58
Conductivity (µS/cm)	69.80
Temperature (°C)	21.60
Volume Leachant (Litres)	0.335
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates

18/12/2020 15:36:52

15:36:40 18/12/2020



CERTIFICATE OF ANALYSIS

Validated

SDG: 200919-132
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PO20-951

Report Number: 580777
Superseded Report:

CEN 2:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/'

Client Reference	
Mass Sample taken (kg)	0.190
Mass of dry sample (kg)	0.175
Particle Size <4mm	>95%

Site Location	A303 Stonehenge
Natural Moisture Content (%)	8.64
Dry Matter Content (%)	92

Case	
SDG	200919-132
Lab Sample Number(s)	22863316
Sampled Date	16-Sep-2020
Customer Sample Ref.	BH72401
Depth (m)	0.50

Eluate Analysis	Conc ⁿ in 2:1 eluate (mg/l)		2:1 conc ⁿ leached (mg/kg)	
	Result	Limit of Detection	Result	Limit of Detection
Benzo(b)fluoranthene (diss.filt)	0.00000785	<0.000005	0.0000157	<0.00001
Benzo(k)fluoranthene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Benzo(a)pyrene (diss.filt)	<0.000002	<0.000002	<0.000004	<0.000004
Copper	0.00152	<0.0003	0.00304	<0.0006
Dibenzo(a,h)anthracene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Lead	<0.0002	<0.0002	<0.0004	<0.0004
Benzo(g,h,i)perylene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Indeno(1,2,3-cd)pyrene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Manganese	<0.003	<0.003	<0.006	<0.006
Molybdenum	<0.003	<0.003	<0.006	<0.006
PAH 16 EPA Total by GCMS (diss.filt)	0.00112	<0.000082	0.00224	<0.000164
Nickel	0.000441	<0.0004	0.000882	<0.0008
Phosphorus	0.0466	<0.01	0.0932	<0.02
Selenium	<0.001	<0.001	<0.002	<0.002
Zinc	0.00224	<0.001	0.00448	<0.002
Calcium (Dis.Filt) mg/l	12.5	<0.2	25	<0.4
Iron (Dis.Filt) mg/l	<0.019	<0.019	<0.038	<0.038
TPH CWG (W)				
Surrogate Recovery	-	-	-	-
GRO TOT (C5-C12)	<0.05	<0.05	<0.1	<0.1
Aliphatics C5-C6	<0.01	<0.01	<0.02	<0.02
Aliphatics >C6-C8	<0.01	<0.01	<0.02	<0.02
Aliphatics >C8-C10	<0.01	<0.01	<0.02	<0.02
Aliphatics >C10-C12	<0.01	<0.01	<0.02	<0.02
Aromatics C6-C7	<0.01	<0.01	<0.02	<0.02
Aromatics >C7-C8	<0.01	<0.01	<0.02	<0.02
MTBE GC-FID	<0.003	<0.003	<0.006	<0.006
Aromatics >EC8 -EC10	<0.01	<0.01	<0.02	<0.02
Aromatics >EC10-EC12	<0.01	<0.01	<0.02	<0.02
Benzene by GC	<0.007	<0.007	<0.014	<0.014
Toluene by GC	<0.004	<0.004	<0.008	<0.008
Ethylbenzene by GC	<0.005	<0.005	<0.01	<0.01
m & p Xylene by GC	<0.008	<0.008	<0.016	<0.016
o Xylene by GC	<0.003	<0.003	<0.006	<0.006
Sum m&p and o Xylene by GC	<0.011	<0.011	<0.022	<0.022
Sum of BTEX by GC	<0.028	<0.028	<0.056	<0.056

Leach Test Information

Date Prepared	11-Dec-2020
pH (pH Units)	7.58
Conductivity (µS/cm)	69.80
Temperature (°C)	21.60
Volume Leachant (Litres)	0.335
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates

18/12/2020 15:36:52



CERTIFICATE OF ANALYSIS

Validated

SDG:	200919-132	Client Reference:	JFR1451	Report Number:	580777
Location:	A303 Stonehenge	Order Number:	PO20-951	Superseded Report:	

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM174	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID
TM178	Modified: US EPA Method 8100	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS in Waters
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser
TM243		Mixed Anions In Soils By Kone
TM245	By GC-FID	Determination of GRO by Headspace in waters
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).



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Test Completion Dates

Lab Sample No(s)	22863316	22863317
Customer Sample Ref.	BH72401	BH72401
AGS Ref.		
Depth	0.50	1.00
Type	Soil/Solid (S)	Soil/Solid (S)

Ammoniacal Nitrogen	16-Dec-2020	
Ammonium Soil by Titration	17-Dec-2020	17-Dec-2020
Anions by Kone (soil)	18-Dec-2020	16-Dec-2020
Anions by Kone (w)	18-Dec-2020	
Asbestos ID in Solid Samples	17-Dec-2020	16-Dec-2020
CEN 2:1 Leachate (1 Stage)	12-Dec-2020	
CEN Readings	16-Dec-2020	
Chromium III	17-Dec-2020	16-Dec-2020
Cyanide Comp/Free/Total/Thiocyanate	17-Dec-2020	15-Dec-2020
Dissolved Metals by ICP-MS	16-Dec-2020	
Dissolved Organic/Inorganic Carbon	17-Dec-2020	
EPH CWG (Aliphatic) Filtered GC (W)	17-Dec-2020	
EPH CWG (Aromatic) Filtered GC (W)	17-Dec-2020	
EPH CWG GC (S)	16-Dec-2020	15-Dec-2020
GRO by GC-FID (S)	15-Dec-2020	15-Dec-2020
GRO by GC-FID (W)	16-Dec-2020	
Hexavalent Chromium (s)	15-Dec-2020	15-Dec-2020
Hexavalent Chromium (w)	17-Dec-2020	
Mercury Dissolved	17-Dec-2020	
Metals in solid samples by OES	16-Dec-2020	16-Dec-2020
Moisture at 105C	11-Dec-2020	
PAH by GCMS	15-Dec-2020	15-Dec-2020
PAH in waters by GC-MS (diss.filt)	17-Dec-2020	
pH	15-Dec-2020	14-Dec-2020
pH Value of Filtered Water	17-Dec-2020	
Phenols by HPLC (S)	15-Dec-2020	15-Dec-2020
Phenols by HPLC (W)	17-Dec-2020	
Sample description	11-Dec-2020	12-Dec-2020
Semi Volatile Organic Compounds		16-Dec-2020
Total Organic Carbon	17-Dec-2020	17-Dec-2020
TPH CWG Filtered (W)	17-Dec-2020	
TPH CWG GC (S)	16-Dec-2020	15-Dec-2020
VOC MS (S)	15-Dec-2020	15-Dec-2020



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ASSOCIATED AQC DATA

Ammonium Soil by Titration

Component	Method Code	QC 2309	QC 2380
Exchangeable Ammonium as NH4	TM024	80.1 76.20 : 110.13	87.56 76.20 : 110.13

Anions by Kone (soil)

Component	Method Code	QC 2316
Chloride (soluble)	TM243	141.97 86.68 : 115.67
Water Soluble Sulphate as SO4 2:1 Extract	TM243	154.21 70.00 : 130.00

Anions by Kone (w)

Component	Method Code	QC 2330
Sulphate (soluble)	TM184	98.4 94.38 : 108.93

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2361	QC 2382	QC 2349
Free Cyanide	TM153	91.78 78.61 : 114.43	92.08 78.61 : 114.43	
Free Cyanide (W)	TM227			101.0 90.50 : 114.50
Thiocyanate	TM153	101.28 90.48 : 109.52	100.64 90.48 : 109.52	
Thiocyanate (W)	TM227			105.0 90.50 : 113.00
Total Cyanide	TM153	97.9 76.80 : 112.96	97.2 76.80 : 112.96	
Total Cyanide (W)	TM227			104.25 91.75 : 112.75

Dissolved Metals by ICP-MS

Component	Method Code	QC 2310
Aluminium	TM152	99.0 94.21 : 111.52
Antimony	TM152	104.33 88.37 : 130.57
Arsenic	TM152	98.17 92.62 : 113.52
Barium	TM152	103.5 88.62 : 113.14



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Dissolved Metals by ICP-MS

		QC 2310
Beryllium	TM152	100.17 87.08 : 111.38
Bismuth	TM152	101.5 92.62 : 115.02
Boron	TM152	98.67 86.31 : 120.88
Cadmium	TM152	100.33 93.85 : 111.65
Calcium	TM152	102.0 89.20 : 126.91
Chromium	TM152	96.83 92.50 : 113.03
Cobalt	TM152	95.83 85.01 : 114.87
Copper	TM152	97.33 89.87 : 119.73
Iron	TM152	98.0 93.02 : 113.86
Lead	TM152	101.67 91.11 : 116.98
Lithium	TM152	99.5 91.30 : 123.00
Magnesium	TM152	99.33 89.60 : 116.61
Manganese	TM152	98.17 93.97 : 112.46
Molybdenum	TM152	96.33 89.07 : 110.96
Nickel	TM152	96.5 93.70 : 112.15
Phosphorus	TM152	98.67 89.24 : 114.18
Potassium	TM152	102.67 93.20 : 115.55
Selenium	TM152	98.5 91.69 : 117.12
Silver	TM152	96.83 90.93 : 121.73
Sodium	TM152	99.33 92.42 : 113.24
Strontium	TM152	100.67 92.14 : 116.24
Tellurium	TM152	97.5 89.88 : 111.78
Thallium	TM152	96.33 82.43 : 113.83
Tin	TM152	103.17 94.62 : 107.79
Titanium	TM152	102.0 90.29 : 115.23
Tungsten	TM152	103.0 77.61 : 132.31
Uranium	TM152	98.0 86.97 : 115.76



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Dissolved Metals by ICP-MS

		QC 2310
Vanadium	TM152	99.33 89.61 : 115.48
Zinc	TM152	97.67 87.51 : 116.26

Dissolved Organic/Inorganic Carbon

Component	Method Code	QC 2359
Dissolved Inorganic Carbon	TM090	104.17 93.58 : 112.28
Dissolved Organic Carbon	TM090	103.0 96.13 : 109.53

EPH CWG (Aliphatic) Filtered GC (W)

Component	Method Code	QC 2362
Total Aliphatics >C10-C40	TM174	126.24 71.82 : 134.09

EPH CWG GC (S)

Component	Method Code	QC 2397
EPH >C8-C40 Raw	TM414	106.82 63.60 : 123.90
Total Aliphatics Raw	TM414	116.67 63.17 : 134.64
Total Aromatics Raw	TM414	95.71 57.00 : 150.27

GRO by GC-FID (S)

Component	Method Code	QC 2370
QC	TM089	90.05 70.75 : 114.19

GRO by GC-FID (W)

Component	Method Code	QC 2317
Benzene by GC	TM245	94.5 79.13 : 118.84
Ethylbenzene by GC	TM245	99.5 79.54 : 115.99
m & p Xylene by GC	TM245	99.5 78.44 : 116.32
MTBE GC-FID	TM245	88.5 81.43 : 120.09



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GRO by GC-FID (W)

		QC 2317
o Xylene by GC	TM245	100.0 76.85 : 120.29
QC	TM245	93.59 71.58 : 131.01
Toluene by GC	TM245	97.0 79.00 : 121.96

Hexavalent Chromium (s)

Component	Method Code	QC 2334	QC 2377
Hexavalent Chromium	TM151	96.0 92.00 : 111.20	108.0 92.00 : 111.20

Hexavalent Chromium (w)

Component	Method Code	QC 2344
Hexavalent Chromium	TM241	100.0 94.17 : 106.17

Mercury Dissolved

Component	Method Code	QC 2387
Mercury Dissolved (CVAf)	TM183	100.0 69.30 : 128.70

Metals in solid samples by OES

Component	Method Code	QC 2366	QC 2309
Aluminium	TM181	90.27 77.46 : 123.98	104.42 77.46 : 123.98
Antimony	TM181	100.41 87.04 : 111.16	101.63 87.04 : 111.16
Arsenic	TM181	104.94 87.34 : 110.87	103.2 87.34 : 110.87
Barium	TM181	97.25 80.73 : 115.16	101.83 80.73 : 115.16
Beryllium	TM181	104.1 89.47 : 112.97	101.87 89.47 : 112.97
Boron	TM181	96.85 76.57 : 104.15	99.71 76.57 : 104.15
Cadmium	TM181	95.06 78.94 : 102.43	90.95 78.94 : 102.43
Chromium	TM181	91.28 77.55 : 104.47	93.1 77.55 : 104.47



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Metals in solid samples by OES

		QC 2366	QC 2309
Cobalt	TM181	91.82 82.95 : 107.41	92.14 82.95 : 107.41
Copper	TM181	90.14 84.36 : 106.14	92.25 84.36 : 106.14
Iron	TM181	96.83 81.43 : 115.79	100.0 81.43 : 115.79
Lead	TM181	98.2 81.95 : 107.63	93.02 81.95 : 107.63
Manganese	TM181	112.5 94.29 : 119.51	110.28 94.29 : 119.51
Mercury	TM181	98.79 82.73 : 106.36	98.55 82.73 : 106.36
Molybdenum	TM181	99.18 86.61 : 111.07	100.82 86.61 : 111.07
Nickel	TM181	95.6 79.72 : 103.80	94.38 79.72 : 103.80
Phosphorus	TM181	111.31 92.65 : 125.47	108.08 92.65 : 125.47
Selenium	TM181	98.82 88.36 : 111.25	100.0 88.36 : 111.25
Strontium	TM181	87.53 78.06 : 99.91	98.44 78.06 : 99.91
Thallium	TM181	105.75 88.60 : 116.73	102.65 88.60 : 116.73
Tin	TM181	109.51 89.77 : 112.62	103.8 89.77 : 112.62
Titanium	TM181	81.68 66.29 : 105.96	91.6 66.29 : 105.96
Vanadium	TM181	95.6 75.51 : 108.87	104.76 75.51 : 108.87
Zinc	TM181	93.22 84.02 : 111.24	100.0 84.02 : 111.24

PAH by GCMS

Component	Method Code	QC 2370	QC 2370
Acenaphthene	TM218	91.0 80.97 : 105.99	87.0 76.79 : 103.90
Acenaphthylene	TM218	91.0 74.76 : 107.36	86.0 78.40 : 108.66
Anthracene	TM218	91.5 73.04 : 106.97	84.0 70.90 : 109.22
Benz(a)anthracene	TM218	106.5 68.79 : 119.64	91.0 73.77 : 119.26
Benzo(a)pyrene	TM218	106.0 66.17 : 117.52	93.0 73.20 : 114.18
Benzo(b)fluoranthene	TM218	97.0 66.40 : 118.34	92.0 75.36 : 117.58
Benzo(ghi)perylene	TM218	101.5 67.68 : 112.07	83.0 70.73 : 116.12
Benzo(k)fluoranthene	TM218	94.5 72.84 : 114.66	89.0 75.98 : 116.59
Chrysene	TM218	102.0 68.39 : 115.56	86.0 74.82 : 114.18



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PAH by GCMS

		QC 2370	QC 2370
Dibenzo(ah)anthracene	TM218	95.5 69.03 : 110.45	85.5 69.17 : 115.30
Fluoranthene	TM218	99.0 69.37 : 117.19	81.0 75.88 : 112.84
Fluorene	TM218	92.5 75.38 : 105.98	88.5 76.66 : 107.56
Indeno(123cd)pyrene	TM218	105.5 65.91 : 113.61	80.5 70.26 : 117.95
Naphthalene	TM218	86.0 71.40 : 105.87	81.5 74.70 : 101.83
Phenanthrene	TM218	95.5 74.04 : 109.30	84.0 73.62 : 109.34
Pyrene	TM218	97.0 69.68 : 115.27	82.0 71.46 : 117.00

PAH in waters by GC-MS (diss.filt)

Component	Method Code	QC 2329
Acenaphthene (diss.filt)	TM178	107.6 93.20 : 119.60
Acenaphthylene (diss.filt)	TM178	104.8 92.00 : 118.40
Anthracene (diss.filt)	TM178	107.6 90.80 : 114.80
Benzo(a)anthracene (diss.filt)	TM178	110.8 91.60 : 115.60
Benzo(a)pyrene (diss.filt)	TM178	106.4 91.20 : 120.00
Benzo(b)fluoranthene (diss.filt)	TM178	111.2 86.80 : 120.40
Benzo(g,h,i)perylene (diss.filt)	TM178	107.2 89.20 : 118.00
Benzo(k)fluoranthene (diss.filt)	TM178	109.2 94.40 : 125.60
Chrysene (diss.filt)	TM178	105.6 96.40 : 122.80
Dibenzo(a,h)anthracene (diss.filt)	TM178	106.0 93.60 : 132.00
Fluoranthene (diss.filt)	TM178	104.0 92.80 : 121.60
Fluorene (diss.filt)	TM178	104.8 93.60 : 120.00
Indeno(1,2,3-cd)pyrene (diss.filt)	TM178	109.6 82.40 : 120.80
Naphthalene (diss.filt)	TM178	103.2 88.40 : 126.80
Phenanthrene (diss.filt)	TM178	107.2 92.40 : 118.80
Pyrene (diss.filt)	TM178	100.8 90.40 : 124.00

pH



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pH

Component	Method Code	QC 2353	QC 2388
pH	TM133	100.66 98.71 : 102.32	100.79 98.71 : 102.32

pH Value of Filtered Water

Component	Method Code	QC 2349
pH	TM256	100.67 99.33 : 102.54

Phenols by HPLC (S)

Component	Method Code	QC 2398	QC 2399
2,3,5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	103.9 83.23 : 109.71	107.79 65.50 : 89.50
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	94.74 76.34 : 104.11	85.96 84.00 : 124.00
Catechol by HPLC (S)	TM062 (S)	86.67 22.43 : 157.02	32.38 19.39 : 135.70
Cresols by HPLC (S)	TM062 (S)	95.82 85.78 : 116.44	90.4 81.00 : 112.20
Naphthol by HPLC (S)	TM062 (S)	110.71 75.62 : 124.38	102.14 57.50 : 102.50
Phenol by HPLC (S)	TM062 (S)	106.62 79.53 : 120.47	98.68 88.67 : 124.67
Resorcinol HPLC (S)	TM062 (S)	93.08 71.43 : 129.59	93.08 69.99 : 127.22
Xylenols by HPLC (S)	TM062 (S)	96.67 89.90 : 107.23	96.46 93.00 : 121.00

Phenols by HPLC (W)

Component	Method Code	QC 2383
2,3,5 Trimethyl-Phenol by HPLC (W)	TM259	105.0 91.00 : 109.00
2-Isopropyl Phenol by HPLC (W)	TM259	106.0 85.00 : 109.00
Cresols by HPLC (W)	TM259	101.67 92.00 : 110.00
Naphthol by HPLC (W)	TM259	109.0 86.00 : 128.00
Phenol by HPLC (W)	TM259	104.0 88.24 : 111.76
Xylenols by HPLC (W)	TM259	107.17 94.83 : 110.83

Total Organic Carbon



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Total Organic Carbon

Component	Method Code	QC 2325	QC 2367
Total Organic Carbon	TM132	104.3 87.02 : 113.45	107.81 87.02 : 113.45

VOC MS (S)

Component	Method Code	QC 2334
1,1,1,2-tetrachloroethane	TM116	98.4 86.59 : 118.97
1,1,1-Trichloroethane	TM116	105.6 86.26 : 117.53
1,1,2-Trichloroethane	TM116	99.8 75.16 : 112.70
1,1-Dichloroethane	TM116	113.4 83.27 : 122.16
1,2-Dichloroethane	TM116	108.4 89.30 : 133.10
1,4-Dichlorobenzene	TM116	114.8 82.59 : 123.23
2-Chlorotoluene	TM116	97.4 66.81 : 118.43
4-Chlorotoluene	TM116	99.0 65.88 : 114.76
Benzene	TM116	102.6 93.16 : 123.63
Carbon Disulphide	TM116	106.6 75.11 : 124.81
Carbontetrachloride	TM116	101.8 82.35 : 126.46
Chlorobenzene	TM116	103.0 85.07 : 118.13
Chloroform	TM116	113.4 88.13 : 122.71
Chloromethane	TM116	120.0 61.62 : 145.66
Cis-1,2-Dichloroethene	TM116	109.0 78.27 : 128.90
Dibromomethane	TM116	99.8 77.47 : 121.29
Dichloromethane	TM116	112.4 87.89 : 134.72
Ethylbenzene	TM116	94.4 79.92 : 110.05
Hexachlorobutadiene	TM116	59.4 16.78 : 153.29
Isopropylbenzene	TM116	89.2 64.20 : 119.59
Naphthalene	TM116	121.8 79.29 : 125.59
o-Xylene	TM116	90.6 72.86 : 102.10



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VOC MS (S)

		QC 2334
p/m-Xylene	TM116	89.9 76.47 : 108.99
Sec-Butylbenzene	TM116	83.8 44.71 : 117.87
Tetrachloroethene	TM116	99.8 85.86 : 122.95
Toluene	TM116	99.8 87.82 : 116.21
Trichloroethene	TM116	98.8 79.80 : 112.33
Trichlorofluoromethane	TM116	110.8 80.52 : 132.12
Vinyl Chloride	TM116	120.6 68.07 : 137.84

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis .

The figure detailed is the percentage recovery result for the AQC .

The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control .



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Validated

SDG: 200919-132
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PQ20-951

Report Number: 580777
Superseded Report:

Chromatogram

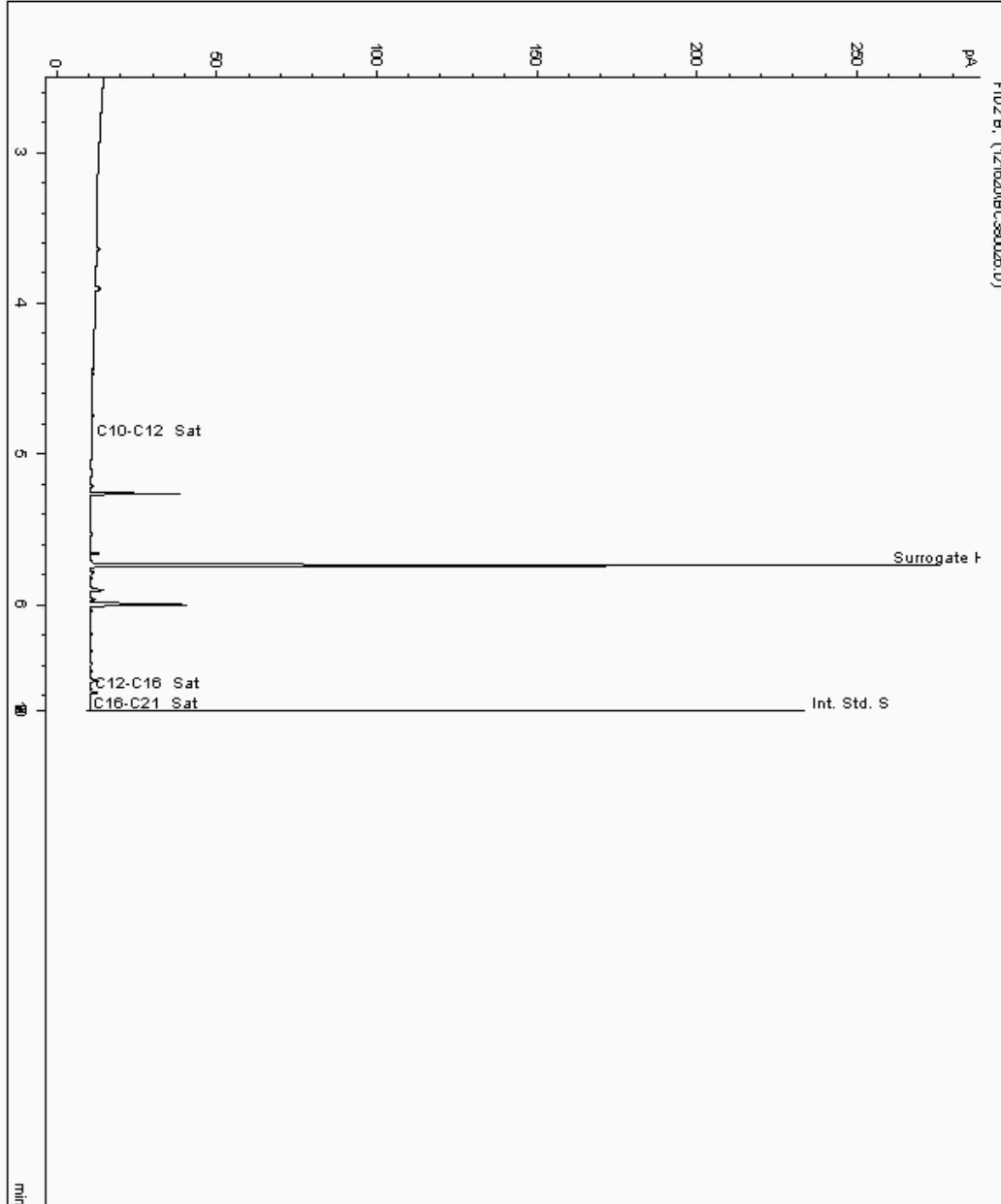
Analysis: EPH CWG (Aliphatic) Filtered GC (W)

Sample No : 23435790
Sample ID : BH72401

Depth : 0.50

Speciated TPH - SATS (C12 - C40)

Sample Identity: 21961153-
Date Acquired : 17/12/20 05:44:33 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025





CERTIFICATE OF ANALYSIS

Validated

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Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PQ20-951

Report Number: 580777
Superseded Report:

Chromatogram

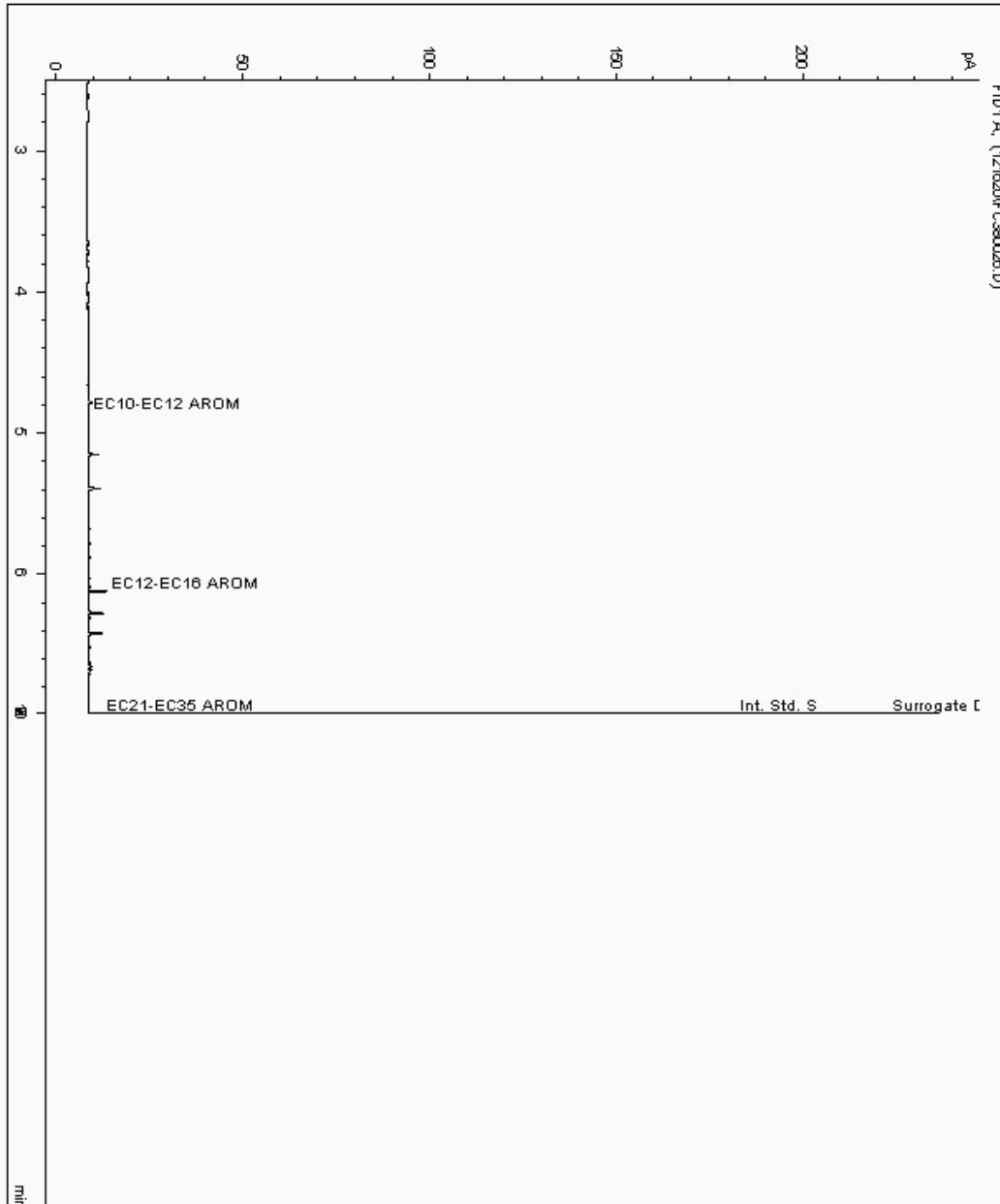
Analysis: EPH CWG (Aromatic) Filtered GC (W)

Sample No : 23435790
Sample ID : BH72401

Depth : 0.50

Speciated TPH - AROM (C12 - C40)

Sample Identity: 21961154-
Date Acquired : 17/12/20 05:44:34 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025





CERTIFICATE OF ANALYSIS

Validated

SDG: 200919-132
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PO20-951

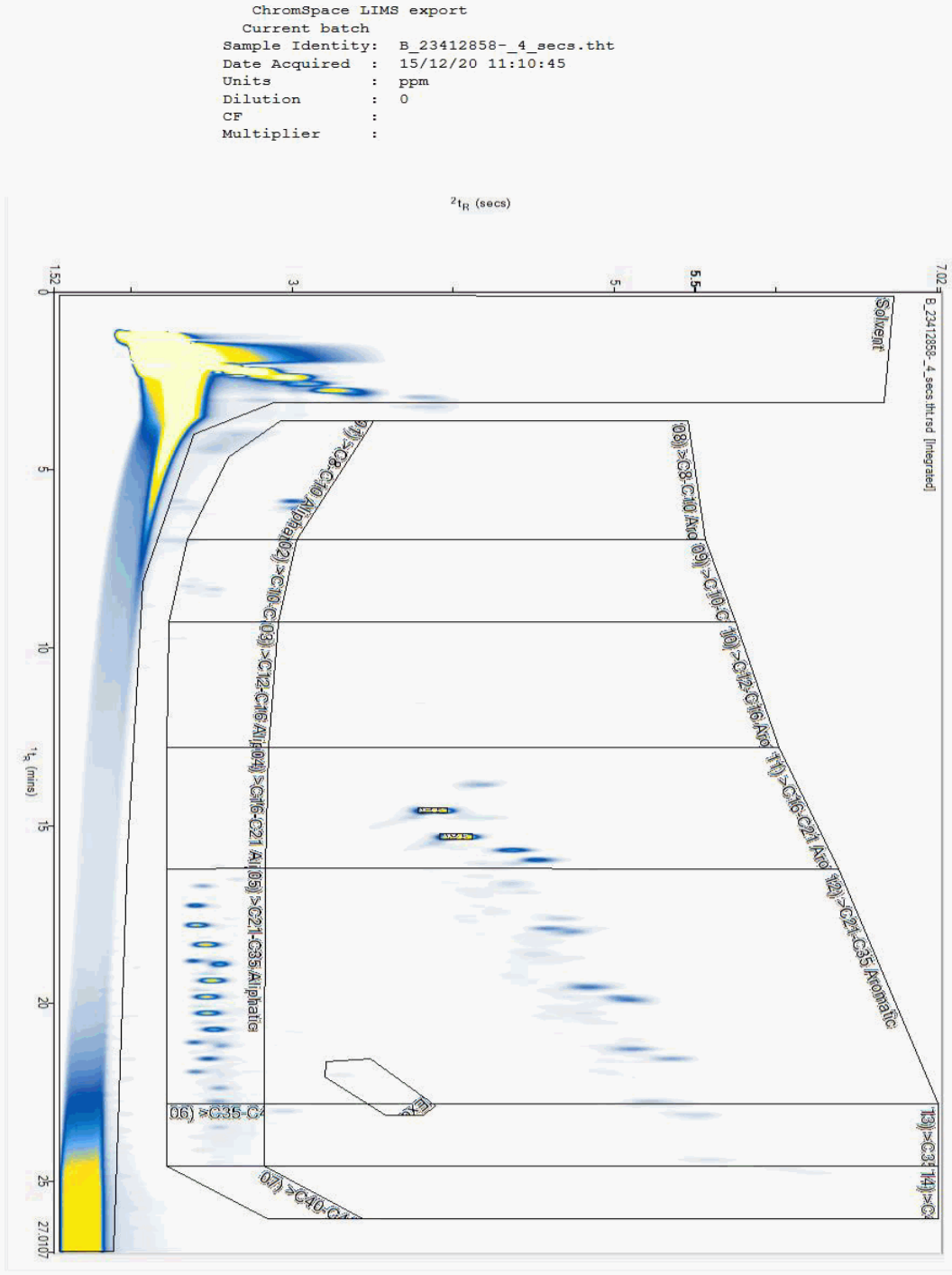
Report Number: 580777
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23412858
Sample ID : BH72401

Depth : 0.50





CERTIFICATE OF ANALYSIS

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SDG: 200919-132
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PO20-951

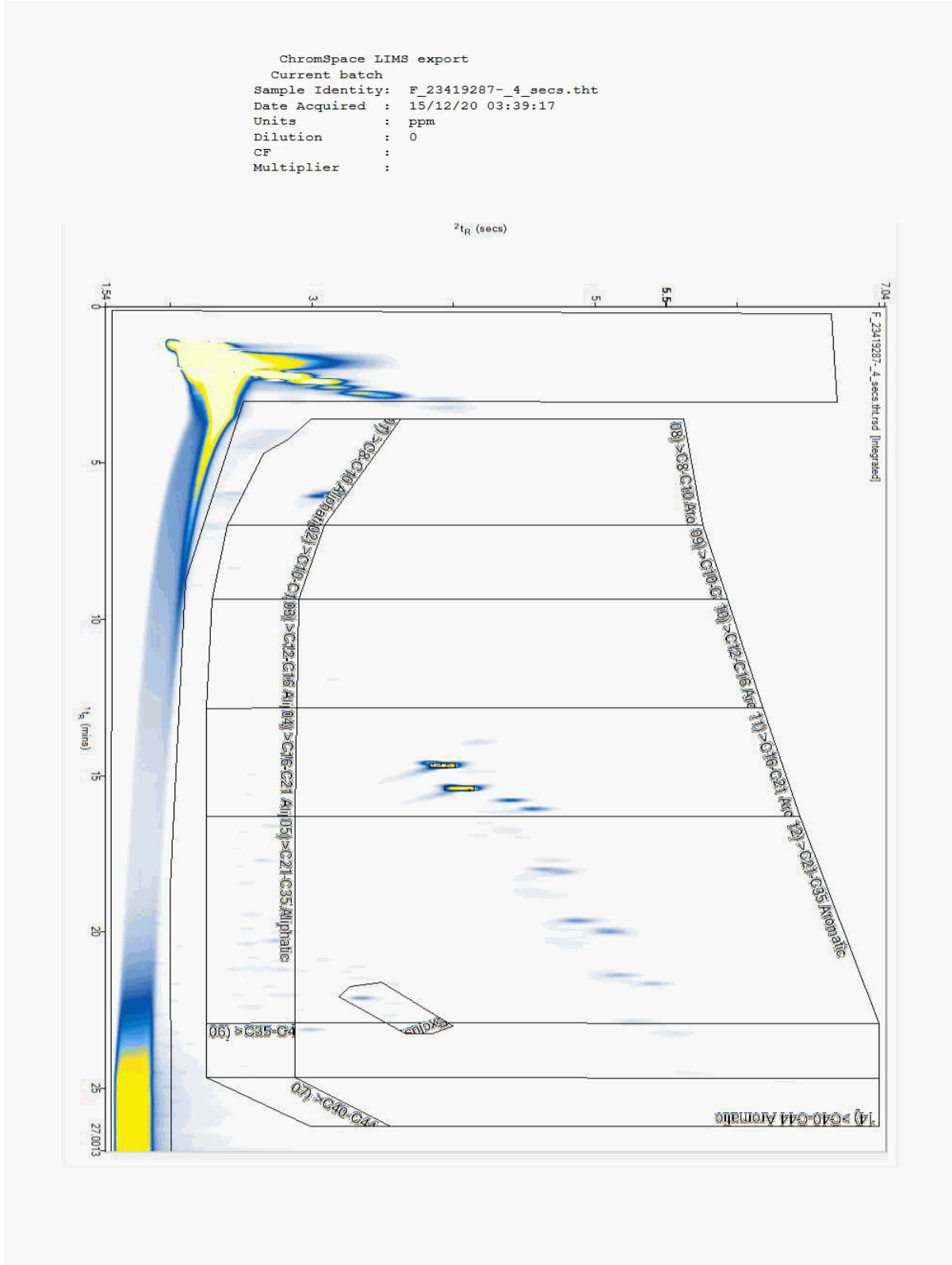
Report Number: 580777
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23419287
Sample ID : BH72401

Depth : 1.00





CERTIFICATE OF ANALYSIS

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SDG: 200919-132
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PQ20-951

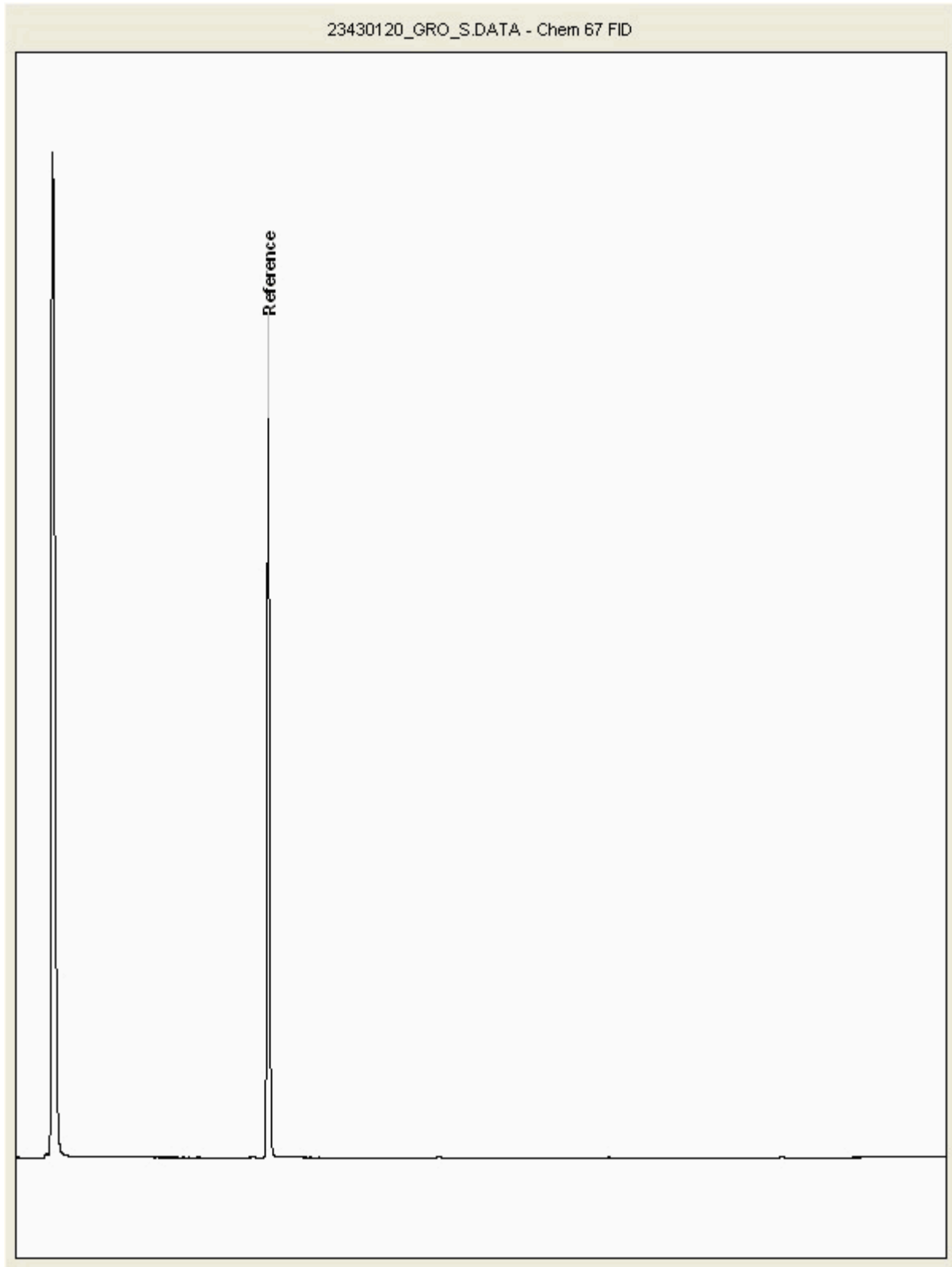
Report Number: 580777
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23430120
Sample ID : BH72401

Depth : 0.50





CERTIFICATE OF ANALYSIS

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SDG: 200919-132
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PQ20-951

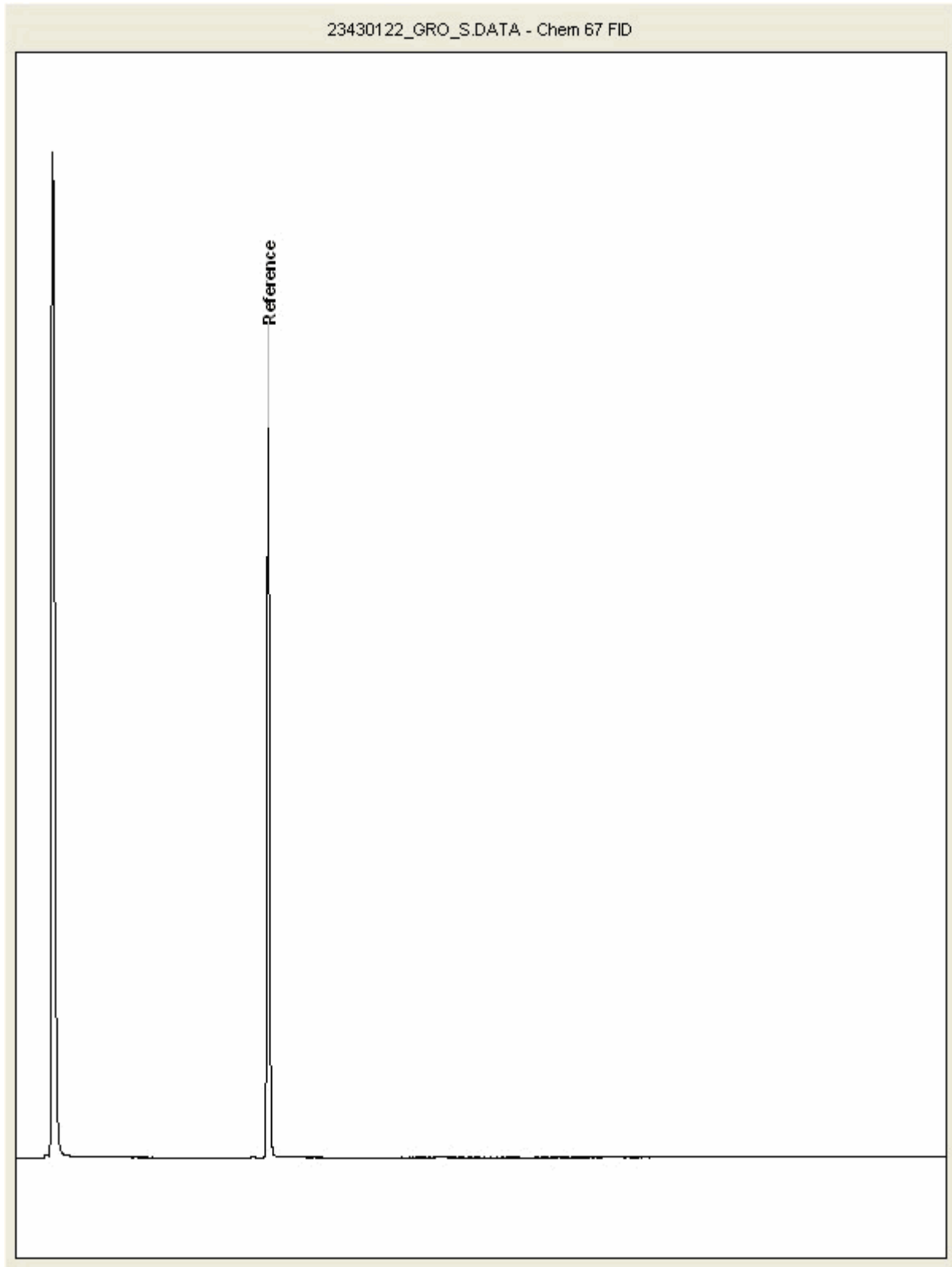
Report Number: 580777
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23430122
Sample ID : BH72401

Depth : 1.00





CERTIFICATE OF ANALYSIS

Validated

SDG: 200919-132
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PQ20-951

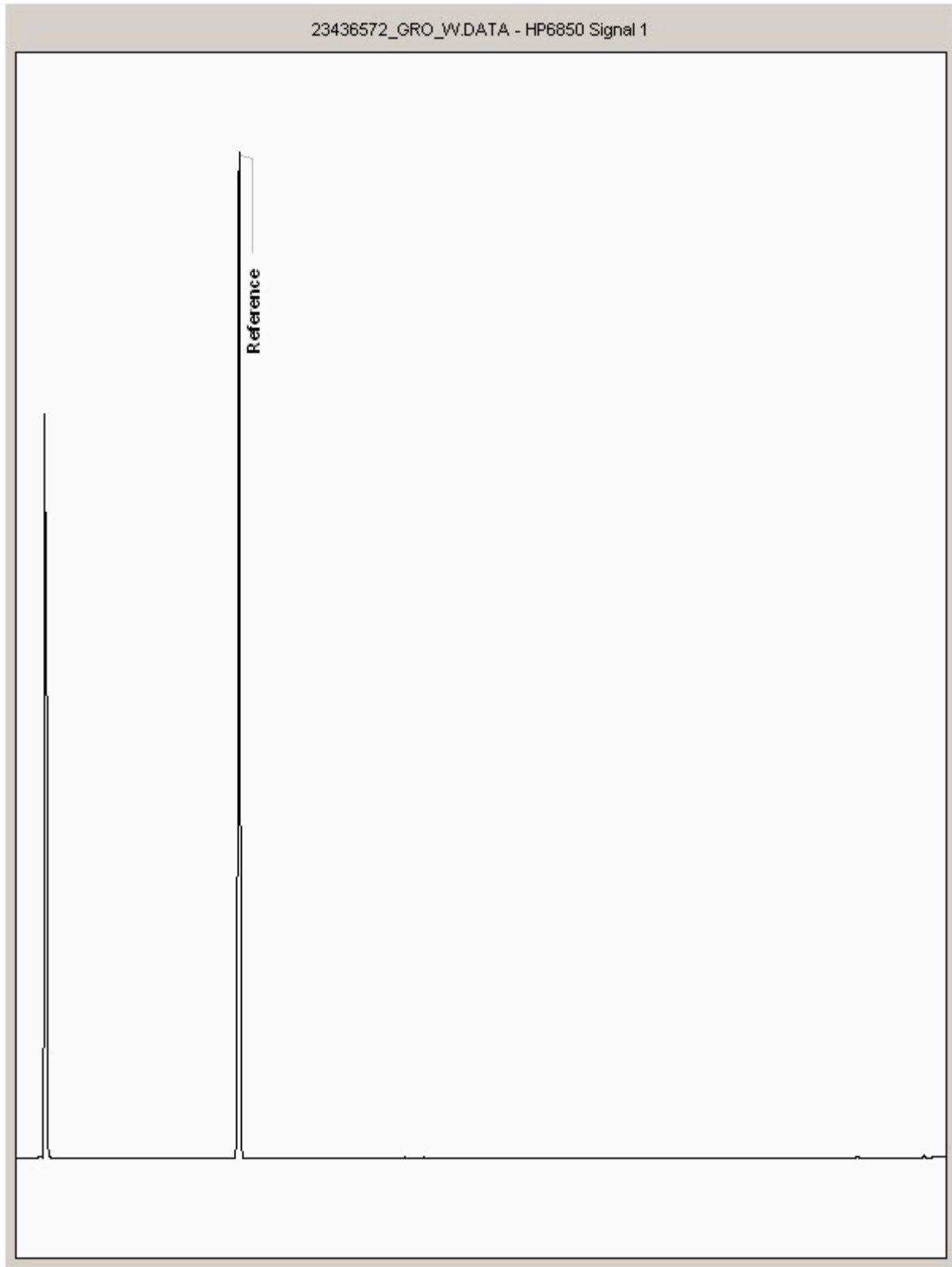
Report Number: 580777
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 23436572
Sample ID : BH72401

Depth : 0.50





CERTIFICATE OF ANALYSIS

SDG: 200919-132	Client Reference: JFR1451	Report Number: 580777
Location: A303 Stonehenge	Order Number: PO20-951	Superseded Report:

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

19. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung. Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017)*.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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email: hawardencustomerservices@alsglobal.com

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RPS Consultants Ltd
260 Park Avenue
Aztec West
Almondsbury
Bristol
BS32 4SY

Attention: Gary Riches

CERTIFICATE OF ANALYSIS

Date of report Generation: 04 November 2020
Customer: RPS Consultants Ltd
Sample Delivery Group (SDG): 200926-98
Your Reference: JFR1451
Location: A303 Stonehenge
Report No: 574116

This report has been revised and directly supersedes 571960 in its entirety.

We received 8 samples on Saturday September 26, 2020 and 2 of these samples were scheduled for analysis which was completed on Wednesday November 04, 2020. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

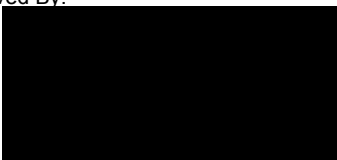
Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:



Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 200926-98 **Client Reference:** JFR1451 **Report Number:** 574116
Location: A303 Stonehenge **Order Number:** PQ20-753 **Superseded Report:** 571960

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
22908547	DTP70701	ES	0.00	23/09/2020
22908548	DTP70701	ES	0.30	23/09/2020
22908549	DTP70701	ES	0.50	23/09/2020
22908550	DTP70701	ES	1.00	23/09/2020
22908543	STP70601	ES	0.00	23/09/2020
22908544	STP70601	ES	0.30	23/09/2020
22908545	STP70601	ES	0.50	23/09/2020
22908546	STP70601	ES	1.00	23/09/2020

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG:	200926-98	Client Reference:	JFR1451	Report Number:	574116
Location:	A303 Stonehenge	Order Number:	PO20-753	Superseded Report:	571960

Results Legend <div style="display: flex; flex-direction: column; gap: 5px;"> <div style="display: flex; align-items: center;"> <div style="width: 15px; height: 15px; background-color: yellow; border: 1px solid black; margin-right: 5px;"></div> Test </div> <div style="display: flex; align-items: center;"> <div style="width: 15px; height: 15px; background-color: red; color: white; border: 1px solid black; margin-right: 5px;"></div> No Determination Possible </div> </div> <p style="font-size: small;">Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other</p>	Lab Sample No(s)	Customer Sample Reference		AGS Reference		Depth (m)		Container		Sample Type	
		22908549	DTP70701		ES		0.50		250g Amber Jar (ALE210)	60g VOC (ALE215)	S
		22908545	STP70601		ES		0.50		1kg TUB with Handle (ALE260)	250g Amber Jar (ALE215)	S
									60g VOC (ALE215)		S
									60g VOC (ALE215)		S
									60g VOC (ALE215)		S
									60g VOC (ALE215)		S
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 1									
Ammonium Soil by Titration	All	NDPs: 0 Tests: 2		X				X			
Anions by Kone (soil)	All	NDPs: 0 Tests: 2		X				X			
Anions by Kone (w)	All	NDPs: 0 Tests: 1						X			
CEN Readings	All	NDPs: 0 Tests: 1						X			
Chromium III	All	NDPs: 0 Tests: 3		X				X	X		
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 3		X				X	X		
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 1						X			
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 1						X			
EPH CWG (Aliphatic) Filtered GC (W)	All	NDPs: 0 Tests: 1						X			
EPH CWG (Aromatic) Filtered GC (W)	All	NDPs: 0 Tests: 1						X			
EPH CWG GC (S)	All	NDPs: 0 Tests: 2		X					X		
GRO by GC-FID (S)	All	NDPs: 0 Tests: 2						X		X	
GRO by GC-FID (W)	All	NDPs: 0 Tests: 1						X			
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 2		X					X		



CERTIFICATE OF ANALYSIS

Validated

SDG:	200926-98	Client Reference:	JFR1451	Report Number:	574116
Location:	A303 Stonehenge	Order Number:	PO20-753	Superseded Report:	571960

Results Legend <div style="display: flex; align-items: center; margin-bottom: 5px;"> <div style="width: 15px; height: 15px; background-color: yellow; border: 1px solid black; margin-right: 5px;"></div> Test </div> <div style="display: flex; align-items: center; margin-bottom: 5px;"> <div style="width: 15px; height: 15px; background-color: red; color: white; border: 1px solid black; margin-right: 5px; display: flex; align-items: center; justify-content: center; font-size: 8px;">N</div> No Determination Possible </div> Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type	
		22908549	DTP70701	ES	0.50	250g Amber Jar (ALE210) 60g VOC (ALE215) 1kg TUB with Handle (ALE280) 250g Amber Jar (ALE215) 60g VOC (ALE215)	S
		22908545	STP70601	ES	0.50	250g Amber Jar (ALE210) 60g VOC (ALE215)	S
	Hexavalent Chromium (w)	All	NDPs: 0 Tests: 1			X	
	Mercury Dissolved	All	NDPs: 0 Tests: 1			X	
	Metals in solid samples by OES	All	NDPs: 0 Tests: 2	X		X	
	OC OP Pesticides and Triazine Herb	All	NDPs: 0 Tests: 2	X		X	
PAH by GCMS	All	NDPs: 0 Tests: 2	X		X		
PAH in waters by GC-MS (diss.filt)	All	NDPs: 0 Tests: 1		X			
pH	All	NDPs: 0 Tests: 2	X		X		
pH Value of Filtered Water	All	NDPs: 0 Tests: 1		X			
Phenols by HPLC (S)	All	NDPs: 0 Tests: 2	X		X		
Phenols by HPLC (W)	All	NDPs: 0 Tests: 1		X			
Sample description	All	NDPs: 0 Tests: 1	X				
Total Organic Carbon	All	NDPs: 0 Tests: 2	X		X		
TPH CWG Filtered (W)	All	NDPs: 0 Tests: 1		X			
TPH CWG GC (S)	All	NDPs: 0 Tests: 2	X		X		
VOC MS (S)	All	NDPs: 0 Tests: 2		X		X	



CERTIFICATE OF ANALYSIS

Validated

SDG:	200926-98	Client Reference:	JFR1451	Report Number:	574116
Location:	A303 Stonehenge	Order Number:	PO20-753	Superseded Report:	571960

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm
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Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
22908549	DTP70701	0.50	Light Brown	Sand	Stones	Vegetation
22908545	STP70601	0.50	Cream	Sand	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.



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SDG:	200926-98	Client Reference:	JFR1451	Report Number:	574116
Location:	A303 Stonehenge	Order Number:	PO20-753	Superseded Report:	571960

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<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%;">Results Legend</td> <td style="width: 20%;">Customer Sample Ref.</td> <td style="width: 10%;">DTP70701</td> <td style="width: 10%;">STP70601</td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> </tr> <tr> <td># ISO17025 accredited.</td> <td>Depth (m)</td> <td>0.50</td> <td>0.50</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>M mCERTS accredited.</td> <td>Sample Type</td> <td>Soil/Solid (S)</td> <td>Soil/Solid (S)</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>aq Aqueous / settled sample.</td> <td>Date Sampled</td> <td>23/09/2020</td> <td>23/09/2020</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>diss.filt Dissolved / filtered sample.</td> <td>Sampled Time</td> <td>-</td> <td>-</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>tot.unfilt Total / unfiltered sample.</td> <td>Date Received</td> <td>26/09/2020</td> <td>26/09/2020</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>* Subcontracted - refer to subcontractor report for accreditation status.</td> <td>SDG Ref</td> <td>200926-98</td> <td>200926-98</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery</td> <td>Lab Sample No.(s)</td> <td>22908549</td> <td>22908545</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>(F) Trigger breach confirmed</td> <td>AGS Reference</td> <td>ES</td> <td>ES</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>1-4*3@ Sample deviation (see appendix)</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>								Results Legend	Customer Sample Ref.	DTP70701	STP70601					# ISO17025 accredited.	Depth (m)	0.50	0.50					M mCERTS accredited.	Sample Type	Soil/Solid (S)	Soil/Solid (S)					aq Aqueous / settled sample.	Date Sampled	23/09/2020	23/09/2020					diss.filt Dissolved / filtered sample.	Sampled Time	-	-					tot.unfilt Total / unfiltered sample.	Date Received	26/09/2020	26/09/2020					* Subcontracted - refer to subcontractor report for accreditation status.	SDG Ref	200926-98	200926-98					** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery	Lab Sample No.(s)	22908549	22908545					(F) Trigger breach confirmed	AGS Reference	ES	ES					1-4*3@ Sample deviation (see appendix)							
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Component	LOD/Units	Method																																																																																					
Moisture Content Ratio (% of as received sample)	%	PM024	6.6	16																																																																																			
Exchangeable Ammonia as N	<12 mg/kg	TM024	<12 @ M	<12 M																																																																																			
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 @ M	<0.01 @ M																																																																																			
Organic Carbon, Total	<0.2 %	TM132	0.779 @ M	<0.2 M																																																																																			
pH	1 pH Units	TM133	8.69 @ M	8.81 M																																																																																			
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 @ #	<0.6 #																																																																																			
Cyanide, Total	<1 mg/kg	TM153	<1 @ M	<1 @ M																																																																																			
Cyanide, Free	<1 mg/kg	TM153	<1 @ M	<1 @ M																																																																																			
Chromium, Trivalent	<0.9 mg/kg	TM181	8.02	1.42																																																																																			
Antimony	<0.6 mg/kg	TM181	<0.6 #	<0.6 #																																																																																			
Arsenic	<0.6 mg/kg	TM181	2.56 M	<0.6 M																																																																																			
Beryllium	<0.01 mg/kg	TM181	0.381 M	0.0804 M																																																																																			
Boron	<0.7 mg/kg	TM181	17.6 #	2.08 #																																																																																			
Cadmium	<0.02 mg/kg	TM181	0.243 M	0.135 M																																																																																			
Chromium	<0.9 mg/kg	TM181	8.02 M	1.42 M																																																																																			
Copper	<1.4 mg/kg	TM181	4.29 M	<1.4 M																																																																																			
Iron	<1000 mg/kg	TM181	7930 #	<1000 #																																																																																			
Lead	<0.7 mg/kg	TM181	7.39 M	<0.7 M																																																																																			
Manganese	<0.13 mg/kg	TM181	570 M	193 M																																																																																			
Mercury	<0.14 mg/kg	TM181	<0.14 @ M	<0.14 M																																																																																			
Molybdenum	<0.1 mg/kg	TM181	0.172 #	0.103 #																																																																																			
Nickel	<0.2 mg/kg	TM181	9.17 M	1.27 M																																																																																			
Phosphorus	<1 mg/kg	TM181	700	393																																																																																			
Selenium	<1 mg/kg	TM181	<1 #	<1 #																																																																																			
Zinc	<1.9 mg/kg	TM181	41.1 M	8.4 M																																																																																			
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243	<0.004 @ M	0.0134 M																																																																																			



CERTIFICATE OF ANALYSIS

Validated

SDG:	200926-98	Client Reference:	JFR1451	Report Number:	574116
Location:	A303 Stonehenge	Order Number:	PO20-753	Superseded Report:	571960

OC OP Pesticides and Triazine Herb

#	Customer Sample Ref.	DTP70701	STP70601		
Results Legend # ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.fit Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4*\$@ Sample deviation (see appendix)	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.50 Soil/Solid (S) 23/09/2020 . 26/09/2020 200926-98 22908549 ES	0.50 Soil/Solid (S) 23/09/2020 . 26/09/2020 200926-98 22908545 ES		
Component	LOD/Units	Method			
Dichlorvos	<50 µg/kg	TM073	<50	<50	
Mevinphos	<50 µg/kg	TM073	<50	<50	
Phorate	<50 µg/kg	TM073	<50	<50	
alpha-Hexachlorocyclohexane (HCH)	<50 µg/kg	TM073	<50	<50	
Diazinon	<50 µg/kg	TM073	<50	<50	
gamma-Hexachlorocyclohexane (HCH / Lindane)	<50 µg/kg	TM073	<50	<50	
Atrazine	<50 µg/kg	TM073	<50	<50	
Simazine	<50 µg/kg	TM073	<50	<50	
Disulfoton	<50 µg/kg	TM073	<50	<50	
Heptachlor	<50 µg/kg	TM073	<50	<50	
Aldrin	<50 µg/kg	TM073	<50	<50	
beta-Hexachlorocyclohexane (HCH)	<50 µg/kg	TM073	<50	<50	
Methyl parathion	<50 µg/kg	TM073	<50	<50	
Malathion	<50 µg/kg	TM073	<50	<50	
Fenitrothion	<50 µg/kg	TM073	<50	<50	
Heptachlor epoxide	<50 µg/kg	TM073	<50	<50	
Parathion	<50 µg/kg	TM073	<50	<50	
Endosulphan I	<50 µg/kg	TM073	<50	<50	
p,p-DDE	<50 µg/kg	TM073	<50	<50	
Dieldrin	<50 µg/kg	TM073	<50	<50	
o,p'-DDD (TDE)	<50 µg/kg	TM073	<50	<50	
Endrin	<50 µg/kg	TM073	<50	<50	
p,p-TDE (DDD)	<50 µg/kg	TM073	<50	<50	
Ethion	<50 µg/kg	TM073	<50	<50	
Endosulphan II	<50 µg/kg	TM073	<50	<50	
p,p-DDT	<50 µg/kg	TM073	<50	<50	
p,p-Methoxychlor	<50 µg/kg	TM073	<50	<50	
Endosulphan sulphate	<50 µg/kg	TM073	<50	<50	
Azinphos-methyl	<50 µg/kg	TM073	<50	<50	



CERTIFICATE OF ANALYSIS

Validated

SDG: 200926-98
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PO20-753

Report Number: 574116
Superseded Report: 571960

PAH by GCMS

Results Legend		Customer Sample Ref.	DTP70701	STP70601			
#	ISO17025 accredited.						
M	mCERTS accredited.						
aq	Aqueous / settled sample.						
diss.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.						
*	Subcontracted - refer to subcontractor report for accreditation status.						
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery						
(F)	Trigger breach confirmed						
1-4*3@	Sample deviation (see appendix)						
	Depth (m)		0.50	0.50			
	Sample Type		Soil/Solid (S)	Soil/Solid (S)			
	Date Sampled		23/09/2020	23/09/2020			
	Sampled Time						
	Date Received		26/09/2020	26/09/2020			
	SDG Ref		200926-98	200926-98			
	Lab Sample No.(s)		22908549	22908545			
	AGS Reference		ES	ES			
Component	LOD/Units	Method					
Naphthalene-d8 % recovery**	%	TM218	89	92.3			
Acenaphthene-d10 % recovery**	%	TM218	89.6	97.2			
Phenanthrene-d10 % recovery**	%	TM218	90.8	89.2			
Chrysene-d12 % recovery**	%	TM218	87.1	80			
Perylene-d12 % recovery**	%	TM218	82.4	88.8			
Naphthalene	<9 µg/kg	TM218	<9 @ M	<9 @ M			
Acenaphthylene	<12 µg/kg	TM218	<12 @ M	<12 @ M			
Acenaphthene	<8 µg/kg	TM218	<8 @ M	<8 @ M			
Fluorene	<10 µg/kg	TM218	<10 @ M	<10 @ M			
Phenanthrene	<15 µg/kg	TM218	<15 @ M	<15 @ M			
Anthracene	<16 µg/kg	TM218	<16 @ M	<16 @ M			
Fluoranthene	<17 µg/kg	TM218	<17 @ M	<17 @ M			
Pyrene	<15 µg/kg	TM218	<15 @ M	<15 @ M			
Benz(a)anthracene	<14 µg/kg	TM218	<14 @ M	<14 @ M			
Chrysene	<10 µg/kg	TM218	<10 @ M	<10 @ M			
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 @ M	<15 @ M			
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 @ M	<14 @ M			
Benzo(a)pyrene	<15 µg/kg	TM218	<15 @ M	<15 @ M			
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 @ M	<18 @ M			
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 @ M	<23 @ M			
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 @ M	<24 @ M			
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118			



CERTIFICATE OF ANALYSIS

Validated

SDG: 200926-98	Client Reference: JFR1451	Report Number: 574116
Location: A303 Stonehenge	Order Number: PO20-753	Superseded Report: 571960

CEN 2:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/

Client Reference		Site Location	A303 Stonehenge
Mass Sample taken (kg)	0.211	Natural Moisture Content (%)	21.1
Mass of dry sample (kg)	0.175	Dry Matter Content (%)	82.6
Particle Size <4mm	>95%		

Case	
SDG	200926-98
Lab Sample Number(s)	22908545
Sampled Date	23-Sep-2020
Customer Sample Ref.	STP70601 ESZ
Depth (m)	0.50

Eluate Analysis	Conc ⁿ in 2:1 eluate (mg/l)		2:1 conc ⁿ leached (mg/kg)	
	Result	Limit of Detection	Result	Limit of Detection
Aliphatics >C12-C16	<0.01	<0.01	<0.02	<0.02
Aliphatics >C16-C21	<0.01	<0.01	<0.02	<0.02
Aliphatics >C21-C35	<0.01	<0.01	<0.02	<0.02
Total Aliphatics >C12-C35	<0.01	<0.01	<0.02	<0.02
Aromatics >EC12-EC16	<0.01	<0.01	<0.02	<0.02
Aromatics >EC16-EC21	<0.01	<0.01	<0.02	<0.02
Aromatics >EC21-EC35	<0.01	<0.01	<0.02	<0.02
Aromatics >EC16-EC35	<0.01	<0.01	<0.02	<0.02
Total Aromatics >EC12-EC35	<0.01	<0.01	<0.02	<0.02
TPH (Total Aliphatics + Total Aromatics) >C5-C35	0.037	<0.01	0.074	<0.02
Ammoniacal Nitrogen as N	<0.2	<0.2	<0.4	<0.4
Chromium III	<0.03	<0.03	<0.06	<0.06
Hexavalent Chromium	<0.03	<0.03	<0.06	<0.06
Sulphate (soluble)	12.4	<2	24.8	<4
Dissolved Organic Carbon	6.81	<3	13.6	<6
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.00002	<0.00002
Antimony	<0.001	<0.001	<0.002	<0.002
Naphthalene (diss.filt)	<0.00001	<0.00001	<0.00002	<0.00002
Total Cyanide (W)	<0.05	<0.05	<0.1	<0.1
Acenaphthene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Arsenic	<0.0005	<0.0005	<0.001	<0.001
Free Cyanide (W)	<0.05	<0.05	<0.1	<0.1
Acenaphthylene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Phenol by HPLC (W)	<0.002	<0.002	<0.004	<0.004
Beryllium	<0.0001	<0.0001	<0.0002	<0.0002
Fluoranthene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Anthracene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Boron	0.0133	<0.01	0.0266	<0.02
Phenanthrene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Cadmium	<0.00008	<0.00008	<0.00016	<0.00016
Fluorene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Chrysene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Pyrene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Benzo(a)anthracene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Chromium	<0.001	<0.001	<0.002	<0.002

Leach Test Information

Date Prepared	13-Oct-2020
pH (pH Units)	8.30
Conductivity (µS/cm)	256.00
Temperature (°C)	19.30
Volume Leachant (Litres)	0.314
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
 Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
 Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

Validated

SDG: 200926-98
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PO20-753

Report Number: 574116
Superseded Report: 571960

CEN 2:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/'

Client Reference	
Mass Sample taken (kg)	0.211
Mass of dry sample (kg)	0.175
Particle Size <4mm	>95%

Site Location	A303 Stonehenge
Natural Moisture Content (%)	21.1
Dry Matter Content (%)	82.6

Case	
SDG	200926-98
Lab Sample Number(s)	22908545
Sampled Date	23-Sep-2020
Customer Sample Ref.	STP70601 ESZ
Depth (m)	0.50

Eluate Analysis	Conc ⁿ in 2:1 eluate (mg/l)		2:1 conc ⁿ leached (mg/kg)	
	Result	Limit of Detection	Result	Limit of Detection
Benzo(b)fluoranthene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Benzo(k)fluoranthene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Benzo(a)pyrene (diss.filt)	<0.000002	<0.000002	<0.000004	<0.000004
Copper	0.00313	<0.0003	0.00626	<0.0006
Dibenzo(a,h)anthracene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Lead	<0.0002	<0.0002	<0.0004	<0.0004
Benzo(g,h,i)perylene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Indeno(1,2,3-cd)pyrene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Manganese	<0.003	<0.003	<0.006	<0.006
Molybdenum	<0.003	<0.003	<0.006	<0.006
PAH 16 EPA Total by GCMS (diss.filt)	<0.000082	<0.000082	<0.000164	<0.000164
Nickel	0.00111	<0.0004	0.00222	<0.0008
Phosphorus	0.0294	<0.01	0.0588	<0.02
Selenium	<0.001	<0.001	<0.002	<0.002
Zinc	0.00407	<0.001	0.00814	<0.002
Calcium (Dis.Filt) mg/l	54	<0.2	108	<0.4
Iron (Dis.Filt) mg/l	<0.019	<0.019	<0.038	<0.038
TPH CWG (W)				
Surrogate Recovery	-	-	-	-
GRO TOT (C5-C12)	<0.05	<0.05	<0.1	<0.1
Aliphatics C5-C6	<0.01	<0.01	<0.02	<0.02
Aliphatics >C6-C8	0.018	<0.01	0.036	<0.02
Aliphatics >C8-C10	<0.01	<0.01	<0.02	<0.02
Aliphatics >C10-C12	<0.01	<0.01	<0.02	<0.02
Aromatics C6-C7	<0.01	<0.01	<0.02	<0.02
Aromatics >C7-C8	<0.01	<0.01	<0.02	<0.02
MTBE GC-FID	<0.003	<0.003	<0.006	<0.006
Aromatics >EC8 -EC10	<0.01	<0.01	<0.02	<0.02
Aromatics >EC10-EC12	<0.01	<0.01	<0.02	<0.02
Benzene by GC	<0.007	<0.007	<0.014	<0.014
Toluene by GC	<0.004	<0.004	<0.008	<0.008
Ethylbenzene by GC	<0.005	<0.005	<0.01	<0.01
m & p Xylene by GC	<0.008	<0.008	<0.016	<0.016
o Xylene by GC	<0.003	<0.003	<0.006	<0.006
Sum m&p and o Xylene by GC	<0.011	<0.011	<0.022	<0.022
Sum of BTEX by GC	<0.028	<0.028	<0.056	<0.056

Leach Test Information

Date Prepared	13-Oct-2020
pH (pH Units)	8.30
Conductivity (µS/cm)	256.00
Temperature (°C)	19.30
Volume Leachant (Litres)	0.314
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

Validated

SDG:	200926-98	Client Reference:	JFR1451	Report Number:	574116
Location:	A303 Stonehenge	Order Number:	PO20-753	Superseded Report:	571960

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM073	MEWAM BOOK 60 1980,95 1985, HMSO / Modified: US EPA Method 8081A & 8141A	Determination of organochlorine and organophosphorous pesticides by GCMS
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM174	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID
TM178	Modified: US EPA Method 8100	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS in Waters
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser
TM243		Mixed Anions In Soils By Kone
TM245	By GC-FID	Determination of GRO by Headspace in waters
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).



CERTIFICATE OF ANALYSIS

Validated

SDG: 200926-98	Client Reference: JFR1451	Report Number: 574116	
Location: A303 Stonehenge	Order Number: PO20-753	Superseded Report: 571960	

Test Completion Dates

Lab Sample No(s)	22908549	22908545
Customer Sample Ref.	DTP70701	STP70601
AGS Ref.	ES	ES
Depth	0.50	0.50
Type	Soil/Solid (S)	Soil/Solid (S)

Ammoniacal Nitrogen		16-Oct-2020
Ammonium Soil by Titration	03-Nov-2020	14-Oct-2020
Anions by Kone (soil)	04-Nov-2020	15-Oct-2020
Anions by Kone (w)		16-Oct-2020
CEN 2:1 Leachate (1 Stage)		14-Oct-2020
CEN Readings		16-Oct-2020
Chromium III	04-Nov-2020	19-Oct-2020
Cyanide Comp/Free/Total/Thiocyanate	03-Nov-2020	19-Oct-2020
Dissolved Metals by ICP-MS		19-Oct-2020
Dissolved Organic/Inorganic Carbon		17-Oct-2020
EPH CWG (Aliphatic) Filtered GC (W)		20-Oct-2020
EPH CWG (Aromatic) Filtered GC (W)		20-Oct-2020
EPH CWG GC (S)	03-Nov-2020	16-Oct-2020
GRO by GC-FID (S)	02-Nov-2020	15-Oct-2020
GRO by GC-FID (W)		16-Oct-2020
Hexavalent Chromium (s)	04-Nov-2020	16-Oct-2020
Hexavalent Chromium (w)		16-Oct-2020
Mercury Dissolved		17-Oct-2020
Metals in solid samples by OES	03-Nov-2020	16-Oct-2020
Moisture at 105C		13-Oct-2020
OC OP Pesticides and Triazine Herb	02-Nov-2020	15-Oct-2020
PAH by GCMS	01-Nov-2020	16-Oct-2020
PAH in waters by GC-MS (diss.filt)		19-Oct-2020
pH	02-Nov-2020	14-Oct-2020
pH Value of Filtered Water		16-Oct-2020
Phenols by HPLC (S)	03-Nov-2020	16-Oct-2020
Phenols by HPLC (W)		16-Oct-2020
Sample description	30-Oct-2020	13-Oct-2020
Total Organic Carbon	03-Nov-2020	16-Oct-2020
TPH CWG Filtered (W)		20-Oct-2020
TPH CWG GC (S)	03-Nov-2020	16-Oct-2020
VOC MS (S)	02-Nov-2020	15-Oct-2020



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ASSOCIATED AQC DATA

Ammoniacal Nitrogen

Component	Method Code	QC 2356
Ammoniacal Nitrogen as N	TM099	101.6 93.14 : 108.60

Ammonium Soil by Titration

Component	Method Code	QC 2326	QC 2388
Exchangeable Ammonium as NH4	TM024	86.57 76.20 : 110.13	93.53 76.20 : 110.13

Anions by Kone (w)

Component	Method Code	QC 2337
Chloride	TM184	104.0 92.93 : 115.43
Sulphate (soluble)	TM184	99.6 90.53 : 113.03
TON as NO3	TM184	108.0 94.00 : 111.10

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2399	QC 2389	QC 2304
Free Cyanide	TM153	92.38 78.61 : 114.43		85.74 78.61 : 114.43
Free Cyanide (W)	TM227		103.75 90.50 : 114.50	
Thiocyanate	TM153	99.36 90.48 : 109.52		97.44 90.48 : 109.52
Thiocyanate (W)	TM227		106.5 90.50 : 113.00	
Total Cyanide	TM153	94.41 76.80 : 112.96		91.61 76.80 : 112.96
Total Cyanide (W)	TM227		99.75 91.75 : 112.75	

Dissolved Metals by ICP-MS

Component	Method Code	QC 2357
Aluminium	TM152	106.0 90.98 : 111.82
Antimony	TM152	105.0 90.44 : 113.04
Arsenic	TM152	104.0 88.00 : 112.00
Barium	TM152	92.83 83.57 : 108.18



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Order Number: PO20-753

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Superseded Report: 571960

Dissolved Metals by ICP-MS

		QC 2357
Beryllium	TM152	105.33 87.77 : 113.97
Bismuth	TM152	101.33 91.90 : 112.20
Borate	TM152	105.56 88.00 : 112.00
Boron	TM152	105.67 96.48 : 114.93
Cadmium	TM152	103.67 96.43 : 110.53
Calcium	TM152	103.33 81.38 : 119.09
Chromium	TM152	103.0 91.84 : 108.67
Cobalt	TM152	103.67 88.00 : 112.00
Copper	TM152	105.5 92.47 : 118.11
Iron	TM152	102.0 92.00 : 113.00
Lead	TM152	102.17 88.00 : 112.00
Lithium	TM152	104.17 91.62 : 113.12
Magnesium	TM152	101.33 94.33 : 111.84
Manganese	TM152	102.17 97.94 : 109.97
Molybdenum	TM152	100.33 88.00 : 112.00
Nickel	TM152	104.17 88.00 : 112.00
Phosphorus	TM152	105.33 88.00 : 112.00
Potassium	TM152	101.33 93.90 : 112.36
Selenium	TM152	103.5 91.58 : 115.98
Silver	TM152	102.17 88.80 : 122.30
Sodium	TM152	100.67 94.28 : 110.71
Strontium	TM152	101.67 88.00 : 112.00
Tellurium	TM152	102.0 93.32 : 114.66
Thallium	TM152	95.0 88.00 : 112.00
Tin	TM152	104.33 94.19 : 113.62
Titanium	TM152	109.17 95.58 : 111.68
Tungsten	TM152	100.0 81.32 : 124.72



CERTIFICATE OF ANALYSIS

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SDG: 200926-98
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Client Reference: JFR1451
Order Number: PO20-753

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Superseded Report: 571960

Dissolved Metals by ICP-MS

		QC 2357
Uranium	TM152	100.33 88.00 : 112.00
Vanadium	TM152	107.83 88.00 : 112.00
Zinc	TM152	105.67 92.98 : 118.95

Dissolved Organic/Inorganic Carbon

Component	Method Code	QC 2367
Dissolved Inorganic Carbon	TM090	101.33 93.58 : 112.28
Dissolved Organic Carbon	TM090	103.67 96.28 : 110.58

GRO by GC-FID (S)

Component	Method Code	QC 2310	QC 2356
QC	TM089	95.0 70.75 : 114.19	91.97 70.34 : 111.95

GRO by GC-FID (W)

Component	Method Code	QC 2397
Benzene by GC	TM245	96.5 81.54 : 119.70
Ethylbenzene by GC	TM245	96.5 80.99 : 121.09
m & p Xylene by GC	TM245	95.25 82.77 : 123.19
MTBE GC-FID	TM245	94.0 80.06 : 123.27
o Xylene by GC	TM245	96.0 84.26 : 121.50
QC	TM245	93.32 76.13 : 145.89
Toluene by GC	TM245	96.5 82.78 : 121.99

Hexavalent Chromium (s)

Component	Method Code	QC 2302	QC 2338
Hexavalent Chromium	TM151	98.0 95.60 : 107.60	104.0 92.00 : 111.20

Hexavalent Chromium (w)



CERTIFICATE OF ANALYSIS

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SDG: 200926-98
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PO20-753

Report Number: 574116
Superseded Report: 571960

Hexavalent Chromium (w)

Component	Method Code	QC 2382
Hexavalent Chromium	TM241	99.2 94.17 : 106.17

Mercury Dissolved

Component	Method Code	QC 2348
Mercury Dissolved (CVAf)	TM183	85.7 69.30 : 128.70

Metals in solid samples by OES

Component	Method Code	QC 2354	QC 2331
Aluminium	TM181	112.39 73.56 : 108.85	96.46 73.56 : 108.85
Antimony	TM181	98.37 76.89 : 111.24	96.34 76.89 : 111.24
Arsenic	TM181	102.03 88.53 : 111.01	102.91 88.53 : 111.01
Barium	TM181	98.17 77.67 : 105.35	96.33 77.67 : 105.35
Beryllium	TM181	99.25 85.44 : 109.61	101.12 85.44 : 109.61
Boron	TM181	102.58 73.51 : 104.66	91.98 73.51 : 104.66
Cadmium	TM181	94.24 77.67 : 104.12	93.83 77.67 : 104.12
Chromium	TM181	96.96 86.11 : 106.21	94.73 86.11 : 106.21
Cobalt	TM181	92.45 84.60 : 104.13	93.71 84.60 : 104.13
Copper	TM181	89.26 82.40 : 105.45	94.19 82.40 : 105.45
Iron	TM181	101.59 82.95 : 110.58	97.62 82.95 : 110.58
Lead	TM181	99.32 78.24 : 104.05	93.47 78.24 : 104.05
Manganese	TM181	112.5 94.29 : 119.51	108.89 94.29 : 119.51
Mercury	TM181	95.17 83.16 : 107.81	96.62 83.16 : 107.81
Molybdenum	TM181	97.94 87.11 : 106.87	97.53 87.11 : 106.87
Nickel	TM181	94.62 80.26 : 102.28	93.89 80.26 : 102.28
Phosphorus	TM181	110.1 94.56 : 124.28	108.08 94.56 : 124.28



CERTIFICATE OF ANALYSIS

Validated

SDG:	200926-98	Client Reference:	JFR1451	Report Number:	574116
Location:	A303 Stonehenge	Order Number:	PO20-753	Superseded Report:	571960

Metals in solid samples by OES

		QC 2354	QC 2331
Selenium	TM181	98.43 82.28 : 110.48	103.14 82.28 : 110.48
Strontium	TM181	97.55 79.13 : 102.79	91.09 79.13 : 102.79
Thallium	TM181	100.88 82.94 : 111.86	100.44 82.94 : 111.86
Tin	TM181	113.69 86.72 : 110.03	101.9 86.72 : 110.03
Titanium	TM181	100.76 66.23 : 102.06	81.68 66.23 : 102.06
Vanadium	TM181	100.37 86.19 : 109.45	96.7 86.19 : 109.45
Zinc	TM181	103.29 84.68 : 113.99	99.18 84.68 : 113.99

PAH by GCMS

Component	Method Code	QC 2395	QC 2354
Acenaphthene	TM218	93.0 80.97 : 105.99	91.0 73.47 : 109.80
Acenaphthylene	TM218	92.0 74.76 : 107.36	88.0 70.00 : 130.00
Anthracene	TM218	90.0 73.04 : 106.97	87.5 68.68 : 111.89
Benz(a)anthracene	TM218	88.0 68.79 : 119.64	92.5 68.12 : 118.39
Benzo(a)pyrene	TM218	86.0 66.17 : 117.52	89.0 71.72 : 115.31
Benzo(b)fluoranthene	TM218	87.5 66.40 : 118.34	88.5 66.89 : 120.40
Benzo(ghi)perylene	TM218	86.5 67.68 : 112.07	86.0 67.82 : 118.49
Benzo(k)fluoranthene	TM218	88.5 72.84 : 114.66	90.0 73.10 : 117.03
Chrysene	TM218	88.0 68.39 : 115.56	89.0 69.58 : 115.47
Dibenzo(ah)anthracene	TM218	84.5 69.03 : 110.45	86.0 67.32 : 121.35
Fluoranthene	TM218	93.5 69.37 : 117.19	88.5 75.16 : 117.28
Fluorene	TM218	91.5 75.38 : 105.98	93.5 73.81 : 108.66
Indeno(123cd)pyrene	TM218	88.0 65.91 : 113.61	87.5 68.91 : 117.62
Naphthalene	TM218	91.0 71.40 : 105.87	87.5 72.12 : 106.18
Phenanthrene	TM218	93.0 74.04 : 109.30	89.0 69.01 : 113.72
Pyrene	TM218	93.0 69.68 : 115.27	89.0 75.68 : 119.23

PAH in waters by GC-MS (diss.filt)



CERTIFICATE OF ANALYSIS

Validated

SDG: 200926-98
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PO20-753

Report Number: 574116
Superseded Report: 571960

PAH in waters by GC-MS (diss.filt)

Component	Method Code	QC 2387
Acenaphthene (diss.filt)	TM178	111.6 93.20 : 119.60
Acenaphthylene (diss.filt)	TM178	110.8 92.00 : 118.40
Anthracene (diss.filt)	TM178	109.6 90.80 : 114.80
Benzo(a)anthracene (diss.filt)	TM178	109.2 91.60 : 115.60
Benzo(a)pyrene (diss.filt)	TM178	98.8 91.20 : 120.00
Benzo(b)fluoranthene (diss.filt)	TM178	105.2 86.80 : 120.40
Benzo(g,h,i)perylene (diss.filt)	TM178	108.4 89.20 : 118.00
Benzo(k)fluoranthene (diss.filt)	TM178	106.0 94.40 : 125.60
Chrysene (diss.filt)	TM178	106.8 96.40 : 122.80
Dibenzo(a,h)anthracene (diss.filt)	TM178	106.0 93.60 : 132.00
Fluoranthene (diss.filt)	TM178	107.6 92.80 : 121.60
Fluorene (diss.filt)	TM178	109.2 93.60 : 120.00
Indeno(1,2,3-cd)pyrene (diss.filt)	TM178	106.8 82.40 : 120.80
Naphthalene (diss.filt)	TM178	112.8 88.40 : 126.80
Phenanthrene (diss.filt)	TM178	110.8 92.40 : 118.80
Pyrene (diss.filt)	TM178	106.8 90.40 : 124.00

pH

Component	Method Code	QC 2397	QC 2312
pH	TM133	100.4 98.47 : 102.33	100.26 99.74 : 102.91

pH Value of Filtered Water

Component	Method Code	QC 2320
pH	TM256	100.27 99.20 : 101.60

Phenols by HPLC (S)



CERTIFICATE OF ANALYSIS

Validated

SDG: 200926-98
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PO20-753

Report Number: 574116
Superseded Report: 571960

Phenols by HPLC (S)

Component	Method Code	QC 2326	QC 2381
2,3,5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	102.6 65.50 : 89.50	114.29 83.23 : 109.71
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	85.96 84.00 : 124.00	103.51 76.34 : 104.11
Catechol by HPLC (S)	TM062 (S)	72.38 19.39 : 135.70	49.52 22.43 : 157.02
Cresols by HPLC (S)	TM062 (S)	94.15 81.00 : 112.20	103.13 85.78 : 116.44
Naphthol by HPLC (S)	TM062 (S)	107.86 57.50 : 102.50	100.71 75.62 : 124.38
Phenol by HPLC (S)	TM062 (S)	99.34 88.67 : 124.67	110.6 79.53 : 120.47
Resorcinol HPLC (S)	TM062 (S)	94.97 69.99 : 127.22	112.58 71.43 : 129.59
Xylenols by HPLC (S)	TM062 (S)	95.42 95.22 : 115.89	102.92 89.90 : 107.23

Phenols by HPLC (W)

Component	Method Code	QC 2301
2,3,5 Trimethyl-Phenol by HPLC (W)	TM259	103.0 84.50 : 111.50
2-Isopropyl Phenol by HPLC (W)	TM259	100.0 84.55 : 110.90
Cresols by HPLC (W)	TM259	96.67 90.00 : 112.00
Naphthol by HPLC (W)	TM259	100.0 82.00 : 124.00
Phenol by HPLC (W)	TM259	98.0 86.80 : 112.60
Xylenols by HPLC (W)	TM259	101.33 94.74 : 115.71

Total Organic Carbon

Component	Method Code	QC 2356	QC 2358
Total Organic Carbon	TM132	107.03 87.02 : 113.45	100.0 87.02 : 113.45

VOC MS (S)

Component	Method Code	QC 2337	QC 2345
1,1,1,2-tetrachloroethane	TM116	102.4 84.84 : 116.25	96.8 84.84 : 116.25
1,1,1-Trichloroethane	TM116	91.0 73.73 : 118.05	89.4 73.73 : 118.05
1,1,2-Trichloroethane	TM116	109.2 77.12 : 116.04	92.2 77.12 : 116.04
1,1-Dichloroethane	TM116	98.0 74.46 : 129.15	95.4 74.46 : 129.15
1,2-Dichloroethane	TM116	121.2 92.38 : 131.65	106.0 92.38 : 131.65



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Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PO20-753

Report Number: 574116
Superseded Report: 571960

VOC MS (S)

		QC 2337	QC 2345
1,4-Dichlorobenzene	TM116	105.6 83.64 : 126.18	89.0 83.64 : 126.18
2-Chlorotoluene	TM116	97.4 75.26 : 110.11	87.8 76.03 : 113.25
4-Chlorotoluene	TM116	97.8 66.90 : 112.46	88.2 66.90 : 112.46
Benzene	TM116	100.8 88.60 : 113.80	93.8 88.60 : 113.80
Carbon Disulphide	TM116	92.2 74.91 : 122.14	91.2 74.91 : 122.14
Carbontetrachloride	TM116	102.8 80.31 : 124.50	96.2 80.31 : 124.50
Chlorobenzene	TM116	103.2 83.81 : 114.18	96.0 83.81 : 114.18
Chloroform	TM116	104.2 87.40 : 122.49	96.8 87.40 : 122.49
Chloromethane	TM116	88.0 65.89 : 136.93	98.6 65.89 : 136.93
Cis-1,2-Dichloroethene	TM116	102.2 80.67 : 126.72	95.6 80.67 : 126.72
Dibromomethane	TM116	111.0 73.23 : 118.35	88.2 73.23 : 118.35
Dichloromethane	TM116	114.8 81.11 : 133.25	105.2 81.11 : 133.25
Ethylbenzene	TM116	94.2 75.92 : 110.41	90.4 75.92 : 110.41
Hexachlorobutadiene	TM116	83.4 12.82 : 152.73	68.8 12.82 : 152.73
Isopropylbenzene	TM116	80.2 55.79 : 97.59	81.6 55.79 : 97.59
Naphthalene	TM116	118.8 80.86 : 128.81	113.4 80.86 : 128.81
o-Xylene	TM116	89.2 69.99 : 108.74	85.0 69.99 : 108.74
p/m-Xylene	TM116	92.5 68.32 : 108.91	89.1 68.32 : 108.91
Sec-Butylbenzene	TM116	79.8 38.50 : 101.50	70.6 38.50 : 101.50
Tetrachloroethene	TM116	103.6 76.95 : 121.02	98.2 76.95 : 121.02
Toluene	TM116	97.0 74.24 : 107.42	89.4 74.24 : 107.42
Trichloroethene	TM116	100.4 77.61 : 111.54	93.6 77.61 : 111.54
Trichlorofluoromethane	TM116	107.2 84.55 : 133.27	100.0 84.55 : 133.27
Vinyl Chloride	TM116	98.6 68.02 : 143.37	96.2 68.02 : 143.37

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.

The figure detailed is the percentage recovery result for the AQC.

The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.



CERTIFICATE OF ANALYSIS

Validated

SDG: 200926-98
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PQ20-753

Report Number: 574116
Superseded Report: 571960

Chromatogram

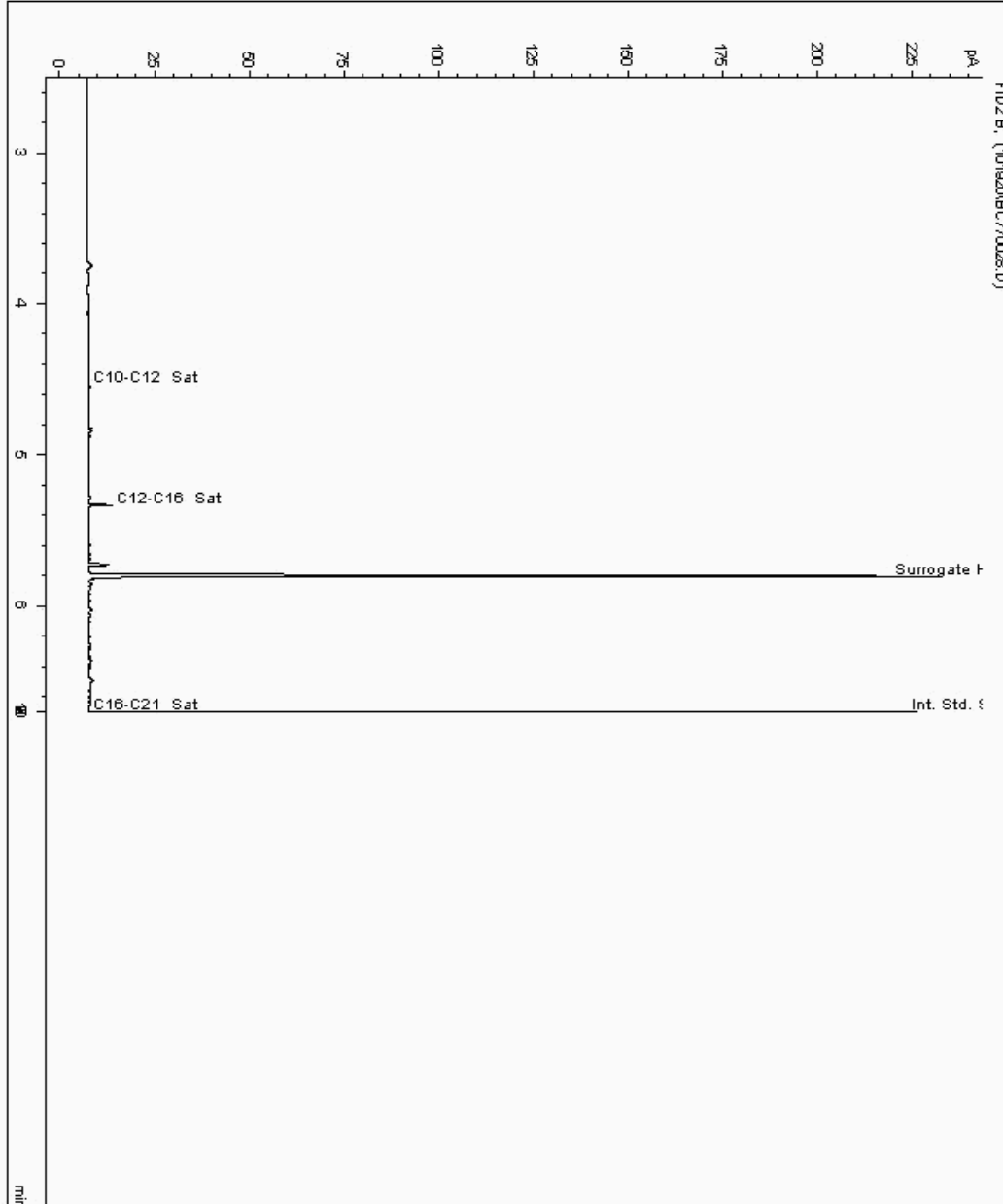
Analysis: EPH CWG (Aliphatic) Filtered GC (W)

Sample No : 23047985
Sample ID : STP70601

Depth : 0.50

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 21609517-
Date Acquired : 10/20/2020 1:56:35 AM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.026





CERTIFICATE OF ANALYSIS

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SDG: 200926-98
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PQ20-753

Report Number: 574116
Superseded Report: 571960

Chromatogram

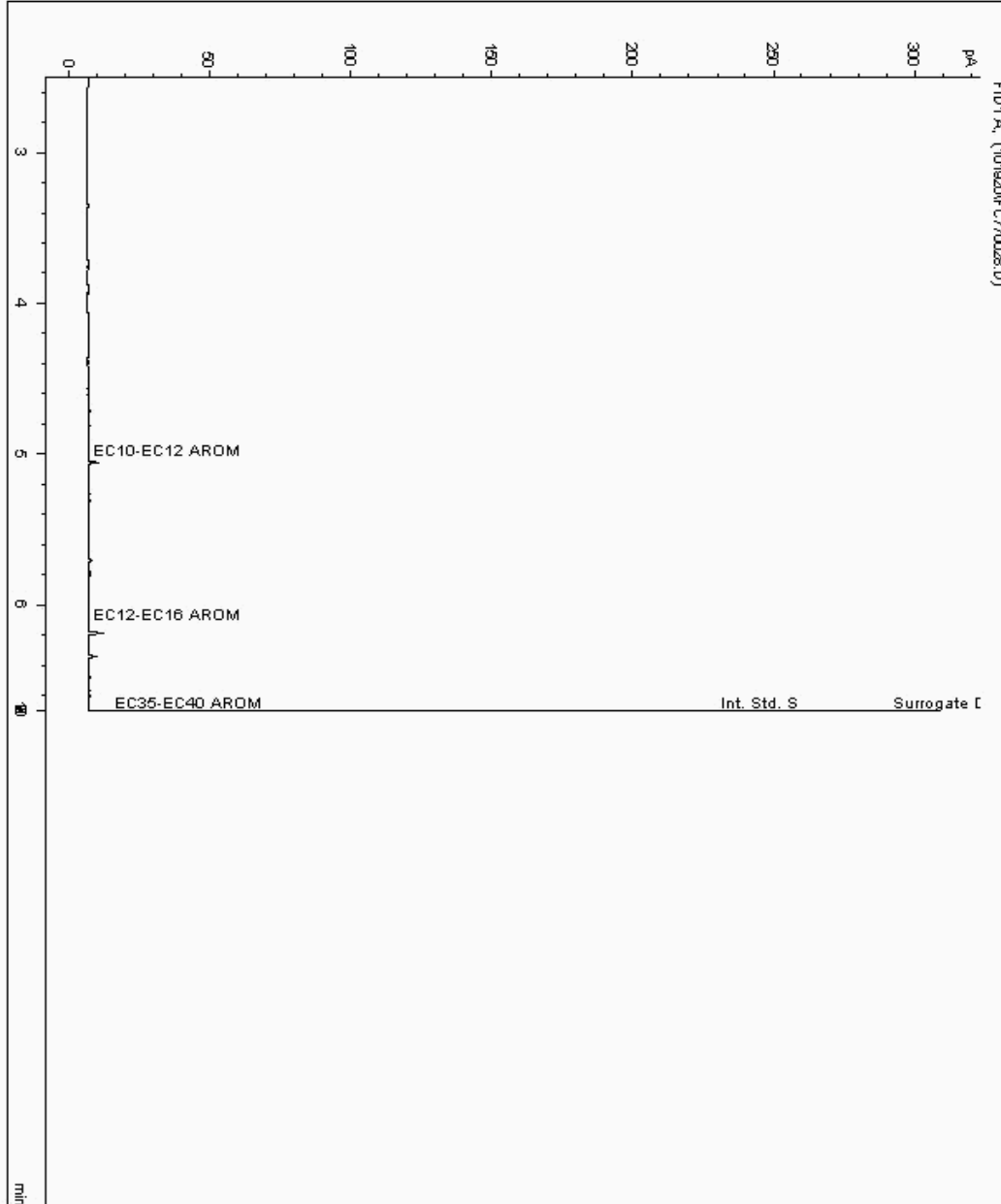
Analysis: EPH CWG (Aromatic) Filtered GC (W)

Sample No : 23047985
Sample ID : STP70601

Depth : 0.50

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 21609518-
Date Acquired : 10/20/2020 1:56:35 AM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.026





CERTIFICATE OF ANALYSIS

Validated

SDG: 200926-98
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PO20-753

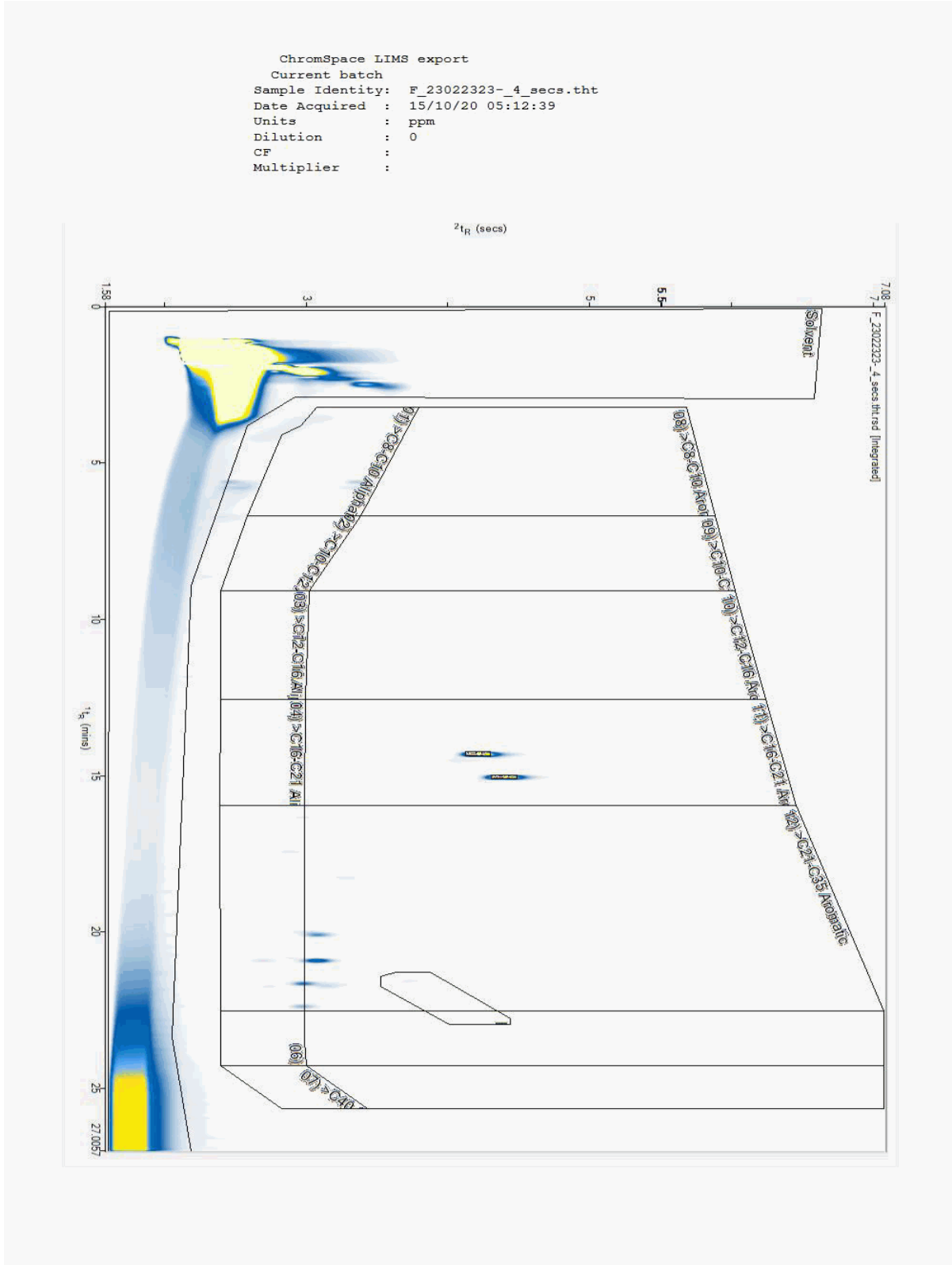
Report Number: 574116
Superseded Report: 571960

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23022323
Sample ID : STP70601

Depth : 0.50





CERTIFICATE OF ANALYSIS

Validated

SDG: 200926-98
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PQ20-753

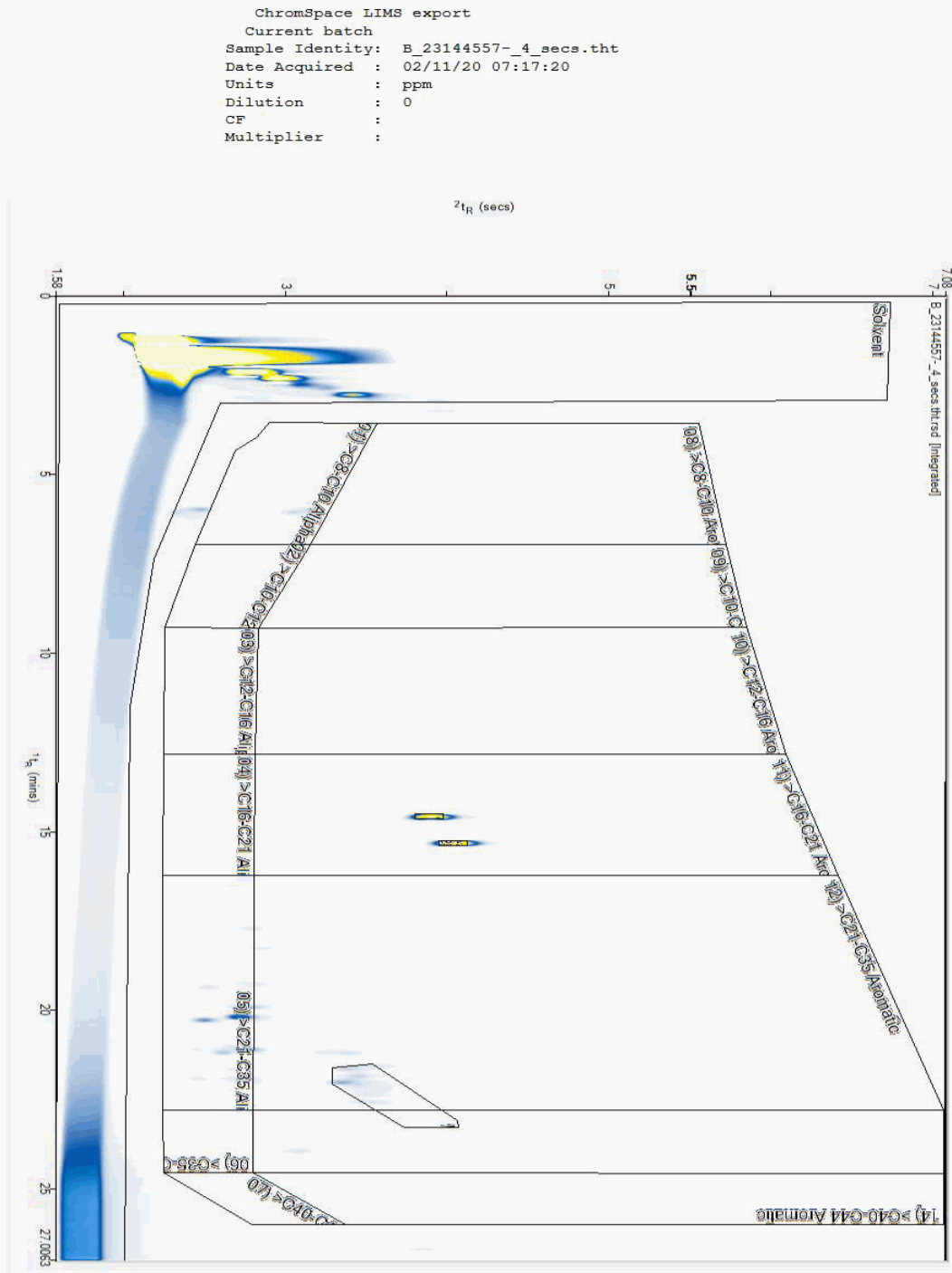
Report Number: 574116
Superseded Report: 571960

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23144557
Sample ID : DTP70701

Depth : 0.50





CERTIFICATE OF ANALYSIS

Validated

SDG: 200926-98
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PQ20-753

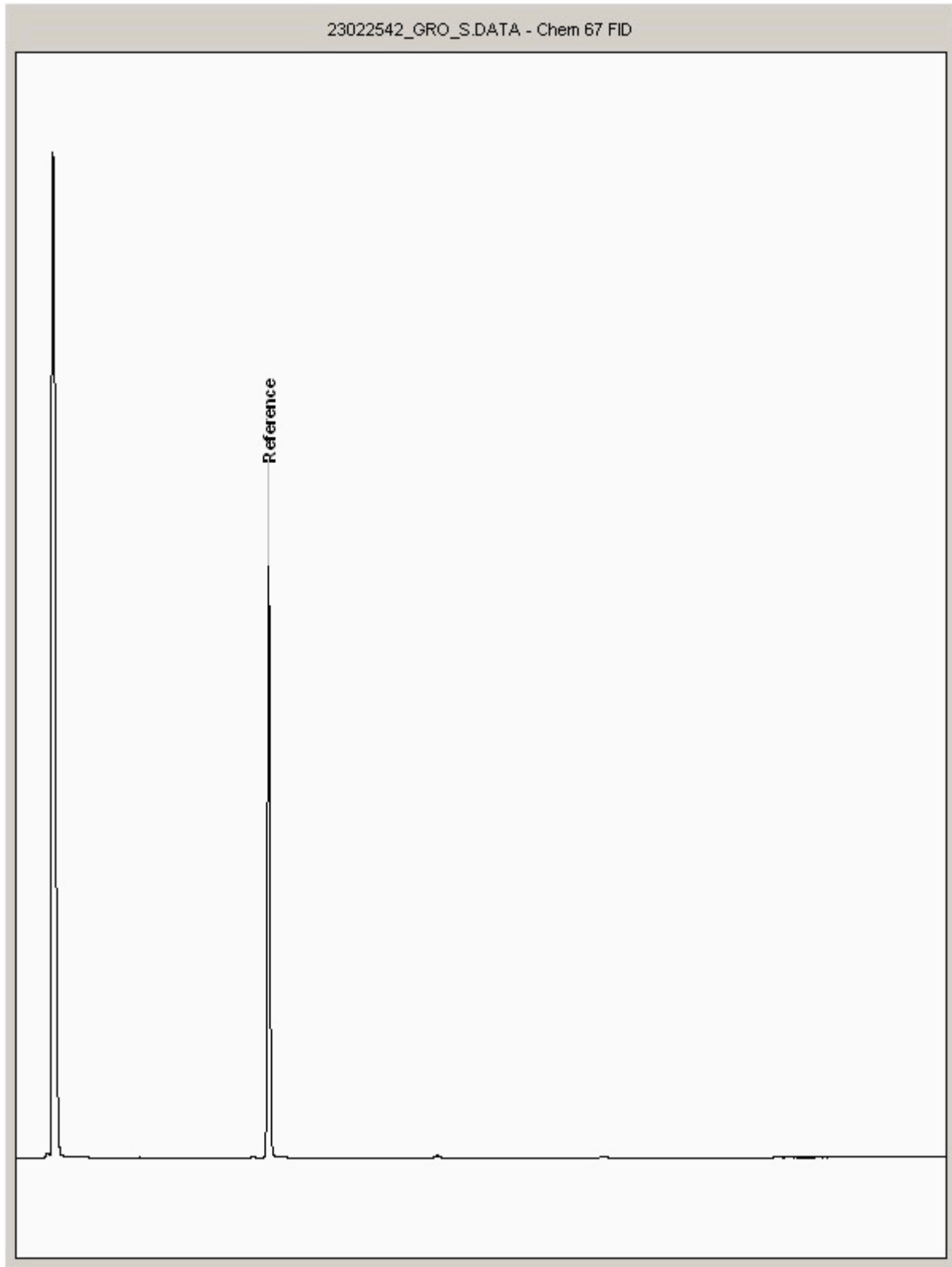
Report Number: 574116
Superseded Report: 571960

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23022542
Sample ID : STP70601

Depth : 0.50





CERTIFICATE OF ANALYSIS

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SDG: 200926-98
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PQ20-753

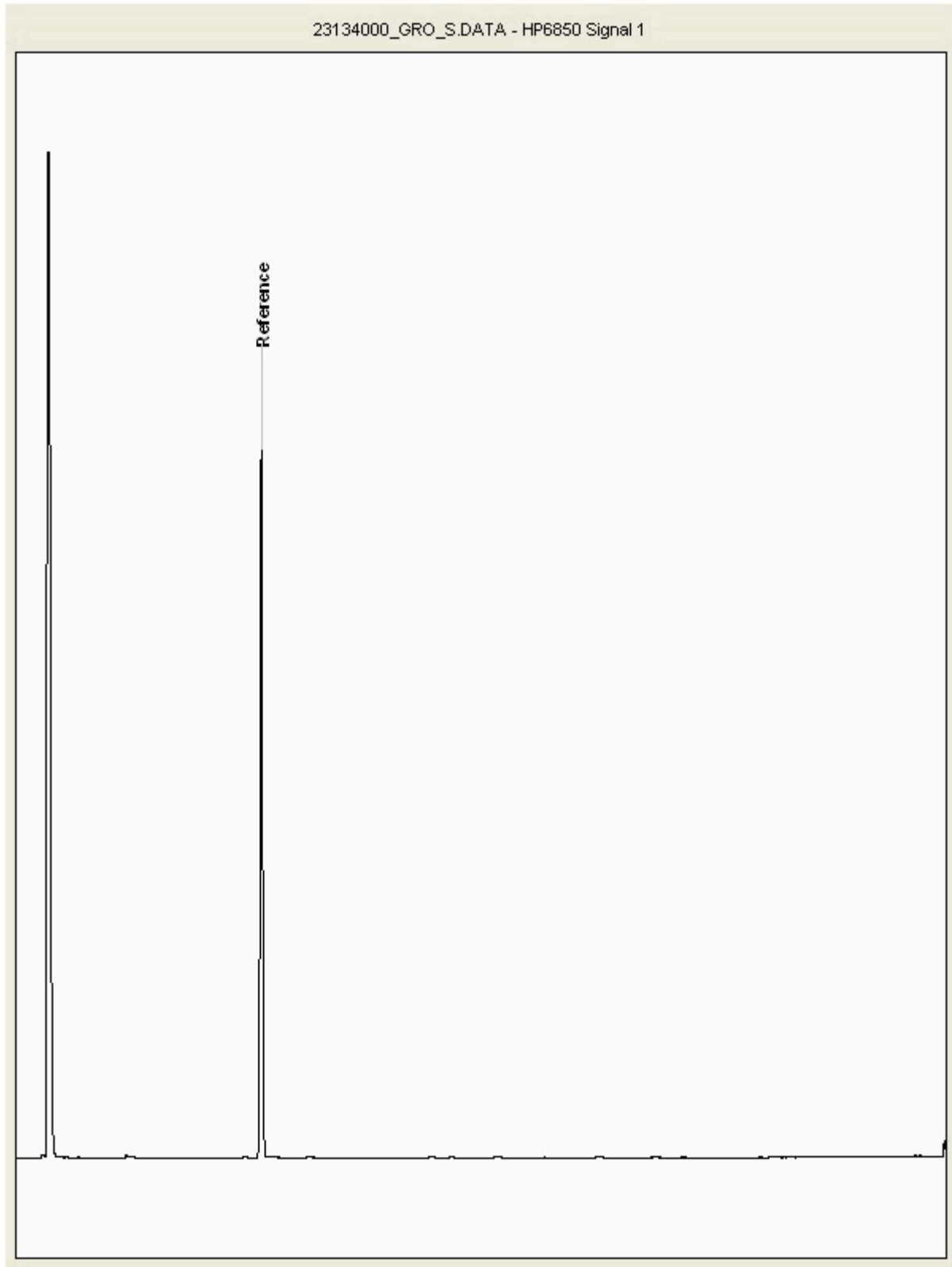
Report Number: 574116
Superseded Report: 571960

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23134000
Sample ID : DTP70701

Depth : 0.50





CERTIFICATE OF ANALYSIS

Validated

SDG: 200926-98
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PQ20-753

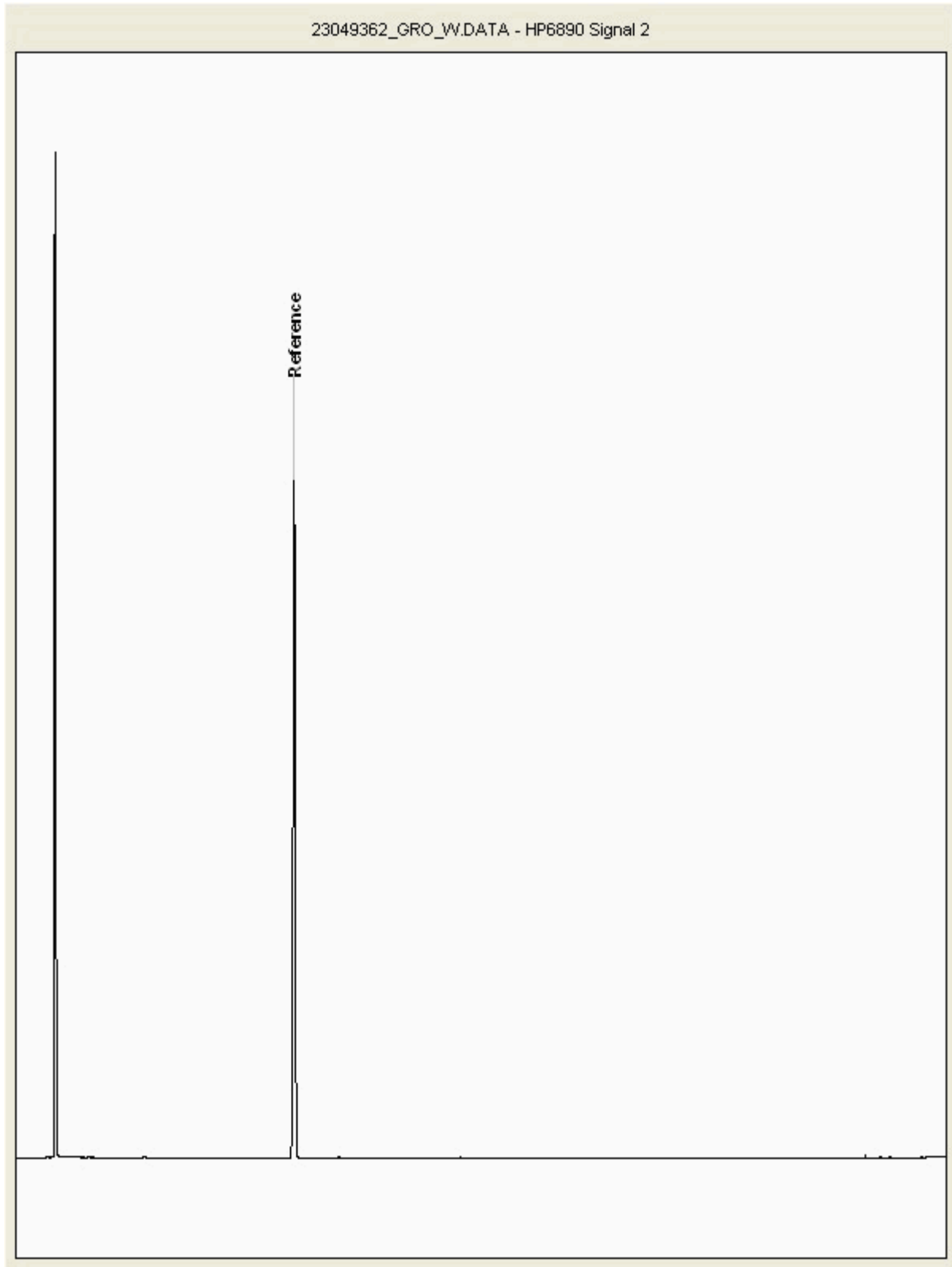
Report Number: 574116
Superseded Report: 571960

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 23049362
Sample ID : STP70601

Depth : 0.50





CERTIFICATE OF ANALYSIS

SDG: 200926-98	Client Reference: JFR1451	Report Number: 574116
Location: A303 Stonehenge	Order Number: PO20-753	Superseded Report: 571960

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

19. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung. Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017)*.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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email: hawardencustomerservices@alsglobal.com

Website: www.alsenvironmental.co.uk

RPS Consultants Ltd
260 Park Avenue
Aztec West
Almondsbury
Bristol
BS32 4SY

Attention: Gary Riches

CERTIFICATE OF ANALYSIS

Date of report Generation: 14 October 2020
Customer: RPS Consultants Ltd
Sample Delivery Group (SDG): 200926-99
Your Reference: JFR1451
Location: A303 Stonehenge
Report No: 571021

We received 9 samples on Saturday September 26, 2020 and 3 of these samples were scheduled for analysis which was completed on Wednesday October 14, 2020. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

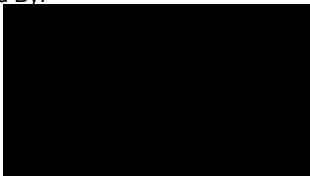
Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:



Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 200926-99
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PO20-722

Report Number: 571021
Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
22908602	R70105	ES	0.00 - 0.10	23/09/2020
22908603	R70105	ES	0.30 - 0.40	23/09/2020
22908605	R70105	ES	0.50 - 0.60	23/09/2020
22908606	R70105	ES	1.00 - 1.10	23/09/2020
22908608	R70106	ES	0.00 - 0.10	23/09/2020
22908609	R70106	ES	0.30	23/09/2020
22908610	R70106	ES	0.50	23/09/2020
22908611	R70106	ES	1.00	23/09/2020
22908607	WS72401	ES	0.30	24/09/2020

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 200926-99
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PO20-722

Report Number: 571021
Superseded Report:

Results Legend

- X Test
- N No Determination Possible

Sample Types -

- S - Soil/Solid
- UNS - Unspecified Solid
- GW - Ground Water
- SW - Surface Water
- LE - Land Leachate
- PL - Prepared Leachate
- PR - Process Water
- SA - Saline Water
- TE - Trade Effluent
- TS - Treated Sewage
- US - Untreated Sewage
- RE - Recreational Water
- DW - Drinking Water Non-regulatory
- UNL - Unspecified Liquid
- SL - Sludge
- G - Gas
- OTH - Other

	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type	22908602			22908609			22908611		
							1kg TUB with Handle (ALE280)	250g Amber Jar (ALE210)	60g VOC (ALE215)	250g Amber Jar (ALE210)	60g VOC (ALE215)	250g Amber Jar (ALE210)	60g VOC (ALE215)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Ammoniacal Nitrogen	All		NDPs: 0 Tests: 1				X								
Ammonium Soil by Titration	All		NDPs: 0 Tests: 3					X	X	X					
Anions by Kone (soil)	All		NDPs: 0 Tests: 3				X	X	X						
Anions by Kone (w)	All		NDPs: 0 Tests: 1				X								
CEN Readings	All		NDPs: 0 Tests: 1				X								
Chromium III	All		NDPs: 0 Tests: 4				X	X	X	X					
Cyanide Comp/Free/Total/Thiocyanate	All		NDPs: 0 Tests: 4				X	X	X	X					
Dissolved Metals by ICP-MS	All		NDPs: 0 Tests: 1				X								
Dissolved Organic/Inorganic Carbon	All		NDPs: 0 Tests: 1				X								
EPH CWG (Aliphatic) Filtered GC (W)	All		NDPs: 0 Tests: 1				X								
EPH CWG (Aromatic) Filtered GC (W)	All		NDPs: 0 Tests: 1				X								
EPH CWG GC (S)	All		NDPs: 0 Tests: 3					X	X	X					
GRO by GC-FID (S)	All		NDPs: 0 Tests: 3						X	X	X				
GRO by GC-FID (W)	All		NDPs: 0 Tests: 1				X								
Hexavalent Chromium (s)	All		NDPs: 0 Tests: 3					X	X	X					



CERTIFICATE OF ANALYSIS

Validated

SDG:	200926-99	Client Reference:	JFR1451	Report Number:	571021
Location:	A303 Stonehenge	Order Number:	PO20-722	Superseded Report:	

Results Legend <div style="display: flex; flex-direction: column; gap: 5px;"> <div style="display: flex; align-items: center;">X Test</div> <div style="display: flex; align-items: center;">N No Determination Possible</div> </div> Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type	
		22908602	R70105	ES	0.00 - 0.10	1kg TUB with Handle (ALE280)	S
		22908609	R70106	ES	0.30	250g Amber Jar (ALE210)	S
		22908611	R70106	ES	1.00	60g VOC (ALE215)	S
						250g Amber Jar (ALE210)	S
						60g VOC (ALE215)	S
						250g Amber Jar (ALE210)	S
Hexavalent Chromium (w)	All					NDPs: 0 Tests: 1 <div style="text-align: center;">X</div>	
Mercury Dissolved	All					NDPs: 0 Tests: 1 <div style="text-align: center;">X</div>	
Metals in solid samples by OES	All					NDPs: 0 Tests: 3 <div style="text-align: center;">X X X</div>	
OC OP Pesticides and Triazine Herb	All					NDPs: 0 Tests: 1 <div style="text-align: center;">X</div>	
PAH by GCMS	All					NDPs: 0 Tests: 3 <div style="text-align: center;">X X X</div>	
PAH in waters by GC-MS (diss.filt)	All					NDPs: 0 Tests: 1 <div style="text-align: center;">X</div>	
pH	All					NDPs: 0 Tests: 3 <div style="text-align: center;">X X X</div>	
pH Value of Filtered Water	All					NDPs: 0 Tests: 1 <div style="text-align: center;">X</div>	
Phenols by HPLC (S)	All					NDPs: 0 Tests: 3 <div style="text-align: center;">X X X</div>	
Phenols by HPLC (W)	All					NDPs: 0 Tests: 1 <div style="text-align: center;">X</div>	
Sample description	All					NDPs: 0 Tests: 3 <div style="text-align: center;">X X X</div>	
Semi Volatile Organic Compounds	All					NDPs: 0 Tests: 1 <div style="text-align: center;">X</div>	
Total Organic Carbon	All					NDPs: 0 Tests: 3 <div style="text-align: center;">X X X</div>	
TPH CWG Filtered (W)	All					NDPs: 0 Tests: 1 <div style="text-align: center;">X</div>	
TPH CWG GC (S)	All					NDPs: 0 Tests: 3 <div style="text-align: center;">X X X</div>	



CERTIFICATE OF ANALYSIS

Validated

SDG:	200926-99	Client Reference:	JFR1451	Report Number:	571021
Location:	A303 Stonehenge	Order Number:	PO20-722	Superseded Report:	

Results Legend

- X Test
- N No Determination Possible

Sample Types -

- S - Soil/Solid
- UNS - Unspecified Solid
- GW - Ground Water
- SW - Surface Water
- LE - Land Leachate
- PL - Prepared Leachate
- PR - Process Water
- SA - Saline Water
- TE - Trade Effluent
- TS - Treated Sewage
- US - Untreated Sewage
- RE - Recreational Water
- DW - Drinking Water Non-regulatory
- UNL - Unspecified Liquid
- SL - Sludge
- G - Gas
- OTH - Other

	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type
	22908602	R70105	ES	0.00 - 0.10	1kg TUB with Handle (ALE280)	S
	22908609	R70106	ES	0.30	250g Amber Jar (ALE210)	S
	22908611	R70106	ES	1.00	60g VOC (ALE215)	S
					250g Amber Jar (ALE210)	S
					60g VOC (ALE215)	S
					250g Amber Jar (ALE210)	S
					60g VOC (ALE215)	S
VOC MS (S)	All				NDPs: 0 Tests: 3	
						X
						X
						X



CERTIFICATE OF ANALYSIS

Validated

SDG: 200926-99	Client Reference: JFR1451	Report Number: 571021
Location: A303 Stonehenge	Order Number: PO20-722	Superseded Report:

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm
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Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
22908602	R70105	0.00 - 0.10	Dark Brown	Sand	Stones	Vegetation
22908609	R70106	0.30	Cream	Sand	Stones	Vegetation
22908611	R70106	1.00	White	Sand	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.



CERTIFICATE OF ANALYSIS

Validated

SDG:	200926-99	Client Reference:	JFR1451	Report Number:	571021
Location:	A303 Stonehenge	Order Number:	PO20-722	Superseded Report:	

#	Customer Sample Ref.	R70105	R70106	R70106																																																																								
<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">Results Legend</td> <td style="width: 15%;">Depth (m)</td> <td style="width: 15%;">0.00 - 0.10</td> <td style="width: 15%;">0.30</td> <td style="width: 15%;">1.00</td> <td style="width: 15%;"></td> <td style="width: 15%;"></td> </tr> <tr> <td>ISO17025 accredited.</td> <td>Sample Type</td> <td>Soil/Solid (S)</td> <td>Soil/Solid (S)</td> <td>Soil/Solid (S)</td> <td></td> <td></td> </tr> <tr> <td>mCERTS accredited.</td> <td>Date Sampled</td> <td>23/09/2020</td> <td>23/09/2020</td> <td>23/09/2020</td> <td></td> <td></td> </tr> <tr> <td>Aqueous / settled sample.</td> <td>Sampled Time</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Dissolved / filtered sample.</td> <td>Date Received</td> <td>26/09/2020</td> <td>26/09/2020</td> <td>26/09/2020</td> <td></td> <td></td> </tr> <tr> <td>Total / unfiltered sample.</td> <td>SDG Ref</td> <td>200926-99</td> <td>200926-99</td> <td>200926-99</td> <td></td> <td></td> </tr> <tr> <td>Subcontracted - refer to subcontractor report for accreditation status.</td> <td>Lab Sample No.(s)</td> <td>22908602</td> <td>22908609</td> <td>22908611</td> <td></td> <td></td> </tr> <tr> <td>% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery</td> <td>AGS Reference</td> <td>ES</td> <td>ES</td> <td>ES</td> <td></td> <td></td> </tr> <tr> <td>Trigger breach confirmed</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>1-4* Sample deviation (see appendix)</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>							Results Legend	Depth (m)	0.00 - 0.10	0.30	1.00			ISO17025 accredited.	Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			mCERTS accredited.	Date Sampled	23/09/2020	23/09/2020	23/09/2020			Aqueous / settled sample.	Sampled Time						Dissolved / filtered sample.	Date Received	26/09/2020	26/09/2020	26/09/2020			Total / unfiltered sample.	SDG Ref	200926-99	200926-99	200926-99			Subcontracted - refer to subcontractor report for accreditation status.	Lab Sample No.(s)	22908602	22908609	22908611			% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery	AGS Reference	ES	ES	ES			Trigger breach confirmed							1-4* Sample deviation (see appendix)						
Results Legend	Depth (m)	0.00 - 0.10	0.30	1.00																																																																								
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1-4* Sample deviation (see appendix)																																																																												
Component	LOD/Units	Method																																																																										
Moisture Content Ratio (% of as received sample)	%	PM024	19	16	16																																																																							
Exchangeable Ammonia as N	<12 mg/kg	TM024	<12 M	<12 M	<12 M																																																																							
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 @ M	<0.01 @ M	<0.01 @ M																																																																							
Organic Carbon, Total	<0.2 %	TM132	2.29 M	<0.2 M	<0.2 M																																																																							
pH	1 pH Units	TM133	8.05 M	8.61 M	9.2 M																																																																							
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 #	<0.6 #	<0.6 #																																																																							
Cyanide, Total	<1 mg/kg	TM153	<1 @ M	<1 @ M	<1 @ M																																																																							
Cyanide, Free	<1 mg/kg	TM153	<1 @ M	<1 @ M	<1 @ M																																																																							
Chromium, Trivalent	<0.9 mg/kg	TM181	9.27	1.95	1.09																																																																							
Antimony	<0.6 mg/kg	TM181	<0.6 #	<0.6 #	<0.6 #																																																																							
Arsenic	<0.6 mg/kg	TM181	4.73 M	0.605 M	<0.6 M																																																																							
Beryllium	<0.01 mg/kg	TM181	0.308 M	0.0736 M	0.0539 M																																																																							
Boron	<0.7 mg/kg	TM181	6.56 #	1.81 #	1.19 #																																																																							
Cadmium	<0.02 mg/kg	TM181	0.337 M	0.124 M	0.0972 M																																																																							
Chromium	<0.9 mg/kg	TM181	9.27 M	1.95 M	1.09 M																																																																							
Copper	<1.4 mg/kg	TM181	6 M	<1.4 M	<1.4 M																																																																							
Iron	<1000 mg/kg	TM181	6550 #	1140 #	<1000 #																																																																							
Lead	<0.7 mg/kg	TM181	8.94 M	<0.7 M	<0.7 M																																																																							
Manganese	<0.13 mg/kg	TM181	497 M	167 M	144 M																																																																							
Mercury	<0.14 mg/kg	TM181	<0.14 M	<0.14 M	<0.14 M																																																																							
Molybdenum	<0.1 mg/kg	TM181	<0.1 #	<0.1 #	<0.1 #																																																																							
Nickel	<0.2 mg/kg	TM181	6.71 M	1.57 M	1.2 M																																																																							
Phosphorus	<1 mg/kg	TM181	1270	407	336																																																																							
Selenium	<1 mg/kg	TM181	<1 #	<1 #	<1 #																																																																							
Zinc	<1.9 mg/kg	TM181	45.3 M	9.85 M	9.51 M																																																																							
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243	0.0091 M	<0.004 M	<0.004 M																																																																							



CERTIFICATE OF ANALYSIS

Validated

SDG: 200926-99
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PO20-722

Report Number: 571021
Superseded Report:

OC OP Pesticides and Triazine Herb

Results Legend		Customer Sample Ref.	R70105			
#	ISO17025 accredited.	Depth (m)	0.00 - 0.10			
M	mCERTS accredited.	Sample Type	Soil/Solid (S)			
aq	Aqueous / settled sample.	Date Sampled	23/09/2020			
diss.filt	Dissolved / filtered sample.	Sampled Time	-			
tot.unfilt	Total / unfiltered sample.	Date Received	26/09/2020			
*	Subcontracted - refer to subcontractor report for accreditation status.	SDG Ref	200926-99			
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery	Lab Sample No.(s)	22908602			
(F)	Trigger breach confirmed	AGS Reference	ES			
1-4*\$@	Sample deviation (see appendix)					
Component	LOD/Units	Method				
Dichlorvos	<50 µg/kg	TM073	<50			
Mevinphos	<50 µg/kg	TM073	<50			
Phorate	<50 µg/kg	TM073	<50			
alpha-Hexachlorocyclohexane (HCH)	<50 µg/kg	TM073	<50			
Diazinon	<50 µg/kg	TM073	<50			
gamma-Hexachlorocyclohexane (HCH / Lindane)	<50 µg/kg	TM073	<50			
Atrazine	<50 µg/kg	TM073	<50			
Simazine	<50 µg/kg	TM073	<50			
Disulfoton	<50 µg/kg	TM073	<50			
Heptachlor	<50 µg/kg	TM073	<50			
Aldrin	<50 µg/kg	TM073	<50			
beta-Hexachlorocyclohexane (HCH)	<50 µg/kg	TM073	<50			
Methyl parathion	<50 µg/kg	TM073	<50			
Malathion	<50 µg/kg	TM073	<50			
Fenitrothion	<50 µg/kg	TM073	<50			
Heptachlor epoxide	<50 µg/kg	TM073	<50			
Parathion	<50 µg/kg	TM073	<50			
Endosulphan I	<50 µg/kg	TM073	<50			
p,p-DDE	<50 µg/kg	TM073	<50			
Dieldrin	<50 µg/kg	TM073	<50			
o,p'-DDD (TDE)	<50 µg/kg	TM073	<50			
Endrin	<50 µg/kg	TM073	<50			
p,p-TDE (DDD)	<50 µg/kg	TM073	<50			
Ethion	<50 µg/kg	TM073	<50			
Endosulphan II	<50 µg/kg	TM073	<50			
p,p-DDT	<50 µg/kg	TM073	<50			
p,p-Methoxychlor	<50 µg/kg	TM073	<50			
Endosulphan sulphate	<50 µg/kg	TM073	<50			
Azinphos-methyl	<50 µg/kg	TM073	<50			



CERTIFICATE OF ANALYSIS

Validated

SDG: 200926-99
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PO20-722

Report Number: 571021
Superseded Report:

PAH by GCMS

Results Legend			Customer Sample Ref.	R70105	R70106	R70106			
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.10	0.30	1.00			
M	mCERTS accredited.			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
aq	Aqueous / settled sample.			23/09/2020	23/09/2020	23/09/2020			
diss.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted - refer to subcontractor report for accreditation status.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery			26/09/2020	26/09/2020	26/09/2020			
(F)	Trigger breach confirmed			200926-99	200926-99	200926-99			
1-4*\$@	Sample deviation (see appendix)			22908602	22908609	22908611			
				ES	ES	ES			
Component	LOD/Units	Method							
Naphthalene-d8 % recovery**	%	TM218	81.7	83.1	80.7				
Acenaphthene-d10 % recovery**	%	TM218	81.6	82.9	81.1				
Phenanthrene-d10 % recovery**	%	TM218	82.1	85.6	83.1				
Chrysene-d12 % recovery**	%	TM218	85.8	90.5	85.2				
Perylene-d12 % recovery**	%	TM218	80.9	86	81.4				
Naphthalene	<9 µg/kg	TM218	<9 M	<9 M	<9 M				
Acenaphthylene	<12 µg/kg	TM218	<12 M	<12 M	<12 M				
Acenaphthene	<8 µg/kg	TM218	<8 M	<8 M	<8 M				
Fluorene	<10 µg/kg	TM218	<10 M	<10 M	<10 M				
Phenanthrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M				
Anthracene	<16 µg/kg	TM218	<16 M	<16 M	<16 M				
Fluoranthene	<17 µg/kg	TM218	38.7 M	<17 M	<17 M				
Pyrene	<15 µg/kg	TM218	33.3 M	<15 M	<15 M				
Benz(a)anthracene	<14 µg/kg	TM218	18.8 M	<14 M	<14 M				
Chrysene	<10 µg/kg	TM218	18.3 M	<10 M	<10 M				
Benzo(b)fluoranthene	<15 µg/kg	TM218	33.7 M	<15 M	<15 M				
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 M	<14 M	<14 M				
Benzo(a)pyrene	<15 µg/kg	TM218	21.5 M	<15 M	<15 M				
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 M	<18 M	<18 M				
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 M	<23 M	<23 M				
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 M	<24 M	<24 M				
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	164	<118	<118				



CERTIFICATE OF ANALYSIS

Validated

SDG: 200926-99
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PO20-722

Report Number: 571021
Superseded Report:

Semi Volatile Organic Compounds

Results Legend		Customer Sample Ref.	R70105			
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.10 Soil/Solid (S) 23/09/2020 26/09/2020 200926-99 22908602 ES			
M	mCERTS accredited.					
aq	Aqueous / settled sample.					
diss.filt	Dissolved / filtered sample.					
tot.unfilt	Total / unfiltered sample.					
*	Subcontracted - refer to subcontractor report for accreditation status.					
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery					
(F)	Trigger breach confirmed					
1-4*\$@	Sample deviation (see appendix)					
Component	LOD/Units			Method		
Phenol	<100 µg/kg	TM157	<100			
Pentachlorophenol	<100 µg/kg	TM157	<100			
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100			
Nitrobenzene	<100 µg/kg	TM157	<100			
Isophorone	<100 µg/kg	TM157	<100			
Hexachloroethane	<100 µg/kg	TM157	<100			
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100			
Hexachlorobutadiene	<100 µg/kg	TM157	<100			
Hexachlorobenzene	<100 µg/kg	TM157	<100			
n-Dioctyl phthalate	<100 µg/kg	TM157	<100			
Dimethyl phthalate	<100 µg/kg	TM157	<100			
Diethyl phthalate	<100 µg/kg	TM157	<100			
n-Dibutyl phthalate	<100 µg/kg	TM157	<100			
Dibenzofuran	<100 µg/kg	TM157	<100			
Carbazole	<100 µg/kg	TM157	<100			
Butylbenzyl phthalate	<100 µg/kg	TM157	<100			
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100			
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100			
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100			
Azobenzene	<100 µg/kg	TM157	<100			
4-Nitrophenol	<100 µg/kg	TM157	<500			
4-Nitroaniline	<100 µg/kg	TM157	<100			
4-Methylphenol	<100 µg/kg	TM157	<100			
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100			
4-Chloroaniline	<100 µg/kg	TM157	<100			
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100			
4-Bromophenylphenylether	<100 µg/kg	TM157	<100			
3-Nitroaniline	<100 µg/kg	TM157	<100			
2-Nitrophenol	<100 µg/kg	TM157	<100			
2-Nitroaniline	<100 µg/kg	TM157	<100			
2-Methylphenol	<100 µg/kg	TM157	<100			
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100			



CERTIFICATE OF ANALYSIS

Validated

SDG:	200926-99	Client Reference:	JFR1451	Report Number:	571021
Location:	A303 Stonehenge	Order Number:	PO20-722	Superseded Report:	

Semi Volatile Organic Compounds

Results Legend		Customer Sample Ref.	R70105				
#	ISO17025 accredited.	Depth (m)	0.00 - 0.10				
M	mCERTS accredited.	Sample Type	Soil/Solid (S)				
sg	Aqueous / filtered sample.	Date Sampled	23/09/2020				
dis.fit	Dissolved / filtered sample.	Sampled Time	.				
tot.unfit	Total / unfiltered sample.	Date Received	26/09/2020				
*	Subcontracted - refer to subcontractor report for accreditation status.	SDG Ref	200926-99				
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery	Lab Sample No.(s)	22908602				
(F)	Trigger breach confirmed	AGS Reference	ES				
1-4&@	Sample deviation (see appendix)						
Component	LOD/Units	Method					
2-Chlorophenol	<100 µg/kg	TM157	<100				
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100				
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100				
2,4-Dimethylphenol	<100 µg/kg	TM157	<100				
2,4-Dichlorophenol	<100 µg/kg	TM157	<100				
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100				
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100				
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100				
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100				
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100				
2-Chloronaphthalene	<100 µg/kg	TM157	<100				
2-Methylnaphthalene	<100 µg/kg	TM157	<100				
Acenaphthylene	<100 µg/kg	TM157	<100				
Acenaphthene	<100 µg/kg	TM157	<100				
Anthracene	<100 µg/kg	TM157	<100				
Benzo(a)anthracene	<100 µg/kg	TM157	<100				
Benzo(b)fluoranthene	<100 µg/kg	TM157	<100				
Benzo(k)fluoranthene	<100 µg/kg	TM157	<100				
Benzo(a)pyrene	<100 µg/kg	TM157	<100				
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<100				
Chrysene	<100 µg/kg	TM157	<100				
Fluoranthene	<100 µg/kg	TM157	<100				
Fluorene	<100 µg/kg	TM157	<100				
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<100				
Phenanthrene	<100 µg/kg	TM157	<100				
Pyrene	<100 µg/kg	TM157	<100				
Naphthalene	<100 µg/kg	TM157	<100				
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100				
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100				
TIC report		TM157	Not Detected				
Total SVOC TIC	<100 µg/kg	TM157	<1000				



CERTIFICATE OF ANALYSIS

Validated

SDG: 200926-99
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PO20-722

Report Number: 571021
Superseded Report:

TPH CWG (S)

Results Legend			Customer Sample Ref.	R70105	R70106	R70106			
#	ISO17025 accredited.		Depth (m)	0.00 - 0.10	0.30	1.00			
M	mCERTS accredited.		Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
aq	Aqueous / settled sample.		Date Sampled	23/09/2020	23/09/2020	23/09/2020			
diss.filt	Dissolved / filtered sample.		Sampled Time						
tot.unfilt	Total / unfiltered sample.		Date Received	26/09/2020	26/09/2020	26/09/2020			
*	Subcontracted - refer to subcontractor report for accreditation status.		SDG Ref	200926-99	200926-99	200926-99			
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		Lab Sample No.(s)	22908602	22908609	22908611			
(F)	Trigger breach confirmed		AGS Reference	ES	ES	ES			
1-4*\$@	Sample deviation (see appendix)								
Component	LOD/Units	Method							
GRO Surrogate % recovery**	%	TM089	86.3	101	98.4				
Aliphatics >C5-C6	<10 µg/kg	TM089	<10	<10	<10				
Aliphatics >C6-C8	<10 µg/kg	TM089	<10	<10	<10				
Aliphatics >C8-C10	<10 µg/kg	TM089	<10	<10	<10				
Aliphatics >C10-C12	<1000 µg/kg	TM414	<1000	<1000	<1000				
Aliphatics >C12-C16	<1000 µg/kg	TM414	<1000	<1000	<1000				
Aliphatics >C16-C21	<1000 µg/kg	TM414	<1000	<1000	<1000				
Aliphatics >C21-C35	<1000 µg/kg	TM414	15400	2110	<1000				
Aliphatics >C35-C44	<1000 µg/kg	TM414	1300	<1000	<1000				
Total Aliphatics >C10-C44	<5000 µg/kg	TM414	17500	<5000	<5000				
Total Aliphatics & Aromatics >C10-C44	<10000 µg/kg	TM414	26200	<10000	<10000				
Aromatics >EC5-EC7	<10 µg/kg	TM089	<10	<10	<10				
Aromatics >EC7-EC8	<10 µg/kg	TM089	<10	<10	<10				
Aromatics >EC8-EC10	<10 µg/kg	TM089	<10	<10	<10				
Aromatics > EC10-EC12	<1000 µg/kg	TM414	<1000	<1000	<1000				
Aromatics > EC12-EC16	<1000 µg/kg	TM414	<1000	<1000	<1000				
Aromatics > EC16-EC21	<1000 µg/kg	TM414	<1000	<1000	<1000				
Aromatics > EC21-EC35	<1000 µg/kg	TM414	7160	1230	<1000				
Aromatics >EC35-EC44	<1000 µg/kg	TM414	<1000	<1000	1090				
Aromatics > EC40-EC44	<1000 µg/kg	TM414	<1000	<1000	<1000				
Total Aromatics > EC10-EC44	<5000 µg/kg	TM414	8710	<5000	<5000				
Total Aliphatics & Aromatics >C5-C44	<10000 µg/kg	TM414	26200	<10000	<10000				
Total Aliphatics >C5-C10	<50 µg/kg	TM089	<50	<50	<50				
Total Aromatics >EC5-EC10	<50 µg/kg	TM089	<50	<50	<50				
GRO >C5-C10	<20 µg/kg	TM089	<20	<20	<20				



CERTIFICATE OF ANALYSIS

Validated

SDG: 200926-99	Client Reference: JFR1451	Report Number: 571021
Location: A303 Stonehenge	Order Number: PO20-722	Superseded Report:

VOC MS (S)

Results Legend			Customer Sample Ref.	R70105	R70106	R70106			
# ISO17025 accredited.									
M mCERTS accredited.									
aq Aqueous / settled sample.									
diss.fit Dissolved / filtered sample.									
tot.unfit Total / unfiltered sample.									
* Subcontracted - refer to subcontractor report for accreditation status.									
** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery									
(F) Trigger breach confirmed									
1-4* Sample deviation (see appendix)									
			Depth (m)	0.00 - 0.10	0.30	1.00			
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
			Date Sampled	23/09/2020	23/09/2020	23/09/2020			
			Sampled Time						
			Date Received	26/09/2020	26/09/2020	26/09/2020			
			SDG Ref	200926-99	200926-99	200926-99			
			Lab Sample No.(s)	22908602	22908609	22908611			
			AGS Reference	ES	ES	ES			
Component	LOD/Units	Method							
Dibromofluoromethane**	%	TM116	119	113	113				
			@	@	@				
Toluene-d8**	%	TM116	90.2	98.2	100				
			@	@	@				
4-Bromofluorobenzene**	%	TM116	72.5	91.9	95.4				
			@	@	@				
Dichlorodifluoromethane	<6 µg/kg	TM116	<6						
			@ M						
Chloromethane	<7 µg/kg	TM116	<7						
			@ #						
Vinyl Chloride	<6 µg/kg	TM116	<6						
			@ M						
Bromomethane	<10 µg/kg	TM116	<10						
			@ M						
Chloroethane	<10 µg/kg	TM116	<10						
			@ M						
Trichlorofluoromethane	<6 µg/kg	TM116	<6						
			@ M						
1,1-Dichloroethene	<10 µg/kg	TM116	<10						
			@ #						
Carbon Disulphide	<7 µg/kg	TM116	<7						
			@ M						
Dichloromethane	<10 µg/kg	TM116	12.7						
			@ #						
Methyl Tertiary Butyl Ether	<10 µg/kg	TM116	<10	<10	<10				
			@ M	@ M	@ M				
trans-1,2-Dichloroethene	<10 µg/kg	TM116	<10						
			@ M						
1,1-Dichloroethane	<8 µg/kg	TM116	<8						
			@ M						
cis-1,2-Dichloroethene	<6 µg/kg	TM116	<6						
			@ M						
2,2-Dichloropropane	<10 µg/kg	TM116	<10						
			@						
Bromochloromethane	<10 µg/kg	TM116	<10						
			@ M						
Chloroform	<8 µg/kg	TM116	<8						
			@ M						
1,1,1-Trichloroethane	<7 µg/kg	TM116	<7						
			@ M						
1,1-Dichloropropene	<10 µg/kg	TM116	<10						
			@ M						
Carbontetrachloride	<10 µg/kg	TM116	<10						
			@ M						
1,2-Dichloroethane	<5 µg/kg	TM116	<5						
			@ M						
Benzene	<9 µg/kg	TM116	<9	<9	<9				
			@ M	@ M	@ M				
Trichloroethene	<9 µg/kg	TM116	<9						
			@ #						
1,2-Dichloropropane	<10 µg/kg	TM116	<10						
			@ M						
Dibromomethane	<9 µg/kg	TM116	<9						
			@ M						
Bromodichloromethane	<7 µg/kg	TM116	<7						
			@ M						
cis-1,3-Dichloropropene	<10 µg/kg	TM116	<10						
			@ M						
Toluene	<7 µg/kg	TM116	<7	<7	<7				
			@ M	@ M	@ M				
trans-1,3-Dichloropropene	<10 µg/kg	TM116	<10						
			@						
1,1,2-Trichloroethane	<10 µg/kg	TM116	<10						
			@ M						



CERTIFICATE OF ANALYSIS

Validated

SDG:	200926-99	Client Reference:	JFR1451	Report Number:	571021
Location:	A303 Stonehenge	Order Number:	PO20-722	Superseded Report:	

VOC MS (S)

Results Legend			Customer Sample Ref.	R70105	R70106	R70106			
# ISO17025 accredited. M mCERTS accredited. sq Aqueous / settled sample. diss.fit Dissolved / filtered sample. tot.unfit Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4# Sample deviation (see appendix)	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference		R70105 0.00 - 0.10 Soil/Solid (S) 23/09/2020 . 26/09/2020 200926-99 22908602 ES	R70106 0.30 Soil/Solid (S) 23/09/2020 . 26/09/2020 200926-99 22908609 ES	R70106 1.00 Soil/Solid (S) 23/09/2020 . 26/09/2020 200926-99 22908611 ES				
Component	LOD/Units	Method							
1,3-Dichloropropane	<7 µg/kg	TM116	<7 @ M						
Tetrachloroethene	<5 µg/kg	TM116	<5 @ M						
Dibromochloromethane	<10 µg/kg	TM116	<10 @ M						
1,2-Dibromoethane	<10 µg/kg	TM116	<10 @ M						
Chlorobenzene	<5 µg/kg	TM116	<5 @ M						
1,1,1,2-Tetrachloroethane	<10 µg/kg	TM116	<10 @ M						
Ethylbenzene	<4 µg/kg	TM116	<4 @ M	<4 @ M	<4 @ M				
p/m-Xylene	<10 µg/kg	TM116	<10 @ #	<10 @ #	<10 @ #				
o-Xylene	<10 µg/kg	TM116	<10 @ M	<10 @ M	<10 @ M				
Styrene	<10 µg/kg	TM116	<10 @ #						
Bromoform	<10 µg/kg	TM116	<10 @ M						
Isopropylbenzene	<5 µg/kg	TM116	<5 @ #						
1,1,2,2-Tetrachloroethane	<10 µg/kg	TM116	<10 @ #						
1,2,3-Trichloropropane	<16 µg/kg	TM116	<16 @ M						
Bromobenzene	<10 µg/kg	TM116	<10 @ M						
Propylbenzene	<10 µg/kg	TM116	<10 @ M						
2-Chlorotoluene	<9 µg/kg	TM116	<9 @ M						
1,3,5-Trimethylbenzene	<8 µg/kg	TM116	<8 @ M						
4-Chlorotoluene	<10 µg/kg	TM116	<10 @ M						
tert-Butylbenzene	<14 µg/kg	TM116	<14 @ M						
1,2,4-Trimethylbenzene	<9 µg/kg	TM116	<9 @ #						
sec-Butylbenzene	<10 µg/kg	TM116	<10 @						
4-Isopropyltoluene	<10 µg/kg	TM116	<10 @ M						
1,3-Dichlorobenzene	<8 µg/kg	TM116	<8 @ M						
1,4-Dichlorobenzene	<5 µg/kg	TM116	<5 @ M						
n-Butylbenzene	<11 µg/kg	TM116	<11 @						
1,2-Dichlorobenzene	<10 µg/kg	TM116	<10 @ M						
1,2-Dibromo-3-chloropropane	<14 µg/kg	TM116	<14 @ M						
Tert-amyl methyl ether	<10 µg/kg	TM116	<10 @ #						
1,2,4-Trichlorobenzene	<20 µg/kg	TM116	<20 @						
Hexachlorobutadiene	<20 µg/kg	TM116	<20 @						
Naphthalene	<13 µg/kg	TM116	<13 @ M						



CERTIFICATE OF ANALYSIS

Validated

SDG:	200926-99	Client Reference:	JFR1451	Report Number:	571021
Location:	A303 Stonehenge	Order Number:	PO20-722	Superseded Report:	

VOC MS (S)

Results Legend			Customer Sample Ref.	R70105	R70106	R70106			
#	ISO17025 accredited.								
M	mCERTS accredited.								
aq	Aqueous / filtered sample.								
dis.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted - refer to subcontractor report for accreditation status.		Depth (m)	0.00 - 0.10	0.30	1.00			
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
(F)	Trigger breach confirmed		Date Sampled	23/09/2020	23/09/2020	23/09/2020			
1-4*5@	Sample deviation (see appendix)		Sampled Time	.	.	.			
			Date Received	26/09/2020	26/09/2020	26/09/2020			
			SDG Ref	200926-99	200926-99	200926-99			
			Lab Sample No.(s)	22908602	22908609	22908611			
			AGS Reference	ES	ES	ES			
Component	LOD/Units	Method							
1,2,3-Trichlorobenzene	<20 µg/kg	TM116	<20						
			@ #						
VOC TIC		TM116	Not Detected						
			@						
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.02	<0.02	<0.02	<0.02			
			@	@	@	@			
Sum of BTEX	<40 µg/kg	TM116	<40	<40	<40	<40			
			@	@	@	@			
Total VOC TIC	<50 µg/kg	TM116	<50						



CERTIFICATE OF ANALYSIS

Validated

SDG: 200926-99
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PO20-722

Report Number: 571021
Superseded Report:

CEN 2:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/

Client Reference		Site Location	A303 Stonehenge
Mass Sample taken (kg)	0.222	Natural Moisture Content (%)	26.5
Mass of dry sample (kg)	0.175	Dry Matter Content (%)	79.1
Particle Size <4mm	>95%		

Case	
SDG	200926-99
Lab Sample Number(s)	22908602
Sampled Date	23-Sep-2020
Customer Sample Ref.	R70105 ESZ
Depth (m)	0.00 - 0.10

Eluate Analysis	Conc ⁿ in 2:1 eluate (mg/l)		2:1 conc ⁿ leached (mg/kg)	
	Result	Limit of Detection	Result	Limit of Detection
Aliphatics >C12-C16	<0.01	<0.01	<0.02	<0.02
Aliphatics >C16-C21	<0.01	<0.01	<0.02	<0.02
Aliphatics >C21-C35	<0.01	<0.01	<0.02	<0.02
Total Aliphatics >C12-C35	<0.01	<0.01	<0.02	<0.02
Aromatics >EC12-EC16	<0.01	<0.01	<0.02	<0.02
Aromatics >EC16-EC21	<0.01	<0.01	<0.02	<0.02
Aromatics >EC21-EC35	<0.01	<0.01	<0.02	<0.02
Aromatics >EC16-EC35	<0.01	<0.01	<0.02	<0.02
Total Aromatics >EC12-EC35	<0.01	<0.01	<0.02	<0.02
TPH (Total Aliphatics + Total Aromatics) >C5-C35	<0.01	<0.01	<0.02	<0.02
Ammoniacal Nitrogen as N	<0.2	<0.2	<0.4	<0.4
Chromium III	<0.03	<0.03	<0.06	<0.06
Hexavalent Chromium	<0.03	<0.03	<0.06	<0.06
Sulphate (soluble)	15.9	<2	31.8	<4
Dissolved Organic Carbon	13.1	<3	26.2	<6
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.00002	<0.00002
Antimony	<0.001	<0.001	<0.002	<0.002
Naphthalene (diss.filt)	<0.00001	<0.00001	<0.00002	<0.00002
Total Cyanide (W)	<0.05	<0.05	<0.1	<0.1
Acenaphthene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Arsenic	0.000977	<0.0005	0.00195	<0.001
Free Cyanide (W)	<0.05	<0.05	<0.1	<0.1
Acenaphthylene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Phenol by HPLC (W)	<0.002	<0.002	<0.004	<0.004
Beryllium	<0.0001	<0.0001	<0.0002	<0.0002
Fluoranthene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Anthracene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Boron	0.0305	<0.01	0.061	<0.02
Phenanthrene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Cadmium	<0.00008	<0.00008	<0.00016	<0.00016
Fluorene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Chrysene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Pyrene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Benzo(a)anthracene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Chromium	<0.001	<0.001	<0.002	<0.002

Leach Test Information

Date Prepared	06-Oct-2020
pH (pH Units)	7.98
Conductivity (µS/cm)	496.00
Temperature (°C)	20.10
Volume Leachant (Litres)	0.303
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates

14/10/2020 15:23:51

15:23:39 14/10/2020



CERTIFICATE OF ANALYSIS

Validated

SDG: 200926-99
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PO20-722

Report Number: 571021
Superseded Report:

CEN 2:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/'

Client Reference	
Mass Sample taken (kg)	0.222
Mass of dry sample (kg)	0.175
Particle Size <4mm	>95%

Site Location	A303 Stonehenge
Natural Moisture Content (%)	26.5
Dry Matter Content (%)	79.1

Case	
SDG	200926-99
Lab Sample Number(s)	22908602
Sampled Date	23-Sep-2020
Customer Sample Ref.	R70105 ESZ
Depth (m)	0.00 - 0.10

Eluate Analysis	Conc ⁿ in 2:1 eluate (mg/l)		2:1 conc ⁿ leached (mg/kg)	
	Result	Limit of Detection	Result	Limit of Detection
Benzo(b)fluoranthene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Benzo(k)fluoranthene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Benzo(a)pyrene (diss.filt)	<0.000002	<0.000002	<0.000004	<0.000004
Copper	0.00901	<0.0003	0.018	<0.0006
Dibenzo(a,h)anthracene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Lead	<0.0002	<0.0002	<0.0004	<0.0004
Benzo(g,h,i)perylene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Indeno(1,2,3-cd)pyrene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Manganese	<0.003	<0.003	<0.006	<0.006
Molybdenum	<0.003	<0.003	<0.006	<0.006
PAH 16 EPA Total by GCMS (diss.filt)	<0.000082	<0.000082	<0.000164	<0.000164
Nickel	0.00124	<0.0004	0.00248	<0.0008
Phosphorus	0.126	<0.01	0.252	<0.02
Selenium	<0.001	<0.001	<0.002	<0.002
Zinc	0.00721	<0.001	0.0144	<0.002
Calcium (Dis.Filt) mg/l	99.7	<0.2	199	<0.4
Iron (Dis.Filt) mg/l	<0.019	<0.019	<0.038	<0.038
TPH CWG (W)				
Surrogate Recovery	-	-	-	-
GRO TOT (C5-C12)	<0.05	<0.05	<0.1	<0.1
Aliphatics C5-C6	<0.01	<0.01	<0.02	<0.02
Aliphatics >C6-C8	<0.01	<0.01	<0.02	<0.02
Aliphatics >C8-C10	<0.01	<0.01	<0.02	<0.02
Aliphatics >C10-C12	<0.01	<0.01	<0.02	<0.02
Aromatics C6-C7	<0.01	<0.01	<0.02	<0.02
Aromatics >C7-C8	<0.01	<0.01	<0.02	<0.02
MTBE GC-FID	<0.003	<0.003	<0.006	<0.006
Aromatics >EC8 -EC10	<0.01	<0.01	<0.02	<0.02
Aromatics >EC10-EC12	<0.01	<0.01	<0.02	<0.02
Benzene by GC	<0.007	<0.007	<0.014	<0.014
Toluene by GC	<0.004	<0.004	<0.008	<0.008
Ethylbenzene by GC	<0.005	<0.005	<0.01	<0.01
m & p Xylene by GC	<0.008	<0.008	<0.016	<0.016
o Xylene by GC	<0.003	<0.003	<0.006	<0.006
Sum m&p and o Xylene by GC	<0.011	<0.011	<0.022	<0.022
Sum of BTEX by GC	<0.028	<0.028	<0.056	<0.056

Leach Test Information

Date Prepared	06-Oct-2020
pH (pH Units)	7.98
Conductivity (µS/cm)	496.00
Temperature (°C)	20.10
Volume Leachant (Litres)	0.303
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates

14/10/2020 15:23:51



CERTIFICATE OF ANALYSIS

Validated

SDG:	200926-99	Client Reference:	JFR1451	Report Number:	571021
Location:	A303 Stonehenge	Order Number:	PO20-722	Superseded Report:	

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM073	MEWAM BOOK 60 1980,95 1985, HMSO / Modified: US EPA Method 8081A & 8141A	Determination of organochlorine and organophosphorous pesticides by GCMS
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM174	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID
TM178	Modified: US EPA Method 8100	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS in Waters
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser
TM243		Mixed Anions In Soils By Kone
TM245	By GC-FID	Determination of GRO by Headspace in waters
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).



CERTIFICATE OF ANALYSIS

Validated

SDG: 200926-99
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PO20-722

Report Number: 571021
Superseded Report:

Test Completion Dates

Lab Sample No(s)	22908602	22908609	22908611
Customer Sample Ref.	R70105	R70106	R70106
AGS Ref.	ES	ES	ES
Depth	0.00 - 0.10	0.30	1.00
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Ammoniacal Nitrogen	09-Oct-2020		
Ammonium Soil by Titration	07-Oct-2020	07-Oct-2020	07-Oct-2020
Anions by Kone (soil)	08-Oct-2020	08-Oct-2020	08-Oct-2020
Anions by Kone (w)	09-Oct-2020		
CEN 2:1 Leachate (1 Stage)	07-Oct-2020		
CEN Readings	09-Oct-2020		
Chromium III	10-Oct-2020	09-Oct-2020	09-Oct-2020
Cyanide Comp/Free/Total/Thiocyanate	12-Oct-2020	09-Oct-2020	09-Oct-2020
Dissolved Metals by ICP-MS	10-Oct-2020		
Dissolved Organic/Inorganic Carbon	14-Oct-2020		
EPH CWG (Aliphatic) Filtered GC (W)	11-Oct-2020		
EPH CWG (Aromatic) Filtered GC (W)	11-Oct-2020		
EPH CWG GC (S)	07-Oct-2020	08-Oct-2020	07-Oct-2020
GRO by GC-FID (S)	09-Oct-2020	09-Oct-2020	09-Oct-2020
GRO by GC-FID (W)	09-Oct-2020		
Hexavalent Chromium (s)	08-Oct-2020	08-Oct-2020	08-Oct-2020
Hexavalent Chromium (w)	09-Oct-2020		
Mercury Dissolved	14-Oct-2020		
Metals in solid samples by OES	12-Oct-2020	09-Oct-2020	09-Oct-2020
Moisture at 105C	06-Oct-2020		
OC OP Pesticides and Triazine Herb	12-Oct-2020		
PAH by GCMS	07-Oct-2020	07-Oct-2020	07-Oct-2020
PAH in waters by GC-MS (diss.filt)	12-Oct-2020		
pH	09-Oct-2020	09-Oct-2020	09-Oct-2020
pH Value of Filtered Water	09-Oct-2020		
Phenols by HPLC (S)	08-Oct-2020	08-Oct-2020	08-Oct-2020
Phenols by HPLC (W)	09-Oct-2020		
Sample description	06-Oct-2020	06-Oct-2020	06-Oct-2020
Semi Volatile Organic Compounds	08-Oct-2020		
Total Organic Carbon	09-Oct-2020	09-Oct-2020	09-Oct-2020
TPH CWG Filtered (W)	11-Oct-2020		
TPH CWG GC (S)	09-Oct-2020	09-Oct-2020	09-Oct-2020
VOC MS (S)	08-Oct-2020	08-Oct-2020	08-Oct-2020



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ASSOCIATED AQC DATA

Ammoniacal Nitrogen

Component	Method Code	QC 2272
Ammoniacal Nitrogen as N	TM099	99.6 93.14 : 108.60

Ammonium Soil by Titration

Component	Method Code	QC 2250
Exchangeable Ammonium as NH4	TM024	85.57 76.20 : 110.13

Anions by Kone (soil)

Component	Method Code	QC 2283
Water Soluble Sulphate as SO4 2:1 Extract	TM243	164.49 70.00 : 130.00

Anions by Kone (w)

Component	Method Code	QC 2332
Chloride	TM184	108.0 92.93 : 115.43
Sulphate (soluble)	TM184	105.6 90.53 : 113.03

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2247	QC 2324
Free Cyanide	TM153	94.95 78.61 : 114.43	
Free Cyanide (W)	TM227		103.5 90.50 : 114.50
Thiocyanate	TM153	98.08 90.48 : 109.52	
Thiocyanate (W)	TM227		103.75 90.50 : 113.00
Total Cyanide	TM153	97.9 76.80 : 112.96	
Total Cyanide (W)	TM227		105.0 91.75 : 112.75

Dissolved Metals by ICP-MS



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Dissolved Metals by ICP-MS

Component	Method Code	QC 2387
Aluminium	TM152	106.0 94.21 : 111.52
Antimony	TM152	103.0 88.37 : 130.57
Arsenic	TM152	104.5 92.62 : 113.52
Barium	TM152	105.17 88.62 : 113.14
Beryllium	TM152	101.0 87.08 : 111.38
Bismuth	TM152	101.0 92.62 : 115.02
Boron	TM152	107.0 86.31 : 120.88
Cadmium	TM152	105.33 93.85 : 111.65
Calcium	TM152	104.67 89.20 : 126.91
Chromium	TM152	105.83 92.22 : 109.85
Cobalt	TM152	102.83 85.01 : 114.87
Copper	TM152	106.5 89.87 : 119.73
Iron	TM152	104.67 93.02 : 113.86
Lead	TM152	106.33 91.11 : 116.98
Lithium	TM152	105.33 91.30 : 123.00
Magnesium	TM152	100.0 89.60 : 116.61
Manganese	TM152	105.0 93.97 : 112.46
Molybdenum	TM152	100.67 89.07 : 110.96
Nickel	TM152	106.17 93.70 : 112.15
Phosphorus	TM152	102.5 89.24 : 114.18
Potassium	TM152	103.33 93.20 : 115.55
Selenium	TM152	105.67 91.69 : 117.12
Silver	TM152	134.0 90.93 : 121.73
Sodium	TM152	102.0 92.42 : 113.24
Strontium	TM152	105.0 92.14 : 116.24
Tellurium	TM152	100.17 89.88 : 111.78
Thallium	TM152	100.17 82.43 : 113.83



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Dissolved Metals by ICP-MS

		QC 2387
Tin	TM152	104.33 94.62 : 107.79
Titanium	TM152	105.5 90.29 : 115.23
Tungsten	TM152	102.17 77.61 : 132.31
Uranium	TM152	100.5 86.97 : 115.76
Vanadium	TM152	104.5 89.61 : 115.48
Zinc	TM152	106.67 87.51 : 116.26

Dissolved Organic/Inorganic Carbon

Component	Method Code	QC 2391
Dissolved Inorganic Carbon	TM090	100.0 91.27 : 109.87
Dissolved Organic Carbon	TM090	99.17 96.58 : 107.98

EPH CWG (Aliphatic) Filtered GC (W)

Component	Method Code	QC 2206
Total Aliphatics >C10-C40	TM174	97.36 71.82 : 134.09

EPH CWG GC (S)

Component	Method Code	QC 2206
EPH >C8-C40 Raw	TM414	94.83 64.56 : 120.16
Total Aliphatics Raw	TM414	99.55 63.39 : 134.72
Total Aromatics Raw	TM414	114.75 57.00 : 150.27

GRO by GC-FID (S)

Component	Method Code	QC 2208
QC	TM089	84.8 70.75 : 114.19

GRO by GC-FID (W)



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Superseded Report:

GRO by GC-FID (W)

Component	Method Code	QC 2272
Benzene by GC	TM245	91.0 79.13 : 118.84
Ethylbenzene by GC	TM245	93.5 79.54 : 115.99
m & p Xylene by GC	TM245	92.0 78.44 : 116.32
MTBE GC-FID	TM245	94.0 81.43 : 120.09
o Xylene by GC	TM245	92.0 76.85 : 120.29
QC	TM245	110.96 71.58 : 131.01
Toluene by GC	TM245	91.5 79.00 : 121.96

Hexavalent Chromium (s)

Component	Method Code	QC 2267	QC 2285
Hexavalent Chromium	TM151	98.0 95.60 : 107.60	98.0 95.60 : 107.60

Hexavalent Chromium (w)

Component	Method Code	QC 2297
Hexavalent Chromium	TM241	100.0 94.17 : 106.17

Mercury Dissolved

Component	Method Code	QC 2298
Mercury Dissolved (CVAf)	TM183	110.0 0.00 : 0.00

Metals in solid samples by OES

Component	Method Code	QC 2216
Aluminium	TM181	86.99 77.46 : 123.98
Antimony	TM181	92.68 87.04 : 111.16
Arsenic	TM181	97.38 87.34 : 110.87
Barium	TM181	87.98 80.73 : 115.16



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Metals in solid samples by OES

		QC 2216
Beryllium	TM181	96.64 89.47 : 112.97
Boron	TM181	85.39 76.57 : 104.15
Cadmium	TM181	86.42 78.94 : 102.43
Chromium	TM181	89.86 77.55 : 104.47
Cobalt	TM181	89.62 82.95 : 107.41
Copper	TM181	92.43 84.36 : 106.14
Iron	TM181	90.48 81.43 : 115.79
Lead	TM181	90.54 81.95 : 107.63
Manganese	TM181	106.11 94.29 : 119.51
Mercury	TM181	87.92 82.73 : 106.36
Molybdenum	TM181	93.83 86.61 : 111.07
Nickel	TM181	88.75 79.72 : 103.80
Phosphorus	TM181	106.67 92.65 : 125.47
Selenium	TM181	94.9 88.36 : 111.25
Strontium	TM181	88.64 78.06 : 99.91
Thallium	TM181	96.46 88.60 : 116.73
Tin	TM181	94.3 89.77 : 112.62
Titanium	TM181	75.34 66.29 : 105.96
Vanadium	TM181	90.48 75.51 : 108.87
Zinc	TM181	94.66 84.02 : 111.24

OC OP Pesticides and Triazine Herb

Component	Method Code	QC 2230
Atrazine (Raw)	TM073	122.09 78.55 : 119.92
Azinphos methyl (Raw)	TM073	189.7 58.68 : 154.71
cis-Chlordane (Raw)	TM073	108.88 71.90 : 129.99
Diazinon (Raw)	TM073	109.34 70.00 : 130.00
Dichlorvos (Raw)	TM073	125.45 70.00 : 130.00



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Superseded Report:

OC OP Pesticides and Triazine Herb

		QC 2230
Dieldrin (Raw)	TM073	116.33 70.00 : 130.00
gamma-HCH (Lindane) (Raw)	TM073	108.46 71.48 : 129.99
Heptachlor (Raw)	TM073	119.89 66.39 : 134.63
Hexachlorobenzene (Raw)	TM073	114.22 47.15 : 124.32
Malathion (Raw)	TM073	140.92 70.00 : 130.00
p,p-DDT (Raw)	TM073	124.56 70.00 : 130.00
Parathion (Raw)	TM073	142.05 64.13 : 127.88

PAH by GCMS

Component	Method Code	QC 2233
Acenaphthene	TM218	88.5 76.79 : 103.90
Acenaphthylene	TM218	85.5 78.40 : 108.66
Anthracene	TM218	91.0 70.90 : 109.22
Benz(a)anthracene	TM218	99.5 73.77 : 119.26
Benzo(a)pyrene	TM218	98.0 73.20 : 114.18
Benzo(b)fluoranthene	TM218	94.5 75.36 : 117.58
Benzo(ghi)perylene	TM218	95.0 70.73 : 116.12
Benzo(k)fluoranthene	TM218	93.5 75.98 : 116.59
Chrysene	TM218	99.5 74.82 : 114.18
Dibenzo(ah)anthracene	TM218	96.0 69.17 : 115.30
Fluoranthene	TM218	105.5 75.88 : 112.84
Fluorene	TM218	87.0 76.66 : 107.56
Indeno(123cd)pyrene	TM218	95.0 70.26 : 117.95
Naphthalene	TM218	84.5 74.70 : 101.83
Phenanthrene	TM218	93.5 73.62 : 109.34
Pyrene	TM218	103.5 71.46 : 117.00

PAH in waters by GC-MS (diss.filt)



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Superseded Report:

PAH in waters by GC-MS (diss.filt)

Component	Method Code	QC 2240
Acenaphthene (diss.filt)	TM178	105.2 93.20 : 119.60
Acenaphthylene (diss.filt)	TM178	106.0 92.00 : 118.40
Anthracene (diss.filt)	TM178	104.8 90.80 : 114.80
Benzo(a)anthracene (diss.filt)	TM178	102.0 91.60 : 115.60
Benzo(a)pyrene (diss.filt)	TM178	104.8 91.20 : 120.00
Benzo(b)fluoranthene (diss.filt)	TM178	103.6 86.80 : 120.40
Benzo(g,h,i)perylene (diss.filt)	TM178	104.8 89.20 : 118.00
Benzo(k)fluoranthene (diss.filt)	TM178	100.4 94.40 : 125.60
Chrysene (diss.filt)	TM178	102.4 96.40 : 122.80
Dibenzo(a,h)anthracene (diss.filt)	TM178	106.4 93.60 : 132.00
Fluoranthene (diss.filt)	TM178	96.8 92.80 : 121.60
Fluorene (diss.filt)	TM178	95.2 93.60 : 120.00
Indeno(1,2,3-cd)pyrene (diss.filt)	TM178	106.0 82.40 : 120.80
Naphthalene (diss.filt)	TM178	100.4 88.40 : 126.80
Phenanthrene (diss.filt)	TM178	106.4 92.40 : 118.80
Pyrene (diss.filt)	TM178	107.6 90.40 : 124.00

pH

Component	Method Code	QC 2272
pH	TM133	100.66 99.74 : 102.91

pH Value of Filtered Water

Component	Method Code	QC 2240
pH	TM256	101.74 99.33 : 102.54

Phenols by HPLC (S)



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Superseded Report:

Phenols by HPLC (S)

Component	Method Code	QC 2276
2,3,5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	103.25 65.50 : 89.50
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	88.89 84.00 : 124.00
Catechol by HPLC (S)	TM062 (S)	85.71 19.39 : 135.70
Cresols by HPLC (S)	TM062 (S)	96.24 81.00 : 112.20
Naphthol by HPLC (S)	TM062 (S)	112.86 57.50 : 102.50
Phenol by HPLC (S)	TM062 (S)	100.0 88.67 : 124.67
Resorcinol HPLC (S)	TM062 (S)	95.6 69.99 : 127.22
Xylenols by HPLC (S)	TM062 (S)	98.85 95.22 : 115.89

Phenols by HPLC (W)

Component	Method Code	QC 2294
2,3,5 Trimethyl-Phenol by HPLC (W)	TM259	99.0 84.50 : 111.50
2-Isopropyl Phenol by HPLC (W)	TM259	97.0 84.55 : 110.90
Cresols by HPLC (W)	TM259	92.33 90.00 : 112.00
Naphthol by HPLC (W)	TM259	102.0 82.00 : 124.00
Phenol by HPLC (W)	TM259	95.0 86.80 : 112.60
Xylenols by HPLC (W)	TM259	99.17 94.74 : 115.71

Semi Volatile Organic Compounds

Component	Method Code	QC 2208
4-Bromophenylphenylether (Soil)	TM157	86.0 63.50 : 114.50
Benzo(a)anthracene (Soil)	TM157	92.0 71.89 : 120.91
Hexachlorobutadiene (Soil)	TM157	90.0 69.80 : 117.77
Naphthalene (Soil)	TM157	88.0 70.00 : 115.00
Nitrobenzene (Soil)	TM157	84.5 70.00 : 118.00
Phenol (Soil)	TM157	85.5 72.00 : 117.00

Total Organic Carbon



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Superseded Report:

Total Organic Carbon

Component	Method Code	QC 2277
Total Organic Carbon	TM132	92.58 87.02 : 113.45

VOC MS (S)

Component	Method Code	QC 2217
1,1,1,2-tetrachloroethane	TM116	102.2 79.10 : 119.66
1,1,1-Trichloroethane	TM116	102.8 87.51 : 115.37
1,1,2-Trichloroethane	TM116	101.8 81.29 : 113.79
1,1-Dichloroethane	TM116	111.6 86.77 : 122.11
1,2-Dichloroethane	TM116	114.6 90.04 : 132.28
1,4-Dichlorobenzene	TM116	101.6 80.81 : 125.07
2-Chlorotoluene	TM116	94.6 73.76 : 115.43
4-Chlorotoluene	TM116	92.6 72.48 : 112.82
Benzene	TM116	103.0 84.29 : 112.22
Carbon Disulphide	TM116	106.0 75.11 : 124.81
Carbontetrachloride	TM116	104.2 82.35 : 126.46
Chlorobenzene	TM116	100.2 82.88 : 122.42
Chloroform	TM116	109.4 90.35 : 120.38
Chloromethane	TM116	121.6 65.80 : 138.88
Cis-1,2-Dichloroethene	TM116	102.8 78.27 : 128.90
Dibromomethane	TM116	103.2 76.00 : 120.73
Dichloromethane	TM116	115.4 92.27 : 134.36
Ethylbenzene	TM116	91.0 70.95 : 113.07
Hexachlorobutadiene	TM116	84.2 14.55 : 147.92
Isopropylbenzene	TM116	80.2 52.00 : 108.19
Naphthalene	TM116	104.8 80.29 : 135.77
o-Xylene	TM116	82.4 64.92 : 98.85



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VOC MS (S)

		QC 2217
p/m-Xylene	TM116	86.7 72.04 : 104.04
Sec-Butylbenzene	TM116	74.2 27.03 : 135.73
Tetrachloroethene	TM116	100.8 81.43 : 126.65
Toluene	TM116	94.2 82.44 : 103.50
Trichloroethene	TM116	101.2 79.80 : 112.33
Trichlorofluoromethane	TM116	116.2 86.68 : 126.82
Vinyl Chloride	TM116	121.0 69.66 : 136.55

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis .

The figure detailed is the percentage recovery result for the AQC .

The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control .



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SDG: 200926-99
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PQ20-722

Report Number: 571021
Superseded Report:

Chromatogram

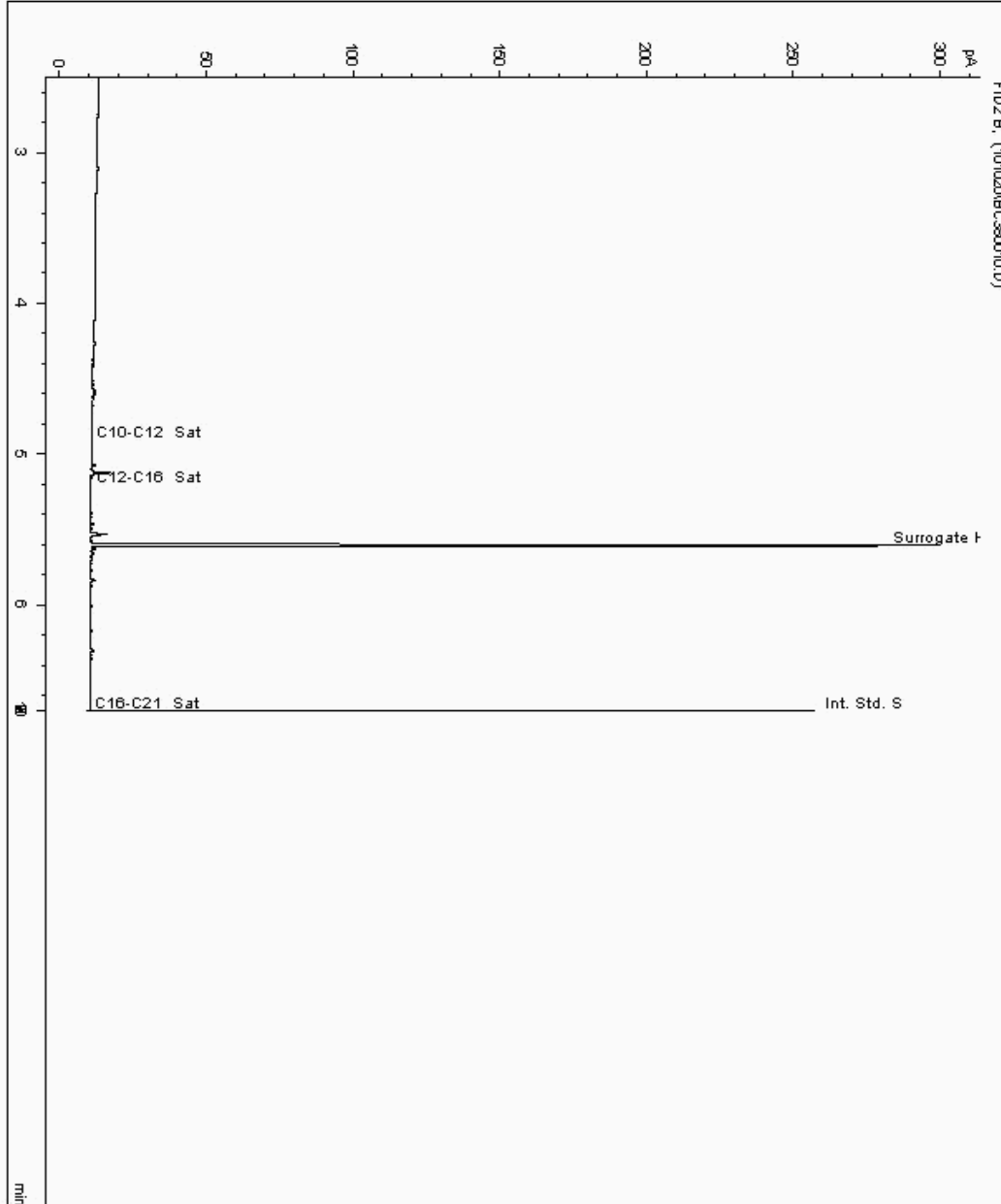
Analysis: EPH CWG (Aliphatic) Filtered GC (W)

Sample No : 22989232
Sample ID : R70105

Depth : 0.00 - 0.10

Speciated TPH - SATS (C12 - C40)

Sample Identity: 21545441-
Date Acquired : 10/10/20 15:17:20 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.028





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SDG: 200926-99
Location: A303 Stonehenge

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Order Number: PO20-722

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Superseded Report:

Chromatogram

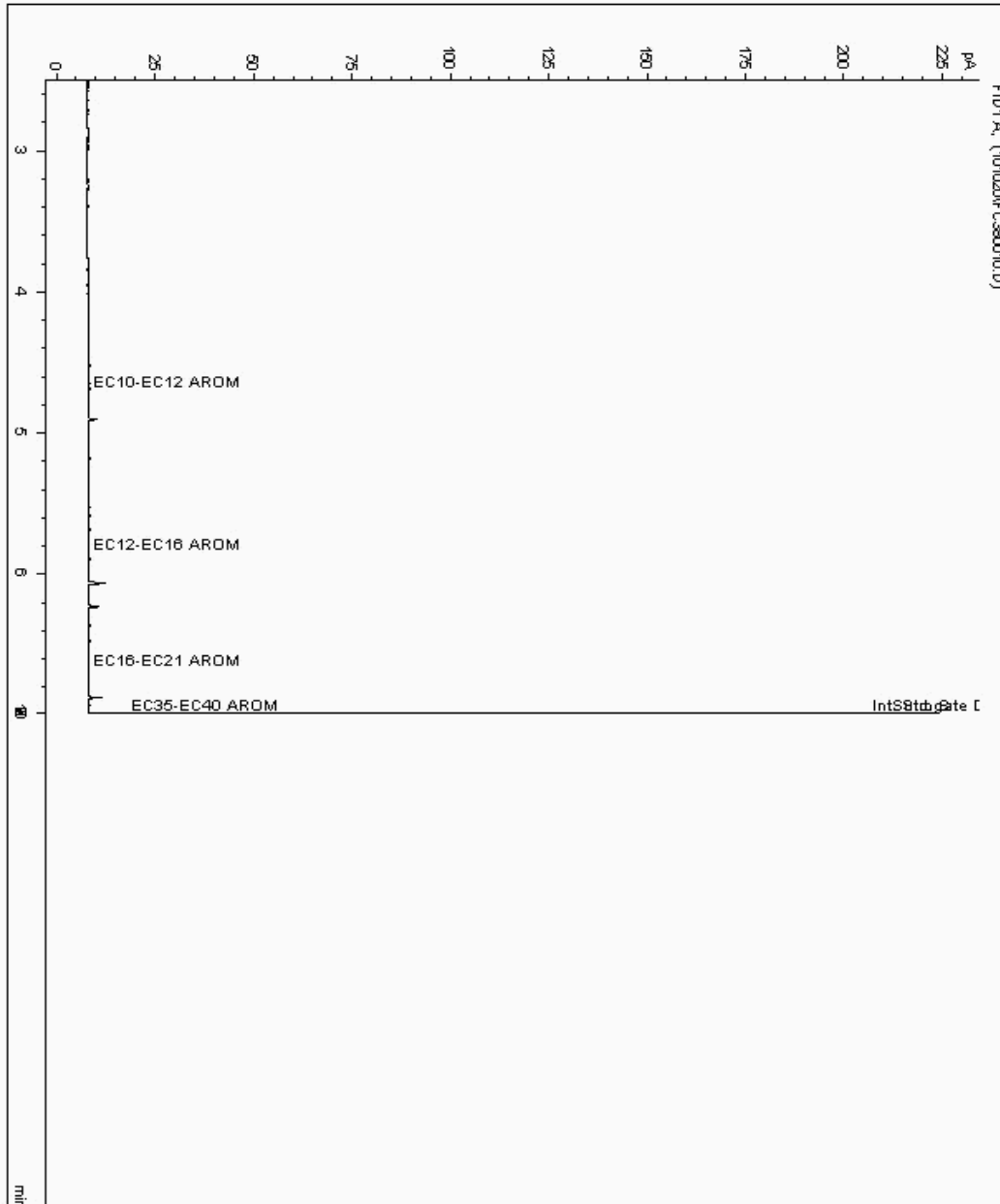
Analysis: EPH CWG (Aromatic) Filtered GC (W)

Sample No : 22989232
Sample ID : R70105

Depth : 0.00 - 0.10

Speciated TPH - AROM (C12 - C40)

Sample Identity: 21545442-
Date Acquired : 10/10/20 15:17:20 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.028





CERTIFICATE OF ANALYSIS

Validated

SDG: 200926-99
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PO20-722

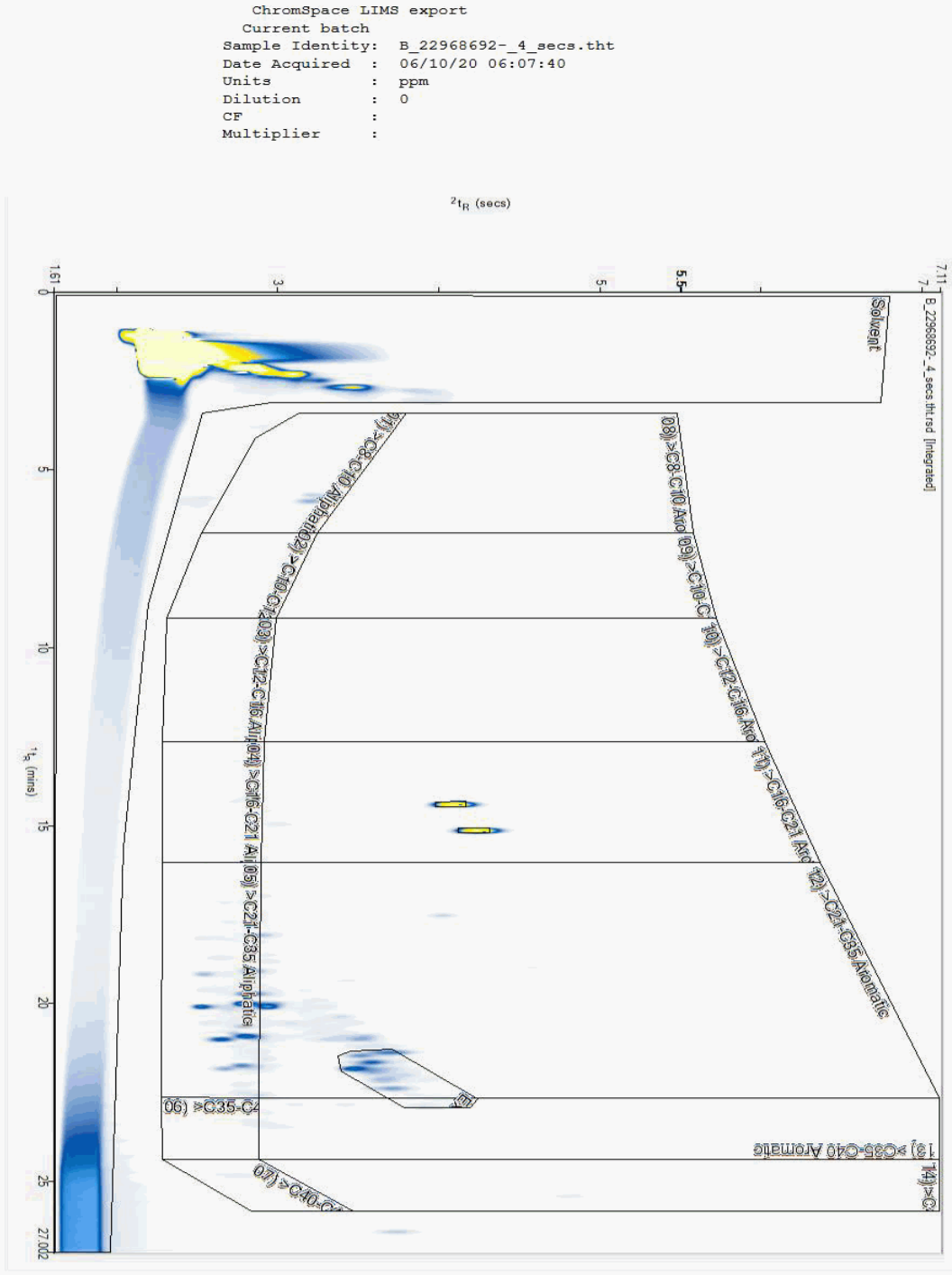
Report Number: 571021
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 22968692
Sample ID : R70105

Depth : 0.00 - 0.10





CERTIFICATE OF ANALYSIS

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SDG: 200926-99
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PO20-722

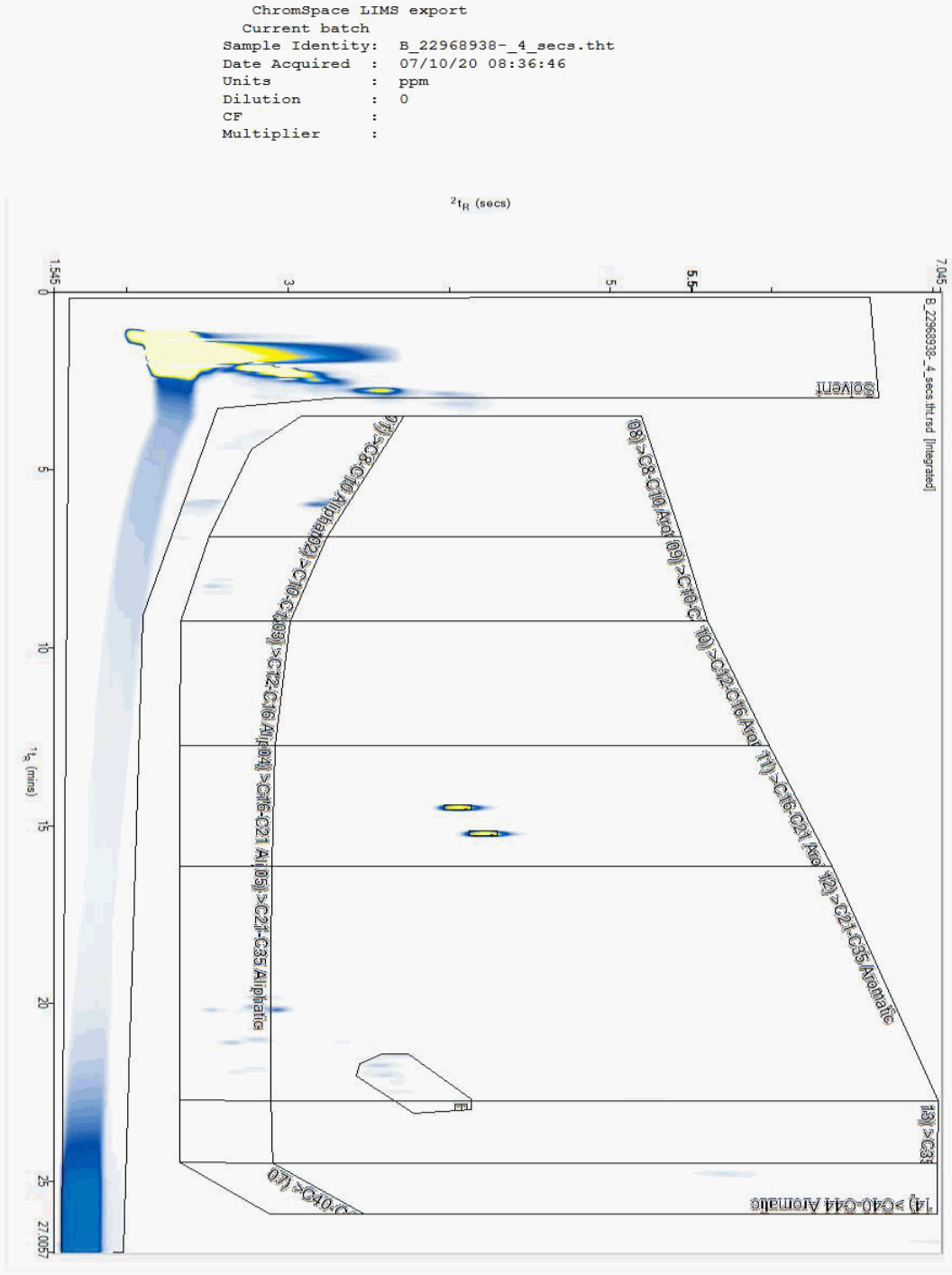
Report Number: 571021
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 22968938
Sample ID : R70106

Depth : 0.30





CERTIFICATE OF ANALYSIS

Validated

SDG: 200926-99
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PO20-722

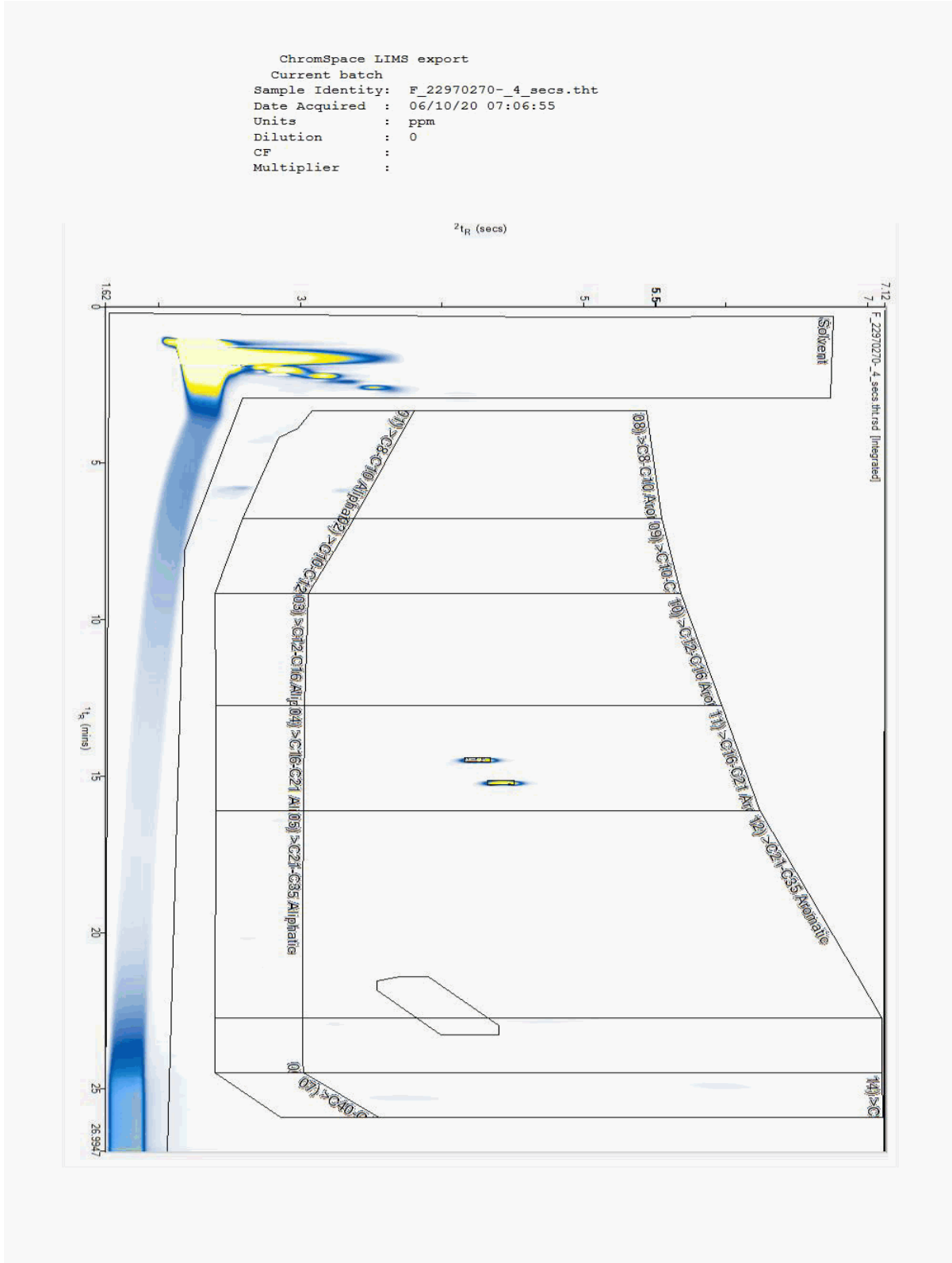
Report Number: 571021
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 22970270
Sample ID : R70106

Depth : 1.00





CERTIFICATE OF ANALYSIS

Validated

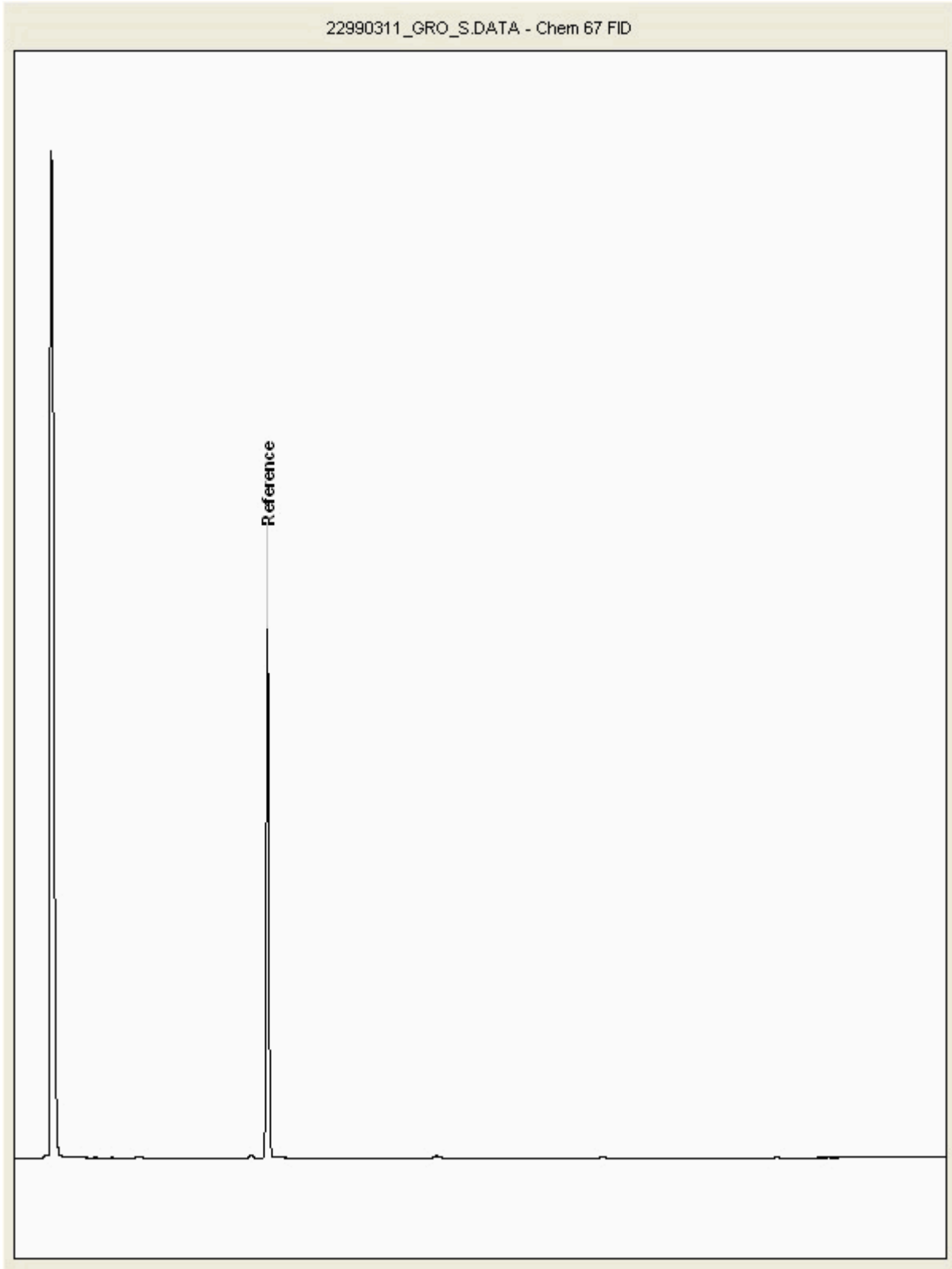
SDG: 200926-99 Client Reference: JFR1451 Report Number: 571021
Location: A303 Stonehenge Order Number: PQ20-722 Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 22990311
Sample ID : R70105

Depth : 0.00 - 0.10





CERTIFICATE OF ANALYSIS

Validated

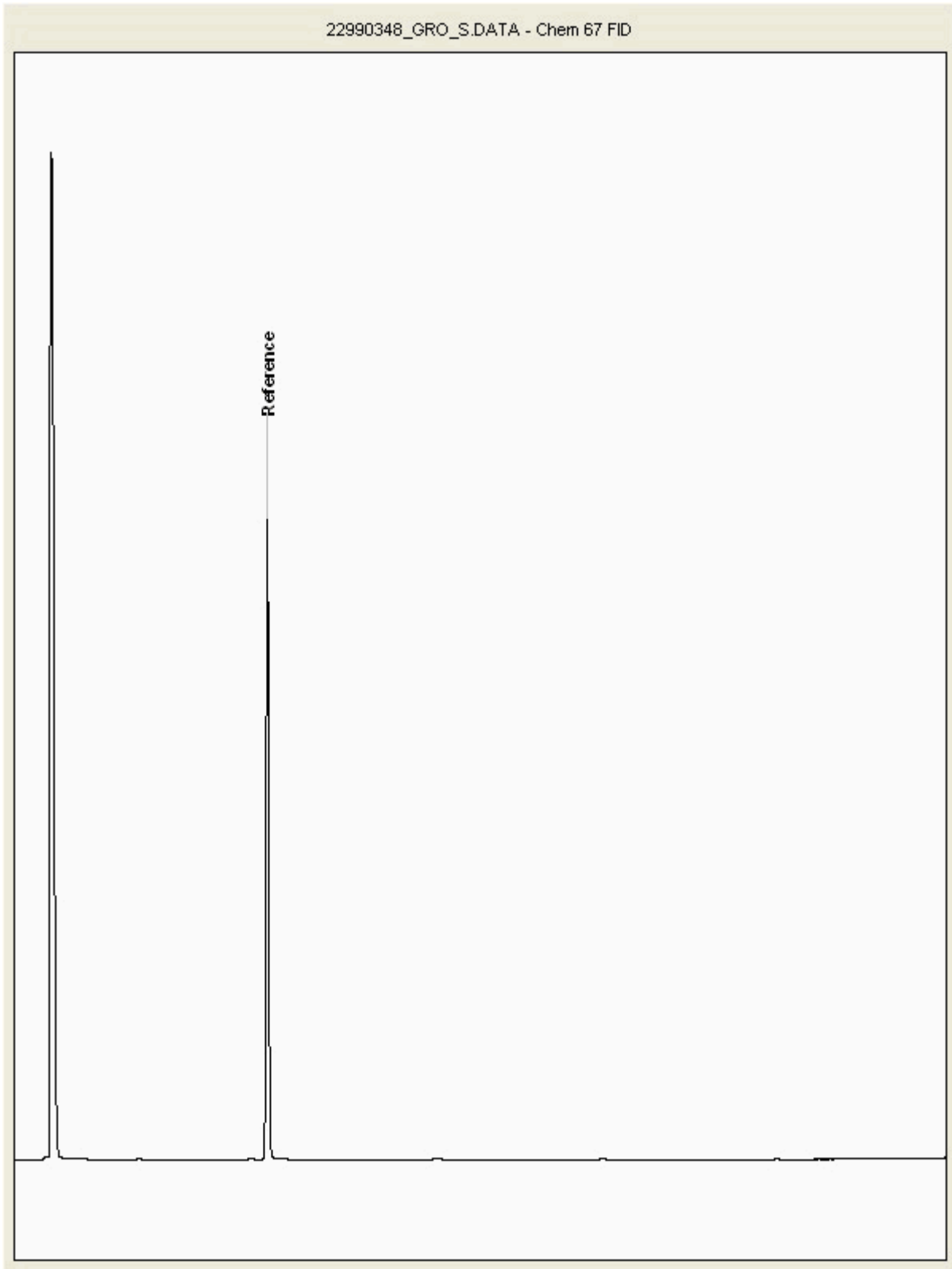
SDG: 200926-99 Client Reference: JFR1451 Report Number: 571021
Location: A303 Stonehenge Order Number: PQ20-722 Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 22990348
Sample ID : R70106

Depth : 1.00





CERTIFICATE OF ANALYSIS

Validated

SDG: 200926-99
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PQ20-722

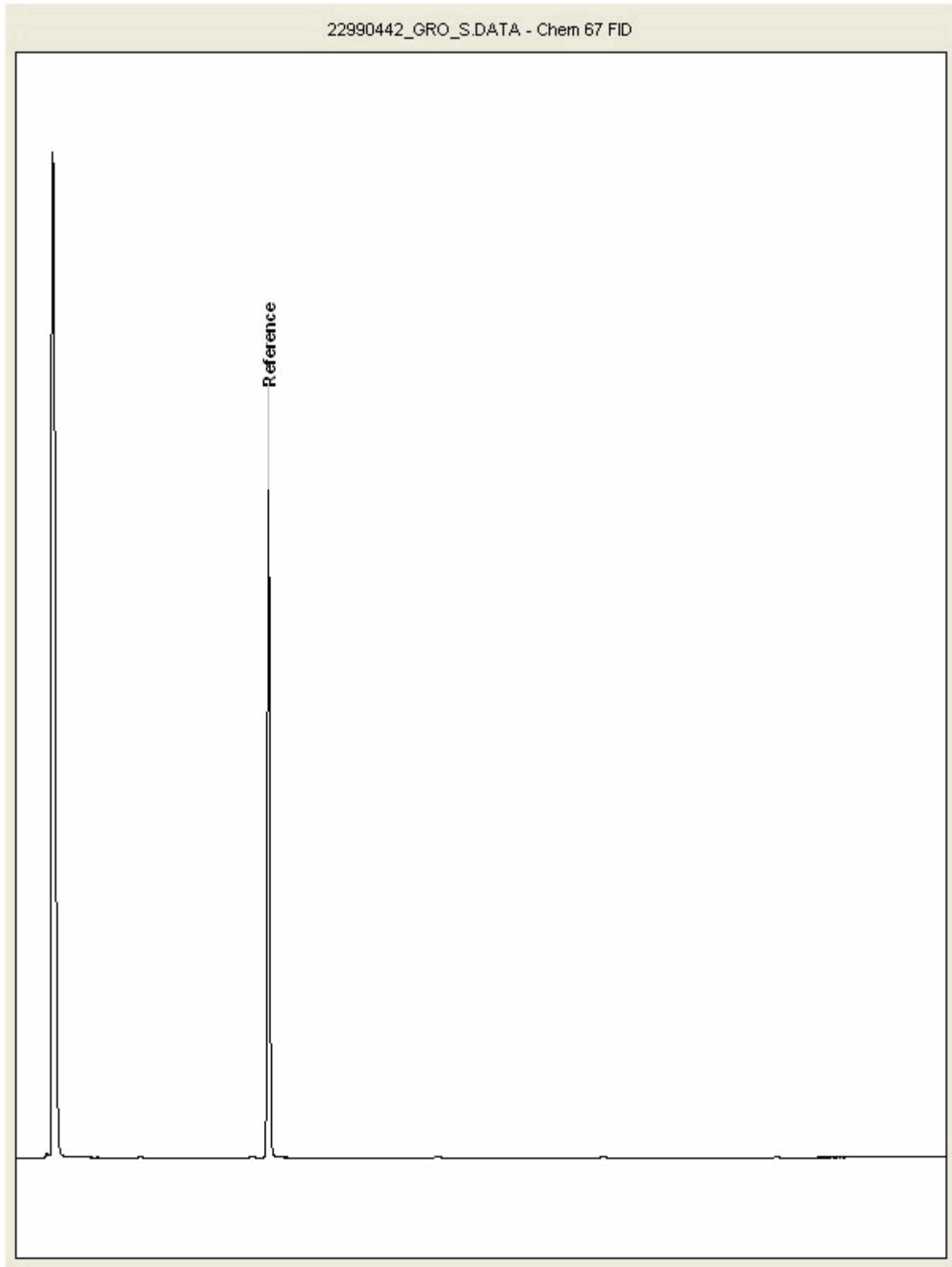
Report Number: 571021
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 22990442
Sample ID : R70106

Depth : 0.30





CERTIFICATE OF ANALYSIS

Validated

SDG: 200926-99
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PQ20-722

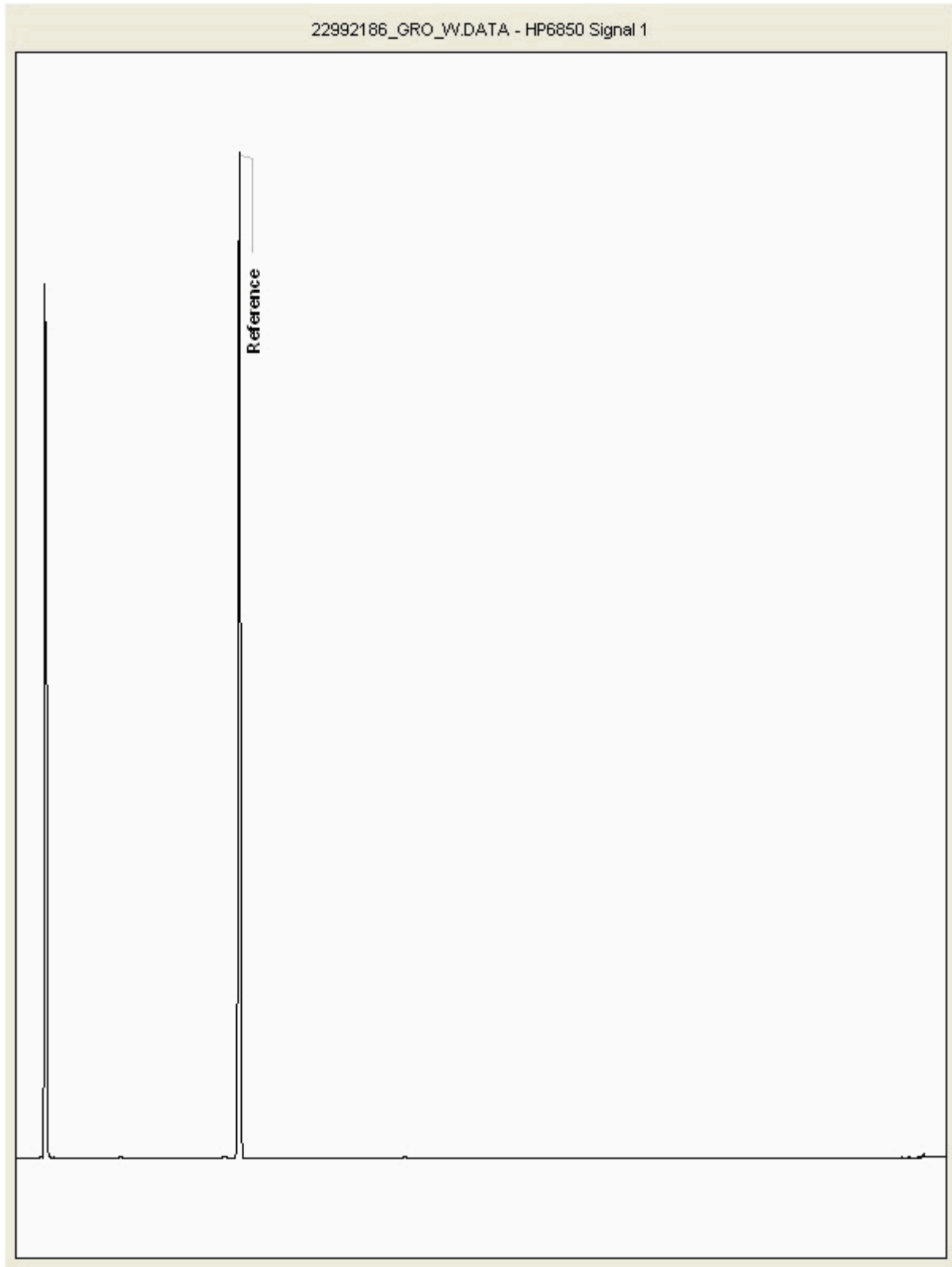
Report Number: 571021
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 22992186
Sample ID : R70105

Depth : 0.00 - 0.10





CERTIFICATE OF ANALYSIS

SDG: 200926-99	Client Reference: JFR1451	Report Number: 571021
Location: A303 Stonehenge	Order Number: PO20-722	Superseded Report:

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

19. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung. Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017)*.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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RPS Consultants Ltd
260 Park Avenue
Aztec West
Almondsbury
Bristol
BS32 4SY

Attention: Gary Riches

CERTIFICATE OF ANALYSIS

Date of report Generation: 14 October 2020
Customer: RPS Consultants Ltd
Sample Delivery Group (SDG): 200926-103
Your Reference: JFR1451
Location: A303 Stonehenge
Report No: 571020

We received 7 samples on Saturday September 26, 2020 and 1 of these samples were scheduled for analysis which was completed on Wednesday October 14, 2020. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

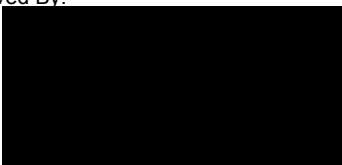
Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:



Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 200926-103
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 571020
Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
22909588	STP70704		0.00	24/09/2020
22909589	STP70704		0.30	24/09/2020
22909591	STP70704		0.50	24/09/2020
22909592	STP70704		1.00	24/09/2020
22909593	STP70704		2.00	24/09/2020
22909596	STP70704		3.00	24/09/2020
22909597	WS72401		0.30	24/09/2020

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 200926-103	Client Reference: JFR1451	Report Number: 571020
Location: A303 Stonehenge	Order Number:	Superseded Report:

Results Legend <div style="margin-top: 10px;"> X Test </div> <div style="margin-top: 10px;"> N No Determination Possible </div> Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other	Lab Sample No(s)	22909597			
	Customer Sample Reference	WSTZ401			
	AGS Reference				
	Depth (m)	0.30			
	Container	1kg TUB with Handle (ALE200)			
	Sample Type	S			
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 1	X		
Ammonium Soil by Titration	All	NDPs: 0 Tests: 1	X		
Anions by Kone (soil)	All	NDPs: 0 Tests: 1	X		
Anions by Kone (w)	All	NDPs: 0 Tests: 1	X		
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 1	X		
CEN Readings	All	NDPs: 0 Tests: 1	X		
Chromium III	All	NDPs: 0 Tests: 1	X		
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 1	X		
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 1	X		
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 1	X		
EPH CWG (Aliphatic) Filtered GC (W)	All	NDPs: 0 Tests: 1	X		
EPH CWG (Aromatic) Filtered GC (W)	All	NDPs: 0 Tests: 1	X		
EPH CWG GC (S)	All	NDPs: 0 Tests: 1	X		
GRO by GC-FID (S)	All	NDPs: 0 Tests: 1	X		
GRO by GC-FID (W)	All	NDPs: 0 Tests: 1	X		



CERTIFICATE OF ANALYSIS

Validated

SDG: 200926-103	Client Reference: JFR1451	Report Number: 571020
Location: A303 Stonehenge	Order Number:	Superseded Report:

Results Legend <div style="margin-top: 10px;"> X Test </div> <div style="margin-top: 10px;"> N No Determination Possible </div> <div style="margin-top: 20px;"> Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other </div>	Lab Sample No(s)	22909597				
	Customer Sample Reference	WSTZ401				
	AGS Reference					
	Depth (m)	0.30				
	Container	1kg TUB with Handle (ALE280)				
	Sample Type	S				
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 1	X			
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 1	X			
Mercury Dissolved	All	NDPs: 0 Tests: 1	X			
Metals in solid samples by OES	All	NDPs: 0 Tests: 1	X			
PAH by GCMS	All	NDPs: 0 Tests: 1	X			
PAH in waters by GC-MS (diss.filt)	All	NDPs: 0 Tests: 1	X			
pH	All	NDPs: 0 Tests: 1	X			
pH Value of Filtered Water	All	NDPs: 0 Tests: 1	X			
Phenols by HPLC (S)	All	NDPs: 0 Tests: 1	X			
Phenols by HPLC (W)	All	NDPs: 0 Tests: 1	X			
Sample description	All	NDPs: 0 Tests: 1	X			
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 1	X			
Total Organic Carbon	All	NDPs: 0 Tests: 1	X			
TPH CWG Filtered (W)	All	NDPs: 0 Tests: 1	X			
TPH CWG GC (S)	All	NDPs: 0 Tests: 1	X			



CERTIFICATE OF ANALYSIS

Validated

SDG:	200926-103	Client Reference:	JFR1451	Report Number:	571020
Location:	A303 Stonehenge	Order Number:		Superseded Report:	

Results Legend <div style="margin-top: 10px;"> X Test </div> <div style="margin-top: 10px;"> N No Determination Possible </div> Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other	Lab Sample No(s)	22909597			
	Customer Sample Reference	WSTZ401			
	AGS Reference				
	Depth (m)	0.30			
	Container	1kg TUB with Handle (ALE280)			
	Sample Type	S			
VOC MS (S)	All	NDPs: 0 Tests: 1	X		



CERTIFICATE OF ANALYSIS

Validated

SDG: 200926-103
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 571020
Superseded Report:

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm
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Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
22909597	WS72401	0.30	Grey	Loamy Sand	Stones	Vegetation

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.



CERTIFICATE OF ANALYSIS

Validated

SDG:	200926-103	Client Reference:	JFR1451	Report Number:	571020
Location:	A303 Stonehenge	Order Number:		Superseded Report:	

#	Customer Sample Ref.	Depth (m)	Sample Type	Date Sampled	Sampled Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.fit Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4*\$@ Sample deviation (see appendix)	WS72401	0.30	Soil/Solid (S)	24/09/2020		26/09/2020	200926-103	22909597	
Component	LOD/Units	Method							
Moisture Content Ratio (% of as received sample)	%	PM024	13						
Exchangeable Ammonia as N	<12 mg/kg	TM024	<12	M					
Phenol	<0.01 mg/kg	TM062 (S)	<0.01	@ M					
Organic Carbon, Total	<0.2 %	TM132	0.643	M					
pH	1 pH Units	TM133	8.33	M					
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6	#					
Cyanide, Total	<1 mg/kg	TM153	<1	@ M					
Cyanide, Free	<1 mg/kg	TM153	<1	@ M					
Chromium, Trivalent	<0.9 mg/kg	TM181	3.75						
Antimony	<0.6 mg/kg	TM181	<0.6	#					
Arsenic	<0.6 mg/kg	TM181	1.65	M					
Beryllium	<0.01 mg/kg	TM181	0.131	M					
Boron	<0.7 mg/kg	TM181	3.6	#					
Cadmium	<0.02 mg/kg	TM181	0.316	M					
Chromium	<0.9 mg/kg	TM181	3.75	M					
Copper	<1.4 mg/kg	TM181	3.1	M					
Iron	<1000 mg/kg	TM181	3030	#					
Lead	<0.7 mg/kg	TM181	8.94	M					
Manganese	<0.13 mg/kg	TM181	294	M					
Mercury	<0.14 mg/kg	TM181	<0.14	M					
Molybdenum	<0.1 mg/kg	TM181	<0.1	#					
Nickel	<0.2 mg/kg	TM181	3.89	M					
Phosphorus	<1 mg/kg	TM181	693						
Selenium	<1 mg/kg	TM181	<1	#					
Zinc	<1.9 mg/kg	TM181	28.2	M					
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243	0.0216	M					



CERTIFICATE OF ANALYSIS

Validated

SDG: 200926-103
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 571020
Superseded Report:

PAH by GCMS

Results Legend		Customer Sample Ref.	WS72401				
#	ISO17025 accredited.						
M	mCERTS accredited.						
aq	Aqueous / settled sample.						
diss.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.						
*	Subcontracted - refer to subcontractor report for accreditation status.						
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery						
(F)	Trigger breach confirmed						
1-4*\$@	Sample deviation (see appendix)						
	Depth (m)		0.30				
	Sample Type		Soil/Solid (S)				
	Date Sampled		24/09/2020				
	Sampled Time						
	Date Received		26/09/2020				
	SDG Ref		200926-103				
	Lab Sample No.(s)		22909597				
	AGS Reference						
Component	LOD/Units	Method					
Naphthalene-d8 % recovery**	%	TM218	81.9				
Acenaphthene-d10 % recovery**	%	TM218	82				
Phenanthrene-d10 % recovery**	%	TM218	86.5				
Chrysene-d12 % recovery**	%	TM218	91.5				
Perylene-d12 % recovery**	%	TM218	87.3				
Naphthalene	<9 µg/kg	TM218	<9			M	
Acenaphthylene	<12 µg/kg	TM218	<12			M	
Acenaphthene	<8 µg/kg	TM218	<8			M	
Fluorene	<10 µg/kg	TM218	<10			M	
Phenanthrene	<15 µg/kg	TM218	96.2			M	
Anthracene	<16 µg/kg	TM218	28.9			M	
Fluoranthene	<17 µg/kg	TM218	311			M	
Pyrene	<15 µg/kg	TM218	284			M	
Benz(a)anthracene	<14 µg/kg	TM218	170			M	
Chrysene	<10 µg/kg	TM218	156			M	
Benzo(b)fluoranthene	<15 µg/kg	TM218	260			M	
Benzo(k)fluoranthene	<14 µg/kg	TM218	104			M	
Benzo(a)pyrene	<15 µg/kg	TM218	198			M	
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	157			M	
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	26.8			M	
Benzo(g,h,i)perylene	<24 µg/kg	TM218	159			M	
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	1950				



CERTIFICATE OF ANALYSIS

Validated

SDG: 200926-103
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 571020
Superseded Report:

Semi Volatile Organic Compounds

Results Legend		Customer Sample Ref.	WS72401			
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.fit Dissolved / filtered sample. tot.unfit Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4*\$@ Sample deviation (see appendix)		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.30 Soil/Solid (S) 24/09/2020 26/09/2020 200926-103 22909597			
Component	LOD/Units	Method				
Phenol	<100 µg/kg	TM157	<100			
Pentachlorophenol	<100 µg/kg	TM157	<100			
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100			
Nitrobenzene	<100 µg/kg	TM157	<100			
Isophorone	<100 µg/kg	TM157	<100			
Hexachloroethane	<100 µg/kg	TM157	<100			
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100			
Hexachlorobutadiene	<100 µg/kg	TM157	<100			
Hexachlorobenzene	<100 µg/kg	TM157	<100			
n-Dioctyl phthalate	<100 µg/kg	TM157	<100			
Dimethyl phthalate	<100 µg/kg	TM157	<100			
Diethyl phthalate	<100 µg/kg	TM157	<100			
n-Dibutyl phthalate	<100 µg/kg	TM157	<100			
Dibenzofuran	<100 µg/kg	TM157	<100			
Carbazole	<100 µg/kg	TM157	<100			
Butylbenzyl phthalate	<100 µg/kg	TM157	<100			
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100			
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100			
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100			
Azobenzene	<100 µg/kg	TM157	<100			
4-Nitrophenol	<100 µg/kg	TM157	<500			
4-Nitroaniline	<100 µg/kg	TM157	<100			
4-Methylphenol	<100 µg/kg	TM157	<100			
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100			
4-Chloroaniline	<100 µg/kg	TM157	<100			
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100			
4-Bromophenylphenylether	<100 µg/kg	TM157	<100			
3-Nitroaniline	<100 µg/kg	TM157	<100			
2-Nitrophenol	<100 µg/kg	TM157	<100			
2-Nitroaniline	<100 µg/kg	TM157	<100			
2-Methylphenol	<100 µg/kg	TM157	<100			
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100			



CERTIFICATE OF ANALYSIS

Validated

SDG: 200926-103
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 571020
Superseded Report:

Semi Volatile Organic Compounds

Results Legend		Customer Sample Ref.	WS72401				
# ISO17025 accredited.							
M mCERTS accredited.							
aq Aqueous / settled sample.							
dis.filt Dissolved / filtered sample.							
tot.unfilt Total / unfiltered sample.							
* Subcontracted - refer to subcontractor report for accreditation status.							
** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery							
(F) Trigger breach confirmed							
1.4.4.6@ Sample deviation (see appendix)							
		Depth (m)	0.30				
		Sample Type	Soil/Solid (S)				
		Date Sampled	24/09/2020				
		Sampled Time	.				
		Date Received	26/09/2020				
		SDG Ref	200926-103				
		Lab Sample No.(s)	22909597				
		AGS Reference					
Component	LOD/Units	Method					
2-Chlorophenol	<100 µg/kg	TM157	<100				
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100				
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100				
2,4-Dimethylphenol	<100 µg/kg	TM157	<100				
2,4-Dichlorophenol	<100 µg/kg	TM157	<100				
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100				
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100				
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100				
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100				
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100				
2-Chloronaphthalene	<100 µg/kg	TM157	<100				
2-Methylnaphthalene	<100 µg/kg	TM157	<100				
Acenaphthylene	<100 µg/kg	TM157	<100				
Acenaphthene	<100 µg/kg	TM157	<100				
Anthracene	<100 µg/kg	TM157	<100				
Benzo(a)anthracene	<100 µg/kg	TM157	<100				
Benzo(b)fluoranthene	<100 µg/kg	TM157	<100				
Benzo(k)fluoranthene	<100 µg/kg	TM157	<100				
Benzo(a)pyrene	<100 µg/kg	TM157	<100				
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<100				
Chrysene	<100 µg/kg	TM157	141				
Fluoranthene	<100 µg/kg	TM157	179				
Fluorene	<100 µg/kg	TM157	<100				
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<100				
Phenanthrene	<100 µg/kg	TM157	<100				
Pyrene	<100 µg/kg	TM157	192				
Naphthalene	<100 µg/kg	TM157	<100				
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100				
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100				
TIC report		TM157	Not Detected				
Total SVOC TIC	<100 µg/kg	TM157	<1000				



CERTIFICATE OF ANALYSIS

Validated

SDG: 200926-103
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 571020
Superseded Report:

TPH CWG (S)

Results Legend		Customer Sample Ref.	WS72401				
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.30				
M	mCERTS accredited.		Soil/Solid (S)				
aq	Aqueous / settled sample.		24/09/2020				
diss.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.		26/09/2020				
*	Subcontracted - refer to subcontractor report for accreditation status.		200926-103				
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		22909597				
(F)	Trigger breach confirmed						
1-4*\$@	Sample deviation (see appendix)						
Component	LOD/Units		Method				
GRO Surrogate % recovery**	%	TM089	91				
				2			
Aliphatics >C5-C6	<10 µg/kg	TM089	<10				
				2			
Aliphatics >C6-C8	<10 µg/kg	TM089	<10				
				2			
Aliphatics >C8-C10	<10 µg/kg	TM089	<10				
				2			
Aliphatics >C10-C12	<1000 µg/kg	TM414	<1000				
Aliphatics >C12-C16	<1000 µg/kg	TM414	<1000				
Aliphatics >C16-C21	<1000 µg/kg	TM414	<1000				
Aliphatics >C21-C35	<1000 µg/kg	TM414	7680				
Aliphatics >C35-C44	<1000 µg/kg	TM414	<1000				
Total Aliphatics >C10-C44	<5000 µg/kg	TM414	9700				
Total Aliphatics & Aromatics >C10-C44	<10000 µg/kg	TM414	18100				
Aromatics >EC5-EC7	<10 µg/kg	TM089	<10				
				2			
Aromatics >EC7-EC8	<10 µg/kg	TM089	<10				
				2			
Aromatics >EC8-EC10	<10 µg/kg	TM089	<10				
				2			
Aromatics > EC10-EC12	<1000 µg/kg	TM414	<1000				
Aromatics > EC12-EC16	<1000 µg/kg	TM414	<1000				
Aromatics > EC16-EC21	<1000 µg/kg	TM414	<1000				
Aromatics > EC21-EC35	<1000 µg/kg	TM414	6470				
Aromatics >EC35-EC44	<1000 µg/kg	TM414	1120				
Aromatics > EC40-EC44	<1000 µg/kg	TM414	<1000				
Total Aromatics > EC10-EC44	<5000 µg/kg	TM414	8430				
Total Aliphatics & Aromatics >C5-C44	<10000 µg/kg	TM414	18100				
Total Aliphatics >C5-C10	<50 µg/kg	TM089	<50				
				2			
Total Aromatics >EC5-EC10	<50 µg/kg	TM089	<50				
				2			
GRO >C5-C10	<20 µg/kg	TM089	<20				
				2			



CERTIFICATE OF ANALYSIS

Validated

SDG: 200926-103
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 571020
Superseded Report:

VOC MS (S)

Results Legend		Customer Sample Ref.	WS72401					
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.30					
M	mCERTS accredited.		Soil/Solid (S)					
aq	Aqueous / settled sample.		24/09/2020					
diss.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.		26/09/2020					
*	Subcontracted - refer to subcontractor report for accreditation status.		200926-103					
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		22909597					
(F)	Trigger breach confirmed							
1-4*\$@	Sample deviation (see appendix)							
Component	LOD/Units		Method					
Dibromofluoromethane**	%	TM116	113	2				
Toluene-d8**	%	TM116	94.6	2				
4-Bromofluorobenzene**	%	TM116	82.4	2				
Dichlorodifluoromethane	<6 µg/kg	TM116	<6	2 M				
Chloromethane	<7 µg/kg	TM116	<7	2 #				
Vinyl Chloride	<6 µg/kg	TM116	<6	2 M				
Bromomethane	<10 µg/kg	TM116	<10	2 M				
Chloroethane	<10 µg/kg	TM116	<10	2 M				
Trichlorofluoromethane	<6 µg/kg	TM116	<6	2 M				
1,1-Dichloroethene	<10 µg/kg	TM116	<10	2 #				
Carbon Disulphide	<7 µg/kg	TM116	<7	2 M				
Dichloromethane	<10 µg/kg	TM116	<10	2 #				
Methyl Tertiary Butyl Ether	<10 µg/kg	TM116	<10	2 M				
trans-1,2-Dichloroethene	<10 µg/kg	TM116	<10	2 M				
1,1-Dichloroethane	<8 µg/kg	TM116	<8	2 M				
cis-1,2-Dichloroethene	<6 µg/kg	TM116	<6	2 M				
2,2-Dichloropropane	<10 µg/kg	TM116	<10	2				
Bromochloromethane	<10 µg/kg	TM116	<10	2 M				
Chloroform	<8 µg/kg	TM116	<8	2 M				
1,1,1-Trichloroethane	<7 µg/kg	TM116	<7	2 M				
1,1-Dichloropropene	<10 µg/kg	TM116	<10	2 M				
Carbontetrachloride	<10 µg/kg	TM116	<10	2 M				
1,2-Dichloroethane	<5 µg/kg	TM116	<5	2 M				
Benzene	<9 µg/kg	TM116	<9	2 M				
Trichloroethene	<9 µg/kg	TM116	<9	2 #				
1,2-Dichloropropane	<10 µg/kg	TM116	<10	2 M				
Dibromomethane	<9 µg/kg	TM116	<9	2 M				
Bromodichloromethane	<7 µg/kg	TM116	<7	2 M				
cis-1,3-Dichloropropene	<10 µg/kg	TM116	<10	2 M				
Toluene	<7 µg/kg	TM116	<7	2 M				
trans-1,3-Dichloropropene	<10 µg/kg	TM116	<10	2				
1,1,2-Trichloroethane	<10 µg/kg	TM116	<10	2 M				



CERTIFICATE OF ANALYSIS

Validated

SDG: 200926-103
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 571020
Superseded Report:

VOC MS (S)

Results Legend		Customer Sample Ref.				
# ISO17025 accredited. M mCERTS accredited. sq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery. (F) Trigger breach confirmed 1-4# Sample deviation (see appendix)		WS72401				
		Depth (m)	0.30			
		Sample Type	Soil/Solid (S)			
		Date Sampled	24/09/2020			
		Sampled Time				
		Date Received	26/09/2020			
		SDG Ref	200926-103			
		Lab Sample No.(s)	22909597			
		AGS Reference				
Component	LOD/Units	Method				
1,3-Dichloropropane	<7 µg/kg	TM116	<7	2 M		
Tetrachloroethene	<5 µg/kg	TM116	<5	2 M		
Dibromochloromethane	<10 µg/kg	TM116	<10	2 M		
1,2-Dibromoethane	<10 µg/kg	TM116	<10	2 M		
Chlorobenzene	<5 µg/kg	TM116	<5	2 M		
1,1,1,2-Tetrachloroethane	<10 µg/kg	TM116	<10	2 M		
Ethylbenzene	<4 µg/kg	TM116	<4	2 M		
p/m-Xylene	<10 µg/kg	TM116	<10	2 #		
o-Xylene	<10 µg/kg	TM116	<10	2 M		
Styrene	<10 µg/kg	TM116	<10	2 #		
Bromoform	<10 µg/kg	TM116	<10	2 M		
Isopropylbenzene	<5 µg/kg	TM116	<5	2 #		
1,1,2,2-Tetrachloroethane	<10 µg/kg	TM116	<10	2 #		
1,2,3-Trichloropropane	<16 µg/kg	TM116	<16	2 M		
Bromobenzene	<10 µg/kg	TM116	<10	2 M		
Propylbenzene	<10 µg/kg	TM116	<10	2 M		
2-Chlorotoluene	<9 µg/kg	TM116	<9	2 M		
1,3,5-Trimethylbenzene	<8 µg/kg	TM116	<8	2 M		
4-Chlorotoluene	<10 µg/kg	TM116	<10	2 M		
tert-Butylbenzene	<14 µg/kg	TM116	<14	2 M		
1,2,4-Trimethylbenzene	<9 µg/kg	TM116	<9	2 #		
sec-Butylbenzene	<10 µg/kg	TM116	<10	2		
4-Isopropyltoluene	<10 µg/kg	TM116	<10	2 M		
1,3-Dichlorobenzene	<8 µg/kg	TM116	<8	2 M		
1,4-Dichlorobenzene	<5 µg/kg	TM116	<5	2 M		
n-Butylbenzene	<11 µg/kg	TM116	<11	2		
1,2-Dichlorobenzene	<10 µg/kg	TM116	<10	2 M		
1,2-Dibromo-3-chloropropane	<14 µg/kg	TM116	<14	2 M		
Tert-amyl methyl ether	<10 µg/kg	TM116	<10	2 #		
1,2,4-Trichlorobenzene	<20 µg/kg	TM116	<20	2		
Hexachlorobutadiene	<20 µg/kg	TM116	<20	2		
Naphthalene	<13 µg/kg	TM116	<13	2 M		



CERTIFICATE OF ANALYSIS

Validated

SDG: 200926-103	Client Reference: JFR1451	Report Number: 571020
Location: A303 Stonehenge	Order Number:	Superseded Report:

Asbestos Identification - Solid Samples

Results Legend

- # ISO17025 accredited.
- M mCERTS accredited.
- * Subcontracted test.
- (F) Trigger breach confirmed
- 1-5&*§@ Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref.	WS72401	08/10/2020	Paul Poynton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Depth (m)	0.30										
Sample Type	SOLID										
Date Sampled	24/09/2020 00:00:00										
Date Received	26/09/2020 05:00:00										
SDG	200926-103										
Original Sample	22909597										
Method Number	TM048										



CERTIFICATE OF ANALYSIS

Validated

SDG: 200926-103
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 571020
Superseded Report:

CEN 2:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/

Client Reference		Site Location	A303 Stonehenge
Mass Sample taken (kg)	0.199	Natural Moisture Content (%)	14.3
Mass of dry sample (kg)	0.175	Dry Matter Content (%)	87.5
Particle Size <4mm	>95%		

Case	
SDG	200926-103
Lab Sample Number(s)	22909597
Sampled Date	24-Sep-2020
Customer Sample Ref.	WS72401
Depth (m)	0.30

Eluate Analysis	Conc ⁿ in 2:1 eluate (mg/l)		2:1 conc ⁿ leached (mg/kg)	
	Result	Limit of Detection	Result	Limit of Detection
Aliphatics >C12-C16	<0.01	<0.01	<0.02	<0.02
Aliphatics >C16-C21	<0.01	<0.01	<0.02	<0.02
Aliphatics >C21-C35	<0.01	<0.01	<0.02	<0.02
Total Aliphatics >C12-C35	<0.01	<0.01	<0.02	<0.02
Aromatics >EC12-EC16	<0.01	<0.01	<0.02	<0.02
Aromatics >EC16-EC21	<0.01	<0.01	<0.02	<0.02
Aromatics >EC21-EC35	<0.01	<0.01	<0.02	<0.02
Aromatics >EC16-EC35	<0.01	<0.01	<0.02	<0.02
Total Aromatics >EC12-EC35	<0.01	<0.01	<0.02	<0.02
TPH (Total Aliphatics + Total Aromatics) >C5-C35	<0.01	<0.01	<0.02	<0.02
Ammoniacal Nitrogen as N	<0.2	<0.2	<0.4	<0.4
Chromium III	<0.03	<0.03	<0.06	<0.06
Hexavalent Chromium	<0.03	<0.03	<0.06	<0.06
Sulphate (soluble)	2.8	<2	5.6	<4
Dissolved Organic Carbon	10.5	<3	21	<6
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.00002	<0.00002
Antimony	<0.001	<0.001	<0.002	<0.002
Naphthalene (diss.filt)	<0.00001	<0.00001	<0.00002	<0.00002
Total Cyanide (W)	<0.05	<0.05	<0.1	<0.1
Acenaphthene (diss.filt)	0.0000201	<0.000005	0.0000402	<0.00001
Arsenic	0.000758	<0.0005	0.00152	<0.001
Free Cyanide (W)	<0.05	<0.05	<0.1	<0.1
Acenaphthylene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Phenol by HPLC (W)	<0.002	<0.002	<0.004	<0.004
Beryllium	<0.0001	<0.0001	<0.0002	<0.0002
Fluoranthene (diss.filt)	0.0000956	<0.000005	0.000191	<0.00001
Anthracene (diss.filt)	0.000016	<0.000005	0.000032	<0.00001
Boron	0.0164	<0.01	0.0328	<0.02
Phenanthrene (diss.filt)	0.0000946	<0.000005	0.000189	<0.00001
Cadmium	<0.00008	<0.00008	<0.00016	<0.00016
Fluorene (diss.filt)	0.0000125	<0.000005	0.000025	<0.00001
Chrysene (diss.filt)	0.0000135	<0.000005	0.000027	<0.00001
Pyrene (diss.filt)	0.0000431	<0.000005	0.0000862	<0.00001
Benzo(a)anthracene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Chromium	<0.001	<0.001	<0.002	<0.002

Leach Test Information

Date Prepared	06-Oct-2020
pH (pH Units)	8.61
Conductivity (µS/cm)	353.00
Temperature (°C)	20.00
Volume Leachant (Litres)	0.326
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates

14/10/2020 15:22:07

15:21:47 14/10/2020



CERTIFICATE OF ANALYSIS

Validated

SDG: 200926-103
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 571020
Superseded Report:

CEN 2:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/'

Client Reference	
Mass Sample taken (kg)	0.199
Mass of dry sample (kg)	0.175
Particle Size <4mm	>95%

Site Location	A303 Stonehenge
Natural Moisture Content (%)	14.3
Dry Matter Content (%)	87.5

Case	
SDG	200926-103
Lab Sample Number(s)	22909597
Sampled Date	24-Sep-2020
Customer Sample Ref.	WS72401
Depth (m)	0.30

Eluate Analysis	Conc ⁿ in 2:1 eluate (mg/l)		2:1 conc ⁿ leached (mg/kg)	
	Result	Limit of Detection	Result	Limit of Detection
Benzo(b)fluoranthene (diss.filt)	0.0000165	<0.000005	0.000033	<0.00001
Benzo(k)fluoranthene (diss.filt)	0.00000503	<0.000005	0.0000101	<0.00001
Benzo(a)pyrene (diss.filt)	0.00000888	<0.000002	0.0000178	<0.000004
Copper	0.00264	<0.0003	0.00528	<0.0006
Dibenzo(a,h)anthracene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Lead	<0.0002	<0.0002	<0.0004	<0.0004
Benzo(g,h,i)perylene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Indeno(1,2,3-cd)pyrene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Manganese	<0.003	<0.003	<0.006	<0.006
Molybdenum	<0.003	<0.003	<0.006	<0.006
PAH 16 EPA Total by GCMS (diss.filt)	0.000326	<0.000082	0.000652	<0.000164
Nickel	0.00109	<0.0004	0.00218	<0.0008
Phosphorus	0.0803	<0.01	0.161	<0.02
Selenium	<0.001	<0.001	<0.002	<0.002
Zinc	0.003	<0.001	0.006	<0.002
Calcium (Dis.Filt) mg/l	61.7	<0.2	123	<0.4
Iron (Dis.Filt) mg/l	<0.019	<0.019	<0.038	<0.038
TPH CWG (W)				
Surrogate Recovery	-	-	-	-
GRO TOT (C5-C12)	<0.05	<0.05	<0.1	<0.1
Aliphatics C5-C6	<0.01	<0.01	<0.02	<0.02
Aliphatics >C6-C8	<0.01	<0.01	<0.02	<0.02
Aliphatics >C8-C10	<0.01	<0.01	<0.02	<0.02
Aliphatics >C10-C12	<0.01	<0.01	<0.02	<0.02
Aromatics C6-C7	<0.01	<0.01	<0.02	<0.02
Aromatics >C7-C8	<0.01	<0.01	<0.02	<0.02
MTBE GC-FID	<0.003	<0.003	<0.006	<0.006
Aromatics >EC8 -EC10	<0.01	<0.01	<0.02	<0.02
Aromatics >EC10-EC12	<0.01	<0.01	<0.02	<0.02
Benzene by GC	<0.007	<0.007	<0.014	<0.014
Toluene by GC	<0.004	<0.004	<0.008	<0.008
Ethylbenzene by GC	<0.005	<0.005	<0.01	<0.01
m & p Xylene by GC	<0.008	<0.008	<0.016	<0.016
o Xylene by GC	<0.003	<0.003	<0.006	<0.006
Sum m&p and o Xylene by GC	<0.011	<0.011	<0.022	<0.022
Sum of BTEX by GC	<0.028	<0.028	<0.056	<0.056

Leach Test Information

Date Prepared	06-Oct-2020
pH (pH Units)	8.61
Conductivity (µS/cm)	353.00
Temperature (°C)	20.00
Volume Leachant (Litres)	0.326
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates

14/10/2020 15:22:07



CERTIFICATE OF ANALYSIS

Validated

SDG: 200926-103	Client Reference: JFR1451	Report Number: 571020
Location: A303 Stonehenge	Order Number:	Superseded Report:

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM174	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID
TM178	Modified: US EPA Method 8100	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS in Waters
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser
TM243		Mixed Anions In Soils By Kone
TM245	By GC-FID	Determination of GRO by Headspace in waters
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).



CERTIFICATE OF ANALYSIS

Validated

SDG: 200926-103
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 571020
Superseded Report:

Test Completion Dates

Lab Sample No(s)	22909597
Customer Sample Ref.	WS72401
AGS Ref.	
Depth	0.30
Type	Soil/Solid (S)

Ammoniacal Nitrogen	09-Oct-2020
Ammonium Soil by Titration	07-Oct-2020
Anions by Kone (soil)	08-Oct-2020
Anions by Kone (w)	09-Oct-2020
Asbestos ID in Solid Samples	08-Oct-2020
CEN 2:1 Leachate (1 Stage)	07-Oct-2020
CEN Readings	09-Oct-2020
Chromium III	12-Oct-2020
Cyanide Comp/Free/Total/Thiocyanate	12-Oct-2020
Dissolved Metals by ICP-MS	13-Oct-2020
Dissolved Organic/Inorganic Carbon	13-Oct-2020
EPH CWG (Aliphatic) Filtered GC (W)	11-Oct-2020
EPH CWG (Aromatic) Filtered GC (W)	11-Oct-2020
EPH CWG GC (S)	08-Oct-2020
GRO by GC-FID (S)	09-Oct-2020
GRO by GC-FID (W)	09-Oct-2020
Hexavalent Chromium (s)	08-Oct-2020
Hexavalent Chromium (w)	09-Oct-2020
Mercury Dissolved	14-Oct-2020
Metals in solid samples by OES	09-Oct-2020
Moisture at 105C	06-Oct-2020
PAH by GCMS	07-Oct-2020
PAH in waters by GC-MS (diss.filt)	12-Oct-2020
pH	09-Oct-2020
pH Value of Filtered Water	09-Oct-2020
Phenols by HPLC (S)	08-Oct-2020
Phenols by HPLC (W)	09-Oct-2020
Sample description	06-Oct-2020
Semi Volatile Organic Compounds	08-Oct-2020
Total Organic Carbon	09-Oct-2020
TPH CWG Filtered (W)	11-Oct-2020
TPH CWG GC (S)	09-Oct-2020
VOC MS (S)	08-Oct-2020



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Order Number:

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Superseded Report:

ASSOCIATED AQC DATA

Ammoniacal Nitrogen

Component	Method Code	QC 2272
Ammoniacal Nitrogen as N	TM099	99.6 93.14 : 108.60

Ammonium Soil by Titration

Component	Method Code	QC 2250
Exchangeable Ammonium as NH4	TM024	85.57 76.20 : 110.13

Anions by Kone (soil)

Component	Method Code	QC 2283
Water Soluble Sulphate as SO4 2:1 Extract	TM243	164.49 70.00 : 130.00

Anions by Kone (w)

Component	Method Code	QC 2332
Chloride	TM184	108.0 92.93 : 115.43
Sulphate (soluble)	TM184	105.6 90.53 : 113.03

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2243	QC 2324
Free Cyanide	TM153	94.85 78.61 : 114.43	
Free Cyanide (W)	TM227		103.5 90.50 : 114.50
Thiocyanate	TM153	98.72 90.48 : 109.52	
Thiocyanate (W)	TM227		103.75 90.50 : 113.00
Total Cyanide	TM153	97.9 76.80 : 112.96	
Total Cyanide (W)	TM227		105.0 91.75 : 112.75

Dissolved Metals by ICP-MS



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Dissolved Metals by ICP-MS

Component	Method Code	QC 2387	QC 2321
Aluminium	TM152	106.0 94.21 : 111.52	99.33 94.21 : 111.52
Antimony	TM152	103.0 88.37 : 130.57	102.17 88.37 : 130.57
Arsenic	TM152	104.5 92.62 : 113.52	99.0 92.62 : 113.52
Barium	TM152	105.17 88.62 : 113.14	102.67 88.62 : 113.14
Beryllium	TM152	101.0 87.08 : 111.38	96.33 87.08 : 111.38
Bismuth	TM152	101.0 92.62 : 115.02	98.67 92.62 : 115.02
Boron	TM152	107.0 86.31 : 120.88	104.67 86.31 : 120.88
Cadmium	TM152	105.33 93.85 : 111.65	99.67 93.85 : 111.65
Calcium	TM152	104.67 89.20 : 126.91	98.0 89.20 : 126.91
Chromium	TM152	105.83 92.22 : 109.85	98.17 92.22 : 109.85
Cobalt	TM152	102.83 85.01 : 114.87	93.17 85.01 : 114.87
Copper	TM152	106.5 89.87 : 119.73	97.17 89.87 : 119.73
Iron	TM152	104.67 93.02 : 113.86	96.67 93.02 : 113.86
Lead	TM152	106.33 91.11 : 116.98	101.5 91.11 : 116.98
Lithium	TM152	105.33 91.30 : 123.00	99.17 91.30 : 123.00
Magnesium	TM152	100.0 89.60 : 116.61	92.67 89.60 : 116.61
Manganese	TM152	105.0 93.97 : 112.46	99.0 93.97 : 112.46
Molybdenum	TM152	100.67 89.07 : 110.96	95.17 89.07 : 110.96
Nickel	TM152	106.17 93.70 : 112.15	96.33 93.70 : 112.15
Phosphorus	TM152	102.5 89.24 : 114.18	98.0 89.24 : 114.18
Potassium	TM152	103.33 93.20 : 115.55	98.0 93.20 : 115.55
Selenium	TM152	105.67 91.69 : 117.12	101.0 91.69 : 117.12
Silver	TM152	134.0 90.93 : 121.73	98.83 90.93 : 121.73
Sodium	TM152	102.0 92.42 : 113.24	90.67 92.42 : 113.24
Strontium	TM152	105.0 92.14 : 116.24	102.67 92.14 : 116.24
Tellurium	TM152	100.17 89.88 : 111.78	102.17 89.88 : 111.78
Thallium	TM152	100.17 82.43 : 113.83	89.67 82.43 : 113.83



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Superseded Report:

Dissolved Metals by ICP-MS

		QC 2387	QC 2321
Tin	TM152	104.33 94.62 : 107.79	102.33 94.62 : 107.79
Titanium	TM152	105.5 90.29 : 115.23	101.17 90.29 : 115.23
Tungsten	TM152	102.17 77.61 : 132.31	96.0 77.61 : 132.31
Uranium	TM152	100.5 86.97 : 115.76	99.5 86.97 : 115.76
Vanadium	TM152	104.5 89.61 : 115.48	98.0 89.61 : 115.48
Zinc	TM152	106.67 87.51 : 116.26	99.33 87.51 : 116.26

Dissolved Organic/Inorganic Carbon

Component	Method Code	QC 2333
Dissolved Inorganic Carbon	TM090	108.17 91.27 : 109.87
Dissolved Organic Carbon	TM090	101.67 96.58 : 107.98

EPH CWG (Aliphatic) Filtered GC (W)

Component	Method Code	QC 2206
Total Aliphatics >C10-C40	TM174	97.36 71.82 : 134.09

GRO by GC-FID (S)

Component	Method Code	QC 2208
QC	TM089	84.8 70.75 : 114.19

GRO by GC-FID (W)

Component	Method Code	QC 2272
Benzene by GC	TM245	91.0 79.13 : 118.84
Ethylbenzene by GC	TM245	93.5 79.54 : 115.99
m & p Xylene by GC	TM245	92.0 78.44 : 116.32
MTBE GC-FID	TM245	94.0 81.43 : 120.09
o Xylene by GC	TM245	92.0 76.85 : 120.29



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GRO by GC-FID (W)

		QC 2272
QC	TM245	110.96 71.58 : 131.01
Toluene by GC	TM245	91.5 79.00 : 121.96

Hexavalent Chromium (s)

		QC 2245
Hexavalent Chromium	TM151	102.0 95.60 : 107.60

Hexavalent Chromium (w)

		QC 2297
Hexavalent Chromium	TM241	100.0 94.17 : 106.17

Mercury Dissolved

		QC 2298
Mercury Dissolved (CVAf)	TM183	110.0 0.00 : 0.00

Metals in solid samples by OES

		QC 2239
Aluminium	TM181	89.38 77.46 : 123.98
Antimony	TM181	90.65 87.04 : 111.16
Arsenic	TM181	95.06 87.34 : 110.87
Barium	TM181	87.25 80.73 : 115.16
Beryllium	TM181	94.4 89.47 : 112.97
Boron	TM181	83.95 76.57 : 104.15
Cadmium	TM181	80.25 78.94 : 102.43
Chromium	TM181	90.47 77.55 : 104.47
Cobalt	TM181	87.74 82.95 : 107.41



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Metals in solid samples by OES

		QC 2239
Copper	TM181	91.2 84.36 : 106.14
Iron	TM181	91.27 81.43 : 115.79
Lead	TM181	88.29 81.95 : 107.63
Manganese	TM181	103.06 94.29 : 119.51
Mercury	TM181	87.2 82.73 : 106.36
Molybdenum	TM181	92.18 86.61 : 111.07
Nickel	TM181	87.29 79.72 : 103.80
Phosphorus	TM181	103.43 92.65 : 125.47
Selenium	TM181	92.94 88.36 : 111.25
Strontium	TM181	90.2 78.06 : 99.91
Thallium	TM181	94.25 88.60 : 116.73
Tin	TM181	92.78 89.77 : 112.62
Titanium	TM181	81.68 66.29 : 105.96
Vanadium	TM181	90.84 75.51 : 108.87
Zinc	TM181	93.02 84.02 : 111.24

PAH by GCMS

Component	Method Code	QC 2233
Acenaphthene	TM218	88.5 76.79 : 103.90
Acenaphthylene	TM218	85.5 78.40 : 108.66
Anthracene	TM218	91.0 70.90 : 109.22
Benz(a)anthracene	TM218	99.5 73.77 : 119.26
Benzo(a)pyrene	TM218	98.0 73.20 : 114.18
Benzo(b)fluoranthene	TM218	94.5 75.36 : 117.58
Benzo(ghi)perylene	TM218	95.0 70.73 : 116.12
Benzo(k)fluoranthene	TM218	93.5 75.98 : 116.59
Chrysene	TM218	99.5 74.82 : 114.18
Dibenzo(ah)anthracene	TM218	96.0 69.17 : 115.30



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PAH by GCMS

		QC 2233
Fluoranthene	TM218	105.5 75.88 : 112.84
Fluorene	TM218	87.0 76.66 : 107.56
Indeno(123cd)pyrene	TM218	95.0 70.26 : 117.95
Naphthalene	TM218	84.5 74.70 : 101.83
Phenanthrene	TM218	93.5 73.62 : 109.34
Pyrene	TM218	103.5 71.46 : 117.00

PAH in waters by GC-MS (diss.filt)

Component	Method Code	QC 2240
Acenaphthene (diss.filt)	TM178	105.2 93.20 : 119.60
Acenaphthylene (diss.filt)	TM178	106.0 92.00 : 118.40
Anthracene (diss.filt)	TM178	104.8 90.80 : 114.80
Benzo(a)anthracene (diss.filt)	TM178	102.0 91.60 : 115.60
Benzo(a)pyrene (diss.filt)	TM178	104.8 91.20 : 120.00
Benzo(b)fluoranthene (diss.filt)	TM178	103.6 86.80 : 120.40
Benzo(g,h,i)perylene (diss.filt)	TM178	104.8 89.20 : 118.00
Benzo(k)fluoranthene (diss.filt)	TM178	100.4 94.40 : 125.60
Chrysene (diss.filt)	TM178	102.4 96.40 : 122.80
Dibenzo(a,h)anthracene (diss.filt)	TM178	106.4 93.60 : 132.00
Fluoranthene (diss.filt)	TM178	96.8 92.80 : 121.60
Fluorene (diss.filt)	TM178	95.2 93.60 : 120.00
Indeno(1,2,3-cd)pyrene (diss.filt)	TM178	106.0 82.40 : 120.80
Naphthalene (diss.filt)	TM178	100.4 88.40 : 126.80
Phenanthrene (diss.filt)	TM178	106.4 92.40 : 118.80
Pyrene (diss.filt)	TM178	107.6 90.40 : 124.00

pH



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Order Number:

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Superseded Report:

pH

Component	Method Code	QC 2272
pH	TM133	100.66 99.74 : 102.91

pH Value of Filtered Water

Component	Method Code	QC 2240
pH	TM256	101.74 99.33 : 102.54

Phenols by HPLC (S)

Component	Method Code	QC 2206
2,3,5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	98.7 65.50 : 89.50
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	85.96 84.00 : 124.00
Catechol by HPLC (S)	TM062 (S)	90.48 19.39 : 135.70
Cresols by HPLC (S)	TM062 (S)	92.48 81.00 : 112.20
Naphthol by HPLC (S)	TM062 (S)	110.0 57.50 : 102.50
Phenol by HPLC (S)	TM062 (S)	96.03 88.67 : 124.67
Resorcinol HPLC (S)	TM062 (S)	92.45 69.99 : 127.22
Xylenols by HPLC (S)	TM062 (S)	95.42 95.22 : 115.89

Phenols by HPLC (W)

Component	Method Code	QC 2294
2,3,5 Trimethyl-Phenol by HPLC (W)	TM259	99.0 84.50 : 111.50
2-Isopropyl Phenol by HPLC (W)	TM259	97.0 84.55 : 110.90
Cresols by HPLC (W)	TM259	92.33 90.00 : 112.00
Naphthol by HPLC (W)	TM259	102.0 82.00 : 124.00
Phenol by HPLC (W)	TM259	95.0 86.80 : 112.60
Xylenols by HPLC (W)	TM259	99.17 94.74 : 115.71

Semi Volatile Organic Compounds



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Semi Volatile Organic Compounds

Component	Method Code	QC 2208
4-Bromophenylphenylether (Soil)	TM157	86.0 63.50 : 114.50
Benzo(a)anthracene (Soil)	TM157	92.0 71.89 : 120.91
Hexachlorobutadiene (Soil)	TM157	90.0 69.80 : 117.77
Naphthalene (Soil)	TM157	88.0 70.00 : 115.00
Nitrobenzene (Soil)	TM157	84.5 70.00 : 118.00
Phenol (Soil)	TM157	85.5 72.00 : 117.00

Total Organic Carbon

Component	Method Code	QC 2294
Total Organic Carbon	TM132	95.7 87.02 : 113.45

VOC MS (S)

Component	Method Code	QC 2217
1,1,1,2-tetrachloroethane	TM116	102.2 79.10 : 119.66
1,1,1-Trichloroethane	TM116	102.8 87.51 : 115.37
1,1,2-Trichloroethane	TM116	101.8 81.29 : 113.79
1,1-Dichloroethane	TM116	111.6 86.77 : 122.11
1,2-Dichloroethane	TM116	114.6 90.04 : 132.28
1,4-Dichlorobenzene	TM116	101.6 80.81 : 125.07
2-Chlorotoluene	TM116	94.6 73.76 : 115.43
4-Chlorotoluene	TM116	92.6 72.48 : 112.82
Benzene	TM116	103.0 84.29 : 112.22
Carbon Disulphide	TM116	106.0 75.11 : 124.81
Carbontetrachloride	TM116	104.2 82.35 : 126.46
Chlorobenzene	TM116	100.2 82.88 : 122.42
Chloroform	TM116	109.4 90.35 : 120.38
Chloromethane	TM116	121.6 65.80 : 138.88



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VOC MS (S)

		QC 2217
Cis-1,2-Dichloroethene	TM116	102.8 78.27 : 128.90
Dibromomethane	TM116	103.2 76.00 : 120.73
Dichloromethane	TM116	115.4 92.27 : 134.36
Ethylbenzene	TM116	91.0 70.95 : 113.07
Hexachlorobutadiene	TM116	84.2 14.55 : 147.92
Isopropylbenzene	TM116	80.2 52.00 : 108.19
Naphthalene	TM116	104.8 80.29 : 135.77
o-Xylene	TM116	82.4 64.92 : 98.85
p/m-Xylene	TM116	86.7 72.04 : 104.04
Sec-Butylbenzene	TM116	74.2 27.03 : 135.73
Tetrachloroethene	TM116	100.8 81.43 : 126.65
Toluene	TM116	94.2 82.44 : 103.50
Trichloroethene	TM116	101.2 79.80 : 112.33
Trichlorofluoromethane	TM116	116.2 86.68 : 126.82
Vinyl Chloride	TM116	121.0 69.66 : 136.55

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis .

The figure detailed is the percentage recovery result for the AQC .

The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control .



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SDG: 200926-103
Location: A303 Stonehenge

Client Reference: JFR1451
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Chromatogram

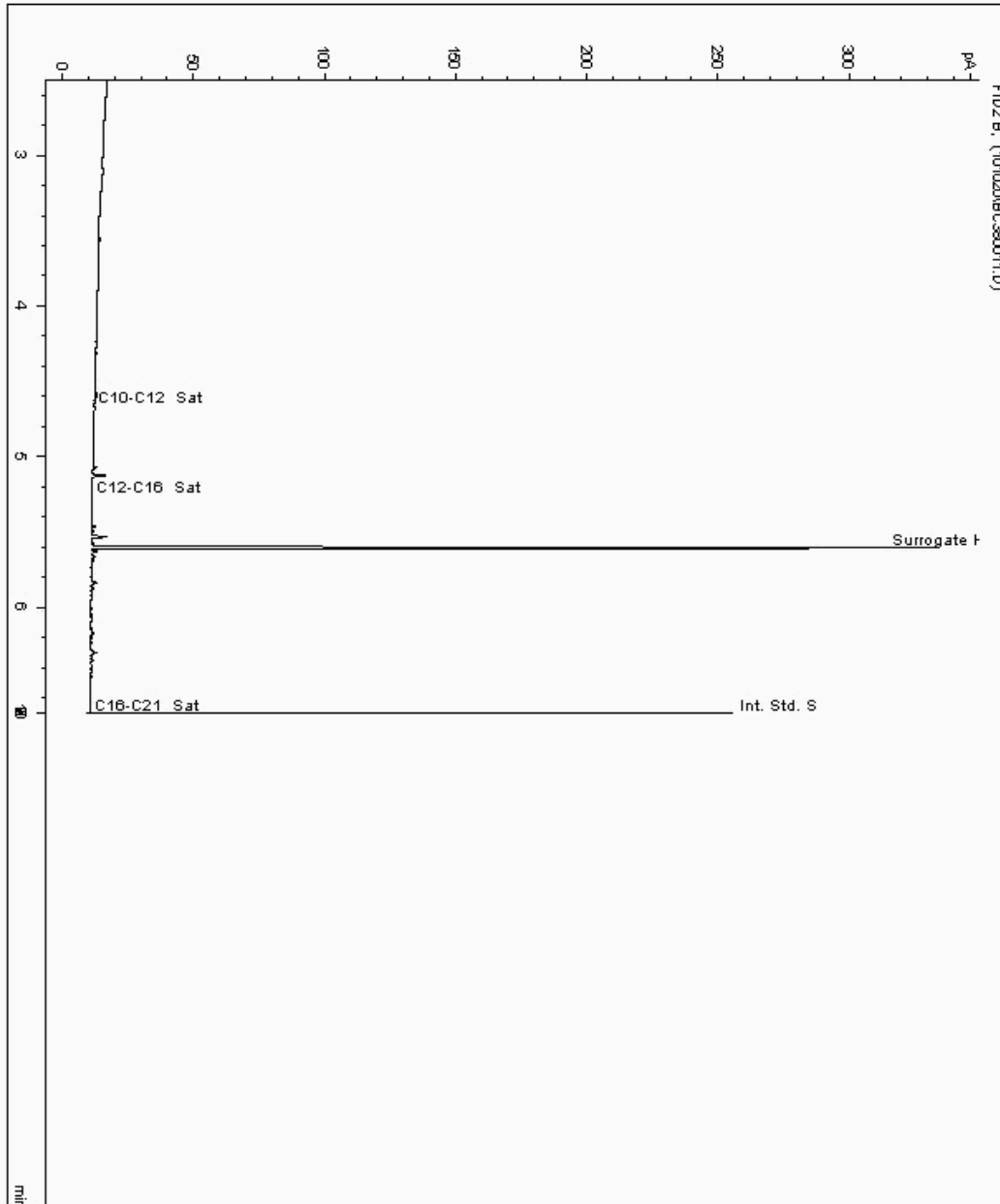
Analysis: EPH CWG (Aliphatic) Filtered GC (W)

Sample No : 22989229
Sample ID : WS72401

Depth : 0.30

Speciated TPH - SATS (C12 - C40)

Sample Identity: 21545248-
Date Acquired : 10/10/20 15:40:25 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025





CERTIFICATE OF ANALYSIS

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Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 571020
Superseded Report:

Chromatogram

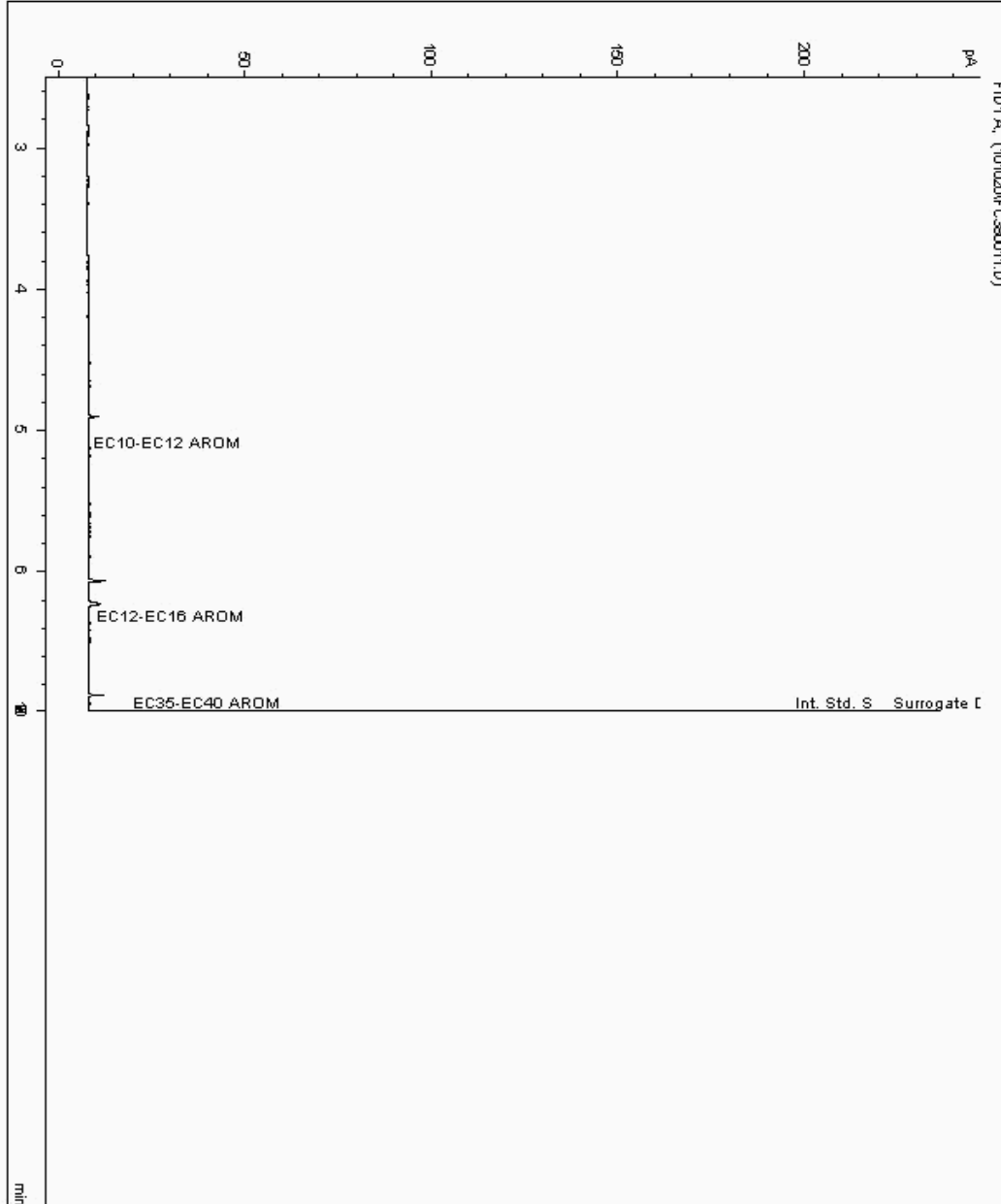
Analysis: EPH CWG (Aromatic) Filtered GC (W)

Sample No : 22989229
Sample ID : WS72401

Depth : 0.30

Speciated TPH - AROM (C12 - C40)

Sample Identity: 21545249-
Date Acquired : 10/10/20 15:40:26 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025





CERTIFICATE OF ANALYSIS

Validated

SDG: 200926-103
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

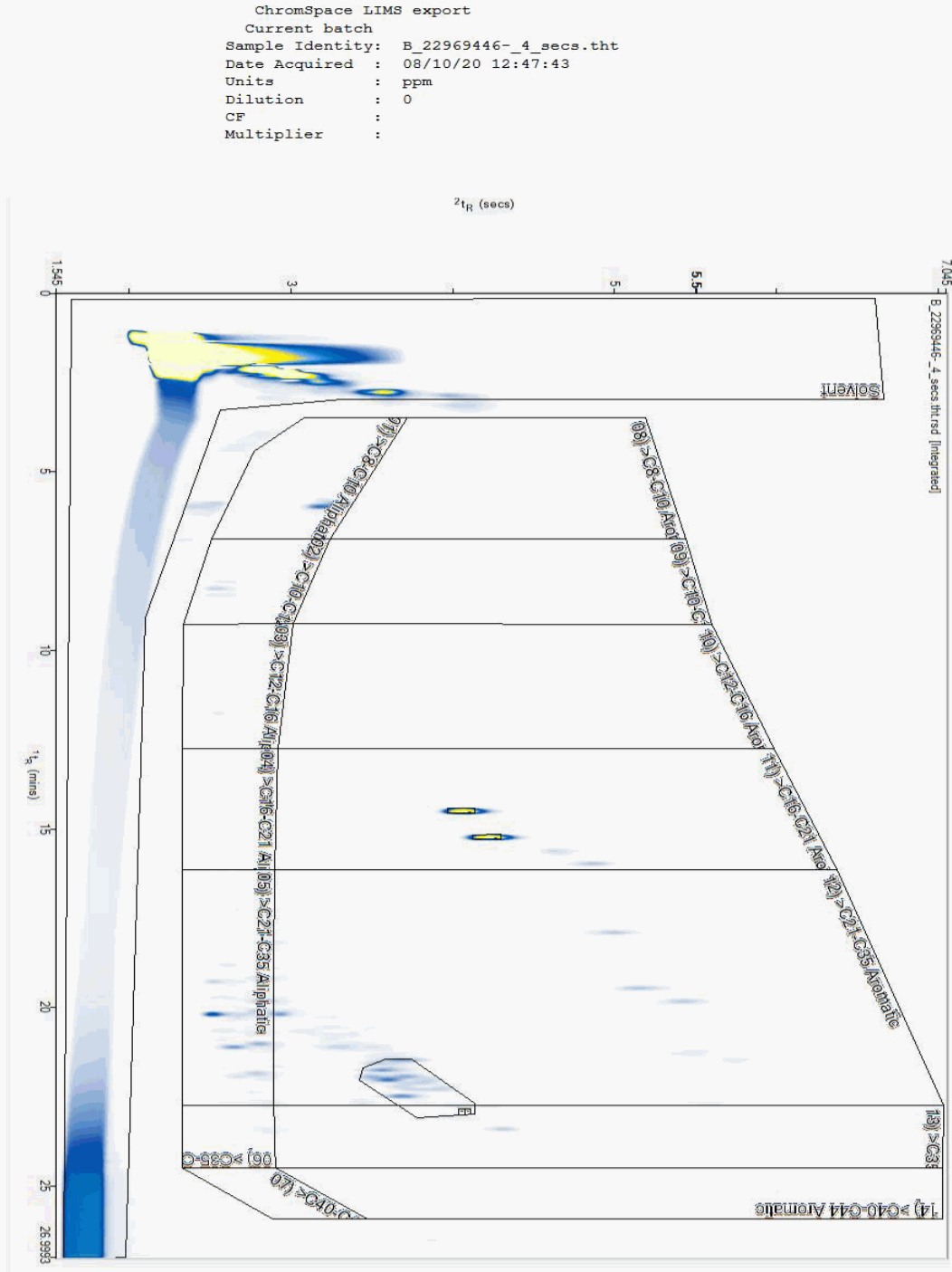
Report Number: 571020
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 22969446
Sample ID : WS72401

Depth : 0.30





CERTIFICATE OF ANALYSIS

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SDG: 200926-103
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

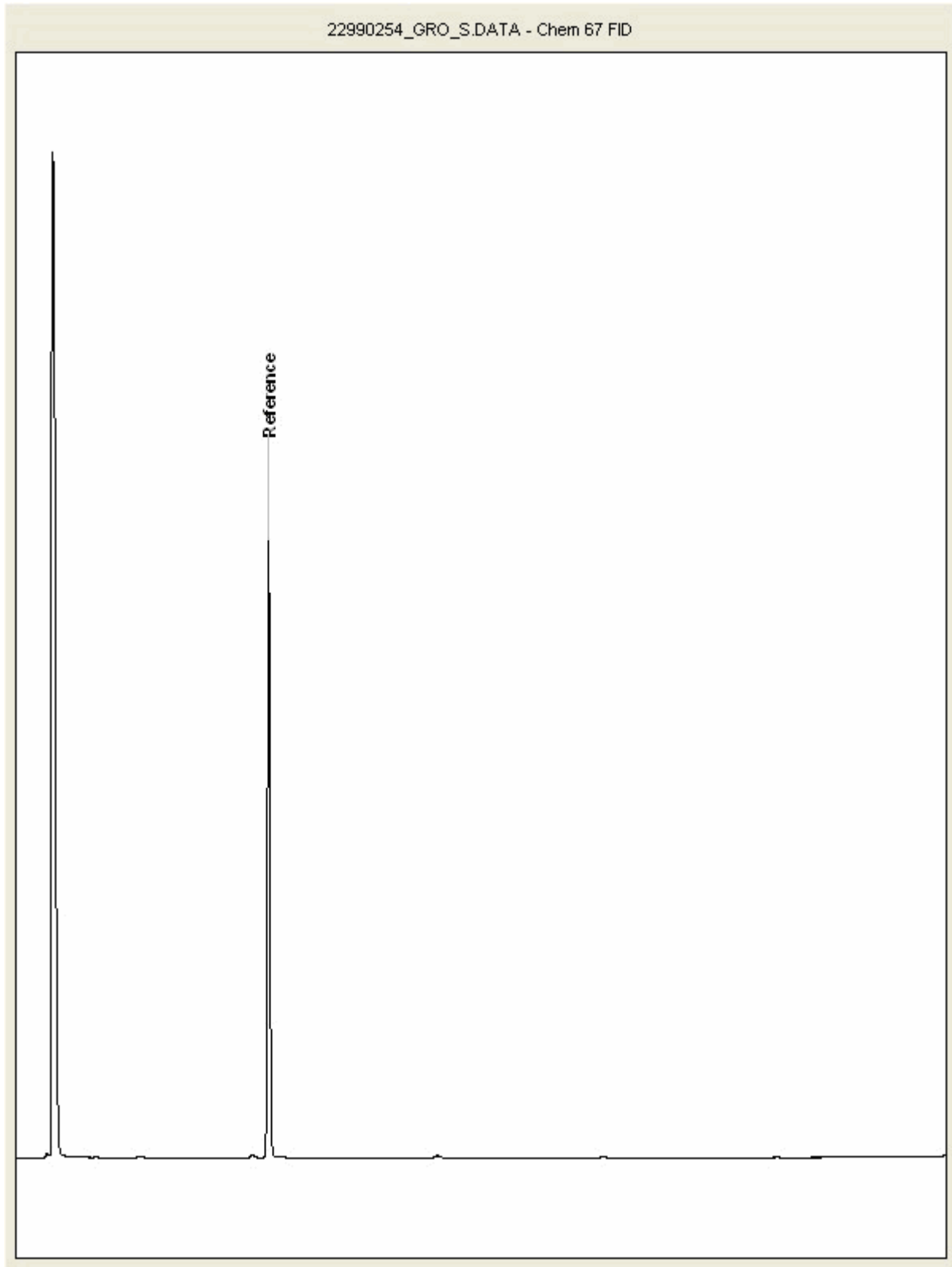
Report Number: 571020
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 22990254
Sample ID : WS72401

Depth : 0.30





CERTIFICATE OF ANALYSIS

Validated

SDG: 200926-103
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

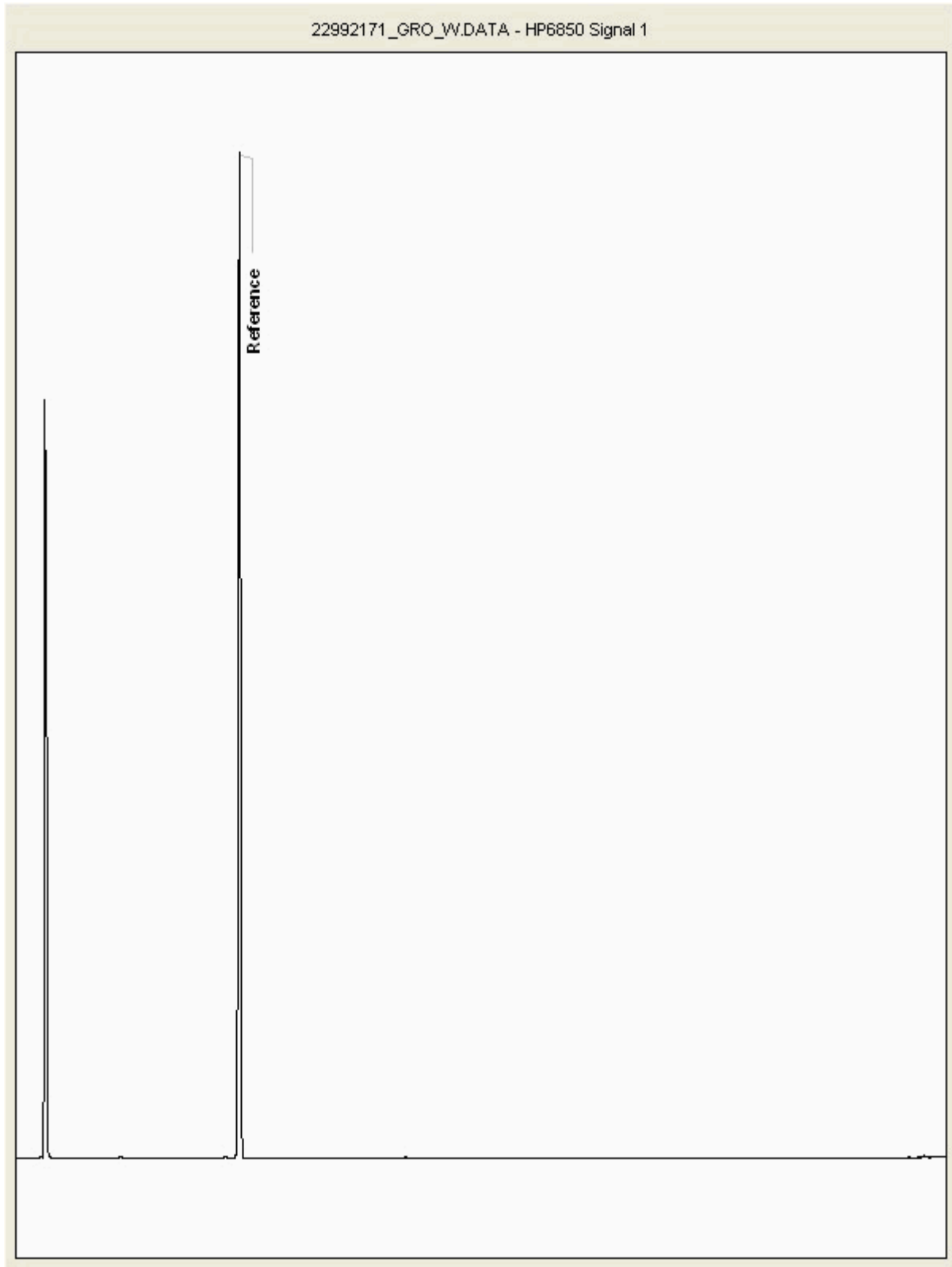
Report Number: 571020
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 22992171
Sample ID : WS72401

Depth : 0.30





CERTIFICATE OF ANALYSIS

SDG: 200926-103 Client Reference: JFR1451 Report Number: 571020
 Location: A303 Stonehenge Order Number: Superseded Report:

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

19. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung. Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017)*.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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RPS Consultants Ltd
260 Park Avenue
Aztec West
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Bristol
BS32 4SY

Attention: Gary Riches

CERTIFICATE OF ANALYSIS

Date of report Generation: 18 December 2020
Customer: RPS Consultants Ltd
Sample Delivery Group (SDG): 201001-47
Your Reference: JFR1451
Location: A303 Stonehenge
Report No: 580778

This report has been revised and directly supersedes 575651 in its entirety.

We received 11 samples on Wednesday September 30, 2020 and 4 of these samples were scheduled for analysis which was completed on Friday December 18, 2020. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:



Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 201001-47
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PQ20-774

Report Number: 580778
Superseded Report: 575651

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
22932448	R70107		0.00	25/09/2020
22932449	R70107		0.30	25/09/2020
22932450	R70107		0.50	25/09/2020
22932451	R70107		1.00	25/09/2020
22932452	R71905		0.00 - 0.10	25/09/2020
22932453	R71905		0.30 - 0.40	25/09/2020
22932454	R71905		0.50 - 0.60	25/09/2020
22932455	R71905		1.00 - 1.10	25/09/2020
22932456	STP70118		0.00	25/09/2020
22932457	STP70118		0.30	25/09/2020
22932459	STP70118		0.50	25/09/2020

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 201001-47 Client Reference: JFR1451 Report Number: 580778
 Location: A303 Stonehenge Order Number: PO20-774 Superseded Report: 575651

Results Legend <input checked="" type="checkbox"/> Test <input checked="" type="checkbox"/> No Determination Possible Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type	
		22932450	R70107		0.50	60g VOC (ALE215) 250g Amber Jar (ALE210) 1kg TUB with Handle (ALE260)	S
		22932453	R71905		0.30 - 0.40	60g VOC (ALE215) 250g Amber Jar (ALE210) 1kg TUB	S
		22932454	R71905		0.50 - 0.60	60g VOC (ALE215) 250g Amber Jar (ALE210) 1kg TUB	S
		22932457	STP70118		0.30	60g VOC (ALE215) 250g Amber Jar (ALE210) 1kg TUB	S
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 1					
Ammonium Soil by Titration	All	NDPs: 0 Tests: 3					
Anions by Kone (soil)	All	NDPs: 0 Tests: 3					
Anions by Kone (w)	All	NDPs: 0 Tests: 2					
CEN Readings	All	NDPs: 0 Tests: 2					
Chromium III	All	NDPs: 0 Tests: 4					
Coronene	All	NDPs: 0 Tests: 1					
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 4					
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 2					
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 2					
EPH by GCxGC-FID	All	NDPs: 0 Tests: 1					
EPH CWG (Aliphatic) Filtered GC (W)	All	NDPs: 0 Tests: 1					
EPH CWG (Aromatic) Filtered GC (W)	All	NDPs: 0 Tests: 1					
EPH CWG GC (S)	All	NDPs: 0 Tests: 3					
Fluoride	All	NDPs: 0 Tests: 1					



CERTIFICATE OF ANALYSIS

Validated

SDG:	201001-47	Client Reference:	JFR1451	Report Number:	580778
Location:	A303 Stonehenge	Order Number:	PO20-774	Superseded Report:	575651

Results Legend <div style="display: flex; flex-direction: column; gap: 5px;"> <div style="display: flex; align-items: center;">X Test</div> <div style="display: flex; align-items: center;">N No Determination Possible</div> </div> Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type	
		22932450	R70107		0.50	1kg TUB with Handle (ALE280) 250g Amber Jar (ALE210) 60g VOC (ALE215)	S
		22932453	R71905		0.30 - 0.40	60g VOC (ALE215) 250g Amber Jar (ALE210) 1kg TUB	S
		22932454	R71905		0.50 - 0.60	250g Amber Jar (ALE210) 60g VOC (ALE215) 250g Amber Jar (ALE210)	S
		22932457	STP70118		0.30	60g VOC (ALE215) 250g Amber Jar (ALE210)	S
	GRO by GC-FID (S)	All	NDPs: 0 Tests: 3				X
	GRO by GC-FID (W)	All	NDPs: 0 Tests: 1				X
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 3				X	
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 1				X	
Mercury Dissolved	All	NDPs: 0 Tests: 2				X	
Metals in solid samples by OES	All	NDPs: 0 Tests: 3				X	
OC OP Pesticides and Triazine Herb	All	NDPs: 0 Tests: 3				X	
PAH 16 & 17 Calc	All	NDPs: 0 Tests: 1				X	
PAH by GCMS	All	NDPs: 0 Tests: 4				X	
PAH in waters by GC-MS (diss.filt)	All	NDPs: 0 Tests: 1				X	
PCBs by GCMS	All	NDPs: 0 Tests: 1				X	
pH	All	NDPs: 0 Tests: 3				X	
pH Value of Filtered Water	All	NDPs: 0 Tests: 1				X	
Phenols by HPLC (S)	All	NDPs: 0 Tests: 3				X	
Phenols by HPLC (W)	All	NDPs: 0 Tests: 2				X	



CERTIFICATE OF ANALYSIS

Validated

SDG:	201001-47	Client Reference:	JFR1451	Report Number:	580778
Location:	A303 Stonehenge	Order Number:	PO20-774	Superseded Report:	575651

Results Legend <div style="display: flex; flex-direction: column; gap: 5px;"> <div style="display: flex; align-items: center;">X Test</div> <div style="display: flex; align-items: center;">N No Determination Possible</div> </div> Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type	
		22932450	R70107		0.50	1kg TUB with Handle (ALE280)	S
		22932453	R71905		0.30 - 0.40	250g Amber Jar (ALE210)	S
		22932454	R71905		0.50 - 0.60	60g VOC (ALE215)	S
		22932457	STP70118		0.30	250g Amber Jar (ALE210)	S
						60g VOC (ALE215)	S
						1kg TUB	S
Sample description	All					NDPs: 0 Tests: 3	
Total Dissolved Solids	All					NDPs: 0 Tests: 1	
Total Organic Carbon	All					NDPs: 0 Tests: 4	
TPH CWG Filtered (W)	All					NDPs: 0 Tests: 1	
TPH CWG GC (S)	All					NDPs: 0 Tests: 3	
VOC MS (S)	All					NDPs: 0 Tests: 4	



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Validated

SDG: 201001-47
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PO20-774

Report Number: 580778
Superseded Report: 575651

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm
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Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
22932450	R70107	0.50	Light Brown	Loamy Sand	Vegetation	Stones
22932453	R71905	0.30 - 0.40	Cream	Chalk	Vegetation	None
22932454	R71905	0.50 - 0.60	Cream	Chalk	Stones	Vegetation
22932457	STP70118	0.30	Light Brown	Loamy Sand	Stones	Vegetation

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.



CERTIFICATE OF ANALYSIS

Validated

SDG:	201001-47	Client Reference:	JFR1451	Report Number:	580778
Location:	A303 Stonehenge	Order Number:	PO20-774	Superseded Report:	575651

#	Customer Sample Ref.	R70107	R71905	R71905	STP70118		
<div style="font-size: small;"> Results Legend # ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.fit Dissolved / filtered sample. tot.unfit Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery. (F) Trigger breach confirmed 1-4*3@ Sample deviation (see appendix) </div>							
	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.50 Soil/Solid (S) 25/09/2020 25/09/2020 30/09/2020 201001-47 22932450	0.30 - 0.40 Soil/Solid (S) 25/09/2020 25/09/2020 30/09/2020 201001-47 22932453	0.50 - 0.60 Soil/Solid (S) 25/09/2020 25/09/2020 30/09/2020 201001-47 22932454	0.30 Soil/Solid (S) 25/09/2020 25/09/2020 30/09/2020 201001-47 22932457		
Component	LOD/Units	Method					
Moisture Content Ratio (% of as received sample)	%	PM024	6.3	8.4	18	17	
Exchangeable Ammonia as N	<12 mg/kg	TM024	<12 @ M	<12 @ #		<12 M	
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 @ M	<0.01 @ #		<0.01 @ M	
Organic Carbon, Total	<0.2 %	TM132	0.901 @ M	0.575 @ #	<0.2 @ #	1.78 M	
pH	1 pH Units	TM133	8.22 @ M	8.46 @ #		8.21 M	
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 @ #	1.33 @ #		<0.6 #	
Cyanide, Total	<1 mg/kg	TM153	<1 @ M	<1 @ #		<1 @ M	
Cyanide, Free	<1 mg/kg	TM153	<1 @ M	<1 @ #		<1 @ M	
PCB congener 28	<3 µg/kg	TM168			<3 @ #		
PCB congener 52	<3 µg/kg	TM168			<3 @ #		
PCB congener 101	<3 µg/kg	TM168			<3 @ #		
PCB congener 118	<3 µg/kg	TM168			<3 @ #		
PCB congener 138	<3 µg/kg	TM168			<3 @ #		
PCB congener 153	<3 µg/kg	TM168			<3 @ #		
PCB congener 180	<3 µg/kg	TM168			<3 @ #		
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168			<21 @ #		
Chromium, Trivalent	<0.9 mg/kg	TM181	7.27	2.4		5.02	
Antimony	<0.6 mg/kg	TM181	<0.6 #	<0.6 #		<0.6 #	
Arsenic	<0.6 mg/kg	TM181	2.99 M	<0.6 #		2.59 M	
Beryllium	<0.01 mg/kg	TM181	0.357 M	0.148 #		0.248 M	
Boron	<0.7 mg/kg	TM181	5.6 #	2.93 #		7.89 #	
Cadmium	<0.02 mg/kg	TM181	0.298 M	0.488 #		0.301 M	
Chromium	<0.9 mg/kg	TM181	7.27 M	3.73 #		5.02 M	
Copper	<1.4 mg/kg	TM181	4.01 M	1.72 #		4.28 M	
Iron	<1000 mg/kg	TM181	6180 #	2150 #		4960 #	
Lead	<0.7 mg/kg	TM181	5.85 M	3.43 #		9.37 M	
Manganese	<0.13 mg/kg	TM181	478 M	307 #		453 M	
Mercury	<0.14 mg/kg	TM181	<0.14 @ M	<0.14 @ #		<0.14 M	
Molybdenum	<0.1 mg/kg	TM181	0.209 #	0.196 #		0.159 #	
Nickel	<0.2 mg/kg	TM181	6.54 M	3.49 #		5.62 M	
Phosphorus	<1 mg/kg	TM181	942	547		1140	
Selenium	<1 mg/kg	TM181	<1 #	<1 #		<1 #	



CERTIFICATE OF ANALYSIS

Validated

SDG:	201001-47	Client Reference:	JFR1451	Report Number:	580778
Location:	A303 Stonehenge	Order Number:	PO20-774	Superseded Report:	575651

OC OP Pesticides and Triazine Herb

Results Legend		Customer Sample Ref.	R70107	R71905	STP70118			
# ISO17025 accredited.		Depth (m)	0.50	0.30 - 0.40	0.30			
M mCERTS accredited.		Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
aq Aqueous / settled sample.		Date Sampled	25/09/2020	25/09/2020	25/09/2020			
diss.fit Dissolved / filtered sample.		Sampled Time						
tot.unfilt Total / unfiltered sample.		Date Received	30/09/2020	30/09/2020	30/09/2020			
* Subcontracted - refer to subcontractor report for accreditation status.		SDG Ref	201001-47	201001-47	201001-47			
** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		Lab Sample No.(s)	22932450	22932453	22932457			
(F) Trigger breach confirmed		AGS Reference						
1-4*\$@ Sample deviation (see appendix)								
Component	LOD/Units	Method						
Dichlorvos	<50 µg/kg	TM073	<50	<50	<50			
Mevinphos	<50 µg/kg	TM073	<50	<50	<50			
Phorate	<50 µg/kg	TM073	<50	<50	<50			
alpha-Hexachlorocyclohexane (HCH)	<50 µg/kg	TM073	<50	<50	<50			
Diazinon	<50 µg/kg	TM073	<50	<50	<50			
gamma-Hexachlorocyclohexane (HCH / Lindane)	<50 µg/kg	TM073	<50	<50	<50			
Atrazine	<50 µg/kg	TM073	<50	<50	<50			
Simazine	<50 µg/kg	TM073	<50	<50	<50			
Disulfoton	<50 µg/kg	TM073	<50	<50	<50			
Heptachlor	<50 µg/kg	TM073	<50	<50	<50			
Aldrin	<50 µg/kg	TM073	<50	<50	<50			
beta-Hexachlorocyclohexane (HCH)	<50 µg/kg	TM073	<50	<50	<50			
Methyl parathion	<50 µg/kg	TM073	<50	<50	<50			
Malathion	<50 µg/kg	TM073	<50	<50	<50			
Fenitrothion	<50 µg/kg	TM073	<50	<50	<50			
Heptachlor epoxide	<50 µg/kg	TM073	<50	<50	<50			
Parathion	<50 µg/kg	TM073	<50	<50	<50			
Endosulphan I	<50 µg/kg	TM073	<50	<50	<50			
p,p-DDE	<50 µg/kg	TM073	<50	<50	<50			
Dieldrin	<50 µg/kg	TM073	<50	<50	<50			
o,p'-DDD (TDE)	<50 µg/kg	TM073	<50	<50	<50			
Endrin	<50 µg/kg	TM073	<50	<50	<50			
p,p-TDE (DDD)	<50 µg/kg	TM073	<50	<50	<50			
Ethion	<50 µg/kg	TM073	<50	<50	<50			
Endosulphan II	<50 µg/kg	TM073	<50	<50	<50			
p,p-DDT	<50 µg/kg	TM073	<50	<50	<50			
p,p-Methoxychlor	<50 µg/kg	TM073	<50	<50	<50			
Endosulphan sulphate	<50 µg/kg	TM073	<50	<50	<50			
Azinphos-methyl	<50 µg/kg	TM073	<50	<50	<50			



CERTIFICATE OF ANALYSIS

Validated

SDG: 201001-47
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PO20-774

Report Number: 580778
Superseded Report: 575651

PAH by GCMS

Results Legend		Customer Sample Ref.	R70107	R71905	STP70118			
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.50	0.30 - 0.40	0.30			
M	mCERTS accredited.		Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
aq	Aqueous / settled sample.		25/09/2020	25/09/2020	25/09/2020			
diss.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.		30/09/2020	30/09/2020	30/09/2020			
*	Subcontracted - refer to subcontractor report for accreditation status.		201001-47	201001-47	201001-47			
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		22932450	22932453	22932457			
(F)	Trigger breach confirmed							
1-4*\$@	Sample deviation (see appendix)							
Component	LOD/Units		Method					
Naphthalene-d8 % recovery**	%	TM218	81.4	81.9	100			
Acenaphthene-d10 % recovery**	%	TM218	80.1	80.6	93.6			
Phenanthrene-d10 % recovery**	%	TM218	81.2	82.1	102			
Chrysene-d12 % recovery**	%	TM218	76	74.6	113			
Perylene-d12 % recovery**	%	TM218	77.8	76	107			
Naphthalene	<9 µg/kg	TM218	<9 @ M	<9 @ #	<9 @ M			
Acenaphthylene	<12 µg/kg	TM218	<12 @ M	<12 @ #	<12 @ M			
Acenaphthene	<8 µg/kg	TM218	<8 @ M	<8 @ #	<8 @ M			
Fluorene	<10 µg/kg	TM218	<10 @ M	<10 @ #	<10 @ M			
Phenanthrene	<15 µg/kg	TM218	<15 @ M	25.5 @ #	<15 @ M			
Anthracene	<16 µg/kg	TM218	<16 @ M	<16 @ #	<16 @ M			
Fluoranthene	<17 µg/kg	TM218	<17 @ M	84.3 @ #	21.9 @ M			
Pyrene	<15 µg/kg	TM218	<15 @ M	71.6 @ #	18.9 @ M			
Benz(a)anthracene	<14 µg/kg	TM218	<14 @ M	41.7 @ #	<14 @ M			
Chrysene	<10 µg/kg	TM218	<10 @ M	42.7 @ #	12.2 @ M			
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 @ M	68.8 @ #	20.6 @ M			
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 @ M	28.9 @ #	<14 @ M			
Benzo(a)pyrene	<15 µg/kg	TM218	<15 @ M	47.7 @ #	<15 @ M			
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 @ M	39.5 @ #	<18 @ M			
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 @ M	<23 @ #	<23 @ M			
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 @ M	37 @ #	<24 @ M			
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	488	<118			



CERTIFICATE OF ANALYSIS

Validated

SDG: 201001-47
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PO20-774

Report Number: 580778
Superseded Report: 575651

TPH CWG (S)

Results Legend			Customer Sample Ref.	R70107	R71905	STP70118						
#	ISO17025 accredited.											
M	mCERTS accredited.											
aq	Aqueous / settled sample.											
diss.fit	Dissolved / filtered sample.											
tot.unfit	Total / unfiltered sample.											
*	Subcontracted - refer to subcontractor report for accreditation status.											
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery											
(F)	Trigger breach confirmed											
1-4*\$@	Sample deviation (see appendix)											
Component	LOD/Units	Method	Depth (m)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Date Sampled	Sampled Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
GRO Surrogate % recovery**	%	TM089	0.50	0.50	0.30 - 0.40	0.30	25/09/2020	25/09/2020	30/09/2020	201001-47	22932450	
				@	@	@						
Aliphatics >C5-C6	<10 µg/kg	TM089	<10	<10	<10	<10						
			@	@	@	@						
Aliphatics >C6-C8	<10 µg/kg	TM089	<10	<10	<10	<10						
			@	@	@	@						
Aliphatics >C8-C10	<10 µg/kg	TM089	<10	<10	<10	<10						
			@	@	@	@						
Aliphatics >C10-C12	<1000 µg/kg	TM414	<1000	<1000	<1000	<1000						
Aliphatics >C12-C16	<1000 µg/kg	TM414	<1000	<1000	<1000	<1000						
Aliphatics >C16-C21	<1000 µg/kg	TM414	<1000	<1000	<1000	<1000						
Aliphatics >C21-C35	<1000 µg/kg	TM414	4440	3850	8230							
Aliphatics >C35-C44	<1000 µg/kg	TM414	<1000	<1000	<1000	<1000						
Total Aliphatics >C10-C44	<5000 µg/kg	TM414	<5000	<5000	8450							
Total Aliphatics & Aromatics >C10-C44	<10000 µg/kg	TM414	<10000	<10000	11400							
Aromatics >EC5-EC7	<10 µg/kg	TM089	<10	<10	<10	<10						
			@	@	@	@						
Aromatics >EC7-EC8	<10 µg/kg	TM089	<10	<10	<10	<10						
			@	@	@	@						
Aromatics >EC8-EC10	<10 µg/kg	TM089	<10	<10	<10	<10						
			@	@	@	@						
Aromatics > EC10-EC12	<1000 µg/kg	TM414	<1000	<1000	<1000	<1000						
Aromatics > EC12-EC16	<1000 µg/kg	TM414	<1000	<1000	<1000	<1000						
Aromatics > EC16-EC21	<1000 µg/kg	TM414	<1000	<1000	<1000	<1000						
Aromatics > EC21-EC35	<1000 µg/kg	TM414	3600	1930	1240							
Aromatics >EC35-EC44	<1000 µg/kg	TM414	<1000	<1000	<1000	<1000						
Aromatics > EC40-EC44	<1000 µg/kg	TM414	<1000	<1000	<1000	<1000						
Total Aromatics > EC10-EC44	<5000 µg/kg	TM414	<5000	<5000	<5000	<5000						
Total Aliphatics & Aromatics >C5-C44	<10000 µg/kg	TM414	<10000	<10000	<10000	<10000						
Total Aliphatics >C5-C10	<50 µg/kg	TM089	<50	<50	<50	<50						
			@	@	@	@						
Total Aromatics >EC5-EC10	<50 µg/kg	TM089	<50	<50	<50	<50						
			@	@	@	@						
GRO >C5-C10	<20 µg/kg	TM089	<20	<20	<20	<20						
			@	@	@	@						



CERTIFICATE OF ANALYSIS

Validated

SDG: 201001-47 Client Reference: JFR1451 Report Number: 580778
Location: A303 Stonehenge Order Number: PO20-774 Superseded Report: 575651

VOC MS (S)

Table with columns: Results Legend, Customer Sample Ref., R70107, R71905, R71905, STP70118. Rows include components like Dibromofluoromethane, Toluene, 4-Bromofluorobenzene, etc., with associated LOD/Units and Method.



CERTIFICATE OF ANALYSIS

Validated

SDG: 201001-47
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PO20-774

Report Number: 580778
Superseded Report: 575651

CEN 2:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/

Client Reference		Site Location	A303 Stonehenge
Mass Sample taken (kg)	0.214	Natural Moisture Content (%)	22.6
Mass of dry sample (kg)	0.175	Dry Matter Content (%)	81.6
Particle Size <4mm	>95%		

Case	
SDG	201001-47
Lab Sample Number(s)	22932450
Sampled Date	25-Sep-2020
Customer Sample Ref.	R70107
Depth (m)	0.50

Eluate Analysis	Conc ⁿ in 2:1 eluate (mg/l)		2:1 conc ⁿ leached (mg/kg)	
	Result	Limit of Detection	Result	Limit of Detection
Aliphatics >C12-C16	<0.01	<0.01	<0.02	<0.02
Aliphatics >C16-C21	<0.01	<0.01	<0.02	<0.02
Aliphatics >C21-C35	<0.01	<0.01	<0.02	<0.02
Total Aliphatics >C12-C35	<0.01	<0.01	<0.02	<0.02
Aromatics >EC12-EC16	<0.01	<0.01	<0.02	<0.02
Aromatics >EC16-EC21	<0.01	<0.01	<0.02	<0.02
Aromatics >EC21-EC35	<0.01	<0.01	<0.02	<0.02
Aromatics >EC16-EC35	<0.01	<0.01	<0.02	<0.02
Total Aromatics >EC12-EC35	<0.01	<0.01	<0.02	<0.02
TPH (Total Aliphatics + Total Aromatics) >C5-C35	<0.01	<0.01	<0.02	<0.02
Ammoniacal Nitrogen as N	<0.2	<0.2	<0.4	<0.4
Chromium III	<0.03	<0.03	<0.06	<0.06
Hexavalent Chromium	<0.03	<0.03	<0.06	<0.06
Sulphate (soluble)	4.8	<2	9.6	<4
Dissolved Organic Carbon	8.32	<3	16.6	<6
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.00002	<0.00002
Antimony	<0.001	<0.001	<0.002	<0.002
Naphthalene (diss.filt)	<0.00001	<0.00001	<0.00002	<0.00002
Total Cyanide (W)	<0.05	<0.05	<0.1	<0.1
Acenaphthene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Arsenic	<0.0005	<0.0005	<0.001	<0.001
Free Cyanide (W)	<0.05	<0.05	<0.1	<0.1
Acenaphthylene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Phenol by HPLC (W)	<0.002	<0.002	<0.004	<0.004
Beryllium	<0.0001	<0.0001	<0.0002	<0.0002
Fluoranthene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Anthracene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Boron	0.0162	<0.01	0.0324	<0.02
Phenanthrene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Cadmium	<0.00008	<0.00008	<0.00016	<0.00016
Fluorene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Chrysene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Pyrene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Benzo(a)anthracene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Chromium	<0.001	<0.001	<0.002	<0.002

Leach Test Information

Date Prepared	12-Dec-2020
pH (pH Units)	7.73
Conductivity (µS/cm)	288.00
Temperature (°C)	21.50
Volume Leachant (Litres)	0.312
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates

18/12/2020 15:37:58

15:37:47 18/12/2020



CERTIFICATE OF ANALYSIS

Validated

SDG: 201001-47	Client Reference: JFR1451	Report Number: 580778
Location: A303 Stonehenge	Order Number: PO20-774	Superseded Report: 575651

CEN 2:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/'

Client Reference		Site Location	A303 Stonehenge
Mass Sample taken (kg)	0.214	Natural Moisture Content (%)	22.6
Mass of dry sample (kg)	0.175	Dry Matter Content (%)	81.6
Particle Size <4mm	>95%		

Case	
SDG	201001-47
Lab Sample Number(s)	22932450
Sampled Date	25-Sep-2020
Customer Sample Ref.	R70107
Depth (m)	0.50

Eluate Analysis	Conc ⁿ in 2:1 eluate (mg/l)		2:1 conc ⁿ leached (mg/kg)	
	Result	Limit of Detection	Result	Limit of Detection
Benzo(b)fluoranthene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Benzo(k)fluoranthene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Benzo(a)pyrene (diss.filt)	<0.000002	<0.000002	<0.000004	<0.000004
Copper	0.00222	<0.0003	0.00444	<0.0006
Dibenzo(a,h)anthracene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Lead	<0.0002	<0.0002	<0.0004	<0.0004
Benzo(g,h,i)perylene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Indeno(1,2,3-cd)pyrene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Manganese	<0.003	<0.003	<0.006	<0.006
Molybdenum	<0.003	<0.003	<0.006	<0.006
PAH 16 EPA Total by GCMS (diss.filt)	<0.000082	<0.000082	<0.000164	<0.000164
Nickel	0.000797	<0.0004	0.00159	<0.0008
Phosphorus	0.0601	<0.01	0.12	<0.02
Selenium	<0.001	<0.001	<0.002	<0.002
Zinc	0.00144	<0.001	0.00288	<0.002
Calcium (Dis.Filt) mg/l	56.4	<0.2	113	<0.4
Iron (Dis.Filt) mg/l	<0.019	<0.019	<0.038	<0.038
TPH CWG (W)				
Surrogate Recovery	-	-	-	-
GRO TOT (C5-C12)	<0.05	<0.05	<0.1	<0.1
Aliphatics C5-C6	<0.01	<0.01	<0.02	<0.02
Aliphatics >C6-C8	<0.01	<0.01	<0.02	<0.02
Aliphatics >C8-C10	<0.01	<0.01	<0.02	<0.02
Aliphatics >C10-C12	<0.01	<0.01	<0.02	<0.02
Aromatics C6-C7	<0.01	<0.01	<0.02	<0.02
Aromatics >C7-C8	<0.01	<0.01	<0.02	<0.02
MTBE GC-FID	<0.003	<0.003	<0.006	<0.006
Aromatics >EC8 -EC10	<0.01	<0.01	<0.02	<0.02
Aromatics >EC10-EC12	<0.01	<0.01	<0.02	<0.02
Benzene by GC	<0.007	<0.007	<0.014	<0.014
Toluene by GC	<0.004	<0.004	<0.008	<0.008
Ethylbenzene by GC	<0.005	<0.005	<0.01	<0.01
m & p Xylene by GC	<0.008	<0.008	<0.016	<0.016
o Xylene by GC	<0.003	<0.003	<0.006	<0.006
Sum m&p and o Xylene by GC	<0.011	<0.011	<0.022	<0.022
Sum of BTEX by GC	<0.028	<0.028	<0.056	<0.056

Leach Test Information

Date Prepared	12-Dec-2020
pH (pH Units)	7.73
Conductivity (µS/cm)	288.00
Temperature (°C)	21.50
Volume Leachant (Litres)	0.312
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
 Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
 Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

Validated

SDG:	201001-47	Client Reference:	JFR1451	Report Number:	580778
Location:	A303 Stonehenge	Order Number:	PO20-774	Superseded Report:	575651

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		Site Location	A303 Stonehenge
Mass Sample taken (kg)	0.103	Natural Moisture Content (%)	15.5
Mass of dry sample (kg)	0.090	Dry Matter Content (%)	86.6
Particle Size <4mm	>95%		

Case	
SDG	201001-47
Lab Sample Number(s)	22932454
Sampled Date	25-Sep-2020
Customer Sample Ref.	R71905
Depth (m)	0.50 - 0.60

Landfill Waste Acceptance Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	-
-	-	-
1	-	-
500	-	-
100	-	-
-	-	-
-	-	-
-	-	-

Solid Waste Analysis	Result
Total Organic Carbon (%)	<0.2
Loss on Ignition (%)	-
Sum of BTEX (mg/kg)	-
Sum of 7 PCBs (mg/kg)	<0.021
Mineral Oil (mg/kg)	<5
PAH Sum of 17 (mg/kg)	<10
pH (pH Units)	-
ANC to pH 6 (mol/kg)	-
ANC to pH 4 (mol/kg)	-

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection	3	5	6
Arsenic	<0.0005	<0.0005	<0.005	<0.005	0.5	2	25
Barium	0.00138	<0.0002	0.0138	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00157	<0.0003	0.0157	<0.003	2	50	100
Mercury Dissolved (CVAF)	0.0000133	<0.00001	0.000133	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.000574	<0.0004	0.00574	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00133	<0.001	0.0133	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	49.9	<5	499	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	3.93	<3	39.3	<30	500	800	1000

Leach Test Information

Date Prepared	06-Nov-2020
pH (pH Units)	7.96
Conductivity (µS/cm)	52.20
Temperature (°C)	21.30
Volume Leachant (Litres)	0.887

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
 Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
 Mcerts Certification does not apply to leachates

18/12/2020 15:37:59



CERTIFICATE OF ANALYSIS

Validated

SDG:	201001-47	Client Reference:	JFR1451	Report Number:	580778
Location:	A303 Stonehenge	Order Number:	PO20-774	Superseded Report:	575651

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM073	MEWAM BOOK 60 1980,95 1985, HMSO / Modified: US EPA Method 8081A & 8141A	Determination of organochlorine and organophosphorous pesticides by GCMS
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM104	Method 4500F, AWWA/APHA, 20th Ed., 1999	Determination of Fluoride using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM123	BS 2690: Part 121:1981	The Determination of Total Dissolved Solids in Water
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM174	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID
TM178	Modified: US EPA Method 8100	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS in Waters
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser
TM243		Mixed Anions In Soils By Kone
TM245	By GC-FID	Determination of GRO by Headspace in waters
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC
TM410	Shaker extraction-In house coronene method	Determination of Coronene in soils by GCMS
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).



CERTIFICATE OF ANALYSIS

Validated

SDG: 201001-47
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PO20-774

Report Number: 580778
Superseded Report: 575651

Test Completion Dates

Lab Sample No(s)	22932450	22932453	22932454	22932457
Customer Sample Ref.	R70107	R71905	R71905	STP70118
AGS Ref.				
Depth	0.50	0.30 - 0.40	0.50 - 0.60	0.30
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)

Ammoniacal Nitrogen	17-Dec-2020			
Ammonium Soil by Titration	17-Dec-2020	17-Dec-2020		21-Oct-2020
Anions by Kone (soil)	18-Dec-2020	18-Dec-2020		22-Oct-2020
Anions by Kone (w)	18-Dec-2020		12-Nov-2020	
CEN 10:1 Leachate (1 Stage)			10-Nov-2020	
CEN 2:1 Leachate (1 Stage)	12-Dec-2020			
CEN Readings	17-Dec-2020		12-Nov-2020	
Chromium III	17-Dec-2020	16-Dec-2020		23-Oct-2020
Coronene			10-Nov-2020	
Cyanide Comp/Free/Total/Thiocyanate	17-Dec-2020	15-Dec-2020		21-Oct-2020
Dissolved Metals by ICP-MS	17-Dec-2020		14-Nov-2020	
Dissolved Organic/Inorganic Carbon	17-Dec-2020		12-Nov-2020	
EPH by GCxGC-FID			13-Nov-2020	
EPH CWG (Aliphatic) Filtered GC (W)	17-Dec-2020			
EPH CWG (Aromatic) Filtered GC (W)	17-Dec-2020			
EPH CWG GC (S)	15-Dec-2020	16-Dec-2020		21-Oct-2020
Fluoride			12-Nov-2020	
GRO by GC-FID (S)		15-Dec-2020		21-Oct-2020
GRO by GC-FID (W)	16-Dec-2020			
Hexavalent Chromium (s)	15-Dec-2020	15-Dec-2020		21-Oct-2020
Hexavalent Chromium (w)	17-Dec-2020			
Mercury Dissolved	17-Dec-2020		13-Nov-2020	
Metals in solid samples by OES	17-Dec-2020	16-Dec-2020		26-Oct-2020
Moisture at 105C	12-Dec-2020		06-Nov-2020	
OC OP Pesticides and Triazine Herb	17-Dec-2020	17-Dec-2020		22-Oct-2020
PAH 16 & 17 Calc			10-Nov-2020	
PAH by GCMS	16-Dec-2020	16-Dec-2020	10-Nov-2020	22-Oct-2020
PAH in waters by GC-MS (diss.filt)	17-Dec-2020			
PCBs by GCMS			11-Nov-2020	
pH	14-Dec-2020	14-Dec-2020		21-Oct-2020
pH Value of Filtered Water	17-Dec-2020			
Phenols by HPLC (S)	17-Dec-2020	17-Dec-2020		22-Oct-2020
Phenols by HPLC (W)	17-Dec-2020		13-Nov-2020	
Sample description	12-Dec-2020	12-Dec-2020	06-Nov-2020	20-Oct-2020
Total Dissolved Solids			12-Nov-2020	
Total Organic Carbon	15-Dec-2020	17-Dec-2020	12-Nov-2020	22-Oct-2020
TPH CWG Filtered (W)	17-Dec-2020			
TPH CWG GC (S)	15-Dec-2020	16-Dec-2020		21-Oct-2020
VOC MS (S)	15-Dec-2020	15-Dec-2020	09-Nov-2020	21-Oct-2020



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ASSOCIATED AQC DATA

Ammoniacal Nitrogen

Component	Method Code	QC 2332
Ammoniacal Nitrogen as N	TM099	98.0 91.28 : 106.64

Ammonium Soil by Titration

Component	Method Code	QC 2305	QC 2309	QC 2380
Exchangeable Ammonium as NH4	TM024	83.08 76.20 : 110.13	80.1 76.20 : 110.13	87.56 76.20 : 110.13

Anions by Kone (soil)

Component	Method Code	QC 2316
Chloride (soluble)	TM243	141.97 86.68 : 115.67
Water Soluble Sulphate as SO4 2:1 Extract	TM243	154.21 70.00 : 130.00

Anions by Kone (w)

Component	Method Code	QC 2325	QC 2330
Chloride	TM184	102.0 94.04 : 108.61	
Sulphate (soluble)	TM184	100.8 91.99 : 109.30	98.4 94.38 : 108.93

Coronene

Component	Method Code	QC 2342
Coronene RAW	TM410	124.0 79.43 : 137.78

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2336	QC 2382	QC 2349
Free Cyanide	TM153	89.11 78.61 : 114.43	92.08 78.61 : 114.43	
Free Cyanide (W)	TM227			101.0 90.50 : 114.50
Thiocyanate	TM153	98.08 90.48 : 109.52	100.64 90.48 : 109.52	



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Cyanide Comp/Free/Total/Thiocyanate

		QC 2336	QC 2382	QC 2349
Thiocyanate (W)	TM227			105.0 90.50 : 113.00
Total Cyanide	TM153	96.5 76.80 : 112.96	97.2 76.80 : 112.96	
Total Cyanide (W)	TM227			104.25 91.75 : 112.75

Dissolved Metals by ICP-MS

Component	Method Code	QC 2376	QC 2312
Aluminium	TM152	105.67 94.21 : 111.52	103.0 94.21 : 111.52
Antimony	TM152	104.5 88.37 : 130.57	102.17 88.37 : 130.57
Arsenic	TM152	103.5 92.62 : 113.52	100.17 92.62 : 113.52
Barium	TM152	97.17 88.62 : 113.14	101.5 88.62 : 113.14
Beryllium	TM152	111.33 87.08 : 111.38	103.17 87.08 : 111.38
Bismuth	TM152	104.33 92.62 : 115.02	102.0 92.62 : 115.02
Boron	TM152	106.0 86.31 : 120.88	105.67 86.31 : 120.88
Cadmium	TM152	107.0 93.85 : 111.65	102.83 93.85 : 111.65
Calcium	TM152	101.33 89.20 : 126.91	100.0 89.20 : 126.91
Chromium	TM152	101.83 92.22 : 109.85	100.17 92.50 : 113.03
Cobalt	TM152	99.67 85.01 : 114.87	100.17 85.01 : 114.87
Copper	TM152	104.0 89.87 : 119.73	100.33 89.87 : 119.73
Iron	TM152	101.33 93.02 : 113.86	100.67 93.02 : 113.86
Lead	TM152	102.67 91.11 : 116.98	101.0 91.11 : 116.98
Lithium	TM152	109.67 91.30 : 123.00	102.0 87.70 : 115.90
Magnesium	TM152	108.0 89.60 : 116.61	98.67 89.60 : 116.61
Manganese	TM152	99.67 93.97 : 112.46	101.33 93.97 : 112.46
Molybdenum	TM152	100.17 89.07 : 110.96	99.17 89.07 : 110.96
Nickel	TM152	99.67 93.70 : 112.15	100.83 93.70 : 112.15
Phosphorus	TM152	103.83 89.24 : 114.18	98.33 89.24 : 114.18
Potassium	TM152	102.67 93.20 : 115.55	100.0 93.20 : 115.55
Selenium	TM152	103.67 91.69 : 117.12	100.33 91.69 : 117.12



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Dissolved Metals by ICP-MS

		QC 2376	QC 2312
Silver	TM152	98.33 90.93 : 121.73	100.33 90.93 : 121.73
Sodium	TM152	106.67 92.42 : 113.24	98.67 92.42 : 113.24
Strontium	TM152	100.33 92.14 : 116.24	103.33 92.14 : 116.24
Tellurium	TM152	92.17 89.88 : 111.78	99.0 89.88 : 111.78
Thallium	TM152	89.67 82.43 : 113.83	93.0 82.43 : 113.83
Tin	TM152	99.33 94.62 : 107.79	101.67 94.62 : 107.79
Titanium	TM152	98.33 90.29 : 115.23	102.5 90.29 : 115.23
Tungsten	TM152	99.0 77.61 : 132.31	100.0 77.61 : 132.31
Uranium	TM152	99.17 86.97 : 115.76	101.83 86.97 : 115.76
Vanadium	TM152	105.0 89.61 : 115.48	104.33 89.61 : 115.48
Zinc	TM152	109.67 87.51 : 116.26	100.67 87.51 : 116.26

Dissolved Organic/Inorganic Carbon

Component	Method Code	QC 2321	QC 2352
Dissolved Inorganic Carbon	TM090	100.17 93.58 : 112.28	104.83 91.27 : 109.87
Dissolved Organic Carbon	TM090	102.33 96.28 : 110.58	102.17 96.58 : 107.98

EPH CWG (Aliphatic) Filtered GC (W)

Component	Method Code	QC 2362
Total Aliphatics >C10-C40	TM174	126.24 71.82 : 134.09

EPH CWG GC (S)

Component	Method Code	QC 2370
EPH >C8-C40 Raw	TM414	93.06 58.92 : 124.32
Total Aliphatics Raw	TM414	99.4 64.95 : 136.26
Total Aromatics Raw	TM414	99.9 58.15 : 147.12

Fluoride



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Fluoride

Component	Method Code	QC 2391
Fluoride	TM104	101.33 95.51 : 107.24

GRO by GC-FID (S)

Component	Method Code	QC 2322	QC 2370	QC 2391
QC	TM089	95.49 70.34 : 111.95	90.05 70.75 : 114.19	93.77 70.75 : 114.19

GRO by GC-FID (W)

Component	Method Code	QC 2317
Benzene by GC	TM245	94.5 79.13 : 118.84
Ethylbenzene by GC	TM245	99.5 79.54 : 115.99
m & p Xylene by GC	TM245	99.5 78.44 : 116.32
MTBE GC-FID	TM245	88.5 81.43 : 120.09
o Xylene by GC	TM245	100.0 76.85 : 120.29
QC	TM245	93.59 71.58 : 131.01
Toluene by GC	TM245	97.0 79.00 : 121.96

Hexavalent Chromium (s)

Component	Method Code	QC 2385	QC 2377
Hexavalent Chromium	TM151	106.0 95.60 : 107.60	108.0 92.00 : 111.20

Hexavalent Chromium (w)

Component	Method Code	QC 2303
Hexavalent Chromium	TM241	100.2 94.17 : 106.17

Mercury Dissolved



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Mercury Dissolved

Component	Method Code	QC 2345	QC 2318
Mercury Dissolved (CVAF)	TM183	96.0 69.30 : 128.70	97.9 69.30 : 128.70

Metals in solid samples by OES

Component	Method Code	QC 2312	QC 2311	QC 2389	QC 2366	QC 2369
Aluminium	TM181	107.08 73.56 : 108.85	91.15 73.56 : 108.85	93.81 73.56 : 108.85	90.27 77.46 : 123.98	90.27 73.56 : 108.85
Antimony	TM181	97.97 76.89 : 111.24	106.1 76.89 : 111.24	100.0 76.89 : 111.24	100.41 87.04 : 111.16	93.5 76.89 : 111.24
Arsenic	TM181	103.2 88.53 : 111.01	104.07 88.53 : 111.01	103.49 88.53 : 111.01	104.94 87.34 : 110.87	97.38 88.53 : 111.01
Barium	TM181	99.08 77.67 : 105.35	100.0 77.67 : 105.35	98.17 77.67 : 105.35	97.25 80.73 : 115.16	94.5 77.67 : 105.35
Beryllium	TM181	100.37 85.44 : 109.61	104.1 85.44 : 109.61	104.85 85.44 : 109.61	104.1 89.47 : 112.97	97.76 85.44 : 109.61
Boron	TM181	94.84 73.51 : 104.66	86.53 73.51 : 104.66	84.81 73.51 : 104.66	96.85 76.57 : 104.15	86.82 73.51 : 104.66
Cadmium	TM181	95.88 77.67 : 104.12	92.59 77.67 : 104.12	92.59 77.67 : 104.12	95.06 78.94 : 102.43	90.53 77.67 : 104.12
Chromium	TM181	95.33 86.11 : 106.21	97.57 86.11 : 106.21	86.61 86.11 : 106.21	91.28 77.55 : 104.47	87.63 86.11 : 106.21
Cobalt	TM181	93.4 84.60 : 104.13	95.28 84.60 : 104.13	93.08 84.60 : 104.13	91.82 82.95 : 107.41	89.62 84.60 : 104.13
Copper	TM181	93.84 82.40 : 105.45	97.36 82.40 : 105.45	89.96 82.40 : 105.45	90.14 84.36 : 106.14	91.2 82.40 : 105.45
Iron	TM181	103.97 82.95 : 110.58	96.83 82.95 : 110.58	96.83 82.95 : 110.58	96.83 81.43 : 115.79	95.24 82.95 : 110.58
Lead	TM181	92.34 78.24 : 104.05	96.4 78.24 : 104.05	88.06 78.24 : 104.05	98.2 81.95 : 107.63	89.86 78.24 : 104.05
Manganese	TM181	115.83 94.29 : 119.51	115.83 94.29 : 119.51	108.61 94.29 : 119.51	112.5 94.29 : 119.51	106.11 94.29 : 119.51
Mercury	TM181	96.14 83.16 : 107.81	97.83 83.16 : 107.81	101.21 83.16 : 107.81	98.79 82.73 : 106.36	95.17 83.16 : 107.81
Molybdenum	TM181	101.65 87.11 : 106.87	105.76 87.11 : 106.87	96.3 87.11 : 106.87	99.18 86.61 : 111.07	98.35 87.11 : 106.87
Nickel	TM181	94.13 80.26 : 102.28	95.35 80.26 : 102.28	96.33 80.26 : 102.28	95.6 79.72 : 103.80	90.22 80.26 : 102.28
Phosphorus	TM181	115.35 94.56 : 124.28	121.82 94.56 : 124.28	124.65 94.56 : 124.28	111.31 92.65 : 125.47	107.27 94.56 : 124.28
Selenium	TM181	102.35 82.28 : 110.48	100.39 82.28 : 110.48	101.57 82.28 : 110.48	98.82 88.36 : 111.25	98.04 82.28 : 110.48
Strontium	TM181	94.88 79.13 : 102.79	94.65 79.13 : 102.79	85.3 79.13 : 102.79	87.53 78.06 : 99.91	93.1 79.13 : 102.79
Thallium	TM181	100.0 82.94 : 111.86	103.1 82.94 : 111.86	103.1 82.94 : 111.86	105.75 88.60 : 116.73	98.23 82.94 : 111.86
Tin	TM181	103.42 86.72 : 110.03	105.32 86.72 : 110.03	97.72 86.72 : 110.03	109.51 89.77 : 112.62	100.38 86.72 : 110.03
Titanium	TM181	80.92 66.23 : 102.06	80.15 66.23 : 102.06	77.1 66.23 : 102.06	81.68 66.29 : 105.96	83.21 66.23 : 102.06



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Metals in solid samples by OES

		QC 2312	QC 2311	QC 2389	QC 2366	QC 2369
Vanadium	TM181	102.93 86.19 : 109.45	101.47 86.19 : 109.45	95.24 86.19 : 109.45	95.6 75.51 : 108.87	97.07 86.19 : 109.45
Zinc	TM181	100.62 84.68 : 113.99	100.41 84.68 : 113.99	94.66 84.68 : 113.99	93.22 84.02 : 111.24	96.92 84.68 : 113.99

OC OP Pesticides and Triazine Herb

Component	Method Code	QC 2374	QC 2313
Atrazine (Raw)	TM073	84.26 78.55 : 119.92	103.96 78.55 : 119.92
Azinphos methyl (Raw)	TM073	142.57 58.68 : 154.71	101.56 58.68 : 154.71
cis-Chlordane (Raw)	TM073	87.22 71.90 : 129.99	101.12 71.90 : 129.99
Diazinon (Raw)	TM073	72.92 70.00 : 130.00	92.88 70.00 : 130.00
Dichlorvos (Raw)	TM073	90.26 70.00 : 130.00	91.86 70.00 : 130.00
Dieldrin (Raw)	TM073	88.93 70.00 : 130.00	106.82 70.00 : 130.00
gamma-HCH (Lindane) (Raw)	TM073	75.25 71.48 : 129.99	94.71 71.48 : 129.99
Heptachlor (Raw)	TM073	83.27 66.39 : 134.63	94.21 66.39 : 134.63
Hexachlorobenzene (Raw)	TM073	84.78 47.15 : 124.32	99.44 47.15 : 124.32
Malathion (Raw)	TM073	82.99 70.00 : 130.00	93.69 70.00 : 130.00
p,p-DDT (Raw)	TM073	83.25 70.00 : 130.00	104.17 70.00 : 130.00
Parathion (Raw)	TM073	92.37 64.13 : 127.88	101.56 64.13 : 127.88

PAH by GCMS

Component	Method Code	QC 2374	QC 2337	QC 2326
Acenaphthene	TM218	84.5 80.97 : 105.99	97.5 76.79 : 103.90	87.5 78.59 : 112.16
Acenaphthylene	TM218	84.5 74.76 : 107.36	98.5 78.40 : 108.66	83.5 75.11 : 109.01
Anthracene	TM218	89.0 73.04 : 106.97	94.0 70.90 : 109.22	81.5 73.99 : 113.85
Benz(a)anthracene	TM218	99.5 68.79 : 119.64	94.0 73.77 : 119.26	82.0 69.31 : 119.18
Benzo(a)pyrene	TM218	95.5 66.17 : 117.52	88.0 73.20 : 114.18	80.0 66.97 : 114.92
Benzo(b)fluoranthene	TM218	96.0 66.40 : 118.34	92.0 75.36 : 117.58	77.0 67.41 : 114.46
Benzo(ghi)perylene	TM218	91.0 67.68 : 112.07	88.5 70.73 : 116.12	74.0 62.92 : 114.36
Benzo(k)fluoranthene	TM218	88.0 72.84 : 114.66	90.5 75.98 : 116.59	79.0 69.98 : 116.49
Chrysene	TM218	93.5 68.39 : 115.56	98.0 74.82 : 114.18	81.5 69.86 : 114.50



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PAH by GCMS

		QC 2374	QC 2337	QC 2326
Dibenzo(ah)anthracene	TM218	92.0 69.03 : 110.45	90.0 69.17 : 115.30	73.0 64.54 : 115.22
Fluoranthene	TM218	94.5 69.37 : 117.19	100.5 75.88 : 112.84	82.5 72.56 : 111.70
Fluorene	TM218	89.5 75.38 : 105.98	97.5 76.66 : 107.56	89.0 79.13 : 111.49
Indeno(123cd)pyrene	TM218	96.0 65.91 : 113.61	85.5 70.26 : 117.95	72.5 61.22 : 113.25
Naphthalene	TM218	79.5 71.40 : 105.87	95.5 74.70 : 101.83	87.0 77.96 : 110.91
Phenanthrene	TM218	92.5 74.04 : 109.30	98.5 73.62 : 109.34	85.0 76.83 : 113.25
Pyrene	TM218	92.0 69.68 : 115.27	97.0 71.46 : 117.00	82.0 72.45 : 110.77

PAH in waters by GC-MS (diss.filt)

Component	Method Code	QC 2329
Acenaphthene (diss.filt)	TM178	107.6 93.20 : 119.60
Acenaphthylene (diss.filt)	TM178	104.8 92.00 : 118.40
Anthracene (diss.filt)	TM178	107.6 90.80 : 114.80
Benzo(a)anthracene (diss.filt)	TM178	110.8 91.60 : 115.60
Benzo(a)pyrene (diss.filt)	TM178	106.4 91.20 : 120.00
Benzo(b)fluoranthene (diss.filt)	TM178	111.2 86.80 : 120.40
Benzo(g,h,i)perylene (diss.filt)	TM178	107.2 89.20 : 118.00
Benzo(k)fluoranthene (diss.filt)	TM178	109.2 94.40 : 125.60
Chrysene (diss.filt)	TM178	105.6 96.40 : 122.80
Dibenzo(a,h)anthracene (diss.filt)	TM178	106.0 93.60 : 132.00
Fluoranthene (diss.filt)	TM178	104.0 92.80 : 121.60
Fluorene (diss.filt)	TM178	104.8 93.60 : 120.00
Indeno(1,2,3-cd)pyrene (diss.filt)	TM178	109.6 82.40 : 120.80
Naphthalene (diss.filt)	TM178	103.2 88.40 : 126.80
Phenanthrene (diss.filt)	TM178	107.2 92.40 : 118.80
Pyrene (diss.filt)	TM178	100.8 90.40 : 124.00

PCBs by GCMS



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PCBs by GCMS

Component	Method Code	QC 2348
PCB congener 101	TM168	96.3 79.46 : 109.70
PCB congener 105	TM168	84.6 66.33 : 105.75
PCB congener 114	TM168	85.9 66.41 : 106.49
PCB congener 118	TM168	89.2 70.33 : 110.29
PCB congener 123	TM168	82.1 65.01 : 99.81
PCB congener 126	TM168	81.9 59.31 : 109.23
PCB congener 138	TM168	84.6 63.95 : 107.63
PCB congener 153	TM168	84.6 62.65 : 108.85
PCB congener 156	TM168	85.2 61.69 : 112.27
PCB congener 157	TM168	83.8 67.15 : 109.93
PCB congener 167	TM168	84.5 65.58 : 109.14
PCB congener 169	TM168	76.6 56.84 : 112.10
PCB congener 180	TM168	87.3 66.99 : 111.63
PCB congener 189	TM168	79.3 57.75 : 112.59
PCB congener 28	TM168	91.9 73.68 : 105.96
PCB congener 52	TM168	87.8 67.24 : 107.62
PCB congener 77	TM168	83.5 64.87 : 108.49
PCB congener 81	TM168	87.8 70.78 : 110.80

pH

Component	Method Code	QC 2383	QC 2337
pH	TM133	100.26 98.47 : 102.33	99.08 97.97 : 101.10

pH Value of Filtered Water



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pH Value of Filtered Water

Component	Method Code	QC 2348
pH	TM256	100.94 99.33 : 102.54

Phenols by HPLC (S)

Component	Method Code	QC 2311	QC 2390
2,3,5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	101.95 65.50 : 89.50	103.9 65.50 : 89.50
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	88.3 84.00 : 124.00	88.89 84.00 : 124.00
Catechol by HPLC (S)	TM062 (S)	81.9 19.39 : 135.70	92.38 19.39 : 135.70
Cresols by HPLC (S)	TM062 (S)	93.74 81.00 : 112.20	92.48 81.00 : 112.20
Naphthol by HPLC (S)	TM062 (S)	113.57 57.50 : 102.50	119.29 57.50 : 102.50
Phenol by HPLC (S)	TM062 (S)	97.35 88.67 : 124.67	96.69 88.67 : 124.67
Resorcinol HPLC (S)	TM062 (S)	93.71 69.99 : 127.22	94.97 69.99 : 127.22
Xylenols by HPLC (S)	TM062 (S)	99.06 95.22 : 115.89	99.17 93.00 : 121.00

Phenols by HPLC (W)

Component	Method Code	QC 2355	QC 2383
2,3,5 Trimethyl-Phenol by HPLC (W)	TM259	99.0 91.00 : 109.00	105.0 91.00 : 109.00
2-Isopropyl Phenol by HPLC (W)	TM259	96.0 85.00 : 109.00	106.0 85.00 : 109.00
Cresols by HPLC (W)	TM259	100.0 93.00 : 115.00	101.67 92.00 : 110.00
Naphthol by HPLC (W)	TM259	104.0 86.00 : 128.00	109.0 86.00 : 128.00
Phenol by HPLC (W)	TM259	100.0 88.24 : 111.76	104.0 88.24 : 111.76
Xylenols by HPLC (W)	TM259	101.17 94.83 : 110.83	107.17 94.83 : 110.83

Total Dissolved Solids

Component	Method Code	QC 2336
Total Dissolved Solids	TM123	100.0 97.30 : 100.92

Total Organic Carbon



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Total Organic Carbon

Component	Method Code	QC 2315	QC 2344	QC 2365	QC 2394
Total Organic Carbon	TM132	103.13 87.02 : 113.45	103.13 87.02 : 113.45	101.56 87.02 : 113.45	101.95 87.02 : 113.45

VOC MS (S)

Component	Method Code	QC 2301	QC 2394	QC 2334
1,1,1,2-tetrachloroethane	TM116	93.6 86.59 : 118.97	101.0 79.10 : 119.66	98.4 86.59 : 118.97
1,1,1-Trichloroethane	TM116	94.2 86.26 : 117.53	105.0 87.51 : 115.37	105.6 86.26 : 117.53
1,1,2-Trichloroethane	TM116	93.8 75.16 : 112.70	100.0 81.29 : 113.79	99.8 75.16 : 112.70
1,1-Dichloroethane	TM116	101.8 83.27 : 122.16	113.8 86.77 : 122.11	113.4 83.27 : 122.16
1,2-Dichloroethane	TM116	110.0 89.30 : 133.10	115.2 90.04 : 132.28	108.4 89.30 : 133.10
1,4-Dichlorobenzene	TM116	90.6 82.59 : 123.23	101.8 80.81 : 125.07	114.8 82.59 : 123.23
2-Chlorotoluene	TM116	82.2 66.81 : 118.43	85.4 73.13 : 114.13	97.4 66.81 : 118.43
4-Chlorotoluene	TM116	84.4 65.88 : 114.76	80.8 72.48 : 112.82	99.0 65.88 : 114.76
Benzene	TM116	97.2 93.16 : 123.63	99.8 84.29 : 112.22	102.6 93.16 : 123.63
Carbon Disulphide	TM116	102.4 75.11 : 124.81	104.4 75.11 : 124.81	106.6 75.11 : 124.81
Carbontetrachloride	TM116	90.8 82.35 : 126.46	105.4 82.35 : 126.46	101.8 82.35 : 126.46
Chlorobenzene	TM116	91.4 85.07 : 118.13	100.2 82.88 : 122.42	103.0 85.07 : 118.13
Chloroform	TM116	99.8 88.13 : 122.71	117.0 90.35 : 120.38	113.4 88.13 : 122.71
Chloromethane	TM116	107.8 55.37 : 133.35	115.2 65.80 : 138.88	120.0 61.62 : 145.66
Cis-1,2-Dichloroethene	TM116	102.0 78.27 : 128.90	105.0 78.27 : 128.90	109.0 78.27 : 128.90
Dibromomethane	TM116	88.8 77.47 : 121.29	102.8 76.00 : 120.73	99.8 77.47 : 121.29
Dichloromethane	TM116	108.8 87.89 : 134.72	121.6 92.27 : 134.36	112.4 87.89 : 134.72
Ethylbenzene	TM116	88.0 79.92 : 110.05	83.2 70.95 : 113.07	94.4 79.92 : 110.05
Hexachlorobutadiene	TM116	73.0 16.78 : 153.29	55.0 14.55 : 147.92	59.4 16.78 : 153.29
Isopropylbenzene	TM116	86.0 64.20 : 119.59	65.6 52.00 : 108.19	89.2 64.20 : 119.59
Naphthalene	TM116	105.8 79.29 : 125.59	97.4 80.29 : 135.77	121.8 79.29 : 125.59
o-Xylene	TM116	83.8 74.57 : 112.73	77.2 64.92 : 98.85	90.6 72.86 : 102.10



CERTIFICATE OF ANALYSIS

Validated

SDG: 201001-47
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PO20-774

Report Number: 580778
Superseded Report: 575651

VOC MS (S)

		QC 2301	QC 2394	QC 2334
p/m-Xylene	TM116	86.7 76.47 : 108.99	80.5 72.04 : 104.04	89.9 76.47 : 108.99
Sec-Butylbenzene	TM116	77.0 44.71 : 117.87	52.0 27.03 : 135.73	83.8 44.71 : 117.87
Tetrachloroethene	TM116	93.6 85.86 : 122.95	99.0 81.43 : 126.65	99.8 85.86 : 122.95
Toluene	TM116	89.8 87.82 : 116.21	89.0 82.44 : 103.50	99.8 87.82 : 116.21
Trichloroethene	TM116	93.6 79.80 : 112.33	95.4 79.80 : 112.33	98.8 79.80 : 112.33
Trichlorofluoromethane	TM116	109.2 80.52 : 132.12	122.8 86.68 : 126.82	110.8 80.52 : 132.12
Vinyl Chloride	TM116	116.2 68.07 : 137.84	114.8 69.66 : 136.55	120.6 68.07 : 137.84

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis .

The figure detailed is the percentage recovery result for the AQC .

The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control .



CERTIFICATE OF ANALYSIS

Validated

SDG: 201001-47
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PQ20-774

Report Number: 580778
Superseded Report: 575651

Chromatogram

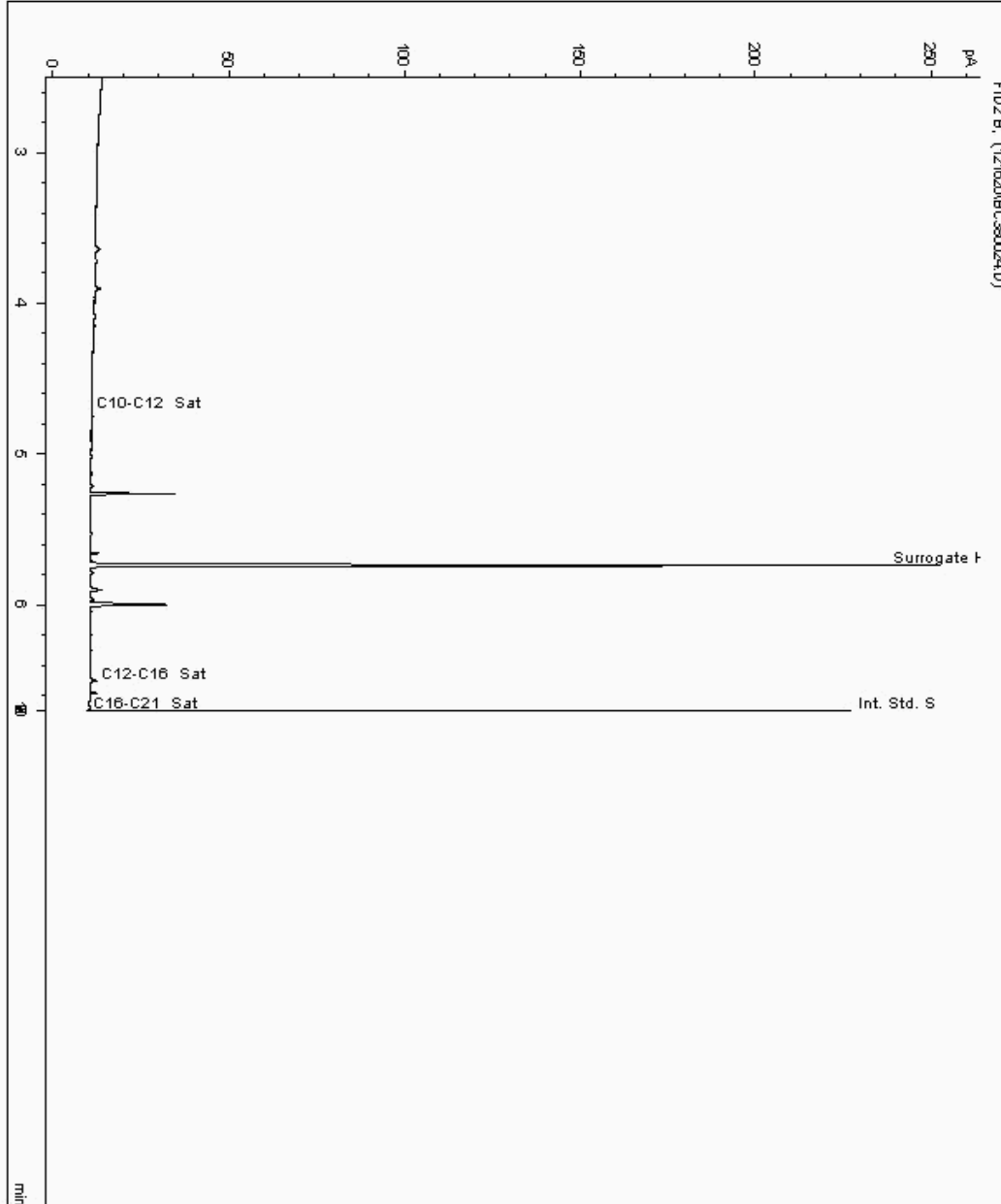
Analysis: EPH CWG (Aliphatic) Filtered GC (W)

Sample No : 23440392
Sample ID : R70107

Depth : 0.50

Speciated TPH - SATS (C12 - C40)

Sample Identity: 21963233-
Date Acquired : 17/12/20 04:58:19 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025





CERTIFICATE OF ANALYSIS

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SDG: 201001-47
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PQ20-774

Report Number: 580778
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Chromatogram

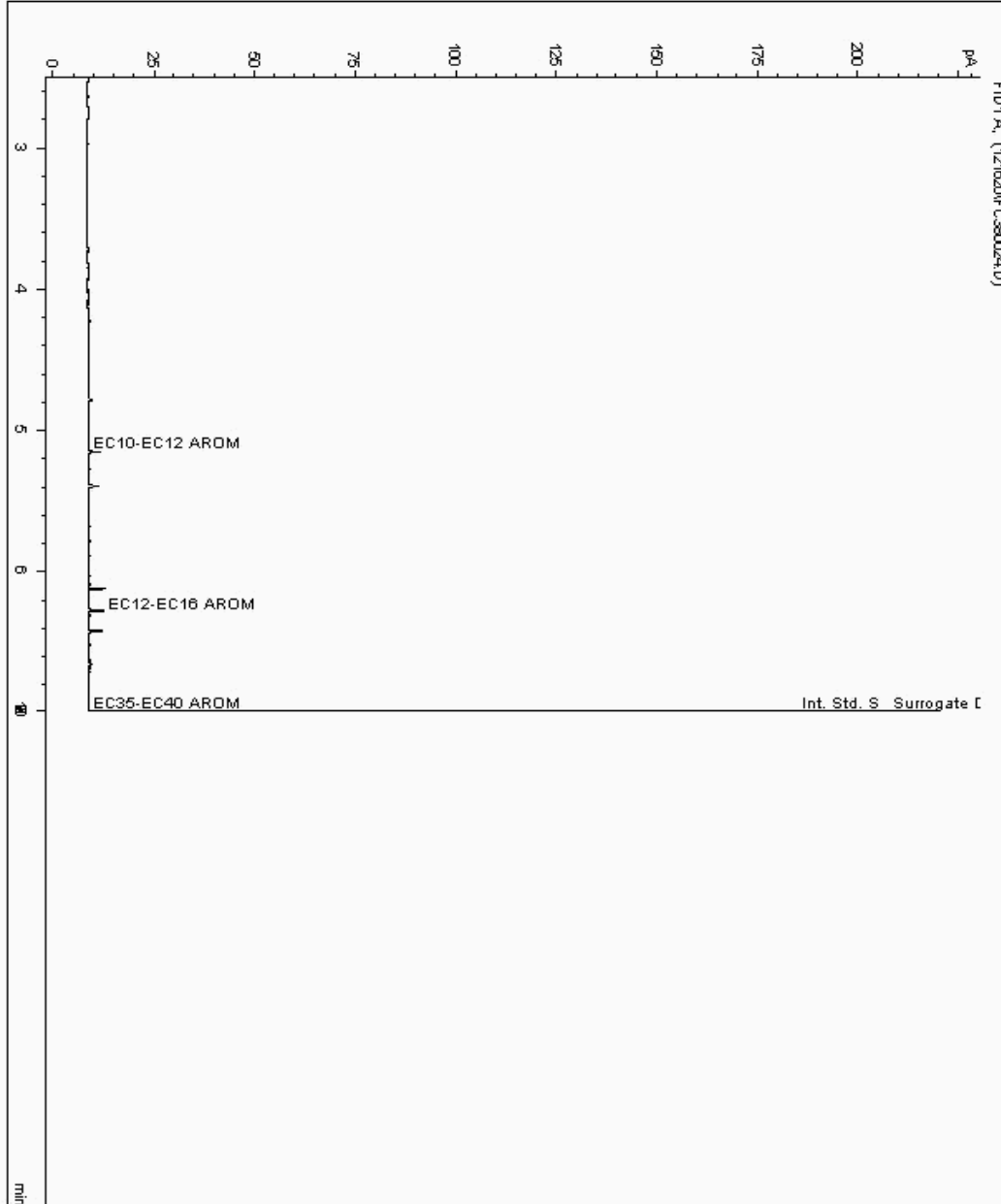
Analysis: EPH CWG (Aromatic) Filtered GC (W)

Sample No : 23440392
Sample ID : R70107

Depth : 0.50

Speciated TPH - AROM (C12 - C40)

Sample Identity: 21963234-
Date Acquired : 17/12/20 04:58:20 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025





CERTIFICATE OF ANALYSIS

Validated

SDG: 201001-47
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PO20-774

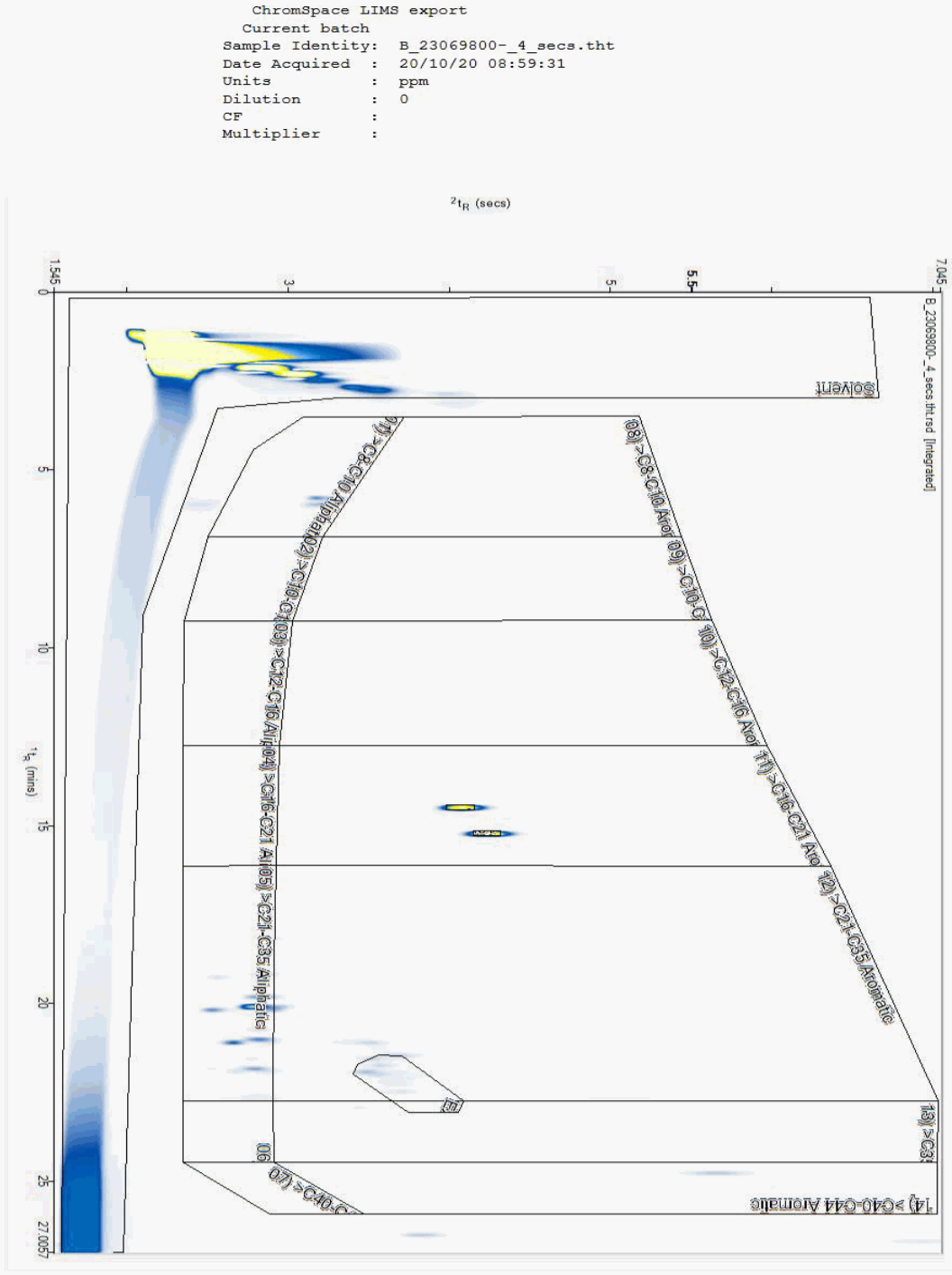
Report Number: 580778
Superseded Report: 575651

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23069800
Sample ID : STP70118

Depth : 0.30





CERTIFICATE OF ANALYSIS

Validated

SDG: 201001-47
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PQ20-774

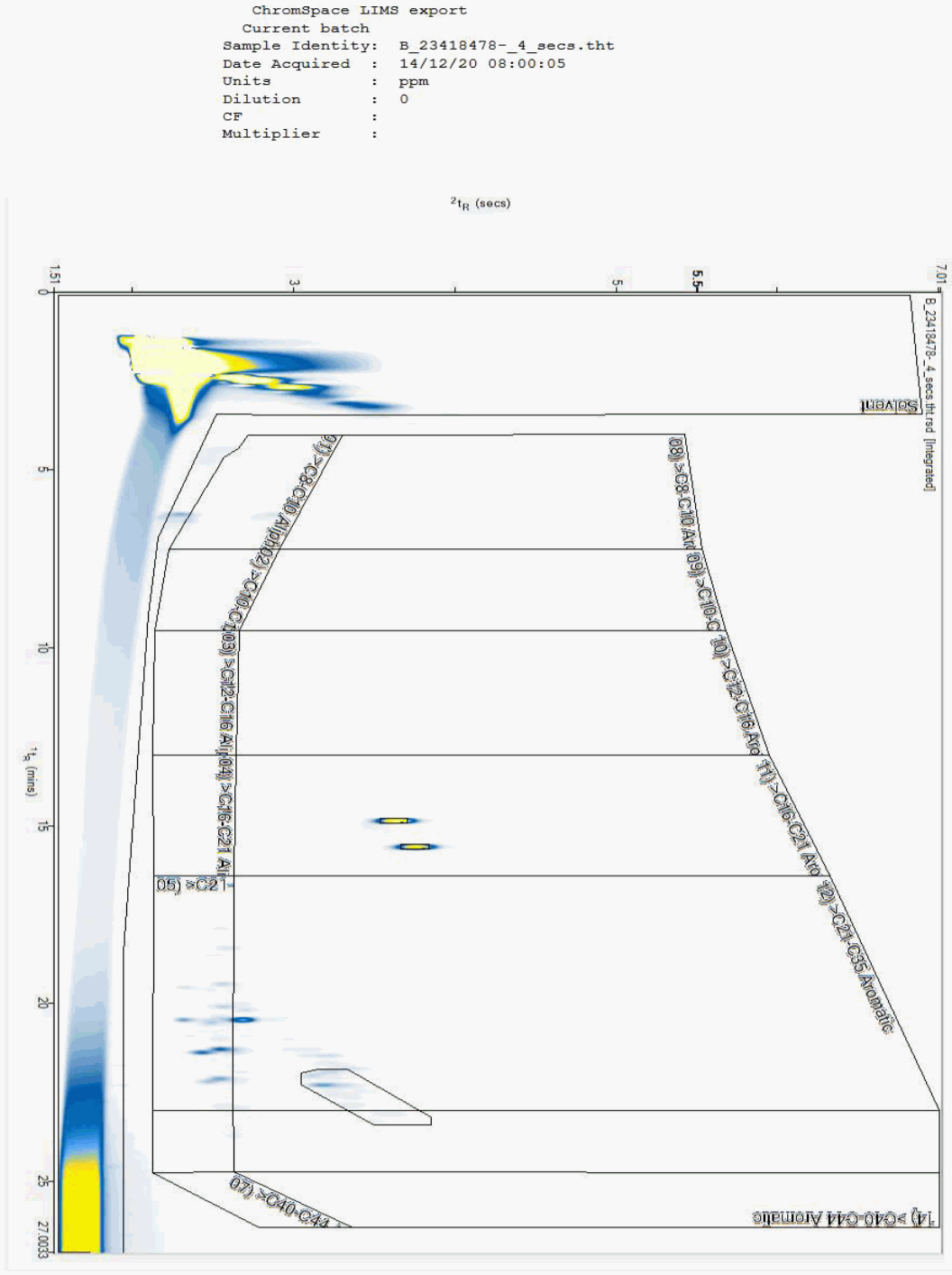
Report Number: 580778
Superseded Report: 575651

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23418478
Sample ID : R70107

Depth : 0.50





CERTIFICATE OF ANALYSIS

Validated

SDG: 201001-47
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PO20-774

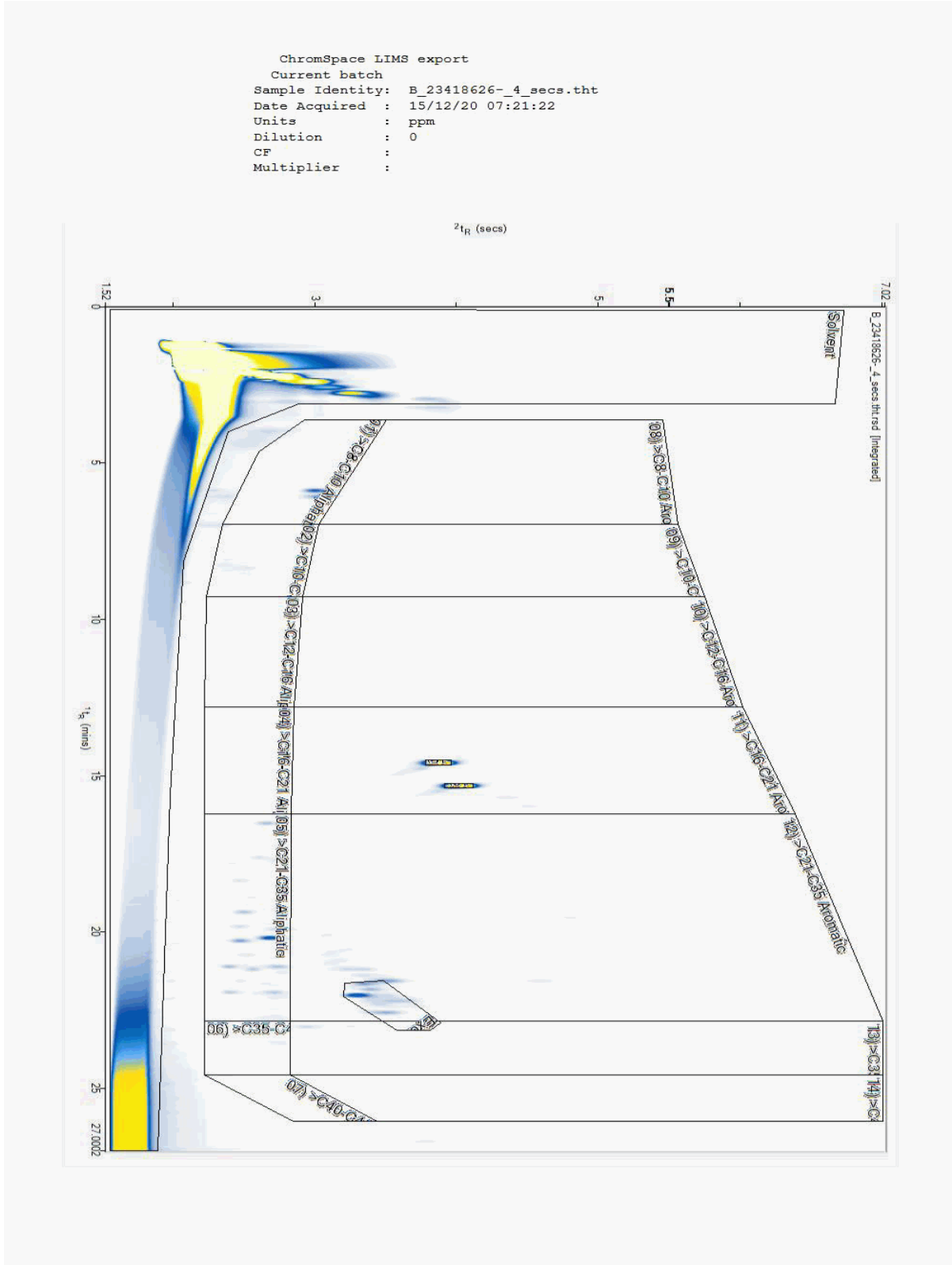
Report Number: 580778
Superseded Report: 575651

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23418626
Sample ID : R71905

Depth : 0.30 - 0.40





CERTIFICATE OF ANALYSIS

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SDG: 201001-47
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PQ20-774

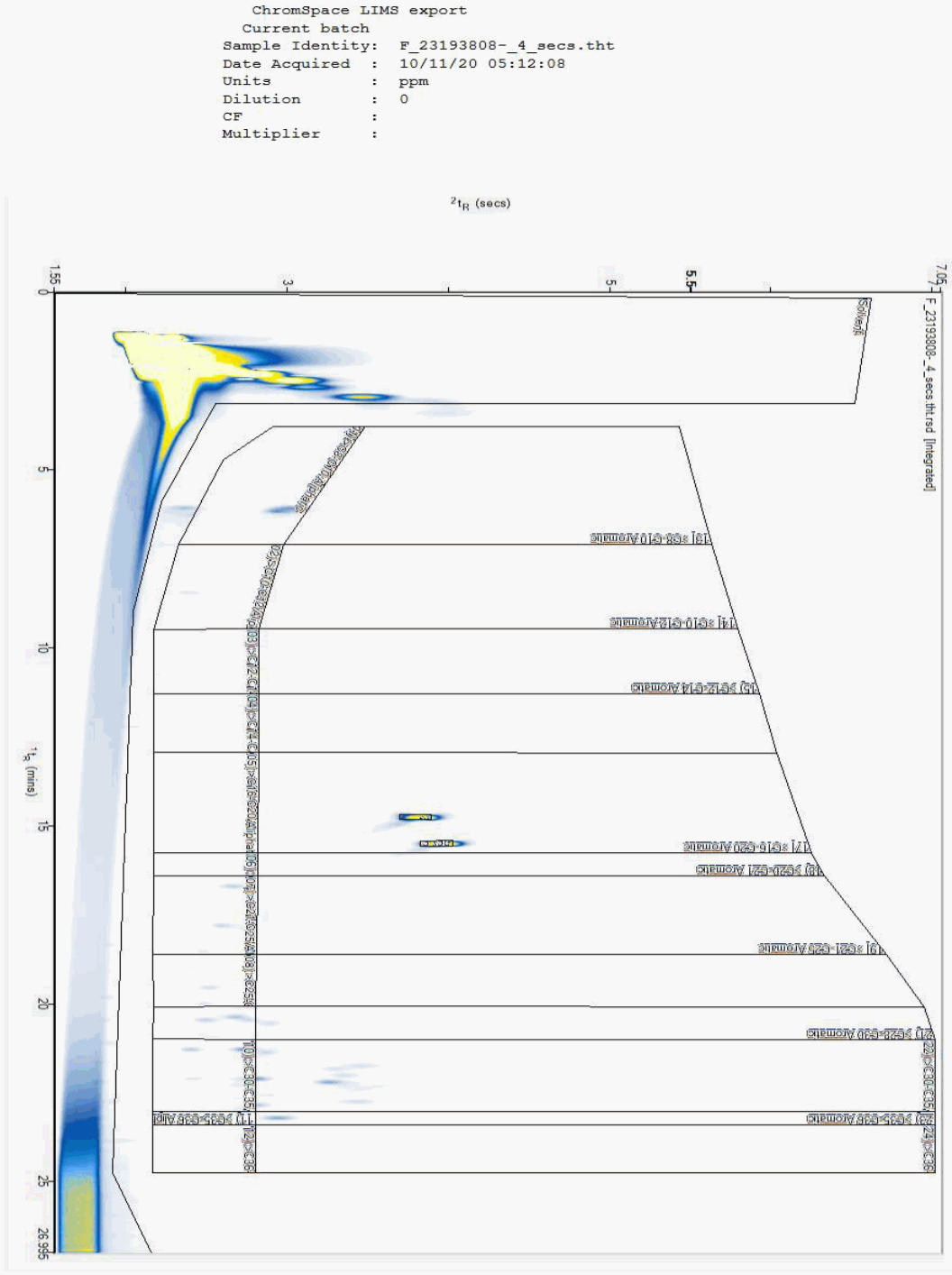
Report Number: 580778
Superseded Report: 575651

Chromatogram

Analysis: EPH by GCxGC-FID

Sample No : 23193808
Sample ID : R71905

Depth : 0.50 - 0.60





CERTIFICATE OF ANALYSIS

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SDG: 201001-47
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PQ20-774

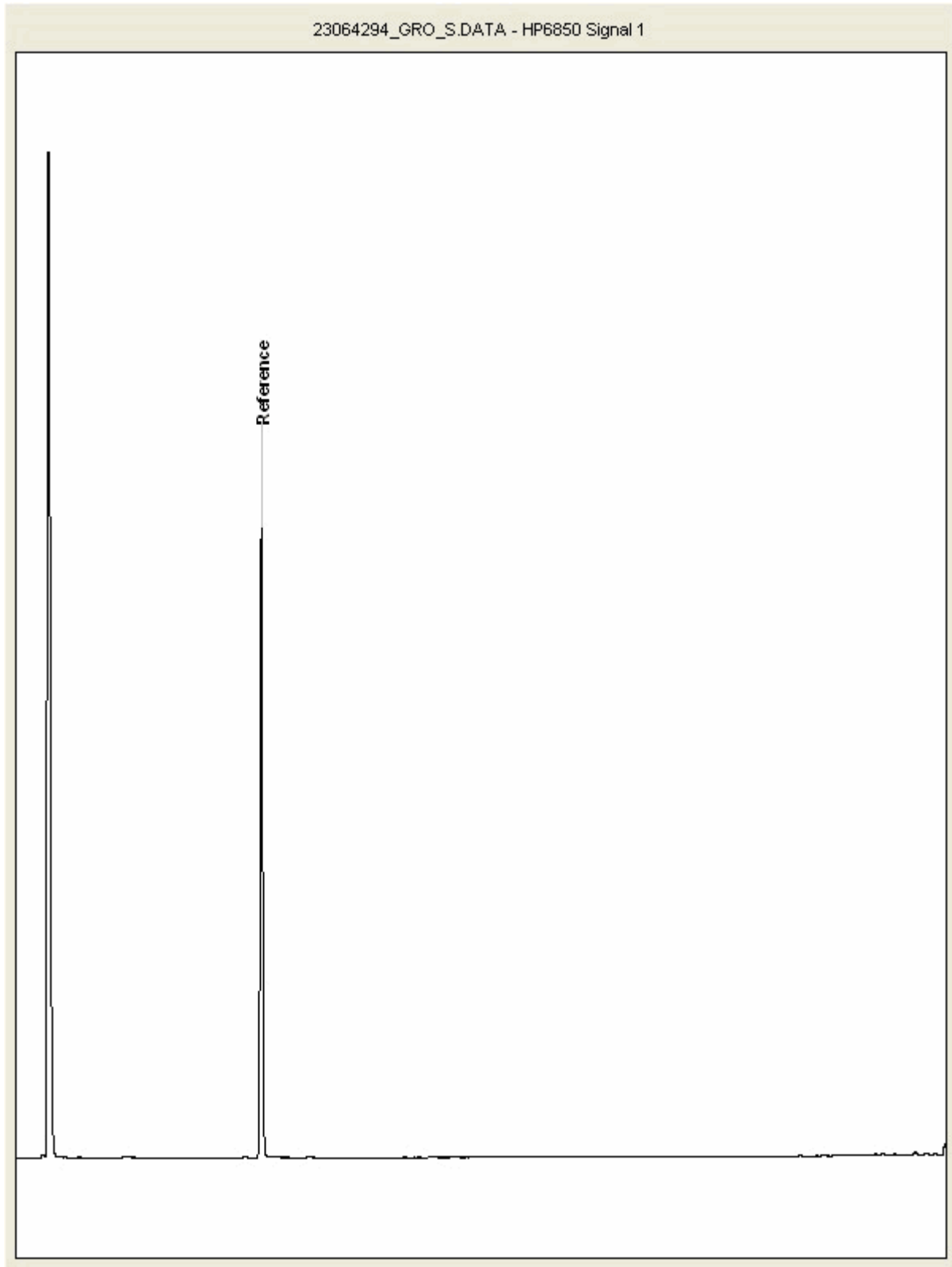
Report Number: 580778
Superseded Report: 575651

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23064294
Sample ID : STP70118

Depth : 0.30





CERTIFICATE OF ANALYSIS

Validated

SDG: 201001-47
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PQ20-774

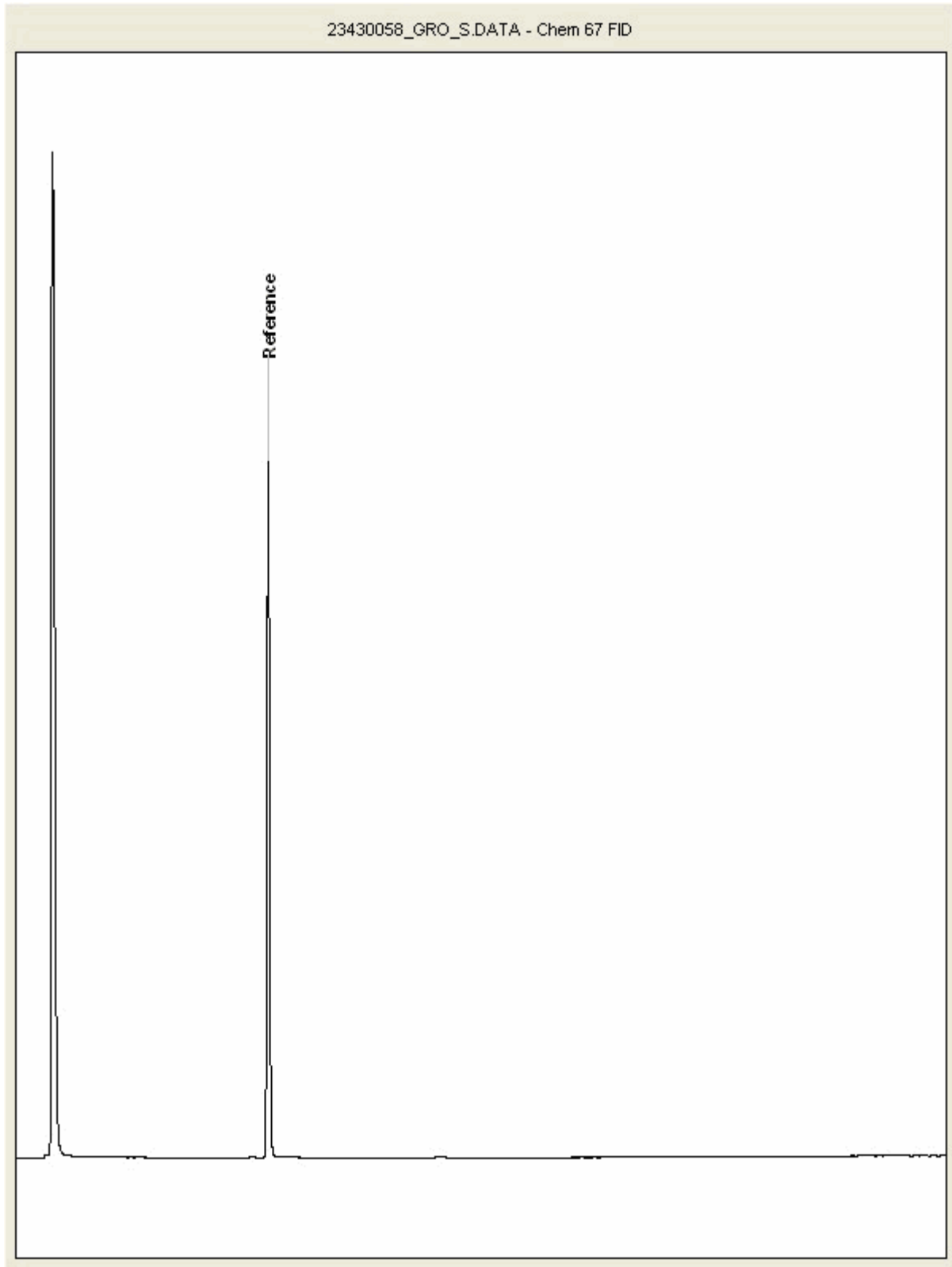
Report Number: 580778
Superseded Report: 575651

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23430058
Sample ID : R71905

Depth : 0.30 - 0.40





CERTIFICATE OF ANALYSIS

Validated

SDG: 201001-47
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PQ20-774

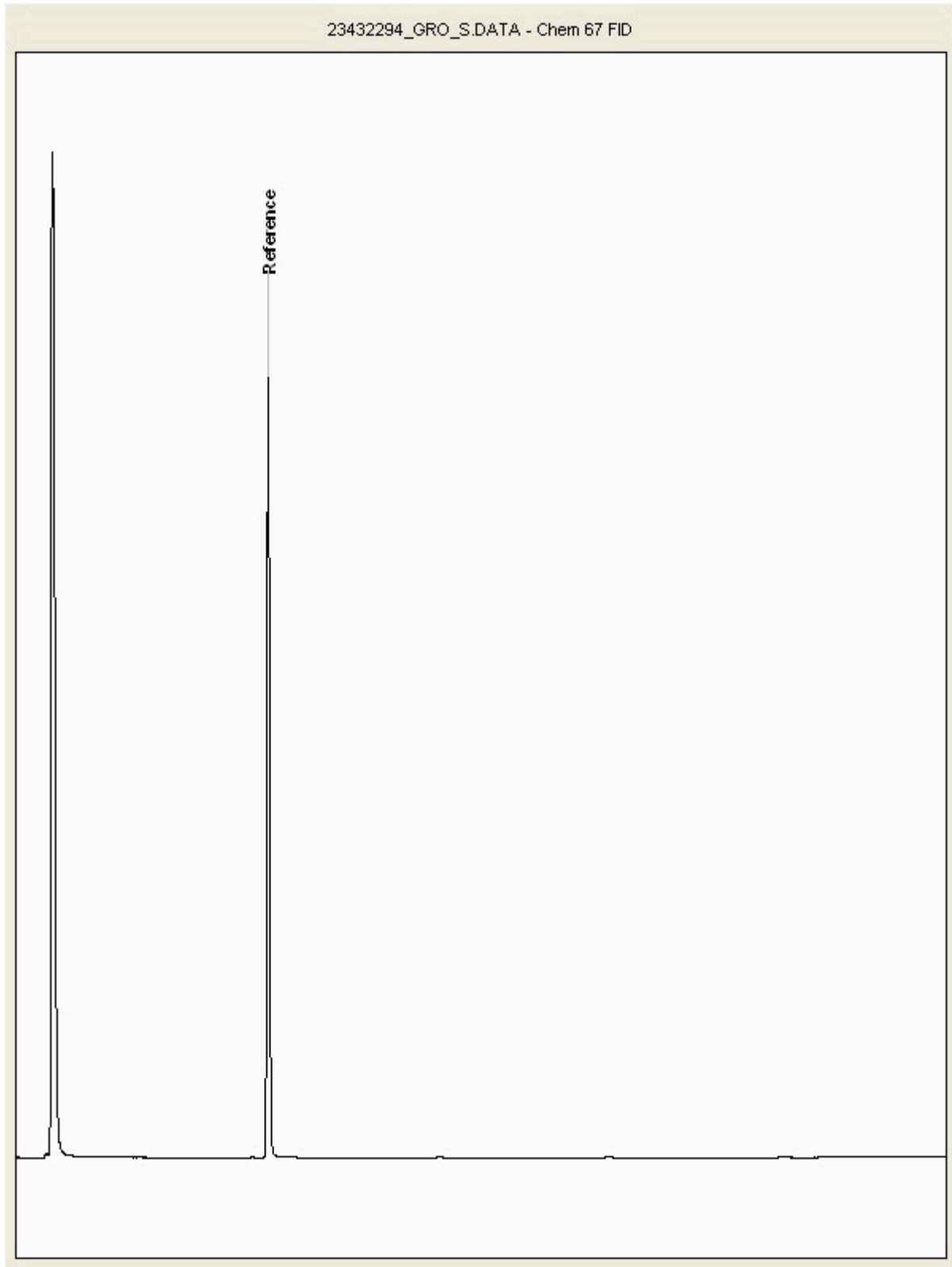
Report Number: 580778
Superseded Report: 575651

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23432294
Sample ID : R70107

Depth : 0.50





CERTIFICATE OF ANALYSIS

Validated

SDG: 201001-47
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PQ20-774

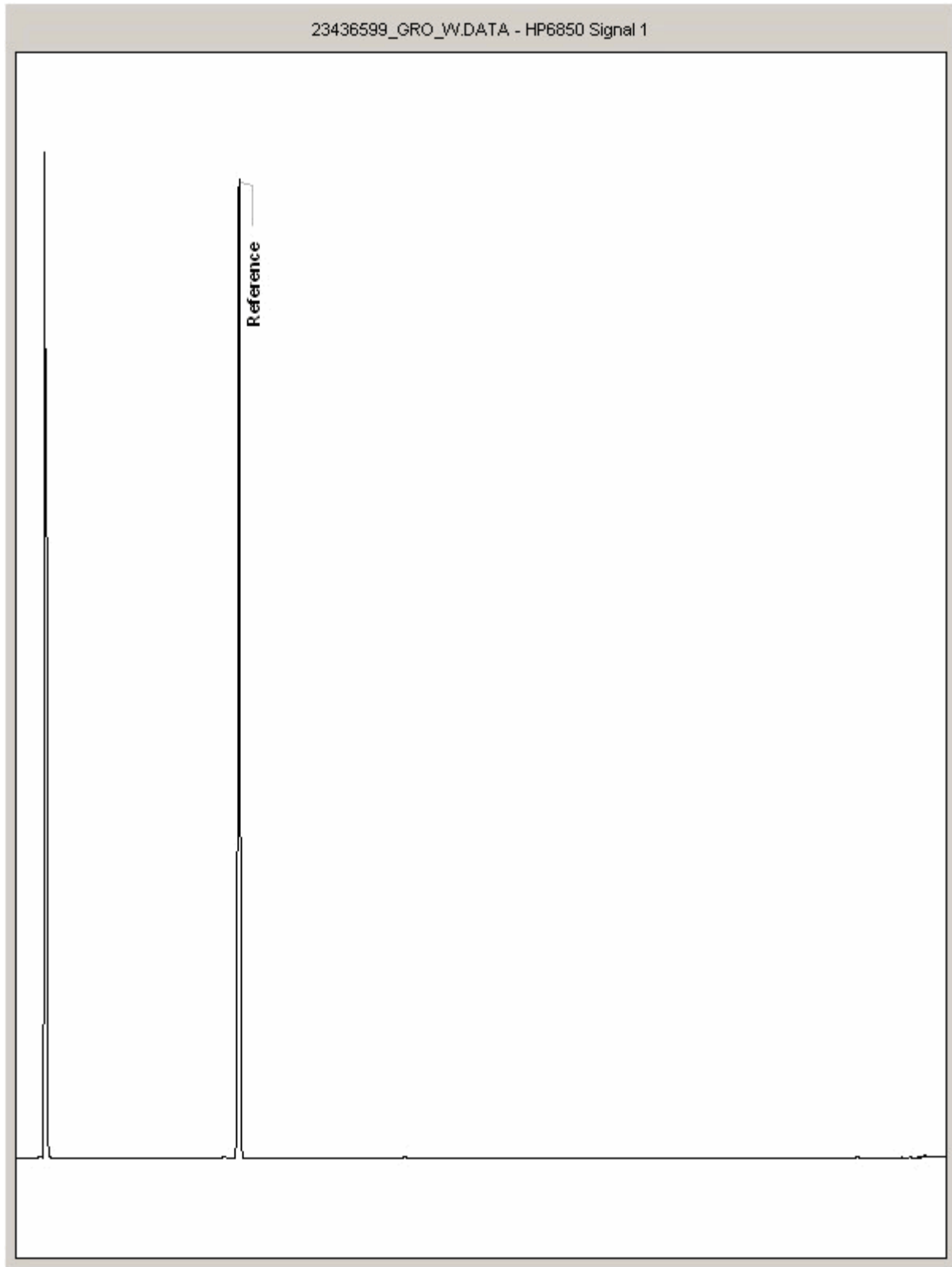
Report Number: 580778
Superseded Report: 575651

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 23436599
Sample ID : R70107

Depth : 0.50





CERTIFICATE OF ANALYSIS

SDG: 201001-47	Client Reference: JFR1451	Report Number: 580778
Location: A303 Stonehenge	Order Number: PO20-774	Superseded Report: 575651

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH₄ by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

19. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung. Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017)*.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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email: hawardencustomerservices@alsglobal.com

Website: www.alsenvironmental.co.uk

RPS Consultants Ltd
260 Park Avenue
Aztec West
Almondsbury
Bristol
BS32 4SY

Attention: Gary Riches

CERTIFICATE OF ANALYSIS

Date of report Generation: 14 November 2020
Customer: RPS Consultants Ltd
Sample Delivery Group (SDG): 201006-141
Your Reference: JFR1451
Location: A303 Stonehenge
Report No: 575652

This report has been revised and directly supersedes 571962 in its entirety.

We received 15 samples on Tuesday October 06, 2020 and 6 of these samples were scheduled for analysis which was completed on Saturday November 14, 2020. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

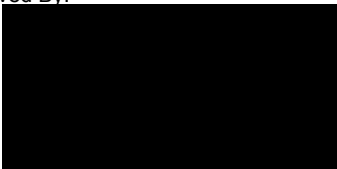
Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:



Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 201006-141 Client Reference: JFR1451 Report Number: 575652
Location: A303 Stonehenge Order Number: PO20-754 Superseded Report: 571962

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
22973867	R70108		0.00 - 0.00	28/09/2020
22973866	R70108		0.30 - 0.40	28/09/2020
22973865	R70108		0.50 - 0.50	28/09/2020
22973868	R70108		1.00 - 1.10	28/09/2020
22973870	R70113		0.00 - 0.10	28/09/2020
22973871	R70113		0.25 - 0.45	28/09/2020
22973869	R70113		0.55 - 0.65	28/09/2020
22973873	R70113		1.00 - 1.10	28/09/2020
22973859	STP10501		0.00 - 0.00	28/09/2020
22973861	STP70501		0.30 - 0.30	28/09/2020
22973864	STP70501		0.50 - 0.50	28/09/2020
22973863	STP70501		1.00 - 1.00	28/09/2020
22973860	STP70501		2.00 - 2.00	28/09/2020
22973872	STP70504		0.00 - 0.00	28/09/2020
22973874	STP70504		0.30 - 0.30	28/09/2020

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG:	201006-141	Client Reference:	JFR1451	Report Number:	575652
Location:	A303 Stonehenge	Order Number:	PO20-754	Superseded Report:	571962

Results Legend <div style="display: flex; flex-direction: column; gap: 5px;"> <div style="display: flex; align-items: center;"> <div style="width: 15px; height: 15px; background-color: yellow; border: 1px solid black; margin-right: 5px;"></div> Test </div> <div style="display: flex; align-items: center;"> <div style="width: 15px; height: 15px; background-color: red; color: white; border: 1px solid black; margin-right: 5px;"></div> No Determination Possible </div> </div> Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type	
		22973866	R70108		0.30 - 0.40	250g Amber Jar (ALE210) 60g VOC (ALE215)	S
		22973868	R70108		1.00 - 1.10	60g VOC (ALE215) 250g Amber Jar (ALE210)	S
		22973861	STP70501		0.30 - 0.30	60g VOC (ALE215) 250g Amber Jar (ALE210)	S
		22973864	STP70501		0.50 - 0.50	1kg TUB 250g Amber Jar (ALE210)	S
		22973860	STP70501		2.00 - 2.00	60g VOC (ALE215) 250g Amber Jar (ALE210)	S
		22973874	STP70504		0.30 - 0.30	60g VOC (ALE215) 250g Amber Jar (ALE210)	S
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 1					
Ammonium Soil by Titration	All	NDPs: 0 Tests: 5					
Anions by Kone (soil)	All	NDPs: 0 Tests: 5					
Anions by Kone (w)	All	NDPs: 0 Tests: 2					
CEN Readings	All	NDPs: 0 Tests: 2					
Chromium III	All	NDPs: 0 Tests: 6					
Coronene	All	NDPs: 0 Tests: 1					
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 6					
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 2					
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 2					
EPH by GCxGC-FID	All	NDPs: 0 Tests: 1					
EPH CWG (Aliphatic) Filtered GC (W)	All	NDPs: 0 Tests: 1					
EPH CWG (Aromatic) Filtered GC (W)	All	NDPs: 0 Tests: 1					
EPH CWG GC (S)	All	NDPs: 0 Tests: 5					
Fluoride	All	NDPs: 0 Tests: 1					



CERTIFICATE OF ANALYSIS

Validated

SDG:	201006-141	Client Reference:	JFR1451	Report Number:	575652
Location:	A303 Stonehenge	Order Number:	PO20-754	Superseded Report:	571962

Results Legend <div style="display: flex; flex-direction: column; gap: 5px;"> <div style="display: flex; align-items: center;"> Test</div> <div style="display: flex; align-items: center;"> No Determination Possible</div> </div> Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type	
		22973866	R70108		0.30 - 0.40	250g Amber Jar (ALEZ10) 60g VOC (ALEZ15)	S
		22973868	R70108		1.00 - 1.10	250g Amber Jar (ALEZ10) 60g VOC (ALEZ15)	S
		22973861	STP70501		0.30 - 0.30	250g Amber Jar (ALEZ10) 60g VOC (ALEZ15)	S
		22973864	STP70501		0.50 - 0.50	250g Amber Jar (ALEZ10) 60g VOC (ALEZ15)	S
		22973860	STP70501		2.00 - 2.00	250g Amber Jar (ALEZ10) 60g VOC (ALEZ15)	S
		22973874	STP70504		0.30 - 0.30	250g Amber Jar (ALEZ10) 60g VOC (ALEZ15)	S
GRO by GC-FID (S)	All	NDPs: 0 Tests: 5				X X X X X X	
GRO by GC-FID (W)	All	NDPs: 0 Tests: 1				X	
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 5				X X X X X	
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 1				X	
Mercury Dissolved	All	NDPs: 0 Tests: 2				X X	
Metals in solid samples by OES	All	NDPs: 0 Tests: 5				X X X X X	
OC OP Pesticides and Triazine Herb	All	NDPs: 0 Tests: 2				X X	
PAH 16 & 17 Calc	All	NDPs: 0 Tests: 1				X	
PAH by GCMS	All	NDPs: 0 Tests: 6				X X X X X X	
PAH in waters by GC-MS (diss.filt)	All	NDPs: 0 Tests: 1				X	
PCBs by GCMS	All	NDPs: 0 Tests: 1				X	
pH	All	NDPs: 0 Tests: 5				X X X X X	
pH Value of Filtered Water	All	NDPs: 0 Tests: 1				X	
Phenols by HPLC (S)	All	NDPs: 0 Tests: 5				X X X X X	
Phenols by HPLC (W)	All	NDPs: 0 Tests: 2				X X	



CERTIFICATE OF ANALYSIS

Validated

SDG: 201006-141	Client Reference: JFR1451	Report Number: 575652
Location: A303 Stonehenge	Order Number: PO20-754	Superseded Report: 571962

Results Legend <div style="display: flex; flex-direction: column; gap: 5px;"> <div style="display: flex; align-items: center;">X Test</div> <div style="display: flex; align-items: center;">N No Determination Possible</div> </div> Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type	
		22973866	R70108		0.30 - 0.40	250g Amber Jar (ALEZ10)	S
		22973868	R70108		1.00 - 1.10	60g VOC (ALEZ15)	S
		22973861	STP70501		0.30 - 0.30	250g Amber Jar (ALEZ10)	S
		22973864	STP70501		0.50 - 0.50	1kg TUB	S
		22973860	STP70501		2.00 - 2.00	60g VOC (ALEZ15)	S
		22973874	STP70504		0.30 - 0.30	60g VOC (ALEZ15)	S
Sample description	All	NDPs: 0 Tests: 4					
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 1					
Total Dissolved Solids	All	NDPs: 0 Tests: 1					
Total Organic Carbon	All	NDPs: 0 Tests: 6					
TPH CWG Filtered (W)	All	NDPs: 0 Tests: 1					
TPH CWG GC (S)	All	NDPs: 0 Tests: 5					
VOC MS (S)	All	NDPs: 0 Tests: 6					



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SDG: 201006-141
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Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm
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Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
22973866	R70108	0.30 - 0.40	Light Brown	Silt Loam	Stones	Vegetation
22973868	R70108	1.00 - 1.10	White	Chalk	Stones	None
22973860	STP70501	2.00 - 2.00	Cream	Sand	Stones	None
22973861	STP70501	0.30 - 0.30	Light Brown	Silt Loam	Stones	Vegetation
22973864	STP70501	0.50 - 0.50	Dark Brown	Loamy Sand	N/A	Stones
22973874	STP70504	0.30 - 0.30	Light Brown	Silty Clay Loam	Stones	Vegetation

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.



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Results Legend			Customer Sample Ref.	R70108	R70108	STP70501	STP70501	STP70501	STP70504
# ISO17025 accredited. M MCERTS accredited. aq Aqueous / settled sample. diss.fit Dissolved / filtered sample. tot.unfit Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4-3@ Sample deviation (see appendix)	Depth (m)	Sample Type	0.30 - 0.40	1.00 - 1.10	0.30 - 0.30	0.50 - 0.50	2.00 - 2.00	0.30 - 0.30	
	Date Sampled	Date Received	28/09/2020	28/09/2020	28/09/2020	28/09/2020	28/09/2020	28/09/2020	
	SDG Ref	Lab Sample No.(s)	201006-141	201006-141	201006-141	201006-141	201006-141	201006-141	
	AGS Reference		22973866	22973868	22973861	22973864	22973860	22973874	
Component	LOD/Units	Method							
Moisture Content Ratio (% of as received sample)	%	PM024	16	9.8	16	14	13	17	
Exchangeable Ammonia as N	<12 mg/kg	TM024	<12	<12	<12		<12	14.5	
Phenol	<0.01 mg/kg	TM062 (S)	<0.01	<0.01	<0.01		<0.01	<0.01	
Organic Carbon, Total	<0.2 %	TM132	0.393	<0.2	2.06	0.891	<0.2	0.714	
pH	1 pH Units	TM133	8.41	9.14	8.21		9.04	8.56	
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6	<0.6	<0.6		<0.6	<0.6	
Cyanide, Total	<1 mg/kg	TM153	<1	<1	<1		<1	<1	
Cyanide, Free	<1 mg/kg	TM153	<1	<1	<1		<1	<1	
PCB congener 28	<3 µg/kg	TM168				<3			
PCB congener 52	<3 µg/kg	TM168				<3			
PCB congener 101	<3 µg/kg	TM168				<3			
PCB congener 118	<3 µg/kg	TM168				<3			
PCB congener 138	<3 µg/kg	TM168				<3			
PCB congener 153	<3 µg/kg	TM168				<3			
PCB congener 180	<3 µg/kg	TM168				<3			
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168				<21			
Chromium, Trivalent	<0.9 mg/kg	TM181	3.14	1.08	11.5		3.41	4.5	
Antimony	<0.6 mg/kg	TM181	<0.6	<0.6	<0.6		0.98	<0.6	
Arsenic	<0.6 mg/kg	TM181	0.649	<0.6	4.99		0.85	1.48	
Beryllium	<0.01 mg/kg	TM181	0.0974	0.0481	0.346		0.101	0.129	
Boron	<0.7 mg/kg	TM181	2.22	1.43	7.08		4.53	4.03	
Cadmium	<0.02 mg/kg	TM181	0.144	0.0845	0.307		0.283	0.155	
Chromium	<0.9 mg/kg	TM181	3.14	1.08	11.5		3.41	4.5	
Copper	<1.4 mg/kg	TM181	<1.4	<1.4	6.55		3.17	3.59	
Iron	<1000 mg/kg	TM181	1470	<1000	9280		3150	2960	
Lead	<0.7 mg/kg	TM181	<0.7	<0.7	10.9		1.92	3.17	
Manganese	<0.13 mg/kg	TM181	224	157	632		316	288	
Mercury	<0.14 mg/kg	TM181	<0.14	<0.14	<0.14		<0.14	<0.14	
Molybdenum	<0.1 mg/kg	TM181	<0.1	<0.1	0.142		<0.1	<0.1	
Nickel	<0.2 mg/kg	TM181	2	0.99	10.1		5.9	4.13	
Phosphorus	<1 mg/kg	TM181	517	567	1200		425	814	
Selenium	<1 mg/kg	TM181	<1	<1	<1		<1	<1	



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#	Customer Sample Ref.	Depth (m)	R70108	R70108	STP70501	STP70501	STP70501	STP70504
Results Legend # ISO17025 accredited. M mCERTS accredited. aq Aqueous / filtered sample. diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery. (F) Trigger breach confirmed 1.4*5@ Sample deviation (see appendix)		Sample Type	0.30 - 0.40	1.00 - 1.10	0.30 - 0.30	0.50 - 0.50	2.00 - 2.00	0.30 - 0.30
		Date Sampled	28/09/2020	28/09/2020	28/09/2020	28/09/2020	28/09/2020	28/09/2020
		Date Received	06/10/2020	06/10/2020	06/10/2020	06/10/2020	06/10/2020	06/10/2020
		SDG Ref	201006-141	201006-141	201006-141	201006-141	201006-141	201006-141
		Lab Sample No.(s)	22973866	22973868	22973861	22973864	22973860	22973874
		AGS Reference						
Component	LOD/Units	Method						
Zinc	<1.9 mg/kg	TM181	12.3	7.68	46.8		27.9	21.8
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243	0.004	0.0045	<0.004		0.0681	<0.004
PAH Total 17 (inc Coronene) Moisture Corrected	<10 mg/kg	TM410				<10		
Coronene	<200 µg/kg	TM410				<200		
EPH Surrogate % recovery**	%	TM415				99.4		
Mineral Oil >C10-C40	<5 mg/kg	TM415				6.49		



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OC OP Pesticides and Triazine Herb

#	Customer Sample Ref.	STP70501	STP70504			
<div style="font-size: small; margin-bottom: 5px;"> Results Legend # ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.fit Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4*\$@ Sample deviation (see appendix) </div>						
	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.30 - 0.30 Soil/Solid (S) 28/09/2020 06/10/2020 201006-141 22973861	0.30 - 0.30 Soil/Solid (S) 28/09/2020 06/10/2020 201006-141 22973874			
Component	LOD/Units	Method				
Dichlorvos	<50 µg/kg	TM073	<50	<50		
Mevinphos	<50 µg/kg	TM073	<50	<50		
Phorate	<50 µg/kg	TM073	<50	<50		
alpha-Hexachlorocyclohexane (HCH)	<50 µg/kg	TM073	<50	<50		
Diazinon	<50 µg/kg	TM073	<50	<50		
gamma-Hexachlorocyclohexane (HCH / Lindane)	<50 µg/kg	TM073	<50	<50		
Atrazine	<50 µg/kg	TM073	<50	<50		
Simazine	<50 µg/kg	TM073	<50	<50		
Disulfoton	<50 µg/kg	TM073	<50	<50		
Heptachlor	<50 µg/kg	TM073	<50	<50		
Aldrin	<50 µg/kg	TM073	<50	<50		
beta-Hexachlorocyclohexane (HCH)	<50 µg/kg	TM073	<50	<50		
Methyl parathion	<50 µg/kg	TM073	<50	<50		
Malathion	<50 µg/kg	TM073	<50	<50		
Fenitrothion	<50 µg/kg	TM073	<50	<50		
Heptachlor epoxide	<50 µg/kg	TM073	<50	<50		
Parathion	<50 µg/kg	TM073	<50	<50		
Endosulphan I	<50 µg/kg	TM073	<50	<50		
p,p-DDE	<50 µg/kg	TM073	<50	<50		
Dieldrin	<50 µg/kg	TM073	<50	<50		
o,p'-DDD (TDE)	<50 µg/kg	TM073	<50	<50		
Endrin	<50 µg/kg	TM073	<50	<50		
p,p-TDE (DDD)	<50 µg/kg	TM073	<50	<50		
Ethion	<50 µg/kg	TM073	<50	<50		
Endosulphan II	<50 µg/kg	TM073	<50	<50		
p,p-DDT	<50 µg/kg	TM073	<50	<50		
p,p-Methoxychlor	<50 µg/kg	TM073	<50	<50		
Endosulphan sulphate	<50 µg/kg	TM073	<50	<50		
Azinphos-methyl	<50 µg/kg	TM073	<50	<50		



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PAH by GCMS

Table with 8 columns: Component, LOD/Units, Method, and 5 sample columns (R70108, R70108, STP70501, STP70501, STP70504). Rows include various PAHs like Naphthalene, Acenaphthylene, Fluorene, etc., with their respective concentrations and recovery percentages.



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Semi Volatile Organic Compounds

#	Customer Sample Ref.	STP70501			
<div style="font-size: small;"> Results Legend # ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4*\$@ Sample deviation (see appendix) </div>					
		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.30 - 0.30 Soil/Solid (S) 28/09/2020 06/10/2020 201006-141 22973861		
Component	LOD/Units	Method			
Phenol	<100 µg/kg	TM157	<100		
Pentachlorophenol	<100 µg/kg	TM157	<100		
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100		
Nitrobenzene	<100 µg/kg	TM157	<100		
Isophorone	<100 µg/kg	TM157	<100		
Hexachloroethane	<100 µg/kg	TM157	<100		
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100		
Hexachlorobutadiene	<100 µg/kg	TM157	<100		
Hexachlorobenzene	<100 µg/kg	TM157	<100		
n-Dioctyl phthalate	<100 µg/kg	TM157	<100		
Dimethyl phthalate	<100 µg/kg	TM157	<100		
Diethyl phthalate	<100 µg/kg	TM157	<100		
n-Dibutyl phthalate	<100 µg/kg	TM157	<100		
Dibenzofuran	<100 µg/kg	TM157	<100		
Carbazole	<100 µg/kg	TM157	<100		
Butylbenzyl phthalate	<100 µg/kg	TM157	<100		
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100		
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100		
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100		
Azobenzene	<100 µg/kg	TM157	<100		
4-Nitrophenol	<100 µg/kg	TM157	<500		
4-Nitroaniline	<100 µg/kg	TM157	<100		
4-Methylphenol	<100 µg/kg	TM157	<100		
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100		
4-Chloroaniline	<100 µg/kg	TM157	<100		
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100		
4-Bromophenylphenylether	<100 µg/kg	TM157	<100		
3-Nitroaniline	<100 µg/kg	TM157	<100		
2-Nitrophenol	<100 µg/kg	TM157	<100		
2-Nitroaniline	<100 µg/kg	TM157	<100		
2-Methylphenol	<100 µg/kg	TM157	<100		
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100		



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Semi Volatile Organic Compounds

Results Legend		Customer Sample Ref.	STP70501				
#	ISO17025 accredited.	Depth (m)	0.30 - 0.30				
M	mCERTS accredited.	Sample Type	Soil/Solid (S)				
sg	Aqueous / filtered sample.	Date Sampled	28/09/2020				
dis.filt	Dissolved / filtered sample.	Sampled Time	.				
tot.unfilt	Total / unfiltered sample.	Date Received	06/10/2020				
*	Subcontracted - refer to subcontractor report for accreditation status.	SDG Ref	201006-141				
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery	Lab Sample No.(s)	22973861				
(F)	Trigger breach confirmed	AGS Reference					
1.4.4.6@	Sample deviation (see appendix)						
Component	LOD/Units	Method	<100				
2-Chlorophenol	<100 µg/kg	TM157	<100				
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100				
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100				
2,4-Dimethylphenol	<100 µg/kg	TM157	<100				
2,4-Dichlorophenol	<100 µg/kg	TM157	<100				
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100				
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100				
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100				
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100				
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100				
2-Chloronaphthalene	<100 µg/kg	TM157	<100				
2-Methylnaphthalene	<100 µg/kg	TM157	<100				
Acenaphthylene	<100 µg/kg	TM157	<100				
Acenaphthene	<100 µg/kg	TM157	<100				
Anthracene	<100 µg/kg	TM157	<100				
Benzo(a)anthracene	<100 µg/kg	TM157	<100				
Benzo(b)fluoranthene	<100 µg/kg	TM157	<100				
Benzo(k)fluoranthene	<100 µg/kg	TM157	<100				
Benzo(a)pyrene	<100 µg/kg	TM157	<100				
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<100				
Chrysene	<100 µg/kg	TM157	<100				
Fluoranthene	<100 µg/kg	TM157	<100				
Fluorene	<100 µg/kg	TM157	<100				
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<100				
Phenanthrene	<100 µg/kg	TM157	<100				
Pyrene	<100 µg/kg	TM157	<100				
Naphthalene	<100 µg/kg	TM157	<100				
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100				
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100				
TIC report		TM157	Not Detected				
Total SVOC TIC	<100 µg/kg	TM157	<1000				



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TPH CWG (S)

Results Legend		Customer Sample Ref.	R70108	R70108	STP70501	STP70501	STP70504
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.30 - 0.40	1.00 - 1.10	0.30 - 0.30	2.00 - 2.00	0.30 - 0.30
M	mCERTS accredited.		Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
aq	Aqueous / settled sample.		28/09/2020	28/09/2020	28/09/2020	28/09/2020	28/09/2020
diss.filt	Dissolved / filtered sample.		06/10/2020	06/10/2020	06/10/2020	06/10/2020	06/10/2020
tot.unfilt	Total / unfiltered sample.		201006-141	201006-141	201006-141	201006-141	201006-141
*	Subcontracted - refer to subcontractor report for accreditation status.		22973866	22973868	22973861	22973860	22973874
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery						
(F)	Trigger breach confirmed						
1-4*3@	Sample deviation (see appendix)						
Component	LOD/Units		Method				
GRO Surrogate % recovery**	%	TM089	97.9 @	98 @	89.4 @	97.2 @	96.1 @
Aliphatics >C5-C6	<10 µg/kg	TM089	<10 @	<10 @	<10 @	<10 @	<10 @
Aliphatics >C6-C8	<10 µg/kg	TM089	<10 @	<10 @	<10 @	<10 @	<10 @
Aliphatics >C8-C10	<10 µg/kg	TM089	<10 @	<10 @	<10 @	<10 @	<10 @
Aliphatics >C10-C12	<1000 µg/kg	TM414	<1000	<1000	<1000	<1000	<1000
Aliphatics >C12-C16	<1000 µg/kg	TM414	<1000	<1000	<1000	<1000	<1000
Aliphatics >C16-C21	<1000 µg/kg	TM414	<1000	<1000	<1000	<1000	<1000
Aliphatics >C21-C35	<1000 µg/kg	TM414	2260	<1000	7300	<1000	4000
Aliphatics >C35-C44	<1000 µg/kg	TM414	<1000	<1000	<1000	<1000	<1000
Total Aliphatics >C10-C44	<5000 µg/kg	TM414	<5000	<5000	7640	<5000	<5000
Total Aliphatics & Aromatics >C10-C44	<10000 µg/kg	TM414	<10000	<10000	<10000	<10000	<10000
Aromatics >EC5-EC7	<10 µg/kg	TM089	<10 @	<10 @	<10 @	<10 @	<10 @
Aromatics >EC7-EC8	<10 µg/kg	TM089	<10 @	<10 @	<10 @	<10 @	<10 @
Aromatics >EC8-EC10	<10 µg/kg	TM089	<10 @	<10 @	<10 @	<10 @	<10 @
Aromatics > EC10-EC12	<1000 µg/kg	TM414	<1000	<1000	<1000	<1000	<1000
Aromatics > EC12-EC16	<1000 µg/kg	TM414	<1000	<1000	<1000	<1000	<1000
Aromatics > EC16-EC21	<1000 µg/kg	TM414	<1000	<1000	<1000	<1000	<1000
Aromatics > EC21-EC35	<1000 µg/kg	TM414	<1000	<1000	1200	<1000	1540
Aromatics >EC35-EC44	<1000 µg/kg	TM414	<1000	<1000	<1000	<1000	<1000
Aromatics > EC40-EC44	<1000 µg/kg	TM414	<1000	<1000	<1000	<1000	<1000
Total Aromatics > EC10-EC44	<5000 µg/kg	TM414	<5000	<5000	<5000	<5000	<5000
Total Aliphatics & Aromatics >C5-C44	<10000 µg/kg	TM414	<10000	<10000	<10000	<10000	<10000
Total Aliphatics >C5-C10	<50 µg/kg	TM089	<50 @	<50 @	<50 @	<50 @	<50 @
Total Aromatics >EC5-EC10	<50 µg/kg	TM089	<50 @	<50 @	<50 @	<50 @	<50 @
GRO >C5-C10	<20 µg/kg	TM089	<20 @	<20 @	<20 @	<20 @	<20 @



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VOC MS (S)

Results Legend			Customer Sample Ref.	R70108	R70108	STP70501	STP70501	STP70501	STP70504
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.fit Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4*\$@ Sample deviation (see appendix)	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference		0.30 - 0.40 Soil/Solid (S) 28/09/2020	1.00 - 1.10 Soil/Solid (S) 28/09/2020	0.30 - 0.30 Soil/Solid (S) 28/09/2020	0.50 - 0.50 Soil/Solid (S) 28/09/2020	2.00 - 2.00 Soil/Solid (S) 28/09/2020	0.30 - 0.30 Soil/Solid (S) 28/09/2020	
Component	LOD/Units	Method							
Dibromofluoromethane**	%	TM116	107 @	111 @	108 @	127 @	115 @	117 @	
Toluene-d8**	%	TM116	100 @	99.4 @	100 @	96.2 @	99.1 @	92.2 @	
4-Bromofluorobenzene**	%	TM116	94.1 @	90.4 @	93.9 @	85.6 @	96.5 @	72.7 @	
Dichlorodifluoromethane	<6 µg/kg	TM116			<120 @ M				
Chloromethane	<7 µg/kg	TM116			<140 @ #				
Vinyl Chloride	<6 µg/kg	TM116			<120 @ M				
Bromomethane	<10 µg/kg	TM116			<200 @ M				
Chloroethane	<10 µg/kg	TM116			<200 @ M				
Trichlorofluoromethane	<6 µg/kg	TM116			<120 @ M				
1,1-Dichloroethene	<10 µg/kg	TM116			<200 @ #				
Carbon Disulphide	<7 µg/kg	TM116			<140 @ M				
Dichloromethane	<10 µg/kg	TM116			<200 @ #				
Methyl Tertiary Butyl Ether	<10 µg/kg	TM116	<200 @ M	<10 @ #	<200 @ M	<10 @ M	<10 @ M	<10 @ M	
trans-1,2-Dichloroethene	<10 µg/kg	TM116			<200 @ M				
1,1-Dichloroethane	<8 µg/kg	TM116			<160 @ M				
cis-1,2-Dichloroethene	<6 µg/kg	TM116			<120 @ M				
2,2-Dichloropropane	<10 µg/kg	TM116			<200 @				
Bromochloromethane	<10 µg/kg	TM116			<200 @ M				
Chloroform	<8 µg/kg	TM116			<160 @ M				
1,1,1-Trichloroethane	<7 µg/kg	TM116			<140 @ M				
1,1-Dichloropropene	<10 µg/kg	TM116			<200 @ M				
Carbontetrachloride	<10 µg/kg	TM116			<200 @ M				
1,2-Dichloroethane	<5 µg/kg	TM116			<100 @ M				
Benzene	<9 µg/kg	TM116	<180 @ M	<9 @ #	<180 @ M	<9 @ M	<9 @ M	<9 @ M	
Trichloroethene	<9 µg/kg	TM116			<180 @ #				
1,2-Dichloropropane	<10 µg/kg	TM116			<200 @ M				
Dibromomethane	<9 µg/kg	TM116			<180 @ M				
Bromodichloromethane	<7 µg/kg	TM116			<140 @ M				
cis-1,3-Dichloropropene	<10 µg/kg	TM116			<200 @ M				
Toluene	<7 µg/kg	TM116	<140 @ M	<7 @ #	<140 @ M	<7 @ M	<7 @ M	<7 @ M	
trans-1,3-Dichloropropene	<10 µg/kg	TM116			<200 @				
1,1,2-Trichloroethane	<10 µg/kg	TM116			<200 @ M				



CERTIFICATE OF ANALYSIS

Validated

SDG:	201006-141	Client Reference:	JFR1451	Report Number:	575652
Location:	A303 Stonehenge	Order Number:	PO20-754	Superseded Report:	571962

VOC MS (S)

Results Legend		Customer Sample Ref.	R70108	R70108	STP70501	STP70501	STP70501	STP70504
#	ISO17025 accredited.	Depth (m)	0.30 - 0.40	1.00 - 1.10	0.30 - 0.30	0.50 - 0.50	2.00 - 2.00	0.30 - 0.30
M	mCERTS accredited.	Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
sq	Aqueous / filtered sample.	Date Sampled	28/09/2020	28/09/2020	28/09/2020	28/09/2020	28/09/2020	28/09/2020
dis.fit	Dissolved / filtered sample.	Sampled Time	.	.	.	.	.	.
tot.unfit	Total / unfiltered sample.	Date Received	06/10/2020	06/10/2020	06/10/2020	06/10/2020	06/10/2020	06/10/2020
*	Subcontracted - refer to subcontractor report for accreditation status.	SDG Ref	201006-141	201006-141	201006-141	201006-141	201006-141	201006-141
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery	Lab Sample No.(s)	22973866	22973868	22973861	22973864	22973860	22973874
(F)	Trigger breach confirmed	AGS Reference						
1-4*5@	Sample deviation (see appendix)							
Component	LOD/Units	Method						
1,3-Dichloropropane	<7 µg/kg	TM116			<140 @ M			
Tetrachloroethene	<5 µg/kg	TM116			<100 @ M			
Dibromochloromethane	<10 µg/kg	TM116			<200 @ M			
1,2-Dibromoethane	<10 µg/kg	TM116			<200 @ M			
Chlorobenzene	<5 µg/kg	TM116			<100 @ M			
1,1,1,2-Tetrachloroethane	<10 µg/kg	TM116			<200 @ M			
Ethylbenzene	<4 µg/kg	TM116	<80 @ M	<4 @ #	<80 @ M	<4 @ M	<4 @ M	<4 @ M
p/m-Xylene	<10 µg/kg	TM116	<200 @ #	<10 @ #	<200 @ #	<10 @ #	<10 @ #	<10 @ #
o-Xylene	<10 µg/kg	TM116	<200 @ M	<10 @ #	<200 @ M	<10 @ M	<10 @ M	<10 @ M
Styrene	<10 µg/kg	TM116			<200 @ #			
Bromoform	<10 µg/kg	TM116			<200 @ M			
Isopropylbenzene	<5 µg/kg	TM116			<100 @ #			
1,1,2,2-Tetrachloroethane	<10 µg/kg	TM116			<200 @ #			
1,2,3-Trichloropropane	<16 µg/kg	TM116			<320 @ M			
Bromobenzene	<10 µg/kg	TM116			<200 @ M			
Propylbenzene	<10 µg/kg	TM116			<200 @ M			
2-Chlorotoluene	<9 µg/kg	TM116			<180 @ M			
1,3,5-Trimethylbenzene	<8 µg/kg	TM116			<160 @ M			
4-Chlorotoluene	<10 µg/kg	TM116			<200 @ M			
tert-Butylbenzene	<14 µg/kg	TM116			<280 @ M			
1,2,4-Trimethylbenzene	<9 µg/kg	TM116			<180 @ #			
sec-Butylbenzene	<10 µg/kg	TM116			<200 @			
4-Isopropyltoluene	<10 µg/kg	TM116			<200 @ M			
1,3-Dichlorobenzene	<8 µg/kg	TM116			<160 @ M			
1,4-Dichlorobenzene	<5 µg/kg	TM116			<100 @ M			
n-Butylbenzene	<11 µg/kg	TM116			<220 @			
1,2-Dichlorobenzene	<10 µg/kg	TM116			<200 @ M			
1,2-Dibromo-3-chloropropane	<14 µg/kg	TM116			<280 @ M			
Tert-amyl methyl ether	<10 µg/kg	TM116			<200 @ #			
1,2,4-Trichlorobenzene	<20 µg/kg	TM116			<400 @			
Hexachlorobutadiene	<20 µg/kg	TM116			<400 @			
Naphthalene	<13 µg/kg	TM116			<260 @ M			



CERTIFICATE OF ANALYSIS

Validated

SDG:	201006-141	Client Reference:	JFR1451	Report Number:	575652
Location:	A303 Stonehenge	Order Number:	PO20-754	Superseded Report:	571962

CEN 2:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/

Client Reference		Site Location	A303 Stonehenge
Mass Sample taken (kg)	0.222	Natural Moisture Content (%)	25.9
Mass of dry sample (kg)	0.175	Dry Matter Content (%)	79.5
Particle Size <4mm	>95%		

Case	
SDG	201006-141
Lab Sample Number(s)	22973861
Sampled Date	28-Sep-2020
Customer Sample Ref.	STP70501
Depth (m)	0.30 - 0.30

Eluate Analysis	Conc ⁿ in 2:1 eluate (mg/l)		2:1 conc ⁿ leached (mg/kg)	
	Result	Limit of Detection	Result	Limit of Detection
Aliphatics >C12-C16	<0.01	<0.01	<0.02	<0.02
Aliphatics >C16-C21	<0.01	<0.01	<0.02	<0.02
Aliphatics >C21-C35	<0.01	<0.01	<0.02	<0.02
Total Aliphatics >C12-C35	<0.01	<0.01	<0.02	<0.02
Aromatics >EC12-EC16	<0.01	<0.01	<0.02	<0.02
Aromatics >EC16-EC21	<0.01	<0.01	<0.02	<0.02
Aromatics >EC21-EC35	<0.01	<0.01	<0.02	<0.02
Aromatics >EC16-EC35	<0.01	<0.01	<0.02	<0.02
Total Aromatics >EC12-EC35	<0.01	<0.01	<0.02	<0.02
TPH (Total Aliphatics + Total Aromatics) >C5-C35	<0.01	<0.01	<0.02	<0.02
Ammoniacal Nitrogen as N	<0.2	<0.2	<0.4	<0.4
Chromium III	<0.03	<0.03	<0.06	<0.06
Hexavalent Chromium	<0.03	<0.03	<0.06	<0.06
Sulphate (soluble)	10.9	<2	21.8	<4
Dissolved Organic Carbon	8	<3	16	<6
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.00002	<0.00002
Antimony	<0.001	<0.001	<0.002	<0.002
Naphthalene (diss.filt)	<0.00001	<0.00001	<0.00002	<0.00002
Total Cyanide (W)	<0.05	<0.05	<0.1	<0.1
Acenaphthene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Arsenic	0.00076	<0.0005	0.00152	<0.001
Free Cyanide (W)	<0.05	<0.05	<0.1	<0.1
Acenaphthylene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Phenol by HPLC (W)	<0.002	<0.002	<0.004	<0.004
Beryllium	<0.0001	<0.0001	<0.0002	<0.0002
Fluoranthene (diss.filt)	0.000134	<0.000005	0.000268	<0.00001
Anthracene (diss.filt)	0.00000615	<0.000005	0.0000123	<0.00001
Boron	0.0186	<0.01	0.0372	<0.02
Phenanthrene (diss.filt)	0.0000239	<0.000005	0.0000478	<0.00001
Cadmium	<0.00008	<0.00008	<0.00016	<0.00016
Fluorene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Chrysene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Pyrene (diss.filt)	0.0000783	<0.000005	0.000157	<0.00001
Benzo(a)anthracene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Chromium	<0.001	<0.001	<0.002	<0.002

Leach Test Information

Date Prepared	14-Oct-2020
pH (pH Units)	6.94
Conductivity (µS/cm)	286.00
Temperature (°C)	18.00
Volume Leachant (Litres)	0.303
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
 Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
 Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

Validated

SDG:	201006-141	Client Reference:	JFR1451	Report Number:	575652
Location:	A303 Stonehenge	Order Number:	PO20-754	Superseded Report:	571962

CEN 2:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/1

Client Reference		Site Location	A303 Stonehenge
Mass Sample taken (kg)	0.222	Natural Moisture Content (%)	25.9
Mass of dry sample (kg)	0.175	Dry Matter Content (%)	79.5
Particle Size <4mm	>95%		

Case	
SDG	201006-141
Lab Sample Number(s)	22973861
Sampled Date	28-Sep-2020
Customer Sample Ref.	STP70501
Depth (m)	0.30 - 0.30

Eluate Analysis	Conc ⁿ in 2:1 eluate (mg/l)		2:1 conc ⁿ leached (mg/kg)	
	Result	Limit of Detection	Result	Limit of Detection
Benzo(b)fluoranthene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Benzo(k)fluoranthene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Benzo(a)pyrene (diss.filt)	<0.000002	<0.000002	<0.000004	<0.000004
Copper	0.0049	<0.0003	0.0098	<0.0006
Dibenzo(a,h)anthracene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Lead	<0.0002	<0.0002	<0.0004	<0.0004
Benzo(g,h,i)perylene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Indeno(1,2,3-cd)pyrene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Manganese	<0.003	<0.003	<0.006	<0.006
Molybdenum	<0.003	<0.003	<0.006	<0.006
PAH 16 EPA Total by GCMS (diss.filt)	0.000242	<0.000082	0.000484	<0.000164
Nickel	0.00108	<0.0004	0.00216	<0.0008
Phosphorus	0.0574	<0.01	0.115	<0.02
Selenium	<0.001	<0.001	<0.002	<0.002
Zinc	0.00375	<0.001	0.0075	<0.002
Calcium (Dis.Filt) mg/l	61.1	<0.2	122	<0.4
Iron (Dis.Filt) mg/l	<0.019	<0.019	<0.038	<0.038
TPH CWG (W)				
Surrogate Recovery	-	-	-	-
GRO TOT (C5-C12)	<0.05	<0.05	<0.1	<0.1
Aliphatics C5-C6	<0.01	<0.01	<0.02	<0.02
Aliphatics >C6-C8	<0.01	<0.01	<0.02	<0.02
Aliphatics >C8-C10	<0.01	<0.01	<0.02	<0.02
Aliphatics >C10-C12	<0.01	<0.01	<0.02	<0.02
Aromatics C6-C7	<0.01	<0.01	<0.02	<0.02
Aromatics >C7-C8	<0.01	<0.01	<0.02	<0.02
MTBE GC-FID	<0.003	<0.003	<0.006	<0.006
Aromatics >EC8 -EC10	<0.01	<0.01	<0.02	<0.02
Aromatics >EC10-EC12	<0.01	<0.01	<0.02	<0.02
Benzene by GC	<0.007	<0.007	<0.014	<0.014
Toluene by GC	<0.004	<0.004	<0.008	<0.008
Ethylbenzene by GC	<0.005	<0.005	<0.01	<0.01
m & p Xylene by GC	<0.008	<0.008	<0.016	<0.016
o Xylene by GC	<0.003	<0.003	<0.006	<0.006
Sum m&p and o Xylene by GC	<0.011	<0.011	<0.022	<0.022
Sum of BTEX by GC	<0.028	<0.028	<0.056	<0.056

Leach Test Information

Date Prepared	14-Oct-2020
pH (pH Units)	6.94
Conductivity (µS/cm)	286.00
Temperature (°C)	18.00
Volume Leachant (Litres)	0.303
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
 Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
 Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

Validated

SDG:	201006-141	Client Reference:	JFR1451	Report Number:	575652
Location:	A303 Stonehenge	Order Number:	PO20-754	Superseded Report:	571962

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		Site Location	A303 Stonehenge
Mass Sample taken (kg)	0.107	Natural Moisture Content (%)	19
Mass of dry sample (kg)	0.090	Dry Matter Content (%)	84.1
Particle Size <4mm	>95%		

Case	
SDG	201006-141
Lab Sample Number(s)	22973864
Sampled Date	28-Sep-2020
Customer Sample Ref.	STP70501
Depth (m)	0.50 - 0.50

Landfill Waste Acceptance Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	-
-	-	-
1	-	-
500	-	-
100	-	-
-	-	-
-	-	-
-	-	-

Solid Waste Analysis	Result
Total Organic Carbon (%)	0.891
Loss on Ignition (%)	-
Sum of BTEX (mg/kg)	-
Sum of 7 PCBs (mg/kg)	<0.021
Mineral Oil (mg/kg)	6.49
PAH Sum of 17 (mg/kg)	<10
pH (pH Units)	-
ANC to pH 6 (mol/kg)	-
ANC to pH 4 (mol/kg)	-

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection	Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Arsenic	<0.0005	<0.0005	<0.005	<0.005	0.5	2	25
Barium	0.122	<0.0002	1.22	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00169	<0.0003	0.0169	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	<0.0004	<0.0004	<0.004	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00779	<0.001	0.0779	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	0.813	<0.5	8.13	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	77.5	<5	775	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	3.77	<3	37.7	<30	500	800	1000

Leach Test Information

Date Prepared	07-Nov-2020
pH (pH Units)	8.43
Conductivity (µS/cm)	101.00
Temperature (°C)	21.30
Volume Leachant (Litres)	0.883

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
 Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
 Mcerts Certification does not apply to leachates

14/11/2020 14:59:14



CERTIFICATE OF ANALYSIS

Validated

SDG:	201006-141	Client Reference:	JFR1451	Report Number:	575652
Location:	A303 Stonehenge	Order Number:	PO20-754	Superseded Report:	571962

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM073	MEWAM BOOK 60 1980,95 1985, HMSO / Modified: US EPA Method 8081A & 8141A	Determination of organochlorine and organophosphorous pesticides by GCMS
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM104	Method 4500F, AWWA/APHA, 20th Ed., 1999	Determination of Fluoride using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM123	BS 2690: Part 121:1981	The Determination of Total Dissolved Solids in Water
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM174	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID
TM178	Modified: US EPA Method 8100	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS in Waters
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser
TM243		Mixed Anions In Soils By Kone
TM245	By GC-FID	Determination of GRO by Headspace in waters
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC
TM410	Shaker extraction-In house coronene method	Determination of Coronene in soils by GCMS
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).



CERTIFICATE OF ANALYSIS

Validated

SDG: 201006-141	Client Reference: JFR1451	Report Number: 575652	
Location: A303 Stonehenge	Order Number: PO20-754	Superseded Report: 571962	

Test Completion Dates

Lab Sample No(s)
Customer Sample Ref.
AGS Ref.
Depth
Type

	22973866	22973868	22973860	22973861	22973864	22973874
	R70108	R70108	STP70501	STP70501	STP70501	STP70504
	0.30 - 0.40	1.00 - 1.10	2.00 - 2.00	0.30 - 0.30	0.50 - 0.50	0.30 - 0.30
	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Ammoniacal Nitrogen				16-Oct-2020		
Ammonium Soil by Titration	16-Oct-2020	14-Oct-2020	16-Oct-2020	16-Oct-2020		16-Oct-2020
Anions by Kone (soil)	16-Oct-2020	15-Oct-2020	16-Oct-2020	16-Oct-2020		16-Oct-2020
Anions by Kone (w)				16-Oct-2020	12-Nov-2020	
CEN 10:1 Leachate (1 Stage)					10-Nov-2020	
CEN 2:1 Leachate (1 Stage)				15-Oct-2020		
CEN Readings				16-Oct-2020	12-Nov-2020	
Chromium III	16-Oct-2020	16-Oct-2020	16-Oct-2020	19-Oct-2020		16-Oct-2020
Coronene					11-Nov-2020	
Cyanide Comp/Free/Total/Thiocyanate	16-Oct-2020	16-Oct-2020	16-Oct-2020	19-Oct-2020		16-Oct-2020
Dissolved Metals by ICP-MS				19-Oct-2020	14-Nov-2020	
Dissolved Organic/Inorganic Carbon				17-Oct-2020	12-Nov-2020	
EPH by GCxGC-FID					13-Nov-2020	
EPH CWG (Aliphatic) Filtered GC (W)				20-Oct-2020		
EPH CWG (Aromatic) Filtered GC (W)				20-Oct-2020		
EPH CWG GC (S)	16-Oct-2020	16-Oct-2020	16-Oct-2020	16-Oct-2020		16-Oct-2020
Fluoride					12-Nov-2020	
GRO by GC-FID (S)	15-Oct-2020	15-Oct-2020	15-Oct-2020	15-Oct-2020		15-Oct-2020
GRO by GC-FID (W)				16-Oct-2020		
Hexavalent Chromium (s)	15-Oct-2020	16-Oct-2020	15-Oct-2020	15-Oct-2020		15-Oct-2020
Hexavalent Chromium (w)				16-Oct-2020		
Mercury Dissolved				17-Oct-2020	13-Nov-2020	
Metals in solid samples by OES	16-Oct-2020	16-Oct-2020	16-Oct-2020	16-Oct-2020		16-Oct-2020
Moisture at 105C				14-Oct-2020	07-Nov-2020	
OC OP Pesticides and Triazine Herb				15-Oct-2020		15-Oct-2020
PAH 16 & 17 Calc					11-Nov-2020	
PAH by GCMS	16-Oct-2020	16-Oct-2020	16-Oct-2020	16-Oct-2020	11-Nov-2020	16-Oct-2020
PAH in waters by GC-MS (diss.filt)				19-Oct-2020		
PCBs by GCMS					12-Nov-2020	
pH	15-Oct-2020	15-Oct-2020	15-Oct-2020	15-Oct-2020		15-Oct-2020
pH Value of Filtered Water				16-Oct-2020		
Phenols by HPLC (S)	16-Oct-2020	16-Oct-2020	16-Oct-2020	16-Oct-2020		16-Oct-2020
Phenols by HPLC (W)				16-Oct-2020	13-Nov-2020	
Sample description	14-Oct-2020	14-Oct-2020	14-Oct-2020	14-Oct-2020	06-Nov-2020	14-Oct-2020
Semi Volatile Organic Compounds				16-Oct-2020		
Total Dissolved Solids					12-Nov-2020	
Total Organic Carbon	16-Oct-2020	16-Oct-2020	16-Oct-2020	16-Oct-2020	12-Nov-2020	16-Oct-2020
TPH CWG Filtered (W)				20-Oct-2020		
TPH CWG GC (S)	16-Oct-2020	16-Oct-2020	16-Oct-2020	16-Oct-2020		16-Oct-2020
VOC MS (S)		14-Oct-2020	15-Oct-2020	15-Oct-2020	09-Nov-2020	15-Oct-2020



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ASSOCIATED AQC DATA

Ammoniacal Nitrogen

Component	Method Code	QC 2356
Ammoniacal Nitrogen as N	TM099	101.6 93.14 : 108.60

Ammonium Soil by Titration

Component	Method Code	QC 2326	QC 2380
Exchangeable Ammonium as NH4	TM024	86.57 76.20 : 110.13	84.08 76.20 : 110.13

Anions by Kone (soil)

Component	Method Code	QC 2382
Chloride (soluble)	TM243	146.11 91.77 : 114.35
Water Soluble Sulphate as SO4 2:1 Extract	TM243	166.36 70.00 : 130.00

Anions by Kone (w)

Component	Method Code	QC 2317	QC 2355
Chloride	TM184	105.0 92.93 : 115.43	104.0 94.04 : 108.61
Sulphate (soluble)	TM184	103.6 90.53 : 113.03	103.2 91.99 : 109.30

Coronene

Component	Method Code	QC 2398
Coronene RAW	TM410	115.5 79.43 : 137.78

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2363	QC 2377	QC 2389
Free Cyanide	TM153	91.29 78.61 : 114.43	89.6 78.61 : 114.43	
Free Cyanide (W)	TM227			103.75 90.50 : 114.50
Thiocyanate	TM153	100.64 90.48 : 109.52	99.36 90.48 : 109.52	



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Cyanide Comp/Free/Total/Thiocyanate

		QC 2363	QC 2377	QC 2389
Thiocyanate (W)	TM227			106.5 90.50 : 113.00
Total Cyanide	TM153	92.31 76.80 : 112.96	93.71 76.80 : 112.96	
Total Cyanide (W)	TM227			99.75 91.75 : 112.75

Dissolved Metals by ICP-MS

Component	Method Code	QC 2357	QC 2376
Aluminium	TM152	106.0 90.98 : 111.82	105.67 94.21 : 111.52
Antimony	TM152	105.0 90.44 : 113.04	104.5 88.37 : 130.57
Arsenic	TM152	104.0 88.00 : 112.00	103.5 92.62 : 113.52
Barium	TM152	92.83 83.57 : 108.18	97.17 88.62 : 113.14
Beryllium	TM152	105.33 87.77 : 113.97	111.33 87.08 : 111.38
Bismuth	TM152	101.33 91.90 : 112.20	104.33 92.62 : 115.02
Borate	TM152	105.56 88.00 : 112.00	
Boron	TM152	105.67 96.48 : 114.93	106.0 86.31 : 120.88
Cadmium	TM152	103.67 96.43 : 110.53	107.0 93.85 : 111.65
Calcium	TM152	103.33 81.38 : 119.09	101.33 89.20 : 126.91
Chromium	TM152	103.0 91.84 : 108.67	101.83 92.22 : 109.85
Cobalt	TM152	103.67 88.00 : 112.00	99.67 85.01 : 114.87
Copper	TM152	105.5 92.47 : 118.11	104.0 89.87 : 119.73
Iron	TM152	102.0 92.00 : 113.00	101.33 93.02 : 113.86
Lead	TM152	102.17 88.00 : 112.00	102.67 91.11 : 116.98
Lithium	TM152	104.17 91.62 : 113.12	109.67 91.30 : 123.00
Magnesium	TM152	101.33 94.33 : 111.84	108.0 89.60 : 116.61
Manganese	TM152	102.17 97.94 : 109.97	99.67 93.97 : 112.46
Molybdenum	TM152	100.33 88.00 : 112.00	100.17 89.07 : 110.96
Nickel	TM152	104.17 88.00 : 112.00	99.67 93.70 : 112.15
Phosphorus	TM152	105.33 88.00 : 112.00	103.83 89.24 : 114.18
Potassium	TM152	101.33 93.90 : 112.36	102.67 93.20 : 115.55



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Dissolved Metals by ICP-MS

		QC 2357	QC 2376
Selenium	TM152	103.5 91.58 : 115.98	103.67 91.69 : 117.12
Silver	TM152	102.17 88.80 : 122.30	98.33 90.93 : 121.73
Sodium	TM152	100.67 94.28 : 110.71	106.67 92.42 : 113.24
Strontium	TM152	101.67 88.00 : 112.00	100.33 92.14 : 116.24
Tellurium	TM152	102.0 93.32 : 114.66	92.17 89.88 : 111.78
Thallium	TM152	95.0 88.00 : 112.00	89.67 82.43 : 113.83
Tin	TM152	104.33 94.19 : 113.62	99.33 94.62 : 107.79
Titanium	TM152	109.17 95.58 : 111.68	98.33 90.29 : 115.23
Tungsten	TM152	100.0 81.32 : 124.72	99.0 77.61 : 132.31
Uranium	TM152	100.33 88.00 : 112.00	99.17 86.97 : 115.76
Vanadium	TM152	107.83 88.00 : 112.00	105.0 89.61 : 115.48
Zinc	TM152	105.67 92.98 : 118.95	109.67 87.51 : 116.26

Dissolved Organic/Inorganic Carbon

Component	Method Code	QC 2367	QC 2321
Dissolved Inorganic Carbon	TM090	101.33 93.58 : 112.28	100.17 93.58 : 112.28
Dissolved Organic Carbon	TM090	103.67 96.28 : 110.58	102.33 96.28 : 110.58

EPH CWG GC (S)

Component	Method Code	QC 2308	QC 2346	QC 2395
EPH >C8-C40 Raw	TM414	89.83 56.39 : 129.94	83.38 77.66 : 104.66	98.71 58.92 : 124.32
Total Aliphatics Raw	TM414	95.96 62.55 : 133.12	89.15 84.39 : 115.61	105.92 64.95 : 136.26
Total Aromatics Raw	TM414	96.39 57.00 : 150.27	88.91 57.00 : 150.27	102.39 58.15 : 147.12

Fluoride

Component	Method Code	QC 2351
Fluoride	TM104	102.67 95.51 : 107.24

GRO by GC-FID (S)



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GRO by GC-FID (S)

Component	Method Code	QC 2351
QC	TM089	86.44 70.75 : 114.19

GRO by GC-FID (W)

Component	Method Code	QC 2397
Benzene by GC	TM245	96.5 81.54 : 119.70
Ethylbenzene by GC	TM245	96.5 80.99 : 121.09
m & p Xylene by GC	TM245	95.25 82.77 : 123.19
MTBE GC-FID	TM245	94.0 80.06 : 123.27
o Xylene by GC	TM245	96.0 84.26 : 121.50
QC	TM245	93.32 76.13 : 145.89
Toluene by GC	TM245	96.5 82.78 : 121.99

Hexavalent Chromium (s)

Component	Method Code	QC 2355	QC 2308	QC 2321
Hexavalent Chromium	TM151	100.0 95.60 : 107.60	104.0 95.60 : 107.60	102.0 95.60 : 107.60

Hexavalent Chromium (w)

Component	Method Code	QC 2382
Hexavalent Chromium	TM241	99.2 94.17 : 106.17

Mercury Dissolved

Component	Method Code	QC 2348	QC 2323
Mercury Dissolved (CVAf)	TM183	85.7 69.30 : 128.70	97.4 69.30 : 128.70

Metals in solid samples by OES



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Metals in solid samples by OES

Component	Method Code	QC 2335	QC 2317
Aluminium	TM181	116.81 77.46 : 123.98	94.69 77.46 : 123.98
Antimony	TM181	101.22 87.04 : 111.16	102.44 87.04 : 111.16
Arsenic	TM181	103.78 87.34 : 110.87	102.91 87.34 : 110.87
Barium	TM181	106.42 80.73 : 115.16	97.25 80.73 : 115.16
Beryllium	TM181	102.61 89.47 : 112.97	100.75 89.47 : 112.97
Boron	TM181	104.01 76.57 : 104.15	91.4 76.57 : 104.15
Cadmium	TM181	90.12 78.94 : 102.43	95.06 78.94 : 102.43
Chromium	TM181	98.38 77.55 : 104.47	97.36 77.55 : 104.47
Cobalt	TM181	93.4 82.95 : 107.41	92.45 82.95 : 107.41
Copper	TM181	96.3 84.36 : 106.14	96.83 84.36 : 106.14
Iron	TM181	105.56 81.43 : 115.79	100.0 81.43 : 115.79
Lead	TM181	92.34 81.95 : 107.63	98.2 81.95 : 107.63
Manganese	TM181	111.94 94.29 : 119.51	111.67 94.29 : 119.51
Mercury	TM181	94.44 82.73 : 106.36	94.44 82.73 : 106.36
Molybdenum	TM181	99.18 86.61 : 111.07	99.59 86.61 : 111.07
Nickel	TM181	94.38 79.72 : 103.80	94.38 79.72 : 103.80
Phosphorus	TM181	114.34 92.65 : 125.47	115.35 92.65 : 125.47
Selenium	TM181	103.14 88.36 : 111.25	102.35 88.36 : 111.25
Strontium	TM181	95.1 78.06 : 99.91	91.09 78.06 : 99.91
Thallium	TM181	102.65 88.60 : 116.73	101.33 88.60 : 116.73
Tin	TM181	99.62 89.77 : 112.62	102.28 89.77 : 112.62
Titanium	TM181	103.05 66.29 : 105.96	83.97 66.29 : 105.96
Vanadium	TM181	106.59 75.51 : 108.87	99.27 75.51 : 108.87
Zinc	TM181	105.34 84.02 : 111.24	100.21 84.02 : 111.24

PAH by GCMS



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PAH by GCMS

Component	Method Code	QC 2395	QC 2321	QC 2385
Acenaphthene	TM218	93.0 80.97 : 105.99	90.0 80.97 : 105.99	89.5 76.79 : 103.90
Acenaphthylene	TM218	92.0 74.76 : 107.36	90.0 74.76 : 107.36	90.0 78.40 : 108.66
Anthracene	TM218	90.0 73.04 : 106.97	87.5 73.04 : 106.97	88.0 70.90 : 109.22
Benz(a)anthracene	TM218	88.0 68.79 : 119.64	83.5 68.79 : 119.64	88.0 73.77 : 119.26
Benzo(a)pyrene	TM218	86.0 66.17 : 117.52	83.5 66.17 : 117.52	83.5 73.20 : 114.18
Benzo(b)fluoranthene	TM218	87.5 66.40 : 118.34	83.0 66.40 : 118.34	84.0 75.36 : 117.58
Benzo(ghi)perylene	TM218	86.5 67.68 : 112.07	85.0 67.68 : 112.07	79.0 70.73 : 116.12
Benzo(k)fluoranthene	TM218	88.5 72.84 : 114.66	85.5 72.84 : 114.66	83.0 75.98 : 116.59
Chrysene	TM218	88.0 68.39 : 115.56	85.0 68.39 : 115.56	85.5 74.82 : 114.18
Dibenzo(ah)anthracene	TM218	84.5 69.03 : 110.45	79.5 69.03 : 110.45	81.5 69.17 : 115.30
Fluoranthene	TM218	93.5 69.37 : 117.19	93.0 69.37 : 117.19	89.5 75.88 : 112.84
Fluorene	TM218	91.5 75.38 : 105.98	89.0 75.38 : 105.98	90.5 76.66 : 107.56
Indeno(123cd)pyrene	TM218	88.0 65.91 : 113.61	82.5 65.91 : 113.61	81.0 70.26 : 117.95
Naphthalene	TM218	91.0 71.40 : 105.87	89.0 71.40 : 105.87	82.0 74.70 : 101.83
Phenanthrene	TM218	93.0 74.04 : 109.30	90.0 74.04 : 109.30	91.0 73.62 : 109.34
Pyrene	TM218	93.0 69.68 : 115.27	90.5 69.68 : 115.27	86.0 71.46 : 117.00

PAH in waters by GC-MS (diss.filt)

Component	Method Code	QC 2387
Acenaphthene (diss.filt)	TM178	111.6 93.20 : 119.60
Acenaphthylene (diss.filt)	TM178	110.8 92.00 : 118.40
Anthracene (diss.filt)	TM178	109.6 90.80 : 114.80
Benzo(a)anthracene (diss.filt)	TM178	109.2 91.60 : 115.60
Benzo(a)pyrene (diss.filt)	TM178	98.8 91.20 : 120.00
Benzo(b)fluoranthene (diss.filt)	TM178	105.2 86.80 : 120.40
Benzo(g,h,i)perylene (diss.filt)	TM178	108.4 89.20 : 118.00
Benzo(k)fluoranthene (diss.filt)	TM178	106.0 94.40 : 125.60
Chrysene (diss.filt)	TM178	106.8 96.40 : 122.80



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PAH in waters by GC-MS (diss.filt)

		QC 2387
Dibenzo(a,h)anthracene (diss.filt)	TM178	106.0 93.60 : 132.00
Fluoranthene (diss.filt)	TM178	107.6 92.80 : 121.60
Fluorene (diss.filt)	TM178	109.2 93.60 : 120.00
Indeno(1,2,3-cd)pyrene (diss.filt)	TM178	106.8 82.40 : 120.80
Naphthalene (diss.filt)	TM178	112.8 88.40 : 126.80
Phenanthrene (diss.filt)	TM178	110.8 92.40 : 118.80
Pyrene (diss.filt)	TM178	106.8 90.40 : 124.00

PCBs by GCMS

Component	Method Code	QC 2303
PCB congener 101	TM168	85.2 79.46 : 109.70
PCB congener 105	TM168	73.2 66.33 : 105.75
PCB congener 114	TM168	72.5 66.41 : 106.49
PCB congener 118	TM168	76.3 70.33 : 110.29
PCB congener 123	TM168	81.0 65.01 : 99.81
PCB congener 126	TM168	74.7 59.31 : 109.23
PCB congener 138	TM168	70.7 63.95 : 107.63
PCB congener 153	TM168	72.9 62.65 : 108.85
PCB congener 156	TM168	73.6 61.69 : 112.27
PCB congener 157	TM168	74.6 67.15 : 109.93
PCB congener 167	TM168	70.5 65.58 : 109.14
PCB congener 169	TM168	67.2 56.84 : 112.10
PCB congener 180	TM168	76.0 66.99 : 111.63
PCB congener 189	TM168	66.8 57.75 : 112.59
PCB congener 28	TM168	76.8 73.68 : 105.96
PCB congener 52	TM168	74.9 67.24 : 107.62
PCB congener 77	TM168	73.2 64.87 : 108.49
PCB congener 81	TM168	77.2 70.78 : 110.80



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pH

Component	Method Code	QC 2396	QC 2342
pH	TM133	100.79 98.47 : 102.33	100.4 98.47 : 102.33

pH Value of Filtered Water

Component	Method Code	QC 2320
pH	TM256	100.27 99.20 : 101.60

Phenols by HPLC (S)

Component	Method Code	QC 2326	QC 2349
2,3,5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	102.6 65.50 : 89.50	116.23 65.50 : 89.50
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	85.96 84.00 : 124.00	91.81 84.00 : 124.00
Catechol by HPLC (S)	TM062 (S)	72.38 19.39 : 135.70	4.76 19.39 : 135.70
Cresols by HPLC (S)	TM062 (S)	94.15 81.00 : 112.20	97.29 81.00 : 112.20
Naphthol by HPLC (S)	TM062 (S)	107.86 57.50 : 102.50	90.71 57.50 : 102.50
Phenol by HPLC (S)	TM062 (S)	99.34 88.67 : 124.67	103.97 88.67 : 124.67
Resorcinol HPLC (S)	TM062 (S)	94.97 69.99 : 127.22	96.23 69.99 : 127.22
Xylenols by HPLC (S)	TM062 (S)	95.42 95.22 : 115.89	101.77 95.22 : 115.89

Phenols by HPLC (W)

Component	Method Code	QC 2301	QC 2376
2,3,5 Trimethyl-Phenol by HPLC (W)	TM259	103.0 84.50 : 111.50	99.0 91.00 : 109.00
2-Isopropyl Phenol by HPLC (W)	TM259	100.0 84.55 : 110.90	97.0 85.00 : 109.00
Cresols by HPLC (W)	TM259	96.67 90.00 : 112.00	98.0 93.00 : 115.00
Naphthol by HPLC (W)	TM259	100.0 82.00 : 124.00	103.0 86.00 : 128.00
Phenol by HPLC (W)	TM259	98.0 86.80 : 112.60	97.0 88.24 : 111.76
Xylenols by HPLC (W)	TM259	101.33 94.74 : 115.71	100.0 94.83 : 110.83

Semi Volatile Organic Compounds



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Semi Volatile Organic Compounds

Component	Method Code	QC 2305
4-Bromophenylphenylether (Soil)	TM157	93.5 63.50 : 114.50
Benzo(a)anthracene (Soil)	TM157	108.5 71.89 : 120.91
Hexachlorobutadiene (Soil)	TM157	95.0 69.80 : 117.77
Naphthalene (Soil)	TM157	94.0 70.00 : 115.00
Nitrobenzene (Soil)	TM157	94.5 70.00 : 118.00
Phenol (Soil)	TM157	88.5 72.00 : 117.00

Total Dissolved Solids

Component	Method Code	QC 2336
Total Dissolved Solids	TM123	100.0 97.30 : 100.92

Total Organic Carbon

Component	Method Code	QC 2353	QC 2356	QC 2373
Total Organic Carbon	TM132	109.38 87.02 : 113.45	107.03 87.02 : 113.45	97.66 87.02 : 113.45

VOC MS (S)

Component	Method Code	QC 2369	QC 2359	QC 2394
1,1,1,2-tetrachloroethane	TM116	114.2 79.10 : 119.66	105.0 84.84 : 116.25	101.0 79.10 : 119.66
1,1,1-Trichloroethane	TM116	111.2 87.51 : 115.37	98.8 73.73 : 118.05	105.0 87.51 : 115.37
1,1,2-Trichloroethane	TM116	116.2 81.29 : 113.79	104.6 77.12 : 116.04	100.0 81.29 : 113.79
1,1-Dichloroethane	TM116	115.6 86.77 : 122.11	104.8 74.46 : 129.15	113.8 86.77 : 122.11
1,2-Dichloroethane	TM116	133.0 90.04 : 132.28	116.4 92.38 : 131.65	115.2 90.04 : 132.28
1,4-Dichlorobenzene	TM116	112.2 80.81 : 125.07	112.0 83.64 : 126.18	101.8 80.81 : 125.07
2-Chlorotoluene	TM116	92.8 73.13 : 114.13	108.6 75.26 : 110.11	85.4 73.13 : 114.13
4-Chlorotoluene	TM116	94.4 72.48 : 112.82	102.6 66.90 : 112.46	80.8 72.48 : 112.82
Benzene	TM116	106.6 84.29 : 112.22	108.6 88.60 : 113.80	99.8 84.29 : 112.22
Carbon Disulphide	TM116	105.2 75.11 : 124.81	107.2 74.91 : 122.14	104.4 75.11 : 124.81



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VOC MS (S)

		QC 2369	QC 2359	QC 2394
Carbontetrachloride	TM116	111.2 82.35 : 126.46	109.4 80.31 : 124.50	105.4 82.35 : 126.46
Chlorobenzene	TM116	106.4 82.88 : 122.42	109.0 83.81 : 114.18	100.2 82.88 : 122.42
Chloroform	TM116	121.0 90.35 : 120.38	109.8 87.40 : 122.49	117.0 90.35 : 120.38
Chloromethane	TM116	118.8 65.80 : 138.88	106.6 65.89 : 136.93	115.2 65.80 : 138.88
Cis-1,2-Dichloroethene	TM116	111.0 78.27 : 128.90	107.8 80.67 : 126.72	105.0 78.27 : 128.90
Dibromomethane	TM116	113.6 76.00 : 120.73	101.2 73.23 : 118.35	102.8 76.00 : 120.73
Dichloromethane	TM116	128.8 92.27 : 134.36	115.6 81.11 : 133.25	121.6 92.27 : 134.36
Ethylbenzene	TM116	94.8 70.95 : 113.07	101.4 75.92 : 110.41	83.2 70.95 : 113.07
Hexachlorobutadiene	TM116	97.6 14.55 : 147.92	81.2 12.82 : 152.73	55.0 14.55 : 147.92
Isopropylbenzene	TM116	81.6 52.00 : 108.19	90.4 55.79 : 97.59	65.6 52.00 : 108.19
Naphthalene	TM116	124.2 80.29 : 135.77	120.4 80.86 : 128.81	97.4 80.29 : 135.77
o-Xylene	TM116	86.6 64.92 : 98.85	94.6 69.99 : 108.74	77.2 64.92 : 98.85
p/m-Xylene	TM116	89.9 72.04 : 104.04	100.0 68.32 : 108.91	80.5 72.04 : 104.04
Sec-Butylbenzene	TM116	81.2 27.03 : 135.73	90.6 38.50 : 101.50	52.0 27.03 : 135.73
Tetrachloroethene	TM116	104.0 81.43 : 126.65	111.2 76.95 : 121.02	99.0 81.43 : 126.65
Toluene	TM116	98.8 82.44 : 103.50	99.4 74.24 : 107.42	89.0 82.44 : 103.50
Trichloroethene	TM116	100.4 79.80 : 112.33	104.6 77.61 : 111.54	95.4 79.80 : 112.33
Trichlorofluoromethane	TM116	122.8 86.68 : 126.82	117.4 84.55 : 133.27	122.8 86.68 : 126.82
Vinyl Chloride	TM116	117.6 69.66 : 136.55	114.0 68.02 : 143.37	114.8 69.66 : 136.55

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.

The figure detailed is the percentage recovery result for the AQC.

The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.



CERTIFICATE OF ANALYSIS

Validated

SDG: 201006-141
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PQ20-754

Report Number: 575652
Superseded Report: 571962

Chromatogram

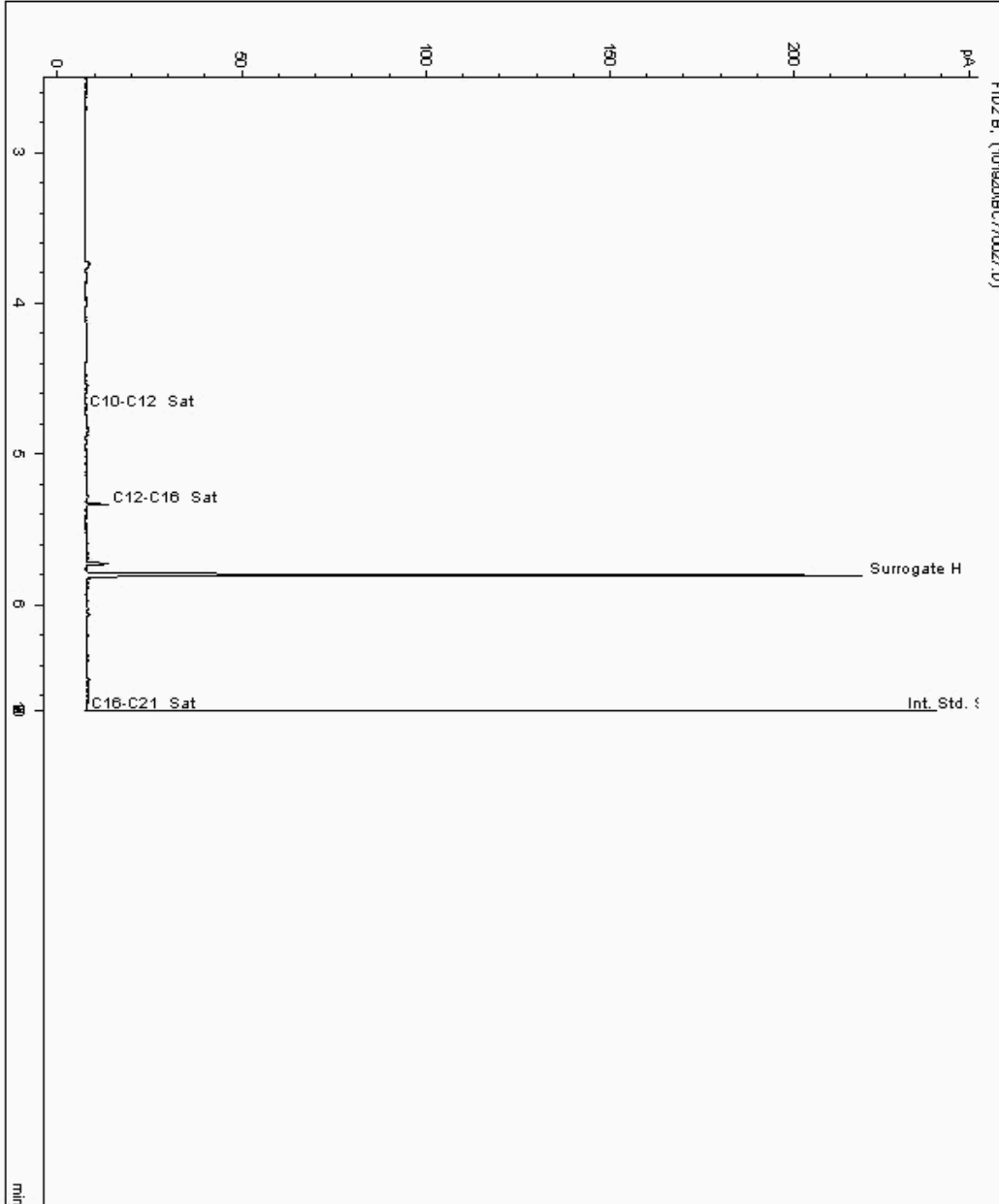
Analysis: EPH CWG (Aliphatic) Filtered GC (W)

Sample No : 23048449
Sample ID : STP70501

Depth : 0.30 - 0.30

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 21589015-
Date Acquired : 10/20/2020 1:32:16 AM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.028





CERTIFICATE OF ANALYSIS

Validated

SDG: 201006-141
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PQ20-754

Report Number: 575652
Superseded Report: 571962

Chromatogram

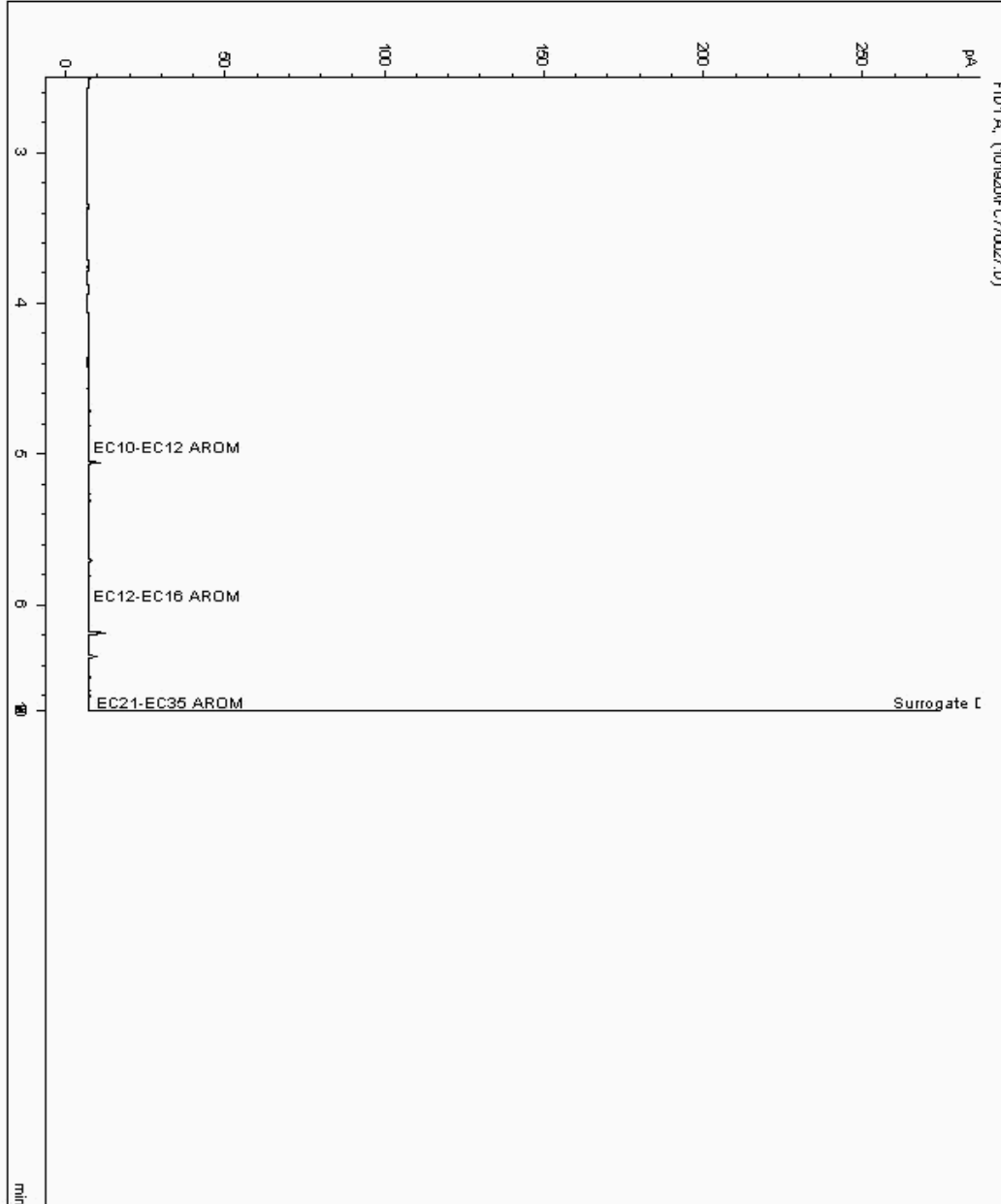
Analysis: EPH CWG (Aromatic) Filtered GC (W)

Sample No : 23048449
Sample ID : STP70501

Depth : 0.30 - 0.30

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 21589016-
Date Acquired : 10/20/2020 1:32:16 AM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.028





CERTIFICATE OF ANALYSIS

Validated

SDG: 201006-141
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PO20-754

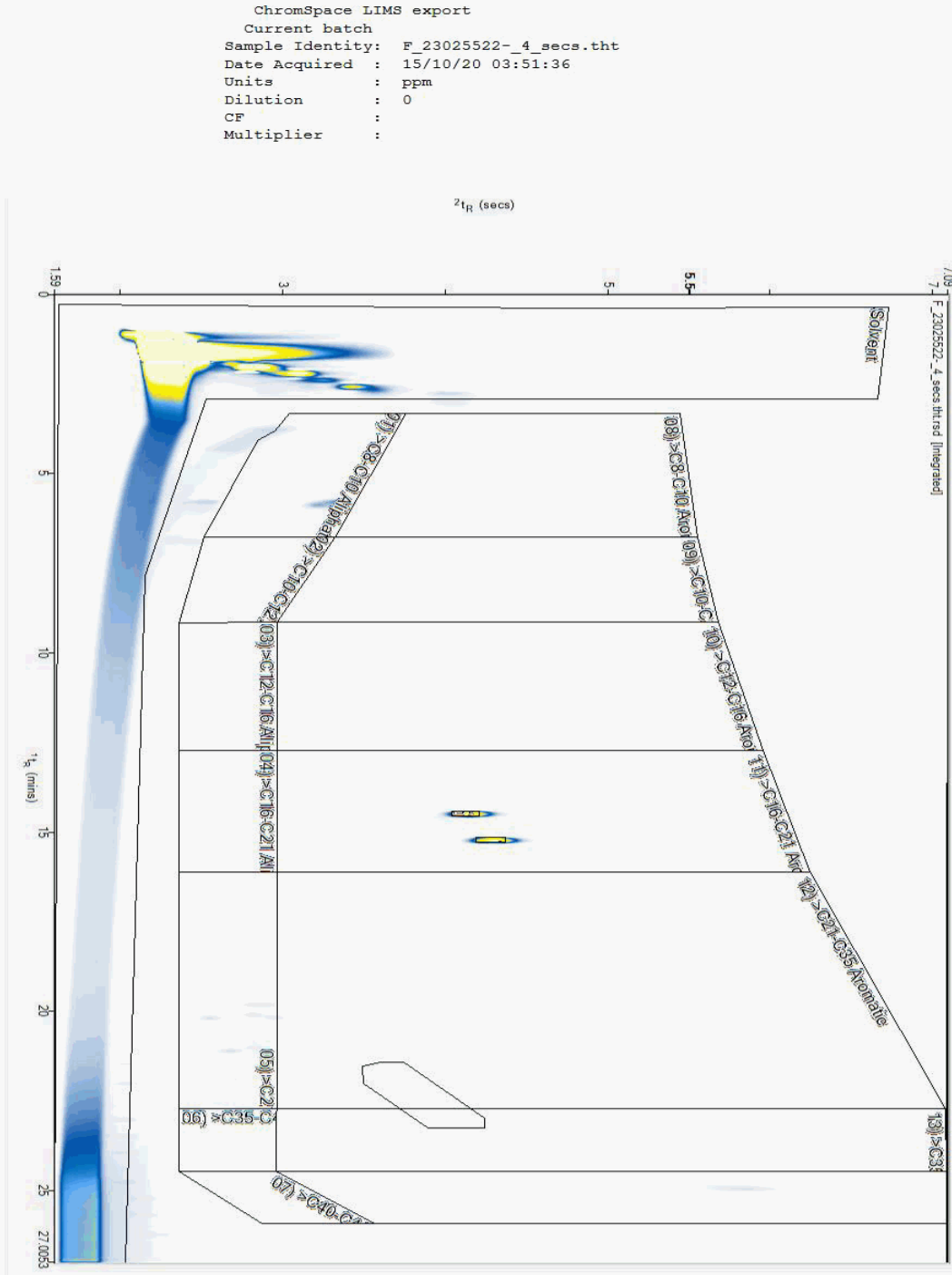
Report Number: 575652
Superseded Report: 571962

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23025522
Sample ID : R70108

Depth : 1.00 - 1.10





CERTIFICATE OF ANALYSIS

Validated

SDG: 201006-141
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PO20-754

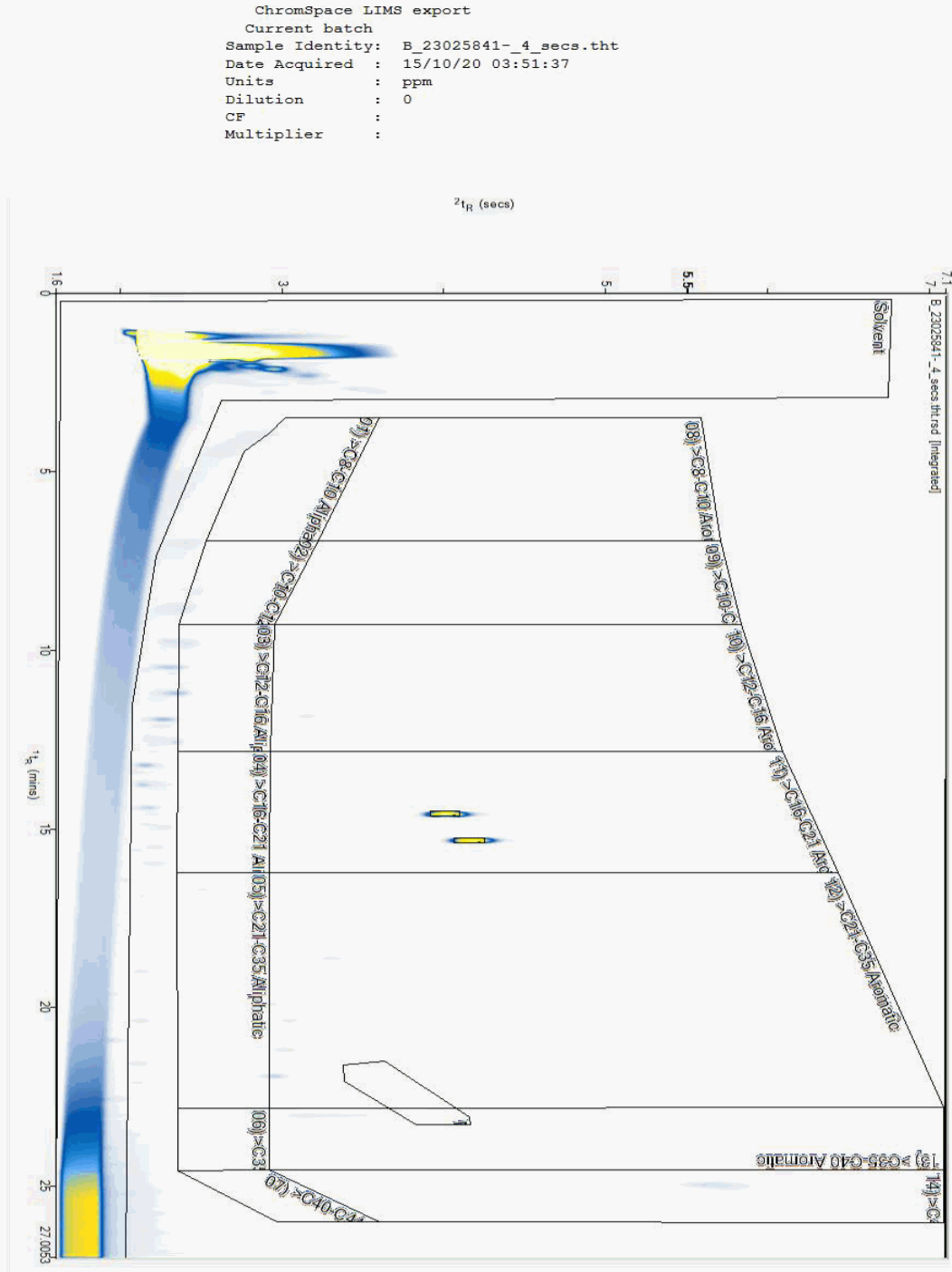
Report Number: 575652
Superseded Report: 571962

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23025841
Sample ID : STP70501

Depth : 2.00 - 2.00





CERTIFICATE OF ANALYSIS

Validated

SDG: 201006-141
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PO20-754

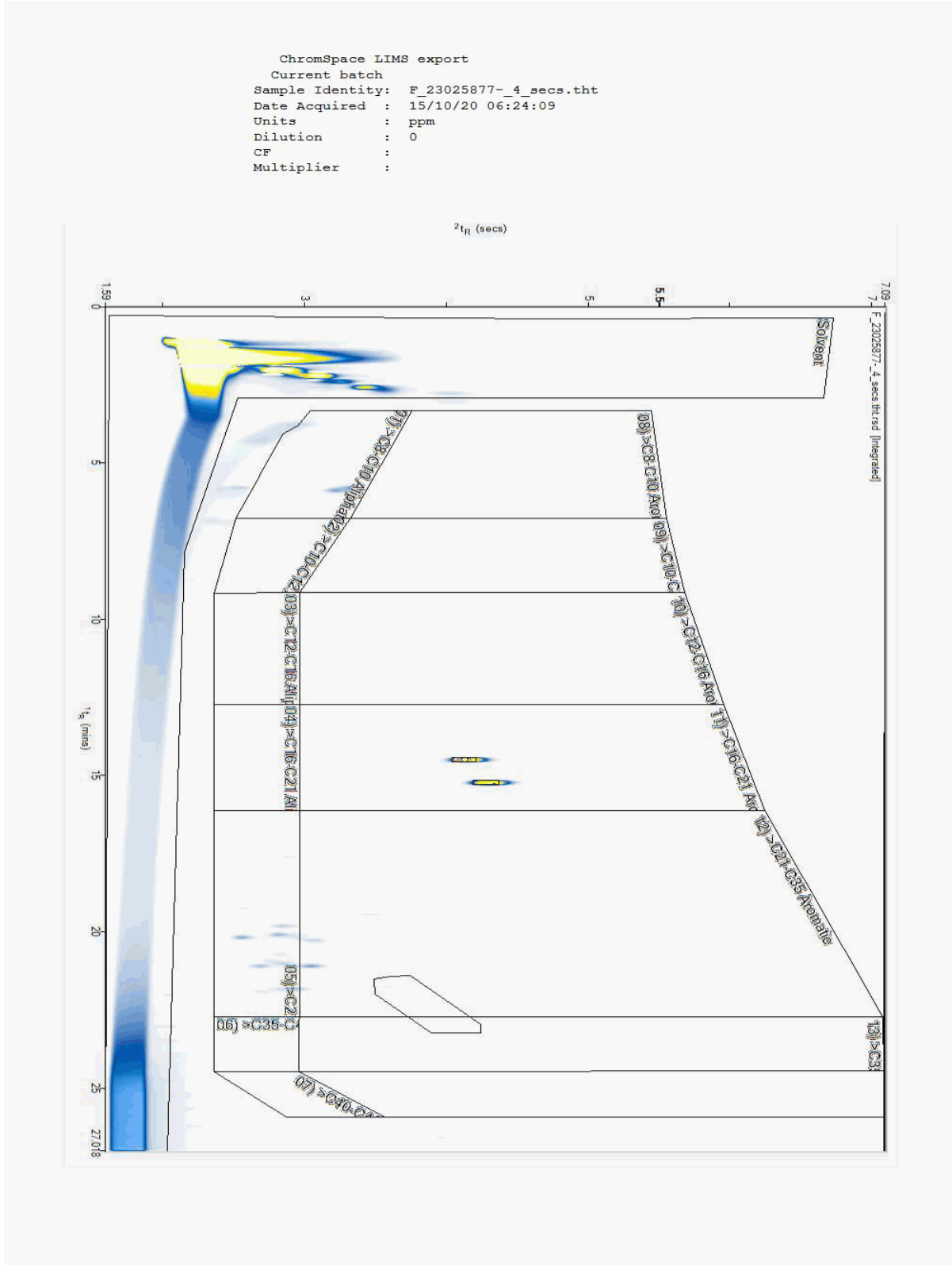
Report Number: 575652
Superseded Report: 571962

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23025877
Sample ID : R70108

Depth : 0.30 - 0.40





CERTIFICATE OF ANALYSIS

Validated

SDG: 201006-141
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PO20-754

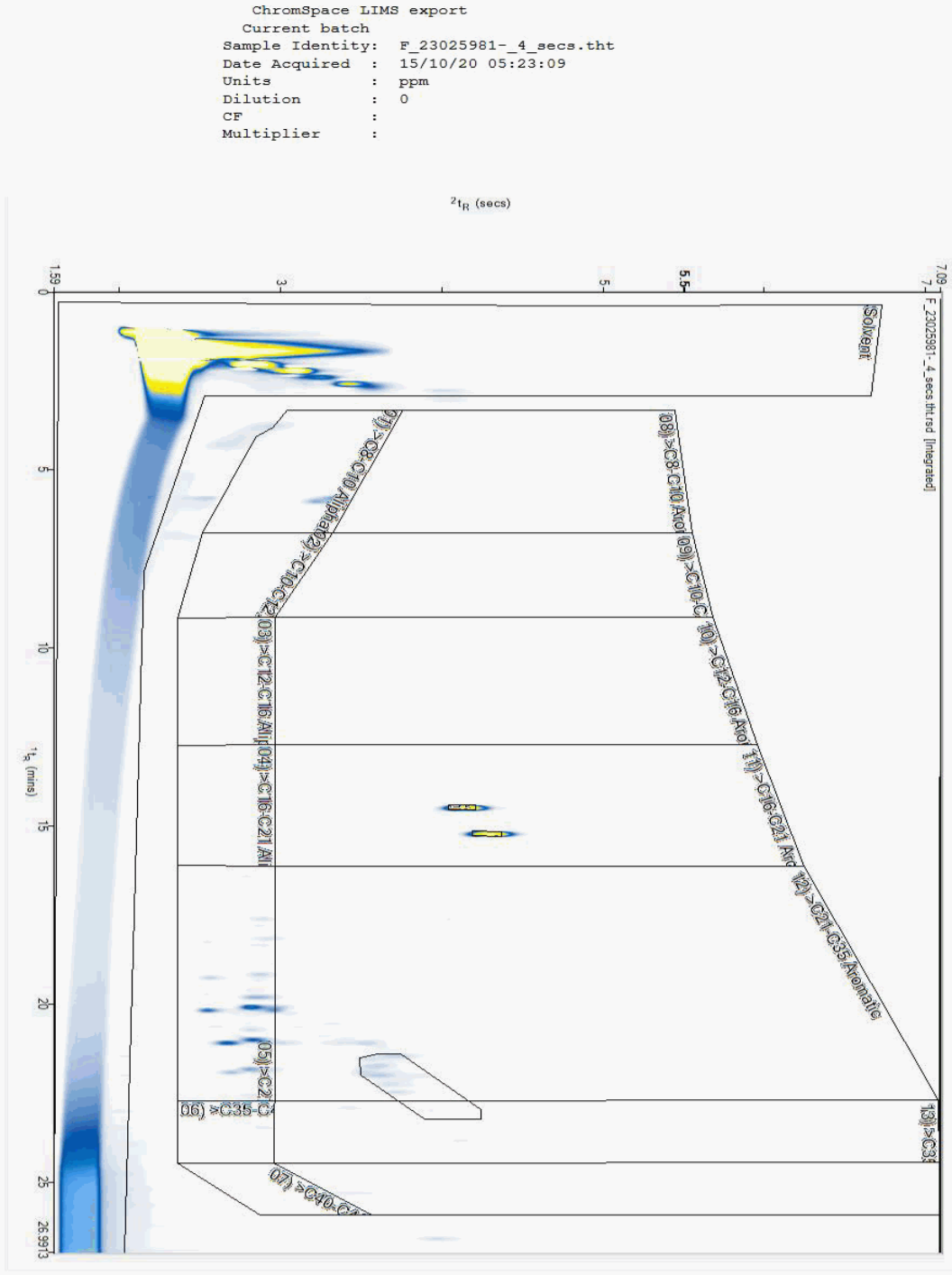
Report Number: 575652
Superseded Report: 571962

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23025981
Sample ID : STP70501

Depth : 0.30 - 0.30





CERTIFICATE OF ANALYSIS

Validated

SDG: 201006-141
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PO20-754

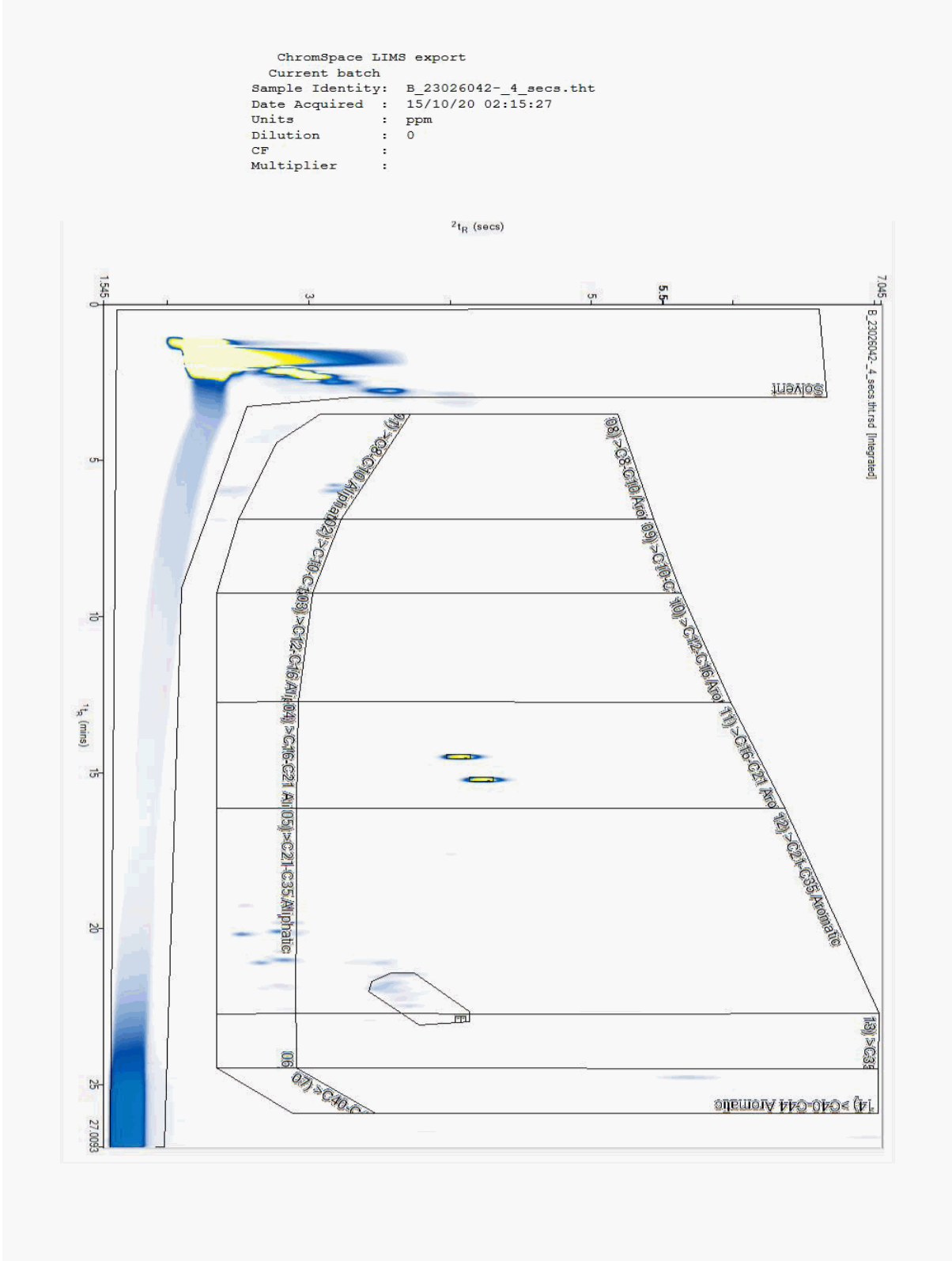
Report Number: 575652
Superseded Report: 571962

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23026042
Sample ID : STP70504

Depth : 0.30 - 0.30





CERTIFICATE OF ANALYSIS

Validated

SDG: 201006-141
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PO20-754

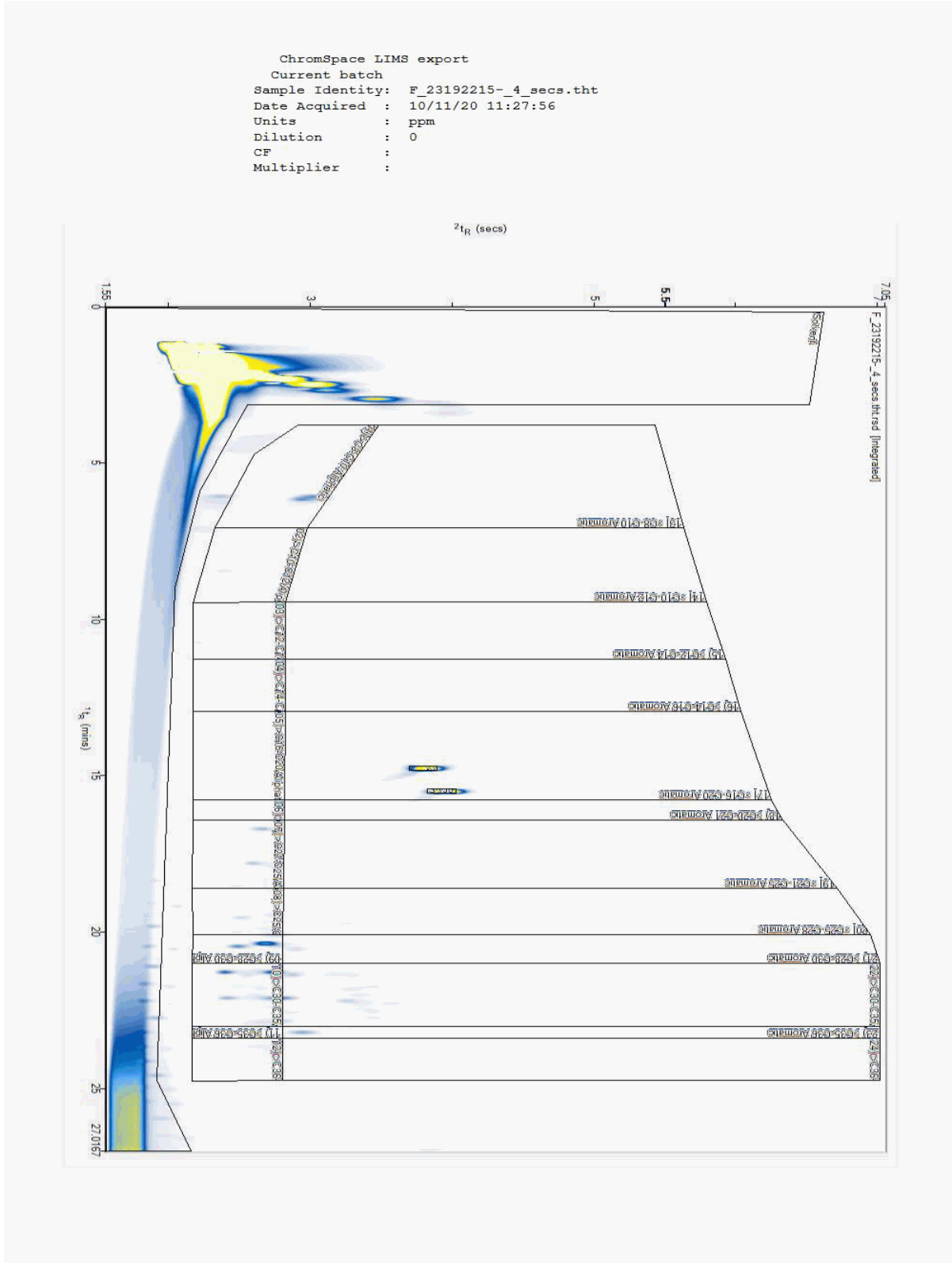
Report Number: 575652
Superseded Report: 571962

Chromatogram

Analysis: EPH by GCxGC-FID

Sample No : 23192215
Sample ID : STP70501

Depth : 0.50 - 0.50





CERTIFICATE OF ANALYSIS

Validated

SDG: 201006-141
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PQ20-754

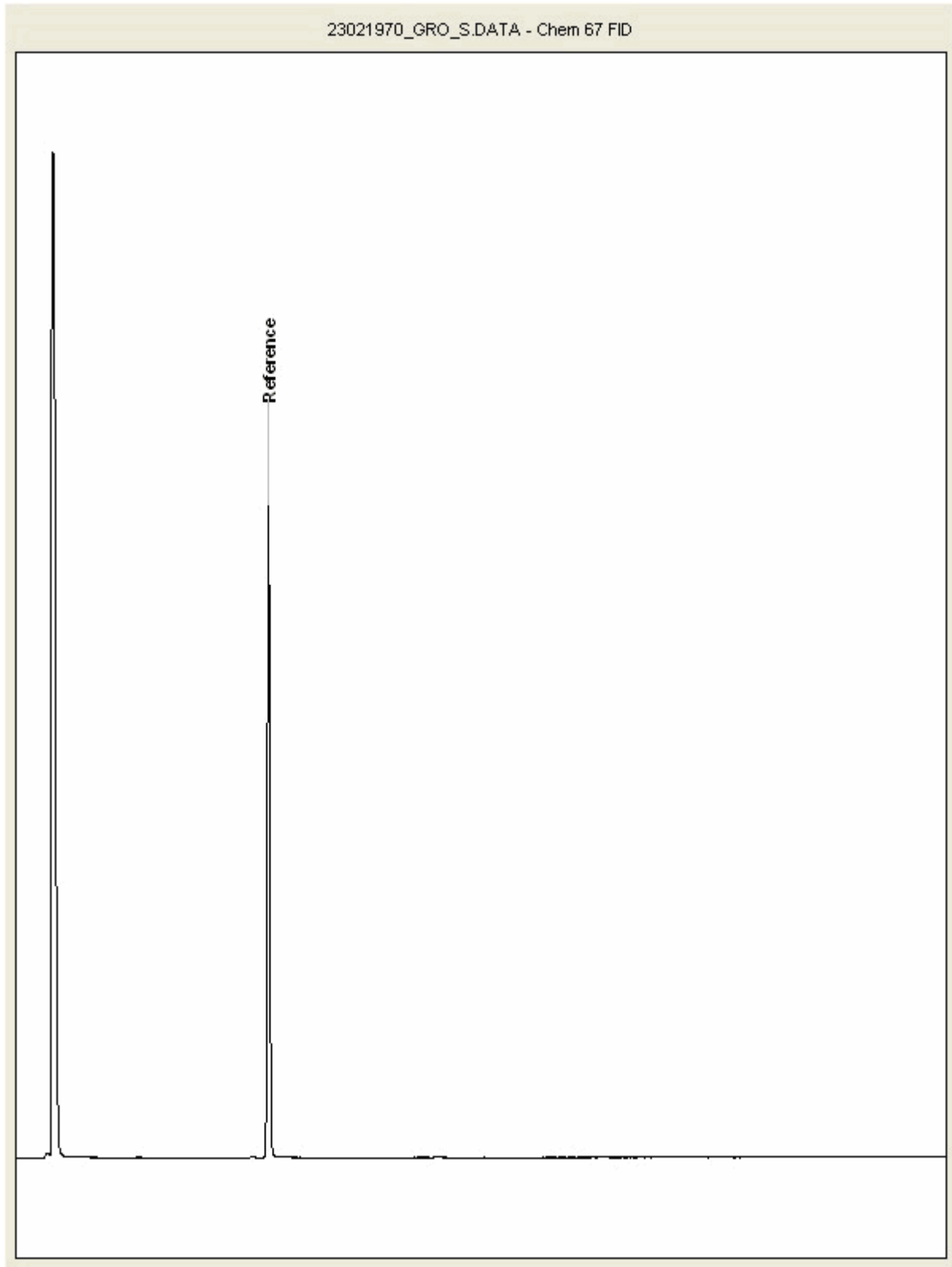
Report Number: 575652
Superseded Report: 571962

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23021970
Sample ID : STP70504

Depth : 0.30 - 0.30





CERTIFICATE OF ANALYSIS

Validated

SDG: 201006-141
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PQ20-754

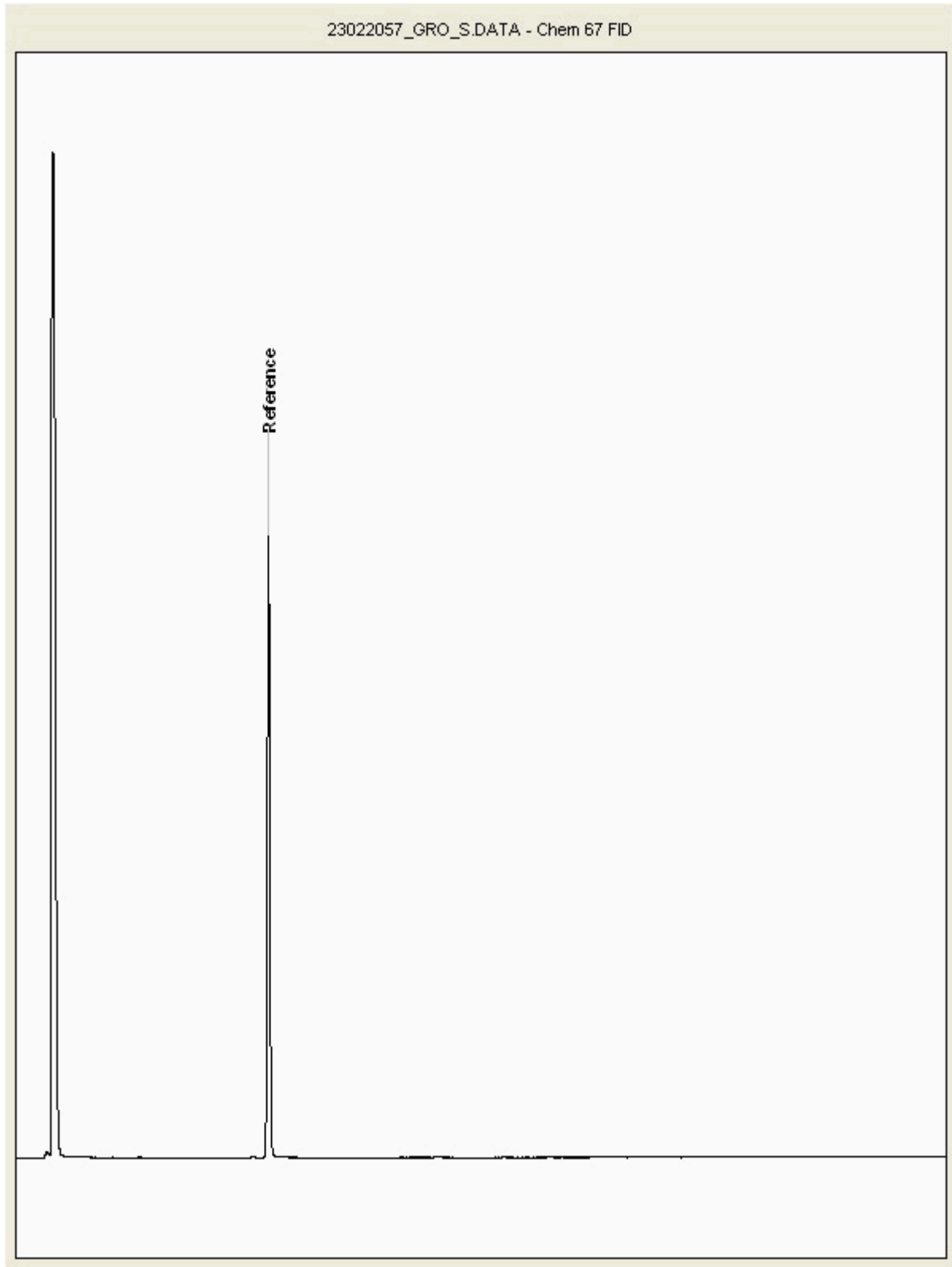
Report Number: 575652
Superseded Report: 571962

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23022057
Sample ID : STP70501

Depth : 0.30 - 0.30





CERTIFICATE OF ANALYSIS

Validated

SDG: 201006-141
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PQ20-754

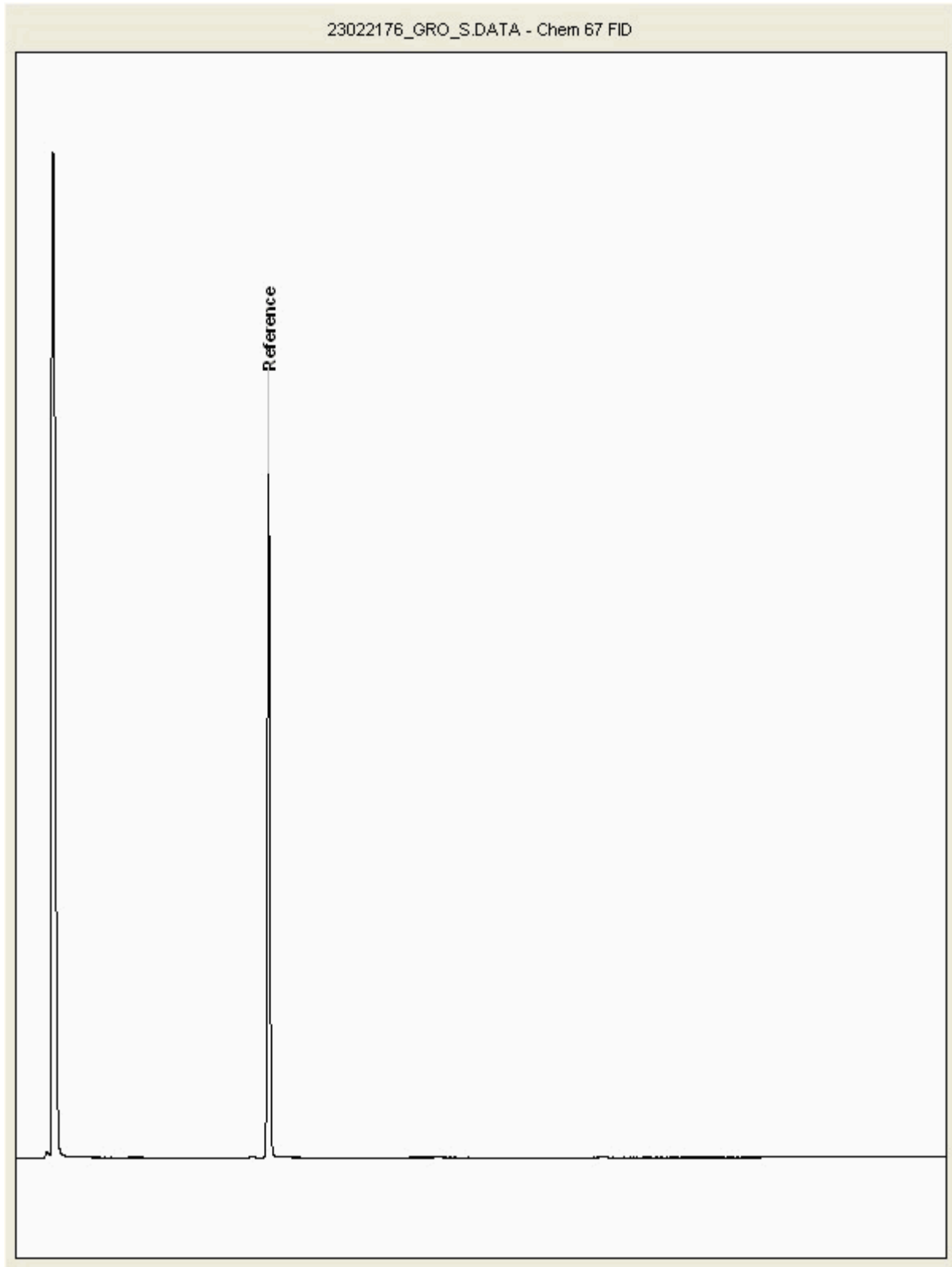
Report Number: 575652
Superseded Report: 571962

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23022176
Sample ID : STP70501

Depth : 2.00 - 2.00





CERTIFICATE OF ANALYSIS

Validated

SDG: 201006-141
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PQ20-754

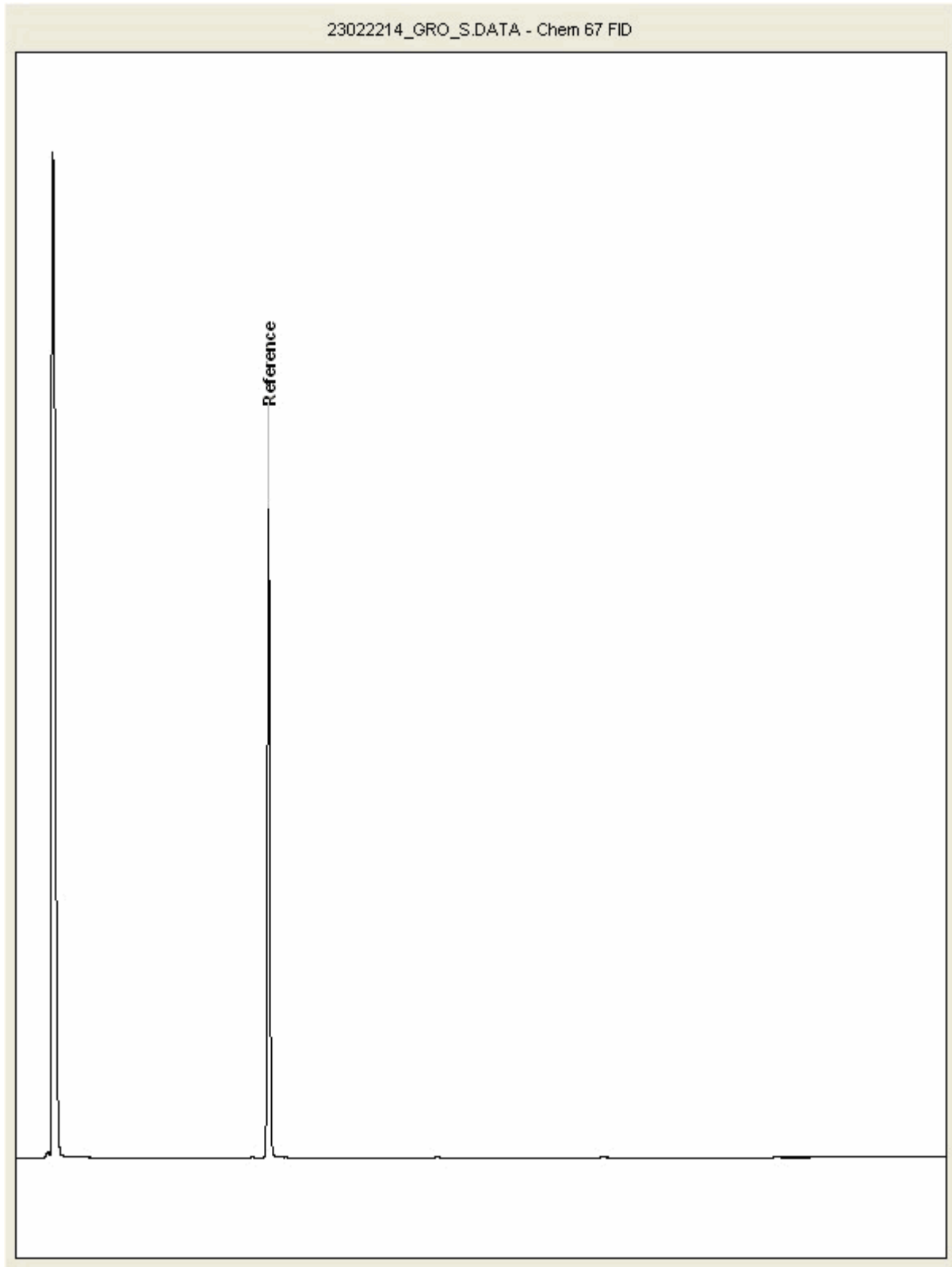
Report Number: 575652
Superseded Report: 571962

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23022214
Sample ID : R70108

Depth : 0.30 - 0.40





CERTIFICATE OF ANALYSIS

Validated

SDG: 201006-141
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PQ20-754

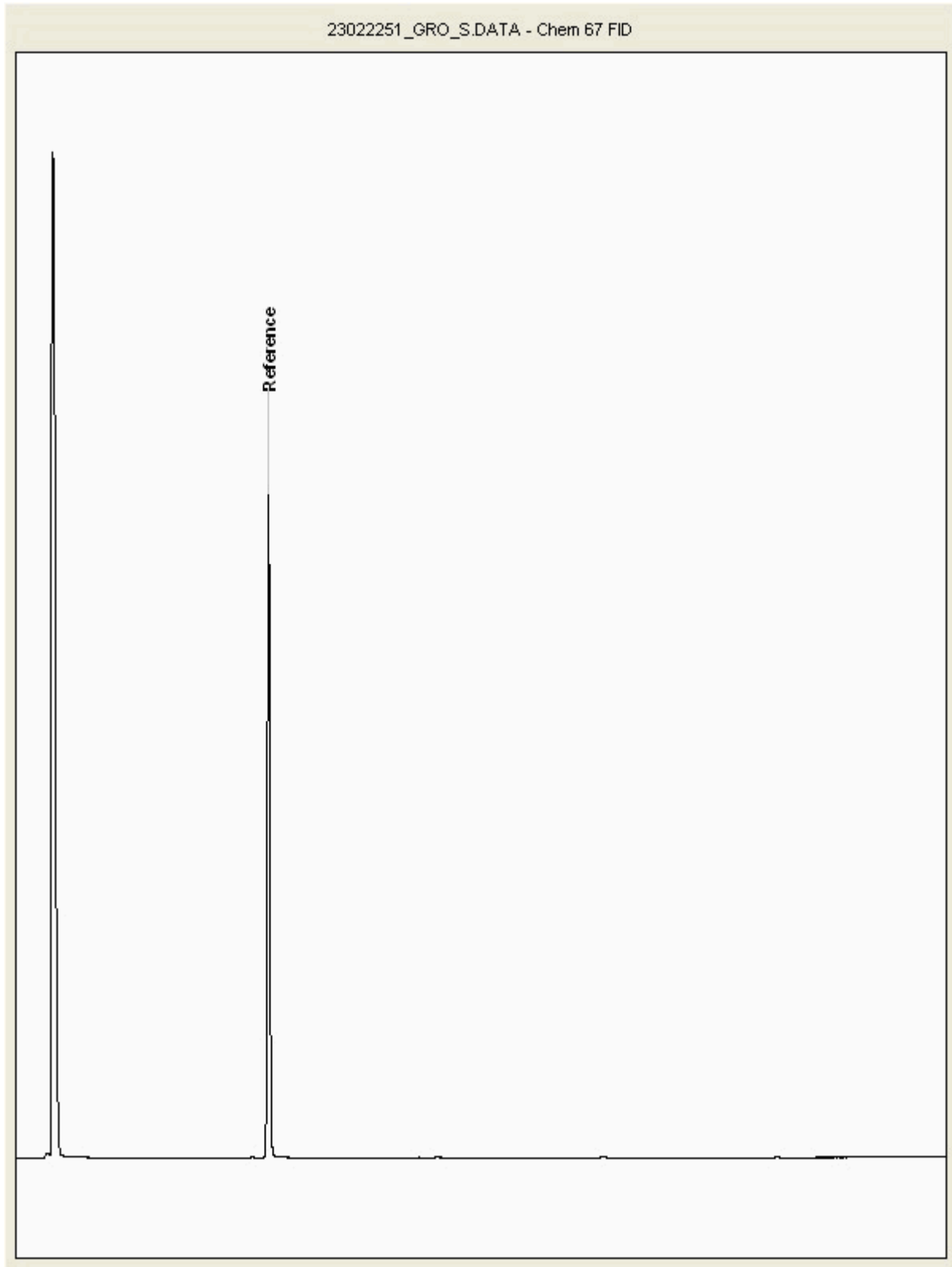
Report Number: 575652
Superseded Report: 571962

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23022251
Sample ID : R70108

Depth : 1.00 - 1.10





CERTIFICATE OF ANALYSIS

Validated

SDG: 201006-141
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PQ20-754

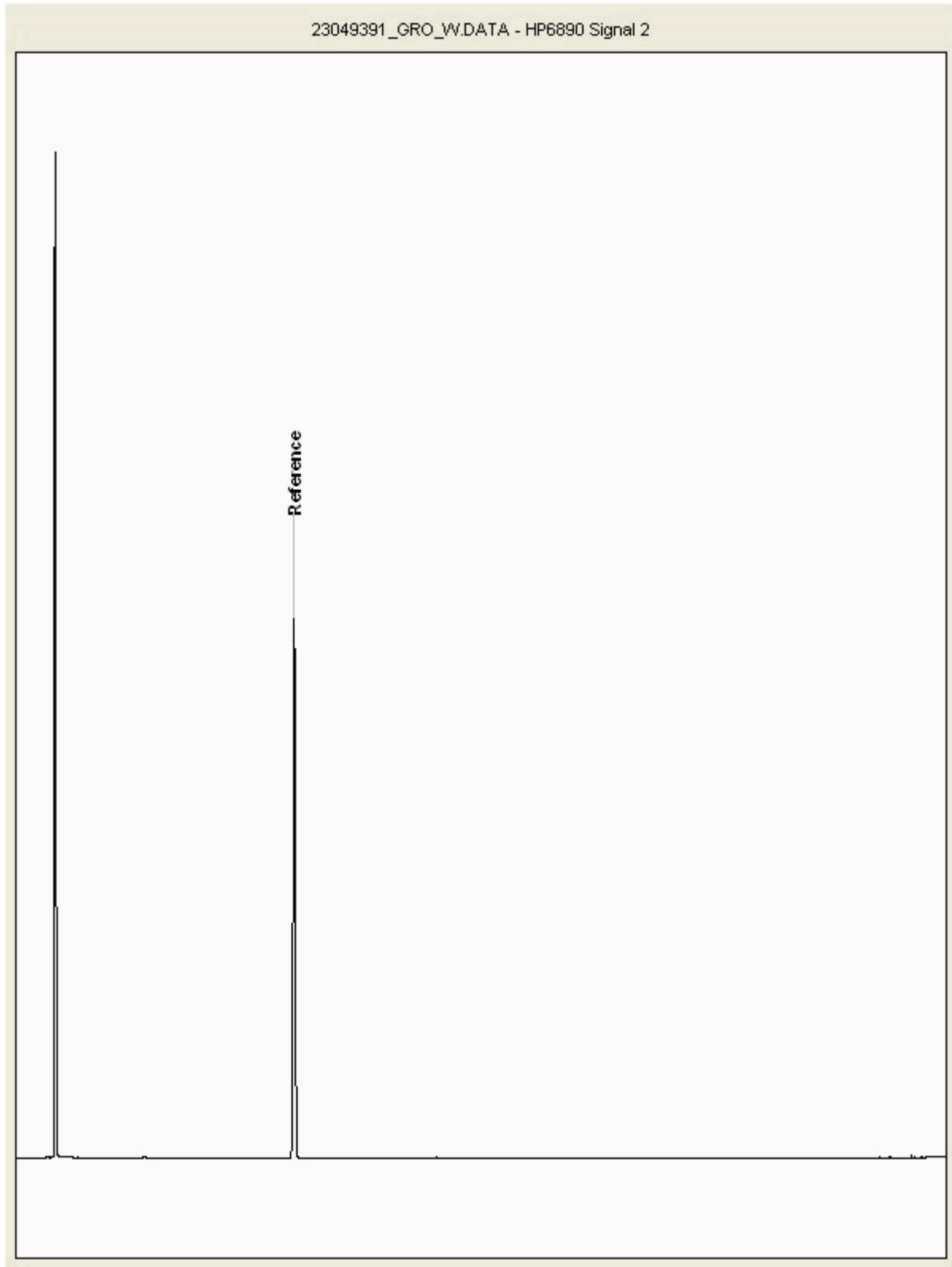
Report Number: 575652
Superseded Report: 571962

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 23049391
Sample ID : STP70501

Depth : 0.30 - 0.30





CERTIFICATE OF ANALYSIS

SDG:	201006-141	Client Reference:	JFR1451	Report Number:	575652
Location:	A303 Stonehenge	Order Number:	PO20-754	Superseded Report:	571962

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH₄ by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

19. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung. Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017)*.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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Deeside
CH5 3US

Tel: (01244) 528700

Fax: (01244) 528701

email: hawardencustomerservices@alsglobal.com

Website: www.alsenvironmental.co.uk

RPS Consultants Ltd
260 Park Avenue
Aztec West
Almondsbury
Bristol
BS32 4SY

Attention: Gary Riches

CERTIFICATE OF ANALYSIS

Date of report Generation: 06 November 2020
Customer: RPS Consultants Ltd
Sample Delivery Group (SDG): 201007-61
Your Reference: JFR1451
Location: A303 Stonehenge
Report No: 574528

We received 6 samples on Wednesday October 07, 2020 and 1 of these samples were scheduled for analysis which was completed on Friday November 06, 2020. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

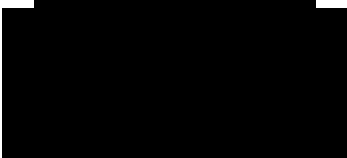
Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:



Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 201007-61
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 574528
Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
22981106	R72005		0.00	05/10/2020
22981107	R72005		0.30	05/10/2020
22981108	STP72202		0.00	05/10/2020
22981109	STP72202		0.30	05/10/2020
22981110	STP72202		0.50	05/10/2020
22981111	STP72202		1.00	05/10/2020

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG:	201007-61	Client Reference:	JFR1451	Report Number:	574528
Location:	A303 Stonehenge	Order Number:		Superseded Report:	

Results Legend <div style="display: flex; flex-direction: column; gap: 5px;"> <div style="display: flex; align-items: center;">X Test</div> <div style="display: flex; align-items: center;">N No Determination Possible</div> </div> Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other	Lab Sample No(s)				22981110
	Customer Sample Reference				STP72202
	AGS Reference				
	Depth (m)				0.50
	Container	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	
	Sample Type	S	S	S	
	Ammonium Soil by Titration	All	NDPs: 0 Tests: 1		X
Anions by Kone (soil)	All	NDPs: 0 Tests: 1		X	
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 1	X		
Chromium III	All	NDPs: 0 Tests: 1		X	
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 1		X	
EPH CWG GC (S)	All	NDPs: 0 Tests: 1		X	
GRO by GC-FID (S)	All	NDPs: 0 Tests: 1			X
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 1		X	
Metals in solid samples by OES	All	NDPs: 0 Tests: 1		X	
PAH by GCMS	All	NDPs: 0 Tests: 1		X	
pH	All	NDPs: 0 Tests: 1		X	
Phenols by HPLC (S)	All	NDPs: 0 Tests: 1		X	
Sample description	All	NDPs: 0 Tests: 1		X	
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 1		X	
Total Organic Carbon	All	NDPs: 0 Tests: 1		X	



CERTIFICATE OF ANALYSIS

Validated

SDG:	201007-61	Client Reference:	JFR1451	Report Number:	574528
Location:	A303 Stonehenge	Order Number:		Superseded Report:	

Results Legend <div style="display: flex; align-items: center; margin-bottom: 5px;"> <div style="border: 1px solid black; width: 15px; height: 15px; background-color: yellow; margin-right: 5px;"></div> X Test </div> <div style="display: flex; align-items: center; margin-bottom: 5px;"> <div style="border: 1px solid black; width: 15px; height: 15px; background-color: red; color: white; margin-right: 5px;"></div> N No Determination Possible </div> Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other	Lab Sample No(s)	22981110			
	Customer Sample Reference	STP72202			
	AGS Reference				
	Depth (m)	0.50			
	Container	1kg TUB with Handle (ALE280)	250g Amber Jar (ALE210)	60g VOC (ALE215)	
	Sample Type	S	S	S	
	TPH CWG GC (S)	All	NDPs: 0 Tests: 1	X	
VOC MS (S)	All	NDPs: 0 Tests: 1		X	



CERTIFICATE OF ANALYSIS

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SDG: 201007-61
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 574528
Superseded Report:

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm
------------------	----------	-------------	-----------------	---------------	-------------	---------------	------------	--------------------	-------

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
22981110	STP72202	0.50	Dark Brown	Loamy Sand	Vegetation	Stones

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.



CERTIFICATE OF ANALYSIS

Validated

SDG: 201007-61
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 574528
Superseded Report:

PAH by GCMS

Results Legend		Customer Sample Ref.	STP72202				
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.50				
M	mCERTS accredited.		Soil/Solid (S)				
aq	Aqueous / settled sample.		05/10/2020				
diss.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.		07/10/2020				
*	Subcontracted - refer to subcontractor report for accreditation status.		201007-61				
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		22981110				
(F)	Trigger breach confirmed						
1-4*\$@	Sample deviation (see appendix)						
Component	LOD/Units		Method				
Naphthalene-d8 % recovery**	%	TM218	100				
Acenaphthene-d10 % recovery**	%	TM218	101				
Phenanthrene-d10 % recovery**	%	TM218	104				
Chrysene-d12 % recovery**	%	TM218	102				
Perylene-d12 % recovery**	%	TM218	101				
Naphthalene	<9 µg/kg	TM218	<9	@ M			
Acenaphthylene	<12 µg/kg	TM218	<12	@ M			
Acenaphthene	<8 µg/kg	TM218	<8	@ M			
Fluorene	<10 µg/kg	TM218	<10	@ M			
Phenanthrene	<15 µg/kg	TM218	<15	@ M			
Anthracene	<16 µg/kg	TM218	<16	@ M			
Fluoranthene	<17 µg/kg	TM218	<17	@ M			
Pyrene	<15 µg/kg	TM218	<15	@ M			
Benzo(a)anthracene	<14 µg/kg	TM218	<14	@ M			
Chrysene	<10 µg/kg	TM218	<10	@ M			
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15	@ M			
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14	@ M			
Benzo(a)pyrene	<15 µg/kg	TM218	<15	@ M			
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18	@ M			
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23	@ M			
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24	@ M			
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118				



CERTIFICATE OF ANALYSIS

Validated

SDG: 201007-61
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 574528
Superseded Report:

Semi Volatile Organic Compounds

Results Legend		Customer Sample Ref.	STP7202			
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.50 Soil/Solid (S) 05/10/2020 07/10/2020 201007-61 22981110			
M	mCERTS accredited.					
aq	Aqueous / settled sample.					
diss.filt	Dissolved / filtered sample.					
tot.unfilt	Total / unfiltered sample.					
*	Subcontracted - refer to subcontractor report for accreditation status.					
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery					
(F)	Trigger breach confirmed					
1-4*\$@	Sample deviation (see appendix)					
Component	LOD/Units			Method		
Phenol	<100 µg/kg	TM157	<100			
Pentachlorophenol	<100 µg/kg	TM157	<100			
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100			
Nitrobenzene	<100 µg/kg	TM157	<100			
Isophorone	<100 µg/kg	TM157	<100			
Hexachloroethane	<100 µg/kg	TM157	<100			
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<500			
Hexachlorobutadiene	<100 µg/kg	TM157	<100			
Hexachlorobenzene	<100 µg/kg	TM157	<100			
n-Dioctyl phthalate	<100 µg/kg	TM157	<100			
Dimethyl phthalate	<100 µg/kg	TM157	<100			
Diethyl phthalate	<100 µg/kg	TM157	<100			
n-Dibutyl phthalate	<100 µg/kg	TM157	<100			
Dibenzofuran	<100 µg/kg	TM157	<100			
Carbazole	<100 µg/kg	TM157	<100			
Butylbenzyl phthalate	<100 µg/kg	TM157	<100			
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100			
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100			
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100			
Azobenzene	<100 µg/kg	TM157	<100			
4-Nitrophenol	<100 µg/kg	TM157	<100			
4-Nitroaniline	<100 µg/kg	TM157	<100			
4-Methylphenol	<100 µg/kg	TM157	<100			
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100			
4-Chloroaniline	<100 µg/kg	TM157	<100			
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100			
4-Bromophenylphenylether	<100 µg/kg	TM157	<100			
3-Nitroaniline	<100 µg/kg	TM157	<100			
2-Nitrophenol	<100 µg/kg	TM157	<100			
2-Nitroaniline	<100 µg/kg	TM157	<100			
2-Methylphenol	<100 µg/kg	TM157	<100			
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100			



CERTIFICATE OF ANALYSIS

Validated

SDG: 201007-61
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 574528
Superseded Report:

Semi Volatile Organic Compounds

Results Legend		Customer Sample Ref.	STP72202				
# ISO17025 accredited.							
M mCERTS accredited.							
aq Aqueous / filtered sample.							
dis.filt Dissolved / filtered sample.							
tot.unfilt Total / unfiltered sample.							
* Subcontracted - refer to subcontractor report for accreditation status.							
** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery							
(F) Trigger breach confirmed							
1.4.4.6@ Sample deviation (see appendix)							
Depth (m)		0.50					
Sample Type		Soil/Solid (S)					
Date Sampled		05/10/2020					
Sampled Time							
Date Received		07/10/2020					
SDG Ref		201007-61					
Lab Sample No.(s)		22981110					
AGS Reference							
Component	LOD/Units	Method					
2-Chlorophenol	<100 µg/kg	TM157	<100				
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100				
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100				
2,4-Dimethylphenol	<100 µg/kg	TM157	<100				
2,4-Dichlorophenol	<100 µg/kg	TM157	<100				
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100				
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100				
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100				
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100				
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100				
2-Chloronaphthalene	<100 µg/kg	TM157	<100				
2-Methylnaphthalene	<100 µg/kg	TM157	<100				
Acenaphthylene	<100 µg/kg	TM157	<100				
Acenaphthene	<100 µg/kg	TM157	<100				
Anthracene	<100 µg/kg	TM157	<100				
Benzo(a)anthracene	<100 µg/kg	TM157	<100				
Benzo(b)fluoranthene	<100 µg/kg	TM157	<100				
Benzo(k)fluoranthene	<100 µg/kg	TM157	<100				
Benzo(a)pyrene	<100 µg/kg	TM157	<100				
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<100				
Chrysene	<100 µg/kg	TM157	<100				
Fluoranthene	<100 µg/kg	TM157	<100				
Fluorene	<100 µg/kg	TM157	<100				
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<100				
Phenanthrene	<100 µg/kg	TM157	<100				
Pyrene	<100 µg/kg	TM157	<100				
Naphthalene	<100 µg/kg	TM157	<100				
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100				
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100				
TIC report		TM157	Not Detected				
Total SVOC TIC	<100 µg/kg	TM157	<1000				



CERTIFICATE OF ANALYSIS

Validated

SDG: 201007-61
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 574528
Superseded Report:

TPH CWG (S)

Results Legend		Customer Sample Ref.	STP72202				
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.50				
M	mCERTS accredited.		Soil/Solid (S)				
aq	Aqueous / settled sample.		05/10/2020				
diss.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.		07/10/2020				
*	Subcontracted - refer to subcontractor report for accreditation status.		201007-61				
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		22981110				
(F)	Trigger breach confirmed						
1-4*\$@	Sample deviation (see appendix)						
Component	LOD/Units		Method				
GRO Surrogate % recovery**	%	TM089	109	@			
Aliphatics >C5-C6	<10 µg/kg	TM089	<10	@			
Aliphatics >C6-C8	<10 µg/kg	TM089	<10	@			
Aliphatics >C8-C10	<10 µg/kg	TM089	<10	@			
Aliphatics >C10-C12	<1000 µg/kg	TM414	<1000				
Aliphatics >C12-C16	<1000 µg/kg	TM414	<1000				
Aliphatics >C16-C21	<1000 µg/kg	TM414	<1000				
Aliphatics >C21-C35	<1000 µg/kg	TM414	1850				
Aliphatics >C35-C44	<1000 µg/kg	TM414	<1000				
Total Aliphatics >C10-C44	<5000 µg/kg	TM414	<5000				
Total Aliphatics & Aromatics >C10-C44	<10000 µg/kg	TM414	<10000				
Aromatics >EC5-EC7	<10 µg/kg	TM089	<10	@			
Aromatics >EC7-EC8	<10 µg/kg	TM089	<10	@			
Aromatics >EC8-EC10	<10 µg/kg	TM089	<10	@			
Aromatics > EC10-EC12	<1000 µg/kg	TM414	<1000				
Aromatics > EC12-EC16	<1000 µg/kg	TM414	<1000				
Aromatics > EC16-EC21	<1000 µg/kg	TM414	<1000				
Aromatics > EC21-EC35	<1000 µg/kg	TM414	1200				
Aromatics >EC35-EC44	<1000 µg/kg	TM414	<1000				
Aromatics > EC40-EC44	<1000 µg/kg	TM414	<1000				
Total Aromatics > EC10-EC44	<5000 µg/kg	TM414	<5000				
Total Aliphatics & Aromatics >C5-C44	<10000 µg/kg	TM414	<10000				
Total Aliphatics >C5-C10	<50 µg/kg	TM089	<50	@			
Total Aromatics >EC5-EC10	<50 µg/kg	TM089	<50	@			
GRO >C5-C10	<20 µg/kg	TM089	<20	@			



CERTIFICATE OF ANALYSIS

Validated

SDG: 201007-61
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 574528
Superseded Report:

VOC MS (S)

Results Legend		Customer Sample Ref.	STP72202				
#	ISO17025 accredited.	Depth (m)	0.50				
M	mCERTS accredited.	Sample Type	Soil/Solid (S)				
aq	Aqueous / settled sample.	Date Sampled	05/10/2020				
diss.filt	Dissolved / filtered sample.	Sampled Time	07/10/2020				
tot.unfilt	Total / unfiltered sample.	Date Received	201007-61				
*	Subcontracted - refer to subcontractor report for accreditation status.	SDG Ref	22981110				
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery	Lab Sample No.(s)					
(F)	Trigger breach confirmed	AGS Reference					
1-4*\$@	Sample deviation (see appendix)						
Component	LOD/Units	Method					
Dibromofluoromethane**	%	TM116	106	@			
Toluene-d8**	%	TM116	97.4	@			
4-Bromofluorobenzene**	%	TM116	84.3	@			
Dichlorodifluoromethane	<6 µg/kg	TM116	<6	@ M			
Chloromethane	<7 µg/kg	TM116	<7	@ #			
Vinyl Chloride	<6 µg/kg	TM116	<6	@ M			
Bromomethane	<10 µg/kg	TM116	<10	@ M			
Chloroethane	<10 µg/kg	TM116	<10	@ M			
Trichlorofluoromethane	<6 µg/kg	TM116	<6	@ M			
1,1-Dichloroethene	<10 µg/kg	TM116	<10	@ #			
Carbon Disulphide	<7 µg/kg	TM116	<7	@ M			
Dichloromethane	<10 µg/kg	TM116	22.9	@ #			
Methyl Tertiary Butyl Ether	<10 µg/kg	TM116	<10	@ M			
trans-1,2-Dichloroethene	<10 µg/kg	TM116	<10	@ M			
1,1-Dichloroethane	<8 µg/kg	TM116	<8	@ M			
cis-1,2-Dichloroethene	<6 µg/kg	TM116	<6	@ M			
2,2-Dichloropropane	<10 µg/kg	TM116	<10	@			
Bromochloromethane	<10 µg/kg	TM116	<10	@ M			
Chloroform	<8 µg/kg	TM116	<8	@ M			
1,1,1-Trichloroethane	<7 µg/kg	TM116	<7	@ M			
1,1-Dichloropropene	<10 µg/kg	TM116	<10	@ M			
Carbontetrachloride	<10 µg/kg	TM116	<10	@ M			
1,2-Dichloroethane	<5 µg/kg	TM116	<5	@ M			
Benzene	<9 µg/kg	TM116	<9	@ M			
Trichloroethene	<9 µg/kg	TM116	<9	@ #			
1,2-Dichloropropane	<10 µg/kg	TM116	<10	@ M			
Dibromomethane	<9 µg/kg	TM116	<9	@ M			
Bromodichloromethane	<7 µg/kg	TM116	<7	@ M			
cis-1,3-Dichloropropene	<10 µg/kg	TM116	<10	@ M			
Toluene	<7 µg/kg	TM116	<7	@ M			
trans-1,3-Dichloropropene	<10 µg/kg	TM116	<10	@			
1,1,2-Trichloroethane	<10 µg/kg	TM116	<10	@ M			



CERTIFICATE OF ANALYSIS

Validated

SDG: 201007-61
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 574528
Superseded Report:

VOC MS (S)

Results Legend		Customer Sample Ref.	STP72202				
# ISO17025 accredited.							
M mCERTS accredited.							
sg Aqueous / settled sample.							
diss.filt Dissolved / filtered sample.							
tot.unfilt Total / unfiltered sample.							
* Subcontracted - refer to subcontractor report for accreditation status.							
** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery							
(F) Trigger breach confirmed							
1-4# @ Sample deviation (see appendix)							
		Depth (m)	0.50				
		Sample Type	Soil/Solid (S)				
		Date Sampled	05/10/2020				
		Sampled Time	.				
		Date Received	07/10/2020				
		SDG Ref	201007-61				
		Lab Sample No.(s)	22981110				
		AGS Reference					
Component	LOD/Units	Method					
1,3-Dichloropropane	<7 µg/kg	TM116	<7	@ M			
Tetrachloroethene	<5 µg/kg	TM116	<5	@ M			
Dibromochloromethane	<10 µg/kg	TM116	<10	@ M			
1,2-Dibromoethane	<10 µg/kg	TM116	<10	@ M			
Chlorobenzene	<5 µg/kg	TM116	<5	@ M			
1,1,1,2-Tetrachloroethane	<10 µg/kg	TM116	<10	@ M			
Ethylbenzene	<4 µg/kg	TM116	<4	@ M			
p/m-Xylene	<10 µg/kg	TM116	<10	@ #			
o-Xylene	<10 µg/kg	TM116	<10	@ M			
Styrene	<10 µg/kg	TM116	<10	@ #			
Bromoform	<10 µg/kg	TM116	<10	@ M			
Isopropylbenzene	<5 µg/kg	TM116	<5	@ #			
1,1,2,2-Tetrachloroethane	<10 µg/kg	TM116	<10	@ #			
1,2,3-Trichloropropane	<16 µg/kg	TM116	<16	@ M			
Bromobenzene	<10 µg/kg	TM116	<10	@ M			
Propylbenzene	<10 µg/kg	TM116	<10	@ M			
2-Chlorotoluene	<9 µg/kg	TM116	<9	@ M			
1,3,5-Trimethylbenzene	<8 µg/kg	TM116	<8	@ M			
4-Chlorotoluene	<10 µg/kg	TM116	<10	@ M			
tert-Butylbenzene	<14 µg/kg	TM116	<14	@ M			
1,2,4-Trimethylbenzene	<9 µg/kg	TM116	<9	@ #			
sec-Butylbenzene	<10 µg/kg	TM116	<10	@			
4-Isopropyltoluene	<10 µg/kg	TM116	<10	@ M			
1,3-Dichlorobenzene	<8 µg/kg	TM116	<8	@ M			
1,4-Dichlorobenzene	<5 µg/kg	TM116	<5	@ M			
n-Butylbenzene	<11 µg/kg	TM116	<11	@			
1,2-Dichlorobenzene	<10 µg/kg	TM116	<10	@ M			
1,2-Dibromo-3-chloropropane	<14 µg/kg	TM116	<14	@ M			
Tert-amyl methyl ether	<10 µg/kg	TM116	<10	@ #			
1,2,4-Trichlorobenzene	<20 µg/kg	TM116	<20	@			
Hexachlorobutadiene	<20 µg/kg	TM116	<20	@			
Naphthalene	<13 µg/kg	TM116	<13	@ M			



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SDG: 201007-61
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 574528
Superseded Report:

Asbestos Identification - Solid Samples

Results Legend

- # ISO17025 accredited.
- M mCERTS accredited.
- * Subcontracted test.
- (F) Trigger breach confirmed
- 1-5&*§@ Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref.	STP72202	06/11/2020	Christian Hallam	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Depth (m)	0.50										
Sample Type	SOLID										
Date Sampled	05/10/2020 00:00:00										
Date Received	07/10/2020 05:00:00										
SDG	201007-61										
Original Sample	22981110										
Method Number	TM048										



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SDG: 201007-61
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 574528
Superseded Report:

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM243		Mixed Anions In Soils By Kone
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).



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SDG: 201007-61
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 574528
Superseded Report:

Test Completion Dates

Lab Sample No(s) 22981110
 Customer Sample Ref. STP72202
 AGS Ref.
 Depth 0.50
 Type Soil/Solid (S)

Ammonium Soil by Titration	05-Nov-2020
Anions by Kone (soil)	06-Nov-2020
Asbestos ID in Solid Samples	06-Nov-2020
Chromium III	06-Nov-2020
Cyanide Comp/Free/Total/Thiocyanate	06-Nov-2020
EPH CWG GC (S)	05-Nov-2020
GRO by GC-FID (S)	03-Nov-2020
Hexavalent Chromium (s)	06-Nov-2020
Metals in solid samples by OES	05-Nov-2020
PAH by GCMS	05-Nov-2020
pH	04-Nov-2020
Phenols by HPLC (S)	06-Nov-2020
Sample description	31-Oct-2020
Semi Volatile Organic Compounds	04-Nov-2020
Total Organic Carbon	05-Nov-2020
TPH CWG GC (S)	05-Nov-2020
VOC MS (S)	04-Nov-2020



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Client Reference: JFR1451
Order Number:

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Superseded Report:

ASSOCIATED AQC DATA

Ammonium Soil by Titration

Component	Method Code	QC 2379
Exchangeable Ammonium as NH4	TM024	84.08 76.20 : 110.13

Anions by Kone (soil)

Component	Method Code	QC 2378
Chloride (soluble)	TM243	139.38 86.68 : 115.67
Water Soluble Sulphate as SO4 2:1 Extract	TM243	162.15 70.00 : 130.00

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2392
Free Cyanide	TM153	92.87 78.61 : 114.43
Thiocyanate	TM153	96.79 90.48 : 109.52
Total Cyanide	TM153	94.41 76.80 : 112.96

GRO by GC-FID (S)

Component	Method Code	QC 2359
QC	TM089	89.35 70.75 : 114.19

Hexavalent Chromium (s)

Component	Method Code	QC 2365
Hexavalent Chromium	TM151	106.0 92.00 : 111.20

Metals in solid samples by OES

Component	Method Code	QC 2330
Aluminium	TM181	94.69 73.56 : 108.85
Antimony	TM181	94.72 76.89 : 111.24
Arsenic	TM181	97.67 88.53 : 111.01



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Order Number:

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Superseded Report:

Metals in solid samples by OES

		QC 2330
Barium	TM181	92.66 77.67 : 105.35
Beryllium	TM181	100.75 85.44 : 109.61
Boron	TM181	90.83 73.51 : 104.66
Cadmium	TM181	94.24 77.67 : 104.12
Chromium	TM181	90.06 86.11 : 106.21
Cobalt	TM181	92.45 84.60 : 104.13
Copper	TM181	88.03 82.40 : 105.45
Iron	TM181	96.83 82.95 : 110.58
Lead	TM181	99.1 78.24 : 104.05
Manganese	TM181	106.67 94.29 : 119.51
Mercury	TM181	92.27 83.16 : 107.81
Molybdenum	TM181	99.59 87.11 : 106.87
Nickel	TM181	90.22 80.26 : 102.28
Phosphorus	TM181	106.67 94.56 : 124.28
Selenium	TM181	100.78 82.28 : 110.48
Strontium	TM181	90.65 79.13 : 102.79
Thallium	TM181	94.69 82.94 : 111.86
Tin	TM181	100.0 86.72 : 110.03
Titanium	TM181	87.79 66.23 : 102.06
Vanadium	TM181	98.17 86.19 : 109.45
Zinc	TM181	98.77 84.68 : 113.99

PAH by GCMS

Component	Method Code	QC 2398
Acenaphthene	TM218	86.5 76.79 : 103.90
Acenaphthylene	TM218	88.0 78.40 : 108.66
Anthracene	TM218	88.5 70.90 : 109.22
Benz(a)anthracene	TM218	93.5 73.77 : 119.26



CERTIFICATE OF ANALYSIS

Validated

SDG: 201007-61
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 574528
Superseded Report:

PAH by GCMS

		QC 2398
Benzo(a)pyrene	TM218	90.5 73.20 : 114.18
Benzo(b)fluoranthene	TM218	95.5 75.36 : 117.58
Benzo(ghi)perylene	TM218	87.0 70.73 : 116.12
Benzo(k)fluoranthene	TM218	90.0 75.98 : 116.59
Chrysene	TM218	87.0 74.82 : 114.18
Dibenzo(ah)anthracene	TM218	87.5 69.17 : 115.30
Fluoranthene	TM218	89.0 75.88 : 112.84
Fluorene	TM218	88.0 76.66 : 107.56
Indeno(123cd)pyrene	TM218	98.0 70.26 : 117.95
Naphthalene	TM218	81.5 74.70 : 101.83
Phenanthrene	TM218	87.0 73.62 : 109.34
Pyrene	TM218	88.0 71.46 : 117.00

pH

Component	Method Code	QC 2391
pH	TM133	100.66 98.47 : 102.33

Phenols by HPLC (S)

Component	Method Code	QC 2336
2,3,5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	109.74 65.50 : 89.50
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	95.91 84.00 : 124.00
Catechol by HPLC (S)	TM062 (S)	92.38 19.39 : 135.70
Cresols by HPLC (S)	TM062 (S)	99.79 81.00 : 112.20
Naphthol by HPLC (S)	TM062 (S)	122.14 57.50 : 102.50
Phenol by HPLC (S)	TM062 (S)	105.96 88.67 : 124.67
Resorcinol HPLC (S)	TM062 (S)	101.26 69.99 : 127.22
Xylenols by HPLC (S)	TM062 (S)	106.25 95.22 : 115.89



CERTIFICATE OF ANALYSIS

Validated

SDG: 201007-61
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 574528
Superseded Report:

Semi Volatile Organic Compounds

Component	Method Code	QC 2382
4-Bromophenylphenylether (Soil)	TM157	90.5 63.50 : 114.50
Benzo(a)anthracene (Soil)	TM157	89.5 71.89 : 120.91
Hexachlorobutadiene (Soil)	TM157	95.5 69.80 : 117.77
Naphthalene (Soil)	TM157	95.0 70.00 : 115.00
Nitrobenzene (Soil)	TM157	96.0 70.00 : 118.00
Phenol (Soil)	TM157	97.0 72.00 : 117.00

Total Organic Carbon

Component	Method Code	QC 2317
Total Organic Carbon	TM132	106.25 87.02 : 113.45

VOC MS (S)

Component	Method Code	QC 2307
1,1,1,2-tetrachloroethane	TM116	93.6 86.59 : 118.97
1,1,1-Trichloroethane	TM116	101.6 86.26 : 117.53
1,1,2-Trichloroethane	TM116	96.0 75.16 : 112.70
1,1-Dichloroethane	TM116	103.4 83.27 : 122.16
1,2-Dichloroethane	TM116	107.2 89.30 : 133.10
1,4-Dichlorobenzene	TM116	98.8 82.59 : 123.23
2-Chlorotoluene	TM116	92.6 66.81 : 118.43
4-Chlorotoluene	TM116	90.8 65.88 : 114.76
Benzene	TM116	95.2 93.16 : 123.63
Carbon Disulphide	TM116	102.8 75.11 : 124.81
Carbontetrachloride	TM116	103.2 82.35 : 126.46
Chlorobenzene	TM116	93.2 85.07 : 118.13
Chloroform	TM116	105.0 88.13 : 122.71
Chloromethane	TM116	113.8 55.37 : 133.35



CERTIFICATE OF ANALYSIS

Validated

SDG: 201007-61
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 574528
Superseded Report:

VOC MS (S)

		QC 2307
Cis-1,2-Dichloroethene	TM116	102.0 78.27 : 128.90
Dibromomethane	TM116	95.2 77.47 : 121.29
Dichloromethane	TM116	111.2 87.89 : 134.72
Ethylbenzene	TM116	80.6 79.92 : 110.05
Hexachlorobutadiene	TM116	51.4 16.78 : 153.29
Isopropylbenzene	TM116	64.8 64.20 : 119.59
Naphthalene	TM116	107.0 79.29 : 125.59
o-Xylene	TM116	82.4 74.57 : 112.73
p/m-Xylene	TM116	77.4 76.47 : 108.99
Sec-Butylbenzene	TM116	52.8 44.71 : 117.87
Tetrachloroethene	TM116	87.8 85.86 : 122.95
Toluene	TM116	88.6 87.82 : 116.21
Trichloroethene	TM116	94.8 79.80 : 112.33
Trichlorofluoromethane	TM116	104.2 80.52 : 132.12
Vinyl Chloride	TM116	103.2 68.07 : 137.84

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.

The figure detailed is the percentage recovery result for the AQC.

The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.



CERTIFICATE OF ANALYSIS

Validated

SDG: 201007-61
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

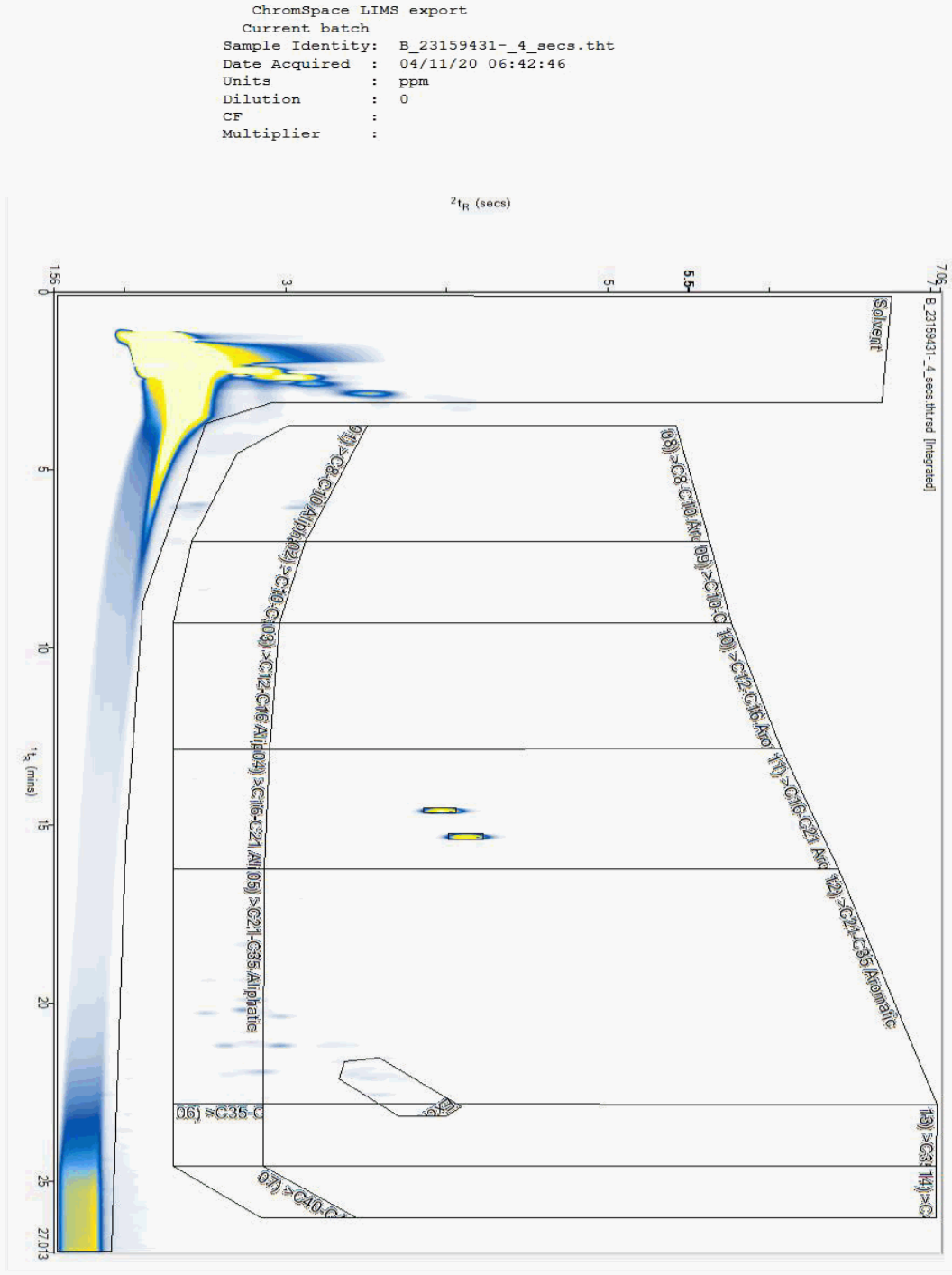
Report Number: 574528
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23159431
Sample ID : STP72202

Depth : 0.50





CERTIFICATE OF ANALYSIS

Validated

SDG: 201007-61
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

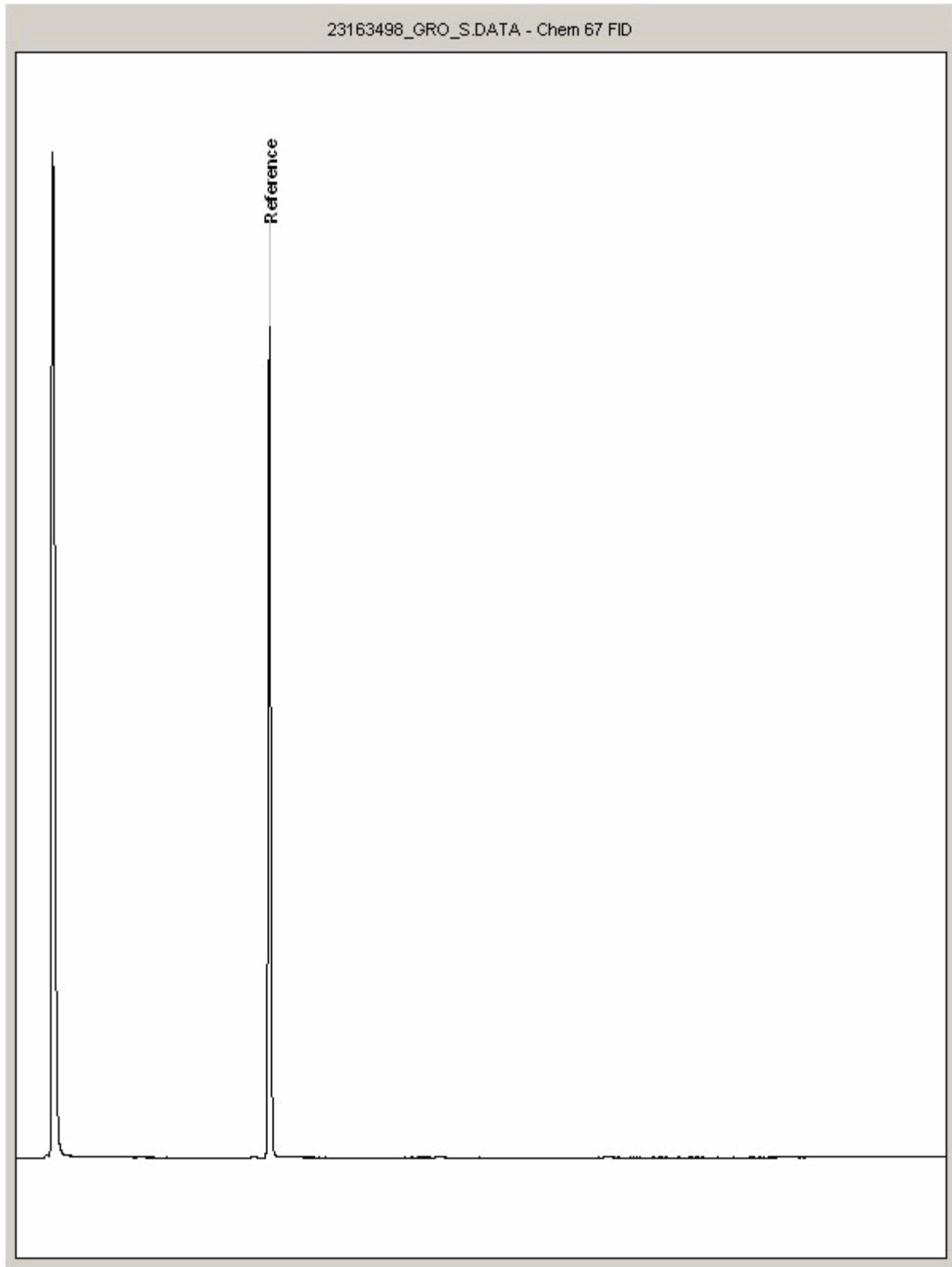
Report Number: 574528
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23163498
Sample ID : STP72202

Depth : 0.50





CERTIFICATE OF ANALYSIS

SDG: 201007-61 Client Reference: JFR1451 Report Number: 574528
 Location: A303 Stonehenge Order Number: Superseded Report:

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

19. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung. Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017)*.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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RPS Consultants Ltd
260 Park Avenue
Aztec West
Almondsbury
Bristol
BS32 4SY

Attention: Gary Riches

CERTIFICATE OF ANALYSIS

Date of report Generation: 18 December 2020
Customer: RPS Consultants Ltd
Sample Delivery Group (SDG): 201007-72
Your Reference: JFR1451
Location: A303 Stonehenge
Report No: 580694

This report has been revised and directly supersedes 575653 in its entirety.

We received 8 samples on Wednesday October 07, 2020 and 4 of these samples were scheduled for analysis which was completed on Friday December 18, 2020. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

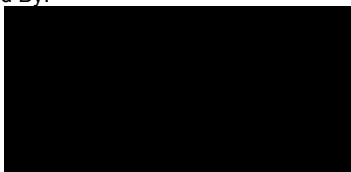
Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:



Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 201007-72 **Client Reference:** JFR1451 **Report Number:** 580694
Location: A303 Stonehenge **Order Number:** PQ20-856 **Superseded Report:** 575653

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
22981696	BH72602		3.50 - 3.95	02/10/2020
22981697	BH72602		4.50 - 4.95	02/10/2020
22981692	R70112		0.00	05/10/2020
22981693	R70112		0.25	05/10/2020
22981694	R70112		0.50	05/10/2020
22981695	R70112		1.00	05/10/2020
22981690	R72005		0.50	05/10/2020
22981691	R72005		1.00	05/10/2020

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG:	201007-72	Client Reference:	JFR1451	Report Number:	580694
Location:	A303 Stonehenge	Order Number:	PO20-856	Superseded Report:	575653

Results Legend

Test

No Determination Possible
Sample Types -

- S - Soil/Solid
- UNS - Unspecified Solid
- GW - Ground Water
- SW - Surface Water
- LE - Land Leachate
- PL - Prepared Leachate
- PR - Process Water
- SA - Saline Water
- TE - Trade Effluent
- TS - Treated Sewage
- US - Untreated Sewage
- RE - Recreational Water
- DW - Drinking Water Non-regulatory
- UNL - Unspecified Liquid
- SL - Sludge
- G - Gas
- OTH - Other

	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container				Sample Type
					22981696	22981693	22981695	22981691	
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 1							
Ammonium Soil by Titration	All	NDPs: 0 Tests: 4							
Anions by Kone (soil)	All	NDPs: 0 Tests: 4							
Anions by Kone (w)	All	NDPs: 0 Tests: 2							
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 2							
CEN Readings	All	NDPs: 0 Tests: 2							
Chromium III	All	NDPs: 0 Tests: 5							
Coronene	All	NDPs: 0 Tests: 1							
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 5							
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 2							
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 2							
EPH by GCxGC-FID	All	NDPs: 0 Tests: 1							
EPH CWG (Aliphatic) Filtered GC (W)	All	NDPs: 0 Tests: 1							
EPH CWG (Aromatic) Filtered GC (W)	All	NDPs: 0 Tests: 1							
EPH CWG GC (S)	All	NDPs: 0 Tests: 4							



CERTIFICATE OF ANALYSIS

Validated

SDG:	201007-72	Client Reference:	JFR1451	Report Number:	580694
Location:	A303 Stonehenge	Order Number:	PO20-856	Superseded Report:	575653

Results Legend <div style="display: flex; flex-direction: column; gap: 5px;"> <div style="display: flex; align-items: center;">X Test</div> <div style="display: flex; align-items: center;">N No Determination Possible</div> </div> Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type	
		22981696	BHT2802		3.50 - 3.95	250g Amber Jar (ALEZ10)	S
		22981693	R70112		0.25	1kg TUB with Handle (ALEZ280)	S
		22981695	R70112		1.00	250g Amber Jar (ALEZ10)	S
		22981691	R72005		1.00	60g VOC (ALEZ15)	S
						250g Amber Jar (ALEZ10)	S
						60g VOC (ALEZ15)	S
Fluoride	All	NDPs: 0 Tests: 1					
GRO by GC-FID (S)	All	NDPs: 1 Tests: 3	N				
GRO by GC-FID (W)	All	NDPs: 0 Tests: 1			X		
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 4			X	X	
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 1			X		
Mercury Dissolved	All	NDPs: 0 Tests: 2			X	X	
Metals in solid samples by OES	All	NDPs: 0 Tests: 4			X	X	
PAH 16 & 17 Calc	All	NDPs: 0 Tests: 1				X	
PAH by GCMS	All	NDPs: 0 Tests: 4			X	X	
PAH in waters by GC-MS (diss.filt)	All	NDPs: 0 Tests: 1			X		
PCBs by GCMS	All	NDPs: 0 Tests: 1				X	
pH	All	NDPs: 0 Tests: 4			X	X	
pH Value of Filtered Water	All	NDPs: 0 Tests: 1			X		
Phenols by HPLC (S)	All	NDPs: 0 Tests: 4			X	X	
Phenols by HPLC (W)	All	NDPs: 0 Tests: 2			X	X	



CERTIFICATE OF ANALYSIS

Validated

SDG:	201007-72	Client Reference:	JFR1451	Report Number:	580694
Location:	A303 Stonehenge	Order Number:	PO20-856	Superseded Report:	575653

Results Legend <div style="display: flex; flex-direction: column; gap: 5px;"> <div style="display: flex; align-items: center;">X Test</div> <div style="display: flex; align-items: center;">N No Determination Possible</div> </div> Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type	
		22981696	BHT2802		3.50 - 3.95	250g Amber Jar (ALEZ10)	S
		22981693	R70112		0.25	1kg TUB with Handle (ALEZ80)	S
		22981695	R70112		1.00	250g Amber Jar (ALEZ15)	S
		22981691	R72005		1.00	60g VOC (ALEZ15)	S
						250g Amber Jar (ALEZ10)	S
						60g VOC (ALEZ15)	S
Sample description	All				NDPs: 0 Tests: 4		
Semi Volatile Organic Compounds	All				NDPs: 0 Tests: 2		
Total Dissolved Solids	All				NDPs: 0 Tests: 1		
Total Organic Carbon	All				NDPs: 0 Tests: 4		
TPH CWG Filtered (W)	All				NDPs: 0 Tests: 1		
TPH CWG GC (S)	All				NDPs: 1 Tests: 3		
VOC MS (S)	All				NDPs: 1 Tests: 3		



CERTIFICATE OF ANALYSIS

Validated

SDG: 201007-72
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PO20-856

Report Number: 580694
Superseded Report: 575653

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm
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Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
22981696	BH72602	3.50 - 3.95	Light Brown	Stone/Soil	Stones	None
22981693	R70112	0.25	Dark Brown	Clay Loam	Vegetation	None
22981695	R70112	1.00	White	Chalk	None	None
22981691	R72005	1.00	White	Chalk	None	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.



CERTIFICATE OF ANALYSIS

Validated

SDG:	201007-72	Client Reference:	JFR1451	Report Number:	580694
Location:	A303 Stonehenge	Order Number:	PO20-856	Superseded Report:	575653

Results Legend			Customer Sample Ref.	BH72602	R70112	R70112	R72005		
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.fit Dissolved / filtered sample. tot.unfit Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4*3@ Sample deviation (see appendix)	Depth (m)	Sample Type	3.50 - 3.95	0.25	1.00	1.00			
	Date Sampled	Soil/Solid (S)	02/10/2020	05/10/2020	05/10/2020	05/10/2020			
	Sampled Time	Date Received	07/10/2020	07/10/2020	07/10/2020	07/10/2020			
	SDG Ref	Lab Sample No.(s)	201007-72 22981696	201007-72 22981693	201007-72 22981695	201007-72 22981691			
	AGS Reference								
Component	LOD/Units	Method							
Moisture Content Ratio (% of as received sample)	%	PM024	1.3	25	20	20			
Exchangeable Ammonia as N	<12 mg/kg	TM024	<12 @ #	<12 @ M	<12 @ #	<12 @ #			
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 @ #	<0.01 @ M	<0.01 @ #	<0.01 @ #			
Organic Carbon, Total	<0.2 %	TM132	<0.2 @ #	1.94 @ M	<0.2 @ #	0.203 @ #			
pH	1 pH Units	TM133	8.97 @ #	8.02 @ M	8.82 @ #	8.72 @ #			
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 @ #	<0.6 @ #	<0.6 @ #	<0.6 @ #			
Cyanide, Total	<1 mg/kg	TM153	<1 @ #	<1 @ M	<1 @ #	<1 @ #			
Cyanide, Free	<1 mg/kg	TM153	<1 @ #	<1 @ M	<1 @ #	<1 @ #			
PCB congener 28	<3 µg/kg	TM168			<3 @ #				
PCB congener 52	<3 µg/kg	TM168			<3 @ #				
PCB congener 101	<3 µg/kg	TM168			<3 @ #				
PCB congener 118	<3 µg/kg	TM168			<3 @ #				
PCB congener 138	<3 µg/kg	TM168			<3 @ #				
PCB congener 153	<3 µg/kg	TM168			<3 @ #				
PCB congener 180	<3 µg/kg	TM168			<3 @ #				
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168			<21 @ #				
Chromium, Trivalent	<0.9 mg/kg	TM181	2.47 #	7.29 #	1.27 #	3.42 #			
Antimony	<0.6 mg/kg	TM181	<0.6 #	<0.6 #	<0.6 #	<0.6 #			
Arsenic	<0.6 mg/kg	TM181	7.19 #	3.85 M	<0.6 #	0.625 #			
Beryllium	<0.01 mg/kg	TM181	0.201 #	0.301 M	0.0713 #	0.162 #			
Boron	<0.7 mg/kg	TM181	3.93 #	8.1 #	1.54 #	2.91 #			
Cadmium	<0.02 mg/kg	TM181	1.18 #	0.374 M	0.148 #	0.351 #			
Chromium	<0.9 mg/kg	TM181	2.47 #	7.29 M	1.27 #	3.42 #			
Copper	<1.4 mg/kg	TM181	4.87 #	7.74 M	<1.4 #	1.67 #			
Iron	<1000 mg/kg	TM181	14600 #	6270 #	<1000 #	2930 #			
Lead	<0.7 mg/kg	TM181	147 #	12.3 M	<0.7 #	1.45 #			
Manganese	<0.13 mg/kg	TM181	691 #	581 M	171 #	261 #			
Mercury	<0.14 mg/kg	TM181	<0.14 @ #	<0.14 @ M	<0.14 @ #	<0.14 @ #			
Molybdenum	<0.1 mg/kg	TM181	0.229 #	0.173 #	<0.1 #	<0.1 #			
Nickel	<0.2 mg/kg	TM181	5.61 #	7.87 M	2.74 #	3.88 #			
Phosphorus	<1 mg/kg	TM181	278 #	1460 #	464 #	542 #			
Selenium	<1 mg/kg	TM181	<1 #	<1 #	<1 #	<1 #			



CERTIFICATE OF ANALYSIS

Validated

SDG:	201007-72	Client Reference:	JFR1451	Report Number:	580694
Location:	A303 Stonehenge	Order Number:	PO20-856	Superseded Report:	575653

PAH by GCMS

Results Legend		Customer Sample Ref.	BH72602	R70112	R70112	R72005		
#	ISO17025 accredited.	Depth (m)	3.50 - 3.95	0.25	1.00	1.00		
M	mCERTS accredited.	Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
aq	Aqueous / settled sample.	Date Sampled	02/10/2020	05/10/2020	05/10/2020	05/10/2020		
diss.filt	Dissolved / filtered sample.	Sampled Time						
tot.unfilt	Total / unfiltered sample.	Date Received	07/10/2020	07/10/2020	07/10/2020	07/10/2020		
*	Subcontracted - refer to subcontractor report for accreditation status.	SDG Ref	201007-72	201007-72	201007-72	201007-72		
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery	Lab Sample No.(s)	22981696	22981693	22981695	22981691		
(F)	Trigger breach confirmed	AGS Reference						
1-4*\$@	Sample deviation (see appendix)							
Component	LOD/Units	Method						
Naphthalene-d8 % recovery**	%	TM218	80.5	88.6	90.5	87.8		
Acenaphthene-d10 % recovery**	%	TM218	81	88.3	91.1	90.6		
Phenanthrene-d10 % recovery**	%	TM218	87.1	87.4	93.4	90.1		
Chrysene-d12 % recovery**	%	TM218	79.6	81.9	89	88.4		
Perylene-d12 % recovery**	%	TM218	78.5	78.6	91.7	89.8		
Naphthalene	<9 µg/kg	TM218	<45 @ #	<9 @ M	<9 @ #	<9 @ #		
Acenaphthylene	<12 µg/kg	TM218	<60 @ #	<12 @ M	<12 @ #	<12 @ #		
Acenaphthene	<8 µg/kg	TM218	620 @ #	<8 @ M	<8 @ #	<8 @ #		
Fluorene	<10 µg/kg	TM218	1110 @ #	<10 @ M	<10 @ #	<10 @ #		
Phenanthrene	<15 µg/kg	TM218	8620 @ #	<15 @ M	<15 @ #	<15 @ #		
Anthracene	<16 µg/kg	TM218	2330 @ #	<16 @ M	<16 @ #	<16 @ #		
Fluoranthene	<17 µg/kg	TM218	9280 @ #	<17 @ M	<17 @ #	<17 @ #		
Pyrene	<15 µg/kg	TM218	7240 @ #	<15 @ M	<15 @ #	<15 @ #		
Benz(a)anthracene	<14 µg/kg	TM218	3040 @ #	<14 @ M	<14 @ #	<14 @ #		
Chrysene	<10 µg/kg	TM218	2570 @ #	<10 @ M	<10 @ #	<10 @ #		
Benzo(b)fluoranthene	<15 µg/kg	TM218	2950 @ #	<15 @ M	<15 @ #	<15 @ #		
Benzo(k)fluoranthene	<14 µg/kg	TM218	1110 @ #	<14 @ M	<14 @ #	<14 @ #		
Benzo(a)pyrene	<15 µg/kg	TM218	2130 @ #	<15 @ M	<15 @ #	<15 @ #		
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	1170 @ #	<18 @ M	<18 @ #	<18 @ #		
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	200 @ #	<23 @ M	<23 @ #	<23 @ #		
Benzo(g,h,i)perylene	<24 µg/kg	TM218	1100 @ #	<24 @ M	<24 @ #	<24 @ #		
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	43400 @ #	<118 @ M	<118 @ #	<118 @ #		



CERTIFICATE OF ANALYSIS

Validated

SDG:	201007-72	Client Reference:	JFR1451	Report Number:	580694
Location:	A303 Stonehenge	Order Number:	PO20-856	Superseded Report:	575653

Semi Volatile Organic Compounds

Results Legend			Customer Sample Ref.					
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.fit Dissolved / filtered sample. tot.unfit Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4*\$@ Sample deviation (see appendix)	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	R70112 0.25 Soil/Solid (S) 05/10/2020 07/10/2020 201007-72 22981693	R72005 1.00 Soil/Solid (S) 05/10/2020 07/10/2020 201007-72 22981691					
Component	LOD/Units	Method						
Phenol	<100 µg/kg	TM157	<100	<100				
Pentachlorophenol	<100 µg/kg	TM157	<100	<100				
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100	<100				
Nitrobenzene	<100 µg/kg	TM157	<100	<100				
Isophorone	<100 µg/kg	TM157	<100	<100				
Hexachloroethane	<100 µg/kg	TM157	<100	<100				
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<500	<500				
Hexachlorobutadiene	<100 µg/kg	TM157	<100	<100				
Hexachlorobenzene	<100 µg/kg	TM157	<100	<100				
n-Dioctyl phthalate	<100 µg/kg	TM157	<100	<100				
Dimethyl phthalate	<100 µg/kg	TM157	<100	<100				
Diethyl phthalate	<100 µg/kg	TM157	<100	<100				
n-Dibutyl phthalate	<100 µg/kg	TM157	<100	<100				
Dibenzofuran	<100 µg/kg	TM157	<100	<100				
Carbazole	<100 µg/kg	TM157	<100	<100				
Butylbenzyl phthalate	<100 µg/kg	TM157	<100	<100				
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100	<100				
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100	<100				
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100	<100				
Azobenzene	<100 µg/kg	TM157	<100	<100				
4-Nitrophenol	<100 µg/kg	TM157	<100	<100				
4-Nitroaniline	<100 µg/kg	TM157	<100	<100				
4-Methylphenol	<100 µg/kg	TM157	<100	<100				
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100	<100				
4-Chloroaniline	<100 µg/kg	TM157	<100	<100				
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100	<100				
4-Bromophenylphenylether	<100 µg/kg	TM157	<100	<100				
3-Nitroaniline	<100 µg/kg	TM157	<100	<100				
2-Nitrophenol	<100 µg/kg	TM157	<100	<100				
2-Nitroaniline	<100 µg/kg	TM157	<100	<100				
2-Methylphenol	<100 µg/kg	TM157	<100	<100				
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100	<100				



CERTIFICATE OF ANALYSIS

Validated

SDG: 201007-72
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PO20-856

Report Number: 580694
Superseded Report: 575653

Semi Volatile Organic Compounds

Results Legend		Customer Sample Ref.	R70112	R72005			
#	ISO17025 accredited.						
M	mCERTS accredited.						
sq	Aqueous / filtered sample.						
dis.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.						
*	Subcontracted - refer to subcontractor report for accreditation status.						
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery						
(F)	Trigger breach confirmed						
1-4*5@	Sample deviation (see appendix)						
		Depth (m)	0.25	1.00			
		Sample Type	Soil/Solid (S)	Soil/Solid (S)			
		Date Sampled	05/10/2020	05/10/2020			
		Sampled Time					
		Date Received	07/10/2020	07/10/2020			
		SDG Ref	201007-72	201007-72			
		Lab Sample No.(s)	22981693	22981691			
		AGS Reference					
Component	LOD/Units	Method					
2-Chlorophenol	<100 µg/kg	TM157	<100	<100			
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100	<100			
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100	<100			
2,4-Dimethylphenol	<100 µg/kg	TM157	<100	<100			
2,4-Dichlorophenol	<100 µg/kg	TM157	<100	<100			
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100	<100			
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100	<100			
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100	<100			
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100	<100			
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100	<100			
2-Chloronaphthalene	<100 µg/kg	TM157	<100	<100			
2-Methylnaphthalene	<100 µg/kg	TM157	<100	<100			
Acenaphthylene	<100 µg/kg	TM157	<100	<100			
Acenaphthene	<100 µg/kg	TM157	<100	<100			
Anthracene	<100 µg/kg	TM157	<100	<100			
Benzo(a)anthracene	<100 µg/kg	TM157	<100	<100			
Benzo(b)fluoranthene	<100 µg/kg	TM157	<100	<100			
Benzo(k)fluoranthene	<100 µg/kg	TM157	<100	<100			
Benzo(a)pyrene	<100 µg/kg	TM157	<100	<100			
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<100	<100			
Chrysene	<100 µg/kg	TM157	<100	<100			
Fluoranthene	<100 µg/kg	TM157	<100	<100			
Fluorene	<100 µg/kg	TM157	<100	<100			
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<100	<100			
Phenanthrene	<100 µg/kg	TM157	<100	<100			
Pyrene	<100 µg/kg	TM157	<100	<100			
Naphthalene	<100 µg/kg	TM157	<100	<100			
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100	<100			
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100	<100			
TIC report		TM157	Not Detected	Not Detected			
Total SVOC TIC	<100 µg/kg	TM157	<1000	<1000			



CERTIFICATE OF ANALYSIS

Validated

SDG: 201007-72
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PO20-856

Report Number: 580694
Superseded Report: 575653

TPH CWG (S)

Results Legend		Customer Sample Ref.	R70112	R70112	R72005			
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.25	1.00	1.00			
M	mCERTS accredited.		Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
aq	Aqueous / settled sample.		05/10/2020	05/10/2020	05/10/2020			
diss.filt	Dissolved / filtered sample.		07/10/2020	07/10/2020	07/10/2020			
tot.unfilt	Total / unfiltered sample.		201007-72	201007-72	201007-72			
*	Subcontracted - refer to subcontractor report for accreditation status.		22981693	22981695	22981691			
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery							
(F)	Trigger breach confirmed							
1-4*\$@	Sample deviation (see appendix)							
Component	LOD/Units		Method					
GRO Surrogate % recovery**	%	TM089	96.8 @	112 @	110 @			
Aliphatics >C5-C6	<10 µg/kg	TM089	<10 @	<10 @	<10 @			
Aliphatics >C6-C8	<10 µg/kg	TM089	<10 @	<10 @	<10 @			
Aliphatics >C8-C10	<10 µg/kg	TM089	<10 @	<10 @	<10 @			
Aliphatics >C10-C12	<1000 µg/kg	TM414	<1000	<1000	<1000			
Aliphatics >C12-C16	<1000 µg/kg	TM414	<1000	<1000	<1000			
Aliphatics >C16-C21	<1000 µg/kg	TM414	<1000	<1000	<1000			
Aliphatics >C21-C35	<1000 µg/kg	TM414	9770	<1000	<1000			
Aliphatics >C35-C44	<1000 µg/kg	TM414	<1000	<1000	<1000			
Total Aliphatics >C10-C44	<5000 µg/kg	TM414	10200	<5000	<5000			
Total Aliphatics & Aromatics >C10-C44	<10000 µg/kg	TM414	14800	<10000	<10000			
Aromatics >EC5-EC7	<10 µg/kg	TM089	<10 @	<10 @	<10 @			
Aromatics >EC7-EC8	<10 µg/kg	TM089	<10 @	<10 @	<10 @			
Aromatics >EC8-EC10	<10 µg/kg	TM089	<10 @	<10 @	<10 @			
Aromatics > EC10-EC12	<1000 µg/kg	TM414	<1000	<1000	<1000			
Aromatics > EC12-EC16	<1000 µg/kg	TM414	<1000	<1000	<1000			
Aromatics > EC16-EC21	<1000 µg/kg	TM414	<1000	<1000	<1000			
Aromatics > EC21-EC35	<1000 µg/kg	TM414	3410	<1000	<1000			
Aromatics >EC35-EC44	<1000 µg/kg	TM414	<1000	<1000	<1000			
Aromatics > EC40-EC44	<1000 µg/kg	TM414	<1000	<1000	<1000			
Total Aromatics > EC10-EC44	<5000 µg/kg	TM414	<5000	<5000	<5000			
Total Aliphatics & Aromatics >C5-C44	<10000 µg/kg	TM414	10200	<10000	<10000			
Total Aliphatics >C5-C10	<50 µg/kg	TM089	<50 @	<50 @	<50 @			
Total Aromatics >EC5-EC10	<50 µg/kg	TM089	<50 @	<50 @	<50 @			
GRO >C5-C10	<20 µg/kg	TM089	<20 @	<20 @	<20 @			



CERTIFICATE OF ANALYSIS

Validated

SDG:	201007-72	Client Reference:	JFR1451	Report Number:	580694
Location:	A303 Stonehenge	Order Number:	PO20-856	Superseded Report:	575653

VOC MS (S)

Results Legend		Customer Sample Ref.	R70112	R70112	R72005			
# ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference						
M mCERTS accredited.			0.25	1.00	1.00			
aq Aqueous / settled sample.			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
diss.fit Dissolved / filtered sample.			05/10/2020	05/10/2020	05/10/2020			
tot.unfit Total / unfiltered sample.								
* Subcontracted - refer to subcontractor report for accreditation status.			07/10/2020	07/10/2020	07/10/2020			
** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery			201007-72	201007-72	201007-72			
(F) Trigger breach confirmed			22981693	22981695	22981691			
1-4* @ Sample deviation (see appendix)								
Component	LOD/Units		Method					
Dibromofluoromethane**	%	TM116	120 @	110 @	107 @			
Toluene-d8**	%	TM116	92.5 @	96.7 @	96.9 @			
4-Bromofluorobenzene**	%	TM116	81.3 @	91.2 @	98.8 @			
Dichlorodifluoromethane	<6 µg/kg	TM116	<6 @ M		<6 @ #			
Chloromethane	<7 µg/kg	TM116	<7 @ #		<7 @ #			
Vinyl Chloride	<6 µg/kg	TM116	<6 @ M		<6 @ #			
Bromomethane	<10 µg/kg	TM116	<10 @ M		<10 @ #			
Chloroethane	<10 µg/kg	TM116	<10 @ M		<10 @ #			
Trichlorofluoromethane	<6 µg/kg	TM116	<6 @ M		<6 @ #			
1,1-Dichloroethene	<10 µg/kg	TM116	<10 @ #		<10 @ #			
Carbon Disulphide	<7 µg/kg	TM116	<7 @ M		<7 @ #			
Dichloromethane	<10 µg/kg	TM116	49.7 @ #		24.8 @ #			
Methyl Tertiary Butyl Ether	<10 µg/kg	TM116	<10 @ M	<10 @ #	<10 @ #			
trans-1,2-Dichloroethene	<10 µg/kg	TM116	<10 @ M		<10 @ #			
1,1-Dichloroethane	<8 µg/kg	TM116	<8 @ M		<8 @ #			
cis-1,2-Dichloroethene	<6 µg/kg	TM116	<6 @ M		<6 @ #			
2,2-Dichloropropane	<10 µg/kg	TM116	<10 @		<10 @			
Bromochloromethane	<10 µg/kg	TM116	<10 @ M		<10 @ #			
Chloroform	<8 µg/kg	TM116	<8 @ M		<8 @ #			
1,1,1-Trichloroethane	<7 µg/kg	TM116	<7 @ M		<7 @ #			
1,1-Dichloropropene	<10 µg/kg	TM116	<10 @ M		<10 @ #			
Carbontetrachloride	<10 µg/kg	TM116	<10 @ M		<10 @ #			
1,2-Dichloroethane	<5 µg/kg	TM116	<5 @ M		<5 @ #			
Benzene	<9 µg/kg	TM116	<9 @ M	<9 @ #	<9 @ #			
Trichloroethene	<9 µg/kg	TM116	<9 @ #		<9 @ #			
1,2-Dichloropropane	<10 µg/kg	TM116	<10 @ M		<10 @ #			
Dibromomethane	<9 µg/kg	TM116	<9 @ M		<9 @ #			
Bromodichloromethane	<7 µg/kg	TM116	<7 @ M		<7 @ #			
cis-1,3-Dichloropropene	<10 µg/kg	TM116	<10 @ M		<10 @ #			
Toluene	<7 µg/kg	TM116	<7 @ M	<7 @ #	<7 @ #			
trans-1,3-Dichloropropene	<10 µg/kg	TM116	<10 @		<10 @			
1,1,2-Trichloroethane	<10 µg/kg	TM116	<10 @ M		<10 @ #			



CERTIFICATE OF ANALYSIS

Validated

SDG:	201007-72	Client Reference:	JFR1451	Report Number:	580694
Location:	A303 Stonehenge	Order Number:	PO20-856	Superseded Report:	575653

VOC MS (S)

Results Legend		Customer Sample Ref.	R70112	R70112	R72005		
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.25	1.00	1.00		
M	mCERTS accredited.		Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
sq	Aqueous / filtered sample.		05/10/2020	05/10/2020	05/10/2020		
dis.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.						
*	Subcontracted - refer to subcontractor report for accreditation status.						
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		07/10/2020	07/10/2020	07/10/2020		
(F)	Trigger breach confirmed		201007-72	201007-72	201007-72		
1-4#	Sample deviation (see appendix)		22981693	22981695	22981691		
Component	LOD/Units		Method				
1,3-Dichloropropane	<7 µg/kg	TM116	<7 @ M		<7 @ #		
Tetrachloroethene	<5 µg/kg	TM116	<5 @ M		<5 @ #		
Dibromochloromethane	<10 µg/kg	TM116	<10 @ M		<10 @ #		
1,2-Dibromoethane	<10 µg/kg	TM116	<10 @ M		<10 @ #		
Chlorobenzene	<5 µg/kg	TM116	<5 @ M		<5 @ #		
1,1,1,2-Tetrachloroethane	<10 µg/kg	TM116	<10 @ M		<10 @ #		
Ethylbenzene	<4 µg/kg	TM116	<4 @ M	<4 @ #	<4 @ #		
p/m-Xylene	<10 µg/kg	TM116	<10 @ #	<10 @ #	<10 @ #		
o-Xylene	<10 µg/kg	TM116	<10 @ M	<10 @ #	<10 @ #		
Styrene	<10 µg/kg	TM116	<10 @ #		<10 @ #		
Bromoform	<10 µg/kg	TM116	<10 @ M		<10 @ #		
Isopropylbenzene	<5 µg/kg	TM116	<5 @ #		<5 @ #		
1,1,2,2-Tetrachloroethane	<10 µg/kg	TM116	<10 @ #		<10 @ #		
1,2,3-Trichloropropane	<16 µg/kg	TM116	<16 @ M		<16 @ #		
Bromobenzene	<10 µg/kg	TM116	<10 @ M		<10 @ #		
Propylbenzene	<10 µg/kg	TM116	<10 @ M		<10 @ #		
2-Chlorotoluene	<9 µg/kg	TM116	<9 @ M		<9 @ #		
1,3,5-Trimethylbenzene	<8 µg/kg	TM116	<8 @ M		<8 @ #		
4-Chlorotoluene	<10 µg/kg	TM116	<10 @ M		<10 @ #		
tert-Butylbenzene	<14 µg/kg	TM116	<14 @ M		<14 @ #		
1,2,4-Trimethylbenzene	<9 µg/kg	TM116	<9 @ #		<9 @ #		
sec-Butylbenzene	<10 µg/kg	TM116	<10 @		<10 @		
4-Isopropyltoluene	<10 µg/kg	TM116	<10 @ M		<10 @ #		
1,3-Dichlorobenzene	<8 µg/kg	TM116	<8 @ M		<8 @ #		
1,4-Dichlorobenzene	<5 µg/kg	TM116	<5 @ M		<5 @ #		
n-Butylbenzene	<11 µg/kg	TM116	<11 @		<11 @		
1,2-Dichlorobenzene	<10 µg/kg	TM116	<10 @ M		<10 @ #		
1,2-Dibromo-3-chloropropane	<14 µg/kg	TM116	<14 @ M		<14 @ #		
Tert-amyl methyl ether	<10 µg/kg	TM116	<10 @ #		<10 @ #		
1,2,4-Trichlorobenzene	<20 µg/kg	TM116	<20 @		<20 @		
Hexachlorobutadiene	<20 µg/kg	TM116	<20 @		<20 @		
Naphthalene	<13 µg/kg	TM116	<13 @ M		<13 @ #		



CERTIFICATE OF ANALYSIS

Validated

SDG: 201007-72
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PQ20-856

Report Number: 580694
Superseded Report: 575653

Asbestos Identification - Solid Samples

Results Legend

- # ISO17025 accredited.
- M mCERTS accredited.
- * Subcontracted test.
- (F) Trigger breach confirmed
- 1-5&*§@ Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	BH72602 3.50 - 3.95 SOLID 02/10/2020 00:00:00 07/10/2020 05:00:00 201007-72 22981696 TM048	15/12/2020	Barbara Urbanek-Walsh	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	R70112 0.25 SOLID 05/10/2020 00:00:00 07/10/2020 05:00:00 201007-72 22981693 TM048	06/11/20	Andrzej Fernecki	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected



CERTIFICATE OF ANALYSIS

Validated

SDG: 201007-72
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PO20-856

Report Number: 580694
Superseded Report: 575653

CEN 2:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/

Client Reference		Site Location	A303 Stonehenge
Mass Sample taken (kg)	0.239	Natural Moisture Content (%)	36.7
Mass of dry sample (kg)	0.175	Dry Matter Content (%)	73.2
Particle Size <4mm	>95%		

Case	
SDG	201007-72
Lab Sample Number(s)	22981693
Sampled Date	05-Oct-2020
Customer Sample Ref.	R70112
Depth (m)	0.25

Eluate Analysis	Conc ⁿ in 2:1 eluate (mg/l)		2:1 conc ⁿ leached (mg/kg)	
	Result	Limit of Detection	Result	Limit of Detection
Aliphatics >C12-C16	<0.01	<0.01	<0.02	<0.02
Aliphatics >C16-C21	<0.01	<0.01	<0.02	<0.02
Aliphatics >C21-C35	<0.01	<0.01	<0.02	<0.02
Total Aliphatics >C12-C35	<0.01	<0.01	<0.02	<0.02
Aromatics >EC12-EC16	<0.01	<0.01	<0.02	<0.02
Aromatics >EC16-EC21	<0.01	<0.01	<0.02	<0.02
Aromatics >EC21-EC35	<0.01	<0.01	<0.02	<0.02
Aromatics >EC16-EC35	<0.01	<0.01	<0.02	<0.02
Total Aromatics >EC12-EC35	<0.01	<0.01	<0.02	<0.02
TPH (Total Aliphatics + Total Aromatics) >C5-C35	<0.01	<0.01	<0.02	<0.02
Ammoniacal Nitrogen as N	<0.2	<0.2	<0.4	<0.4
Chromium III	<0.03	<0.03	<0.06	<0.06
Hexavalent Chromium	<0.03	<0.03	<0.06	<0.06
Sulphate (soluble)	<2	<2	<4	<4
Dissolved Organic Carbon	10.3	<3	20.6	<6
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.00002	<0.00002
Antimony	<0.001	<0.001	<0.002	<0.002
Naphthalene (diss.filt)	<0.00001	<0.00001	<0.00002	<0.00002
Total Cyanide (W)	<0.05	<0.05	<0.1	<0.1
Acenaphthene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Arsenic	0.00104	<0.0005	0.00208	<0.001
Free Cyanide (W)	<0.05	<0.05	<0.1	<0.1
Acenaphthylene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Phenol by HPLC (W)	<0.002	<0.002	<0.004	<0.004
Beryllium	<0.0001	<0.0001	<0.0002	<0.0002
Fluoranthene (diss.filt)	0.0000241	<0.000005	0.0000482	<0.00001
Anthracene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Boron	0.039	<0.01	0.078	<0.02
Phenanthrene (diss.filt)	0.0000107	<0.000005	0.0000214	<0.00001
Cadmium	<0.00008	<0.00008	<0.00016	<0.00016
Fluorene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Chrysene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Pyrene (diss.filt)	0.00000933	<0.000005	0.0000187	<0.00001
Benzo(a)anthracene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Chromium	<0.001	<0.001	<0.002	<0.002

Leach Test Information

Date Prepared	02-Nov-2020
pH (pH Units)	7.90
Conductivity (µS/cm)	402.00
Temperature (°C)	20.80
Volume Leachant (Litres)	0.285
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates

18/12/2020 12:08:31

12:08:06 18/12/2020



CERTIFICATE OF ANALYSIS

Validated

SDG:	201007-72	Client Reference:	JFR1451	Report Number:	580694
Location:	A303 Stonehenge	Order Number:	PO20-856	Superseded Report:	575653

CEN 2:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/'

Client Reference		Site Location	A303 Stonehenge
Mass Sample taken (kg)	0.239	Natural Moisture Content (%)	36.7
Mass of dry sample (kg)	0.175	Dry Matter Content (%)	73.2
Particle Size <4mm	>95%		

Case	
SDG	201007-72
Lab Sample Number(s)	22981693
Sampled Date	05-Oct-2020
Customer Sample Ref.	R70112
Depth (m)	0.25

Eluate Analysis	Conc ⁿ in 2:1 eluate (mg/l)		2:1 conc ⁿ leached (mg/kg)	
	Result	Limit of Detection	Result	Limit of Detection
Benzo(b)fluoranthene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Benzo(k)fluoranthene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Benzo(a)pyrene (diss.filt)	<0.000002	<0.000002	<0.000004	<0.000004
Copper	0.0102	<0.0003	0.0204	<0.0006
Dibenzo(a,h)anthracene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Lead	<0.0002	<0.0002	<0.0004	<0.0004
Benzo(g,h,i)perylene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Indeno(1,2,3-cd)pyrene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Manganese	<0.003	<0.003	<0.006	<0.006
Molybdenum	<0.003	<0.003	<0.006	<0.006
PAH 16 EPA Total by GCMS (diss.filt)	<0.000082	<0.000082	<0.000164	<0.000164
Nickel	0.00133	<0.0004	0.00266	<0.0008
Phosphorus	0.17	<0.01	0.34	<0.02
Selenium	<0.001	<0.001	<0.002	<0.002
Zinc	0.00539	<0.001	0.0108	<0.002
Calcium (Dis.Filt) mg/l	84.5	<0.2	169	<0.4
Iron (Dis.Filt) mg/l	<0.019	<0.019	<0.038	<0.038
TPH CWG (W)				
Surrogate Recovery	-	-	-	-
GRO TOT (C5-C12)	<0.05	<0.05	<0.1	<0.1
Aliphatics C5-C6	<0.01	<0.01	<0.02	<0.02
Aliphatics >C6-C8	<0.01	<0.01	<0.02	<0.02
Aliphatics >C8-C10	<0.01	<0.01	<0.02	<0.02
Aliphatics >C10-C12	<0.01	<0.01	<0.02	<0.02
Aromatics C6-C7	<0.01	<0.01	<0.02	<0.02
Aromatics >C7-C8	<0.01	<0.01	<0.02	<0.02
MTBE GC-FID	<0.003	<0.003	<0.006	<0.006
Aromatics >EC8 -EC10	<0.01	<0.01	<0.02	<0.02
Aromatics >EC10-EC12	<0.01	<0.01	<0.02	<0.02
Benzene by GC	<0.007	<0.007	<0.014	<0.014
Toluene by GC	<0.004	<0.004	<0.008	<0.008
Ethylbenzene by GC	<0.005	<0.005	<0.01	<0.01
m & p Xylene by GC	<0.008	<0.008	<0.016	<0.016
o Xylene by GC	<0.003	<0.003	<0.006	<0.006
Sum m&p and o Xylene by GC	<0.011	<0.011	<0.022	<0.022
Sum of BTEX by GC	<0.028	<0.028	<0.056	<0.056

Leach Test Information

Date Prepared	02-Nov-2020
pH (pH Units)	7.90
Conductivity (µS/cm)	402.00
Temperature (°C)	20.80
Volume Leachant (Litres)	0.285
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
 Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
 Mcerts Certification does not apply to leachates

18/12/2020 12:08:31



CERTIFICATE OF ANALYSIS

Validated

SDG:	201007-72	Client Reference:	JFR1451	Report Number:	580694
Location:	A303 Stonehenge	Order Number:	PO20-856	Superseded Report:	575653

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		Site Location	A303 Stonehenge
Mass Sample taken (kg)	0.107	Natural Moisture Content (%)	19.2
Mass of dry sample (kg)	0.090	Dry Matter Content (%)	83.9
Particle Size <4mm	>95%		

Case	
SDG	201007-72
Lab Sample Number(s)	22981695
Sampled Date	05-Oct-2020
Customer Sample Ref.	R70112
Depth (m)	1.00

Landfill Waste Acceptance Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	-
6	-	-
1	-	-
500	-	-
100	-	-
-	>6	-
-	-	-
-	-	-

Solid Waste Analysis	Result
Total Organic Carbon (%)	<0.2
Loss on Ignition (%)	-
Sum of BTEX (mg/kg)	<0.04
Sum of 7 PCBs (mg/kg)	<0.021
Mineral Oil (mg/kg)	<5
PAH Sum of 17 (mg/kg)	<10
pH (pH Units)	8.82
ANC to pH 6 (mol/kg)	-
ANC to pH 4 (mol/kg)	-

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection	Inert	Stable Non-reactive	Hazardous
Arsenic	<0.0005	<0.0005	<0.005	<0.005	0.5	2	25
Barium	0.00199	<0.0002	0.0199	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00249	<0.0003	0.0249	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.000403	<0.0004	0.00403	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00116	<0.001	0.0116	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	39.6	<5	396	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	<3	<3	<30	<30	500	800	1000

Leach Test Information

Date Prepared	06-Nov-2020
pH (pH Units)	8.70
Conductivity (µS/cm)	50.50
Temperature (°C)	21.40
Volume Leachant (Litres)	0.883

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
 Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
 Mcerts Certification does not apply to leachates

18/12/2020 12:08:39



CERTIFICATE OF ANALYSIS

Validated

SDG: 201007-72 **Client Reference:** JFR1451 **Report Number:** 580694
Location: A303 Stonehenge **Order Number:** PQ20-856 **Superseded Report:** 575653

Notification of NDPs (No determination possible)

Date Received : 07/10/2020 13:37:37

Sample No	Customer Sample Ref.	Depth (m)	Test	Comment
22981696	BH72602	3.50 - 3.95	GRO by GC-FID (S)	Insufficient Sample
22981696	BH72602	3.50 - 3.95	VOC MS (S)	Insufficient Sample
22981696	BH72602	3.50 - 3.95	TPH CWG GC (S)	Insufficient Sample



CERTIFICATE OF ANALYSIS

Validated

SDG:	201007-72	Client Reference:	JFR1451	Report Number:	580694
Location:	A303 Stonehenge	Order Number:	PO20-856	Superseded Report:	575653

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM104	Method 4500F, AWWA/APHA, 20th Ed., 1999	Determination of Fluoride using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM123	BS 2690: Part 121:1981	The Determination of Total Dissolved Solids in Water
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM174	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID
TM178	Modified: US EPA Method 8100	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS in Waters
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser
TM243		Mixed Anions In Soils By Kone
TM245	By GC-FID	Determination of GRO by Headspace in waters
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC
TM410	Shaker extraction-In house coronene method	Determination of Coronene in soils by GCMS
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).



CERTIFICATE OF ANALYSIS

Validated

SDG: 201007-72
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PO20-856

Report Number: 580694
Superseded Report: 575653

Test Completion Dates

Lab Sample No(s)	22981696	22981693	22981695	22981691
Customer Sample Ref.	BH72602	R70112	R70112	R72005
AGS Ref.				
Depth	3.50 - 3.95	0.25	1.00	1.00
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)

Ammoniacal Nitrogen		05-Nov-2020		
Ammonium Soil by Titration	17-Dec-2020	05-Nov-2020	05-Nov-2020	05-Nov-2020
Anions by Kone (soil)	18-Dec-2020	06-Nov-2020	06-Nov-2020	06-Nov-2020
Anions by Kone (w)		06-Nov-2020	12-Nov-2020	
Asbestos ID in Solid Samples	15-Dec-2020	06-Nov-2020		
CEN 10:1 Leachate (1 Stage)			10-Nov-2020	
CEN 2:1 Leachate (1 Stage)		03-Nov-2020		
CEN Readings		05-Nov-2020	12-Nov-2020	
Chromium III	16-Dec-2020	09-Nov-2020	06-Nov-2020	06-Nov-2020
Coronene			11-Nov-2020	
Cyanide Comp/Free/Total/Thiocyanate	15-Dec-2020	06-Nov-2020	06-Nov-2020	05-Nov-2020
Dissolved Metals by ICP-MS		09-Nov-2020	14-Nov-2020	
Dissolved Organic/Inorganic Carbon		06-Nov-2020	12-Nov-2020	
EPH by GCxGC-FID			09-Nov-2020	
EPH CWG (Aliphatic) Filtered GC (W)		07-Nov-2020		
EPH CWG (Aromatic) Filtered GC (W)		07-Nov-2020		
EPH CWG GC (S)	16-Dec-2020	06-Nov-2020	06-Nov-2020	06-Nov-2020
Fluoride			12-Nov-2020	
GRO by GC-FID (S)		03-Nov-2020	03-Nov-2020	03-Nov-2020
GRO by GC-FID (W)		06-Nov-2020		
Hexavalent Chromium (s)	15-Dec-2020	06-Nov-2020	06-Nov-2020	06-Nov-2020
Hexavalent Chromium (w)		06-Nov-2020		
Mercury Dissolved		06-Nov-2020	13-Nov-2020	
Metals in solid samples by OES	17-Dec-2020	05-Nov-2020	05-Nov-2020	05-Nov-2020
Moisture at 105C		02-Nov-2020	06-Nov-2020	
PAH 16 & 17 Calc			11-Nov-2020	
PAH by GCMS	16-Dec-2020	05-Nov-2020	11-Nov-2020	05-Nov-2020
PAH in waters by GC-MS (diss.filt)		06-Nov-2020		
PCBs by GCMS			11-Nov-2020	
pH	14-Dec-2020	04-Nov-2020	04-Nov-2020	04-Nov-2020
pH Value of Filtered Water		06-Nov-2020		
Phenols by HPLC (S)	15-Dec-2020	05-Nov-2020	05-Nov-2020	05-Nov-2020
Phenols by HPLC (W)		09-Nov-2020	13-Nov-2020	
Sample description	12-Dec-2020	31-Oct-2020	31-Oct-2020	31-Oct-2020
Semi Volatile Organic Compounds		04-Nov-2020		04-Nov-2020
Total Dissolved Solids			11-Nov-2020	
Total Organic Carbon	17-Dec-2020	06-Nov-2020	06-Nov-2020	05-Nov-2020
TPH CWG Filtered (W)		07-Nov-2020		
TPH CWG GC (S)		06-Nov-2020	06-Nov-2020	06-Nov-2020
VOC MS (S)		04-Nov-2020	04-Nov-2020	04-Nov-2020



CERTIFICATE OF ANALYSIS

Validated

SDG:	201007-72	Client Reference:	JFR1451	Report Number:	580694
Location:	A303 Stonehenge	Order Number:	PO20-856	Superseded Report:	575653

ASSOCIATED AQC DATA

Ammoniacal Nitrogen

Component	Method Code	QC 2309
Ammoniacal Nitrogen as N	TM099	97.6 93.14 : 108.60

Ammonium Soil by Titration

Component	Method Code	QC 2379	QC 2309
Exchangeable Ammonium as NH4	TM024	84.08 76.20 : 110.13	80.1 76.20 : 110.13

Anions by Kone (soil)

Component	Method Code	QC 2378	QC 2320	QC 2316
Chloride (soluble)	TM243	139.38 86.68 : 115.67	142.49 86.68 : 115.67	141.97 86.68 : 115.67
Water Soluble Sulphate as SO4 2:1 Extract	TM243	162.15 70.00 : 130.00	159.81 70.00 : 130.00	154.21 70.00 : 130.00

Anions by Kone (w)

Component	Method Code	QC 2364	QC 2359
Chloride	TM184	98.8 92.93 : 115.43	105.0 94.04 : 108.61
Sulphate (soluble)	TM184	101.2 90.53 : 113.03	102.0 91.99 : 109.30

Coronene

Component	Method Code	QC 2398
Coronene RAW	TM410	115.5 79.43 : 137.78

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2395	QC 2392	QC 2368	QC 2382
Free Cyanide	TM153	94.85 78.61 : 114.43	92.87 78.61 : 114.43		92.08 78.61 : 114.43
Free Cyanide (W)	TM227			100.75 90.50 : 114.50	
Thiocyanate	TM153	100.64 90.48 : 109.52	96.79 90.48 : 109.52		100.64 90.48 : 109.52



CERTIFICATE OF ANALYSIS

Validated

SDG:	201007-72	Client Reference:	JFR1451	Report Number:	580694
Location:	A303 Stonehenge	Order Number:	PO20-856	Superseded Report:	575653

Cyanide Comp/Free/Total/Thiocyanate

		QC 2395	QC 2392	QC 2368	QC 2382
Thiocyanate (W)	TM227			102.0 90.50 : 113.00	
Total Cyanide	TM153	95.8 76.80 : 112.96	94.41 76.80 : 112.96		97.2 76.80 : 112.96
Total Cyanide (W)	TM227			101.0 91.75 : 112.75	

Dissolved Metals by ICP-MS

Component	Method Code	QC 2368	QC 2376
Aluminium	TM152	100.67 94.21 : 111.52	105.67 94.21 : 111.52
Antimony	TM152	96.5 88.37 : 130.57	104.5 88.37 : 130.57
Arsenic	TM152	97.83 92.62 : 113.52	103.5 92.62 : 113.52
Barium	TM152	97.0 88.62 : 113.14	97.17 88.62 : 113.14
Beryllium	TM152	100.5 87.08 : 111.38	111.33 87.08 : 111.38
Bismuth	TM152	96.0 92.62 : 115.02	104.33 92.62 : 115.02
Boron	TM152	91.33 86.31 : 120.88	106.0 86.31 : 120.88
Cadmium	TM152	101.5 93.85 : 111.65	107.0 93.85 : 111.65
Calcium	TM152	96.67 89.20 : 126.91	101.33 89.20 : 126.91
Chromium	TM152	97.67 92.22 : 109.85	101.83 92.22 : 109.85
Cobalt	TM152	97.67 85.01 : 114.87	99.67 85.01 : 114.87
Copper	TM152	99.0 89.87 : 119.73	104.0 89.87 : 119.73
Iron	TM152	98.0 93.02 : 113.86	101.33 93.02 : 113.86
Lead	TM152	96.33 91.11 : 116.98	102.67 91.11 : 116.98
Lithium	TM152	99.33 91.30 : 123.00	109.67 91.30 : 123.00
Magnesium	TM152	94.67 89.60 : 116.61	108.0 89.60 : 116.61
Manganese	TM152	96.0 93.97 : 112.46	99.67 93.97 : 112.46
Molybdenum	TM152	95.0 89.07 : 110.96	100.17 89.07 : 110.96
Nickel	TM152	98.83 93.70 : 112.15	99.67 93.70 : 112.15
Phosphorus	TM152	97.83 89.24 : 114.18	103.83 89.24 : 114.18
Potassium	TM152	98.0 93.20 : 115.55	102.67 93.20 : 115.55
Selenium	TM152	100.83 91.69 : 117.12	103.67 91.69 : 117.12



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Dissolved Metals by ICP-MS

		QC 2368	QC 2376
Silver	TM152	92.5 90.93 : 121.73	98.33 90.93 : 121.73
Sodium	TM152	94.0 92.42 : 113.24	106.67 92.42 : 113.24
Strontium	TM152	99.0 92.14 : 116.24	100.33 92.14 : 116.24
Tellurium	TM152	93.5 89.88 : 111.78	92.17 89.88 : 111.78
Thallium	TM152	88.17 82.43 : 113.83	89.67 82.43 : 113.83
Tin	TM152	96.0 94.62 : 107.79	99.33 94.62 : 107.79
Titanium	TM152	102.33 90.29 : 115.23	98.33 90.29 : 115.23
Tungsten	TM152	94.5 77.61 : 132.31	99.0 77.61 : 132.31
Uranium	TM152	93.67 86.97 : 115.76	99.17 86.97 : 115.76
Vanadium	TM152	90.17 89.61 : 115.48	105.0 89.61 : 115.48
Zinc	TM152	99.33 87.51 : 116.26	109.67 87.51 : 116.26

Dissolved Organic/Inorganic Carbon

Component	Method Code	QC 2324	QC 2380
Dissolved Inorganic Carbon	TM090	101.5 91.27 : 109.87	104.0 93.58 : 112.28
Dissolved Organic Carbon	TM090	101.67 96.58 : 107.98	101.0 96.28 : 110.58

EPH CWG GC (S)

Component	Method Code	QC 2320
EPH >C8-C40 Raw	TM414	87.56 56.39 : 129.94
Total Aliphatics Raw	TM414	94.13 62.55 : 133.12
Total Aromatics Raw	TM414	89.55 57.00 : 150.27

Fluoride

Component	Method Code	QC 2340
Fluoride	TM104	103.33 95.51 : 107.24

GRO by GC-FID (S)



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GRO by GC-FID (S)

Component	Method Code	QC 2359
QC	TM089	89.35 70.75 : 114.19

GRO by GC-FID (W)

Component	Method Code	QC 2387
Benzene by GC	TM245	99.0 81.54 : 119.70
Ethylbenzene by GC	TM245	102.0 80.99 : 121.09
m & p Xylene by GC	TM245	101.75 82.77 : 123.19
MTBE GC-FID	TM245	97.5 80.06 : 123.27
o Xylene by GC	TM245	102.0 84.26 : 121.50
QC	TM245	99.93 76.13 : 145.89
Toluene by GC	TM245	100.5 82.78 : 121.99

Hexavalent Chromium (s)

Component	Method Code	QC 2323	QC 2365	QC 2377
Hexavalent Chromium	TM151	100.0 92.00 : 111.20	106.0 92.00 : 111.20	108.0 92.00 : 111.20

Mercury Dissolved

Component	Method Code	QC 2384	QC 2323
Mercury Dissolved (CVAf)	TM183	115.0 0.00 : 0.00	97.4 69.30 : 128.70

Metals in solid samples by OES

Component	Method Code	QC 2330	QC 2396	QC 2305
Aluminium	TM181	94.69 73.56 : 108.85	89.38 73.56 : 108.85	103.54 73.56 : 108.85
Antimony	TM181	94.72 76.89 : 111.24	92.68 76.89 : 111.24	95.12 76.89 : 111.24
Arsenic	TM181	97.67 88.53 : 111.01	97.38 88.53 : 111.01	105.23 88.53 : 111.01
Barium	TM181	92.66 77.67 : 105.35	87.34 77.67 : 105.35	103.67 77.67 : 105.35



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Metals in solid samples by OES

		QC 2330	QC 2396	QC 2305
Beryllium	TM181	100.75 85.44 : 109.61	89.55 85.44 : 109.61	104.48 85.44 : 109.61
Boron	TM181	90.83 73.51 : 104.66	87.97 73.51 : 104.66	100.0 73.51 : 104.66
Cadmium	TM181	94.24 77.67 : 104.12	89.71 77.67 : 104.12	91.77 77.67 : 104.12
Chromium	TM181	90.06 86.11 : 106.21	88.03 86.11 : 106.21	95.94 86.11 : 106.21
Cobalt	TM181	92.45 84.60 : 104.13	86.48 84.60 : 104.13	94.65 84.60 : 104.13
Copper	TM181	88.03 82.40 : 105.45	89.08 82.40 : 105.45	97.71 82.40 : 105.45
Iron	TM181	96.83 82.95 : 110.58	90.48 82.95 : 110.58	102.38 82.95 : 110.58
Lead	TM181	99.1 78.24 : 104.05	87.84 78.24 : 104.05	96.4 78.24 : 104.05
Manganese	TM181	106.67 94.29 : 119.51	103.33 94.29 : 119.51	111.94 94.29 : 119.51
Mercury	TM181	92.27 83.16 : 107.81	90.82 83.16 : 107.81	101.93 83.16 : 107.81
Molybdenum	TM181	99.59 87.11 : 106.87	92.18 87.11 : 106.87	101.23 87.11 : 106.87
Nickel	TM181	90.22 80.26 : 102.28	88.51 80.26 : 102.28	97.07 80.26 : 102.28
Phosphorus	TM181	106.67 94.56 : 124.28	103.23 94.56 : 124.28	112.93 94.56 : 124.28
Selenium	TM181	100.78 82.28 : 110.48	95.69 82.28 : 110.48	103.53 82.28 : 110.48
Strontium	TM181	90.65 79.13 : 102.79	83.07 79.13 : 102.79	101.56 79.13 : 102.79
Thallium	TM181	94.69 82.94 : 111.86	94.25 82.94 : 111.86	105.75 82.94 : 111.86
Tin	TM181	100.0 86.72 : 110.03	95.06 86.72 : 110.03	107.22 86.72 : 110.03
Titanium	TM181	87.79 66.23 : 102.06	83.97 66.23 : 102.06	88.55 66.23 : 102.06
Vanadium	TM181	98.17 86.19 : 109.45	90.48 86.19 : 109.45	105.13 86.19 : 109.45
Zinc	TM181	98.77 84.68 : 113.99	93.63 84.68 : 113.99	102.46 84.68 : 113.99

PAH by GCMS

Component	Method Code	QC 2372	QC 2398	QC 2385	QC 2326
Acenaphthene	TM218	88.5 73.47 : 109.80	86.5 76.79 : 103.90	89.5 76.79 : 103.90	87.5 78.59 : 112.16
Acenaphthylene	TM218	89.0 70.00 : 130.00	88.0 78.40 : 108.66	90.0 78.40 : 108.66	83.5 75.11 : 109.01
Anthracene	TM218	85.0 68.68 : 111.89	88.5 70.90 : 109.22	88.0 70.90 : 109.22	81.5 73.99 : 113.85
Benz(a)anthracene	TM218	87.5 68.12 : 118.39	93.5 73.77 : 119.26	88.0 73.77 : 119.26	82.0 69.31 : 119.18
Benzo(a)pyrene	TM218	85.5 71.72 : 115.31	90.5 73.20 : 114.18	83.5 73.20 : 114.18	80.0 66.97 : 114.92



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PAH by GCMS

		QC 2372	QC 2398	QC 2385	QC 2326
Benzo(b)fluoranthene	TM218	85.0 66.89 : 120.40	95.5 75.36 : 117.58	84.0 75.36 : 117.58	77.0 67.41 : 114.46
Benzo(ghi)perylene	TM218	86.0 67.82 : 118.49	87.0 70.73 : 116.12	79.0 70.73 : 116.12	74.0 62.92 : 114.36
Benzo(k)fluoranthene	TM218	88.5 73.10 : 117.03	90.0 75.98 : 116.59	83.0 75.98 : 116.59	79.0 69.98 : 116.49
Chrysene	TM218	85.5 69.58 : 115.47	87.0 74.82 : 114.18	85.5 74.82 : 114.18	81.5 69.86 : 114.50
Dibenzo(ah)anthracene	TM218	86.5 67.32 : 121.35	87.5 69.17 : 115.30	81.5 69.17 : 115.30	73.0 64.54 : 115.22
Fluoranthene	TM218	87.5 75.16 : 117.28	89.0 75.88 : 112.84	89.5 75.88 : 112.84	82.5 72.56 : 111.70
Fluorene	TM218	88.0 73.81 : 108.66	88.0 76.66 : 107.56	90.5 76.66 : 107.56	89.0 79.13 : 111.49
Indeno(123cd)pyrene	TM218	88.0 68.91 : 117.62	98.0 70.26 : 117.95	81.0 70.26 : 117.95	72.5 61.22 : 113.25
Naphthalene	TM218	87.5 72.12 : 106.18	81.5 74.70 : 101.83	82.0 74.70 : 101.83	87.0 77.96 : 110.91
Phenanthrene	TM218	86.5 69.01 : 113.72	87.0 73.62 : 109.34	91.0 73.62 : 109.34	85.0 76.83 : 113.25
Pyrene	TM218	86.5 75.68 : 119.23	88.0 71.46 : 117.00	86.0 71.46 : 117.00	82.0 72.45 : 110.77

PAH in waters by GC-MS (diss.filt)

Component	Method Code	QC 2331
Acenaphthene (diss.filt)	TM178	108.8 94.00 : 120.40
Acenaphthylene (diss.filt)	TM178	98.4 91.20 : 117.60
Anthracene (diss.filt)	TM178	104.0 91.20 : 112.80
Benzo(a)anthracene (diss.filt)	TM178	101.2 86.80 : 115.60
Benzo(a)pyrene (diss.filt)	TM178	100.0 85.20 : 114.00
Benzo(b)fluoranthene (diss.filt)	TM178	101.2 86.40 : 117.60
Benzo(g,h,i)perylene (diss.filt)	TM178	110.8 87.60 : 121.20
Benzo(k)fluoranthene (diss.filt)	TM178	108.8 91.20 : 124.80
Chrysene (diss.filt)	TM178	111.2 95.20 : 124.00
Dibenzo(a,h)anthracene (diss.filt)	TM178	103.2 84.80 : 118.40
Fluoranthene (diss.filt)	TM178	110.8 91.20 : 120.00
Fluorene (diss.filt)	TM178	112.0 93.20 : 119.60
Indeno(1,2,3-cd)pyrene (diss.filt)	TM178	100.8 86.80 : 115.60
Naphthalene (diss.filt)	TM178	108.4 90.40 : 126.40



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PAH in waters by GC-MS (diss.filt)

		QC 2331
Phenanthrene (diss.filt)	TM178	103.2 94.40 : 118.40
Pyrene (diss.filt)	TM178	112.8 93.60 : 120.00

PCBs by GCMS

Component	Method Code	QC 2303
PCB congener 101	TM168	85.2 79.46 : 109.70
PCB congener 105	TM168	73.2 66.33 : 105.75
PCB congener 114	TM168	72.5 66.41 : 106.49
PCB congener 118	TM168	76.3 70.33 : 110.29
PCB congener 123	TM168	81.0 65.01 : 99.81
PCB congener 126	TM168	74.7 59.31 : 109.23
PCB congener 138	TM168	70.7 63.95 : 107.63
PCB congener 153	TM168	72.9 62.65 : 108.85
PCB congener 156	TM168	73.6 61.69 : 112.27
PCB congener 157	TM168	74.6 67.15 : 109.93
PCB congener 167	TM168	70.5 65.58 : 109.14
PCB congener 169	TM168	67.2 56.84 : 112.10
PCB congener 180	TM168	76.0 66.99 : 111.63
PCB congener 189	TM168	66.8 57.75 : 112.59
PCB congener 28	TM168	76.8 73.68 : 105.96
PCB congener 52	TM168	74.9 67.24 : 107.62
PCB congener 77	TM168	73.2 64.87 : 108.49
PCB congener 81	TM168	77.2 70.78 : 110.80

pH

Component	Method Code	QC 2377	QC 2391	QC 2353
pH	TM133	100.4 98.47 : 102.33	100.66 98.47 : 102.33	100.66 98.71 : 102.32



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pH Value of Filtered Water

Component	Method Code	QC 2324
pH	TM256	101.2 99.33 : 102.54

Phenols by HPLC (S)

Component	Method Code	QC 2326	QC 2390
2,3,5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	103.25 65.50 : 89.50	103.9 65.50 : 89.50
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	89.47 84.00 : 124.00	88.89 84.00 : 124.00
Catechol by HPLC (S)	TM062 (S)	80.0 19.39 : 135.70	92.38 19.39 : 135.70
Cresols by HPLC (S)	TM062 (S)	93.32 81.00 : 112.20	92.48 81.00 : 112.20
Naphthol by HPLC (S)	TM062 (S)	113.57 57.50 : 102.50	119.29 57.50 : 102.50
Phenol by HPLC (S)	TM062 (S)	98.01 88.67 : 124.67	96.69 88.67 : 124.67
Resorcinol HPLC (S)	TM062 (S)	94.97 69.99 : 127.22	94.97 69.99 : 127.22
Xylenols by HPLC (S)	TM062 (S)	99.27 95.22 : 115.89	99.17 93.00 : 121.00

Phenols by HPLC (W)

Component	Method Code	QC 2355
2,3,5 Trimethyl-Phenol by HPLC (W)	TM259	99.0 91.00 : 109.00
2-Isopropyl Phenol by HPLC (W)	TM259	96.0 85.00 : 109.00
Cresols by HPLC (W)	TM259	100.0 93.00 : 115.00
Naphthol by HPLC (W)	TM259	104.0 86.00 : 128.00
Phenol by HPLC (W)	TM259	100.0 88.24 : 111.76
Xylenols by HPLC (W)	TM259	101.17 94.83 : 110.83

Semi Volatile Organic Compounds

Component	Method Code	QC 2382
4-Bromophenylphenylether (Soil)	TM157	90.5 63.50 : 114.50
Benzo(a)anthracene (Soil)	TM157	89.5 71.89 : 120.91
Hexachlorobutadiene (Soil)	TM157	95.5 69.80 : 117.77
Naphthalene (Soil)	TM157	95.0 70.00 : 115.00
Nitrobenzene (Soil)	TM157	96.0 70.00 : 118.00



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Semi Volatile Organic Compounds

		QC 2382
Phenol (Soil)	TM157	97.0 72.00 : 117.00

Total Dissolved Solids

Component	Method Code	QC 2314
Total Dissolved Solids	TM123	99.2 97.30 : 100.92

Total Organic Carbon

Component	Method Code	QC 2315	QC 2368	QC 2358
Total Organic Carbon	TM132	104.69 87.02 : 113.45	106.25 87.02 : 113.45	106.64 87.02 : 113.45

VOC MS (S)

Component	Method Code	QC 2307
1,1,1,2-tetrachloroethane	TM116	93.6 86.59 : 118.97
1,1,1-Trichloroethane	TM116	101.6 86.26 : 117.53
1,1,2-Trichloroethane	TM116	96.0 75.16 : 112.70
1,1-Dichloroethane	TM116	103.4 83.27 : 122.16
1,2-Dichloroethane	TM116	107.2 89.30 : 133.10
1,4-Dichlorobenzene	TM116	98.8 82.59 : 123.23
2-Chlorotoluene	TM116	92.6 66.81 : 118.43
4-Chlorotoluene	TM116	90.8 65.88 : 114.76
Benzene	TM116	95.2 93.16 : 123.63
Carbon Disulphide	TM116	102.8 75.11 : 124.81
Carbontetrachloride	TM116	103.2 82.35 : 126.46
Chlorobenzene	TM116	93.2 85.07 : 118.13
Chloroform	TM116	105.0 88.13 : 122.71
Chloromethane	TM116	113.8 55.37 : 133.35
Cis-1,2-Dichloroethene	TM116	102.0 78.27 : 128.90



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VOC MS (S)

		QC 2307
Dibromomethane	TM116	95.2 77.47 : 121.29
Dichloromethane	TM116	111.2 87.89 : 134.72
Ethylbenzene	TM116	80.6 79.92 : 110.05
Hexachlorobutadiene	TM116	51.4 16.78 : 153.29
Isopropylbenzene	TM116	64.8 64.20 : 119.59
Naphthalene	TM116	107.0 79.29 : 125.59
o-Xylene	TM116	82.4 74.57 : 112.73
p/m-Xylene	TM116	77.4 76.47 : 108.99
Sec-Butylbenzene	TM116	52.8 44.71 : 117.87
Tetrachloroethene	TM116	87.8 85.86 : 122.95
Toluene	TM116	88.6 87.82 : 116.21
Trichloroethene	TM116	94.8 79.80 : 112.33
Trichlorofluoromethane	TM116	104.2 80.52 : 132.12
Vinyl Chloride	TM116	103.2 68.07 : 137.84

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.

The figure detailed is the percentage recovery result for the AQC.

The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.



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Chromatogram

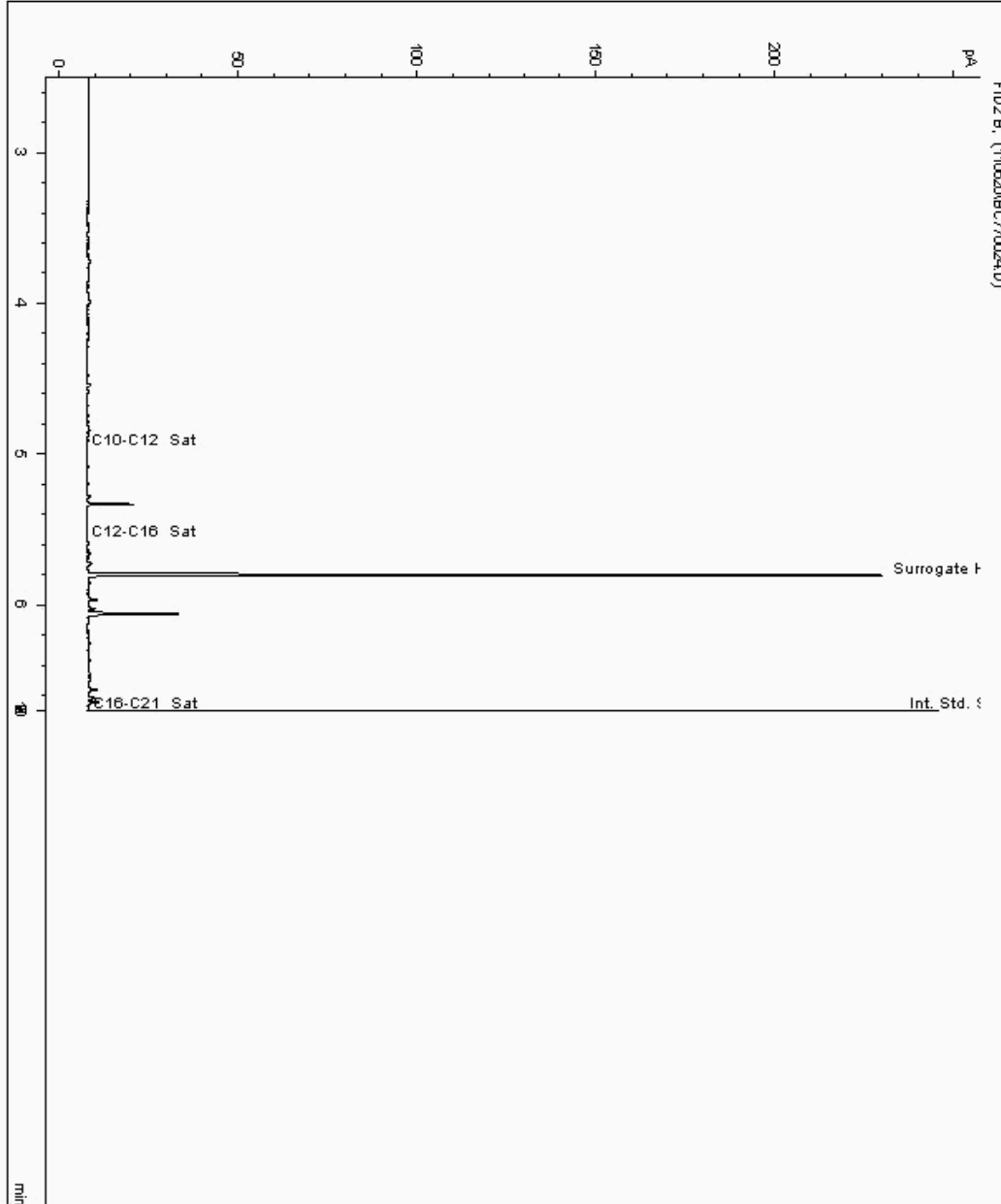
Analysis: EPH CWG (Aliphatic) Filtered GC (W)

Sample No : 23186609
Sample ID : R70112

Depth : 0.25

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 21723597-
Date Acquired : 11/7/2020 6:24:14 AM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025





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Chromatogram

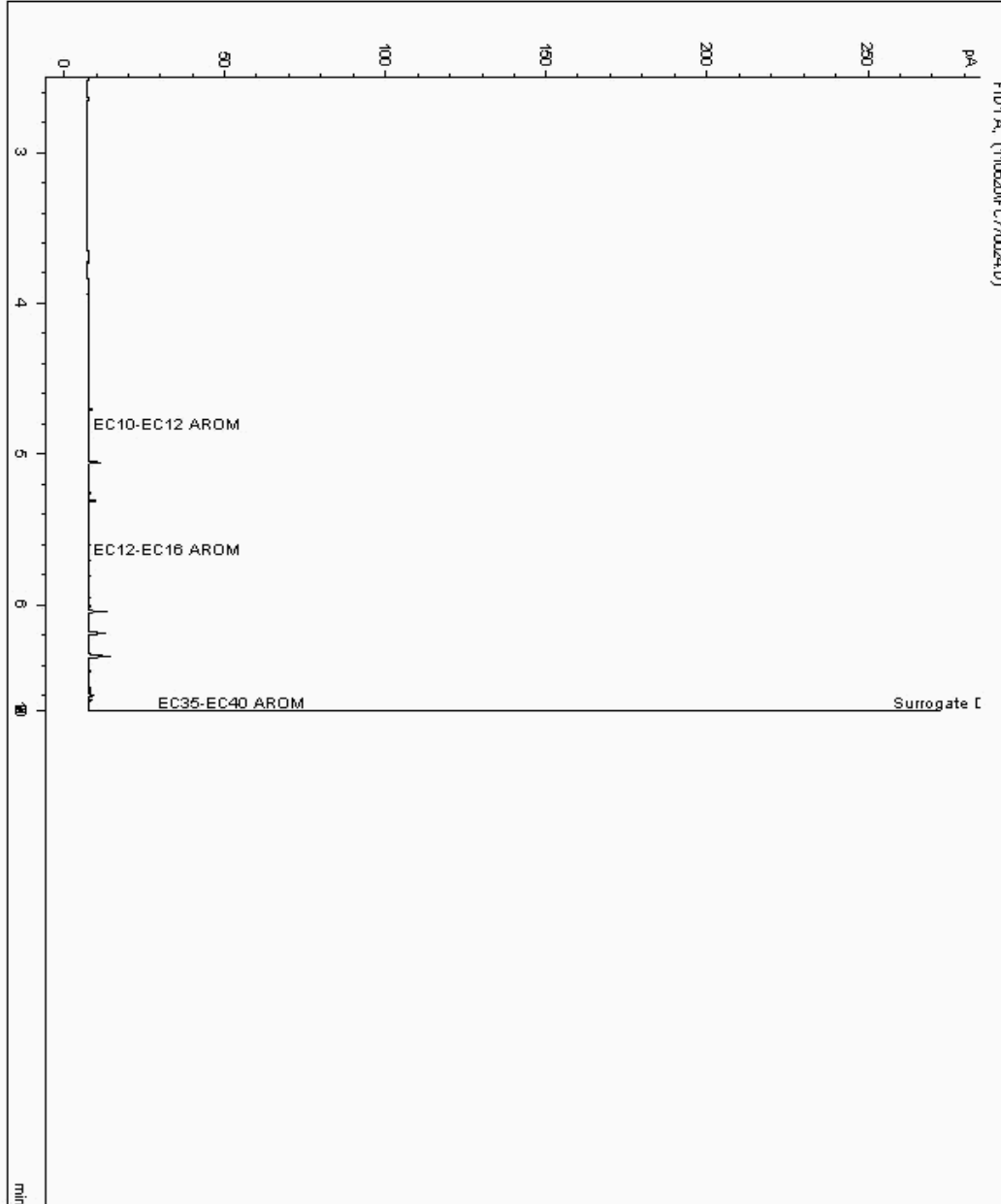
Analysis: EPH CWG (Aromatic) Filtered GC (W)

Sample No : 23186609
Sample ID : R70112

Depth : 0.25

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 21723598-
Date Acquired : 11/7/2020 6:24:14 AM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025





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Client Reference: JFR1451
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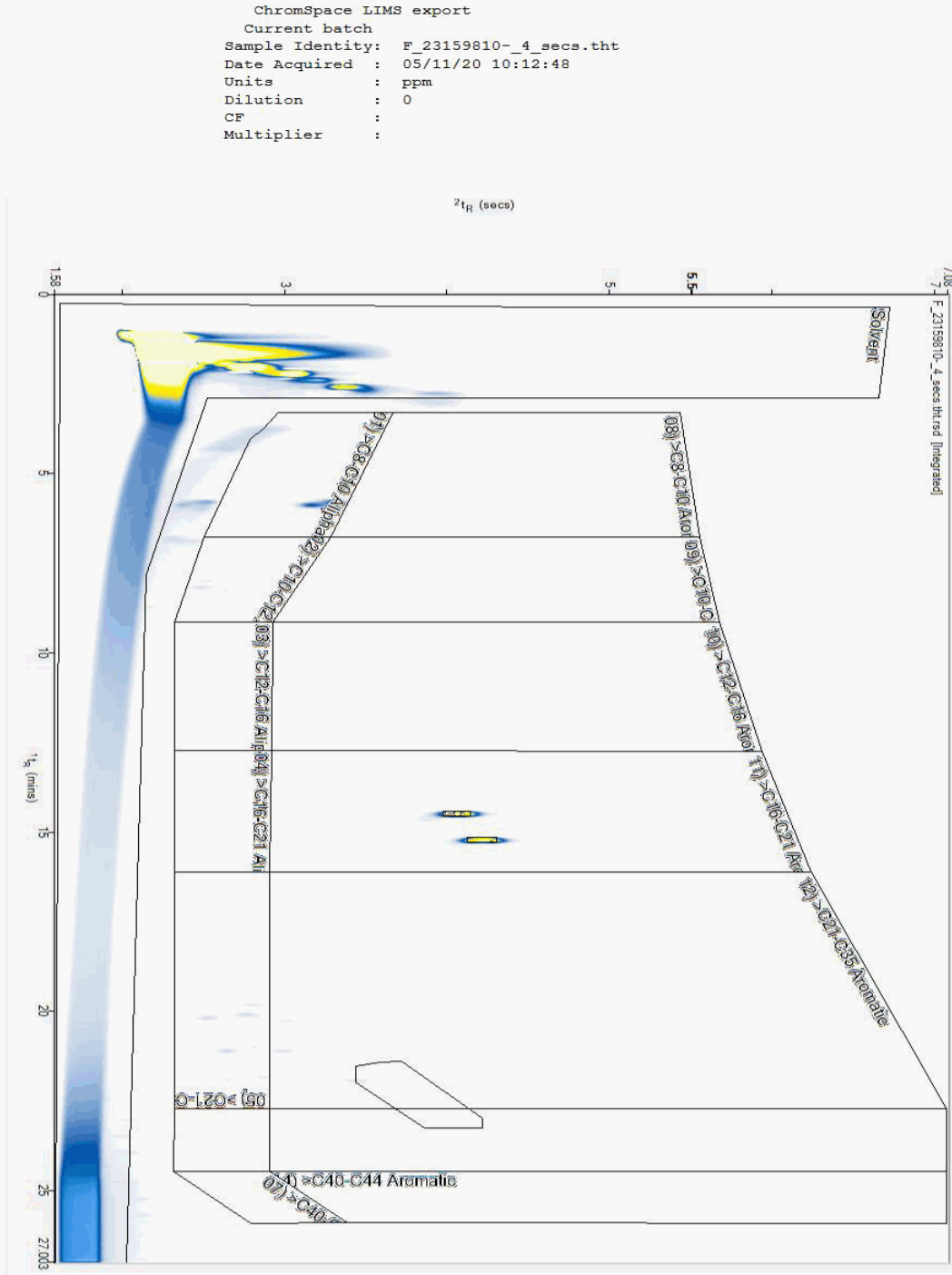
Report Number: 580694
Superseded Report: 575653

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23159810
Sample ID : R72005

Depth : 1.00





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Client Reference: JFR1451
Order Number: PQ20-856

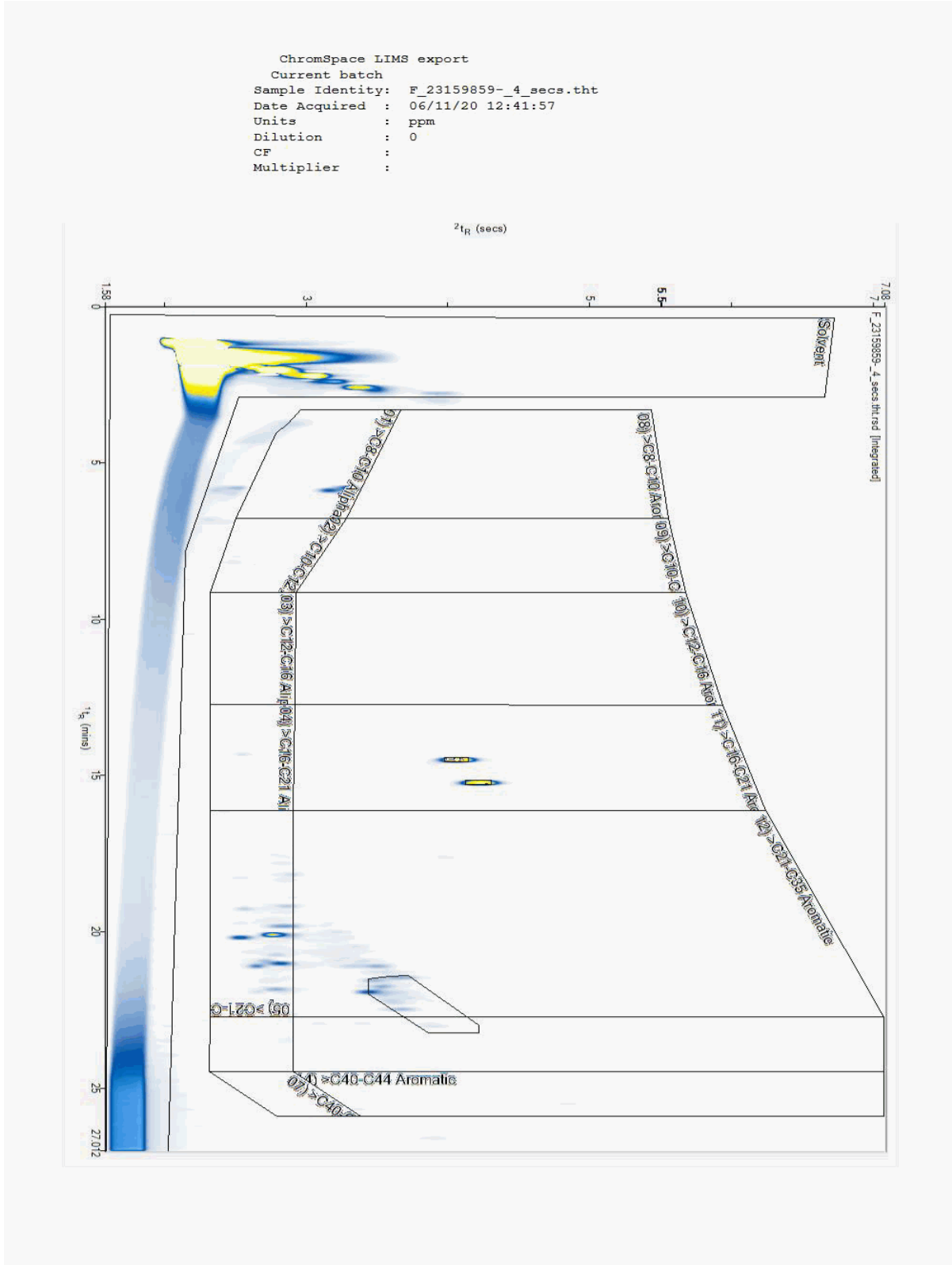
Report Number: 580694
Superseded Report: 575653

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23159859
Sample ID : R70112

Depth : 0.25





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Client Reference: JFR1451
Order Number: PO20-856

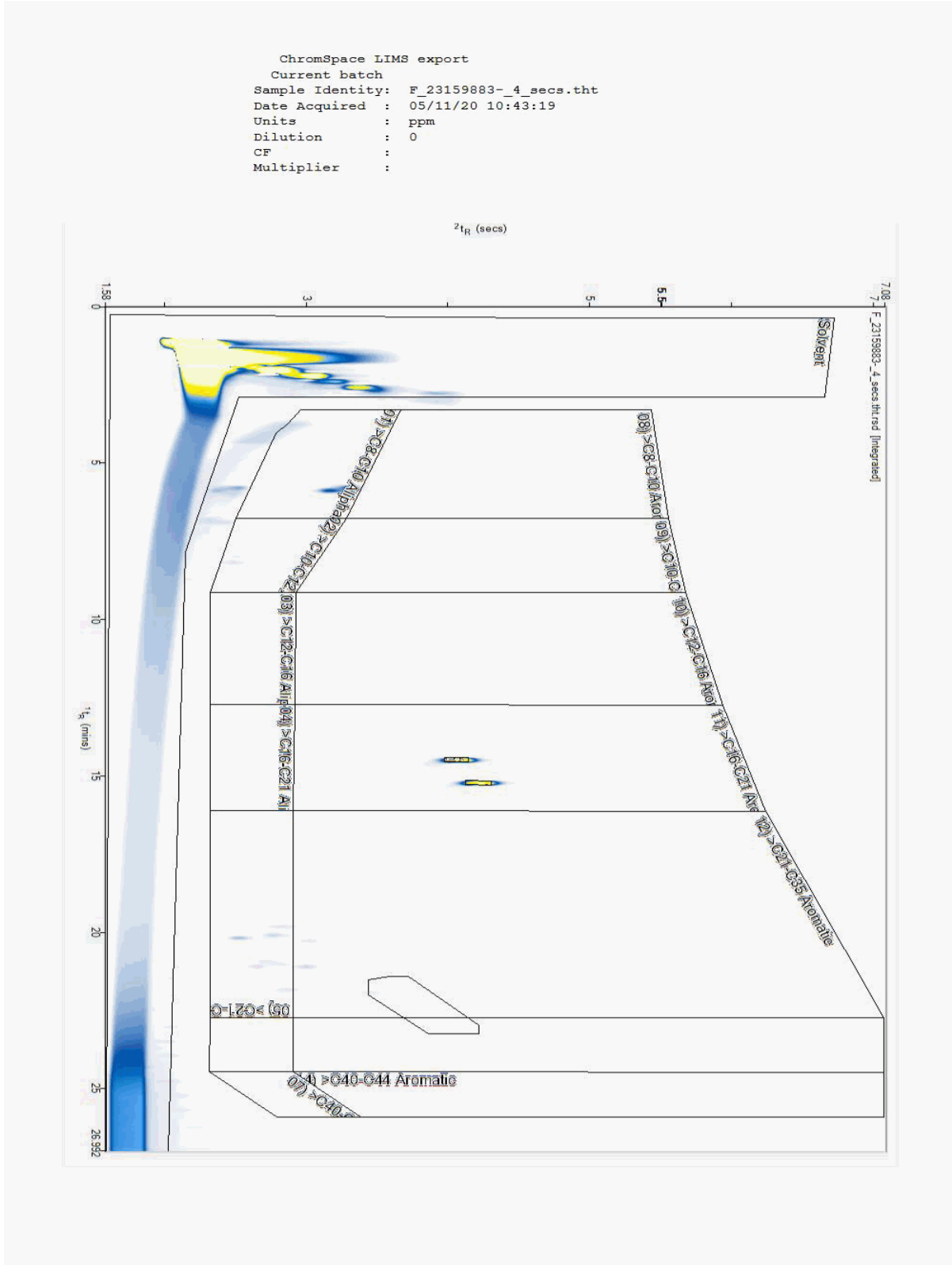
Report Number: 580694
Superseded Report: 575653

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23159883
Sample ID : R70112

Depth : 1.00





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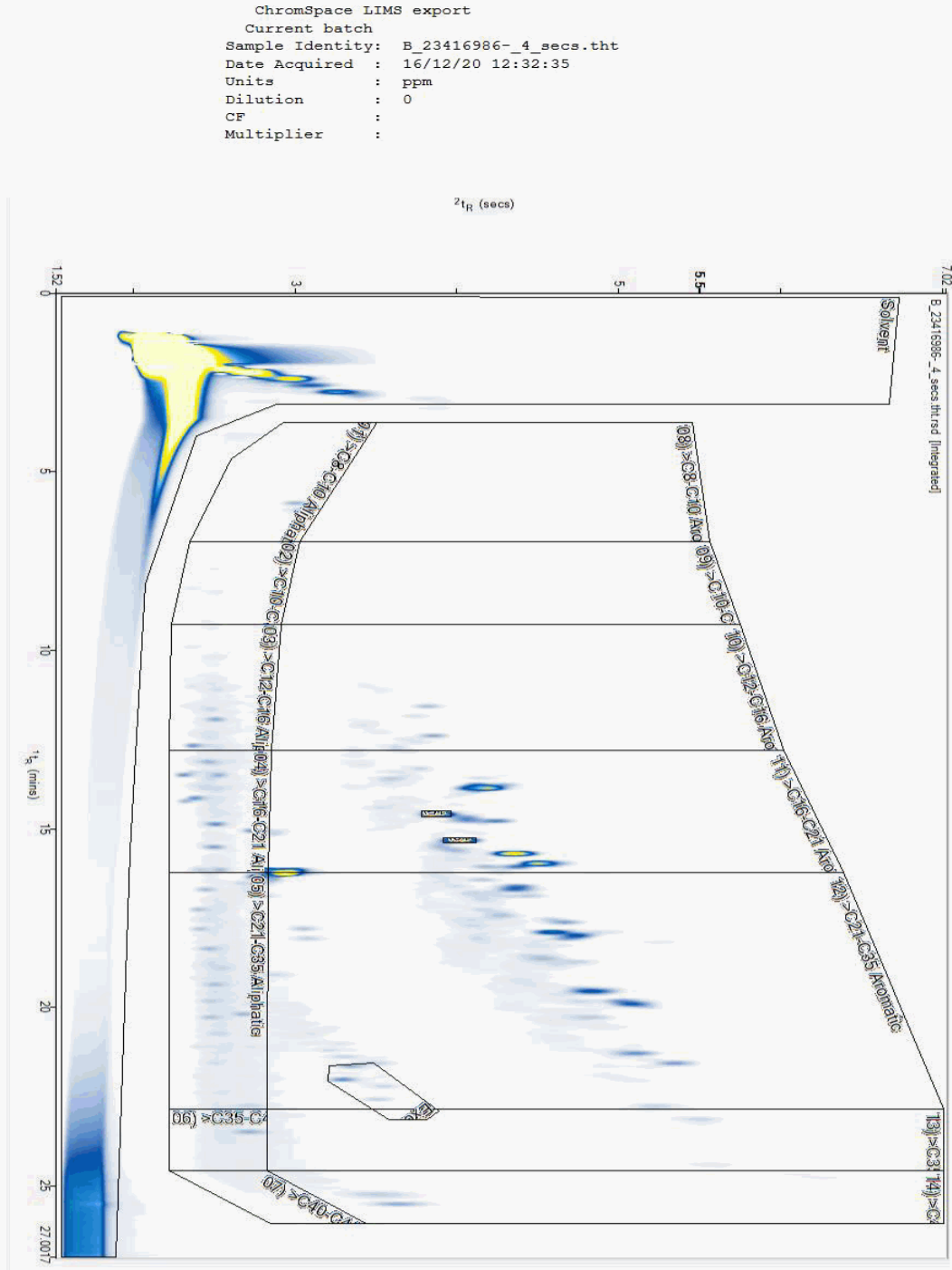
Report Number: 580694
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Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23416986
Sample ID : BH72602

Depth : 3.50 - 3.95





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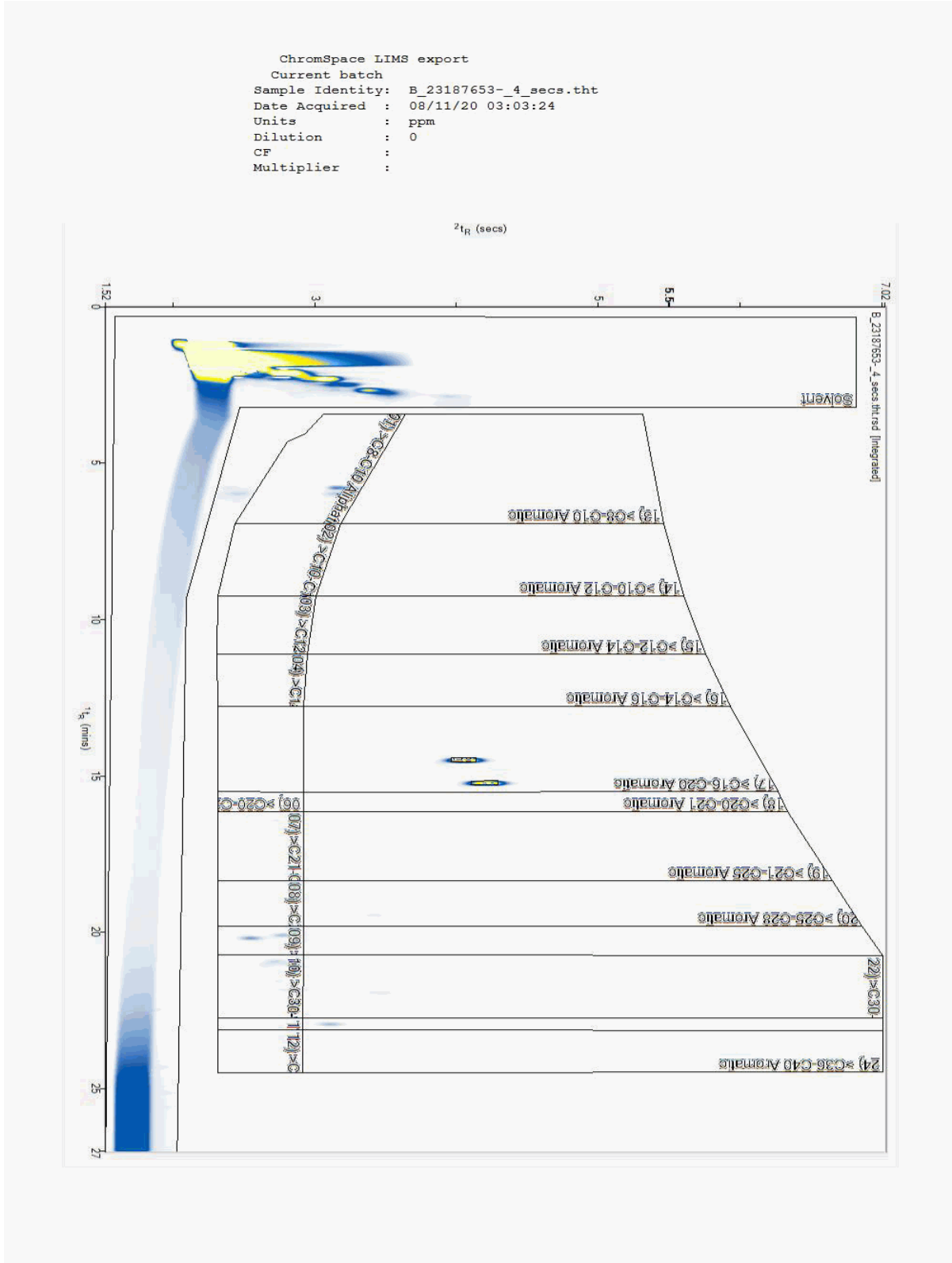
Report Number: 580694
Superseded Report: 575653

Chromatogram

Analysis: EPH by GCxGC-FID

Sample No : 23187653
Sample ID : R70112

Depth : 1.00





CERTIFICATE OF ANALYSIS

Validated

SDG: 201007-72
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PQ20-856

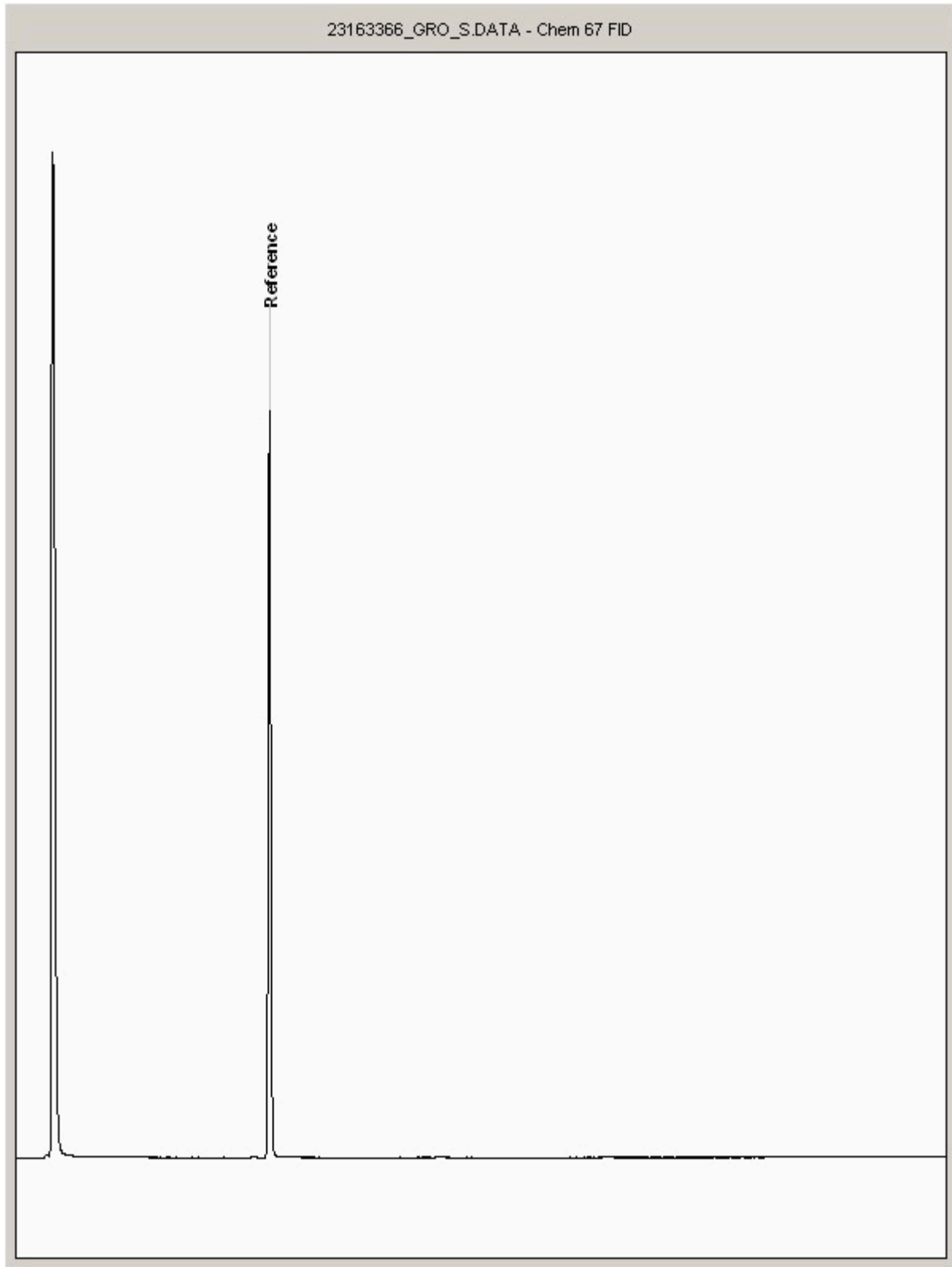
Report Number: 580694
Superseded Report: 575653

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23163366
Sample ID : R70112

Depth : 0.25





CERTIFICATE OF ANALYSIS

Validated

SDG: 201007-72
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PQ20-856

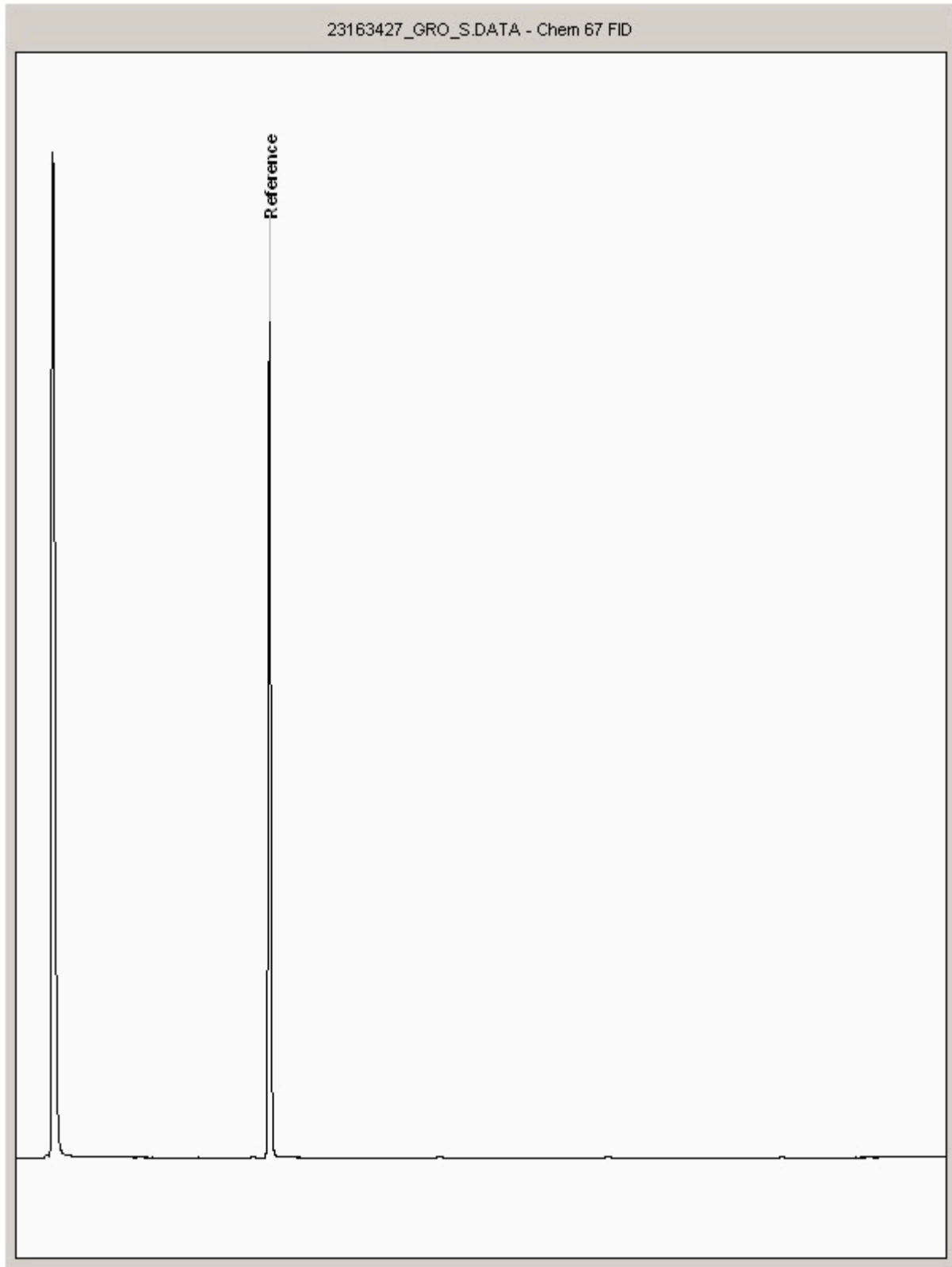
Report Number: 580694
Superseded Report: 575653

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23163427
Sample ID : R72005

Depth : 1.00





CERTIFICATE OF ANALYSIS

Validated

SDG: 201007-72
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PQ20-856

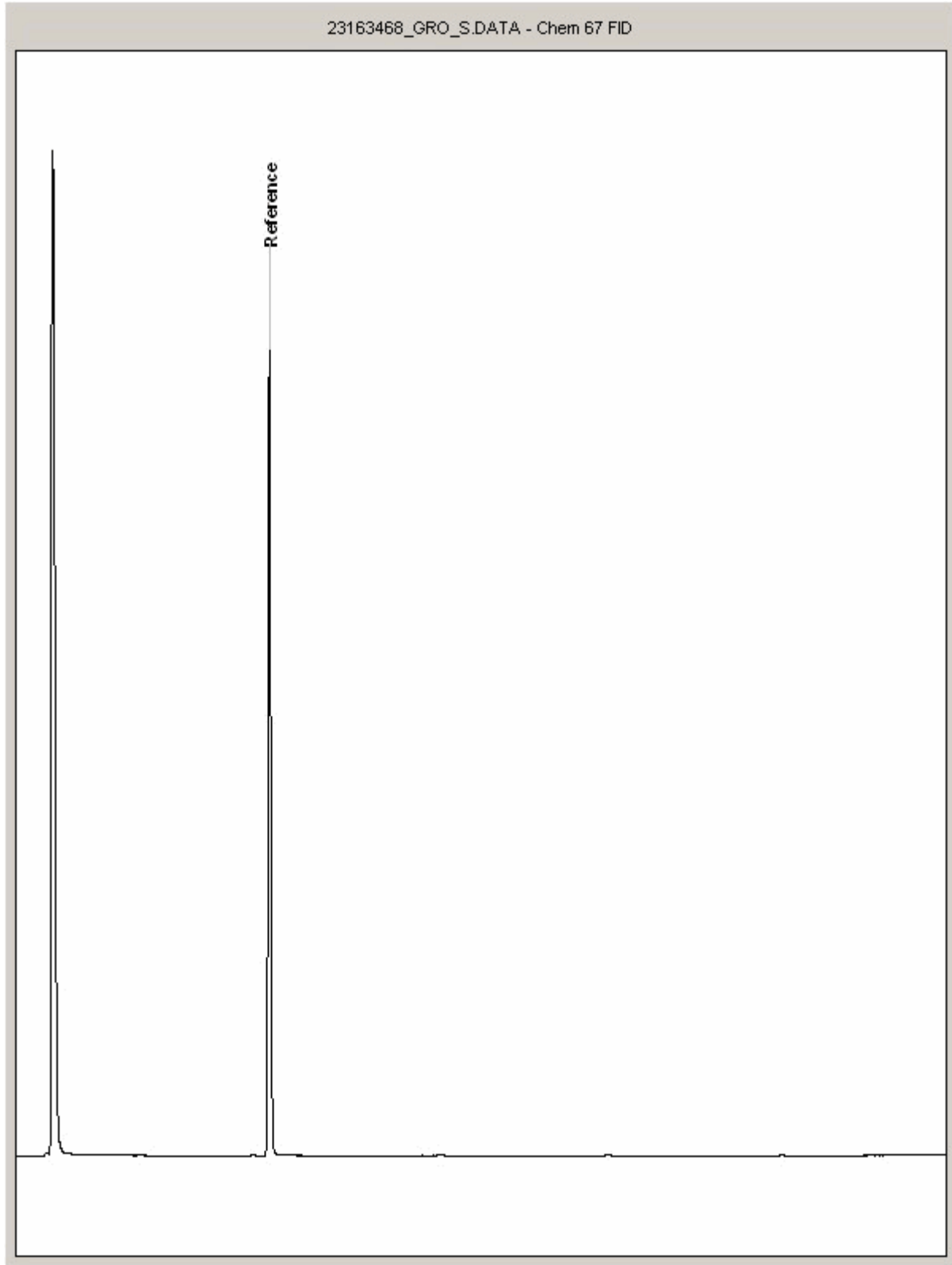
Report Number: 580694
Superseded Report: 575653

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23163468
Sample ID : R70112

Depth : 1.00





CERTIFICATE OF ANALYSIS

Validated

SDG: 201007-72
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PQ20-856

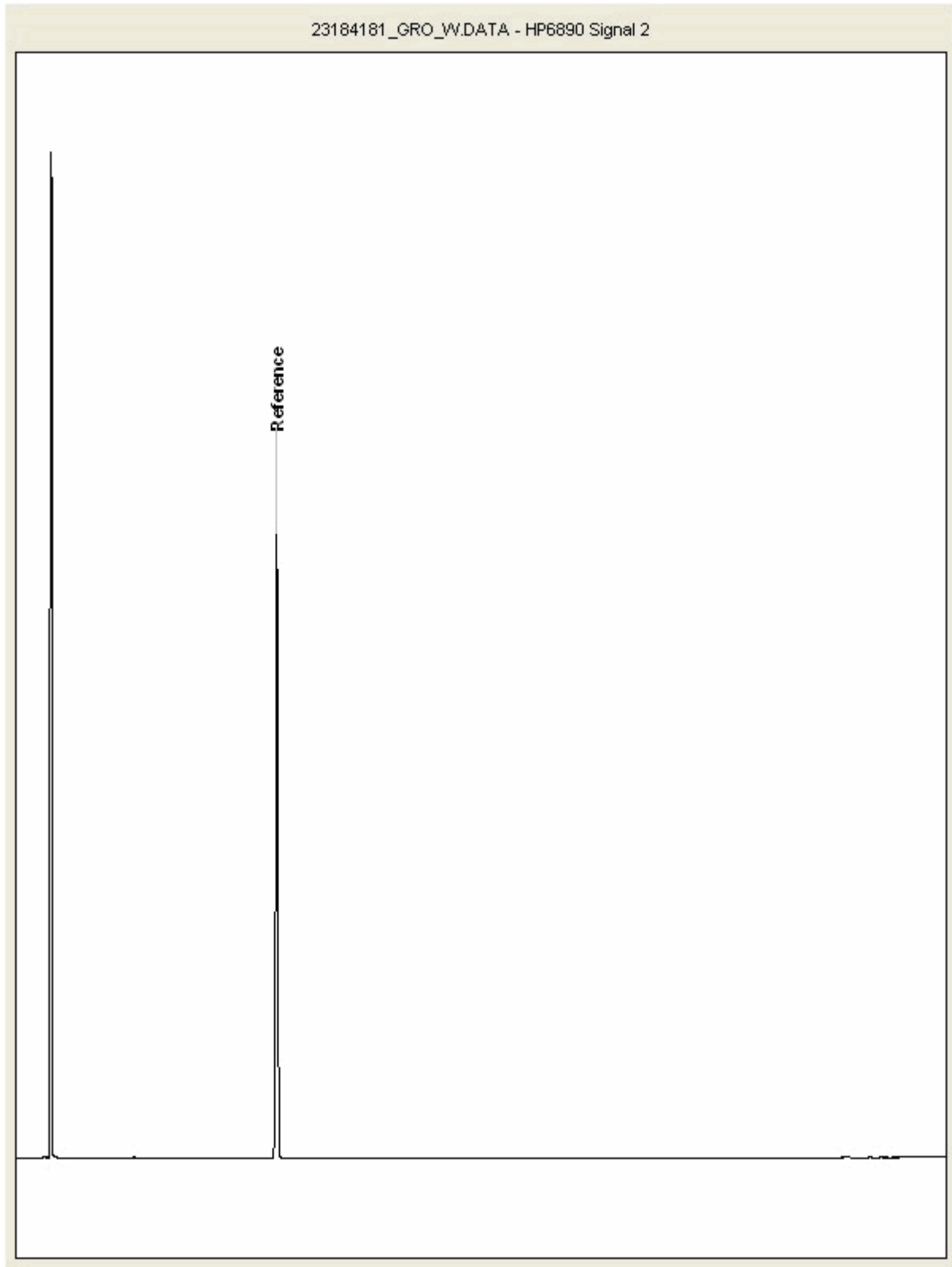
Report Number: 580694
Superseded Report: 575653

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 23184181
Sample ID : R70112

Depth : 0.25





CERTIFICATE OF ANALYSIS

SDG: 201007-72	Client Reference: JFR1451	Report Number: 580694
Location: A303 Stonehenge	Order Number: PO20-856	Superseded Report: 575653

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

19. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung. Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017)*.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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RPS Consultants Ltd
260 Park Avenue
Aztec West
Almondsbury
Bristol
BS32 4SY

Attention: Gary Riches

CERTIFICATE OF ANALYSIS

Date of report Generation: 04 November 2020
Customer: RPS Consultants Ltd
Sample Delivery Group (SDG): 201007-73
Your Reference: JFR1451
Location: A303 Stonehenge
Report No: 573946

This report has been revised and directly supersedes 572665 in its entirety.

We received 8 samples on Wednesday October 07, 2020 and 2 of these samples were scheduled for analysis which was completed on Tuesday November 03, 2020. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

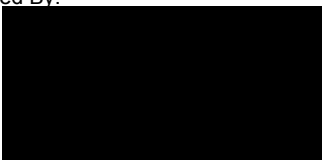
Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:



Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 201007-73 **Client Reference:** JFR1451 **Report Number:** 573946
Location: A303 Stonehenge **Order Number:** **Superseded Report:** 572665

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
22981852	ST72202A		0.00	02/10/2020
22981856	ST72202A		0.50	02/10/2020
22981858	ST72202A		1.50	02/10/2020
22981859	ST72202A		2.00	02/10/2020
22981860	ST72202A		3.00	02/10/2020
22981861	ST72202A		3.50	02/10/2020
22981854	STP72202A		0.30	02/10/2020
22981857	STP72202A		1.00	02/10/2020

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG:	201007-73	Client Reference:	JFR1451	Report Number:	573946
Location:	A303 Stonehenge	Order Number:		Superseded Report:	572665

Results Legend <div style="display: flex; align-items: center; gap: 5px;"> <div style="background-color: yellow; border: 1px solid black; width: 15px; height: 15px; display: flex; align-items: center; justify-content: center; font-size: 8px;">X</div> Test </div> <div style="display: flex; align-items: center; gap: 5px; margin-top: 5px;"> <div style="background-color: red; border: 1px solid black; width: 15px; height: 15px; display: flex; align-items: center; justify-content: center; font-size: 8px;">N</div> No Determination Possible </div> Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other	Lab Sample No(s)	22981854	22981857			
	Customer Sample Reference	STP72202A	STP72202A	STP72202A		
	AGS Reference					
	Depth (m)	0.30	0.30	1.00		
	Container	1kg TUB with Handle (ALE280)	250g Amber Jar (ALE210)	60g VOC (ALE215)	250g Amber Jar (ALE210)	60g VOC (ALE215)
	Sample Type	S	S	S	S	S
	Ammoniacal Nitrogen	All	NDPs: 0 Tests: 1	X		
Ammonium Soil by Titration	All	NDPs: 0 Tests: 2		X	X	
Anions by Kone (soil)	All	NDPs: 0 Tests: 2		X	X	
Anions by Kone (w)	All	NDPs: 0 Tests: 1	X			
CEN Readings	All	NDPs: 0 Tests: 1	X			
Chromium III	All	NDPs: 0 Tests: 3	X	X	X	
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 3	X	X	X	
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 1	X			
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 1	X			
EPH CWG (Aliphatic) Filtered GC (W)	All	NDPs: 0 Tests: 1	X			
EPH CWG (Aromatic) Filtered GC (W)	All	NDPs: 0 Tests: 1	X			
EPH CWG GC (S)	All	NDPs: 0 Tests: 2		X	X	
GRO by GC-FID (S)	All	NDPs: 0 Tests: 2			X	
GRO by GC-FID (W)	All	NDPs: 0 Tests: 1	X			
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 2		X	X	



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SDG:	201007-73	Client Reference:	JFR1451	Report Number:	573946
Location:	A303 Stonehenge	Order Number:		Superseded Report:	572665

Results Legend <div style="display: flex; flex-direction: column; gap: 5px;"> <div style="display: flex; align-items: center;">X Test</div> <div style="display: flex; align-items: center;">N No Determination Possible</div> </div> Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other	Lab Sample No(s)	22981854	22981857	STP72202A	STP72202A	
	Customer Sample Reference	AGS Reference	Depth (m)	0.30	1.00	
	Container	1kg TUB with Handle (ALE280)	250g Amber Jar (ALE210)	60g VOC (ALE215)	250g Amber Jar (ALE210)	60g VOC (ALE215)
	Sample Type	S	S	S	S	S
	Hexavalent Chromium (w)	All	NDPs: 0 Tests: 1	X		
	Mercury Dissolved	All	NDPs: 0 Tests: 1	X		
	Metals in solid samples by OES	All	NDPs: 0 Tests: 2	X	X	
OC OP Pesticides and Triazine Herb	All	NDPs: 0 Tests: 1	X			
PAH by GCMS	All	NDPs: 0 Tests: 2	X	X		
PAH in waters by GC-MS (diss.filt)	All	NDPs: 0 Tests: 1	X			
pH	All	NDPs: 0 Tests: 2	X	X		
pH Value of Filtered Water	All	NDPs: 0 Tests: 1	X			
Phenols by HPLC (S)	All	NDPs: 0 Tests: 2	X	X		
Phenols by HPLC (W)	All	NDPs: 0 Tests: 1	X			
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 1	X			
Total Organic Carbon	All	NDPs: 0 Tests: 2	X	X		
TPH CWG Filtered (W)	All	NDPs: 0 Tests: 1	X			
TPH CWG GC (S)	All	NDPs: 0 Tests: 2	X	X		
VOC MS (S)	All	NDPs: 0 Tests: 2		X	X	



CERTIFICATE OF ANALYSIS

Validated

SDG: 201007-73
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 573946
Superseded Report: 572665

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm
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Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
22981854	STP72202A	0.30	Dark Brown	Sandy Loam	Vegetation	Stones
22981857	STP72202A	1.00	Light Brown	Sandy Loam	Stones	N/A

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.



CERTIFICATE OF ANALYSIS

Validated

SDG:	201007-73	Client Reference:	JFR1451	Report Number:	573946
Location:	A303 Stonehenge	Order Number:		Superseded Report:	572665

#	ISO17025 accredited.	Customer Sample Ref.	STP72202A	STP72202A			
M	mCERTS accredited.	Depth (m)	0.30	1.00			
aq	Aqueous / settled sample.	Sample Type	Soil/Solid (S)	Soil/Solid (S)			
diss.filt	Dissolved / filtered sample.	Date Sampled	02/10/2020	02/10/2020			
tot.unfilt	Total / unfiltered sample.	Sampled Time					
*	Subcontracted - refer to subcontractor report for accreditation status.	Date Received	07/10/2020	07/10/2020			
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery	SDG Ref	201007-73	201007-73			
(F)	Trigger breach confirmed	Lab Sample No.(s)	22981854	22981857			
1-4*\$@	Sample deviation (see appendix)	AGS Reference					
Component	LOD/Units	Method					
Moisture Content Ratio (% of as received sample)	%	PM024	13	7.5			
Exchangeable Ammonia as N	<12 mg/kg	TM024	<12 M	<12 M			
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 @ M	<0.01 @ M			
Organic Carbon, Total	<0.2 %	TM132	1.8 M	<0.2 M			
pH	1 pH Units	TM133	8.16 M	8.73 M			
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 #	<0.6 #			
Cyanide, Total	<1 mg/kg	TM153	<1 @ M	<1 @ M			
Cyanide, Free	<1 mg/kg	TM153	<1 @ M	<1 @ M			
Chromium, Trivalent	<0.9 mg/kg	TM181	16.6	6.22			
Antimony	<0.6 mg/kg	TM181	<0.6 #	<0.6 #			
Arsenic	<0.6 mg/kg	TM181	7.01 M	2.48 M			
Beryllium	<0.01 mg/kg	TM181	0.448 M	0.305 M			
Boron	<0.7 mg/kg	TM181	7.71 #	5.13 #			
Cadmium	<0.02 mg/kg	TM181	0.759 M	0.414 M			
Chromium	<0.9 mg/kg	TM181	16.6 M	6.22 M			
Copper	<1.4 mg/kg	TM181	8.75 M	2.53 M			
Iron	<1000 mg/kg	TM181	19000 #	6370 #			
Lead	<0.7 mg/kg	TM181	19.9 M	0.838 M			
Manganese	<0.13 mg/kg	TM181	811 M	426 M			
Mercury	<0.14 mg/kg	TM181	<0.14 M	<0.14 M			
Molybdenum	<0.1 mg/kg	TM181	0.388 #	0.113 #			
Nickel	<0.2 mg/kg	TM181	14.8 M	8.01 M			
Phosphorus	<1 mg/kg	TM181	1460	723			
Selenium	<1 mg/kg	TM181	<1 #	<1 #			
Zinc	<1.9 mg/kg	TM181	64.3 M	22.1 M			
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243	0.0111 M	0.0053 M			



CERTIFICATE OF ANALYSIS

Validated

SDG:	201007-73	Client Reference:	JFR1451	Report Number:	573946
Location:	A303 Stonehenge	Order Number:		Superseded Report:	572665

OC OP Pesticides and Triazine Herb

Component	LOD/Units	Method	Customer Sample Ref.	STP72202A			
Dichlorvos	<50 µg/kg	TM073		<50			
Mevinphos	<50 µg/kg	TM073		<50			
Phorate	<50 µg/kg	TM073		<50			
alpha-Hexachlorocyclohexane (HCH)	<50 µg/kg	TM073		<50			
Diazinon	<50 µg/kg	TM073		<50			
gamma-Hexachlorocyclohexane (HCH / Lindane)	<50 µg/kg	TM073		<50			
Atrazine	<50 µg/kg	TM073		<50			
Simazine	<50 µg/kg	TM073		<50			
Disulfoton	<50 µg/kg	TM073		<50			
Heptachlor	<50 µg/kg	TM073		<50			
Aldrin	<50 µg/kg	TM073		<50			
beta-Hexachlorocyclohexane (HCH)	<50 µg/kg	TM073		<50			
Methyl parathion	<50 µg/kg	TM073		<50			
Malathion	<50 µg/kg	TM073		<50			
Fenitrothion	<50 µg/kg	TM073		<50			
Heptachlor epoxide	<50 µg/kg	TM073		<50			
Parathion	<50 µg/kg	TM073		<50			
Endosulphan I	<50 µg/kg	TM073		<50			
p,p-DDE	<50 µg/kg	TM073		<50			
Dieldrin	<50 µg/kg	TM073		<50			
o,p'-DDD (TDE)	<50 µg/kg	TM073		<50			
Endrin	<50 µg/kg	TM073		<50			
p,p-TDE (DDD)	<50 µg/kg	TM073		<50			
Ethion	<50 µg/kg	TM073		<50			
Endosulphan II	<50 µg/kg	TM073		<50			
p,p-DDT	<50 µg/kg	TM073		<50			
p,p-Methoxychlor	<50 µg/kg	TM073		<50			
Endosulphan sulphate	<50 µg/kg	TM073		<50			
Azinphos-methyl	<50 µg/kg	TM073		<50			



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SDG: 201007-73
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 573946
Superseded Report: 572665

PAH by GCMS

Results Legend		Customer Sample Ref.	STP72202A	STP72202A			
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.30	1.00			
M	mCERTS accredited.		Soil/Solid (S)	Soil/Solid (S)			
aq	Aqueous / settled sample.		02/10/2020	02/10/2020			
diss.filt	Dissolved / filtered sample.		07/10/2020	07/10/2020			
tot.unfilt	Total / unfiltered sample.		201007-73	201007-73			
*	Subcontracted - refer to subcontractor report for accreditation status.		22981854	22981857			
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery						
(F)	Trigger breach confirmed						
1-4*\$@	Sample deviation (see appendix)						
Component	LOD/Units		Method				
Naphthalene-d8 % recovery**	%	TM218	91.6	94.9			
Acenaphthene-d10 % recovery**	%	TM218	84.7	91.1			
Phenanthrene-d10 % recovery**	%	TM218	90.4	98.8			
Chrysene-d12 % recovery**	%	TM218	96.5	108			
Perylene-d12 % recovery**	%	TM218	96.7	111			
Naphthalene	<9 µg/kg	TM218	<9 @ M	<9 @ M			
Acenaphthylene	<12 µg/kg	TM218	<12 @ M	<12 @ M			
Acenaphthene	<8 µg/kg	TM218	<8 @ M	<8 @ M			
Fluorene	<10 µg/kg	TM218	<10 @ M	<10 @ M			
Phenanthrene	<15 µg/kg	TM218	32.9 @ M	<15 @ M			
Anthracene	<16 µg/kg	TM218	<16 @ M	<16 @ M			
Fluoranthene	<17 µg/kg	TM218	62.6 @ M	<17 @ M			
Pyrene	<15 µg/kg	TM218	55.9 @ M	<15 @ M			
Benz(a)anthracene	<14 µg/kg	TM218	37.3 @ M	<14 @ M			
Chrysene	<10 µg/kg	TM218	40.9 @ M	<10 @ M			
Benzo(b)fluoranthene	<15 µg/kg	TM218	36.9 @ M	<15 @ M			
Benzo(k)fluoranthene	<14 µg/kg	TM218	20 @ M	<14 @ M			
Benzo(a)pyrene	<15 µg/kg	TM218	44.3 @ M	<15 @ M			
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	36.1 @ M	<18 @ M			
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 @ M	<23 @ M			
Benzo(g,h,i)perylene	<24 µg/kg	TM218	41.5 @ M	<24 @ M			
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	408	<118			



CERTIFICATE OF ANALYSIS

Validated

SDG: 201007-73
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 573946
Superseded Report: 572665

Semi Volatile Organic Compounds

Results Legend		Customer Sample Ref.	STP72202A				
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.30 Soil/Solid (S) 02/10/2020 07/10/2020 201007-73 22981854				
M	mCERTS accredited.						
aq	Aqueous / settled sample.						
diss.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.						
*	Subcontracted - refer to subcontractor report for accreditation status.						
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery						
(F)	Trigger breach confirmed						
1-4*\$@	Sample deviation (see appendix)						
Component	LOD/Units			Method			
Phenol	<100 µg/kg	TM157	<100				
Pentachlorophenol	<100 µg/kg	TM157	<100				
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100				
Nitrobenzene	<100 µg/kg	TM157	<100				
Isophorone	<100 µg/kg	TM157	<100				
Hexachloroethane	<100 µg/kg	TM157	<100				
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100				
Hexachlorobutadiene	<100 µg/kg	TM157	<100				
Hexachlorobenzene	<100 µg/kg	TM157	<100				
n-Dioctyl phthalate	<100 µg/kg	TM157	<100				
Dimethyl phthalate	<100 µg/kg	TM157	<100				
Diethyl phthalate	<100 µg/kg	TM157	<100				
n-Dibutyl phthalate	<100 µg/kg	TM157	<100				
Dibenzofuran	<100 µg/kg	TM157	<100				
Carbazole	<100 µg/kg	TM157	<100				
Butylbenzyl phthalate	<100 µg/kg	TM157	<100				
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100				
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100				
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100				
Azobenzene	<100 µg/kg	TM157	<100				
4-Nitrophenol	<100 µg/kg	TM157	<100				
4-Nitroaniline	<100 µg/kg	TM157	<100				
4-Methylphenol	<100 µg/kg	TM157	<100				
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100				
4-Chloroaniline	<100 µg/kg	TM157	<100				
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100				
4-Bromophenylphenylether	<100 µg/kg	TM157	<100				
3-Nitroaniline	<100 µg/kg	TM157	<100				
2-Nitrophenol	<100 µg/kg	TM157	<100				
2-Nitroaniline	<100 µg/kg	TM157	<100				
2-Methylphenol	<100 µg/kg	TM157	<100				
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100				



CERTIFICATE OF ANALYSIS

Validated

SDG:	201007-73	Client Reference:	JFR1451	Report Number:	573946
Location:	A303 Stonehenge	Order Number:		Superseded Report:	572665

Semi Volatile Organic Compounds

Results Legend		Customer Sample Ref.	STP72202A				
# ISO17025 accredited.		Depth (m)	0.30				
M mCERTS accredited.		Sample Type	Soil/Solid (S)				
sg Aqueous / filtered sample.		Date Sampled	02/10/2020				
dis.filt Dissolved / filtered sample.		Sampled Time	.				
tot.unfilt Total / unfiltered sample.		Date Received	07/10/2020				
* Subcontracted - refer to subcontractor report for accreditation status.		SDG Ref	201007-73				
** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		Lab Sample No.(s)	22981854				
(F) Trigger breach confirmed		AGS Reference					
1.4.4.6@ Sample deviation (see appendix)							
Component	LOD/Units	Method					
2-Chlorophenol	<100 µg/kg	TM157	<100				
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100				
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100				
2,4-Dimethylphenol	<100 µg/kg	TM157	<100				
2,4-Dichlorophenol	<100 µg/kg	TM157	<100				
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100				
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100				
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100				
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100				
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100				
2-Chloronaphthalene	<100 µg/kg	TM157	<100				
2-Methylnaphthalene	<100 µg/kg	TM157	<100				
Acenaphthylene	<100 µg/kg	TM157	<100				
Acenaphthene	<100 µg/kg	TM157	<100				
Anthracene	<100 µg/kg	TM157	<100				
Benzo(a)anthracene	<100 µg/kg	TM157	<100				
Benzo(b)fluoranthene	<100 µg/kg	TM157	<100				
Benzo(k)fluoranthene	<100 µg/kg	TM157	<100				
Benzo(a)pyrene	<100 µg/kg	TM157	<100				
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<100				
Chrysene	<100 µg/kg	TM157	<100				
Fluoranthene	<100 µg/kg	TM157	<100				
Fluorene	<100 µg/kg	TM157	<100				
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<100				
Phenanthrene	<100 µg/kg	TM157	<100				
Pyrene	<100 µg/kg	TM157	<100				
Naphthalene	<100 µg/kg	TM157	<100				
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100				
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100				
TIC report		TM157	Not Detected				
Total SVOC TIC	<100 µg/kg	TM157	<1000				



CERTIFICATE OF ANALYSIS

Validated

SDG:	201007-73	Client Reference:	JFR1451	Report Number:	573946
Location:	A303 Stonehenge	Order Number:		Superseded Report:	572665

TPH CWG (S)

#	Customer Sample Ref.	STP72202A	STP72202A			
Results Legend						
ISO17025 accredited.						
mCERTS accredited.						
Aqueous / settled sample.						
Dissolved / filtered sample.						
Total / unfiltered sample.						
Subcontracted - refer to subcontractor report for accreditation status.						
% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery						
Trigger breach confirmed						
Sample deviation (see appendix)						
	Depth (m)	0.30	1.00			
	Sample Type	Soil/Solid (S)	Soil/Solid (S)			
	Date Sampled	02/10/2020	02/10/2020			
	Sampled Time					
	Date Received	07/10/2020	07/10/2020			
	SDG Ref	201007-73	201007-73			
	Lab Sample No.(s)	22981854	22981857			
	AGS Reference					
Component	LOD/Units	Method				
GRO Surrogate % recovery**	%	TM089	95.3	109		
			@	@		
Aliphatics >C5-C6	<10 µg/kg	TM089	<10	<10		
			@	@		
Aliphatics >C6-C8	<10 µg/kg	TM089	<10	<10		
			@	@		
Aliphatics >C8-C10	<10 µg/kg	TM089	<10	<10		
			@	@		
Aliphatics >C10-C12	<1000 µg/kg	TM414	<1000	<1000		
Aliphatics >C12-C16	<1000 µg/kg	TM414	<1000	<1000		
Aliphatics >C16-C21	<1000 µg/kg	TM414	<1000	<1000		
Aliphatics >C21-C35	<1000 µg/kg	TM414	7960	<1000		
Aliphatics >C35-C44	<1000 µg/kg	TM414	<1000	<1000		
Total Aliphatics >C10-C44	<5000 µg/kg	TM414	8410	<5000		
Total Aliphatics & Aromatics >C10-C44	<10000 µg/kg	TM414	14000	<10000		
Aromatics >EC5-EC7	<10 µg/kg	TM089	<10	<10		
			@	@		
Aromatics >EC7-EC8	<10 µg/kg	TM089	<10	<10		
			@	@		
Aromatics >EC8-EC10	<10 µg/kg	TM089	<10	<10		
			@	@		
Aromatics > EC10-EC12	<1000 µg/kg	TM414	<1000	<1000		
Aromatics > EC12-EC16	<1000 µg/kg	TM414	<1000	<1000		
Aromatics > EC16-EC21	<1000 µg/kg	TM414	<1000	<1000		
Aromatics > EC21-EC35	<1000 µg/kg	TM414	4530	<1000		
Aromatics >EC35-EC44	<1000 µg/kg	TM414	<1000	<1000		
Aromatics > EC40-EC44	<1000 µg/kg	TM414	<1000	<1000		
Total Aromatics > EC10-EC44	<5000 µg/kg	TM414	5610	<5000		
Total Aliphatics & Aromatics >C5-C44	<10000 µg/kg	TM414	14000	<10000		
Total Aliphatics >C5-C10	<50 µg/kg	TM089	<50	<50		
			@	@		
Total Aromatics >EC5-EC10	<50 µg/kg	TM089	<50	<50		
			@	@		
GRO >C5-C10	<20 µg/kg	TM089	<20	<20		
			@	@		



CERTIFICATE OF ANALYSIS

Validated

SDG:	201007-73	Client Reference:	JFR1451	Report Number:	573946
Location:	A303 Stonehenge	Order Number:		Superseded Report:	572665

VOC MS (S)

#	ISO17025 accredited.	Customer Sample Ref.	STP72202A	STP72202A		
M	mCERTS accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.30	1.00		
aq	Aqueous / settled sample.		Soil/Solid (S)	Soil/Solid (S)		
diss.fit	Dissolved / filtered sample.		02/10/2020	02/10/2020		
tot.unfit	Total / unfiltered sample.		07/10/2020	07/10/2020		
*	Subcontracted - refer to subcontractor report for accreditation status.		201007-73	201007-73		
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		22981854	22981857		
(F)	Trigger breach confirmed					
1-4*\$@	Sample deviation (see appendix)					
Component	LOD/Units	Method				
Dibromofluoromethane**	%	TM116	109 @	129 @		
Toluene-d8**	%	TM116	94.4 @	97.2 @		
4-Bromofluorobenzene**	%	TM116	92.9 @	85.9 @		
Dichlorodifluoromethane	<6 µg/kg	TM116	<120 @ M			
Chloromethane	<7 µg/kg	TM116	<140 @ #			
Vinyl Chloride	<6 µg/kg	TM116	<120 @ M			
Bromomethane	<10 µg/kg	TM116	<200 @ M			
Chloroethane	<10 µg/kg	TM116	<200 @ M			
Trichlorofluoromethane	<6 µg/kg	TM116	<120 @ M			
1,1-Dichloroethene	<10 µg/kg	TM116	<200 @ #			
Carbon Disulphide	<7 µg/kg	TM116	<140 @ M			
Dichloromethane	<10 µg/kg	TM116	<200 @ #			
Methyl Tertiary Butyl Ether	<10 µg/kg	TM116	<200 @ M	<10 @ M		
trans-1,2-Dichloroethene	<10 µg/kg	TM116	<200 @ M			
1,1-Dichloroethane	<8 µg/kg	TM116	<160 @ M			
cis-1,2-Dichloroethene	<6 µg/kg	TM116	<120 @ M			
2,2-Dichloropropane	<10 µg/kg	TM116	<200 @			
Bromochloromethane	<10 µg/kg	TM116	<200 @ M			
Chloroform	<8 µg/kg	TM116	<160 @ M			
1,1,1-Trichloroethane	<7 µg/kg	TM116	<140 @ M			
1,1-Dichloropropene	<10 µg/kg	TM116	<200 @ M			
Carbontetrachloride	<10 µg/kg	TM116	<200 @ M			
1,2-Dichloroethane	<5 µg/kg	TM116	<100 @ M			
Benzene	<9 µg/kg	TM116	<180 @ M	<9 @ M		
Trichloroethene	<9 µg/kg	TM116	<180 @ #			
1,2-Dichloropropane	<10 µg/kg	TM116	<200 @ M			
Dibromomethane	<9 µg/kg	TM116	<180 @ M			
Bromodichloromethane	<7 µg/kg	TM116	<140 @ M			
cis-1,3-Dichloropropene	<10 µg/kg	TM116	<200 @ M			
Toluene	<7 µg/kg	TM116	<140 @ M	<7 @ M		
trans-1,3-Dichloropropene	<10 µg/kg	TM116	<200 @			
1,1,2-Trichloroethane	<10 µg/kg	TM116	<200 @ M			



CERTIFICATE OF ANALYSIS

Validated

SDG:	201007-73	Client Reference:	JFR1451	Report Number:	573946
Location:	A303 Stonehenge	Order Number:		Superseded Report:	572665

VOC MS (S)

Results Legend		Customer Sample Ref.	STP72202A	STP72202A			
#	ISO17025 accredited.						
M	mCERTS accredited.						
sq	Aqueous / settled sample.						
dis.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.						
*	Subcontracted - refer to subcontractor report for accreditation status.						
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery						
(F)	Trigger breach confirmed						
1-4*5@	Sample deviation (see appendix)						
		Depth (m)	0.30	1.00			
		Sample Type	Soil/Solid (S)	Soil/Solid (S)			
		Date Sampled	02/10/2020	02/10/2020			
		Sampled Time					
		Date Received	07/10/2020	07/10/2020			
		SDG Ref	201007-73	201007-73			
		Lab Sample No.(s)	22981854	22981857			
		AGS Reference					
Component	LOD/Units	Method					
1,3-Dichloropropane	<7 µg/kg	TM116	<140 @ M				
Tetrachloroethene	<5 µg/kg	TM116	<100 @ M				
Dibromochloromethane	<10 µg/kg	TM116	<200 @ M				
1,2-Dibromoethane	<10 µg/kg	TM116	<200 @ M				
Chlorobenzene	<5 µg/kg	TM116	<100 @ M				
1,1,1,2-Tetrachloroethane	<10 µg/kg	TM116	<200 @ M				
Ethylbenzene	<4 µg/kg	TM116	<80 @ M	<4 @ M			
p/m-Xylene	<10 µg/kg	TM116	<200 @ #	<10 @ #			
o-Xylene	<10 µg/kg	TM116	<200 @ M	<10 @ M			
Styrene	<10 µg/kg	TM116	<200 @ #				
Bromoform	<10 µg/kg	TM116	<200 @ M				
Isopropylbenzene	<5 µg/kg	TM116	<100 @ #				
1,1,2,2-Tetrachloroethane	<10 µg/kg	TM116	<200 @ #				
1,2,3-Trichloropropane	<16 µg/kg	TM116	<320 @ M				
Bromobenzene	<10 µg/kg	TM116	<200 @ M				
Propylbenzene	<10 µg/kg	TM116	<200 @ M				
2-Chlorotoluene	<9 µg/kg	TM116	<180 @ M				
1,3,5-Trimethylbenzene	<8 µg/kg	TM116	<160 @ M				
4-Chlorotoluene	<10 µg/kg	TM116	<200 @ M				
tert-Butylbenzene	<14 µg/kg	TM116	<280 @ M				
1,2,4-Trimethylbenzene	<9 µg/kg	TM116	<180 @ #				
sec-Butylbenzene	<10 µg/kg	TM116	<200 @				
4-Isopropyltoluene	<10 µg/kg	TM116	<200 @ M				
1,3-Dichlorobenzene	<8 µg/kg	TM116	<160 @ M				
1,4-Dichlorobenzene	<5 µg/kg	TM116	<100 @ M				
n-Butylbenzene	<11 µg/kg	TM116	<220 @				
1,2-Dichlorobenzene	<10 µg/kg	TM116	<200 @ M				
1,2-Dibromo-3-chloropropane	<14 µg/kg	TM116	<280 @ M				
Tert-amyl methyl ether	<10 µg/kg	TM116	<200 @ #				
1,2,4-Trichlorobenzene	<20 µg/kg	TM116	<400 @				
Hexachlorobutadiene	<20 µg/kg	TM116	<400 @				
Naphthalene	<13 µg/kg	TM116	<260 @ M				



CERTIFICATE OF ANALYSIS

Validated

SDG: 201007-73
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 573946
Superseded Report: 572665

CEN 2:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/

Client Reference		Site Location	A303 Stonehenge
Mass Sample taken (kg)	0.205	Natural Moisture Content (%)	18.2
Mass of dry sample (kg)	0.175	Dry Matter Content (%)	84.6
Particle Size <4mm	>95%		

Case	
SDG	201007-73
Lab Sample Number(s)	22981854
Sampled Date	02-Oct-2020
Customer Sample Ref.	STP72202A
Depth (m)	0.30

Eluate Analysis	Conc ⁿ in 2:1 eluate (mg/l)		2:1 conc ⁿ leached (mg/kg)	
	Result	Limit of Detection	Result	Limit of Detection
Aliphatics >C12-C16	<0.01	<0.01	<0.02	<0.02
Aliphatics >C16-C21	<0.01	<0.01	<0.02	<0.02
Aliphatics >C21-C35	<0.01	<0.01	<0.02	<0.02
Total Aliphatics >C12-C35	<0.01	<0.01	<0.02	<0.02
Aromatics >EC12-EC16	<0.01	<0.01	<0.02	<0.02
Aromatics >EC16-EC21	<0.01	<0.01	<0.02	<0.02
Aromatics >EC21-EC35	<0.01	<0.01	<0.02	<0.02
Aromatics >EC16-EC35	<0.01	<0.01	<0.02	<0.02
Total Aromatics >EC12-EC35	<0.01	<0.01	<0.02	<0.02
TPH (Total Aliphatics + Total Aromatics) >C5-C35	<0.01	<0.01	<0.02	<0.02
Ammoniacal Nitrogen as N	<0.2	<0.2	<0.4	<0.4
Chromium III	<0.03	<0.03	<0.06	<0.06
Hexavalent Chromium	<0.03	<0.03	<0.06	<0.06
Sulphate (soluble)	11.6	<2	23.2	<4
Dissolved Organic Carbon	7.5	<3	15	<6
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.00002	<0.00002
Antimony	<0.001	<0.001	<0.002	<0.002
Naphthalene (diss.filt)	<0.00001	<0.00001	<0.00002	<0.00002
Total Cyanide (W)	<0.05	<0.05	<0.1	<0.1
Acenaphthene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Arsenic	0.00063	<0.0005	0.00126	<0.001
Free Cyanide (W)	<0.05	<0.05	<0.1	<0.1
Acenaphthylene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Phenol by HPLC (W)	<0.002	<0.002	<0.004	<0.004
Beryllium	<0.0001	<0.0001	<0.0002	<0.0002
Fluoranthene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Anthracene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Boron	0.013	<0.01	0.026	<0.02
Phenanthrene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Cadmium	<0.00008	<0.00008	<0.00016	<0.00016
Fluorene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Chrysene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Pyrene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Benzo(a)anthracene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Chromium	<0.001	<0.001	<0.002	<0.002

Leach Test Information

Date Prepared	28-Oct-2020
pH (pH Units)	8.20
Conductivity (µS/cm)	261.00
Temperature (°C)	18.80
Volume Leachant (Litres)	0.319
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates

04/11/2020 05:02:54

05:01:54 04/11/2020



CERTIFICATE OF ANALYSIS

Validated

SDG: 201007-73
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 573946
Superseded Report: 572665

CEN 2:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/'

Client Reference	
Mass Sample taken (kg)	0.205
Mass of dry sample (kg)	0.175
Particle Size <4mm	>95%

Site Location	A303 Stonehenge
Natural Moisture Content (%)	18.2
Dry Matter Content (%)	84.6

Case	
SDG	201007-73
Lab Sample Number(s)	22981854
Sampled Date	02-Oct-2020
Customer Sample Ref.	STP72202A
Depth (m)	0.30

Eluate Analysis	Conc ⁿ in 2:1 eluate (mg/l)		2:1 conc ⁿ leached (mg/kg)	
	Result	Limit of Detection	Result	Limit of Detection
Benzo(b)fluoranthene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Benzo(k)fluoranthene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Benzo(a)pyrene (diss.filt)	<0.000002	<0.000002	<0.000004	<0.000004
Copper	0.00452	<0.0003	0.00904	<0.0006
Dibenzo(a,h)anthracene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Lead	<0.0002	<0.0002	<0.0004	<0.0004
Benzo(g,h,i)perylene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Indeno(1,2,3-cd)pyrene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Manganese	<0.003	<0.003	<0.006	<0.006
Molybdenum	<0.003	<0.003	<0.006	<0.006
PAH 16 EPA Total by GCMS (diss.filt)	<0.000082	<0.000082	<0.000164	<0.000164
Nickel	0.0012	<0.0004	0.0024	<0.0008
Phosphorus	0.0605	<0.01	0.121	<0.02
Selenium	<0.001	<0.001	<0.002	<0.002
Zinc	<0.001	<0.001	<0.002	<0.002
Calcium (Dis.Filt) mg/l	57	<0.2	114	<0.4
Iron (Dis.Filt) mg/l	<0.019	<0.019	<0.038	<0.038
TPH CWG (W)				
Surrogate Recovery	-	-	-	-
GRO TOT (C5-C12)	<0.05	<0.05	<0.1	<0.1
Aliphatics C5-C6	<0.01	<0.01	<0.02	<0.02
Aliphatics >C6-C8	<0.01	<0.01	<0.02	<0.02
Aliphatics >C8-C10	<0.01	<0.01	<0.02	<0.02
Aliphatics >C10-C12	<0.01	<0.01	<0.02	<0.02
Aromatics C6-C7	<0.01	<0.01	<0.02	<0.02
Aromatics >C7-C8	<0.01	<0.01	<0.02	<0.02
MTBE GC-FID	<0.003	<0.003	<0.006	<0.006
Aromatics >EC8 -EC10	<0.01	<0.01	<0.02	<0.02
Aromatics >EC10-EC12	<0.01	<0.01	<0.02	<0.02
Benzene by GC	<0.007	<0.007	<0.014	<0.014
Toluene by GC	<0.004	<0.004	<0.008	<0.008
Ethylbenzene by GC	<0.005	<0.005	<0.01	<0.01
m & p Xylene by GC	<0.008	<0.008	<0.016	<0.016
o Xylene by GC	<0.003	<0.003	<0.006	<0.006
Sum m&p and o Xylene by GC	<0.011	<0.011	<0.022	<0.022
Sum of BTEX by GC	<0.028	<0.028	<0.056	<0.056

Leach Test Information

Date Prepared	28-Oct-2020
pH (pH Units)	8.20
Conductivity (µS/cm)	261.00
Temperature (°C)	18.80
Volume Leachant (Litres)	0.319
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates

04/11/2020 05:02:54



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Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM073	MEWAM BOOK 60 1980,95 1985, HMSO / Modified: US EPA Method 8081A & 8141A	Determination of organochlorine and organophosphorous pesticides by GCMS
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM174	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID
TM178	Modified: US EPA Method 8100	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS in Waters
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser
TM243		Mixed Anions In Soils By Kone
TM245	By GC-FID	Determination of GRO by Headspace in waters
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).



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Test Completion Dates

Lab Sample No(s)	22981854	22981857
Customer Sample Ref.	STP72202A	STP72202A
AGS Ref.		
Depth	0.30	1.00
Type	Soil/Solid (S)	Soil/Solid (S)

Ammoniacal Nitrogen	02-Nov-2020	
Ammonium Soil by Titration	21-Oct-2020	21-Oct-2020
Anions by Kone (soil)	21-Oct-2020	21-Oct-2020
Anions by Kone (w)	01-Nov-2020	
CEN 2:1 Leachate (1 Stage)	28-Oct-2020	
CEN Readings	29-Oct-2020	
Chromium III	03-Nov-2020	22-Oct-2020
Cyanide Comp/Free/Total/Thiocyanate	03-Nov-2020	21-Oct-2020
Dissolved Metals by ICP-MS	02-Nov-2020	
Dissolved Organic/Inorganic Carbon	02-Nov-2020	
EPH CWG (Aliphatic) Filtered GC (W)	03-Nov-2020	
EPH CWG (Aromatic) Filtered GC (W)	03-Nov-2020	
EPH CWG GC (S)	21-Oct-2020	21-Oct-2020
GRO by GC-FID (S)	20-Oct-2020	20-Oct-2020
GRO by GC-FID (W)	30-Oct-2020	
Hexavalent Chromium (s)	22-Oct-2020	22-Oct-2020
Hexavalent Chromium (w)	03-Nov-2020	
Mercury Dissolved	31-Oct-2020	
Metals in solid samples by OES	26-Oct-2020	21-Oct-2020
Moisture at 105C	28-Oct-2020	
OC OP Pesticides and Triazine Herb	22-Oct-2020	
PAH by GCMS	23-Oct-2020	23-Oct-2020
PAH in waters by GC-MS (diss.filt)	02-Nov-2020	
pH	21-Oct-2020	21-Oct-2020
pH Value of Filtered Water	31-Oct-2020	
Phenols by HPLC (S)	22-Oct-2020	21-Oct-2020
Phenols by HPLC (W)	02-Nov-2020	
Sample description	19-Oct-2020	19-Oct-2020
Semi Volatile Organic Compounds	21-Oct-2020	
Total Organic Carbon	22-Oct-2020	22-Oct-2020
TPH CWG Filtered (W)	03-Nov-2020	
TPH CWG GC (S)	21-Oct-2020	21-Oct-2020
VOC MS (S)		21-Oct-2020



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ASSOCIATED AQC DATA

Ammoniacal Nitrogen

Component	Method Code	QC 2329
Ammoniacal Nitrogen as N	TM099	97.2 93.14 : 108.60

Ammonium Soil by Titration

Component	Method Code	QC 2305
Exchangeable Ammonium as NH4	TM024	83.08 76.20 : 110.13

Anions by Kone (w)

Component	Method Code	QC 2313
Sulphate (soluble)	TM184	96.8 91.99 : 109.30

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2372	QC 2344	QC 2394
Free Cyanide	TM153	86.83 78.61 : 114.43	86.34 78.61 : 114.43	
Free Cyanide (W)	TM227			101.5 90.50 : 114.50
Thiocyanate	TM153	95.51 90.48 : 109.52	96.79 90.48 : 109.52	
Thiocyanate (W)	TM227			101.25 90.50 : 113.00
Total Cyanide	TM153	95.8 76.80 : 112.96	93.71 76.80 : 112.96	
Total Cyanide (W)	TM227			105.75 91.75 : 112.75

Dissolved Metals by ICP-MS

Component	Method Code	QC 2363
Aluminium	TM152	101.0 90.78 : 110.89
Antimony	TM152	104.67 77.22 : 119.42
Arsenic	TM152	101.67 86.77 : 107.67
Barium	TM152	103.83 87.86 : 110.23



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Dissolved Metals by ICP-MS

		QC 2363
Beryllium	TM152	101.17 86.19 : 112.98
Bismuth	TM152	105.17 84.06 : 106.46
Borate	TM152	100.62 88.00 : 112.00
Boron	TM152	100.67 83.92 : 114.90
Cadmium	TM152	102.67 88.89 : 106.69
Calcium	TM152	100.0 80.24 : 117.95
Chromium	TM152	99.67 83.22 : 110.16
Cobalt	TM152	100.67 82.49 : 112.36
Copper	TM152	101.67 83.14 : 113.00
Iron	TM152	101.33 88.40 : 109.24
Lead	TM152	106.33 83.71 : 109.58
Lithium	TM152	103.17 84.50 : 114.28
Magnesium	TM152	100.0 87.56 : 114.57
Manganese	TM152	100.83 93.05 : 112.42
Molybdenum	TM152	101.33 85.53 : 107.42
Nickel	TM152	101.67 88.05 : 106.42
Phosphorus	TM152	101.67 82.76 : 107.72
Potassium	TM152	100.0 88.45 : 106.42
Selenium	TM152	104.33 85.61 : 111.03
Silver	TM152	102.5 95.35 : 113.25
Sodium	TM152	100.67 88.32 : 106.30
Strontium	TM152	103.67 83.77 : 107.87
Tellurium	TM152	100.33 82.83 : 104.73
Thallium	TM152	101.33 77.47 : 113.87
Tin	TM152	103.67 91.00 : 109.00
Titanium	TM152	101.67 87.29 : 108.31
Tungsten	TM152	101.33 68.27 : 122.97



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Dissolved Metals by ICP-MS

		QC 2363
Uranium	TM152	104.33 82.46 : 105.16
Vanadium	TM152	98.33 88.43 : 114.30
Zinc	TM152	102.67 85.57 : 114.31

Dissolved Organic/Inorganic Carbon

Component	Method Code	QC 2379
Dissolved Inorganic Carbon	TM090	104.67 93.58 : 112.28
Dissolved Organic Carbon	TM090	101.83 96.28 : 110.58

EPH CWG (Aromatic) Filtered GC (W)

Component	Method Code	QC 2354
Total Aromatics >EC10-EC40	TM174	100.24 73.75 : 120.32

EPH CWG GC (S)

Component	Method Code	QC 2331	QC 2390
EPH >C8-C40 Raw	TM414	89.88 56.39 : 129.94	96.83 77.66 : 104.66
Total Aliphatics Raw	TM414	96.17 62.55 : 133.12	102.71 84.39 : 115.61
Total Aromatics Raw	TM414	95.28 57.00 : 150.27	109.26 57.00 : 150.27

GRO by GC-FID (S)

Component	Method Code	QC 2339
QC	TM089	94.16 70.34 : 111.95

GRO by GC-FID (W)

Component	Method Code	QC 2308
Benzene by GC	TM245	105.0 79.13 : 118.84
Ethylbenzene by GC	TM245	109.5 79.54 : 115.99
m & p Xylene by GC	TM245	109.25 78.44 : 116.32



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GRO by GC-FID (W)

		QC 2308
MTBE GC-FID	TM245	104.5 81.43 : 120.09
o Xylene by GC	TM245	111.0 76.85 : 120.29
QC	TM245	94.27 71.58 : 131.01
Toluene by GC	TM245	107.5 79.00 : 121.96

Hexavalent Chromium (s)

		QC 2329
Hexavalent Chromium	TM151	104.0 95.60 : 107.60

Hexavalent Chromium (w)

		QC 2314
Hexavalent Chromium	TM241	100.0 94.17 : 106.17

Mercury Dissolved

		QC 2300
Mercury Dissolved (CVAF)	TM183	86.2 69.30 : 128.70

Metals in solid samples by OES

Component	Method Code	QC 2358	QC 2390	QC 2311	QC 2389
Aluminium	TM181	85.75 73.56 : 108.85	92.04 73.56 : 108.85	91.15 73.56 : 108.85	93.81 73.56 : 108.85
Antimony	TM181	91.87 76.89 : 111.24	102.44 76.89 : 111.24	106.1 76.89 : 111.24	100.0 76.89 : 111.24
Arsenic	TM181	93.6 88.53 : 111.01	98.84 88.53 : 111.01	104.07 88.53 : 111.01	103.49 88.53 : 111.01
Barium	TM181	86.88 77.67 : 105.35	95.41 77.67 : 105.35	100.0 77.67 : 105.35	98.17 77.67 : 105.35
Beryllium	TM181	101.12 85.44 : 109.61	98.13 85.44 : 109.61	104.1 85.44 : 109.61	104.85 85.44 : 109.61
Boron	TM181	91.4 73.51 : 104.66	81.66 73.51 : 104.66	86.53 73.51 : 104.66	84.81 73.51 : 104.66
Cadmium	TM181	92.18 77.67 : 104.12	90.12 77.67 : 104.12	92.59 77.67 : 104.12	92.59 77.67 : 104.12



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Metals in solid samples by OES

		QC 2358	QC 2390	QC 2311	QC 2389
Chromium	TM181	86.61 86.11 : 106.21	93.71 86.11 : 106.21	97.57 86.11 : 106.21	86.61 86.11 : 106.21
Cobalt	TM181	84.59 84.60 : 104.13	89.94 84.60 : 104.13	95.28 84.60 : 104.13	93.08 84.60 : 104.13
Copper	TM181	86.8 82.40 : 105.45	95.42 82.40 : 105.45	97.36 82.40 : 105.45	89.96 82.40 : 105.45
Iron	TM181	89.68 82.95 : 110.58	98.41 82.95 : 110.58	96.83 82.95 : 110.58	96.83 82.95 : 110.58
Lead	TM181	86.26 78.24 : 104.05	90.09 78.24 : 104.05	96.4 78.24 : 104.05	88.06 78.24 : 104.05
Manganese	TM181	105.28 94.29 : 119.51	116.11 94.29 : 119.51	115.83 94.29 : 119.51	108.61 94.29 : 119.51
Mercury	TM181	85.99 83.16 : 107.81	91.55 83.16 : 107.81	97.83 83.16 : 107.81	101.21 83.16 : 107.81
Molybdenum	TM181	90.12 87.11 : 106.87	98.77 87.11 : 106.87	105.76 87.11 : 106.87	96.3 87.11 : 106.87
Nickel	TM181	84.35 80.26 : 102.28	89.98 80.26 : 102.28	95.35 80.26 : 102.28	96.33 80.26 : 102.28
Phosphorus	TM181	108.69 94.56 : 124.28	114.55 94.56 : 124.28	121.82 94.56 : 124.28	124.65 94.56 : 124.28
Selenium	TM181	93.73 82.28 : 110.48	99.22 82.28 : 110.48	100.39 82.28 : 110.48	101.57 82.28 : 110.48
Strontium	TM181	82.63 79.13 : 102.79	89.09 79.13 : 102.79	94.65 79.13 : 102.79	85.3 79.13 : 102.79
Thallium	TM181	93.36 82.94 : 111.86	97.79 82.94 : 111.86	103.1 82.94 : 111.86	103.1 82.94 : 111.86
Tin	TM181	90.11 86.72 : 110.03	98.48 86.72 : 110.03	105.32 86.72 : 110.03	97.72 86.72 : 110.03
Titanium	TM181	77.1 66.23 : 102.06	73.05 66.23 : 102.06	80.15 66.23 : 102.06	77.1 66.23 : 102.06
Vanadium	TM181	86.45 86.19 : 109.45	92.67 75.51 : 108.87	101.47 86.19 : 109.45	95.24 86.19 : 109.45
Zinc	TM181	91.58 84.68 : 113.99	95.28 84.68 : 113.99	100.41 84.68 : 113.99	94.66 84.68 : 113.99

OC OP Pesticides and Triazine Herb

Component	Method Code	QC 2374
Atrazine (Raw)	TM073	84.26 78.55 : 119.92
Azinphos methyl (Raw)	TM073	142.57 58.68 : 154.71
cis-Chlordane (Raw)	TM073	87.22 71.90 : 129.99
Diazinon (Raw)	TM073	72.92 70.00 : 130.00
Dichlorvos (Raw)	TM073	90.26 70.00 : 130.00
Dieldrin (Raw)	TM073	88.93 70.00 : 130.00
gamma-HCH (Lindane) (Raw)	TM073	75.25 71.48 : 129.99
Heptachlor (Raw)	TM073	83.27 66.39 : 134.63



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OC OP Pesticides and Triazine Herb

		QC 2374
Hexachlorobenzene (Raw)	TM073	84.78 47.15 : 124.32
Malathion (Raw)	TM073	82.99 70.00 : 130.00
p,p-DDT (Raw)	TM073	83.25 70.00 : 130.00
Parathion (Raw)	TM073	92.37 64.13 : 127.88

PAH by GCMS

Component	Method Code	QC 2355
Acenaphthene	TM218	89.5 80.97 : 105.99
Acenaphthylene	TM218	87.0 74.76 : 107.36
Anthracene	TM218	90.5 73.04 : 106.97
Benz(a)anthracene	TM218	104.5 68.79 : 119.64
Benzo(a)pyrene	TM218	103.5 66.17 : 117.52
Benzo(b)fluoranthene	TM218	98.0 66.40 : 118.34
Benzo(ghi)perylene	TM218	102.0 67.68 : 112.07
Benzo(k)fluoranthene	TM218	100.0 72.84 : 114.66
Chrysene	TM218	102.5 68.39 : 115.56
Dibenzo(ah)anthracene	TM218	104.5 69.03 : 110.45
Fluoranthene	TM218	94.0 69.37 : 117.19
Fluorene	TM218	92.0 75.38 : 105.98
Indeno(123cd)pyrene	TM218	97.0 65.91 : 113.61
Naphthalene	TM218	83.5 71.40 : 105.87
Phenanthrene	TM218	92.0 74.04 : 109.30
Pyrene	TM218	95.5 69.68 : 115.27

PAH in waters by GC-MS (diss.filt)

Component	Method Code	QC 2360
Acenaphthene (diss.filt)	TM178	109.6 94.00 : 120.40
Acenaphthylene (diss.filt)	TM178	103.6 91.20 : 117.60
Anthracene (diss.filt)	TM178	104.4 91.20 : 112.80



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PAH in waters by GC-MS (diss.filt)

		QC 2360
Benzo(a)anthracene (diss.filt)	TM178	102.4 86.80 : 115.60
Benzo(a)pyrene (diss.filt)	TM178	101.2 85.20 : 114.00
Benzo(b)fluoranthene (diss.filt)	TM178	99.2 86.40 : 117.60
Benzo(g,h,i)perylene (diss.filt)	TM178	104.0 87.60 : 121.20
Benzo(k)fluoranthene (diss.filt)	TM178	101.2 91.20 : 124.80
Chrysene (diss.filt)	TM178	104.4 95.20 : 124.00
Dibenzo(a,h)anthracene (diss.filt)	TM178	99.2 84.80 : 118.40
Fluoranthene (diss.filt)	TM178	108.8 91.20 : 120.00
Fluorene (diss.filt)	TM178	109.6 93.20 : 119.60
Indeno(1,2,3-cd)pyrene (diss.filt)	TM178	96.4 86.80 : 115.60
Naphthalene (diss.filt)	TM178	106.4 90.40 : 126.40
Phenanthrene (diss.filt)	TM178	102.0 94.40 : 118.40
Pyrene (diss.filt)	TM178	106.4 93.60 : 120.00

pH

Component	Method Code	QC 2387
pH	TM133	100.53 99.74 : 102.91

pH Value of Filtered Water

Component	Method Code	QC 2316
pH	TM256	100.94 99.33 : 102.54

Phenols by HPLC (S)

Component	Method Code	QC 2397	QC 2311
2,3,5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	100.65 65.50 : 89.50	101.95 65.50 : 89.50
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	87.72 84.00 : 124.00	88.3 84.00 : 124.00
Catechol by HPLC (S)	TM062 (S)	92.38 19.39 : 135.70	81.9 19.39 : 135.70



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Phenols by HPLC (S)

		QC 2397	QC 2311
Cresols by HPLC (S)	TM062 (S)	95.2 81.00 : 112.20	93.74 81.00 : 112.20
Naphthol by HPLC (S)	TM062 (S)	112.14 57.50 : 102.50	113.57 57.50 : 102.50
Phenol by HPLC (S)	TM062 (S)	99.34 88.67 : 124.67	97.35 88.67 : 124.67
Resorcinol HPLC (S)	TM062 (S)	94.34 69.99 : 127.22	93.71 69.99 : 127.22
Xylenols by HPLC (S)	TM062 (S)	99.58 95.22 : 115.89	99.06 95.22 : 115.89

Phenols by HPLC (W)

Component	Method Code	QC 2394
2,3,5 Trimethyl-Phenol by HPLC (W)	TM259	98.0 91.00 : 109.00
2-Isopropyl Phenol by HPLC (W)	TM259	93.0 85.00 : 109.00
Cresols by HPLC (W)	TM259	96.0 93.00 : 115.00
Naphthol by HPLC (W)	TM259	100.0 86.00 : 128.00
Phenol by HPLC (W)	TM259	91.0 88.24 : 111.76
Xylenols by HPLC (W)	TM259	99.17 94.83 : 110.83

Semi Volatile Organic Compounds

Component	Method Code	QC 2321
4-Bromophenylphenylether (Soil)	TM157	94.5 63.50 : 114.50
Benzo(a)anthracene (Soil)	TM157	95.5 71.89 : 120.91
Hexachlorobutadiene (Soil)	TM157	99.0 69.80 : 117.77
Naphthalene (Soil)	TM157	97.0 70.00 : 115.00
Nitrobenzene (Soil)	TM157	94.0 70.00 : 118.00
Phenol (Soil)	TM157	90.0 72.00 : 117.00

Total Organic Carbon

Component	Method Code	QC 2396
Total Organic Carbon	TM132	99.22 87.02 : 113.45

VOC MS (S)



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VOC MS (S)

Component	Method Code	QC 2395	QC 2301
1,1,1,2-tetrachloroethane	TM116	97.6 79.10 : 119.66	96.8 84.84 : 116.25
1,1,1-Trichloroethane	TM116	96.8 87.51 : 115.37	95.4 73.73 : 118.05
1,1,2-Trichloroethane	TM116	96.4 81.29 : 113.79	98.4 77.12 : 116.04
1,1-Dichloroethane	TM116	103.6 86.77 : 122.11	102.4 74.46 : 129.15
1,2-Dichloroethane	TM116	108.2 90.04 : 132.28	107.4 92.38 : 131.65
1,4-Dichlorobenzene	TM116	98.0 80.81 : 125.07	108.4 83.64 : 126.18
2-Chlorotoluene	TM116	93.6 73.13 : 114.13	99.4 76.03 : 113.25
4-Chlorotoluene	TM116	92.0 72.48 : 112.82	96.0 66.90 : 112.46
Benzene	TM116	98.2 84.29 : 112.22	97.6 88.60 : 113.80
Carbon Disulphide	TM116	103.2 75.11 : 124.81	102.4 74.91 : 122.14
Carbontetrachloride	TM116	97.2 82.35 : 126.46	96.6 80.31 : 124.50
Chlorobenzene	TM116	95.2 82.88 : 122.42	98.0 83.81 : 114.18
Chloroform	TM116	103.2 90.35 : 120.38	103.4 87.40 : 122.49
Chloromethane	TM116	112.8 65.80 : 138.88	104.4 65.89 : 136.93
Cis-1,2-Dichloroethene	TM116	96.2 78.27 : 128.90	99.0 80.67 : 126.72
Dibromomethane	TM116	95.6 76.00 : 120.73	91.0 73.23 : 118.35
Dichloromethane	TM116	109.8 92.27 : 134.36	111.4 81.11 : 133.25
Ethylbenzene	TM116	88.2 70.95 : 113.07	92.4 75.92 : 110.41
Hexachlorobutadiene	TM116	73.2 14.55 : 147.92	107.4 12.82 : 152.73
Isopropylbenzene	TM116	79.4 52.00 : 108.19	82.4 55.79 : 97.59
Naphthalene	TM116	108.8 80.29 : 135.77	102.8 80.86 : 128.81
o-Xylene	TM116	81.0 64.92 : 98.85	86.4 69.99 : 108.74
p/m-Xylene	TM116	85.9 72.04 : 104.04	92.0 68.32 : 108.91
Sec-Butylbenzene	TM116	76.6 27.03 : 135.73	88.4 38.50 : 101.50
Tetrachloroethene	TM116	97.2 81.43 : 126.65	98.6 76.95 : 121.02
Toluene	TM116	90.4 82.44 : 103.50	92.6 74.24 : 107.42
Trichloroethene	TM116	96.0 79.80 : 112.33	95.8 77.61 : 111.54



CERTIFICATE OF ANALYSIS

Validated

SDG: 201007-73
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 573946
Superseded Report: 572665

VOC MS (S)

		QC 2395	QC 2301
Trichlorofluoromethane	TM116	109.0 86.68 : 126.82	106.4 84.55 : 133.27
Vinyl Chloride	TM116	116.8 69.66 : 136.55	114.4 68.02 : 143.37

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis .

The figure detailed is the percentage recovery result for the AQC .

The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control .



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Chromatogram

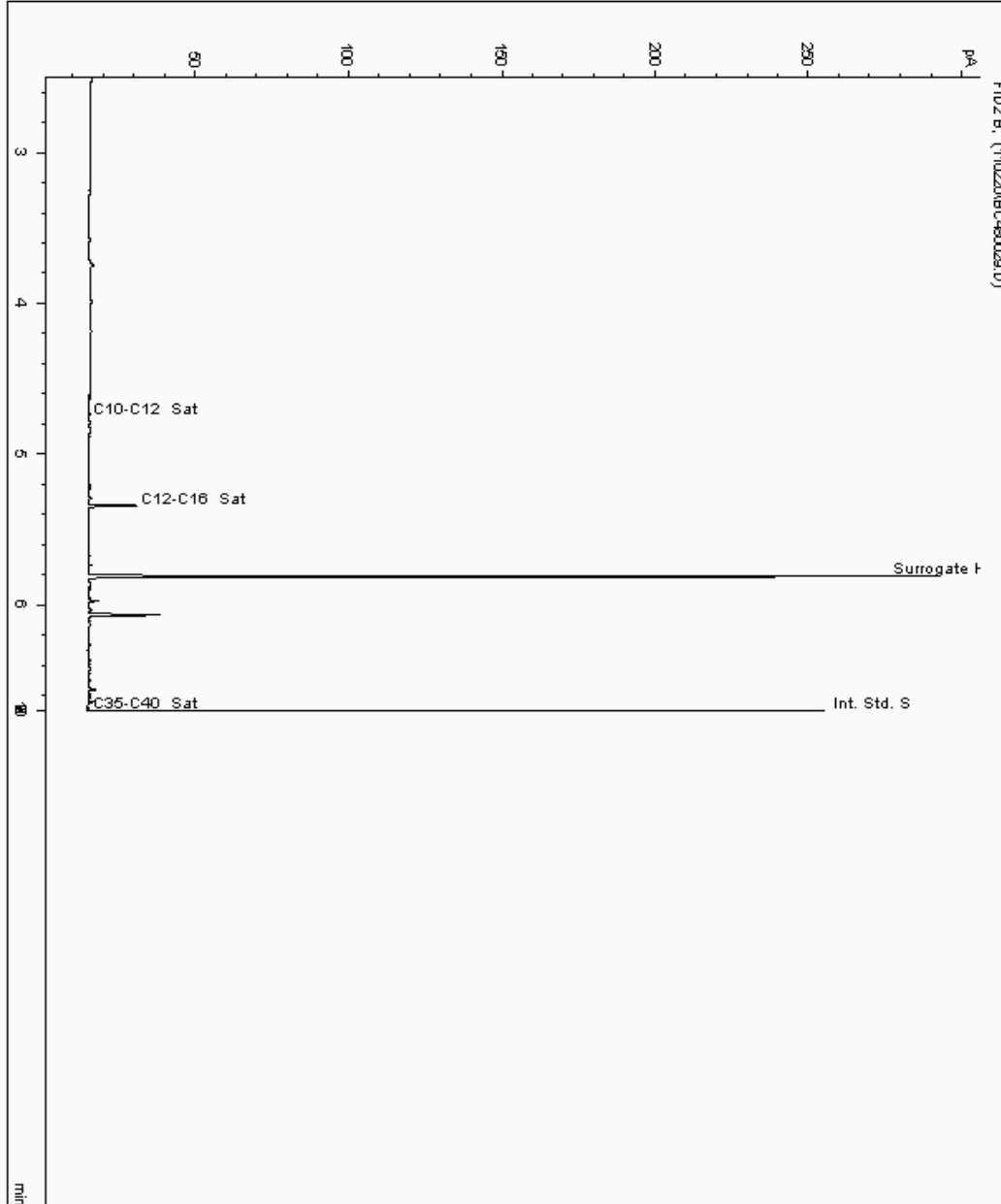
Analysis: EPH CWG (Aliphatic) Filtered GC (W)

Sample No : 23144189
Sample ID : STP72202A

Depth : 0.30

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 21709597-
Date Acquired : 02/11/2020 21:06:10 PM
Units : ppb
Dilution : STP72202A [0.30] CEN 2 1 ->
CF : 1
Multiplier : 0.026





CERTIFICATE OF ANALYSIS

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SDG: 201007-73
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Client Reference: JFR1451
Order Number:

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Chromatogram

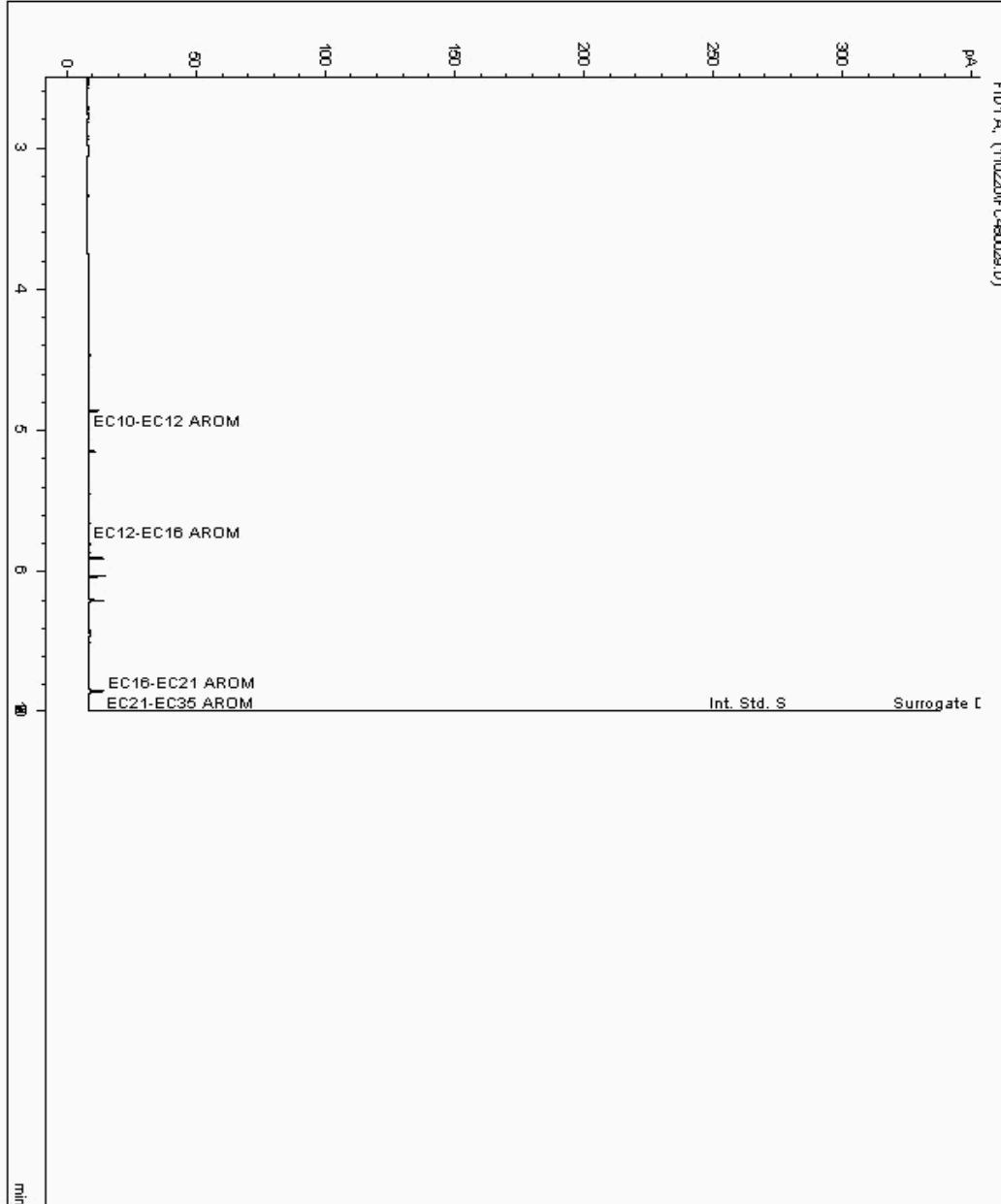
Analysis: EPH CWG (Aromatic) Filtered GC (W)

Sample No : 23144189
Sample ID : STP72202A

Depth : 0.30

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 21709598-
Date Acquired : 02/11/2020 21:06:10 PM
Units : ppb
Dilution : STP72202A [0.30] CEN 2 1 ->
CF : 1
Multiplier : 0.026





CERTIFICATE OF ANALYSIS

Validated

SDG: 201007-73
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

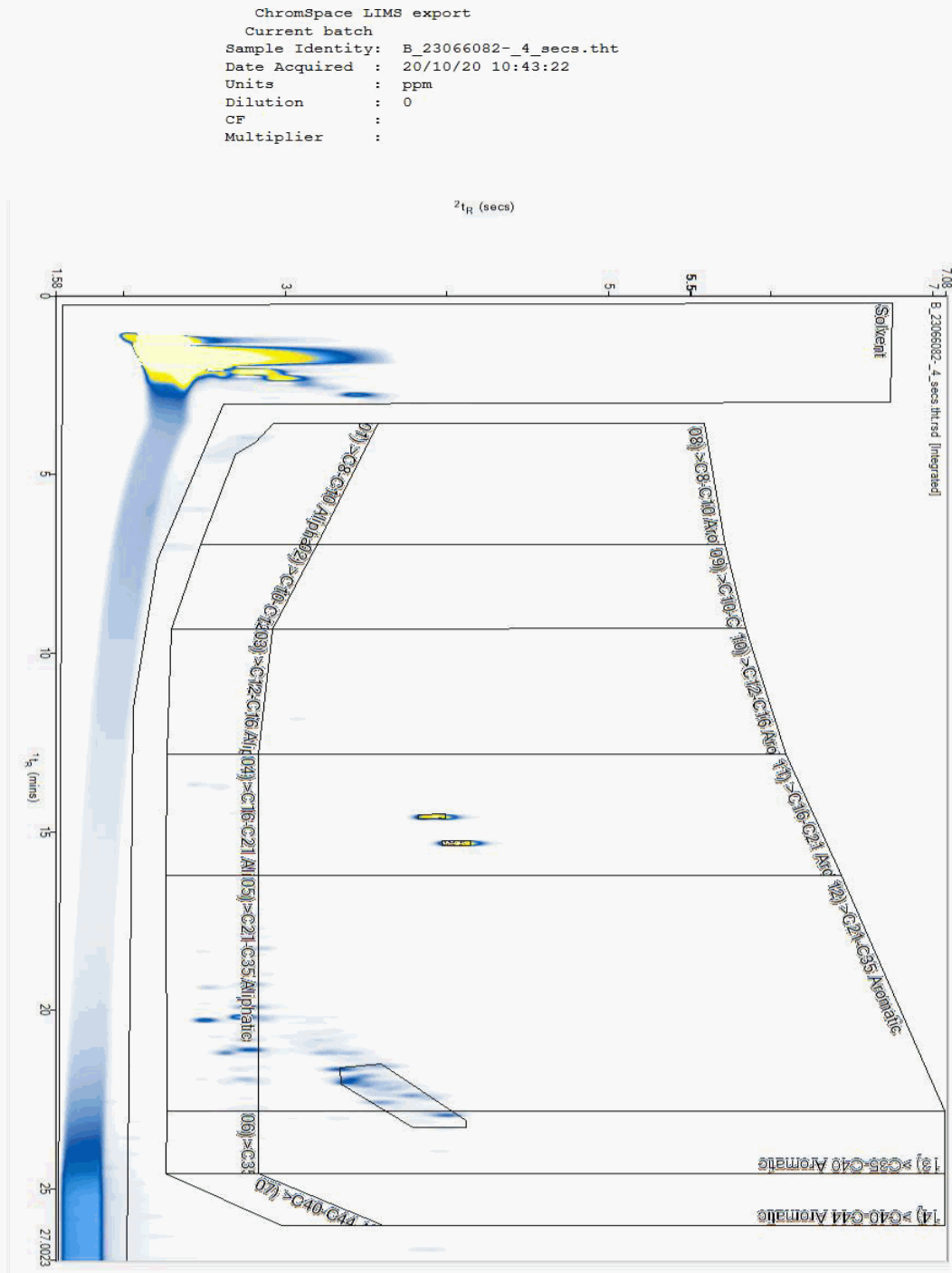
Report Number: 573946
Superseded Report: 572665

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23066082
Sample ID : STP72202A

Depth : 0.30





CERTIFICATE OF ANALYSIS

Validated

SDG: 201007-73
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

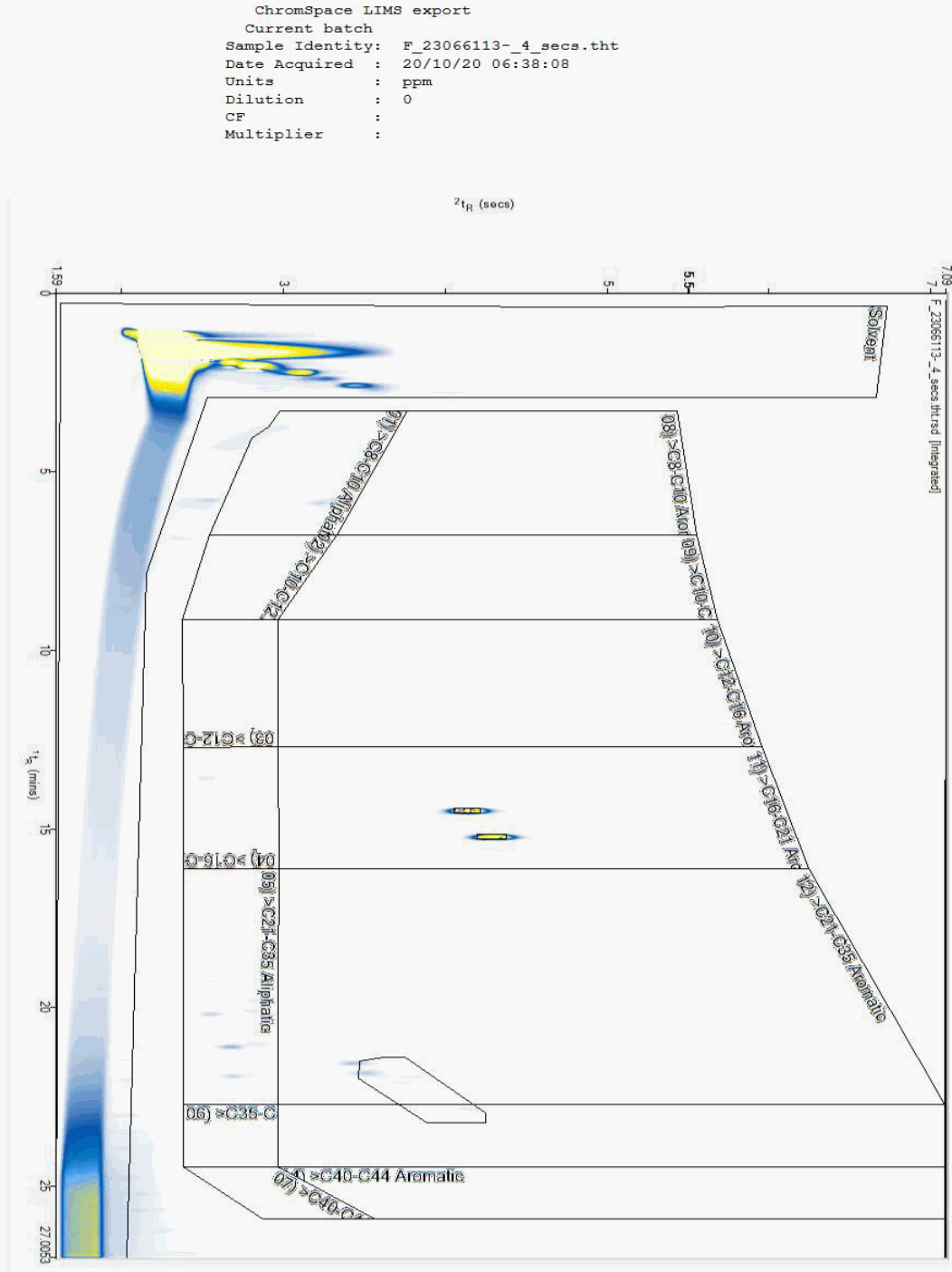
Report Number: 573946
Superseded Report: 572665

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23066113
Sample ID : STP72202A

Depth : 1.00





CERTIFICATE OF ANALYSIS

Validated

SDG: 201007-73
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

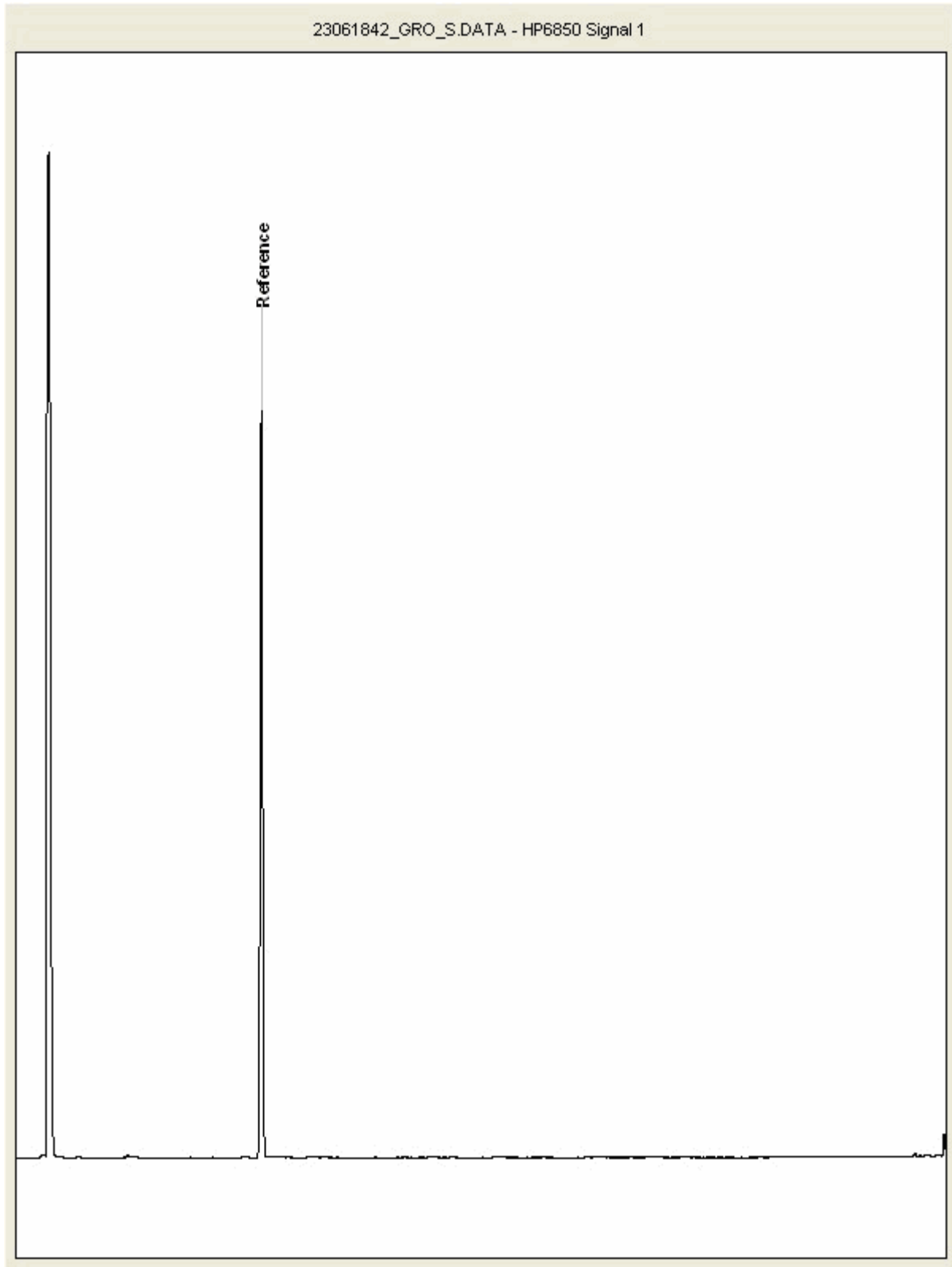
Report Number: 573946
Superseded Report: 572665

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23061842
Sample ID : STP72202A

Depth : 1.00





CERTIFICATE OF ANALYSIS

Validated

SDG: 201007-73
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

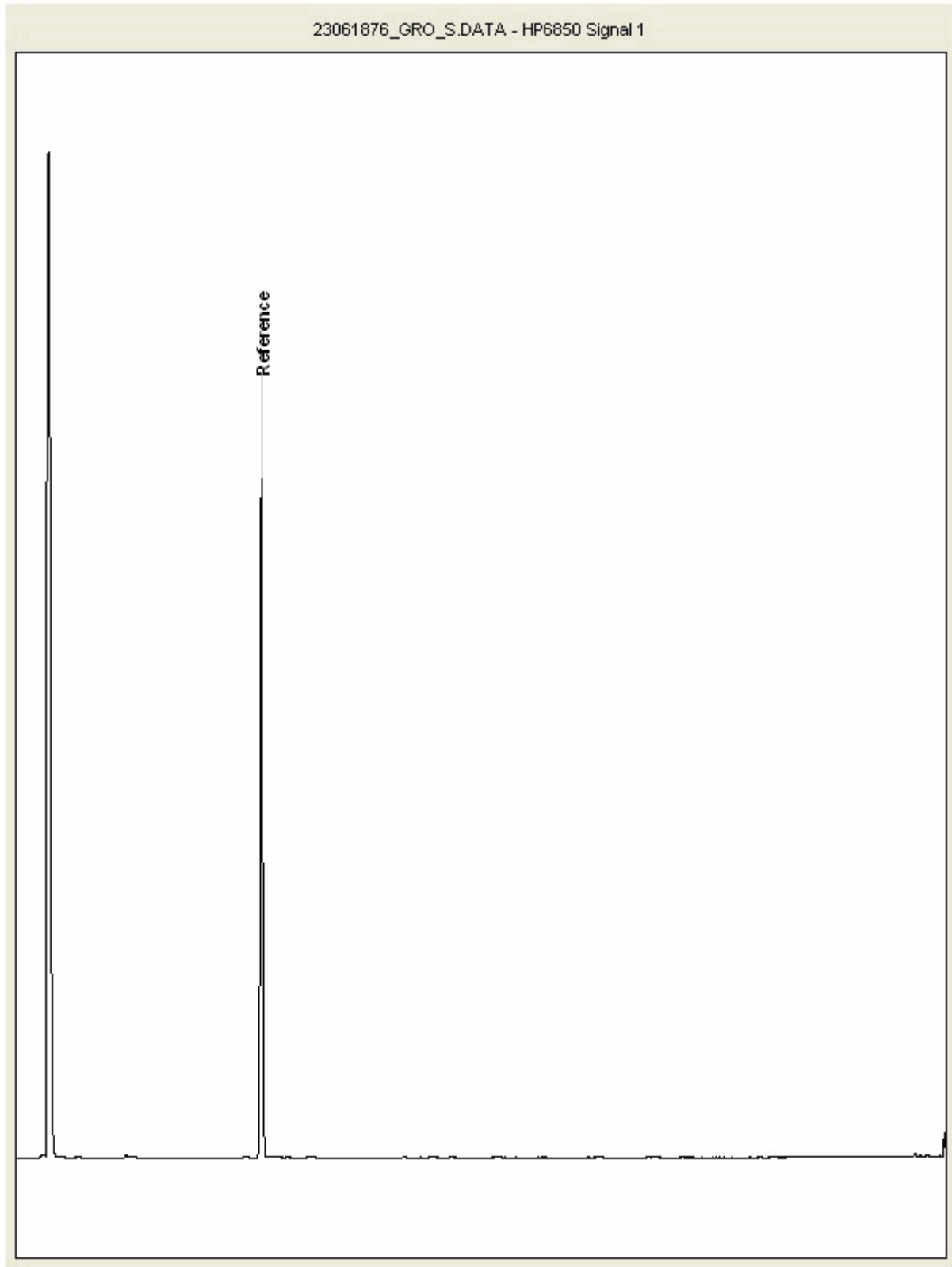
Report Number: 573946
Superseded Report: 572665

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23061876
Sample ID : STP72202A

Depth : 0.30





CERTIFICATE OF ANALYSIS

Validated

SDG: 201007-73
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

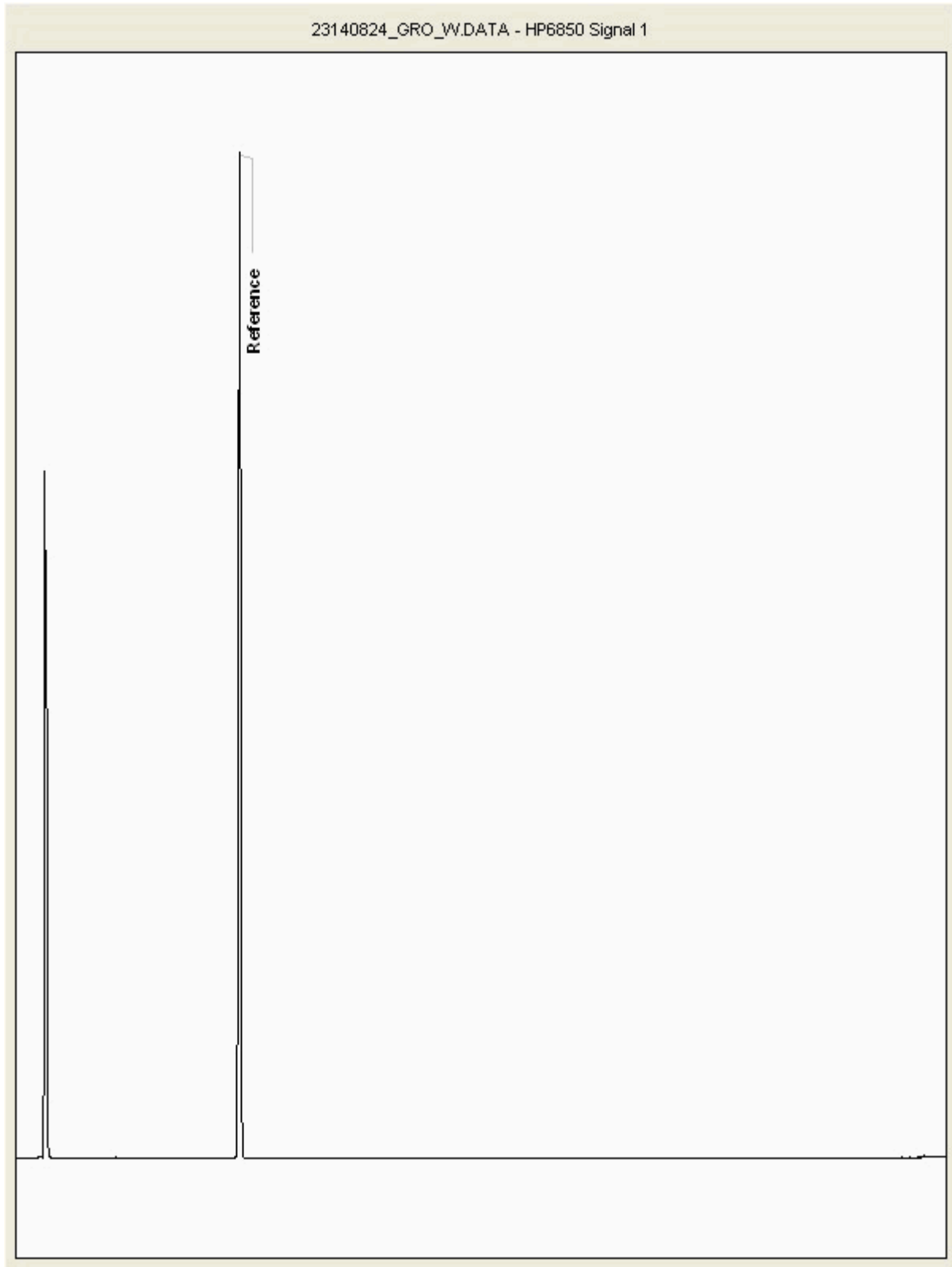
Report Number: 573946
Superseded Report: 572665

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 23140824
Sample ID : STP72202A

Depth : 0.30





CERTIFICATE OF ANALYSIS

SDG: 201007-73	Client Reference: JFR1451	Report Number: 573946
Location: A303 Stonehenge	Order Number:	Superseded Report: 572665

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH₄ by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

19. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung. Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017)*.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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Website: www.alsenvironmental.co.uk

RPS Consultants Ltd
260 Park Avenue
Aztec West
Almondsbury
Bristol
BS32 4SY

Attention: Gary Riches

CERTIFICATE OF ANALYSIS

Date of report Generation: 13 November 2020
Customer: RPS Consultants Ltd
Sample Delivery Group (SDG): 201009-77
Your Reference: JFR1451
Location: A303 Stonehenge
Report No: 575579

This report has been revised and directly supersedes 573912 in its entirety.

We received 24 samples on Friday October 09, 2020 and 6 of these samples were scheduled for analysis which was completed on Friday November 13, 2020. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

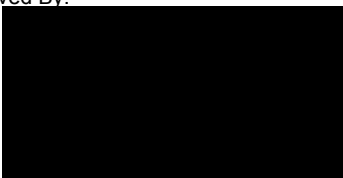
Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:



Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 201009-77	Client Reference: JFR1451	Report Number: 575579
Location: A303 Stonehenge	Order Number:	Superseded Report: 573912

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
22999040	STP72201	ES	0.00 - 0.10	07/10/2020
22999041	STP72201	ES	0.30 - 0.35	07/10/2020
22999045	STP72201	ES	0.50	07/10/2020
22999046	STP72201	ES	1.00	07/10/2020
22999301	STP72601	ES	0.00 - 0.10	07/10/2020
22999302	STP72601	ES	0.30	07/10/2020
22999303	STP72601	ES	0.50	07/10/2020
22999304	STP72601	ES	1.00	07/10/2020
22999048	STP72602	ES	0.00 - 0.10	06/10/2020
22999049	STP72602	ES	0.30 - 0.40	06/10/2020
22999050	STP72602	ES	0.50	06/10/2020
22999051	STP72602	ES	0.65	06/10/2020
22999903	STP72602	ES	1.00	06/10/2020
22999895	STPES1	ES	0.00 - 0.10	06/10/2020
22999896	STPES1	ES	0.30	06/10/2020
22999898	STPES1	ES	0.50	06/10/2020
22999899	STPES2	ES	0.00 - 0.10	06/10/2020
22999900	STPES2	ES	0.30	06/10/2020
22999901	STPES2	ES	0.50	06/10/2020
22999902	STPES2	ES	1.00	06/10/2020
22999296	STPES3	ES	0.00 - 0.10	07/10/2020
22999297	STPES3	ES	0.30	07/10/2020
22999298	STPES3	ES	0.65	07/10/2020
22999299	STPES3	ES	1.00	07/10/2020

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG:	201009-77	Client Reference:	JFR1451	Report Number:	575579
Location:	A303 Stonehenge	Order Number:		Superseded Report:	573912

Results Legend

- X Test
- N No Determination Possible

Sample Types -

- S - Soil/Solid
- UNS - Unspecified Solid
- GW - Ground Water
- SW - Surface Water
- LE - Land Leachate
- PL - Prepared Leachate
- PR - Process Water
- SA - Saline Water
- TE - Trade Effluent
- TS - Treated Sewage
- US - Untreated Sewage
- RE - Recreational Water
- DW - Drinking Water Non-regulatory
- UNL - Unspecified Liquid
- SL - Sludge
- G - Gas
- OTH - Other

	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type
	22999041	STP72201	ES	0.30 - 0.35	250g Amber Jar (ALE210)	S
	22999303	STP72601	ES	0.50	60g VOC (ALE215)	S
	22999898	STPES1	ES	0.50	1kg TUB with Handle (ALE260)	S
	22999900	STPES2	ES	0.30	250g Amber Jar (ALE215)	S
	22999902	STPES2	ES	1.00	1kg TUB with Handle (ALE260)	S
	22999298	STPES3	ES	0.65	60g VOC (ALE215)	S
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 3				
Ammonium Soil by Titration	All	NDPs: 0 Tests: 6	X	X	X	X
Anions by Kone (soil)	All	NDPs: 0 Tests: 6	X	X	X	X
Anions by Kone (w)	All	NDPs: 0 Tests: 3		X	X	X
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 5	X	X	X	X
CEN Readings	All	NDPs: 0 Tests: 3		X	X	X
Chromium III	All	NDPs: 0 Tests: 9	X	X	X	X
Coronene	All	NDPs: 0 Tests: 1				X
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 9	X	X	X	X
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 3		X	X	X
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 3		X	X	X
EPH by GCxGC-FID	All	NDPs: 0 Tests: 1				X
EPH CWG (Aliphatic) Filtered GC (W)	All	NDPs: 0 Tests: 3		X	X	X
EPH CWG (Aromatic) Filtered GC (W)	All	NDPs: 0 Tests: 3		X	X	X
EPH CWG GC (S)	All	NDPs: 0 Tests: 6	X	X	X	X



CERTIFICATE OF ANALYSIS

Validated

SDG:	201009-77	Client Reference:	JFR1451	Report Number:	575579
Location:	A303 Stonehenge	Order Number:		Superseded Report:	573912

Results Legend

- X Test
- N No Determination Possible

Sample Types -

- S - Soil/Solid
- UNS - Unspecified Solid
- GW - Ground Water
- SW - Surface Water
- LE - Land Leachate
- PL - Prepared Leachate
- PR - Process Water
- SA - Saline Water
- TE - Trade Effluent
- TS - Treated Sewage
- US - Untreated Sewage
- RE - Recreational Water
- DW - Drinking Water Non-regulatory
- UNL - Unspecified Liquid
- SL - Sludge
- G - Gas
- OTH - Other

	Lab Sample No(s)		Customer Sample Reference		AGS Reference		Depth (m)		Container		Sample Type		
	22999041	22999303	STP72201	STP72601	ES	ES	0.30 - 0.35	0.50	250g Amber Jar (ALE210)	60g VOC (ALE215)	S	S	
Fluoride	All	NDPs: 0 Tests: 1											
GRO by GC-FID (S)	All	NDPs: 0 Tests: 6	X	X	X	X	X	X	X	X	X	X	X
GRO by GC-FID (W)	All	NDPs: 0 Tests: 3		X		X			X				
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 6	X		X		X		X		X		X
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 3		X		X			X				
Mercury Dissolved	All	NDPs: 0 Tests: 3		X		X			X				
Metals in solid samples by OES	All	NDPs: 0 Tests: 6	X	X	X	X	X	X	X	X	X	X	X
OC OP Pesticides and Triazine Herb	All	NDPs: 0 Tests: 1	X										
PAH 16 & 17 Calc	All	NDPs: 0 Tests: 1									X		
PAH by GCMS	All	NDPs: 0 Tests: 6	X	X	X	X	X	X	X	X	X	X	X
PAH in waters by GC-MS (diss.filt)	All	NDPs: 0 Tests: 3		X		X			X				
PCBs by GCMS	All	NDPs: 0 Tests: 1									X		
pH	All	NDPs: 0 Tests: 6	X	X	X	X	X	X	X	X	X	X	X
pH Value of Filtered Water	All	NDPs: 0 Tests: 3		X		X			X				
Phenols by HPLC (S)	All	NDPs: 0 Tests: 6	X	X	X	X	X	X	X	X	X	X	X



CERTIFICATE OF ANALYSIS

Validated

SDG:	201009-77	Client Reference:	JFR1451	Report Number:	575579
Location:	A303 Stonehenge	Order Number:		Superseded Report:	573912

Results Legend <div style="margin-top: 5px;"> X Test </div> <div style="margin-top: 5px;"> N No Determination Possible </div> Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type	
		22999041	STP72201	ES	0.30 - 0.35	250g Amber Jar (ALE210)	S
		22999303	STP72601	ES	0.50	60g VOC (ALE215)	S
		22999898	STPES1	ES	0.50	1kg TUB with Handle (ALE280)	S
		22999900	STPES2	ES	0.30	250g Amber Jar (ALE215)	S
		22999902	STPES2	ES	1.00	1kg TUB with Handle (ALE280)	S
		22999298	STPES3	ES	0.65	60g VOC (ALE215)	S
Phenols by HPLC (W)	All	NDPs: 0 Tests: 3					
Sample description	All	NDPs: 0 Tests: 2					
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 3					
Total Dissolved Solids	All	NDPs: 0 Tests: 1					
Total Organic Carbon	All	NDPs: 0 Tests: 6					
TPH CWG Filtered (W)	All	NDPs: 0 Tests: 3					
TPH CWG GC (S)	All	NDPs: 0 Tests: 6					
VOC MS (S)	All	NDPs: 0 Tests: 6					



CERTIFICATE OF ANALYSIS

Validated

SDG: 201009-77
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 575579
Superseded Report: 573912

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm
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Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
22999041	STP72201	0.30 - 0.35	Dark Brown	Sandy Loam	Stones	Vegetation
22999303	STP72601	0.50	Cream	Loamy Sand	Stones	None
22999898	STPES1	0.50	Dark Brown	Sandy Loam	Stones	Vegetation
22999900	STPES2	0.30	Dark Brown	Sandy Loam	Stones	Vegetation
22999902	STPES2	1.00	Cream	N/A	N/A	N/A
22999298	STPES3	0.65	Dark Brown	Sandy Loam	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.



CERTIFICATE OF ANALYSIS

Validated

SDG:	201009-77	Client Reference:	JFR1451	Report Number:	575579
Location:	A303 Stonehenge	Order Number:		Superseded Report:	573912

Results Legend		Customer Sample Ref.	STP72201	STP72601	STPES1	STPES2	STPES2	STPES3
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.30 - 0.35	0.50	0.50	0.30	1.00	0.65
M	mCERTS accredited.		Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
aq	Aqueous / settled sample.		07/10/2020	07/10/2020	06/10/2020	06/10/2020	06/10/2020	07/10/2020
diss.fit	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
*	Subcontracted - refer to subcontractor report for accreditation status.		09/10/2020	09/10/2020	09/10/2020	09/10/2020	09/10/2020	09/10/2020
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		201009-77	201009-77	201009-77	201009-77	201009-77	201009-77
(F)	Trigger breach confirmed		22999041	22999303	22999898	22999900	22999902	22999298
1-4*3@	Sample deviation (see appendix)		ES	ES	ES	ES	ES	ES
Component	LOD/Units	Method						
Moisture Content Ratio (% of as received sample)	%	PM024	24	17	14	13	17	16
Exchangeable Ammonia as N	<12 mg/kg	TM024	<12	<12	<12	<12	<12	<12
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 @ M	<0.01 @ M	<0.01 @ M	<0.01 @ M	<0.01 @ #	<0.01 @ M
Organic Carbon, Total	<0.2 %	TM132	2.47 M	0.246 M	0.817 M	1.28 M	0.702 #	3.5 M
pH	1 pH Units	TM133	8.28 M	9.01 M	10.1 M	8.83 M	9.11 #	8.71 M
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #
Cyanide, Total	<1 mg/kg	TM153	<1 @ M	<1 @ M	<1 @ M	<1 @ M	<1 @ #	<1 M
Cyanide, Free	<1 mg/kg	TM153	<1 @ M	<1 @ M	<1 @ M	<1 @ M	<1 @ #	<1 M
PCB congener 28	<3 µg/kg	TM168					<15 @ #	
PCB congener 52	<3 µg/kg	TM168					<15 @ #	
PCB congener 101	<3 µg/kg	TM168					<15 @ #	
PCB congener 118	<3 µg/kg	TM168					<15 @ #	
PCB congener 138	<3 µg/kg	TM168					<15 @ #	
PCB congener 153	<3 µg/kg	TM168					<15 @ #	
PCB congener 180	<3 µg/kg	TM168					<15 @ #	
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168					<105	
Chromium, Trivalent	<0.9 mg/kg	TM181	12.4	2.08	9.46	10.6	3.52	13.5
Antimony	<0.6 mg/kg	TM181	2.52 #	<0.6 #	1.24 #	1.67 #	<0.6 #	1.83 #
Arsenic	<0.6 mg/kg	TM181	5.95 M	1.14 M	3.3 M	4.04 M	1.63 #	4.61 M
Beryllium	<0.01 mg/kg	TM181	0.453 M	0.114 M	0.302 M	0.221 M	0.178 #	0.268 M
Boron	<0.7 mg/kg	TM181	8.06 #	2.47 #	6.76 #	5.4 #	3.58 #	8.28 #
Cadmium	<0.02 mg/kg	TM181	0.74 M	0.315 M	0.436 M	0.469 M	0.35 #	0.579 M
Chromium	<0.9 mg/kg	TM181	11.7 M	2.29 M	9.46 M	10.6 M	3.52 #	13.5 M
Copper	<1.4 mg/kg	TM181	25.8 M	2.21 M	11.3 M	17.8 M	3.48 #	22.5 M
Iron	<1000 mg/kg	TM181	10700 #	1750 #	8820 #	8830 #	2710 #	10400 #
Lead	<0.7 mg/kg	TM181	263 M	3.01 M	38 M	32.7 M	18.1 #	71.5 M
Manganese	<0.13 mg/kg	TM181	670 M	228 M	351 M	383 M	204 #	517 M
Mercury	<0.14 mg/kg	TM181	<0.14 M	<0.14 M	<0.14 M	<0.14 M	<0.14 #	<0.14 M
Molybdenum	<0.1 mg/kg	TM181	0.952 #	0.117 #	0.578 #	0.905 #	0.216 #	0.781 #
Nickel	<0.2 mg/kg	TM181	10.4 M	3.05 M	7.33 M	8.43 M	4.46 #	8.38 M
Phosphorus	<1 mg/kg	TM181	1230	491	764	599	559	968
Selenium	<1 mg/kg	TM181	<1 #	<1 #	<1 #	<1 #	<1 #	<1 #



CERTIFICATE OF ANALYSIS

Validated

SDG:	201009-77	Client Reference:	JFR1451	Report Number:	575579
Location:	A303 Stonehenge	Order Number:		Superseded Report:	573912

Results Legend			Customer Sample Ref.	STP72201	STP72601	STPES1	STPES2	STPES2	STPES3
#	ISO17025 accredited.								
M	mCERTS accredited.								
aq	Aqueous / settled sample.								
diss.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted - refer to subcontractor report for accreditation status.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery								
(F)	Trigger breach confirmed								
1-4*\$@	Sample deviation (see appendix)								
Component	LOD/Units	Method	Depth (m)	0.30 - 0.35	0.50	0.50	0.30	1.00	0.65
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	07/10/2020	07/10/2020	06/10/2020	06/10/2020	06/10/2020	07/10/2020
			Sampled Time	.	.	.	.	.	.
			Date Received	09/10/2020	09/10/2020	09/10/2020	09/10/2020	09/10/2020	09/10/2020
			SDG Ref	201009-77	201009-77	201009-77	201009-77	201009-77	201009-77
			Lab Sample No.(s)	22999041	22999303	22999898	22999900	22999902	22999298
			AGS Reference	ES	ES	ES	ES	ES	ES
Zinc	<1.9 mg/kg	TM181		139	22	88.6	83.7	37.7	129
				M	M	M	M	#	M
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243		<0.004	0.0144	0.0579	0.0855	0.0347	<0.004
				M	M	M	M	#	M
PAH Total 17 (inc Coronene) Moisture Corrected	<10 mg/kg	TM410						<10	
Coronene	<200 µg/kg	TM410						254	
EPH Surrogate % recovery**	%	TM415						116	
Mineral Oil >C10-C40	<5 mg/kg	TM415						357	



CERTIFICATE OF ANALYSIS

Validated

SDG:	201009-77	Client Reference:	JFR1451	Report Number:	575579
Location:	A303 Stonehenge	Order Number:		Superseded Report:	573912

OC OP Pesticides and Triazine Herb

#	Customer Sample Ref.	STP72201			
<div style="font-size: small;"> Results Legend # ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.fit Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4*\$@ Sample deviation (see appendix) </div>					
		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.30 - 0.35 Soil/Solid (S) 07/10/2020 . 09/10/2020 201009-77 22999041 ES		
Component	LOD/Units	Method			
Dichlorvos	<50 µg/kg	TM073	<500		
Mevinphos	<50 µg/kg	TM073	<500		
Phorate	<50 µg/kg	TM073	<500		
alpha-Hexachlorocyclohexane (HCH)	<50 µg/kg	TM073	<500		
Diazinon	<50 µg/kg	TM073	<500		
gamma-Hexachlorocyclohexane (HCH / Lindane)	<50 µg/kg	TM073	<500		
Atrazine	<50 µg/kg	TM073	<500		
Simazine	<50 µg/kg	TM073	<500		
Disulfoton	<50 µg/kg	TM073	<500		
Heptachlor	<50 µg/kg	TM073	<500		
Aldrin	<50 µg/kg	TM073	<500		
beta-Hexachlorocyclohexane (HCH)	<50 µg/kg	TM073	<500		
Methyl parathion	<50 µg/kg	TM073	<500		
Malathion	<50 µg/kg	TM073	<500		
Fenitrothion	<50 µg/kg	TM073	<500		
Heptachlor epoxide	<50 µg/kg	TM073	<500		
Parathion	<50 µg/kg	TM073	<500		
Endosulphan I	<50 µg/kg	TM073	<500		
p,p-DDE	<50 µg/kg	TM073	<500		
Dieldrin	<50 µg/kg	TM073	<500		
o,p'-DDD (TDE)	<50 µg/kg	TM073	<500		
Endrin	<50 µg/kg	TM073	<500		
p,p-TDE (DDD)	<50 µg/kg	TM073	<500		
Ethion	<50 µg/kg	TM073	<500		
Endosulphan II	<50 µg/kg	TM073	<500		
p,p-DDT	<50 µg/kg	TM073	<500		
p,p-Methoxychlor	<50 µg/kg	TM073	<500		
Endosulphan sulphate	<50 µg/kg	TM073	<500		
Azinphos-methyl	<50 µg/kg	TM073	<500		



CERTIFICATE OF ANALYSIS

Validated

SDG:	201009-77	Client Reference:	JFR1451	Report Number:	575579
Location:	A303 Stonehenge	Order Number:		Superseded Report:	573912

PAH by GCMS

Results Legend			Customer Sample Ref.	STP72201	STP72601	STPES1	STPES2	STPES2	STPES3
# ISO17025 accredited.									
M mCERTS accredited.									
aq Aqueous / settled sample.									
diss.fit Dissolved / filtered sample.									
tot.unfilt Total / unfiltered sample.									
* Subcontracted - refer to subcontractor report for accreditation status.									
** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery									
(F) Trigger breach confirmed									
1-4* Sample deviation (see appendix)									
			Depth (m)	0.30 - 0.35	0.50	0.50	0.30	1.00	0.65
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	07/10/2020	07/10/2020	06/10/2020	06/10/2020	06/10/2020	07/10/2020
			Sampled Time						
			Date Received	09/10/2020	09/10/2020	09/10/2020	09/10/2020	09/10/2020	09/10/2020
			SDG Ref	201009-77	201009-77	201009-77	201009-77	201009-77	201009-77
			Lab Sample No.(s)	22999041	22999303	22999898	22999900	22999902	22999298
			AGS Reference	ES	ES	ES	ES	ES	ES
Component	LOD/Units	Method							
Naphthalene-d8 % recovery**	%	TM218	92	86.5	89.6	96.7	88.4	81.7	
Acenaphthene-d10 % recovery**	%	TM218	92.8	83.3	85.6	91.7	81.6	76.1	
Phenanthrene-d10 % recovery**	%	TM218	93	80.5	93.6	101	89.8	84.4	
Chrysene-d12 % recovery**	%	TM218	87.9	78.1	106	106	99.4	94	
Perylene-d12 % recovery**	%	TM218	93.9	75.5	108	106	88.2	91.8	
Naphthalene	<9 µg/kg	TM218	<9 @ M	<9 @ M	13.8 @ M	<90 @ M	<45 @ #	<45 @ M	
Acenaphthylene	<12 µg/kg	TM218	30.5 @ M	<12 @ M	130 @ M	<120 @ M	118 @ #	468 @ M	
Acenaphthene	<8 µg/kg	TM218	11.9 @ M	<8 @ M	16.9 @ M	<80 @ M	<40 @ #	<40 @ M	
Fluorene	<10 µg/kg	TM218	<10 @ M	<10 @ M	12.9 @ M	<100 @ M	<50 @ #	<50 @ M	
Phenanthrene	<15 µg/kg	TM218	223 @ M	81.5 @ M	325 @ M	222 @ M	402 @ #	1200 @ M	
Anthracene	<16 µg/kg	TM218	51.5 @ M	26.2 @ M	120 @ M	<160 @ M	150 @ #	481 @ M	
Fluoranthene	<17 µg/kg	TM218	756 @ M	187 @ M	1620 @ M	979 @ M	1500 @ #	5480 @ M	
Pyrene	<15 µg/kg	TM218	674 @ M	167 @ M	1490 @ M	899 @ M	1360 @ #	4970 @ M	
Benz(a)anthracene	<14 µg/kg	TM218	371 @ M	94 @ M	1130 @ M	645 @ M	790 @ #	4000 @ M	
Chrysene	<10 µg/kg	TM218	381 @ M	91.9 @ M	1090 @ M	738 @ M	814 @ #	3530 @ M	
Benzo(b)fluoranthene	<15 µg/kg	TM218	675 @ M	121 @ M	1110 @ M	1030 @ M	1360 @ #	2960 @ M	
Benzo(k)fluoranthene	<14 µg/kg	TM218	250 @ M	45.4 @ M	542 @ M	284 @ M	455 @ #	1670 @ M	
Benzo(a)pyrene	<15 µg/kg	TM218	452 @ M	83 @ M	1450 @ M	852 @ M	924 @ #	4190 @ M	
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	391 @ M	66.9 @ M	1130 @ M	716 @ M	746 @ #	3220 @ M	
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	56.3 @ M	<23 @ M	206 @ M	<230 @ M	<115 @ #	585 @ M	
Benzo(g,h,i)perylene	<24 µg/kg	TM218	433 @ M	52 @ M	1200 @ M	805 @ M	708 @ #	3180 @ M	
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	4760	1020	11600	7170	9330	35900	



CERTIFICATE OF ANALYSIS

Validated

SDG:	201009-77	Client Reference:	JFR1451	Report Number:	575579
Location:	A303 Stonehenge	Order Number:		Superseded Report:	573912

Semi Volatile Organic Compounds

Results Legend			Customer Sample Ref.	STPES1	STPES2	STPES2			
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.fit Dissolved / filtered sample. tot.unfit Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4*\$@ Sample deviation (see appendix)			Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.50 Soil/Solid (S) 06/10/2020 09/10/2020 201009-77 22999898 ES	0.30 Soil/Solid (S) 06/10/2020 09/10/2020 201009-77 22999900 ES	1.00 Soil/Solid (S) 06/10/2020 09/10/2020 201009-77 22999902 ES			
Component	LOD/Units	Method							
Phenol	<100 µg/kg	TM157	<200	<500	<500				
Pentachlorophenol	<100 µg/kg	TM157	<200	<500	<500				
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<200	<500	<500				
Nitrobenzene	<100 µg/kg	TM157	<200	<500	<500				
Isophorone	<100 µg/kg	TM157	<200	<500	<500				
Hexachloroethane	<100 µg/kg	TM157	<200	<500	<500				
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<200	<500	<500				
Hexachlorobutadiene	<100 µg/kg	TM157	<200	<500	<500				
Hexachlorobenzene	<100 µg/kg	TM157	<200	<500	<500				
n-Dioctyl phthalate	<100 µg/kg	TM157	<200	<500	<500				
Dimethyl phthalate	<100 µg/kg	TM157	<200	<500	<500				
Diethyl phthalate	<100 µg/kg	TM157	<200	<500	<500				
n-Dibutyl phthalate	<100 µg/kg	TM157	<200	<500	<500				
Dibenzofuran	<100 µg/kg	TM157	<200	<500	<500				
Carbazole	<100 µg/kg	TM157	<200	<500	<500				
Butylbenzyl phthalate	<100 µg/kg	TM157	<200	<500	<500				
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<200	<500	<500				
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<200	<500	<500				
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<200	<500	<500				
Azobenzene	<100 µg/kg	TM157	<200	<500	<500				
4-Nitrophenol	<100 µg/kg	TM157	<200	<500	<500				
4-Nitroaniline	<100 µg/kg	TM157	<200	<500	<500				
4-Methylphenol	<100 µg/kg	TM157	<200	<500	<500				
4-Chlorophenylphenylether	<100 µg/kg	TM157	<200	<500	<500				
4-Chloroaniline	<100 µg/kg	TM157	<200	<500	<500				
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<200	<500	<500				
4-Bromophenylphenylether	<100 µg/kg	TM157	<200	<500	<500				
3-Nitroaniline	<100 µg/kg	TM157	<200	<500	<500				
2-Nitrophenol	<100 µg/kg	TM157	<200	<500	<500				
2-Nitroaniline	<100 µg/kg	TM157	<200	<500	<500				
2-Methylphenol	<100 µg/kg	TM157	<200	<500	<500				
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<200	<500	<500				



CERTIFICATE OF ANALYSIS

Validated

SDG: 201009-77
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 575579
Superseded Report: 573912

Semi Volatile Organic Compounds

Results Legend			Customer Sample Ref.	STPES1	STPES2	STPES2			
#	ISO17025 accredited.								
M	mCERTS accredited.								
sq	Aqueous / filtered sample.								
dis.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted - refer to subcontractor report for accreditation status.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery								
(F)	Trigger breach confirmed								
1-4*5@	Sample deviation (see appendix)								
Component	LOD/Units	Method	Customer Sample Ref.	STPES1	STPES2	STPES2			
2-Chlorophenol	<100 µg/kg	TM157		<200	<500	<500			
2,6-Dinitrotoluene	<100 µg/kg	TM157		<200	<500	<500			
2,4-Dinitrotoluene	<100 µg/kg	TM157		<200	<500	<500			
2,4-Dimethylphenol	<100 µg/kg	TM157		<200	<500	<500			
2,4-Dichlorophenol	<100 µg/kg	TM157		<200	<500	<500			
2,4,6-Trichlorophenol	<100 µg/kg	TM157		<200	<500	<500			
2,4,5-Trichlorophenol	<100 µg/kg	TM157		<200	<500	<500			
1,4-Dichlorobenzene	<100 µg/kg	TM157		<200	<500	<500			
1,3-Dichlorobenzene	<100 µg/kg	TM157		<200	<500	<500			
1,2-Dichlorobenzene	<100 µg/kg	TM157		<200	<500	<500			
2-Chloronaphthalene	<100 µg/kg	TM157		<200	<500	<500			
2-Methylnaphthalene	<100 µg/kg	TM157		<200	<500	<500			
Acenaphthylene	<100 µg/kg	TM157		<200	<500	<500			
Acenaphthene	<100 µg/kg	TM157		<200	<500	<500			
Anthracene	<100 µg/kg	TM157		<200	<500	<500			
Benzo(a)anthracene	<100 µg/kg	TM157		902	649	1070			
Benzo(b)fluoranthene	<100 µg/kg	TM157		795	<500	772			
Benzo(k)fluoranthene	<100 µg/kg	TM157		946	705	858			
Benzo(a)pyrene	<100 µg/kg	TM157		1040	590	998			
Benzo(g,h,i)perylene	<100 µg/kg	TM157		718	<500	628			
Chrysene	<100 µg/kg	TM157		1090	807	1220			
Fluoranthene	<100 µg/kg	TM157		1720	1010	1490			
Fluorene	<100 µg/kg	TM157		<200	<500	<500			
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157		883	605	620			
Phenanthrene	<100 µg/kg	TM157		335	<500	<500			
Pyrene	<100 µg/kg	TM157		1520	1000	1440			
Naphthalene	<100 µg/kg	TM157		<200	<500	<500			
Dibenzo(a,h)anthracene	<100 µg/kg	TM157		<200	<500	<500			
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157		<200	<500	<500			
TIC report		TM157		Not Detected	Not Detected	Not Detected			
Total SVOC TIC	<100 µg/kg	TM157		<2000	<5000	<5000			



CERTIFICATE OF ANALYSIS

Validated

SDG:	201009-77	Client Reference:	JFR1451	Report Number:	575579
Location:	A303 Stonehenge	Order Number:		Superseded Report:	573912

TPH CWG (S)

Results Legend			Customer Sample Ref.	STP72201	STP72601	STPES1	STPES2	STPES2	STPES3	
#	M	aq	diss.fit	tot.unfit	* **	(F)	1-4*\$@			
ISO17025 accredited.										
mCERTS accredited.										
Aqueous / settled sample.										
Dissolved / filtered sample.										
Total / unfiltered sample.										
Subcontracted - refer to subcontractor report for accreditation status.										
% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery										
Trigger breach confirmed										
Sample deviation (see appendix)										
Depth (m)	Sample Type	Date Sampled	Sampled Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference			
0.30 - 0.35	Soil/Solid (S)	07/10/2020		07/10/2020	201009-77	22999041	ES			
0.50	Soil/Solid (S)	07/10/2020		09/10/2020	201009-77	22999303	ES			
0.50	Soil/Solid (S)	06/10/2020		09/10/2020	201009-77	22999898	ES			
0.30	Soil/Solid (S)	06/10/2020		09/10/2020	201009-77	22999900	ES			
1.00	Soil/Solid (S)	06/10/2020		09/10/2020	201009-77	22999902	ES			
0.65	Soil/Solid (S)	07/10/2020		09/10/2020	201009-77	22999298	ES			
Component	LOD/Units	Method								
GRO Surrogate % recovery**	%	TM089	105	99	97.6	96.3	99.3	86.6		
Aliphatics >C5-C6	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10		
Aliphatics >C6-C8	<10 µg/kg	TM089	<10	<10	<10	<10	15.7	<10		
Aliphatics >C8-C10	<10 µg/kg	TM089	<10	<10	<10	<10	19.4	<10		
Aliphatics >C10-C12	<1000 µg/kg	TM414	<1000	<1000	<1000	<1000	<1000	<1000		
Aliphatics >C12-C16	<1000 µg/kg	TM414	2210	<1000	<1000	<1000	<1000	<1000		
Aliphatics >C16-C21	<1000 µg/kg	TM414	1970	<1000	<1000	<1000	<1000	<1000		
Aliphatics >C21-C35	<1000 µg/kg	TM414	26400	1500	11300	5740	3070	11200		
Aliphatics >C35-C44	<1000 µg/kg	TM414	<1000	<1000	<1000	<1000	22100	<1000		
Total Aliphatics >C10-C44	<5000 µg/kg	TM414	31000	<5000	12500	5910	25300	11900		
Total Aliphatics & Aromatics >C10-C44	<10000 µg/kg	TM414	98100	<10000	64900	47600	184000	77400		
Aromatics >EC5-EC7	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10		
Aromatics >EC7-EC8	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10		
Aromatics >EC8-EC10	<10 µg/kg	TM089	<10	<10	<10	<10	12.1	<10		
Aromatics > EC10-EC12	<1000 µg/kg	TM414	<1000	<1000	<1000	<1000	<1000	<1000		
Aromatics > EC12-EC16	<1000 µg/kg	TM414	1320	<1000	<1000	<1000	<1000	<1000		
Aromatics > EC16-EC21	<1000 µg/kg	TM414	3380	<1000	5800	4360	8000	7640		
Aromatics > EC21-EC35	<1000 µg/kg	TM414	57000	1660	38700	28800	103000	49200		
Aromatics >EC35-EC44	<1000 µg/kg	TM414	5430	<1000	7650	8290	46700	8280		
Aromatics > EC40-EC44	<1000 µg/kg	TM414	<1000	<1000	1610	<1000	15000	1240		
Total Aromatics > EC10-EC44	<5000 µg/kg	TM414	67100	<5000	52400	41700	158000	65500		
Total Aliphatics & Aromatics >C5-C44	<10000 µg/kg	TM414	98100	<10000	64900	47600	184000	77400		
Total Aliphatics >C5-C10	<50 µg/kg	TM089	<50	<50	<50	<50	<50	<50		
Total Aromatics >EC5-EC10	<50 µg/kg	TM089	<50	<50	<50	<50	<50	<50		
GRO >C5-C10	<20 µg/kg	TM089	<20	<20	<20	<20	<20	<20		



CERTIFICATE OF ANALYSIS

Validated

SDG:	201009-77	Client Reference:	JFR1451	Report Number:	575579
Location:	A303 Stonehenge	Order Number:		Superseded Report:	573912

VOC MS (S)

Results Legend			Customer Sample Ref.	STP72201	STP72601	STPES1	STPES2	STPES2	STPES3
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.fit Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery. (F) Trigger breach confirmed 1-4*3@ Sample deviation (see appendix)	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference		0.30 - 0.35 Soil/Solid (S) 07/10/2020	0.50 Soil/Solid (S) 07/10/2020	0.50 Soil/Solid (S) 06/10/2020	0.30 Soil/Solid (S) 06/10/2020	1.00 Soil/Solid (S) 06/10/2020	0.65 Soil/Solid (S) 07/10/2020	
			09/10/2020 201009-77 22999041 ES	09/10/2020 201009-77 22999303 ES	09/10/2020 201009-77 22999898 ES	09/10/2020 201009-77 22999900 ES	09/10/2020 201009-77 22999902 ES	09/10/2020 201009-77 22999298 ES	
Component	LOD/Units	Method							
Dibromofluoromethane**	%	TM116	108 @	102 @	111 @	110 @	112 @	110	
Toluene-d8**	%	TM116	97.3 @	98.8 @	96.1 @	96.8 @	94.4 @	94.4	
4-Bromofluorobenzene**	%	TM116	90.4 @	96.9 @	93.4 @	97.7 @	82.5 @	93.4	
Dichlorodifluoromethane	<6 µg/kg	TM116			<120 @ M	<120 @ M	<6 #		
Chloromethane	<7 µg/kg	TM116			<140 @ #	<140 @ #	<7 #		
Vinyl Chloride	<6 µg/kg	TM116			<120 @ M	<120 @ M	<6 #		
Bromomethane	<10 µg/kg	TM116			<200 @ M	<200 @ M	<10 #		
Chloroethane	<10 µg/kg	TM116			<200 @ M	<200 @ M	<10 #		
Trichlorofluoromethane	<6 µg/kg	TM116			<120 @ M	<120 @ M	<6 #		
1,1-Dichloroethene	<10 µg/kg	TM116			<200 @ #	<200 @ #	<10 #		
Carbon Disulphide	<7 µg/kg	TM116			<140 @ M	<140 @ M	<7 #		
Dichloromethane	<10 µg/kg	TM116			<200 @ #	<200 @ #	<10 #		
Methyl Tertiary Butyl Ether	<10 µg/kg	TM116	<200 @ M	<10 @ M	<200 @ M	<200 @ M	<10 #	<200 M	
trans-1,2-Dichloroethene	<10 µg/kg	TM116			<200 @ M	<200 @ M	<10 #		
1,1-Dichloroethane	<8 µg/kg	TM116			<160 @ M	<160 @ M	<8 #		
cis-1,2-Dichloroethene	<6 µg/kg	TM116			<120 @ M	<120 @ M	<6 #		
2,2-Dichloropropane	<10 µg/kg	TM116			<200 @	<200 @	<10 #		
Bromochloromethane	<10 µg/kg	TM116			<200 @ M	<200 @ M	<10 #		
Chloroform	<8 µg/kg	TM116			<160 @ M	<160 @ M	<8 #		
1,1,1-Trichloroethane	<7 µg/kg	TM116			<140 @ M	<140 @ M	<7 #		
1,1-Dichloropropene	<10 µg/kg	TM116			<200 @ M	<200 @ M	<10 #		
Carbontetrachloride	<10 µg/kg	TM116			<200 @ M	<200 @ M	<10 #		
1,2-Dichloroethane	<5 µg/kg	TM116			<100 @ M	<100 @ M	<5 #		
Benzene	<9 µg/kg	TM116	<180 @ M	<9 @ M	<180 @ M	<180 @ M	<9 #	<180 M	
Trichloroethene	<9 µg/kg	TM116			<180 @ #	<180 @ #	<9 #		
1,2-Dichloropropane	<10 µg/kg	TM116			<200 @ M	<200 @ M	<10 #		
Dibromomethane	<9 µg/kg	TM116			<180 @ M	<180 @ M	<9 #		
Bromodichloromethane	<7 µg/kg	TM116			<140 @ M	<140 @ M	<7 #		
cis-1,3-Dichloropropene	<10 µg/kg	TM116			<200 @ M	<200 @ M	<10 #		
Toluene	<7 µg/kg	TM116	<140 @ M	<7 @ M	<140 @ M	<140 @ M	<7 #	<140 M	
trans-1,3-Dichloropropene	<10 µg/kg	TM116			<200 @	<200 @	<10 #		
1,1,2-Trichloroethane	<10 µg/kg	TM116			<200 @ M	<200 @ M	<10 #		



CERTIFICATE OF ANALYSIS

Validated

SDG:	201009-77	Client Reference:	JFR1451	Report Number:	575579
Location:	A303 Stonehenge	Order Number:		Superseded Report:	573912

VOC MS (S)

Results Legend			Customer Sample Ref.	STP72201	STP72601	STPES1	STPES2	STPES2	STPES3	
#	M	sg	dis.filt	tot.unfilt	* **	(F)	1.4.5@			
ISO17025 accredited. mCERTS accredited. Aqueous / filtered sample. Dissolved / filtered sample. Total / unfiltered sample. Subcontracted - refer to subcontractor report for accreditation status. % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery Trigger breach confirmed			Depth (m)	Sample Type	Date Sampled	Sampled Time	Date Received	SDG Ref	Lab Sample No.(s)	
Sample deviation (see appendix)			AGS Reference							
Component	LOD/Units	Method								
1,3-Dichloropropane	<7 µg/kg	TM116				<140		<140	<7	
Tetrachloroethene	<5 µg/kg	TM116				<100		<100	<5	
Dibromochloromethane	<10 µg/kg	TM116				<200		<200	<10	
1,2-Dibromoethane	<10 µg/kg	TM116				<200		<200	<10	
Chlorobenzene	<5 µg/kg	TM116				<100		<100	<5	
1,1,1,2-Tetrachloroethane	<10 µg/kg	TM116				<200		<200	<10	
Ethylbenzene	<4 µg/kg	TM116	<80	<4		<80		<80	<4	<80
p/m-Xylene	<10 µg/kg	TM116	<200	<10		<200		<200	<10	<200
o-Xylene	<10 µg/kg	TM116	<200	<10		<200		<200	<10	<200
Styrene	<10 µg/kg	TM116				<200		<200	<10	
Bromoform	<10 µg/kg	TM116				<200		<200	<10	
Isopropylbenzene	<5 µg/kg	TM116				<100		<100	<5	
1,1,2,2-Tetrachloroethane	<10 µg/kg	TM116				<200		<200	<10	
1,2,3-Trichloropropane	<16 µg/kg	TM116				<320		<320	<16	
Bromobenzene	<10 µg/kg	TM116				<200		<200	<10	
Propylbenzene	<10 µg/kg	TM116				<200		<200	<10	
2-Chlorotoluene	<9 µg/kg	TM116				<180		<180	<9	
1,3,5-Trimethylbenzene	<8 µg/kg	TM116				<160		<160	<8	
4-Chlorotoluene	<10 µg/kg	TM116				<200		<200	<10	
tert-Butylbenzene	<14 µg/kg	TM116				<280		<280	<14	
1,2,4-Trimethylbenzene	<9 µg/kg	TM116				<180		<180	<9	
sec-Butylbenzene	<10 µg/kg	TM116				<200		<200	<10	
4-Isopropyltoluene	<10 µg/kg	TM116				<200		<200	<10	
1,3-Dichlorobenzene	<8 µg/kg	TM116				<160		<160	<8	
1,4-Dichlorobenzene	<5 µg/kg	TM116				<100		<100	<5	
n-Butylbenzene	<11 µg/kg	TM116				<220		<220	<11	
1,2-Dichlorobenzene	<10 µg/kg	TM116				<200		<200	<10	
1,2-Dibromo-3-chloropropane	<14 µg/kg	TM116				<280		<280	<14	
Tert-amyl methyl ether	<10 µg/kg	TM116				<200		<200	<10	
1,2,4-Trichlorobenzene	<20 µg/kg	TM116				<400		<400	<20	
Hexachlorobutadiene	<20 µg/kg	TM116				<400		<400	<20	
Naphthalene	<13 µg/kg	TM116				<260		<260	<13	



CERTIFICATE OF ANALYSIS

Validated

SDG:	201009-77	Client Reference:	JFR1451	Report Number:	575579
Location:	A303 Stonehenge	Order Number:		Superseded Report:	573912

VOC MS (S)

#	m	diss.fltr	tot.unfltr	*	**	(F)	1-4*5@	Customer Sample Ref.	STP72201	STP72601	STPES1	STPES2	STPES2	STPES3							
Results Legend # ISO17025 accredited. m MCERTS accredited. diss.fltr Aqueous / filtered sample. tot.unfltr Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery. (F) Trigger breach confirmed 1-4*5@ Sample deviation (see appendix)								Depth (m)	0.30 - 0.35	0.50	0.50	0.30	1.00	0.65							
								Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)							
								Date Sampled	07/10/2020	07/10/2020	06/10/2020	06/10/2020	06/10/2020	07/10/2020							
								Sampled Time							
								Date Received	09/10/2020	09/10/2020	09/10/2020	09/10/2020	09/10/2020	09/10/2020							
								SDG Ref	201009-77	201009-77	201009-77	201009-77	201009-77	201009-77							
								Lab Sample No.(s)	22999041	22999303	22999898	22999900	22999902	22999298							
								AGS Reference	ES	ES	ES	ES	ES	ES							
Component	LOD/Units	Method																			
1,2,3-Trichlorobenzene	<20 µg/kg	TM116			<400	<400	<20					@ #	@ #	#							
VOC TIC		TM116			Not Detected	Not Detected	Not Detected				@	@	@								
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.4	<0.02	<0.4	<0.4	<0.02	<0.4			@	@	@	<0.4							
Sum of BTEX	<40 µg/kg	TM116	<800	<40	<800	<800	<40	<800			@	@	@	<800							
Total VOC TIC	<50 µg/kg	TM116			<1000	<1000	<50														



CERTIFICATE OF ANALYSIS

Validated

SDG: 201009-77
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 575579
Superseded Report: 573912

Asbestos Identification - Solid Samples

Results Legend

- # ISO17025 accredited.
- M mCERTS accredited.
- * Subcontracted test.
- (F) Trigger breach confirmed
- 1-5&@ Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	STP72601ES 0.50 SOLID 07/10/2020 00:00:00 09/10/2020 05:00:00 201009-77 22999303 TM048	29/10/2020	Marcin Magdziarek	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	STPES1ES 0.50 SOLID 06/10/2020 00:00:00 09/10/2020 05:00:00 201009-77 22999898 TM048	22/10/20	Andrzej Ferfecki	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	STPES2ES 0.30 SOLID 06/10/2020 00:00:00 09/10/2020 05:00:00 201009-77 22999900 TM048	22/10/2020	Agnieszka Chelmonska	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	STPES2ES 1.00 SOLID 06/10/2020 00:00:00 09/10/2020 05:00:00 201009-77 22999902 TM048	22/10/2020	Agnieszka Chelmonska	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	STPES3ES 0.65 SOLID 07/10/2020 00:00:00 09/10/2020 05:00:00 201009-77 22999298 TM048	22/10/2020	Paul Poynton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected



CERTIFICATE OF ANALYSIS

Validated

SDG: 201009-77
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 575579
Superseded Report: 573912

CEN 2:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/

Client Reference		Site Location	A303 Stonehenge
Mass Sample taken (kg)	0.216	Natural Moisture Content (%)	23.7
Mass of dry sample (kg)	0.175	Dry Matter Content (%)	80.8
Particle Size <4mm	>95%		

Case	
SDG	201009-77
Lab Sample Number(s)	22999303
Sampled Date	07-Oct-2020
Customer Sample Ref.	STP72601 ESZ
Depth (m)	0.50

Eluate Analysis	Conc ⁿ in 2:1 eluate (mg/l)		2:1 conc ⁿ leached (mg/kg)	
	Result	Limit of Detection	Result	Limit of Detection
Aliphatics >C12-C16	<0.01	<0.01	<0.02	<0.02
Aliphatics >C16-C21	<0.01	<0.01	<0.02	<0.02
Aliphatics >C21-C35	<0.01	<0.01	<0.02	<0.02
Total Aliphatics >C12-C35	<0.01	<0.01	<0.02	<0.02
Aromatics >EC12-EC16	<0.01	<0.01	<0.02	<0.02
Aromatics >EC16-EC21	<0.01	<0.01	<0.02	<0.02
Aromatics >EC21-EC35	<0.01	<0.01	<0.02	<0.02
Aromatics >EC16-EC35	<0.01	<0.01	<0.02	<0.02
Total Aromatics >EC12-EC35	<0.01	<0.01	<0.02	<0.02
TPH (Total Aliphatics + Total Aromatics) >C5-C35	<0.01	<0.01	<0.02	<0.02
Ammoniacal Nitrogen as N	<0.2	<0.2	<0.4	<0.4
Chromium III	<0.03	<0.03	<0.06	<0.06
Hexavalent Chromium	<0.03	<0.03	<0.06	<0.06
Sulphate (soluble)	<2	<2	<4	<4
Dissolved Organic Carbon	5.32	<3	10.6	<6
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.00002	<0.00002
Antimony	<0.001	<0.001	<0.002	<0.002
Naphthalene (diss.filt)	<0.00001	<0.00001	<0.00002	<0.00002
Total Cyanide (W)	<0.05	<0.05	<0.1	<0.1
Acenaphthene (diss.filt)	0.0000205	<0.000005	0.000041	<0.00001
Arsenic	<0.0005	<0.0005	<0.001	<0.001
Free Cyanide (W)	<0.05	<0.05	<0.1	<0.1
Acenaphthylene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Phenol by HPLC (W)	<0.002	<0.002	<0.004	<0.004
Beryllium	<0.0001	<0.0001	<0.0002	<0.0002
Fluoranthene (diss.filt)	0.0000263	<0.000005	0.0000526	<0.00001
Anthracene (diss.filt)	0.000015	<0.000005	0.00003	<0.00001
Boron	<0.01	<0.01	<0.02	<0.02
Phenanthrene (diss.filt)	0.0000716	<0.000005	0.000143	<0.00001
Cadmium	<0.00008	<0.00008	<0.00016	<0.00016
Fluorene (diss.filt)	0.0000123	<0.000005	0.0000246	<0.00001
Chrysene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Pyrene (diss.filt)	0.000017	<0.000005	0.000034	<0.00001
Benzo(a)anthracene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Chromium	<0.001	<0.001	<0.002	<0.002

Leach Test Information

Date Prepared	27-Oct-2020
pH (pH Units)	8.55
Conductivity (µS/cm)	157.00
Temperature (°C)	20.70
Volume Leachant (Litres)	0.309
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates

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15:25:36 13/11/2020



CERTIFICATE OF ANALYSIS

Validated

SDG: 201009-77
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 575579
Superseded Report: 573912

CEN 2:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/

Client Reference	
Mass Sample taken (kg)	0.216
Mass of dry sample (kg)	0.175
Particle Size <4mm	>95%

Site Location	A303 Stonehenge
Natural Moisture Content (%)	23.7
Dry Matter Content (%)	80.8

Case	
SDG	201009-77
Lab Sample Number(s)	22999303
Sampled Date	07-Oct-2020
Customer Sample Ref.	STP72601 ESZ
Depth (m)	0.50

Eluate Analysis	Conc ⁿ in 2:1 eluate (mg/l)		2:1 conc ⁿ leached (mg/kg)	
	Result	Limit of Detection	Result	Limit of Detection
Benzo(b)fluoranthene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Benzo(k)fluoranthene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Benzo(a)pyrene (diss.filt)	<0.000002	<0.000002	<0.000004	<0.000004
Copper	0.00363	<0.0003	0.00726	<0.0006
Dibenzo(a,h)anthracene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Lead	<0.0002	<0.0002	<0.0004	<0.0004
Benzo(g,h,i)perylene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Indeno(1,2,3-cd)pyrene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Manganese	0.0151	<0.003	0.0302	<0.006
Molybdenum	<0.003	<0.003	<0.006	<0.006
PAH 16 EPA Total by GCMS (diss.filt)	0.000163	<0.000082	0.000326	<0.000164
Nickel	0.000661	<0.0004	0.00132	<0.0008
Phosphorus	0.0209	<0.01	0.0418	<0.02
Selenium	<0.001	<0.001	<0.002	<0.002
Zinc	0.00141	<0.001	0.00282	<0.002
Calcium (Dis.Filt) mg/l	22.1	<0.2	44.2	<0.4
Iron (Dis.Filt) mg/l	<0.019	<0.019	<0.038	<0.038
TPH CWG (W)				
Surrogate Recovery	-	-	-	-
GRO TOT (C5-C12)	<0.05	<0.05	<0.1	<0.1
Aliphatics C5-C6	<0.01	<0.01	<0.02	<0.02
Aliphatics >C6-C8	<0.01	<0.01	<0.02	<0.02
Aliphatics >C8-C10	<0.01	<0.01	<0.02	<0.02
Aliphatics >C10-C12	<0.01	<0.01	<0.02	<0.02
Aromatics C6-C7	<0.01	<0.01	<0.02	<0.02
Aromatics >C7-C8	<0.01	<0.01	<0.02	<0.02
MTBE GC-FID	<0.003	<0.003	<0.006	<0.006
Aromatics >EC8 -EC10	<0.01	<0.01	<0.02	<0.02
Aromatics >EC10-EC12	<0.01	<0.01	<0.02	<0.02
Benzene by GC	<0.007	<0.007	<0.014	<0.014
Toluene by GC	<0.004	<0.004	<0.008	<0.008
Ethylbenzene by GC	<0.005	<0.005	<0.01	<0.01
m & p Xylene by GC	<0.008	<0.008	<0.016	<0.016
o Xylene by GC	<0.003	<0.003	<0.006	<0.006
Sum m&p and o Xylene by GC	<0.011	<0.011	<0.022	<0.022
Sum of BTEX by GC	<0.028	<0.028	<0.056	<0.056

Leach Test Information

Date Prepared	27-Oct-2020
pH (pH Units)	8.55
Conductivity (µS/cm)	157.00
Temperature (°C)	20.70
Volume Leachant (Litres)	0.309
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates

13/11/2020 15:25:58



CERTIFICATE OF ANALYSIS

Validated

SDG: 201009-77
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 575579
Superseded Report: 573912

CEN 2:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/

Client Reference	
Mass Sample taken (kg)	0.208
Mass of dry sample (kg)	0.175
Particle Size <4mm	>95%

Site Location	A303 Stonehenge
Natural Moisture Content (%)	19.1
Dry Matter Content (%)	84

Case	
SDG	201009-77
Lab Sample Number(s)	22999898
Sampled Date	06-Oct-2020
Customer Sample Ref.	STPES1 ESZ
Depth (m)	0.50

Eluate Analysis	Conc ⁿ in 2:1 eluate (mg/l)		2:1 conc ⁿ leached (mg/kg)	
	Result	Limit of Detection	Result	Limit of Detection
Aliphatics >C12-C16	<0.02	<0.02	<0.04	<0.04
Aliphatics >C16-C21	<0.02	<0.02	<0.04	<0.04
Aliphatics >C21-C35	<0.02	<0.02	<0.04	<0.04
Total Aliphatics >C12-C35	<0.02	<0.02	<0.04	<0.04
Aromatics >EC12-EC16	<0.02	<0.02	<0.04	<0.04
Aromatics >EC16-EC21	<0.02	<0.02	<0.04	<0.04
Aromatics >EC21-EC35	<0.02	<0.02	<0.04	<0.04
Aromatics >EC16-EC35	<0.02	<0.02	<0.04	<0.04
Total Aromatics >EC12-EC35	<0.02	<0.02	<0.04	<0.04
TPH (Total Aliphatics + Total Aromatics) >C5-C35	<0.01	<0.01	<0.02	<0.02
Ammoniacal Nitrogen as N	<0.2	<0.2	<0.4	<0.4
Chromium III	<0.03	<0.03	<0.06	<0.06
Hexavalent Chromium	<0.03	<0.03	<0.06	<0.06
Sulphate (soluble)	42	<2	84	<4
Dissolved Organic Carbon	21	<3	42	<6
Mercury Dissolved (CVAF)	0.000014	<0.00001	0.000028	<0.00002
Antimony	0.00897	<0.001	0.0179	<0.002
Naphthalene (diss.filt)	0.0000267	<0.00002	0.0000534	<0.00004
Total Cyanide (W)	<0.05	<0.05	<0.1	<0.1
Acenaphthene (diss.filt)	<0.00001	<0.00001	<0.00002	<0.00002
Arsenic	0.0034	<0.0005	0.0068	<0.001
Free Cyanide (W)	<0.05	<0.05	<0.1	<0.1
Acenaphthylene (diss.filt)	<0.00001	<0.00001	<0.00002	<0.00002
Phenol by HPLC (W)	<0.002	<0.002	<0.004	<0.004
Beryllium	<0.0001	<0.0001	<0.0002	<0.0002
Fluoranthene (diss.filt)	0.000166	<0.00001	0.000332	<0.00002
Anthracene (diss.filt)	0.0000199	<0.00001	0.0000398	<0.00002
Boron	0.0913	<0.01	0.183	<0.02
Phenanthrene (diss.filt)	0.0000783	<0.00001	0.000157	<0.00002
Cadmium	0.000146	<0.00008	0.000292	<0.00016
Fluorene (diss.filt)	0.0000149	<0.00001	0.0000298	<0.00002
Chrysene (diss.filt)	0.000069	<0.00001	0.000138	<0.00002
Pyrene (diss.filt)	0.000121	<0.00001	0.000242	<0.00002
Benzo(a)anthracene (diss.filt)	0.0000432	<0.00001	0.0000864	<0.00002
Chromium	0.00465	<0.001	0.0093	<0.002

Leach Test Information

Date Prepared	20-Oct-2020
pH (pH Units)	6.98
Conductivity (µS/cm)	395.00
Temperature (°C)	19.30
Volume Leachant (Litres)	0.317
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates

13/11/2020 15:25:58



CERTIFICATE OF ANALYSIS

Validated

SDG:	201009-77	Client Reference:	JFR1451	Report Number:	575579
Location:	A303 Stonehenge	Order Number:		Superseded Report:	573912

CEN 2:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/1

Client Reference		Site Location	A303 Stonehenge
Mass Sample taken (kg)	0.208	Natural Moisture Content (%)	19.1
Mass of dry sample (kg)	0.175	Dry Matter Content (%)	84
Particle Size <4mm	>95%		

Case	
SDG	201009-77
Lab Sample Number(s)	22999898
Sampled Date	06-Oct-2020
Customer Sample Ref.	STPES1 ESZ
Depth (m)	0.50

Eluate Analysis	Conc ⁿ in 2:1 eluate (mg/l)		2:1 conc ⁿ leached (mg/kg)	
	Result	Limit of Detection	Result	Limit of Detection
Benzo(b)fluoranthene (diss.filt)	0.000143	<0.00001	0.000286	<0.00002
Benzo(k)fluoranthene (diss.filt)	0.00006	<0.00001	0.00012	<0.00002
Benzo(a)pyrene (diss.filt)	0.0000732	<0.000004	0.000146	<0.000008
Copper	0.0294	<0.0003	0.0588	<0.0006
Dibenzo(a,h)anthracene (diss.filt)	<0.00001	<0.00001	<0.00002	<0.00002
Lead	0.00398	<0.0002	0.00796	<0.0004
Benzo(g,h,i)perylene (diss.filt)	0.000145	<0.00001	0.00029	<0.00002
Indeno(1,2,3-cd)pyrene (diss.filt)	0.0000636	<0.00001	0.000127	<0.00002
Manganese	0.0126	<0.003	0.0252	<0.006
Molybdenum	0.0257	<0.003	0.0514	<0.006
PAH 16 EPA Total by GCMS (diss.filt)	0.00102	<0.000164	0.00204	<0.000328
Nickel	0.0038	<0.0004	0.0076	<0.0008
Phosphorus	0.193	<0.01	0.386	<0.02
Selenium	0.00103	<0.001	0.00206	<0.002
Zinc	0.0521	<0.001	0.104	<0.002
Calcium (Dis.Filt) mg/l	35.3	<0.2	70.6	<0.4
Iron (Dis.Filt) mg/l	0.344	<0.019	0.688	<0.038
TPH CWG (W)				
Surrogate Recovery	-	-	-	-
GRO TOT (C5-C12)	<0.05	<0.05	<0.1	<0.1
Aliphatics C5-C6	<0.01	<0.01	<0.02	<0.02
Aliphatics >C6-C8	<0.01	<0.01	<0.02	<0.02
Aliphatics >C8-C10	<0.01	<0.01	<0.02	<0.02
Aliphatics >C10-C12	<0.01	<0.01	<0.02	<0.02
Aromatics C6-C7	<0.01	<0.01	<0.02	<0.02
Aromatics >C7-C8	<0.01	<0.01	<0.02	<0.02
MTBE GC-FID	<0.003	<0.003	<0.006	<0.006
Aromatics >EC8 -EC10	<0.01	<0.01	<0.02	<0.02
Aromatics >EC10-EC12	<0.01	<0.01	<0.02	<0.02
Benzene by GC	<0.007	<0.007	<0.014	<0.014
Toluene by GC	<0.004	<0.004	<0.008	<0.008
Ethylbenzene by GC	<0.005	<0.005	<0.01	<0.01
m & p Xylene by GC	<0.008	<0.008	<0.016	<0.016
o Xylene by GC	<0.003	<0.003	<0.006	<0.006
Sum m&p and o Xylene by GC	<0.011	<0.011	<0.022	<0.022
Sum of BTEX by GC	<0.028	<0.028	<0.056	<0.056

Leach Test Information

Date Prepared	20-Oct-2020
pH (pH Units)	6.98
Conductivity (µS/cm)	395.00
Temperature (°C)	19.30
Volume Leachant (Litres)	0.317
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
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CERTIFICATE OF ANALYSIS

Validated

SDG:	201009-77	Client Reference:	JFR1451	Report Number:	575579
Location:	A303 Stonehenge	Order Number:		Superseded Report:	573912

CEN 2:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/'

Client Reference		Site Location	A303 Stonehenge
Mass Sample taken (kg)	0.106	Natural Moisture Content (%)	17.1
Mass of dry sample (kg)	0.175	Dry Matter Content (%)	85.4
Particle Size <4mm	>95%		

Case	
SDG	201009-77
Lab Sample Number(s)	22999902
Sampled Date	06-Oct-2020
Customer Sample Ref.	STPES2 ESZ
Depth (m)	1.00

Eluate Analysis	Conc ⁿ in 2:1 eluate (mg/l)		2:1 conc ⁿ leached (mg/kg)	
	Result	Limit of Detection	Result	Limit of Detection
Aliphatics >C12-C16	<0.01	<0.01	<0.02	<0.02
Aliphatics >C16-C21	<0.01	<0.01	<0.02	<0.02
Aliphatics >C21-C35	<0.01	<0.01	<0.02	<0.02
Total Aliphatics >C12-C35	<0.01	<0.01	<0.02	<0.02
Aromatics >EC12-EC16	<0.01	<0.01	<0.02	<0.02
Aromatics >EC16-EC21	<0.01	<0.01	<0.02	<0.02
Aromatics >EC21-EC35	<0.01	<0.01	<0.02	<0.02
Aromatics >EC16-EC35	<0.01	<0.01	<0.02	<0.02
Total Aromatics >EC12-EC35	<0.01	<0.01	<0.02	<0.02
TPH (Total Aliphatics + Total Aromatics) >C5-C35	<0.01	<0.01	<0.02	<0.02
Ammoniacal Nitrogen as N	<0.2	<0.2	<0.4	<0.4
Chromium III	<0.03	<0.03	<0.06	<0.06
Hexavalent Chromium	<0.03	<0.03	<0.06	<0.06
Sulphate (soluble)	10	<2	20	<4
Dissolved Organic Carbon	6.71	<3	13.4	<6
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.00002	<0.00002
Antimony	0.00237	<0.001	0.00474	<0.002
Naphthalene (diss.filt)	0.0000168	<0.00001	0.0000336	<0.00002
Total Cyanide (W)	<0.05	<0.05	<0.1	<0.1
Acenaphthene (diss.filt)	0.0000825	<0.000005	0.000165	<0.00001
Arsenic	0.00272	<0.0005	0.00544	<0.001
Free Cyanide (W)	<0.05	<0.05	<0.1	<0.1
Acenaphthylene (diss.filt)	0.0000484	<0.000005	0.0000968	<0.00001
Phenol by HPLC (W)	<0.002	<0.002	<0.004	<0.004
Beryllium	<0.0001	<0.0001	<0.0002	<0.0002
Fluoranthene (diss.filt)	0.000251	<0.000005	0.000502	<0.00001
Anthracene (diss.filt)	0.0000747	<0.000005	0.000149	<0.00001
Boron	0.026	<0.01	0.052	<0.02
Phenanthrene (diss.filt)	0.000294	<0.000005	0.000588	<0.00001
Cadmium	<0.00008	<0.00008	<0.00016	<0.00016
Fluorene (diss.filt)	0.0000427	<0.000005	0.0000854	<0.00001
Chrysene (diss.filt)	0.0000588	<0.000005	0.000118	<0.00001
Pyrene (diss.filt)	0.000194	<0.000005	0.000388	<0.00001
Benzo(a)anthracene (diss.filt)	0.0000528	<0.000005	0.000106	<0.00001
Chromium	<0.001	<0.001	<0.002	<0.002

Leach Test Information

Date Prepared	20-Oct-2020
pH (pH Units)	8.29
Conductivity (µS/cm)	171.00
Temperature (°C)	12.00
Volume Leachant (Litres)	0.319
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
 Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
 Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

Validated

SDG: 201009-77
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 575579
Superseded Report: 573912

CEN 2:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/'

Client Reference	
Mass Sample taken (kg)	0.106
Mass of dry sample (kg)	0.175
Particle Size <4mm	>95%

Site Location	A303 Stonehenge
Natural Moisture Content (%)	17.1
Dry Matter Content (%)	85.4

Case	
SDG	201009-77
Lab Sample Number(s)	22999902
Sampled Date	06-Oct-2020
Customer Sample Ref.	STPES2 ESZ
Depth (m)	1.00

Eluate Analysis	Conc ⁿ in 2:1 eluate (mg/l)		2:1 conc ⁿ leached (mg/kg)	
	Result	Limit of Detection	Result	Limit of Detection
Benzo(b)fluoranthene (diss.filt)	0.0000937	<0.000005	0.000187	<0.00001
Benzo(k)fluoranthene (diss.filt)	0.0000304	<0.000005	0.0000608	<0.00001
Benzo(a)pyrene (diss.filt)	0.0000525	<0.000002	0.000105	<0.000004
Copper	0.00711	<0.0003	0.0142	<0.0006
Dibenzo(a,h)anthracene (diss.filt)	0.0000146	<0.000005	0.0000292	<0.00001
Lead	0.000488	<0.0002	0.000976	<0.0004
Benzo(g,h,i)perylene (diss.filt)	0.000199	<0.000005	0.000398	<0.00001
Indeno(1,2,3-cd)pyrene (diss.filt)	0.0000785	<0.000005	0.000157	<0.00001
Manganese	<0.003	<0.003	<0.006	<0.006
Molybdenum	0.00624	<0.003	0.0125	<0.006
PAH 16 EPA Total by GCMS (diss.filt)	0.00158	<0.000082	0.00316	<0.000164
Nickel	0.00129	<0.0004	0.00258	<0.0008
Phosphorus	0.0472	<0.01	0.0944	<0.02
Selenium	<0.001	<0.001	<0.002	<0.002
Zinc	0.00223	<0.001	0.00446	<0.002
Calcium (Dis.Filt) mg/l	15.7	<0.2	31.4	<0.4
Iron (Dis.Filt) mg/l	0.0498	<0.019	0.0996	<0.038
TPH CWG (W)				
Surrogate Recovery	-	-	-	-
GRO TOT (C5-C12)	<0.05	<0.05	<0.1	<0.1
Aliphatics C5-C6	<0.01	<0.01	<0.02	<0.02
Aliphatics >C6-C8	<0.01	<0.01	<0.02	<0.02
Aliphatics >C8-C10	<0.01	<0.01	<0.02	<0.02
Aliphatics >C10-C12	<0.01	<0.01	<0.02	<0.02
Aromatics C6-C7	<0.01	<0.01	<0.02	<0.02
Aromatics >C7-C8	<0.01	<0.01	<0.02	<0.02
MTBE GC-FID	<0.003	<0.003	<0.006	<0.006
Aromatics >EC8 -EC10	<0.01	<0.01	<0.02	<0.02
Aromatics >EC10-EC12	<0.01	<0.01	<0.02	<0.02
Benzene by GC	<0.007	<0.007	<0.014	<0.014
Toluene by GC	<0.004	<0.004	<0.008	<0.008
Ethylbenzene by GC	<0.005	<0.005	<0.01	<0.01
m & p Xylene by GC	<0.008	<0.008	<0.016	<0.016
o Xylene by GC	<0.003	<0.003	<0.006	<0.006
Sum m&p and o Xylene by GC	<0.011	<0.011	<0.022	<0.022
Sum of BTEX by GC	<0.028	<0.028	<0.056	<0.056

Leach Test Information

Date Prepared	20-Oct-2020
pH (pH Units)	8.29
Conductivity (µS/cm)	171.00
Temperature (°C)	12.00
Volume Leachant (Litres)	0.319
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

Validated

SDG:	201009-77	Client Reference:	JFR1451	Report Number:	575579
Location:	A303 Stonehenge	Order Number:		Superseded Report:	573912

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		Site Location	A303 Stonehenge
Mass Sample taken (kg)	0.106	Natural Moisture Content (%)	17.1
Mass of dry sample (kg)	0.090	Dry Matter Content (%)	85.4
Particle Size <4mm	>95%		

Case	
SDG	201009-77
Lab Sample Number(s)	22999902
Sampled Date	06-Oct-2020
Customer Sample Ref.	STPES2 ESZ
Depth (m)	1.00

Landfill Waste Acceptance Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	-
6	-	-
1	-	-
500	-	-
100	-	-
-	>6	-
-	-	-
-	-	-

Solid Waste Analysis	Result
Total Organic Carbon (%)	0.702
Loss on Ignition (%)	-
Sum of BTEX (mg/kg)	<0.04
Sum of 7 PCBs (mg/kg)	<0.105
Mineral Oil (mg/kg)	357
PAH Sum of 17 (mg/kg)	<10
pH (pH Units)	9.11
ANC to pH 6 (mol/kg)	-
ANC to pH 4 (mol/kg)	-

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection	Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Arsenic	0.00175	<0.0005	0.0175	<0.005	0.5	2	25
Barium	0.174	<0.0002	1.74	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00248	<0.0003	0.0248	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.000581	<0.0004	0.00581	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00341	<0.001	0.0341	<0.01	4	50	200
Chloride	4.7	<2	47	<20	800	15000	25000
Fluoride	1.69	<0.5	16.9	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	61.5	<5	615	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	3.71	<3	37.1	<30	500	800	1000

Leach Test Information

Date Prepared	10-Nov-2020
pH (pH Units)	9.02
Conductivity (µS/cm)	76.80
Temperature (°C)	20.50
Volume Leachant (Litres)	0.884

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
 Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
 Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

Validated

SDG:	201009-77	Client Reference:	JFR1451	Report Number:	575579
Location:	A303 Stonehenge	Order Number:		Superseded Report:	573912

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM073	MEWAM BOOK 60 1980,95 1985, HMSO / Modified: US EPA Method 8081A & 8141A	Determination of organochlorine and organophosphorous pesticides by GCMS
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM104	Method 4500F, AWWA/APHA, 20th Ed., 1999	Determination of Fluoride using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM123	BS 2690: Part 121:1981	The Determination of Total Dissolved Solids in Water
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM174	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID
TM178	Modified: US EPA Method 8100	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS in Waters
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser
TM243		Mixed Anions In Soils By Kone
TM245	By GC-FID	Determination of GRO by Headspace in waters
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC
TM410	Shaker extraction-In house coronene method	Determination of Coronene in soils by GCMS
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).



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Test Completion Dates

	22999041	22999303	22999898	22999900	22999902	22999298
Lab Sample No(s)	STP72201	STP72601	STPES1	STPES2	STPES2	STPES3
Customer Sample Ref.						
AGS Ref.	ES	ES	ES	ES	ES	ES
Depth	0.30 - 0.35	0.50	0.50	0.30	1.00	0.65
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)

Ammoniacal Nitrogen		29-Oct-2020	22-Oct-2020		22-Oct-2020	
Ammonium Soil by Titration	30-Oct-2020	30-Oct-2020	21-Oct-2020	21-Oct-2020	21-Oct-2020	21-Oct-2020
Anions by Kone (soil)	30-Oct-2020	29-Oct-2020	21-Oct-2020	21-Oct-2020	22-Oct-2020	22-Oct-2020
Anions by Kone (w)		29-Oct-2020	22-Oct-2020		12-Nov-2020	
Asbestos ID in Solid Samples		29-Oct-2020	22-Oct-2020	22-Oct-2020	22-Oct-2020	22-Oct-2020
CEN 10:1 Leachate (1 Stage)					10-Nov-2020	
CEN 2:1 Leachate (1 Stage)		27-Oct-2020	20-Oct-2020		20-Oct-2020	
CEN Readings		28-Oct-2020	22-Oct-2020		11-Nov-2020	
Chromium III	03-Nov-2020	03-Nov-2020	22-Oct-2020	22-Oct-2020	22-Oct-2020	22-Oct-2020
Coronene					11-Nov-2020	
Cyanide Comp/Free/Total/Thiocyanate	30-Oct-2020	30-Oct-2020	23-Oct-2020	21-Oct-2020	23-Oct-2020	21-Oct-2020
Dissolved Metals by ICP-MS		31-Oct-2020	22-Oct-2020		13-Nov-2020	
Dissolved Organic/Inorganic Carbon		30-Oct-2020	23-Oct-2020		12-Nov-2020	
EPH by GCxGC-FID					09-Nov-2020	
EPH CWG (Aliphatic) Filtered GC (W)		30-Oct-2020	23-Oct-2020		22-Oct-2020	
EPH CWG (Aromatic) Filtered GC (W)		30-Oct-2020	23-Oct-2020		22-Oct-2020	
EPH CWG GC (S)	28-Oct-2020	28-Oct-2020	21-Oct-2020	21-Oct-2020	21-Oct-2020	21-Oct-2020
Fluoride					12-Nov-2020	
GRO by GC-FID (S)	28-Oct-2020	27-Oct-2020	21-Oct-2020	21-Oct-2020	21-Oct-2020	21-Oct-2020
GRO by GC-FID (W)		28-Oct-2020	22-Oct-2020		22-Oct-2020	
Hexavalent Chromium (s)			21-Oct-2020	21-Oct-2020	21-Oct-2020	22-Oct-2020
Hexavalent Chromium (w)		29-Oct-2020	22-Oct-2020		22-Oct-2020	
Mercury Dissolved		30-Oct-2020	22-Oct-2020		13-Nov-2020	
Metals in solid samples by OES	30-Oct-2020	30-Oct-2020	24-Oct-2020	24-Oct-2020	23-Oct-2020	27-Oct-2020
Moisture at 105C		27-Oct-2020	20-Oct-2020		20-Oct-2020	
OC OP Pesticides and Triazine Herb	29-Oct-2020					
PAH 16 & 17 Calc					11-Nov-2020	
PAH by GCMS	29-Oct-2020	28-Oct-2020	23-Oct-2020	23-Oct-2020	11-Nov-2020	23-Oct-2020
PAH in waters by GC-MS (diss.filt)		30-Oct-2020	26-Oct-2020		22-Oct-2020	
PCBs by GCMS					11-Nov-2020	
pH	28-Oct-2020	28-Oct-2020	20-Oct-2020	20-Oct-2020	20-Oct-2020	21-Oct-2020
pH Value of Filtered Water		29-Oct-2020	22-Oct-2020		22-Oct-2020	
Phenols by HPLC (S)	30-Oct-2020	29-Oct-2020	21-Oct-2020	21-Oct-2020	21-Oct-2020	23-Oct-2020
Phenols by HPLC (W)		30-Oct-2020	22-Oct-2020		13-Nov-2020	
Sample description	27-Oct-2020	26-Oct-2020	19-Oct-2020	19-Oct-2020	19-Oct-2020	20-Oct-2020
Semi Volatile Organic Compounds			21-Oct-2020	21-Oct-2020	21-Oct-2020	
Total Dissolved Solids					11-Nov-2020	
Total Organic Carbon	30-Oct-2020	30-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	22-Oct-2020
TPH CWG Filtered (W)		30-Oct-2020	23-Oct-2020		23-Oct-2020	
TPH CWG GC (S)	28-Oct-2020	28-Oct-2020	21-Oct-2020	21-Oct-2020	21-Oct-2020	21-Oct-2020
VOC MS (S)		27-Oct-2020	21-Oct-2020	21-Oct-2020	21-Oct-2020	21-Oct-2020



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ASSOCIATED AQC DATA

Ammoniacal Nitrogen

Component	Method Code	QC 2322	QC 2338
Ammoniacal Nitrogen as N	TM099	100.8 93.14 : 108.60	100.0 93.14 : 108.60

Ammonium Soil by Titration

Component	Method Code	QC 2305	QC 2313
Exchangeable Ammonium as NH4	TM024	83.08 76.20 : 110.13	89.05 76.20 : 110.13

Anions by Kone (w)

Component	Method Code	QC 2397	QC 2397	QC 2311	QC 2359
Chloride	TM184	105.0 92.93 : 115.43	108.0 92.93 : 115.43	107.0 92.93 : 115.43	105.0 94.04 : 108.61
Sulphate (soluble)	TM184	104.0 90.53 : 113.03	103.6 90.53 : 113.03	103.2 90.53 : 113.03	102.0 91.99 : 109.30
TON as NO3	TM184	103.0 94.00 : 111.10			

Coronene

Component	Method Code	QC 2398
Coronene RAW	TM410	115.5 79.43 : 137.78

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2344	QC 2331	QC 2371	QC 2386	QC 2312	QC 2313
Free Cyanide	TM153	86.34 78.61 : 114.43	87.82 78.61 : 114.43			88.42 78.61 : 114.43	
Free Cyanide (W)	TM227			105.75 90.50 : 114.50	103.5 90.50 : 114.50		101.0 90.50 : 114.50
Thiocyanate	TM153	96.79 90.48 : 109.52	97.44 90.48 : 109.52			97.44 90.48 : 109.52	
Thiocyanate (W)	TM227			105.25 90.50 : 113.00	105.75 90.50 : 113.00		106.25 90.50 : 113.00
Total Cyanide	TM153	93.71 76.80 : 112.96	93.01 76.80 : 112.96			99.3 76.80 : 112.96	
Total Cyanide (W)	TM227			105.75 91.75 : 112.75	102.5 91.75 : 112.75		105.0 91.75 : 112.75



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Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2323
Free Cyanide	TM153	89.5 78.61 : 114.43
Thiocyanate	TM153	99.36 90.48 : 109.52
Total Cyanide	TM153	97.2 76.80 : 112.96

Dissolved Metals by ICP-MS

Component	Method Code	QC 2375	QC 2387	QC 2320	QC 2347
Aluminium	TM152	102.67 94.21 : 111.52	102.67 94.21 : 111.52	108.0 94.21 : 111.52	103.67 94.21 : 111.52
Antimony	TM152	101.83 88.37 : 130.57	103.33 88.37 : 130.57	104.83 88.37 : 130.57	101.83 88.37 : 130.57
Arsenic	TM152	102.17 92.62 : 113.52	101.5 92.62 : 113.52	106.0 92.62 : 113.52	100.83 92.62 : 113.52
Barium	TM152	101.17 88.62 : 113.14	102.67 88.62 : 113.14	106.0 88.62 : 113.14	101.0 88.62 : 113.14
Beryllium	TM152	101.5 87.08 : 111.38	103.0 87.08 : 111.38	109.83 87.08 : 111.38	104.83 87.08 : 111.38
Bismuth	TM152	99.5 92.62 : 115.02	102.17 92.62 : 115.02	103.5 92.62 : 115.02	100.33 92.62 : 115.02
Boron	TM152	105.67 86.31 : 120.88	106.67 86.31 : 120.88	110.67 86.31 : 120.88	106.33 86.31 : 120.88
Cadmium	TM152	100.17 93.85 : 111.65	100.0 93.85 : 111.65	107.0 93.85 : 111.65	101.67 93.85 : 111.65
Calcium	TM152	101.33 89.20 : 126.91	102.67 89.20 : 126.91	105.33 89.20 : 126.91	102.0 89.20 : 126.91
Chromium	TM152	100.67 92.22 : 109.85	101.33 92.22 : 109.85	105.83 92.22 : 109.85	102.5 92.22 : 109.85
Cobalt	TM152	99.67 85.01 : 114.87	100.0 85.01 : 114.87	105.33 85.01 : 114.87	101.67 85.01 : 114.87
Copper	TM152	101.33 89.87 : 119.73	101.5 89.87 : 119.73	106.17 89.87 : 119.73	103.17 89.87 : 119.73
Iron	TM152	100.67 93.02 : 113.86	101.33 93.02 : 113.86	106.67 93.02 : 113.86	103.33 93.02 : 113.86
Lead	TM152	101.0 91.11 : 116.98	101.5 91.11 : 116.98	105.83 91.11 : 116.98	101.67 91.11 : 116.98
Lithium	TM152	101.5 91.30 : 123.00	101.33 91.30 : 123.00	111.33 91.30 : 123.00	104.33 91.30 : 123.00
Magnesium	TM152	98.0 89.60 : 116.61	99.33 89.60 : 116.61	104.67 89.60 : 116.61	101.33 89.60 : 116.61
Manganese	TM152	101.83 93.97 : 112.46	102.0 93.97 : 112.46	106.83 93.97 : 112.46	102.67 93.97 : 112.46
Molybdenum	TM152	98.83 89.07 : 110.96	98.5 89.07 : 110.96	102.67 89.07 : 110.96	100.0 89.07 : 110.96
Nickel	TM152	100.5 93.70 : 112.15	100.5 93.70 : 112.15	105.17 93.70 : 112.15	102.17 93.70 : 112.15
Phosphorus	TM152	100.0 89.24 : 114.18	102.33 89.24 : 114.18	107.0 89.24 : 114.18	100.5 89.24 : 114.18
Potassium	TM152	100.67 93.20 : 115.55	103.33 93.20 : 115.55	105.33 93.20 : 115.55	102.0 93.20 : 115.55
Selenium	TM152	101.83 91.69 : 117.12	105.17 91.69 : 117.12	108.17 91.69 : 117.12	101.0 91.69 : 117.12



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Dissolved Metals by ICP-MS

		QC 2375	QC 2387	QC 2320	QC 2347
Silver	TM152	99.83 90.93 : 121.73	99.83 90.93 : 121.73	103.5 90.93 : 121.73	100.17 90.93 : 121.73
Sodium	TM152	98.67 92.42 : 113.24	100.0 92.42 : 113.24	106.67 92.42 : 113.24	102.0 92.42 : 113.24
Strontium	TM152	101.33 92.14 : 116.24	103.33 92.14 : 116.24	105.33 92.14 : 116.24	101.67 92.14 : 116.24
Tellurium	TM152	98.83 89.88 : 111.78	100.17 89.88 : 111.78	101.33 89.88 : 111.78	97.5 89.88 : 111.78
Thallium	TM152	95.33 82.43 : 113.83	97.0 82.43 : 113.83	98.5 82.43 : 113.83	92.83 82.43 : 113.83
Tin	TM152	102.33 94.62 : 107.79	103.5 94.62 : 107.79	104.5 94.62 : 107.79	101.17 94.62 : 107.79
Titanium	TM152	105.33 90.29 : 115.23	104.0 90.29 : 115.23	104.83 90.29 : 115.23	102.33 90.29 : 115.23
Tungsten	TM152	98.83 77.61 : 132.31	98.5 77.61 : 132.31	102.5 77.61 : 132.31	99.83 77.61 : 132.31
Uranium	TM152	98.67 86.97 : 115.76	100.33 86.97 : 115.76	104.33 86.97 : 115.76	99.33 86.97 : 115.76
Vanadium	TM152	102.0 89.61 : 115.48	103.33 89.61 : 115.48	106.5 89.61 : 115.48	104.17 89.61 : 115.48
Zinc	TM152	102.0 87.51 : 116.26	102.0 87.51 : 116.26	108.67 87.51 : 116.26	103.33 87.51 : 116.26

Dissolved Organic/Inorganic Carbon

Component	Method Code	QC 2338	QC 2310	QC 2347	QC 2380
Dissolved Inorganic Carbon	TM090	97.33 91.27 : 109.87	99.0 91.27 : 109.87	103.17 93.58 : 112.28	104.0 93.58 : 112.28
Dissolved Organic Carbon	TM090	97.83 96.58 : 107.98	99.17 96.58 : 107.98	100.83 96.28 : 110.58	101.0 96.28 : 110.58

EPH CWG (Aliphatic) Filtered GC (W)

Component	Method Code	QC 2350
Total Aliphatics >C10-C40	TM174	95.87 71.82 : 134.09

EPH CWG GC (S)

Component	Method Code	QC 2331	QC 2390	QC 2370
EPH >C8-C40 Raw	TM414	89.88 56.39 : 129.94	96.83 77.66 : 104.66	93.06 58.92 : 124.32
Total Aliphatics Raw	TM414	96.17 62.55 : 133.12	102.71 84.39 : 115.61	99.4 64.95 : 136.26
Total Aromatics Raw	TM414	95.28 57.00 : 150.27	109.26 57.00 : 150.27	99.9 58.15 : 147.12

Fluoride



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Fluoride

Component	Method Code	QC 2391
Fluoride	TM104	101.33 95.51 : 107.24

GRO by GC-FID (S)

Component	Method Code	QC 2300	QC 2319
QC	TM089	93.66 70.34 : 111.95	87.73 70.34 : 111.95

GRO by GC-FID (W)

Component	Method Code	QC 2312	QC 2389
Benzene by GC	TM245	100.0 83.48 : 117.21	95.5 83.48 : 117.21
Ethylbenzene by GC	TM245	104.0 84.11 : 114.89	101.0 84.11 : 114.89
m & p Xylene by GC	TM245	104.0 83.73 : 116.33	100.5 83.73 : 116.33
MTBE GC-FID	TM245	98.5 84.42 : 117.50	94.5 84.42 : 117.50
o Xylene by GC	TM245	104.5 85.03 : 117.59	101.5 85.03 : 117.59
QC	TM245	107.87 60.71 : 137.65	98.02 60.71 : 137.65
Toluene by GC	TM245	102.0 84.73 : 116.85	98.5 84.73 : 116.85

Hexavalent Chromium (s)

Component	Method Code	QC 2366	QC 2388	QC 2344
Hexavalent Chromium	TM151	102.0 95.60 : 107.60	106.0 95.60 : 107.60	104.0 92.00 : 111.20

Hexavalent Chromium (w)

Component	Method Code	QC 2354	QC 2303
Hexavalent Chromium	TM241	100.4 94.17 : 106.17	105.4 94.17 : 106.17

Mercury Dissolved



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Mercury Dissolved

Component	Method Code	QC 2314	QC 2333	QC 2323
Mercury Dissolved (CVAF)	TM183	86.4 69.30 : 128.70	98.7 0.00 : 0.00	97.4 69.30 : 128.70

Metals in solid samples by OES

Component	Method Code	QC 2303	QC 2358	QC 2332	QC 2371	QC 2389	QC 2324
Aluminium	TM181	106.19 73.56 : 108.85	89.38 73.56 : 108.85	104.42 73.56 : 108.85	101.77 73.56 : 108.85	91.15 73.56 : 108.85	99.12 73.56 : 108.85
Antimony	TM181	104.47 76.89 : 111.24	100.0 76.89 : 111.24	103.25 76.89 : 111.24	103.66 76.89 : 111.24	104.88 76.89 : 111.24	101.22 76.89 : 111.24
Arsenic	TM181	101.45 88.53 : 111.01	96.22 88.53 : 111.01	105.52 88.53 : 111.01	102.03 88.53 : 111.01	106.1 88.53 : 111.01	104.07 88.53 : 111.01
Barium	TM181	101.83 77.67 : 105.35	89.91 77.67 : 105.35	99.08 77.67 : 105.35	98.17 77.67 : 105.35	95.41 77.67 : 105.35	99.08 77.67 : 105.35
Beryllium	TM181	100.0 85.44 : 109.61	96.64 85.44 : 109.61	104.1 85.44 : 109.61	100.0 85.44 : 109.61	105.6 85.44 : 109.61	103.36 85.44 : 109.61
Boron	TM181	95.13 73.51 : 104.66	83.67 73.51 : 104.66	99.71 73.51 : 104.66	88.83 73.51 : 104.66	88.25 73.51 : 104.66	92.84 73.51 : 104.66
Cadmium	TM181	94.24 77.67 : 104.12	84.77 77.67 : 104.12	92.18 77.67 : 104.12	91.77 77.67 : 104.12	92.59 77.67 : 104.12	90.53 77.67 : 104.12
Chromium	TM181	97.16 86.11 : 106.21	92.29 86.11 : 106.21	100.2 86.11 : 106.21	94.73 86.11 : 106.21	98.99 86.11 : 106.21	97.16 86.11 : 106.21
Cobalt	TM181	92.45 84.60 : 104.13	87.74 84.60 : 104.13	96.23 84.60 : 104.13	91.82 84.60 : 104.13	96.23 84.60 : 104.13	94.03 84.60 : 104.13
Copper	TM181	96.65 82.40 : 105.45	93.31 82.40 : 105.45	95.25 82.40 : 105.45	97.36 82.40 : 105.45	94.01 82.40 : 105.45	91.02 82.40 : 105.45
Iron	TM181	105.56 82.95 : 110.58	93.65 82.95 : 110.58	108.73 82.95 : 110.58	99.21 82.95 : 110.58	96.83 82.95 : 110.58	100.0 82.95 : 110.58
Lead	TM181	96.85 78.24 : 104.05	90.09 78.24 : 104.05	95.5 78.24 : 104.05	89.41 78.24 : 104.05	93.69 78.24 : 104.05	93.69 78.24 : 104.05
Manganese	TM181	121.11 94.29 : 119.51	115.56 94.29 : 119.51	119.17 94.29 : 119.51	118.89 94.29 : 119.51	112.22 94.29 : 119.51	107.5 94.29 : 119.51
Mercury	TM181	93.72 83.16 : 107.81	89.13 83.16 : 107.81	98.31 83.16 : 107.81	92.27 83.16 : 107.81	100.72 83.16 : 107.81	97.58 83.16 : 107.81
Molybdenum	TM181	101.65 87.11 : 106.87	97.53 87.11 : 106.87	101.65 87.11 : 106.87	100.41 87.11 : 106.87	103.7 87.11 : 106.87	100.41 87.11 : 106.87
Nickel	TM181	92.91 80.26 : 102.28	88.26 80.26 : 102.28	97.31 80.26 : 102.28	91.2 80.26 : 102.28	97.8 80.26 : 102.28	95.6 80.26 : 102.28
Phosphorus	TM181	115.96 94.56 : 124.28	115.15 94.56 : 124.28	113.33 94.56 : 124.28	113.13 94.56 : 124.28	126.26 94.56 : 124.28	120.81 94.56 : 124.28
Selenium	TM181	101.96 82.28 : 110.48	95.69 82.28 : 110.48	103.92 82.28 : 110.48	98.82 82.28 : 110.48	103.92 82.28 : 110.48	101.96 82.28 : 110.48
Strontium	TM181	94.43 79.13 : 102.79	89.09 79.13 : 102.79	100.45 79.13 : 102.79	91.76 79.13 : 102.79	90.2 79.13 : 102.79	89.31 79.13 : 102.79
Thallium	TM181	101.77 82.94 : 111.86	97.35 82.94 : 111.86	104.87 82.94 : 111.86	100.44 82.94 : 111.86	105.31 82.94 : 111.86	101.33 82.94 : 111.86
Tin	TM181	101.52 86.72 : 110.03	97.34 86.72 : 110.03	106.84 86.72 : 110.03	98.86 86.72 : 110.03	100.76 86.72 : 110.03	98.86 86.72 : 110.03
Titanium	TM181	90.84 66.23 : 102.06	80.15 66.23 : 102.06	97.71 66.23 : 102.06	77.1 66.23 : 102.06	78.63 66.23 : 102.06	87.79 66.23 : 102.06



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Metals in solid samples by OES

		QC 2303	QC 2358	QC 2332	QC 2371	QC 2389	QC 2324
Vanadium	TM181	98.9 75.51 : 108.87	93.41 86.19 : 109.45	106.59 86.19 : 109.45	97.8 75.51 : 108.87	101.1 86.19 : 109.45	100.73 86.19 : 109.45
Zinc	TM181	100.0 84.68 : 113.99	93.02 84.68 : 113.99	103.7 84.68 : 113.99	96.1 84.68 : 113.99	100.41 84.68 : 113.99	97.33 84.68 : 113.99
Component	Method Code	QC 2311	QC 2331	QC 2389	QC 2366	QC 2365	QC 2388
Aluminium	TM181	91.15 73.56 : 108.85	98.23 73.56 : 108.85	93.81 73.56 : 108.85	94.69 73.56 : 108.85	111.5 73.56 : 108.85	100.0 73.56 : 108.85
Antimony	TM181	106.1 76.89 : 111.24	98.37 76.89 : 111.24	100.0 76.89 : 111.24	110.16 76.89 : 111.24	107.72 76.89 : 111.24	102.03 76.89 : 111.24
Arsenic	TM181	104.07 88.53 : 111.01	101.74 88.53 : 111.01	103.49 88.53 : 111.01	109.3 88.53 : 111.01	110.17 88.53 : 111.01	103.2 88.53 : 111.01
Barium	TM181	100.0 77.67 : 105.35	95.41 77.67 : 105.35	98.17 77.67 : 105.35	96.33 77.67 : 105.35	108.26 77.67 : 105.35	100.0 77.67 : 105.35
Beryllium	TM181	104.1 85.44 : 109.61	96.64 85.44 : 109.61	104.85 85.44 : 109.61	104.85 85.44 : 109.61	106.72 85.44 : 109.61	103.73 85.44 : 109.61
Boron	TM181	86.53 73.51 : 104.66	90.83 73.51 : 104.66	84.81 73.51 : 104.66	94.84 73.51 : 104.66	100.57 73.51 : 104.66	91.4 73.51 : 104.66
Cadmium	TM181	92.59 77.67 : 104.12	84.77 77.67 : 104.12	92.59 77.67 : 104.12	91.36 77.67 : 104.12	97.12 77.67 : 104.12	87.65 77.67 : 104.12
Chromium	TM181	97.57 86.11 : 106.21	89.86 86.11 : 106.21	86.61 86.11 : 106.21	100.2 86.11 : 106.21	101.83 86.11 : 106.21	97.36 86.11 : 106.21
Cobalt	TM181	95.28 84.60 : 104.13	91.19 84.60 : 104.13	93.08 84.60 : 104.13	98.74 84.60 : 104.13	99.69 84.60 : 104.13	94.03 84.60 : 104.13
Copper	TM181	97.36 82.40 : 105.45	90.32 82.40 : 105.45	89.96 82.40 : 105.45	97.18 82.40 : 105.45	99.65 82.40 : 105.45	92.61 82.40 : 105.45
Iron	TM181	96.83 82.95 : 110.58	97.62 82.95 : 110.58	96.83 82.95 : 110.58	98.41 82.95 : 110.58	110.32 82.95 : 110.58	100.0 82.95 : 110.58
Lead	TM181	96.4 78.24 : 104.05	91.22 78.24 : 104.05	88.06 78.24 : 104.05	122.75 78.24 : 104.05	103.6 78.24 : 104.05	95.27 78.24 : 104.05
Manganese	TM181	115.83 94.29 : 119.51	113.06 94.29 : 119.51	108.61 94.29 : 119.51	113.61 94.29 : 119.51	119.44 94.29 : 119.51	107.22 94.29 : 119.51
Mercury	TM181	97.83 83.16 : 107.81	93.72 83.16 : 107.81	101.21 83.16 : 107.81	103.14 83.16 : 107.81	103.14 83.16 : 107.81	98.79 83.16 : 107.81
Molybdenum	TM181	105.76 87.11 : 106.87	97.94 87.11 : 106.87	96.3 87.11 : 106.87	107.82 87.11 : 106.87	109.05 87.11 : 106.87	101.23 87.11 : 106.87
Nickel	TM181	95.35 80.26 : 102.28	89.49 80.26 : 102.28	96.33 80.26 : 102.28	99.76 80.26 : 102.28	100.73 80.26 : 102.28	94.87 80.26 : 102.28
Phosphorus	TM181	121.82 94.56 : 124.28	108.28 94.56 : 124.28	124.65 94.56 : 124.28	115.56 94.56 : 124.28	121.41 94.56 : 124.28	111.92 94.56 : 124.28
Selenium	TM181	100.39 82.28 : 110.48	93.73 82.28 : 110.48	101.57 82.28 : 110.48	109.41 82.28 : 110.48	109.41 82.28 : 110.48	102.35 82.28 : 110.48
Strontium	TM181	94.65 79.13 : 102.79	87.08 79.13 : 102.79	85.3 79.13 : 102.79	93.99 79.13 : 102.79	102.0 79.13 : 102.79	91.31 79.13 : 102.79
Thallium	TM181	103.1 82.94 : 111.86	97.35 82.94 : 111.86	103.1 82.94 : 111.86	107.08 82.94 : 111.86	106.64 82.94 : 111.86	102.21 82.94 : 111.86
Tin	TM181	105.32 86.72 : 110.03	95.44 86.72 : 110.03	97.72 86.72 : 110.03	109.89 86.72 : 110.03	111.41 86.72 : 110.03	103.04 86.72 : 110.03
Titanium	TM181	80.15 66.23 : 102.06	81.68 66.23 : 102.06	77.1 66.23 : 102.06	81.68 66.23 : 102.06	95.42 66.23 : 102.06	77.86 66.23 : 102.06
Vanadium	TM181	101.47 86.19 : 109.45	94.14 75.51 : 108.87	95.24 86.19 : 109.45	101.1 86.19 : 109.45	107.69 86.19 : 109.45	101.47 86.19 : 109.45
Zinc	TM181	100.41 84.68 : 113.99	96.92 84.68 : 113.99	94.66 84.68 : 113.99	107.6 84.68 : 113.99	108.62 84.68 : 113.99	109.24 84.68 : 113.99



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Metals in solid samples by OES

Component	Method Code	QC 2305
Aluminium	TM181	96.46 77.46 : 123.98
Antimony	TM181	96.34 87.04 : 111.16
Arsenic	TM181	97.38 87.34 : 110.87
Barium	TM181	94.5 80.73 : 115.16
Beryllium	TM181	96.64 89.47 : 112.97
Boron	TM181	90.54 76.57 : 104.15
Cadmium	TM181	85.6 78.94 : 102.43
Chromium	TM181	90.67 77.55 : 104.47
Cobalt	TM181	87.74 82.95 : 107.41
Copper	TM181	90.67 84.36 : 106.14
Iron	TM181	93.65 81.43 : 115.79
Lead	TM181	90.77 81.95 : 107.63
Manganese	TM181	105.28 94.29 : 119.51
Mercury	TM181	88.89 82.73 : 106.36
Molybdenum	TM181	94.65 86.61 : 111.07
Nickel	TM181	87.29 79.72 : 103.80
Phosphorus	TM181	107.68 92.65 : 125.47
Selenium	TM181	95.29 88.36 : 111.25
Strontium	TM181	88.64 78.06 : 99.91
Thallium	TM181	97.35 88.60 : 116.73
Tin	TM181	94.3 89.77 : 112.62
Titanium	TM181	86.26 66.29 : 105.96
Vanadium	TM181	94.14 75.51 : 108.87
Zinc	TM181	95.89 84.02 : 111.24

OC OP Pesticides and Triazine Herb



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OC OP Pesticides and Triazine Herb

Component	Method Code	QC 2396
Atrazine (Raw)	TM073	96.0 78.55 : 119.92
Azinphos methyl (Raw)	TM073	115.13 58.68 : 154.71
cis-Chlordane (Raw)	TM073	101.87 71.90 : 129.99
Diazinon (Raw)	TM073	92.25 70.00 : 130.00
Dichlorvos (Raw)	TM073	93.13 70.00 : 130.00
Dieldrin (Raw)	TM073	108.12 70.00 : 130.00
gamma-HCH (Lindane) (Raw)	TM073	104.38 71.48 : 129.99
Heptachlor (Raw)	TM073	98.25 66.39 : 134.63
Hexachlorobenzene (Raw)	TM073	95.88 47.15 : 124.32
Malathion (Raw)	TM073	108.12 70.00 : 130.00
p,p-DDT (Raw)	TM073	108.75 70.00 : 130.00
Parathion (Raw)	TM073	114.25 64.13 : 127.88

PAH by GCMS

Component	Method Code	QC 2355	QC 2375	QC 2312	QC 2358	QC 2336	QC 2385
Acenaphthene	TM218	89.5 80.97 : 105.99	82.5 80.97 : 105.99	85.5 80.97 : 105.99	93.5 76.79 : 103.90	96.0 80.97 : 105.99	89.5 76.79 : 103.90
Acenaphthylene	TM218	87.0 74.76 : 107.36	80.5 74.76 : 107.36	83.0 74.76 : 107.36	91.0 78.40 : 108.66	94.0 74.76 : 107.36	90.0 78.40 : 108.66
Anthracene	TM218	90.5 73.04 : 106.97	85.0 73.04 : 106.97	88.5 73.04 : 106.97	92.5 70.90 : 109.22	96.0 73.04 : 106.97	88.0 70.90 : 109.22
Benz(a)anthracene	TM218	104.5 68.79 : 119.64	99.5 68.79 : 119.64	88.0 68.79 : 119.64	96.5 73.77 : 119.26	100.0 68.79 : 119.64	88.0 73.77 : 119.26
Benzo(a)pyrene	TM218	103.5 66.17 : 117.52	93.5 66.17 : 117.52	86.0 66.17 : 117.52	91.5 73.20 : 114.18	99.0 66.17 : 117.52	83.5 73.20 : 114.18
Benzo(b)fluoranthene	TM218	98.0 66.40 : 118.34	91.5 66.40 : 118.34	86.0 66.40 : 118.34	92.0 75.36 : 117.58	97.5 66.40 : 118.34	84.0 75.36 : 117.58
Benzo(ghi)perylene	TM218	102.0 67.68 : 112.07	88.0 67.68 : 112.07	85.0 67.68 : 112.07	87.5 70.73 : 116.12	94.5 67.68 : 112.07	79.0 70.73 : 116.12
Benzo(k)fluoranthene	TM218	100.0 72.84 : 114.66	87.5 72.84 : 114.66	85.5 72.84 : 114.66	92.0 75.98 : 116.59	96.5 72.84 : 114.66	83.0 75.98 : 116.59
Chrysene	TM218	102.5 68.39 : 115.56	98.5 68.39 : 115.56	91.0 68.39 : 115.56	96.0 74.82 : 114.18	96.5 68.39 : 115.56	85.5 74.82 : 114.18
Dibenzo(ah)anthracene	TM218	104.5 69.03 : 110.45	90.5 69.03 : 110.45	85.0 69.03 : 110.45	85.5 69.17 : 115.30	95.0 69.03 : 110.45	81.5 69.17 : 115.30
Fluoranthene	TM218	94.0 69.37 : 117.19	91.0 69.37 : 117.19	89.0 69.37 : 117.19	96.0 75.88 : 112.84	98.0 69.37 : 117.19	89.5 75.88 : 112.84
Fluorene	TM218	92.0 75.38 : 105.98	85.5 75.38 : 105.98	89.5 75.38 : 105.98	96.0 76.66 : 107.56	100.5 75.38 : 105.98	90.5 76.66 : 107.56
Indeno(123cd)pyrene	TM218	97.0 65.91 : 113.61	90.0 65.91 : 113.61	82.5 65.91 : 113.61	79.5 70.26 : 117.95	99.5 65.91 : 113.61	81.0 70.26 : 117.95



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PAH by GCMS

		QC 2355	QC 2375	QC 2312	QC 2358	QC 2336	QC 2385
Naphthalene	TM218	83.5 71.40 : 105.87	76.0 71.40 : 105.87	79.0 71.40 : 105.87	92.0 74.70 : 101.83	93.0 71.40 : 105.87	82.0 74.70 : 101.83
Phenanthrene	TM218	92.0 74.04 : 109.30	87.0 74.04 : 109.30	91.0 74.04 : 109.30	94.0 73.62 : 109.34	99.0 74.04 : 109.30	91.0 73.62 : 109.34
Pyrene	TM218	95.5 69.68 : 115.27	90.0 69.68 : 115.27	90.5 69.68 : 115.27	94.5 71.46 : 117.00	99.5 69.68 : 115.27	86.0 71.46 : 117.00

PAH in waters by GC-MS (diss.filt)

Component	Method Code	QC 2356	QC 2327
Acenaphthene (diss.filt)	TM178	109.6 93.20 : 119.60	111.2 94.00 : 120.40
Acenaphthylene (diss.filt)	TM178	108.0 92.00 : 118.40	96.0 91.20 : 117.60
Anthracene (diss.filt)	TM178	103.2 90.80 : 114.80	109.6 91.20 : 112.80
Benzo(a)anthracene (diss.filt)	TM178	103.2 91.60 : 115.60	90.0 86.80 : 115.60
Benzo(a)pyrene (diss.filt)	TM178	104.8 91.20 : 120.00	97.2 85.20 : 114.00
Benzo(b)fluoranthene (diss.filt)	TM178	104.0 86.80 : 120.40	93.2 86.40 : 117.60
Benzo(g,h,i)perylene (diss.filt)	TM178	103.6 89.20 : 118.00	105.6 87.60 : 121.20
Benzo(k)fluoranthene (diss.filt)	TM178	107.6 94.40 : 125.60	103.6 91.20 : 124.80
Chrysene (diss.filt)	TM178	103.6 96.40 : 122.80	109.2 95.20 : 124.00
Dibenzo(a,h)anthracene (diss.filt)	TM178	102.4 93.60 : 132.00	95.6 84.80 : 118.40
Fluoranthene (diss.filt)	TM178	106.0 92.80 : 121.60	104.0 91.20 : 120.00
Fluorene (diss.filt)	TM178	111.2 93.60 : 120.00	108.4 93.20 : 119.60
Indeno(1,2,3-cd)pyrene (diss.filt)	TM178	101.2 82.40 : 120.80	94.4 86.80 : 115.60
Naphthalene (diss.filt)	TM178	111.6 88.40 : 126.80	106.8 90.40 : 126.40
Phenanthrene (diss.filt)	TM178	106.0 92.40 : 118.80	107.2 94.40 : 118.40
Pyrene (diss.filt)	TM178	105.6 90.40 : 124.00	103.6 93.60 : 120.00

PCBs by GCMS

Component	Method Code	QC 2303
PCB congener 101	TM168	85.2 79.46 : 109.70
PCB congener 105	TM168	73.2 66.33 : 105.75
PCB congener 114	TM168	72.5 66.41 : 106.49
PCB congener 118	TM168	76.3 70.33 : 110.29



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PCBs by GCMS

		QC 2303
PCB congener 123	TM168	81.0 65.01 : 99.81
PCB congener 126	TM168	74.7 59.31 : 109.23
PCB congener 138	TM168	70.7 63.95 : 107.63
PCB congener 153	TM168	72.9 62.65 : 108.85
PCB congener 156	TM168	73.6 61.69 : 112.27
PCB congener 157	TM168	74.6 67.15 : 109.93
PCB congener 167	TM168	70.5 65.58 : 109.14
PCB congener 169	TM168	67.2 56.84 : 112.10
PCB congener 180	TM168	76.0 66.99 : 111.63
PCB congener 189	TM168	66.8 57.75 : 112.59
PCB congener 28	TM168	76.8 73.68 : 105.96
PCB congener 52	TM168	74.9 67.24 : 107.62
PCB congener 77	TM168	73.2 64.87 : 108.49
PCB congener 81	TM168	77.2 70.78 : 110.80

pH

Component	Method Code	QC 2336	QC 2323	QC 2377	QC 2333
pH	TM133	100.79 98.47 : 102.33	99.87 98.47 : 102.33	100.93 98.47 : 102.33	100.4 99.74 : 102.91

pH Value of Filtered Water

Component	Method Code	QC 2346	QC 2381
pH	TM256	100.4 99.33 : 102.54	99.73 99.20 : 101.60

Phenols by HPLC (S)



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Phenols by HPLC (S)

Component	Method Code	QC 2397	QC 2347	QC 2341
2,3,5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	100.65 65.50 : 89.50	102.6 65.50 : 89.50	104.55 83.23 : 109.71
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	87.72 84.00 : 124.00	91.81 84.00 : 124.00	100.0 76.34 : 104.11
Catechol by HPLC (S)	TM062 (S)	92.38 19.39 : 135.70	85.71 19.39 : 135.70	88.57 22.43 : 157.02
Cresols by HPLC (S)	TM062 (S)	95.2 81.00 : 112.20	98.12 81.00 : 112.20	95.41 85.78 : 116.44
Naphthol by HPLC (S)	TM062 (S)	112.14 57.50 : 102.50	117.86 57.50 : 102.50	110.0 75.62 : 124.38
Phenol by HPLC (S)	TM062 (S)	99.34 88.67 : 124.67	103.31 88.67 : 124.67	103.97 79.53 : 120.47
Resorcinol HPLC (S)	TM062 (S)	94.34 69.99 : 127.22	94.97 69.99 : 127.22	106.29 71.43 : 129.59
Xylenols by HPLC (S)	TM062 (S)	99.58 95.22 : 115.89	102.71 95.22 : 115.89	97.6 89.90 : 107.23

Phenols by HPLC (W)

Component	Method Code	QC 2335	QC 2311	QC 2363	QC 2355
2,3,5 Trimethyl-Phenol by HPLC (W)	TM259	92.0 84.50 : 111.50	100.0 91.00 : 109.00	105.0 91.00 : 109.00	99.0 91.00 : 109.00
2-Isopropyl Phenol by HPLC (W)	TM259	103.0 84.55 : 110.90	97.0 85.00 : 109.00	103.0 85.00 : 109.00	96.0 85.00 : 109.00
Cresols by HPLC (W)	TM259	94.0 90.00 : 112.00	98.33 93.00 : 115.00	103.33 93.00 : 115.00	100.0 93.00 : 115.00
Naphthol by HPLC (W)	TM259	100.0 82.00 : 124.00	105.0 86.00 : 128.00	104.0 86.00 : 128.00	104.0 86.00 : 128.00
Phenol by HPLC (W)	TM259	102.0 86.80 : 112.60	95.0 88.24 : 111.76	97.0 88.24 : 111.76	100.0 88.24 : 111.76
Xylenols by HPLC (W)	TM259	99.67 94.74 : 115.71	100.0 94.83 : 110.83	106.0 94.83 : 110.83	101.17 94.83 : 110.83

Semi Volatile Organic Compounds

Component	Method Code	QC 2321
4-Bromophenylphenylether (Soil)	TM157	94.5 63.50 : 114.50
Benzo(a)anthracene (Soil)	TM157	95.5 71.89 : 120.91
Hexachlorobutadiene (Soil)	TM157	99.0 69.80 : 117.77
Naphthalene (Soil)	TM157	97.0 70.00 : 115.00
Nitrobenzene (Soil)	TM157	94.0 70.00 : 118.00
Phenol (Soil)	TM157	90.0 72.00 : 117.00

Total Dissolved Solids



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Total Dissolved Solids

Component	Method Code	QC 2314
Total Dissolved Solids	TM123	99.2 97.30 : 100.92

Total Organic Carbon

Component	Method Code	QC 2315	QC 2337	QC 2370	QC 2389	QC 2398
Total Organic Carbon	TM132	103.13 87.02 : 113.45	94.92 87.02 : 113.45	103.13 87.02 : 113.45	109.38 84.82 : 117.61	111.72 84.82 : 117.61

VOC MS (S)

Component	Method Code	QC 2376	QC 2362	QC 2327	QC 2344
1,1,1,2-tetrachloroethane	TM116	97.6 79.10 : 119.66	97.4 86.59 : 118.97	91.6 84.84 : 116.25	96.0 86.59 : 118.97
1,1,1-Trichloroethane	TM116	99.0 87.51 : 115.37	98.4 86.26 : 117.53	84.6 73.73 : 118.05	95.6 86.26 : 117.53
1,1,2-Trichloroethane	TM116	97.8 81.29 : 113.79	94.6 75.16 : 112.70	88.2 77.12 : 116.04	95.8 75.16 : 112.70
1,1-Dichloroethane	TM116	107.2 86.77 : 122.11	103.2 83.27 : 122.16	91.0 74.46 : 129.15	102.4 83.27 : 122.16
1,2-Dichloroethane	TM116	108.0 90.04 : 132.28	114.6 89.30 : 133.10	101.4 92.38 : 131.65	113.8 89.30 : 133.10
1,4-Dichlorobenzene	TM116	98.6 80.81 : 125.07	92.2 82.59 : 123.23	95.6 83.64 : 126.18	93.6 82.59 : 123.23
2-Chlorotoluene	TM116	91.8 73.13 : 114.13	86.6 66.81 : 118.43	80.8 76.03 : 113.25	89.4 66.81 : 118.43
4-Chlorotoluene	TM116	89.8 72.48 : 112.82	91.0 65.88 : 114.76	79.8 66.90 : 112.46	85.4 65.88 : 114.76
Benzene	TM116	97.8 84.29 : 112.22	103.2 93.16 : 123.63	90.8 88.60 : 113.80	98.6 93.16 : 123.63
Carbon Disulphide	TM116	102.8 75.11 : 124.81	103.2 75.11 : 124.81	89.6 74.91 : 122.14	96.4 75.11 : 124.81
Carbontetrachloride	TM116	98.4 82.35 : 126.46	95.4 82.35 : 126.46	93.6 80.31 : 124.50	104.4 82.35 : 126.46
Chlorobenzene	TM116	96.4 82.88 : 122.42	98.8 85.07 : 118.13	92.4 83.81 : 114.18	94.8 85.07 : 118.13
Chloroform	TM116	104.6 90.35 : 120.38	104.4 88.13 : 122.71	94.0 87.40 : 122.49	103.4 88.13 : 122.71
Chloromethane	TM116	115.4 65.80 : 138.88	108.4 55.37 : 133.35	110.0 65.89 : 136.93	129.6 55.37 : 133.35
Cis-1,2-Dichloroethene	TM116	97.8 78.27 : 128.90	104.0 78.27 : 128.90	90.0 80.67 : 126.72	100.8 78.27 : 128.90
Dibromomethane	TM116	96.8 76.00 : 120.73	87.4 77.47 : 121.29	86.8 73.23 : 118.35	104.4 77.47 : 121.29
Dichloromethane	TM116	109.8 92.27 : 134.36	111.0 87.89 : 134.72	95.6 81.11 : 133.25	111.6 87.89 : 134.72



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VOC MS (S)

		QC 2376	QC 2362	QC 2327	QC 2344
Ethylbenzene	TM116	90.4 70.95 : 113.07	96.0 79.92 : 110.05	80.6 75.92 : 110.41	82.4 79.92 : 110.05
Hexachlorobutadiene	TM116	113.8 14.55 : 147.92	75.4 16.78 : 153.29	32.8 12.82 : 152.73	38.0 16.78 : 153.29
Isopropylbenzene	TM116	85.4 52.00 : 108.19	95.4 64.20 : 119.59	54.8 55.79 : 97.59	61.8 64.20 : 119.59
Naphthalene	TM116	100.2 80.29 : 135.77	111.0 79.29 : 125.59	95.6 80.86 : 128.81	103.4 79.29 : 125.59
o-Xylene	TM116	81.0 64.92 : 98.85	86.4 74.57 : 112.73	75.2 69.99 : 108.74	75.8 74.57 : 112.73
p/m-Xylene	TM116	87.9 72.04 : 104.04	93.4 76.47 : 108.99	77.2 68.32 : 108.91	79.1 76.47 : 108.99
Sec-Butylbenzene	TM116	98.6 27.03 : 135.73	85.8 44.71 : 117.87	41.0 38.50 : 101.50	48.4 44.71 : 117.87
Tetrachloroethene	TM116	98.2 81.43 : 126.65	104.0 85.86 : 122.95	88.6 76.95 : 121.02	92.0 85.86 : 122.95
Toluene	TM116	90.6 82.44 : 103.50	94.0 87.82 : 116.21	84.2 74.24 : 107.42	87.6 87.82 : 116.21
Trichloroethene	TM116	93.4 79.80 : 112.33	98.4 79.80 : 112.33	88.8 77.61 : 111.54	94.4 79.80 : 112.33
Trichlorofluoromethane	TM116	111.0 86.68 : 126.82	112.4 80.52 : 132.12	101.0 84.55 : 133.27	104.8 80.52 : 132.12
Vinyl Chloride	TM116	118.6 69.66 : 136.55	111.6 68.07 : 137.84	102.2 68.02 : 143.37	105.8 68.07 : 137.84

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis .

The figure detailed is the percentage recovery result for the AQC .

The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control .



CERTIFICATE OF ANALYSIS

Validated

SDG: 201009-77
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 575579
Superseded Report: 573912

Chromatogram

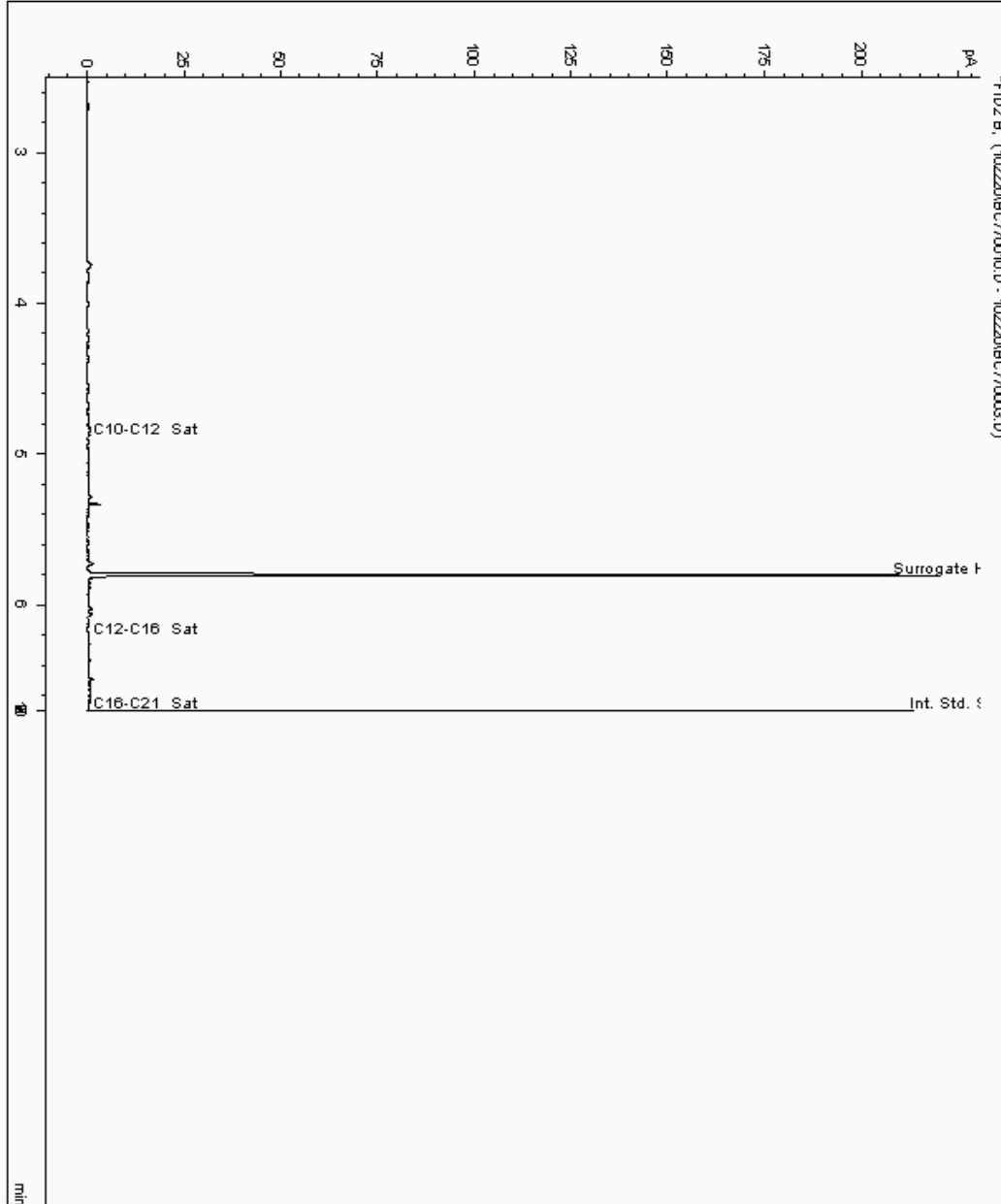
Analysis: EPH CWG (Aliphatic) Filtered GC (W)

Sample No : 23084948
Sample ID : STPES2

Depth : 1.00

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 21621980-
Date Acquired : 10/22/2020 6:11:22 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.027





CERTIFICATE OF ANALYSIS

Validated

SDG: 201009-77
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 575579
Superseded Report: 573912

Chromatogram

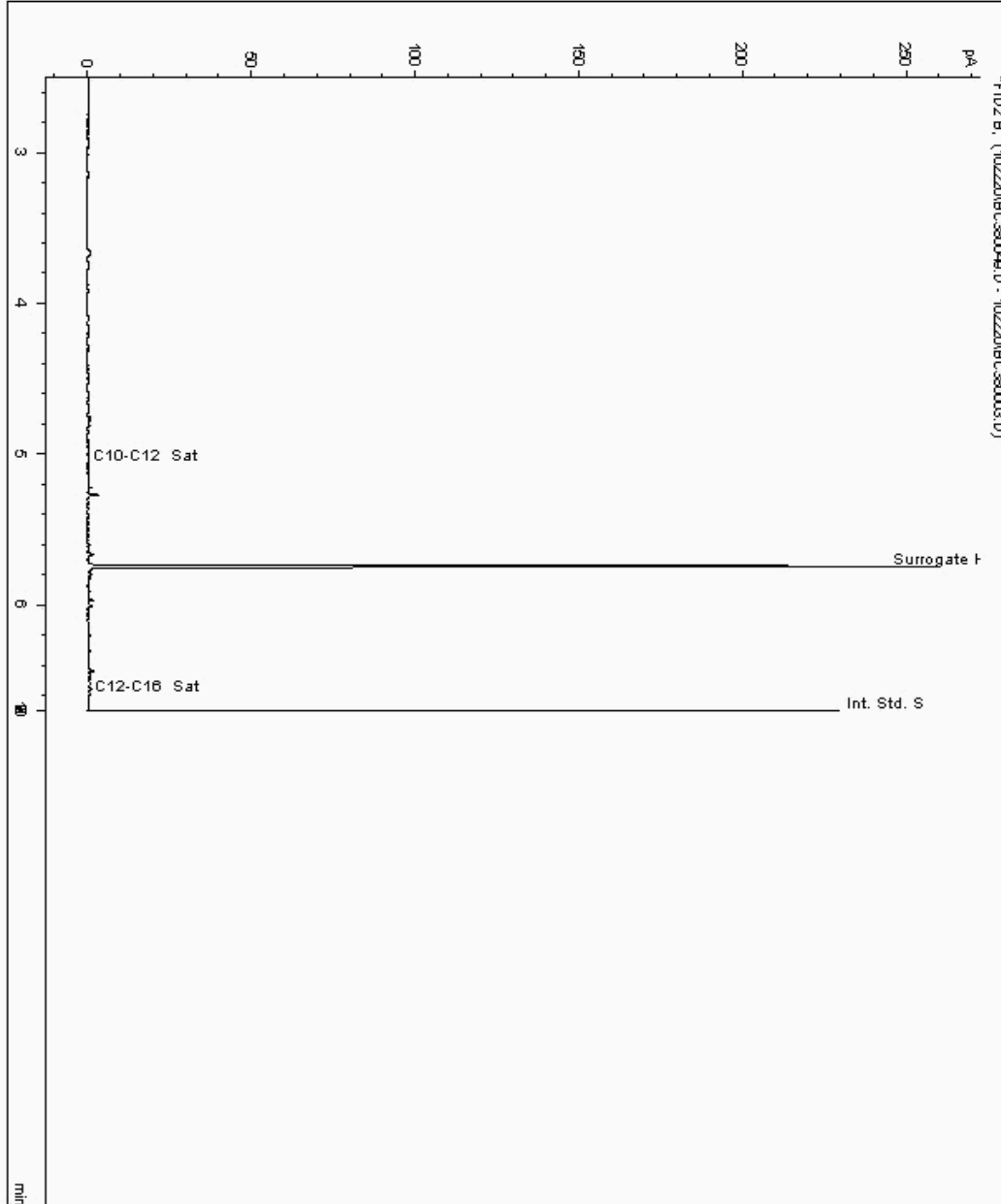
Analysis: EPH CWG (Aliphatic) Filtered GC (W)

Sample No : 23087827
Sample ID : STPES1

Depth : 0.50

Speciated TPH - SATS (C12 - C40)

Sample Identity: 21621963-
Date Acquired : 23/10/20 15:51:22 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.050





CERTIFICATE OF ANALYSIS

Validated

SDG: 201009-77
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 575579
Superseded Report: 573912

Chromatogram

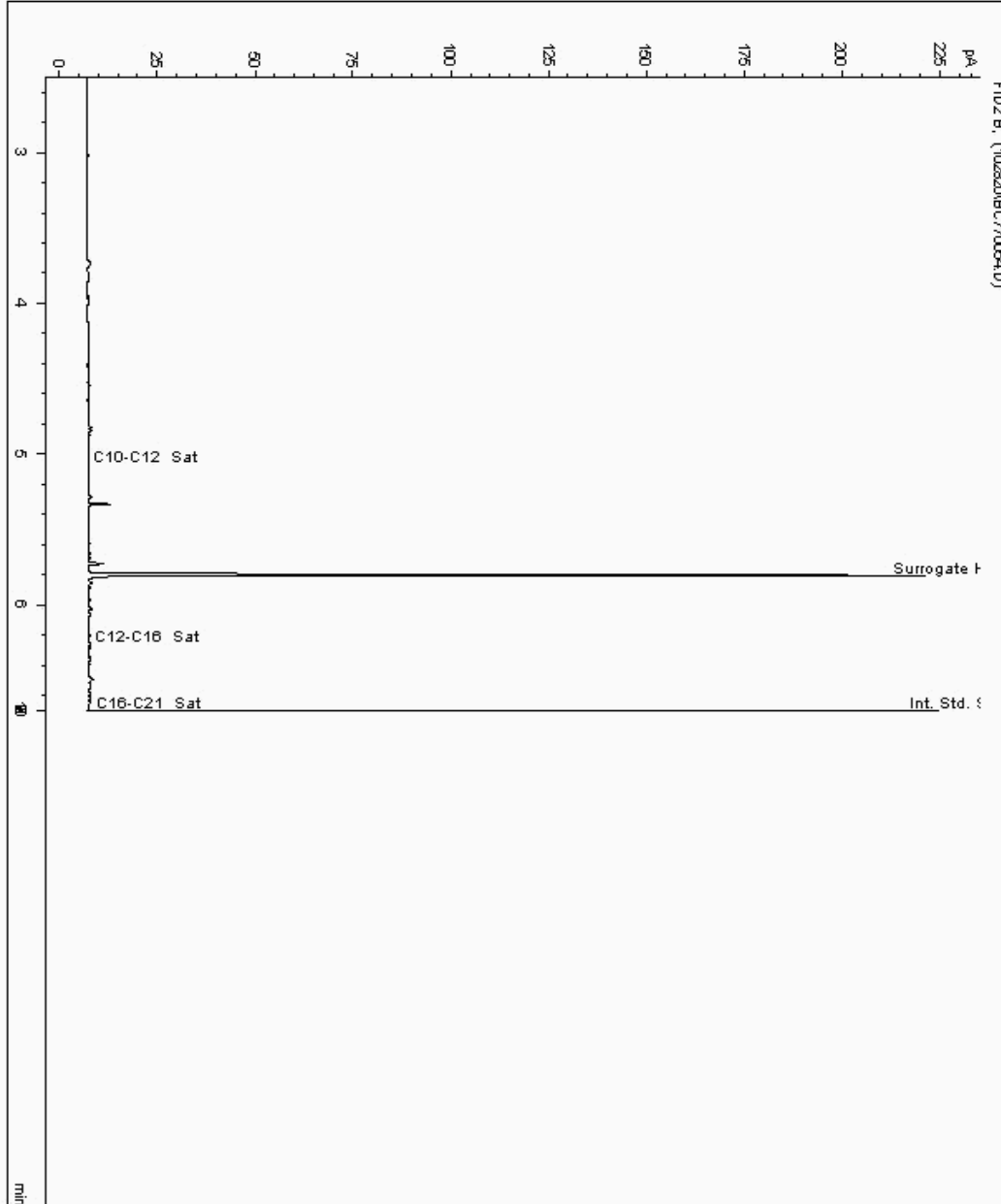
Analysis: EPH CWG (Aliphatic) Filtered GC (W)

Sample No : 23131686
Sample ID : STP72601

Depth : 0.50

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 21683724-
Date Acquired : 10/30/2020 1:10:29 AM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025





CERTIFICATE OF ANALYSIS

Validated

SDG: 201009-77
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 575579
Superseded Report: 573912

Chromatogram

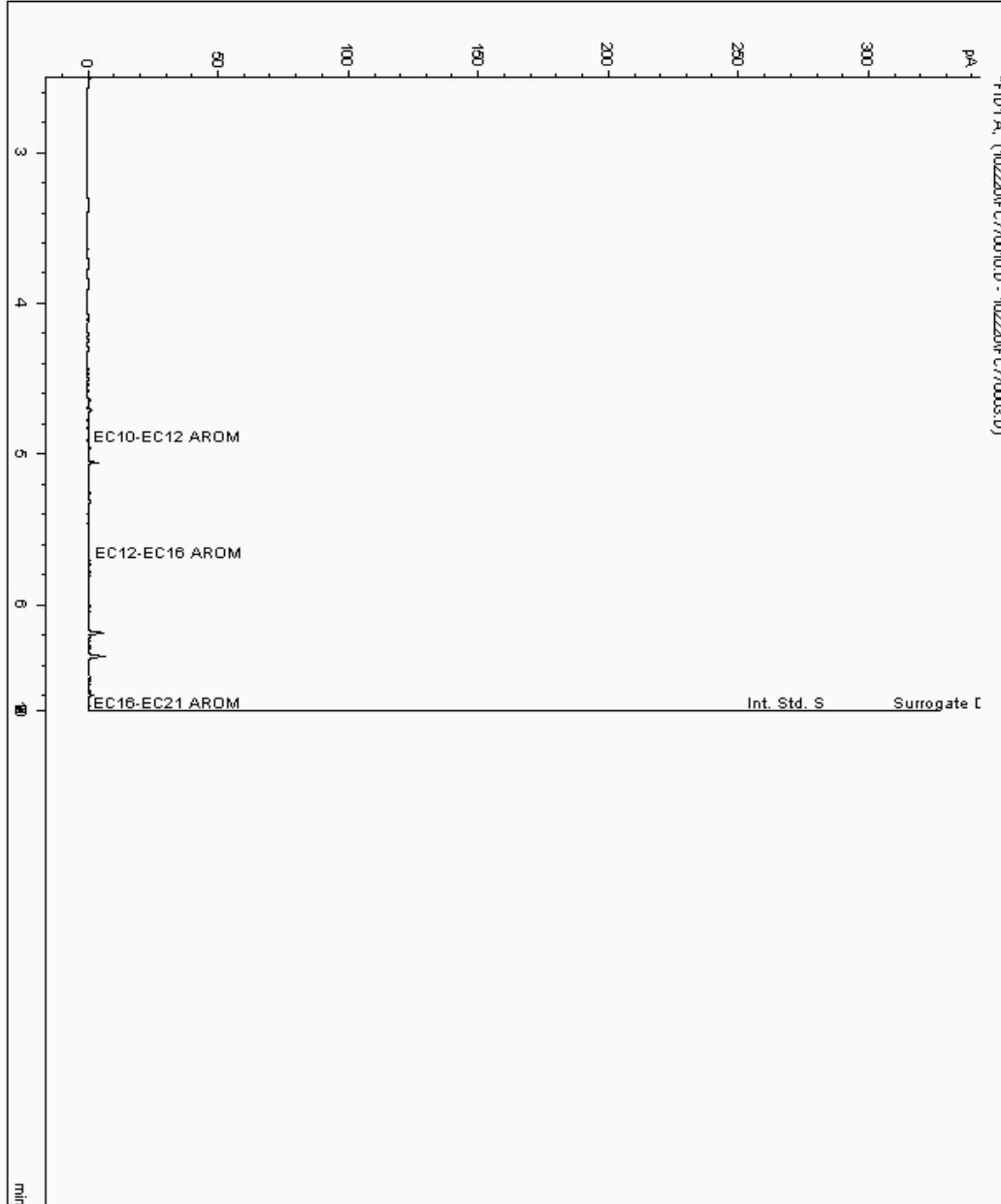
Analysis: EPH CWG (Aromatic) Filtered GC (W)

Sample No : 23084948
Sample ID : STPES2

Depth : 1.00

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 21621981-
Date Acquired : 10/22/2020 6:11:22 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.027





CERTIFICATE OF ANALYSIS

Validated

SDG: 201009-77
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 575579
Superseded Report: 573912

Chromatogram

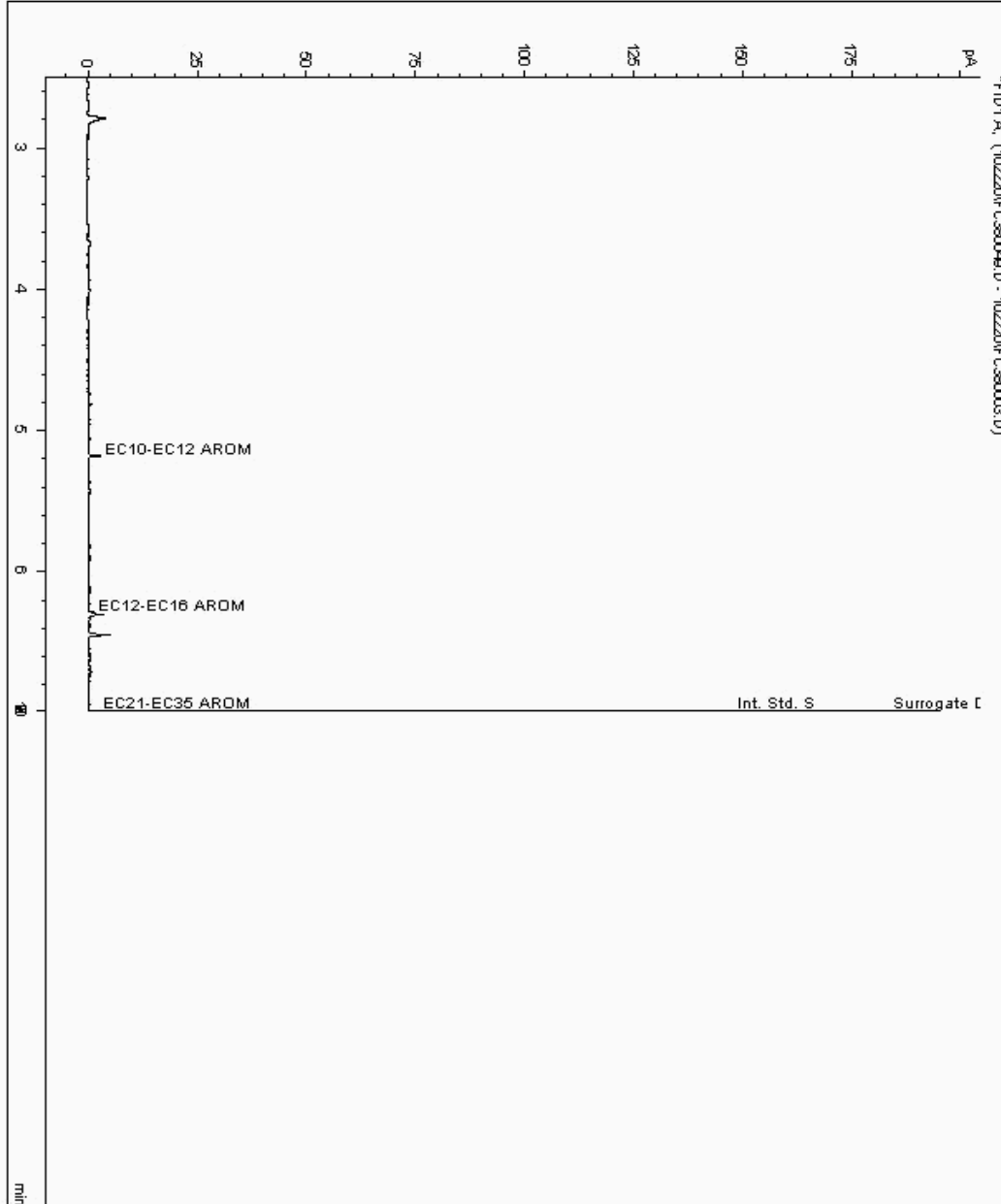
Analysis: EPH CWG (Aromatic) Filtered GC (W)

Sample No : 23087827
Sample ID : STPES1

Depth : 0.50

Speciated TPH - AROM (C12 - C40)

Sample Identity: 21621964-
Date Acquired : 23/10/20 15:51:22 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.050





CERTIFICATE OF ANALYSIS

Validated

SDG: 201009-77
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 575579
Superseded Report: 573912

Chromatogram

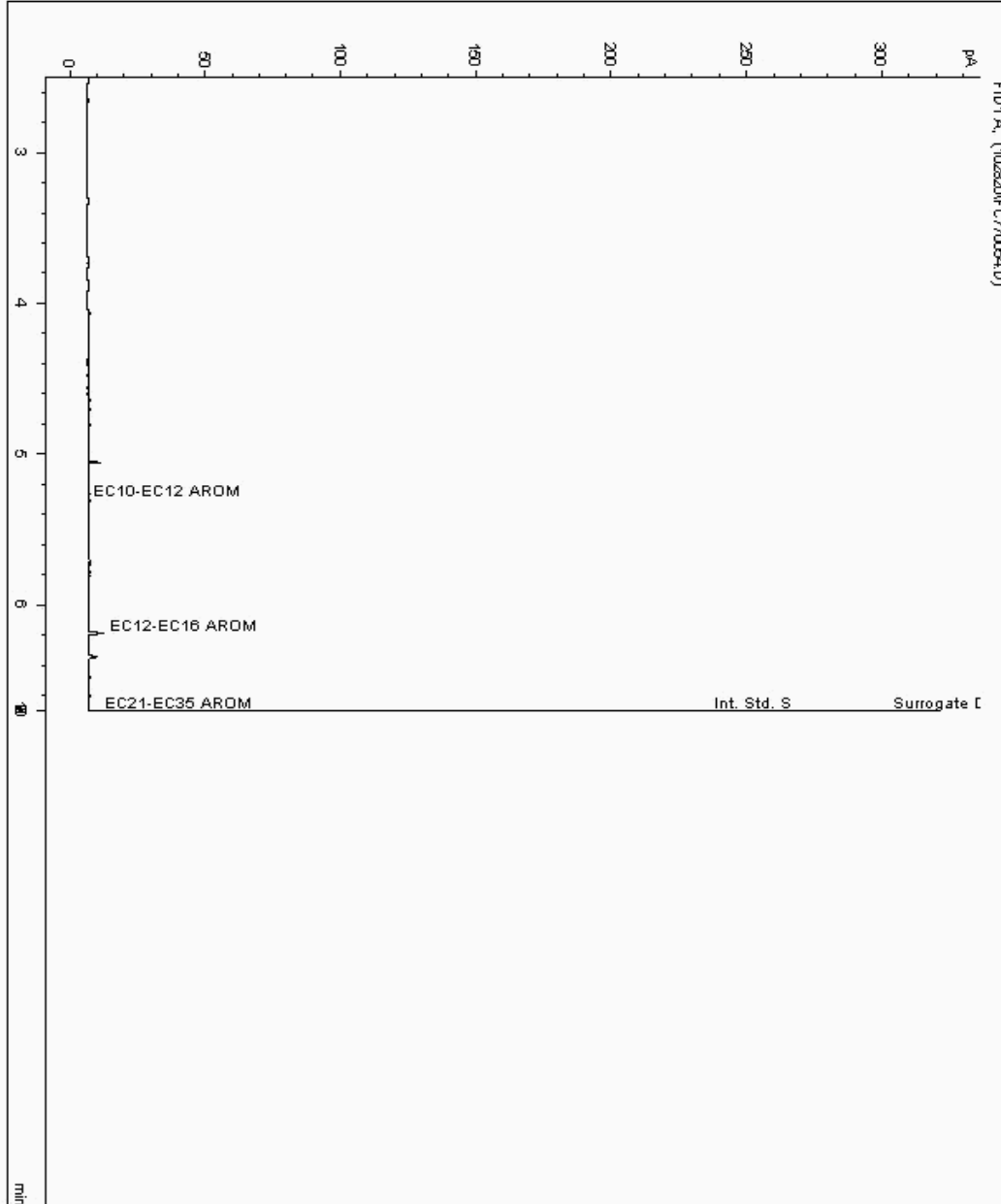
Analysis: EPH CWG (Aromatic) Filtered GC (W)

Sample No : 23131686
Sample ID : STP72601

Depth : 0.50

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 21683725-
Date Acquired : 10/30/2020 1:10:29 AM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025





CERTIFICATE OF ANALYSIS

Validated

SDG: 201009-77
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

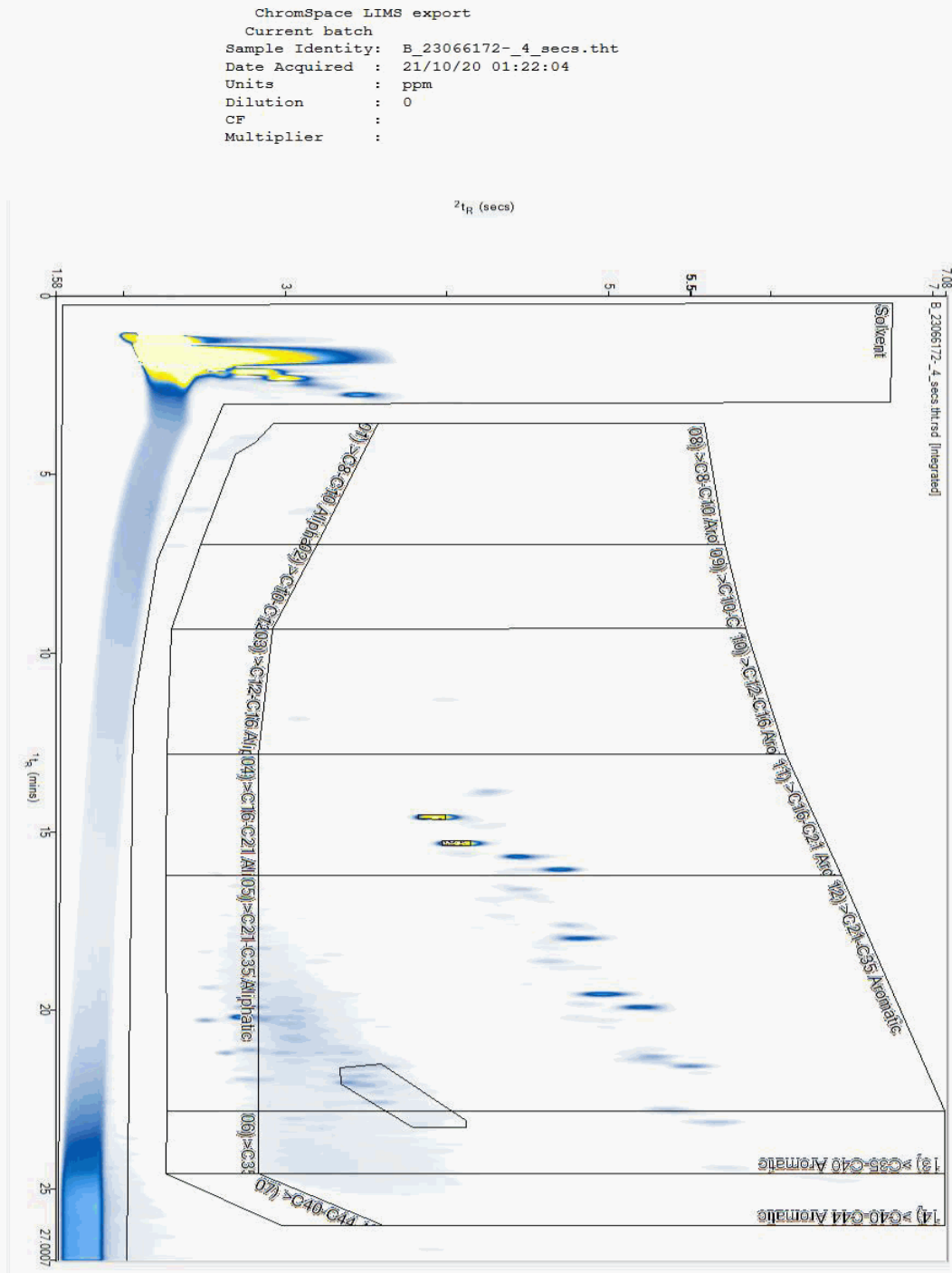
Report Number: 575579
Superseded Report: 573912

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23066172
Sample ID : STPES2

Depth : 0.30





CERTIFICATE OF ANALYSIS

Validated

SDG: 201009-77
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

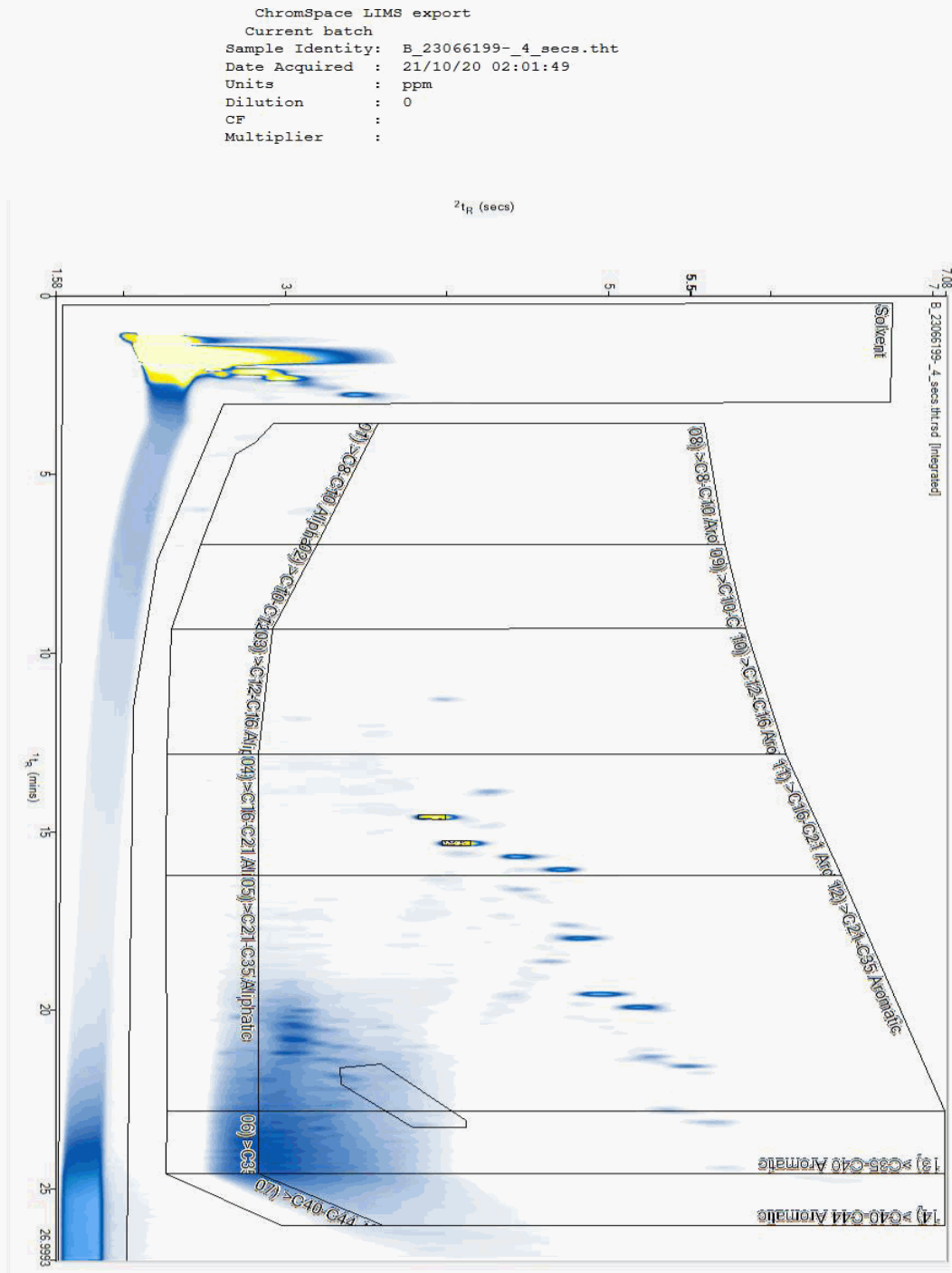
Report Number: 575579
Superseded Report: 573912

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23066199
Sample ID : STPES2

Depth : 1.00





CERTIFICATE OF ANALYSIS

Validated

SDG: 201009-77
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

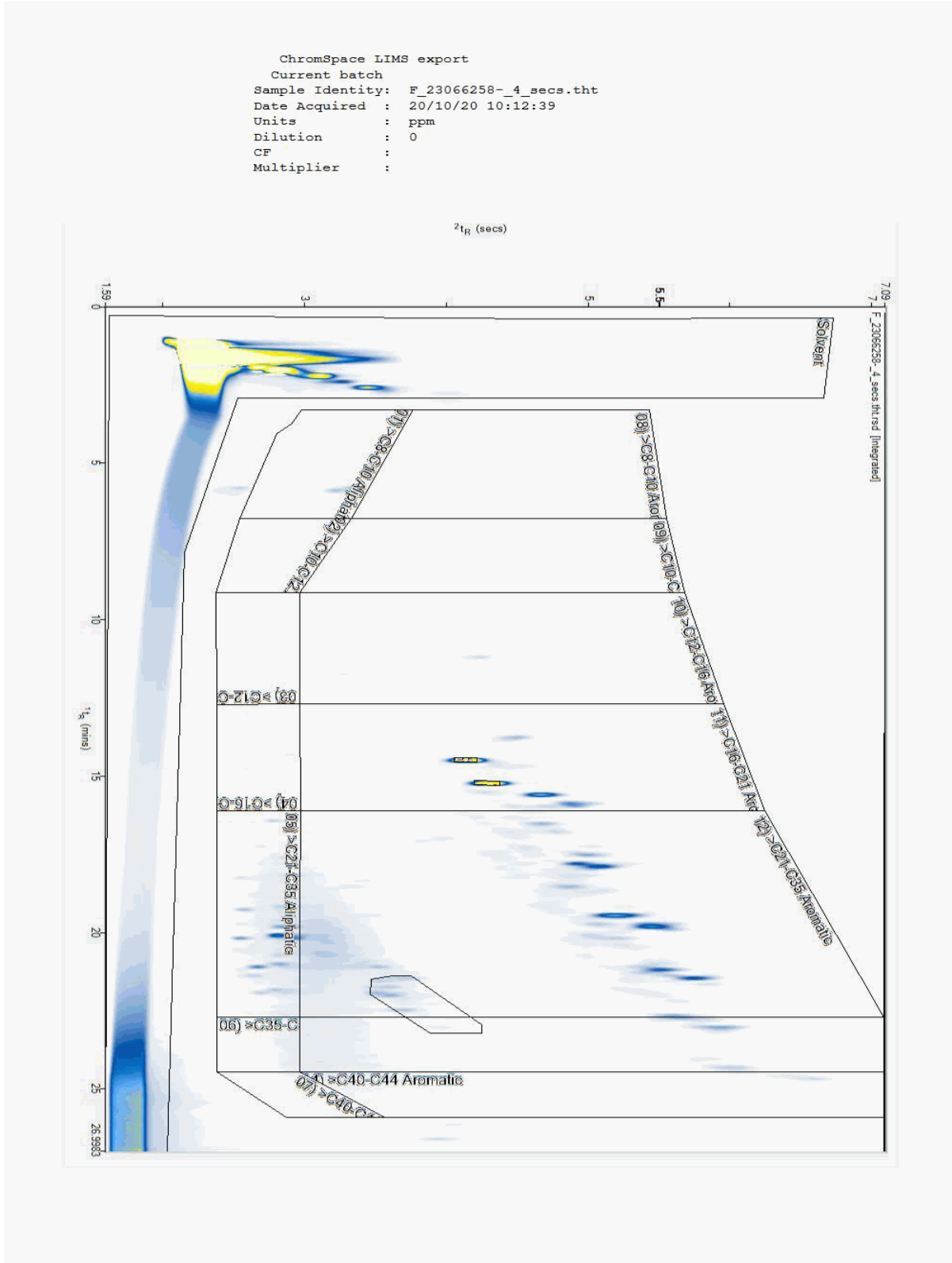
Report Number: 575579
Superseded Report: 573912

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23066258
Sample ID : STPES1

Depth : 0.50





CERTIFICATE OF ANALYSIS

Validated

SDG: 201009-77
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

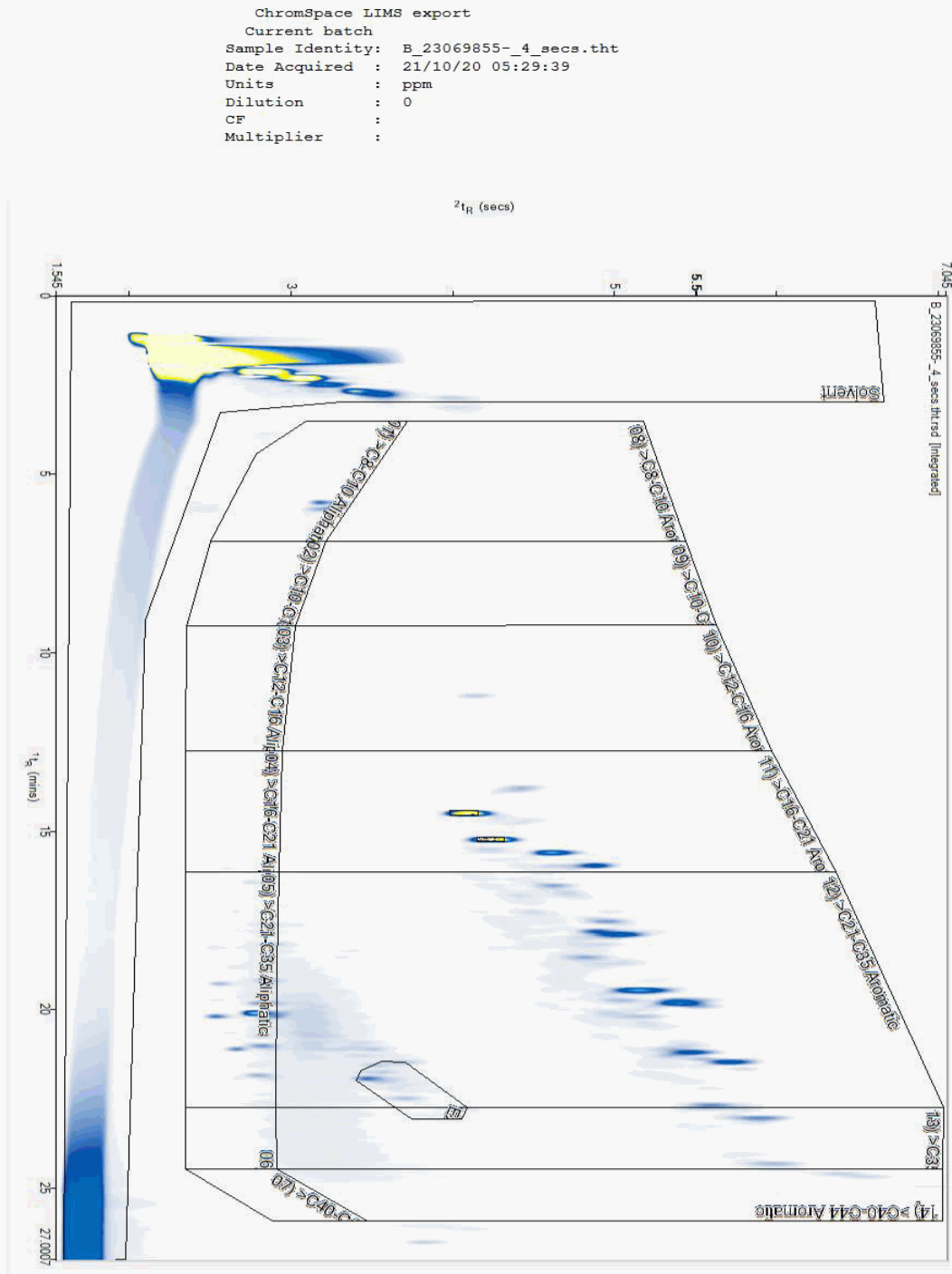
Report Number: 575579
Superseded Report: 573912

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23069855
Sample ID : STPES3

Depth : 0.65





CERTIFICATE OF ANALYSIS

Validated

SDG: 201009-77
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

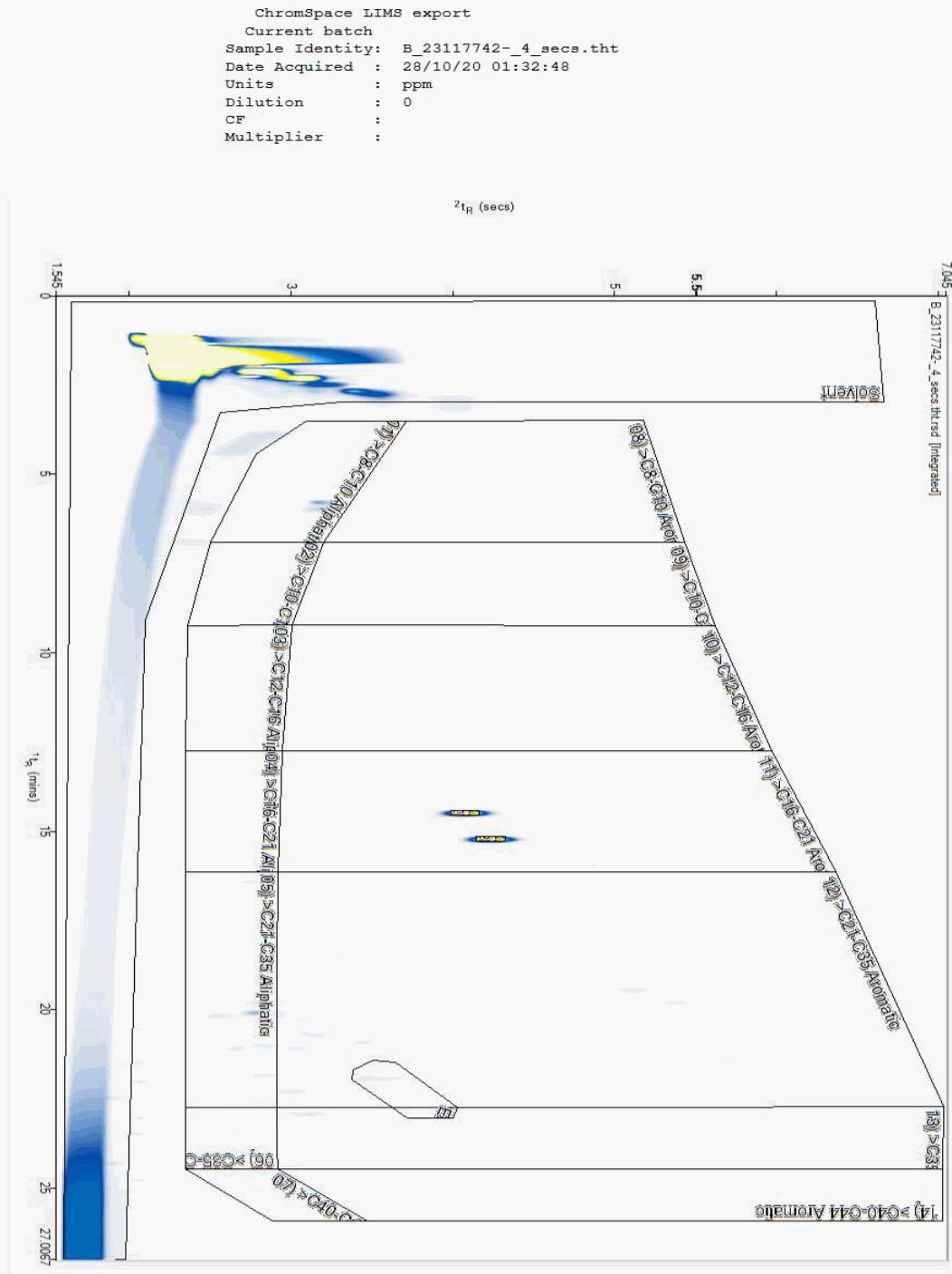
Report Number: 575579
Superseded Report: 573912

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23117742
Sample ID : STP72601

Depth : 0.50





CERTIFICATE OF ANALYSIS

Validated

SDG: 201009-77
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

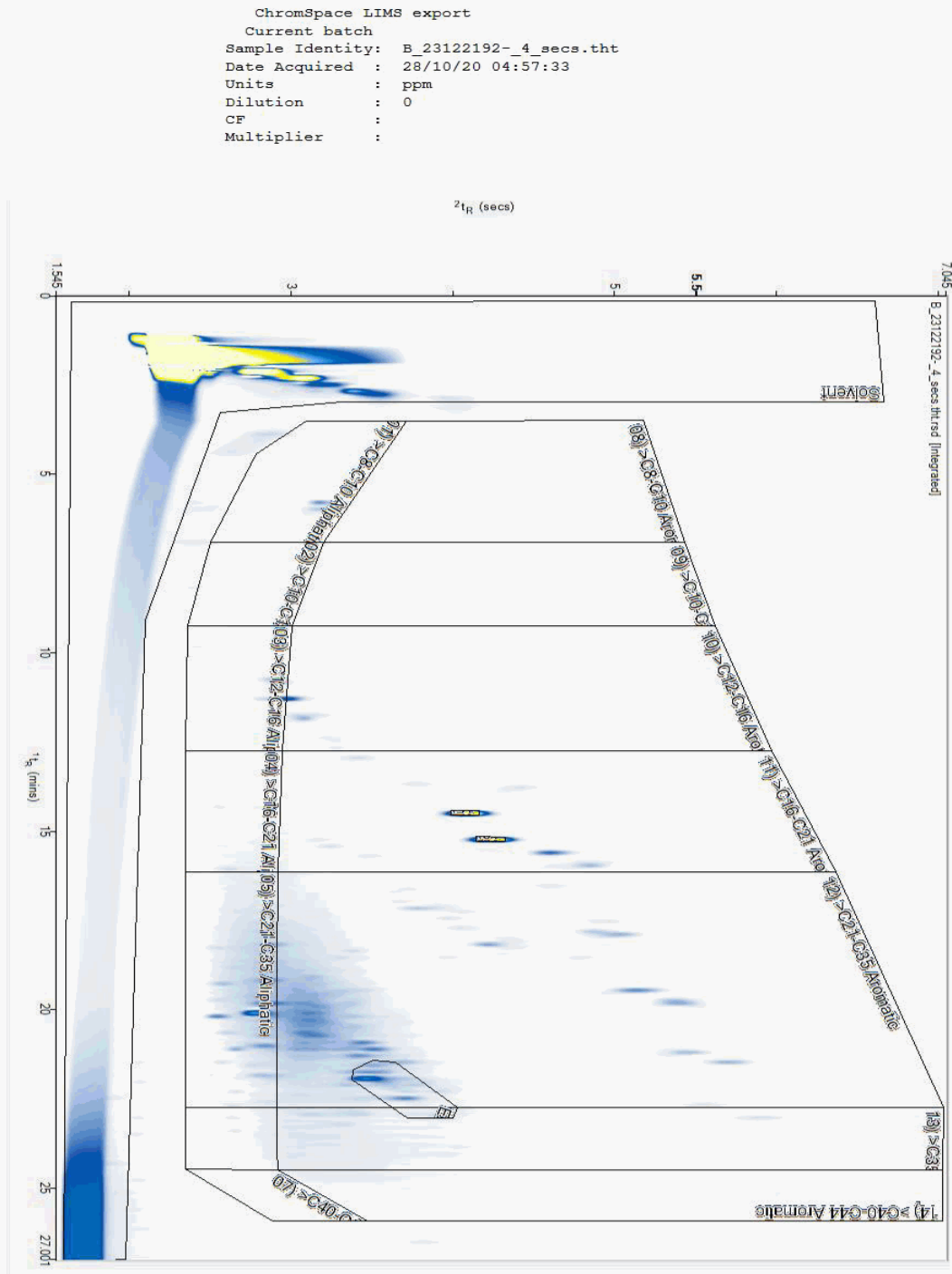
Report Number: 575579
Superseded Report: 573912

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23122192
Sample ID : STP72201

Depth : 0.30 - 0.35





CERTIFICATE OF ANALYSIS

Validated

SDG: 201009-77
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

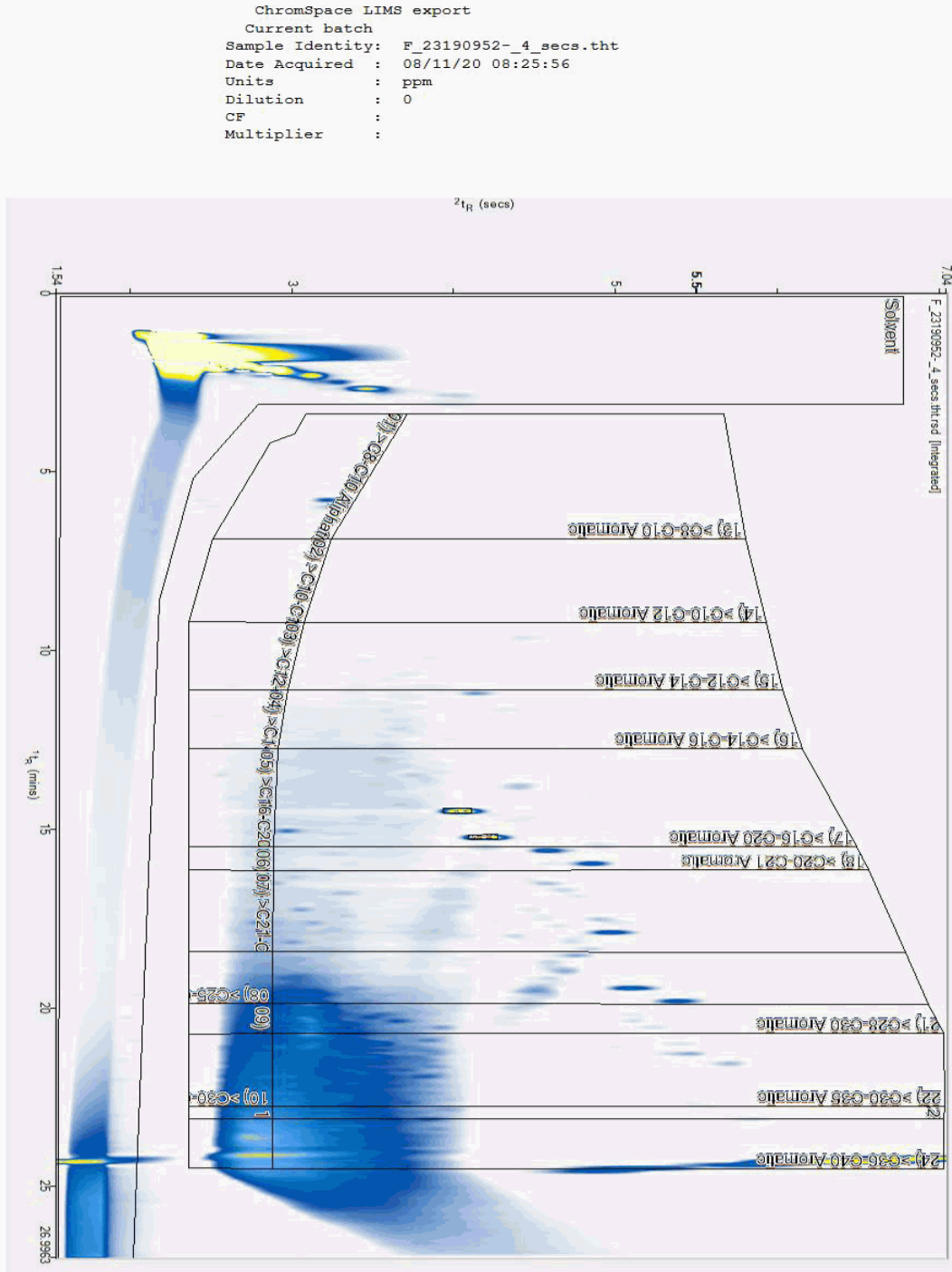
Report Number: 575579
Superseded Report: 573912

Chromatogram

Analysis: EPH by GCxGC-FID

Sample No : 23190952
Sample ID : STPES2

Depth : 1.00





CERTIFICATE OF ANALYSIS

Validated

SDG: 201009-77
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

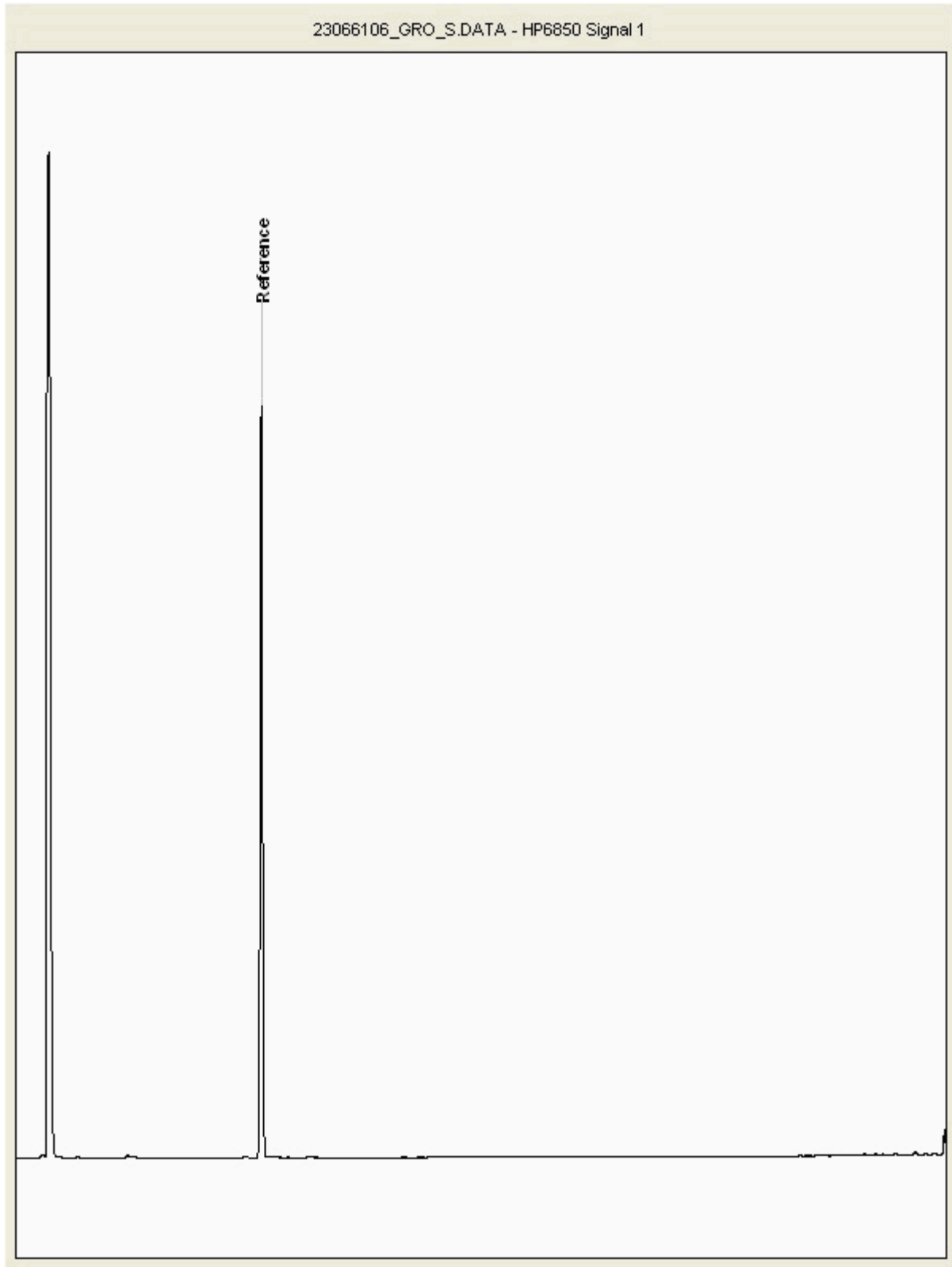
Report Number: 575579
Superseded Report: 573912

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23066106
Sample ID : STPES2

Depth : 1.00





CERTIFICATE OF ANALYSIS

Validated

SDG: 201009-77
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

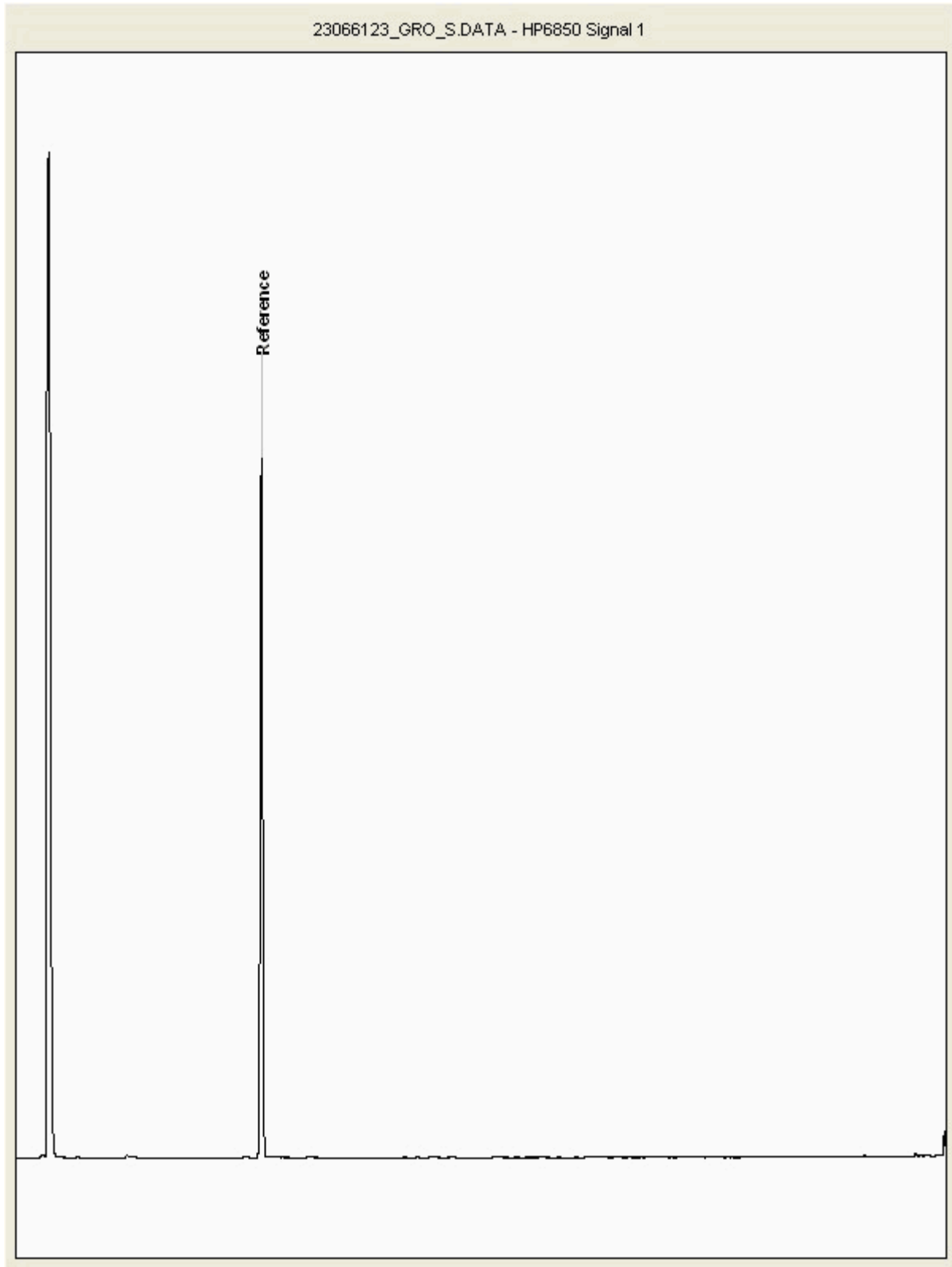
Report Number: 575579
Superseded Report: 573912

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23066123
Sample ID : STPES1

Depth : 0.50





CERTIFICATE OF ANALYSIS

Validated

SDG: 201009-77
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

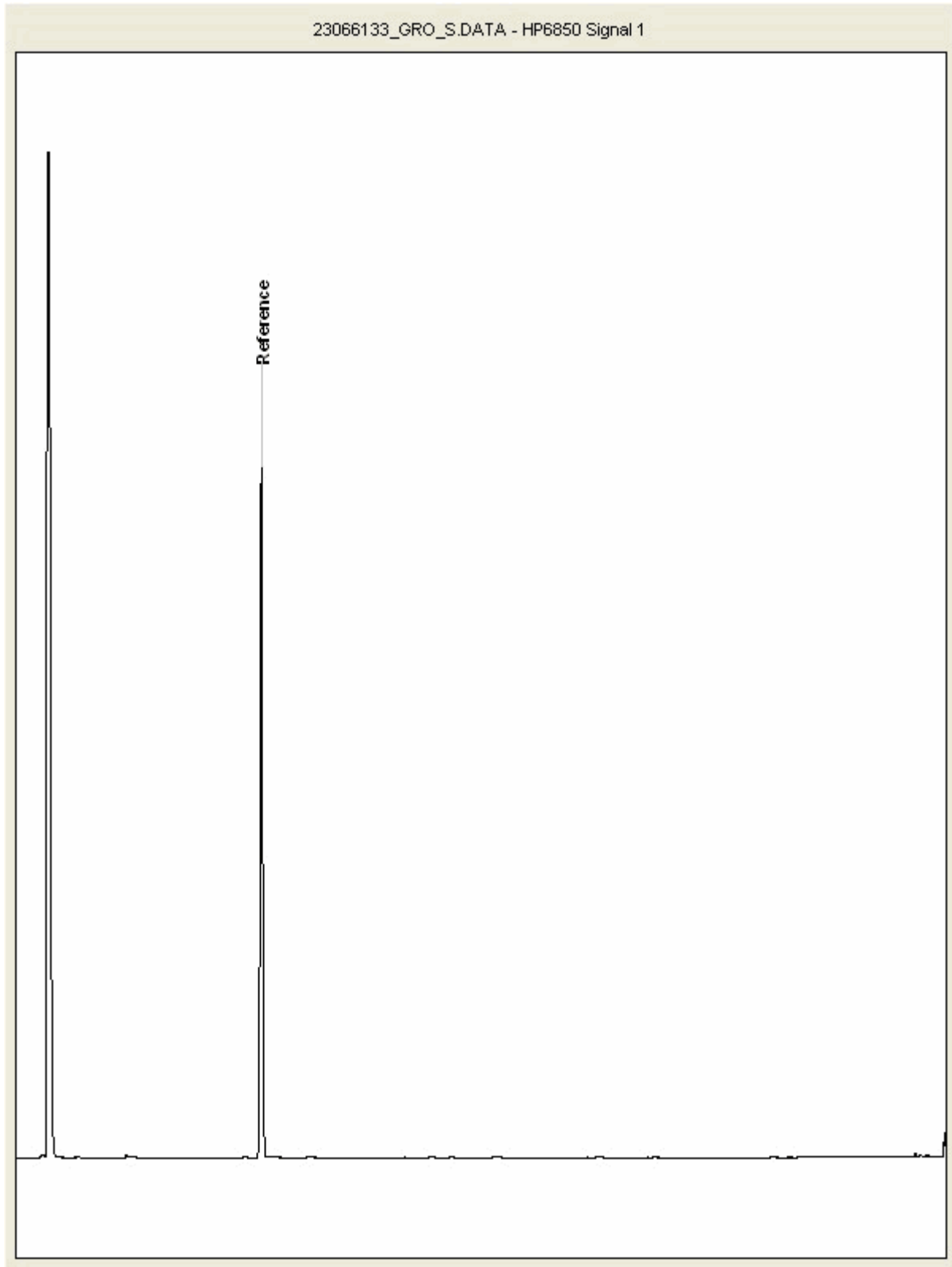
Report Number: 575579
Superseded Report: 573912

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23066133
Sample ID : STPES2

Depth : 0.30





CERTIFICATE OF ANALYSIS

Validated

SDG: 201009-77
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

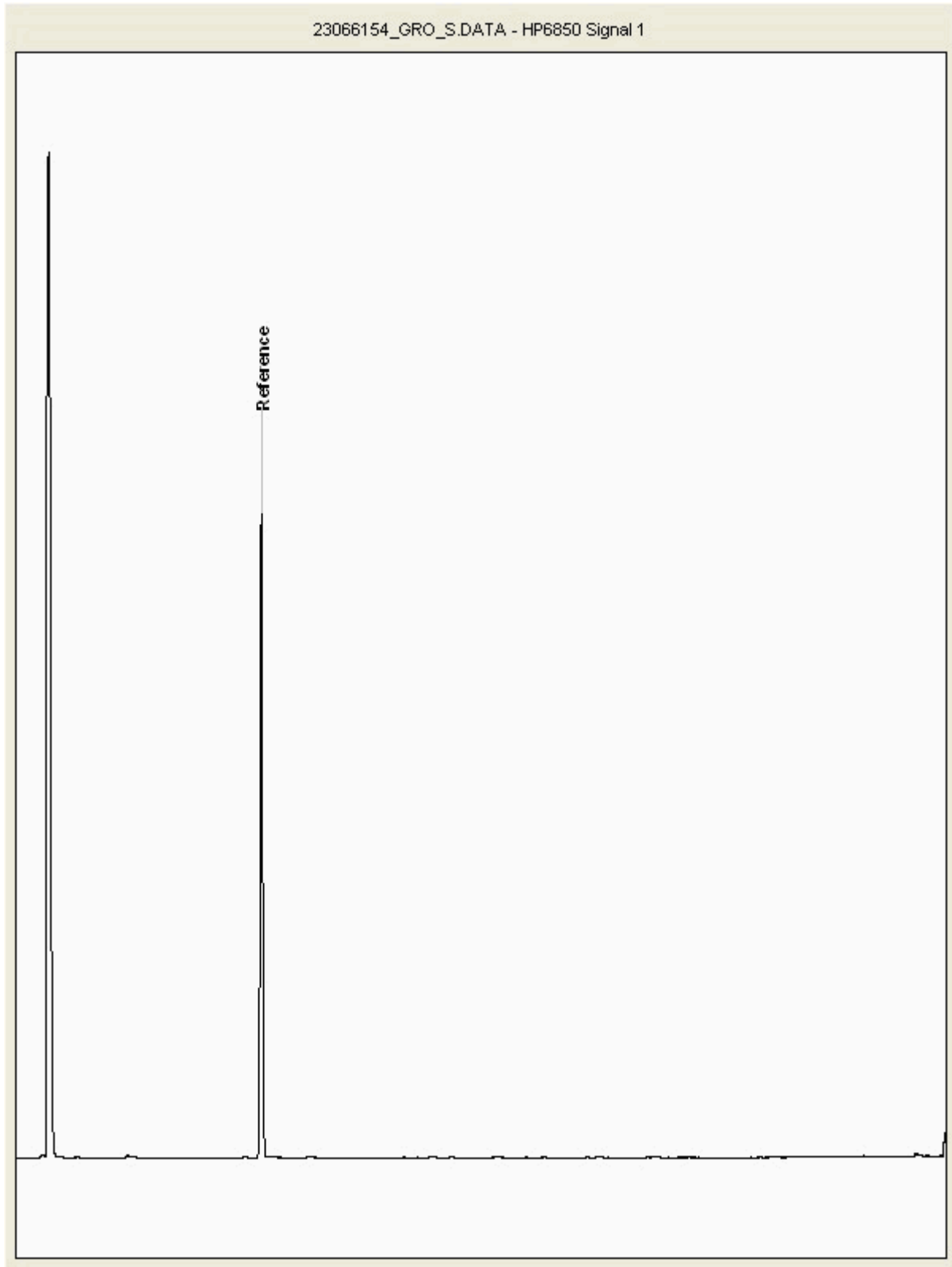
Report Number: 575579
Superseded Report: 573912

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23066154
Sample ID : STPES3

Depth : 0.65





CERTIFICATE OF ANALYSIS

Validated

SDG: 201009-77
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

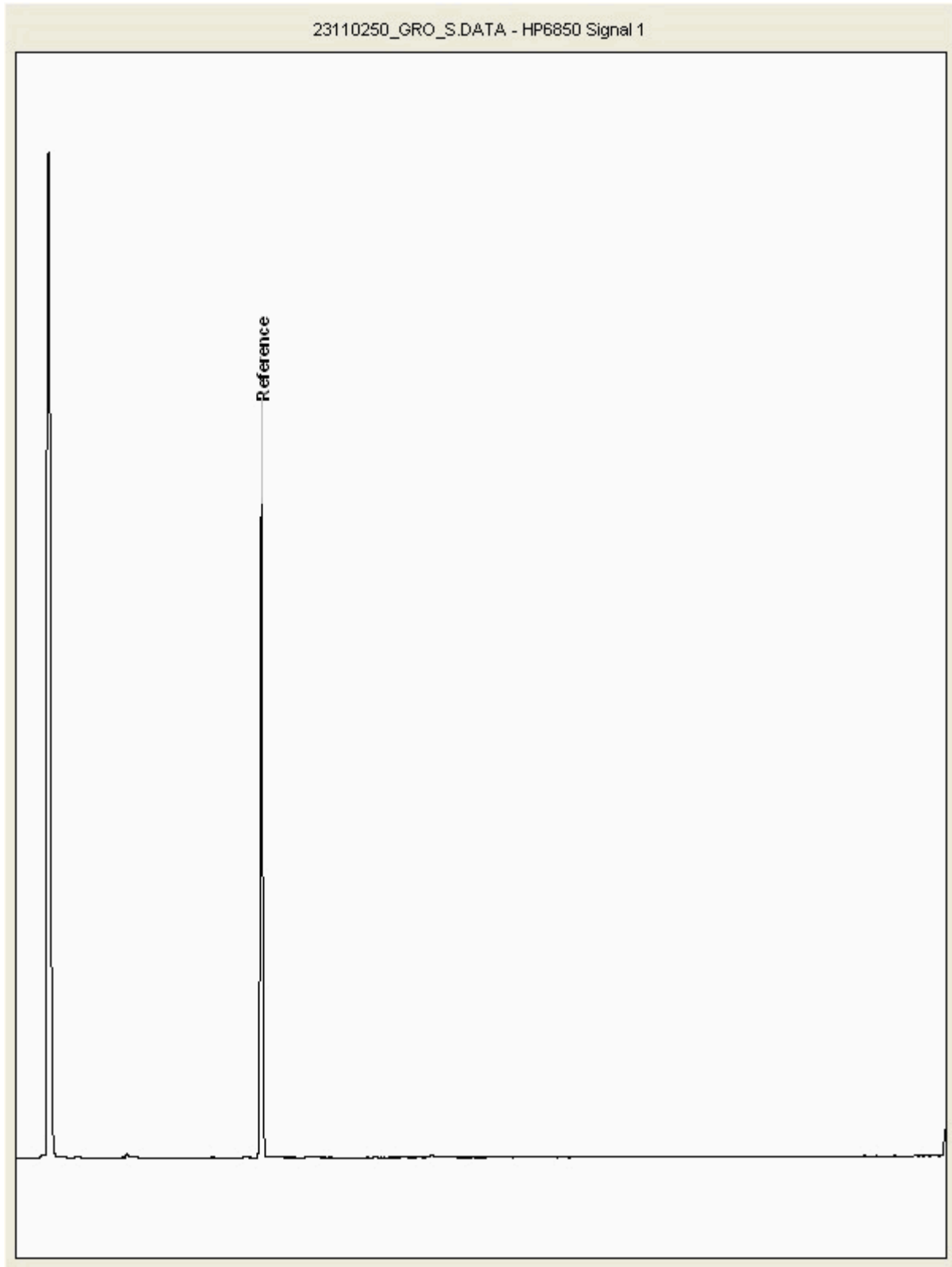
Report Number: 575579
Superseded Report: 573912

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23110250
Sample ID : STP72601

Depth : 0.50





CERTIFICATE OF ANALYSIS

Validated

SDG: 201009-77
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

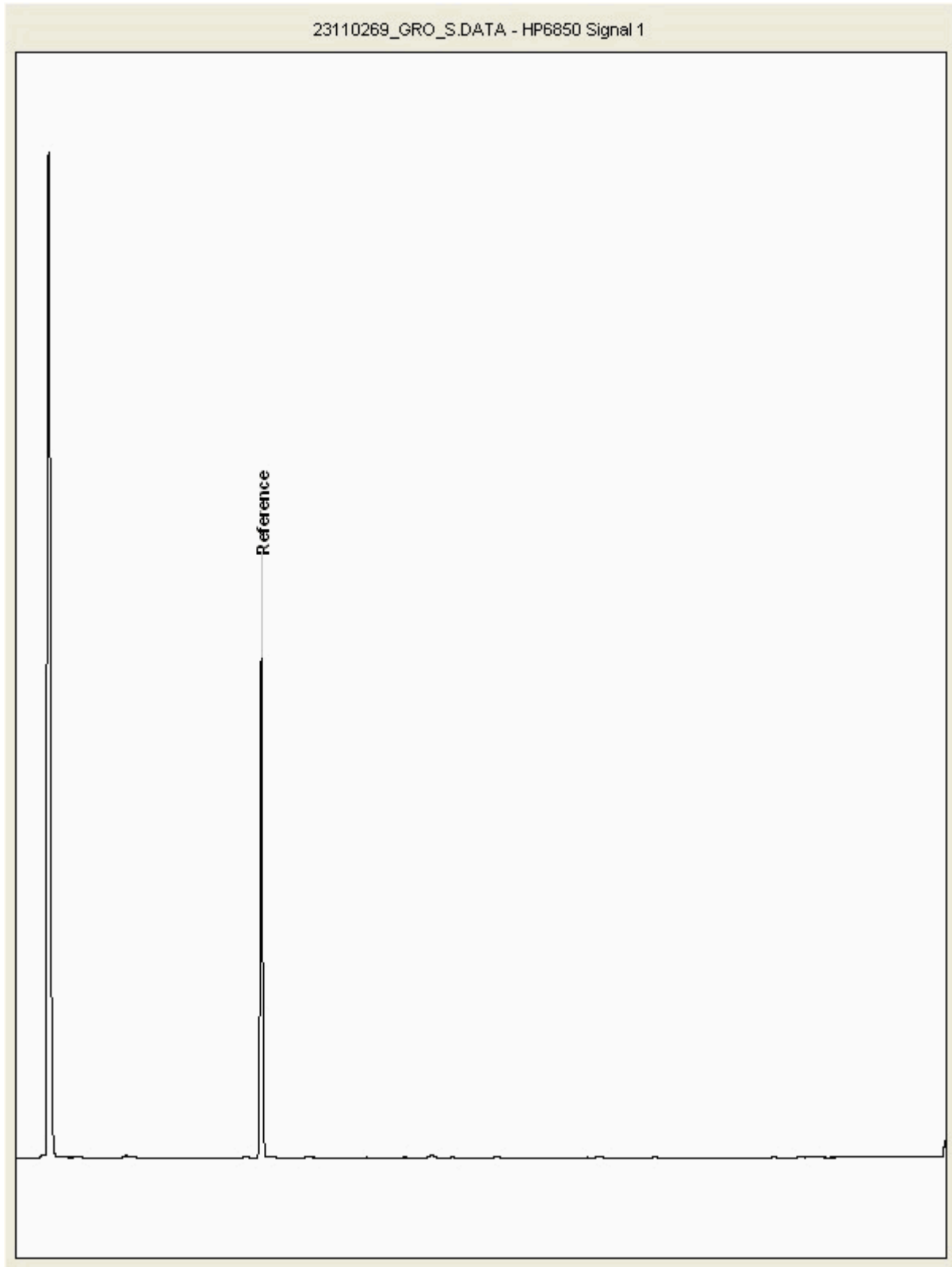
Report Number: 575579
Superseded Report: 573912

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23110269
Sample ID : STP72201

Depth : 0.30 - 0.35





CERTIFICATE OF ANALYSIS

Validated

SDG: 201009-77
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

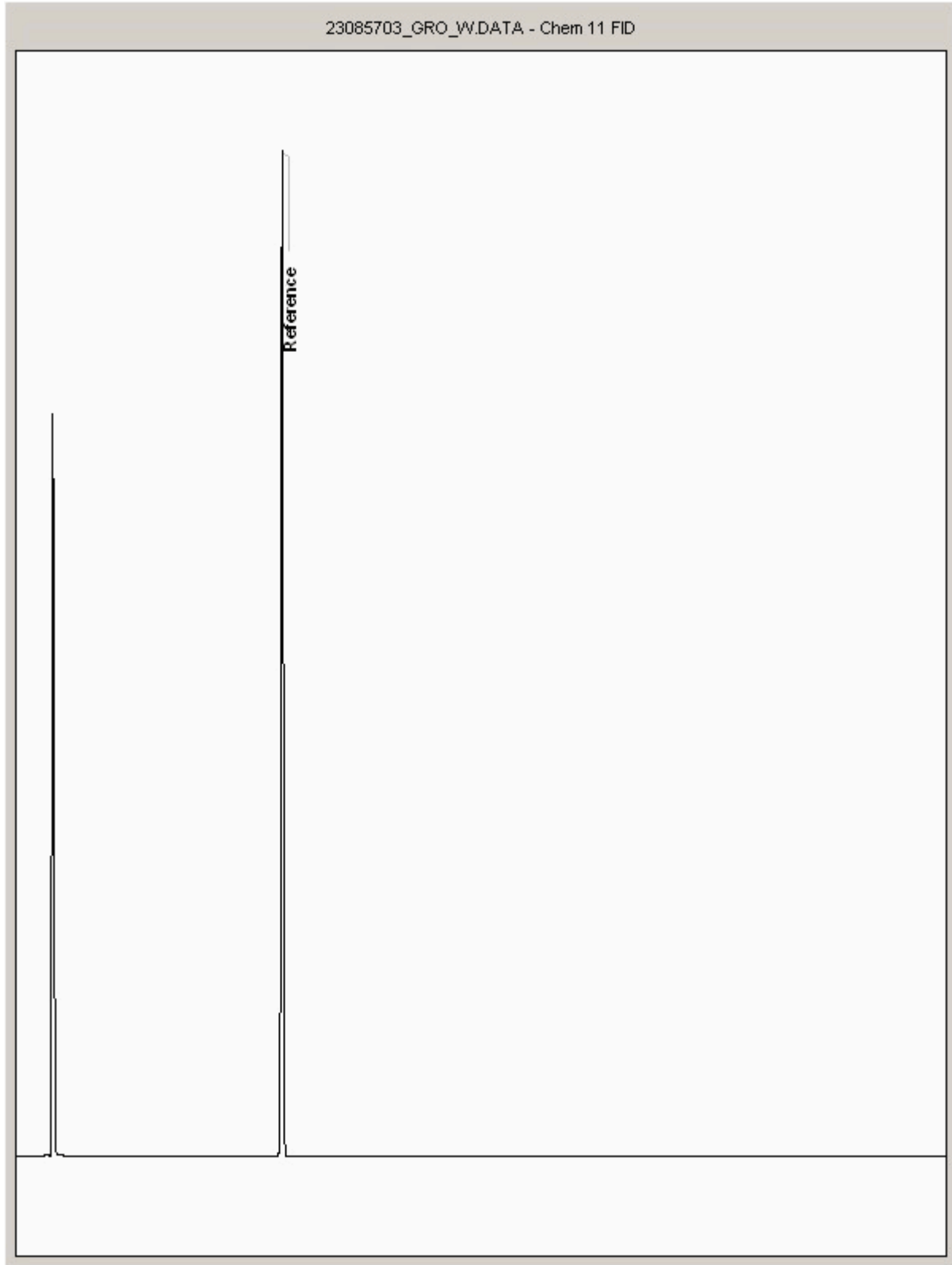
Report Number: 575579
Superseded Report: 573912

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 23085703
Sample ID : STPES2

Depth : 1.00





CERTIFICATE OF ANALYSIS

Validated

SDG: 201009-77
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

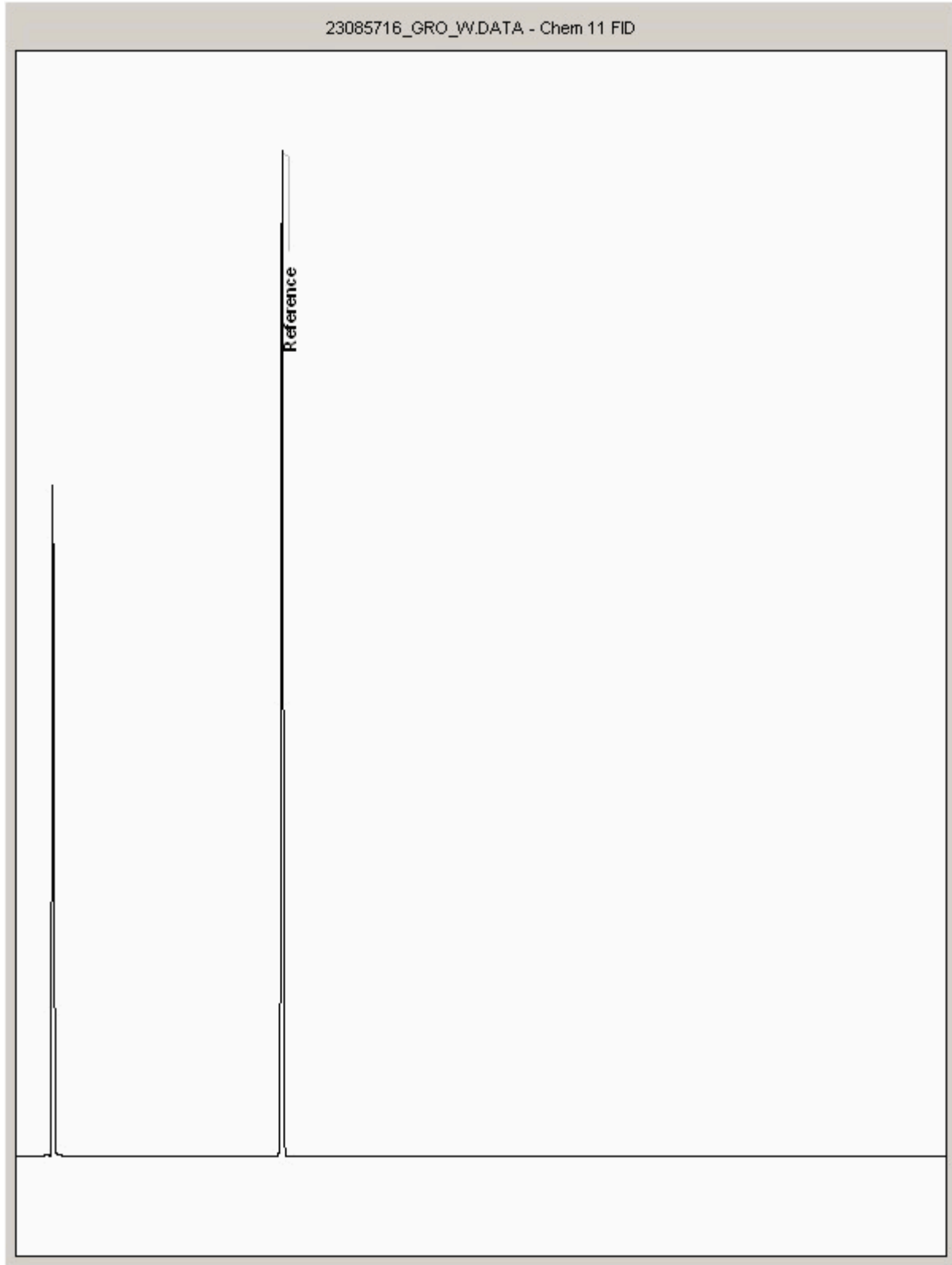
Report Number: 575579
Superseded Report: 573912

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 23085716
Sample ID : STPES1

Depth : 0.50





CERTIFICATE OF ANALYSIS

Validated

SDG: 201009-77
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

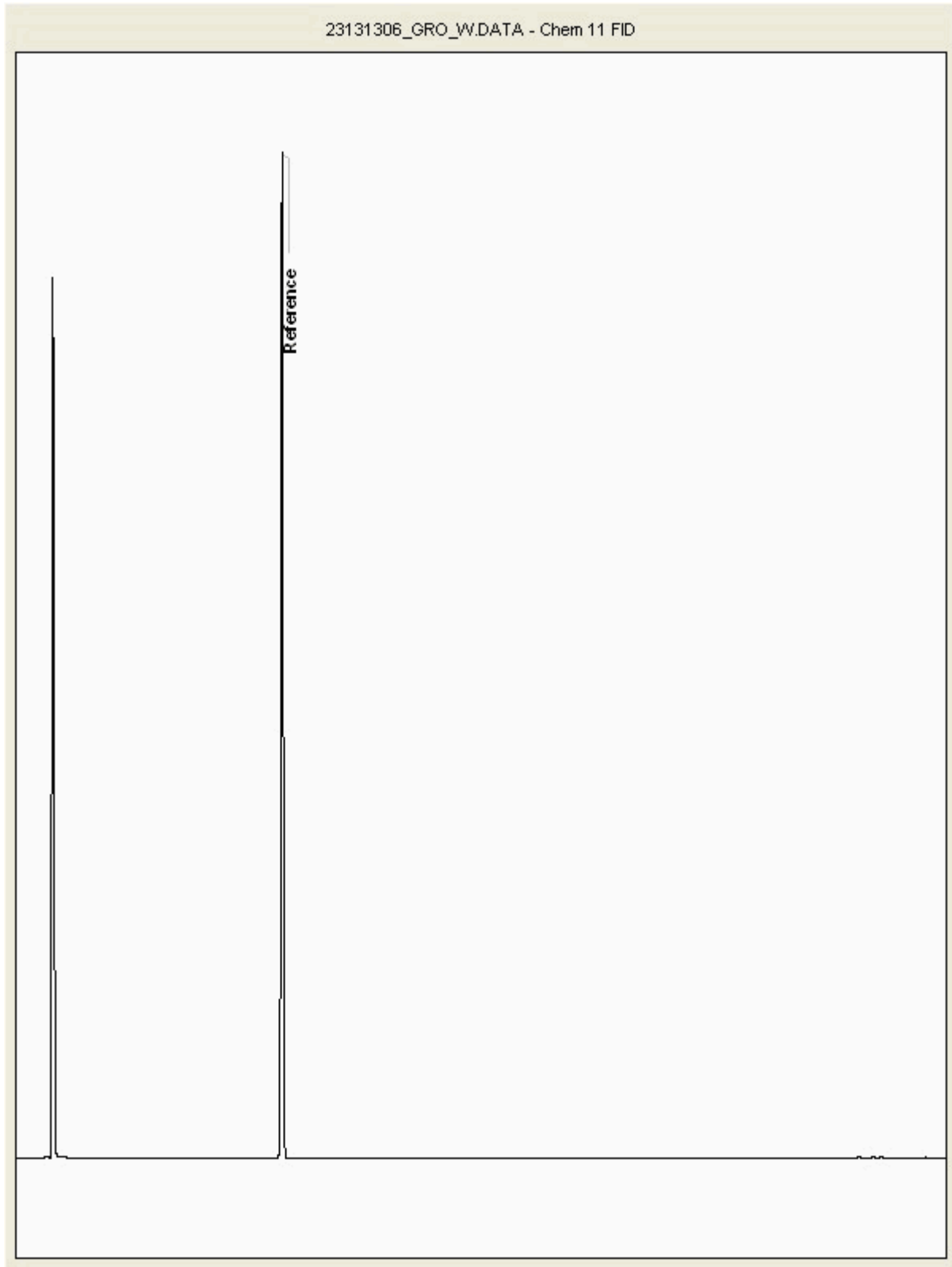
Report Number: 575579
Superseded Report: 573912

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 23131306
Sample ID : STP72601

Depth : 0.50





CERTIFICATE OF ANALYSIS

SDG: 201009-77	Client Reference: JFR1451	Report Number: 575579
Location: A303 Stonehenge	Order Number:	Superseded Report: 573912

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH₄ by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

19. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung. Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017)*.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US

Tel: (01244) 528700

Fax: (01244) 528701

email: hawardencustomerservices@alsglobal.com

Website: www.alsenvironmental.co.uk

RPS Consultants Ltd
260 Park Avenue
Aztec West
Almondsbury
Bristol
BS32 4SY

Attention: Gary Riches

CERTIFICATE OF ANALYSIS

Date of report Generation: 26 October 2020
Customer: RPS Consultants Ltd
Sample Delivery Group (SDG): 201009-94
Your Reference: JFR1451
Location: A303 Stonehenge
Report No: 572605

We received 4 samples on Friday October 09, 2020 and 2 of these samples were scheduled for analysis which was completed on Monday October 26, 2020. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

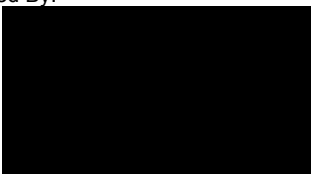
Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:



Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 201009-94
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 572605
Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
23000306	STP70602	ES	0.00	06/10/2020
23000307	STP70602	ES	0.30	06/10/2020
23000309	STP70602	ES	0.50	06/10/2020
23000310	STP70602	ES	0.90	06/10/2020

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 201009-94 Client Reference: JFR1451 Report Number: 572605
 Location: A303 Stonehenge Order Number: Superseded Report:

Results Legend

- X Test
- N No Determination Possible

Sample Types -

- S - Soil/Solid
- UNS - Unspecified Solid
- GW - Ground Water
- SW - Surface Water
- LE - Land Leachate
- PL - Prepared Leachate
- PR - Process Water
- SA - Saline Water
- TE - Trade Effluent
- TS - Treated Sewage
- US - Untreated Sewage
- RE - Recreational Water
- DW - Drinking Water Non-regulatory
- UNL - Unspecified Liquid
- SL - Sludge
- G - Gas
- OTH - Other

	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container		Sample Type
					250g Amber Jar (ALE210)	60g VOC (ALE215)	
	23000307	STP70602	ES	0.30	250g Amber Jar (ALE210)	60g VOC (ALE215)	S
	23000310	STP70602	ES	0.90	250g Amber Jar (ALE210)	60g VOC (ALE215)	S
Ammonium Soil by Titration	All				NDPs: 0 Tests: 2		X X
Anions by Kone (soil)	All				NDPs: 0 Tests: 2		X X
Chromium III	All				NDPs: 0 Tests: 2		X X
Cyanide Comp/Free/Total/Thiocyanate	All				NDPs: 0 Tests: 2		X X
EPH CWG GC (S)	All				NDPs: 0 Tests: 2		X X
GRO by GC-FID (S)	All				NDPs: 0 Tests: 2		X X
Hexavalent Chromium (s)	All				NDPs: 0 Tests: 2		X X
Metals in solid samples by OES	All				NDPs: 0 Tests: 2		X X
OC OP Pesticides and Triazine Herb	All				NDPs: 0 Tests: 1		X
PAH by GCMS	All				NDPs: 0 Tests: 2		X X
pH	All				NDPs: 0 Tests: 2		X X
Phenols by HPLC (S)	All				NDPs: 0 Tests: 2		X X
Sample description	All				NDPs: 0 Tests: 2		X X
Semi Volatile Organic Compounds	All				NDPs: 0 Tests: 1		X
Total Organic Carbon	All				NDPs: 0 Tests: 2		X X



CERTIFICATE OF ANALYSIS

Validated

SDG:	201009-94	Client Reference:	JFR1451	Report Number:	572605
Location:	A303 Stonehenge	Order Number:		Superseded Report:	

Results Legend

- X Test
- N No Determination Possible

Sample Types -

- S - Soil/Solid
- UNS - Unspecified Solid
- GW - Ground Water
- SW - Surface Water
- LE - Land Leachate
- PL - Prepared Leachate
- PR - Process Water
- SA - Saline Water
- TE - Trade Effluent
- TS - Treated Sewage
- US - Untreated Sewage
- RE - Recreational Water
- DW - Drinking Water Non-regulatory
- UNL - Unspecified Liquid
- SL - Sludge
- G - Gas
- OTH - Other

	Lab Sample No(s)		23000307	23000310		
	Customer Sample Reference		STP70602	STP70602		
	AGS Reference		ES	ES		
	Depth (m)		0.30	0.90		
	Container		250g Amber Jar (ALEZ10)	60g VOC (ALEZ15)	250g Amber Jar (ALEZ10)	60g VOC (ALEZ15)
	Sample Type		S	S	S	S
	TPH CWG GC (S)	All	NDPs: 0 Tests: 2	X	X	
VOC MS (S)	All	NDPs: 0 Tests: 2		X	X	



CERTIFICATE OF ANALYSIS

Validated

SDG: 201009-94
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 572605
Superseded Report:

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm
-----------	----------	------	-----------------	--------	-------------	--------	------------	-------------	-------

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
23000307	STP70602	0.30	Dark Brown	Sandy Loam	Stones	Vegetation
23000310	STP70602	0.90	Cream	Chalk	N/A	N/A

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.



CERTIFICATE OF ANALYSIS

Validated

SDG: 201009-94 Client Reference: JFR1451 Report Number: 572605
 Location: A303 Stonehenge Order Number: Superseded Report:

Results Legend		Customer Sample Ref.	STP70602	STP70602			
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.30	0.90			
M	mCERTS accredited.		Soil/Solid (S)	Soil/Solid (S)			
aq	Aqueous / settled sample.		06/10/2020	06/10/2020			
diss.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.		09/10/2020	09/10/2020			
*	Subcontracted - refer to subcontractor report for accreditation status.		201009-94	201009-94			
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		23000307	23000310			
(F)	Trigger breach confirmed		ES	ES			
1-4*\$@	Sample deviation (see appendix)						
Component	LOD/Units		Method				
Moisture Content Ratio (% of as received sample)	%	PM024	20	18			
Exchangeable Ammonia as N	<12 mg/kg	TM024	<12	<12	M	#	
Phenol	<0.01 mg/kg	TM062 (S)	<0.01	<0.01	@ M	@ #	
Organic Carbon, Total	<0.2 %	TM132	1.82	<0.2	M	#	
pH	1 pH Units	TM133	8.23	9.07	M	#	
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6	<0.6	#	#	
Cyanide, Total	<1 mg/kg	TM153	<1	<1	@ M	@ #	
Cyanide, Free	<1 mg/kg	TM153	<1	<1	@ M	@ #	
Chromium, Trivalent	<0.9 mg/kg	TM181	5.53	1.1			
Antimony	<0.6 mg/kg	TM181	<0.6	<0.6	#	#	
Arsenic	<0.6 mg/kg	TM181	5.43	<0.6	M	#	
Beryllium	<0.01 mg/kg	TM181	0.212	0.0552	M	#	
Boron	<0.7 mg/kg	TM181	4.9	1.76	#	#	
Cadmium	<0.02 mg/kg	TM181	0.381	0.0746	M	#	
Chromium	<0.9 mg/kg	TM181	5.53	1.1	M	#	
Copper	<1.4 mg/kg	TM181	4.04	<1.4	M	#	
Iron	<1000 mg/kg	TM181	17500	<1000	#	#	
Lead	<0.7 mg/kg	TM181	11.6	<0.7	M	#	
Manganese	<0.13 mg/kg	TM181	573	200	M	#	
Mercury	<0.14 mg/kg	TM181	<0.14	<0.14	M	#	
Molybdenum	<0.1 mg/kg	TM181	0.252	<0.1	#	#	
Nickel	<0.2 mg/kg	TM181	6.35	1.68	M	#	
Phosphorus	<1 mg/kg	TM181	980	391			
Selenium	<1 mg/kg	TM181	<1	<1	#	#	
Zinc	<1.9 mg/kg	TM181	33.2	7.43	M	#	
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243	<0.004	0.0042	M	#	



CERTIFICATE OF ANALYSIS

Validated

SDG: 201009-94
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 572605
Superseded Report:

OC OP Pesticides and Triazine Herb

Results Legend # ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.fit Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4*\$@ Sample deviation (see appendix)		Customer Sample Ref. Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	STP70602				
Component	LOD/Units	Method					
Dichlorvos	<50 µg/kg	TM073	<50				
Mevinphos	<50 µg/kg	TM073	<50				
Phorate	<50 µg/kg	TM073	<50				
alpha-Hexachlorocyclohexane (HCH)	<50 µg/kg	TM073	<50				
Diazinon	<50 µg/kg	TM073	<50				
gamma-Hexachlorocyclohexane (HCH / Lindane)	<50 µg/kg	TM073	<50				
Atrazine	<50 µg/kg	TM073	<50				
Simazine	<50 µg/kg	TM073	<50				
Disulfoton	<50 µg/kg	TM073	<50				
Heptachlor	<50 µg/kg	TM073	<50				
Aldrin	<50 µg/kg	TM073	<50				
beta-Hexachlorocyclohexane (HCH)	<50 µg/kg	TM073	<50				
Methyl parathion	<50 µg/kg	TM073	<50				
Malathion	<50 µg/kg	TM073	<50				
Fenitrothion	<50 µg/kg	TM073	<50				
Heptachlor epoxide	<50 µg/kg	TM073	<50				
Parathion	<50 µg/kg	TM073	<50				
Endosulphan I	<50 µg/kg	TM073	<50				
p,p-DDE	<50 µg/kg	TM073	<50				
Dieldrin	<50 µg/kg	TM073	<50				
o,p'-DDD (TDE)	<50 µg/kg	TM073	<50				
Endrin	<50 µg/kg	TM073	<50				
p,p-TDE (DDD)	<50 µg/kg	TM073	<50				
Ethion	<50 µg/kg	TM073	<50				
Endosulphan II	<50 µg/kg	TM073	<50				
p,p-DDT	<50 µg/kg	TM073	<50				
p,p-Methoxychlor	<50 µg/kg	TM073	<50				
Endosulphan sulphate	<50 µg/kg	TM073	<50				
Azinphos-methyl	<50 µg/kg	TM073	<50				



CERTIFICATE OF ANALYSIS

Validated

SDG:	201009-94	Client Reference:	JFR1451	Report Number:	572605
Location:	A303 Stonehenge	Order Number:		Superseded Report:	

PAH by GCMS

#	M	aq	diss.filt	tot.unfilt	*	**	(F)	1-4*\$@	Customer Sample Ref.	STP70602	STP70602												
Results Legend ISO17025 accredited. mCERTS accredited. Aqueous / settled sample. Dissolved / filtered sample. Total / unfiltered sample. Subcontracted - refer to subcontractor report for accreditation status. % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery Trigger breach confirmed Sample deviation (see appendix)									Depth (m)	0.30	0.90												
										Soil/Solid (S)	Soil/Solid (S)												
										06/10/2020	06/10/2020												
										09/10/2020	09/10/2020												
										201009-94	201009-94												
										23000307	23000310												
										ES	ES												
Component	LOD/Units	Method																					
Naphthalene-d8 % recovery**	%	TM218	91.2	90.4																			
Acenaphthene-d10 % recovery**	%	TM218	85.1	82.1																			
Phenanthrene-d10 % recovery**	%	TM218	93.4	86																			
Chrysene-d12 % recovery**	%	TM218	107	86.5																			
Perylene-d12 % recovery**	%	TM218	111	84.3																			
Naphthalene	<9 µg/kg	TM218	<9 @ M	<9 @ #																			
Acenaphthylene	<12 µg/kg	TM218	<12 @ M	<12 @ #																			
Acenaphthene	<8 µg/kg	TM218	<8 @ M	<8 @ #																			
Fluorene	<10 µg/kg	TM218	<10 @ M	<10 @ #																			
Phenanthrene	<15 µg/kg	TM218	<15 @ M	<15 @ #																			
Anthracene	<16 µg/kg	TM218	<16 @ M	<16 @ #																			
Fluoranthene	<17 µg/kg	TM218	34.8 @ M	<17 @ #																			
Pyrene	<15 µg/kg	TM218	32.3 @ M	<15 @ #																			
Benz(a)anthracene	<14 µg/kg	TM218	23.5 @ M	<14 @ #																			
Chrysene	<10 µg/kg	TM218	23.4 @ M	<10 @ #																			
Benzo(b)fluoranthene	<15 µg/kg	TM218	28.4 @ M	<15 @ #																			
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 @ M	<14 @ #																			
Benzo(a)pyrene	<15 µg/kg	TM218	26.2 @ M	<15 @ #																			
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 @ M	<18 @ #																			
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 @ M	<23 @ #																			
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 @ M	<24 @ #																			
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	169	<118																			



CERTIFICATE OF ANALYSIS

Validated

SDG: 201009-94
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 572605
Superseded Report:

Semi Volatile Organic Compounds

Results Legend		Customer Sample Ref.	STP70602				
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.30				
M	mCERTS accredited.		Soil/Solid (S)				
aq	Aqueous / settled sample.		06/10/2020				
diss.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.		09/10/2020				
*	Subcontracted - refer to subcontractor report for accreditation status.		201009-94				
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		23000307				
(F)	Trigger breach confirmed		ES				
1-4*§@	Sample deviation (see appendix)						
Component	LOD/Units		Method				
Phenol	<100 µg/kg	TM157	<100				
Pentachlorophenol	<100 µg/kg	TM157	<100				
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100				
Nitrobenzene	<100 µg/kg	TM157	<100				
Isophorone	<100 µg/kg	TM157	<100				
Hexachloroethane	<100 µg/kg	TM157	<100				
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100				
Hexachlorobutadiene	<100 µg/kg	TM157	<100				
Hexachlorobenzene	<100 µg/kg	TM157	<100				
n-Dioctyl phthalate	<100 µg/kg	TM157	<100				
Dimethyl phthalate	<100 µg/kg	TM157	<100				
Diethyl phthalate	<100 µg/kg	TM157	<100				
n-Dibutyl phthalate	<100 µg/kg	TM157	<100				
Dibenzofuran	<100 µg/kg	TM157	<100				
Carbazole	<100 µg/kg	TM157	<100				
Butylbenzyl phthalate	<100 µg/kg	TM157	<100				
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100				
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100				
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100				
Azobenzene	<100 µg/kg	TM157	<100				
4-Nitrophenol	<100 µg/kg	TM157	<100				
4-Nitroaniline	<100 µg/kg	TM157	<100				
4-Methylphenol	<100 µg/kg	TM157	<100				
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100				
4-Chloroaniline	<100 µg/kg	TM157	<100				
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100				
4-Bromophenylphenylether	<100 µg/kg	TM157	<100				
3-Nitroaniline	<100 µg/kg	TM157	<100				
2-Nitrophenol	<100 µg/kg	TM157	<100				
2-Nitroaniline	<100 µg/kg	TM157	<100				
2-Methylphenol	<100 µg/kg	TM157	<100				
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100				



CERTIFICATE OF ANALYSIS

Validated

SDG: 201009-94
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 572605
Superseded Report:

Semi Volatile Organic Compounds

Results Legend		Customer Sample Ref.	STP70602				
# ISO17025 accredited.							
M mCERTS accredited.							
aq Aqueous / filtered sample.							
dis.filt Dissolved / filtered sample.							
tot.unfilt Total / unfiltered sample.							
* Subcontracted - refer to subcontractor report for accreditation status.							
** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery							
(F) Trigger breach confirmed							
1.4.4.6@ Sample deviation (see appendix)							
		Depth (m)	0.30				
		Sample Type	Soil/Solid (S)				
		Date Sampled	06/10/2020				
		Sampled Time	.				
		Date Received	09/10/2020				
		SDG Ref	201009-94				
		Lab Sample No.(s)	23000307				
		AGS Reference	ES				
Component	LOD/Units	Method					
2-Chlorophenol	<100 µg/kg	TM157	<100				
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100				
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100				
2,4-Dimethylphenol	<100 µg/kg	TM157	<100				
2,4-Dichlorophenol	<100 µg/kg	TM157	<100				
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100				
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100				
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100				
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100				
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100				
2-Chloronaphthalene	<100 µg/kg	TM157	<100				
2-Methylnaphthalene	<100 µg/kg	TM157	<100				
Acenaphthylene	<100 µg/kg	TM157	<100				
Acenaphthene	<100 µg/kg	TM157	<100				
Anthracene	<100 µg/kg	TM157	<100				
Benzo(a)anthracene	<100 µg/kg	TM157	<100				
Benzo(b)fluoranthene	<100 µg/kg	TM157	<100				
Benzo(k)fluoranthene	<100 µg/kg	TM157	<100				
Benzo(a)pyrene	<100 µg/kg	TM157	<100				
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<100				
Chrysene	<100 µg/kg	TM157	<100				
Fluoranthene	<100 µg/kg	TM157	<100				
Fluorene	<100 µg/kg	TM157	<100				
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<100				
Phenanthrene	<100 µg/kg	TM157	<100				
Pyrene	<100 µg/kg	TM157	<100				
Naphthalene	<100 µg/kg	TM157	<100				
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100				
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100				
TIC report		TM157	Not Detected				
Total SVOC TIC	<100 µg/kg	TM157	<1000				



CERTIFICATE OF ANALYSIS

Validated

SDG: 201009-94 **Client Reference:** JFR1451 **Report Number:** 572605
Location: A303 Stonehenge **Order Number:**

TPH CWG (S)

Results Legend		Customer Sample Ref.	STP70602	STP70602				
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.30	0.90				
M	mCERTS accredited.		Soil/Solid (S)	Soil/Solid (S)				
aq	Aqueous / settled sample.		06/10/2020	06/10/2020				
diss.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.		09/10/2020	09/10/2020				
*	Subcontracted - refer to subcontractor report for accreditation status.		201009-94	201009-94				
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		23000307	23000310				
(F)	Trigger breach confirmed		ES	ES				
1-4*\$@	Sample deviation (see appendix)							
Component	LOD/Units		Method					
GRO Surrogate % recovery**	%		TM089	96	107			
Aliphatics >C5-C6	<10 µg/kg		TM089	<10	<10			
Aliphatics >C6-C8	<10 µg/kg		TM089	<10	<10			
Aliphatics >C8-C10	<10 µg/kg		TM089	<10	<10			
Aliphatics >C10-C12	<1000 µg/kg	TM414	<1000	<1000				
Aliphatics >C12-C16	<1000 µg/kg	TM414	<1000	<1000				
Aliphatics >C16-C21	<1000 µg/kg	TM414	<1000	<1000				
Aliphatics >C21-C35	<1000 µg/kg	TM414	6580	<1000				
Aliphatics >C35-C44	<1000 µg/kg	TM414	<1000	<1000				
Total Aliphatics >C10-C44	<5000 µg/kg	TM414	7040	<5000				
Total Aliphatics & Aromatics >C10-C44	<10000 µg/kg	TM414	<10000	<10000				
Aromatics >EC5-EC7	<10 µg/kg	TM089	<10	<10				
Aromatics >EC7-EC8	<10 µg/kg	TM089	<10	<10				
Aromatics >EC8-EC10	<10 µg/kg	TM089	<10	<10				
Aromatics > EC10-EC12	<1000 µg/kg	TM414	<1000	<1000				
Aromatics > EC12-EC16	<1000 µg/kg	TM414	<1000	<1000				
Aromatics > EC16-EC21	<1000 µg/kg	TM414	<1000	<1000				
Aromatics > EC21-EC35	<1000 µg/kg	TM414	1920	<1000				
Aromatics >EC35-EC44	<1000 µg/kg	TM414	<1000	<1000				
Aromatics > EC40-EC44	<1000 µg/kg	TM414	<1000	<1000				
Total Aromatics > EC10-EC44	<5000 µg/kg	TM414	<5000	<5000				
Total Aliphatics & Aromatics >C5-C44	<10000 µg/kg	TM414	<10000	<10000				
Total Aliphatics >C5-C10	<50 µg/kg	TM089	<50	<50				
Total Aromatics >EC5-EC10	<50 µg/kg	TM089	<50	<50				
GRO >C5-C10	<20 µg/kg	TM089	<20	<20				



CERTIFICATE OF ANALYSIS

Validated

SDG:	201009-94	Client Reference:	JFR1451	Report Number:	572605
Location:	A303 Stonehenge	Order Number:		Superseded Report:	

VOC MS (S)

#	ISO17025 accredited.	Customer Sample Ref.	STP70602	STP70602		
M	mCERTS accredited.					
aq	Aqueous / settled sample.					
diss.filt	Dissolved / filtered sample.					
tot.unfilt	Total / unfiltered sample.					
*	Subcontracted - refer to subcontractor report for accreditation status.					
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery					
(F)	Trigger breach confirmed					
1-4*\$@	Sample deviation (see appendix)					
		Depth (m)	0.30	0.90		
		Sample Type	Soil/Solid (S)	Soil/Solid (S)		
		Date Sampled	06/10/2020	06/10/2020		
		Sampled Time				
		Date Received	09/10/2020	09/10/2020		
		SDG Ref	201009-94	201009-94		
		Lab Sample No.(s)	23000307	23000310		
		AGS Reference	ES	ES		
Component	LOD/Units	Method				
Dibromofluoromethane**	%	TM116	113	114		
Toluene-d8**	%	TM116	99.1	104		
4-Bromofluorobenzene**	%	TM116	77.4	93.4		
Dichlorodifluoromethane	<6 µg/kg	TM116	<6			
Chloromethane	<7 µg/kg	TM116	<7			
Vinyl Chloride	<6 µg/kg	TM116	<6			
Bromomethane	<10 µg/kg	TM116	<10			
Chloroethane	<10 µg/kg	TM116	<10			
Trichlorofluoromethane	<6 µg/kg	TM116	<6			
1,1-Dichloroethene	<10 µg/kg	TM116	<10			
Carbon Disulphide	<7 µg/kg	TM116	<7			
Dichloromethane	<10 µg/kg	TM116	<10			
Methyl Tertiary Butyl Ether	<10 µg/kg	TM116	<10	<10		
trans-1,2-Dichloroethene	<10 µg/kg	TM116	<10			
1,1-Dichloroethane	<8 µg/kg	TM116	<8			
cis-1,2-Dichloroethene	<6 µg/kg	TM116	<6			
2,2-Dichloropropane	<10 µg/kg	TM116	<10			
Bromochloromethane	<10 µg/kg	TM116	<10			
Chloroform	<8 µg/kg	TM116	<8			
1,1,1-Trichloroethane	<7 µg/kg	TM116	<7			
1,1-Dichloropropene	<10 µg/kg	TM116	<10			
Carbontetrachloride	<10 µg/kg	TM116	<10			
1,2-Dichloroethane	<5 µg/kg	TM116	<5			
Benzene	<9 µg/kg	TM116	<9	<9		
Trichloroethene	<9 µg/kg	TM116	<9			
1,2-Dichloropropane	<10 µg/kg	TM116	<10			
Dibromomethane	<9 µg/kg	TM116	<9			
Bromodichloromethane	<7 µg/kg	TM116	<7			
cis-1,3-Dichloropropene	<10 µg/kg	TM116	<10			
Toluene	<7 µg/kg	TM116	<7	<7		
trans-1,3-Dichloropropene	<10 µg/kg	TM116	<10			
1,1,2-Trichloroethane	<10 µg/kg	TM116	<10			



CERTIFICATE OF ANALYSIS

Validated

SDG:	201009-94	Client Reference:	JFR1451	Report Number:	572605
Location:	A303 Stonehenge	Order Number:		Superseded Report:	

VOC MS (S)

Results Legend		Customer Sample Ref.	STP70602	STP70602			
#	ISO17825 accredited.						
M	mCERTS accredited.						
sq	Aqueous / settled sample.						
dis.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.						
*	Subcontracted - refer to subcontractor report for accreditation status.						
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery						
(F)	Trigger breach confirmed						
1-4#&@	Sample deviation (see appendix)						
		Depth (m)	0.30	0.90			
		Sample Type	Soil/Solid (S)	Soil/Solid (S)			
		Date Sampled	06/10/2020	06/10/2020			
		Sampled Time	.	.			
		Date Received	09/10/2020	09/10/2020			
		SDG Ref	201009-94	201009-94			
		Lab Sample No.(s)	23000307	23000310			
		AGS Reference	ES	ES			
Component	LOD/Units	Method					
1,3-Dichloropropane	<7 µg/kg	TM116	<7 M				
Tetrachloroethene	<5 µg/kg	TM116	<5 M				
Dibromochloromethane	<10 µg/kg	TM116	<10 M				
1,2-Dibromoethane	<10 µg/kg	TM116	<10 M				
Chlorobenzene	<5 µg/kg	TM116	<5 M				
1,1,1,2-Tetrachloroethane	<10 µg/kg	TM116	<10 M				
Ethylbenzene	<4 µg/kg	TM116	<4 M	<4 #			
p/m-Xylene	<10 µg/kg	TM116	<10 #	<10 #			
o-Xylene	<10 µg/kg	TM116	<10 M	<10 #			
Styrene	<10 µg/kg	TM116	<10 #				
Bromoform	<10 µg/kg	TM116	<10 M				
Isopropylbenzene	<5 µg/kg	TM116	<5 #				
1,1,2,2-Tetrachloroethane	<10 µg/kg	TM116	<10 #				
1,2,3-Trichloropropane	<16 µg/kg	TM116	<16 M				
Bromobenzene	<10 µg/kg	TM116	<10 M				
Propylbenzene	<10 µg/kg	TM116	<10 M				
2-Chlorotoluene	<9 µg/kg	TM116	<9 M				
1,3,5-Trimethylbenzene	<8 µg/kg	TM116	<8 M				
4-Chlorotoluene	<10 µg/kg	TM116	<10 M				
tert-Butylbenzene	<14 µg/kg	TM116	<14 M				
1,2,4-Trimethylbenzene	<9 µg/kg	TM116	<9 #				
sec-Butylbenzene	<10 µg/kg	TM116	<10				
4-Isopropyltoluene	<10 µg/kg	TM116	<10 M				
1,3-Dichlorobenzene	<8 µg/kg	TM116	<8 M				
1,4-Dichlorobenzene	<5 µg/kg	TM116	<5 M				
n-Butylbenzene	<11 µg/kg	TM116	<11				
1,2-Dichlorobenzene	<10 µg/kg	TM116	<10 M				
1,2-Dibromo-3-chloropropane	<14 µg/kg	TM116	<14 M				
Tert-amyl methyl ether	<10 µg/kg	TM116	<10 #				
1,2,4-Trichlorobenzene	<20 µg/kg	TM116	<20				
Hexachlorobutadiene	<20 µg/kg	TM116	<20				
Naphthalene	<13 µg/kg	TM116	<13 M				



CERTIFICATE OF ANALYSIS

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VOC MS (S)

Table with columns for Results Legend, Customer Sample Ref., Depth (m), Sample Type, Date Sampled, Sampled Time, Date Received, SDG Ref, Lab Sample No.(s), AGS Reference, Component, LOD/Units, Method, and detection results for 1,2,3-Trichlorobenzene, VOC TIC, Sum of Detected Xylenes, Sum of BTEX, and Total VOC TIC.



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Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM073	MEWAM BOOK 60 1980,95 1985, HMSO / Modified: US EPA Method 8081A & 8141A	Determination of organochlorine and organophosphorous pesticides by GCMS
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM243		Mixed Anions In Soils By Kone
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).



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Test Completion Dates

Lab Sample No(s)	23000307	23000310
Customer Sample Ref.	STP70602	STP70602
AGS Ref.	ES	ES
Depth	0.30	0.90
Type	Soil/Solid (S)	Soil/Solid (S)

Ammonium Soil by Titration	21-Oct-2020	21-Oct-2020
Anions by Kone (soil)	21-Oct-2020	21-Oct-2020
Chromium III	21-Oct-2020	22-Oct-2020
Cyanide Comp/Free/Total/Thiocyanate	21-Oct-2020	21-Oct-2020
EPH CWG GC (S)	21-Oct-2020	21-Oct-2020
GRO by GC-FID (S)	20-Oct-2020	20-Oct-2020
Hexavalent Chromium (s)	21-Oct-2020	22-Oct-2020
Metals in solid samples by OES	26-Oct-2020	24-Oct-2020
OC OP Pesticides and Triazine Herb	21-Oct-2020	
PAH by GCMS	23-Oct-2020	26-Oct-2020
pH	21-Oct-2020	21-Oct-2020
Phenols by HPLC (S)	21-Oct-2020	23-Oct-2020
Sample description	19-Oct-2020	19-Oct-2020
Semi Volatile Organic Compounds	21-Oct-2020	
Total Organic Carbon	22-Oct-2020	22-Oct-2020
TPH CWG GC (S)	21-Oct-2020	21-Oct-2020
VOC MS (S)	20-Oct-2020	20-Oct-2020



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ASSOCIATED AQC DATA

Ammonium Soil by Titration

Component	Method Code	QC 2305
Exchangeable Ammonium as NH4	TM024	83.08 76.20 : 110.13

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2372	QC 2344
Free Cyanide	TM153	86.83 78.61 : 114.43	86.34 78.61 : 114.43
Thiocyanate	TM153	95.51 90.48 : 109.52	96.79 90.48 : 109.52
Total Cyanide	TM153	95.8 76.80 : 112.96	93.71 76.80 : 112.96

EPH CWG GC (S)

Component	Method Code	QC 2331
EPH >C8-C40 Raw	TM414	89.88 56.39 : 129.94
Total Aliphatics Raw	TM414	96.17 62.55 : 133.12
Total Aromatics Raw	TM414	95.28 57.00 : 150.27

GRO by GC-FID (S)

Component	Method Code	QC 2357
QC	TM089	105.54 72.28 : 114.54

Hexavalent Chromium (s)

Component	Method Code	QC 2329	QC 2366
Hexavalent Chromium	TM151	104.0 95.60 : 107.60	102.0 95.60 : 107.60

Metals in solid samples by OES

Component	Method Code	QC 2390	QC 2331
Aluminium	TM181	92.04 73.56 : 108.85	98.23 73.56 : 108.85
Antimony	TM181	102.44 76.89 : 111.24	98.37 76.89 : 111.24
Arsenic	TM181	98.84 88.53 : 111.01	101.74 88.53 : 111.01



CERTIFICATE OF ANALYSIS

Validated

SDG:	201009-94	Client Reference:	JFR1451	Report Number:	572605
Location:	A303 Stonehenge	Order Number:		Superseded Report:	

Metals in solid samples by OES

		QC 2390	QC 2331
Barium	TM181	95.41 77.67 : 105.35	95.41 77.67 : 105.35
Beryllium	TM181	98.13 85.44 : 109.61	96.64 85.44 : 109.61
Boron	TM181	81.66 73.51 : 104.66	90.83 73.51 : 104.66
Cadmium	TM181	90.12 77.67 : 104.12	84.77 77.67 : 104.12
Chromium	TM181	93.71 86.11 : 106.21	89.86 86.11 : 106.21
Cobalt	TM181	89.94 84.60 : 104.13	91.19 84.60 : 104.13
Copper	TM181	95.42 82.40 : 105.45	90.32 82.40 : 105.45
Iron	TM181	98.41 82.95 : 110.58	97.62 82.95 : 110.58
Lead	TM181	90.09 78.24 : 104.05	91.22 78.24 : 104.05
Manganese	TM181	116.11 94.29 : 119.51	113.06 94.29 : 119.51
Mercury	TM181	91.55 83.16 : 107.81	93.72 83.16 : 107.81
Molybdenum	TM181	98.77 87.11 : 106.87	97.94 87.11 : 106.87
Nickel	TM181	89.98 80.26 : 102.28	89.49 80.26 : 102.28
Phosphorus	TM181	114.55 94.56 : 124.28	108.28 94.56 : 124.28
Selenium	TM181	99.22 82.28 : 110.48	93.73 82.28 : 110.48
Strontium	TM181	89.09 79.13 : 102.79	87.08 79.13 : 102.79
Thallium	TM181	97.79 82.94 : 111.86	97.35 82.94 : 111.86
Tin	TM181	98.48 86.72 : 110.03	95.44 86.72 : 110.03
Titanium	TM181	73.05 66.23 : 102.06	81.68 66.23 : 102.06
Vanadium	TM181	92.67 75.51 : 108.87	94.14 75.51 : 108.87
Zinc	TM181	95.28 84.68 : 113.99	96.92 84.68 : 113.99

OC OP Pesticides and Triazine Herb

Component	Method Code	QC 2374
Atrazine (Raw)	TM073	84.26 78.55 : 119.92
Azinphos methyl (Raw)	TM073	142.57 58.68 : 154.71
cis-Chlordane (Raw)	TM073	87.22 71.90 : 129.99
Diazinon (Raw)	TM073	72.92 70.00 : 130.00



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Order Number:

Report Number: 572605
Superseded Report:

OC OP Pesticides and Triazine Herb

		QC 2374
Dichlorvos (Raw)	TM073	90.26 70.00 : 130.00
Dieldrin (Raw)	TM073	88.93 70.00 : 130.00
gamma-HCH (Lindane) (Raw)	TM073	75.25 71.48 : 129.99
Heptachlor (Raw)	TM073	83.27 66.39 : 134.63
Hexachlorobenzene (Raw)	TM073	84.78 47.15 : 124.32
Malathion (Raw)	TM073	82.99 70.00 : 130.00
p,p-DDT (Raw)	TM073	83.25 70.00 : 130.00
Parathion (Raw)	TM073	92.37 64.13 : 127.88

PAH by GCMS

Component	Method Code	QC 2342	QC 2355
Acenaphthene	TM218	90.0 76.79 : 103.90	89.5 80.97 : 105.99
Acenaphthylene	TM218	85.5 78.40 : 108.66	87.0 74.76 : 107.36
Anthracene	TM218	84.0 70.90 : 109.22	90.5 73.04 : 106.97
Benz(a)anthracene	TM218	82.0 73.77 : 119.26	104.5 68.79 : 119.64
Benzo(a)pyrene	TM218	83.5 73.20 : 114.18	103.5 66.17 : 117.52
Benzo(b)fluoranthene	TM218	76.5 75.36 : 117.58	98.0 66.40 : 118.34
Benzo(ghi)perylene	TM218	80.5 70.73 : 116.12	102.0 67.68 : 112.07
Benzo(k)fluoranthene	TM218	81.0 75.98 : 116.59	100.0 72.84 : 114.66
Chrysene	TM218	78.5 74.82 : 114.18	102.5 68.39 : 115.56
Dibenzo(ah)anthracene	TM218	83.5 69.17 : 115.30	104.5 69.03 : 110.45
Fluoranthene	TM218	80.0 75.88 : 112.84	94.0 69.37 : 117.19
Fluorene	TM218	93.5 76.66 : 107.56	92.0 75.38 : 105.98
Indeno(123cd)pyrene	TM218	78.0 70.26 : 117.95	97.0 65.91 : 113.61
Naphthalene	TM218	85.5 74.70 : 101.83	83.5 71.40 : 105.87
Phenanthrene	TM218	86.0 73.62 : 109.34	92.0 74.04 : 109.30
Pyrene	TM218	80.0 71.46 : 117.00	95.5 69.68 : 115.27

pH



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pH

Component	Method Code	QC 2387
pH	TM133	100.53 99.74 : 102.91

Phenols by HPLC (S)

Component	Method Code	QC 2397	QC 2369
2,3,5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	100.65 65.50 : 89.50	100.65 65.50 : 89.50
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	87.72 84.00 : 124.00	86.55 84.00 : 124.00
Catechol by HPLC (S)	TM062 (S)	92.38 19.39 : 135.70	81.9 19.39 : 135.70
Cresols by HPLC (S)	TM062 (S)	95.2 81.00 : 112.20	94.57 81.00 : 112.20
Naphthol by HPLC (S)	TM062 (S)	112.14 57.50 : 102.50	115.0 57.50 : 102.50
Phenol by HPLC (S)	TM062 (S)	99.34 88.67 : 124.67	99.34 88.67 : 124.67
Resorcinol HPLC (S)	TM062 (S)	94.34 69.99 : 127.22	95.6 69.99 : 127.22
Xylenols by HPLC (S)	TM062 (S)	99.58 95.22 : 115.89	99.69 95.22 : 115.89

Semi Volatile Organic Compounds

Component	Method Code	QC 2321
4-Bromophenylphenylether (Soil)	TM157	94.5 63.50 : 114.50
Benzo(a)anthracene (Soil)	TM157	95.5 71.89 : 120.91
Hexachlorobutadiene (Soil)	TM157	99.0 69.80 : 117.77
Naphthalene (Soil)	TM157	97.0 70.00 : 115.00
Nitrobenzene (Soil)	TM157	94.0 70.00 : 118.00
Phenol (Soil)	TM157	90.0 72.00 : 117.00

Total Organic Carbon

Component	Method Code	QC 2396
Total Organic Carbon	TM132	99.22 87.02 : 113.45

VOC MS (S)



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VOC MS (S)

Component	Method Code	QC 2362
1,1,1,2-tetrachloroethane	TM116	98.6 86.59 : 118.97
1,1,1-Trichloroethane	TM116	95.0 86.26 : 117.53
1,1,2-Trichloroethane	TM116	99.4 75.16 : 112.70
1,1-Dichloroethane	TM116	96.0 83.27 : 122.16
1,2-Dichloroethane	TM116	106.4 89.30 : 133.10
1,4-Dichlorobenzene	TM116	101.4 82.59 : 123.23
2-Chlorotoluene	TM116	95.6 66.81 : 118.43
4-Chlorotoluene	TM116	93.8 65.88 : 114.76
Benzene	TM116	99.2 93.16 : 123.63
Carbon Disulphide	TM116	99.4 75.11 : 124.81
Carbontetrachloride	TM116	99.8 82.35 : 126.46
Chlorobenzene	TM116	98.2 85.07 : 118.13
Chloroform	TM116	99.2 88.13 : 122.71
Chloromethane	TM116	126.8 55.37 : 133.35
Cis-1,2-Dichloroethene	TM116	99.0 78.27 : 128.90
Dibromomethane	TM116	90.0 77.47 : 121.29
Dichloromethane	TM116	107.2 87.89 : 134.72
Ethylbenzene	TM116	93.2 79.92 : 110.05
Hexachlorobutadiene	TM116	82.2 16.78 : 153.29
Isopropylbenzene	TM116	82.4 64.20 : 119.59
Naphthalene	TM116	103.4 79.29 : 125.59
o-Xylene	TM116	85.2 74.57 : 112.73
p/m-Xylene	TM116	91.9 76.47 : 108.99
Sec-Butylbenzene	TM116	85.4 44.71 : 117.87
Tetrachloroethene	TM116	105.6 85.86 : 122.95
Toluene	TM116	94.4 87.82 : 116.21
Trichloroethene	TM116	99.6 79.80 : 112.33



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VOC MS (S)

		QC 2362
Trichlorofluoromethane	TM116	109.2 80.52 : 132.12
Vinyl Chloride	TM116	104.8 68.07 : 137.84

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis .

The figure detailed is the percentage recovery result for the AQC .

The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control .



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Client Reference: JFR1451
Order Number:

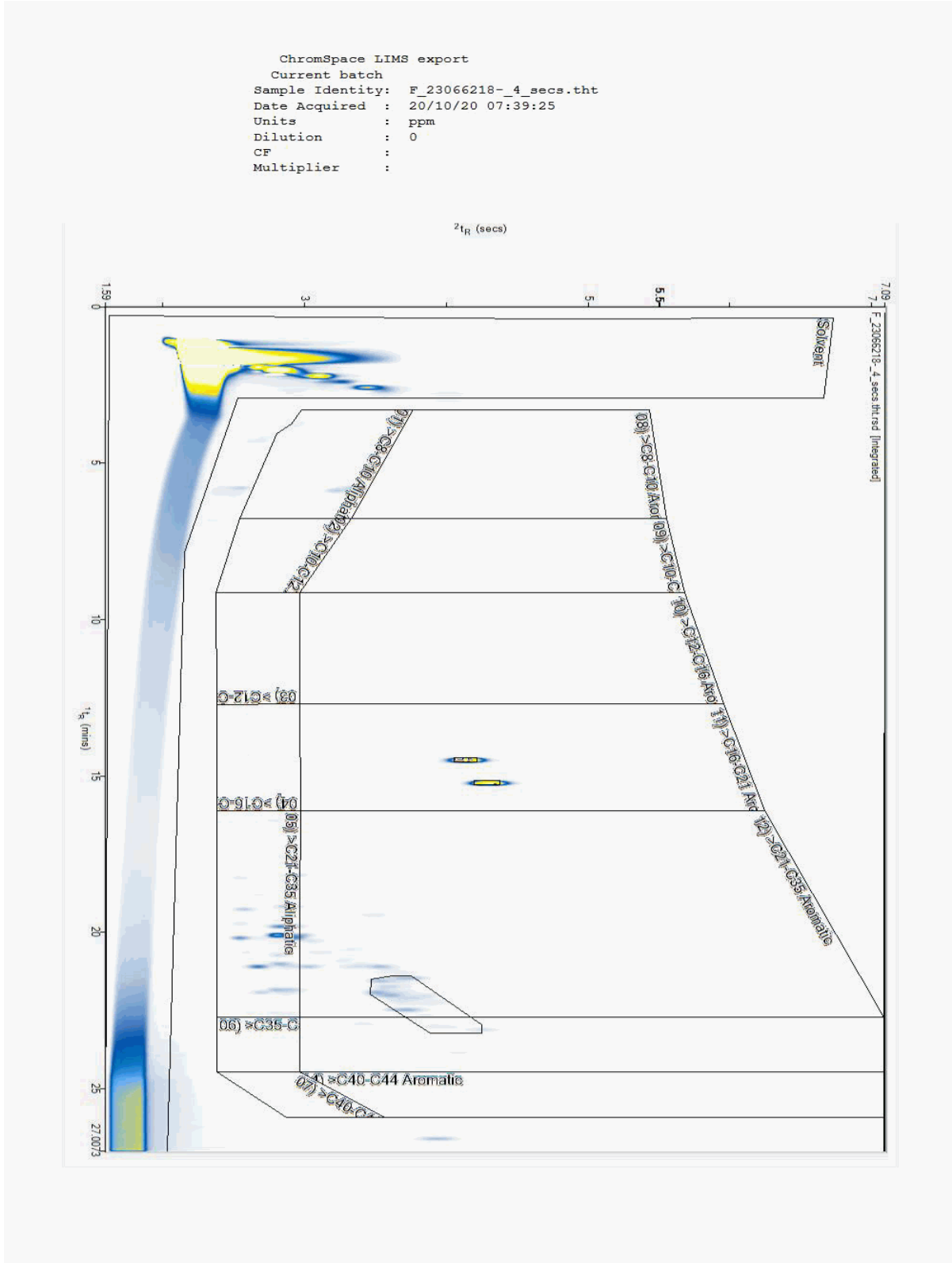
Report Number: 572605
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23066218
Sample ID : STP70602

Depth : 0.30





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Client Reference: JFR1451
Order Number:

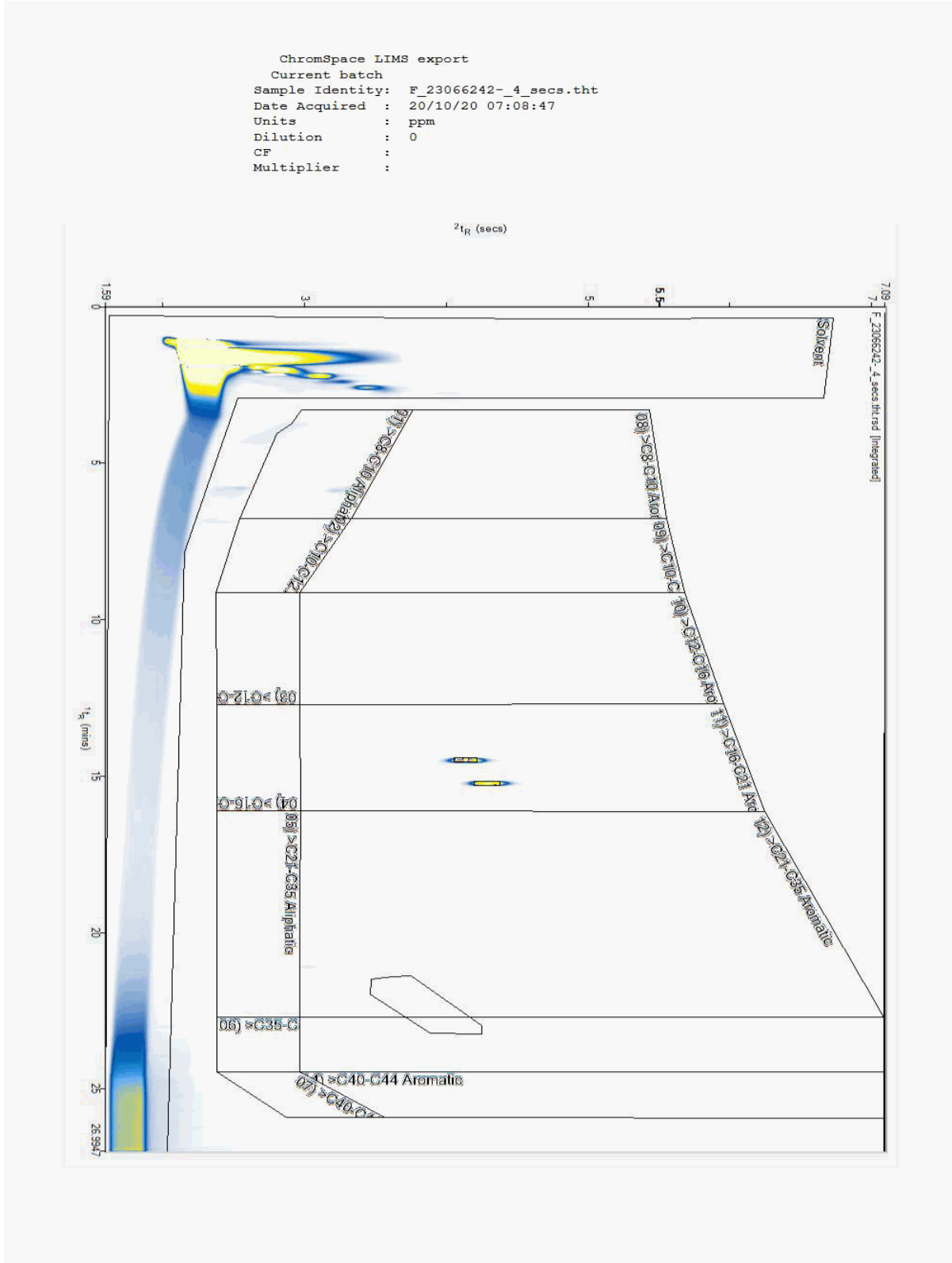
Report Number: 572605
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23066242
Sample ID : STP70602

Depth : 0.90





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Client Reference: JFR1451
Order Number:

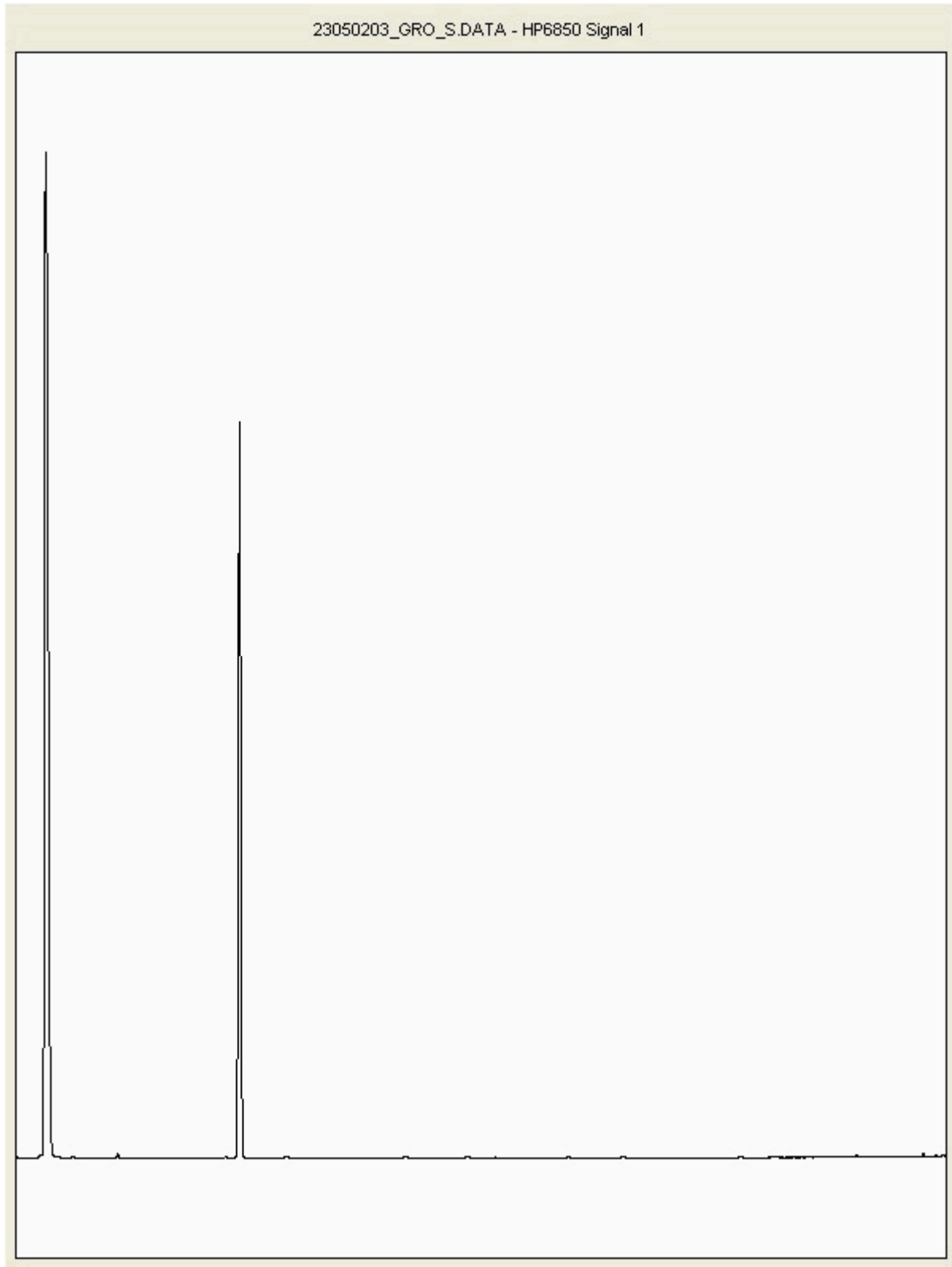
Report Number: 572605
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23050203
Sample ID : STP70602

Depth : 0.30





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Client Reference: JFR1451
Order Number:

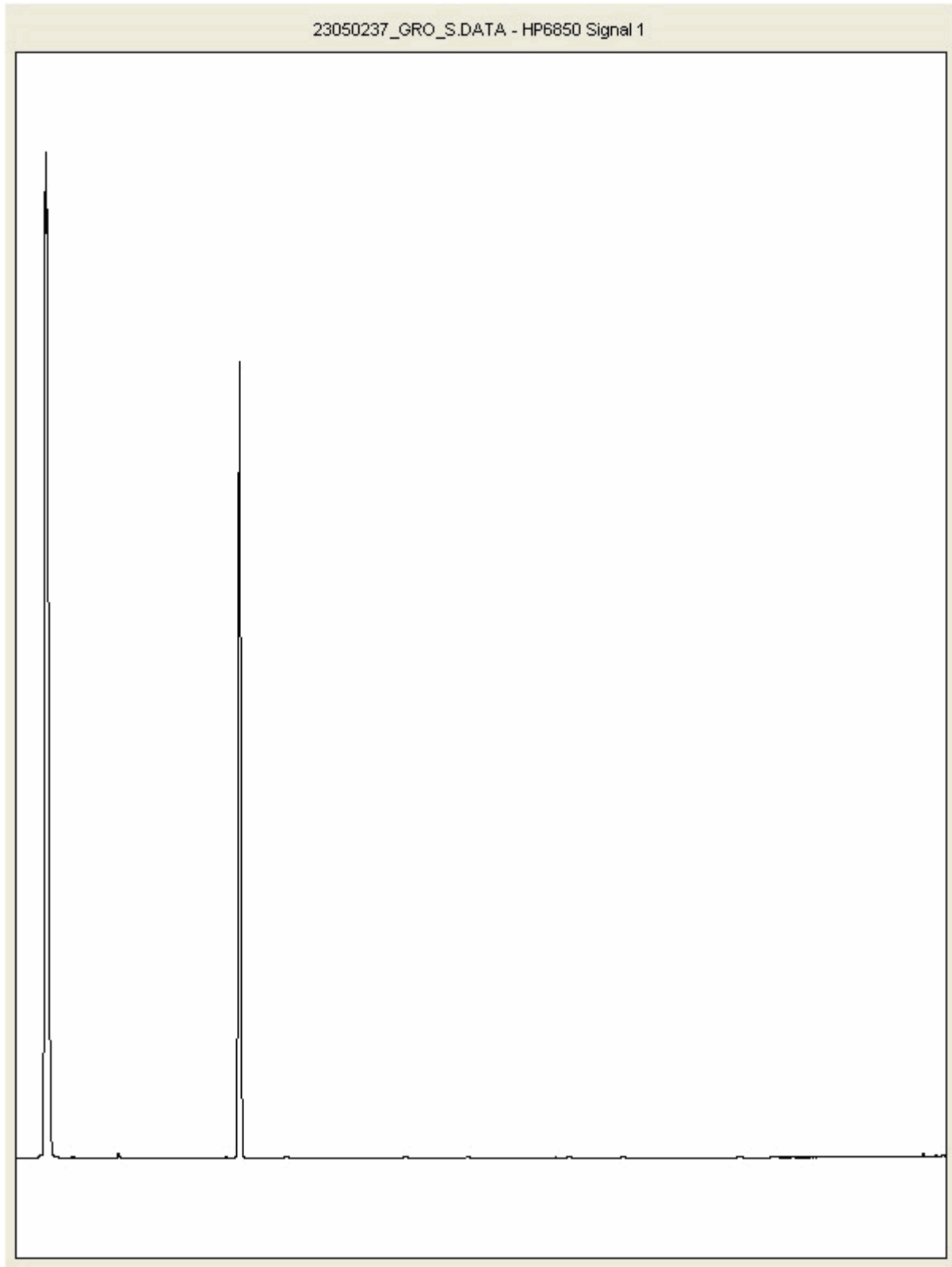
Report Number: 572605
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23050237
Sample ID : STP70602

Depth : 0.90





CERTIFICATE OF ANALYSIS

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Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

19. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung. Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017)*.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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RPS Consultants Ltd
260 Park Avenue
Aztec West
Almondsbury
Bristol
BS32 4SY

Attention: Gary Riches

CERTIFICATE OF ANALYSIS

Date of report Generation: 18 December 2020
Customer: RPS Consultants Ltd
Sample Delivery Group (SDG): 201011-1
Your Reference: JFR1451
Location: A303 Stonehenge
Report No: 580779

We received 4 samples on Saturday October 10, 2020 and 2 of these samples were scheduled for analysis which was completed on Friday December 18, 2020. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

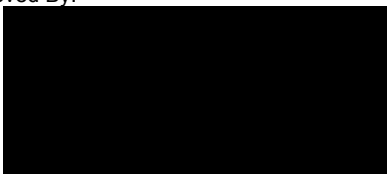
Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:



Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 201011-1 **Client Reference:** JFR1451 **Report Number:** 580779
Location: A303 Stonehenge **Order Number:** PQ20-951 **Superseded Report:**

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
23012201	R72006		0.00	08/10/2020
23012202	R72006		0.30	08/10/2020
23012203	R72006		0.50	08/10/2020
23012204	R72006		1.00	08/10/2020

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 201011-1 Client Reference: JFR1451 Report Number: 580779
 Location: A303 Stonehenge Order Number: PO20-951 Superseded Report:

Results Legend Test No Determination Possible Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other	Lab Sample No(s)	23012202		23012204			
	Customer Sample Reference	R72006		R72006			
	AGS Reference						
	Depth (m)	0.30		1.00			
	Container	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
	Sample Type	S	S	S	S	S	S
		All	NDPs: 0 Tests: 2				
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 2		X		X	
Ammonium Soil by Titration	All	NDPs: 0 Tests: 2			X		X
Anions by Kone (soil)	All	NDPs: 0 Tests: 2			X		X
Anions by Kone (w)	All	NDPs: 0 Tests: 2		X		X	
CEN Readings	All	NDPs: 0 Tests: 2		X		X	
Chromium III	All	NDPs: 0 Tests: 4		X	X	X	X
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 4		X	X	X	X
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 2		X		X	
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 2		X		X	
EPH CWG (Aliphatic) Filtered GC (W)	All	NDPs: 0 Tests: 2		X		X	
EPH CWG (Aromatic) Filtered GC (W)	All	NDPs: 0 Tests: 2		X		X	
EPH CWG GC (S)	All	NDPs: 0 Tests: 2			X		X
GRO by GC-FID (S)	All	NDPs: 0 Tests: 2				X	X
GRO by GC-FID (W)	All	NDPs: 0 Tests: 2		X		X	
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 2			X		X



CERTIFICATE OF ANALYSIS

Validated

SDG:	201011-1	Client Reference:	JFR1451	Report Number:	580779
Location:	A303 Stonehenge	Order Number:	PO20-951	Superseded Report:	

Results Legend <div style="display: flex; flex-direction: column; gap: 5px;"> <div style="display: flex; align-items: center;">X Test</div> <div style="display: flex; align-items: center;">N No Determination Possible</div> </div> Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type	
		23012202	R72006		0.30	60g VOC (ALEZ15) 1kg TUB with Handle (ALEZ80)	S
					1.00	60g VOC (ALEZ15) 250g Amber Jar (ALEZ10)	S
					0.30	60g VOC (ALEZ15) 1kg TUB with Handle (ALEZ80)	S
					1.00	60g VOC (ALEZ15) 250g Amber Jar (ALEZ10)	S
					0.30	60g VOC (ALEZ15) 1kg TUB with Handle (ALEZ80)	S
					1.00	60g VOC (ALEZ15) 250g Amber Jar (ALEZ10)	S
Hexavalent Chromium (w)	All				NDPs: 0 Tests: 2	X	
Mercury Dissolved	All				NDPs: 0 Tests: 2	X	
Metals in solid samples by OES	All				NDPs: 0 Tests: 2	X	
OC OP Pesticides and Triazine Herb	All				NDPs: 0 Tests: 1	X	
PAH by GCMS	All				NDPs: 0 Tests: 2	X	
PAH in waters by GC-MS (diss.filt)	All				NDPs: 0 Tests: 2	X	
pH	All				NDPs: 0 Tests: 2	X	
pH Value of Filtered Water	All				NDPs: 0 Tests: 2	X	
Phenols by HPLC (S)	All				NDPs: 0 Tests: 2	X	
Phenols by HPLC (W)	All				NDPs: 0 Tests: 2	X	
Sample description	All				NDPs: 0 Tests: 1	X	
Semi Volatile Organic Compounds	All				NDPs: 0 Tests: 1	X	
Total Organic Carbon	All				NDPs: 0 Tests: 2	X	
TPH CWG Filtered (W)	All				NDPs: 0 Tests: 2	X	
TPH CWG GC (S)	All				NDPs: 0 Tests: 2	X	



CERTIFICATE OF ANALYSIS

Validated

SDG:	201011-1	Client Reference:	JFR1451	Report Number:	580779
Location:	A303 Stonehenge	Order Number:	PO20-951	Superseded Report:	

Results Legend <div style="display: flex; align-items: center;"> <div style="border: 1px solid black; width: 15px; height: 15px; background-color: yellow; margin-right: 5px;"></div> Test </div> <div style="display: flex; align-items: center; margin-top: 5px;"> <div style="border: 1px solid black; width: 15px; height: 15px; background-color: red; color: white; margin-right: 5px;"></div> No Determination Possible </div> Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other	Lab Sample No(s)	23012202	23012204				
	Customer Sample Reference	R72006	R72006				
	AGS Reference						
	Depth (m)	0.30	1.00				
	Container	1kg TUB with Handle (ALE280)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE280)	250g Amber Jar (ALE210)	60g VOC (ALE215)
	Sample Type	S	S	S	S	S	S
	VOC MS (S)	All	NDPs: 0 Tests: 2		X		X



CERTIFICATE OF ANALYSIS

Validated

SDG: 201011-1
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PQ20-951

Report Number: 580779
Superseded Report:

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm
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Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
23012202	R72006	0.30	Light Brown	Loamy Sand	Stones	None
23012204	R72006	1.00	Cream	Chalk	None	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.



CERTIFICATE OF ANALYSIS

Validated

SDG:	201011-1	Client Reference:	JFR1451	Report Number:	580779
Location:	A303 Stonehenge	Order Number:	PO20-951	Superseded Report:	

#	ISO17025 accredited.	Customer Sample Ref.	R72006	R72006		
M	mCERTS accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.30	1.00		
aq	Aqueous / settled sample.		Soil/Solid (S)	Soil/Solid (S)		
diss.filt	Dissolved / filtered sample.		08/10/2020	08/10/2020		
tot.unfilt	Total / unfiltered sample.					
*	Subcontracted - refer to subcontractor report for accreditation status.					
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		10/10/2020	10/10/2020		
(F)	Trigger breach confirmed		201011-1	201011-1		
1-4*\$@	Sample deviation (see appendix)		23012202	23012204		
Component	LOD/Units	Method				
Moisture Content Ratio (% of as received sample)	%	PM024	7	11		
Exchangeable Ammonia as N	<12 mg/kg	TM024	<12 @ M	<12 @ #		
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 @ M	<0.01 @ #		
Organic Carbon, Total	<0.2 %	TM132	0.276 @ M	<0.2 @ #		
pH	1 pH Units	TM133	8.55 @ M	8.81 @ #		
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 @ #	<0.6 @ #		
Cyanide, Total	<1 mg/kg	TM153	<1 @ M	<1 @ #		
Cyanide, Free	<1 mg/kg	TM153	<1 @ M	<1 @ #		
Chromium, Trivalent	<0.9 mg/kg	TM181	2.62	2.06		
Antimony	<0.6 mg/kg	TM181	<0.6 #	1.56 #		
Arsenic	<0.6 mg/kg	TM181	<0.6 M	<0.6 #		
Beryllium	<0.01 mg/kg	TM181	0.104 M	0.0945 #		
Boron	<0.7 mg/kg	TM181	2.64 #	3.71 #		
Cadmium	<0.02 mg/kg	TM181	0.423 M	0.547 #		
Chromium	<0.9 mg/kg	TM181	2.62 M	2.06 #		
Copper	<1.4 mg/kg	TM181	1.74 M	2.45 #		
Iron	<1000 mg/kg	TM181	1430 #	<1000 #		
Lead	<0.7 mg/kg	TM181	1.19 M	2.53 #		
Manganese	<0.13 mg/kg	TM181	217 M	185 #		
Mercury	<0.14 mg/kg	TM181	<0.14 @ M	<0.14 @ #		
Molybdenum	<0.1 mg/kg	TM181	0.118 #	0.144 #		
Nickel	<0.2 mg/kg	TM181	2.09 M	1.75 #		
Phosphorus	<1 mg/kg	TM181	527	414		
Selenium	<1 mg/kg	TM181	<1 #	<1 #		
Zinc	<1.9 mg/kg	TM181	15.7 M	24.7 #		
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243	0.0969 @ M	1.28 @ #		



CERTIFICATE OF ANALYSIS

Validated

SDG: 201011-1
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PO20-951

Report Number: 580779
Superseded Report:

OC OP Pesticides and Triazine Herb

Results Legend # ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.fit Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4*\$@ Sample deviation (see appendix)		Customer Sample Ref. Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	R72006				
Component	LOD/Units	Method					
Dichlorvos	<50 µg/kg	TM073	<50				
Mevinphos	<50 µg/kg	TM073	<50				
Phorate	<50 µg/kg	TM073	<50				
alpha-Hexachlorocyclohexane (HCH)	<50 µg/kg	TM073	<50				
Diazinon	<50 µg/kg	TM073	<50				
gamma-Hexachlorocyclohexane (HCH / Lindane)	<50 µg/kg	TM073	<50				
Atrazine	<50 µg/kg	TM073	<50				
Simazine	<50 µg/kg	TM073	<50				
Disulfoton	<50 µg/kg	TM073	<50				
Heptachlor	<50 µg/kg	TM073	<50				
Aldrin	<50 µg/kg	TM073	<50				
beta-Hexachlorocyclohexane (HCH)	<50 µg/kg	TM073	<50				
Methyl parathion	<50 µg/kg	TM073	<50				
Malathion	<50 µg/kg	TM073	<50				
Fenitrothion	<50 µg/kg	TM073	<50				
Heptachlor epoxide	<50 µg/kg	TM073	<50				
Parathion	<50 µg/kg	TM073	<50				
Endosulphan I	<50 µg/kg	TM073	<50				
p,p-DDE	<50 µg/kg	TM073	<50				
Dieldrin	<50 µg/kg	TM073	<50				
o,p'-DDD (TDE)	<50 µg/kg	TM073	<50				
Endrin	<50 µg/kg	TM073	<50				
p,p-TDE (DDD)	<50 µg/kg	TM073	<50				
Ethion	<50 µg/kg	TM073	<50				
Endosulphan II	<50 µg/kg	TM073	<50				
p,p-DDT	<50 µg/kg	TM073	<50				
p,p-Methoxychlor	<50 µg/kg	TM073	<50				
Endosulphan sulphate	<50 µg/kg	TM073	<50				
Azinphos-methyl	<50 µg/kg	TM073	<50				



CERTIFICATE OF ANALYSIS

Validated

SDG: 201011-1
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PO20-951

Report Number: 580779
Superseded Report:

PAH by GCMS

Results Legend		Customer Sample Ref.	R72006	R72006			
#	ISO17025 accredited.						
M	mCERTS accredited.						
aq	Aqueous / settled sample.						
diss.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.						
*	Subcontracted - refer to subcontractor report for accreditation status.						
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery						
(F)	Trigger breach confirmed						
1-4*\$@	Sample deviation (see appendix)						
		Depth (m)	0.30	1.00			
		Sample Type	Soil/Solid (S)	Soil/Solid (S)			
		Date Sampled	08/10/2020	08/10/2020			
		Sampled Time					
		Date Received	10/10/2020	10/10/2020			
		SDG Ref	201011-1	201011-1			
		Lab Sample No.(s)	23012202	23012204			
		AGS Reference					
Component	LOD/Units	Method					
Naphthalene-d8 % recovery**	%	TM218	81.2	82.2			
Acenaphthene-d10 % recovery**	%	TM218	81.3	82.8			
Phenanthrene-d10 % recovery**	%	TM218	81.8	86.6			
Chrysene-d12 % recovery**	%	TM218	78.1	84.2			
Perylene-d12 % recovery**	%	TM218	80.3	83.3			
Naphthalene	<9 µg/kg	TM218	<9 @ M	<9 @ #			
Acenaphthylene	<12 µg/kg	TM218	<12 @ M	<12 @ #			
Acenaphthene	<8 µg/kg	TM218	<8 @ M	<8 @ #			
Fluorene	<10 µg/kg	TM218	<10 @ M	<10 @ #			
Phenanthrene	<15 µg/kg	TM218	<15 @ M	<15 @ #			
Anthracene	<16 µg/kg	TM218	<16 @ M	<16 @ #			
Fluoranthene	<17 µg/kg	TM218	<17 @ M	<17 @ #			
Pyrene	<15 µg/kg	TM218	<15 @ M	<15 @ #			
Benz(a)anthracene	<14 µg/kg	TM218	<14 @ M	<14 @ #			
Chrysene	<10 µg/kg	TM218	<10 @ M	<10 @ #			
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 @ M	<15 @ #			
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 @ M	<14 @ #			
Benzo(a)pyrene	<15 µg/kg	TM218	<15 @ M	<15 @ #			
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 @ M	<18 @ #			
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 @ M	<23 @ #			
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 @ M	<24 @ #			
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118			



CERTIFICATE OF ANALYSIS

Validated

SDG: 201011-1
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PO20-951

Report Number: 580779
Superseded Report:

Semi Volatile Organic Compounds

Results Legend # ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.fit Dissolved / filtered sample. tot.unfit Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4*8@ Sample deviation (see appendix)		Customer Sample Ref. Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	R72006				
Component	LOD/Units	Method					
Phenol	<100 µg/kg	TM157	<100				
Pentachlorophenol	<100 µg/kg	TM157	<100				
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100				
Nitrobenzene	<100 µg/kg	TM157	<100				
Isophorone	<100 µg/kg	TM157	<100				
Hexachloroethane	<100 µg/kg	TM157	<100				
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<200				
Hexachlorobutadiene	<100 µg/kg	TM157	<100				
Hexachlorobenzene	<100 µg/kg	TM157	<100				
n-Dioctyl phthalate	<100 µg/kg	TM157	<100				
Dimethyl phthalate	<100 µg/kg	TM157	<100				
Diethyl phthalate	<100 µg/kg	TM157	<100				
n-Dibutyl phthalate	<100 µg/kg	TM157	<100				
Dibenzofuran	<100 µg/kg	TM157	<100				
Carbazole	<100 µg/kg	TM157	<100				
Butylbenzyl phthalate	<100 µg/kg	TM157	<100				
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100				
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100				
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100				
Azobenzene	<100 µg/kg	TM157	<100				
4-Nitrophenol	<100 µg/kg	TM157	<100				
4-Nitroaniline	<100 µg/kg	TM157	<100				
4-Methylphenol	<100 µg/kg	TM157	<100				
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100				
4-Chloroaniline	<100 µg/kg	TM157	<100				
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100				
4-Bromophenylphenylether	<100 µg/kg	TM157	<100				
3-Nitroaniline	<100 µg/kg	TM157	<100				
2-Nitrophenol	<100 µg/kg	TM157	<100				
2-Nitroaniline	<100 µg/kg	TM157	<100				
2-Methylphenol	<100 µg/kg	TM157	<100				
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100				



CERTIFICATE OF ANALYSIS

Validated

SDG: 201011-1
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PQ20-951

Report Number: 580779
Superseded Report:

Semi Volatile Organic Compounds

Results Legend		Customer Sample Ref.	R72006				
# ISO17025 accredited.							
M mCERTS accredited.							
aq Aqueous / filtered sample.							
dis.filt Dissolved / filtered sample.							
tot.unfilt Total / unfiltered sample.							
* Subcontracted - refer to subcontractor report for accreditation status.							
** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery							
(F) Trigger breach confirmed							
1.4.4.6@ Sample deviation (see appendix)							
		Depth (m)	0.30				
		Sample Type	Soil/Solid (S)				
		Date Sampled	08/10/2020				
		Sampled Time					
		Date Received	10/10/2020				
		SDG Ref	201011-1				
		Lab Sample No.(s)	23012202				
		AGS Reference					
Component	LOD/Units	Method					
2-Chlorophenol	<100 µg/kg	TM157	<100				
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100				
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100				
2,4-Dimethylphenol	<100 µg/kg	TM157	<100				
2,4-Dichlorophenol	<100 µg/kg	TM157	<100				
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100				
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100				
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100				
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100				
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100				
2-Chloronaphthalene	<100 µg/kg	TM157	<100				
2-Methylnaphthalene	<100 µg/kg	TM157	<100				
Acenaphthylene	<100 µg/kg	TM157	<100				
Acenaphthene	<100 µg/kg	TM157	<100				
Anthracene	<100 µg/kg	TM157	<100				
Benzo(a)anthracene	<100 µg/kg	TM157	<100				
Benzo(b)fluoranthene	<100 µg/kg	TM157	<100				
Benzo(k)fluoranthene	<100 µg/kg	TM157	<100				
Benzo(a)pyrene	<100 µg/kg	TM157	<100				
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<100				
Chrysene	<100 µg/kg	TM157	<100				
Fluoranthene	<100 µg/kg	TM157	<100				
Fluorene	<100 µg/kg	TM157	<100				
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<100				
Phenanthrene	<100 µg/kg	TM157	<100				
Pyrene	<100 µg/kg	TM157	<100				
Naphthalene	<100 µg/kg	TM157	<100				
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100				
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100				
TIC report		TM157	Not Detected				
Total SVOC TIC	<100 µg/kg	TM157	<1000				



CERTIFICATE OF ANALYSIS

Validated

SDG: 201011-1
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PO20-951

Report Number: 580779
Superseded Report:

TPH CWG (S)

Results Legend		Customer Sample Ref.	R72006	R72006			
# ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.30	1.00			
M mCERTS accredited.			Soil/Solid (S)	Soil/Solid (S)			
aq Aqueous / settled sample.			08/10/2020	08/10/2020			
diss.filt Dissolved / filtered sample.			10/10/2020	10/10/2020			
tot.unfilt Total / unfiltered sample.			201011-1	201011-1			
* Subcontracted - refer to subcontractor report for accreditation status.			23012202	23012204			
** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery							
(F) Trigger breach confirmed							
1-4*\$@ Sample deviation (see appendix)							
Component	LOD/Units		Method				
GRO Surrogate % recovery**	%	TM089	107	121			
			@	@			
Aliphatics >C5-C6	<10 µg/kg	TM089	<10	<10			
			@	@			
Aliphatics >C6-C8	<10 µg/kg	TM089	<10	<10			
			@	@			
Aliphatics >C8-C10	<10 µg/kg	TM089	<10	<10			
			@	@			
Aliphatics >C10-C12	<1000 µg/kg	TM414	<1000	<1000			
Aliphatics >C12-C16	<1000 µg/kg	TM414	<1000	<1000			
Aliphatics >C16-C21	<1000 µg/kg	TM414	<1000	<1000			
Aliphatics >C21-C35	<1000 µg/kg	TM414	1530	<1000			
Aliphatics >C35-C44	<1000 µg/kg	TM414	<1000	<1000			
Total Aliphatics >C10-C44	<5000 µg/kg	TM414	<5000	<5000			
Total Aliphatics & Aromatics >C10-C44	<10000 µg/kg	TM414	<10000	<10000			
Aromatics >EC5-EC7	<10 µg/kg	TM089	<10	<10			
			@	@			
Aromatics >EC7-EC8	<10 µg/kg	TM089	<10	<10			
			@	@			
Aromatics >EC8-EC10	<10 µg/kg	TM089	<10	<10			
			@	@			
Aromatics > EC10-EC12	<1000 µg/kg	TM414	<1000	<1000			
Aromatics > EC12-EC16	<1000 µg/kg	TM414	<1000	<1000			
Aromatics > EC16-EC21	<1000 µg/kg	TM414	<1000	<1000			
Aromatics > EC21-EC35	<1000 µg/kg	TM414	<1000	<1000			
Aromatics >EC35-EC44	<1000 µg/kg	TM414	<1000	<1000			
Aromatics > EC40-EC44	<1000 µg/kg	TM414	<1000	<1000			
Total Aromatics > EC10-EC44	<5000 µg/kg	TM414	<5000	<5000			
Total Aliphatics & Aromatics >C5-C44	<10000 µg/kg	TM414	<10000	<10000			
Total Aliphatics >C5-C10	<50 µg/kg	TM089	<50	<50			
			@	@			
Total Aromatics >EC5-EC10	<50 µg/kg	TM089	<50	<50			
			@	@			
GRO >C5-C10	<20 µg/kg	TM089	<20	<20			
			@	@			



CERTIFICATE OF ANALYSIS

Validated

SDG: 201011-1
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PO20-951

Report Number: 580779
Superseded Report:

VOC MS (S)

Results Legend		Customer Sample Ref.	R72006	R72006			
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.30	1.00			
M	mCERTS accredited.		Soil/Solid (S)	Soil/Solid (S)			
aq	Aqueous / settled sample.		08/10/2020	08/10/2020			
diss.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.		10/10/2020	10/10/2020			
*	Subcontracted - refer to subcontractor report for accreditation status.		201011-1	201011-1			
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		23012202	23012204			
(F)	Trigger breach confirmed						
1-4*\$@	Sample deviation (see appendix)						
Component	LOD/Units		Method				
Dibromofluoromethane**	%	TM116	119 @	112 @			
Toluene-d8**	%	TM116	109 @	104 @			
4-Bromofluorobenzene**	%	TM116	89.6 @	87.8 @			
Dichlorodifluoromethane	<6 µg/kg	TM116	<6 @ M				
Chloromethane	<7 µg/kg	TM116	<7 @ #				
Vinyl Chloride	<6 µg/kg	TM116	<6 @ M				
Bromomethane	<10 µg/kg	TM116	<10 @ M				
Chloroethane	<10 µg/kg	TM116	<10 @ M				
Trichlorofluoromethane	<6 µg/kg	TM116	<6 @ M				
1,1-Dichloroethene	<10 µg/kg	TM116	<10 @ #				
Carbon Disulphide	<7 µg/kg	TM116	<7 @ M				
Dichloromethane	<10 µg/kg	TM116	<10 @ #				
Methyl Tertiary Butyl Ether	<10 µg/kg	TM116	<10 @ M	<10 @ #			
trans-1,2-Dichloroethene	<10 µg/kg	TM116	<10 @ M				
1,1-Dichloroethane	<8 µg/kg	TM116	<8 @ M				
cis-1,2-Dichloroethene	<6 µg/kg	TM116	<6 @ M				
2,2-Dichloropropane	<10 µg/kg	TM116	<10 @				
Bromochloromethane	<10 µg/kg	TM116	<10 @ M				
Chloroform	<8 µg/kg	TM116	<8 @ M				
1,1,1-Trichloroethane	<7 µg/kg	TM116	<7 @ M				
1,1-Dichloropropene	<10 µg/kg	TM116	<10 @ M				
Carbontetrachloride	<10 µg/kg	TM116	<10 @ M				
1,2-Dichloroethane	<5 µg/kg	TM116	<5 @ M				
Benzene	<9 µg/kg	TM116	<9 @ M	<9 @ #			
Trichloroethene	<9 µg/kg	TM116	<9 @ #				
1,2-Dichloropropane	<10 µg/kg	TM116	<10 @ M				
Dibromomethane	<9 µg/kg	TM116	<9 @ M				
Bromodichloromethane	<7 µg/kg	TM116	<7 @ M				
cis-1,3-Dichloropropene	<10 µg/kg	TM116	<10 @ M				
Toluene	<7 µg/kg	TM116	<7 @ M	<7 @ #			
trans-1,3-Dichloropropene	<10 µg/kg	TM116	<10 @				
1,1,2-Trichloroethane	<10 µg/kg	TM116	<10 @ M				



CERTIFICATE OF ANALYSIS

Validated

SDG: 201011-1
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PO20-951

Report Number: 580779
Superseded Report:

VOC MS (S)

Results Legend			Customer Sample Ref.	R72006	R72006			
# ISO17025 accredited. M mCERTS accredited. sq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery. (F) Trigger breach confirmed 1-4# @ Sample deviation (see appendix)	Depth (m)		0.30	1.00				
	Sample Type		Soil/Solid (S)	Soil/Solid (S)				
	Date Sampled		08/10/2020	08/10/2020				
	Sampled Time		.	.				
	Date Received		10/10/2020	10/10/2020				
	SDG Ref		201011-1	201011-1				
	Lab Sample No.(s)		23012202	23012204				
	AGS Reference							
Component	LOD/Units	Method						
1,3-Dichloropropane	<7 µg/kg	TM116	<7					
			@ M					
Tetrachloroethene	<5 µg/kg	TM116	<5					
			@ M					
Dibromochloromethane	<10 µg/kg	TM116	<10					
			@ M					
1,2-Dibromoethane	<10 µg/kg	TM116	<10					
			@ M					
Chlorobenzene	<5 µg/kg	TM116	<5					
			@ M					
1,1,1,2-Tetrachloroethane	<10 µg/kg	TM116	<10					
			@ M					
Ethylbenzene	<4 µg/kg	TM116	<4	<4				
			@ M	@ #				
p/m-Xylene	<10 µg/kg	TM116	<10	<10				
			@ #	@ #				
o-Xylene	<10 µg/kg	TM116	<10	<10				
			@ M	@ #				
Styrene	<10 µg/kg	TM116	<10					
			@ #					
Bromoform	<10 µg/kg	TM116	<10					
			@ M					
Isopropylbenzene	<5 µg/kg	TM116	<5					
			@ #					
1,1,2,2-Tetrachloroethane	<10 µg/kg	TM116	<10					
			@ #					
1,2,3-Trichloropropane	<16 µg/kg	TM116	<16					
			@ M					
Bromobenzene	<10 µg/kg	TM116	<10					
			@ M					
Propylbenzene	<10 µg/kg	TM116	<10					
			@ M					
2-Chlorotoluene	<9 µg/kg	TM116	<9					
			@ M					
1,3,5-Trimethylbenzene	<8 µg/kg	TM116	<8					
			@ M					
4-Chlorotoluene	<10 µg/kg	TM116	<10					
			@ M					
tert-Butylbenzene	<14 µg/kg	TM116	<14					
			@ M					
1,2,4-Trimethylbenzene	<9 µg/kg	TM116	<9					
			@ #					
sec-Butylbenzene	<10 µg/kg	TM116	<10					
			@					
4-Isopropyltoluene	<10 µg/kg	TM116	<10					
			@ M					
1,3-Dichlorobenzene	<8 µg/kg	TM116	<8					
			@ M					
1,4-Dichlorobenzene	<5 µg/kg	TM116	<5					
			@ M					
n-Butylbenzene	<11 µg/kg	TM116	<11					
			@					
1,2-Dichlorobenzene	<10 µg/kg	TM116	<10					
			@ M					
1,2-Dibromo-3-chloropropane	<14 µg/kg	TM116	<14					
			@ M					
Tert-amyl methyl ether	<10 µg/kg	TM116	<10					
			@ #					
1,2,4-Trichlorobenzene	<20 µg/kg	TM116	<20					
			@					
Hexachlorobutadiene	<20 µg/kg	TM116	<20					
			@					
Naphthalene	<13 µg/kg	TM116	<13					
			@ M					



CERTIFICATE OF ANALYSIS

Validated

SDG: 201011-1
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PO20-951

Report Number: 580779
Superseded Report:

CEN 2:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/

Client Reference		Site Location	A303 Stonehenge
Mass Sample taken (kg)	0.222	Natural Moisture Content (%)	26.4
Mass of dry sample (kg)	0.175	Dry Matter Content (%)	79.1
Particle Size <4mm	>95%		

Case	
SDG	201011-1
Lab Sample Number(s)	23012202
Sampled Date	08-Oct-2020
Customer Sample Ref.	R72006
Depth (m)	0.30

Eluate Analysis	Conc ⁿ in 2:1 eluate (mg/l)		2:1 conc ⁿ leached (mg/kg)	
	Result	Limit of Detection	Result	Limit of Detection
Aliphatics >C12-C16	<0.01	<0.01	<0.02	<0.02
Aliphatics >C16-C21	<0.01	<0.01	<0.02	<0.02
Aliphatics >C21-C35	<0.01	<0.01	<0.02	<0.02
Total Aliphatics >C12-C35	<0.01	<0.01	<0.02	<0.02
Aromatics >EC12-EC16	<0.01	<0.01	<0.02	<0.02
Aromatics >EC16-EC21	<0.01	<0.01	<0.02	<0.02
Aromatics >EC21-EC35	<0.01	<0.01	<0.02	<0.02
Aromatics >EC16-EC35	<0.01	<0.01	<0.02	<0.02
Total Aromatics >EC12-EC35	<0.01	<0.01	<0.02	<0.02
TPH (Total Aliphatics + Total Aromatics) >C5-C35	<0.01	<0.01	<0.02	<0.02
Ammoniacal Nitrogen as N	<0.2	<0.2	<0.4	<0.4
Chromium III	<0.03	<0.03	<0.06	<0.06
Hexavalent Chromium	<0.03	<0.03	<0.06	<0.06
Sulphate (soluble)	9.2	<2	18.4	<4
Dissolved Organic Carbon	5.4	<3	10.8	<6
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.00002	<0.00002
Antimony	<0.001	<0.001	<0.002	<0.002
Naphthalene (diss.filt)	<0.00001	<0.00001	<0.00002	<0.00002
Total Cyanide (W)	<0.05	<0.05	<0.1	<0.1
Acenaphthene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Arsenic	<0.0005	<0.0005	<0.001	<0.001
Free Cyanide (W)	<0.05	<0.05	<0.1	<0.1
Acenaphthylene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Phenol by HPLC (W)	<0.002	<0.002	<0.004	<0.004
Beryllium	<0.0001	<0.0001	<0.0002	<0.0002
Fluoranthene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Anthracene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Boron	0.012	<0.01	0.024	<0.02
Phenanthrene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Cadmium	<0.00008	<0.00008	<0.00016	<0.00016
Fluorene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Chrysene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Pyrene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Benzo(a)anthracene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Chromium	<0.001	<0.001	<0.002	<0.002

Leach Test Information

Date Prepared	12-Dec-2020
pH (pH Units)	8.00
Conductivity (µS/cm)	150.00
Temperature (°C)	21.60
Volume Leachant (Litres)	0.303
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates

18/12/2020 15:39:12

15:38:56 18/12/2020



CERTIFICATE OF ANALYSIS

Validated

SDG: 201011-1
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PO20-951

Report Number: 580779
Superseded Report:

CEN 2:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/'

Client Reference	
Mass Sample taken (kg)	0.222
Mass of dry sample (kg)	0.175
Particle Size <4mm	>95%

Site Location	A303 Stonehenge
Natural Moisture Content (%)	26.4
Dry Matter Content (%)	79.1

Case	
SDG	201011-1
Lab Sample Number(s)	23012202
Sampled Date	08-Oct-2020
Customer Sample Ref.	R72006
Depth (m)	0.30

Eluate Analysis	Conc ⁿ in 2:1 eluate (mg/l)		2:1 conc ⁿ leached (mg/kg)	
	Result	Limit of Detection	Result	Limit of Detection
Benzo(b)fluoranthene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Benzo(k)fluoranthene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Benzo(a)pyrene (diss.filt)	<0.000002	<0.000002	<0.000004	<0.000004
Copper	0.00221	<0.0003	0.00442	<0.0006
Dibenzo(a,h)anthracene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Lead	<0.0002	<0.0002	<0.0004	<0.0004
Benzo(g,h,i)perylene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Indeno(1,2,3-cd)pyrene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Manganese	<0.003	<0.003	<0.006	<0.006
Molybdenum	<0.003	<0.003	<0.006	<0.006
PAH 16 EPA Total by GCMS (diss.filt)	<0.000082	<0.000082	<0.000164	<0.000164
Nickel	0.00068	<0.0004	0.00136	<0.0008
Phosphorus	0.0412	<0.01	0.0824	<0.02
Selenium	<0.001	<0.001	<0.002	<0.002
Zinc	0.00192	<0.001	0.00384	<0.002
Calcium (Dis.Filt) mg/l	29.7	<0.2	59.4	<0.4
Iron (Dis.Filt) mg/l	<0.019	<0.019	<0.038	<0.038
TPH CWG (W)				
Surrogate Recovery	-	-	-	-
GRO TOT (C5-C12)	<0.05	<0.05	<0.1	<0.1
Aliphatics C5-C6	<0.01	<0.01	<0.02	<0.02
Aliphatics >C6-C8	<0.01	<0.01	<0.02	<0.02
Aliphatics >C8-C10	<0.01	<0.01	<0.02	<0.02
Aliphatics >C10-C12	<0.01	<0.01	<0.02	<0.02
Aromatics C6-C7	<0.01	<0.01	<0.02	<0.02
Aromatics >C7-C8	<0.01	<0.01	<0.02	<0.02
MTBE GC-FID	<0.003	<0.003	<0.006	<0.006
Aromatics >EC8 -EC10	<0.01	<0.01	<0.02	<0.02
Aromatics >EC10-EC12	<0.01	<0.01	<0.02	<0.02
Benzene by GC	<0.007	<0.007	<0.014	<0.014
Toluene by GC	<0.004	<0.004	<0.008	<0.008
Ethylbenzene by GC	<0.005	<0.005	<0.01	<0.01
m & p Xylene by GC	<0.008	<0.008	<0.016	<0.016
o Xylene by GC	<0.003	<0.003	<0.006	<0.006
Sum m&p and o Xylene by GC	<0.011	<0.011	<0.022	<0.022
Sum of BTEX by GC	<0.028	<0.028	<0.056	<0.056

Leach Test Information

Date Prepared	12-Dec-2020
pH (pH Units)	8.00
Conductivity (µS/cm)	150.00
Temperature (°C)	21.60
Volume Leachant (Litres)	0.303
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates

18/12/2020 15:39:12



CERTIFICATE OF ANALYSIS

Validated

SDG: 201011-1
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PO20-951

Report Number: 580779
Superseded Report:

CEN 2:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/

Client Reference	
Mass Sample taken (kg)	0.222
Mass of dry sample (kg)	0.175
Particle Size <4mm	>95%

Site Location	A303 Stonehenge
Natural Moisture Content (%)	26.9
Dry Matter Content (%)	78.8

Case	
SDG	201011-1
Lab Sample Number(s)	23012204
Sampled Date	08-Oct-2020
Customer Sample Ref.	R72006
Depth (m)	1.00

Eluate Analysis	Conc ⁿ in 2:1 eluate (mg/l)		2:1 conc ⁿ leached (mg/kg)	
	Result	Limit of Detection	Result	Limit of Detection
Aliphatics >C12-C16	<0.01	<0.01	<0.02	<0.02
Aliphatics >C16-C21	<0.01	<0.01	<0.02	<0.02
Aliphatics >C21-C35	<0.01	<0.01	<0.02	<0.02
Total Aliphatics >C12-C35	<0.01	<0.01	<0.02	<0.02
Aromatics >EC12-EC16	<0.01	<0.01	<0.02	<0.02
Aromatics >EC16-EC21	<0.01	<0.01	<0.02	<0.02
Aromatics >EC21-EC35	<0.01	<0.01	<0.02	<0.02
Aromatics >EC16-EC35	<0.01	<0.01	<0.02	<0.02
Total Aromatics >EC12-EC35	<0.01	<0.01	<0.02	<0.02
TPH (Total Aliphatics + Total Aromatics) >C5-C35	<0.01	<0.01	<0.02	<0.02
Ammoniacal Nitrogen as N	<0.2	<0.2	<0.4	<0.4
Chromium III	<0.03	<0.03	<0.06	<0.06
Hexavalent Chromium	<0.03	<0.03	<0.06	<0.06
Sulphate (soluble)	<2	<2	<4	<4
Dissolved Organic Carbon	4.16	<3	8.32	<6
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.00002	<0.00002
Antimony	<0.001	<0.001	<0.002	<0.002
Naphthalene (diss.filt)	<0.00001	<0.00001	<0.00002	<0.00002
Total Cyanide (W)	<0.05	<0.05	<0.1	<0.1
Acenaphthene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Arsenic	<0.0005	<0.0005	<0.001	<0.001
Free Cyanide (W)	<0.05	<0.05	<0.1	<0.1
Acenaphthylene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Phenol by HPLC (W)	<0.002	<0.002	<0.004	<0.004
Beryllium	<0.0001	<0.0001	<0.0002	<0.0002
Fluoranthene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Anthracene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Boron	<0.01	<0.01	<0.02	<0.02
Phenanthrene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Cadmium	<0.00008	<0.00008	<0.00016	<0.00016
Fluorene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Chrysene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Pyrene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Benzo(a)anthracene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Chromium	<0.001	<0.001	<0.002	<0.002

Leach Test Information

Date Prepared	12-Dec-2020
pH (pH Units)	8.58
Conductivity (µS/cm)	83.70
Temperature (°C)	21.30
Volume Leachant (Litres)	0.303
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates

18/12/2020 15:39:12



CERTIFICATE OF ANALYSIS

Validated

SDG:	201011-1	Client Reference:	JFR1451	Report Number:	580779
Location:	A303 Stonehenge	Order Number:	PO20-951	Superseded Report:	

CEN 2:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/'

Client Reference		Site Location	A303 Stonehenge
Mass Sample taken (kg)	0.222	Natural Moisture Content (%)	26.9
Mass of dry sample (kg)	0.175	Dry Matter Content (%)	78.8
Particle Size <4mm	>95%		

Case	
SDG	201011-1
Lab Sample Number(s)	23012204
Sampled Date	08-Oct-2020
Customer Sample Ref.	R72006
Depth (m)	1.00

Eluate Analysis	Conc ⁿ in 2:1 eluate (mg/l)		2:1 conc ⁿ leached (mg/kg)	
	Result	Limit of Detection	Result	Limit of Detection
Benzo(b)fluoranthene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Benzo(k)fluoranthene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Benzo(a)pyrene (diss.filt)	<0.000002	<0.000002	<0.000004	<0.000004
Copper	0.000896	<0.0003	0.00179	<0.0006
Dibenzo(a,h)anthracene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Lead	<0.0002	<0.0002	<0.0004	<0.0004
Benzo(g,h,i)perylene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Indeno(1,2,3-cd)pyrene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Manganese	<0.003	<0.003	<0.006	<0.006
Molybdenum	<0.003	<0.003	<0.006	<0.006
PAH 16 EPA Total by GCMS (diss.filt)	<0.000082	<0.000082	<0.000164	<0.000164
Nickel	0.00042	<0.0004	0.00084	<0.0008
Phosphorus	0.022	<0.01	0.044	<0.02
Selenium	<0.001	<0.001	<0.002	<0.002
Zinc	0.00243	<0.001	0.00486	<0.002
Calcium (Dis.Filt) mg/l	15.2	<0.2	30.4	<0.4
Iron (Dis.Filt) mg/l	<0.019	<0.019	<0.038	<0.038
TPH CWG (W)				
Surrogate Recovery	-	-	-	-
GRO TOT (C5-C12)	<0.05	<0.05	<0.1	<0.1
Aliphatics C5-C6	<0.01	<0.01	<0.02	<0.02
Aliphatics >C6-C8	<0.01	<0.01	<0.02	<0.02
Aliphatics >C8-C10	<0.01	<0.01	<0.02	<0.02
Aliphatics >C10-C12	<0.01	<0.01	<0.02	<0.02
Aromatics C6-C7	<0.01	<0.01	<0.02	<0.02
Aromatics >C7-C8	<0.01	<0.01	<0.02	<0.02
MTBE GC-FID	<0.003	<0.003	<0.006	<0.006
Aromatics >EC8 -EC10	<0.01	<0.01	<0.02	<0.02
Aromatics >EC10-EC12	<0.01	<0.01	<0.02	<0.02
Benzene by GC	<0.007	<0.007	<0.014	<0.014
Toluene by GC	<0.004	<0.004	<0.008	<0.008
Ethylbenzene by GC	<0.005	<0.005	<0.01	<0.01
m & p Xylene by GC	<0.008	<0.008	<0.016	<0.016
o Xylene by GC	<0.003	<0.003	<0.006	<0.006
Sum m&p and o Xylene by GC	<0.011	<0.011	<0.022	<0.022
Sum of BTEX by GC	<0.028	<0.028	<0.056	<0.056

Leach Test Information

Date Prepared	12-Dec-2020
pH (pH Units)	8.58
Conductivity (µS/cm)	83.70
Temperature (°C)	21.30
Volume Leachant (Litres)	0.303
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
 Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
 Mcerts Certification does not apply to leachates

18/12/2020 15:39:12



CERTIFICATE OF ANALYSIS

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SDG:	201011-1	Client Reference:	JFR1451	Report Number:	580779
Location:	A303 Stonehenge	Order Number:	PO20-951	Superseded Report:	

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM073	MEWAM BOOK 60 1980,95 1985, HMSO / Modified: US EPA Method 8081A & 8141A	Determination of organochlorine and organophosphorous pesticides by GCMS
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM174	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID
TM178	Modified: US EPA Method 8100	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS in Waters
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser
TM243		Mixed Anions In Soils By Kone
TM245	By GC-FID	Determination of GRO by Headspace in waters
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).



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Test Completion Dates

Lab Sample No(s)	23012202	23012204
Customer Sample Ref.	R72006	R72006
AGS Ref.		
Depth	0.30	1.00
Type	Soil/Solid (S)	Soil/Solid (S)

Ammoniacal Nitrogen	17-Dec-2020	17-Dec-2020
Ammonium Soil by Titration	17-Dec-2020	16-Dec-2020
Anions by Kone (soil)	18-Dec-2020	18-Dec-2020
Anions by Kone (w)	18-Dec-2020	18-Dec-2020
CEN 2:1 Leachate (1 Stage)	12-Dec-2020	12-Dec-2020
CEN Readings	17-Dec-2020	17-Dec-2020
Chromium III	17-Dec-2020	17-Dec-2020
Cyanide Comp/Free/Total/Thiocyanate	17-Dec-2020	17-Dec-2020
Dissolved Metals by ICP-MS	17-Dec-2020	17-Dec-2020
Dissolved Organic/Inorganic Carbon	17-Dec-2020	17-Dec-2020
EPH CWG (Aliphatic) Filtered GC (W)	17-Dec-2020	17-Dec-2020
EPH CWG (Aromatic) Filtered GC (W)	17-Dec-2020	17-Dec-2020
EPH CWG GC (S)	16-Dec-2020	16-Dec-2020
GRO by GC-FID (S)		15-Dec-2020
GRO by GC-FID (W)	16-Dec-2020	16-Dec-2020
Hexavalent Chromium (s)	15-Dec-2020	15-Dec-2020
Hexavalent Chromium (w)	17-Dec-2020	17-Dec-2020
Mercury Dissolved	17-Dec-2020	17-Dec-2020
Metals in solid samples by OES	16-Dec-2020	16-Dec-2020
Moisture at 105C	12-Dec-2020	12-Dec-2020
OC OP Pesticides and Triazine Herb	17-Dec-2020	
PAH by GCMS	15-Dec-2020	16-Dec-2020
PAH in waters by GC-MS (diss.filt)	17-Dec-2020	17-Dec-2020
pH	14-Dec-2020	14-Dec-2020
pH Value of Filtered Water	17-Dec-2020	17-Dec-2020
Phenols by HPLC (S)	17-Dec-2020	15-Dec-2020
Phenols by HPLC (W)	17-Dec-2020	17-Dec-2020
Sample description	12-Dec-2020	12-Dec-2020
Semi Volatile Organic Compounds	16-Dec-2020	
Total Organic Carbon	17-Dec-2020	17-Dec-2020
TPH CWG Filtered (W)	17-Dec-2020	17-Dec-2020
TPH CWG GC (S)	16-Dec-2020	16-Dec-2020
VOC MS (S)	15-Dec-2020	15-Dec-2020



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ASSOCIATED AQC DATA

Ammoniacal Nitrogen

Component	Method Code	QC 2332	QC 2368
Ammoniacal Nitrogen as N	TM099	98.0 91.28 : 106.64	98.4 91.28 : 106.64

Ammonium Soil by Titration

Component	Method Code	QC 2308	QC 2309
Exchangeable Ammonium as NH4	TM024	90.05 76.20 : 110.13	80.1 76.20 : 110.13

Anions by Kone (soil)

Component	Method Code	QC 2316	QC 2309
Chloride (soluble)	TM243	141.97 86.68 : 115.67	142.49 86.68 : 115.67
Water Soluble Sulphate as SO4 2:1 Extract	TM243	154.21 70.00 : 130.00	155.14 70.00 : 130.00

Anions by Kone (w)

Component	Method Code	QC 2330
Sulphate (soluble)	TM184	98.4 94.38 : 108.93

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2382	QC 2349
Free Cyanide	TM153	92.08 78.61 : 114.43	
Free Cyanide (W)	TM227		101.0 90.50 : 114.50
Thiocyanate	TM153	100.64 90.48 : 109.52	
Thiocyanate (W)	TM227		105.0 90.50 : 113.00
Total Cyanide	TM153	97.2 76.80 : 112.96	
Total Cyanide (W)	TM227		104.25 91.75 : 112.75

Dissolved Metals by ICP-MS



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Dissolved Metals by ICP-MS

Component	Method Code	QC 2312
Aluminium	TM152	103.0 94.21 : 111.52
Antimony	TM152	102.17 88.37 : 130.57
Arsenic	TM152	100.17 92.62 : 113.52
Barium	TM152	101.5 88.62 : 113.14
Beryllium	TM152	103.17 87.08 : 111.38
Bismuth	TM152	102.0 92.62 : 115.02
Boron	TM152	105.67 86.31 : 120.88
Cadmium	TM152	102.83 93.85 : 111.65
Calcium	TM152	100.0 89.20 : 126.91
Chromium	TM152	100.17 92.50 : 113.03
Cobalt	TM152	100.17 85.01 : 114.87
Copper	TM152	100.33 89.87 : 119.73
Iron	TM152	100.67 93.02 : 113.86
Lead	TM152	101.0 91.11 : 116.98
Lithium	TM152	102.0 87.70 : 115.90
Magnesium	TM152	98.67 89.60 : 116.61
Manganese	TM152	101.33 93.97 : 112.46
Molybdenum	TM152	99.17 89.07 : 110.96
Nickel	TM152	100.83 93.70 : 112.15
Phosphorus	TM152	98.33 89.24 : 114.18
Potassium	TM152	100.0 93.20 : 115.55
Selenium	TM152	100.33 91.69 : 117.12
Silver	TM152	100.33 90.93 : 121.73
Sodium	TM152	98.67 92.42 : 113.24
Strontium	TM152	103.33 92.14 : 116.24
Tellurium	TM152	99.0 89.88 : 111.78
Thallium	TM152	93.0 82.43 : 113.83



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Dissolved Metals by ICP-MS

		QC 2312
Tin	TM152	101.67 94.62 : 107.79
Titanium	TM152	102.5 90.29 : 115.23
Tungsten	TM152	100.0 77.61 : 132.31
Uranium	TM152	101.83 86.97 : 115.76
Vanadium	TM152	104.33 89.61 : 115.48
Zinc	TM152	100.67 87.51 : 116.26

Dissolved Organic/Inorganic Carbon

Component	Method Code	QC 2352
Dissolved Inorganic Carbon	TM090	104.83 91.27 : 109.87
Dissolved Organic Carbon	TM090	102.17 96.58 : 107.98

EPH CWG (Aliphatic) Filtered GC (W)

Component	Method Code	QC 2362
Total Aliphatics >C10-C40	TM174	126.24 71.82 : 134.09

GRO by GC-FID (S)

Component	Method Code	QC 2370	QC 2391
QC	TM089	90.05 70.75 : 114.19	93.77 70.75 : 114.19

GRO by GC-FID (W)

Component	Method Code	QC 2317
Benzene by GC	TM245	94.5 79.13 : 118.84
Ethylbenzene by GC	TM245	99.5 79.54 : 115.99
m & p Xylene by GC	TM245	99.5 78.44 : 116.32
MTBE GC-FID	TM245	88.5 81.43 : 120.09
o Xylene by GC	TM245	100.0 76.85 : 120.29



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GRO by GC-FID (W)

		QC 2317
QC	TM245	93.59 71.58 : 131.01
Toluene by GC	TM245	97.0 79.00 : 121.96

Hexavalent Chromium (s)

Component	Method Code	QC 2377
Hexavalent Chromium	TM151	108.0 92.00 : 111.20

Hexavalent Chromium (w)

Component	Method Code	QC 2307	QC 2303
Hexavalent Chromium	TM241	99.0 94.17 : 106.17	100.2 94.17 : 106.17

Mercury Dissolved

Component	Method Code	QC 2318
Mercury Dissolved (CVAf)	TM183	97.9 69.30 : 128.70

Metals in solid samples by OES

Component	Method Code	QC 2366
Aluminium	TM181	90.27 77.46 : 123.98
Antimony	TM181	100.41 87.04 : 111.16
Arsenic	TM181	104.94 87.34 : 110.87
Barium	TM181	97.25 80.73 : 115.16
Beryllium	TM181	104.1 89.47 : 112.97
Boron	TM181	96.85 76.57 : 104.15
Cadmium	TM181	95.06 78.94 : 102.43
Chromium	TM181	91.28 77.55 : 104.47
Cobalt	TM181	91.82 82.95 : 107.41



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Metals in solid samples by OES

		QC 2366
Copper	TM181	90.14 84.36 : 106.14
Iron	TM181	96.83 81.43 : 115.79
Lead	TM181	98.2 81.95 : 107.63
Manganese	TM181	112.5 94.29 : 119.51
Mercury	TM181	98.79 82.73 : 106.36
Molybdenum	TM181	99.18 86.61 : 111.07
Nickel	TM181	95.6 79.72 : 103.80
Phosphorus	TM181	111.31 92.65 : 125.47
Selenium	TM181	98.82 88.36 : 111.25
Strontium	TM181	87.53 78.06 : 99.91
Thallium	TM181	105.75 88.60 : 116.73
Tin	TM181	109.51 89.77 : 112.62
Titanium	TM181	81.68 66.29 : 105.96
Vanadium	TM181	95.6 75.51 : 108.87
Zinc	TM181	93.22 84.02 : 111.24

OC OP Pesticides and Triazine Herb

Component	Method Code	QC 2313
Atrazine (Raw)	TM073	103.96 78.55 : 119.92
Azinphos methyl (Raw)	TM073	101.56 58.68 : 154.71
cis-Chlordane (Raw)	TM073	101.12 71.90 : 129.99
Diazinon (Raw)	TM073	92.88 70.00 : 130.00
Dichlorvos (Raw)	TM073	91.86 70.00 : 130.00
Dieldrin (Raw)	TM073	106.82 70.00 : 130.00
gamma-HCH (Lindane) (Raw)	TM073	94.71 71.48 : 129.99
Heptachlor (Raw)	TM073	94.21 66.39 : 134.63
Hexachlorobenzene (Raw)	TM073	99.44 47.15 : 124.32
Malathion (Raw)	TM073	93.69 70.00 : 130.00



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OC OP Pesticides and Triazine Herb

		QC 2313
p,p-DDT (Raw)	TM073	104.17 70.00 : 130.00
Parathion (Raw)	TM073	101.56 64.13 : 127.88

PAH by GCMS

Component	Method Code	QC 2370	QC 2326
Acenaphthene	TM218	91.0 80.97 : 105.99	87.5 78.59 : 112.16
Acenaphthylene	TM218	91.0 74.76 : 107.36	83.5 75.11 : 109.01
Anthracene	TM218	91.5 73.04 : 106.97	81.5 73.99 : 113.85
Benz(a)anthracene	TM218	106.5 68.79 : 119.64	82.0 69.31 : 119.18
Benzo(a)pyrene	TM218	106.0 66.17 : 117.52	80.0 66.97 : 114.92
Benzo(b)fluoranthene	TM218	97.0 66.40 : 118.34	77.0 67.41 : 114.46
Benzo(ghi)perylene	TM218	101.5 67.68 : 112.07	74.0 62.92 : 114.36
Benzo(k)fluoranthene	TM218	94.5 72.84 : 114.66	79.0 69.98 : 116.49
Chrysene	TM218	102.0 68.39 : 115.56	81.5 69.86 : 114.50
Dibenzo(ah)anthracene	TM218	95.5 69.03 : 110.45	73.0 64.54 : 115.22
Fluoranthene	TM218	99.0 69.37 : 117.19	82.5 72.56 : 111.70
Fluorene	TM218	92.5 75.38 : 105.98	89.0 79.13 : 111.49
Indeno(123cd)pyrene	TM218	105.5 65.91 : 113.61	72.5 61.22 : 113.25
Naphthalene	TM218	86.0 71.40 : 105.87	87.0 77.96 : 110.91
Phenanthrene	TM218	95.5 74.04 : 109.30	85.0 76.83 : 113.25
Pyrene	TM218	97.0 69.68 : 115.27	82.0 72.45 : 110.77

PAH in waters by GC-MS (diss.filt)

Component	Method Code	QC 2329
Acenaphthene (diss.filt)	TM178	107.6 93.20 : 119.60
Acenaphthylene (diss.filt)	TM178	104.8 92.00 : 118.40
Anthracene (diss.filt)	TM178	107.6 90.80 : 114.80
Benzo(a)anthracene (diss.filt)	TM178	110.8 91.60 : 115.60
Benzo(a)pyrene (diss.filt)	TM178	106.4 91.20 : 120.00



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PAH in waters by GC-MS (diss.filt)

		QC 2329
Benzo(b)fluoranthene (diss.filt)	TM178	111.2 86.80 : 120.40
Benzo(g,h,i)perylene (diss.filt)	TM178	107.2 89.20 : 118.00
Benzo(k)fluoranthene (diss.filt)	TM178	109.2 94.40 : 125.60
Chrysene (diss.filt)	TM178	105.6 96.40 : 122.80
Dibenzo(a,h)anthracene (diss.filt)	TM178	106.0 93.60 : 132.00
Fluoranthene (diss.filt)	TM178	104.0 92.80 : 121.60
Fluorene (diss.filt)	TM178	104.8 93.60 : 120.00
Indeno(1,2,3-cd)pyrene (diss.filt)	TM178	109.6 82.40 : 120.80
Naphthalene (diss.filt)	TM178	103.2 88.40 : 126.80
Phenanthrene (diss.filt)	TM178	107.2 92.40 : 118.80
Pyrene (diss.filt)	TM178	100.8 90.40 : 124.00

pH

Component	Method Code	QC 2337
pH	TM133	99.08 97.97 : 101.10

pH Value of Filtered Water

Component	Method Code	QC 2348
pH	TM256	100.94 99.33 : 102.54

Phenols by HPLC (S)

Component	Method Code	QC 2390	QC 2398
2,3,5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	103.9 65.50 : 89.50	103.9 83.23 : 109.71
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	88.89 84.00 : 124.00	94.74 76.34 : 104.11
Catechol by HPLC (S)	TM062 (S)	92.38 19.39 : 135.70	86.67 22.43 : 157.02
Cresols by HPLC (S)	TM062 (S)	92.48 81.00 : 112.20	95.82 85.78 : 116.44
Naphthol by HPLC (S)	TM062 (S)	119.29 57.50 : 102.50	110.71 75.62 : 124.38



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Phenols by HPLC (S)

		QC 2390	QC 2398
Phenol by HPLC (S)	TM062 (S)	96.69 88.67 : 124.67	106.62 79.53 : 120.47
Resorcinol HPLC (S)	TM062 (S)	94.97 69.99 : 127.22	93.08 71.43 : 129.59
Xylenols by HPLC (S)	TM062 (S)	99.17 93.00 : 121.00	96.67 89.90 : 107.23

Phenols by HPLC (W)

Component	Method Code	QC 2383
2,3,5 Trimethyl-Phenol by HPLC (W)	TM259	105.0 91.00 : 109.00
2-Isopropyl Phenol by HPLC (W)	TM259	106.0 85.00 : 109.00
Cresols by HPLC (W)	TM259	101.67 92.00 : 110.00
Naphthol by HPLC (W)	TM259	109.0 86.00 : 128.00
Phenol by HPLC (W)	TM259	104.0 88.24 : 111.76
Xylenols by HPLC (W)	TM259	107.17 94.83 : 110.83

Semi Volatile Organic Compounds

Component	Method Code	QC 2357
4-Bromophenylphenylether (Soil)	TM157	89.5 66.75 : 125.25
Benzo(a)anthracene (Soil)	TM157	92.5 67.40 : 120.50
Hexachlorobutadiene (Soil)	TM157	94.0 68.25 : 126.75
Naphthalene (Soil)	TM157	93.5 67.55 : 125.45
Nitrobenzene (Soil)	TM157	99.0 66.50 : 123.50
Phenol (Soil)	TM157	89.5 69.92 : 114.02

Total Organic Carbon

Component	Method Code	QC 2394
Total Organic Carbon	TM132	101.95 87.02 : 113.45

VOC MS (S)



CERTIFICATE OF ANALYSIS

Validated

SDG: 201011-1
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PO20-951

Report Number: 580779
Superseded Report:

VOC MS (S)

Component	Method Code	QC 2334
1,1,1,2-tetrachloroethane	TM116	98.4 86.59 : 118.97
1,1,1-Trichloroethane	TM116	105.6 86.26 : 117.53
1,1,2-Trichloroethane	TM116	99.8 75.16 : 112.70
1,1-Dichloroethane	TM116	113.4 83.27 : 122.16
1,2-Dichloroethane	TM116	108.4 89.30 : 133.10
1,4-Dichlorobenzene	TM116	114.8 82.59 : 123.23
2-Chlorotoluene	TM116	97.4 66.81 : 118.43
4-Chlorotoluene	TM116	99.0 65.88 : 114.76
Benzene	TM116	102.6 93.16 : 123.63
Carbon Disulphide	TM116	106.6 75.11 : 124.81
Carbontetrachloride	TM116	101.8 82.35 : 126.46
Chlorobenzene	TM116	103.0 85.07 : 118.13
Chloroform	TM116	113.4 88.13 : 122.71
Chloromethane	TM116	120.0 61.62 : 145.66
Cis-1,2-Dichloroethene	TM116	109.0 78.27 : 128.90
Dibromomethane	TM116	99.8 77.47 : 121.29
Dichloromethane	TM116	112.4 87.89 : 134.72
Ethylbenzene	TM116	94.4 79.92 : 110.05
Hexachlorobutadiene	TM116	59.4 16.78 : 153.29
Isopropylbenzene	TM116	89.2 64.20 : 119.59
Naphthalene	TM116	121.8 79.29 : 125.59
o-Xylene	TM116	90.6 72.86 : 102.10
p/m-Xylene	TM116	89.9 76.47 : 108.99
Sec-Butylbenzene	TM116	83.8 44.71 : 117.87
Tetrachloroethene	TM116	99.8 85.86 : 122.95
Toluene	TM116	99.8 87.82 : 116.21
Trichloroethene	TM116	98.8 79.80 : 112.33



CERTIFICATE OF ANALYSIS

Validated

SDG:	201011-1	Client Reference:	JFR1451	Report Number:	580779
Location:	A303 Stonehenge	Order Number:	PO20-951	Superseded Report:	

VOC MS (S)

		QC 2334
Trichlorofluoromethane	TM116	110.8 80.52 : 132.12
Vinyl Chloride	TM116	120.6 68.07 : 137.84

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis .

The figure detailed is the percentage recovery result for the AQC .

The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control .



CERTIFICATE OF ANALYSIS

Validated

SDG: 201011-1
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PQ20-951

Report Number: 580779
Superseded Report:

Chromatogram

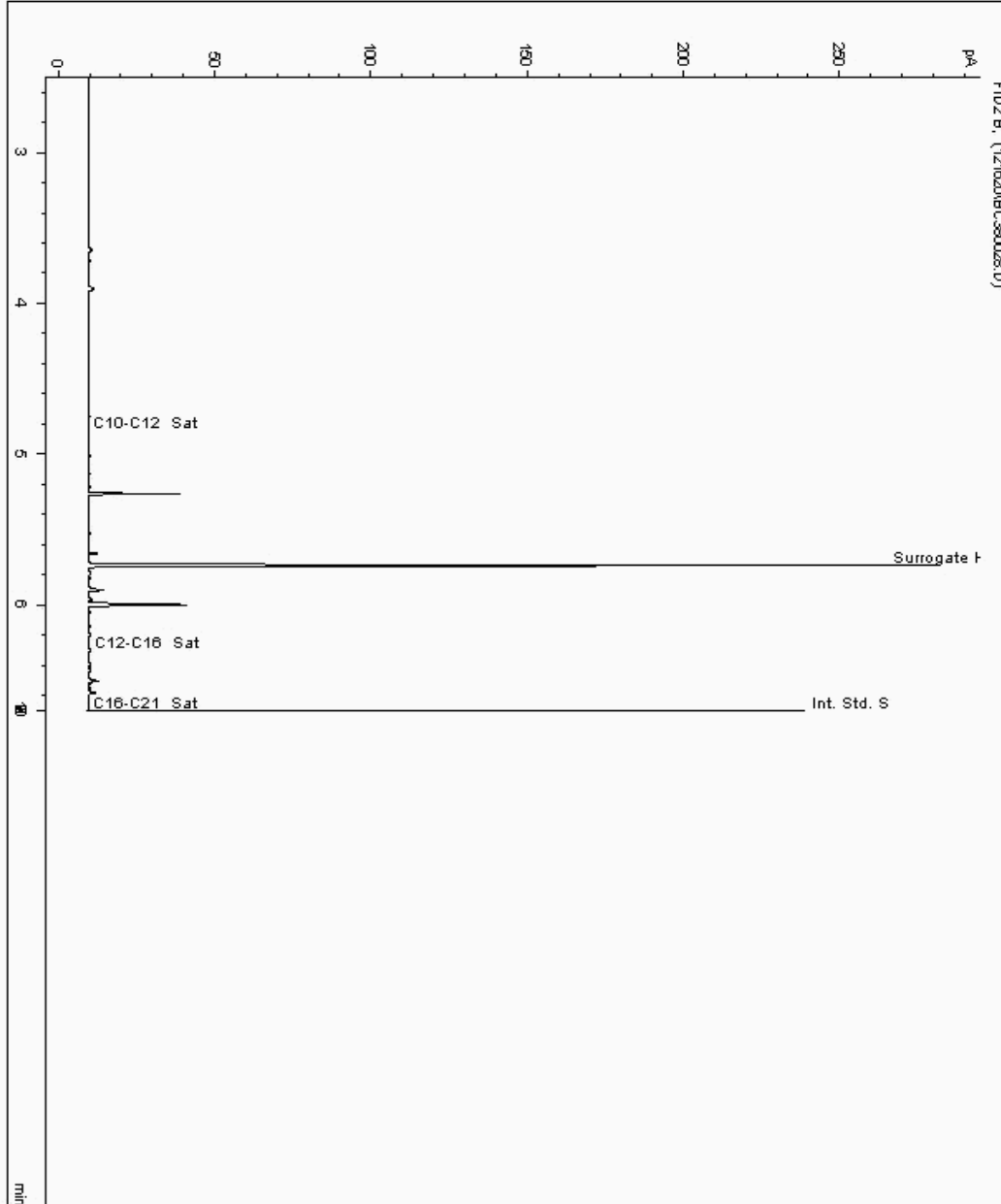
Analysis: EPH CWG (Aliphatic) Filtered GC (W)

Sample No : 23439822
Sample ID : R72006

Depth : 0.30

Speciated TPH - SATS (C12 - C40)

Sample Identity: 21963337-
Date Acquired : 17/12/20 06:31:23 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025





CERTIFICATE OF ANALYSIS

Validated

SDG: 201011-1
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PQ20-951

Report Number: 580779
Superseded Report:

Chromatogram

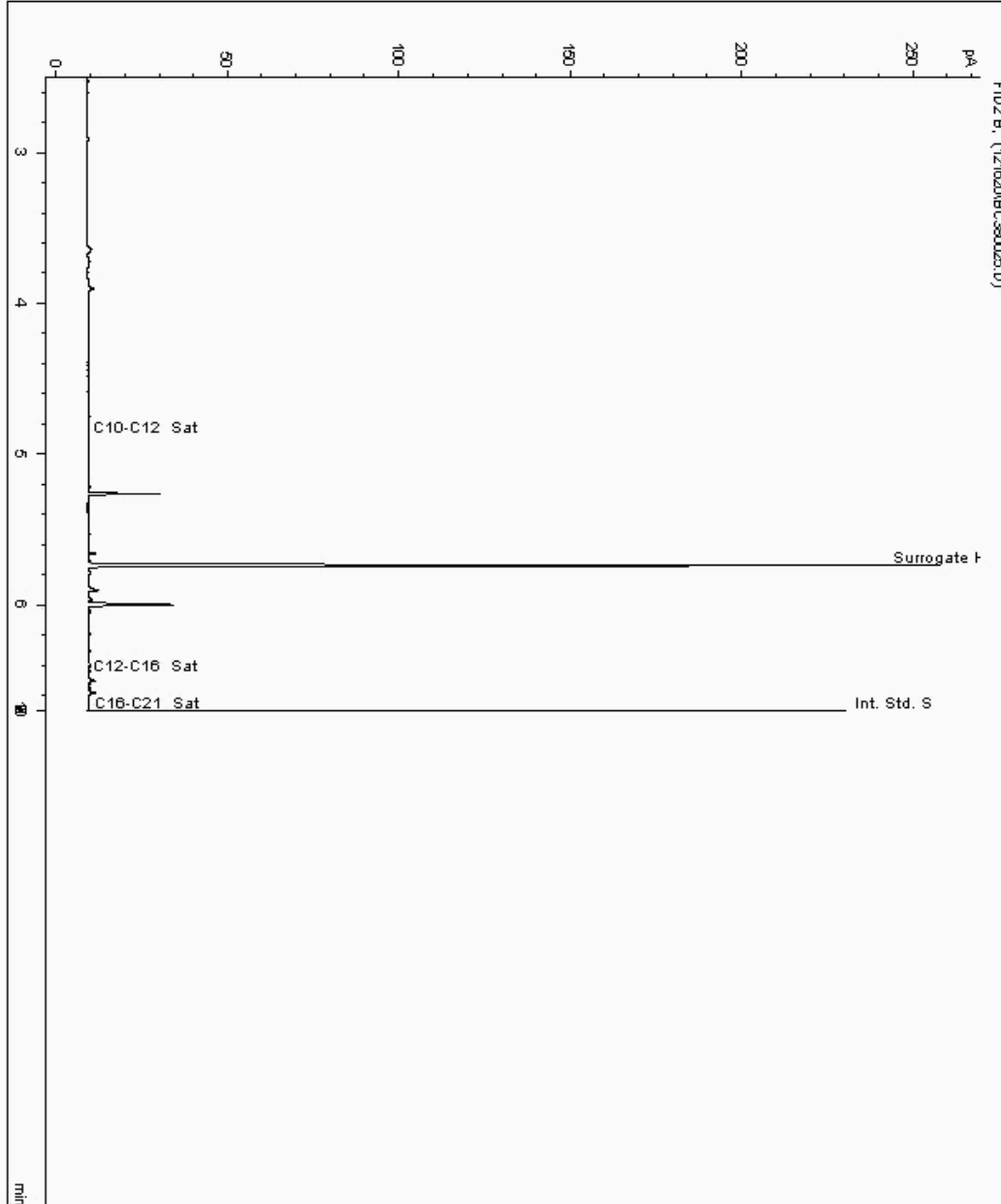
Analysis: EPH CWG (Aliphatic) Filtered GC (W)

Sample No : 23440397
Sample ID : R72006

Depth : 1.00

Speciated TPH - SATS (C12 - C40)

Sample Identity: 21963357-
Date Acquired : 17/12/20 05:21:31 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.026





CERTIFICATE OF ANALYSIS

Validated

SDG: 201011-1
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PQ20-951

Report Number: 580779
Superseded Report:

Chromatogram

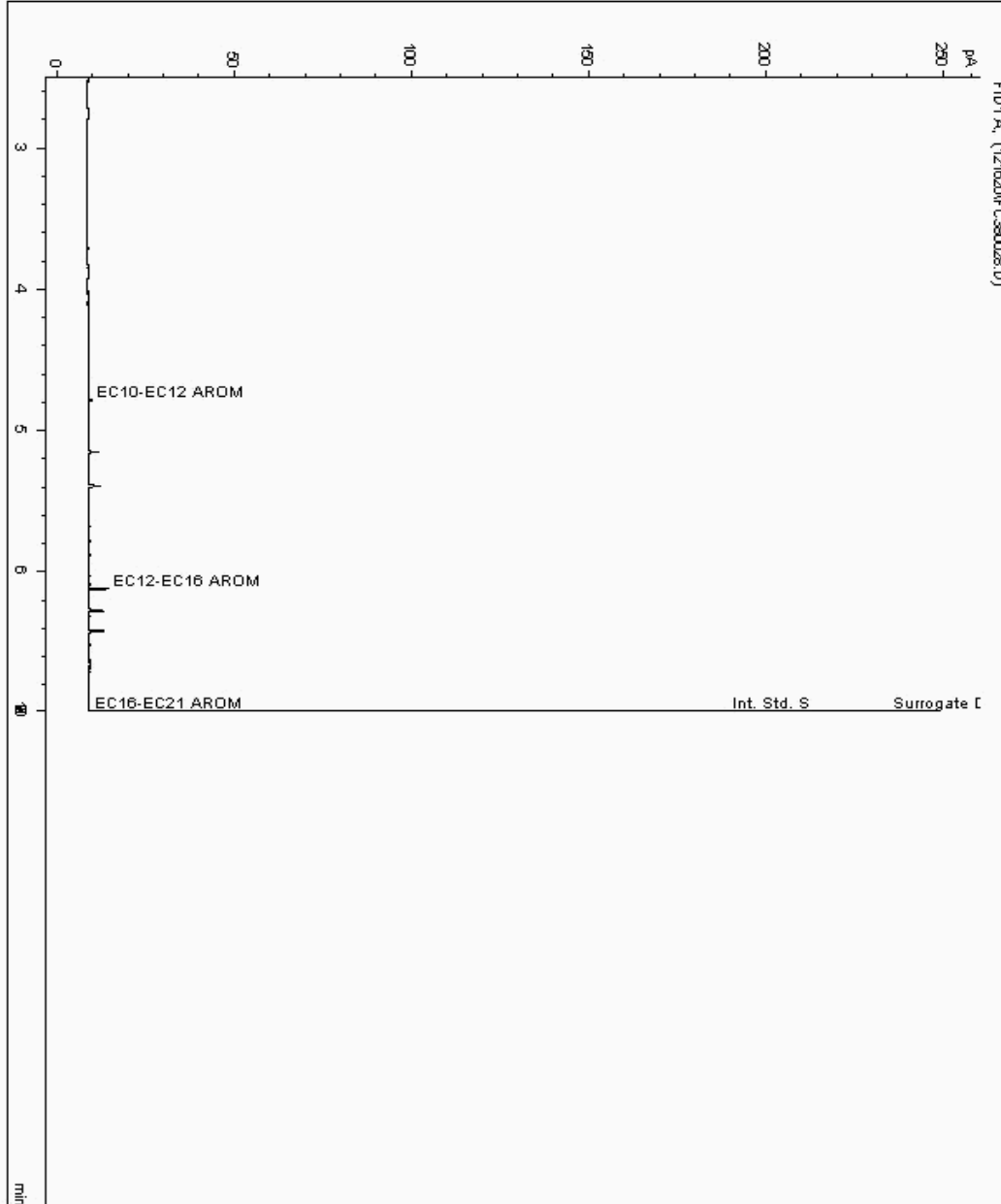
Analysis: EPH CWG (Aromatic) Filtered GC (W)

Sample No : 23439822
Sample ID : R72006

Depth : 0.30

Speciated TPH - AROM (C12 - C40)

Sample Identity: 21963338-
Date Acquired : 17/12/20 06:31:23 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025





CERTIFICATE OF ANALYSIS

Validated

SDG: 201011-1
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PQ20-951

Report Number: 580779
Superseded Report:

Chromatogram

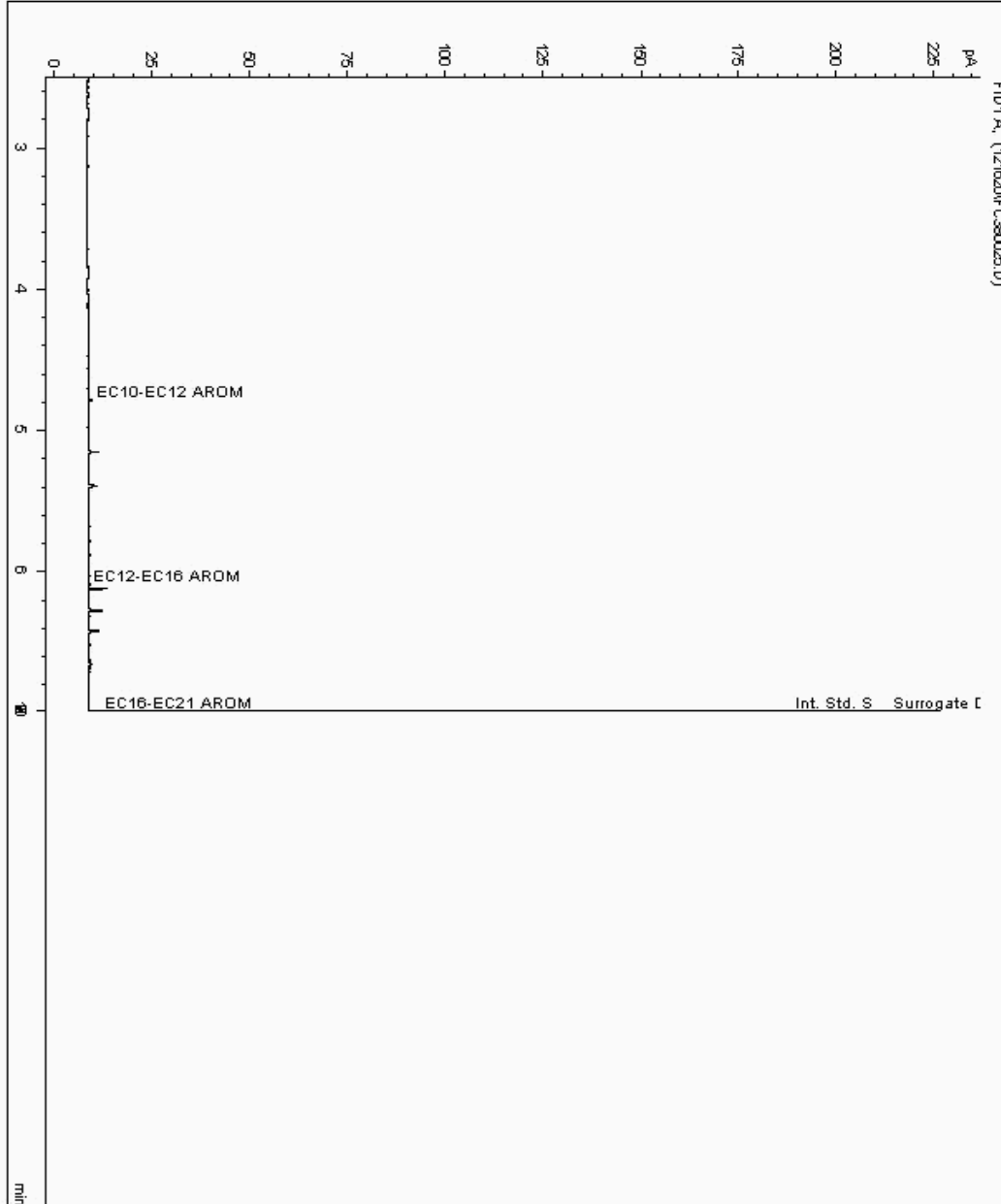
Analysis: EPH CWG (Aromatic) Filtered GC (W)

Sample No : 23440397
Sample ID : R72006

Depth : 1.00

Speciated TPH - AROM (C12 - C40)

Sample Identity: 21963358-
Date Acquired : 17/12/20 05:21:30 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.026





CERTIFICATE OF ANALYSIS

Validated

SDG: 201011-1
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PQ20-951

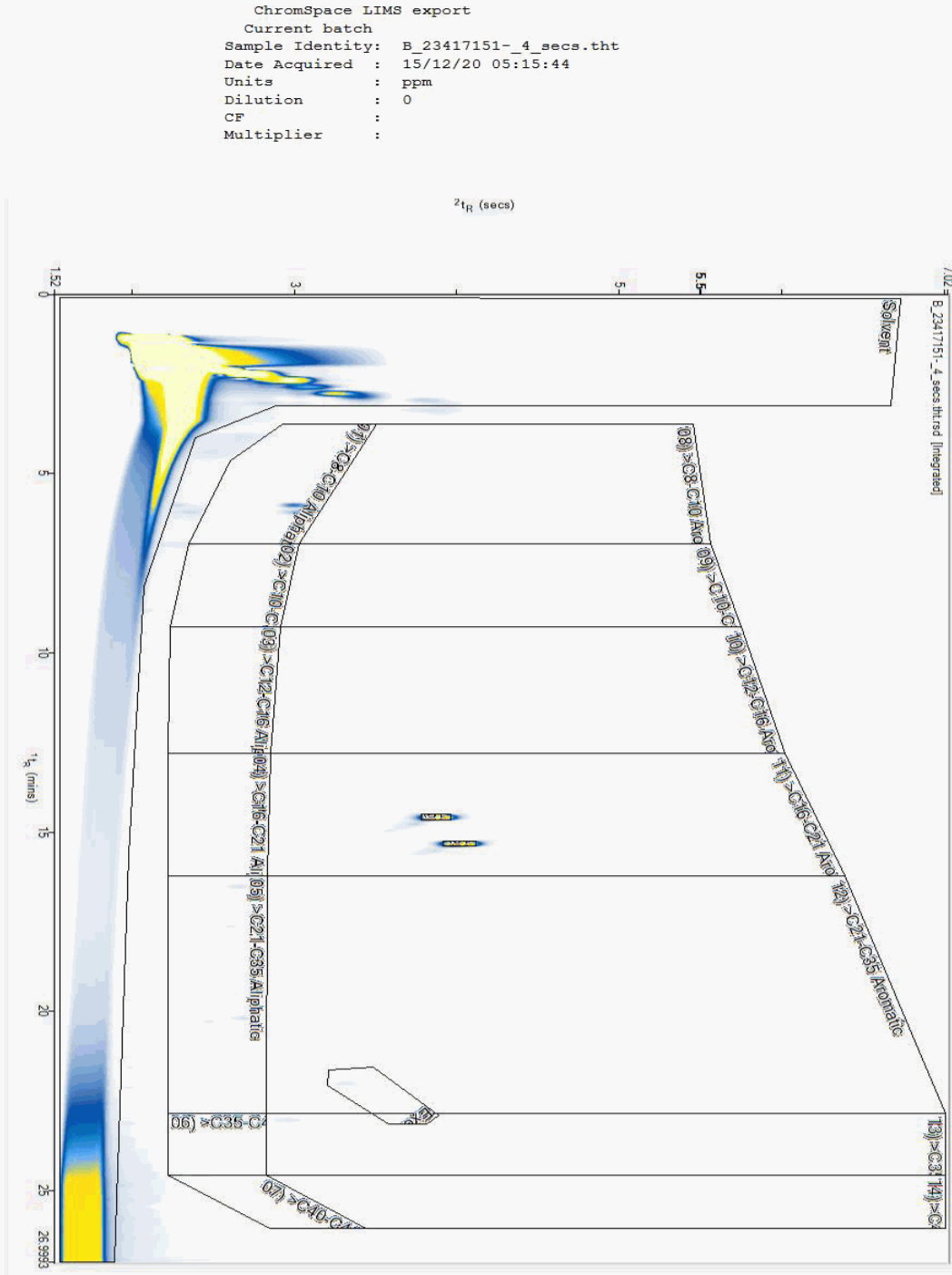
Report Number: 580779
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23417151
Sample ID : R72006

Depth : 1.00





CERTIFICATE OF ANALYSIS

Validated

SDG: 201011-1
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PQ20-951

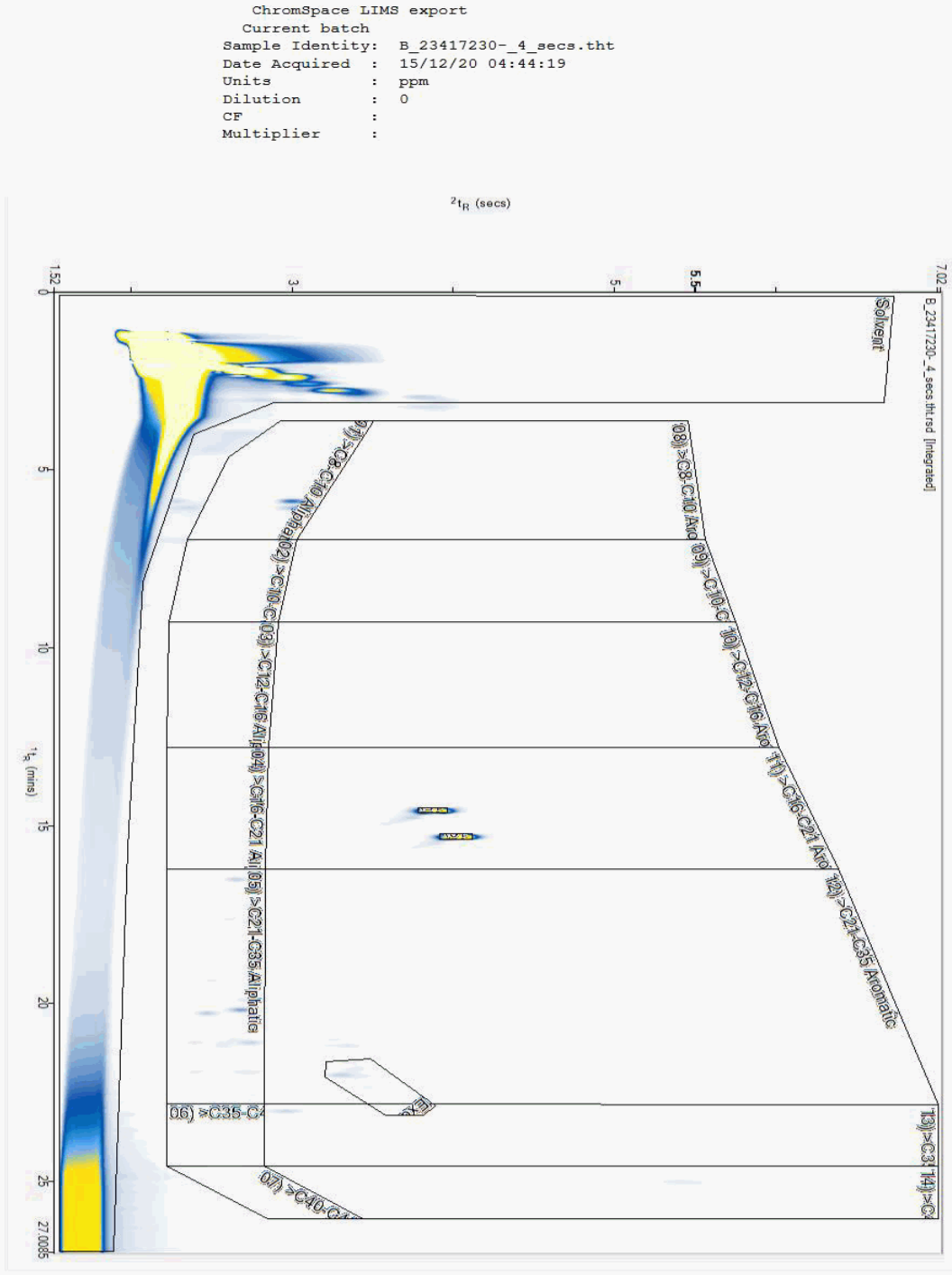
Report Number: 580779
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23417230
Sample ID : R72006

Depth : 0.30





CERTIFICATE OF ANALYSIS

Validated

SDG: 201011-1
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PQ20-951

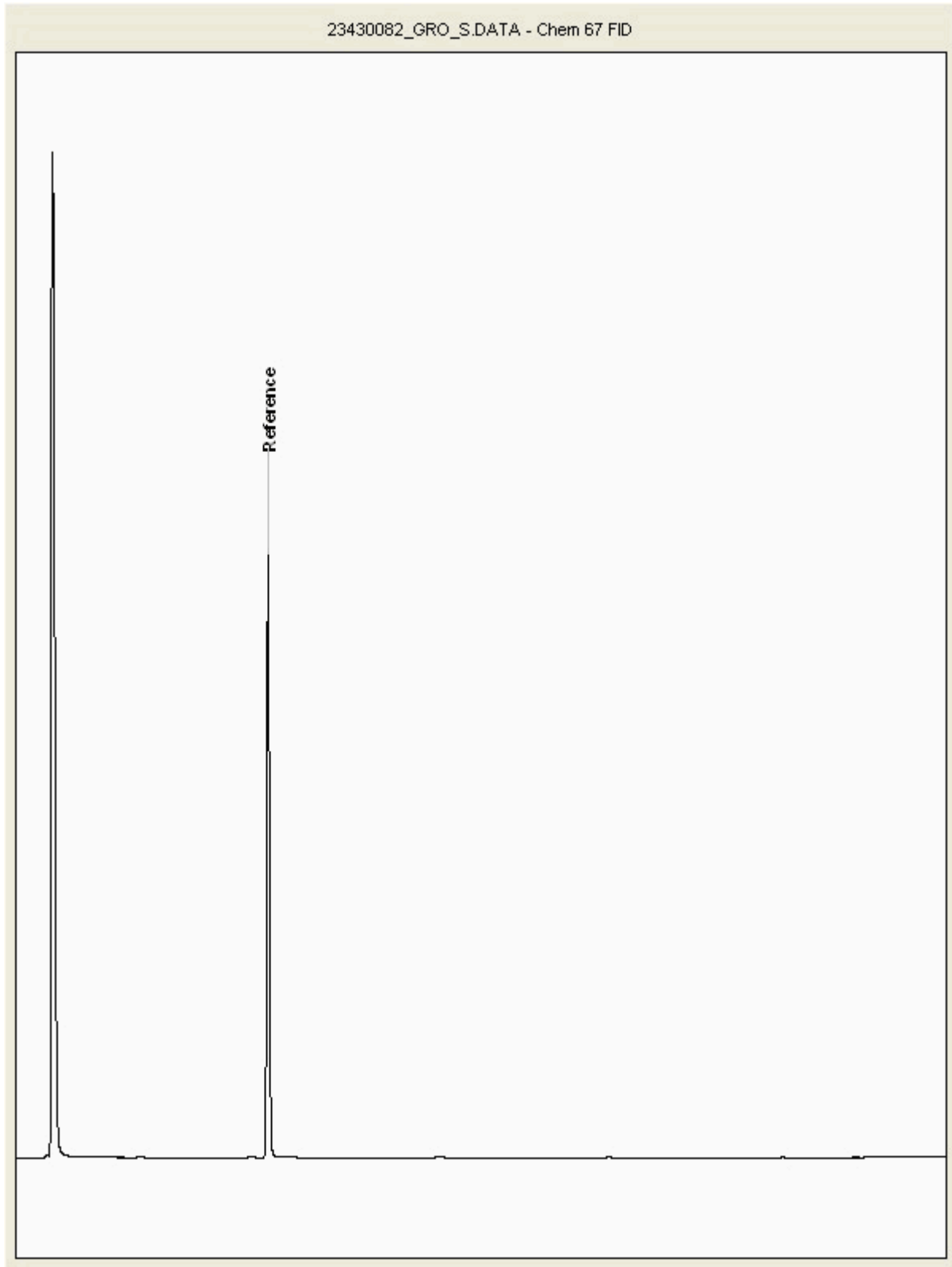
Report Number: 580779
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23430082
Sample ID : R72006

Depth : 1.00





CERTIFICATE OF ANALYSIS

Validated

SDG: 201011-1
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PQ20-951

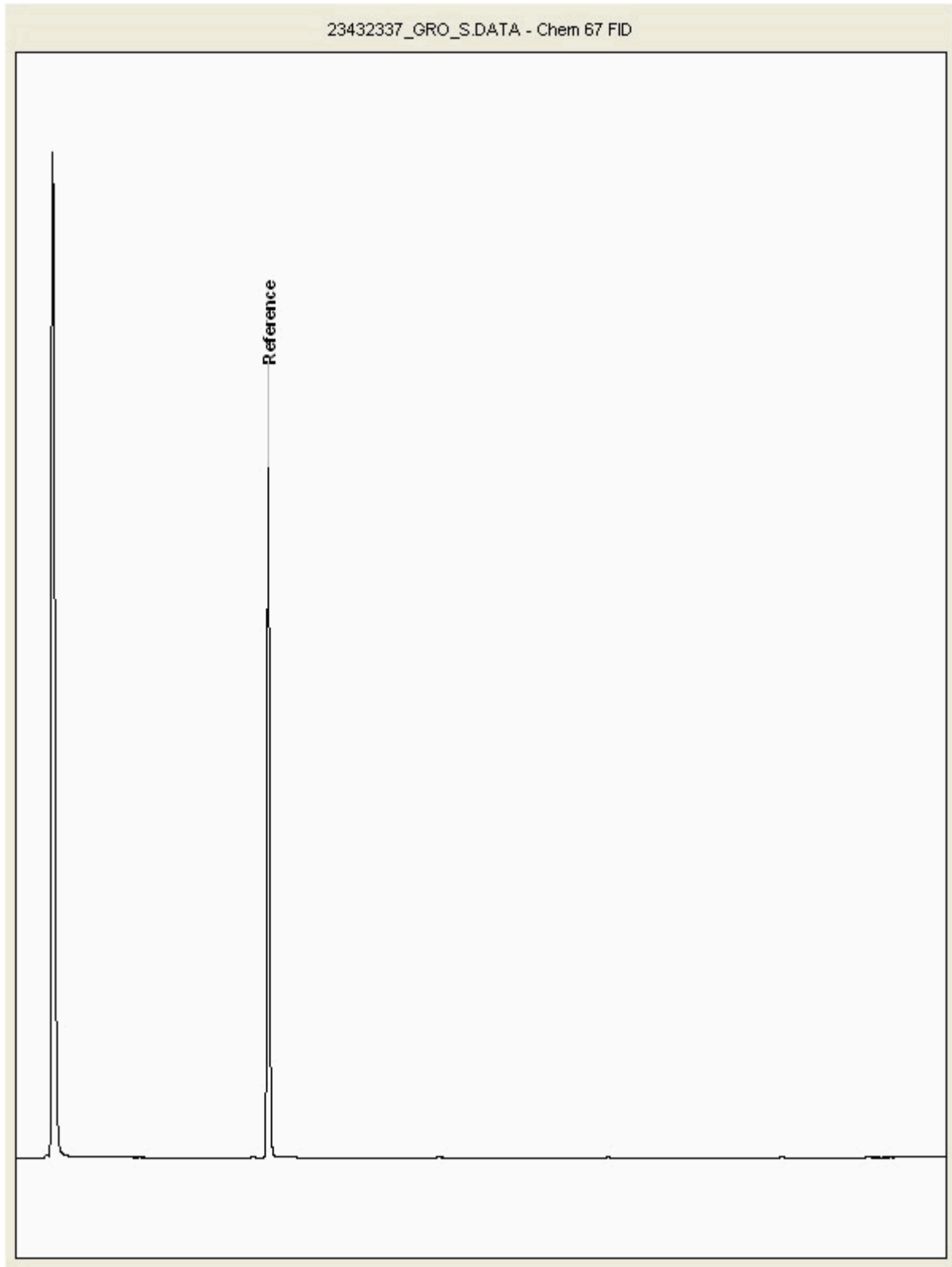
Report Number: 580779
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23432337
Sample ID : R72006

Depth : 0.30





CERTIFICATE OF ANALYSIS

Validated

SDG: 201011-1
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PQ20-951

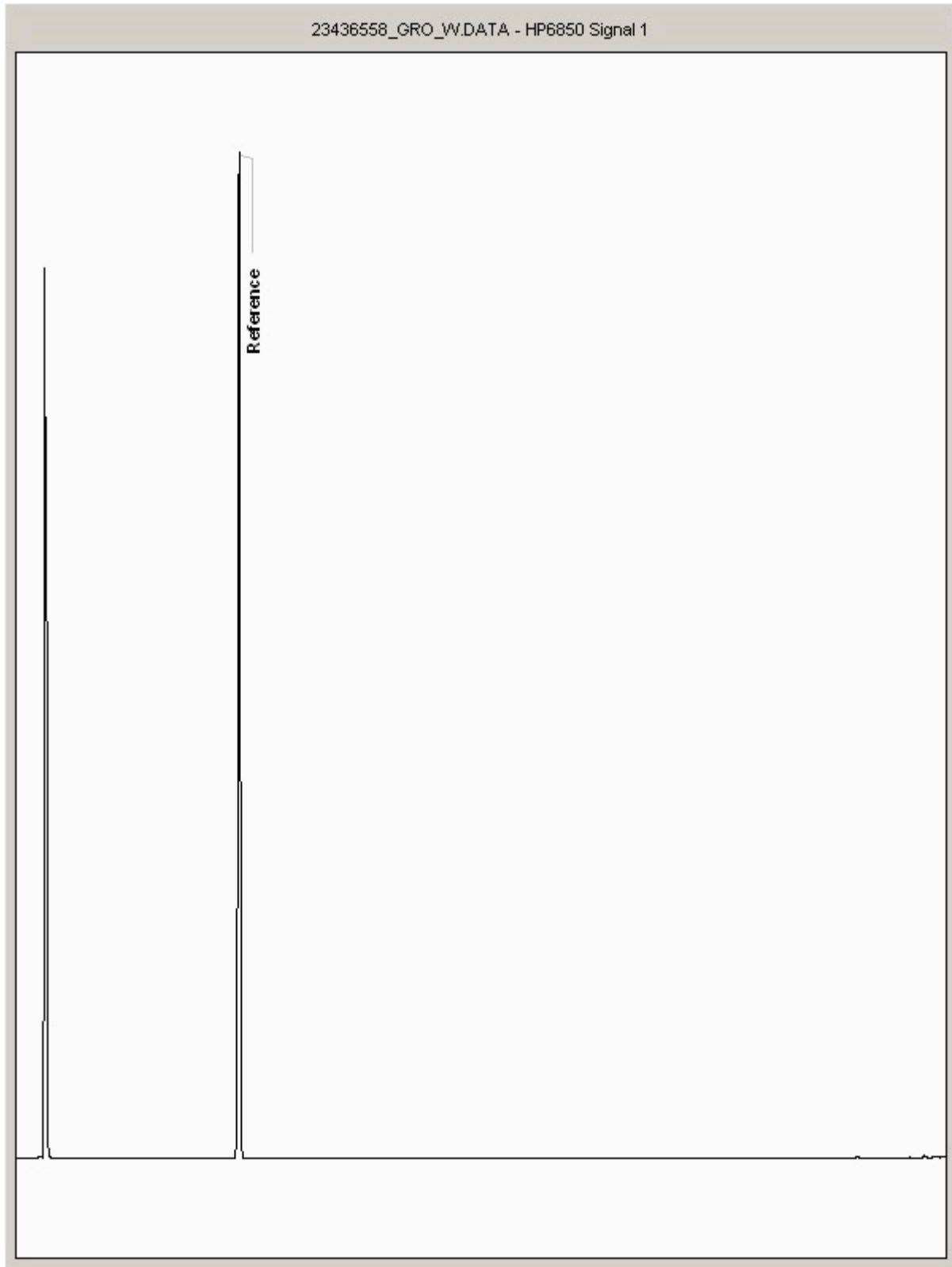
Report Number: 580779
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 23436558
Sample ID : R72006

Depth : 1.00





CERTIFICATE OF ANALYSIS

Validated

SDG: 201011-1
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PQ20-951

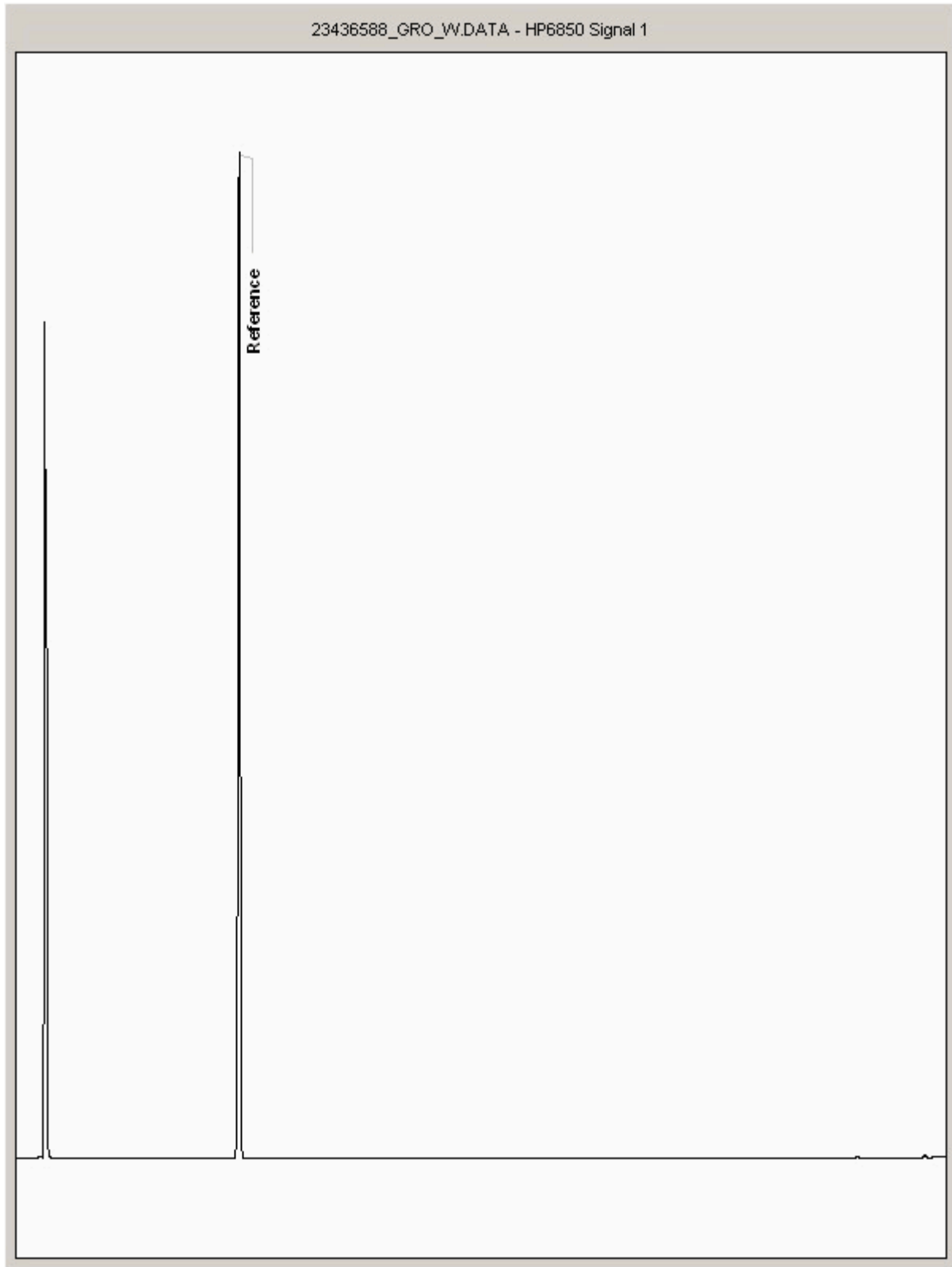
Report Number: 580779
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 23436588
Sample ID : R72006

Depth : 0.30





CERTIFICATE OF ANALYSIS

SDG: 201011-1	Client Reference: JFR1451	Report Number: 580779
Location: A303 Stonehenge	Order Number: PO20-951	Superseded Report:

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

19. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung. Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017)*.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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Deeside
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Tel: (01244) 528700

Fax: (01244) 528701

email: hawardencustomerservices@alsglobal.com

Website: www.alsenvironmental.co.uk

RPS Consultants Ltd
260 Park Avenue
Aztec West
Almondsbury
Bristol
BS32 4SY

Attention: Gary Riches

CERTIFICATE OF ANALYSIS

Date of report Generation: 23 October 2020
Customer: RPS Consultants Ltd
Sample Delivery Group (SDG): 201011-2
Your Reference: JFR1451
Location: A303 Stonehenge
Report No: 572420

We received 4 samples on Saturday October 10, 2020 and 1 of these samples were scheduled for analysis which was completed on Friday October 23, 2020. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

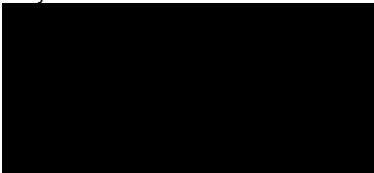
Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:



Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 201011-2
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 572420
Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
23012229	R70115		0.00 - 0.10	08/10/2020
23012230	R70115		0.30 - 0.40	08/10/2020
23012231	R70115		0.50 - 0.60	08/10/2020
23012232	R70115		1.00 - 1.10	08/10/2020

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG:	201011-2	Client Reference:	JFR1451	Report Number:	572420
Location:	A303 Stonehenge	Order Number:		Superseded Report:	

Results Legend <div style="display: flex; align-items: center; margin-bottom: 5px;"> <div style="background-color: yellow; border: 1px solid black; width: 15px; height: 15px; display: flex; align-items: center; justify-content: center; margin-right: 5px;">X</div> Test </div> <div style="display: flex; align-items: center; margin-bottom: 5px;"> <div style="background-color: red; color: white; border: 1px solid black; width: 15px; height: 15px; display: flex; align-items: center; justify-content: center; margin-right: 5px;">N</div> No Determination Possible </div> Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other	Lab Sample No(s)		23012230																																																																																												
	Customer Sample Reference		R70115																																																																																												
	AGS Reference																																																																																														
	Depth (m)		0.30 - 0.40																																																																																												
	Container		250g Amber Jar (ALEZ10)	60g VOC (ALEZ15)																																																																																											
	Sample Type		S	S																																																																																											
<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%; border-bottom: none;">Ammonium Soil by Titration</td> <td style="width: 15%; border-bottom: none;">All</td> <td style="width: 15%; border-bottom: none;">NDPs: 0 Tests: 1</td> <td style="width: 10%; border-bottom: none; text-align: center;">X</td> <td style="width: 10%; border-bottom: none;"></td> <td style="width: 10%; border-bottom: none;"></td> </tr> <tr> <td style="border-bottom: none;">Anions by Kone (soil)</td> <td style="border-bottom: none;">All</td> <td style="border-bottom: none;">NDPs: 0 Tests: 1</td> <td style="border-bottom: none; text-align: center;">X</td> <td style="border-bottom: none;"></td> <td style="border-bottom: none;"></td> </tr> <tr> <td style="border-bottom: none;">Chromium III</td> <td style="border-bottom: none;">All</td> <td style="border-bottom: none;">NDPs: 0 Tests: 1</td> <td style="border-bottom: none; text-align: center;">X</td> <td style="border-bottom: none;"></td> <td style="border-bottom: none;"></td> </tr> <tr> <td style="border-bottom: none;">Cyanide Comp/Free/Total/Thiocyanate</td> <td style="border-bottom: none;">All</td> <td style="border-bottom: none;">NDPs: 0 Tests: 1</td> <td style="border-bottom: none; text-align: center;">X</td> <td style="border-bottom: none;"></td> <td style="border-bottom: none;"></td> </tr> <tr> <td style="border-bottom: none;">EPH CWG GC (S)</td> <td style="border-bottom: none;">All</td> <td style="border-bottom: none;">NDPs: 0 Tests: 1</td> <td style="border-bottom: none; text-align: center;">X</td> <td style="border-bottom: none;"></td> <td style="border-bottom: none;"></td> </tr> <tr> <td style="border-bottom: none;">GRO by GC-FID (S)</td> <td style="border-bottom: none;">All</td> <td style="border-bottom: none;">NDPs: 0 Tests: 1</td> <td style="border-bottom: none;"></td> <td style="border-bottom: none; text-align: center;">X</td> <td style="border-bottom: none;"></td> </tr> <tr> <td style="border-bottom: none;">Hexavalent Chromium (s)</td> <td style="border-bottom: none;">All</td> <td style="border-bottom: none;">NDPs: 0 Tests: 1</td> <td style="border-bottom: none; text-align: center;">X</td> <td style="border-bottom: none;"></td> <td style="border-bottom: none;"></td> </tr> <tr> <td style="border-bottom: none;">Metals in solid samples by OES</td> <td style="border-bottom: none;">All</td> <td style="border-bottom: none;">NDPs: 0 Tests: 1</td> <td style="border-bottom: none; text-align: center;">X</td> <td style="border-bottom: none;"></td> <td style="border-bottom: none;"></td> </tr> <tr> <td style="border-bottom: none;">OC OP Pesticides and Triazine Herb</td> <td style="border-bottom: none;">All</td> <td style="border-bottom: none;">NDPs: 0 Tests: 1</td> <td style="border-bottom: none; text-align: center;">X</td> <td style="border-bottom: none;"></td> <td style="border-bottom: none;"></td> </tr> <tr> <td style="border-bottom: none;">PAH by GCMS</td> <td style="border-bottom: none;">All</td> <td style="border-bottom: none;">NDPs: 0 Tests: 1</td> <td style="border-bottom: none; text-align: center;">X</td> <td style="border-bottom: none;"></td> <td style="border-bottom: none;"></td> </tr> <tr> <td style="border-bottom: none;">pH</td> <td style="border-bottom: none;">All</td> <td style="border-bottom: none;">NDPs: 0 Tests: 1</td> <td style="border-bottom: none; text-align: center;">X</td> <td style="border-bottom: none;"></td> <td style="border-bottom: none;"></td> </tr> <tr> <td style="border-bottom: none;">Phenols by HPLC (S)</td> <td style="border-bottom: none;">All</td> <td style="border-bottom: none;">NDPs: 0 Tests: 1</td> <td style="border-bottom: none; 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CERTIFICATE OF ANALYSIS

Validated

SDG: 201011-2
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 572420
Superseded Report:

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm
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Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
23012230	R70115	0.30 - 0.40	Cream	Clay	N/A	N/A

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.



CERTIFICATE OF ANALYSIS

Validated

SDG: 201011-2 Client Reference: JFR1451 Report Number: 572420
 Location: A303 Stonehenge Order Number: Superseded Report:

Results Legend		Customer Sample Ref.	R70115				
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.30 - 0.40				
M	mCERTS accredited.		Soil/Solid (S)				
aq	Aqueous / settled sample.		08/10/2020				
diss.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.		10/10/2020				
*	Subcontracted - refer to subcontractor report for accreditation status.		201011-2				
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		23012230				
(F)	Trigger breach confirmed						
1-4*\$@	Sample deviation (see appendix)						
Component	LOD/Units		Method				
Moisture Content Ratio (% of as received sample)	%	PM024	21				
Exchangeable Ammonia as N	<12 mg/kg	TM024	<12	M			
Phenol	<0.01 mg/kg	TM062 (S)	<0.01	@ M			
Organic Carbon, Total	<0.2 %	TM132	0.227	M			
pH	1 pH Units	TM133	8.45	M			
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6	#			
Cyanide, Total	<1 mg/kg	TM153	<1	M			
Cyanide, Free	<1 mg/kg	TM153	<1	M			
Chromium, Trivalent	<0.9 mg/kg	TM181	2.06				
Antimony	<0.6 mg/kg	TM181	<0.6	#			
Arsenic	<0.6 mg/kg	TM181	<0.6	M			
Beryllium	<0.01 mg/kg	TM181	0.0646	M			
Boron	<0.7 mg/kg	TM181	1.9	#			
Cadmium	<0.02 mg/kg	TM181	0.144	M			
Chromium	<0.9 mg/kg	TM181	2.06	M			
Copper	<1.4 mg/kg	TM181	<1.4	M			
Iron	<1000 mg/kg	TM181	<1000	#			
Lead	<0.7 mg/kg	TM181	<0.7	M			
Manganese	<0.13 mg/kg	TM181	184	M			
Mercury	<0.14 mg/kg	TM181	<0.14	M			
Molybdenum	<0.1 mg/kg	TM181	<0.1	#			
Nickel	<0.2 mg/kg	TM181	1.39	M			
Phosphorus	<1 mg/kg	TM181	457				
Selenium	<1 mg/kg	TM181	<1	#			
Zinc	<1.9 mg/kg	TM181	9.42	M			
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243	<0.004	M			



CERTIFICATE OF ANALYSIS

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SDG: 201011-2
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Order Number:

Report Number: 572420
Superseded Report:

OC OP Pesticides and Triazine Herb

Results Legend # ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.fit Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4*\$@ Sample deviation (see appendix)		Customer Sample Ref. Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	R70115				
Component	LOD/Units	Method					
Dichlorvos	<50 µg/kg	TM073	<50				
Mevinphos	<50 µg/kg	TM073	<50				
Phorate	<50 µg/kg	TM073	<50				
alpha-Hexachlorocyclohexane (HCH)	<50 µg/kg	TM073	<50				
Diazinon	<50 µg/kg	TM073	<50				
gamma-Hexachlorocyclohexane (HCH / Lindane)	<50 µg/kg	TM073	<50				
Atrazine	<50 µg/kg	TM073	<50				
Simazine	<50 µg/kg	TM073	<50				
Disulfoton	<50 µg/kg	TM073	<50				
Heptachlor	<50 µg/kg	TM073	<50				
Aldrin	<50 µg/kg	TM073	<50				
beta-Hexachlorocyclohexane (HCH)	<50 µg/kg	TM073	<50				
Methyl parathion	<50 µg/kg	TM073	<50				
Malathion	<50 µg/kg	TM073	<50				
Fenitrothion	<50 µg/kg	TM073	<50				
Heptachlor epoxide	<50 µg/kg	TM073	<50				
Parathion	<50 µg/kg	TM073	<50				
Endosulphan I	<50 µg/kg	TM073	<50				
p,p-DDE	<50 µg/kg	TM073	<50				
Dieldrin	<50 µg/kg	TM073	<50				
o,p'-DDD (TDE)	<50 µg/kg	TM073	<50				
Endrin	<50 µg/kg	TM073	<50				
p,p-TDE (DDD)	<50 µg/kg	TM073	<50				
Ethion	<50 µg/kg	TM073	<50				
Endosulphan II	<50 µg/kg	TM073	<50				
p,p-DDT	<50 µg/kg	TM073	<50				
p,p-Methoxychlor	<50 µg/kg	TM073	<50				
Endosulphan sulphate	<50 µg/kg	TM073	<50				
Azinphos-methyl	<50 µg/kg	TM073	<50				



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SDG: 201011-2
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 572420
Superseded Report:

PAH by GCMS

Results Legend		Customer Sample Ref.	R70115				
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.30 - 0.40				
M	mCERTS accredited.		Soil/Solid (S)				
aq	Aqueous / settled sample.		08/10/2020				
diss.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.		10/10/2020				
*	Subcontracted - refer to subcontractor report for accreditation status.		201011-2				
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		23012230				
(F)	Trigger breach confirmed						
1-4*\$@	Sample deviation (see appendix)						
Component	LOD/Units		Method				
Naphthalene-d8 % recovery**	%	TM218	89.5				
Acenaphthene-d10 % recovery**	%	TM218	81.4				
Phenanthrene-d10 % recovery**	%	TM218	89.4				
Chrysene-d12 % recovery**	%	TM218	93				
Perylene-d12 % recovery**	%	TM218	83.8				
Naphthalene	<9 µg/kg	TM218	<9			M	
Acenaphthylene	<12 µg/kg	TM218	<12			M	
Acenaphthene	<8 µg/kg	TM218	<8			M	
Fluorene	<10 µg/kg	TM218	<10			M	
Phenanthrene	<15 µg/kg	TM218	<15			M	
Anthracene	<16 µg/kg	TM218	<16			M	
Fluoranthene	<17 µg/kg	TM218	<17			M	
Pyrene	<15 µg/kg	TM218	<15			M	
Benz(a)anthracene	<14 µg/kg	TM218	<14			M	
Chrysene	<10 µg/kg	TM218	<10			M	
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15			M	
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14			M	
Benzo(a)pyrene	<15 µg/kg	TM218	<15			M	
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18			M	
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23			M	
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24			M	
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118				



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Order Number:

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Superseded Report:

TPH CWG (S)

Table with columns: Component, LOD/Units, Method, Customer Sample Ref., Depth (m), Sample Type, Date Sampled, Sampled Time, Date Received, SDG Ref, Lab Sample No.(s), AGS Reference. Rows include GRO Surrogate % recovery, Aliphatics >C5-C6, Aliphatics >C6-C8, etc.



CERTIFICATE OF ANALYSIS

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Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

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Superseded Report:

VOC MS (S)

Table with columns: Component, LOD/Units, Method, and data rows for various VOCs like Dibromofluoromethane, Toluene-d8, 4-Bromofluorobenzene, etc.



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SDG: 201011-2
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 572420
Superseded Report:

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM073	MEWAM BOOK 60 1980,95 1985, HMSO / Modified: US EPA Method 8081A & 8141A	Determination of organochlorine and organophosphorous pesticides by GCMS
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM243		Mixed Anions In Soils By Kone
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).



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SDG: 201011-2
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 572420
Superseded Report:

Test Completion Dates

Lab Sample No(s) 23012230
Customer Sample Ref. R70115
AGS Ref.
Depth 0.30 - 0.40
Type Soil/Solid (S)

Ammonium Soil by Titration	21-Oct-2020
Anions by Kone (soil)	21-Oct-2020
Chromium III	22-Oct-2020
Cyanide Comp/Free/Total/Thiocyanate	22-Oct-2020
EPH CWG GC (S)	21-Oct-2020
GRO by GC-FID (S)	21-Oct-2020
Hexavalent Chromium (s)	22-Oct-2020
Metals in solid samples by OES	23-Oct-2020
OC OP Pesticides and Triazine Herb	22-Oct-2020
PAH by GCMS	22-Oct-2020
pH	21-Oct-2020
Phenols by HPLC (S)	22-Oct-2020
Sample description	19-Oct-2020
Total Organic Carbon	23-Oct-2020
TPH CWG GC (S)	21-Oct-2020
VOC MS (S)	21-Oct-2020



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Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 572420
Superseded Report:

ASSOCIATED AQC DATA

Ammonium Soil by Titration

Component	Method Code	QC 2305
Exchangeable Ammonium as NH4	TM024	83.08 76.20 : 110.13

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2372
Free Cyanide	TM153	86.83 78.61 : 114.43
Thiocyanate	TM153	95.51 90.48 : 109.52
Total Cyanide	TM153	95.8 76.80 : 112.96

EPH CWG GC (S)

Component	Method Code	QC 2390
EPH >C8-C40 Raw	TM414	96.83 77.66 : 104.66
Total Aliphatics Raw	TM414	102.71 84.39 : 115.61
Total Aromatics Raw	TM414	109.26 57.00 : 150.27

GRO by GC-FID (S)

Component	Method Code	QC 2300
QC	TM089	93.66 70.34 : 111.95

Hexavalent Chromium (s)

Component	Method Code	QC 2329
Hexavalent Chromium	TM151	104.0 95.60 : 107.60

Metals in solid samples by OES

Component	Method Code	QC 2358	QC 2389
Aluminium	TM181	89.38 73.56 : 108.85	91.15 73.56 : 108.85
Antimony	TM181	100.0 76.89 : 111.24	104.88 76.89 : 111.24
Arsenic	TM181	96.22 88.53 : 111.01	106.1 88.53 : 111.01



CERTIFICATE OF ANALYSIS

Validated

SDG:	201011-2	Client Reference:	JFR1451	Report Number:	572420
Location:	A303 Stonehenge	Order Number:		Superseded Report:	

Metals in solid samples by OES

		QC 2358	QC 2389
Barium	TM181	89.91 77.67 : 105.35	95.41 77.67 : 105.35
Beryllium	TM181	96.64 85.44 : 109.61	105.6 85.44 : 109.61
Boron	TM181	83.67 73.51 : 104.66	88.25 73.51 : 104.66
Cadmium	TM181	84.77 77.67 : 104.12	92.59 77.67 : 104.12
Chromium	TM181	92.29 86.11 : 106.21	98.99 86.11 : 106.21
Cobalt	TM181	87.74 84.60 : 104.13	96.23 84.60 : 104.13
Copper	TM181	93.31 82.40 : 105.45	94.01 82.40 : 105.45
Iron	TM181	93.65 82.95 : 110.58	96.83 82.95 : 110.58
Lead	TM181	90.09 78.24 : 104.05	93.69 78.24 : 104.05
Manganese	TM181	115.56 94.29 : 119.51	112.22 94.29 : 119.51
Mercury	TM181	89.13 83.16 : 107.81	100.72 83.16 : 107.81
Molybdenum	TM181	97.53 87.11 : 106.87	103.7 87.11 : 106.87
Nickel	TM181	88.26 80.26 : 102.28	97.8 80.26 : 102.28
Phosphorus	TM181	115.15 94.56 : 124.28	126.26 94.56 : 124.28
Selenium	TM181	95.69 82.28 : 110.48	103.92 82.28 : 110.48
Strontium	TM181	89.09 79.13 : 102.79	90.2 79.13 : 102.79
Thallium	TM181	97.35 82.94 : 111.86	105.31 82.94 : 111.86
Tin	TM181	97.34 86.72 : 110.03	100.76 86.72 : 110.03
Titanium	TM181	80.15 66.23 : 102.06	78.63 66.23 : 102.06
Vanadium	TM181	93.41 86.19 : 109.45	101.1 86.19 : 109.45
Zinc	TM181	93.02 84.68 : 113.99	100.41 84.68 : 113.99

OC OP Pesticides and Triazine Herb

Component	Method Code	QC 2374
Atrazine (Raw)	TM073	84.26 78.55 : 119.92
Azinphos methyl (Raw)	TM073	142.57 58.68 : 154.71
cis-Chlordane (Raw)	TM073	87.22 71.90 : 129.99
Diazinon (Raw)	TM073	72.92 70.00 : 130.00



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Order Number:

Report Number: 572420
Superseded Report:

OC OP Pesticides and Triazine Herb

		QC 2374
Dichlorvos (Raw)	TM073	90.26 70.00 : 130.00
Dieldrin (Raw)	TM073	88.93 70.00 : 130.00
gamma-HCH (Lindane) (Raw)	TM073	75.25 71.48 : 129.99
Heptachlor (Raw)	TM073	83.27 66.39 : 134.63
Hexachlorobenzene (Raw)	TM073	84.78 47.15 : 124.32
Malathion (Raw)	TM073	82.99 70.00 : 130.00
p,p-DDT (Raw)	TM073	83.25 70.00 : 130.00
Parathion (Raw)	TM073	92.37 64.13 : 127.88

PAH by GCMS

Component	Method Code	QC 2312
Acenaphthene	TM218	85.5 80.97 : 105.99
Acenaphthylene	TM218	83.0 74.76 : 107.36
Anthracene	TM218	88.5 73.04 : 106.97
Benz(a)anthracene	TM218	88.0 68.79 : 119.64
Benzo(a)pyrene	TM218	86.0 66.17 : 117.52
Benzo(b)fluoranthene	TM218	86.0 66.40 : 118.34
Benzo(ghi)perylene	TM218	85.0 67.68 : 112.07
Benzo(k)fluoranthene	TM218	85.5 72.84 : 114.66
Chrysene	TM218	91.0 68.39 : 115.56
Dibenzo(ah)anthracene	TM218	85.0 69.03 : 110.45
Fluoranthene	TM218	89.0 69.37 : 117.19
Fluorene	TM218	89.5 75.38 : 105.98
Indeno(123cd)pyrene	TM218	82.5 65.91 : 113.61
Naphthalene	TM218	79.0 71.40 : 105.87
Phenanthrene	TM218	91.0 74.04 : 109.30
Pyrene	TM218	90.5 69.68 : 115.27

pH



CERTIFICATE OF ANALYSIS

Validated

SDG: 201011-2
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 572420
Superseded Report:

pH

Component	Method Code	QC 2387
pH	TM133	100.53 99.74 : 102.91

Phenols by HPLC (S)

Component	Method Code	QC 2311
2,3,5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	101.95 65.50 : 89.50
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	88.3 84.00 : 124.00
Catechol by HPLC (S)	TM062 (S)	81.9 19.39 : 135.70
Cresols by HPLC (S)	TM062 (S)	93.74 81.00 : 112.20
Napthol by HPLC (S)	TM062 (S)	113.57 57.50 : 102.50
Phenol by HPLC (S)	TM062 (S)	97.35 88.67 : 124.67
Resorcinol HPLC (S)	TM062 (S)	93.71 69.99 : 127.22
Xylenols by HPLC (S)	TM062 (S)	99.06 95.22 : 115.89

Total Organic Carbon

Component	Method Code	QC 2337
Total Organic Carbon	TM132	94.92 87.02 : 113.45

VOC MS (S)

Component	Method Code	QC 2376
1,1,1,2-tetrachloroethane	TM116	97.6 79.10 : 119.66
1,1,1-Trichloroethane	TM116	99.0 87.51 : 115.37
1,1,2-Trichloroethane	TM116	97.8 81.29 : 113.79
1,1-Dichloroethane	TM116	107.2 86.77 : 122.11
1,2-Dichloroethane	TM116	108.0 90.04 : 132.28
1,4-Dichlorobenzene	TM116	98.6 80.81 : 125.07
2-Chlorotoluene	TM116	91.8 73.13 : 114.13
4-Chlorotoluene	TM116	89.8 72.48 : 112.82



CERTIFICATE OF ANALYSIS

Validated

SDG: 201011-2
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 572420
Superseded Report:

VOC MS (S)

		QC 2376
Benzene	TM116	97.8 84.29 : 112.22
Carbon Disulphide	TM116	102.8 75.11 : 124.81
Carbontetrachloride	TM116	98.4 82.35 : 126.46
Chlorobenzene	TM116	96.4 82.88 : 122.42
Chloroform	TM116	104.6 90.35 : 120.38
Chloromethane	TM116	115.4 65.80 : 138.88
Cis-1,2-Dichloroethene	TM116	97.8 78.27 : 128.90
Dibromomethane	TM116	96.8 76.00 : 120.73
Dichloromethane	TM116	109.8 92.27 : 134.36
Ethylbenzene	TM116	90.4 70.95 : 113.07
Hexachlorobutadiene	TM116	113.8 14.55 : 147.92
Isopropylbenzene	TM116	85.4 52.00 : 108.19
Naphthalene	TM116	100.2 80.29 : 135.77
o-Xylene	TM116	81.0 64.92 : 98.85
p/m-Xylene	TM116	87.9 72.04 : 104.04
Sec-Butylbenzene	TM116	98.6 27.03 : 135.73
Tetrachloroethene	TM116	98.2 81.43 : 126.65
Toluene	TM116	90.6 82.44 : 103.50
Trichloroethene	TM116	93.4 79.80 : 112.33
Trichlorofluoromethane	TM116	111.0 86.68 : 126.82
Vinyl Chloride	TM116	118.6 69.66 : 136.55

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.

The figure detailed is the percentage recovery result for the AQC.

The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.



CERTIFICATE OF ANALYSIS

Validated

SDG: 201011-2
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

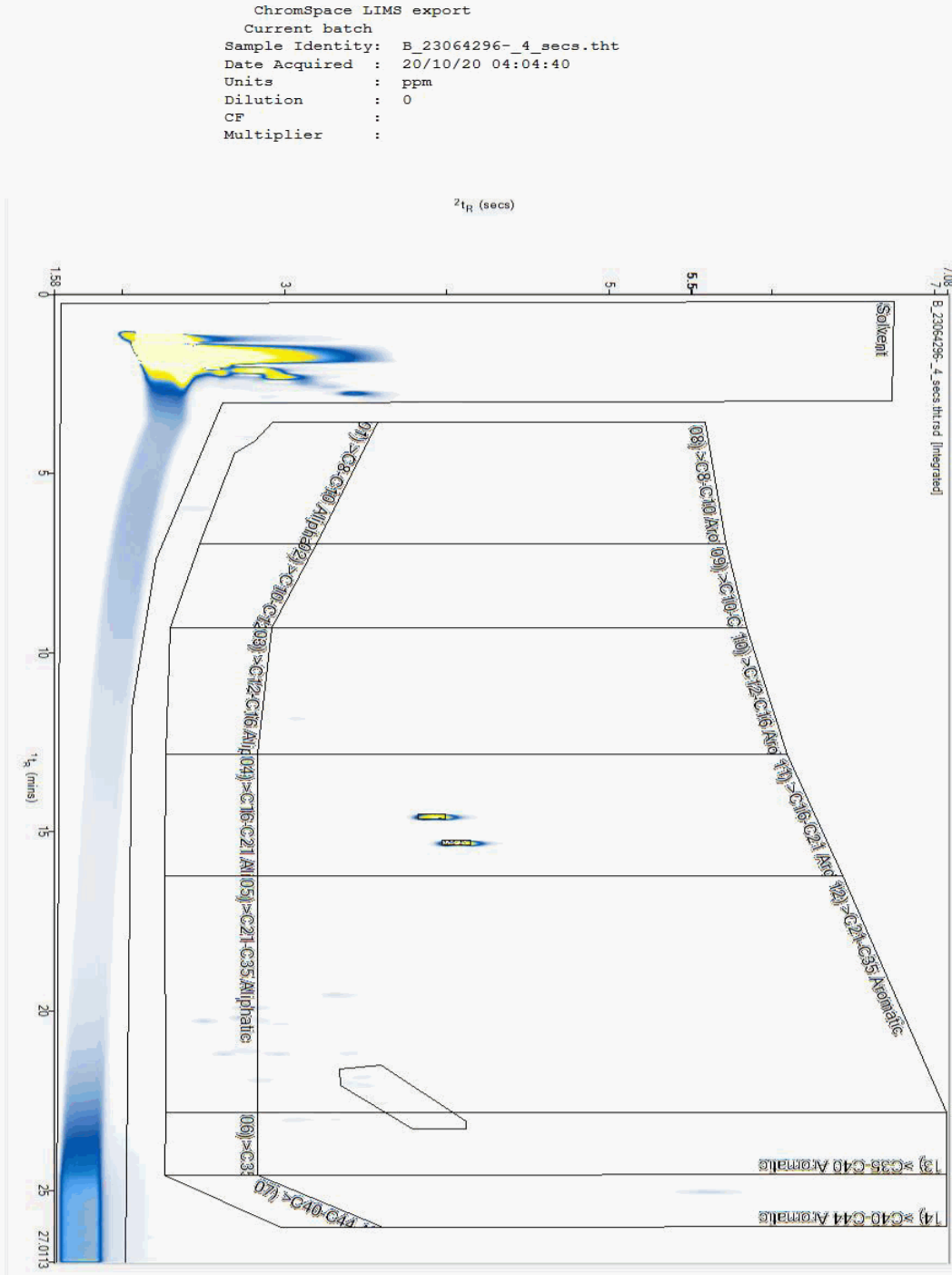
Report Number: 572420
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23064296
Sample ID : R70115

Depth : 0.30 - 0.40





CERTIFICATE OF ANALYSIS

Validated

SDG: 201011-2
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

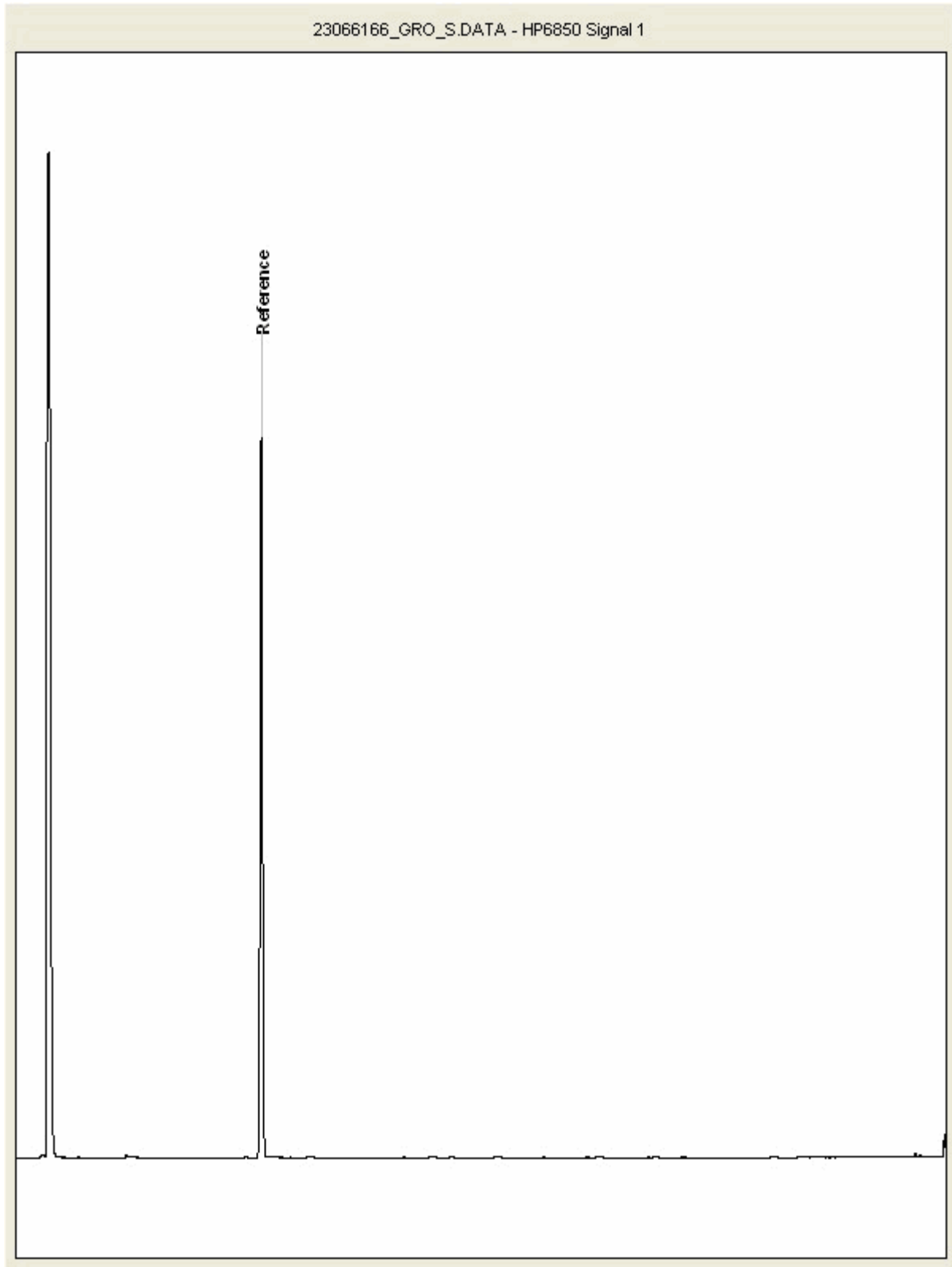
Report Number: 572420
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23066166
Sample ID : R70115

Depth : 0.30 - 0.40





CERTIFICATE OF ANALYSIS

SDG: 201011-2 Client Reference: JFR1451 Report Number: 572420
 Location: A303 Stonehenge Order Number: Superseded Report:

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

19. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung. Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017)*.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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RPS Consultants Ltd
260 Park Avenue
Aztec West
Almondsbury
Bristol
BS32 4SY

Attention: Gary Riches

CERTIFICATE OF ANALYSIS

Date of report Generation: 04 December 2020
Customer: RPS Consultants Ltd
Sample Delivery Group (SDG): 201011-3
Your Reference: JFR1451
Location: A303 Stonehenge
Report No: 578687

This report has been revised and directly supersedes 574555 in its entirety.

We received 12 samples on Saturday October 10, 2020 and 6 of these samples were scheduled for analysis which was completed on Tuesday November 03, 2020. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

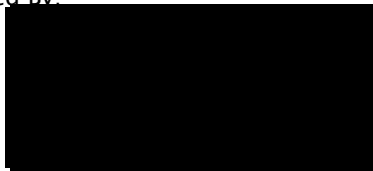
Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:



Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 201011-3 Client Reference: JFR1451 Report Number: 578687
Location: A303 Stonehenge Order Number: PQ20-857 Superseded Report: 574555

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
23012261	STP ES4		0.00	08/10/2020
23012262	STP ES4		0.30	08/10/2020
23012263	STP ES4		0.50	08/10/2020
23012264	STP ES4		1.00	08/10/2020
23012257	STP ES5		0.00	08/10/2020
23012258	STP ES5		0.30	08/10/2020
23012259	STP ES5		0.50	08/10/2020
23012260	STP ES5		1.00	08/10/2020
23012253	STP ES6		0.00	08/10/2020
23012254	STP ES6		0.30	08/10/2020
23012255	STP ES6		0.50	08/10/2020
23012256	STP ES6		1.00	08/10/2020

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 201011-3
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PQ20-857

Report Number: 578687
Superseded Report: 574555

Results Legend



Test



No Determination Possible

Sample Types -

- S - Soil/Solid
- UNS - Unspecified Solid
- GW - Ground Water
- SW - Surface Water
- LE - Land Leachate
- PL - Prepared Leachate
- PR - Process Water
- SA - Saline Water
- TE - Trade Effluent
- TS - Treated Sewage
- US - Untreated Sewage
- RE - Recreational Water
- DW - Drinking Water
- Non-regulatory
- UNL - Unspecified Liquid
- SL - Sludge
- G - Gas
- OTH - Other

Results Legend	Lab Sample No(s)		Customer Sample Reference		AGS Reference		Depth (m)		Container		Sample Type	
	23012256	23012255	23012260	23012259	23012264	23012262	0.30	1.00	0.50	1.00	60g VOC (ALE215)	250g Amber Jar (ALE210)
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 1		X								
Ammonium Soil by Titration	All	NDPs: 0 Tests: 6	X		X		X		X		X	
Anions by Kone (soil)	All	NDPs: 0 Tests: 5	X				X		X		X	
Anions by Kone (w)	All	NDPs: 0 Tests: 1							X			
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 6	X		X		X		X		X	
CEN Readings	All	NDPs: 0 Tests: 1							X			
Chromium III	All	NDPs: 0 Tests: 7	X		X		X		X	X	X	
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 7	X		X		X		X	X	X	
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 1							X			
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 1							X			
EPH CWG (Aliphatic) Filtered GC (W)	All	NDPs: 0 Tests: 1							X			
EPH CWG (Aromatic) Filtered GC (W)	All	NDPs: 0 Tests: 1							X			
EPH CWG GC (S)	All	NDPs: 0 Tests: 6	X		X		X		X		X	
GRO by GC-FID (S)	All	NDPs: 0 Tests: 6		X			X		X		X	
GRO by GC-FID (W)	All	NDPs: 0 Tests: 1							X			



CERTIFICATE OF ANALYSIS

Validated

SDG:	201011-3	Client Reference:	JFR1451
Location:	A303 Stonehenge	Order Number:	PO20-857
		Report Number:	578687
		Superseded Report:	574555

Results Legend

X Test

N No Determination Possible

Sample Types -

- S - Soil/Solid
- UNS - Unspecified Solid
- GW - Ground Water
- SW - Surface Water
- LE - Land Leachate
- PL - Prepared Leachate
- PR - Process Water
- SA - Saline Water
- TE - Trade Effluent
- TS - Treated Sewage
- US - Untreated Sewage
- RE - Recreational Water
- DW - Drinking Water
- Non-regulatory
- UNL - Unspecified Liquid
- SL - Sludge
- G - Gas
- OTH - Other

	Lab Sample No(s)		Customer Sample Reference		AGS Reference		Depth (m)		Container		Sample Type	
	23012262	23012264	STP ES4	STP ES4			0.30	1.00	250g Amber Jar (ALE215)	1kg TUB with Handle	S	S
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 6	X	X	X	X	X	X	X	X	X	X
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 1								X		
Mercury Dissolved	All	NDPs: 0 Tests: 1								X		
Metals in solid samples by OES	All	NDPs: 0 Tests: 6	X	X	X	X	X	X	X	X	X	X
PAH by GCMS	All	NDPs: 0 Tests: 6	X	X	X	X	X	X	X	X	X	X
PAH in waters by GC-MS (diss.filt)	All	NDPs: 0 Tests: 1								X		
pH	All	NDPs: 0 Tests: 6	X	X	X	X	X	X	X	X	X	X
pH Value of Filtered Water	All	NDPs: 0 Tests: 1								X		
Phenols by HPLC (S)	All	NDPs: 0 Tests: 6	X	X	X	X	X	X	X	X	X	X
Phenols by HPLC (W)	All	NDPs: 0 Tests: 1								X		
Sample description	All	NDPs: 0 Tests: 6	X	X	X	X	X	X	X	X	X	X
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 2		X						X		
Total Organic Carbon	All	NDPs: 0 Tests: 6	X	X	X	X	X	X	X	X	X	X
TPH CWG Filtered (W)	All	NDPs: 0 Tests: 1								X		
TPH CWG GC (S)	All	NDPs: 0 Tests: 6	X	X	X	X	X	X	X	X	X	X



CERTIFICATE OF ANALYSIS

Validated

SDG: 201011-3	Client Reference: JFR1451	Report Number: 578687	578687
Location: A303 Stonehenge	Order Number: PQ20-857	Superseded Report:	574555

Results Legend

- X Test
- N No Determination Possible

- Sample Types -
- S - Soil/Solid
 - UNS - Unspecified Solid
 - GW - Ground Water
 - SW - Surface Water
 - LE - Land Leachate
 - PL - Prepared Leachate
 - PR - Process Water
 - SA - Saline Water
 - TE - Trade Effluent
 - TS - Treated Sewage
 - US - Untreated Sewage
 - RE - Recreational Water
 - DW - Drinking Water
 - Non-regulatory
 - UNL - Unspecified Liquid
 - SL - Sludge
 - G - Gas
 - OTH - Other

	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type
	2301 2262	STP ES4		0.30	250g Amber Jar (ALE210) 60g VOC (ALE215) 1kg TUB with Handle	S
	2301 2264	STP ES4		1.00	250g Amber Jar (ALE210) 60g VOC (ALE215) 1kg TUB with Handle	S
	2301 2259	STP ES5		0.50	250g Amber Jar (ALE210) 60g VOC (ALE215) 1kg TUB with Handle	S
	2301 2260	STP ES5		1.00	250g Amber Jar (ALE210) 60g VOC (ALE215) 1kg TUB with Handle	S
	2301 2255	STP ES6		0.50	250g Amber Jar (ALE210) 60g VOC (ALE215) 1kg TUB with Handle	S
	2301 2256	STP ES6		1.00	250g Amber Jar (ALE210) 60g VOC (ALE215) 1kg TUB with Handle	S
VOC MS (S)	All	NDPs: 0 Tests: 6				
						X
						X
						X
						X
						X
						X



CERTIFICATE OF ANALYSIS

Validated

SDG: 201011-3	Client Reference: JFR1451	Report Number: 578687
Location: A303 Stonehenge	Order Number: PQ20-857	Superseded Report: 574555

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm
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Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
23012262	STP ES4	0.30	Light Brown	Clay Loam	Stones	Vegetation
23012264	STP ES4	1.00	Beige	Chalk	Stones	Vegetation
23012259	STP ES5	0.50	Dark Brown	Sandy Clay	Stones	Vegetation
23012260	STP ES5	1.00	Light Brown	Sandy Loam	Stones	None
23012255	STP ES6	0.50	Dark Brown	Sandy Loam	Stones	Vegetation
23012256	STP ES6	1.00	White	Chalk	Vegetation	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.



CERTIFICATE OF ANALYSIS

Validated

SDG:	201011-3	Client Reference:	JFR1451	Report Number:	578687
Location:	A303 Stonehenge	Order Number:	PO20-857	Superseded Report:	574555

Results Legend			Customer Sample Ref.	STP ES4	STP ES4	STP ES5	STP ES5	STP ES6	STP ES6
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4*5@ Sample deviation (see appendix)	Depth (m)	Sample Type		0.30 Soil/Solid (S)	1.00 Soil/Solid (S)	0.50 Soil/Solid (S)	1.00 Soil/Solid (S)	0.50 Soil/Solid (S)	1.00 Soil/Solid (S)
	Date Sampled	Sampled Time		08/10/2020	08/10/2020	08/10/2020	08/10/2020	08/10/2020	08/10/2020
	Date Received	SDG Ref		10/10/2020	10/10/2020	10/10/2020	10/10/2020	10/10/2020	10/10/2020
	Lab Sample No.(s)	AGS Reference		201011-3 23012262	201011-3 23012264	201011-3 23012259	201011-3 23012260	201011-3 23012255	201011-3 23012256
Component	LOD/Units	Method							
Moisture Content Ratio (% of as received sample)	%	PM024		6.5	18	14	9.6	16	20
Exchangeable Ammonia as N	<12 mg/kg	TM024		<12 M	<12 #	<12 M	<12 M	<12 M	<12 #
Phenol	<0.01 mg/kg	TM062 (S)		<0.01 @ M	<0.01 @ #	0.0116 @ M	<0.01 @ M	<0.01 @ M	<0.01 @ #
Organic Carbon, Total	<0.2 %	TM132		1.27 M	0.327 #	1.54 M	0.23 M	1.96 M	<0.2 #
pH	1 pH Units	TM133		8.97 M	9.21 #	8.71 M	9.2 M	8.75 M	9.14 #
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #
Cyanide, Total	<1 mg/kg	TM153		<1 @ M	<1 @ #	<1 @ M	<1 @ M	<1 @ M	<1 @ #
Cyanide, Free	<1 mg/kg	TM153		<1 @ M	<1 @ #	<1 @ M	<1 @ M	<1 @ M	<1 @ #
Chromium, Trivalent	<0.9 mg/kg	TM181		12.2 M	3.31 #	11 M	8.91 M	13.5 M	4.32 #
Antimony	<0.6 mg/kg	TM181		4.34 #	<0.6 #	2.5 #	<0.6 #	3.86 #	1.82 #
Arsenic	<0.6 mg/kg	TM181		6.26 M	0.662 #	5.22 M	4.47 M	3.39 M	1.13 #
Beryllium	<0.01 mg/kg	TM181		0.248 M	0.13 #	0.395 M	0.396 M	0.306 M	0.0987 #
Boron	<0.7 mg/kg	TM181		6.93 #	2.89 #	9.36 #	14.8 #	6.94 #	2.47 #
Cadmium	<0.02 mg/kg	TM181		0.621 M	0.464 #	0.497 M	0.113 M	0.396 M	0.449 #
Chromium	<0.9 mg/kg	TM181		12.2 M	3.31 #	11 M	8.91 M	13.5 M	4.32 #
Copper	<1.4 mg/kg	TM181		77.3 M	4.57 #	32.5 M	3.26 M	37 M	56.6 #
Iron	<1000 mg/kg	TM181		11500 #	2620 #	11900 #	12400 #	9140 #	2070 #
Lead	<0.7 mg/kg	TM181		64.8 M	7.91 #	74.5 M	6.3 M	54.8 M	14.2 #
Manganese	<0.13 mg/kg	TM181		366 M	233 #	432 M	485 M	286 M	247 #
Mercury	<0.14 mg/kg	TM181		<0.14 M	<0.14 #	<0.14 M	<0.14 M	<0.14 M	<0.14 #
Molybdenum	<0.1 mg/kg	TM181		1.73 #	0.206 #	1.17 #	0.17 #	1.5 #	0.534 #
Nickel	<0.2 mg/kg	TM181		9.78 M	4.15 #	10.4 M	10.8 M	8.61 M	4.46 #
Phosphorus	<1 mg/kg	TM181		1010 M	534 #	1050 M	1010 M	650 M	530 #
Selenium	<1 mg/kg	TM181		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Zinc	<1.9 mg/kg	TM181		326 M	41.3 #	141 M	22 M	139 M	103 #
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243		0.0565 M		0.0267 M	0.0068 M	0.0484 M	0.023 #



CERTIFICATE OF ANALYSIS

Validated

SDG: 201011-3 Client Reference: JFR1451 Report Number: 578687
 Location: A303 Stonehenge Order Number: PO20-857 Superseded Report: 574555

PAH by GCMS

Results Legend		Customer Sample Ref.	STP ES4	STP ES4	STP ES5	STP ES5	STP ES6	STP ES6
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.30	1.00	0.50	1.00	0.50	1.00
M	mCERTS accredited.		Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
aq	Aqueous / settled sample.		08/10/2020	08/10/2020	08/10/2020	08/10/2020	08/10/2020	08/10/2020
diss,filtr	Dissolved / filtered sample.		10/10/2020	10/10/2020	10/10/2020	10/10/2020	10/10/2020	10/10/2020
tot.unfiltr	Total / unfiltered sample.		201011-3	201011-3	201011-3	201011-3	201011-3	201011-3
*	Subcontracted - refer to subcontractor report for accreditation status.		23012262	23012264	23012259	23012260	23012255	23012256
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery							
(F)	Trigger breach confirmed							
1-4*5@	Sample deviation (see appendix)							
Component	LOD/Units	Method						
Naphthalene-d8 % recovery**	%	TM218	84.2	85.8	83.4	89.6	88.8	92.4
Acenaphthene-d10 % recovery**	%	TM218	89.2	91	91.2	94.8	90.5	94.7
Phenanthrene-d10 % recovery**	%	TM218	86.3	93.2	90.2	96.2	90.1	95.3
Chrysene-d12 % recovery**	%	TM218	93.1	97.3	96.2	103	76.5	82.7
Perylene-d12 % recovery**	%	TM218	81.1	86	82	92.1	72.3	84.4
Naphthalene	<9 µg/kg	TM218	<45 @ M	<9 @ #	<180 @ M	<9 @ M	<45 @ M	<9 @ #
Acenaphthylene	<12 µg/kg	TM218	95.9 @ M	34.5 @ #	317 @ M	40.8 @ M	76.1 @ M	<12 @ #
Acenaphthene	<8 µg/kg	TM218	<40 @ M	20.1 @ #	<160 @ M	<8 @ M	<40 @ M	<8 @ #
Fluorene	<10 µg/kg	TM218	<50 @ M	19.7 @ #	<200 @ M	<10 @ M	<50 @ M	<10 @ #
Phenanthrene	<15 µg/kg	TM218	585 @ M	392 @ #	815 @ M	63 @ M	258 @ M	<15 @ #
Anthracene	<16 µg/kg	TM218	200 @ M	81.3 @ #	<320 @ M	28.9 @ M	<80 @ M	<16 @ #
Fluoranthene	<17 µg/kg	TM218	1720 @ M	1020 @ #	3750 @ M	365 @ M	1170 @ M	35.3 @ #
Pyrene	<15 µg/kg	TM218	1570 @ M	869 @ #	3610 @ M	342 @ M	1050 @ M	31.3 @ #
Benz(a)anthracene	<14 µg/kg	TM218	942 @ M	461 @ #	2300 @ M	236 @ M	673 @ M	19.1 @ #
Chrysene	<10 µg/kg	TM218	865 @ M	454 @ #	2210 @ M	223 @ M	686 @ M	18.5 @ #
Benzo(b)fluoranthene	<15 µg/kg	TM218	1180 @ M	653 @ #	3340 @ M	369 @ M	1080 @ M	29.4 @ #
Benzo(k)fluoranthene	<14 µg/kg	TM218	431 @ M	233 @ #	1210 @ M	140 @ M	368 @ M	<14 @ #
Benzo(a)pyrene	<15 µg/kg	TM218	907 @ M	441 @ #	2430 @ M	282 @ M	730 @ M	19 @ #
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	640 @ M	282 @ #	1910 @ M	219 @ M	678 @ M	<18 @ #
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<115 @ M	49 @ #	<460 @ M	38.9 @ M	<115 @ M	<23 @ #
Benzo(g,h,i)perylene	<24 µg/kg	TM218	675 @ M	303 @ #	2180 @ M	233 @ M	696 @ M	<24 @ #
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	9810	5310	24100	2580	7470	153



CERTIFICATE OF ANALYSIS

Validated

SDG:	201011-3	Client Reference:	JFR1451	Report Number:	578687
Location:	A303 Stonehenge	Order Number:	PO20-857	Superseded Report:	574555

Semi Volatile Organic Compounds

Results Legend # ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss,filtr Dissolved / filtered sample. tot.unfiltr Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-44\$@ Sample deviation (see appendix)		Customer Sample Ref. Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	STP ES4	STP ES6			
Component	LOD/Units	Method	1.00 Soil/Solid (S) 08/10/2020	0.50 Soil/Solid (S) 08/10/2020			
Phenol	<100 µg/kg	TM157	<100	<200			
Pentachlorophenol	<100 µg/kg	TM157	<100	<200			
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100	<200			
Nitrobenzene	<100 µg/kg	TM157	<100	<200			
Isophorone	<100 µg/kg	TM157	<100	<200			
Hexachloroethane	<100 µg/kg	TM157	<100	<200			
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100	<200			
Hexachlorobutadiene	<100 µg/kg	TM157	<100	<200			
Hexachlorobenzene	<100 µg/kg	TM157	<100	<200			
n-Dioctyl phthalate	<100 µg/kg	TM157	<100	<200			
Dimethyl phthalate	<100 µg/kg	TM157	<100	<200			
Diethyl phthalate	<100 µg/kg	TM157	<100	<200			
n-Dibutyl phthalate	<100 µg/kg	TM157	<100	<200			
Dibenzofuran	<100 µg/kg	TM157	<100	<200			
Carbazole	<100 µg/kg	TM157	<100	<200			
Butylbenzyl phthalate	<100 µg/kg	TM157	<100	<200			
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100	<200			
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100	<200			
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100	<200			
Azobenzene	<100 µg/kg	TM157	<100	<200			
4-Nitrophenol	<100 µg/kg	TM157	<100	<200			
4-Nitroaniline	<100 µg/kg	TM157	<100	<200			
4-Methylphenol	<100 µg/kg	TM157	<100	<200			
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100	<200			
4-Chloroaniline	<100 µg/kg	TM157	<100	<200			
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100	<200			
4-Bromophenylphenylether	<100 µg/kg	TM157	<100	<200			
3-Nitroaniline	<100 µg/kg	TM157	<100	<200			
2-Nitrophenol	<100 µg/kg	TM157	<100	<200			
2-Nitroaniline	<100 µg/kg	TM157	<100	<200			
2-Methylphenol	<100 µg/kg	TM157	<100	<200			
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100	<200			



CERTIFICATE OF ANALYSIS

Validated

SDG:	201011-3	Client Reference:	JFR1451
Location:	A303 Stonehenge	Order Number:	PO20-857
		Report Number:	578687
		Superseded Report:	574555

Semi Volatile Organic Compounds

Results Legend			Customer Sample Ref.	STP ES4	STP ES6			
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. dis.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery. (F) Trigger breach confirmed 1-4&@ Sample deviation (see appendix)			Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	1.00 Soil/Solid (S) 08/10/2020 10/10/2020 201011-3 23012264	0.50 Soil/Solid (S) 08/10/2020 10/10/2020 201011-3 23012255			
Component	LOD/Units	Method						
2-Chlorophenol	<100 µg/kg	TM157	<100	<200				
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100	<200				
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100	<200				
2,4-Dimethylphenol	<100 µg/kg	TM157	<100	<200				
2,4-Dichlorophenol	<100 µg/kg	TM157	<100	<200				
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100	<200				
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100	<200				
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100	<200				
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100	<200				
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100	<200				
2-Chloronaphthalene	<100 µg/kg	TM157	<100	<200				
2-Methylnaphthalene	<100 µg/kg	TM157	<100	<200				
Acenaphthylene	<100 µg/kg	TM157	<100	<200				
Acenaphthene	<100 µg/kg	TM157	<100	<200				
Anthracene	<100 µg/kg	TM157	<100	<200				
Benzo(a)anthracene	<100 µg/kg	TM157	258	880				
Benzo(b)fluoranthene	<100 µg/kg	TM157	355	1520				
Benzo(k)fluoranthene	<100 µg/kg	TM157	235	959				
Benzo(a)pyrene	<100 µg/kg	TM157	269	917				
Benzo(g,h,i)perylene	<100 µg/kg	TM157	177	922				
Chrysene	<100 µg/kg	TM157	299	972				
Fluoranthene	<100 µg/kg	TM157	623	1680				
Fluorene	<100 µg/kg	TM157	<100	<200				
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	215	992				
Phenanthrene	<100 µg/kg	TM157	227	465				
Pyrene	<100 µg/kg	TM157	463	1450				
Naphthalene	<100 µg/kg	TM157	<100	<200				
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100	<200				
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100	<200				
TIC report		TM157	Not Detected	Not Detected				
Total SVOC TIC	<100 µg/kg	TM157	<1000	<2000				



CERTIFICATE OF ANALYSIS

Validated

SDG: 201011-3
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PO20-857

Report Number: 578687
Superseded Report: 574555

TPH CWG (S)

Results Legend		Customer Sample Ref.	STP ES4	STP ES4	STP ES5	STP ES5	STP ES6	STP ES6
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No. (s) AGS Reference	0.30	1.00	0.50	1.00	0.50	1.00
M	mCERTS accredited.		Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
aq	Aqueous / settled sample.		08/10/2020	08/10/2020	08/10/2020	08/10/2020	08/10/2020	08/10/2020
diss.filt	Dissolved / filtered sample.		10/10/2020	10/10/2020	10/10/2020	10/10/2020	10/10/2020	10/10/2020
tot.unfilt	Total / unfiltered sample.		201011-3	201011-3	201011-3	201011-3	201011-3	201011-3
*	Subcontracted - refer to subcontractor report for accreditation status.		23012262	23012264	23012259	23012260	23012255	23012256
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery							
(F)	Trigger breach confirmed							
1-4*\$@	Sample deviation (see appendix)							
Component	LOD/Units	Method						
GRO Surrogate % recovery**	%	TM089	92.2 @	106 @	116 @	110 @	126 @	111 @
Aliphatics >C5-C6	<10 µg/kg	TM089	<10 @	<10 @	<10 @	<10 @	<10 @	<10 @
Aliphatics >C6-C8	<10 µg/kg	TM089	<10 @	<10 @	<10 @	<10 @	<10 @	<10 @
Aliphatics >C8-C10	<10 µg/kg	TM089	<10 @	<10 @	<10 @	<10 @	<10 @	<10 @
Aliphatics >C10-C12	<1000 µg/kg	TM414	<1000	<1000	<1000	<1000	<1000	<1000
Aliphatics >C12-C16	<1000 µg/kg	TM414	<1000	<1000	<1000	<1000	<1000	<1000
Aliphatics >C16-C21	<1000 µg/kg	TM414	<1000	<1000	<1000	<1000	1760	<1000
Aliphatics >C21-C35	<1000 µg/kg	TM414	6260	1130	7390	1950	12800	1140
Aliphatics >C35-C44	<1000 µg/kg	TM414	<1000	<1000	<1000	<1000	<1000	<1000
Total Aliphatics >C10-C44	<5000 µg/kg	TM414	7270	<5000	8350	<5000	14900	<5000
Total Aliphatics & Aromatics >C10-C44	<10000 µg/kg	TM414	58800	24900	110000	22500	73600	<10000
Aromatics >EC5-EC7	<10 µg/kg	TM089	<10 @	<10 @	<10 @	<10 @	<10 @	<10 @
Aromatics >EC7-EC8	<10 µg/kg	TM089	<10 @	<10 @	<10 @	<10 @	<10 @	<10 @
Aromatics >EC8-EC10	<10 µg/kg	TM089	<10 @	<10 @	<10 @	<10 @	<10 @	<10 @
Aromatics > EC10-EC12	<1000 µg/kg	TM414	<1000	<1000	<1000	<1000	<1000	<1000
Aromatics > EC12-EC16	<1000 µg/kg	TM414	<1000	<1000	<1000	<1000	<1000	<1000
Aromatics > EC16-EC21	<1000 µg/kg	TM414	6640	4110	14800	2320	4780	<1000
Aromatics > EC21-EC35	<1000 µg/kg	TM414	37200	17300	68300	15200	44700	2740
Aromatics >EC35-EC44	<1000 µg/kg	TM414	7420	2080	18200	2000	9090	<1000
Aromatics > EC40-EC44	<1000 µg/kg	TM414	<1000	<1000	1480	<1000	1190	<1000
Total Aromatics > EC10-EC44	<5000 µg/kg	TM414	51500	23600	102000	19700	58700	<5000
Total Aliphatics & Aromatics >C5-C44	<10000 µg/kg	TM414	58800	23600	110000	19700	73600	<10000
Total Aliphatics >C5-C10	<50 µg/kg	TM089	<50 @	<50 @	<50 @	<50 @	<50 @	<50 @
Total Aromatics >EC5-EC10	<50 µg/kg	TM089	<50 @	<50 @	<50 @	<50 @	<50 @	<50 @
GRO >C5-C10	<20 µg/kg	TM089	<20 @	<20 @	<20 @	<20 @	<20 @	<20 @



CERTIFICATE OF ANALYSIS

Validated

SDG:	201011-3	Client Reference:	JFR1451
Location:	A303 Stonehenge	Order Number:	PO20-857
		Report Number:	578687
		Superseded Report:	574555

VOC MS (S)

Results Legend			Customer Sample Ref.	STP ES4	STP ES4	STP ES5	STP ES5	STP ES6	STP ES6
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss,filtr Dissolved / filtered sample. tot.unfiltr Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery. (F) Trigger breach confirmed 1-44\$@ Sample deviation (see appendix)	Depth (m)	Sample Type	0.30 Soil/Solid (S)	1.00 Soil/Solid (S)	0.50 Soil/Solid (S)	1.00 Soil/Solid (S)	0.50 Soil/Solid (S)	1.00 Soil/Solid (S)	
	Date Sampled	Date Received	08/10/2020	08/10/2020	08/10/2020	08/10/2020	08/10/2020	08/10/2020	
	SDG Ref	Lab Sample No. (s)	201011-3 23012262	201011-3 23012264	201011-3 23012259	201011-3 23012260	201011-3 23012255	201011-3 23012256	
	AGS Reference								
Component	LOD/Units	Method							
Dibromofluoromethane**	%	TM116	116 @	109 @	128 @	102 @	131 @	106 @	
Toluene-d8**	%	TM116	93.3 @	98.8 @	99.8 @	99.9 @	98.7 @	98.5 @	
4-Bromofluorobenzene**	%	TM116	76.7 @	94.5 @	100 @	97 @	97.9 @	90.3 @	
Dichlorodifluoromethane	<6 µg/kg	TM116		<6 @ #			<6 @ M		
Chloromethane	<7 µg/kg	TM116		<7 @ #			<70 @ #		
Vinyl Chloride	<6 µg/kg	TM116		<6 @ #			<60 @ M		
Bromomethane	<10 µg/kg	TM116		<10 @ #			<100 @ M		
Chloroethane	<10 µg/kg	TM116		<10 @ #			<100 @ M		
Trichlorofluoromethane	<6 µg/kg	TM116		<6 @ #			<60 @ M		
1,1-Dichloroethene	<10 µg/kg	TM116		<10 @ #			<100 @ #		
Carbon Disulphide	<7 µg/kg	TM116		<7 @ #			<70 @ M		
Dichloromethane	<10 µg/kg	TM116		27.3 @ #			<100 @ #		
Methyl Tertiary Butyl Ether	<10 µg/kg	TM116	<10 @ M	<10 @ #	<100 @ M	<10 @ M	<100 @ M	<10 @ #	
trans-1,2-Dichloroethene	<10 µg/kg	TM116		<10 @ #			<100 @ M		
1,1-Dichloroethane	<8 µg/kg	TM116		<8 @ #			<80 @ M		
cis-1,2-Dichloroethene	<6 µg/kg	TM116		<6 @ #			<60 @ M		
2,2-Dichloropropane	<10 µg/kg	TM116		<10 @			<100 @		
Bromochloromethane	<10 µg/kg	TM116		<10 @ #			<100 @ M		
Chloroform	<8 µg/kg	TM116		<8 @ #			<80 @ M		
1,1,1-Trichloroethane	<7 µg/kg	TM116		<7 @ #			<70 @ M		
1,1-Dichloropropene	<10 µg/kg	TM116		<10 @ #			<100 @ M		
Carbontetrachloride	<10 µg/kg	TM116		<10 @ #			<100 @ M		
1,2-Dichloroethane	<5 µg/kg	TM116		<5 @ #			<50 @ M		
Benzene	<9 µg/kg	TM116	<9 @ M	<9 @ #	<90 @ M	<9 @ M	<90 @ M	<9 @ #	
Trichloroethene	<9 µg/kg	TM116		<9 @ #			<90 @ #		
1,2-Dichloropropane	<10 µg/kg	TM116		<10 @ #			<100 @ M		
Dibromomethane	<9 µg/kg	TM116		<9 @ #			<90 @ M		
Bromodichloromethane	<7 µg/kg	TM116		<7 @ #			<70 @ M		
cis-1,3-Dichloropropene	<10 µg/kg	TM116		<10 @ #			<100 @ M		
Toluene	<7 µg/kg	TM116	<7 @ M	<7 @ #	<70 @ M	<7 @ M	<70 @ M	<7 @ #	
trans-1,3-Dichloropropene	<10 µg/kg	TM116		<10 @			<100 @		
1,1,2-Trichloroethane	<10 µg/kg	TM116		<10 @ #			<100 @ M		



CERTIFICATE OF ANALYSIS

Validated

SDG:	201011-3	Client Reference:	JFR1451
Location:	A303 Stonehenge	Order Number:	PO20-857
		Report Number:	578687
		Superseded Report:	574555

VOC MS (S)

Results Legend			Customer Sample Ref.	STP ES4	STP ES4	STP ES5	STP ES5	STP ES6	STP ES6
# ISO17025 accredited. M MCERTS accredited. aq Aqueous / settled sample. dis.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4*6@ Sample deviation (see appendix)	Depth (m)	Sample Type		0.30 Soil/Solid (S)	1.00 Soil/Solid (S)	0.50 Soil/Solid (S)	1.00 Soil/Solid (S)	0.50 Soil/Solid (S)	1.00 Soil/Solid (S)
	Date Sampled	Sampled Time		08/10/2020	08/10/2020	08/10/2020	08/10/2020	08/10/2020	08/10/2020
	Date Received	SDG Ref		10/10/2020	10/10/2020	10/10/2020	10/10/2020	10/10/2020	10/10/2020
	Lab Sample No.(s)	AGS Reference		201011-3 23012262	201011-3 23012264	201011-3 23012259	201011-3 23012260	201011-3 23012255	201011-3 23012256
Component	LOD/Units	Method							
1,3-Dichloropropane	<7 µg/kg	TM116			<7 @ #			<70 @ M	
Tetrachloroethene	<5 µg/kg	TM116			<5 @ #			<50 @ M	
Dibromochloromethane	<10 µg/kg	TM116			<10 @ #			<100 @ M	
1,2-Dibromoethane	<10 µg/kg	TM116			<10 @ #			<100 @ M	
Chlorobenzene	<5 µg/kg	TM116			<5 @ #			<50 @ M	
1,1,1,2-Tetrachloroethane	<10 µg/kg	TM116			<10 @ #			<100 @ M	
Ethylbenzene	<4 µg/kg	TM116	<4 @ M	<4 @ #	<4 @ M	<4 @ M	<4 @ M	<4 @ M	<4 @ #
p/m-Xylene	<10 µg/kg	TM116	<10 @ #	<10 @ #	<100 @ #	<10 @ #	<100 @ #	<100 @ #	<10 @ #
o-Xylene	<10 µg/kg	TM116	<10 @ M	<10 @ #	<100 @ M	<10 @ M	<100 @ M	<100 @ M	<10 @ #
Styrene	<10 µg/kg	TM116		<10 @ #				<100 @ #	
Bromoform	<10 µg/kg	TM116		<10 @ #				<100 @ M	
Isopropylbenzene	<5 µg/kg	TM116		<5 @ #				<50 @ #	
1,1,2,2-Tetrachloroethane	<10 µg/kg	TM116		<10 @ #				<100 @ #	
1,2,3-Trichloropropane	<16 µg/kg	TM116		<16 @ #				<160 @ M	
Bromobenzene	<10 µg/kg	TM116		<10 @ #				<100 @ M	
Propylbenzene	<10 µg/kg	TM116		<10 @ #				<100 @ M	
2-Chlorotoluene	<9 µg/kg	TM116		<9 @ #				<90 @ M	
1,3,5-Trimethylbenzene	<8 µg/kg	TM116		<8 @ #				<80 @ M	
4-Chlorotoluene	<10 µg/kg	TM116		<10 @ #				<100 @ M	
tert-Butylbenzene	<14 µg/kg	TM116		<14 @ #				<140 @ M	
1,2,4-Trimethylbenzene	<9 µg/kg	TM116		<9 @ #				<90 @ #	
sec-Butylbenzene	<10 µg/kg	TM116		<10 @				<100 @	
4-Isopropyltoluene	<10 µg/kg	TM116		<10 @ #				<100 @ M	
1,3-Dichlorobenzene	<8 µg/kg	TM116		<8 @ #				<80 @ M	
1,4-Dichlorobenzene	<5 µg/kg	TM116		<5 @ #				<50 @ M	
n-Butylbenzene	<11 µg/kg	TM116		<11 @				<110 @	
1,2-Dichlorobenzene	<10 µg/kg	TM116		<10 @ #				<100 @ M	
1,2-Dibromo-3-chloropropane	<14 µg/kg	TM116		<14 @ #				<140 @ M	
Tert-amyl methyl ether	<10 µg/kg	TM116		<10 @ #				<100 @ #	
1,2,4-Trichlorobenzene	<20 µg/kg	TM116		<20 @				<200 @	
Hexachlorobutadiene	<20 µg/kg	TM116		<20 @				<200 @	
Naphthalene	<13 µg/kg	TM116		<13 @ #				<130 @ M	



CERTIFICATE OF ANALYSIS

Validated

SDG:	201011-3	Client Reference:	JFR1451
Location:	A303 Stonehenge	Order Number:	PQ20-857
		Report Number:	578687
		Superseded Report:	574555

Asbestos Identification - Solid Samples

Results Legend

- # ISO17025 accredited.
- M mCERTS accredited.
- * Subcontracted test.
- (F) Trigger breach confirmed
- 1-5	@ Sample deviation (see appendix)

	Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	02/11/2020	Marcin Magdziarek	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
STP ES4 0.30 SOLID 08/10/2020 00:00:00 10/10/2020 05:00:00 201011-3 23012262 TM048										
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	02/11/2020	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
STP ES4 1.00 SOLID 08/10/2020 00:00:00 10/10/2020 05:00:00 201011-3 23012264 TM048										
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	02/11/2020	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
STP ES5 0.50 SOLID 08/10/2020 00:00:00 10/10/2020 05:00:00 201011-3 23012259 TM048										
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	02/11/2020	Paul Poynton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
STP ES5 1.00 SOLID 08/10/2020 00:00:00 10/10/2020 05:00:00 201011-3 23012260 TM048										
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	02/11/2020	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
STP ES6 0.50 SOLID 08/10/2020 00:00:00 10/10/2020 05:00:00 201011-3 23012255 TM048										
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	02/11/20	Andrzej Ferfecki	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
STP ES6 1.00 SOLID 08/10/2020 00:00:00 10/10/2020 05:00:00 201011-3 23012256 TM048										



CERTIFICATE OF ANALYSIS

Validated

SDG: 201011-3
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PO20-857

Report Number: 578687
Superseded Report: 574555

CEN 2:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/1

Client Reference	
Mass Sample taken (kg)	0.199
Mass of dry sample (kg)	0.175
Particle Size <4mm	>95%

Site Location	A303 Stonehenge
Natural Moisture Content (%)	13.7
Dry Matter Content (%)	88

Case	
SDG	201011-3
Lab Sample Number(s)	23012260
Sampled Date	08-Oct-2020
Customer Sample Ref.	STP ES5
Depth (m)	1.00

Eluate Analysis	Conc ⁿ in 2:1 eluate (mg/l)		2:1 conc ⁿ leached (mg/kg)	
	Result	Limit of Detection	Result	Limit of Detection
Aliphatics >C12-C16	<0.01	<0.01	<0.02	<0.02
Aliphatics >C16-C21	<0.01	<0.01	<0.02	<0.02
Aliphatics >C21-C35	<0.01	<0.01	<0.02	<0.02
Total Aliphatics >C12-C35	<0.01	<0.01	<0.02	<0.02
Aromatics >EC12-EC16	<0.01	<0.01	<0.02	<0.02
Aromatics >EC16-EC21	<0.01	<0.01	<0.02	<0.02
Aromatics >EC21-EC35	<0.01	<0.01	<0.02	<0.02
Aromatics >EC16-EC35	<0.01	<0.01	<0.02	<0.02
Total Aromatics >EC12-EC35	<0.01	<0.01	<0.02	<0.02
TPH (Total Aliphatics + Total Aromatics) >C5-C35	<0.01	<0.01	<0.02	<0.02
Ammoniacal Nitrogen as N	<0.2	<0.2	<0.4	<0.4
Chromium III	<0.03	<0.03	<0.06	<0.06
Hexavalent Chromium	<0.03	<0.03	<0.06	<0.06
Sulphate (soluble)	<2	<2	<4	<4
Dissolved Organic Carbon	11.4	<3	22.8	<6
Mercury Dissolved (CVAF)	0.0000164	<0.00001	0.0000328	<0.00002
Antimony	0.00269	<0.001	0.00538	<0.002
Naphthalene (diss.filt)	0.0000104	<0.00001	0.0000208	<0.00002
Total Cyanide (W)	<0.05	<0.05	<0.1	<0.1
Acenaphthene (diss.filt)	0.0000417	<0.000005	0.0000834	<0.00001
Arsenic	0.00427	<0.0005	0.00854	<0.001
Free Cyanide (W)	<0.05	<0.05	<0.1	<0.1
Acenaphthylene (diss.filt)	0.000026	<0.000005	0.000052	<0.00001
Phenol by HPLC (W)	<0.002	<0.002	<0.004	<0.004
Beryllium	<0.0001	<0.0001	<0.0002	<0.0002
Fluoranthene (diss.filt)	0.0000825	<0.000005	0.000165	<0.00001
Anthracene (diss.filt)	0.0000868	<0.000005	0.000174	<0.00001
Boron	0.0372	<0.01	0.0744	<0.02
Phenanthrene (diss.filt)	0.0000942	<0.000005	0.000188	<0.00001
Cadmium	<0.00008	<0.00008	<0.00016	<0.00016
Fluorene (diss.filt)	0.0000229	<0.000005	0.0000458	<0.00001
Chrysene (diss.filt)	0.0000444	<0.000005	0.0000888	<0.00001
Pyrene (diss.filt)	0.0000678	<0.000005	0.000136	<0.00001
Benzo(a)anthracene (diss.filt)	0.0000412	<0.000005	0.0000824	<0.00001
Chromium	<0.001	<0.001	<0.002	<0.002

Leach Test Information

Date Prepared	28-Oct-2020
pH (pH Units)	8.59
Conductivity (µS/cm)	274.00
Temperature (°C)	18.70
Volume Leachant (Litres)	0.326
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

Validated

SDG:	201011-3	Client Reference:	JFR1451	Report Number:	578687
Location:	A303 Stonehenge	Order Number:	PO20-857	Superseded Report:	574555

CEN 2:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/1

Client Reference		Site Location	A303 Stonehenge
Mass Sample taken (kg)	0.199	Natural Moisture Content (%)	13.7
Mass of dry sample (kg)	0.175	Dry Matter Content (%)	88
Particle Size <4mm	>95%		

Case

SDG	201011-3
Lab Sample Number(s)	23012260
Sampled Date	08-Oct-2020
Customer Sample Ref.	STP ES5
Depth (m)	1.00

Eluate Analysis	Conc ⁿ in 2:1 eluate (mg/l)		2:1 conc ⁿ leached (mg/kg)	
	Result	Limit of Detection	Result	Limit of Detection
Benzo(b)fluoranthene (diss.filt)	0.000068	<0.000005	0.000136	<0.00001
Benzo(k)fluoranthene (diss.filt)	0.0000316	<0.000005	0.0000632	<0.00001
Benzo(a)pyrene (diss.filt)	0.0000504	<0.000002	0.000101	<0.000004
Copper	0.0137	<0.0003	0.0274	<0.0006
Dibenzo(a,h)anthracene (diss.filt)	0.0000113	<0.000005	0.0000226	<0.00001
Lead	<0.0002	<0.0002	<0.0004	<0.0004
Benzo(g,h,i)perylene (diss.filt)	0.000134	<0.000005	0.000268	<0.00001
Indeno(1,2,3-cd)pyrene (diss.filt)	0.0000516	<0.000005	0.000103	<0.00001
Manganese	<0.003	<0.003	<0.006	<0.006
Molybdenum	0.0228	<0.003	0.0456	<0.006
PAH 16 EPA Total by GCMS (diss.filt)	0.000865	<0.000082	0.00173	<0.000164
Nickel	0.00168	<0.0004	0.00336	<0.0008
Phosphorus	0.622	<0.01	1.24	<0.02
Selenium	<0.001	<0.001	<0.002	<0.002
Zinc	0.00256	<0.001	0.00512	<0.002
Calcium (Dis.Filt) mg/l	24.1	<0.2	48.2	<0.4
Iron (Dis.Filt) mg/l	<0.019	<0.019	<0.038	<0.038
TPH CWG (W)				
Surrogate Recovery	-	-	-	-
GRO TOT (C5-C12)	<0.05	<0.05	<0.1	<0.1
Aliphatics C5-C6	<0.01	<0.01	<0.02	<0.02
Aliphatics >C6-C8	<0.01	<0.01	<0.02	<0.02
Aliphatics >C8-C10	<0.01	<0.01	<0.02	<0.02
Aliphatics >C10-C12	<0.01	<0.01	<0.02	<0.02
Aromatics C6-C7	<0.01	<0.01	<0.02	<0.02
Aromatics >C7-C8	<0.01	<0.01	<0.02	<0.02
MTBE GC-FID	<0.003	<0.003	<0.006	<0.006
Aromatics >EC8 -EC10	<0.01	<0.01	<0.02	<0.02
Aromatics >EC10-EC12	<0.01	<0.01	<0.02	<0.02
Benzene by GC	<0.007	<0.007	<0.014	<0.014
Toluene by GC	<0.004	<0.004	<0.008	<0.008
Ethylbenzene by GC	<0.005	<0.005	<0.01	<0.01
m & p Xylene by GC	<0.008	<0.008	<0.016	<0.016
o Xylene by GC	<0.003	<0.003	<0.006	<0.006
Sum m&p and o Xylene by GC	<0.011	<0.011	<0.022	<0.022
Sum of BTEX by GC	<0.028	<0.028	<0.056	<0.056

Leach Test Information

Date Prepared	28-Oct-2020
pH (pH Units)	8.59
Conductivity (µS/cm)	274.00
Temperature (°C)	18.70
Volume Leachant (Litres)	0.326
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
 Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
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CERTIFICATE OF ANALYSIS

Validated

SDG:	201011-3	Client Reference:	JFR1451	Report Number:	578687
Location:	A303 Stonehenge	Order Number:	PO20-857	Superseded Report:	574555

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM174	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID
TM178	Modified: US EPA Method 8100	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS in Waters
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser
TM243		Mixed Anions In Soils By Kone
TM245	By GC-FID	Determination of GRO by Headspace in waters
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).



CERTIFICATE OF ANALYSIS

Validated

SDG:	201011-3	Client Reference:	JFR1451
Location:	A303 Stonehenge	Order Number:	PO20-857
		Report Number:	578687
		Superseded Report:	574555

Test Completion Dates

Lab Sample No(s)	23012262	23012264	23012259	23012260	23012255	23012256
Customer Sample Ref.	STP ES4	STP ES4	STP ES5	STP ES5	STP ES6	STP ES6
AGS Ref.						
Depth	0.30	1.00	0.50	1.00	0.50	1.00
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Ammoniacal Nitrogen				02-Nov-2020		
Ammonium Soil by Titration	30-Oct-2020	30-Oct-2020	30-Oct-2020	30-Oct-2020	30-Oct-2020	30-Oct-2020
Anions by Kone (soil)	03-Nov-2020		03-Nov-2020	03-Nov-2020	03-Nov-2020	03-Nov-2020
Anions by Kone (w)				01-Nov-2020		
Asbestos ID in Solid Samples	02-Nov-2020	02-Nov-2020	02-Nov-2020	02-Nov-2020	02-Nov-2020	02-Nov-2020
CEN 2:1 Leachate (1 Stage)				28-Oct-2020		
CEN Readings				29-Oct-2020		
Chromium III	03-Nov-2020	03-Nov-2020	03-Nov-2020	03-Nov-2020	03-Nov-2020	03-Nov-2020
Cyanide Comp/Free/Total/Thiocyanate	03-Nov-2020	03-Nov-2020	03-Nov-2020	03-Nov-2020	03-Nov-2020	03-Nov-2020
Dissolved Metals by ICP-MS				02-Nov-2020		
Dissolved Organic/Inorganic Carbon				02-Nov-2020		
EPH CWG (Aliphatic) Filtered GC (W)				03-Nov-2020		
EPH CWG (Aromatic) Filtered GC (W)				03-Nov-2020		
EPH CWG GC (S)	30-Oct-2020	30-Oct-2020	30-Oct-2020	30-Oct-2020	30-Oct-2020	30-Oct-2020
GRO by GC-FID (S)	30-Oct-2020	30-Oct-2020	30-Oct-2020	30-Oct-2020	30-Oct-2020	30-Oct-2020
GRO by GC-FID (W)				30-Oct-2020		
Hexavalent Chromium (s)	03-Nov-2020	03-Nov-2020	03-Nov-2020	03-Nov-2020	03-Nov-2020	03-Nov-2020
Hexavalent Chromium (w)				03-Nov-2020		
Mercury Dissolved				31-Oct-2020		
Metals in solid samples by OES	03-Nov-2020	03-Nov-2020	02-Nov-2020	03-Nov-2020	02-Nov-2020	02-Nov-2020
Moisture at 105C				28-Oct-2020		
PAH by GCMS	30-Oct-2020	30-Oct-2020	30-Oct-2020	30-Oct-2020	30-Oct-2020	30-Oct-2020
PAH in waters by GC-MS (diss.filt)				02-Nov-2020		
pH	29-Oct-2020	29-Oct-2020	29-Oct-2020	29-Oct-2020	29-Oct-2020	29-Oct-2020
pH Value of Filtered Water				31-Oct-2020		
Phenols by HPLC (S)	02-Nov-2020	02-Nov-2020	02-Nov-2020	02-Nov-2020	02-Nov-2020	02-Nov-2020
Phenols by HPLC (W)				02-Nov-2020		
Sample description	29-Oct-2020	29-Oct-2020	29-Oct-2020	29-Oct-2020	29-Oct-2020	29-Oct-2020
Semi Volatile Organic Compounds		02-Nov-2020			02-Nov-2020	
Total Organic Carbon	02-Nov-2020	02-Nov-2020	02-Nov-2020	02-Nov-2020	02-Nov-2020	02-Nov-2020
TPH CWG Filtered (W)				03-Nov-2020		
TPH CWG GC (S)	30-Oct-2020	30-Oct-2020	30-Oct-2020	30-Oct-2020	30-Oct-2020	30-Oct-2020
VOC MS (S)	30-Oct-2020	30-Oct-2020		30-Oct-2020	30-Oct-2020	30-Oct-2020



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SDG: 201011-3	Client Reference: JFR1451	Report Number: 578687
Location: A303 Stonehenge	Order Number: PQ20-857	Superseded Report: 574555

ASSOCIATED AQC DATA

Ammoniacal Nitrogen

Component	Method Code	QC 2329
Ammoniacal Nitrogen as N	TM099	97.2 93.14 : 108.60

Ammonium Soil by Titration

Component	Method Code	QC 2313
Exchangeable Ammonium as NH4	TM024	89.05 76.20 : 110.13

Anions by Kone (w)

Component	Method Code	QC 2313
Sulphate (soluble)	TM184	96.8 91.99 : 109.30

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2374	QC 2330	QC 2394
Free Cyanide	TM153	94.85 78.61 : 114.43	89.11 78.61 : 114.43	
Free Cyanide (W)	TM227			101.5 90.50 : 114.50
Thiocyanate	TM153	108.33 90.48 : 109.52	101.92 90.48 : 109.52	
Thiocyanate (W)	TM227			101.25 90.50 : 113.00
Total Cyanide	TM153	100.0 76.80 : 112.96	102.8 76.80 : 112.96	
Total Cyanide (W)	TM227			105.75 91.75 : 112.75

Dissolved Metals by ICP-MS

Component	Method Code	QC 2323
Aluminium	TM152	97.0 90.78 : 110.89
Antimony	TM152	99.33 77.22 : 119.42
Arsenic	TM152	97.33 86.77 : 107.67
Barium	TM152	98.17 87.86 : 110.23



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SDG: 201011-3
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PQ20-857

Report Number: 578687
Superseded Report: 574555

Dissolved Metals by ICP-MS

		QC 2323
Beryllium	TM152	96.33 86.19 : 112.98
Bismuth	TM152	99.33 84.06 : 106.46
Borate	TM152	92.59 88.00 : 112.00
Boron	TM152	92.67 83.92 : 114.90
Cadmium	TM152	98.5 88.89 : 106.69
Calcium	TM152	96.0 80.24 : 117.95
Chromium	TM152	96.67 83.22 : 110.16
Cobalt	TM152	95.83 82.49 : 112.36
Copper	TM152	96.83 83.14 : 113.00
Iron	TM152	97.33 88.40 : 109.24
Lead	TM152	100.33 83.71 : 109.58
Lithium	TM152	99.0 84.50 : 114.28
Magnesium	TM152	95.33 87.56 : 114.57
Manganese	TM152	96.67 93.05 : 112.42
Molybdenum	TM152	97.0 85.53 : 107.42
Nickel	TM152	96.17 88.05 : 106.42
Phosphorus	TM152	97.33 82.76 : 107.72
Potassium	TM152	96.67 88.45 : 106.42
Selenium	TM152	98.67 85.61 : 111.03
Silver	TM152	97.17 95.35 : 113.25
Sodium	TM152	94.67 88.32 : 106.30
Strontium	TM152	99.0 83.77 : 107.87
Tellurium	TM152	95.17 82.83 : 104.73
Thallium	TM152	93.33 77.47 : 113.87
Tin	TM152	99.0 91.00 : 109.00
Titanium	TM152	96.0 87.29 : 108.31
Tungsten	TM152	95.33 68.27 : 122.97



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SDG: 201011-3	Client Reference: JFR1451	Report Number: 578687
Location: A303 Stonehenge	Order Number: PQ20-857	Superseded Report: 574555

Dissolved Metals by ICP-MS

		QC 2323
Uranium	TM152	97.5 82.46 : 105.16
Vanadium	TM152	96.67 88.43 : 114.30
Zinc	TM152	98.33 85.57 : 114.31

Dissolved Organic/Inorganic Carbon

Component	Method Code	QC 2379
Dissolved Inorganic Carbon	TM090	104.67 93.58 : 112.28
Dissolved Organic Carbon	TM090	101.83 96.28 : 110.58

EPH CWG (Aromatic) Filtered GC (W)

Component	Method Code	QC 2354
Total Aromatics >EC10-EC40	TM174	100.24 73.75 : 120.32

GRO by GC-FID (S)

Component	Method Code	QC 2364	QC 2306
QC	TM089	104.44 70.75 : 114.19	82.91 70.34 : 111.95

GRO by GC-FID (W)

Component	Method Code	QC 2308
Benzene by GC	TM245	105.0 79.13 : 118.84
Ethylbenzene by GC	TM245	109.5 79.54 : 115.99
m & p Xylene by GC	TM245	109.25 78.44 : 116.32
MTBE GC-FID	TM245	104.5 81.43 : 120.09
o Xylene by GC	TM245	111.0 76.85 : 120.29
QC	TM245	94.27 71.58 : 131.01
Toluene by GC	TM245	107.5 79.00 : 121.96

Hexavalent Chromium (s)



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Hexavalent Chromium (s)

Component	Method Code	QC 2348	QC 2381
Hexavalent Chromium	TM151	106.0 92.00 : 111.20	104.0 92.00 : 111.20

Hexavalent Chromium (w)

Component	Method Code	QC 2314
Hexavalent Chromium	TM241	100.0 94.17 : 106.17

Mercury Dissolved

Component	Method Code	QC 2345
Mercury Dissolved (CVAF)	TM183	87.9 69.30 : 128.70

Metals in solid samples by OES

Component	Method Code	QC 2390	QC 2374	QC 2380	QC 2394
Aluminium	TM181	91.15 73.56 : 108.85	107.96 77.46 : 123.98	100.0 73.56 : 108.85	88.05 73.56 : 108.85
Antimony	TM181	96.75 76.89 : 111.24	103.25 87.04 : 111.16	98.37 76.89 : 111.24	104.47 76.89 : 111.24
Arsenic	TM181	99.13 88.53 : 111.01	108.72 87.34 : 110.87	103.2 88.53 : 111.01	106.69 88.53 : 111.01
Barium	TM181	91.74 77.67 : 105.35	98.17 80.73 : 115.16	97.25 77.67 : 105.35	97.25 77.67 : 105.35
Beryllium	TM181	95.15 85.44 : 109.61	104.85 89.47 : 112.97	100.0 85.44 : 109.61	105.22 85.44 : 109.61
Boron	TM181	88.83 73.51 : 104.66	101.15 76.57 : 104.15	92.55 73.51 : 104.66	90.26 73.51 : 104.66
Cadmium	TM181	91.36 77.67 : 104.12	97.53 78.94 : 102.43	94.24 77.67 : 104.12	93.42 77.67 : 104.12
Chromium	TM181	95.54 86.11 : 106.21	101.62 77.55 : 104.47	94.32 86.11 : 106.21	99.19 86.11 : 106.21
Cobalt	TM181	89.62 84.60 : 104.13	96.54 82.95 : 107.41	93.71 84.60 : 104.13	95.91 84.60 : 104.13
Copper	TM181	94.01 82.40 : 105.45	96.48 84.36 : 106.14	93.66 82.40 : 105.45	97.89 82.40 : 105.45
Iron	TM181	90.48 82.95 : 110.58	106.35 81.43 : 115.79	100.79 82.95 : 110.58	88.1 82.95 : 110.58
Lead	TM181	93.24 78.24 : 104.05	100.9 81.95 : 107.63	109.01 78.24 : 104.05	101.13 78.24 : 104.05
Manganese	TM181	104.44 94.29 : 119.51	115.83 94.29 : 119.51	111.94 94.29 : 119.51	113.33 94.29 : 119.51



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Metals in solid samples by OES

		QC 2390	QC 2374	QC 2380	QC 2394
Mercury	TM181	94.69 83.16 : 107.81	100.0 82.73 : 106.36	96.14 83.16 : 107.81	102.17 83.16 : 107.81
Molybdenum	TM181	97.12 87.11 : 106.87	103.29 86.61 : 111.07	97.94 87.11 : 106.87	101.65 87.11 : 106.87
Nickel	TM181	93.89 80.26 : 102.28	98.29 79.72 : 103.80	94.13 80.26 : 102.28	97.31 80.26 : 102.28
Phosphorus	TM181	108.69 94.56 : 124.28	114.34 92.65 : 125.47	109.09 94.56 : 124.28	114.14 94.56 : 124.28
Selenium	TM181	99.61 82.28 : 110.48	105.88 88.36 : 111.25	102.35 82.28 : 110.48	106.27 82.28 : 110.48
Strontium	TM181	93.1 79.13 : 102.79	96.66 78.06 : 99.91	91.76 79.13 : 102.79	92.43 79.13 : 102.79
Thallium	TM181	99.12 82.94 : 111.86	106.19 88.60 : 116.73	100.44 82.94 : 111.86	106.19 82.94 : 111.86
Tin	TM181	92.78 86.72 : 110.03	101.52 89.77 : 112.62	101.52 86.72 : 110.03	103.04 86.72 : 110.03
Titanium	TM181	84.73 66.23 : 102.06	94.66 66.29 : 105.96	82.44 66.23 : 102.06	83.97 66.23 : 102.06
Vanadium	TM181	97.44 86.19 : 109.45	106.59 75.51 : 108.87	97.07 86.19 : 109.45	99.27 86.19 : 109.45
Zinc	TM181	104.52 84.68 : 113.99	103.08 84.02 : 111.24	100.62 84.68 : 113.99	100.62 84.68 : 113.99

PAH by GCMS

Component	Method Code	QC 2350	QC 2386
Acenaphthene	TM218	94.0 73.47 : 109.80	97.5 76.79 : 103.90
Acenaphthylene	TM218	92.0 70.00 : 130.00	95.5 78.40 : 108.66
Anthracene	TM218	99.0 68.68 : 111.89	97.0 70.90 : 109.22
Benz(a)anthracene	TM218	110.5 68.12 : 118.39	95.0 73.77 : 119.26
Benzo(a)pyrene	TM218	93.5 71.72 : 115.31	88.0 73.20 : 114.18
Benzo(b)fluoranthene	TM218	94.5 66.89 : 120.40	90.5 75.36 : 117.58
Benzo(ghi)perylene	TM218	88.0 67.82 : 118.49	90.0 70.73 : 116.12
Benzo(k)fluoranthene	TM218	95.0 73.10 : 117.03	86.5 75.98 : 116.59
Chrysene	TM218	106.0 69.58 : 115.47	88.0 74.82 : 114.18
Dibenzo(ah)anthracene	TM218	84.5 67.32 : 121.35	90.5 69.17 : 115.30
Fluoranthene	TM218	113.5 75.16 : 117.28	94.5 75.88 : 112.84
Fluorene	TM218	102.0 73.81 : 108.66	102.0 76.66 : 107.56
Indeno(123cd)pyrene	TM218	89.0 68.91 : 117.62	93.5 70.26 : 117.95
Naphthalene	TM218	86.5 72.12 : 106.18	89.5 74.70 : 101.83



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PAH by GCMS

		QC 2350	QC 2386
Phenanthrene	TM218	102.0 69.01 : 113.72	98.0 73.62 : 109.34
Pyrene	TM218	112.0 75.68 : 119.23	93.0 71.46 : 117.00

PAH in waters by GC-MS (diss.filt)

Component	Method Code	QC 2360
Acenaphthene (diss.filt)	TM178	109.6 94.00 : 120.40
Acenaphthylene (diss.filt)	TM178	103.6 91.20 : 117.60
Anthracene (diss.filt)	TM178	104.4 91.20 : 112.80
Benzo(a)anthracene (diss.filt)	TM178	102.4 86.80 : 115.60
Benzo(a)pyrene (diss.filt)	TM178	101.2 85.20 : 114.00
Benzo(b)fluoranthene (diss.filt)	TM178	99.2 86.40 : 117.60
Benzo(g,h,i)perylene (diss.filt)	TM178	104.0 87.60 : 121.20
Benzo(k)fluoranthene (diss.filt)	TM178	101.2 91.20 : 124.80
Chrysene (diss.filt)	TM178	104.4 95.20 : 124.00
Dibenzo(a,h)anthracene (diss.filt)	TM178	99.2 84.80 : 118.40
Fluoranthene (diss.filt)	TM178	108.8 91.20 : 120.00
Fluorene (diss.filt)	TM178	109.6 93.20 : 119.60
Indeno(1,2,3-cd)pyrene (diss.filt)	TM178	96.4 86.80 : 115.60
Naphthalene (diss.filt)	TM178	106.4 90.40 : 126.40
Phenanthrene (diss.filt)	TM178	102.0 94.40 : 118.40
Pyrene (diss.filt)	TM178	106.4 93.60 : 120.00

pH

Component	Method Code	QC 2399
pH	TM133	100.93 98.47 : 102.33

pH Value of Filtered Water



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pH Value of Filtered Water

Component	Method Code	QC 2316
pH	TM256	100.94 99.33 : 102.54

Phenols by HPLC (S)

Component	Method Code	QC 2354
2,3,5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	98.7 65.50 : 89.50
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	83.63 84.00 : 124.00
Catechol by HPLC (S)	TM062 (S)	80.95 19.39 : 135.70
Cresols by HPLC (S)	TM062 (S)	92.69 81.00 : 112.20
Naphthol by HPLC (S)	TM062 (S)	110.71 57.50 : 102.50
Phenol by HPLC (S)	TM062 (S)	94.04 88.67 : 124.67
Resorcinol HPLC (S)	TM062 (S)	92.45 69.99 : 127.22
Xylenols by HPLC (S)	TM062 (S)	96.04 95.22 : 115.89

Phenols by HPLC (W)

Component	Method Code	QC 2394
2,3,5 Trimethyl-Phenol by HPLC (W)	TM259	98.0 91.00 : 109.00
2-Isopropyl Phenol by HPLC (W)	TM259	93.0 85.00 : 109.00
Cresols by HPLC (W)	TM259	96.0 93.00 : 115.00
Naphthol by HPLC (W)	TM259	100.0 86.00 : 128.00
Phenol by HPLC (W)	TM259	91.0 88.24 : 111.76
Xylenols by HPLC (W)	TM259	99.17 94.83 : 110.83

Semi Volatile Organic Compounds

Component	Method Code	QC 2325
4-Bromophenylphenylether (Soil)	TM157	100.0 63.50 : 114.50
Benzo(a)anthracene (Soil)	TM157	111.5 71.89 : 120.91
Hexachlorobutadiene (Soil)	TM157	103.0 69.80 : 117.77
Naphthalene (Soil)	TM157	106.5 70.00 : 115.00
Nitrobenzene (Soil)	TM157	102.5 70.00 : 118.00



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Semi Volatile Organic Compounds

		QC 2325
Phenol (Soil)	TM157	97.5 72.00 : 117.00

Total Organic Carbon

Component	Method Code	QC 2362	QC 2372
Total Organic Carbon	TM132	96.48 87.02 : 113.45	97.27 87.02 : 113.45

VOC MS (S)

Component	Method Code	QC 2335	QC 2332
1,1,1,2-tetrachloroethane	TM116	106.8 84.84 : 116.25	103.4 79.10 : 119.66
1,1,1-Trichloroethane	TM116	98.8 73.73 : 118.05	105.8 87.51 : 115.37
1,1,2-Trichloroethane	TM116	99.8 77.12 : 116.04	105.2 81.29 : 113.79
1,1-Dichloroethane	TM116	105.0 74.46 : 129.15	113.0 86.77 : 122.11
1,2-Dichloroethane	TM116	116.4 92.38 : 131.65	111.6 90.04 : 132.28
1,4-Dichlorobenzene	TM116	101.6 83.64 : 126.18	107.4 80.81 : 125.07
2-Chlorotoluene	TM116	91.0 76.03 : 113.25	94.0 73.13 : 114.13
4-Chlorotoluene	TM116	92.4 66.90 : 112.46	90.4 72.48 : 112.82
Benzene	TM116	106.4 88.60 : 113.80	102.2 84.29 : 112.22
Carbon Disulphide	TM116	105.6 74.91 : 122.14	108.8 75.11 : 124.81
Carbontetrachloride	TM116	106.2 80.31 : 124.50	109.2 82.35 : 126.46
Chlorobenzene	TM116	106.8 83.81 : 114.18	99.6 82.88 : 122.42
Chloroform	TM116	108.0 87.40 : 122.49	109.4 90.35 : 120.38
Chloromethane	TM116	115.8 65.89 : 136.93	125.2 65.80 : 138.88
Cis-1,2-Dichloroethene	TM116	104.4 80.67 : 126.72	101.2 78.27 : 128.90
Dibromomethane	TM116	97.8 73.23 : 118.35	98.2 76.00 : 120.73
Dichloromethane	TM116	110.2 81.11 : 133.25	115.4 92.27 : 134.36
Ethylbenzene	TM116	97.6 75.92 : 110.41	86.6 70.95 : 113.07
Hexachlorobutadiene	TM116	64.4 12.82 : 152.73	79.6 14.55 : 147.92



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VOC MS (S)

		QC 2335	QC 2332
Isopropylbenzene	TM116	79.6 55.79 : 97.59	66.4 52.00 : 108.19
Naphthalene	TM116	118.4 80.86 : 128.81	100.4 80.29 : 135.77
o-Xylene	TM116	90.2 69.99 : 108.74	80.8 64.92 : 98.85
p/m-Xylene	TM116	92.4 68.32 : 108.91	82.7 72.04 : 104.04
Sec-Butylbenzene	TM116	67.0 38.50 : 101.50	61.8 27.03 : 135.73
Tetrachloroethene	TM116	105.6 76.95 : 121.02	96.4 81.43 : 126.65
Toluene	TM116	98.8 74.24 : 107.42	93.2 82.44 : 103.50
Trichloroethene	TM116	105.4 77.61 : 111.54	100.8 79.80 : 112.33
Trichlorofluoromethane	TM116	115.4 84.55 : 133.27	114.8 86.68 : 126.82
Vinyl Chloride	TM116	117.4 68.02 : 143.37	126.2 69.66 : 136.55

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.

The figure detailed is the percentage recovery result for the AQC.

The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.



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SDG: 201011-3 Client Reference: JFR1451 Report Number: 578687
Location: A303 Stonehenge Order Number: PQ20-857 Superseded Report: 574555

Chromatogram

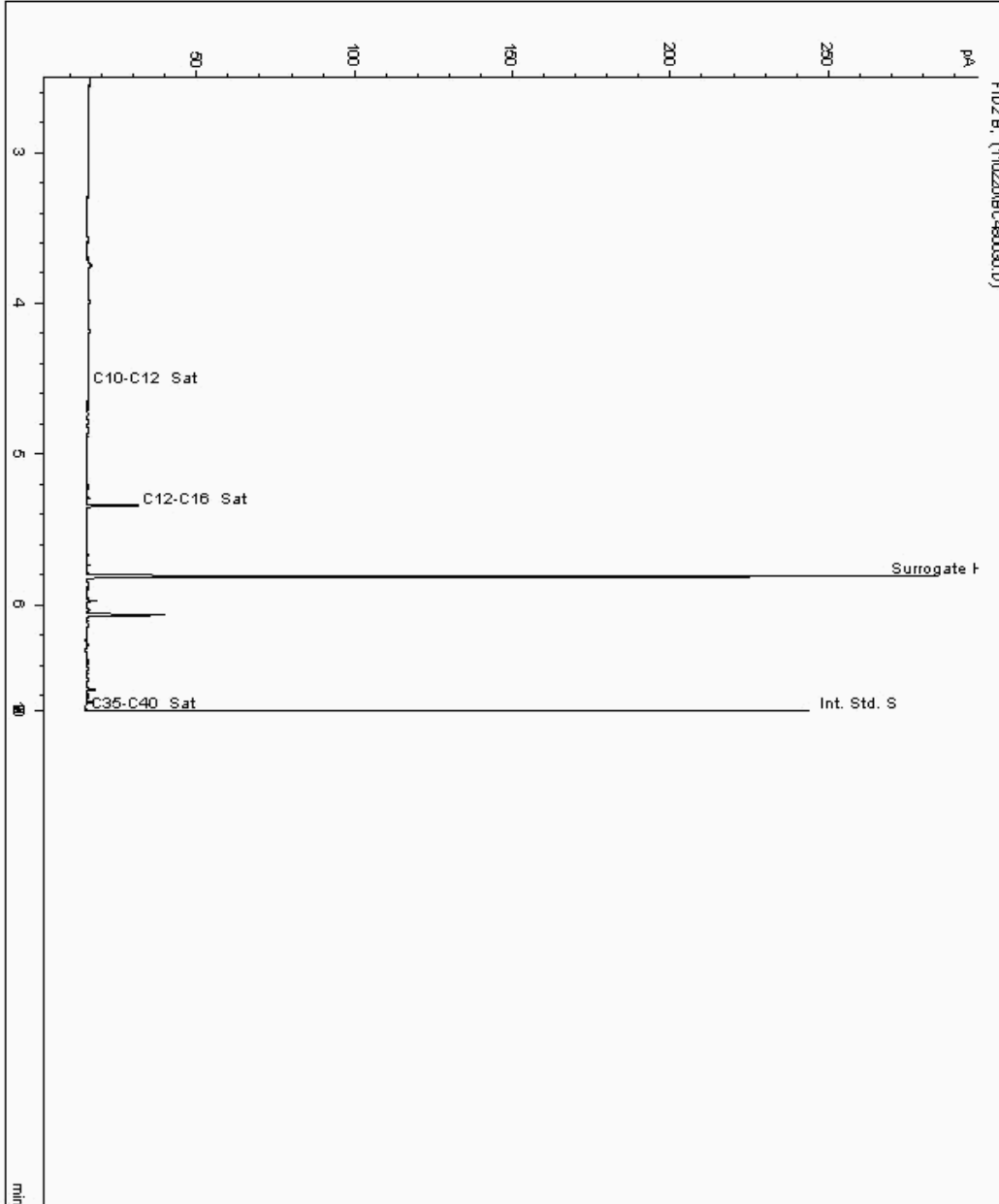
Analysis: EPH CWG (Aliphatic) Filtered GC (W)

Sample No : 23144291
Sample ID : STP ES5

Depth : 1.00

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 21709114-
Date Acquired : 02/11/2020 21:29:17 PM
Units : ppb
Dilution : STP ES35 [1.00] CEN 2 1 ->
CF : 1
Multiplier : 0.030





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SDG: 201011-3
Location: A303 Stonehenge

Client Reference: JFR1451
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Chromatogram

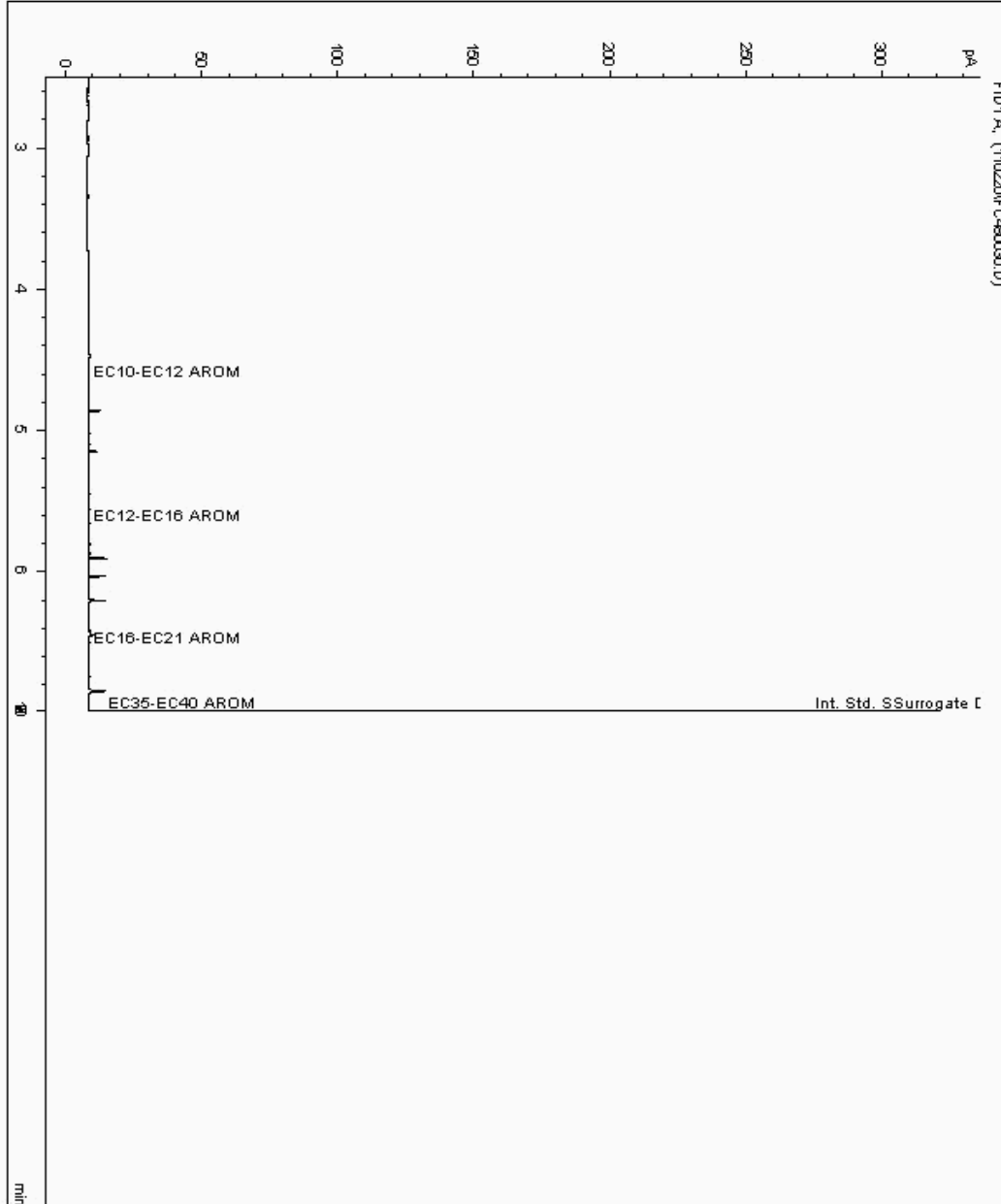
Analysis: EPH CWG (Aromatic) Filtered GC (W)

Sample No : 23144291
Sample ID : STP ES5

Depth : 1.00

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 21709115-
Date Acquired : 02/11/2020 21:29:17 PM
Units : ppb
Dilution : STP ES35 [1.00] CEN 2 1 ->
CF : 1
Multiplier : 0.030





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Validated

SDG: 201011-3
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PQ20-857

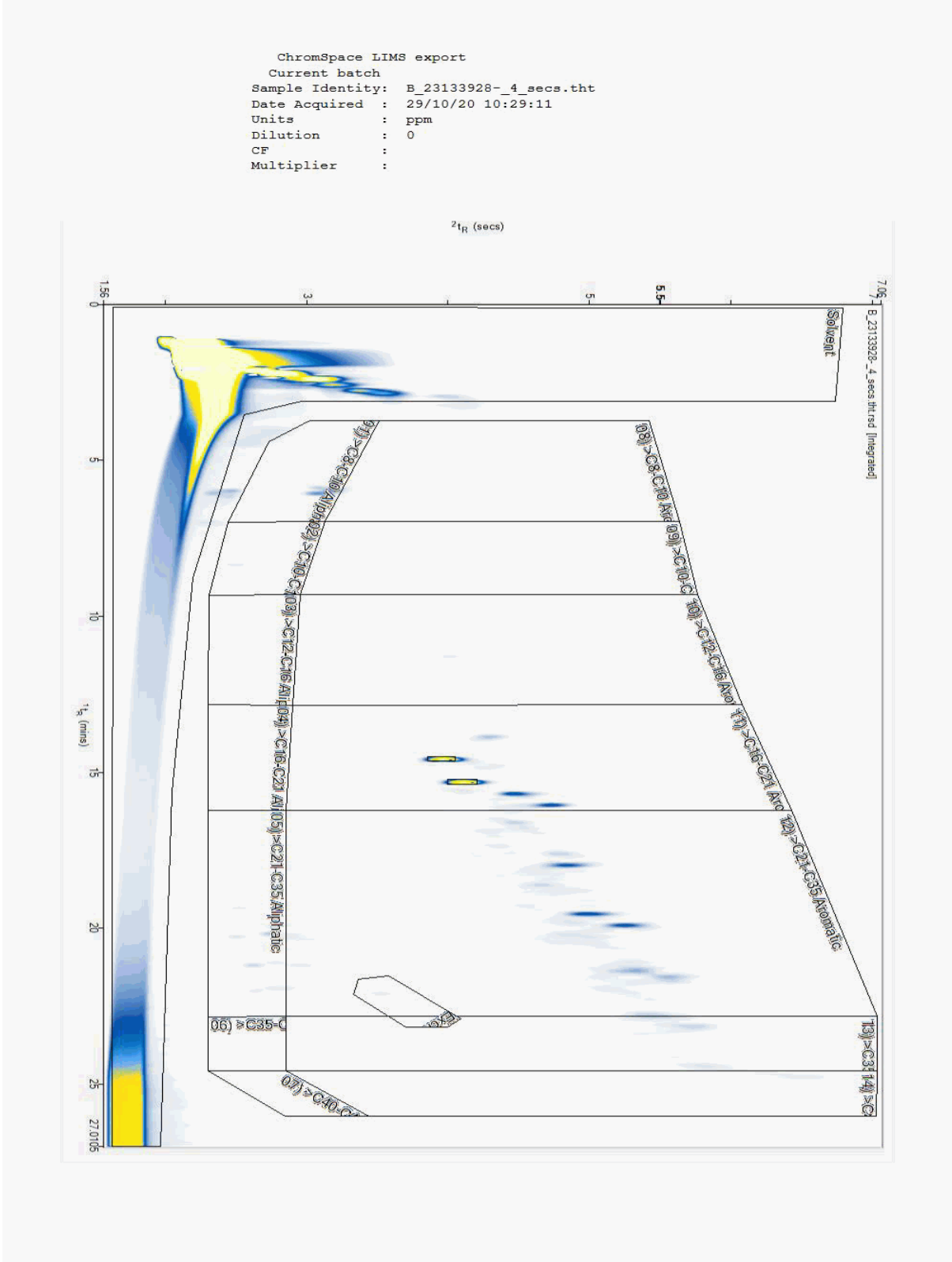
Report Number: 578687
Superseded Report: 574555

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23133928
Sample ID : STP ES4

Depth : 1.00





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Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PQ20-857

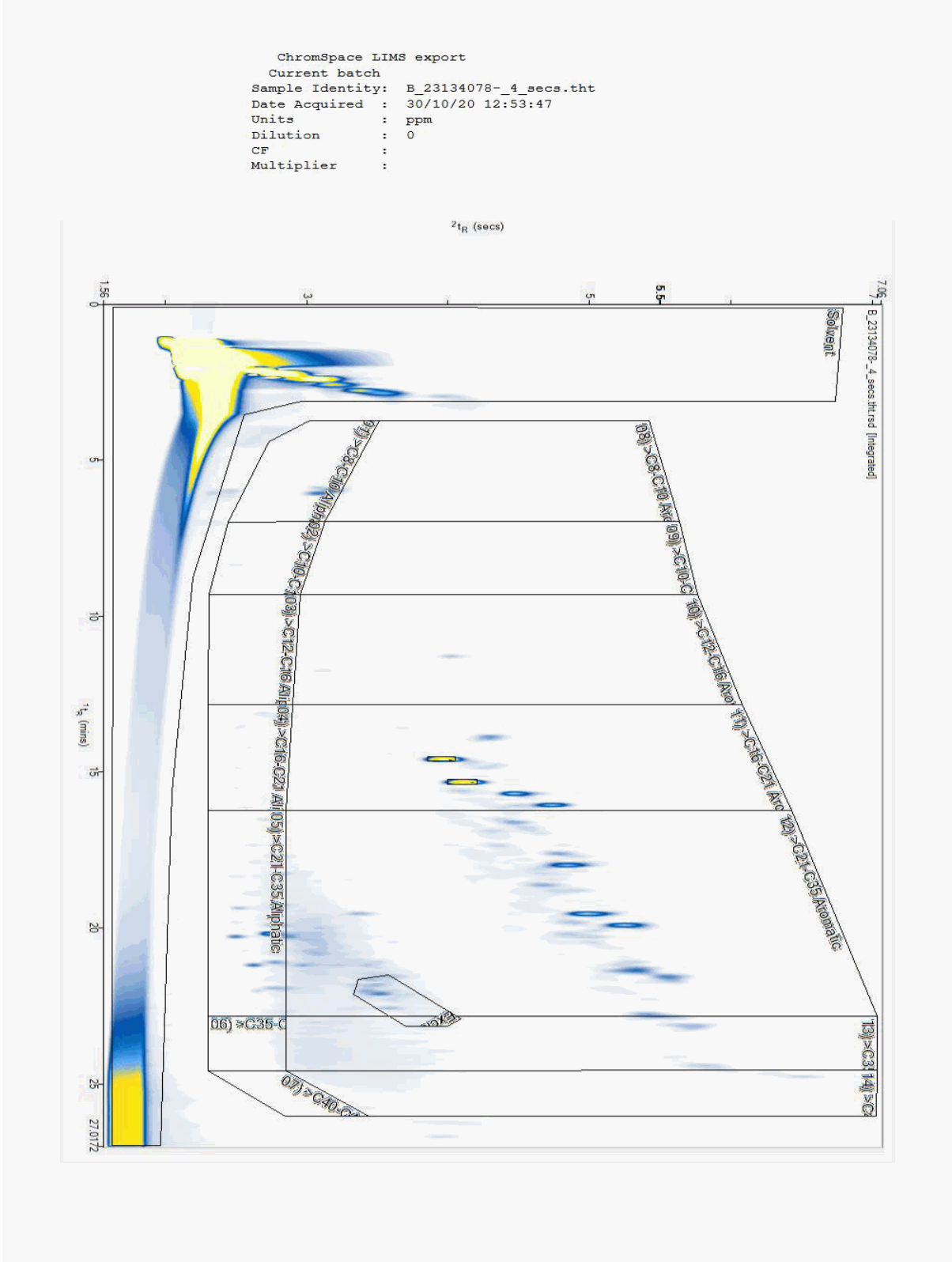
Report Number: 578687
Superseded Report: 574555

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23134078
Sample ID : STP ES4

Depth : 0.30





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Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PQ20-857

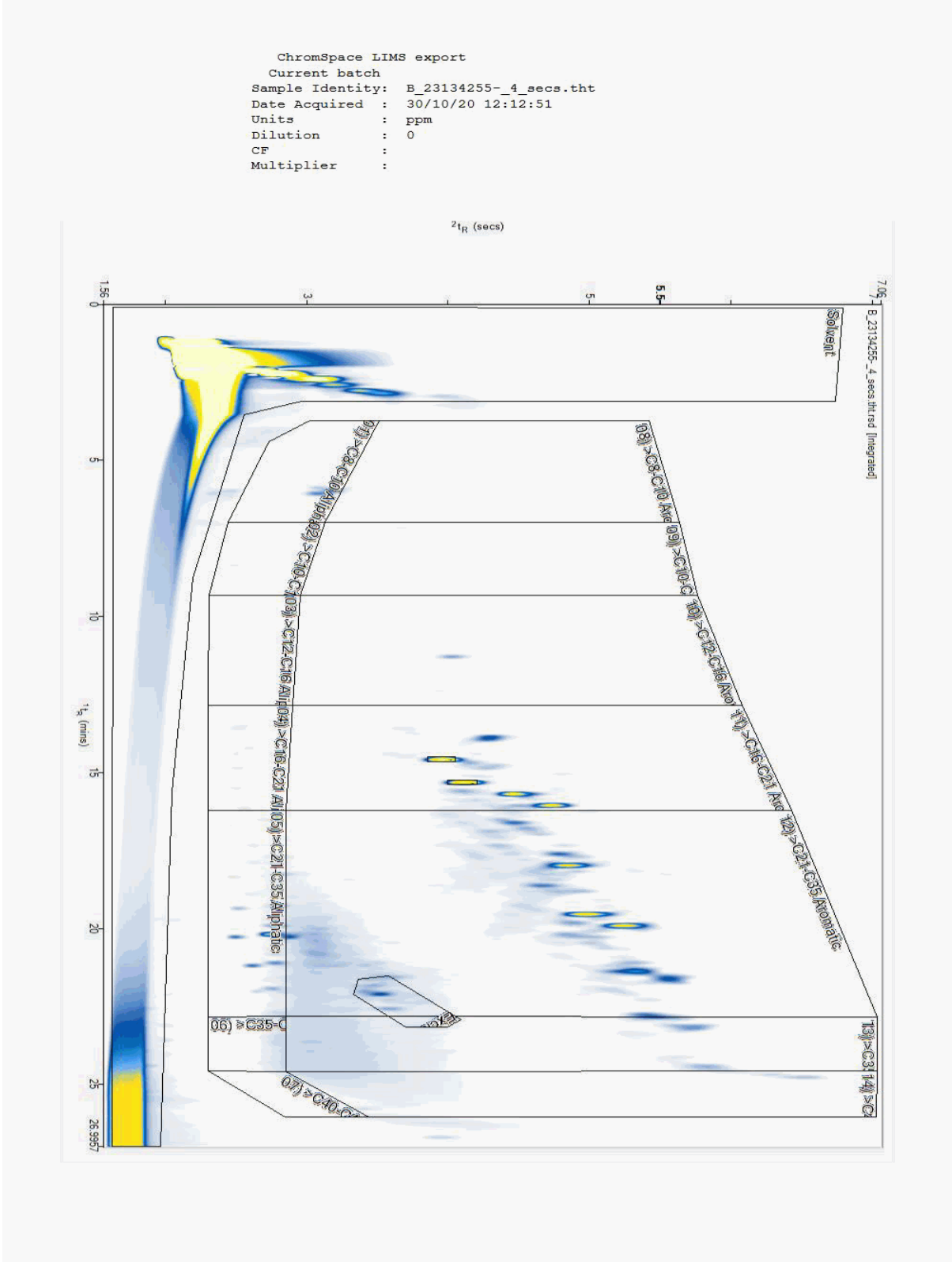
Report Number: 578687
Superseded Report: 574555

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23134255
Sample ID : STP ES5

Depth : 0.50





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Client Reference: JFR1451
Order Number: PQ20-857

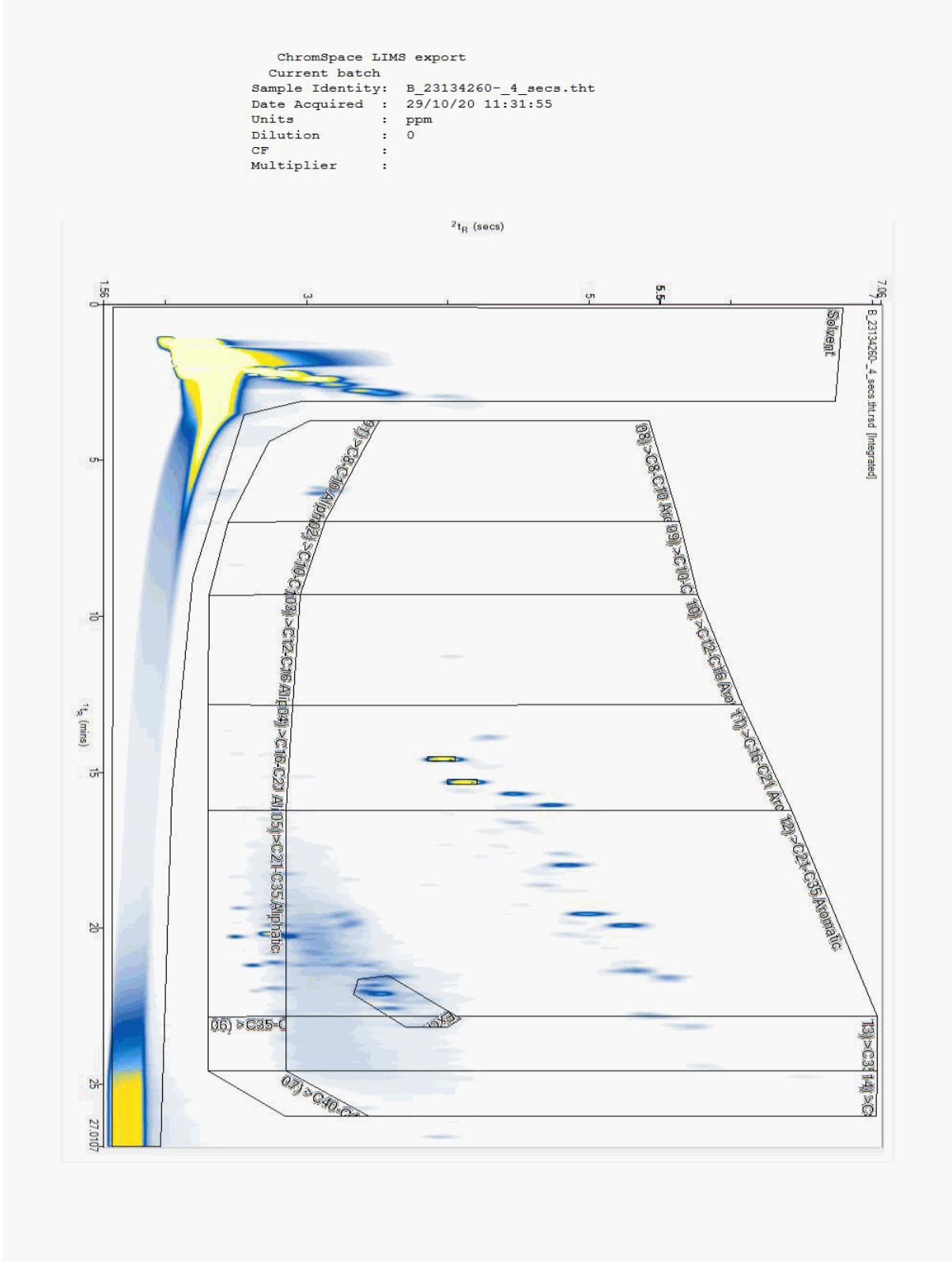
Report Number: 578687
Superseded Report: 574555

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23134260
Sample ID : STP ES6

Depth : 0.50





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Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PQ20-857

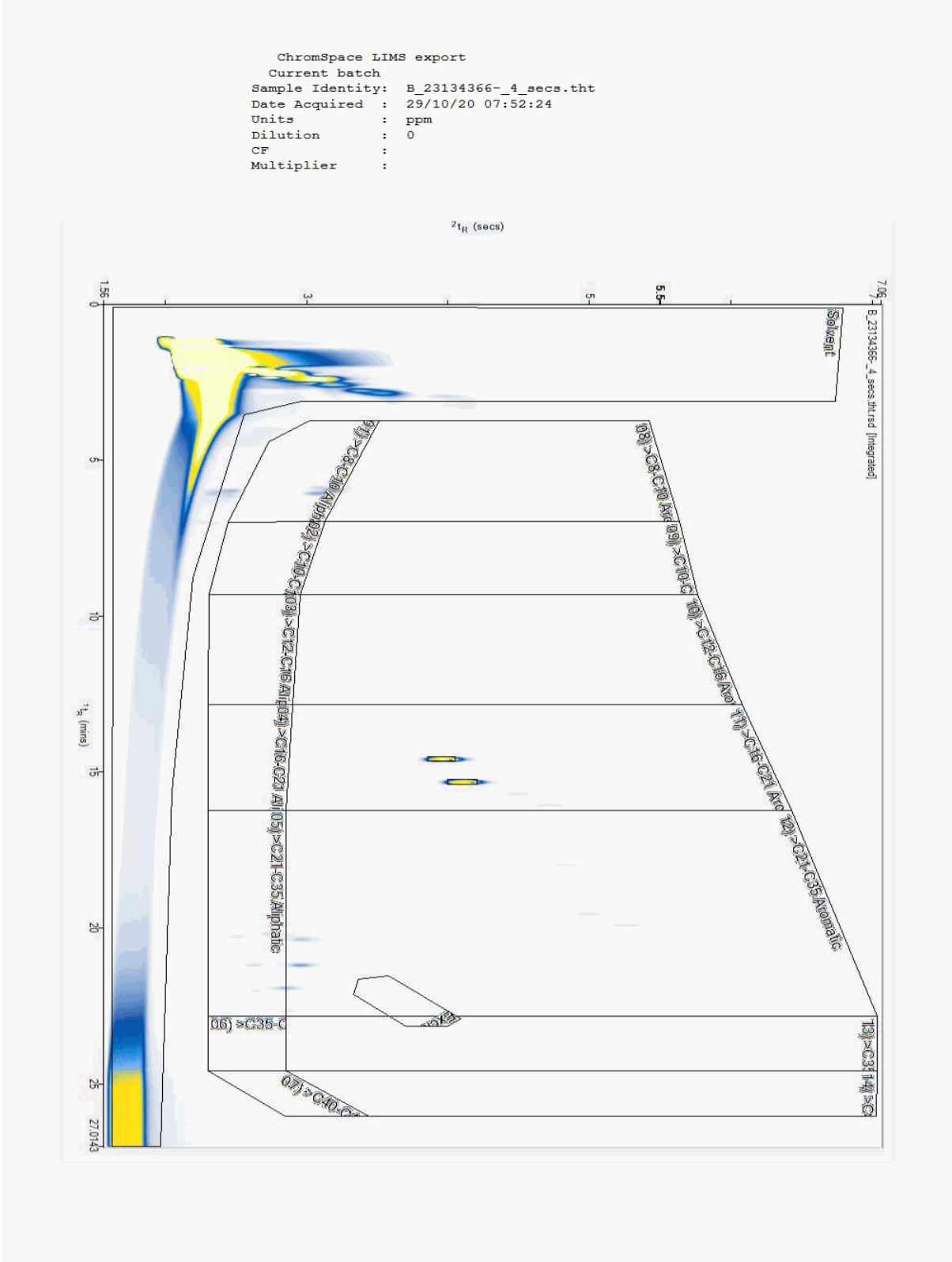
Report Number: 578687
Superseded Report: 574555

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23134366
Sample ID : STP ES6

Depth : 1.00





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SDG: 201011-3
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PQ20-857

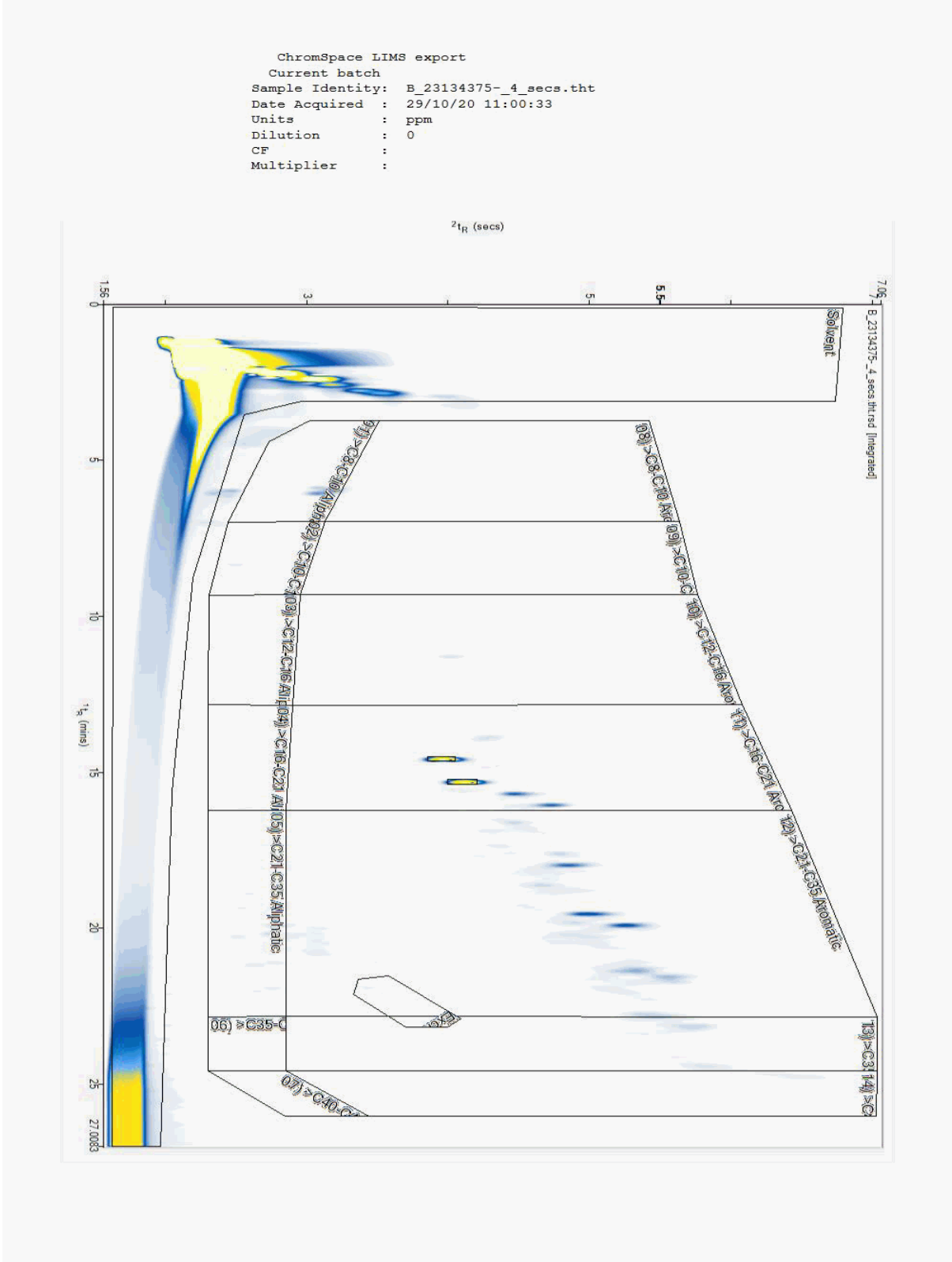
Report Number: 578687
Superseded Report: 574555

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23134375
Sample ID : STP ES5

Depth : 1.00





CERTIFICATE OF ANALYSIS

Validated

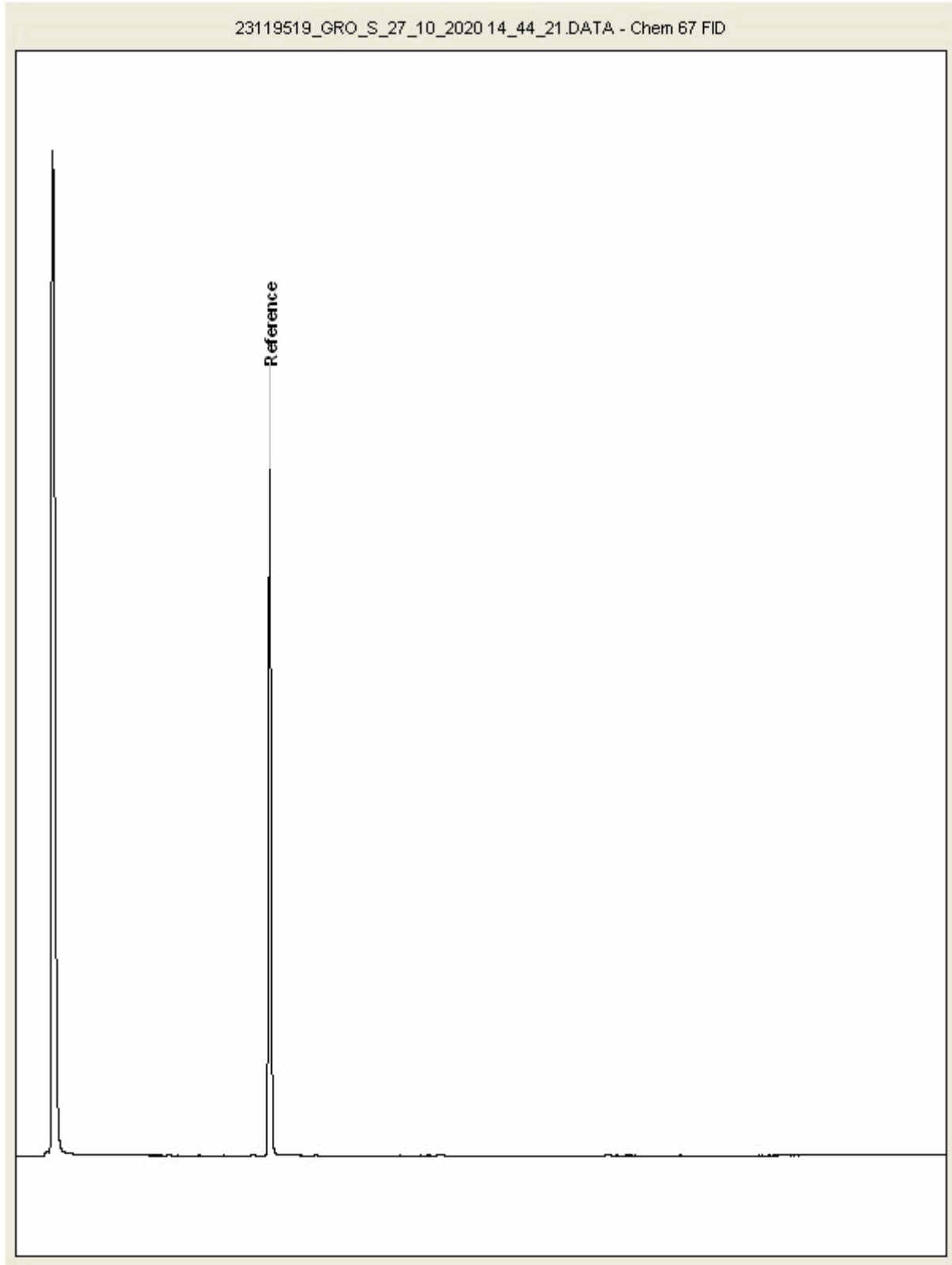
SDG:	201011-3	Client Reference:	JFR1451	Report Number:	578687
Location:	A303 Stonehenge	Order Number:	PQ20-857	Superseded Report:	574555

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23119519
Sample ID : STP ES5

Depth : 0.50





CERTIFICATE OF ANALYSIS

Validated

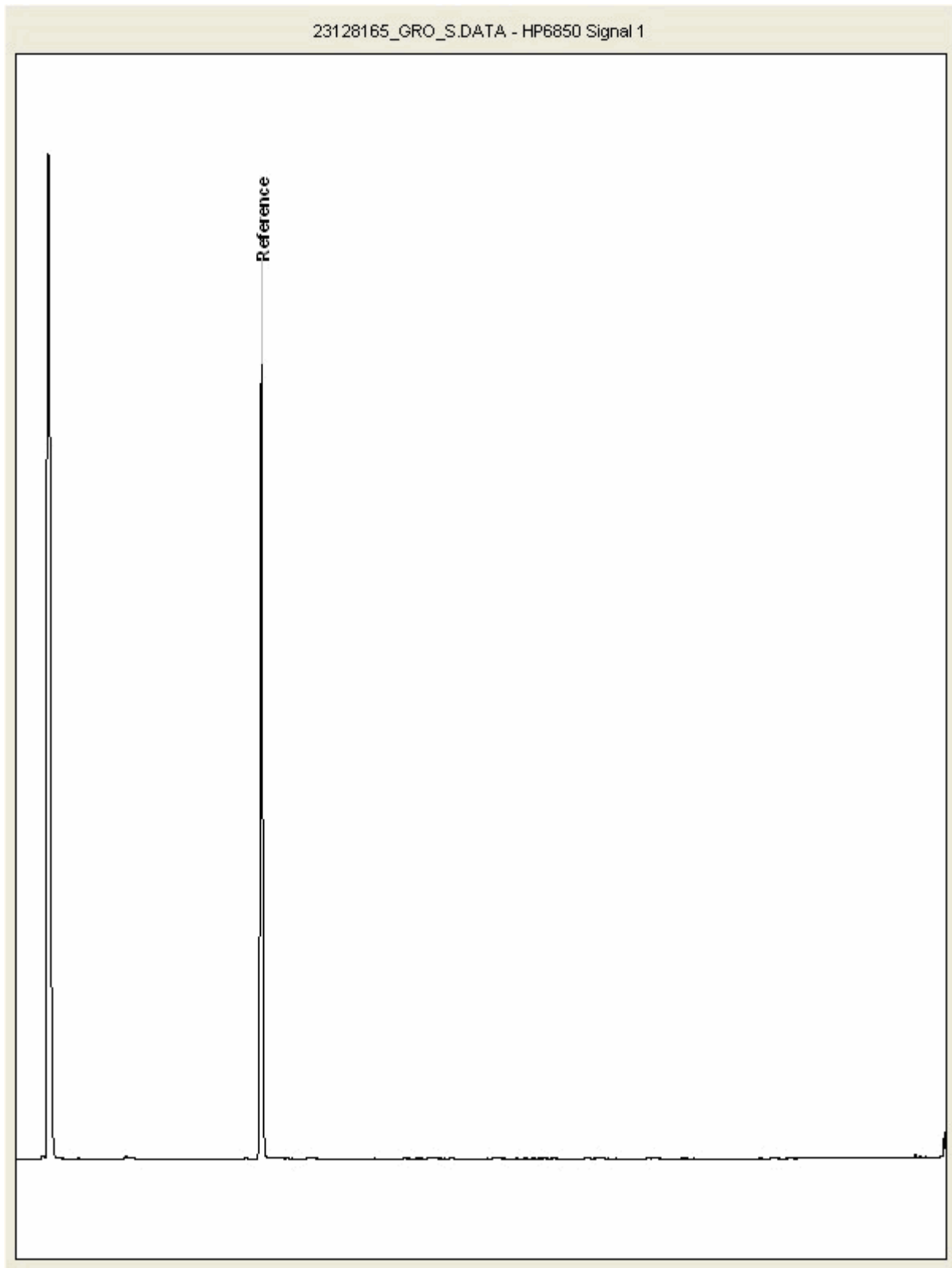
SDG:	201011-3	Client Reference:	JFR1451	Report Number:	578687
Location:	A303 Stonehenge	Order Number:	PQ20-857	Superseded Report:	574555

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23128165
Sample ID : STP ES6

Depth : 1.00





CERTIFICATE OF ANALYSIS

Validated

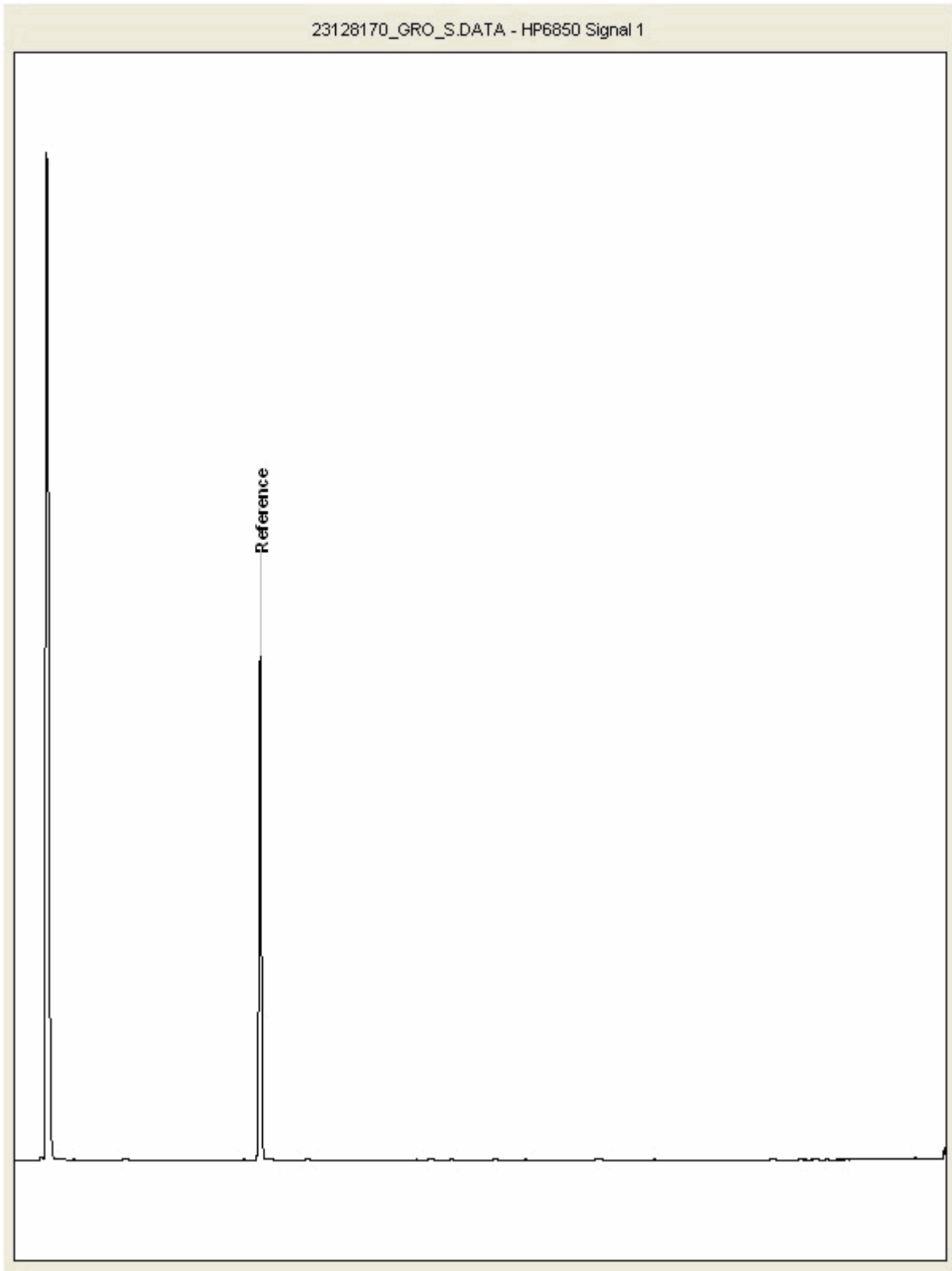
SDG:	201011-3	Client Reference:	JFR1451	Report Number:	578687
Location:	A303 Stonehenge	Order Number:	PQ20-857	Superseded Report:	574555

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23128170
Sample ID : STP ES6

Depth : 0.50





CERTIFICATE OF ANALYSIS

Validated

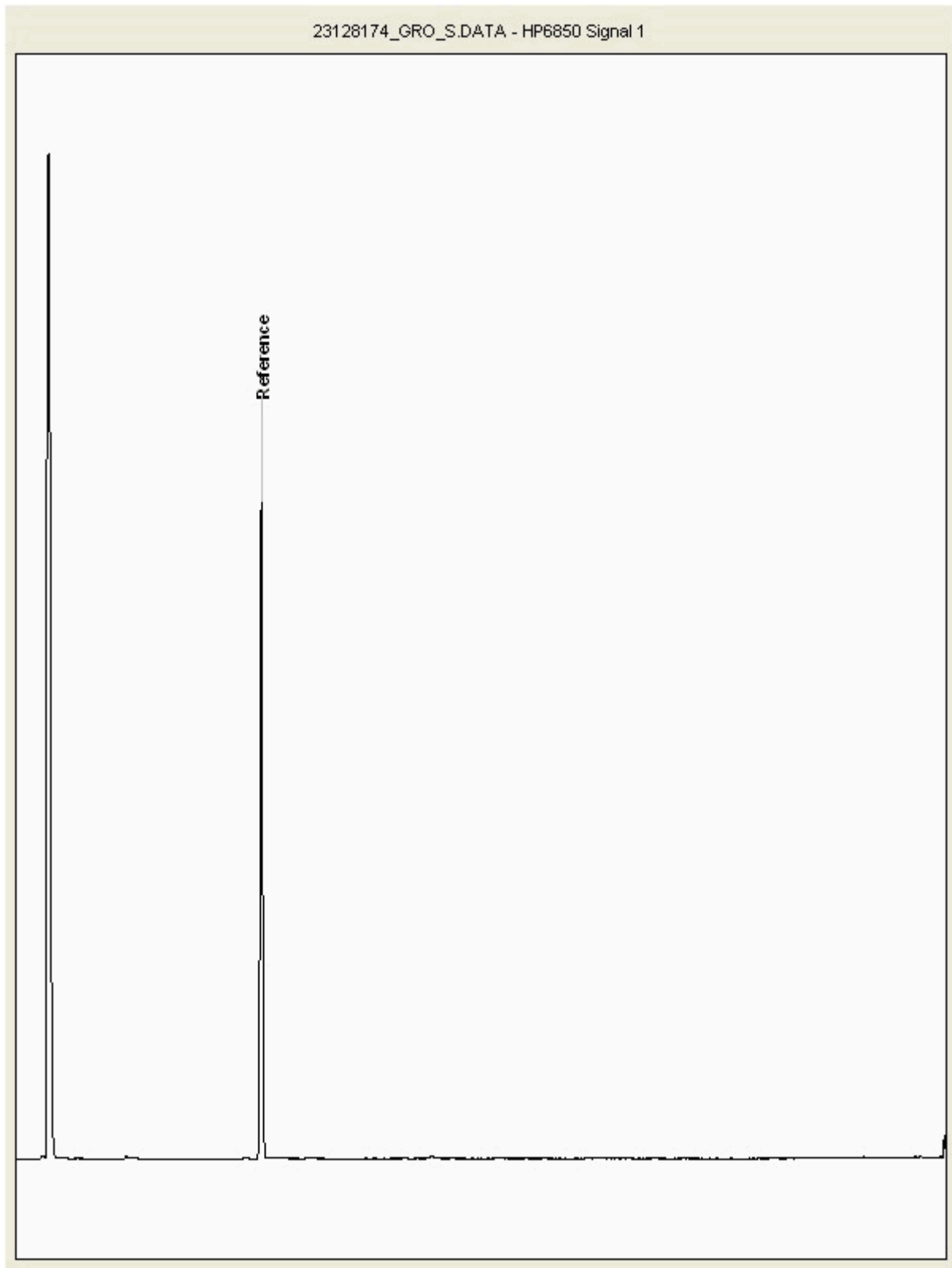
SDG:	201011-3	Client Reference:	JFR1451	Report Number:	578687
Location:	A303 Stonehenge	Order Number:	PQ20-857	Superseded Report:	574555

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23128174
Sample ID : STP ES4

Depth : 0.30





CERTIFICATE OF ANALYSIS

Validated

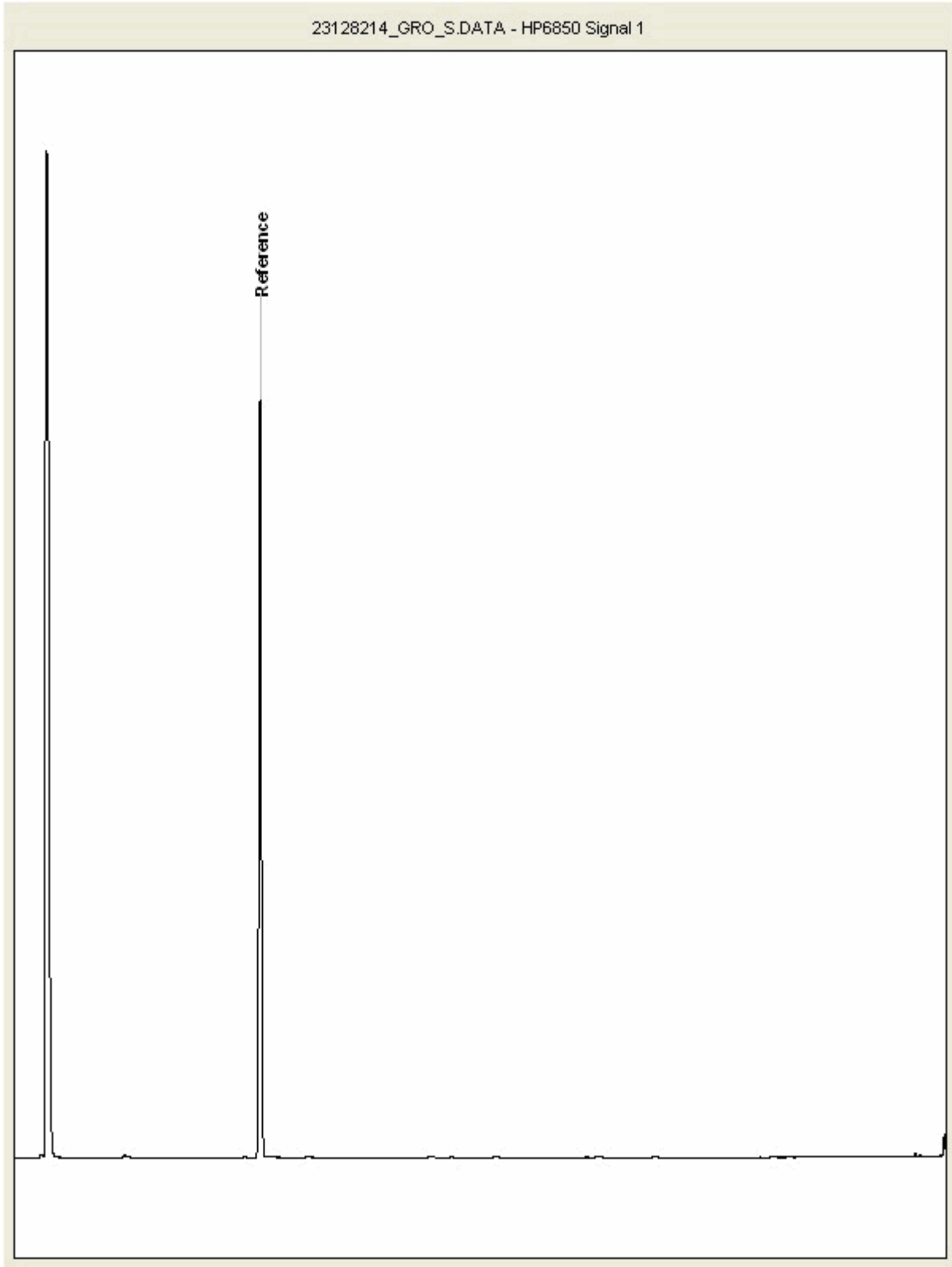
SDG:	201011-3	Client Reference:	JFR1451	Report Number:	578687
Location:	A303 Stonehenge	Order Number:	PQ20-857	Superseded Report:	574555

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23128214
Sample ID : STP ES5

Depth : 1.00





CERTIFICATE OF ANALYSIS

Validated

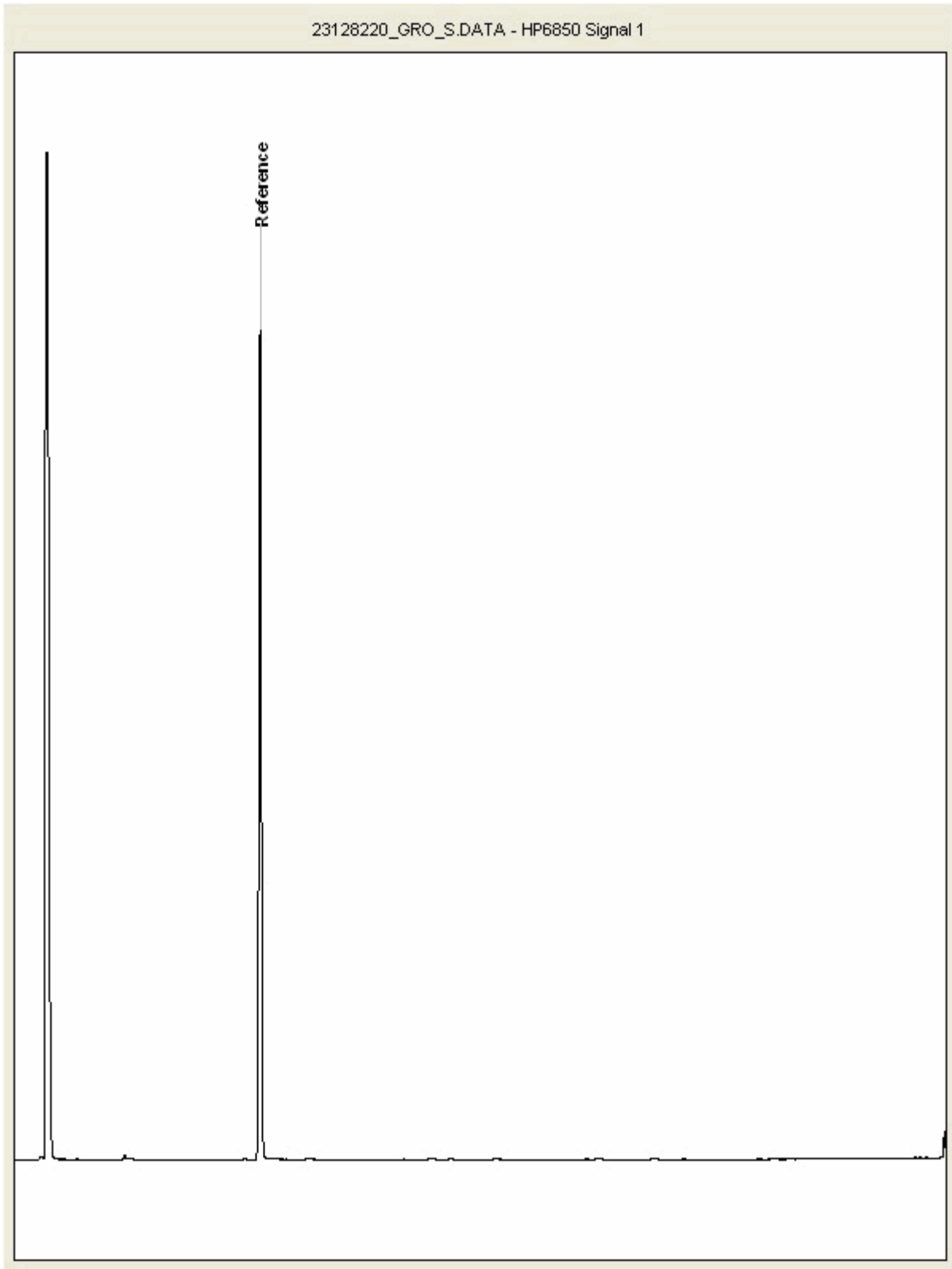
SDG:	201011-3	Client Reference:	JFR1451	Report Number:	578687
Location:	A303 Stonehenge	Order Number:	PQ20-857	Superseded Report:	574555

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23128220
Sample ID : STP ES4

Depth : 1.00





CERTIFICATE OF ANALYSIS

Validated

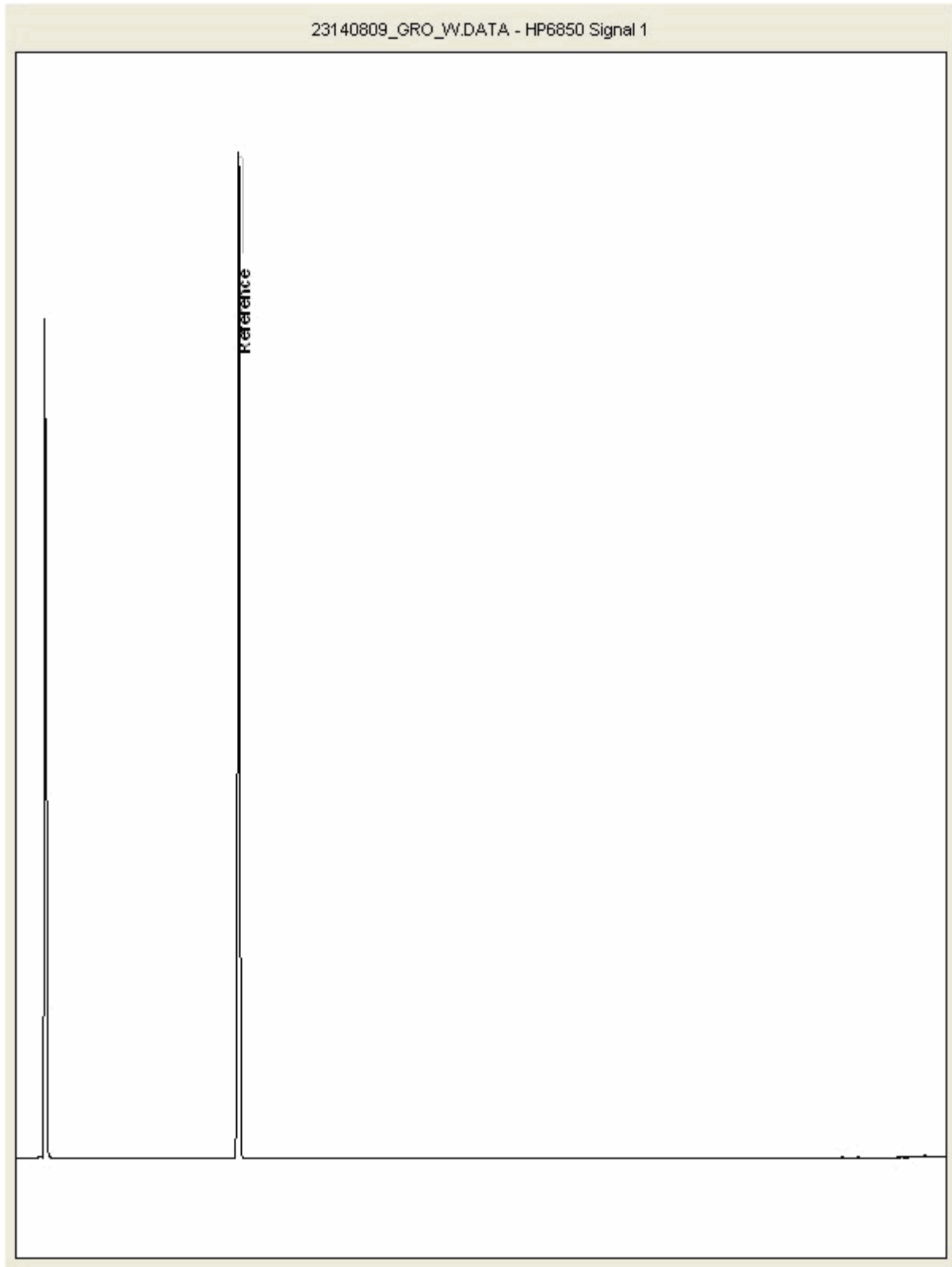
SDG:	201011-3	Client Reference:	JFR1451	Report Number:	578687
Location:	A303 Stonehenge	Order Number:	PQ20-857	Superseded Report:	574555

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 23140809
Sample ID : STP ES5

Depth : 1.00



ALS Environmental, Land

QF.7.5.1 Data Amendments Form (Issue No. 3)

Date: 10/01/2020

Issued and Authorised by Quality Manager

SDG	Sample Event	Sample ID	Date Amended	Amendment Reason	Previous Reference	New Reference	Supercedes Report
201011-3	23012253	STP ES6	04/12/2020	Sample ID Change	STP ES36	STP ES6	574555
201011-3	23012254	STP ES6	04/12/2020	Sample ID Change	STP ES36	STP ES6	574555
201011-3	23012255	STP ES6	04/12/2020	Sample ID Change	STP ES36	STP ES6	574555
201011-3	23012256	STP ES6	04/12/2020	Sample ID Change	STP ES36	STP ES6	574555
201011-3	23012257	STP ES5	04/12/2020	Sample ID Change	STP ES35	STP ES5	574555
201011-3	23012258	STP ES5	04/12/2020	Sample ID Change	STP ES35	STP ES5	574555
201011-3	23012259	STP ES5	04/12/2020	Sample ID Change	STP ES35	STP ES5	574555
201011-3	23012260	STP ES5	04/12/2020	Sample ID Change	STP ES35	STP ES5	574555
201011-3	23012261	STP ES4	04/12/2020	Sample ID Change	STP ES34	STP ES4	574555
201011-3	23012262	STP ES4	04/12/2020	Sample ID Change	STP ES34	STP ES4	574555
201011-3	23012263	STP ES4	04/12/2020	Sample ID Change	STP ES34	STP ES4	574555
201011-3	23012264	STP ES4	04/12/2020	Sample ID Change	STP ES34	STP ES4	574555



CERTIFICATE OF ANALYSIS

SDG: 201011-3	Client Reference: JFR1451	Report Number: 578687
Location: A303 Stonehenge	Order Number: PO20-857	Superseded Report: 574555

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

19. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung. Standing Committee of Analysts, *The Quantification of Asbestos in Soil* (2017).

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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RPS Consultants Ltd
260 Park Avenue
Aztec West
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Bristol
BS32 4SY

Attention: Gary Riches

CERTIFICATE OF ANALYSIS

Date of report Generation: 05 November 2020
Customer: RPS Consultants Ltd
Sample Delivery Group (SDG): 201015-121
Your Reference: JFR1451
Location: A303 Stonehenge
Report No: 574317

This report has been revised and directly supersedes 572866 in its entirety.

We received 5 samples on Thursday October 15, 2020 and 3 of these samples were scheduled for analysis which was completed on Thursday November 05, 2020. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

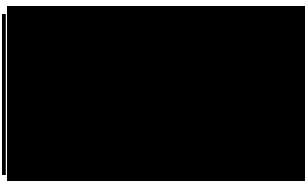
Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved



Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-121 **Client Reference:** JFR1451 **Report Number:** 574317
Location: A303 Stonehenge **Order Number:** PO20-748 **Superseded Report:** 572866

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
23039651	CP72308	ES1	0.20 - 0.20	13/10/2020
23039649	CP72308	ES2	0.45 - 0.45	13/10/2020
23039648	CP72308	ES3	0.60 - 0.60	13/10/2020
23039650	CP72308	ES4	1.00 - 1.00	13/10/2020
23048508	CP72308		1.75 - 1.85	14/10/2020

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG:	201015-121	Client Reference:	JFR1451	Report Number:	574317
Location:	A303 Stonehenge	Order Number:	PO20-748	Superseded Report:	572866

Results Legend

- X Test
- N No Determination Possible

Sample Types -

- S - Soil/Solid
- UNS - Unspecified Solid
- GW - Ground Water
- SW - Surface Water
- LE - Land Leachate
- PL - Prepared Leachate
- PR - Process Water
- SA - Saline Water
- TE - Trade Effluent
- TS - Treated Sewage
- US - Untreated Sewage
- RE - Recreational Water
- DW - Drinking Water Non-regulatory
- UNL - Unspecified Liquid
- SL - Sludge
- G - Gas
- OTH - Other

	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type
	23039651	CP72308	ES1	0.20 - 0.20	1kg TUB with Handle (ALE260)	S
	23039648	CP72308	ES3	0.60 - 0.60	250g Amber Jar (ALE215)	S
	23048508	CP72308		1.75 - 1.85	60g VOC (ALE215)	S
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 1	X			
Ammonium Soil by Titration	All	NDPs: 0 Tests: 3	X	X	X	
Anions by Kone (soil)	All	NDPs: 0 Tests: 3	X	X	X	
Anions by Kone (w)	All	NDPs: 0 Tests: 1	X			
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 3	X	X	X	
CEN Readings	All	NDPs: 0 Tests: 1	X			
Chromium III	All	NDPs: 0 Tests: 4	X	X	X	X
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 4	X	X	X	X
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 1	X			
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 1	X			
EPH CWG (Aliphatic) Filtered GC (W)	All	NDPs: 0 Tests: 1	X			
EPH CWG (Aromatic) Filtered GC (W)	All	NDPs: 0 Tests: 1	X			
EPH CWG GC (S)	All	NDPs: 0 Tests: 3	X	X	X	
GRO by GC-FID (S)	All	NDPs: 0 Tests: 3	X	X	X	
GRO by GC-FID (W)	All	NDPs: 0 Tests: 1	X			



CERTIFICATE OF ANALYSIS

Validated

SDG:	201015-121	Client Reference:	JFR1451	Report Number:	574317
Location:	A303 Stonehenge	Order Number:	PO20-748	Superseded Report:	572866

Results Legend <div style="display: flex; flex-direction: column; gap: 5px;"> <div style="display: flex; align-items: center;">X Test</div> <div style="display: flex; align-items: center;">N No Determination Possible</div> </div> Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type	
		23039651	CP72308	ES1	0.20 - 0.20	1kg TUB with Handle (ALE280)	S
		23039648	CP72308	ES3	0.60 - 0.60	250g Amber Jar (ALE215)	S
		23048508	CP72308		1.75 - 1.85	60g VOC (ALE215)	S
						250g Amber Jar (ALE215)	S
						60g VOC (ALE210)	S
						1kg TUB with Handle (ALE280)	S
Hexavalent Chromium (s)	All		NDPs: 0 Tests: 3				
						X	
						X	
						X	
Hexavalent Chromium (w)	All		NDPs: 0 Tests: 1				
						X	
Mercury Dissolved	All		NDPs: 0 Tests: 1				
						X	
Metals in solid samples by OES	All		NDPs: 0 Tests: 3				
						X	
						X	
						X	
PAH by GCMS	All		NDPs: 0 Tests: 3				
						X	
						X	
						X	
PAH in waters by GC-MS (diss.filt)	All		NDPs: 0 Tests: 1				
						X	
pH	All		NDPs: 0 Tests: 3				
						X	
						X	
						X	
pH Value of Filtered Water	All		NDPs: 0 Tests: 1				
						X	
Phenols by HPLC (S)	All		NDPs: 0 Tests: 3				
						X	
						X	
						X	
Phenols by HPLC (W)	All		NDPs: 0 Tests: 1				
						X	
Sample description	All		NDPs: 0 Tests: 3				
						X	
						X	
						X	
Semi Volatile Organic Compounds	All		NDPs: 0 Tests: 1				
						X	
Total Organic Carbon	All		NDPs: 0 Tests: 3				
						X	
						X	
						X	
TPH CWG Filtered (W)	All		NDPs: 0 Tests: 1				
						X	
TPH CWG GC (S)	All		NDPs: 0 Tests: 3				
						X	
						X	
						X	



CERTIFICATE OF ANALYSIS

Validated

SDG:	201015-121	Client Reference:	JFR1451	Report Number:	574317
Location:	A303 Stonehenge	Order Number:	PO20-748	Superseded Report:	572866

Results Legend

Test

No Determination Possible
Sample Types -

- S - Soil/Solid
- UNS - Unspecified Solid
- GW - Ground Water
- SW - Surface Water
- LE - Land Leachate
- PL - Prepared Leachate
- PR - Process Water
- SA - Saline Water
- TE - Trade Effluent
- TS - Treated Sewage
- US - Untreated Sewage
- RE - Recreational Water
- DW - Drinking Water Non-regulatory
- UNL - Unspecified Liquid
- SL - Sludge
- G - Gas
- OTH - Other

	Lab Sample No(s)	23039651	23039648	23048508
Customer Sample Reference		CP72308	CP72308	CP72308
AGS Reference		ES1	ES3	
Depth (m)		0.20 - 0.20	0.60 - 0.60	1.75 - 1.85
Container		1kg TUB with Handle (ALE280)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type		S	S	S
VOC MS (S)	All	NDPs: 0 Tests: 3		
			X	X



CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-121
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PO20-748

Report Number: 574317
Superseded Report: 572866

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm
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Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
23039648	CP72308	0.60 - 0.60	Cream	Chalk	Stones	Vegetation
23039651	CP72308	0.20 - 0.20	Dark Brown	Stone/Soil	Stones	Vegetation
23048508	CP72308	1.75 - 1.85	Dark Brown	Silt Loam	Vegetation	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.



CERTIFICATE OF ANALYSIS

Validated

SDG:	201015-121	Client Reference:	JFR1451	Report Number:	574317
Location:	A303 Stonehenge	Order Number:	PO20-748	Superseded Report:	572866

Results Legend		Customer Sample Ref.					
#	ISO17025 accredited.	CP72308	CP72308	CP72308			
M	mCERTS accredited.						
aq	Aqueous / settled sample.						
diss.fit	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.						
*	Subcontracted - refer to subcontractor report for accreditation status.						
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery						
(F)	Trigger breach confirmed						
1-4*§@	Sample deviation (see appendix)						
		Depth (m)	0.20 - 0.20	0.60 - 0.60	1.75 - 1.85		
		Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
		Date Sampled	13/10/2020	13/10/2020	14/10/2020		
		Sampled Time					
		Date Received	15/10/2020	15/10/2020	15/10/2020		
		SDG Ref	201015-121	201015-121	201015-121		
		Lab Sample No.(s)	23039651	23039648	23048508		
		AGS Reference	ES1	ES3			
Component	LOD/Units	Method					
Moisture Content Ratio (% of as received sample)	%	PM024	2.2	20	72		
Exchangeable Ammonia as N	<12 mg/kg	TM024	24.7	22.9	149		
Phenol	<0.01 mg/kg	TM062 (S)	0.123	<0.01	<0.01		
Organic Carbon, Total	<0.2 %	TM132	0.507	<0.2	13.5		
pH	1 pH Units	TM133	8.69	8.79	7.9		
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6	<0.6	<0.6		
Cyanide, Total	<1 mg/kg	TM153	<1	<1	1.05		
Cyanide, Free	<1 mg/kg	TM153	<1	<1	<1		
Chromium, Trivalent	<0.9 mg/kg	TM181	11.4	1.49	33.7		
Antimony	<0.6 mg/kg	TM181	1.23	1.16	<0.6		
Arsenic	<0.6 mg/kg	TM181	1.47	<0.6	7.9		
Beryllium	<0.01 mg/kg	TM181	0.231	0.0707	1.08		
Boron	<0.7 mg/kg	TM181	2.91	7.47	16.5		
Cadmium	<0.02 mg/kg	TM181	0.782	0.569	0.569		
Chromium	<0.9 mg/kg	TM181	11.4	1.49	33.7		
Copper	<1.4 mg/kg	TM181	11.8	2.42	14.5		
Iron	<1000 mg/kg	TM181	11600	1520	23500		
Lead	<0.7 mg/kg	TM181	12.2	6.72	24.5		
Manganese	<0.13 mg/kg	TM181	217	283	85.7		
Mercury	<0.14 mg/kg	TM181	<0.14	<0.14	<0.14		
Molybdenum	<0.1 mg/kg	TM181	0.195	0.139	0.152		
Nickel	<0.2 mg/kg	TM181	11.2	2.17	31.6		
Phosphorus	<1 mg/kg	TM181	509	529	1580		
Selenium	<1 mg/kg	TM181	<1	<1	4.08		
Zinc	<1.9 mg/kg	TM181	73.2	34.1	43.4		
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243	0.15	0.266	0.0836		



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Validated

SDG: 201015-121	Client Reference: JFR1451	Report Number: 574317
Location: A303 Stonehenge	Order Number: PO20-748	Superseded Report: 572866

PAH by GCMS

Results Legend		Customer Sample Ref.	CP72308	CP72308	CP72308			
#	ISO17025 accredited.	Depth (m)	0.20 - 0.20	0.60 - 0.60	1.75 - 1.85			
M	mCERTS accredited.	Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
aq	Aqueous / settled sample.	Date Sampled	13/10/2020	13/10/2020	14/10/2020			
diss.filt	Dissolved / filtered sample.	Sampled Time						
tot.unfilt	Total / unfiltered sample.	Date Received	15/10/2020	15/10/2020	15/10/2020			
*	Subcontracted - refer to subcontractor report for accreditation status.	SDG Ref	201015-121	201015-121	201015-121			
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery	Lab Sample No.(s)	23039651	23039648	23048508			
(F)	Trigger breach confirmed	AGS Reference	ES1	ES3				
1-4*\$@	Sample deviation (see appendix)							
Component	LOD/Units	Method						
Naphthalene-d8 % recovery**	%	TM218	83.7	85.5	86.2			
Acenaphthene-d10 % recovery**	%	TM218	73.9	80.3	84.2			
Phenanthrene-d10 % recovery**	%	TM218	77.6	87.6	84.4			
Chrysene-d12 % recovery**	%	TM218	100	88.3	76.7			
Perylene-d12 % recovery**	%	TM218	101	80.1	77.3			
Naphthalene	<9 µg/kg	TM218	95900 #	6310 #	356 @ M			
Acenaphthylene	<12 µg/kg	TM218	9970 #	1240 #	56.8 @ M			
Acenaphthene	<8 µg/kg	TM218	27000 #	1840 #	206 @ M			
Fluorene	<10 µg/kg	TM218	50000 #	4220 #	349 @ M			
Phenanthrene	<15 µg/kg	TM218	212000 #	18700 #	1450 @ M			
Anthracene	<16 µg/kg	TM218	56200 #	5100 #	335 @ M			
Fluoranthene	<17 µg/kg	TM218	161000 #	14400 #	1000 @ M			
Pyrene	<15 µg/kg	TM218	124000 #	11100 #	783 @ M			
Benz(a)anthracene	<14 µg/kg	TM218	58700 #	4880 #	310 @ M			
Chrysene	<10 µg/kg	TM218	51500 #	4350 #	263 @ M			
Benzo(b)fluoranthene	<15 µg/kg	TM218	61100 #	3940 #	294 @ M			
Benzo(k)fluoranthene	<14 µg/kg	TM218	26900 #	1450 #	133 @ M			
Benzo(a)pyrene	<15 µg/kg	TM218	49900 #	4160 #	248 @ M			
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	34300 #	2750 #	151 @ M			
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	7300 #	531 #	<23 @ M			
Benzo(g,h,i)perylene	<24 µg/kg	TM218	27400 #	2420 #	140 @ M			
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	1050000	87500	6070			



CERTIFICATE OF ANALYSIS

Validated

SDG:	201015-121	Client Reference:	JFR1451	Report Number:	574317
Location:	A303 Stonehenge	Order Number:	PO20-748	Superseded Report:	572866

Semi Volatile Organic Compounds

#	M	aq	diss.filt	tot.unfilt	*	**	(F)	1-4*5@	Customer Sample Ref.	CP72308	Depth (m)	Sample Type	Date Sampled	Sampled Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference		
Results Legend																				
ISO17025 accredited. mCERTS accredited. Aqueous / settled sample. Dissolved / filtered sample. Total / unfiltered sample. Subcontracted - refer to subcontractor report for accreditation status. % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery Trigger breach confirmed Sample deviation (see appendix)																				
Component	LOD/Units	Method																		
Phenol	<100 µg/kg	TM157	<500																	
Pentachlorophenol	<100 µg/kg	TM157	<500																	
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<500																	
Nitrobenzene	<100 µg/kg	TM157	<500																	
Isophorone	<100 µg/kg	TM157	<500																	
Hexachloroethane	<100 µg/kg	TM157	<500																	
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<500																	
Hexachlorobutadiene	<100 µg/kg	TM157	<500																	
Hexachlorobenzene	<100 µg/kg	TM157	<500																	
n-Dioctyl phthalate	<100 µg/kg	TM157	<500																	
Dimethyl phthalate	<100 µg/kg	TM157	<500																	
Diethyl phthalate	<100 µg/kg	TM157	<500																	
n-Dibutyl phthalate	<100 µg/kg	TM157	<500																	
Dibenzofuran	<100 µg/kg	TM157	43800																	
Carbazole	<100 µg/kg	TM157	24000																	
Butylbenzyl phthalate	<100 µg/kg	TM157	<500																	
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<500																	
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<500																	
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<500																	
Azobenzene	<100 µg/kg	TM157	<500																	
4-Nitrophenol	<100 µg/kg	TM157	<500																	
4-Nitroaniline	<100 µg/kg	TM157	<500																	
4-Methylphenol	<100 µg/kg	TM157	1340																	
4-Chlorophenylphenylether	<100 µg/kg	TM157	<500																	
4-Chloroaniline	<100 µg/kg	TM157	<500																	
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<500																	
4-Bromophenylphenylether	<100 µg/kg	TM157	<500																	
3-Nitroaniline	<100 µg/kg	TM157	<500																	
2-Nitrophenol	<100 µg/kg	TM157	<500																	
2-Nitroaniline	<100 µg/kg	TM157	<500																	
2-Methylphenol	<100 µg/kg	TM157	949																	
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<500																	



CERTIFICATE OF ANALYSIS

Validated

SDG:	201015-121	Client Reference:	JFR1451	Report Number:	574317
Location:	A303 Stonehenge	Order Number:	PO20-748	Superseded Report:	572866

Semi Volatile Organic Compounds

Results Legend		Customer Sample Ref.	CP72308				
#	ISO17025 accredited.	Depth (m)	0.20 - 0.20				
M	mCERTS accredited.	Sample Type	Soil/Solid (S)				
sq	Aqueous / filtered sample.	Date Sampled	13/10/2020				
dis.filt	Dissolved / filtered sample.	Sampled Time	.				
tot.unfilt	Total / unfiltered sample.	Date Received	15/10/2020				
*	Subcontracted - refer to subcontractor report for accreditation status.	SDG Ref	201015-121				
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery	Lab Sample No.(s)	23039651				
(F)	Trigger breach confirmed	AGS Reference	ES1				
1-4&@	Sample deviation (see appendix)						
Component	LOD/Units	Method					
2-Chlorophenol	<100 µg/kg	TM157	<500				
2,6-Dinitrotoluene	<100 µg/kg	TM157	<500				
2,4-Dinitrotoluene	<100 µg/kg	TM157	<500				
2,4-Dimethylphenol	<100 µg/kg	TM157	3010				
2,4-Dichlorophenol	<100 µg/kg	TM157	<500				
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<500				
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<500				
1,4-Dichlorobenzene	<100 µg/kg	TM157	<500				
1,3-Dichlorobenzene	<100 µg/kg	TM157	<500				
1,2-Dichlorobenzene	<100 µg/kg	TM157	<500				
2-Chloronaphthalene	<100 µg/kg	TM157	<500				
2-Methylnaphthalene	<100 µg/kg	TM157	41500				
Acenaphthylene	<100 µg/kg	TM157	13600				
Acenaphthene	<100 µg/kg	TM157	33900				
Anthracene	<100 µg/kg	TM157	66400				
Benzo(a)anthracene	<100 µg/kg	TM157	67600				
Benzo(b)fluoranthene	<100 µg/kg	TM157	49500				
Benzo(k)fluoranthene	<100 µg/kg	TM157	39300				
Benzo(a)pyrene	<100 µg/kg	TM157	56700				
Benzo(g,h,i)perylene	<100 µg/kg	TM157	31000				
Chrysene	<100 µg/kg	TM157	58600				
Fluoranthene	<100 µg/kg	TM157	226000				
Fluorene	<100 µg/kg	TM157	60500				
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	47600				
Phenanthrene	<100 µg/kg	TM157	281000				
Pyrene	<100 µg/kg	TM157	170000				
Naphthalene	<100 µg/kg	TM157	115000				
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	6090				
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<500				
TIC report		TM157	Detected				
Total SVOC TIC	<100 µg/kg	TM157	340000				
Benzofluorene	<100 µg/kg	TM157	47500				



CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-121
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PO20-748

Report Number: 574317
Superseded Report: 572866

Semi Volatile Organic Compounds

Results Legend			Customer Sample Ref.					
#	ISO17025 accredited.		CP72308					
M	mCERTS accredited.							
aq	Aqueous / settled sample.		Depth (m)	0.20 - 0.20				
diss.filt	Dissolved / filtered sample.		Sample Type	Soil/Solid (S)				
tot.unfilt	Total / unfiltered sample.		Date Sampled	13/10/2020				
*	Subcontracted - refer to subcontractor report for accreditation status.		Sampled Time	.				
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		Date Received	15/10/2020				
(F)	Trigger breach confirmed		SDG Ref	201015-121				
1.4.5@	Sample deviation (see appendix)		Lab Sample No.(s)	23039651				
			AGS Reference	ES1				
Component	LOD/Units	Method						
Benzopyrene	µg/kg	TM157	51100					
Cyclopentaphenanthrene	µg/kg	TM157	55900					
Dibenzothiophene	µg/kg	TM157	29400					
Isomers of Dimethylnaphthalene	µg/kg	TM157	37100					
Isomers of Methylphenanthrene	µg/kg	TM157	60500					
Methylfluoranthene	µg/kg	TM157	28800					
Methylnaphthalene	µg/kg	TM157	29400					



CERTIFICATE OF ANALYSIS

Validated

SDG:	201015-121	Client Reference:	JFR1451	Report Number:	574317
Location:	A303 Stonehenge	Order Number:	PO20-748	Superseded Report:	572866

TPH CWG (S)

Results Legend		Customer Sample Ref.	CP72308	CP72308	CP72308			
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.20 - 0.20	0.60 - 0.60	1.75 - 1.85			
M	mCERTS accredited.		Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
aq	Aqueous / settled sample.		13/10/2020	13/10/2020	14/10/2020			
diss.filt	Dissolved / filtered sample.		15/10/2020	15/10/2020	15/10/2020			
tot.unfilt	Total / unfiltered sample.		201015-121	201015-121	201015-121			
*	Subcontracted - refer to subcontractor report for accreditation status.		23039651	23039648	23048508			
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		ES1	ES3				
(F)	Trigger breach confirmed							
1-4*\$@	Sample deviation (see appendix)							
Component	LOD/Units		Method					
GRO Surrogate % recovery**	%	TM089	65	114	81.1			
Aliphatics >C5-C6	<10 µg/kg	TM089	22.5	17.4	<10			
Aliphatics >C6-C8	<10 µg/kg	TM089	122	32.2	<10			
Aliphatics >C8-C10	<10 µg/kg	TM089	1290	63.2	<10			
Aliphatics >C10-C12	<1000 µg/kg	TM414	10200	<1000	<1000			
Aliphatics >C12-C16	<1000 µg/kg	TM414	29600	<1000	<1000			
Aliphatics >C16-C21	<1000 µg/kg	TM414	29100	<1000	<1000			
Aliphatics >C21-C35	<1000 µg/kg	TM414	98400	1920	24500			
Aliphatics >C35-C44	<1000 µg/kg	TM414	64800	<1000	3870			
Total Aliphatics >C10-C44	<5000 µg/kg	TM414	232000	<5000	29300			
Total Aliphatics & Aromatics >C10-C44	<10000 µg/kg	TM414	2270000	122000	50600			
Aromatics >EC5-EC7	<10 µg/kg	TM089	<10	<10	<10			
Aromatics >EC7-EC8	<10 µg/kg	TM089	38.9	<10	<10			
Aromatics >EC8-EC10	<10 µg/kg	TM089	863	42.2	<10			
Aromatics > EC10-EC12	<1000 µg/kg	TM414	70300	3230	<1000			
Aromatics > EC12-EC16	<1000 µg/kg	TM414	271000	14400	<1000			
Aromatics > EC16-EC21	<1000 µg/kg	TM414	727000	46000	1870			
Aromatics > EC21-EC35	<1000 µg/kg	TM414	842000	50200	15500			
Aromatics >EC35-EC44	<1000 µg/kg	TM414	129000	5070	3280			
Aromatics > EC40-EC44	<1000 µg/kg	TM414	18300	<1000	<1000			
Total Aromatics > EC10-EC44	<5000 µg/kg	TM414	2040000	119000	21200			
Total Aliphatics & Aromatics >C5-C44	<10000 µg/kg	TM414	2270000	119000	50600			
Total Aliphatics >C5-C10	<50 µg/kg	TM089	1440	113	<50			
Total Aromatics >EC5-EC10	<50 µg/kg	TM089	902	<50	<50			
GRO >C5-C10	<20 µg/kg	TM089	2340	113	<20			



CERTIFICATE OF ANALYSIS

Validated

SDG:	201015-121	Client Reference:	JFR1451	Report Number:	574317
Location:	A303 Stonehenge	Order Number:	PO20-748	Superseded Report:	572866

VOC MS (S)

Results Legend		Customer Sample Ref.	CP72308	CP72308	CP72308			
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.20 - 0.20	0.60 - 0.60	1.75 - 1.85			
M	mCERTS accredited.		Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
aq	Aqueous / settled sample.		13/10/2020	13/10/2020	14/10/2020			
diss.filt	Dissolved / filtered sample.		15/10/2020	15/10/2020	15/10/2020			
tot.unfilt	Total / unfiltered sample.		201015-121	201015-121	201015-121			
*	Subcontracted - refer to subcontractor report for accreditation status.		23039651	23039648	23048508			
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		ES1	ES3				
(F)	Trigger breach confirmed							
1-4*3@	Sample deviation (see appendix)							
Component	LOD/Units		Method					
Dibromofluoromethane**	%	TM116	123	102	114	@		
Toluene-d8**	%	TM116	96.2	97.4	101	@		
4-Bromofluorobenzene**	%	TM116	90.1	90	93.8	@		
Dichlorodifluoromethane	<6 µg/kg	TM116	<1200					
Chloromethane	<7 µg/kg	TM116	<1400					
Vinyl Chloride	<6 µg/kg	TM116	<1200					
Bromomethane	<10 µg/kg	TM116	<2000					
Chloroethane	<10 µg/kg	TM116	<2000					
Trichlorofluoromethane	<6 µg/kg	TM116	<1200					
1,1-Dichloroethene	<10 µg/kg	TM116	<2000					
Carbon Disulphide	<7 µg/kg	TM116	<1400					
Dichloromethane	<10 µg/kg	TM116	<2000					
Methyl Tertiary Butyl Ether	<10 µg/kg	TM116	<2000	<10	<200	@ M		
trans-1,2-Dichloroethene	<10 µg/kg	TM116	<2000					
1,1-Dichloroethane	<8 µg/kg	TM116	<1600					
cis-1,2-Dichloroethene	<6 µg/kg	TM116	<1200					
2,2-Dichloropropane	<10 µg/kg	TM116	<2000					
Bromochloromethane	<10 µg/kg	TM116	<2000					
Chloroform	<8 µg/kg	TM116	<1600					
1,1,1-Trichloroethane	<7 µg/kg	TM116	<1400					
1,1-Dichloropropene	<10 µg/kg	TM116	<2000					
Carbontetrachloride	<10 µg/kg	TM116	<2000					
1,2-Dichloroethane	<5 µg/kg	TM116	<1000					
Benzene	<9 µg/kg	TM116	<1800	<9	<180	@ M		
Trichloroethene	<9 µg/kg	TM116	<1800					
1,2-Dichloropropane	<10 µg/kg	TM116	<2000					
Dibromomethane	<9 µg/kg	TM116	<1800					
Bromodichloromethane	<7 µg/kg	TM116	<1400					
cis-1,3-Dichloropropene	<10 µg/kg	TM116	<2000					
Toluene	<7 µg/kg	TM116	<1400	<7	<140	@ M		
trans-1,3-Dichloropropene	<10 µg/kg	TM116	<2000					
1,1,2-Trichloroethane	<10 µg/kg	TM116	<2000					



CERTIFICATE OF ANALYSIS

Validated

SDG:	201015-121	Client Reference:	JFR1451	Report Number:	574317
Location:	A303 Stonehenge	Order Number:	PO20-748	Superseded Report:	572866

VOC MS (S)

Results Legend		Customer Sample Ref.	CP72308	CP72308	CP72308			
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.20 - 0.20	0.60 - 0.60	1.75 - 1.85			
M	mCERTS accredited.		Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
sq	Aqueous / filtered sample.		13/10/2020	13/10/2020	14/10/2020			
dis.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
*	Subcontracted - refer to subcontractor report for accreditation status.							
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		15/10/2020	15/10/2020	15/10/2020			
(F)	Trigger breach confirmed		201015-121	201015-121	201015-121			
1-4#	Sample deviation (see appendix)		23039651	23039648	23048508			
			ES1	ES3				
Component	LOD/Units	Method						
1,3-Dichloropropane	<7 µg/kg	TM116	<1400 #					
Tetrachloroethene	<5 µg/kg	TM116	<1000 #					
Dibromochloromethane	<10 µg/kg	TM116	<2000 #					
1,2-Dibromoethane	<10 µg/kg	TM116	<2000 #					
Chlorobenzene	<5 µg/kg	TM116	<1000 #					
1,1,1,2-Tetrachloroethane	<10 µg/kg	TM116	<2000 #					
Ethylbenzene	<4 µg/kg	TM116	<800 #	<4 #	<80 @ M			
p/m-Xylene	<10 µg/kg	TM116	<2000 #	<10 #	<200 @ #			
o-Xylene	<10 µg/kg	TM116	<2000 #	<10 #	<200 @ M			
Styrene	<10 µg/kg	TM116	<2000 #					
Bromoform	<10 µg/kg	TM116	<2000 #					
Isopropylbenzene	<5 µg/kg	TM116	<1000 #					
1,1,2,2-Tetrachloroethane	<10 µg/kg	TM116	<2000 #					
1,2,3-Trichloropropane	<16 µg/kg	TM116	<3200 #					
Bromobenzene	<10 µg/kg	TM116	<2000 #					
Propylbenzene	<10 µg/kg	TM116	<2000 #					
2-Chlorotoluene	<9 µg/kg	TM116	<1800 #					
1,3,5-Trimethylbenzene	<8 µg/kg	TM116	<1600 #					
4-Chlorotoluene	<10 µg/kg	TM116	<2000 #					
tert-Butylbenzene	<14 µg/kg	TM116	<2800 #					
1,2,4-Trimethylbenzene	<9 µg/kg	TM116	<1800 #					
sec-Butylbenzene	<10 µg/kg	TM116	<2000 #					
4-Isopropyltoluene	<10 µg/kg	TM116	<2000 #					
1,3-Dichlorobenzene	<8 µg/kg	TM116	<1600 #					
1,4-Dichlorobenzene	<5 µg/kg	TM116	<1000 #					
n-Butylbenzene	<11 µg/kg	TM116	<2200 #					
1,2-Dichlorobenzene	<10 µg/kg	TM116	<2000 #					
1,2-Dibromo-3-chloropropane	<14 µg/kg	TM116	<2800 #					
Tert-amyl methyl ether	<10 µg/kg	TM116	<2000 #					
1,2,4-Trichlorobenzene	<20 µg/kg	TM116	<4000 #					
Hexachlorobutadiene	<20 µg/kg	TM116	<4000 #					
Naphthalene	<13 µg/kg	TM116	132000 #					



CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-121	Client Reference: JFR1451	Report Number: 574317
Location: A303 Stonehenge	Order Number: PO20-748	Superseded Report: 572866

Asbestos Identification - Solid Samples

Results Legend

- # ISO17025 accredited.
- M mCERTS accredited.
- * Subcontracted test.
- (F) Trigger breach confirmed
- 1-5&§@ Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	CP72308ES1 0.20 - 0.20 SOLID 13/10/2020 00:00:00 15/10/2020 06:00:00 201015-121 23039651 TM048	26/10/2020	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	CP72308ES3 0.60 - 0.60 SOLID 13/10/2020 00:00:00 15/10/2020 06:00:00 201015-121 23039648 TM048	26/10/2020	Marcin Magdziarek	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	CP72308 1.75 - 1.85 SOLID 14/10/2020 00:00:00 15/10/2020 06:00:00 201015-121 23048508 TM048	04/11/2020	Christian Hallam	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected



CERTIFICATE OF ANALYSIS

Validated

SDG:	201015-121	Client Reference:	JFR1451	Report Number:	574317
Location:	A303 Stonehenge	Order Number:	PO20-748	Superseded Report:	572866

CEN 2:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/

Client Reference		Site Location	A303 Stonehenge
Mass Sample taken (kg)	0.183	Natural Moisture Content (%)	4.75
Mass of dry sample (kg)	0.175	Dry Matter Content (%)	95.5
Particle Size <4mm	>95%		

Case	
SDG	201015-121
Lab Sample Number(s)	23039651
Sampled Date	13-Oct-2020
Customer Sample Ref.	CP72308 ES1
Depth (m)	0.20 - 0.20

Eluate Analysis	Conc ⁿ in 2:1 eluate (mg/l)		2:1 conc ⁿ leached (mg/kg)	
	Result	Limit of Detection	Result	Limit of Detection
Aliphatics >C12-C16	<0.01	<0.01	<0.02	<0.02
Aliphatics >C16-C21	<0.01	<0.01	<0.02	<0.02
Aliphatics >C21-C35	<0.01	<0.01	<0.02	<0.02
Total Aliphatics >C12-C35	<0.01	<0.01	<0.02	<0.02
Aromatics >EC12-EC16	0.759	<0.01	1.52	<0.02
Aromatics >EC16-EC21	0.595	<0.01	1.19	<0.02
Aromatics >EC21-EC35	0.039	<0.01	0.078	<0.02
Aromatics >EC16-EC35	0.634	<0.01	1.27	<0.02
Total Aromatics >EC12-EC35	1.39	<0.01	2.78	<0.02
TPH (Total Aliphatics + Total Aromatics) >C5-C35	1.83	<0.01	3.66	<0.02
Ammoniacal Nitrogen as N	<0.2	<0.2	<0.4	<0.4
Chromium III	<0.03	<0.03	<0.06	<0.06
Hexavalent Chromium	<0.03	<0.03	<0.06	<0.06
Sulphate (soluble)	3.4	<2	6.8	<4
Dissolved Organic Carbon	31.4	<3	62.8	<6
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.00002	<0.00002
Antimony	0.00183	<0.001	0.00366	<0.002
Naphthalene (diss.filt)	0.0016	<0.00001	0.0032	<0.00002
Total Cyanide (W)	<0.05	<0.05	<0.1	<0.1
Acenaphthene (diss.filt)	0.051	<0.000005	0.102	<0.00001
Arsenic	0.00312	<0.0005	0.00624	<0.001
Free Cyanide (W)	<0.05	<0.05	<0.1	<0.1
Acenaphthylene (diss.filt)	0.0462	<0.000005	0.0924	<0.00001
Phenol by HPLC (W)	<0.002	<0.002	<0.004	<0.004
Beryllium	<0.0001	<0.0001	<0.0002	<0.0002
Fluoranthene (diss.filt)	0.014	<0.000005	0.028	<0.00001
Anthracene (diss.filt)	0.0164	<0.000005	0.0328	<0.00001
Boron	0.055	<0.01	0.11	<0.02
Phenanthrene (diss.filt)	0.0863	<0.000005	0.173	<0.00001
Cadmium	<0.00008	<0.00008	<0.00016	<0.00016
Fluorene (diss.filt)	0.0481	<0.000005	0.0962	<0.00001
Chrysene (diss.filt)	0.000487	<0.000005	0.000974	<0.00001
Pyrene (diss.filt)	0.009	<0.000005	0.018	<0.00001
Benzo(a)anthracene (diss.filt)	0.000666	<0.000005	0.00133	<0.00001
Chromium	<0.001	<0.001	<0.002	<0.002

Leach Test Information

Date Prepared	22-Oct-2020
pH (pH Units)	7.59
Conductivity (µS/cm)	421.00
Temperature (°C)	20.10
Volume Leachant (Litres)	0.342
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
 Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
 Mcerts Certification does not apply to leachates

05/11/2020 16:26:45



CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-121	Client Reference: JFR1451	Report Number: 574317
Location: A303 Stonehenge	Order Number: PO20-748	Superseded Report: 572866

CEN 2:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/'

Client Reference		Site Location	A303 Stonehenge
Mass Sample taken (kg)	0.183	Natural Moisture Content (%)	4.75
Mass of dry sample (kg)	0.175	Dry Matter Content (%)	95.5
Particle Size <4mm	>95%		

Case	
SDG	201015-121
Lab Sample Number(s)	23039651
Sampled Date	13-Oct-2020
Customer Sample Ref.	CP72308 ES1
Depth (m)	0.20 - 0.20

Eluate Analysis	Conc ⁿ in 2:1 eluate (mg/l)		2:1 conc ⁿ leached (mg/kg)	
	Result	Limit of Detection	Result	Limit of Detection
Benzo(b)fluoranthene (diss.filt)	0.000211	<0.000005	0.000422	<0.00001
Benzo(k)fluoranthene (diss.filt)	0.000107	<0.000005	0.000214	<0.00001
Benzo(a)pyrene (diss.filt)	0.000163	<0.000002	0.000326	<0.000004
Copper	0.00493	<0.0003	0.00986	<0.0006
Dibenzo(a,h)anthracene (diss.filt)	<0.000005	<0.000005	<0.00001	<0.00001
Lead	0.0107	<0.0002	0.0214	<0.0004
Benzo(g,h,i)perylene (diss.filt)	0.0000723	<0.000005	0.000145	<0.00001
Indeno(1,2,3-cd)pyrene (diss.filt)	0.0000662	<0.000005	0.000132	<0.00001
Manganese	0.0758	<0.003	0.152	<0.006
Molybdenum	0.00467	<0.003	0.00934	<0.006
PAH 16 EPA Total by GCMS (diss.filt)	0.274	<0.000082	0.548	<0.000164
Nickel	0.00196	<0.0004	0.00392	<0.0008
Phosphorus	0.0413	<0.01	0.0826	<0.02
Selenium	<0.001	<0.001	<0.002	<0.002
Zinc	0.0072	<0.001	0.0144	<0.002
Calcium (Dis.Filt) mg/l	86.3	<0.2	173	<0.4
Iron (Dis.Filt) mg/l	0.323	<0.019	0.646	<0.038
TPH CWG (W)				
Surrogate Recovery	-	-	-	-
GRO TOT (C5-C12)	0.44	<0.05	0.88	<0.1
Aliphatics C5-C6	<0.01	<0.01	<0.02	<0.02
Aliphatics >C6-C8	<0.01	<0.01	<0.02	<0.02
Aliphatics >C8-C10	0.05	<0.01	0.1	<0.02
Aliphatics >C10-C12	0.189	<0.01	0.378	<0.02
Aromatics C6-C7	<0.01	<0.01	<0.02	<0.02
Aromatics >C7-C8	<0.01	<0.01	<0.02	<0.02
MTBE GC-FID	<0.003	<0.003	<0.006	<0.006
Aromatics >EC8 -EC10	0.055	<0.01	0.11	<0.02
Aromatics >EC10-EC12	0.126	<0.01	0.252	<0.02
Benzene by GC	<0.007	<0.007	<0.014	<0.014
Toluene by GC	0.006	<0.004	0.012	<0.008
Ethylbenzene by GC	<0.005	<0.005	<0.01	<0.01
m & p Xylene by GC	0.01	<0.008	0.02	<0.016
o Xylene by GC	0.009	<0.003	0.018	<0.006
Sum m&p and o Xylene by GC	0.019	<0.011	0.038	<0.022
Sum of BTEX by GC	<0.028	<0.028	<0.056	<0.056

Leach Test Information

Date Prepared	22-Oct-2020
pH (pH Units)	7.59
Conductivity (µS/cm)	421.00
Temperature (°C)	20.10
Volume Leachant (Litres)	0.342
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
 Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
 Mcerts Certification does not apply to leachates

05/11/2020 16:26:45



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SDG:	201015-121	Client Reference:	JFR1451	Report Number:	574317
Location:	A303 Stonehenge	Order Number:	PO20-748	Superseded Report:	572866

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM174	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID
TM178	Modified: US EPA Method 8100	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS in Waters
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser
TM243		Mixed Anions In Soils By Kone
TM245	By GC-FID	Determination of GRO by Headspace in waters
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).



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 Location: A303 Stonehenge Order Number: PO20-748 Superseded Report: 572866

Test Completion Dates

Lab Sample No(s)	23039648	23039651	23048508
Customer Sample Ref.	CP72308	CP72308	CP72308
AGS Ref.	ES3	ES1	
Depth	0.60 - 0.60	0.20 - 0.20	1.75 - 1.85
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)

Ammoniacal Nitrogen		26-Oct-2020	
Ammonium Soil by Titration	23-Oct-2020	23-Oct-2020	03-Nov-2020
Anions by Kone (soil)	23-Oct-2020	23-Oct-2020	05-Nov-2020
Anions by Kone (w)		25-Oct-2020	
Asbestos ID in Solid Samples	26-Oct-2020	26-Oct-2020	04-Nov-2020
CEN 2:1 Leachate (1 Stage)		23-Oct-2020	
CEN Readings		25-Oct-2020	
Chromium III	26-Oct-2020	27-Oct-2020	04-Nov-2020
Cyanide Comp/Free/Total/Thiocyanate	26-Oct-2020	27-Oct-2020	03-Nov-2020
Dissolved Metals by ICP-MS		27-Oct-2020	
Dissolved Organic/Inorganic Carbon		26-Oct-2020	
EPH CWG (Aliphatic) Filtered GC (W)		27-Oct-2020	
EPH CWG (Aromatic) Filtered GC (W)		27-Oct-2020	
EPH CWG GC (S)	23-Oct-2020	27-Oct-2020	30-Oct-2020
GRO by GC-FID (S)	23-Oct-2020	23-Oct-2020	30-Oct-2020
GRO by GC-FID (W)		26-Oct-2020	
Hexavalent Chromium (s)	26-Oct-2020	26-Oct-2020	04-Nov-2020
Hexavalent Chromium (w)		26-Oct-2020	
Mercury Dissolved		26-Oct-2020	
Metals in solid samples by OES	24-Oct-2020	24-Oct-2020	04-Nov-2020
Moisture at 105C		22-Oct-2020	
PAH by GCMS	25-Oct-2020	23-Oct-2020	02-Nov-2020
PAH in waters by GC-MS (diss.filt)		26-Oct-2020	
pH	23-Oct-2020	23-Oct-2020	29-Oct-2020
pH Value of Filtered Water		26-Oct-2020	
Phenols by HPLC (S)	25-Oct-2020	25-Oct-2020	04-Nov-2020
Phenols by HPLC (W)		27-Oct-2020	
Sample description	22-Oct-2020	22-Oct-2020	27-Oct-2020
Semi Volatile Organic Compounds		26-Oct-2020	
Total Organic Carbon	26-Oct-2020	26-Oct-2020	04-Nov-2020
TPH CWG Filtered (W)		27-Oct-2020	
TPH CWG GC (S)	23-Oct-2020	27-Oct-2020	30-Oct-2020
VOC MS (S)	23-Oct-2020	24-Oct-2020	30-Oct-2020



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Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PO20-748

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ASSOCIATED AQC DATA

Ammoniacal Nitrogen

Component	Method Code	QC 2315
Ammoniacal Nitrogen as N	TM099	99.2 93.14 : 108.60

Ammonium Soil by Titration

Component	Method Code	QC 2394	QC 2309
Exchangeable Ammonium as NH4	TM024	86.07 76.20 : 110.13	84.08 76.20 : 110.13

Anions by Kone (soil)

Component	Method Code	QC 2335
Chloride (soluble)	TM243	145.6 86.68 : 115.67
Water Soluble Sulphate as SO4 2:1 Extract	TM243	170.09 70.00 : 130.00

Anions by Kone (w)

Component	Method Code	QC 2343
Sulphate (soluble)	TM184	102.8 90.53 : 113.03

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2353	QC 2385	QC 2391
Free Cyanide	TM153	91.49 78.61 : 114.43		89.21 78.61 : 114.43
Free Cyanide (W)	TM227		105.5 90.50 : 114.50	
Thiocyanate	TM153	101.28 90.48 : 109.52		102.56 90.48 : 109.52
Thiocyanate (W)	TM227		105.5 90.50 : 113.00	
Total Cyanide	TM153	96.5 76.80 : 112.96		95.8 76.80 : 112.96
Total Cyanide (W)	TM227		106.5 91.75 : 112.75	

Dissolved Metals by ICP-MS



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Dissolved Metals by ICP-MS

Component	Method Code	QC 2306
Aluminium	TM152	105.67 94.21 : 111.52
Antimony	TM152	103.67 88.37 : 130.57
Arsenic	TM152	107.0 92.62 : 113.52
Barium	TM152	108.17 88.62 : 113.14
Beryllium	TM152	100.33 87.08 : 111.38
Bismuth	TM152	104.33 92.62 : 115.02
Boron	TM152	102.67 86.31 : 120.88
Cadmium	TM152	105.83 93.85 : 111.65
Calcium	TM152	108.0 89.20 : 126.91
Chromium	TM152	108.67 92.22 : 109.85
Cobalt	TM152	106.83 85.01 : 114.87
Copper	TM152	110.67 89.87 : 119.73
Iron	TM152	106.67 93.02 : 113.86
Lead	TM152	109.67 91.11 : 116.98
Lithium	TM152	103.0 91.30 : 123.00
Magnesium	TM152	106.0 89.60 : 116.61
Manganese	TM152	107.67 93.97 : 112.46
Molybdenum	TM152	104.5 89.07 : 110.96
Nickel	TM152	109.33 93.70 : 112.15
Phosphorus	TM152	105.17 89.24 : 114.18
Potassium	TM152	106.67 93.20 : 115.55
Selenium	TM152	110.67 91.69 : 117.12
Silver	TM152	106.67 90.93 : 121.73
Sodium	TM152	106.67 92.42 : 113.24
Strontium	TM152	109.0 92.14 : 116.24
Tellurium	TM152	100.5 89.88 : 111.78
Thallium	TM152	99.0 82.43 : 113.83



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Dissolved Metals by ICP-MS

		QC 2306
Tin	TM152	104.83 94.62 : 107.79
Titanium	TM152	107.5 90.29 : 115.23
Tungsten	TM152	103.83 77.61 : 132.31
Uranium	TM152	104.33 86.97 : 115.76
Vanadium	TM152	111.83 89.61 : 115.48
Zinc	TM152	109.33 87.51 : 116.26

Dissolved Organic/Inorganic Carbon

Component	Method Code	QC 2359
Dissolved Inorganic Carbon	TM090	101.0 93.58 : 112.28
Dissolved Organic Carbon	TM090	100.0 96.28 : 110.58

EPH CWG (Aromatic) Filtered GC (W)

Component	Method Code	QC 2398
Total Aromatics >EC10-EC40	TM174	93.66 73.75 : 120.32

EPH CWG GC (S)

Component	Method Code	QC 2371	QC 2353
EPH >C8-C40 Raw	TM414	90.71 58.30 : 125.82	99.73 56.39 : 129.94
Total Aliphatics Raw	TM414	98.08 62.99 : 136.42	106.63 62.55 : 133.12
Total Aromatics Raw	TM414	88.62 58.66 : 146.54	106.3 57.00 : 150.27

GRO by GC-FID (S)

Component	Method Code	QC 2340	QC 2373	QC 2375
QC	TM089	100.44 70.75 : 114.19	104.34 70.75 : 114.19	84.87 70.34 : 111.95

GRO by GC-FID (W)



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 Location: A303 Stonehenge Order Number: PO20-748 Superseded Report: 572866

GRO by GC-FID (W)

Component	Method Code	QC 2349
Benzene by GC	TM245	99.0 83.48 : 117.21
Ethylbenzene by GC	TM245	104.0 84.11 : 114.89
m & p Xylene by GC	TM245	104.0 83.73 : 116.33
MTBE GC-FID	TM245	98.5 84.42 : 117.50
o Xylene by GC	TM245	105.0 85.03 : 117.59
QC	TM245	90.42 60.71 : 137.65
Toluene by GC	TM245	102.0 84.73 : 116.85

Hexavalent Chromium (s)

Component	Method Code	QC 2383	QC 2310
Hexavalent Chromium	TM151	100.0 95.60 : 107.60	106.0 92.00 : 111.20

Hexavalent Chromium (w)

Component	Method Code	QC 2309
Hexavalent Chromium	TM241	99.6 94.17 : 106.17

Mercury Dissolved

Component	Method Code	QC 2301
Mercury Dissolved (CVAf)	TM183	102.0 0.00 : 0.00

Metals in solid samples by OES

Component	Method Code	QC 2350	QC 2326
Aluminium	TM181	99.12 73.56 : 108.85	93.81 73.56 : 108.85
Antimony	TM181	108.13 76.89 : 111.24	96.34 76.89 : 111.24
Arsenic	TM181	100.0 88.53 : 111.01	100.0 88.53 : 111.01
Barium	TM181	100.0 77.67 : 105.35	91.38 77.67 : 105.35



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Metals in solid samples by OES

		QC 2350	QC 2326
Beryllium	TM181	106.34 85.44 : 109.61	95.52 85.44 : 109.61
Boron	TM181	94.27 73.51 : 104.66	91.69 73.51 : 104.66
Cadmium	TM181	89.71 77.67 : 104.12	91.36 77.67 : 104.12
Chromium	TM181	94.73 86.11 : 106.21	93.91 86.11 : 106.21
Cobalt	TM181	99.06 84.60 : 104.13	89.62 84.60 : 104.13
Copper	TM181	96.48 82.40 : 105.45	89.44 82.40 : 105.45
Iron	TM181	100.0 82.95 : 110.58	92.86 82.95 : 110.58
Lead	TM181	100.9 78.24 : 104.05	91.22 78.24 : 104.05
Manganese	TM181	111.94 94.29 : 119.51	107.22 94.29 : 119.51
Mercury	TM181	92.75 83.16 : 107.81	92.51 83.16 : 107.81
Molybdenum	TM181	103.7 87.11 : 106.87	100.0 87.11 : 106.87
Nickel	TM181	96.82 80.26 : 102.28	90.46 80.26 : 102.28
Phosphorus	TM181	119.39 94.56 : 124.28	104.65 94.56 : 124.28
Selenium	TM181	101.57 82.28 : 110.48	96.86 82.28 : 110.48
Strontium	TM181	95.32 79.13 : 102.79	87.97 79.13 : 102.79
Thallium	TM181	106.64 82.94 : 111.86	94.69 82.94 : 111.86
Tin	TM181	101.52 86.72 : 110.03	100.0 86.72 : 110.03
Titanium	TM181	86.26 66.23 : 102.06	92.37 66.23 : 102.06
Vanadium	TM181	102.56 75.51 : 108.87	95.6 86.19 : 109.45
Zinc	TM181	104.72 84.68 : 113.99	98.15 84.68 : 113.99

PAH by GCMS

Component	Method Code	QC 2373	QC 2369	QC 2375
Acenaphthene	TM218	85.0 73.47 : 109.80	92.0 73.47 : 109.80	96.5 80.97 : 105.99
Acenaphthylene	TM218	84.5 70.00 : 130.00	89.0 70.00 : 130.00	94.5 74.76 : 107.36
Anthracene	TM218	86.5 68.68 : 111.89	89.0 68.68 : 111.89	97.5 73.04 : 106.97
Benz(a)anthracene	TM218	108.5 68.12 : 118.39	83.0 68.12 : 118.39	94.0 68.79 : 119.64
Benzo(a)pyrene	TM218	108.5 71.72 : 115.31	78.0 71.72 : 115.31	93.5 66.17 : 117.52



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PAH by GCMS

		QC 2373	QC 2369	QC 2375
Benzo(b)fluoranthene	TM218	110.5 66.89 : 120.40	78.5 66.89 : 120.40	94.5 66.40 : 118.34
Benzo(ghi)perylene	TM218	104.0 67.82 : 118.49	78.5 67.82 : 118.49	90.0 67.68 : 112.07
Benzo(k)fluoranthene	TM218	104.5 73.10 : 117.03	83.0 73.10 : 117.03	95.5 72.84 : 114.66
Chrysene	TM218	104.5 69.58 : 115.47	80.0 69.58 : 115.47	95.5 68.39 : 115.56
Dibenzo(ah)anthracene	TM218	106.0 67.32 : 121.35	81.0 67.32 : 121.35	91.5 69.03 : 110.45
Fluoranthene	TM218	97.5 75.16 : 117.28	85.0 75.16 : 117.28	102.5 69.37 : 117.19
Fluorene	TM218	90.0 73.81 : 108.66	95.5 73.81 : 108.66	99.5 75.38 : 105.98
Indeno(123cd)pyrene	TM218	106.5 68.91 : 117.62	79.0 68.91 : 117.62	87.0 65.91 : 113.61
Naphthalene	TM218	81.5 72.12 : 106.18	87.0 72.12 : 106.18	93.5 71.40 : 105.87
Phenanthrene	TM218	90.5 69.01 : 113.72	90.5 69.01 : 113.72	101.0 74.04 : 109.30
Pyrene	TM218	95.0 75.68 : 119.23	85.0 75.68 : 119.23	101.5 69.68 : 115.27

PAH in waters by GC-MS (diss.filt)

Component	Method Code	QC 2302
Acenaphthene (diss.filt)	TM178	110.8 93.20 : 119.60
Acenaphthylene (diss.filt)	TM178	110.8 92.00 : 118.40
Anthracene (diss.filt)	TM178	103.6 90.80 : 114.80
Benzo(a)anthracene (diss.filt)	TM178	102.0 91.60 : 115.60
Benzo(a)pyrene (diss.filt)	TM178	107.6 91.20 : 120.00
Benzo(b)fluoranthene (diss.filt)	TM178	97.6 86.80 : 120.40
Benzo(g,h,i)perylene (diss.filt)	TM178	106.0 89.20 : 118.00
Benzo(k)fluoranthene (diss.filt)	TM178	104.8 94.40 : 125.60
Chrysene (diss.filt)	TM178	109.2 96.40 : 122.80
Dibenzo(a,h)anthracene (diss.filt)	TM178	100.4 93.60 : 132.00
Fluoranthene (diss.filt)	TM178	103.6 92.80 : 121.60
Fluorene (diss.filt)	TM178	104.0 93.60 : 120.00
Indeno(1,2,3-cd)pyrene (diss.filt)	TM178	99.2 82.40 : 120.80
Naphthalene (diss.filt)	TM178	102.4 88.40 : 126.80



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SDG: 201015-121
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PO20-748

Report Number: 574317
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PAH in waters by GC-MS (diss.filt)

		QC 2302
Phenanthrene (diss.filt)	TM178	108.8 92.40 : 118.80
Pyrene (diss.filt)	TM178	102.8 90.40 : 124.00

pH

Component	Method Code	QC 2357	QC 2389
pH	TM133	100.4 98.47 : 102.33	100.53 99.74 : 102.91

pH Value of Filtered Water

Component	Method Code	QC 2364
pH	TM256	100.53 99.33 : 102.54

Phenols by HPLC (S)

Component	Method Code	QC 2311	QC 2368
2,3,5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	101.95 65.50 : 89.50	107.79 65.50 : 89.50
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	87.72 84.00 : 124.00	91.81 84.00 : 124.00
Catechol by HPLC (S)	TM062 (S)	86.67 19.39 : 135.70	63.81 19.39 : 135.70
Cresols by HPLC (S)	TM062 (S)	95.2 81.00 : 112.20	99.37 81.00 : 112.20
Naphthol by HPLC (S)	TM062 (S)	111.43 57.50 : 102.50	114.29 57.50 : 102.50
Phenol by HPLC (S)	TM062 (S)	99.34 88.67 : 124.67	103.31 88.67 : 124.67
Resorcinol HPLC (S)	TM062 (S)	94.34 69.99 : 127.22	99.37 69.99 : 127.22
Xylenols by HPLC (S)	TM062 (S)	99.48 95.22 : 115.89	104.17 95.22 : 115.89

Semi Volatile Organic Compounds

Component	Method Code	QC 2389
4-Bromophenylphenylether (Soil)	TM157	90.0 63.50 : 114.50
Benzo(a)anthracene (Soil)	TM157	93.0 71.89 : 120.91
Hexachlorobutadiene (Soil)	TM157	96.0 69.80 : 117.77
Naphthalene (Soil)	TM157	93.5 70.00 : 115.00



CERTIFICATE OF ANALYSIS

Validated

SDG:	201015-121	Client Reference:	JFR1451	Report Number:	574317
Location:	A303 Stonehenge	Order Number:	PO20-748	Superseded Report:	572866

Semi Volatile Organic Compounds

		QC 2389
Nitrobenzene (Soil)	TM157	89.0 70.00 : 118.00
Phenol (Soil)	TM157	88.5 72.00 : 117.00

Total Organic Carbon

Component	Method Code	QC 2300	QC 2309
Total Organic Carbon	TM132	101.56 87.02 : 113.45	100.78 87.02 : 113.45

VOC MS (S)

Component	Method Code	QC 2339	QC 2384	QC 2336
1,1,1,2-tetrachloroethane	TM116	99.2 86.59 : 118.97	92.6 79.10 : 119.66	101.2 84.84 : 116.25
1,1,1-Trichloroethane	TM116	93.0 86.26 : 117.53	93.4 87.51 : 115.37	94.6 73.73 : 118.05
1,1,2-Trichloroethane	TM116	96.8 75.16 : 112.70	105.0 81.29 : 113.79	95.6 77.12 : 116.04
1,1-Dichloroethane	TM116	96.6 83.27 : 122.16	97.8 86.77 : 122.11	98.2 74.46 : 129.15
1,2-Dichloroethane	TM116	110.8 89.30 : 133.10	111.4 90.04 : 132.28	108.8 92.38 : 131.65
1,4-Dichlorobenzene	TM116	91.8 82.59 : 123.23	94.6 80.81 : 125.07	93.0 83.64 : 126.18
2-Chlorotoluene	TM116	80.2 66.81 : 118.43	83.0 73.13 : 114.13	83.2 76.03 : 113.25
4-Chlorotoluene	TM116	80.0 65.88 : 114.76	81.0 72.48 : 112.82	78.0 66.90 : 112.46
Benzene	TM116	96.6 93.16 : 123.63	93.8 84.29 : 112.22	97.6 88.60 : 113.80
Carbon Disulphide	TM116	93.6 75.11 : 124.81	94.2 75.11 : 124.81	91.0 74.91 : 122.14
Carbontetrachloride	TM116	92.2 82.35 : 126.46	95.2 82.35 : 126.46	98.4 80.31 : 124.50
Chlorobenzene	TM116	96.6 85.07 : 118.13	92.2 82.88 : 122.42	97.6 83.81 : 114.18
Chloroform	TM116	99.2 88.13 : 122.71	97.4 90.35 : 120.38	100.6 87.40 : 122.49
Chloromethane	TM116	100.2 55.37 : 133.35	109.6 65.80 : 138.88	110.8 65.89 : 136.93
Cis-1,2-Dichloroethene	TM116	97.6 78.27 : 128.90	91.8 78.27 : 128.90	96.2 80.67 : 126.72
Dibromomethane	TM116	90.8 77.47 : 121.29	103.8 76.00 : 120.73	91.2 73.23 : 118.35
Dichloromethane	TM116	107.2 87.89 : 134.72	106.6 92.27 : 134.36	110.0 81.11 : 133.25
Ethylbenzene	TM116	90.2 79.92 : 110.05	82.0 70.95 : 113.07	88.4 75.92 : 110.41



CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-121
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PO20-748

Report Number: 574317
Superseded Report: 572866

VOC MS (S)

		QC 2339	QC 2384	QC 2336
Hexachlorobutadiene	TM116	106.4 16.78 : 153.29	52.0 14.55 : 147.92	66.0 12.82 : 152.73
Isopropylbenzene	TM116	85.8 64.20 : 119.59	63.4 52.00 : 108.19	72.0 55.79 : 97.59
Naphthalene	TM116	107.2 79.29 : 125.59	102.2 80.29 : 135.77	111.0 80.86 : 128.81
o-Xylene	TM116	81.2 74.57 : 112.73	78.8 64.92 : 98.85	83.0 69.99 : 108.74
p/m-Xylene	TM116	88.8 76.47 : 108.99	77.4 72.04 : 104.04	84.8 68.32 : 108.91
Sec-Butylbenzene	TM116	85.6 44.71 : 117.87	53.2 27.03 : 135.73	54.8 38.50 : 101.50
Tetrachloroethene	TM116	98.6 85.86 : 122.95	89.6 81.43 : 126.65	97.0 76.95 : 121.02
Toluene	TM116	88.6 87.82 : 116.21	90.6 82.44 : 103.50	89.8 74.24 : 107.42
Trichloroethene	TM116	93.8 79.80 : 112.33	96.8 79.80 : 112.33	94.6 77.61 : 111.54
Trichlorofluoromethane	TM116	108.0 80.52 : 132.12	102.8 86.68 : 126.82	108.8 84.55 : 133.27
Vinyl Chloride	TM116	102.4 68.07 : 137.84	103.6 69.66 : 136.55	105.0 68.02 : 143.37

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.

The figure detailed is the percentage recovery result for the AQC.

The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.



CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-121
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PQ20-748

Report Number: 574317
Superseded Report: 572866

Chromatogram

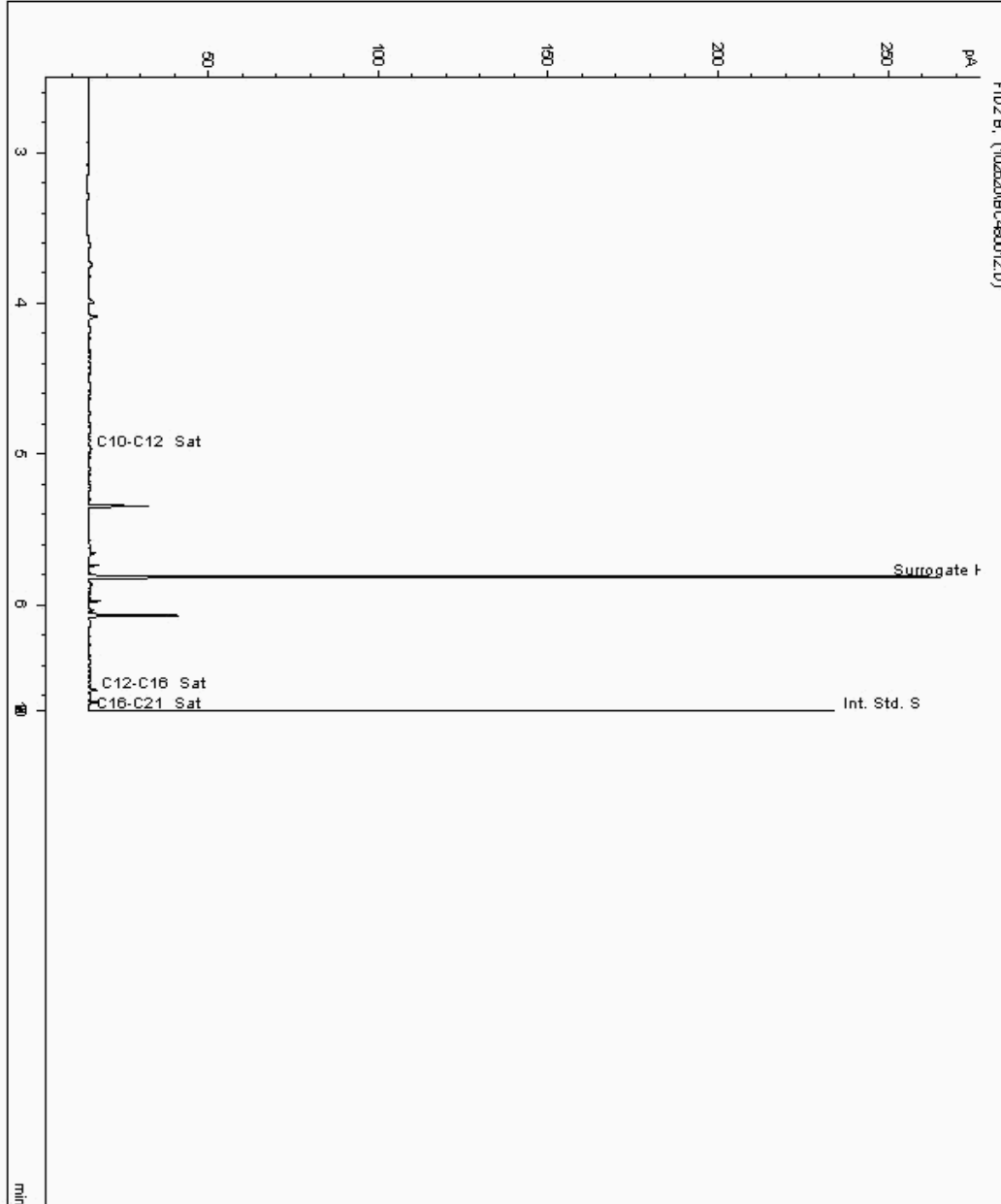
Analysis: EPH CWG (Aliphatic) Filtered GC (W)

Sample No : 23113455
Sample ID : CP72308

Depth : 0.20 - 0.20

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 21646041-
Date Acquired : 26/10/2020 19:03:03 PM
Units : ppb
Dilution : CP72308 [0.20 - 0.20] CEW ->
CF : 1
Multiplier : 0.031





CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-121
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PQ20-748

Report Number: 574317
Superseded Report: 572866

Chromatogram

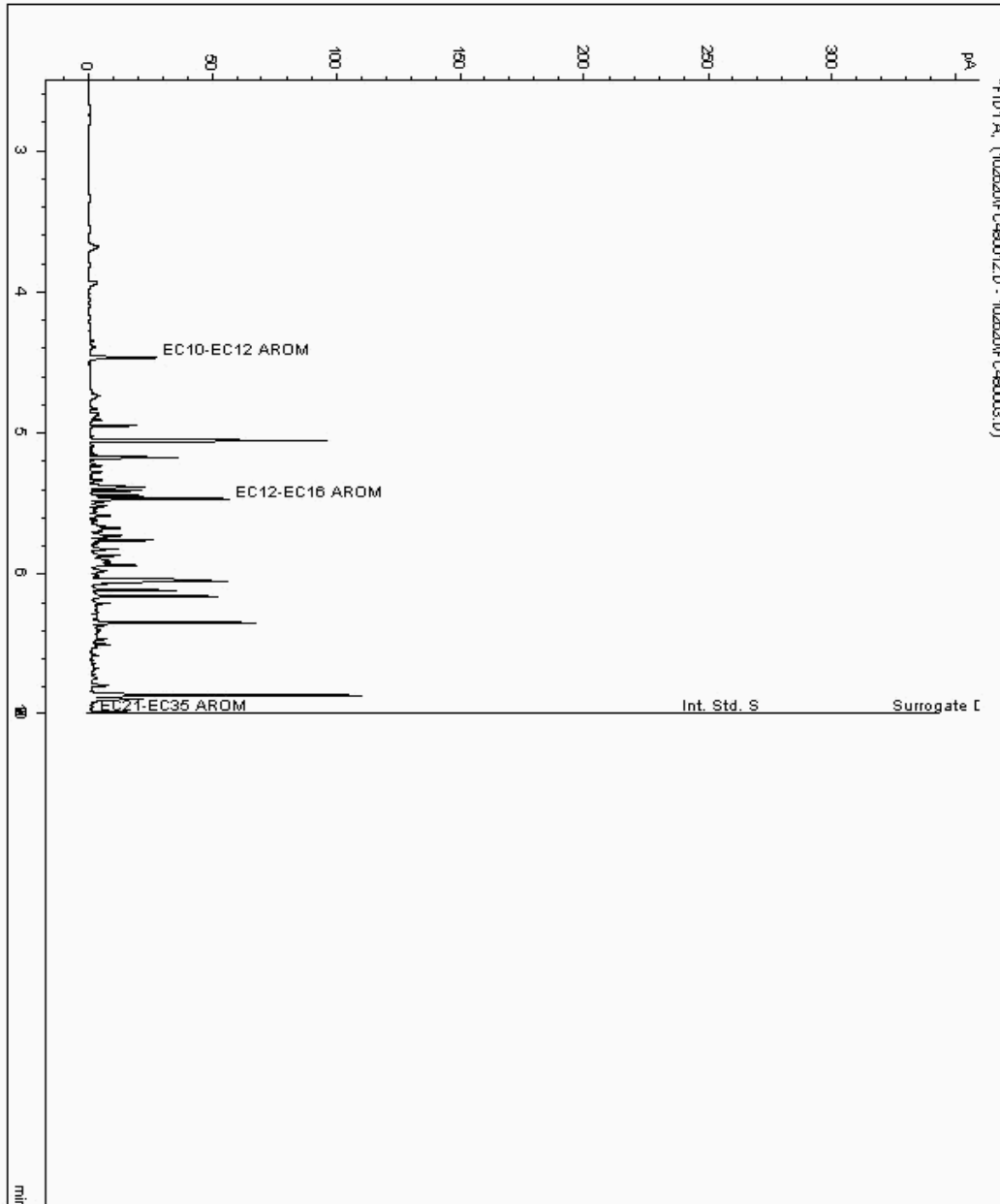
Analysis: EPH CWG (Aromatic) Filtered GC (W)

Sample No : 23113455
Sample ID : CP72308

Depth : 0.20 - 0.20

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 21646042-
Date Acquired : 26/10/2020 19:03:04 PM
Units : ppb
Dilution : CP72308 [0.20 - 0.20] CEN ->
CF : 1
Multiplier : 0.031





CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-121
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PO20-748

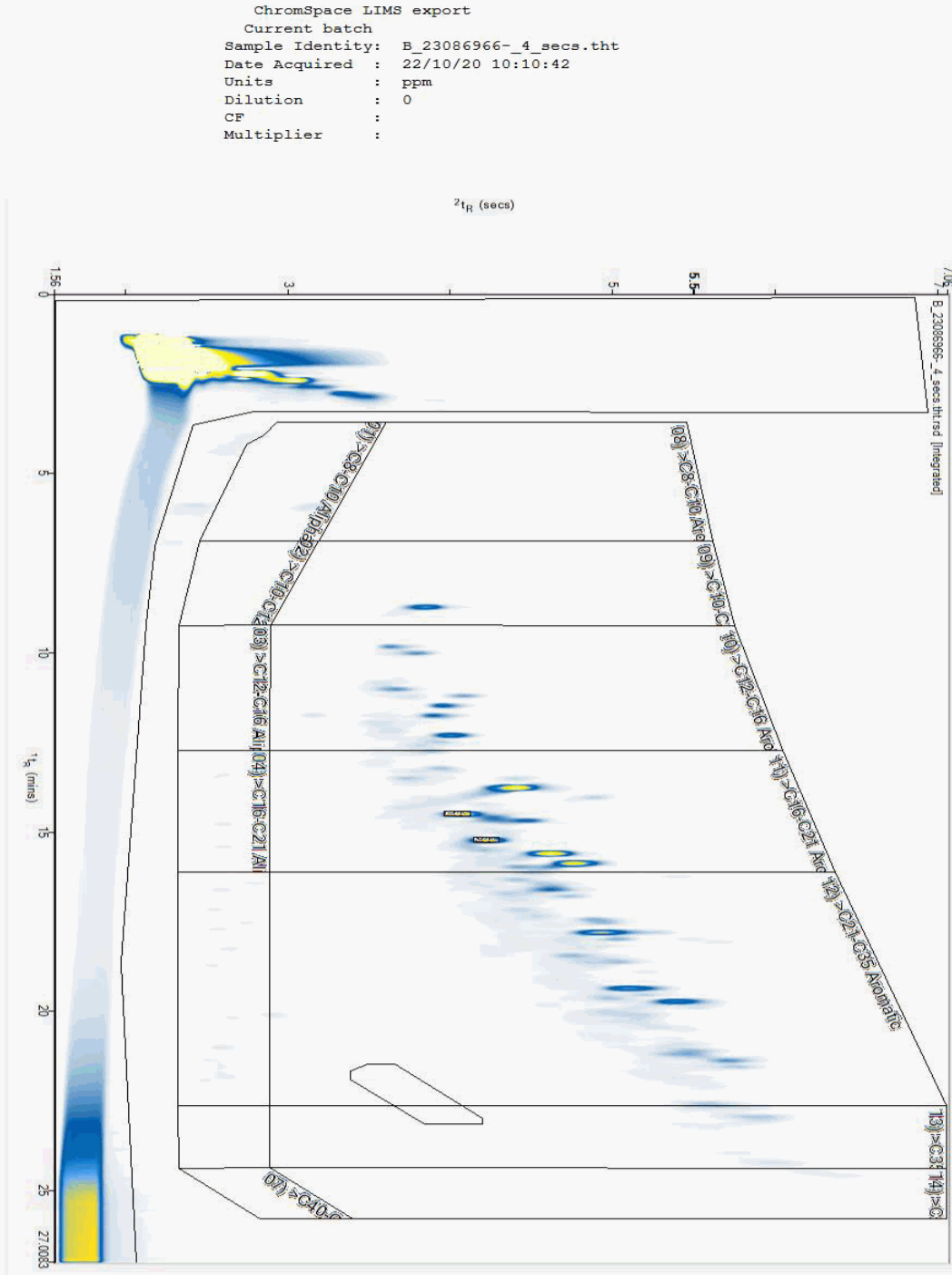
Report Number: 574317
Superseded Report: 572866

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23086966
Sample ID : CP72308

Depth : 0.60 - 0.60





CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-121
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PO20-748

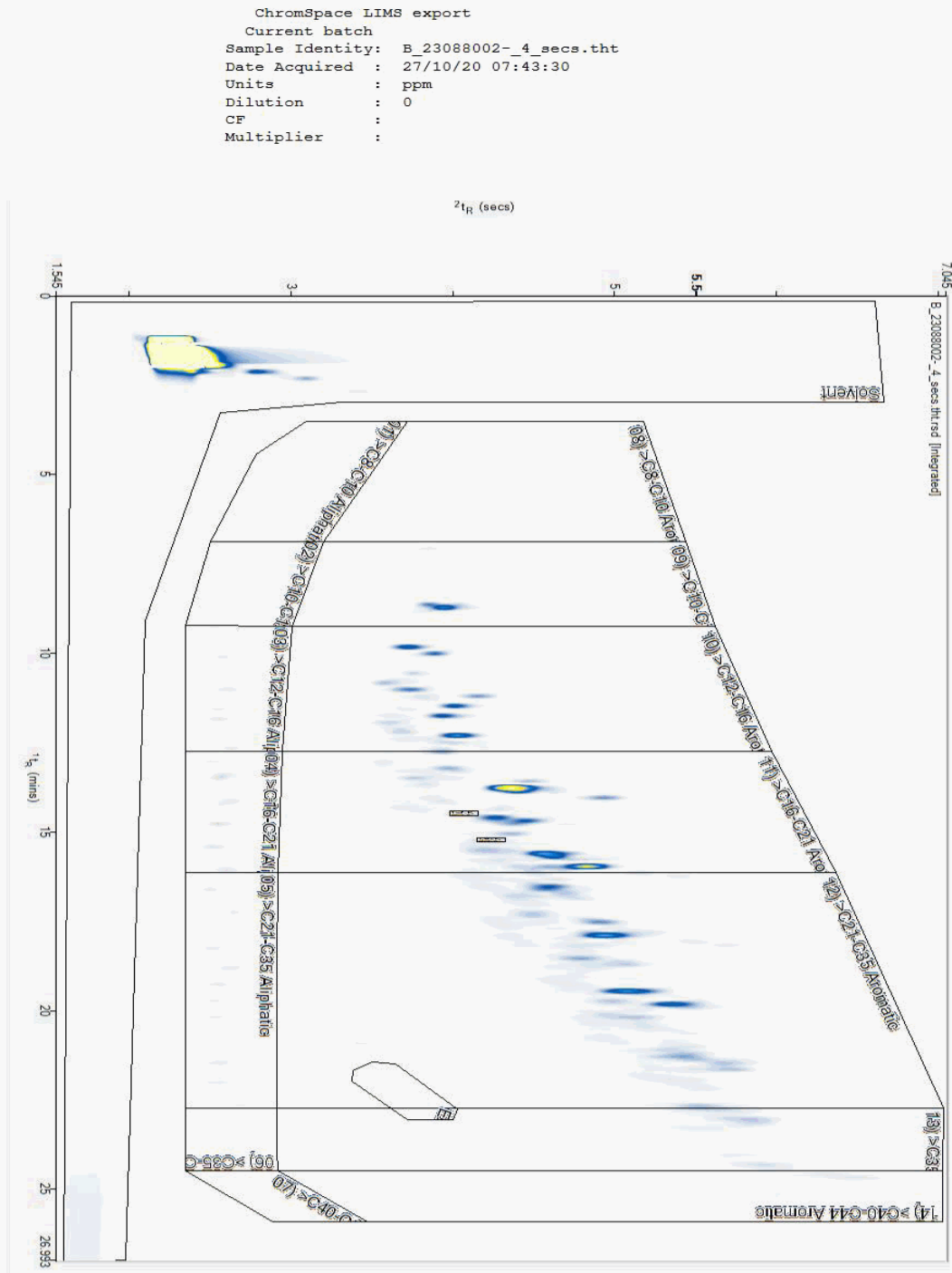
Report Number: 574317
Superseded Report: 572866

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23088002
Sample ID : CP72308

Depth : 0.20 - 0.20





CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-121
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PO20-748

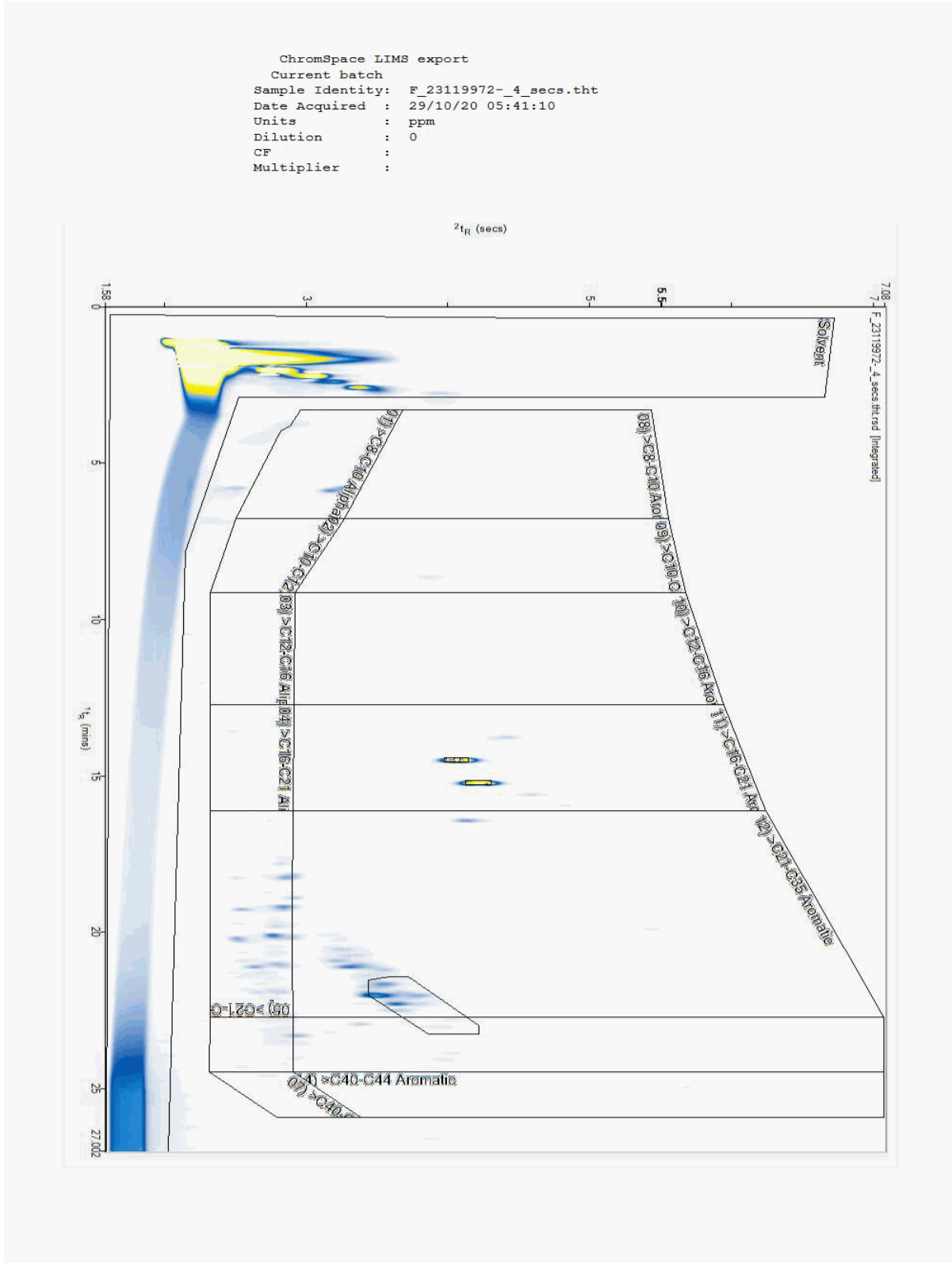
Report Number: 574317
Superseded Report: 572866

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23119972
Sample ID : CP72308

Depth : 1.75 - 1.85





CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-121
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PQ20-748

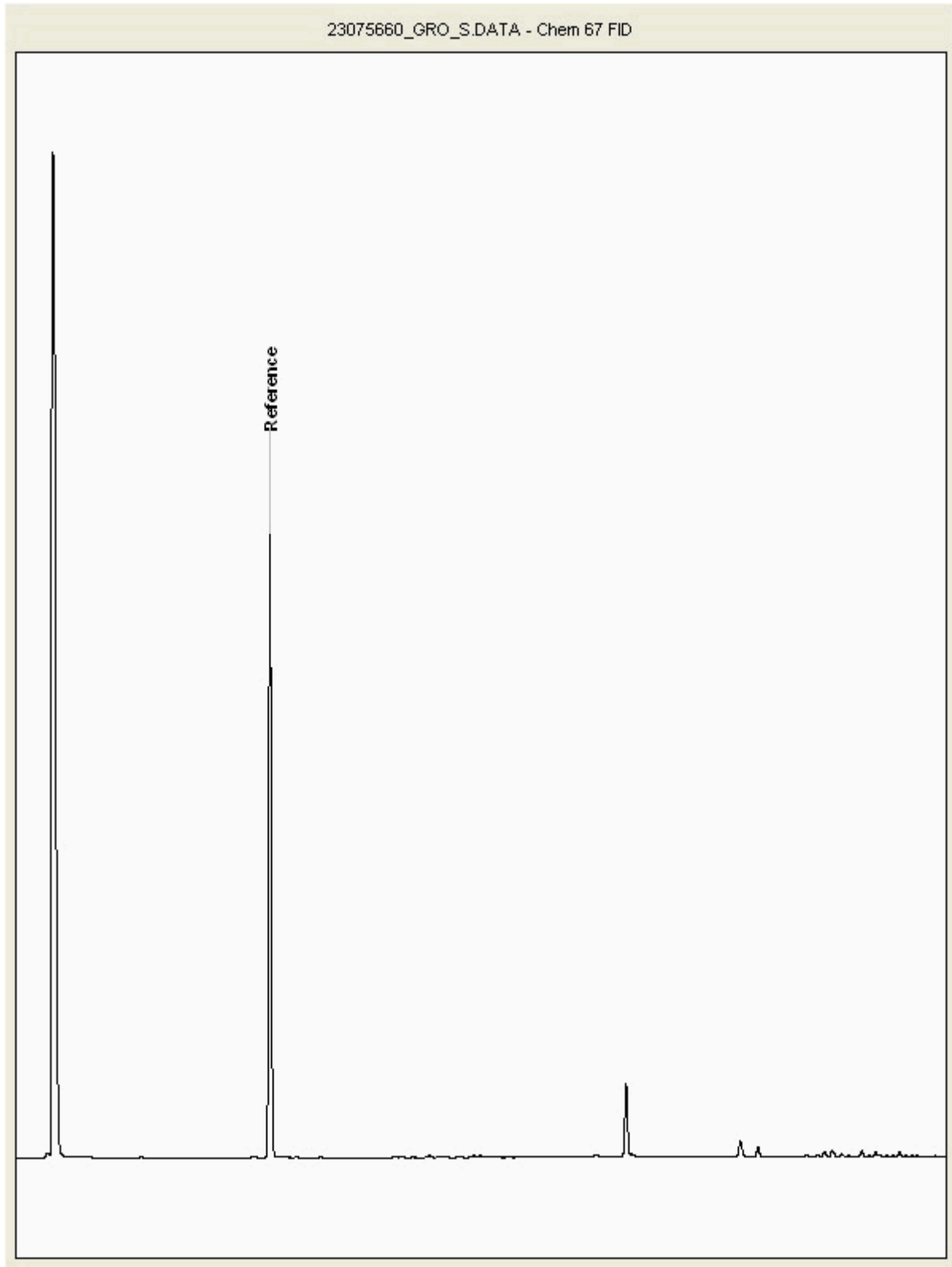
Report Number: 574317
Superseded Report: 572866

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23075660
Sample ID : CP72308

Depth : 0.60 - 0.60





CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-121
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PQ20-748

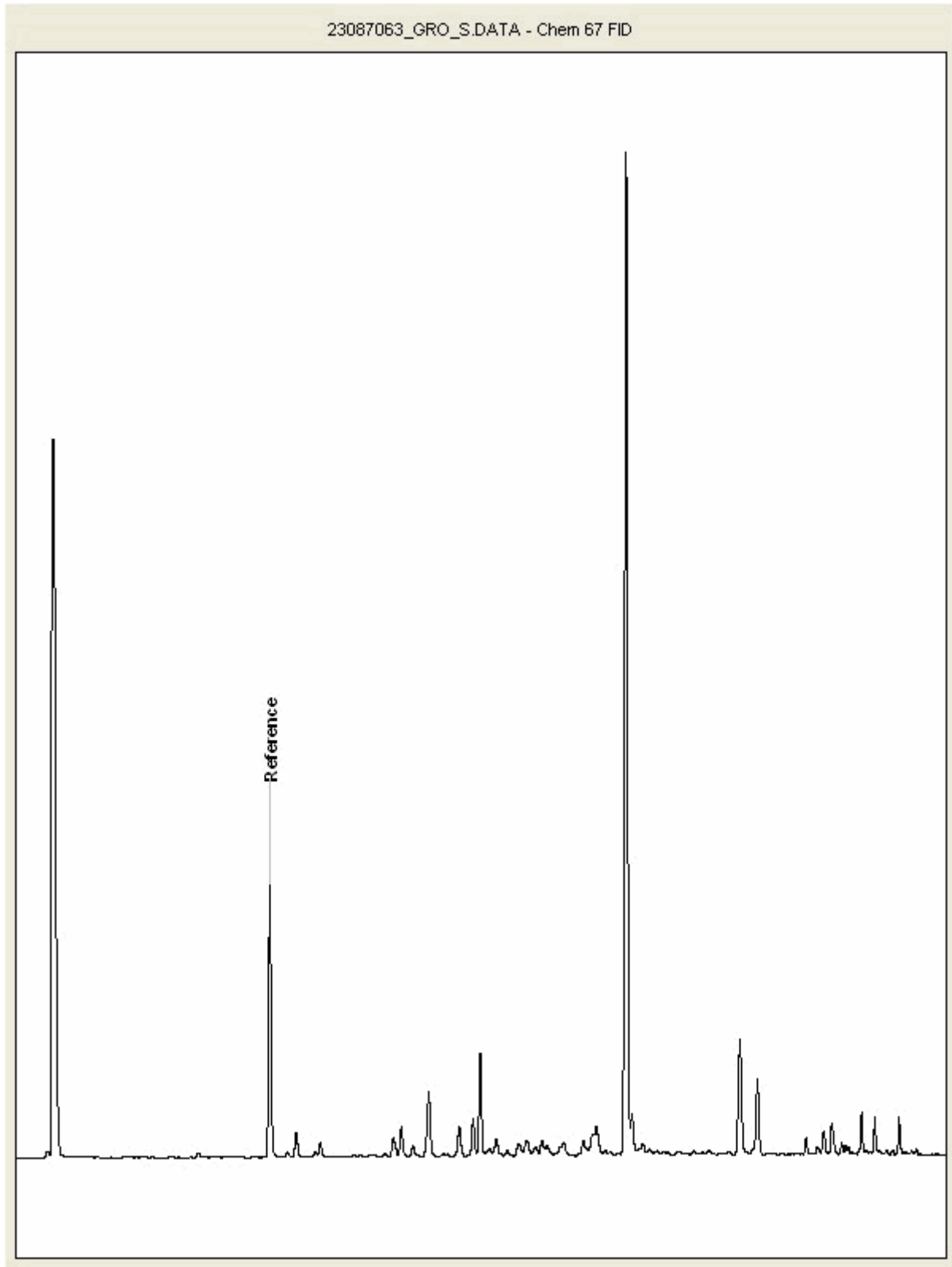
Report Number: 574317
Superseded Report: 572866

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23087063
Sample ID : CP72308

Depth : 0.20 - 0.20





CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-121
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PQ20-748

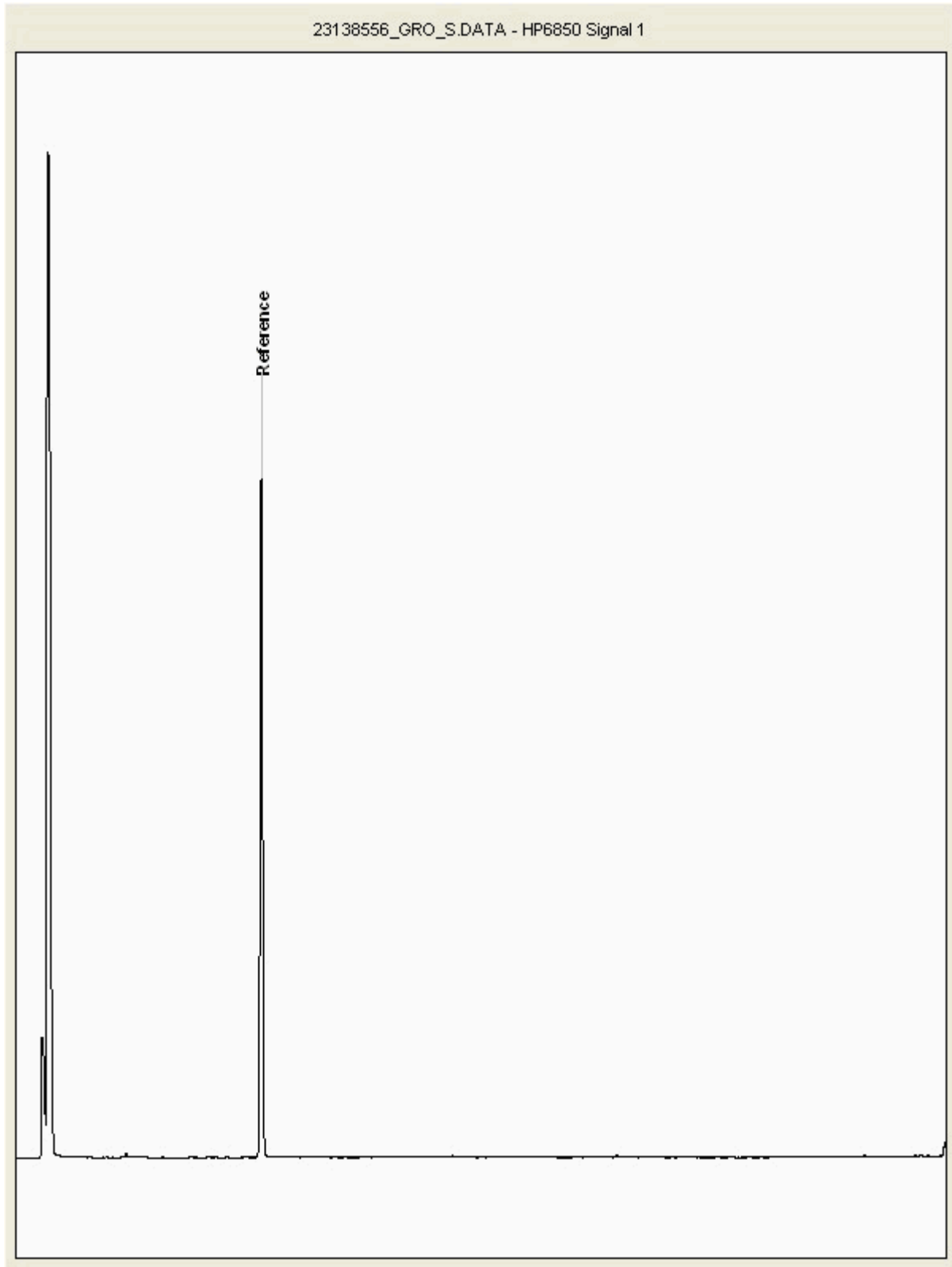
Report Number: 574317
Superseded Report: 572866

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23138556
Sample ID : CP72308

Depth : 1.75 - 1.85





CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-121
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PQ20-748

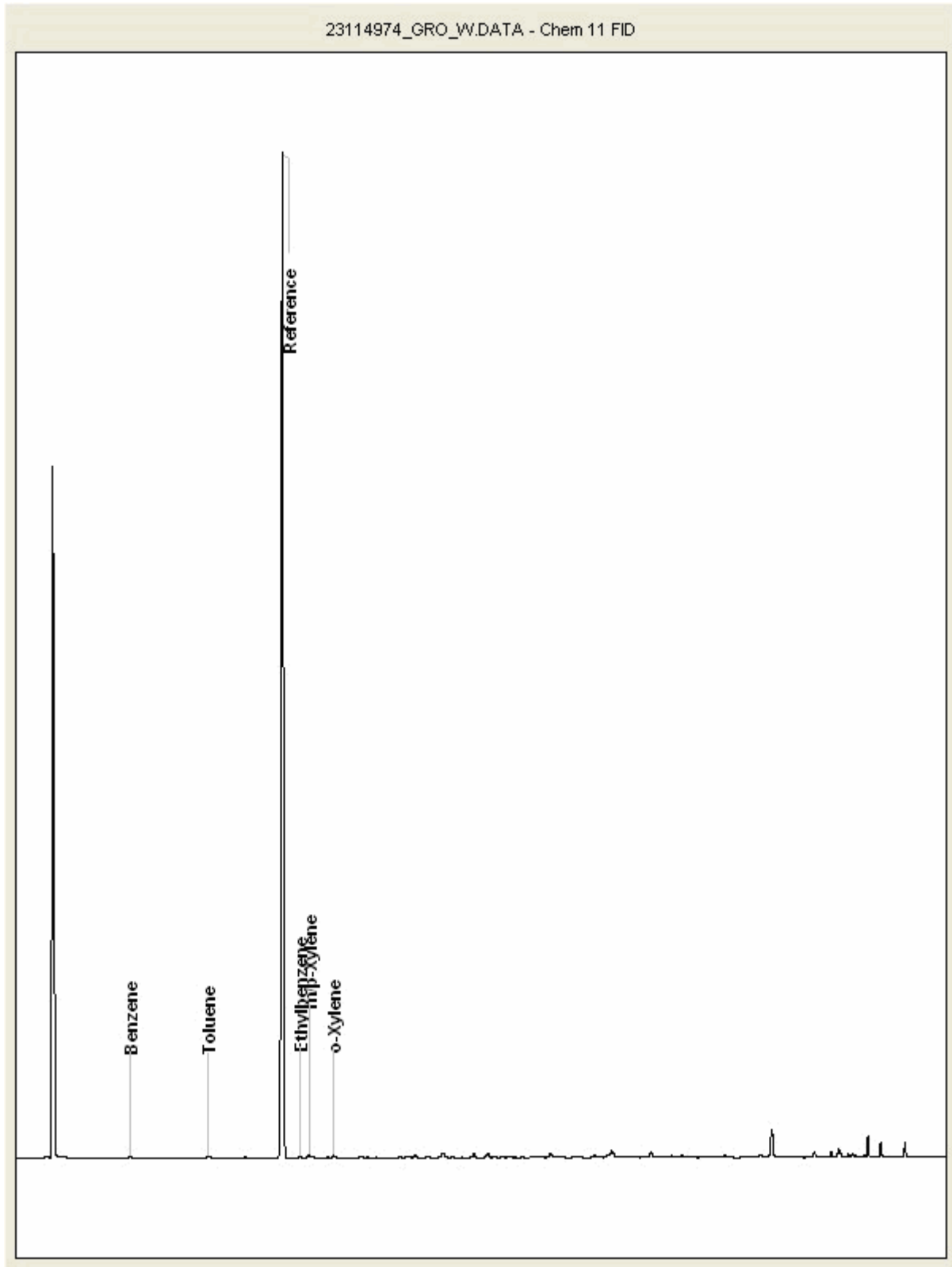
Report Number: 574317
Superseded Report: 572866

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 23114974
Sample ID : CP72308

Depth : 0.20 - 0.20





CERTIFICATE OF ANALYSIS

SDG:	201015-121	Client Reference:	JFR1451	Report Number:	574317
Location:	A303 Stonehenge	Order Number:	PO20-748	Superseded Report:	572866

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

19. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung. Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017)*.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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Tel: (01244) 528700

Fax: (01244) 528701

email: hawardencustomerservices@alsglobal.com

Website: www.alsenvironmental.co.uk

RPS Consultants Ltd
260 Park Avenue
Aztec West
Almondsbury
Bristol
BS32 4SY

Attention: Gary Riches

CERTIFICATE OF ANALYSIS

Date of report Generation: 04 December 2020
Customer: RPS Consultants Ltd
Sample Delivery Group (SDG): 201022-118
Your Reference: JFR1451
Location: A303 Stonehenge
Report No: 578688

This report has been revised and directly supersedes 573671 in its entirety.

We received 2 samples on Thursday October 22, 2020 and 1 of these samples were scheduled for analysis which was completed on Monday November 02, 2020. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

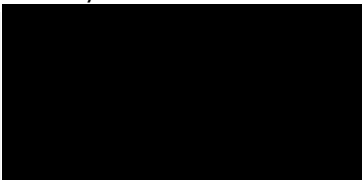
Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:



Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 201022-118 Client Reference: JFR1451 Report Number: 578688
Location: A303 Stonehenge Order Number: PO20-924 Superseded Report: 573671

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
23092163	R71916			19/10/2020
23092164	R71916		0.20	

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG:	201022-118	Client Reference:	JFR1451
Location:	A303 Stonehenge	Order Number:	PO20-924
		Report Number:	578688
		Superseded Report:	573671

Results Legend <div style="display: flex; align-items: center; margin-bottom: 5px;"> <div style="border: 1px solid black; width: 20px; height: 20px; display: flex; align-items: center; justify-content: center; margin-right: 5px;">X</div> Test </div> <div style="display: flex; align-items: center; margin-bottom: 5px;"> <div style="border: 1px solid black; width: 20px; height: 20px; display: flex; align-items: center; justify-content: center; margin-right: 5px; background-color: red; color: white;">N</div> No Determination Possible </div> Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other	Lab Sample No(s)	23092164	
	Customer Sample Reference	R71916	
	AGS Reference		
	Depth (m)	0.20	
	Container	1kg TUB with Handle (ALE260)	
	Sample Type	S	
Asbestos Identification	All	NDPs: 0 Tests: 1	<div style="border: 1px solid black; width: 20px; height: 20px; display: flex; align-items: center; justify-content: center; background-color: yellow;">X</div>



CERTIFICATE OF ANALYSIS

Validated

SDG: 201022-118 Client Reference: JFR1451 Report Number: 578688
 Location: A303 Stonehenge Order Number: PO20-924 Superseded Report: 573671

Asbestos Identification - Bulk

Results Legend

- # ISO17025 accredited.
- M mCERTS accredited.
- * Subcontracted test.
- (F) Trigger breach confirmed
- 1-5□ Sample deviation (see appendix)

		Date of Analysis	Analysed by	Comments	Actinolite, Fibrous	Anthophyllite, Fibrous	Asbestos, Amosite (brown)	Asbestos, Chrysotile (white)	Asbestos, Crocidolite (blue)	Non-asbestos fibre	Tremolite, Fibrous
Cust. Sample Ref.	R71916	02/11/20	Andrzej Ferfecki	Material typical of Asbestos Insulation Board	Not Detected (#)	Not Detected (#)	Not Detected (#)	Detected (#)	Detected (#)	Not Detected	Not Detected (#)
Depth (m)	0.20										
Sample Type	SOLID										
Date Sampled											
Date Received	22/10/2020 05:00:00										
SDG	201022-118										
Original Sample	23092164										
Method Number	TM048										



CERTIFICATE OF ANALYSIS

Validated

SDG: 201022-118 Client Reference: JFR1451 Report Number: 578688
Location: A303 Stonehenge Order Number: PO20-924 Superseded Report: 573671

Table of Results - Appendix

Method No	Reference	Description
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).



CERTIFICATE OF ANALYSIS

Validated

SDG: 201022-118 Client Reference: JFR1451 Report Number: 578688
Location: A303 Stonehenge Order Number: PO20-924 Superseded Report: 573671

Test Completion Dates

Lab Sample No(s)	23092164
Customer Sample Ref.	R71916
AGS Ref.	
Depth	0.20
Type	Soil/Solid (S)
Asbestos Identification	02-Nov-2020



CERTIFICATE OF ANALYSIS

Validated

SDG:	201022-118	Client Reference:	JFR1451	Report Number:	578688
Location:	A303 Stonehenge	Order Number:	PO20-924	Superseded Report:	573671

ALS Environmental, Land	QF.7.5.1 Data Amendments Form (Issue No. 3)
	Date: 10/01/2020
	Issued and Authorised by Quality Manager

SDG	Sample Event	Sample ID	Date Amended	Amendment Reason	Previous Reference	New Reference	Supercedes Report
201022-118	23092164	R71916	04/14/2020	Sample ID Change	POSSIBLE ACM	R71916	573671
201022-118	23092164	R71916	04/14/2020	Sample Depth Change	0.00	0.2m	573671



CERTIFICATE OF ANALYSIS

SDG: 201022-118	Client Reference: JFR1451	Report Number: 578688
Location: A303 Stonehenge	Order Number: PO20-924	Superseded Report: 573671

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

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3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

19. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung. Standing Committee of Analysts, *The Quantification of Asbestos in Soil* (2017).

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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RPS Consultants Ltd
260 Park Avenue
Aztec West
Almondsbury
Bristol
BS32 4SY

Attention: Gary Riches

CERTIFICATE OF ANALYSIS

Date of report Generation: 18 December 2020
Customer: RPS Consultants Ltd
Sample Delivery Group (SDG): 201023-139
Your Reference: JFR1451
Location: A303 Stonehenge
Report No: 580701

We received 4 samples on Friday October 23, 2020 and 1 of these samples were scheduled for analysis which was completed on Friday December 18, 2020. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

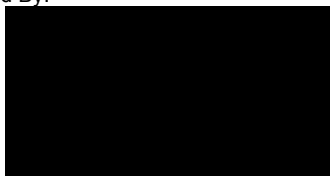
Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:



Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 201023-139 **Client Reference:** JFR1451 **Report Number:** 580701
Location: A303 Stonehenge **Order Number:** PQ20-951 **Superseded Report:**

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
23103620	CP72308A	ES	0.20 - 0.20	21/10/2020
23103621	CP72308A	ES	0.45 - 0.45	21/10/2020
23103622	CP72308A	ES	0.60 - 0.60	21/10/2020
23103618	CP72308A	ES	1.00 - 1.00	21/10/2020

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG:	201023-139	Client Reference:	JFR1451	Report Number:	580701
Location:	A303 Stonehenge	Order Number:	PO20-951	Superseded Report:	

Results Legend <div style="display: flex; flex-direction: column; gap: 5px;"> <div style="display: flex; align-items: center;">X Test</div> <div style="display: flex; align-items: center;">N No Determination Possible</div> </div> Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other	Lab Sample No(s)				
		Customer Sample Reference	23103620		
		AGS Reference	CP72308A		
		Depth (m)	ES		
		Container	0.20 - 0.20		
		Sample Type	60g VOC (ALE215)	250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)
			S	S	S
Ammonium Soil by Titration	All	NDPs: 0 Tests: 1	X		
Anions by Kone (soil)	All	NDPs: 0 Tests: 1	X		
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 1	X		
Chromium III	All	NDPs: 0 Tests: 1	X		
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 1	X		
EPH CWG GC (S)	All	NDPs: 0 Tests: 1	X		
GRO by GC-FID (S)	All	NDPs: 0 Tests: 1		X	
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 1	X		
Metals in solid samples by OES	All	NDPs: 0 Tests: 1	X		
PAH by GCMS	All	NDPs: 0 Tests: 1	X		
pH	All	NDPs: 0 Tests: 1	X		
Phenols by HPLC (S)	All	NDPs: 0 Tests: 1	X		
Sample description	All	NDPs: 0 Tests: 1	X		
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 1	X		
Total Organic Carbon	All	NDPs: 0 Tests: 1	X		



CERTIFICATE OF ANALYSIS

Validated

SDG:	201023-139	Client Reference:	JFR1451	Report Number:	580701
Location:	A303 Stonehenge	Order Number:	PO20-951	Superseded Report:	

Results Legend <div style="display: flex; justify-content: space-between;"> <div style="text-align: center;"> <div style="background-color: yellow; width: 15px; height: 15px; margin: 0 auto; display: flex; align-items: center; justify-content: center;">X</div> <p>Test</p> </div> <div style="text-align: center;"> <div style="background-color: red; width: 15px; height: 15px; margin: 0 auto; display: flex; align-items: center; justify-content: center;">N</div> <p>No Determination Possible</p> </div> </div> Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other	Lab Sample No(s)	23103620			
	Customer Sample Reference	CP72308A			
	AGS Reference	ES			
	Depth (m)	0.20 - 0.20			
	Container	1kg TUB with Handle (ALE280)	250g Amber Jar (ALE210)	60g VOC (ALE215)	
	Sample Type	S	S	S	
	TPH CWG GC (S)	All	NDPs: 0 Tests: 1	X	
VOC MS (S)	All	NDPs: 0 Tests: 1		X	



CERTIFICATE OF ANALYSIS

Validated

SDG: 201023-139
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PQ20-951

Report Number: 580701
Superseded Report:

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm
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Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
23103620	CP72308A	0.20 - 0.20	Dark Brown	Sand	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.



CERTIFICATE OF ANALYSIS

Validated

SDG:	201023-139	Client Reference:	JFR1451	Report Number:	580701
Location:	A303 Stonehenge	Order Number:	PO20-951	Superseded Report:	

#	Customer Sample Ref.	CP72308A											
<table border="0" style="width: 100%;"> <tr> <td style="width: 15%; vertical-align: top;"> Results Legend # ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4*5@ Sample deviation (see appendix) </td> <td style="width: 10%; vertical-align: top;"> Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference </td> <td style="width: 10%; vertical-align: top;"> 0.20 - 0.20 Soil/Solid (S) 21/10/2020 . 23/10/2020 201023-139 23103620 ES </td> <td colspan="4"></td> </tr> </table>							Results Legend # ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4*5@ Sample deviation (see appendix)	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.20 - 0.20 Soil/Solid (S) 21/10/2020 . 23/10/2020 201023-139 23103620 ES				
Results Legend # ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4*5@ Sample deviation (see appendix)	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.20 - 0.20 Soil/Solid (S) 21/10/2020 . 23/10/2020 201023-139 23103620 ES											
Component	LOD/Units	Method											
Moisture Content Ratio (% of as received sample)	%	PM024	1.1										
Exchangeable Ammonia as N	<12 mg/kg	TM024	12.2 @ M										
Phenol	<0.01 mg/kg	TM062 (S)	<0.5 @ M										
Organic Carbon, Total	<0.2 %	TM132	0.847 @ M										
pH	1 pH Units	TM133	9.07 @ M										
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 @ #										
Cyanide, Total	<1 mg/kg	TM153	<1 @ M										
Cyanide, Free	<1 mg/kg	TM153	<1 @ M										
Chromium, Trivalent	<0.9 mg/kg	TM181	3.13										
Antimony	<0.6 mg/kg	TM181	<0.6 #										
Arsenic	<0.6 mg/kg	TM181	2.99 M										
Beryllium	<0.01 mg/kg	TM181	0.737 M										
Boron	<0.7 mg/kg	TM181	3.37 #										
Cadmium	<0.02 mg/kg	TM181	<0.02 M										
Chromium	<0.9 mg/kg	TM181	3.13 M										
Copper	<1.4 mg/kg	TM181	26 M										
Iron	<1000 mg/kg	TM181	41200 #										
Lead	<0.7 mg/kg	TM181	14.8 M										
Manganese	<0.13 mg/kg	TM181	691 M										
Mercury	<0.14 mg/kg	TM181	<0.14 @ M										
Molybdenum	<0.1 mg/kg	TM181	0.678 #										
Nickel	<0.2 mg/kg	TM181	32 M										
Phosphorus	<1 mg/kg	TM181	1680										
Selenium	<1 mg/kg	TM181	<1 #										
Zinc	<1.9 mg/kg	TM181	85.9 M										
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243	0.0065 @ M										



CERTIFICATE OF ANALYSIS

Validated

SDG: 201023-139
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PO20-951

Report Number: 580701
Superseded Report:

PAH by GCMS

Results Legend		Customer Sample Ref.	CP72308A				
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.20 - 0.20				
M	mCERTS accredited.		Soil/Solid (S)				
aq	Aqueous / settled sample.		21/10/2020				
diss.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.		23/10/2020				
*	Subcontracted - refer to subcontractor report for accreditation status.		201023-139				
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		23103620				
(F)	Trigger breach confirmed		ES				
1-4*\$@	Sample deviation (see appendix)						
Component	LOD/Units		Method				
Naphthalene-d8 % recovery**	%	TM218	83.4				
Acenaphthene-d10 % recovery**	%	TM218	87.8				
Phenanthrene-d10 % recovery**	%	TM218	87.4				
Chrysene-d12 % recovery**	%	TM218	82				
Perylene-d12 % recovery**	%	TM218	89.2				
Naphthalene	<9 µg/kg	TM218	41800 @ M				
Acenaphthylene	<12 µg/kg	TM218	11900 @ M				
Acenaphthene	<8 µg/kg	TM218	27900 @ M				
Fluorene	<10 µg/kg	TM218	46300 @ M				
Phenanthrene	<15 µg/kg	TM218	191000 @ M				
Anthracene	<16 µg/kg	TM218	52500 @ M				
Fluoranthene	<17 µg/kg	TM218	164000 @ M				
Pyrene	<15 µg/kg	TM218	137000 @ M				
Benz(a)anthracene	<14 µg/kg	TM218	60900 @ M				
Chrysene	<10 µg/kg	TM218	50800 @ M				
Benzo(b)fluoranthene	<15 µg/kg	TM218	69700 @ M				
Benzo(k)fluoranthene	<14 µg/kg	TM218	26100 @ M				
Benzo(a)pyrene	<15 µg/kg	TM218	58000 @ M				
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	36600 @ M				
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	6550 @ M				
Benzo(g,h,i)perylene	<24 µg/kg	TM218	31300 @ M				
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	1010000				



CERTIFICATE OF ANALYSIS

Validated

SDG:	201023-139	Client Reference:	JFR1451	Report Number:	580701
Location:	A303 Stonehenge	Order Number:	PO20-951	Superseded Report:	

Semi Volatile Organic Compounds

#	ISO17025 accredited.	Customer Sample Ref.	CP72308A			
M	mCERTS accredited.					
aq	Aqueous / settled sample.	Depth (m)	0.20 - 0.20			
diss.filt	Dissolved / filtered sample.	Sample Type	Soil/Solid (S)			
tot.unfilt	Total / unfiltered sample.	Date Sampled	21/10/2020			
*	Subcontracted - refer to subcontractor report for accreditation status.	Sampled Time				
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery	Date Received	23/10/2020			
(F)	Trigger breach confirmed	SDG Ref	201023-139			
1-4*\$@	Sample deviation (see appendix)	Lab Sample No.(s)	23103620			
		AGS Reference	ES			
Component	LOD/Units	Method				
Phenol	<100 µg/kg	TM157	<1000			
Pentachlorophenol	<100 µg/kg	TM157	<1000			
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<1000			
Nitrobenzene	<100 µg/kg	TM157	<1000			
Isophorone	<100 µg/kg	TM157	<1000			
Hexachloroethane	<100 µg/kg	TM157	<1000			
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<1000			
Hexachlorobutadiene	<100 µg/kg	TM157	<1000			
Hexachlorobenzene	<100 µg/kg	TM157	<1000			
n-Dioctyl phthalate	<100 µg/kg	TM157	<1000			
Dimethyl phthalate	<100 µg/kg	TM157	<1000			
Diethyl phthalate	<100 µg/kg	TM157	<1000			
n-Dibutyl phthalate	<100 µg/kg	TM157	<1000			
Dibenzofuran	<100 µg/kg	TM157	30600			
Carbazole	<100 µg/kg	TM157	11200			
Butylbenzyl phthalate	<100 µg/kg	TM157	<1000			
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<1000			
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<1000			
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<1000			
Azobenzene	<100 µg/kg	TM157	<1000			
4-Nitrophenol	<100 µg/kg	TM157	<1000			
4-Nitroaniline	<100 µg/kg	TM157	<1000			
4-Methylphenol	<100 µg/kg	TM157	<1000			
4-Chlorophenylphenylether	<100 µg/kg	TM157	<1000			
4-Chloroaniline	<100 µg/kg	TM157	<1000			
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<1000			
4-Bromophenylphenylether	<100 µg/kg	TM157	<1000			
3-Nitroaniline	<100 µg/kg	TM157	<1000			
2-Nitrophenol	<100 µg/kg	TM157	<1000			
2-Nitroaniline	<100 µg/kg	TM157	<1000			
2-Methylphenol	<100 µg/kg	TM157	<1000			
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<1000			



CERTIFICATE OF ANALYSIS

Validated

SDG:	201023-139	Client Reference:	JFR1451	Report Number:	580701
Location:	A303 Stonehenge	Order Number:	PO20-951	Superseded Report:	

Semi Volatile Organic Compounds

Results Legend		Customer Sample Ref.	CP72308A				
#	ISO17025 accredited.	Depth (m)	0.20 - 0.20				
M	mCERTS accredited.	Sample Type	Soil/Solid (S)				
sq	Aqueous / filtered sample.	Date Sampled	21/10/2020				
dis.fit	Dissolved / filtered sample.	Sampled Time	.				
tot.unfit	Total / unfiltered sample.	Date Received	23/10/2020				
*	Subcontracted - refer to subcontractor report for accreditation status.	SDG Ref	201023-139				
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery	Lab Sample No.(s)	23103620				
(F)	Trigger breach confirmed	AGS Reference	ES				
1-4&@	Sample deviation (see appendix)						
Component	LOD/Units	Method					
2-Chlorophenol	<100 µg/kg	TM157	<1000				
2,6-Dinitrotoluene	<100 µg/kg	TM157	<1000				
2,4-Dinitrotoluene	<100 µg/kg	TM157	<1000				
2,4-Dimethylphenol	<100 µg/kg	TM157	<1000				
2,4-Dichlorophenol	<100 µg/kg	TM157	<1000				
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<1000				
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<1000				
1,4-Dichlorobenzene	<100 µg/kg	TM157	<1000				
1,3-Dichlorobenzene	<100 µg/kg	TM157	<1000				
1,2-Dichlorobenzene	<100 µg/kg	TM157	<1000				
2-Chloronaphthalene	<100 µg/kg	TM157	<1000				
2-Methylnaphthalene	<100 µg/kg	TM157	24000				
Acenaphthylene	<100 µg/kg	TM157	12200				
Acenaphthene	<100 µg/kg	TM157	25000				
Anthracene	<100 µg/kg	TM157	49100				
Benzo(a)anthracene	<100 µg/kg	TM157	63600				
Benzo(b)fluoranthene	<100 µg/kg	TM157	46900				
Benzo(k)fluoranthene	<100 µg/kg	TM157	43200				
Benzo(a)pyrene	<100 µg/kg	TM157	56800				
Benzo(g,h,i)perylene	<100 µg/kg	TM157	30500				
Chrysene	<100 µg/kg	TM157	61000				
Fluoranthene	<100 µg/kg	TM157	169000				
Fluorene	<100 µg/kg	TM157	43300				
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	35100				
Phenanthrene	<100 µg/kg	TM157	177000				
Pyrene	<100 µg/kg	TM157	145000				
Naphthalene	<100 µg/kg	TM157	45100				
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	2510				
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<1000				
TIC report		TM157	Detected				
Total SVOC TIC	<100 µg/kg	TM157	234000				
Benzopyrene	<100 µg/kg	TM157	45700				



CERTIFICATE OF ANALYSIS

Validated

SDG: 201023-139	Client Reference: JFR1451	Report Number: 580701	
Location: A303 Stonehenge	Order Number: PQ20-951	Superseded Report:	

Semi Volatile Organic Compounds

Results Legend		Customer Sample Ref.	CP72308A					
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.20 - 0.20 Soil/Solid (S) 21/10/2020 . 23/10/2020 201023-139 23103620 ES					
M	mCERTS accredited.							
sq	Aqueous / settled sample.							
dis.fit	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
*	Subcontracted - refer to subcontractor report for accreditation status.							
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery							
(F)	Trigger breach confirmed							
1-4*\$@	Sample deviation (see appendix)							
Component	LOD/Units			Method				
Isomers of Benzo(a)fluorene	µg/kg			TM157	56200			
Methylphenanthrene	µg/kg			TM157	16200			
Methylnaphthalene	µg/kg	TM157	17000					
Unknown	µg/kg	TM157	98500					



CERTIFICATE OF ANALYSIS

Validated

SDG: 201023-139
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: PO20-951

Report Number: 580701
Superseded Report:

TPH CWG (S)

Results Legend		Customer Sample Ref.	CP72308A				
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.20 - 0.20				
M	mCERTS accredited.		Soil/Solid (S)				
aq	Aqueous / settled sample.		21/10/2020				
diss.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.		23/10/2020				
*	Subcontracted - refer to subcontractor report for accreditation status.		201023-139				
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		23103620				
(F)	Trigger breach confirmed		ES				
1-4*\$@	Sample deviation (see appendix)						
Component	LOD/Units		Method				
GRO Surrogate % recovery**	%	TM089	84.7	@			
Aliphatics >C5-C6	<10 µg/kg	TM089	<10	@			
Aliphatics >C6-C8	<10 µg/kg	TM089	55.6	@			
Aliphatics >C8-C10	<10 µg/kg	TM089	225	@			
Aliphatics >C10-C12	<1000 µg/kg	TM414	<10000				
Aliphatics >C12-C16	<1000 µg/kg	TM414	11100				
Aliphatics >C16-C21	<1000 µg/kg	TM414	14500				
Aliphatics >C21-C35	<1000 µg/kg	TM414	70700				
Aliphatics >C35-C44	<1000 µg/kg	TM414	16200				
Total Aliphatics >C10-C44	<5000 µg/kg	TM414	116000				
Total Aliphatics & Aromatics >C10-C44	<10000 µg/kg	TM414	3050000				
Aromatics >EC5-EC7	<10 µg/kg	TM089	<10	@			
Aromatics >EC7-EC8	<10 µg/kg	TM089	<10	@			
Aromatics >EC8-EC10	<10 µg/kg	TM089	151	@			
Aromatics > EC10-EC12	<1000 µg/kg	TM414	57900				
Aromatics > EC12-EC16	<1000 µg/kg	TM414	305000				
Aromatics > EC16-EC21	<1000 µg/kg	TM414	957000				
Aromatics > EC21-EC35	<1000 µg/kg	TM414	1410000				
Aromatics >EC35-EC44	<1000 µg/kg	TM414	206000				
Aromatics > EC40-EC44	<1000 µg/kg	TM414	35900				
Total Aromatics > EC10-EC44	<5000 µg/kg	TM414	2930000				
Total Aliphatics & Aromatics >C5-C44	<10000 µg/kg	TM414	3050000				
Total Aliphatics >C5-C10	<50 µg/kg	TM089	281	@			
Total Aromatics >EC5-EC10	<50 µg/kg	TM089	151	@			
GRO >C5-C10	<20 µg/kg	TM089	432	@			



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VOC MS (S)

Table with columns: Component, LOD/Units, Method, Customer Sample Ref., Depth (m), Sample Type, Date Sampled, Sampled Time, Date Received, SDG Ref, Lab Sample No.(s), AGS Reference. Rows list various VOCs like Dibromofluoromethane, Toluene-d8, 4-Bromofluorobenzene, etc.



CERTIFICATE OF ANALYSIS

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SDG:	201023-139	Client Reference:	JFR1451	Report Number:	580701
Location:	A303 Stonehenge	Order Number:	PO20-951	Superseded Report:	

VOC MS (S)

Results Legend		Customer Sample Ref.	CP72308A				
# ISO17025 accredited. M mCERTS accredited. sq Aqueous / filtered sample. diss.fit Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery. (F) Trigger breach confirmed 1-4*6@ Sample deviation (see appendix)		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.20 - 0.20 Soil/Solid (S) 21/10/2020 . 23/10/2020 201023-139 23103620 ES				
Component	LOD/Units	Method					
1,3-Dichloropropane	<7 µg/kg	TM116	<140	@ M			
Tetrachloroethene	<5 µg/kg	TM116	<100	@ M			
Dibromochloromethane	<10 µg/kg	TM116	<200	@ M			
1,2-Dibromoethane	<10 µg/kg	TM116	<200	@ M			
Chlorobenzene	<5 µg/kg	TM116	<100	@ M			
1,1,1,2-Tetrachloroethane	<10 µg/kg	TM116	<200	@ M			
Ethylbenzene	<4 µg/kg	TM116	<80	@ M			
p/m-Xylene	<10 µg/kg	TM116	<200	@ #			
o-Xylene	<10 µg/kg	TM116	<200	@ M			
Styrene	<10 µg/kg	TM116	<200	@ #			
Bromoform	<10 µg/kg	TM116	<200	@ M			
Isopropylbenzene	<5 µg/kg	TM116	<100	@ #			
1,1,2,2-Tetrachloroethane	<10 µg/kg	TM116	<200	@ #			
1,2,3-Trichloropropane	<16 µg/kg	TM116	<320	@ M			
Bromobenzene	<10 µg/kg	TM116	<200	@ M			
Propylbenzene	<10 µg/kg	TM116	<200	@ M			
2-Chlorotoluene	<9 µg/kg	TM116	<180	@ M			
1,3,5-Trimethylbenzene	<8 µg/kg	TM116	<160	@ M			
4-Chlorotoluene	<10 µg/kg	TM116	<200	@ M			
tert-Butylbenzene	<14 µg/kg	TM116	<280	@ M			
1,2,4-Trimethylbenzene	<9 µg/kg	TM116	<180	@ #			
sec-Butylbenzene	<10 µg/kg	TM116	<200	@			
4-Isopropyltoluene	<10 µg/kg	TM116	<200	@ M			
1,3-Dichlorobenzene	<8 µg/kg	TM116	<160	@ M			
1,4-Dichlorobenzene	<5 µg/kg	TM116	<100	@ M			
n-Butylbenzene	<11 µg/kg	TM116	<220	@			
1,2-Dichlorobenzene	<10 µg/kg	TM116	<200	@ M			
1,2-Dibromo-3-chloropropane	<14 µg/kg	TM116	<280	@ M			
Tert-amyl methyl ether	<10 µg/kg	TM116	<200	@ #			
1,2,4-Trichlorobenzene	<20 µg/kg	TM116	<400	@			
Hexachlorobutadiene	<20 µg/kg	TM116	<400	@			
Naphthalene	<13 µg/kg	TM116	85000	@ M			



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VOC MS (S)

Table with columns: Results Legend, Customer Sample Ref., Depth (m), Sample Type, Date Sampled, Sampled Time, Date Received, SDG Ref, Lab Sample No.(s), AGS Reference, Component, LOD/Units, Method, and numerical values for various VOCs like 1,2,3-Trichlorobenzene, VOC TIC, etc.



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Superseded Report:

Asbestos Identification - Solid Samples

Results Legend

- # ISO17025 accredited.
- M mCERTS accredited.
- * Subcontracted test.
- (F) Trigger breach confirmed
- 1-5&*§@ Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	CP72308AES 0.20 - 0.20 SOLID 21/10/2020 00:00:00 23/10/2020 06:00:00 201023-139 23103620 TM048	15/12/2020	Barbara Urbanek-Walsh	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected



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Validated

SDG:	201023-139	Client Reference:	JFR1451	Report Number:	580701
Location:	A303 Stonehenge	Order Number:	PO20-951	Superseded Report:	

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM243		Mixed Anions In Soils By Kone
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).



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Test Completion Dates

Lab Sample No(s)	23103620
Customer Sample Ref.	CP72308A
AGS Ref.	ES
Depth	0.20 - 0.20
Type	Soil/Solid (S)

Ammonium Soil by Titration	17-Dec-2020
Anions by Kone (soil)	18-Dec-2020
Asbestos ID in Solid Samples	15-Dec-2020
Chromium III	15-Dec-2020
Cyanide Comp/Free/Total/Thiocyanate	15-Dec-2020
EPH CWG GC (S)	16-Dec-2020
GRO by GC-FID (S)	15-Dec-2020
Hexavalent Chromium (s)	15-Dec-2020
Metals in solid samples by OES	16-Dec-2020
PAH by GCMS	16-Dec-2020
pH	14-Dec-2020
Phenols by HPLC (S)	17-Dec-2020
Sample description	12-Dec-2020
Semi Volatile Organic Compounds	16-Dec-2020
Total Organic Carbon	17-Dec-2020
TPH CWG GC (S)	16-Dec-2020



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ASSOCIATED AQC DATA

Ammonium Soil by Titration

Component	Method Code	QC 2309
Exchangeable Ammonium as NH4	TM024	80.1 76.20 : 110.13

Anions by Kone (soil)

Component	Method Code	QC 2309
Chloride (soluble)	TM243	142.49 86.68 : 115.67
Water Soluble Sulphate as SO4 2:1 Extract	TM243	155.14 70.00 : 130.00

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2382
Free Cyanide	TM153	92.08 78.61 : 114.43
Thiocyanate	TM153	100.64 90.48 : 109.52
Total Cyanide	TM153	97.2 76.80 : 112.96

GRO by GC-FID (S)

Component	Method Code	QC 2325
QC	TM089	91.83 70.34 : 111.95

Hexavalent Chromium (s)

Component	Method Code	QC 2377
Hexavalent Chromium	TM151	108.0 92.00 : 111.20

Metals in solid samples by OES

Component	Method Code	QC 2302
Aluminium	TM181	97.35 73.56 : 108.85
Antimony	TM181	101.63 76.89 : 111.24
Arsenic	TM181	105.52 88.53 : 111.01



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Metals in solid samples by OES

		QC 2302
Barium	TM181	100.0 77.67 : 105.35
Beryllium	TM181	102.99 85.44 : 109.61
Boron	TM181	91.4 73.51 : 104.66
Cadmium	TM181	91.77 77.67 : 104.12
Chromium	TM181	95.94 86.11 : 106.21
Cobalt	TM181	93.71 84.60 : 104.13
Copper	TM181	95.77 82.40 : 105.45
Iron	TM181	99.21 82.95 : 110.58
Lead	TM181	96.4 78.24 : 104.05
Manganese	TM181	112.22 94.29 : 119.51
Mercury	TM181	102.17 83.16 : 107.81
Molybdenum	TM181	101.65 87.11 : 106.87
Nickel	TM181	96.09 80.26 : 102.28
Phosphorus	TM181	114.14 94.56 : 124.28
Selenium	TM181	103.92 82.28 : 110.48
Strontium	TM181	95.55 79.13 : 102.79
Thallium	TM181	104.87 82.94 : 111.86
Tin	TM181	101.9 86.72 : 110.03
Titanium	TM181	86.26 66.23 : 102.06
Vanadium	TM181	100.37 86.19 : 109.45
Zinc	TM181	100.62 84.68 : 113.99

PAH by GCMS

Component	Method Code	QC 2326
Acenaphthene	TM218	87.5 78.59 : 112.16
Acenaphthylene	TM218	83.5 75.11 : 109.01
Anthracene	TM218	81.5 73.99 : 113.85
Benz(a)anthracene	TM218	82.0 69.31 : 119.18



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PAH by GCMS

		QC 2326
Benzo(a)pyrene	TM218	80.0 66.97 : 114.92
Benzo(b)fluoranthene	TM218	77.0 67.41 : 114.46
Benzo(ghi)perylene	TM218	74.0 62.92 : 114.36
Benzo(k)fluoranthene	TM218	79.0 69.98 : 116.49
Chrysene	TM218	81.5 69.86 : 114.50
Dibenzo(ah)anthracene	TM218	73.0 64.54 : 115.22
Fluoranthene	TM218	82.5 72.56 : 111.70
Fluorene	TM218	89.0 79.13 : 111.49
Indeno(123cd)pyrene	TM218	72.5 61.22 : 113.25
Naphthalene	TM218	87.0 77.96 : 110.91
Phenanthrene	TM218	85.0 76.83 : 113.25
Pyrene	TM218	82.0 72.45 : 110.77

pH

Component	Method Code	QC 2353
pH	TM133	100.66 98.71 : 102.32

Phenols by HPLC (S)

Component	Method Code	QC 2390
2,3,5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	103.9 65.50 : 89.50
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	88.89 84.00 : 124.00
Catechol by HPLC (S)	TM062 (S)	92.38 19.39 : 135.70
Cresols by HPLC (S)	TM062 (S)	92.48 81.00 : 112.20
Naphthol by HPLC (S)	TM062 (S)	119.29 57.50 : 102.50
Phenol by HPLC (S)	TM062 (S)	96.69 88.67 : 124.67
Resorcinol HPLC (S)	TM062 (S)	94.97 69.99 : 127.22
Xylenols by HPLC (S)	TM062 (S)	99.17 93.00 : 121.00



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Total Organic Carbon

Component	Method Code	QC 2367
Total Organic Carbon	TM132	107.81 87.02 : 113.45

VOC MS (S)

Component	Method Code	QC 2308
1,1,1,2-tetrachloroethane	TM116	99.6 79.10 : 119.66
1,1,1-Trichloroethane	TM116	95.6 87.51 : 115.37
1,1,2-Trichloroethane	TM116	96.2 81.29 : 113.79
1,1-Dichloroethane	TM116	101.4 86.77 : 122.11
1,2-Dichloroethane	TM116	107.2 90.04 : 132.28
1,4-Dichlorobenzene	TM116	98.0 80.81 : 125.07
2-Chlorotoluene	TM116	91.6 73.13 : 114.13
4-Chlorotoluene	TM116	87.6 72.48 : 112.82
Benzene	TM116	97.8 84.29 : 112.22
Carbon Disulphide	TM116	97.4 75.11 : 124.81
Carbontetrachloride	TM116	96.2 82.35 : 126.46
Chlorobenzene	TM116	97.2 82.88 : 122.42
Chloroform	TM116	102.6 90.35 : 120.38
Chloromethane	TM116	99.4 65.80 : 138.88
Cis-1,2-Dichloroethene	TM116	101.8 78.27 : 128.90
Dibromomethane	TM116	89.8 76.00 : 120.73
Dichloromethane	TM116	107.2 92.27 : 134.36
Ethylbenzene	TM116	90.4 70.95 : 113.07
Hexachlorobutadiene	TM116	62.6 14.55 : 147.92
Isopropylbenzene	TM116	84.2 52.00 : 108.19
Naphthalene	TM116	98.2 80.29 : 135.77
o-Xylene	TM116	87.4 64.92 : 98.85



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VOC MS (S)

		QC 2308
p/m-Xylene	TM116	87.9 72.04 : 104.04
Sec-Butylbenzene	TM116	77.2 27.03 : 135.73
Tetrachloroethene	TM116	99.2 81.43 : 126.65
Toluene	TM116	91.2 82.44 : 103.50
Trichloroethene	TM116	96.4 79.80 : 112.33
Trichlorofluoromethane	TM116	105.8 86.68 : 126.82
Vinyl Chloride	TM116	111.8 69.66 : 136.55

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis .

The figure detailed is the percentage recovery result for the AQC .

The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control .



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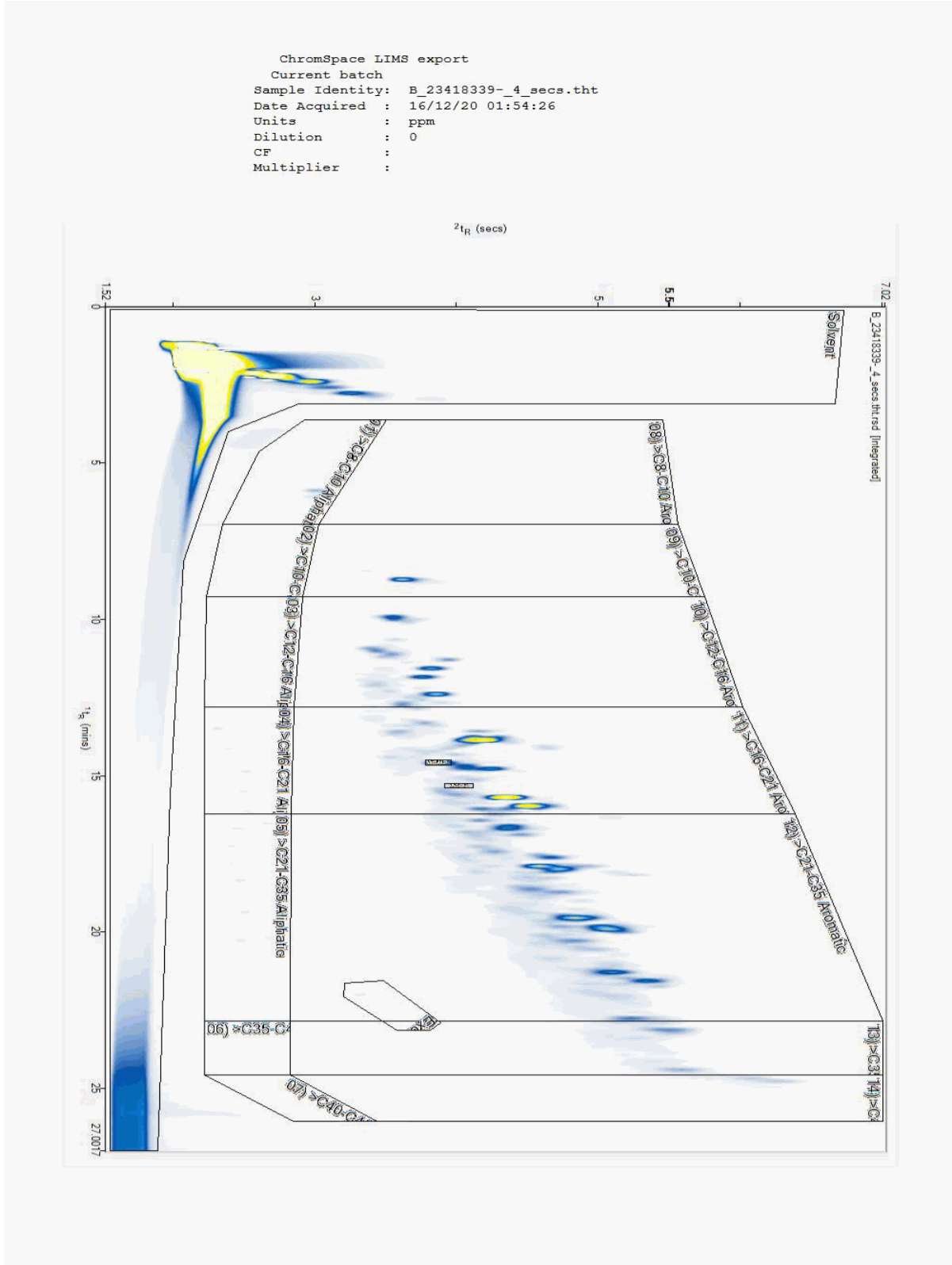
Report Number: 580701
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23418339
Sample ID : CP72308A

Depth : 0.20 - 0.20





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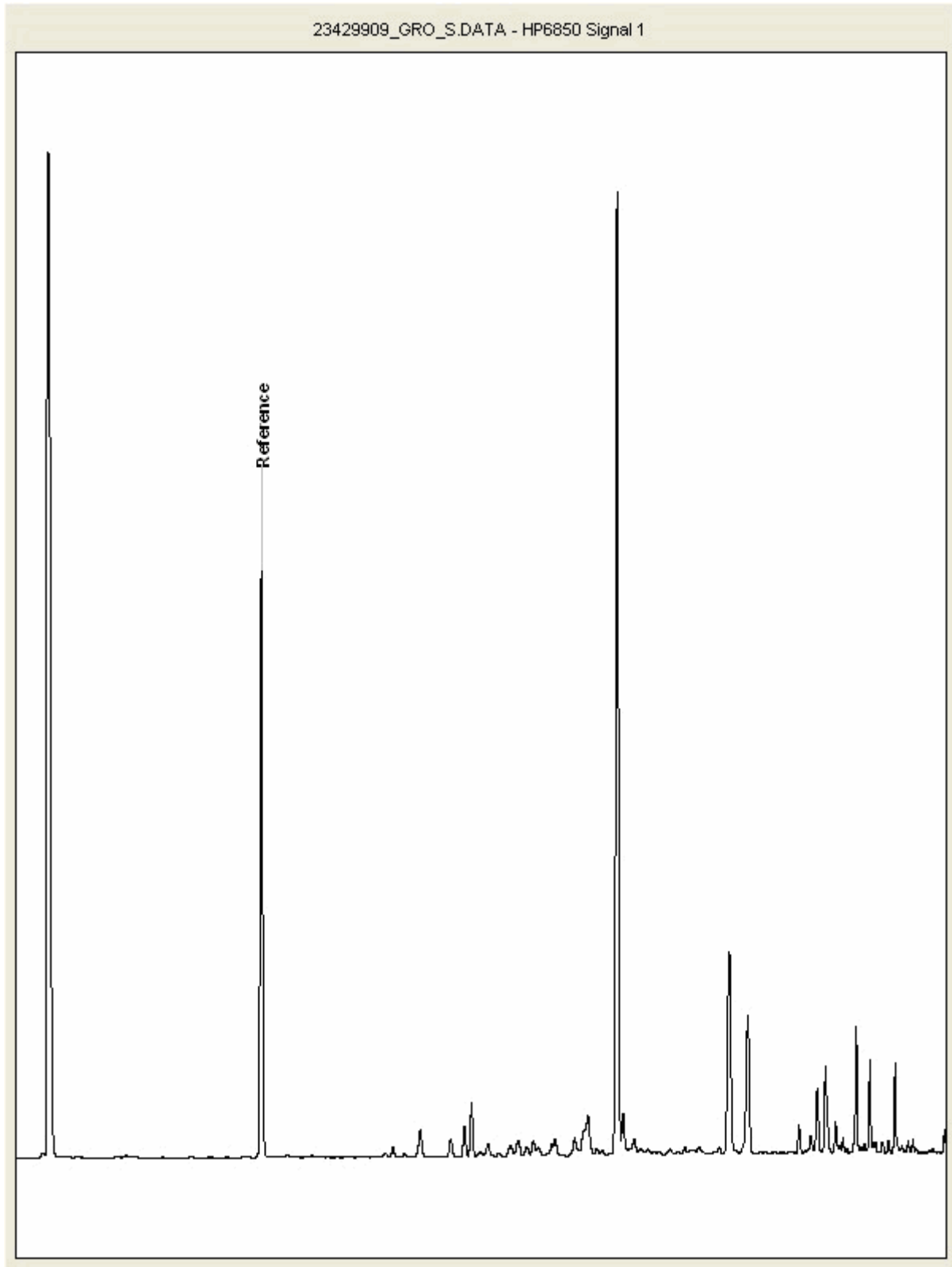
Report Number: 580701
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23429909
Sample ID : CP72308A

Depth : 0.20 - 0.20





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Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

19. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung. Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017)*.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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RPS Consultants Ltd
260 Park Avenue
Aztec West
Almondsbury
Bristol
BS32 4SY

Attention: Gary Riches

CERTIFICATE OF ANALYSIS

Date of report Generation: 17 December 2020
Customer: RPS Consultants Ltd
Sample Delivery Group (SDG): 201030-180
Your Reference: JFR1451
Location: A303 Stonehenge
Report No: 580416

We received 3 samples on Friday October 30, 2020 and 1 of these samples were scheduled for analysis which was completed on Thursday December 17, 2020. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

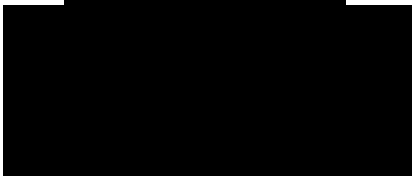
Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:



Sonia McWhan

Operations Manager



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CERTIFICATE OF ANALYSIS

Validated

SDG: 201030-180 Client Reference: JFR1451 Report Number: 580416
Location: A303 Stonehenge Order Number: Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
23149065	R71917	ES	0.10	28/10/2020
23149066	R71917	ES	0.50	28/10/2020
23149067	R71917	ES	1.00	28/10/2020

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG:	201030-180	Client Reference:	JFR1451	Report Number:	580416
Location:	A303 Stonehenge	Order Number:		Superseded Report:	

Results Legend	Lab Sample No(s)					
<p>X Test</p> <p>N No Determination Possible</p> <p>Sample Types -</p> <p>S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other</p>	23149066					
	Customer Sample Reference					
	AGS Reference					
	Depth (m)					
	Container		1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	
	Sample Type		S	S	S	
Anions by Kone (w)	All	NDPs: 0 Tests: 1	X			
CEN Readings	All	NDPs: 0 Tests: 1	X			
Coronene	All	NDPs: 0 Tests: 1		X		
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 1	X			
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 1	X			
EPH by GCxGC-FID	All	NDPs: 0 Tests: 1		X		
Fluoride	All	NDPs: 0 Tests: 1	X			
Mercury Dissolved	All	NDPs: 0 Tests: 1	X			
PAH 16 & 17 Calc	All	NDPs: 0 Tests: 1		X		
PAH by GCMS	All	NDPs: 0 Tests: 1		X		
PCBs by GCMS	All	NDPs: 0 Tests: 1		X		
Phenols by HPLC (W)	All	NDPs: 0 Tests: 1	X			
Sample description	All	NDPs: 0 Tests: 1		X		
Total Dissolved Solids	All	NDPs: 0 Tests: 1	X			
Total Organic Carbon	All	NDPs: 0 Tests: 1		X		



CERTIFICATE OF ANALYSIS

Validated

SDG:	201030-180	Client Reference:	JFR1451	Report Number:	580416
Location:	A303 Stonehenge	Order Number:		Superseded Report:	

Results Legend

Test

No Determination Possible
Sample Types -

- S - Soil/Solid
- UNS - Unspecified Solid
- GW - Ground Water
- SW - Surface Water
- LE - Land Leachate
- PL - Prepared Leachate
- PR - Process Water
- SA - Saline Water
- TE - Trade Effluent
- TS - Treated Sewage
- US - Untreated Sewage
- RE - Recreational Water
- DW - Drinking Water Non-regulatory
- UNL - Unspecified Liquid
- SL - Sludge
- G - Gas
- OTH - Other

	Lab Sample No(s)	23149066		
	Customer Sample Reference	R71917		
	AGS Reference	ES		
	Depth (m)	0.50		
	Container	1kg TUB with Handle (ALE280)	250g Amber Jar (ALE210)	60g VOC (ALE215)
	Sample Type	S	S	S
VOC MS (S)	All	NDPs: 0 Tests: 1		X



CERTIFICATE OF ANALYSIS

Validated

SDG: 201030-180
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 580416
Superseded Report:

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm
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Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
23149066	R71917	0.50	Cream	Chalk	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.



CERTIFICATE OF ANALYSIS

Validated

SDG: 201030-180	Client Reference: JFR1451	Report Number: 580416
Location: A303 Stonehenge	Order Number:	Superseded Report:

VOC MS (S)

Results Legend		Customer Sample Ref.	R71917				
#	ISO17025 accredited.						
M	mCERTS accredited.						
aq	Aqueous / settled sample.						
diss.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.						
*	Subcontracted - refer to subcontractor report for accreditation status.						
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery						
(F)	Trigger breach confirmed						
1-4*\$@	Sample deviation (see appendix)						
		Depth (m)	0.50				
		Sample Type	Soil/Solid (S)				
		Date Sampled	28/10/2020				
		Sampled Time					
		Date Received	30/10/2020				
		SDG Ref	201030-180				
		Lab Sample No.(s)	23149066				
		AGS Reference	ES				
Component	LOD/Units	Method					
Dibromofluoromethane**	%	TM116	106	@			
Toluene-d8**	%	TM116	97.4	@			
4-Bromofluorobenzene**	%	TM116	97.8	@			
Methyl Tertiary Butyl Ether	<10 µg/kg	TM116	<10	@ #			
Benzene	<9 µg/kg	TM116	<9	@ #			
Toluene	<7 µg/kg	TM116	<7	@ #			
Ethylbenzene	<4 µg/kg	TM116	<4	@ #			
p/m-Xylene	<10 µg/kg	TM116	<10	@ #			
o-Xylene	<10 µg/kg	TM116	<10	@ #			



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SDG:	201030-180	Client Reference:	JFR1451	Report Number:	580416
Location:	A303 Stonehenge	Order Number:		Superseded Report:	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		Site Location	A303 Stonehenge
Mass Sample taken (kg)	0.104	Natural Moisture Content (%)	14.9
Mass of dry sample (kg)	0.090	Dry Matter Content (%)	87
Particle Size <4mm	>95%		

Case	
SDG	201030-180
Lab Sample Number(s)	23149066
Sampled Date	28-Oct-2020
Customer Sample Ref.	R71917 ESZ
Depth (m)	0.50

Landfill Waste Acceptance Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	-
-	-	-
1	-	-
500	-	-
100	-	-
-	-	-
-	-	-
-	-	-

Solid Waste Analysis	Result
Total Organic Carbon (%)	<0.2
Loss on Ignition (%)	-
Sum of BTEX (mg/kg)	-
Sum of 7 PCBs (mg/kg)	<0.021
Mineral Oil (mg/kg)	<5
PAH Sum of 17 (mg/kg)	<10
pH (pH Units)	-
ANC to pH 6 (mol/kg)	-
ANC to pH 4 (mol/kg)	-

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection	Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Arsenic	<0.0005	<0.0005	<0.005	<0.005	0.5	2	25
Barium	0.00105	<0.0002	0.0105	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.000732	<0.0003	0.00732	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	<0.0004	<0.0004	<0.004	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00172	<0.001	0.0172	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	32.6	<5	326	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	3.49	<3	34.9	<30	500	800	1000

Leach Test Information

Date Prepared	10-Dec-2020
pH (pH Units)	8.28
Conductivity (µS/cm)	48.60
Temperature (°C)	21.20
Volume Leachant (Litres)	0.887

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
 Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
 Mcerts Certification does not apply to leachates

17/12/2020 08:47:27



CERTIFICATE OF ANALYSIS

Validated

SDG: 201030-180 **Client Reference:** JFR1451 **Report Number:** 580416
Location: A303 Stonehenge **Order Number:** **Superseded Report:**

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM104	Method 4500F, AWWA/APHA, 20th Ed., 1999	Determination of Fluoride using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM123	BS 2690: Part 121:1981	The Determination of Total Dissolved Solids in Water
TM132	In - house Method	ELTRA CS800 Operators Guide
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC
TM410	Shaker extraction-In house coronene method	Determination of Coronene in soils by GCMS
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).



CERTIFICATE OF ANALYSIS

Validated

SDG: 201030-180
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 580416
Superseded Report:

Test Completion Dates

Lab Sample No(s)	23149066
Customer Sample Ref.	R71917
AGS Ref.	ES
Depth	0.50
Type	Soil/Solid (S)

Anions by Kone (w)	17-Dec-2020
CEN 10:1 Leachate (1 Stage)	10-Dec-2020
CEN Readings	16-Dec-2020
Coronene	11-Dec-2020
Dissolved Metals by ICP-MS	16-Dec-2020
Dissolved Organic/Inorganic Carbon	15-Dec-2020
EPH by GCxGC-FID	11-Dec-2020
Fluoride	15-Dec-2020
Mercury Dissolved	15-Dec-2020
Moisture at 105C	10-Dec-2020
PAH 16 & 17 Calc	11-Dec-2020
PAH by GCMS	11-Dec-2020
PCBs by GCMS	14-Dec-2020
Phenols by HPLC (W)	16-Dec-2020
Sample description	10-Dec-2020
Total Dissolved Solids	15-Dec-2020
Total Organic Carbon	15-Dec-2020
VOC MS (S)	14-Dec-2020



CERTIFICATE OF ANALYSIS

Validated

SDG: 201030-180
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 580416
Superseded Report:

ASSOCIATED AQC DATA

Anions by Kone (w)

Component	Method Code	QC 2330
Chloride	TM184	100.0 94.04 : 108.61
Sulphate (soluble)	TM184	95.6 91.99 : 109.30

Coronene

Component	Method Code	QC 2318
Coronene RAW	TM410	125.5 79.43 : 137.78

Dissolved Metals by ICP-MS

Component	Method Code	QC 2368
Aluminium	TM152	101.33 94.21 : 111.52
Antimony	TM152	104.17 88.37 : 130.57
Arsenic	TM152	101.5 92.62 : 113.52
Barium	TM152	102.5 88.62 : 113.14
Beryllium	TM152	103.17 87.08 : 111.38
Bismuth	TM152	99.33 92.62 : 115.02
Boron	TM152	99.0 86.31 : 120.88
Cadmium	TM152	102.17 93.85 : 111.65
Calcium	TM152	104.67 89.20 : 126.91
Chromium	TM152	99.5 92.50 : 113.03
Cobalt	TM152	99.17 85.01 : 114.87
Copper	TM152	100.33 89.87 : 119.73
Iron	TM152	102.0 93.02 : 113.86
Lead	TM152	100.17 91.11 : 116.98
Lithium	TM152	103.17 91.30 : 123.00
Magnesium	TM152	103.33 89.60 : 116.61
Manganese	TM152	102.5 93.97 : 112.46



CERTIFICATE OF ANALYSIS

Validated

SDG: 201030-180
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 580416
Superseded Report:

Dissolved Metals by ICP-MS

		QC 2368
Molybdenum	TM152	96.67 89.07 : 110.96
Nickel	TM152	100.0 93.70 : 112.15
Phosphorus	TM152	102.0 89.24 : 114.18
Potassium	TM152	104.0 93.20 : 115.55
Selenium	TM152	101.17 91.69 : 117.12
Silver	TM152	99.17 90.93 : 121.73
Sodium	TM152	105.33 92.42 : 113.24
Strontium	TM152	103.33 92.14 : 116.24
Tellurium	TM152	96.67 89.88 : 111.78
Thallium	TM152	95.0 82.43 : 113.83
Tin	TM152	102.67 94.62 : 107.79
Titanium	TM152	106.83 90.29 : 115.23
Tungsten	TM152	100.33 77.61 : 132.31
Uranium	TM152	95.17 86.97 : 115.76
Vanadium	TM152	100.5 89.61 : 115.48
Zinc	TM152	100.67 87.51 : 116.26

Dissolved Organic/Inorganic Carbon

Component	Method Code	QC 2307
Dissolved Inorganic Carbon	TM090	100.0 93.58 : 112.28
Dissolved Organic Carbon	TM090	101.83 96.13 : 109.53

Fluoride

Component	Method Code	QC 2395
Fluoride	TM104	104.67 96.67 : 108.67

Mercury Dissolved



CERTIFICATE OF ANALYSIS

Validated

SDG: 201030-180
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 580416
Superseded Report:

Mercury Dissolved

Component	Method Code	QC 2373
Mercury Dissolved (CVAf)	TM183	90.8 69.30 : 128.70

PAH by GCMS

Component	Method Code	QC 2368
Acenaphthene	TM218	90.0 78.59 : 112.16
Acenaphthylene	TM218	87.0 75.11 : 109.01
Anthracene	TM218	87.5 73.99 : 113.85
Benz(a)anthracene	TM218	92.5 69.31 : 119.18
Benzo(a)pyrene	TM218	104.5 66.97 : 114.92
Benzo(b)fluoranthene	TM218	90.0 67.41 : 114.46
Benzo(ghi)perylene	TM218	97.0 62.92 : 114.36
Benzo(k)fluoranthene	TM218	92.5 69.98 : 116.49
Chrysene	TM218	88.0 69.86 : 114.50
Dibenzo(ah)anthracene	TM218	97.5 64.54 : 115.22
Fluoranthene	TM218	87.0 72.56 : 111.70
Fluorene	TM218	91.5 79.13 : 111.49
Indeno(123cd)pyrene	TM218	92.0 61.22 : 113.25
Naphthalene	TM218	88.5 77.96 : 110.91
Phenanthrene	TM218	90.0 76.83 : 113.25
Pyrene	TM218	85.5 72.45 : 110.77

PCBs by GCMS

Component	Method Code	QC 2397
PCB congener 101	TM168	88.0 79.46 : 109.70
PCB congener 105	TM168	78.8 66.33 : 105.75
PCB congener 114	TM168	81.6 66.41 : 106.49
PCB congener 118	TM168	81.2 70.33 : 110.29



CERTIFICATE OF ANALYSIS

Validated

SDG: 201030-180
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 580416
Superseded Report:

PCBs by GCMS

		QC 2397
PCB congener 123	TM168	82.9 65.01 : 99.81
PCB congener 126	TM168	81.2 59.31 : 109.23
PCB congener 138	TM168	81.0 63.95 : 107.63
PCB congener 153	TM168	80.0 62.65 : 108.85
PCB congener 156	TM168	83.0 61.69 : 112.27
PCB congener 157	TM168	76.9 67.15 : 109.93
PCB congener 167	TM168	80.7 65.58 : 109.14
PCB congener 169	TM168	79.7 56.84 : 112.10
PCB congener 180	TM168	81.8 66.99 : 111.63
PCB congener 189	TM168	81.7 57.75 : 112.59
PCB congener 28	TM168	87.9 73.68 : 105.96
PCB congener 52	TM168	85.9 67.24 : 107.62
PCB congener 77	TM168	82.5 64.87 : 108.49
PCB congener 81	TM168	86.7 70.78 : 110.80

Phenols by HPLC (W)

Component	Method Code	QC 2305
2,3,5 Trimethyl-Phenol by HPLC (W)	TM259	102.0 91.00 : 109.00
2-Isopropyl Phenol by HPLC (W)	TM259	102.0 85.00 : 109.00
Cresols by HPLC (W)	TM259	100.0 92.00 : 110.00
Naphthol by HPLC (W)	TM259	111.0 86.00 : 128.00
Phenol by HPLC (W)	TM259	100.0 88.24 : 111.76
Xylenols by HPLC (W)	TM259	105.33 94.83 : 110.83

Total Dissolved Solids

Component	Method Code	QC 2302
Total Dissolved Solids	TM123	98.1 97.30 : 100.92



CERTIFICATE OF ANALYSIS

Validated

SDG: 201030-180
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 580416
Superseded Report:

Total Organic Carbon

Component	Method Code	QC 2397
Total Organic Carbon	TM132	104.3 87.02 : 113.45

VOC MS (S)

Component	Method Code	QC 2388
1,1,1,2-tetrachloroethane	TM116	95.4 84.84 : 116.25
1,1,1-Trichloroethane	TM116	96.4 73.73 : 118.05
1,1,2-Trichloroethane	TM116	97.0 77.12 : 116.04
1,1-Dichloroethane	TM116	100.4 74.46 : 129.15
1,2-Dichloroethane	TM116	107.8 92.38 : 131.65
1,4-Dichlorobenzene	TM116	102.0 83.64 : 126.18
2-Chlorotoluene	TM116	96.8 76.03 : 113.25
4-Chlorotoluene	TM116	90.4 66.90 : 112.46
Benzene	TM116	98.8 88.60 : 113.80
Carbon Disulphide	TM116	100.2 74.91 : 122.14
Carbontetrachloride	TM116	104.2 80.31 : 124.50
Chlorobenzene	TM116	100.8 83.81 : 114.18
Chloroform	TM116	101.8 87.40 : 122.49
Chloromethane	TM116	83.6 65.89 : 136.93
Cis-1,2-Dichloroethene	TM116	98.6 80.67 : 126.72
Dibromomethane	TM116	98.2 73.23 : 118.35
Dichloromethane	TM116	107.4 81.11 : 133.25
Ethylbenzene	TM116	92.0 75.92 : 110.41
Hexachlorobutadiene	TM116	61.2 12.82 : 152.73
Isopropylbenzene	TM116	78.0 55.79 : 97.59
Naphthalene	TM116	103.6 80.86 : 128.81
o-Xylene	TM116	86.4 69.99 : 108.74



CERTIFICATE OF ANALYSIS

Validated

SDG: 201030-180
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 580416
Superseded Report:

VOC MS (S)

		QC 2388
p/m-Xylene	TM116	90.5 68.32 : 108.91
Sec-Butylbenzene	TM116	71.2 38.50 : 101.50
Tetrachloroethene	TM116	102.2 76.95 : 121.02
Toluene	TM116	92.8 74.24 : 107.42
Trichloroethene	TM116	97.2 77.61 : 111.54
Trichlorofluoromethane	TM116	105.0 84.55 : 133.27
Vinyl Chloride	TM116	100.0 68.02 : 143.37

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis .

The figure detailed is the percentage recovery result for the AQC .

The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control .



CERTIFICATE OF ANALYSIS

Validated

SDG: 201030-180
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

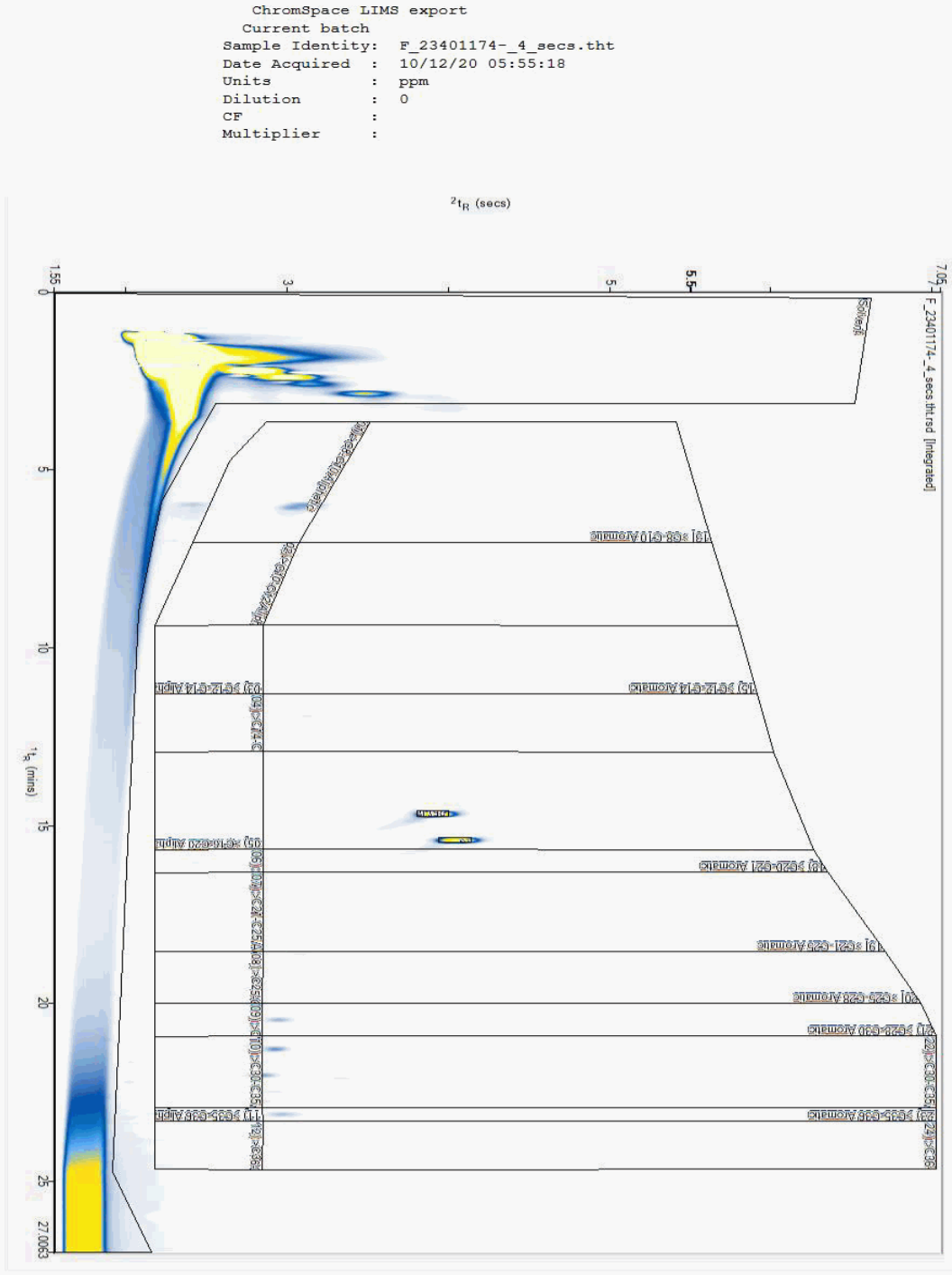
Report Number: 580416
Superseded Report:

Chromatogram

Analysis: EPH by GCxGC-FID

Sample No : 23401174
Sample ID : R71917

Depth : 0.50





CERTIFICATE OF ANALYSIS

SDG: 201030-180 Client Reference: JFR1451 Report Number: 580416
 Location: A303 Stonehenge Order Number: Superseded Report:

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

19. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung. Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017)*.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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RPS Consultants Ltd
260 Park Avenue
Aztec West
Almondsbury
Bristol
BS32 4SY

Attention: Gary Riches

CERTIFICATE OF ANALYSIS

Date of report Generation: 26 November 2020
Customer: RPS Consultants Ltd
Sample Delivery Group (SDG): 201103-83
Your Reference: JFF 1451
Location: A303 Stonehenge
Report No: 577342

We received 6 samples on Tuesday November 03, 2020 and 6 of these samples were scheduled for analysis which was completed on Thursday November 26, 2020. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

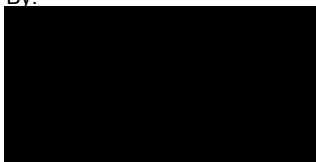
Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:



Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 201103-83
Location: A303 Stonehenge

Client Reference: JFF 1451
Order Number:

Report Number: 577342
Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
23169963	TPB		0.30	29/10/2020
23169964	TPB		0.50	29/10/2020
23169965	TPB		1.00	29/10/2020
23169960	TPC		0.30	29/10/2020
23169961	TPC		0.60	29/10/2020
23169962	TPC		1.10	29/10/2020

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG:	201103-83	Client Reference:	JFF 1451	Report Number:	577342
Location:	A303 Stonehenge	Order Number:		Superseded Report:	

Results Legend

- X Test
- N No Determination Possible

Sample Types -

- S - Soil/Solid
- UNS - Unspecified Solid
- GW - Ground Water
- SW - Surface Water
- LE - Land Leachate
- PL - Prepared Leachate
- PR - Process Water
- SA - Saline Water
- TE - Trade Effluent
- TS - Treated Sewage
- US - Untreated Sewage
- RE - Recreational Water
- DW - Drinking Water Non-regulatory
- UNL - Unspecified Liquid
- SL - Sludge
- G - Gas
- OTH - Other

	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type							
							23169963	23169964	23169965	23169960	23169961	23169962	
Alkali Metals by iCap-OES (Soil)	All	NDPs: 0 Tests: 6	X	X	X	X	X	X	X				
Alkalinity as CaCO3	All	NDPs: 0 Tests: 6	X	X	X	X	X	X	X				
Ammonium Soil by Titration	All	NDPs: 0 Tests: 6	X	X	X	X	X	X	X				
Anions by Kone (soil)	All	NDPs: 0 Tests: 6	X	X	X	X	X	X	X				
EPH	All	NDPs: 0 Tests: 6	X	X	X	X	X	X	X				
EPH by GCxGC-FID	All	NDPs: 0 Tests: 6	X	X	X	X	X	X	X				
GRO by GC-FID (S)	All	NDPs: 0 Tests: 3					X		X		X		
Metals in solid samples by OES	All	NDPs: 0 Tests: 6	X	X	X	X	X	X	X				
PAH by GCMS	All	NDPs: 0 Tests: 6	X	X	X	X	X	X	X				
pH	All	NDPs: 0 Tests: 6	X	X	X	X	X	X	X				
Sample description	All	NDPs: 0 Tests: 5	X	X	X			X	X				
Total Organic Carbon	All	NDPs: 0 Tests: 6	X	X	X	X	X	X	X				
VOC MS (S)	All	NDPs: 0 Tests: 6	X	X	X	X	X	X	X				



CERTIFICATE OF ANALYSIS

Validated

SDG: 201103-83
Location: A303 Stonehenge

Client Reference: JFF 1451
Order Number:

Report Number: 577342
Superseded Report:

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm
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Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
23169963	TPB	0.30	Light Brown	N/A	Stones	Vegetation
23169964	TPB	0.50	Light Brown	N/A	Stones	Vegetation
23169965	TPB	1.00	Cream	N/A	Stones	Vegetation
23169960	TPC	0.30	Light Brown	Sandy Loam	Stones	None
23169961	TPC	0.60	White	Chalk	Stones	None
23169962	TPC	1.10	White	Chalk	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.



CERTIFICATE OF ANALYSIS

Validated

SDG:	201103-83	Client Reference:	JFF 1451	Report Number:	577342
Location:	A303 Stonehenge	Order Number:		Superseded Report:	

Results Legend # ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.fit Dissolved / filtered sample. tot.unfit Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4* @ Sample deviation (see appendix)		Customer Sample Ref. Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	TPB	TPB	TPB	TPC	TPC	TPC
Component	LOD/Units	Method						
Moisture Content Ratio (% of as received sample)	%	PM024	14	12	14	18	21	21
Exchangeable Ammonia as N	<12 mg/kg	TM024	<12	<12	<12	<12	<12	<12
Organic Carbon, Total	<0.2 %	TM132	0.693	0.205	<0.2	0.583	<0.2	<0.2
Fraction Organic Carbon (FOC)	<0.002	TM132	0.00693	0.00205	<0.002	0.00583	<0.002	<0.002
pH	1 pH Units	TM133	8.47	8.76	9.07	8.61	8.95	9.1
Arsenic	<0.6 mg/kg	TM181	3.3	1.86	<0.6	1.93	<0.6	<0.6
Barium	<0.6 mg/kg	TM181	45.5	23.3	10.4	30.6	11	10.1
Cadmium	<0.02 mg/kg	TM181	0.507	0.316	0.242	0.335	0.206	0.186
Chromium	<0.9 mg/kg	TM181	8.18	3.89	1.09	5.04	1.42	1.61
Copper	<1.4 mg/kg	TM181	2.68	2.05	<1.4	2.59	<1.4	<1.4
Iron	<1000 mg/kg	TM181	7250	4110	<1000	5100	<1000	<1000
Lead	<0.7 mg/kg	TM181	5.63	1.68	<0.7	4.06	<0.7	1.6
Manganese	<0.13 mg/kg	TM181	469	271	177	363	212	202
Mercury	<0.14 mg/kg	TM181	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14
Molybdenum	<0.1 mg/kg	TM181	0.211	0.135	0.104	0.141	<0.1	<0.1
Nickel	<0.2 mg/kg	TM181	8.59	5.72	2.32	5.95	1.72	1.79
Phosphorus	<1 mg/kg	TM181	567	453	351	593	451	339
Selenium	<1 mg/kg	TM181	<1	<1	<1	<1	<1	<1
Zinc	<1.9 mg/kg	TM181	31.4	20	14.2	26.8	11.8	12.5
Calcium	<21 mg/kg	TM224	257000	299000	330000	404000	450000	223000
Sodium	<7 mg/kg	TM224	151	173	194	166	184	180
Magnesium	<8 mg/kg	TM224	1620	1340	919	1330	849	838
Potassium	<16 mg/kg	TM224	711	614	177	597	153	170
Alkalinity, Bicarbonate as CaCO3	<10 mg/kg	TM230	154	107	72.5	138	95.3	107
Alkalinity, Carbonate as CaCO3	<10 mg/kg	TM230	<10	<10	29	12.3	31.8	25.2
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243	<0.004	0.01	0.0072	<0.004	<0.004	0.0089
Chloride (soluble)	<5 mg/kg	TM243	6.6	12.6	15.3	8.16	21.7	15.1
EPH (C5-C40)	<35 mg/kg	TM415	<35	<35	<35	<35	<35	<35
EPH Surrogate % recovery**	%	TM415	106	105	100	92.8	91.6	99.6
EPH >C10-C40	<35 mg/kg	TM415	<35	<35	<35	<35	<35	<35
			@ M	@	@	@ M	@ #	@ #



CERTIFICATE OF ANALYSIS

Validated

SDG: 201103-83
Location: A303 Stonehenge

Client Reference: JFF 1451
Order Number:

Report Number: 577342
Superseded Report:

GRO by GC-FID (S)

Table with columns: Results Legend, Customer Sample Ref., TPC, TPC, TPC. Includes rows for GRO TOT (Moisture Corrected), GRO TOT uncorrected, and GRO >C5-C10.



CERTIFICATE OF ANALYSIS

Validated

SDG: 201103-83
Location: A303 Stonehenge

Client Reference: JFF 1451
Order Number:

Report Number: 577342
Superseded Report:

PAH by GCMS

Results Legend			Customer Sample Ref.	TPB	TPB	TPB	TPC	TPC	TPC
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.30	0.50	1.00	0.30	0.60	1.10
M	mCERTS accredited.			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
aq	Aqueous / settled sample.			29/10/2020	29/10/2020	29/10/2020	29/10/2020	29/10/2020	29/10/2020
diss.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted - refer to subcontractor report for accreditation status.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery			03/11/2020	03/11/2020	03/11/2020	03/11/2020	03/11/2020	03/11/2020
(F)	Trigger breach confirmed			201103-83	201103-83	201103-83	201103-83	201103-83	201103-83
1-4*\$@	Sample deviation (see appendix)			23169963	23169964	23169965	23169960	23169961	23169962
Component	LOD/Units	Method							
Naphthalene-d8 % recovery**	%	TM218	95.5	92	94.9	92.9	95.3	94.2	
Acenaphthene-d10 % recovery**	%	TM218	94.1	90.9	93.7	91.2	91.9	93.4	
Phenanthrene-d10 % recovery**	%	TM218	97.6	93.5	95.8	93.7	93.1	89.6	
Chrysene-d12 % recovery**	%	TM218	94	89.4	88.9	91.3	84.9	86.4	
Perylene-d12 % recovery**	%	TM218	97.9	94.5	92.6	94.2	85.3	94.1	
Naphthalene	<9 µg/kg	TM218	<9 @ #	<9 @	<9 @	<9 @ M	<9 @ #	<9 @ #	
Acenaphthylene	<12 µg/kg	TM218	18.2 @ #	<12 @	<12 @	46.5 @ M	<12 @ #	<12 @ #	
Acenaphthene	<8 µg/kg	TM218	<8 @ #	<8 @	<8 @	10.2 @ M	<8 @ #	<8 @ #	
Fluorene	<10 µg/kg	TM218	<10 @ #	<10 @	<10 @	<10 @ M	<10 @ #	<10 @ #	
Phenanthrene	<15 µg/kg	TM218	79.1 @ #	26.1 @	61.1 @	247 @ M	<15 @ #	<15 @ #	
Anthracene	<16 µg/kg	TM218	24.9 @ #	<16 @	<16 @	72.5 @ M	<16 @ #	<16 @ #	
Fluoranthene	<17 µg/kg	TM218	394 @ #	111 @	106 @	823 @ M	47.3 @ #	25 @ #	
Pyrene	<15 µg/kg	TM218	380 @ #	104 @	89 @	721 @ M	42.2 @ #	22.4 @ #	
Benz(a)anthracene	<14 µg/kg	TM218	208 @ #	58.2 @	50.9 @	435 @ M	28 @ #	18 @ #	
Chrysene	<10 µg/kg	TM218	237 @ #	55.3 @	41.9 @	438 @ M	30.2 @ #	17.6 @ #	
Benzo(b)fluoranthene	<15 µg/kg	TM218	446 @ #	112 @	60.1 @	747 @ M	43.8 @ #	28.7 @ #	
Benzo(k)fluoranthene	<14 µg/kg	TM218	186 @ #	41.7 @	21.6 @	285 @ M	<14 @ #	<14 @ #	
Benzo(a)pyrene	<15 µg/kg	TM218	302 @ #	76.9 @	40.5 @	489 @ M	27.9 @ #	<15 @ #	
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	286 @ #	63.1 @	29.2 @	410 @ M	33.6 @ #	<18 @ #	
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	33.6 @ #	<23 @	<23 @	42.6 @ M	<23 @ #	<23 @ #	
Benzo(g,h,i)perylene	<24 µg/kg	TM218	291 @ #	75.3 @	28 @	369 @ M	<24 @ #	<24 @ #	
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	2890	723	528	5140	253	<118	



CERTIFICATE OF ANALYSIS

Validated

SDG: 201103-83
Location: A303 Stonehenge

Client Reference: JFF 1451
Order Number:

Report Number: 577342
Superseded Report:

VOC MS (S)

Results Legend			Customer Sample Ref.	TPB	TPB	TPB	TPC	TPC	TPC					
#	ISO17025 accredited.													
M	mCERTS accredited.													
aq	Aqueous / settled sample.													
diss.filt	Dissolved / filtered sample.													
tot.unfilt	Total / unfiltered sample.													
*	Subcontracted - refer to subcontractor report for accreditation status.													
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery													
(F)	Trigger breach confirmed													
1-4*3@	Sample deviation (see appendix)													
Component	LOD/Units	Method	Depth (m)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)					
Dibromofluoromethane**	%	TM116	0.30	102 @	0.50	101 @	1.00	101 @	0.30	113 @	0.60	124 @	1.10	115 @
Toluene-d8**	%	TM116	29/10/2020	98 @	29/10/2020	98.8 @	29/10/2020	99 @	29/10/2020	98.2 @	29/10/2020	103 @	29/10/2020	102 @
4-Bromofluorobenzene**	%	TM116	Date Sampled	86.2 @	Date Sampled	92.8 @	Date Sampled	95.1 @	Date Sampled	89.4 @	Date Sampled	105 @	Date Sampled	100 @
Methyl Tertiary Butyl Ether	<10 µg/kg	TM116	Sampled Time	<10 @ M	Sampled Time	<10 @	Sampled Time	<10 @	Sampled Time	<10 @ M	Sampled Time	<10 @ #	Sampled Time	<10 @ #
Benzene	<9 µg/kg	TM116	Date Received	<9 @ M	Date Received	<9 @	Date Received	<9 @	Date Received	<9 @ M	Date Received	<9 @ #	Date Received	<9 @ #
Toluene	<7 µg/kg	TM116	Date Received	<7 @ M	Date Received	<7 @	Date Received	<7 @	Date Received	<7 @ M	Date Received	<7 @ #	Date Received	<7 @ #
Ethylbenzene	<4 µg/kg	TM116	SDG Ref	<4 @ M	SDG Ref	<4 @	SDG Ref	<4 @	SDG Ref	<4 @ M	SDG Ref	<4 @ #	SDG Ref	<4 @ #
p/m-Xylene	<10 µg/kg	TM116	Lab Sample No.(s)	<10 @ #	Lab Sample No.(s)	<10 @	Lab Sample No.(s)	<10 @	Lab Sample No.(s)	<10 @ #	Lab Sample No.(s)	<10 @ #	Lab Sample No.(s)	<10 @ #
o-Xylene	<10 µg/kg	TM116	AGS Reference	<10 @ M	AGS Reference	<10 @	AGS Reference	<10 @	AGS Reference	<10 @ M	AGS Reference	<10 @ #	AGS Reference	<10 @ #
Sum of BTEX	<40 µg/kg	TM116		<40 @		<40 @		<40 @		<40 @		<40 @		<40 @



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Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM224	US EPA Method 6010B	Determination of Alkaline Metals by iCap 6500 Duo ICP-OES
TM230	Methods 2320B and 4500-CO2 D, AWWA/APHA 19th Edition, 1995.	Determination of Alkalinity in Aqueous Sludge and Soil extracts
TM243		Mixed Anions In Soils By Kone
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).



CERTIFICATE OF ANALYSIS

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Test Completion Dates

Lab Sample No(s)	23169963	23169964	23169965	23169960	23169961	23169962
Customer Sample Ref.	TPB	TPB	TPB	TPC	TPC	TPC
AGS Ref.						
Depth	0.30	0.50	1.00	0.30	0.60	1.10
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)

Alkali Metals by iCap-OES (Soil)	25-Nov-2020	25-Nov-2020	25-Nov-2020	25-Nov-2020	25-Nov-2020	24-Nov-2020
Alkalinity as CaCO3	19-Nov-2020	19-Nov-2020	19-Nov-2020	19-Nov-2020	19-Nov-2020	19-Nov-2020
Ammonium Soil by Titration	19-Nov-2020	19-Nov-2020	19-Nov-2020	19-Nov-2020	19-Nov-2020	19-Nov-2020
Anions by Kone (soil)	25-Nov-2020	24-Nov-2020	24-Nov-2020	25-Nov-2020	25-Nov-2020	25-Nov-2020
EPH	24-Nov-2020	24-Nov-2020	24-Nov-2020	24-Nov-2020	24-Nov-2020	24-Nov-2020
EPH by GCxGC-FID	19-Nov-2020	19-Nov-2020	19-Nov-2020	19-Nov-2020	19-Nov-2020	19-Nov-2020
GRO by GC-FID (S)	24-Nov-2020	24-Nov-2020	24-Nov-2020			
Metals in solid samples by OES	26-Nov-2020	26-Nov-2020	26-Nov-2020	24-Nov-2020	24-Nov-2020	20-Nov-2020
PAH by GCMS	18-Nov-2020	18-Nov-2020	18-Nov-2020	18-Nov-2020	18-Nov-2020	19-Nov-2020
pH	18-Nov-2020	18-Nov-2020	18-Nov-2020	18-Nov-2020	18-Nov-2020	18-Nov-2020
Sample description	17-Nov-2020	17-Nov-2020	17-Nov-2020	17-Nov-2020	17-Nov-2020	17-Nov-2020
Total Organic Carbon	23-Nov-2020	24-Nov-2020	23-Nov-2020	24-Nov-2020	24-Nov-2020	19-Nov-2020
VOC MS (S)	24-Nov-2020	24-Nov-2020	24-Nov-2020	23-Nov-2020	23-Nov-2020	23-Nov-2020



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ASSOCIATED AQC DATA

Alkali Metals by iCap-OES (Soil)

Component	Method Code	QC 2356	QC 2366	QC 2340
Calcium	TM224	96.83 80.29 : 119.71	98.68 80.29 : 119.71	98.94 80.29 : 119.71
Magnesium	TM224	94.41 81.99 : 118.01	97.58 81.99 : 118.01	98.88 81.99 : 118.01
Potassium	TM224	98.73 72.21 : 127.79	104.78 72.21 : 127.79	104.14 72.21 : 127.79
Sodium	TM224	97.04 83.09 : 114.47	96.24 83.09 : 114.47	98.39 83.09 : 114.47

Ammonium Soil by Titration

Component	Method Code	QC 2373	QC 2387
Exchangeable Ammonium as NH4	TM024	84.58 76.20 : 110.13	84.08 76.20 : 110.13

Anions by Kone (soil)

Component	Method Code	QC 2323	QC 2335	QC 2345
Chloride (soluble)	TM243	144.56 86.68 : 115.67	144.56 86.68 : 115.67	141.97 86.68 : 115.67
Water Soluble Sulphate as SO4 2:1 Extract	TM243	159.81 70.00 : 130.00	157.01 70.00 : 130.00	157.94 70.00 : 130.00

GRO by GC-FID (S)

Component	Method Code	QC 2395	QC 2397
QC	TM089	88.72 70.75 : 114.19	81.58 70.34 : 111.95

Metals in solid samples by OES

Component	Method Code	QC 2356	QC 2366	QC 2340
Aluminium	TM181	98.23 73.56 : 108.85	98.23 73.56 : 108.85	98.23 73.56 : 108.85
Antimony	TM181	91.87 76.89 : 111.24	96.75 76.89 : 111.24	95.53 76.89 : 111.24
Arsenic	TM181	98.84 88.53 : 111.01	99.71 88.53 : 111.01	104.07 88.53 : 111.01
Barium	TM181	94.5 77.67 : 105.35	95.41 77.67 : 105.35	96.33 77.67 : 105.35
Beryllium	TM181	99.25 85.44 : 109.61	98.13 85.44 : 109.61	104.1 85.44 : 109.61
Boron	TM181	89.97 73.51 : 104.66	90.54 73.51 : 104.66	93.41 73.51 : 104.66



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Metals in solid samples by OES

		QC 2356	QC 2366	QC 2340
Cadmium	TM181	90.12 77.67 : 104.12	89.3 77.67 : 104.12	91.77 77.67 : 104.12
Chromium	TM181	92.9 86.11 : 106.21	91.28 86.11 : 106.21	93.71 86.11 : 106.21
Cobalt	TM181	91.82 84.60 : 104.13	89.94 84.60 : 104.13	93.08 84.60 : 104.13
Copper	TM181	90.67 82.40 : 105.45	92.43 82.40 : 105.45	90.67 82.40 : 105.45
Iron	TM181	98.41 82.95 : 110.58	96.83 82.95 : 110.58	100.0 82.95 : 110.58
Lead	TM181	97.3 78.24 : 104.05	89.19 78.24 : 104.05	94.14 78.24 : 104.05
Manganese	TM181	106.67 94.29 : 119.51	107.22 94.29 : 119.51	113.33 94.29 : 119.51
Mercury	TM181	93.72 83.16 : 107.81	95.17 83.16 : 107.81	97.1 83.16 : 107.81
Molybdenum	TM181	95.47 87.11 : 106.87	96.3 87.11 : 106.87	95.47 87.11 : 106.87
Nickel	TM181	92.91 80.26 : 102.28	91.93 80.26 : 102.28	93.64 80.26 : 102.28
Phosphorus	TM181	103.43 94.56 : 124.28	104.44 94.56 : 124.28	108.08 94.56 : 124.28
Selenium	TM181	97.65 82.28 : 110.48	96.08 82.28 : 110.48	100.0 82.28 : 110.48
Strontium	TM181	94.88 79.13 : 102.79	93.99 79.13 : 102.79	89.98 79.13 : 102.79
Thallium	TM181	100.44 82.94 : 111.86	98.67 82.94 : 111.86	100.44 82.94 : 111.86
Tin	TM181	98.86 86.72 : 110.03	100.76 86.72 : 110.03	103.42 86.72 : 110.03
Titanium	TM181	83.21 66.23 : 102.06	76.34 66.23 : 102.06	80.15 66.23 : 102.06
Vanadium	TM181	95.24 75.51 : 108.87	95.6 86.19 : 109.45	95.24 86.19 : 109.45
Zinc	TM181	97.54 84.68 : 113.99	99.59 84.68 : 113.99	102.67 84.68 : 113.99

PAH by GCMS

Component	Method Code	QC 2300	QC 2349	QC 2358
Acenaphthene	TM218	89.0 80.97 : 105.99	90.0 80.97 : 105.99	86.5 76.79 : 103.90
Acenaphthylene	TM218	87.0 74.76 : 107.36	88.5 74.76 : 107.36	87.0 78.40 : 108.66
Anthracene	TM218	88.5 73.04 : 106.97	88.5 73.04 : 106.97	84.0 70.90 : 109.22
Benz(a)anthracene	TM218	85.0 68.79 : 119.64	78.0 68.79 : 119.64	86.0 73.77 : 119.26
Benzo(a)pyrene	TM218	82.0 66.17 : 117.52	73.5 66.17 : 117.52	80.5 73.20 : 114.18
Benzo(b)fluoranthene	TM218	84.0 66.40 : 118.34	73.0 66.40 : 118.34	81.5 75.36 : 117.58
Benzo(ghi)perylene	TM218	80.0 67.68 : 112.07	73.5 67.68 : 112.07	77.5 70.73 : 116.12



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PAH by GCMS

		QC 2300	QC 2349	QC 2358
Benzo(k)fluoranthene	TM218	84.5 72.84 : 114.66	75.5 72.84 : 114.66	81.5 75.98 : 116.59
Chrysene	TM218	85.5 68.39 : 115.56	79.5 68.39 : 115.56	82.5 74.82 : 114.18
Dibenzo(ah)anthracene	TM218	81.5 69.03 : 110.45	74.0 69.03 : 110.45	82.5 69.17 : 115.30
Fluoranthene	TM218	86.0 69.37 : 117.19	80.5 69.37 : 117.19	79.5 75.88 : 112.84
Fluorene	TM218	88.0 75.38 : 105.98	89.0 75.38 : 105.98	86.5 76.66 : 107.56
Indeno(123cd)pyrene	TM218	78.5 65.91 : 113.61	67.0 65.91 : 113.61	81.5 70.26 : 117.95
Naphthalene	TM218	90.5 71.40 : 105.87	89.0 71.40 : 105.87	85.0 74.70 : 101.83
Phenanthrene	TM218	90.0 74.04 : 109.30	89.0 74.04 : 109.30	83.0 73.62 : 109.34
Pyrene	TM218	87.0 69.68 : 115.27	80.5 69.68 : 115.27	79.5 71.46 : 117.00

pH

Component	Method Code	QC 2323	QC 2312
pH	TM133	99.47 99.06 : 100.67	99.21 99.06 : 100.67

Total Organic Carbon

Component	Method Code	QC 2392	QC 2373	QC 2350
Total Organic Carbon	TM132	104.69 87.02 : 113.45	101.17 87.02 : 113.45	103.13 87.02 : 113.45

VOC MS (S)

Component	Method Code	QC 2318	QC 2306
1,1,1,2-tetrachloroethane	TM116	103.8 84.84 : 116.25	95.4 84.84 : 116.25
1,1,1-Trichloroethane	TM116	95.2 73.73 : 118.05	91.2 73.73 : 118.05
1,1,2-Trichloroethane	TM116	99.0 77.12 : 116.04	91.2 77.12 : 116.04
1,1-Dichloroethane	TM116	103.0 74.46 : 129.15	97.4 74.46 : 129.15
1,2-Dichloroethane	TM116	113.6 92.38 : 131.65	109.4 92.38 : 131.65
1,4-Dichlorobenzene	TM116	107.6 83.64 : 126.18	95.8 83.64 : 126.18
2-Chlorotoluene	TM116	98.8 76.03 : 113.25	87.8 76.03 : 113.25



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Superseded Report:

VOC MS (S)

		QC 2318	QC 2306
4-Chlorotoluene	TM116	99.4 66.90 : 112.46	85.4 66.90 : 112.46
Benzene	TM116	102.6 88.60 : 113.80	98.6 88.60 : 113.80
Carbon Disulphide	TM116	87.6 74.91 : 122.14	81.0 74.91 : 122.14
Carbontetrachloride	TM116	104.6 80.31 : 124.50	100.4 80.31 : 124.50
Chlorobenzene	TM116	104.0 83.81 : 114.18	97.2 83.81 : 114.18
Chloroform	TM116	106.0 87.40 : 122.49	100.4 87.40 : 122.49
Chloromethane	TM116	108.6 65.89 : 136.93	102.0 65.89 : 136.93
Cis-1,2-Dichloroethene	TM116	102.0 80.67 : 126.72	96.6 80.67 : 126.72
Dibromomethane	TM116	96.8 73.23 : 118.35	85.0 73.23 : 118.35
Dichloromethane	TM116	113.2 81.11 : 133.25	105.6 81.11 : 133.25
Ethylbenzene	TM116	93.2 75.92 : 110.41	86.4 75.92 : 110.41
Hexachlorobutadiene	TM116	86.8 12.82 : 152.73	59.6 12.82 : 152.73
Isopropylbenzene	TM116	78.6 55.79 : 97.59	69.2 55.79 : 97.59
Naphthalene	TM116	114.6 80.86 : 128.81	108.4 80.86 : 128.81
o-Xylene	TM116	87.0 69.99 : 108.74	78.8 69.99 : 108.74
p/m-Xylene	TM116	88.8 68.32 : 108.91	81.7 68.32 : 108.91
Sec-Butylbenzene	TM116	69.2 38.50 : 101.50	57.8 38.50 : 101.50
Tetrachloroethene	TM116	102.4 76.95 : 121.02	93.6 76.95 : 121.02
Toluene	TM116	95.6 74.24 : 107.42	89.8 74.24 : 107.42
Trichloroethene	TM116	99.2 77.61 : 111.54	97.8 77.61 : 111.54
Trichlorofluoromethane	TM116	111.8 84.55 : 133.27	104.2 84.55 : 133.27
Vinyl Chloride	TM116	111.4 68.02 : 143.37	106.0 68.02 : 143.37

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis .

The figure detailed is the percentage recovery result for the AQC .

The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control .



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SDG: 201103-83
Location: A303 Stonehenge

Client Reference: JFF 1451
Order Number:

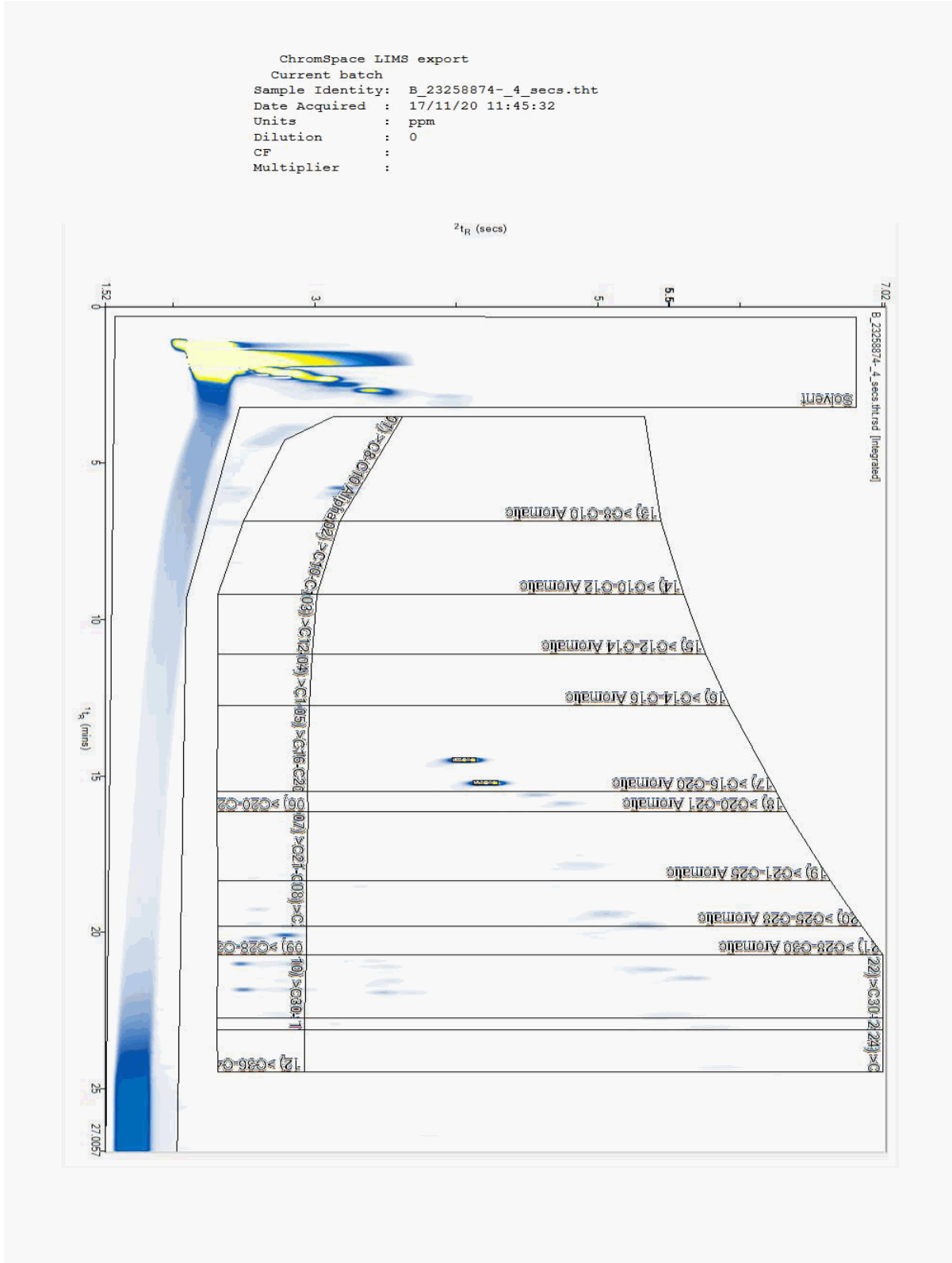
Report Number: 577342
Superseded Report:

Chromatogram

Analysis: EPH by GCxGC-FID

Sample No : 23258874
Sample ID : TPB

Depth : 0.30





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Client Reference: JFF 1451
Order Number:

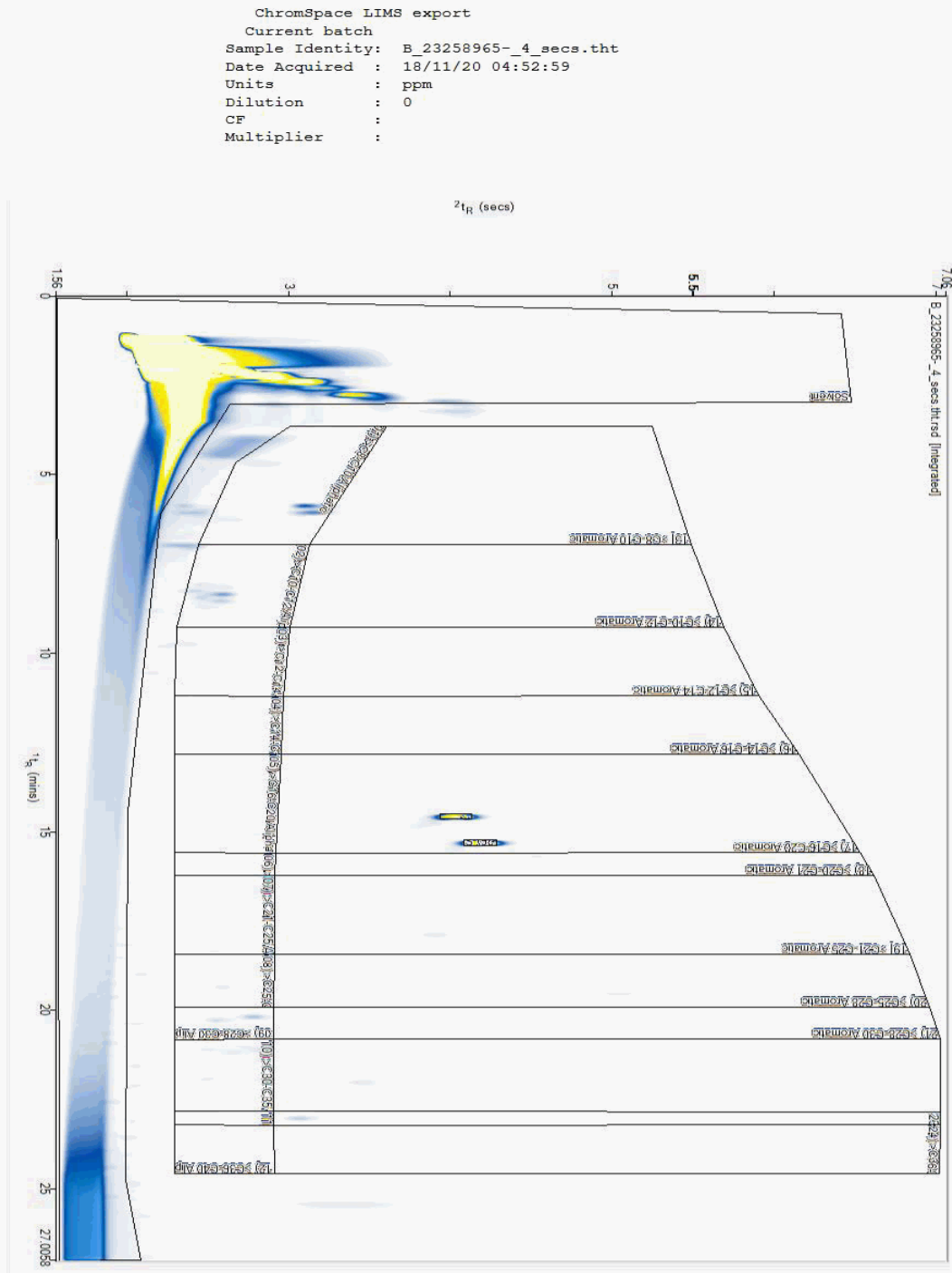
Report Number: 577342
Superseded Report:

Chromatogram

Analysis: EPH by GCxGC-FID

Sample No : 23258965
Sample ID : TPC

Depth : 1.10





CERTIFICATE OF ANALYSIS

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SDG: 201103-83
Location: A303 Stonehenge

Client Reference: JFF 1451
Order Number:

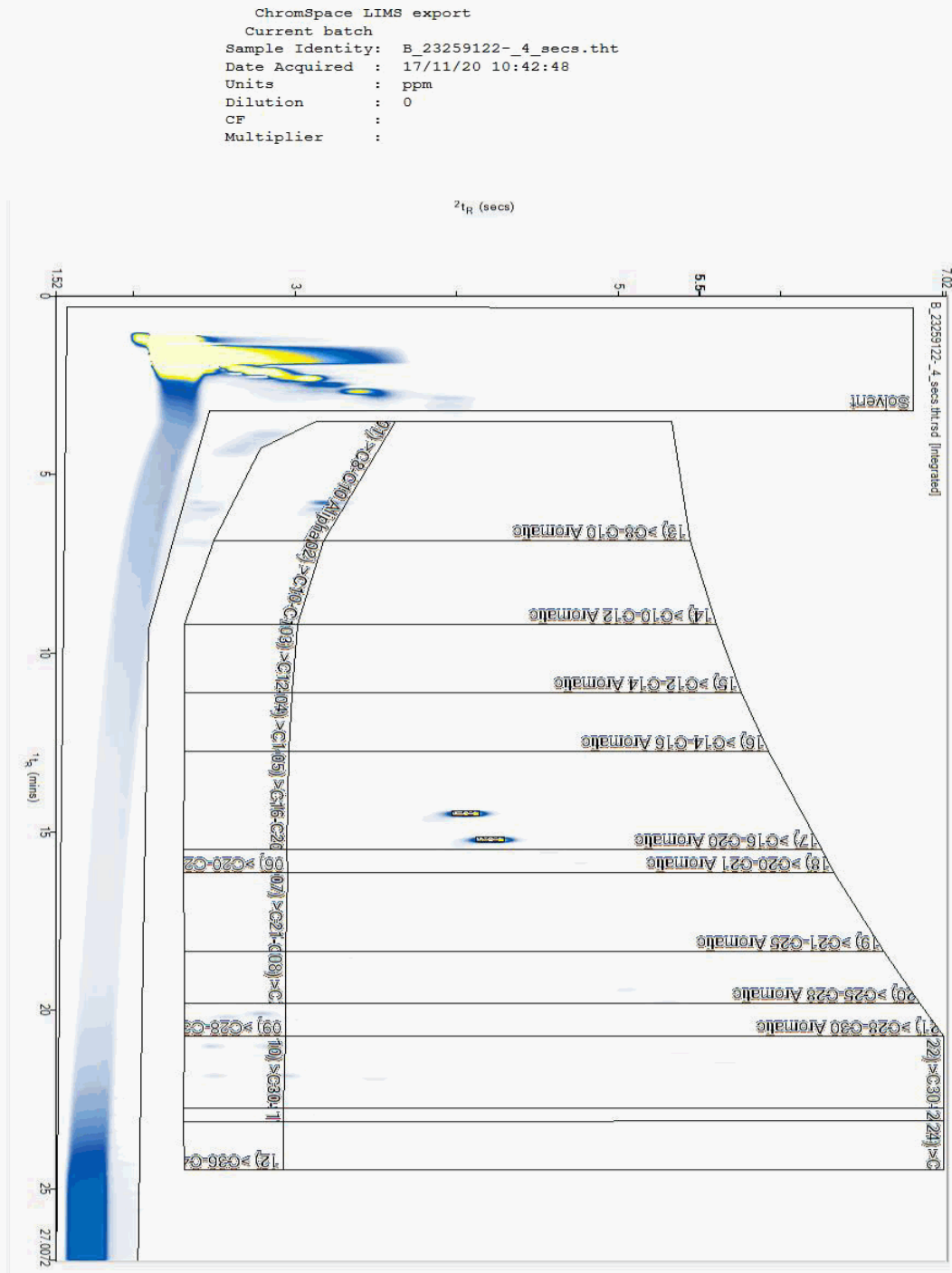
Report Number: 577342
Superseded Report:

Chromatogram

Analysis: EPH by GCxGC-FID

Sample No : 23259122
Sample ID : TPB

Depth : 0.50





CERTIFICATE OF ANALYSIS

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SDG: 201103-83
Location: A303 Stonehenge

Client Reference: JFF 1451
Order Number:

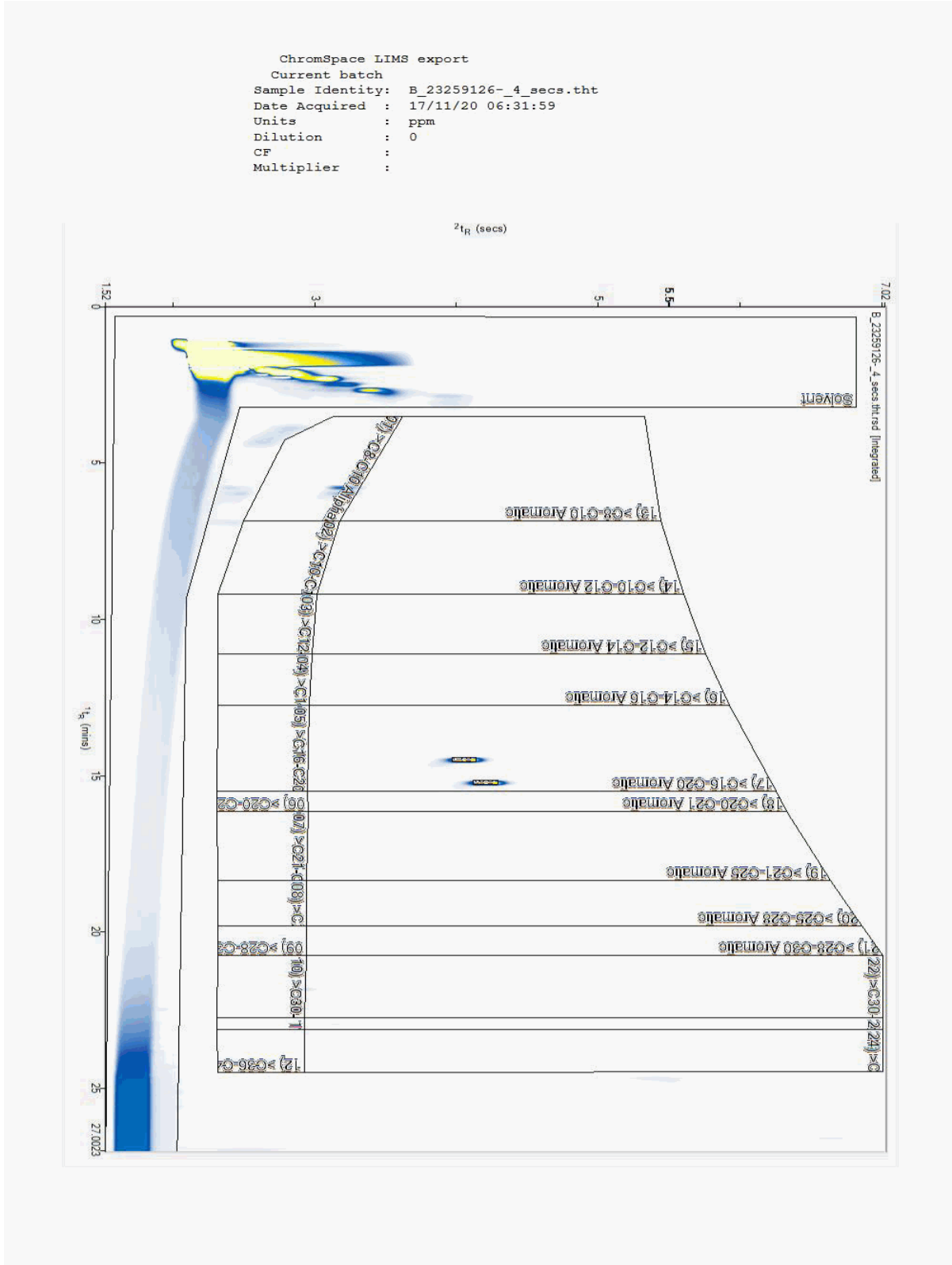
Report Number: 577342
Superseded Report:

Chromatogram

Analysis: EPH by GCxGC-FID

Sample No : 23259126
Sample ID : TPB

Depth : 1.00





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SDG: 201103-83
Location: A303 Stonehenge

Client Reference: JFF 1451
Order Number:

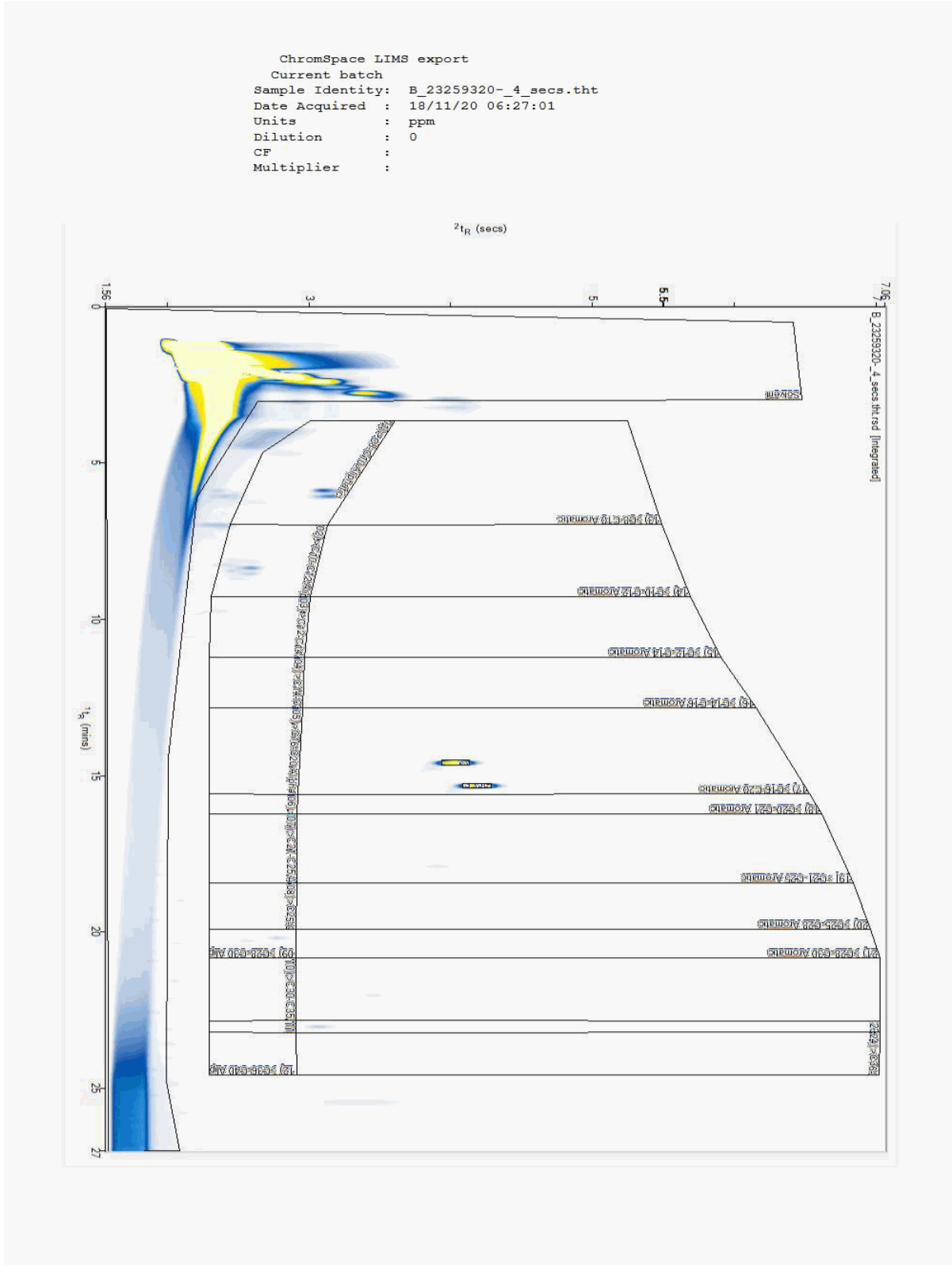
Report Number: 577342
Superseded Report:

Chromatogram

Analysis: EPH by GCxGC-FID

Sample No : 23259320
Sample ID : TPC

Depth : 0.60





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SDG: 201103-83
Location: A303 Stonehenge

Client Reference: JFF 1451
Order Number:

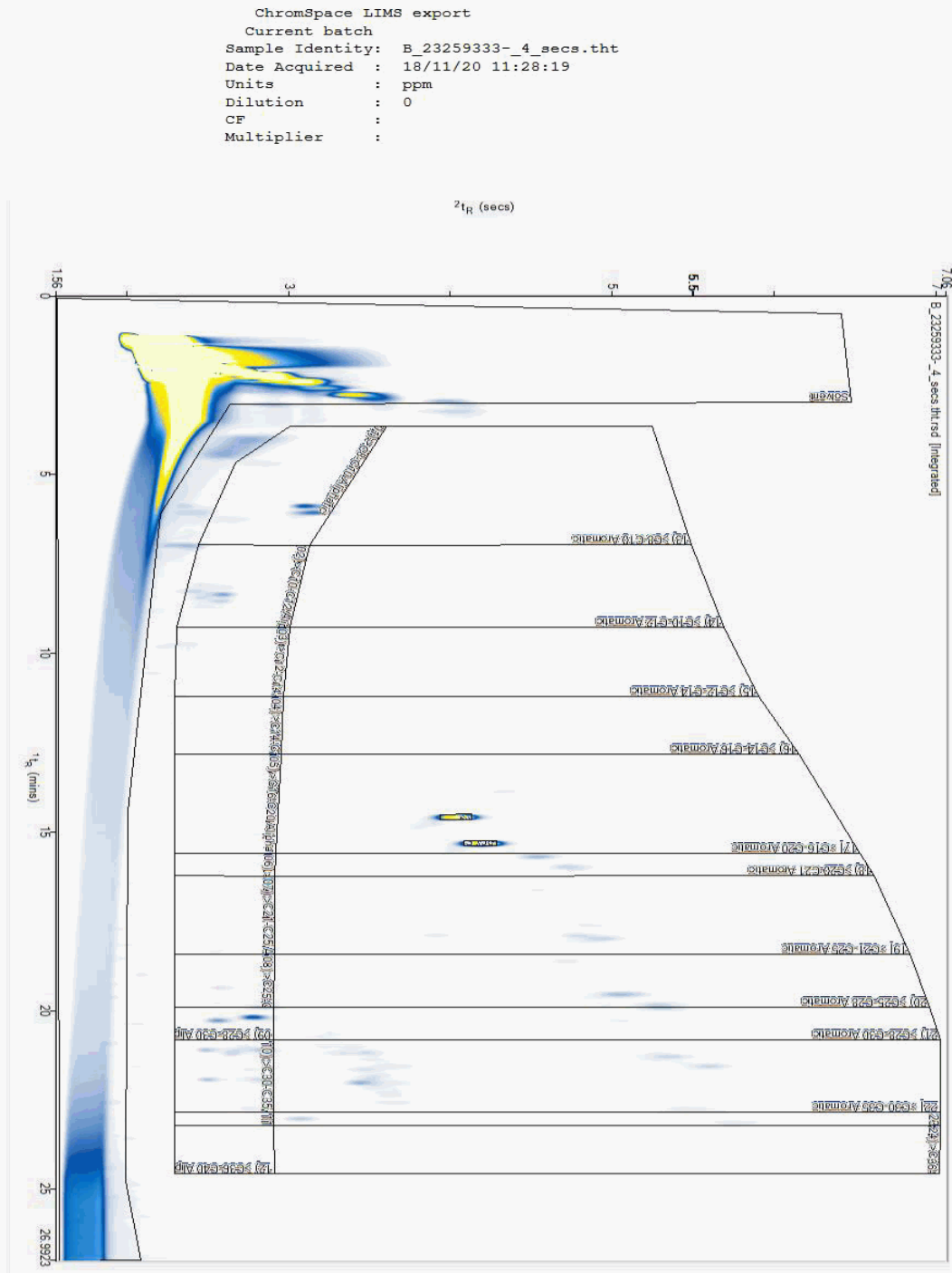
Report Number: 577342
Superseded Report:

Chromatogram

Analysis: EPH by GCxGC-FID

Sample No : 23259333
Sample ID : TPC

Depth : 0.30





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SDG: 201103-83
Location: A303 Stonehenge

Client Reference: JFF 1451
Order Number:

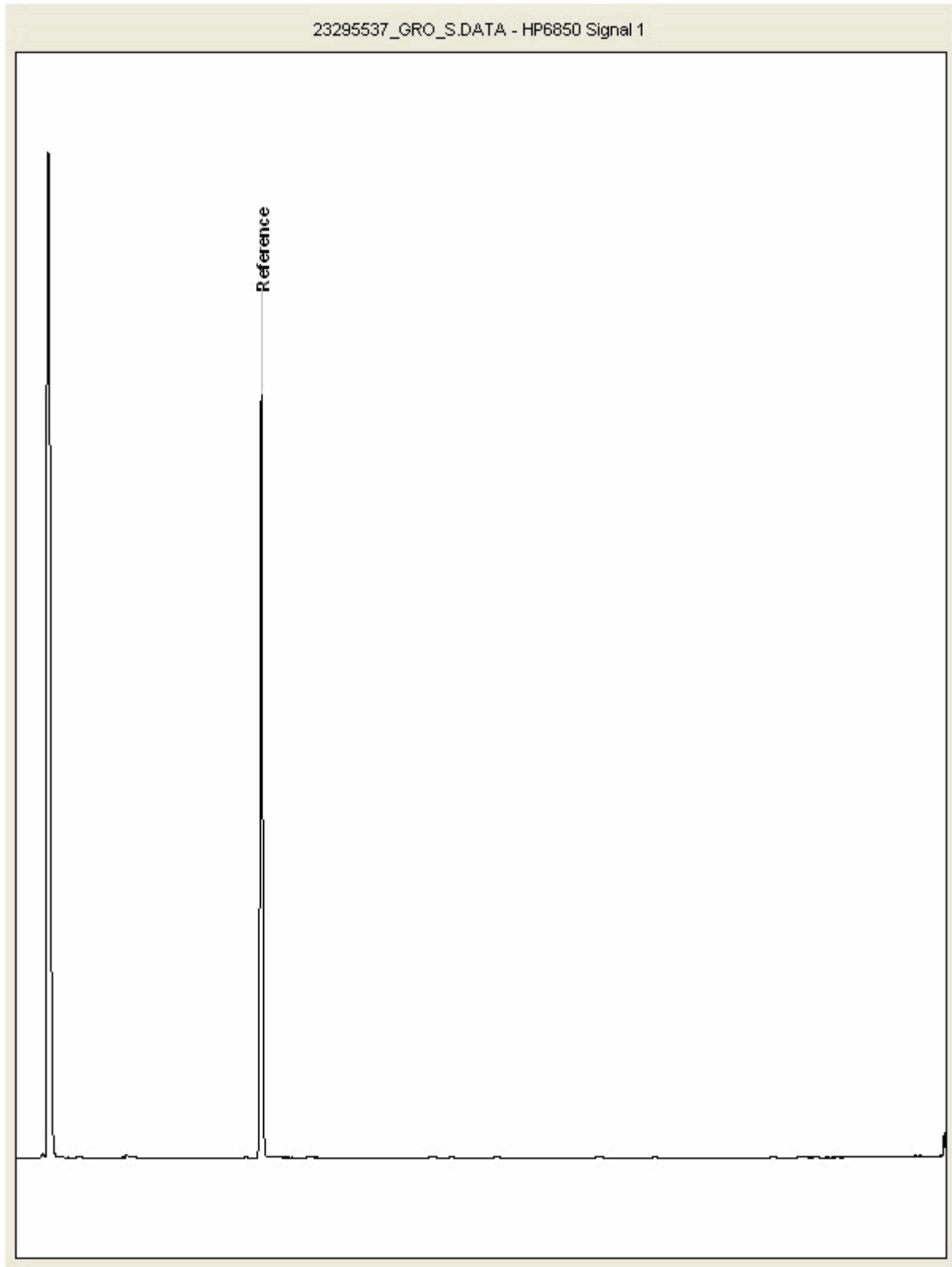
Report Number: 577342
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23295537
Sample ID : TPB

Depth : 1.00





CERTIFICATE OF ANALYSIS

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SDG: 201103-83
Location: A303 Stonehenge

Client Reference: JFF 1451
Order Number:

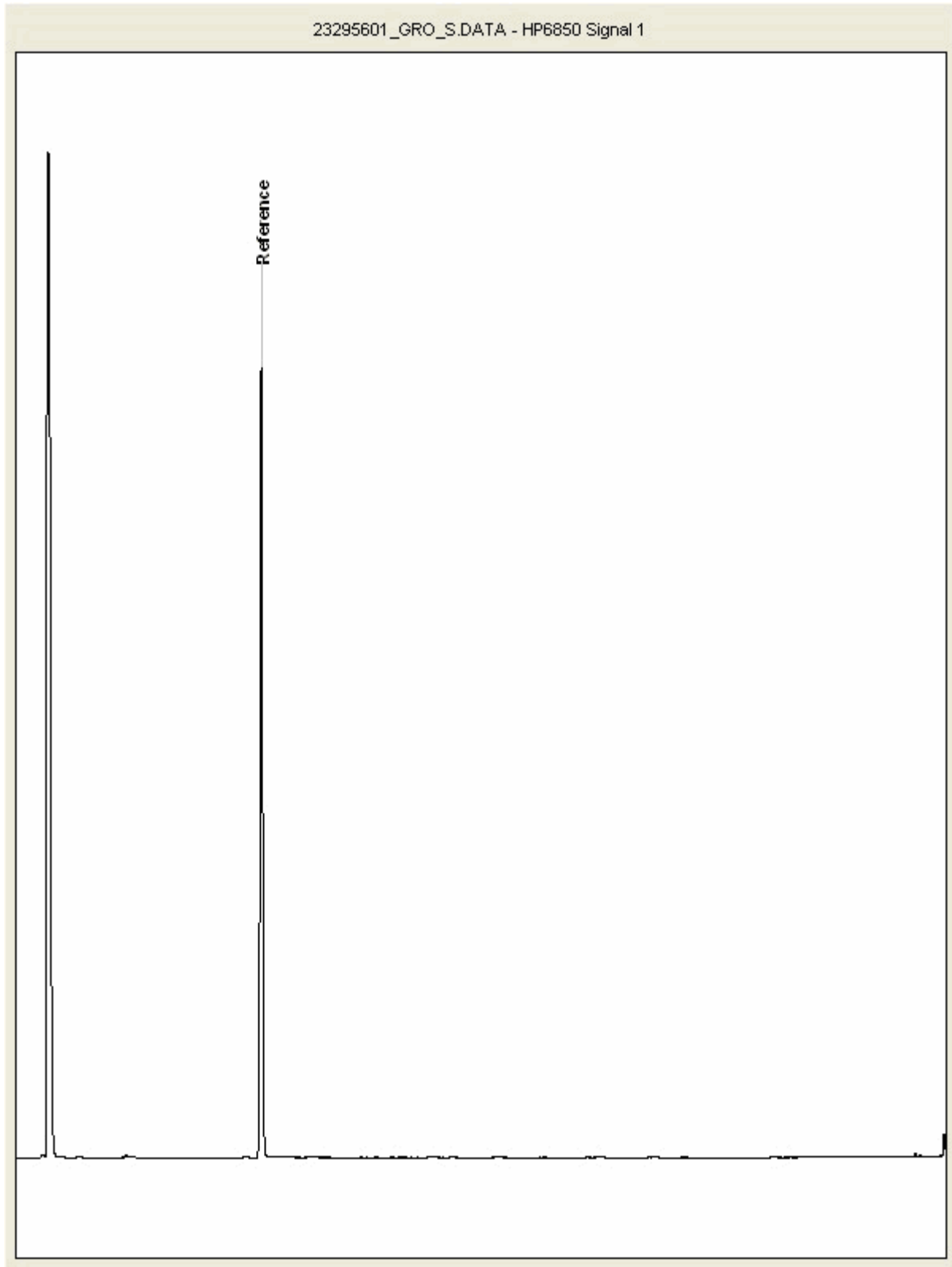
Report Number: 577342
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23295601
Sample ID : TPB

Depth : 0.30





CERTIFICATE OF ANALYSIS

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SDG: 201103-83
Location: A303 Stonehenge

Client Reference: JFF 1451
Order Number:

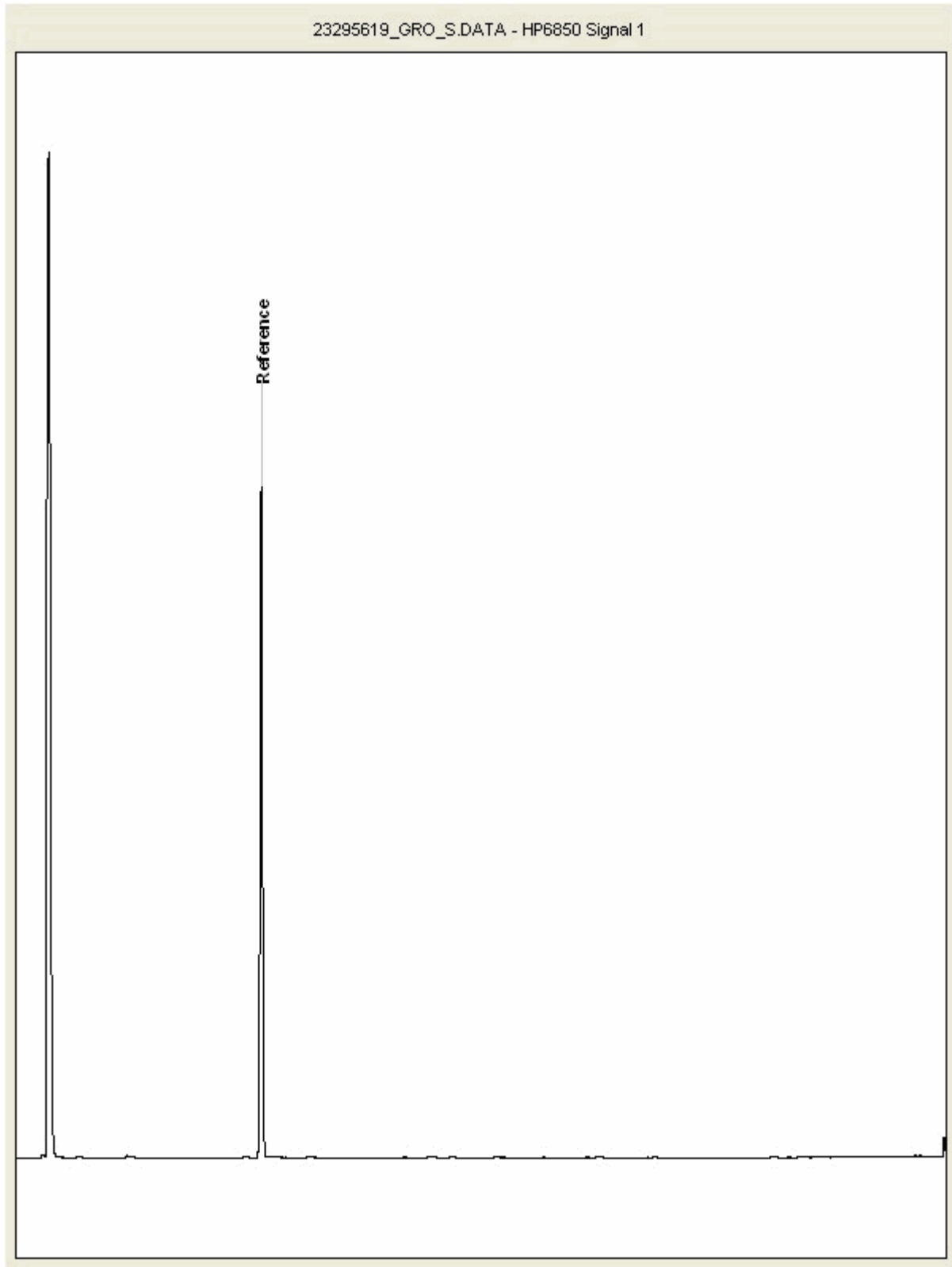
Report Number: 577342
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23295619
Sample ID : TPB

Depth : 0.50





CERTIFICATE OF ANALYSIS

Validated

SDG: 201103-83
Location: A303 Stonehenge

Client Reference: JFF 1451
Order Number:

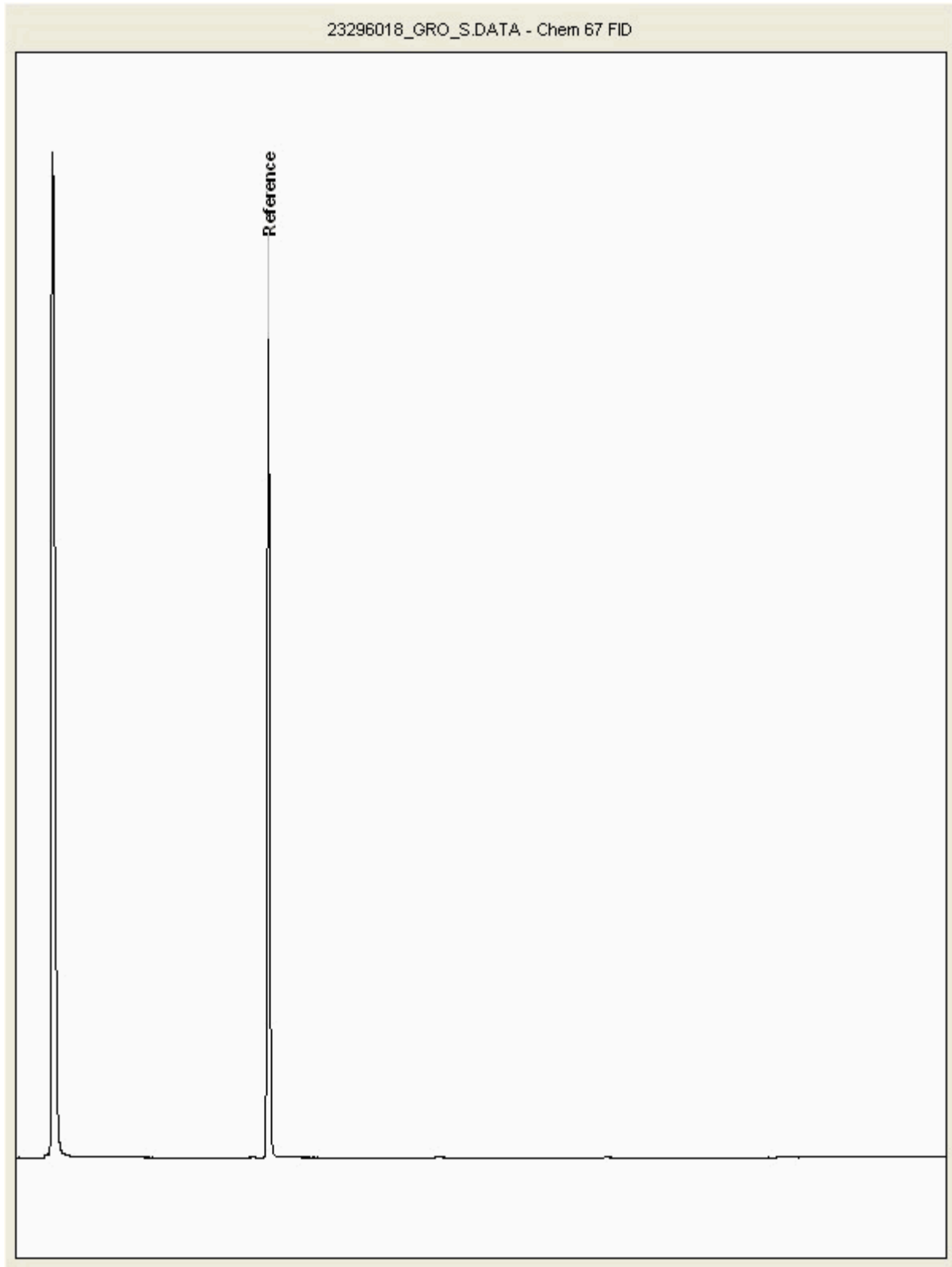
Report Number: 577342
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23296018
Sample ID : TPC

Depth : 0.30





CERTIFICATE OF ANALYSIS

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SDG: 201103-83
Location: A303 Stonehenge

Client Reference: JFF 1451
Order Number:

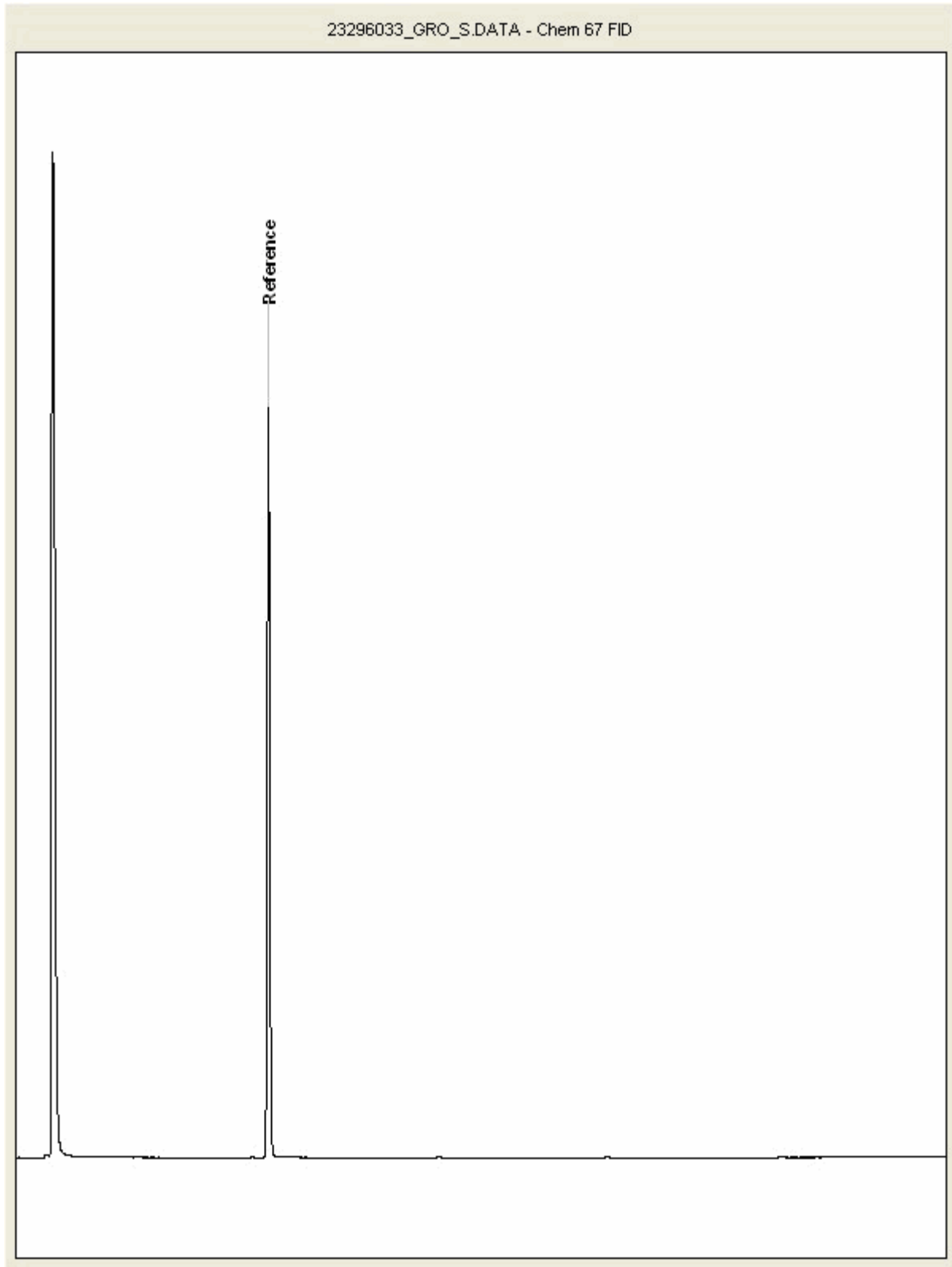
Report Number: 577342
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23296033
Sample ID : TPC

Depth : 1.10





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SDG: 201103-83
Location: A303 Stonehenge

Client Reference: JFF 1451
Order Number:

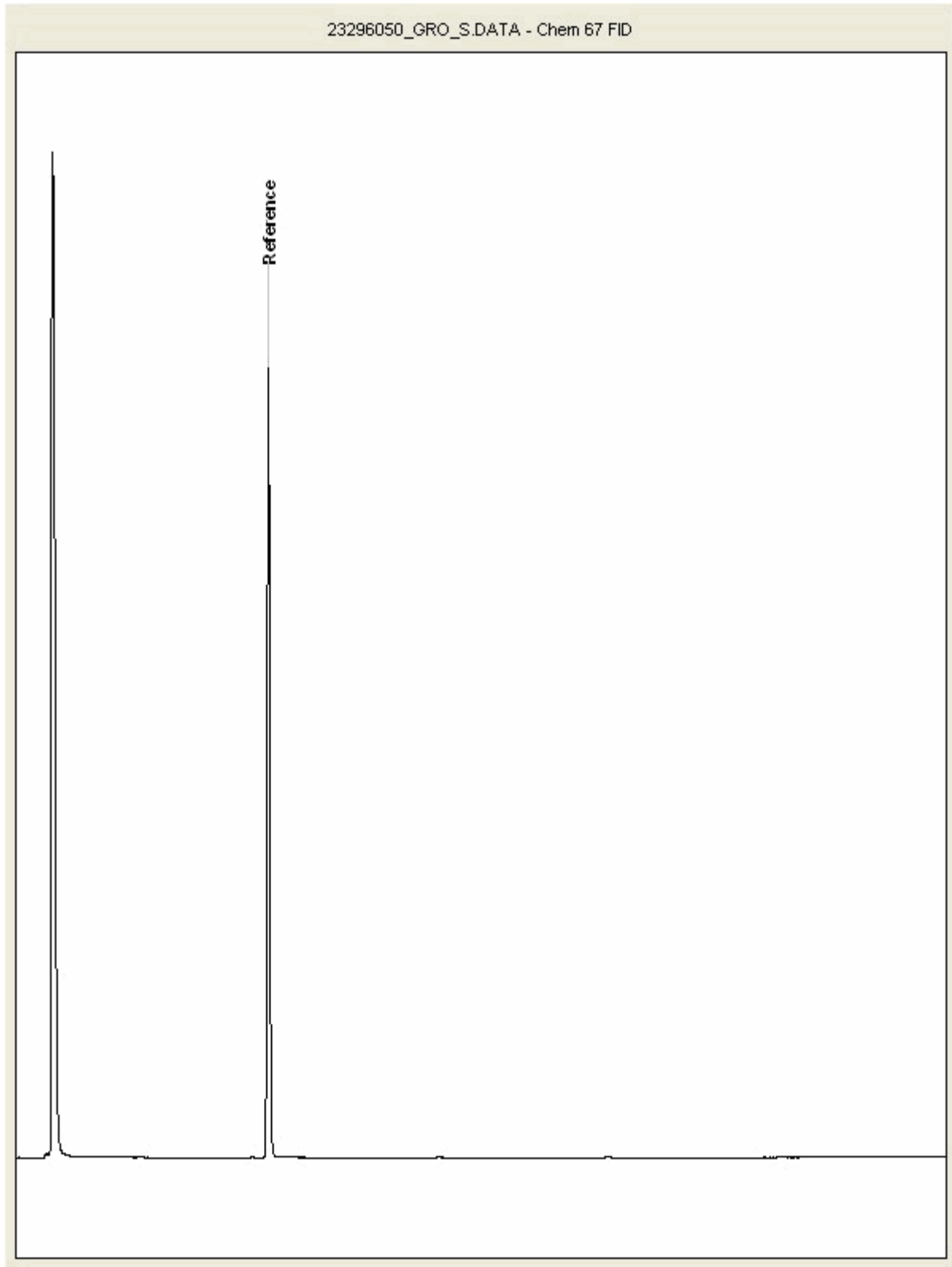
Report Number: 577342
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23296050
Sample ID : TPC

Depth : 0.60





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SDG: 201103-83 Client Reference: JFF 1451 Report Number: 577342
 Location: A303 Stonehenge Order Number: Superseded Report:

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH₄ by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

19. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung. Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017)*.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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Website: www.alsenvironmental.co.uk

RPS Consultants Ltd
260 Park Avenue
Aztec West
Almondsbury
Bristol
BS32 4SY

Attention: Gary Riches

CERTIFICATE OF ANALYSIS

Date of report Generation: 26 November 2020
Customer: RPS Consultants Ltd
Sample Delivery Group (SDG): 201104-105
Your Reference: JFR1451
Location: A303 Stonehenge
Report No: 577343

We received 6 samples on Wednesday November 04, 2020 and 6 of these samples were scheduled for analysis which was completed on Thursday November 26, 2020. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

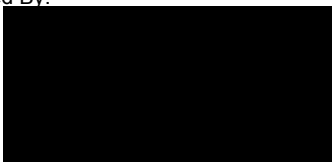
Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:



Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 201104-105
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 577343
Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
23177310	TPD 02		0.20	02/11/2020
23177312	TPD0.8		0.80	02/11/2020
23177311	TPD0.45		0.45	02/11/2020
23177314	TPE 0.3		0.30	02/11/2020
23177315	TPE 0.4		0.40	02/11/2020
23177316	TPE 0.8		0.80	02/11/2020

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG:	201104-105	Client Reference:	JFR1451	Report Number:	577343
Location:	A303 Stonehenge	Order Number:		Superseded Report:	

Results Legend

- X Test
- N No Determination Possible

Sample Types -

- S - Soil/Solid
- UNS - Unspecified Solid
- GW - Ground Water
- SW - Surface Water
- LE - Land Leachate
- PL - Prepared Leachate
- PR - Process Water
- SA - Saline Water
- TE - Trade Effluent
- TS - Treated Sewage
- US - Untreated Sewage
- RE - Recreational Water
- DW - Drinking Water Non-regulatory
- UNL - Unspecified Liquid
- SL - Sludge
- G - Gas
- OTH - Other

	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type						
							23177310	23177312	23177311	23177314	23177315	23177316
Alkali Metals by iCap-OES (Soil)	All	NDPs: 0 Tests: 6	X	X	X	X	X	X	X	X		
Alkalinity as CaCO3	All	NDPs: 0 Tests: 6	X	X	X	X	X	X	X	X		
Ammonium Soil by Titration	All	NDPs: 0 Tests: 6	X	X	X	X	X	X	X	X		
Anions by Kone (soil)	All	NDPs: 0 Tests: 6	X	X	X	X	X	X	X	X		
EPH	All	NDPs: 0 Tests: 6	X	X	X	X	X	X	X	X		
EPH by GCxGC-FID	All	NDPs: 0 Tests: 6	X	X	X	X	X	X	X	X		
GRO by GC-FID (S)	All	NDPs: 0 Tests: 6		X	X	X	X	X	X	X		
Metals in solid samples by OES	All	NDPs: 0 Tests: 6	X	X	X	X	X	X	X	X		
PAH by GCMS	All	NDPs: 0 Tests: 6	X	X	X	X	X	X	X	X		
pH	All	NDPs: 0 Tests: 6	X	X	X	X	X	X	X	X		
Sample description	All	NDPs: 0 Tests: 6	X	X	X	X	X	X	X	X		
Total Organic Carbon	All	NDPs: 0 Tests: 6	X	X	X	X	X	X	X	X		
VOC MS (S)	All	NDPs: 0 Tests: 6		X	X	X	X	X	X	X		



CERTIFICATE OF ANALYSIS

Validated

SDG: 201104-105
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 577343
Superseded Report:

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm
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Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
23177310	TPD 02	0.20	Light Brown	Sandy Loam	Stones	Vegetation
23177312	TPD0.8	0.80	White	Chalk	Stones	None
23177311	TPD0.45	0.45	White	Chalk	Stones	None
23177314	TPE 0.3	0.30	Dark Brown	Loamy Sand	Stones	Vegetation
23177315	TPE 0.4	0.40	Cream	N/A	Stones	Vegetation
23177316	TPE 0.8	0.80	Cream	N/A	Stones	Vegetation

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.



CERTIFICATE OF ANALYSIS

Validated

SDG: 201104-105
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 577343
Superseded Report:

Results Legend			Customer Sample Ref.	TPD 02	TPD0.8	TPD0.45	TPE 0.3	TPE 0.4	TPE 0.8
#	ISO17025 accredited.								
M	mCERTS accredited.								
aq	Aqueous / settled sample.								
diss.fit	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted - refer to subcontractor report for accreditation status.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery								
(F)	Trigger breach confirmed								
1-4*\$@	Sample deviation (see appendix)								
		Depth (m)	0.20	0.80	0.45	0.30	0.40	0.80	
		Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
		Date Sampled	02/11/2020	02/11/2020	02/11/2020	02/11/2020	02/11/2020	02/11/2020	02/11/2020
		Sampled Time							
		Date Received	04/11/2020	04/11/2020	04/11/2020	04/11/2020	04/11/2020	04/11/2020	04/11/2020
		SDG Ref	201104-105	201104-105	201104-105	201104-105	201104-105	201104-105	201104-105
		Lab Sample No.(s)	23177310	23177312	23177311	23177314	23177315	23177316	
		AGS Reference							
Component	LOD/Units	Method							
Moisture Content Ratio (% of as received sample)	%	PM024	21	20	21	16	17	17	
Exchangeable Ammonia as N	<12 mg/kg	TM024	<12	<12	<12	<12	<12	<12	<12
Organic Carbon, Total	<0.2 %	TM132	2.14	<0.2	<0.2	2.01	<0.2	<0.2	<0.2
Fraction Organic Carbon (FOC)	<0.002	TM132	0.0214	<0.002	<0.002	0.0201	<0.002	<0.002	<0.002
pH	1 pH Units	TM133	8.06	9.2	9.07	8.15	8.96	8.93	
Arsenic	<0.6 mg/kg	TM181	6.94	<0.6	<0.6	6.28	<0.6	<0.6	<0.6
Barium	<0.6 mg/kg	TM181	63.3	9.36	8.41	59.2	9.37	11.1	
Cadmium	<0.02 mg/kg	TM181	0.817	0.378	0.394	0.805	0.353	0.386	
Chromium	<0.9 mg/kg	TM181	11.8	0.968	<0.9	11.1	<0.9	1.12	
Copper	<1.4 mg/kg	TM181	7.47	<1.4	<1.4	8.11	<1.4	<1.4	
Iron	<1000 mg/kg	TM181	11300	<1000	<1000	10500	<1000	<1000	
Lead	<0.7 mg/kg	TM181	17.3	<0.7	<0.7	15.9	<0.7	<0.7	
Manganese	<0.13 mg/kg	TM181	798	187	185	794	191	209	
Mercury	<0.14 mg/kg	TM181	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	
Molybdenum	<0.1 mg/kg	TM181	0.233	0.101	0.131	0.202	0.103	0.116	
Nickel	<0.2 mg/kg	TM181	10.9	2.15	1.58	10.3	1.35	1.72	
Phosphorus	<1 mg/kg	TM181	907	394	347	926	287	308	
Selenium	<1 mg/kg	TM181	<1	<1	<1	<1	<1	<1	
Zinc	<1.9 mg/kg	TM181	55.1	10.7	10.9	53.3	9.88	10.6	
Calcium	<21 mg/kg	TM224	160000	424000	451000	182000	423000	411000	
Sodium	<7 mg/kg	TM224	124	166	164	128	158	151	
Magnesium	<8 mg/kg	TM224	1660	958	949	1650	932	953	
Potassium	<16 mg/kg	TM224	1250	142	115	1070	127	160	
Alkalinity, Bicarbonate as CaCO3	<10 mg/kg	TM230	258	93.8	88.2	274	93	109	
Alkalinity, Carbonate as CaCO3	<10 mg/kg	TM230	<10	31.3	31.5	<10	24	18.2	
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
Chloride (soluble)	<5 mg/kg	TM243	25.7	7.08	7.45	21.7	8.2	8.37	
EPH (C5-C40)	<35 mg/kg	TM415	<35	<35	<35	36.3	<35	<35	
EPH Surrogate % recovery**	%	TM415	96.6	91.2	93.6	100	103	95.4	
EPH >C10-C40	<35 mg/kg	TM415	<35	<35	<35	36.3	<35	<35	
			@ M	@ #	@ #	@ M	@	@	



CERTIFICATE OF ANALYSIS

Validated

SDG: 201104-105 Client Reference: JFR1451 Report Number: 577343
Location: A303 Stonehenge Order Number: Superseded Report:

GRO by GC-FID (S)

Table with columns: Results Legend, Customer Sample Ref., TPD 02, TPD0.8, TPD0.45, TPE 0.3, TPE 0.4, TPE 0.8. Rows include GRO TOT (Moisture Corrected), GRO TOT uncorrected, and GRO >C5-C10.



CERTIFICATE OF ANALYSIS

Validated

SDG: 201104-105
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 577343
Superseded Report:

PAH by GCMS

Results Legend			Customer Sample Ref.	TPD 02	TPD0.8	TPD0.45	TPE 0.3	TPE 0.4	TPE 0.8					
#	ISO17025 accredited.													
M	mCERTS accredited.													
aq	Aqueous / settled sample.													
diss.filt	Dissolved / filtered sample.													
tot.unfilt	Total / unfiltered sample.													
*	Subcontracted - refer to subcontractor report for accreditation status.													
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery													
(F)	Trigger breach confirmed													
1-4*\$@	Sample deviation (see appendix)													
Component	LOD/Units	Method	Depth (m)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)					
Naphthalene-d8 % recovery**	%	TM218	0.20	02/11/2020	0.80	02/11/2020	0.45	02/11/2020	0.30	02/11/2020	0.40	02/11/2020	0.80	02/11/2020
Acenaphthene-d10 % recovery**	%	TM218	0.20	04/11/2020	0.80	04/11/2020	0.45	04/11/2020	0.30	04/11/2020	0.40	04/11/2020	0.80	04/11/2020
Phenanthrene-d10 % recovery**	%	TM218	0.20	201104-105	0.80	201104-105	0.45	201104-105	0.30	201104-105	0.40	201104-105	0.80	201104-105
Chrysene-d12 % recovery**	%	TM218	0.20	23177310	0.80	23177312	0.45	23177311	0.30	23177314	0.40	23177315	0.80	23177316
Perylene-d12 % recovery**	%	TM218	0.20		0.80		0.45		0.30		0.40		0.80	
Naphthalene	<9 µg/kg	TM218	<9	@ M	<9	@ #	<9	@ #	<9	@ M	<9	@	<9	@
Acenaphthylene	<12 µg/kg	TM218	<12	@ M	<12	@ #	<12	@ #	<12	@ M	<12	@	<12	@
Acenaphthene	<8 µg/kg	TM218	<8	@ M	<8	@ #	<8	@ #	<8	@ M	<8	@	<8	@
Fluorene	<10 µg/kg	TM218	<10	@ M	<10	@ #	<10	@ #	<10	@ M	<10	@	<10	@
Phenanthrene	<15 µg/kg	TM218	22.1	@ M	<15	@ #	<15	@ #	27	@ M	<15	@	<15	@
Anthracene	<16 µg/kg	TM218	<16	@ M	<16	@ #	<16	@ #	<16	@ M	<16	@	<16	@
Fluoranthene	<17 µg/kg	TM218	65.2	@ M	<17	@ #	<17	@ #	86.3	@ M	<17	@	<17	@
Pyrene	<15 µg/kg	TM218	57.6	@ M	<15	@ #	<15	@ #	79.4	@ M	<15	@	<15	@
Benz(a)anthracene	<14 µg/kg	TM218	33.3	@ M	<14	@ #	<14	@ #	47	@ M	<14	@	<14	@
Chrysene	<10 µg/kg	TM218	38.1	@ M	<10	@ #	<10	@ #	55.5	@ M	<10	@	<10	@
Benzo(b)fluoranthene	<15 µg/kg	TM218	69.1	@ M	<15	@ #	<15	@ #	86.3	@ M	<15	@	<15	@
Benzo(k)fluoranthene	<14 µg/kg	TM218	26.8	@ M	<14	@ #	<14	@ #	38.1	@ M	<14	@	<14	@
Benzo(a)pyrene	<15 µg/kg	TM218	40.6	@ M	<15	@ #	<15	@ #	54.7	@ M	<15	@	<15	@
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	36.3	@ M	<18	@ #	<18	@ #	43.6	@ M	<18	@	<18	@
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23	@ M	<23	@ #	<23	@ #	<23	@ M	<23	@	<23	@
Benzo(g,h,i)perylene	<24 µg/kg	TM218	36.3	@ M	<24	@ #	<24	@ #	46.6	@ M	<24	@	<24	@
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	425	@ M	<118	@ #	<118	@ #	564	@ M	<118	@	<118	@



CERTIFICATE OF ANALYSIS

Validated

SDG: 201104-105
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 577343
Superseded Report:

VOC MS (S)

Table with columns for Component, LOD/Units, Method, and VOC concentrations (TPD 0.2, TPD0.8, TPD0.45, TPE 0.3, TPE 0.4, TPE 0.8). Includes legend for results and sample details.



CERTIFICATE OF ANALYSIS

Validated

SDG:	201104-105	Client Reference:	JFR1451	Report Number:	577343
Location:	A303 Stonehenge	Order Number:		Superseded Report:	

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM224	US EPA Method 6010B	Determination of Alkaline Metals by iCap 6500 Duo ICP-OES
TM230	Methods 2320B and 4500-CO2 D, AWWA/APHA 19th Edition, 1995.	Determination of Alkalinity in Aqueous Sludge and Soil extracts
TM243		Mixed Anions In Soils By Kone
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).



CERTIFICATE OF ANALYSIS

Validated

SDG:	201104-105	Client Reference:	JFR1451	Report Number:	577343
Location:	A303 Stonehenge	Order Number:		Superseded Report:	

Test Completion Dates

Lab Sample No(s)	23177310	23177312	23177311	23177314	23177315	23177316
Customer Sample Ref.	TPD 02	TPD0.8	TPD0.45	TPE 0.3	TPE 0.4	TPE 0.8
AGS Ref.						
Depth	0.20	0.80	0.45	0.30	0.40	0.80
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)

Alkali Metals by iCap-OES (Soil)	25-Nov-2020	25-Nov-2020	25-Nov-2020	25-Nov-2020	25-Nov-2020	25-Nov-2020
Alkalinity as CaCO3	19-Nov-2020	19-Nov-2020	19-Nov-2020	19-Nov-2020	19-Nov-2020	19-Nov-2020
Ammonium Soil by Titration	19-Nov-2020	19-Nov-2020	24-Nov-2020	19-Nov-2020	19-Nov-2020	19-Nov-2020
Anions by Kone (soil)	25-Nov-2020	25-Nov-2020	25-Nov-2020	25-Nov-2020	25-Nov-2020	24-Nov-2020
EPH	23-Nov-2020	23-Nov-2020	24-Nov-2020	23-Nov-2020	23-Nov-2020	23-Nov-2020
EPH by GCxGC-FID	19-Nov-2020	19-Nov-2020	19-Nov-2020	19-Nov-2020	19-Nov-2020	19-Nov-2020
GRO by GC-FID (S)			24-Nov-2020			
Metals in solid samples by OES	24-Nov-2020	25-Nov-2020	26-Nov-2020	24-Nov-2020	25-Nov-2020	25-Nov-2020
PAH by GCMS	18-Nov-2020	19-Nov-2020	19-Nov-2020	24-Nov-2020	18-Nov-2020	18-Nov-2020
pH	18-Nov-2020	18-Nov-2020	18-Nov-2020	18-Nov-2020	18-Nov-2020	18-Nov-2020
Sample description	17-Nov-2020	17-Nov-2020	17-Nov-2020	17-Nov-2020	17-Nov-2020	17-Nov-2020
Total Organic Carbon	23-Nov-2020	24-Nov-2020	24-Nov-2020	23-Nov-2020	24-Nov-2020	24-Nov-2020
VOC MS (S)	23-Nov-2020	23-Nov-2020	23-Nov-2020	23-Nov-2020	23-Nov-2020	23-Nov-2020



CERTIFICATE OF ANALYSIS

Validated

SDG: 201104-105
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

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Superseded Report:

ASSOCIATED AQC DATA

Alkali Metals by iCap-OES (Soil)

Component	Method Code	QC 2366	QC 2340
Calcium	TM224	98.68 80.29 : 119.71	98.94 80.29 : 119.71
Magnesium	TM224	97.58 81.99 : 118.01	98.88 81.99 : 118.01
Potassium	TM224	104.78 72.21 : 127.79	104.14 72.21 : 127.79
Sodium	TM224	96.24 83.09 : 114.47	98.39 83.09 : 114.47

Ammonium Soil by Titration

Component	Method Code	QC 2373	QC 2387	QC 2378
Exchangeable Ammonium as NH4	TM024	84.58 76.20 : 110.13	84.08 76.20 : 110.13	96.02 76.20 : 110.13

Anions by Kone (soil)

Component	Method Code	QC 2329	QC 2335	QC 2345
Chloride (soluble)	TM243	149.22 86.68 : 115.67	144.56 86.68 : 115.67	141.97 86.68 : 115.67
Water Soluble Sulphate as SO4 2:1 Extract	TM243	159.35 70.00 : 130.00	157.01 70.00 : 130.00	157.94 70.00 : 130.00

EPH by GCxGC-FID

Component	Method Code	QC 2300
EPH >C10-C40 Raw	TM415	98.74 59.15 : 115.05

GRO by GC-FID (S)

Component	Method Code	QC 2371	QC 2341
QC	TM089	87.06 70.34 : 111.95	77.65 70.75 : 114.19

Metals in solid samples by OES



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Metals in solid samples by OES

Component	Method Code	QC 2366	QC 2340
Aluminium	TM181	98.23 73.56 : 108.85	98.23 73.56 : 108.85
Antimony	TM181	96.75 76.89 : 111.24	95.53 76.89 : 111.24
Arsenic	TM181	99.71 88.53 : 111.01	104.07 88.53 : 111.01
Barium	TM181	95.41 77.67 : 105.35	96.33 77.67 : 105.35
Beryllium	TM181	98.13 85.44 : 109.61	104.1 85.44 : 109.61
Boron	TM181	90.54 73.51 : 104.66	93.41 73.51 : 104.66
Cadmium	TM181	89.3 77.67 : 104.12	91.77 77.67 : 104.12
Chromium	TM181	91.28 86.11 : 106.21	93.71 86.11 : 106.21
Cobalt	TM181	89.94 84.60 : 104.13	93.08 84.60 : 104.13
Copper	TM181	92.43 82.40 : 105.45	90.67 82.40 : 105.45
Iron	TM181	96.83 82.95 : 110.58	100.0 82.95 : 110.58
Lead	TM181	89.19 78.24 : 104.05	94.14 78.24 : 104.05
Manganese	TM181	107.22 94.29 : 119.51	113.33 94.29 : 119.51
Mercury	TM181	95.17 83.16 : 107.81	97.1 83.16 : 107.81
Molybdenum	TM181	96.3 87.11 : 106.87	95.47 87.11 : 106.87
Nickel	TM181	91.93 80.26 : 102.28	93.64 80.26 : 102.28
Phosphorus	TM181	104.44 94.56 : 124.28	108.08 94.56 : 124.28
Selenium	TM181	96.08 82.28 : 110.48	100.0 82.28 : 110.48
Strontium	TM181	93.99 79.13 : 102.79	89.98 79.13 : 102.79
Thallium	TM181	98.67 82.94 : 111.86	100.44 82.94 : 111.86
Tin	TM181	100.76 86.72 : 110.03	103.42 86.72 : 110.03
Titanium	TM181	76.34 66.23 : 102.06	80.15 66.23 : 102.06
Vanadium	TM181	95.6 86.19 : 109.45	95.24 86.19 : 109.45
Zinc	TM181	99.59 84.68 : 113.99	102.67 84.68 : 113.99

PAH by GCMS



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PAH by GCMS

Component	Method Code	QC 2349	QC 2358
Acenaphthene	TM218	90.0 80.97 : 105.99	86.5 76.79 : 103.90
Acenaphthylene	TM218	88.5 74.76 : 107.36	87.0 78.40 : 108.66
Anthracene	TM218	88.5 73.04 : 106.97	84.0 70.90 : 109.22
Benz(a)anthracene	TM218	78.0 68.79 : 119.64	86.0 73.77 : 119.26
Benzo(a)pyrene	TM218	73.5 66.17 : 117.52	80.5 73.20 : 114.18
Benzo(b)fluoranthene	TM218	73.0 66.40 : 118.34	81.5 75.36 : 117.58
Benzo(ghi)perylene	TM218	73.5 67.68 : 112.07	77.5 70.73 : 116.12
Benzo(k)fluoranthene	TM218	75.5 72.84 : 114.66	81.5 75.98 : 116.59
Chrysene	TM218	79.5 68.39 : 115.56	82.5 74.82 : 114.18
Dibenzo(ah)anthracene	TM218	74.0 69.03 : 110.45	82.5 69.17 : 115.30
Fluoranthene	TM218	80.5 69.37 : 117.19	79.5 75.88 : 112.84
Fluorene	TM218	89.0 75.38 : 105.98	86.5 76.66 : 107.56
Indeno(123cd)pyrene	TM218	67.0 65.91 : 113.61	81.5 70.26 : 117.95
Naphthalene	TM218	89.0 71.40 : 105.87	85.0 74.70 : 101.83
Phenanthrene	TM218	89.0 74.04 : 109.30	83.0 73.62 : 109.34
Pyrene	TM218	80.5 69.68 : 115.27	79.5 71.46 : 117.00

pH

Component	Method Code	QC 2323
pH	TM133	99.47 99.06 : 100.67

Total Organic Carbon

Component	Method Code	QC 2354	QC 2350	QC 2366
Total Organic Carbon	TM132	104.3 87.02 : 113.45	103.13 87.02 : 113.45	99.22 87.02 : 113.45

VOC MS (S)



CERTIFICATE OF ANALYSIS

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Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

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Superseded Report:

VOC MS (S)

Component	Method Code	QC 2318
1,1,1,2-tetrachloroethane	TM116	103.8 84.84 : 116.25
1,1,1-Trichloroethane	TM116	95.2 73.73 : 118.05
1,1,2-Trichloroethane	TM116	99.0 77.12 : 116.04
1,1-Dichloroethane	TM116	103.0 74.46 : 129.15
1,2-Dichloroethane	TM116	113.6 92.38 : 131.65
1,4-Dichlorobenzene	TM116	107.6 83.64 : 126.18
2-Chlorotoluene	TM116	98.8 76.03 : 113.25
4-Chlorotoluene	TM116	99.4 66.90 : 112.46
Benzene	TM116	102.6 88.60 : 113.80
Carbon Disulphide	TM116	87.6 74.91 : 122.14
Carbontetrachloride	TM116	104.6 80.31 : 124.50
Chlorobenzene	TM116	104.0 83.81 : 114.18
Chloroform	TM116	106.0 87.40 : 122.49
Chloromethane	TM116	108.6 65.89 : 136.93
Cis-1,2-Dichloroethene	TM116	102.0 80.67 : 126.72
Dibromomethane	TM116	96.8 73.23 : 118.35
Dichloromethane	TM116	113.2 81.11 : 133.25
Ethylbenzene	TM116	93.2 75.92 : 110.41
Hexachlorobutadiene	TM116	86.8 12.82 : 152.73
Isopropylbenzene	TM116	78.6 55.79 : 97.59
Naphthalene	TM116	114.6 80.86 : 128.81
o-Xylene	TM116	87.0 69.99 : 108.74
p/m-Xylene	TM116	88.8 68.32 : 108.91
Sec-Butylbenzene	TM116	69.2 38.50 : 101.50
Tetrachloroethene	TM116	102.4 76.95 : 121.02
Toluene	TM116	95.6 74.24 : 107.42
Trichloroethene	TM116	99.2 77.61 : 111.54



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VOC MS (S)

		QC 2318
Trichlorofluoromethane	TM116	111.8 84.55 : 133.27
Vinyl Chloride	TM116	111.4 68.02 : 143.37

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis .

The figure detailed is the percentage recovery result for the AQC .

The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control .



CERTIFICATE OF ANALYSIS

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SDG: 201104-105
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

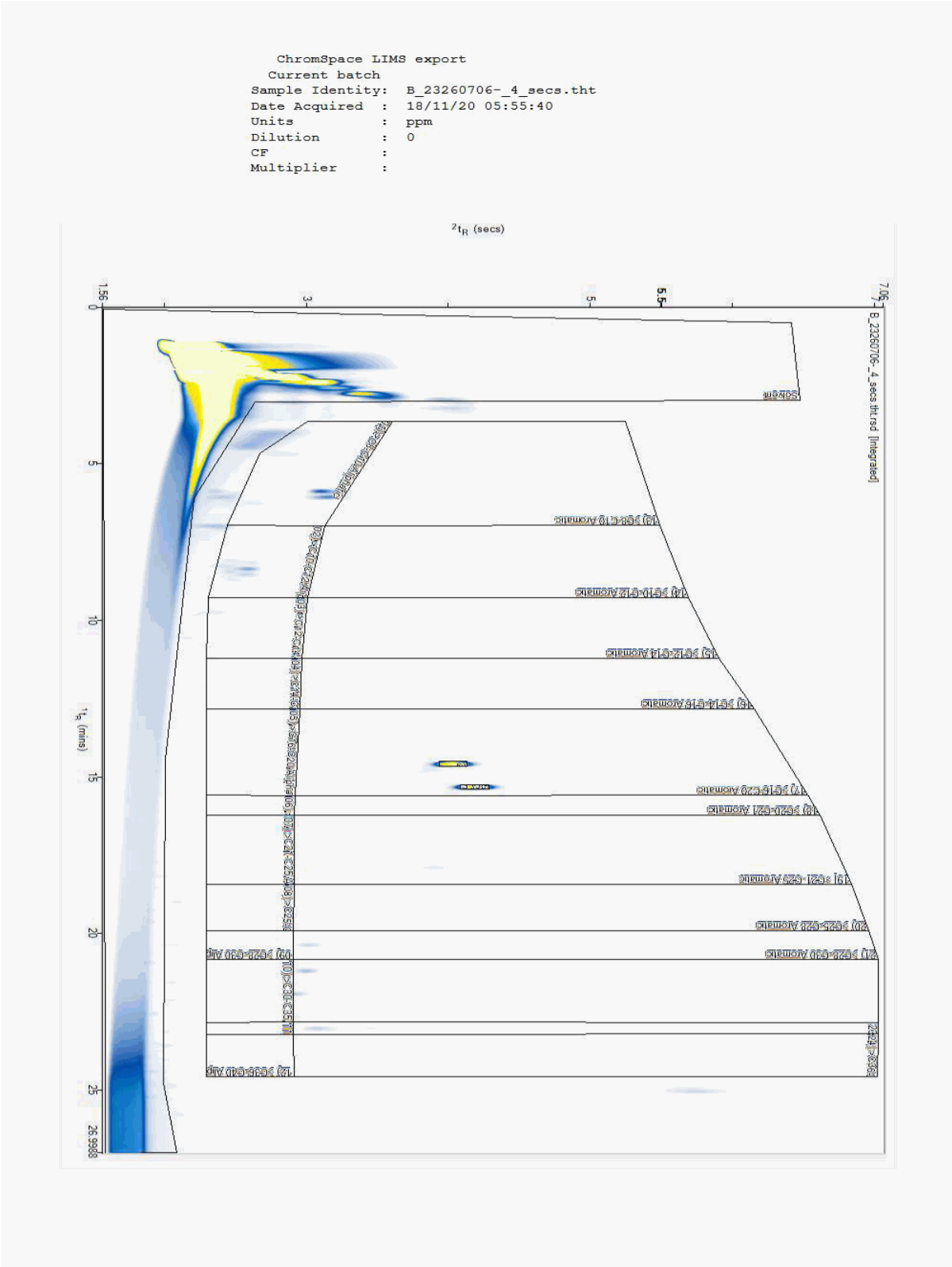
Report Number: 577343
Superseded Report:

Chromatogram

Analysis: EPH by GCxGC-FID

Sample No : 23260706
Sample ID : TPD0.8

Depth : 0.80





CERTIFICATE OF ANALYSIS

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SDG: 201104-105
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

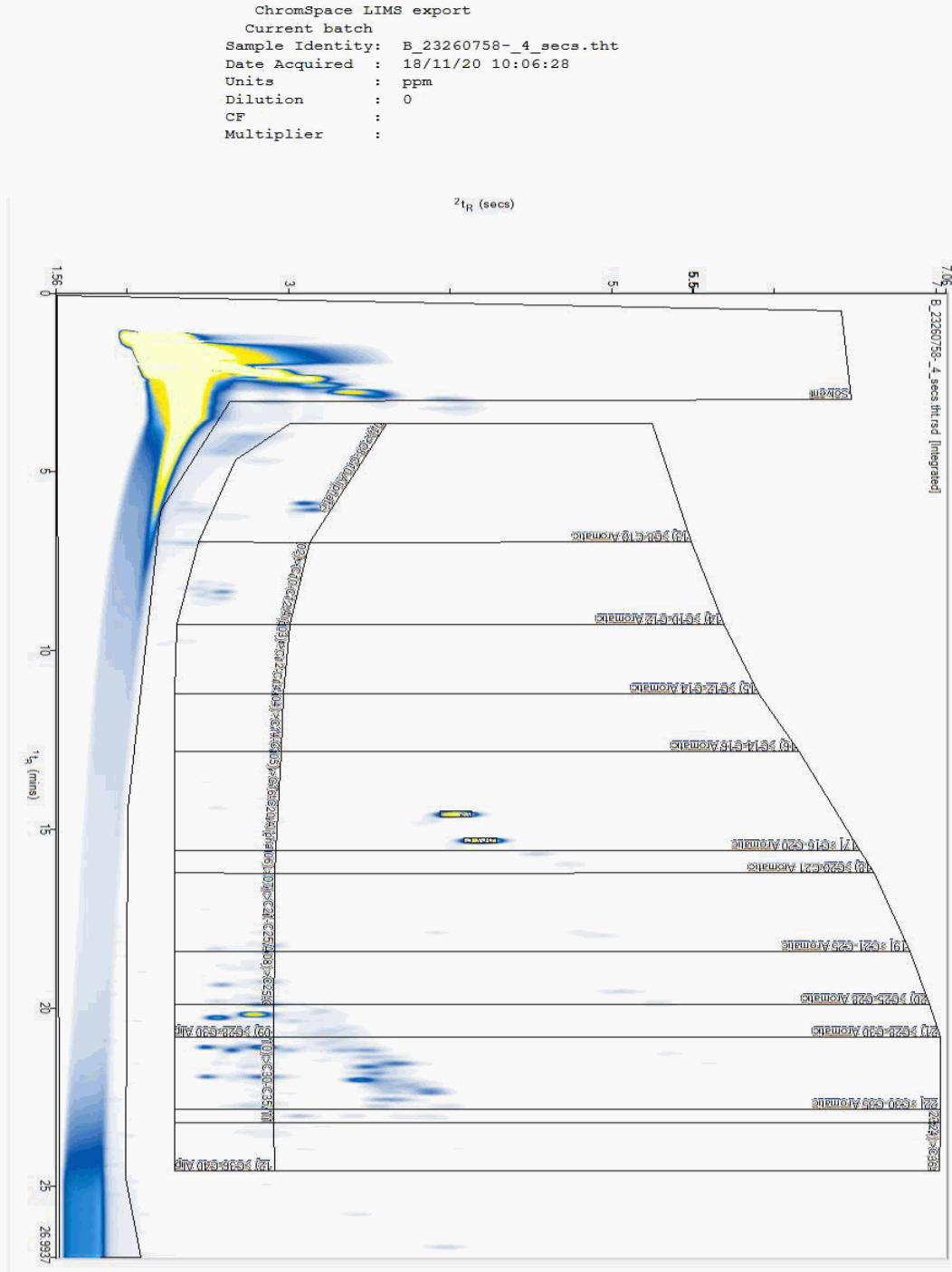
Report Number: 577343
Superseded Report:

Chromatogram

Analysis: EPH by GCxGC-FID

Sample No : 23260758
Sample ID : TPD 02

Depth : 0.20





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SDG: 201104-105
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

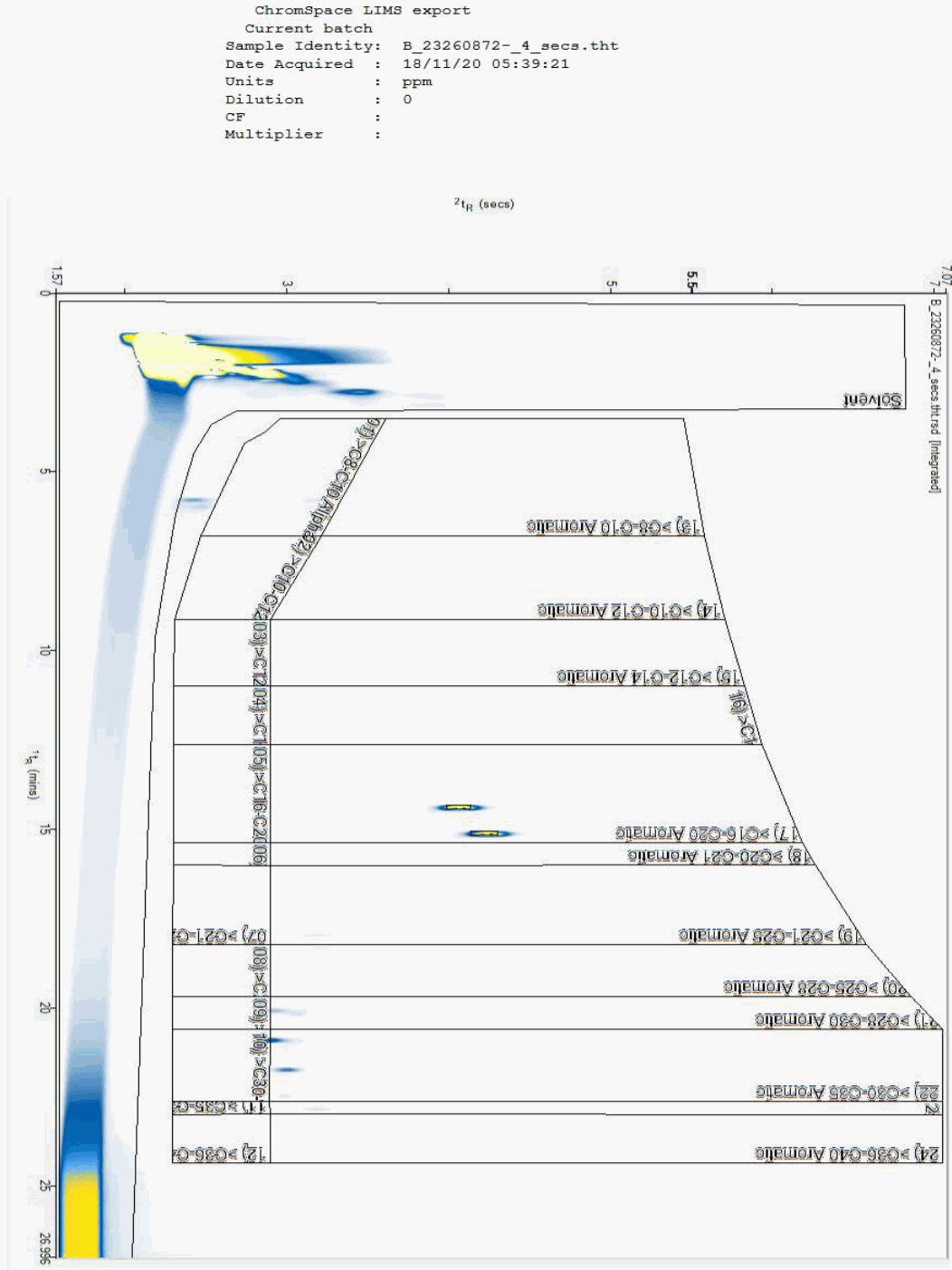
Report Number: 577343
Superseded Report:

Chromatogram

Analysis: EPH by GCxGC-FID

Sample No : 23260872
Sample ID : TPD0.45

Depth : 0.45





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SDG: 201104-105
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

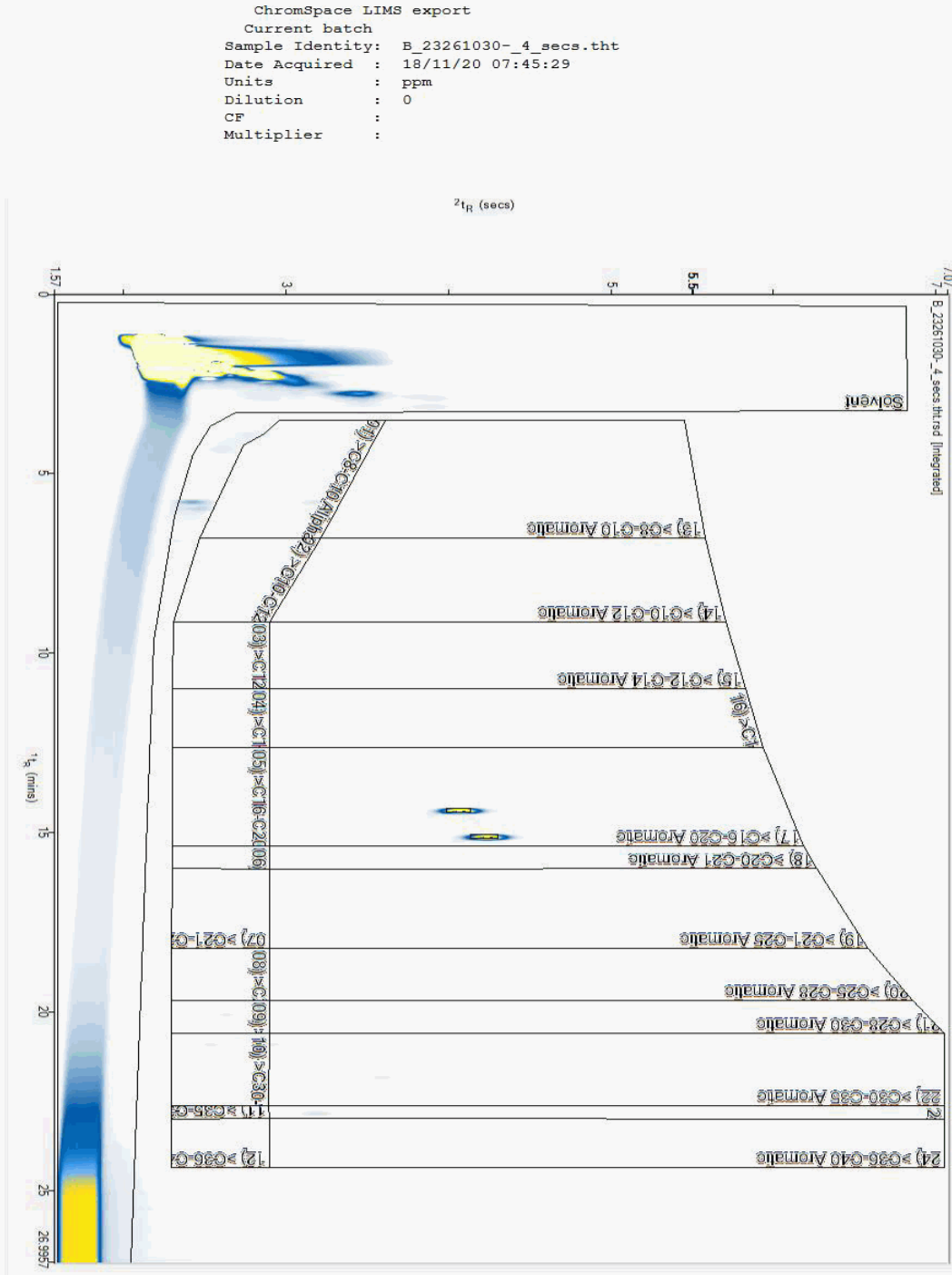
Report Number: 577343
Superseded Report:

Chromatogram

Analysis: EPH by GCxGC-FID

Sample No : 23261030
Sample ID : TPE 0.8

Depth : 0.80





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Client Reference: JFR1451
Order Number:

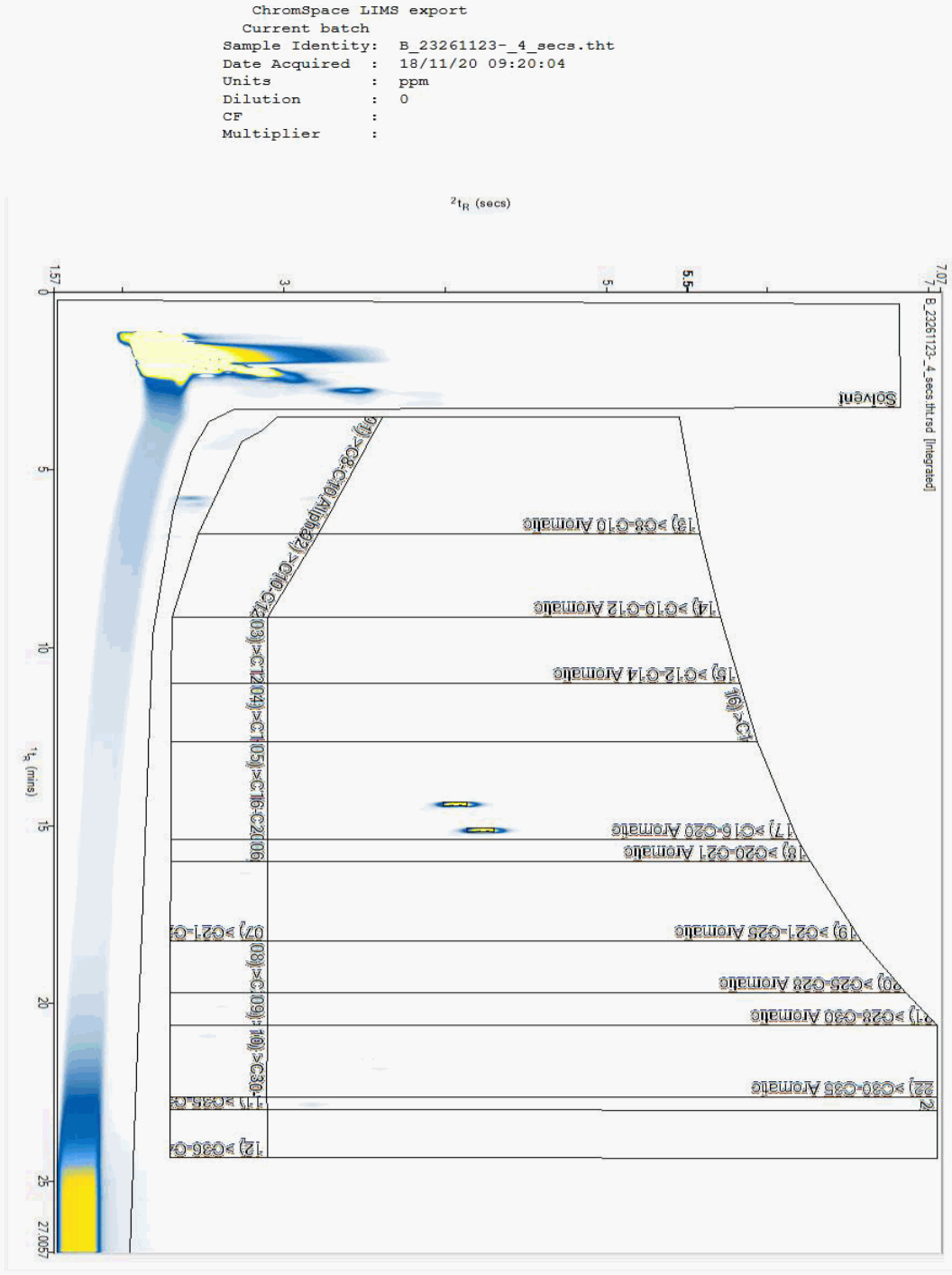
Report Number: 577343
Superseded Report:

Chromatogram

Analysis: EPH by GCxGC-FID

Sample No : 23261123
Sample ID : TPE 0.4

Depth : 0.40





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Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

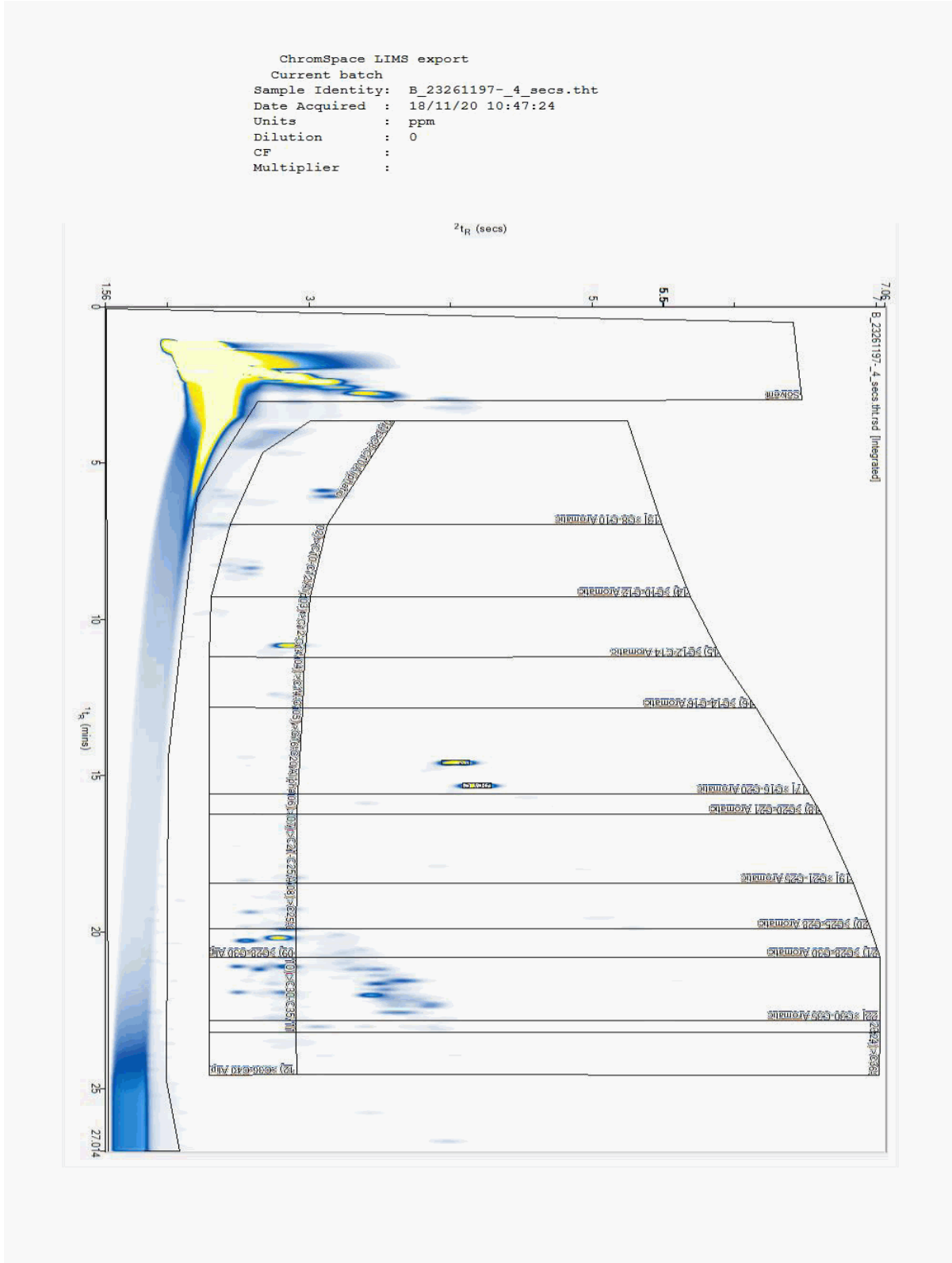
Report Number: 577343
Superseded Report:

Chromatogram

Analysis: EPH by GCxGC-FID

Sample No : 23261197
Sample ID : TPE 0.3

Depth : 0.30





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Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

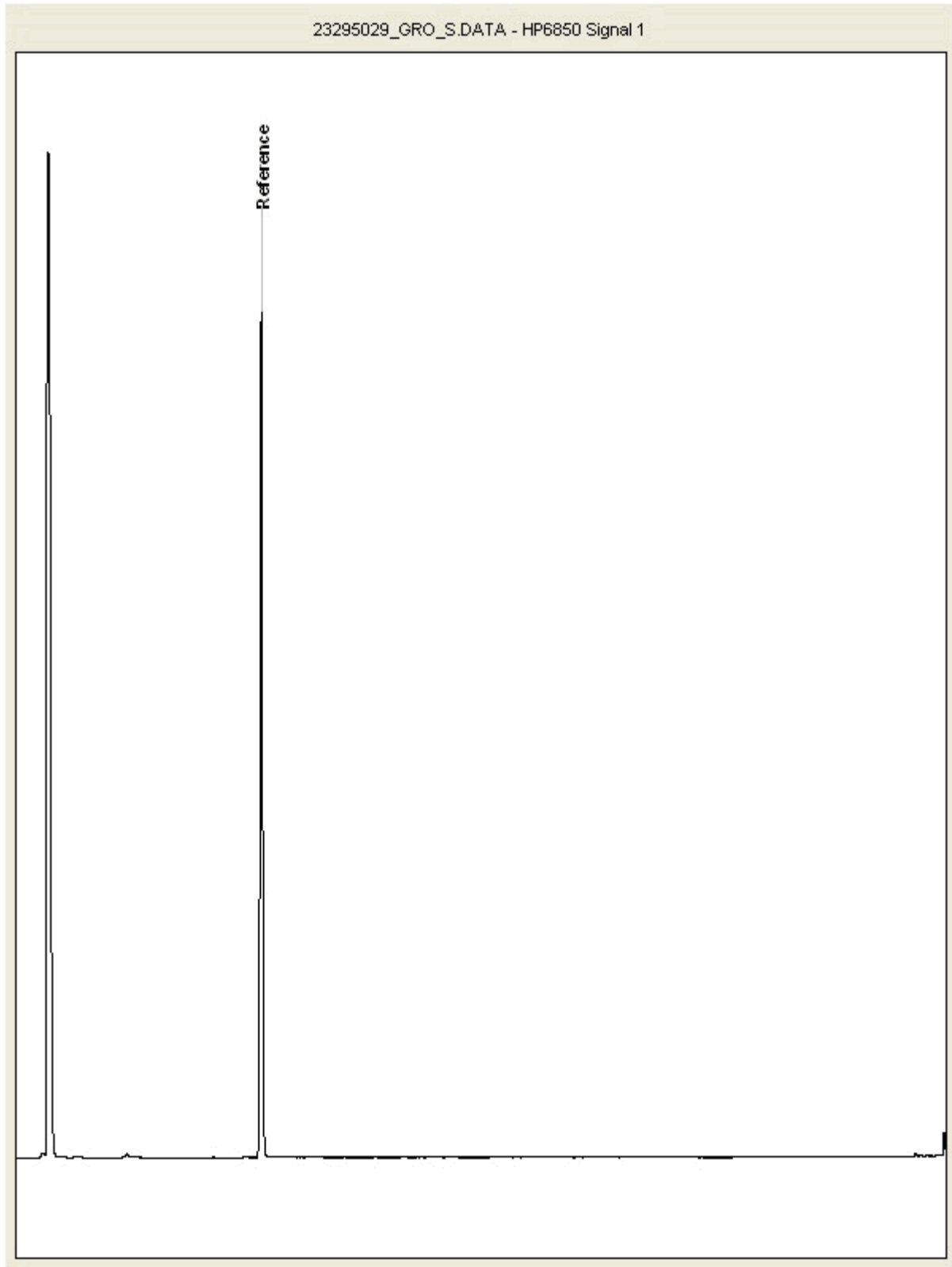
Report Number: 577343
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23295029
Sample ID : TPD0.8

Depth : 0.80





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SDG: 201104-105
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

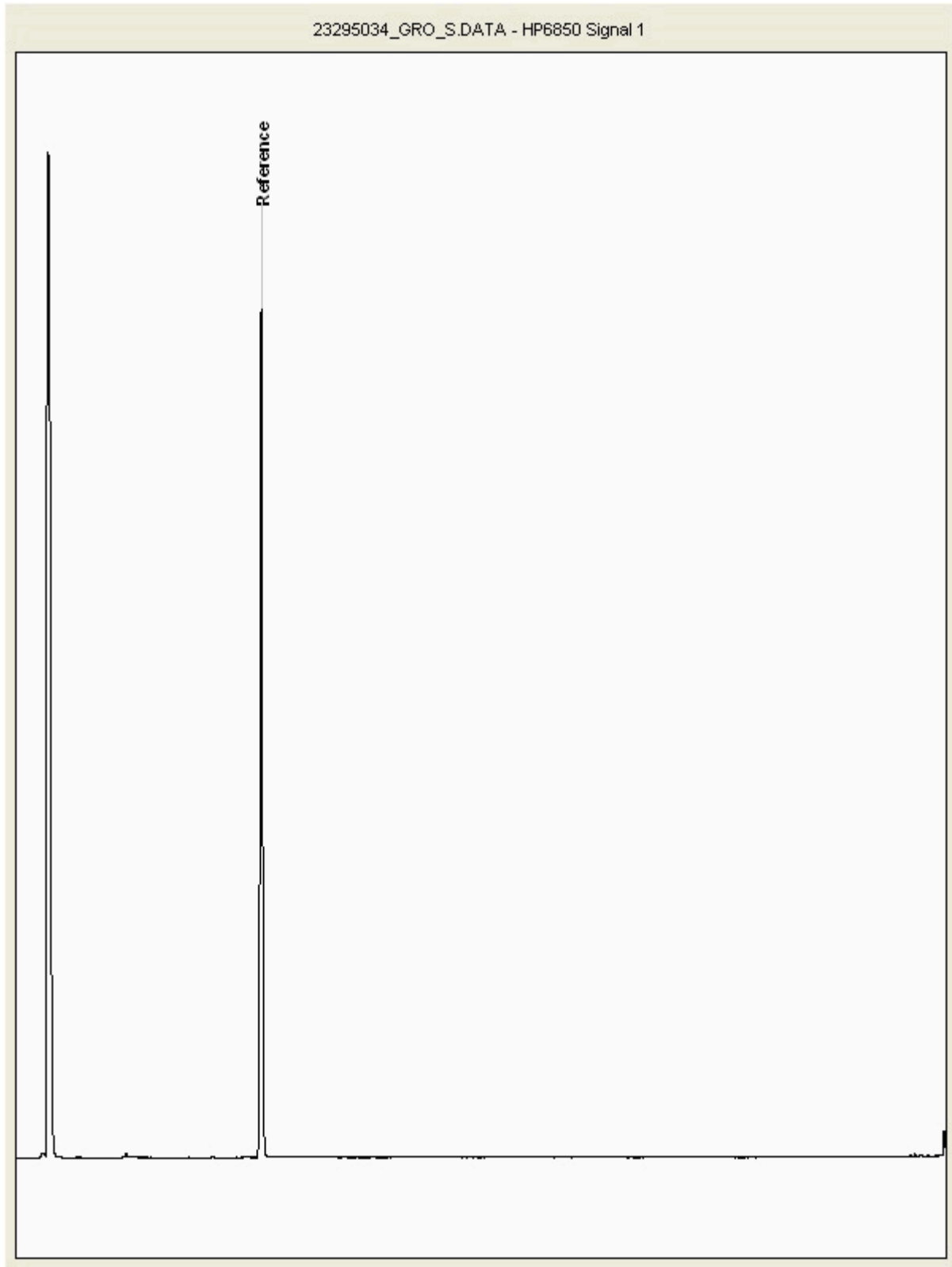
Report Number: 577343
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23295034
Sample ID : TPE 0.4

Depth : 0.40





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SDG: 201104-105
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

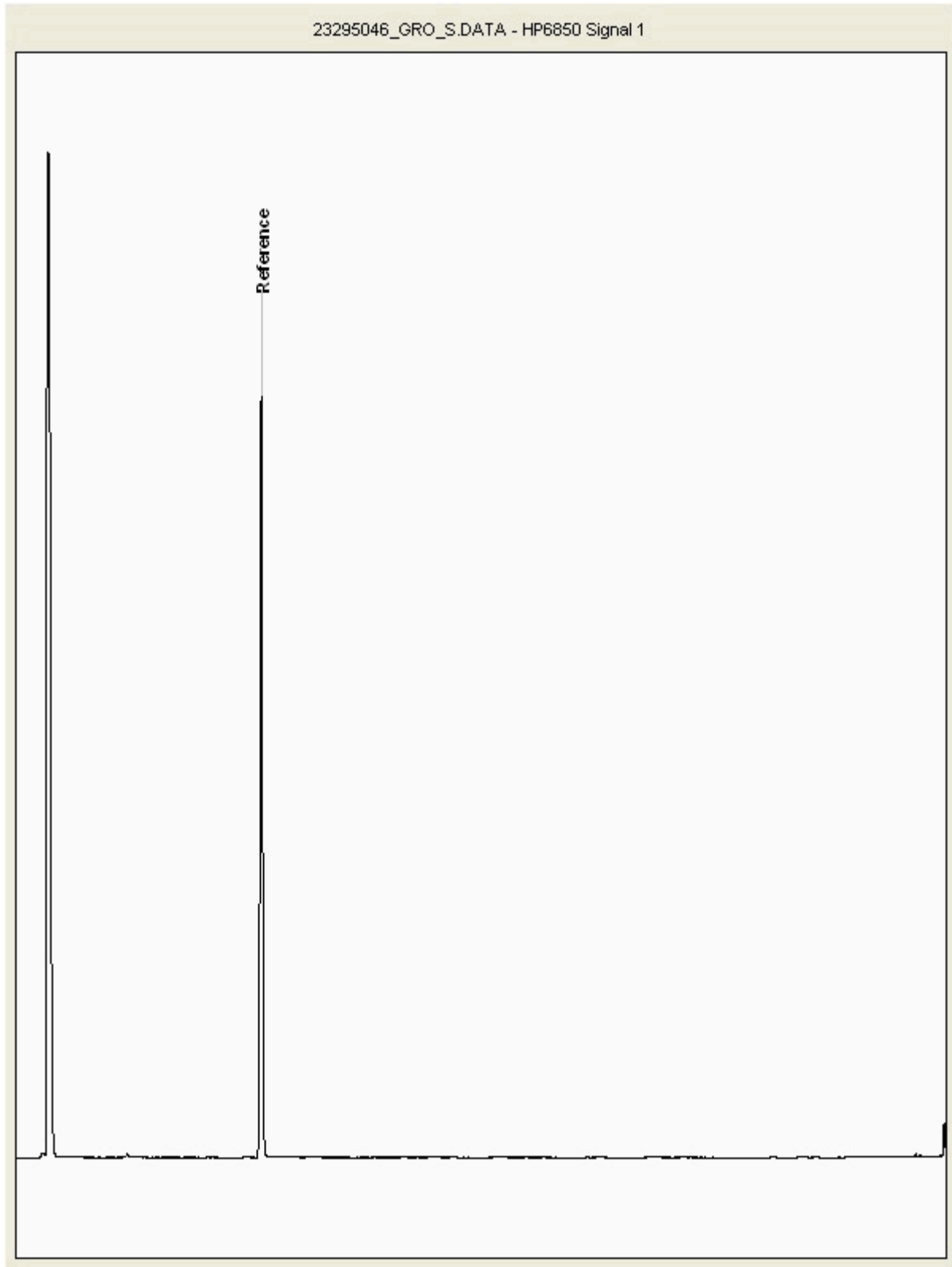
Report Number: 577343
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23295046
Sample ID : TPD 02

Depth : 0.20





CERTIFICATE OF ANALYSIS

Validated

SDG: 201104-105
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

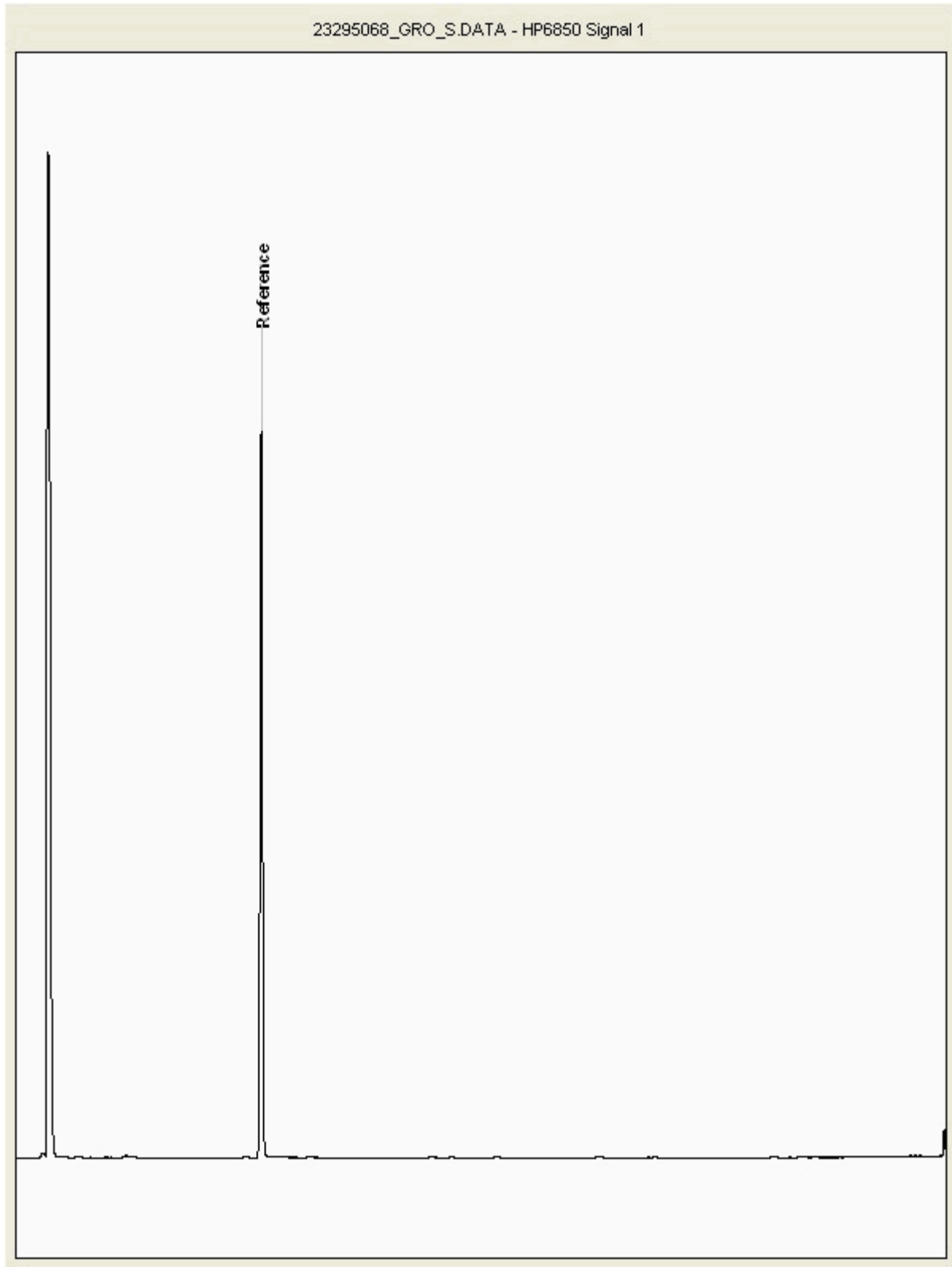
Report Number: 577343
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23295068
Sample ID : TPE 0.3

Depth : 0.30





CERTIFICATE OF ANALYSIS

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SDG: 201104-105
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

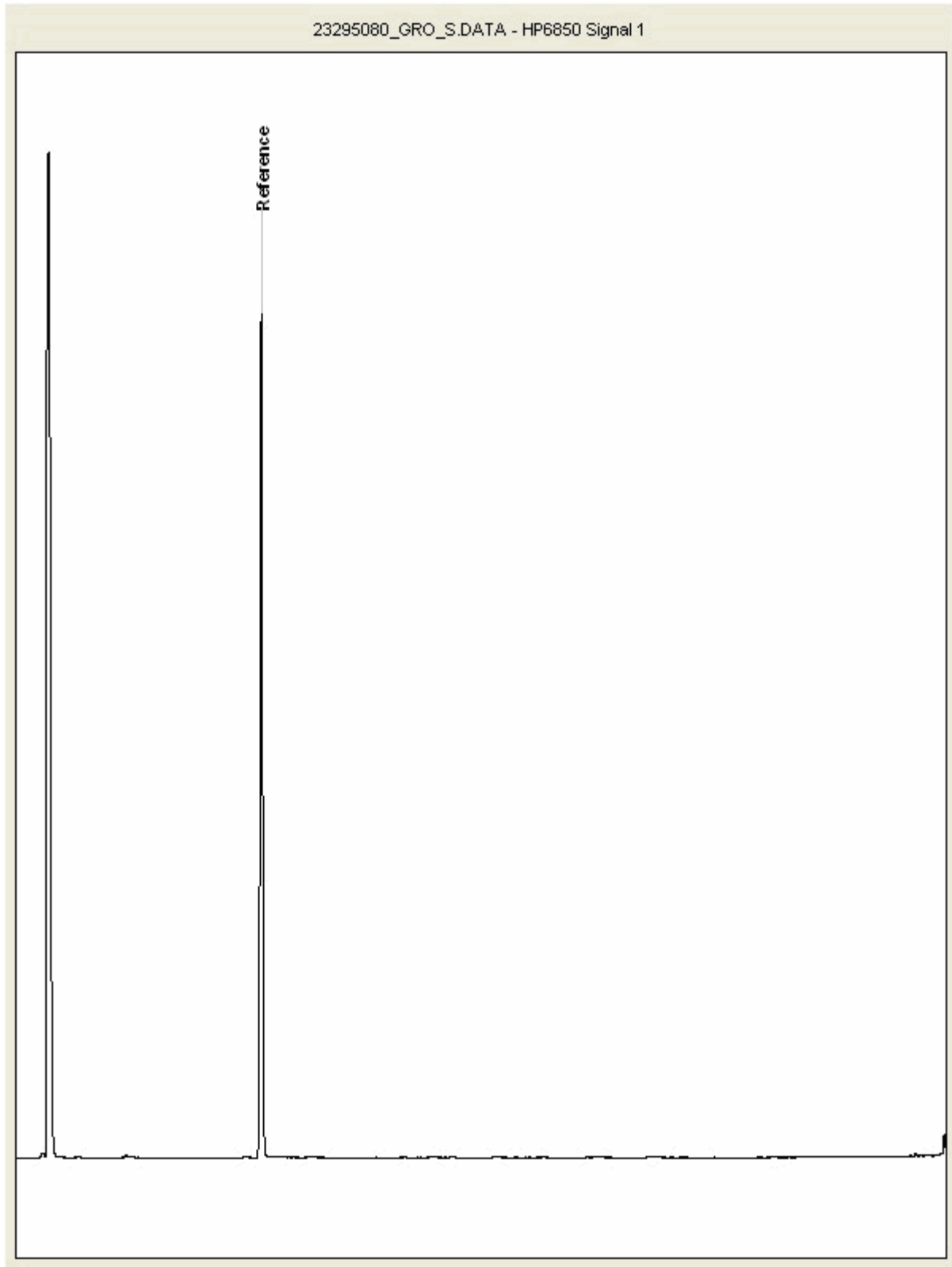
Report Number: 577343
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23295080
Sample ID : TPE 0.8

Depth : 0.80





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SDG: 201104-105
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

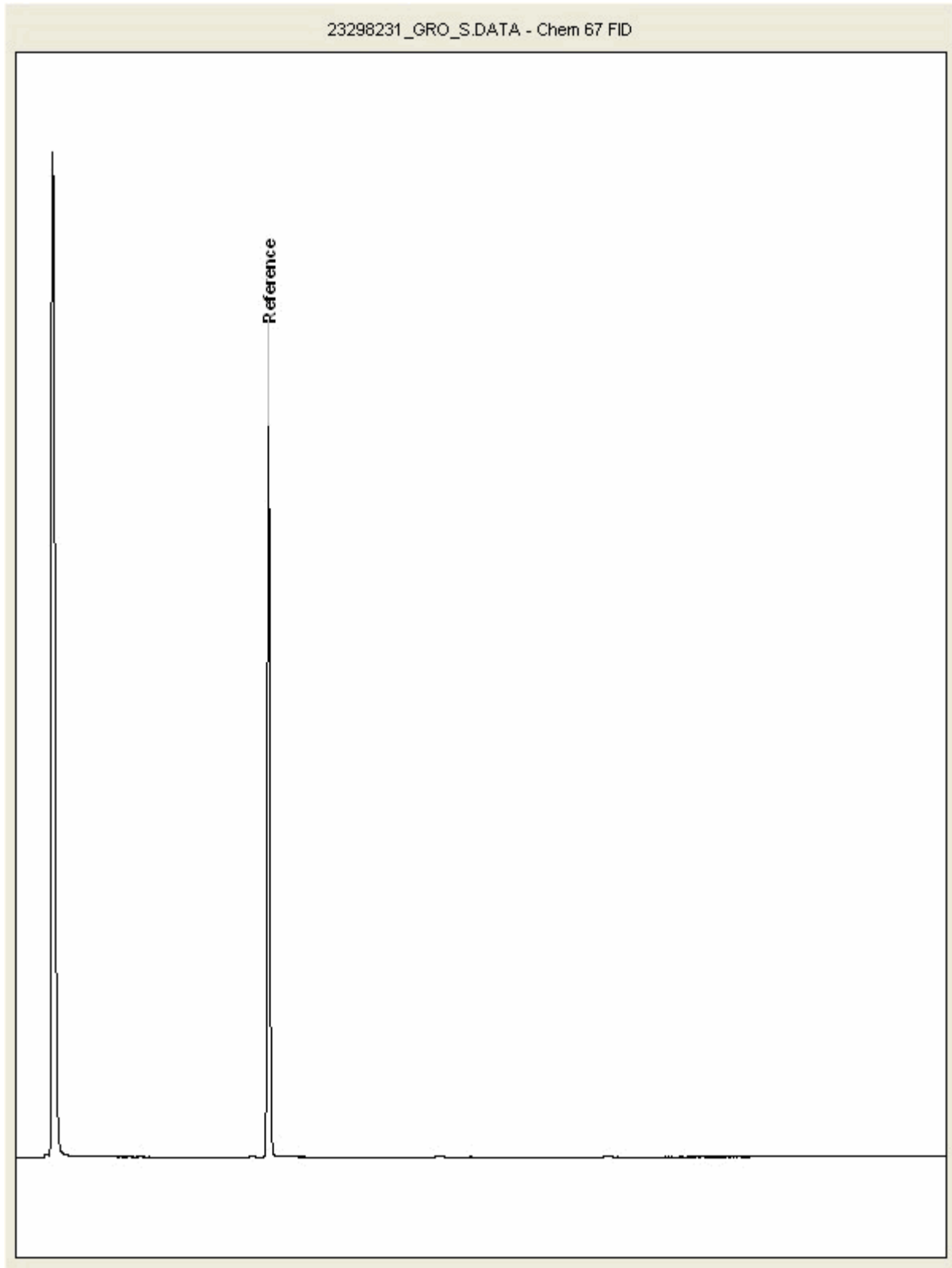
Report Number: 577343
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23298231
Sample ID : TPD0.45

Depth : 0.45





CERTIFICATE OF ANALYSIS

SDG: 201104-105 Client Reference: JFR1451 Report Number: 577343
 Location: A303 Stonehenge Order Number: Superseded Report:

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

19. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung. Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017)*.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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Deeside
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email: hawardencustomerservices@alsglobal.com

Website: www.alsenvironmental.co.uk

RPS Consultants Ltd
260 Park Avenue
Aztec West
Almondsbury
Bristol
BS32 4SY

Attention: Gary Riches

CERTIFICATE OF ANALYSIS

Date of report Generation: 25 November 2020
Customer: RPS Consultants Ltd
Sample Delivery Group (SDG): 201105-88
Your Reference: JFR1451
Location: A303 Stonehenge
Report No: 577286

We received 5 samples on Thursday November 05, 2020 and 5 of these samples were scheduled for analysis which was completed on Wednesday November 25, 2020. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

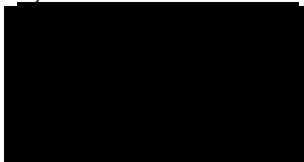
Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:



Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 201105-88
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 577286
Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
23183930	TPG		0.40	03/11/2020
23183931	TPG		0.70	03/11/2020
23183932	TPG		1.40	03/11/2020
23183933	TPH		0.20	03/11/2020
23183934	TPH		0.60	03/11/2020

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG:	201105-88	Client Reference:	JFR1451	Report Number:	577286
Location:	A303 Stonehenge	Order Number:		Superseded Report:	

Results Legend

- X Test
- N No Determination Possible

Sample Types -

- S - Soil/Solid
- UNS - Unspecified Solid
- GW - Ground Water
- SW - Surface Water
- LE - Land Leachate
- PL - Prepared Leachate
- PR - Process Water
- SA - Saline Water
- TE - Trade Effluent
- TS - Treated Sewage
- US - Untreated Sewage
- RE - Recreational Water
- DW - Drinking Water Non-regulatory
- UNL - Unspecified Liquid
- SL - Sludge
- G - Gas
- OTH - Other

	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type
		23183930	TPG		0.40	609 VOC (ALE215) 250g Amber Jar (ALE210)	S
	23183931	TPG		0.70	609 VOC (ALE215) 250g Amber Jar (ALE210)	S
	23183932	TPG		1.40	609 VOC (ALE215) 250g Amber Jar (ALE210)	S
	23183933	TPH		0.20	609 VOC (ALE215) 250g Amber Jar (ALE210)	S
	23183934	TPH		0.60	609 VOC (ALE215) 250g Amber Jar (ALE210)	S

	All	NDPs: 0 Tests: 5				
Alkali Metals by iCap-OES (Soil)			X	X	X	X
Alkalinity as CaCO3			X	X	X	X
Ammonium Soil by Titration			X	X	X	X
Anions by Kone (soil)			X	X	X	X
EPH			X	X	X	X
EPH by GCxGC-FID			X	X	X	X
Metals in solid samples by OES			X	X	X	X
PAH by GCMS			X	X	X	X
pH			X	X	X	X
Sample description			X	X	X	X
Total Organic Carbon			X	X	X	X
VOC MS (S)			X	X	X	X



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Validated

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Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm
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Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
23183930	TPG	0.40	Light Brown	N/A	Stones	Vegetation
23183931	TPG	0.70	Cream	Chalk	Vegetation	Stones
23183932	TPG	1.40	Cream	Chalk	Vegetation	None
23183933	TPH	0.20	Light Brown	Sand	Stones	Vegetation
23183934	TPH	0.60	Cream	Chalk	Vegetation	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.



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Location:	A303 Stonehenge	Order Number:		Superseded Report:	

Results Legend			Customer Sample Ref.	TPG	TPG	TPG	TPH	TPH	
#	ISO17025 accredited.		Depth (m)	0.40	0.70	1.40	0.20	0.60	
M	mCERTS accredited.		Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	
aq	Aqueous / settled sample.		Date Sampled	03/11/2020	03/11/2020	03/11/2020	03/11/2020	03/11/2020	
diss.filt	Dissolved / filtered sample.		Sampled Time						
tot.unfilt	Total / unfiltered sample.		Date Received	05/11/2020	05/11/2020	05/11/2020	05/11/2020	05/11/2020	
*	Subcontracted - refer to subcontractor report for accreditation status.		SDG Ref	201105-88	201105-88	201105-88	201105-88	201105-88	
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		Lab Sample No.(s)	23183930	23183931	23183932	23183933	23183934	
(F)	Trigger breach confirmed		AGS Reference						
1-4*\$@	Sample deviation (see appendix)								
Component	LOD/Units	Method							
Moisture Content Ratio (% of as received sample)	%	PM024		10	18	21	15	19	
Exchangeable Ammonia as N	<12 mg/kg	TM024		<12	<12	<12	<12	<12	#
Organic Carbon, Total	<0.2 %	TM132		0.294	0.315	<0.2	1.69	<0.2	#
Fraction Organic Carbon (FOC)	<0.002	TM132		0.00294	0.00315	<0.002	0.0169	<0.002	#
pH	1 pH Units	TM133		8.8	8.91	9.17	8.26	8.94	#
Arsenic	<0.6 mg/kg	TM181		2.69	0.988	<0.6	3.71	<0.6	#
Barium	<0.6 mg/kg	TM181		28.2	17.3	8.53	36.8	9.97	#
Cadmium	<0.02 mg/kg	TM181		0.399	0.365	0.343	0.953	0.423	#
Chromium	<0.9 mg/kg	TM181		5.66	2.83	<0.9	6.24	1.23	#
Copper	<1.4 mg/kg	TM181		3.11	1.53	<1.4	3.74	<1.4	#
Iron	<1000 mg/kg	TM181		7030	2920	<1000	4930	<1000	#
Lead	<0.7 mg/kg	TM181		3	1.18	<0.7	10.3	<0.7	#
Manganese	<0.13 mg/kg	TM181		302	244	176	626	214	#
Mercury	<0.14 mg/kg	TM181		<0.14	<0.14	<0.14	<0.14	<0.14	#
Molybdenum	<0.1 mg/kg	TM181		0.252	<0.1	0.139	0.186	<0.1	#
Nickel	<0.2 mg/kg	TM181		7.66	3.62	2.04	5.94	1.81	#
Phosphorus	<1 mg/kg	TM181		411	350	282	893	333	#
Selenium	<1 mg/kg	TM181		<1	<1	<1	<1	<1	#
Zinc	<1.9 mg/kg	TM181		23.3	15.5	12.7	44.1	10.8	#
Calcium	<21 mg/kg	TM224		371000	430000	679000	271000	475000	
Sodium	<7 mg/kg	TM224		136	146	162	158	137	
Magnesium	<8 mg/kg	TM224		1600	1170	872	1290	930	
Potassium	<16 mg/kg	TM224		738	378	116	553	129	
Alkalinity, Bicarbonate as CaCO3	<10 mg/kg	TM230		133	153	101	252	133	
Alkalinity, Carbonate as CaCO3	<10 mg/kg	TM230		16.7	<10	<10	<10	12.4	
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243		<0.004	<0.004	0.0052	<0.004	<0.004	#
Chloride (soluble)	<5 mg/kg	TM243		11.6	13	7.63	16	12.6	#
EPH (C5-C40)	<35 mg/kg	TM415		<35	<35	<35	<35	<35	
EPH Surrogate % recovery**	%	TM415		100	101	91.8	94	96.8	
EPH >C10-C40	<35 mg/kg	TM415		<35	<35	<35	<35	<35	#
				@	@	@	@ M	@	#



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PAH by GCMS

Results Legend			Customer Sample Ref.	TPG	TPG	TPG	TPH	TPH
#	ISO17025 accredited.							
M	mCERTS accredited.							
aq	Aqueous / settled sample.							
diss.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
*	Subcontracted - refer to subcontractor report for accreditation status.							
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery							
(F)	Trigger breach confirmed							
1-4*\$@	Sample deviation (see appendix)							
		Depth (m)	0.40	0.70	1.40	0.20	0.60	
		Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	
		Date Sampled	03/11/2020	03/11/2020	03/11/2020	03/11/2020	03/11/2020	
		Sampled Time						
		Date Received	05/11/2020	05/11/2020	05/11/2020	05/11/2020	05/11/2020	
		SDG Ref	201105-88	201105-88	201105-88	201105-88	201105-88	
		Lab Sample No.(s)	23183930	23183931	23183932	23183933	23183934	
		AGS Reference						
Component	LOD/Units	Method						
Naphthalene-d8 % recovery**	%	TM218	94.6	100	96.6	92.4	100	
Acenaphthene-d10 % recovery**	%	TM218	91.4	98.8	94.5	90.9	97	
Phenanthrene-d10 % recovery**	%	TM218	93.6	105	99.5	93	101	
Chrysene-d12 % recovery**	%	TM218	82.1	108	98.3	87.1	100	
Perylene-d12 % recovery**	%	TM218	83.9	101	92.2	89.8	94	
Naphthalene	<9 µg/kg	TM218	<9 @ #	<9 @ #	<9 @ #	<9 @ M	<9 @ #	
Acenaphthylene	<12 µg/kg	TM218	<12 @ #	<12 @ #	<12 @ #	<12 @ M	<12 @ #	
Acenaphthene	<8 µg/kg	TM218	<8 @ #	<8 @ #	<8 @ #	<8 @ M	<8 @ #	
Fluorene	<10 µg/kg	TM218	<10 @ #	<10 @ #	<10 @ #	<10 @ M	<10 @ #	
Phenanthrene	<15 µg/kg	TM218	<15 @ #	<15 @ #	<15 @ #	<15 @ M	<15 @ #	
Anthracene	<16 µg/kg	TM218	<16 @ #	<16 @ #	<16 @ #	<16 @ M	<16 @ #	
Fluoranthene	<17 µg/kg	TM218	<17 @ #	<17 @ #	<17 @ #	45.2 @ M	<17 @ #	
Pyrene	<15 µg/kg	TM218	<15 @ #	<15 @ #	<15 @ #	39.5 @ M	<15 @ #	
Benz(a)anthracene	<14 µg/kg	TM218	<14 @ #	<14 @ #	<14 @ #	26.8 @ M	<14 @ #	
Chrysene	<10 µg/kg	TM218	<10 @ #	<10 @ #	<10 @ #	28.2 @ M	<10 @ #	
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 @ #	<15 @ #	<15 @ #	51 @ M	<15 @ #	
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 @ #	<14 @ #	<14 @ #	20.4 @ M	<14 @ #	
Benzo(a)pyrene	<15 µg/kg	TM218	<15 @ #	<15 @ #	<15 @ #	29.9 @ M	<15 @ #	
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 @ #	<18 @ #	<18 @ #	<18 @ M	<18 @ #	
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 @ #	<23 @ #	<23 @ #	<23 @ M	<23 @ #	
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 @ #	<24 @ #	<24 @ #	<24 @ M	<24 @ #	
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118	<118	241	<118	



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VOC MS (S)

Results Legend			Customer Sample Ref.	TPG	TPG	TPG	TPH	TPH
#	ISO17025 accredited.		Depth (m)	0.40	0.70	1.40	0.20	0.60
M	mCERTS accredited.		Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
aq	Aqueous / settled sample.		Date Sampled	03/11/2020	03/11/2020	03/11/2020	03/11/2020	03/11/2020
diss.filt	Dissolved / filtered sample.		Sampled Time					
tot.unfilt	Total / unfiltered sample.		Date Received	05/11/2020	05/11/2020	05/11/2020	05/11/2020	05/11/2020
*	Subcontracted - refer to subcontractor report for accreditation status.		SDG Ref	201105-88	201105-88	201105-88	201105-88	201105-88
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		Lab Sample No.(s)	23183930	23183931	23183932	23183933	23183934
(F)	Trigger breach confirmed		AGS Reference					
1-4*3@	Sample deviation (see appendix)							
Component	LOD/Units	Method						
Dibromofluoromethane**	%	TM116	106 @	110 @	108 @	119 @	108 @	
Toluene-d8**	%	TM116	102 @	107 @	107 @	89.8 @	104 @	
4-Bromofluorobenzene**	%	TM116	73.7 @	90.7 @	87.1 @	70.1 @	84.7 @	
Methyl Tertiary Butyl Ether	<10 µg/kg	TM116	<10 @	<10 @ #	<10 @ #	<10 @ M	<10 @ #	
Benzene	<9 µg/kg	TM116	<9 @	<9 @ #	<9 @ #	<9 @ M	<9 @ #	
Toluene	<7 µg/kg	TM116	<7 @	<7 @ #	<7 @ #	<7 @ M	<7 @ #	
Ethylbenzene	<4 µg/kg	TM116	<4 @	<4 @ #	<4 @ #	<4 @ M	<4 @ #	
p/m-Xylene	<10 µg/kg	TM116	<10 @	<10 @ #	<10 @ #	<10 @ #	<10 @ #	
o-Xylene	<10 µg/kg	TM116	<10 @	<10 @ #	<10 @ #	<10 @ M	<10 @ #	
Sum of BTEX	<40 µg/kg	TM116	<40 @	<40 @	<40 @	<40 @	<40 @	



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Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM224	US EPA Method 6010B	Determination of Alkaline Metals by iCap 6500 Duo ICP-OES
TM230	Methods 2320B and 4500-CO2 D, AWWA/APHA 19th Edition, 1995.	Determination of Alkalinity in Aqueous Sludge and Soil extracts
TM243		Mixed Anions In Soils By Kone
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).



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Test Completion Dates

Lab Sample No(s)	23183930	23183931	23183932	23183933	23183934
Customer Sample Ref.	TPG	TPG	TPG	TPH	TPH
AGS Ref.					
Depth	0.40	0.70	1.40	0.20	0.60
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)

Alkali Metals by iCap-OES (Soil)	25-Nov-2020	25-Nov-2020	25-Nov-2020	25-Nov-2020	25-Nov-2020
Alkalinity as CaCO3	19-Nov-2020	19-Nov-2020	19-Nov-2020	19-Nov-2020	19-Nov-2020
Ammonium Soil by Titration	19-Nov-2020	19-Nov-2020	24-Nov-2020	19-Nov-2020	24-Nov-2020
Anions by Kone (soil)	25-Nov-2020	25-Nov-2020	25-Nov-2020	25-Nov-2020	25-Nov-2020
EPH	23-Nov-2020	23-Nov-2020	23-Nov-2020	23-Nov-2020	23-Nov-2020
EPH by GCxGC-FID	19-Nov-2020	19-Nov-2020	19-Nov-2020	19-Nov-2020	19-Nov-2020
GRO by GC-FID (S)	23-Nov-2020	23-Nov-2020	23-Nov-2020	23-Nov-2020	23-Nov-2020
Metals in solid samples by OES	24-Nov-2020	24-Nov-2020	24-Nov-2020	24-Nov-2020	24-Nov-2020
PAH by GCMS	18-Nov-2020	18-Nov-2020	18-Nov-2020	18-Nov-2020	18-Nov-2020
pH	18-Nov-2020	18-Nov-2020	18-Nov-2020	18-Nov-2020	18-Nov-2020
Sample description	17-Nov-2020	17-Nov-2020	17-Nov-2020	17-Nov-2020	17-Nov-2020
Total Organic Carbon	24-Nov-2020	24-Nov-2020	24-Nov-2020	23-Nov-2020	24-Nov-2020
VOC MS (S)	23-Nov-2020	23-Nov-2020	23-Nov-2020	23-Nov-2020	23-Nov-2020



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ASSOCIATED AQC DATA

Alkali Metals by iCap-OES (Soil)

Component	Method Code	QC 2340
Calcium	TM224	98.94 80.29 : 119.71
Magnesium	TM224	98.88 81.99 : 118.01
Potassium	TM224	104.14 72.21 : 127.79
Sodium	TM224	98.39 83.09 : 114.47

Ammonium Soil by Titration

Component	Method Code	QC 2373	QC 2387	QC 2378
Exchangeable Ammonium as NH4	TM024	84.58 76.20 : 110.13	84.08 76.20 : 110.13	96.02 76.20 : 110.13

Anions by Kone (soil)

Component	Method Code	QC 2323	QC 2329	QC 2335
Chloride (soluble)	TM243	144.56 86.68 : 115.67	149.22 86.68 : 115.67	144.56 86.68 : 115.67
Water Soluble Sulphate as SO4 2:1 Extract	TM243	159.81 70.00 : 130.00	159.35 70.00 : 130.00	157.01 70.00 : 130.00

EPH by GCxGC-FID

Component	Method Code	QC 2300
EPH >C10-C40 Raw	TM415	98.74 59.15 : 115.05

GRO by GC-FID (S)

Component	Method Code	QC 2337
QC	TM089	84.09 70.34 : 111.95

Metals in solid samples by OES



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Metals in solid samples by OES

Component	Method Code	QC 2340
Aluminium	TM181	98.23 73.56 : 108.85
Antimony	TM181	95.53 76.89 : 111.24
Arsenic	TM181	104.07 88.53 : 111.01
Barium	TM181	96.33 77.67 : 105.35
Beryllium	TM181	104.1 85.44 : 109.61
Boron	TM181	93.41 73.51 : 104.66
Cadmium	TM181	91.77 77.67 : 104.12
Chromium	TM181	93.71 86.11 : 106.21
Cobalt	TM181	93.08 84.60 : 104.13
Copper	TM181	90.67 82.40 : 105.45
Iron	TM181	100.0 82.95 : 110.58
Lead	TM181	94.14 78.24 : 104.05
Manganese	TM181	113.33 94.29 : 119.51
Mercury	TM181	97.1 83.16 : 107.81
Molybdenum	TM181	95.47 87.11 : 106.87
Nickel	TM181	93.64 80.26 : 102.28
Phosphorus	TM181	108.08 94.56 : 124.28
Selenium	TM181	100.0 82.28 : 110.48
Strontium	TM181	89.98 79.13 : 102.79
Thallium	TM181	100.44 82.94 : 111.86
Tin	TM181	103.42 86.72 : 110.03
Titanium	TM181	80.15 66.23 : 102.06
Vanadium	TM181	95.24 86.19 : 109.45
Zinc	TM181	102.67 84.68 : 113.99

PAH by GCMS



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PAH by GCMS

Component	Method Code	QC 2349	QC 2361
Acenaphthene	TM218	90.0 80.97 : 105.99	93.0 76.79 : 103.90
Acenaphthylene	TM218	88.5 74.76 : 107.36	93.0 78.40 : 108.66
Anthracene	TM218	88.5 73.04 : 106.97	97.0 70.90 : 109.22
Benz(a)anthracene	TM218	78.0 68.79 : 119.64	102.0 73.77 : 119.26
Benzo(a)pyrene	TM218	73.5 66.17 : 117.52	103.5 73.20 : 114.18
Benzo(b)fluoranthene	TM218	73.0 66.40 : 118.34	95.5 75.36 : 117.58
Benzo(ghi)perylene	TM218	73.5 67.68 : 112.07	100.0 70.73 : 116.12
Benzo(k)fluoranthene	TM218	75.5 72.84 : 114.66	103.5 75.98 : 116.59
Chrysene	TM218	79.5 68.39 : 115.56	103.0 74.82 : 114.18
Dibenzo(ah)anthracene	TM218	74.0 69.03 : 110.45	98.0 69.17 : 115.30
Fluoranthene	TM218	80.5 69.37 : 117.19	103.0 75.88 : 112.84
Fluorene	TM218	89.0 75.38 : 105.98	92.5 76.66 : 107.56
Indeno(123cd)pyrene	TM218	67.0 65.91 : 113.61	90.0 70.26 : 117.95
Naphthalene	TM218	89.0 71.40 : 105.87	96.0 74.70 : 101.83
Phenanthrene	TM218	89.0 74.04 : 109.30	97.0 73.62 : 109.34
Pyrene	TM218	80.5 69.68 : 115.27	102.5 71.46 : 117.00

pH

Component	Method Code	QC 2323	QC 2344
pH	TM133	99.47 99.06 : 100.67	101.05 98.79 : 101.47

Total Organic Carbon

Component	Method Code	QC 2354	QC 2350	QC 2366
Total Organic Carbon	TM132	104.3 87.02 : 113.45	103.13 87.02 : 113.45	99.22 87.02 : 113.45

VOC MS (S)



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VOC MS (S)

Component	Method Code	QC 2354
1,1,1,2-tetrachloroethane	TM116	98.6 86.59 : 118.97
1,1,1-Trichloroethane	TM116	110.0 86.26 : 117.53
1,1,2-Trichloroethane	TM116	107.2 75.16 : 112.70
1,1-Dichloroethane	TM116	115.0 83.27 : 122.16
1,2-Dichloroethane	TM116	120.2 89.30 : 133.10
1,4-Dichlorobenzene	TM116	118.0 82.59 : 123.23
2-Chlorotoluene	TM116	109.4 66.81 : 118.43
4-Chlorotoluene	TM116	107.0 65.88 : 114.76
Benzene	TM116	107.4 93.16 : 123.63
Carbon Disulphide	TM116	92.8 75.11 : 124.81
Carbontetrachloride	TM116	112.8 82.35 : 126.46
Chlorobenzene	TM116	100.4 85.07 : 118.13
Chloroform	TM116	115.2 88.13 : 122.71
Chloromethane	TM116	137.4 61.62 : 145.66
Cis-1,2-Dichloroethene	TM116	108.2 78.27 : 128.90
Dibromomethane	TM116	93.4 77.47 : 121.29
Dichloromethane	TM116	122.2 87.89 : 134.72
Ethylbenzene	TM116	91.0 79.92 : 110.05
Hexachlorobutadiene	TM116	76.6 16.78 : 153.29
Isopropylbenzene	TM116	88.4 64.20 : 119.59
Naphthalene	TM116	119.2 79.29 : 125.59
o-Xylene	TM116	85.6 74.57 : 112.73
p/m-Xylene	TM116	87.5 76.47 : 108.99
Sec-Butylbenzene	TM116	77.4 44.71 : 117.87
Tetrachloroethene	TM116	93.8 85.86 : 122.95
Toluene	TM116	100.2 87.82 : 116.21
Trichloroethene	TM116	100.4 79.80 : 112.33



CERTIFICATE OF ANALYSIS

Validated

SDG: 201105-88
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 577286
Superseded Report:

VOC MS (S)

		QC 2354
Trichlorofluoromethane	TM116	119.2 80.52 : 132.12
Vinyl Chloride	TM116	127.8 68.07 : 137.84

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis .

The figure detailed is the percentage recovery result for the AQC .

The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control .



CERTIFICATE OF ANALYSIS

Validated

SDG: 201105-88
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

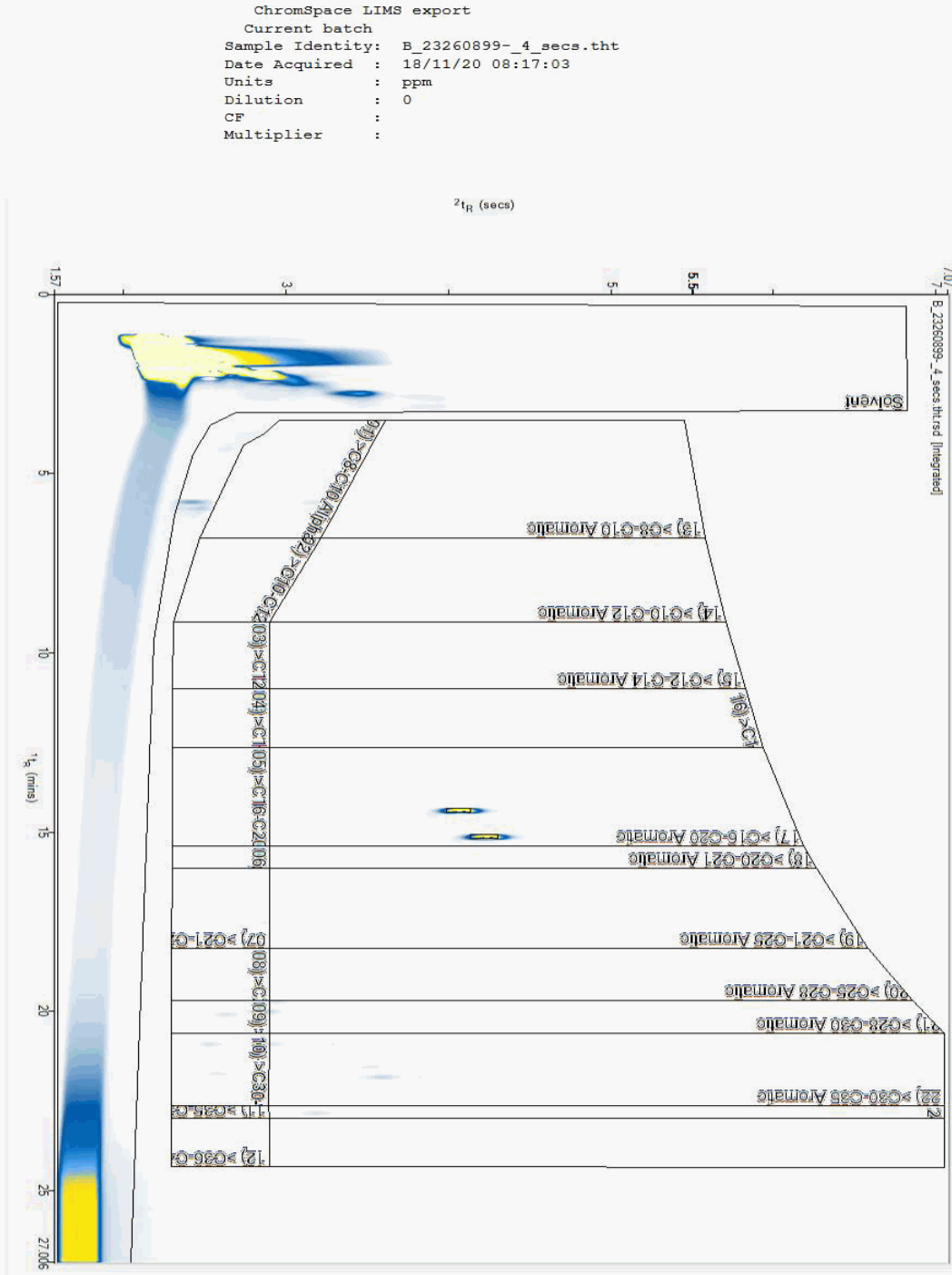
Report Number: 577286
Superseded Report:

Chromatogram

Analysis: EPH by GCxGC-FID

Sample No : 23260899
Sample ID : TPG

Depth : 0.40





CERTIFICATE OF ANALYSIS

Validated

SDG: 201105-88
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

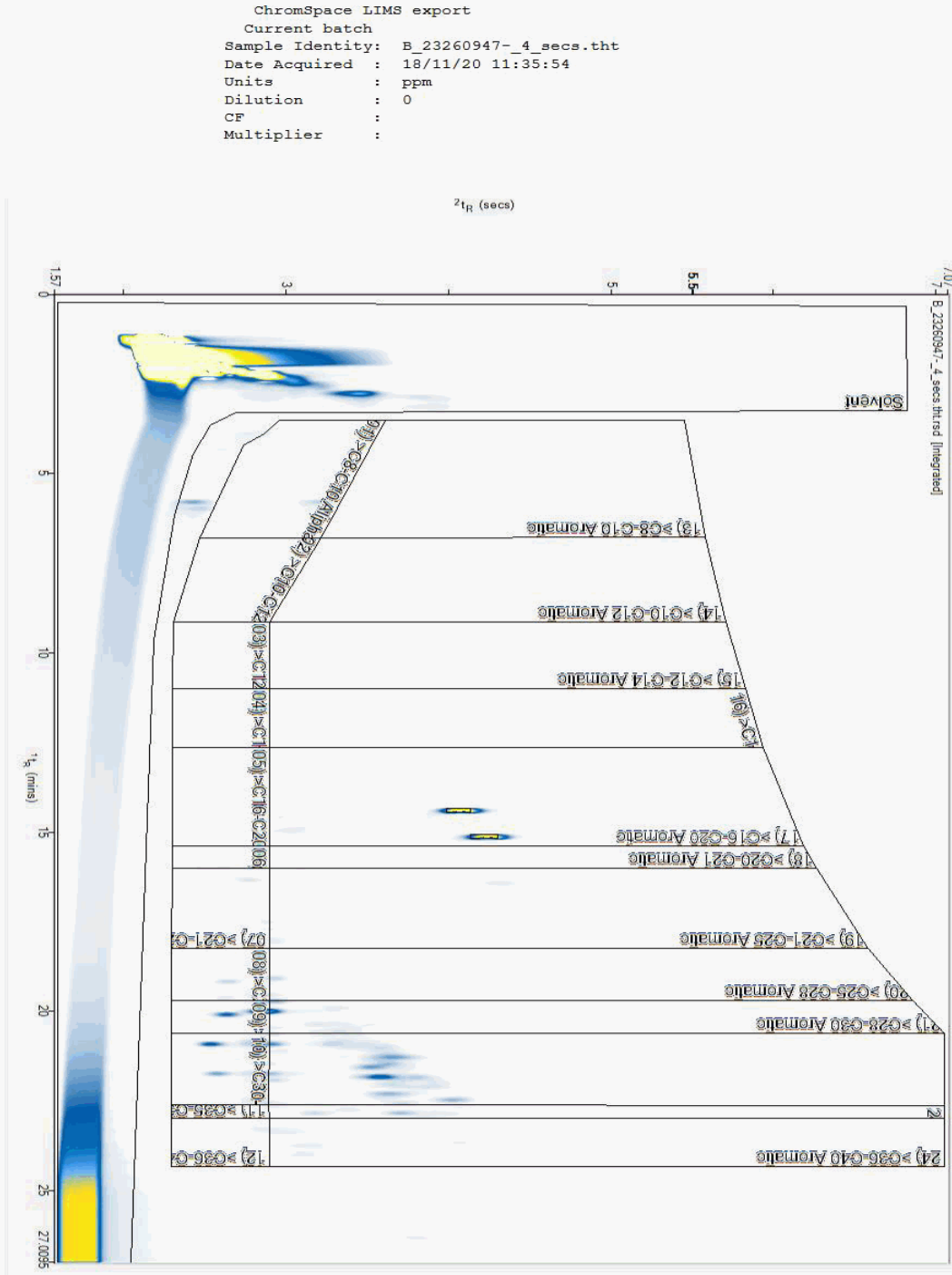
Report Number: 577286
Superseded Report:

Chromatogram

Analysis: EPH by GCxGC-FID

Sample No : 23260947
Sample ID : TPH

Depth : 0.20





CERTIFICATE OF ANALYSIS

Validated

SDG: 201105-88
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

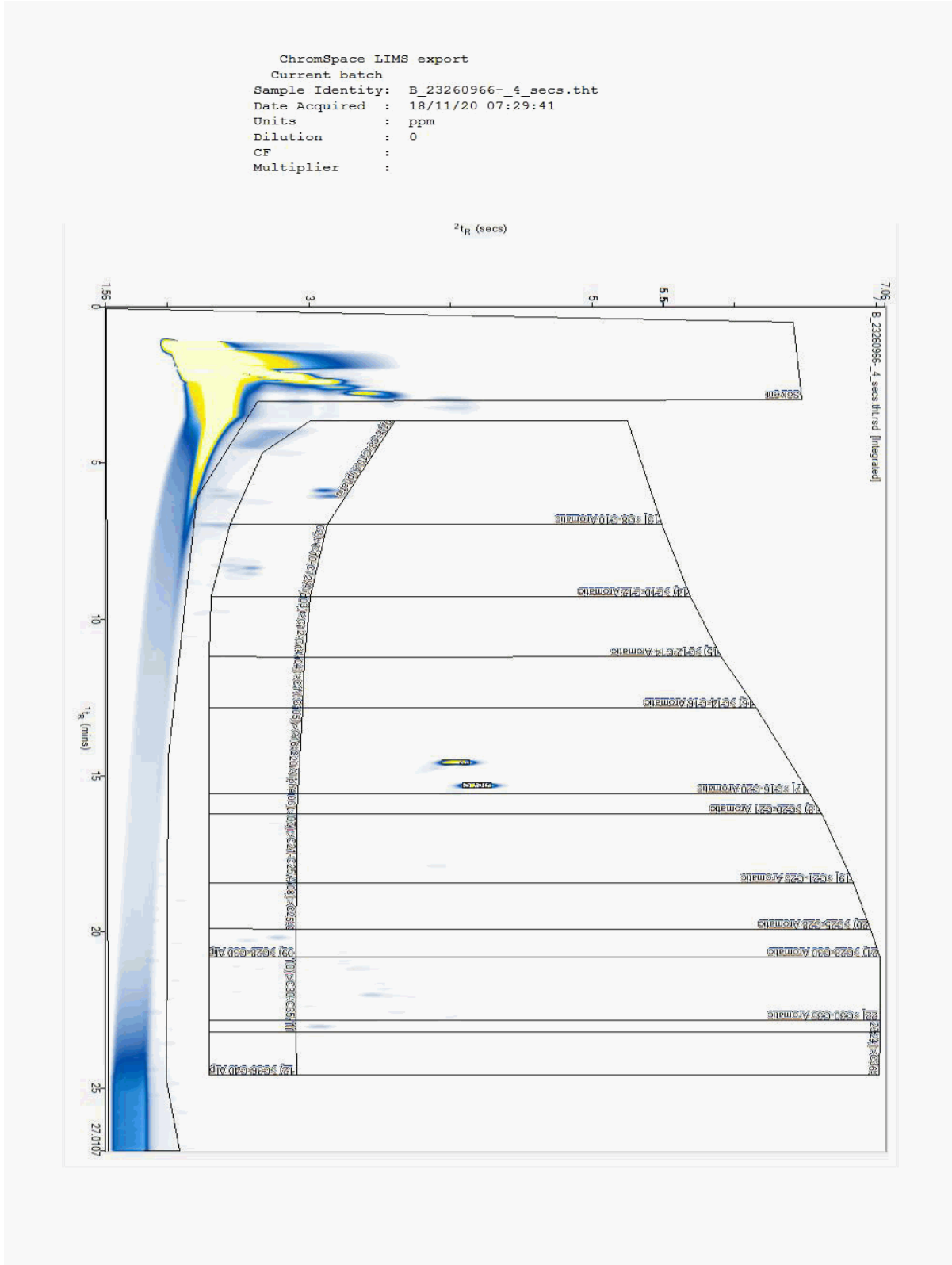
Report Number: 577286
Superseded Report:

Chromatogram

Analysis: EPH by GCxGC-FID

Sample No : 23260966
Sample ID : TPH

Depth : 0.60





CERTIFICATE OF ANALYSIS

Validated

SDG: 201105-88
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

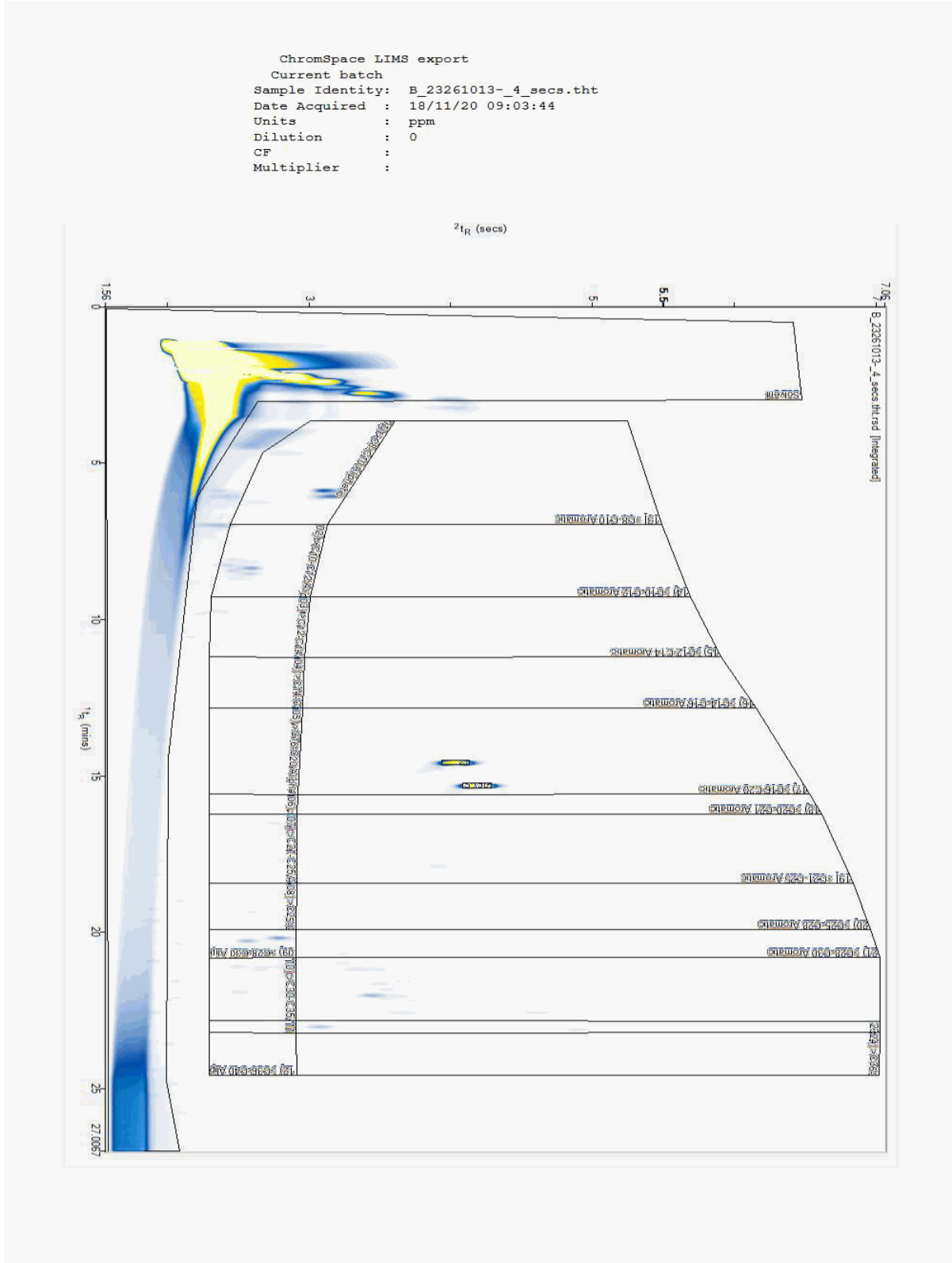
Report Number: 577286
Superseded Report:

Chromatogram

Analysis: EPH by GCxGC-FID

Sample No : 23261013
Sample ID : TPG

Depth : 0.70





CERTIFICATE OF ANALYSIS

Validated

SDG: 201105-88
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

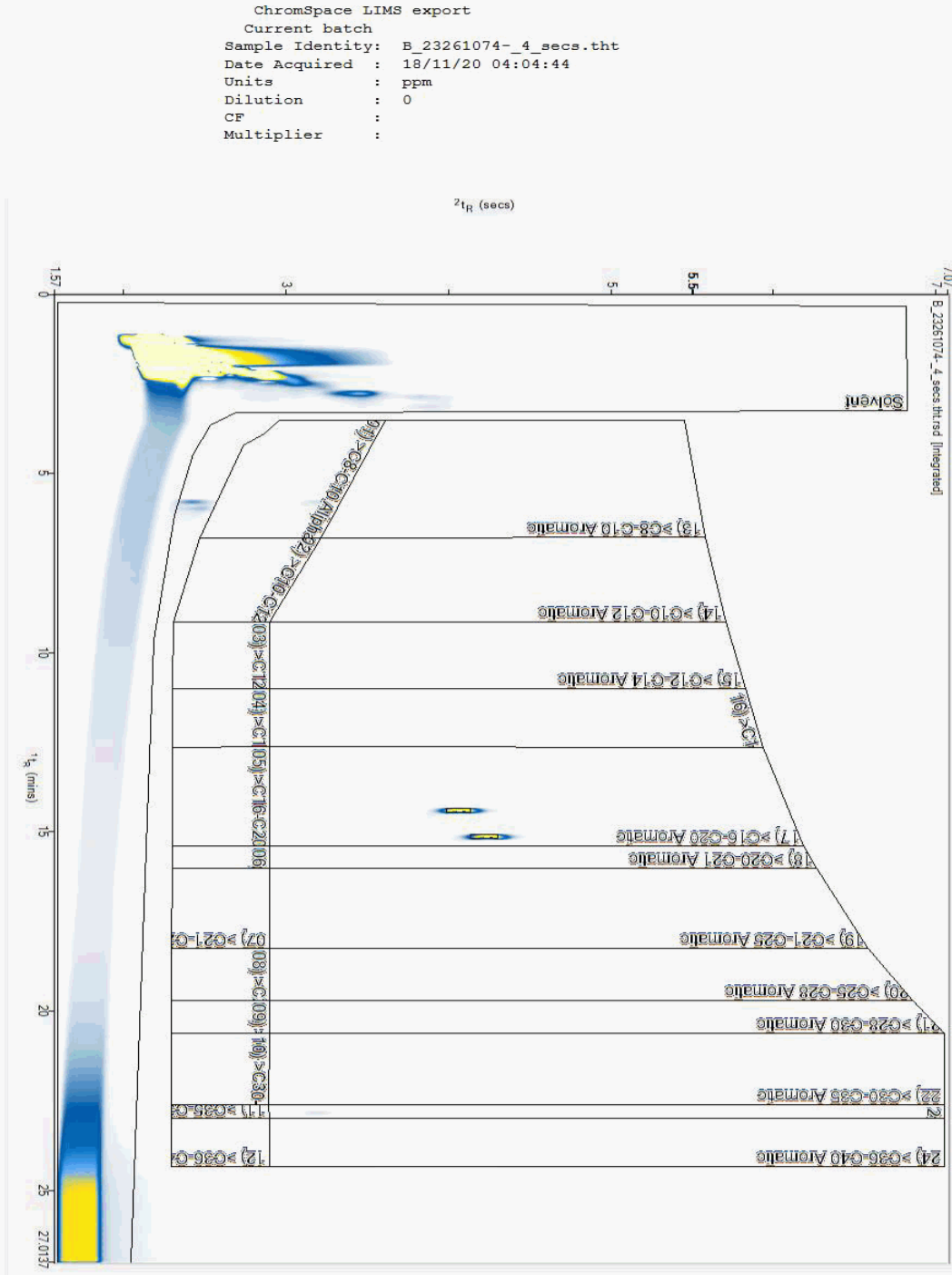
Report Number: 577286
Superseded Report:

Chromatogram

Analysis: EPH by GCxGC-FID

Sample No : 23261074
Sample ID : TPG

Depth : 1.40





CERTIFICATE OF ANALYSIS

Validated

SDG: 201105-88
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

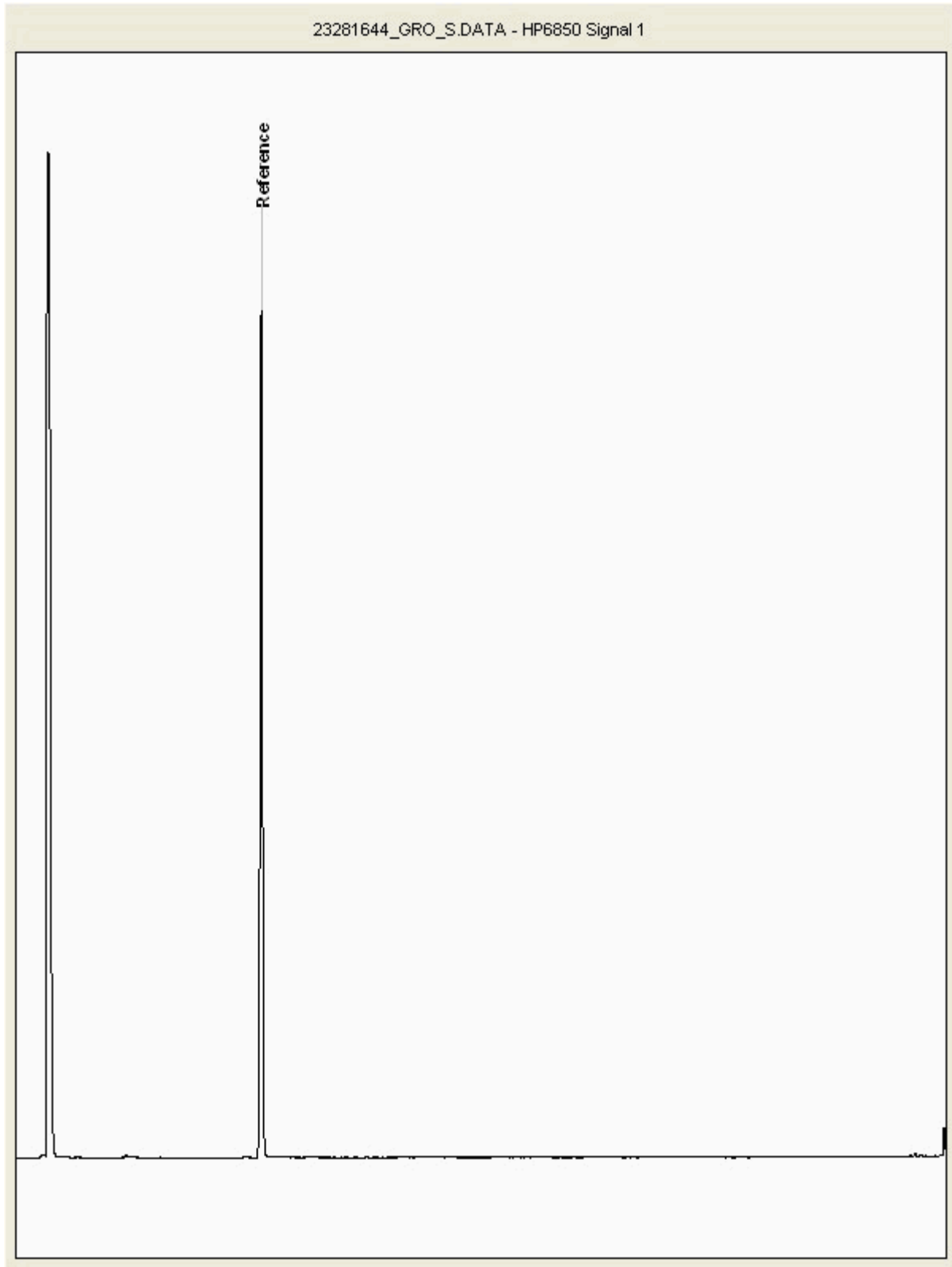
Report Number: 577286
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23281644
Sample ID : TPG

Depth : 0.70





CERTIFICATE OF ANALYSIS

Validated

SDG: 201105-88
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

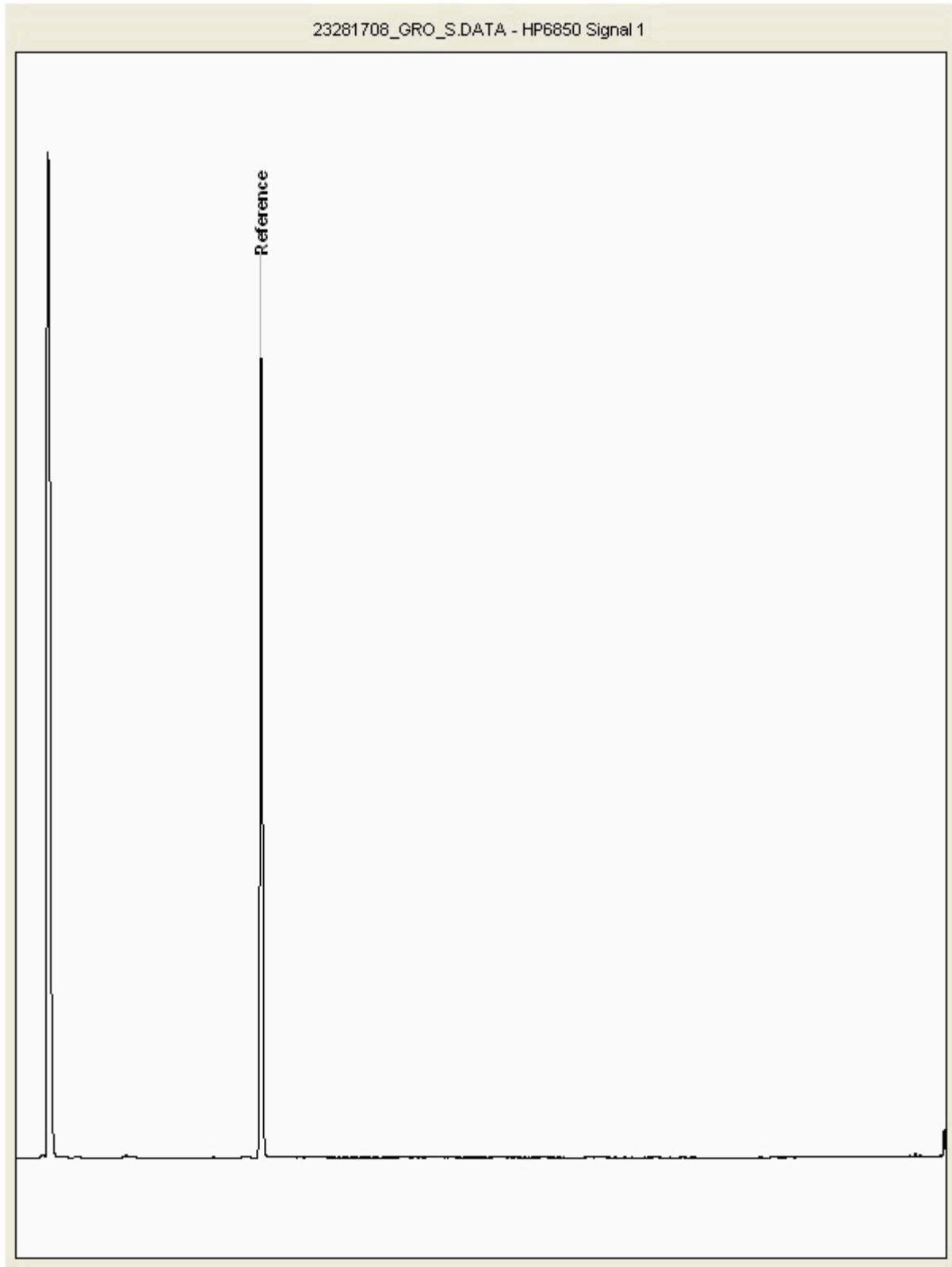
Report Number: 577286
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23281708
Sample ID : TPG

Depth : 1.40





CERTIFICATE OF ANALYSIS

Validated

SDG: 201105-88
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

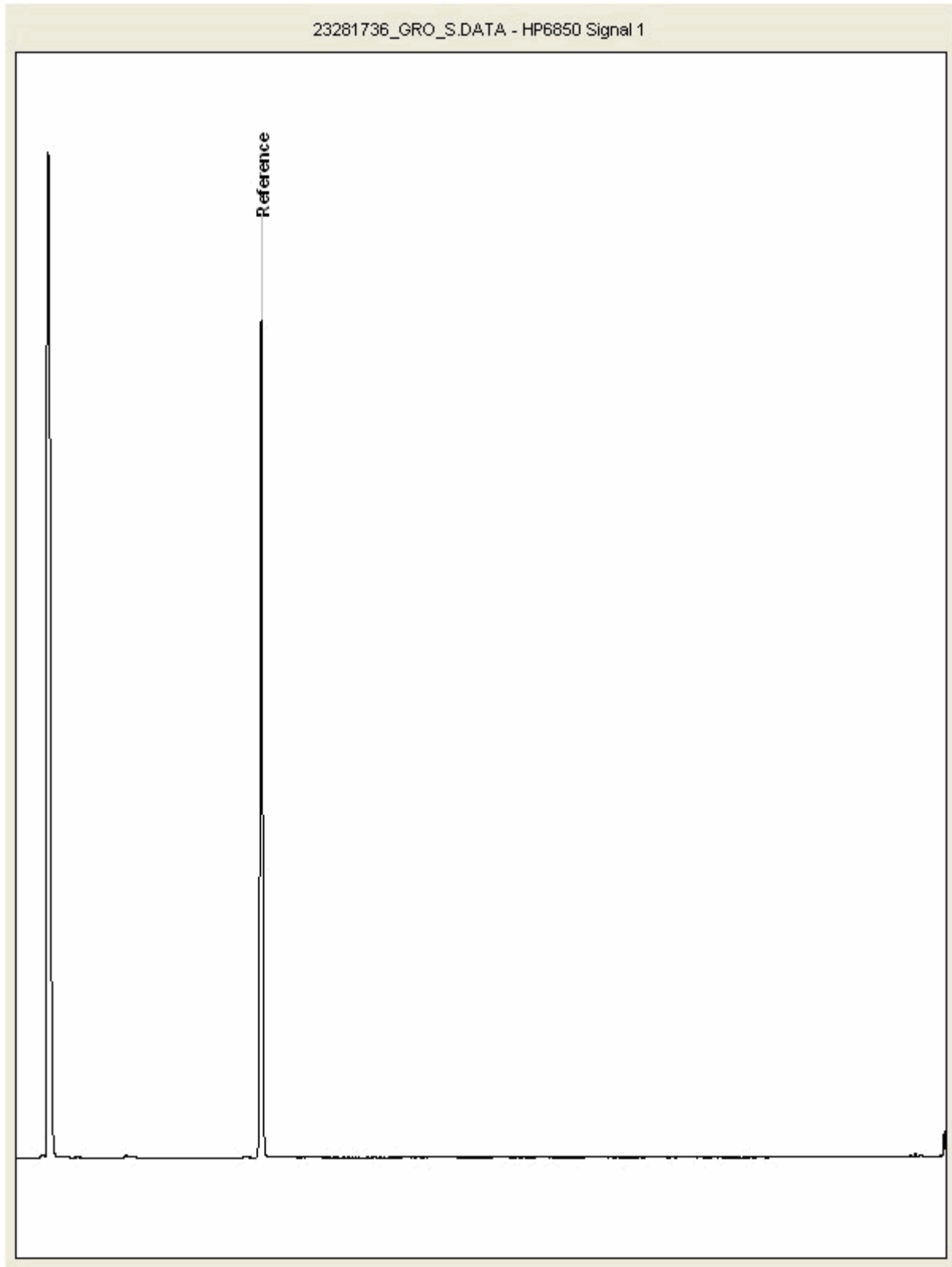
Report Number: 577286
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23281736
Sample ID : TPG

Depth : 0.40





CERTIFICATE OF ANALYSIS

Validated

SDG: 201105-88
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

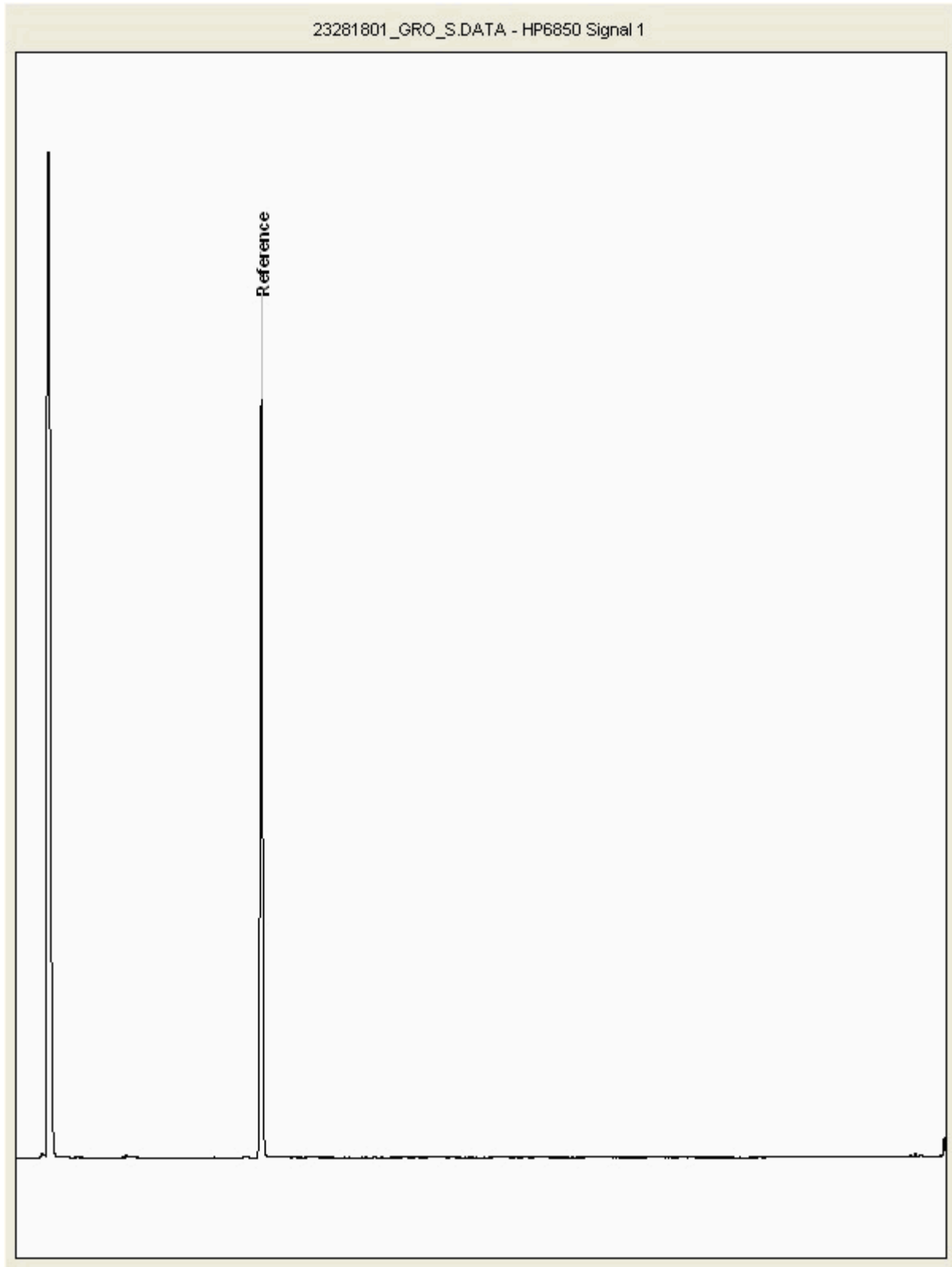
Report Number: 577286
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23281801
Sample ID : TPH

Depth : 0.20





CERTIFICATE OF ANALYSIS

Validated

SDG: 201105-88
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

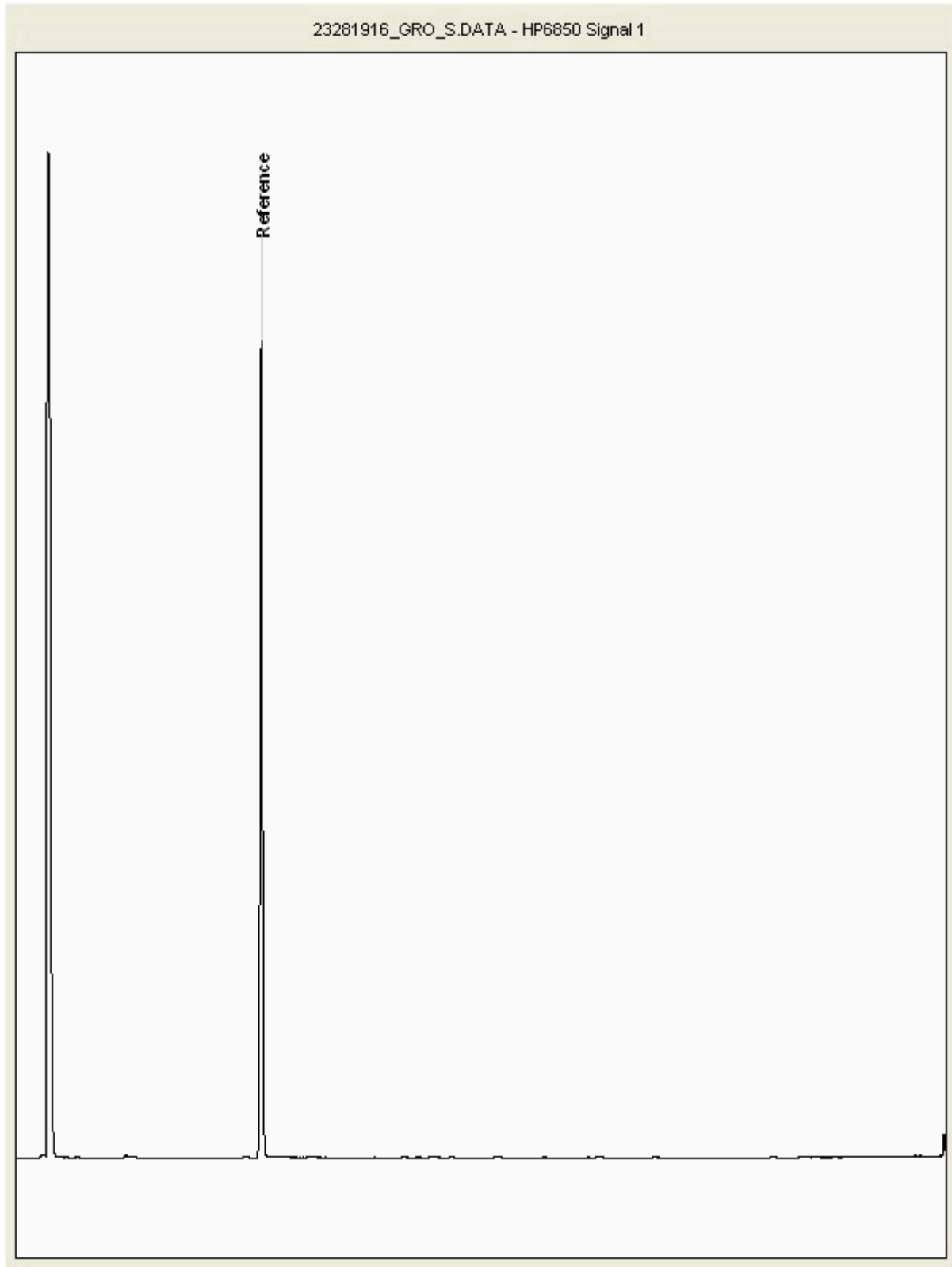
Report Number: 577286
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23281916
Sample ID : TPH

Depth : 0.60





CERTIFICATE OF ANALYSIS

SDG: 201105-88 Client Reference: JFR1451 Report Number: 577286
 Location: A303 Stonehenge Order Number: Superseded Report:

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

19. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung. Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017)*.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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RPS Consultants Ltd
260 Park Avenue
Aztec West
Almondsbury
Bristol
BS32 4SY

Attention: Gary Riches

CERTIFICATE OF ANALYSIS

Date of report Generation: 25 November 2020
Customer: RPS Consultants Ltd
Sample Delivery Group (SDG): 201106-106
Your Reference: JFR1451
Location: A303 Stonehenge
Report No: 577289

We received 3 samples on Friday November 06, 2020 and 3 of these samples were scheduled for analysis which was completed on Wednesday November 25, 2020. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

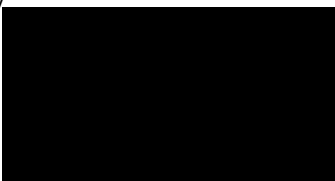
Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approv



Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 201106-106 **Client Reference:** JFR1451 **Report Number:** 577289
Location: A303 Stonehenge **Order Number:** **Superseded Report:**

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
23192562	TP-A		0.15 - 0.20	04/11/2020
23192564	TP-A		0.60 - 0.70	04/11/2020
23192566	TP-A		1.10	04/11/2020

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 201106-106	Client Reference: JFR1451	Report Number: 577289
Location: A303 Stonehenge	Order Number:	Superseded Report:

Results Legend

- X Test
- N No Determination Possible

Sample Types -

- S - Soil/Solid
- UNS - Unspecified Solid
- GW - Ground Water
- SW - Surface Water
- LE - Land Leachate
- PL - Prepared Leachate
- PR - Process Water
- SA - Saline Water
- TE - Trade Effluent
- TS - Treated Sewage
- US - Untreated Sewage
- RE - Recreational Water
- DW - Drinking Water Non-regulatory
- UNL - Unspecified Liquid
- SL - Sludge
- G - Gas
- OTH - Other

Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container			Sample Type
				250g Amber Jar (ALE210)	60g VOC (ALE215)	250g Amber Jar (ALE210)	
23192562	TP-A		0.15 - 0.20	60g VOC (ALE215)	60g VOC (ALE215)	250g Amber Jar (ALE210)	S
23192564	TP-A		0.60 - 0.70	60g VOC (ALE215)	60g VOC (ALE215)	250g Amber Jar (ALE210)	S
23192566	TP-A		1.10	60g VOC (ALE215)	60g VOC (ALE215)	250g Amber Jar (ALE210)	S
Alkali Metals by iCap-OES (Soil)	All			NDPs: 0 Tests: 3	X	X	X
Alkalinity as CaCO3	All			NDPs: 0 Tests: 3	X	X	X
Ammonium Soil by Titration	All			NDPs: 0 Tests: 3	X	X	X
Anions by Kone (soil)	All			NDPs: 0 Tests: 3	X	X	X
EPH	All			NDPs: 0 Tests: 3	X	X	X
EPH by GCxGC-FID	All			NDPs: 0 Tests: 3	X	X	X
Metals in solid samples by OES	All			NDPs: 0 Tests: 3	X	X	X
PAH by GCMS	All			NDPs: 0 Tests: 3	X	X	X
pH	All			NDPs: 0 Tests: 3	X	X	X
Sample description	All			NDPs: 0 Tests: 2		X	X
Total Organic Carbon	All			NDPs: 0 Tests: 3	X	X	X
VOC MS (S)	All			NDPs: 0 Tests: 3	X	X	X



CERTIFICATE OF ANALYSIS

Validated

SDG: 201106-106
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 577289
Superseded Report:

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm
-----------	----------	------	-----------------	--------	-------------	--------	------------	-------------	-------

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
23192562	TP-A	0.15 - 0.20	Dark Brown	Sandy Loam	Stones	None
23192564	TP-A	0.60 - 0.70	White	Chalk	Stones	None
23192566	TP-A	1.10	White	Chalk	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.



CERTIFICATE OF ANALYSIS

Validated

SDG: 201106-106
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 577289
Superseded Report:

Results Legend		Customer Sample Ref.	TP-A	TP-A	TP-A			
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.15 - 0.20	0.60 - 0.70	1.10			
M	mCERTS accredited.		Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
aq	Aqueous / settled sample.		04/11/2020	04/11/2020	04/11/2020			
diss.fit	Dissolved / filtered sample.							
tot.unfit	Total / unfiltered sample.							
*	Subcontracted - refer to subcontractor report for accreditation status.							
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		06/11/2020	06/11/2020	06/11/2020			
(F)	Trigger breach confirmed		201106-106	201106-106	201106-106			
1-4*3@	Sample deviation (see appendix)		23192562	23192564	23192566			
Component	LOD/Units		Method					
Moisture Content Ratio (% of as received sample)	%	PM024	22	22	21			
Exchangeable Ammonia as N	<12 mg/kg	TM024	<12	<12	<12			
Organic Carbon, Total	<0.2 %	TM132	0.867	<0.2	<0.2			
Fraction Organic Carbon (FOC)	<0.002	TM132	0.00867	<0.002	<0.002			
pH	1 pH Units	TM133	8.54	9.16	9.2			
Arsenic	<0.6 mg/kg	TM181	2.12	<0.6	<0.6			
Barium	<0.6 mg/kg	TM181	34.8	7.3	8.13			
Cadmium	<0.02 mg/kg	TM181	0.511	0.223	0.248			
Chromium	<0.9 mg/kg	TM181	4.71	<0.9	<0.9			
Copper	<1.4 mg/kg	TM181	3.91	<1.4	<1.4			
Iron	<1000 mg/kg	TM181	3400	<1000	<1000			
Lead	<0.7 mg/kg	TM181	9.42	<0.7	<0.7			
Manganese	<0.13 mg/kg	TM181	362	166	167			
Mercury	<0.14 mg/kg	TM181	<0.14	<0.14	<0.14			
Molybdenum	<0.1 mg/kg	TM181	0.152	0.105	0.133			
Nickel	<0.2 mg/kg	TM181	4.03	0.787	0.994			
Phosphorus	<1 mg/kg	TM181	631	489	343			
Selenium	<1 mg/kg	TM181	<1	<1	<1			
Zinc	<1.9 mg/kg	TM181	34.5	9.6	11.1			
Calcium	<21 mg/kg	TM224	359000	357000	419000			
Sodium	<7 mg/kg	TM224	170	187	160			
Magnesium	<8 mg/kg	TM224	1240	800	760			
Potassium	<16 mg/kg	TM224	503	124	118			
Alkalinity, Bicarbonate as CaCO3	<10 mg/kg	TM230	177	76.8	98.4			
Alkalinity, Carbonate as CaCO3	<10 mg/kg	TM230	<10	32	<10			
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243	<0.004	0.007	0.0062			
Chloride (soluble)	<5 mg/kg	TM243	8.48	8.73	8.4			
EPH (C5-C40)	<35 mg/kg	TM415	106	<35	<35			
EPH Surrogate % recovery**	%	TM415	106	99.2	88.6			
EPH >C10-C40	<35 mg/kg	TM415	106	<35	<35			
			@ M	@ #	@ #			



CERTIFICATE OF ANALYSIS

Validated

SDG: 201106-106 Client Reference: JFR1451 Report Number: 577289
 Location: A303 Stonehenge Order Number: Superseded Report:

PAH by GCMS

Results Legend		Customer Sample Ref.	TP-A	TP-A	TP-A			
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.15 - 0.20	0.60 - 0.70	1.10			
M	mCERTS accredited.		Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
aq	Aqueous / settled sample.		04/11/2020	04/11/2020	04/11/2020			
diss.filt	Dissolved / filtered sample.		06/11/2020	06/11/2020	06/11/2020			
tot.unfilt	Total / unfiltered sample.		201106-106	201106-106	201106-106			
*	Subcontracted - refer to subcontractor report for accreditation status.		23192562	23192564	23192566			
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery							
(F)	Trigger breach confirmed							
1-4*§@	Sample deviation (see appendix)							
Component	LOD/Units		Method					
Naphthalene-d8 % recovery**	%	TM218	96	94.9	93			
Acenaphthene-d10 % recovery**	%	TM218	93.4	91.9	89.7			
Phenanthrene-d10 % recovery**	%	TM218	94.5	93	89.8			
Chrysene-d12 % recovery**	%	TM218	92.2	84.9	86.7			
Perylene-d12 % recovery**	%	TM218	93.2	88.3	91			
Naphthalene	<9 µg/kg	TM218	13.4 @ M	<9 @ #	<9 @ #			
Acenaphthylene	<12 µg/kg	TM218	91.1 @ M	<12 @ #	<12 @ #			
Acenaphthene	<8 µg/kg	TM218	33 @ M	<8 @ #	<8 @ #			
Fluorene	<10 µg/kg	TM218	29 @ M	<10 @ #	<10 @ #			
Phenanthrene	<15 µg/kg	TM218	684 @ M	<15 @ #	<15 @ #			
Anthracene	<16 µg/kg	TM218	180 @ M	<16 @ #	<16 @ #			
Fluoranthene	<17 µg/kg	TM218	2450 @ M	<17 @ #	50.8 @ #			
Pyrene	<15 µg/kg	TM218	2140 @ M	<15 @ #	46.3 @ #			
Benz(a)anthracene	<14 µg/kg	TM218	1200 @ M	<14 @ #	28 @ #			
Chrysene	<10 µg/kg	TM218	1190 @ M	<10 @ #	29 @ #			
Benzo(b)fluoranthene	<15 µg/kg	TM218	2090 @ M	<15 @ #	49.4 @ #			
Benzo(k)fluoranthene	<14 µg/kg	TM218	791 @ M	<14 @ #	<14 @ #			
Benzo(a)pyrene	<15 µg/kg	TM218	1450 @ M	<15 @ #	31.6 @ #			
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	1270 @ M	<18 @ #	29.1 @ #			
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	109 @ M	<23 @ #	<23 @ #			
Benzo(g,h,i)perylene	<24 µg/kg	TM218	1140 @ M	<24 @ #	<24 @ #			
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	14900	<118	264			



CERTIFICATE OF ANALYSIS

Validated

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Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM224	US EPA Method 6010B	Determination of Alkaline Metals by iCap 6500 Duo ICP-OES
TM230	Methods 2320B and 4500-CO2 D, AWWA/APHA 19th Edition, 1995.	Determination of Alkalinity in Aqueous Sludge and Soil extracts
TM243		Mixed Anions In Soils By Kone
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).



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Test Completion Dates

Lab Sample No(s)	23192562	23192564	23192566
Customer Sample Ref.	TP-A	TP-A	TP-A
AGS Ref.			
Depth	0.15 - 0.20	0.60 - 0.70	1.10
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)

Alkali Metals by iCap-OES (Soil)	25-Nov-2020	25-Nov-2020	25-Nov-2020
Alkalinity as CaCO3	19-Nov-2020	19-Nov-2020	19-Nov-2020
Ammonium Soil by Titration	19-Nov-2020	24-Nov-2020	19-Nov-2020
Anions by Kone (soil)	25-Nov-2020	24-Nov-2020	24-Nov-2020
EPH	23-Nov-2020	23-Nov-2020	23-Nov-2020
EPH by GCxGC-FID	19-Nov-2020	19-Nov-2020	19-Nov-2020
GRO by GC-FID (S)	23-Nov-2020	23-Nov-2020	23-Nov-2020
Metals in solid samples by OES	25-Nov-2020	25-Nov-2020	25-Nov-2020
PAH by GCMS	18-Nov-2020	18-Nov-2020	18-Nov-2020
pH	18-Nov-2020	18-Nov-2020	18-Nov-2020
Sample description	17-Nov-2020	17-Nov-2020	17-Nov-2020
Total Organic Carbon	24-Nov-2020	24-Nov-2020	24-Nov-2020
VOC MS (S)	23-Nov-2020	23-Nov-2020	23-Nov-2020



CERTIFICATE OF ANALYSIS

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ASSOCIATED AQC DATA

Alkali Metals by iCap-OES (Soil)

Component	Method Code	QC 2366
Calcium	TM224	98.68 80.29 : 119.71
Magnesium	TM224	97.58 81.99 : 118.01
Potassium	TM224	104.78 72.21 : 127.79
Sodium	TM224	96.24 83.09 : 114.47

Ammonium Soil by Titration

Component	Method Code	QC 2387	QC 2378
Exchangeable Ammonium as NH4	TM024	84.08 76.20 : 110.13	96.02 76.20 : 110.13

Anions by Kone (soil)

Component	Method Code	QC 2335	QC 2345
Chloride (soluble)	TM243	144.56 86.68 : 115.67	141.97 86.68 : 115.67
Water Soluble Sulphate as SO4 2:1 Extract	TM243	157.01 70.00 : 130.00	157.94 70.00 : 130.00

EPH by GCxGC-FID

Component	Method Code	QC 2300
EPH >C10-C40 Raw	TM415	98.74 59.15 : 115.05

GRO by GC-FID (S)

Component	Method Code	QC 2337
QC	TM089	84.09 70.34 : 111.95

Metals in solid samples by OES



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Metals in solid samples by OES

Component	Method Code	QC 2366
Aluminium	TM181	98.23 73.56 : 108.85
Antimony	TM181	96.75 76.89 : 111.24
Arsenic	TM181	99.71 88.53 : 111.01
Barium	TM181	95.41 77.67 : 105.35
Beryllium	TM181	98.13 85.44 : 109.61
Boron	TM181	90.54 73.51 : 104.66
Cadmium	TM181	89.3 77.67 : 104.12
Chromium	TM181	91.28 86.11 : 106.21
Cobalt	TM181	89.94 84.60 : 104.13
Copper	TM181	92.43 82.40 : 105.45
Iron	TM181	96.83 82.95 : 110.58
Lead	TM181	89.19 78.24 : 104.05
Manganese	TM181	107.22 94.29 : 119.51
Mercury	TM181	95.17 83.16 : 107.81
Molybdenum	TM181	96.3 87.11 : 106.87
Nickel	TM181	91.93 80.26 : 102.28
Phosphorus	TM181	104.44 94.56 : 124.28
Selenium	TM181	96.08 82.28 : 110.48
Strontium	TM181	93.99 79.13 : 102.79
Thallium	TM181	98.67 82.94 : 111.86
Tin	TM181	100.76 86.72 : 110.03
Titanium	TM181	76.34 66.23 : 102.06
Vanadium	TM181	95.6 86.19 : 109.45
Zinc	TM181	99.59 84.68 : 113.99

PAH by GCMS



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PAH by GCMS

Component	Method Code	QC 2349
Acenaphthene	TM218	90.0 80.97 : 105.99
Acenaphthylene	TM218	88.5 74.76 : 107.36
Anthracene	TM218	88.5 73.04 : 106.97
Benz(a)anthracene	TM218	78.0 68.79 : 119.64
Benzo(a)pyrene	TM218	73.5 66.17 : 117.52
Benzo(b)fluoranthene	TM218	73.0 66.40 : 118.34
Benzo(ghi)perylene	TM218	73.5 67.68 : 112.07
Benzo(k)fluoranthene	TM218	75.5 72.84 : 114.66
Chrysene	TM218	79.5 68.39 : 115.56
Dibenzo(ah)anthracene	TM218	74.0 69.03 : 110.45
Fluoranthene	TM218	80.5 69.37 : 117.19
Fluorene	TM218	89.0 75.38 : 105.98
Indeno(123cd)pyrene	TM218	67.0 65.91 : 113.61
Naphthalene	TM218	89.0 71.40 : 105.87
Phenanthrene	TM218	89.0 74.04 : 109.30
Pyrene	TM218	80.5 69.68 : 115.27

pH

Component	Method Code	QC 2323
pH	TM133	99.47 99.06 : 100.67

Total Organic Carbon

Component	Method Code	QC 2350	QC 2366
Total Organic Carbon	TM132	103.13 87.02 : 113.45	99.22 87.02 : 113.45

VOC MS (S)



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VOC MS (S)

Component	Method Code	QC 2354
1,1,1,2-tetrachloroethane	TM116	98.6 86.59 : 118.97
1,1,1-Trichloroethane	TM116	110.0 86.26 : 117.53
1,1,2-Trichloroethane	TM116	107.2 75.16 : 112.70
1,1-Dichloroethane	TM116	115.0 83.27 : 122.16
1,2-Dichloroethane	TM116	120.2 89.30 : 133.10
1,4-Dichlorobenzene	TM116	118.0 82.59 : 123.23
2-Chlorotoluene	TM116	109.4 66.81 : 118.43
4-Chlorotoluene	TM116	107.0 65.88 : 114.76
Benzene	TM116	107.4 93.16 : 123.63
Carbon Disulphide	TM116	92.8 75.11 : 124.81
Carbontetrachloride	TM116	112.8 82.35 : 126.46
Chlorobenzene	TM116	100.4 85.07 : 118.13
Chloroform	TM116	115.2 88.13 : 122.71
Chloromethane	TM116	137.4 61.62 : 145.66
Cis-1,2-Dichloroethene	TM116	108.2 78.27 : 128.90
Dibromomethane	TM116	93.4 77.47 : 121.29
Dichloromethane	TM116	122.2 87.89 : 134.72
Ethylbenzene	TM116	91.0 79.92 : 110.05
Hexachlorobutadiene	TM116	76.6 16.78 : 153.29
Isopropylbenzene	TM116	88.4 64.20 : 119.59
Naphthalene	TM116	119.2 79.29 : 125.59
o-Xylene	TM116	85.6 74.57 : 112.73
p/m-Xylene	TM116	87.5 76.47 : 108.99
Sec-Butylbenzene	TM116	77.4 44.71 : 117.87
Tetrachloroethene	TM116	93.8 85.86 : 122.95
Toluene	TM116	100.2 87.82 : 116.21
Trichloroethene	TM116	100.4 79.80 : 112.33



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VOC MS (S)

		QC 2354
Trichlorofluoromethane	TM116	119.2 80.52 : 132.12
Vinyl Chloride	TM116	127.8 68.07 : 137.84

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis .

The figure detailed is the percentage recovery result for the AQC .

The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control .



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Client Reference: JFR1451
Order Number:

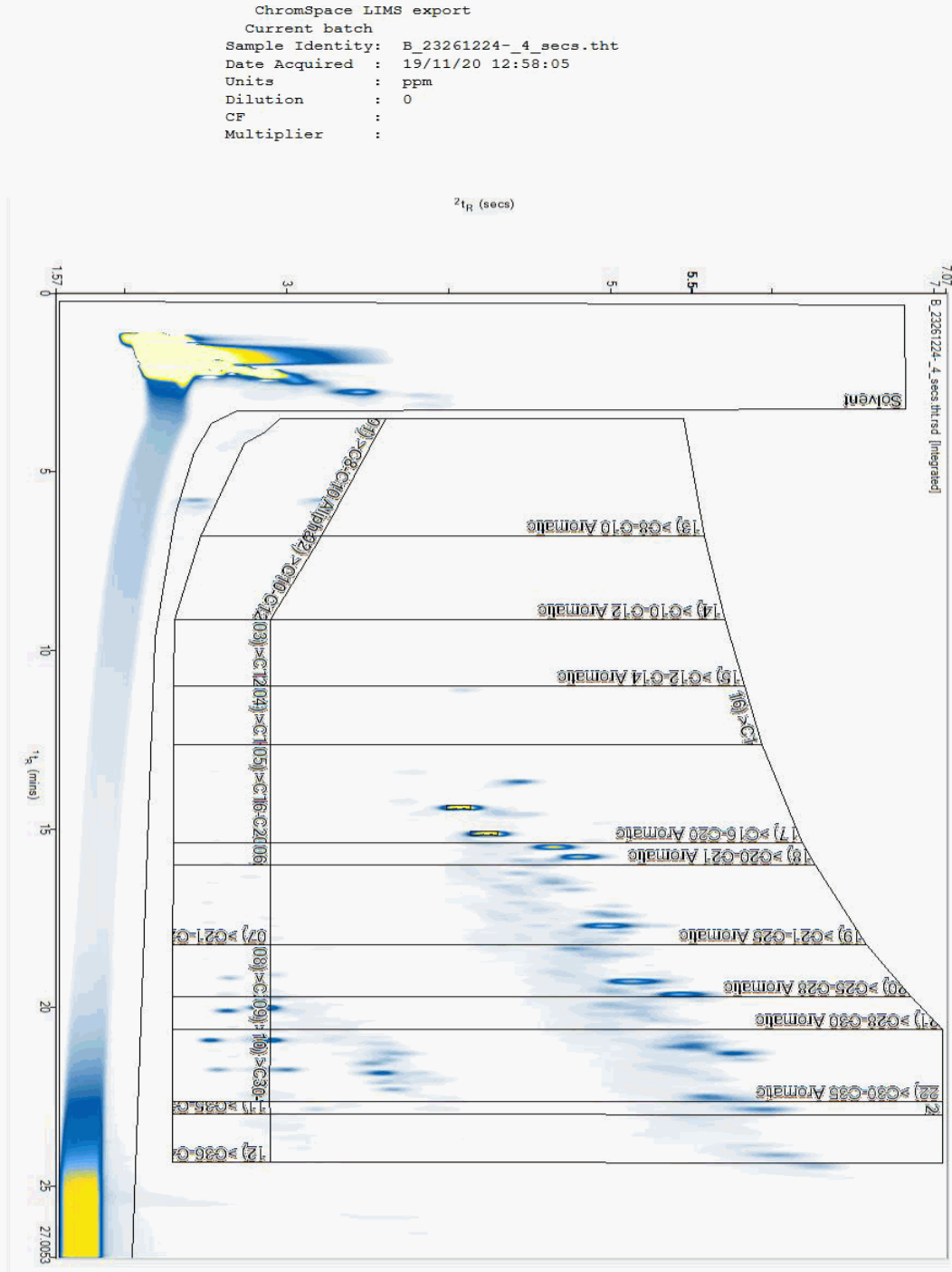
Report Number: 577289
Superseded Report:

Chromatogram

Analysis: EPH by GCxGC-FID

Sample No : 23261224
Sample ID : TP-A

Depth : 0.15 - 0.20





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SDG: 201106-106
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

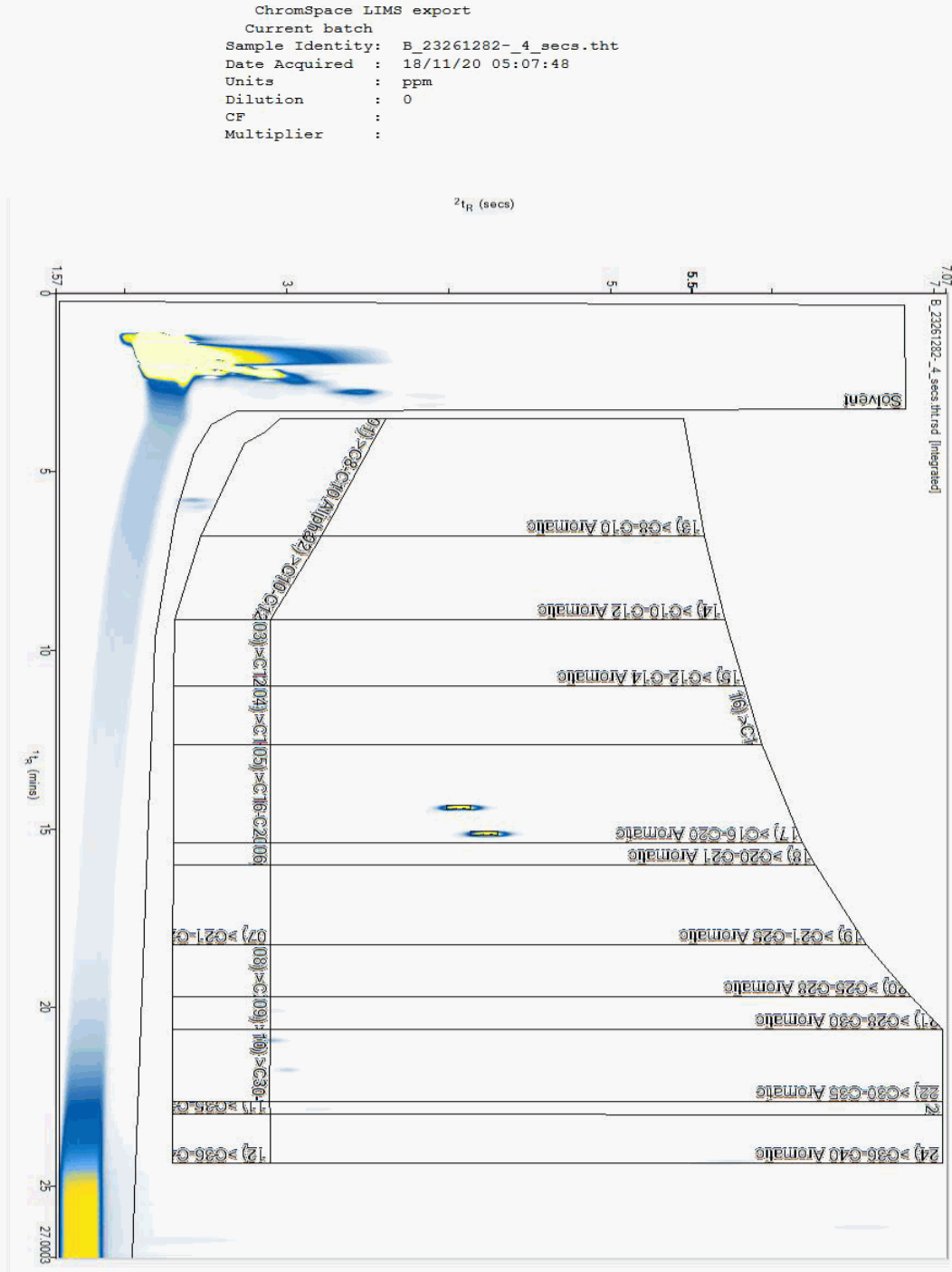
Report Number: 577289
Superseded Report:

Chromatogram

Analysis: EPH by GCxGC-FID

Sample No : 23261282
Sample ID : TP-A

Depth : 1.10





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Client Reference: JFR1451
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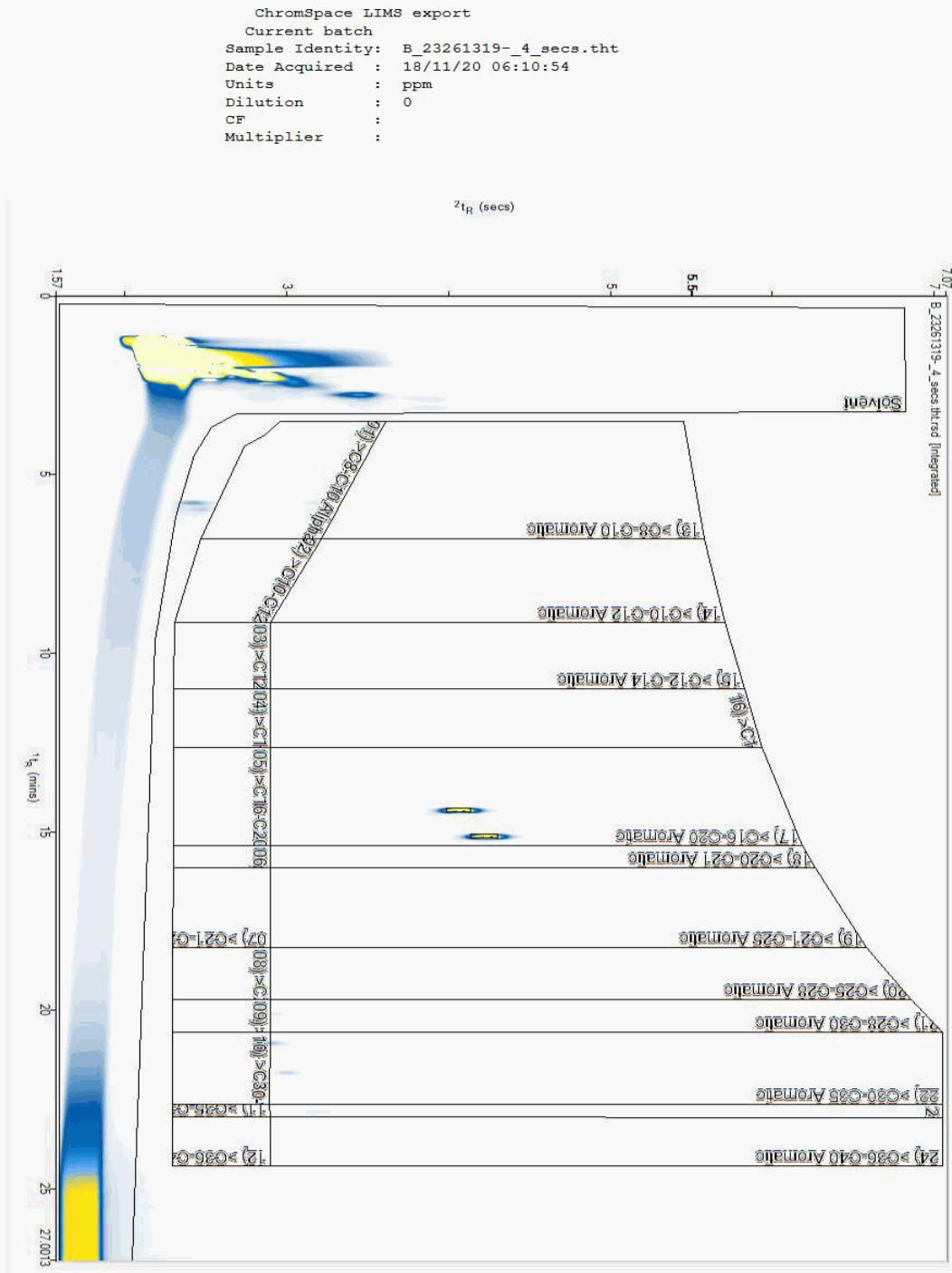
Report Number: 577289
Superseded Report:

Chromatogram

Analysis: EPH by GCxGC-FID

Sample No : 23261319
Sample ID : TP-A

Depth : 0.60 - 0.70





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Client Reference: JFR1451
Order Number:

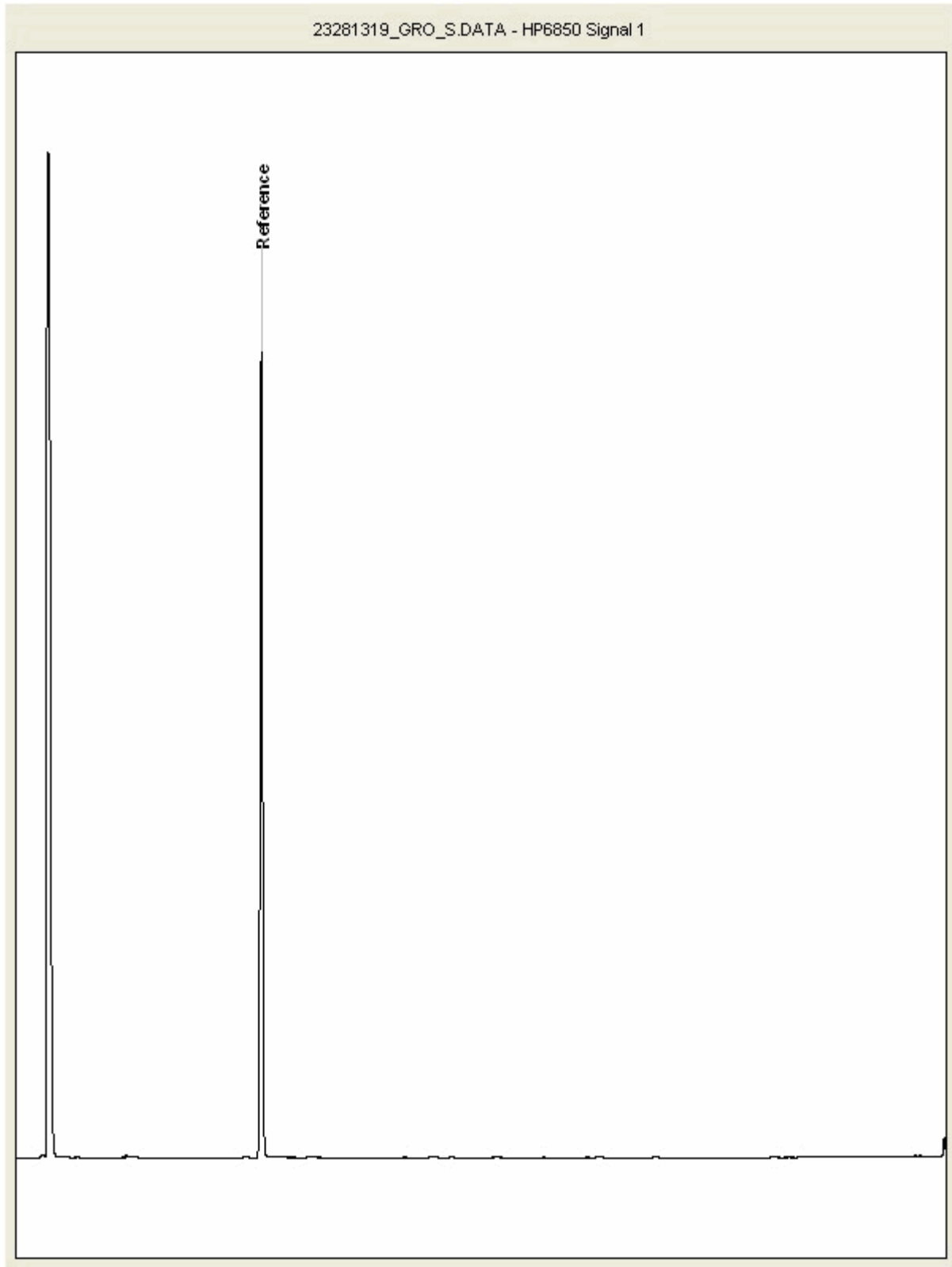
Report Number: 577289
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23281319
Sample ID : TP-A

Depth : 0.60 - 0.70





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SDG: 201106-106
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

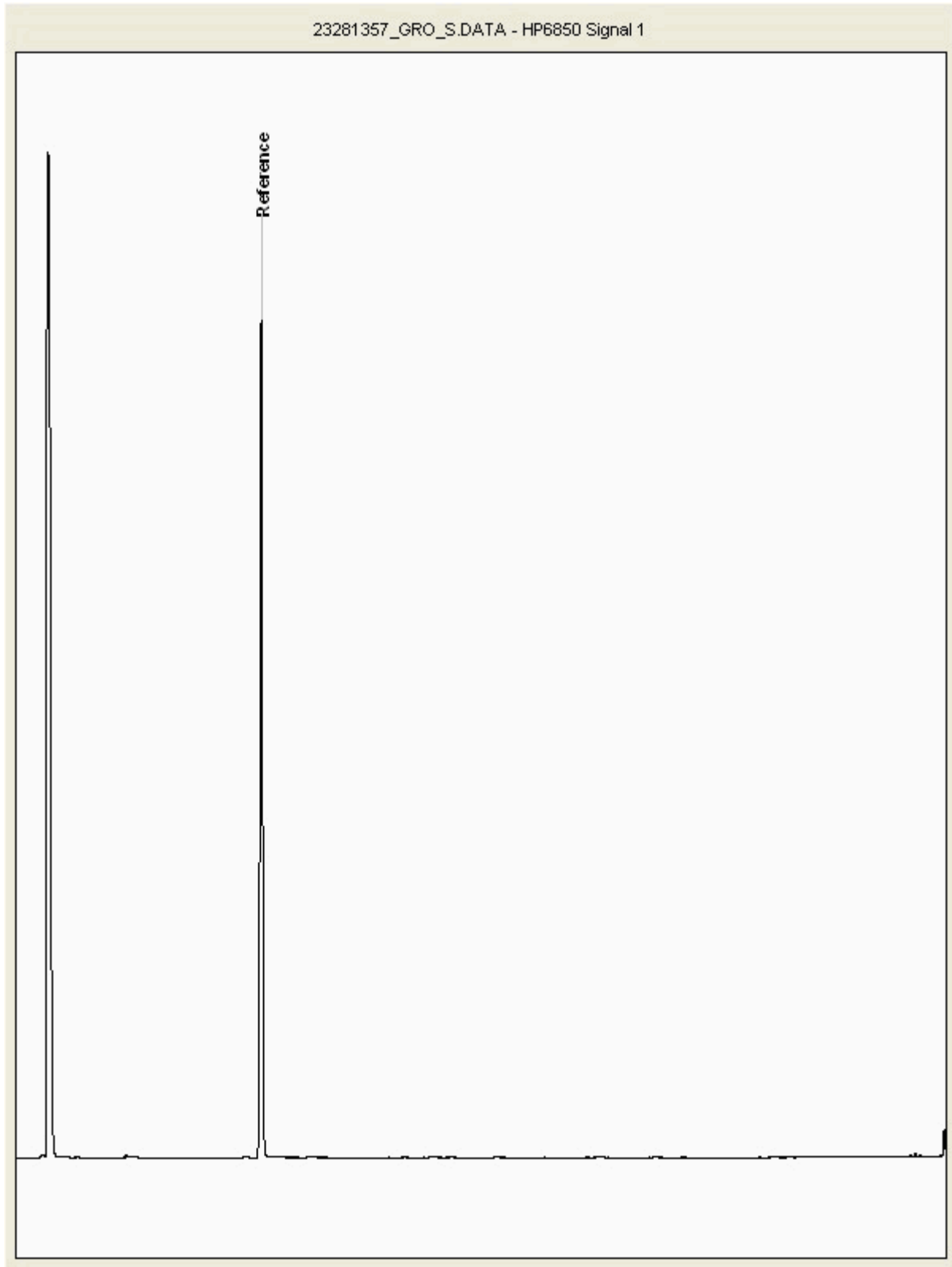
Report Number: 577289
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23281357
Sample ID : TP-A

Depth : 1.10





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SDG: 201106-106
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

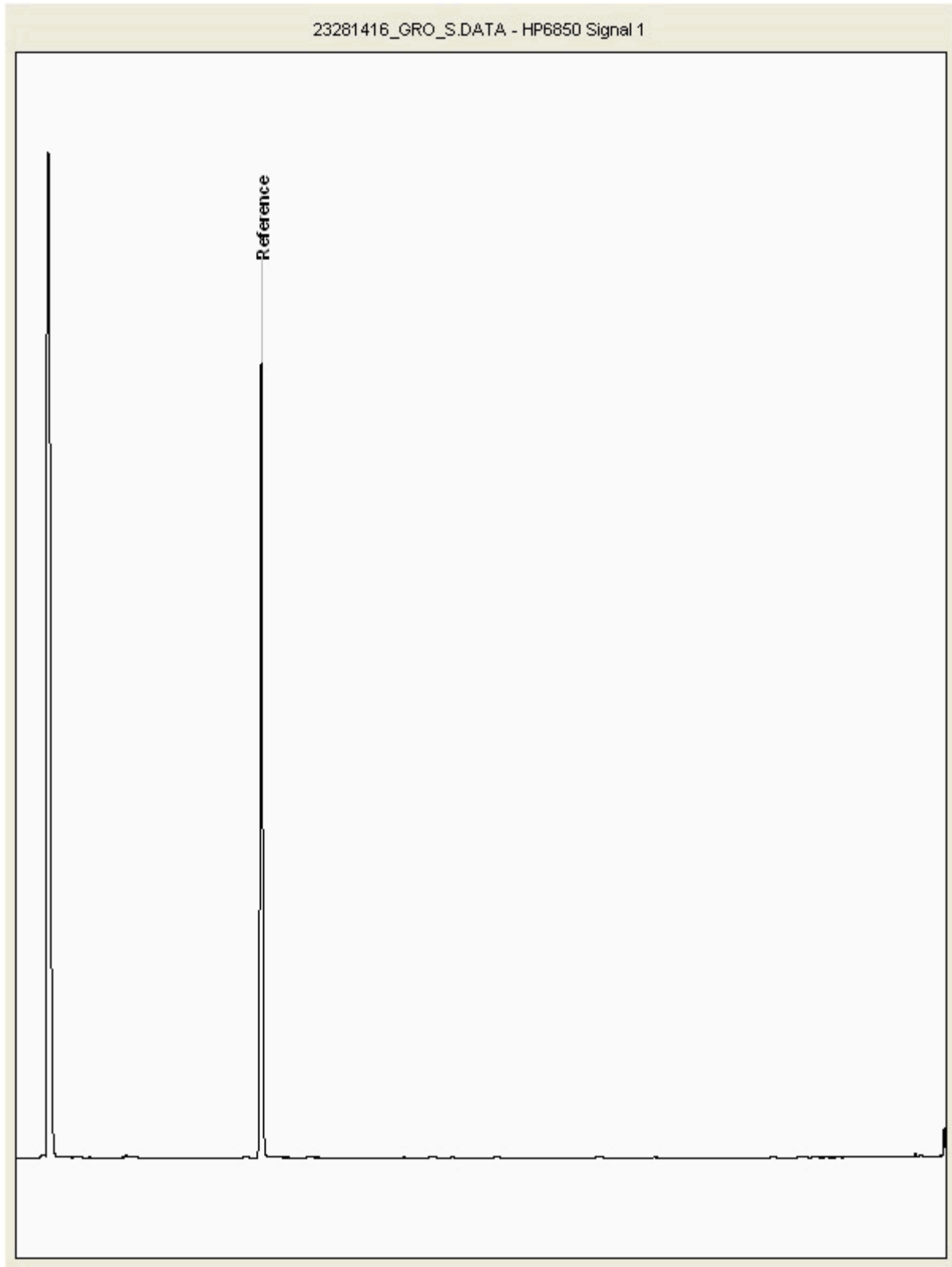
Report Number: 577289
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23281416
Sample ID : TP-A

Depth : 0.15 - 0.20





CERTIFICATE OF ANALYSIS

SDG: 201106-106 Client Reference: JFR1451 Report Number: 577289
 Location: A303 Stonehenge Order Number: Superseded Report:

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

19. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung. Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017)*.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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Website: www.alsenvironmental.co.uk

RPS Consultants Ltd
260 Park Avenue
Aztec West
Almondsbury
Bristol
BS32 4SY

Attention: Gary Riches

CERTIFICATE OF ANALYSIS

Date of report Generation: 26 November 2020
Customer: RPS Consultants Ltd
Sample Delivery Group (SDG): 201107-100
Your Reference: JFR1451
Location: A303 Stonehenge
Report No: 577345

We received 6 samples on Saturday November 07, 2020 and 6 of these samples were scheduled for analysis which was completed on Thursday November 26, 2020. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

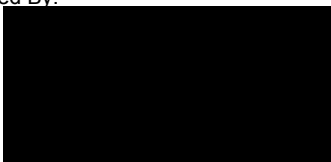
Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:



Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 201107-100
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 577345
Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
23201449	TPH	ES	0.35	05/11/2020
23201446	TPJ	ES	0.40	05/11/2020
23201448	TPJ	ES	0.70	05/11/2020
23201443	TPK	ES	0.35	05/11/2020
23201444	TPK	ES	0.50	05/11/2020
23201445	TPK	ES	0.70	05/11/2020

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG:	201107-100	Client Reference:	JFR1451	Report Number:	577345
Location:	A303 Stonehenge	Order Number:		Superseded Report:	

Results Legend

- X Test
- N No Determination Possible

Sample Types -

- S - Soil/Solid
- UNS - Unspecified Solid
- GW - Ground Water
- SW - Surface Water
- LE - Land Leachate
- PL - Prepared Leachate
- PR - Process Water
- SA - Saline Water
- TE - Trade Effluent
- TS - Treated Sewage
- US - Untreated Sewage
- RE - Recreational Water
- DW - Drinking Water Non-regulatory
- UNL - Unspecified Liquid
- SL - Sludge
- G - Gas
- OTH - Other

			Lab Sample No(s)		Customer Sample Reference		AGS Reference		Depth (m)		Container		Sample Type	
			23201449	23201446	TPH	TPJ	ES	ES	0.35	0.40	250g Amber Jar (ALE215) 60g VOC (ALE215)	250g Amber Jar (ALE215) 60g VOC (ALE215)	S	S
			23201448		TPJ		ES		0.70		250g Amber Jar (ALE215) 60g VOC (ALE215)	250g Amber Jar (ALE215) 60g VOC (ALE215)	S	S
			23201443		TPK		ES		0.35		250g Amber Jar (ALE215) 60g VOC (ALE215)	250g Amber Jar (ALE215) 60g VOC (ALE215)	S	S
			23201444		TPK		ES		0.50		250g Amber Jar (ALE215) 60g VOC (ALE215)	250g Amber Jar (ALE215) 60g VOC (ALE215)	S	S
			23201445		TPK		ES		0.70		250g Amber Jar (ALE215) 60g VOC (ALE215)	250g Amber Jar (ALE215) 60g VOC (ALE215)	S	S
Alkali Metals by iCap-OES (Soil)	All	NDPs: 0 Tests: 6	X	X	X	X	X	X	X	X	X	X	X	X
Alkalinity as CaCO3	All	NDPs: 0 Tests: 6	X	X	X	X	X	X	X	X	X	X	X	X
Ammonium Soil by Titration	All	NDPs: 0 Tests: 6	X	X	X	X	X	X	X	X	X	X	X	X
Anions by Kone (soil)	All	NDPs: 0 Tests: 6	X	X	X	X	X	X	X	X	X	X	X	X
EPH	All	NDPs: 0 Tests: 6	X	X	X	X	X	X	X	X	X	X	X	X
EPH by GCxGC-FID	All	NDPs: 0 Tests: 6	X	X	X	X	X	X	X	X	X	X	X	X
Metals in solid samples by OES	All	NDPs: 0 Tests: 6	X	X	X	X	X	X	X	X	X	X	X	X
PAH by GCMS	All	NDPs: 0 Tests: 6	X	X	X	X	X	X	X	X	X	X	X	X
pH	All	NDPs: 0 Tests: 6	X	X	X	X	X	X	X	X	X	X	X	X
Sample description	All	NDPs: 0 Tests: 6	X	X	X	X	X	X	X	X	X	X	X	X
Total Organic Carbon	All	NDPs: 0 Tests: 6	X	X	X	X	X	X	X	X	X	X	X	X
VOC MS (S)	All	NDPs: 0 Tests: 6		X	X	X	X	X	X	X	X	X	X	X



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Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm
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Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
23201449	TPH	0.35	Cream	N/A	Stones	Vegetation
23201446	TPJ	0.40	Cream	Chalk	None	None
23201448	TPJ	0.70	Cream	N/A	Stones	Vegetation
23201443	TPK	0.35	Light Brown	Loamy Sand	Stones	Vegetation
23201444	TPK	0.50	Beige	Sand	Stones	None
23201445	TPK	0.70	Cream	Chalk	Vegetation	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.



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Results Legend			Customer Sample Ref.	TPH	TPJ	TPJ	TPK	TPK	TPK
#	ISO17025 accredited.								
M	mCERTS accredited.								
aq	Aqueous / settled sample.								
diss.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted - refer to subcontractor report for accreditation status.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery								
(F)	Trigger breach confirmed								
1-4*\$@	Sample deviation (see appendix)								
		Depth (m)	0.35	0.40	0.70	0.35	0.50	0.70	
		Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	
		Date Sampled	05/11/2020	05/11/2020	05/11/2020	05/11/2020	05/11/2020	05/11/2020	
		Sampled Time							
		Date Received	07/11/2020	07/11/2020	07/11/2020	07/11/2020	07/11/2020	07/11/2020	
		SDG Ref	201107-100	201107-100	201107-100	201107-100	201107-100	201107-100	
		Lab Sample No.(s)	23201449	23201446	23201448	23201443	23201444	23201445	
		AGS Reference	ES	ES	ES	ES	ES	ES	
Component	LOD/Units	Method							
Moisture Content Ratio (% of as received sample)	%	PM024	16	18	14	21	20	20	
Exchangeable Ammonia as N	<12 mg/kg	TM024	<12	<12	<12	<12	<12	<12	
Organic Carbon, Total	<0.2 %	TM132	0.227	0.246	0.238	2.42	<0.2	0.237	
Fraction Organic Carbon (FOC)	<0.002	TM132	0.00227	0.00246	0.00238	0.0242	<0.002	0.00237	
pH	1 pH Units	TM133	8.57	9.03	8.99	8.2	9.02	8.85	
Arsenic	<0.6 mg/kg	TM181	<0.6	<0.6	<0.6	3.59	<0.6	<0.6	
Barium	<0.6 mg/kg	TM181	10.9	15.5	16.7	46.9	7.24	8.85	
Cadmium	<0.02 mg/kg	TM181	0.464	0.336	0.349	1.05	0.361	0.433	
Chromium	<0.9 mg/kg	TM181	1.86	1.59	2.01	6.17	<0.9	1.23	
Copper	<1.4 mg/kg	TM181	<1.4	<1.4	1.91	3.98	<1.4	<1.4	
Iron	<1000 mg/kg	TM181	<1000	<1000	<1000	5840	<1000	<1000	
Lead	<0.7 mg/kg	TM181	2.19	<0.7	3.5	12.4	<0.7	<0.7	
Manganese	<0.13 mg/kg	TM181	234	218	216	850	205	234	
Mercury	<0.14 mg/kg	TM181	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	
Molybdenum	<0.1 mg/kg	TM181	<0.1	<0.1	<0.1	0.184	<0.1	0.123	
Nickel	<0.2 mg/kg	TM181	2.57	1.62	1.97	6.43	1.08	1.37	
Phosphorus	<1 mg/kg	TM181	341	315	419	1250	306	423	
Selenium	<1 mg/kg	TM181	<1	<1	<1	<1	<1	<1	
Zinc	<1.9 mg/kg	TM181	12.7	10.4	13.1	46.7	8.25	9.46	
Calcium	<21 mg/kg	TM224	445000	460000	443000	256000	354000	450000	
Sodium	<7 mg/kg	TM224	134	140	147	209	156	148	
Magnesium	<8 mg/kg	TM224	947	1080	1120	1390	1150	1080	
Potassium	<16 mg/kg	TM224	173	191	206	681	141	128	
Alkalinity, Bicarbonate as CaCO3	<10 mg/kg	TM230	89.3	128	107	287	136	97.7	
Alkalinity, Carbonate as CaCO3	<10 mg/kg	TM230	11.9	<10	23.2	<10	18.6	<10	
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243	<0.004	<0.004	0.02	<0.004	0.0044	<0.004	
Chloride (soluble)	<5 mg/kg	TM243	19.7	9.23	17.4	30.5	12.6	12.8	
EPH (C5-C40)	<35 mg/kg	TM415	<35	<35	<35	<35	<35	<35	
EPH Surrogate % recovery**	%	TM415	98.4	101	92	92.2	99.4	90.2	
EPH >C10-C40	<35 mg/kg	TM415	<35	<35	<35	<35	<35	<35	



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PAH by GCMS

Results Legend			Customer Sample Ref.	TPH	TPJ	TPJ	TPK	TPK	TPK
#	ISO17025 accredited.		Depth (m)	0.35	0.40	0.70	0.35	0.50	0.70
M	mCERTS accredited.		Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
aq	Aqueous / settled sample.		Date Sampled	05/11/2020	05/11/2020	05/11/2020	05/11/2020	05/11/2020	05/11/2020
diss.filt	Dissolved / filtered sample.		Sampled Time						
tot.unfilt	Total / unfiltered sample.		Date Received	07/11/2020	07/11/2020	07/11/2020	07/11/2020	07/11/2020	07/11/2020
*	Subcontracted - refer to subcontractor report for accreditation status.		SDG Ref	201107-100	201107-100	201107-100	201107-100	201107-100	201107-100
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		Lab Sample No.(s)	23201449	23201446	23201448	23201443	23201444	23201445
(F)	Trigger breach confirmed		AGS Reference	ES	ES	ES	ES	ES	ES
1-4*\$@	Sample deviation (see appendix)								
Component	LOD/Units	Method							
Naphthalene-d8 % recovery**	%	TM218	93.6	96.3	95.5	96.1	92.7	97.5	
Acenaphthene-d10 % recovery**	%	TM218	90.2	94.2	92.6	92.9	90.9	95.5	
Phenanthrene-d10 % recovery**	%	TM218	90.3	99.5	94.6	92.2	91.9	101	
Chrysene-d12 % recovery**	%	TM218	76.5	96.3	81.3	85.1	82.8	102	
Perylene-d12 % recovery**	%	TM218	77.5	89.2	81.8	89.1	86.5	99.5	
Naphthalene	<9 µg/kg	TM218	<9	<9	<9	<9	<9	<9	<9
Acenaphthylene	<12 µg/kg	TM218	<12	<12	<12	<12	<12	<12	<12
Acenaphthene	<8 µg/kg	TM218	<8	<8	<8	<8	<8	<8	<8
Fluorene	<10 µg/kg	TM218	<10	<10	<10	<10	<10	<10	<10
Phenanthrene	<15 µg/kg	TM218	<15	<15	<15	26	<15	<15	<15
Anthracene	<16 µg/kg	TM218	<16	<16	<16	<16	<16	<16	<16
Fluoranthene	<17 µg/kg	TM218	<17	<17	<17	73.3	<17	<17	<17
Pyrene	<15 µg/kg	TM218	<15	<15	<15	65.6	<15	<15	<15
Benz(a)anthracene	<14 µg/kg	TM218	<14	<14	<14	33.9	<14	<14	<14
Chrysene	<10 µg/kg	TM218	<10	<10	<10	38.7	<10	<10	<10
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15	<15	<15	62.9	<15	<15	<15
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14	<14	<14	24.1	<14	<14	<14
Benzo(a)pyrene	<15 µg/kg	TM218	<15	<15	<15	40.1	<15	<15	<15
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18	<18	<18	31.6	<18	<18	<18
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23	<23	<23	<23	<23	<23	<23
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24	<24	<24	32.9	<24	<24	<24
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118	<118	429	<118	<118	<118



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VOC MS (S)

Results Legend			Customer Sample Ref.	TPH	TPJ	TPJ	TPK	TPK	TPK					
#	ISO17025 accredited.		Depth (m)	0.35	0.40	0.70	0.35	0.50	0.70					
M	mCERTS accredited.		Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)					
aq	Aqueous / settled sample.		Date Sampled	05/11/2020	05/11/2020	05/11/2020	05/11/2020	05/11/2020	05/11/2020					
diss.filt	Dissolved / filtered sample.		Sampled Time											
tot.unfilt	Total / unfiltered sample.		Date Received	07/11/2020	07/11/2020	07/11/2020	07/11/2020	07/11/2020	07/11/2020					
*	Subcontracted - refer to subcontractor report for accreditation status.		SDG Ref	201107-100	201107-100	201107-100	201107-100	201107-100	201107-100					
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		Lab Sample No.(s)	23201449	23201446	23201448	23201443	23201444	23201445					
(F)	Trigger breach confirmed		AGS Reference	ES	ES	ES	ES	ES	ES					
1-4*§@	Sample deviation (see appendix)													
Component	LOD/Units	Method												
Dibromofluoromethane**	%	TM116	102	@	102	@	101	@	102	@	102	@	101	@
Toluene-d8**	%	TM116	99.3	@	98.7	@	98.8	@	94.1	@	99.3	@	98.1	@
4-Bromofluorobenzene**	%	TM116	92.5	@	92.2	@	92.8	@	74.2	@	91.5	@	92.7	@
Methyl Tertiary Butyl Ether	<10 µg/kg	TM116	<10	@	<10	@ #	<10	@	<10	@ M	<10	@ M	<10	@ #
Benzene	<9 µg/kg	TM116	<9	@	<9	@ #	<9	@	<9	@ M	<9	@ M	<9	@ #
Toluene	<7 µg/kg	TM116	<7	@	<7	@ #	<7	@	<7	@ M	<7	@ M	<7	@ #
Ethylbenzene	<4 µg/kg	TM116	<4	@	<4	@ #	<4	@	<4	@ M	<4	@ M	<4	@ #
p/m-Xylene	<10 µg/kg	TM116	<10	@	<10	@ #	<10	@	<10	@ #	<10	@ #	<10	@ #
o-Xylene	<10 µg/kg	TM116	<10	@	<10	@ #	<10	@	<10	@ M	<10	@ M	<10	@ #
Sum of BTEX	<40 µg/kg	TM116	<40	@	<40	@	<40	@	<40	@	<40	@	<40	@



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Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM224	US EPA Method 6010B	Determination of Alkaline Metals by iCap 6500 Duo ICP-OES
TM230	Methods 2320B and 4500-CO2 D, AWWA/APHA 19th Edition, 1995.	Determination of Alkalinity in Aqueous Sludge and Soil extracts
TM243		Mixed Anions In Soils By Kone
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).



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Test Completion Dates

Lab Sample No(s)	23201449	23201446	23201448	23201443	23201444	23201445
Customer Sample Ref.	TPH	TPJ	TPJ	TPK	TPK	TPK
AGS Ref.	ES	ES	ES	ES	ES	ES
Depth	0.35	0.40	0.70	0.35	0.50	0.70
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)

Alkali Metals by iCap-OES (Soil)	24-Nov-2020	25-Nov-2020	24-Nov-2020	25-Nov-2020	25-Nov-2020	25-Nov-2020
Alkalinity as CaCO3	19-Nov-2020	19-Nov-2020	19-Nov-2020	19-Nov-2020	19-Nov-2020	19-Nov-2020
Ammonium Soil by Titration	19-Nov-2020	24-Nov-2020	19-Nov-2020	19-Nov-2020	19-Nov-2020	19-Nov-2020
Anions by Kone (soil)	20-Nov-2020	24-Nov-2020	25-Nov-2020	25-Nov-2020	25-Nov-2020	24-Nov-2020
EPH	24-Nov-2020	24-Nov-2020	24-Nov-2020	24-Nov-2020	24-Nov-2020	24-Nov-2020
EPH by GCxGC-FID	19-Nov-2020	19-Nov-2020	19-Nov-2020	19-Nov-2020	19-Nov-2020	19-Nov-2020
GRO by GC-FID (S)	24-Nov-2020	24-Nov-2020	24-Nov-2020	24-Nov-2020	24-Nov-2020	24-Nov-2020
Metals in solid samples by OES	20-Nov-2020	24-Nov-2020	20-Nov-2020	26-Nov-2020	26-Nov-2020	24-Nov-2020
PAH by GCMS	19-Nov-2020	18-Nov-2020	19-Nov-2020	18-Nov-2020	18-Nov-2020	18-Nov-2020
pH	18-Nov-2020	18-Nov-2020	18-Nov-2020	18-Nov-2020	18-Nov-2020	18-Nov-2020
Sample description	17-Nov-2020	17-Nov-2020	17-Nov-2020	17-Nov-2020	17-Nov-2020	17-Nov-2020
Total Organic Carbon	24-Nov-2020	24-Nov-2020	24-Nov-2020	23-Nov-2020	23-Nov-2020	24-Nov-2020
VOC MS (S)	24-Nov-2020	24-Nov-2020	24-Nov-2020	24-Nov-2020	24-Nov-2020	24-Nov-2020



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ASSOCIATED AQC DATA

Alkali Metals by iCap-OES (Soil)

Component	Method Code	QC 2323	QC 2366	QC 2340
Calcium	TM224	100.0 80.29 : 119.71	98.68 80.29 : 119.71	98.94 80.29 : 119.71
Magnesium	TM224	96.46 81.99 : 118.01	97.58 81.99 : 118.01	98.88 81.99 : 118.01
Potassium	TM224	96.5 72.21 : 127.79	104.78 72.21 : 127.79	104.14 72.21 : 127.79
Sodium	TM224	98.66 83.09 : 114.47	96.24 83.09 : 114.47	98.39 83.09 : 114.47

Ammonium Soil by Titration

Component	Method Code	QC 2373	QC 2387	QC 2378
Exchangeable Ammonium as NH4	TM024	84.58 76.20 : 110.13	84.08 76.20 : 110.13	96.02 76.20 : 110.13

Anions by Kone (soil)

Component	Method Code	QC 2354	QC 2323	QC 2329	QC 2345
Chloride (soluble)	TM243	142.49 86.68 : 115.67	144.56 86.68 : 115.67	149.22 86.68 : 115.67	141.97 86.68 : 115.67
Water Soluble Sulphate as SO4 2:1 Extract	TM243	158.41 70.00 : 130.00	159.81 70.00 : 130.00	159.35 70.00 : 130.00	157.94 70.00 : 130.00

EPH by GCxGC-FID

Component	Method Code	QC 2300
EPH >C10-C40 Raw	TM415	98.74 59.15 : 115.05

GRO by GC-FID (S)

Component	Method Code	QC 2397
QC	TM089	81.58 70.34 : 111.95

Metals in solid samples by OES



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Metals in solid samples by OES

Component	Method Code	QC 2323	QC 2366	QC 2340
Aluminium	TM181	100.0 73.56 : 108.85	98.23 73.56 : 108.85	98.23 73.56 : 108.85
Antimony	TM181	94.31 76.89 : 111.24	96.75 76.89 : 111.24	95.53 76.89 : 111.24
Arsenic	TM181	100.0 88.53 : 111.01	99.71 88.53 : 111.01	104.07 88.53 : 111.01
Barium	TM181	93.58 77.67 : 105.35	95.41 77.67 : 105.35	96.33 77.67 : 105.35
Beryllium	TM181	101.87 85.44 : 109.61	98.13 85.44 : 109.61	104.1 85.44 : 109.61
Boron	TM181	91.4 73.51 : 104.66	90.54 73.51 : 104.66	93.41 73.51 : 104.66
Cadmium	TM181	92.18 77.67 : 104.12	89.3 77.67 : 104.12	91.77 77.67 : 104.12
Chromium	TM181	93.71 86.11 : 106.21	91.28 86.11 : 106.21	93.71 86.11 : 106.21
Cobalt	TM181	93.4 84.60 : 104.13	89.94 84.60 : 104.13	93.08 84.60 : 104.13
Copper	TM181	92.61 82.40 : 105.45	92.43 82.40 : 105.45	90.67 82.40 : 105.45
Iron	TM181	100.0 82.95 : 110.58	96.83 82.95 : 110.58	100.0 82.95 : 110.58
Lead	TM181	93.02 78.24 : 104.05	89.19 78.24 : 104.05	94.14 78.24 : 104.05
Manganese	TM181	107.78 94.29 : 119.51	107.22 94.29 : 119.51	113.33 94.29 : 119.51
Mercury	TM181	96.14 83.16 : 107.81	95.17 83.16 : 107.81	97.1 83.16 : 107.81
Molybdenum	TM181	98.77 87.11 : 106.87	96.3 87.11 : 106.87	95.47 87.11 : 106.87
Nickel	TM181	94.87 80.26 : 102.28	91.93 80.26 : 102.28	93.64 80.26 : 102.28
Phosphorus	TM181	104.44 94.56 : 124.28	104.44 94.56 : 124.28	108.08 94.56 : 124.28
Selenium	TM181	100.78 82.28 : 110.48	96.08 82.28 : 110.48	100.0 82.28 : 110.48
Strontium	TM181	96.88 79.13 : 102.79	93.99 79.13 : 102.79	89.98 79.13 : 102.79
Thallium	TM181	103.1 82.94 : 111.86	98.67 82.94 : 111.86	100.44 82.94 : 111.86
Tin	TM181	100.38 86.72 : 110.03	100.76 86.72 : 110.03	103.42 86.72 : 110.03
Titanium	TM181	84.73 66.23 : 102.06	76.34 66.23 : 102.06	80.15 66.23 : 102.06
Vanadium	TM181	95.24 75.51 : 108.87	95.6 86.19 : 109.45	95.24 86.19 : 109.45
Zinc	TM181	98.15 84.68 : 113.99	99.59 84.68 : 113.99	102.67 84.68 : 113.99

PAH by GCMS



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PAH by GCMS

Component	Method Code	QC 2349	QC 2361
Acenaphthene	TM218	90.0 80.97 : 105.99	93.0 76.79 : 103.90
Acenaphthylene	TM218	88.5 74.76 : 107.36	93.0 78.40 : 108.66
Anthracene	TM218	88.5 73.04 : 106.97	97.0 70.90 : 109.22
Benz(a)anthracene	TM218	78.0 68.79 : 119.64	102.0 73.77 : 119.26
Benzo(a)pyrene	TM218	73.5 66.17 : 117.52	103.5 73.20 : 114.18
Benzo(b)fluoranthene	TM218	73.0 66.40 : 118.34	95.5 75.36 : 117.58
Benzo(ghi)perylene	TM218	73.5 67.68 : 112.07	100.0 70.73 : 116.12
Benzo(k)fluoranthene	TM218	75.5 72.84 : 114.66	103.5 75.98 : 116.59
Chrysene	TM218	79.5 68.39 : 115.56	103.0 74.82 : 114.18
Dibenzo(ah)anthracene	TM218	74.0 69.03 : 110.45	98.0 69.17 : 115.30
Fluoranthene	TM218	80.5 69.37 : 117.19	103.0 75.88 : 112.84
Fluorene	TM218	89.0 75.38 : 105.98	92.5 76.66 : 107.56
Indeno(123cd)pyrene	TM218	67.0 65.91 : 113.61	90.0 70.26 : 117.95
Naphthalene	TM218	89.0 71.40 : 105.87	96.0 74.70 : 101.83
Phenanthrene	TM218	89.0 74.04 : 109.30	97.0 73.62 : 109.34
Pyrene	TM218	80.5 69.68 : 115.27	102.5 71.46 : 117.00

pH

Component	Method Code	QC 2323	QC 2344	QC 2375
pH	TM133	99.47 99.06 : 100.67	101.05 98.79 : 101.47	99.74 99.06 : 100.67

Total Organic Carbon

Component	Method Code	QC 2354	QC 2373	QC 2350	QC 2366
Total Organic Carbon	TM132	104.3 87.02 : 113.45	101.17 87.02 : 113.45	103.13 87.02 : 113.45	99.22 87.02 : 113.45

VOC MS (S)



CERTIFICATE OF ANALYSIS

Validated

SDG: 201107-100
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 577345
Superseded Report:

VOC MS (S)

Component	Method Code	QC 2306
1,1,1,2-tetrachloroethane	TM116	95.4 84.84 : 116.25
1,1,1-Trichloroethane	TM116	91.2 73.73 : 118.05
1,1,2-Trichloroethane	TM116	91.2 77.12 : 116.04
1,1-Dichloroethane	TM116	97.4 74.46 : 129.15
1,2-Dichloroethane	TM116	109.4 92.38 : 131.65
1,4-Dichlorobenzene	TM116	95.8 83.64 : 126.18
2-Chlorotoluene	TM116	87.8 76.03 : 113.25
4-Chlorotoluene	TM116	85.4 66.90 : 112.46
Benzene	TM116	98.6 88.60 : 113.80
Carbon Disulphide	TM116	81.0 74.91 : 122.14
Carbontetrachloride	TM116	100.4 80.31 : 124.50
Chlorobenzene	TM116	97.2 83.81 : 114.18
Chloroform	TM116	100.4 87.40 : 122.49
Chloromethane	TM116	102.0 65.89 : 136.93
Cis-1,2-Dichloroethene	TM116	96.6 80.67 : 126.72
Dibromomethane	TM116	85.0 73.23 : 118.35
Dichloromethane	TM116	105.6 81.11 : 133.25
Ethylbenzene	TM116	86.4 75.92 : 110.41
Hexachlorobutadiene	TM116	59.6 12.82 : 152.73
Isopropylbenzene	TM116	69.2 55.79 : 97.59
Naphthalene	TM116	108.4 80.86 : 128.81
o-Xylene	TM116	78.8 69.99 : 108.74
p/m-Xylene	TM116	81.7 68.32 : 108.91
Sec-Butylbenzene	TM116	57.8 38.50 : 101.50
Tetrachloroethene	TM116	93.6 76.95 : 121.02
Toluene	TM116	89.8 74.24 : 107.42
Trichloroethene	TM116	97.8 77.61 : 111.54



CERTIFICATE OF ANALYSIS

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SDG: 201107-100
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 577345
Superseded Report:

VOC MS (S)

		QC 2306
Trichlorofluoromethane	TM116	104.2 84.55 : 133.27
Vinyl Chloride	TM116	106.0 68.02 : 143.37

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis .

The figure detailed is the percentage recovery result for the AQC .

The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control .



CERTIFICATE OF ANALYSIS

Validated

SDG: 201107-100
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

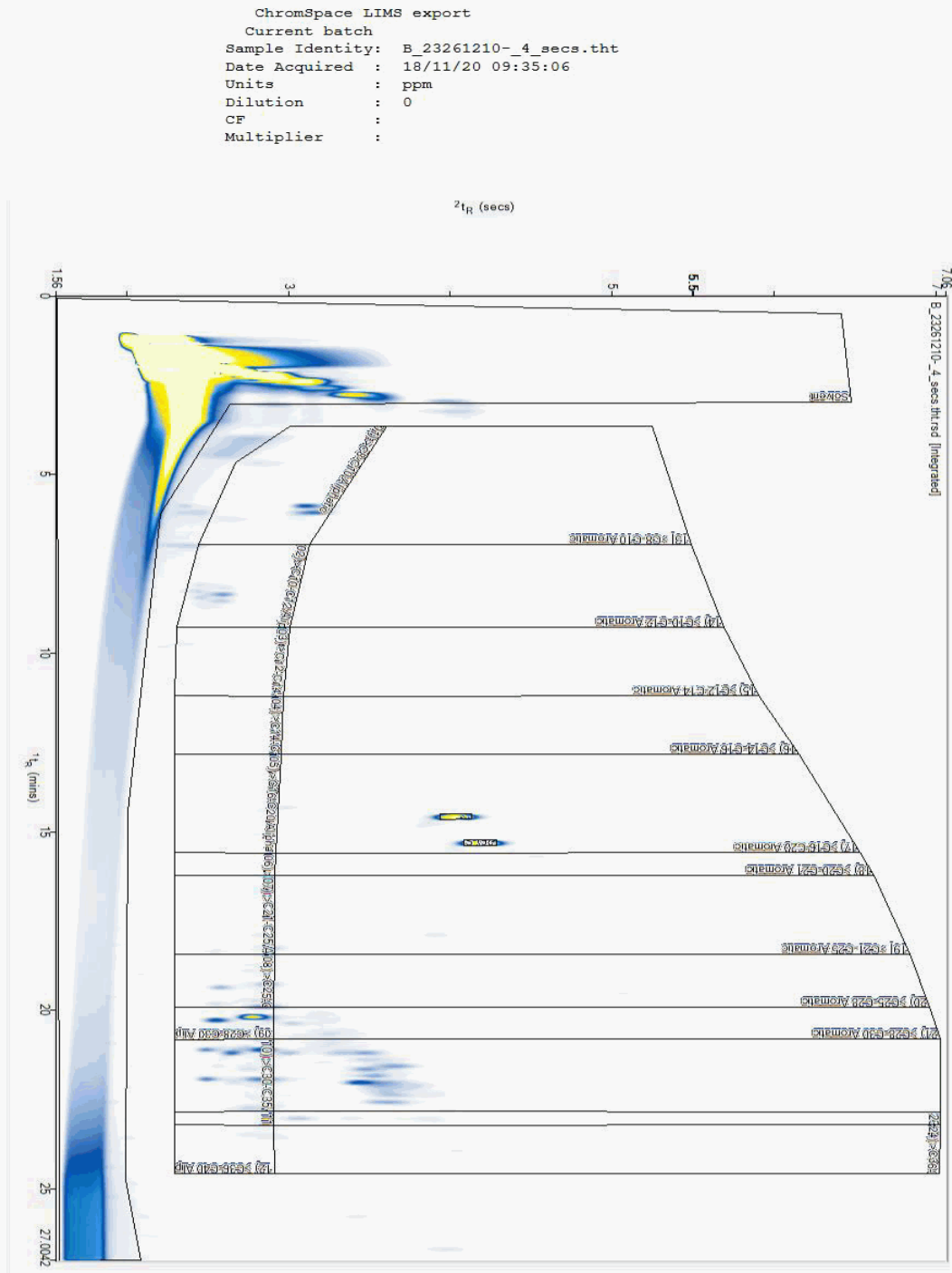
Report Number: 577345
Superseded Report:

Chromatogram

Analysis: EPH by GCxGC-FID

Sample No : 23261210
Sample ID : TPK

Depth : 0.35





CERTIFICATE OF ANALYSIS

Validated

SDG: 201107-100
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

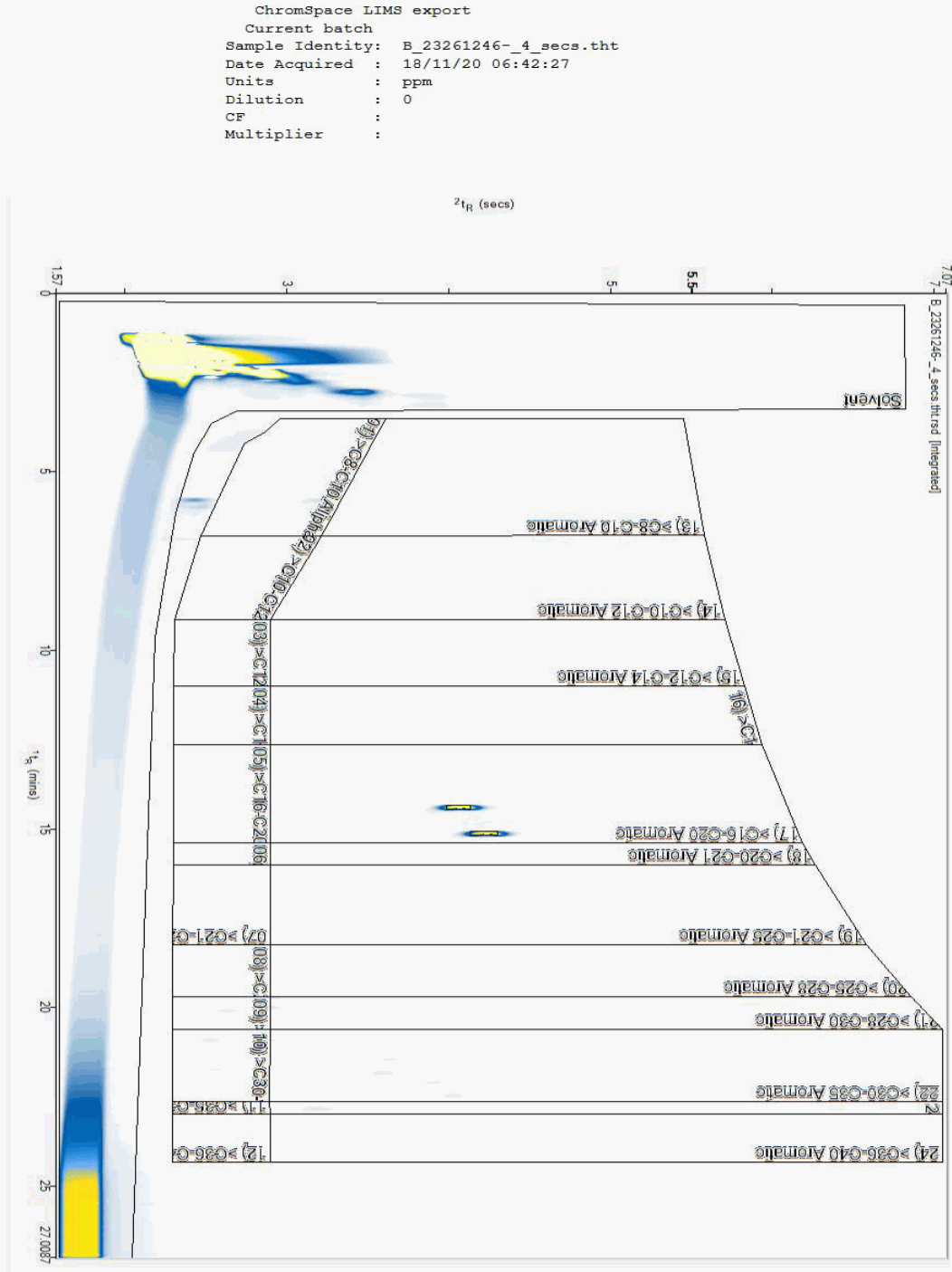
Report Number: 577345
Superseded Report:

Chromatogram

Analysis: EPH by GCxGC-FID

Sample No : 23261246
Sample ID : TPJ

Depth : 0.70





CERTIFICATE OF ANALYSIS

Validated

SDG: 201107-100
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

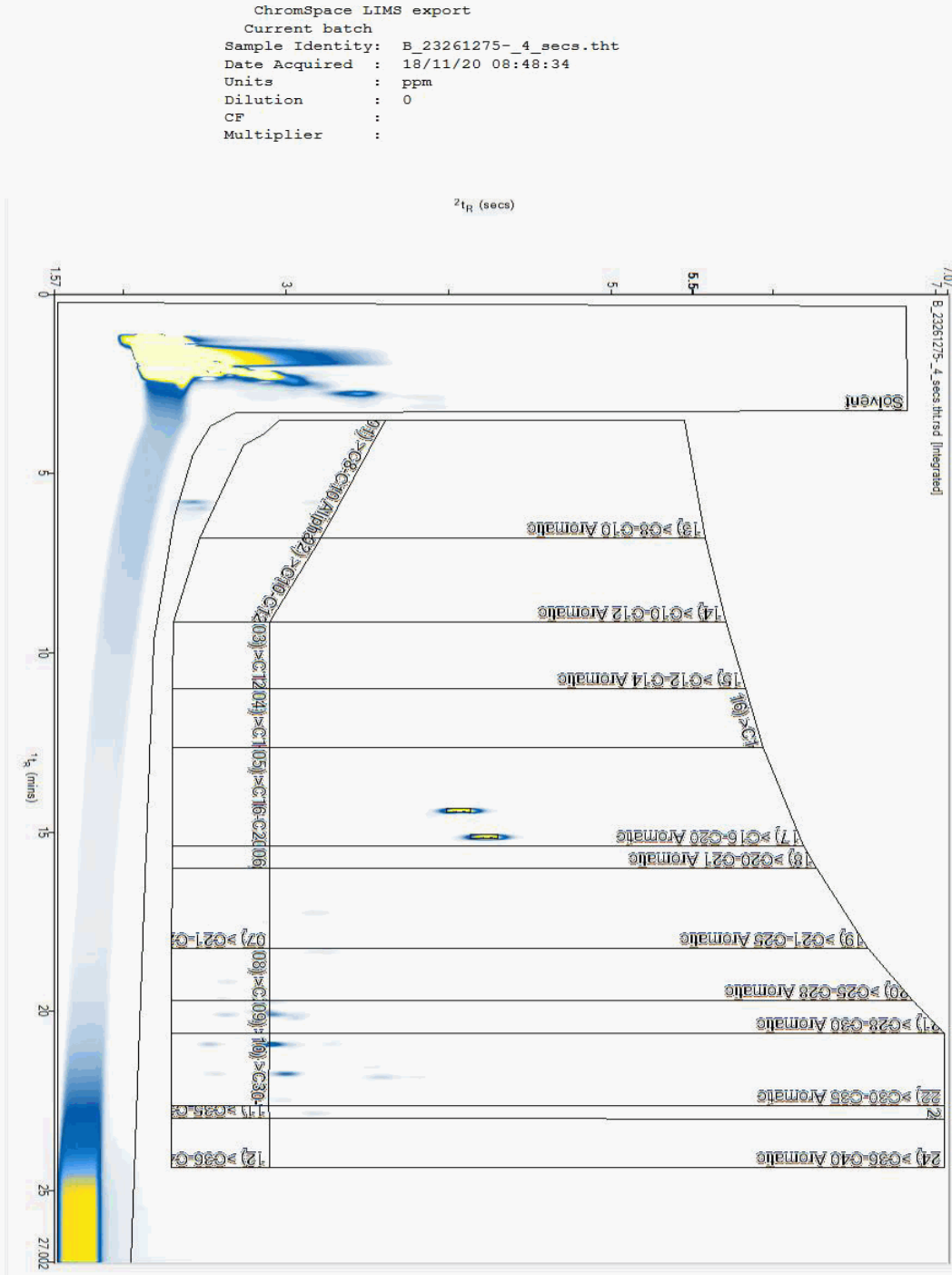
Report Number: 577345
Superseded Report:

Chromatogram

Analysis: EPH by GCxGC-FID

Sample No : 23261275
Sample ID : TPK

Depth : 0.50





CERTIFICATE OF ANALYSIS

Validated

SDG: 201107-100
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

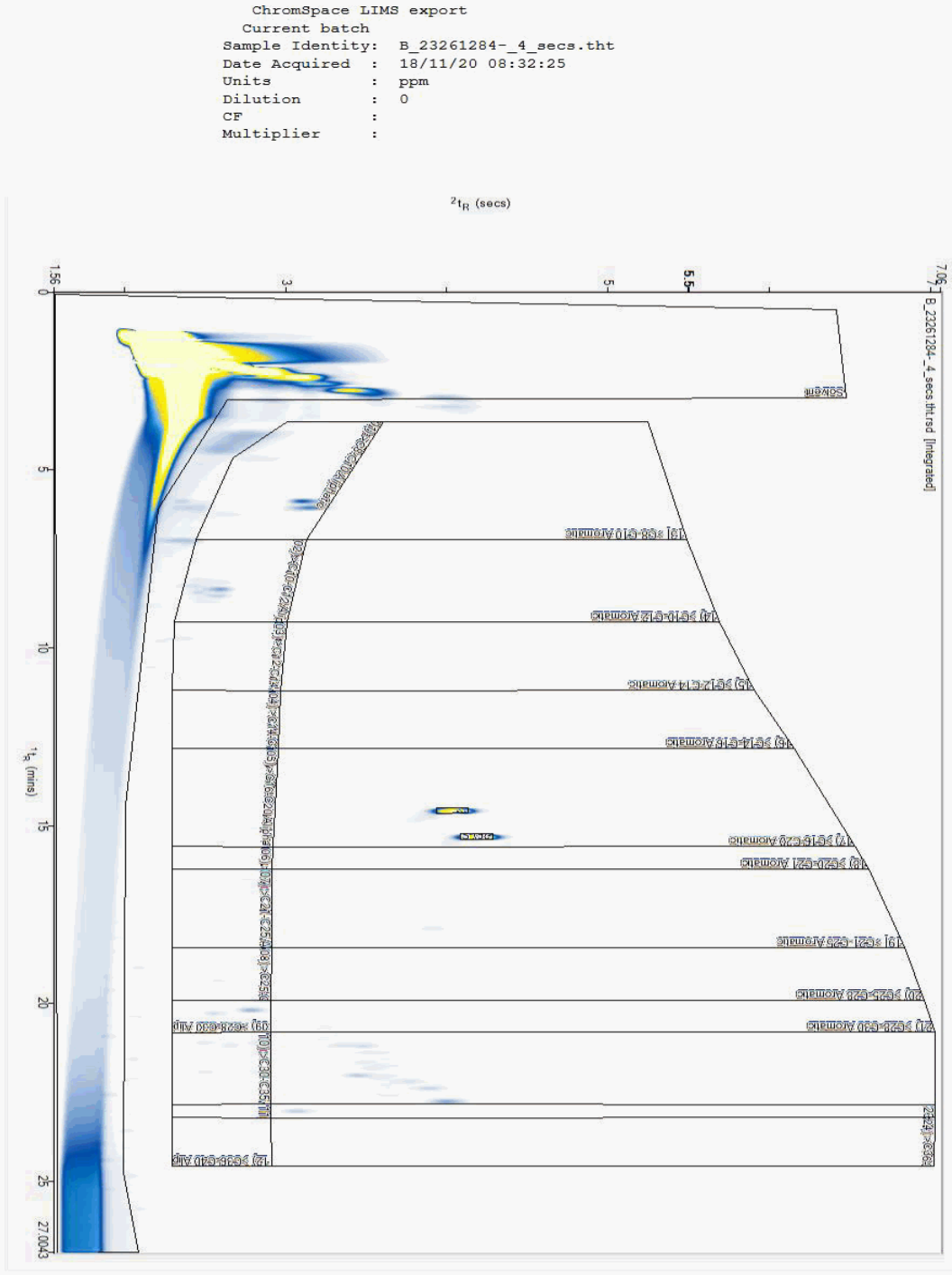
Report Number: 577345
Superseded Report:

Chromatogram

Analysis: EPH by GCxGC-FID

Sample No : 23261284
Sample ID : TPK

Depth : 0.70





CERTIFICATE OF ANALYSIS

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SDG: 201107-100
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

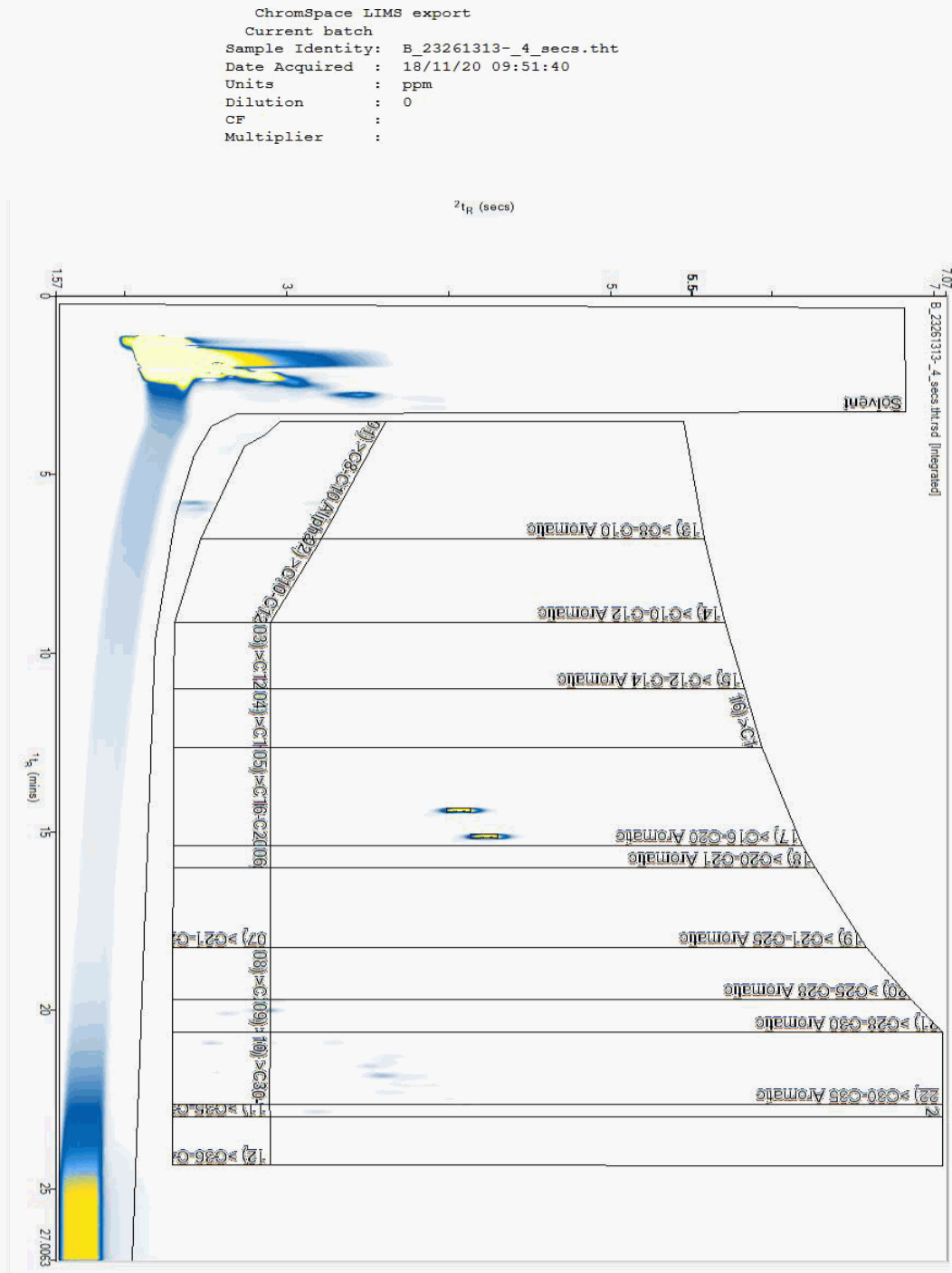
Report Number: 577345
Superseded Report:

Chromatogram

Analysis: EPH by GCxGC-FID

Sample No : 23261313
Sample ID : TPH

Depth : 0.35





CERTIFICATE OF ANALYSIS

Validated

SDG: 201107-100
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

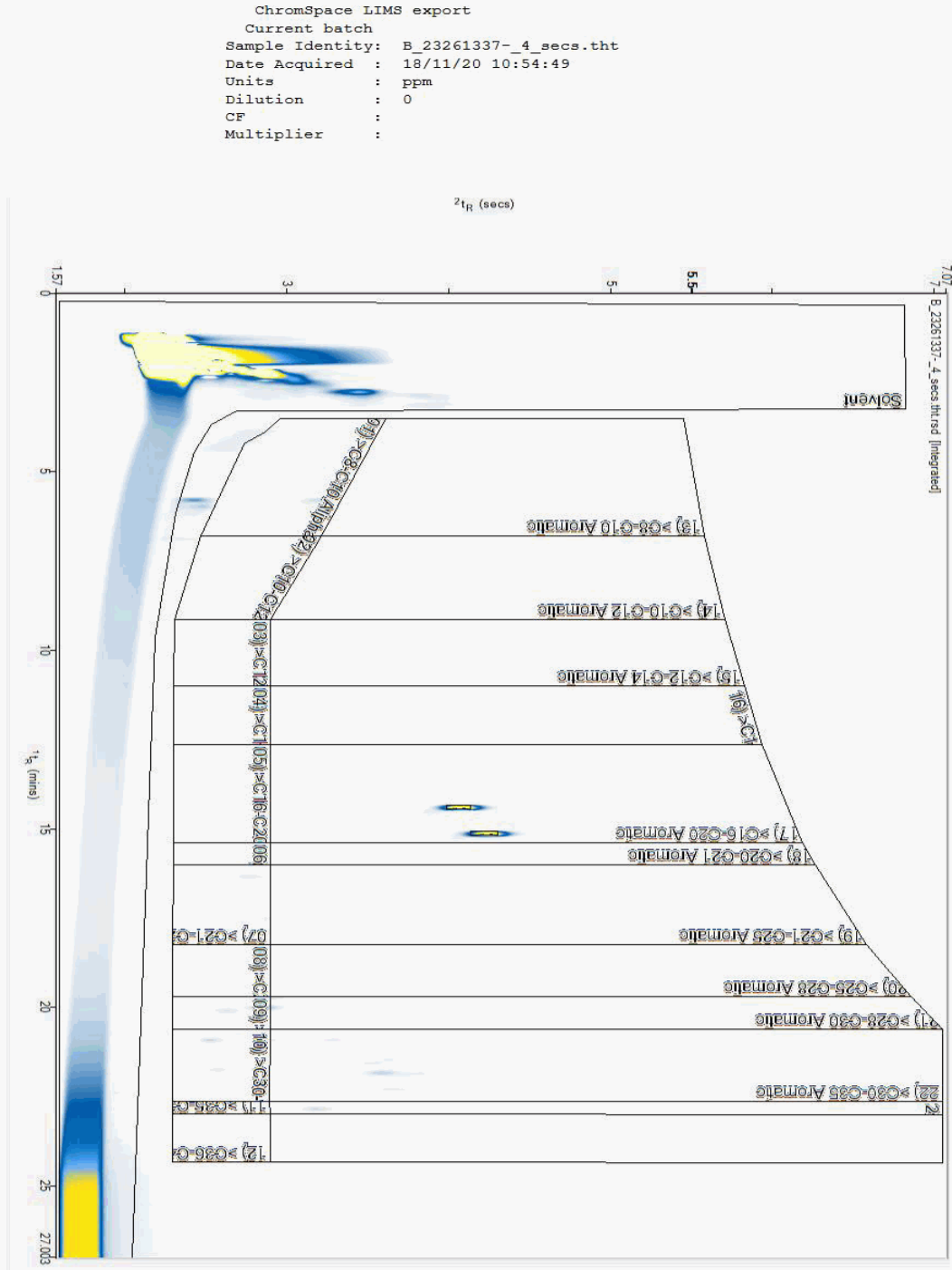
Report Number: 577345
Superseded Report:

Chromatogram

Analysis: EPH by GCxGC-FID

Sample No : 23261337
Sample ID : TPJ

Depth : 0.40





CERTIFICATE OF ANALYSIS

Validated

SDG: 201107-100
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

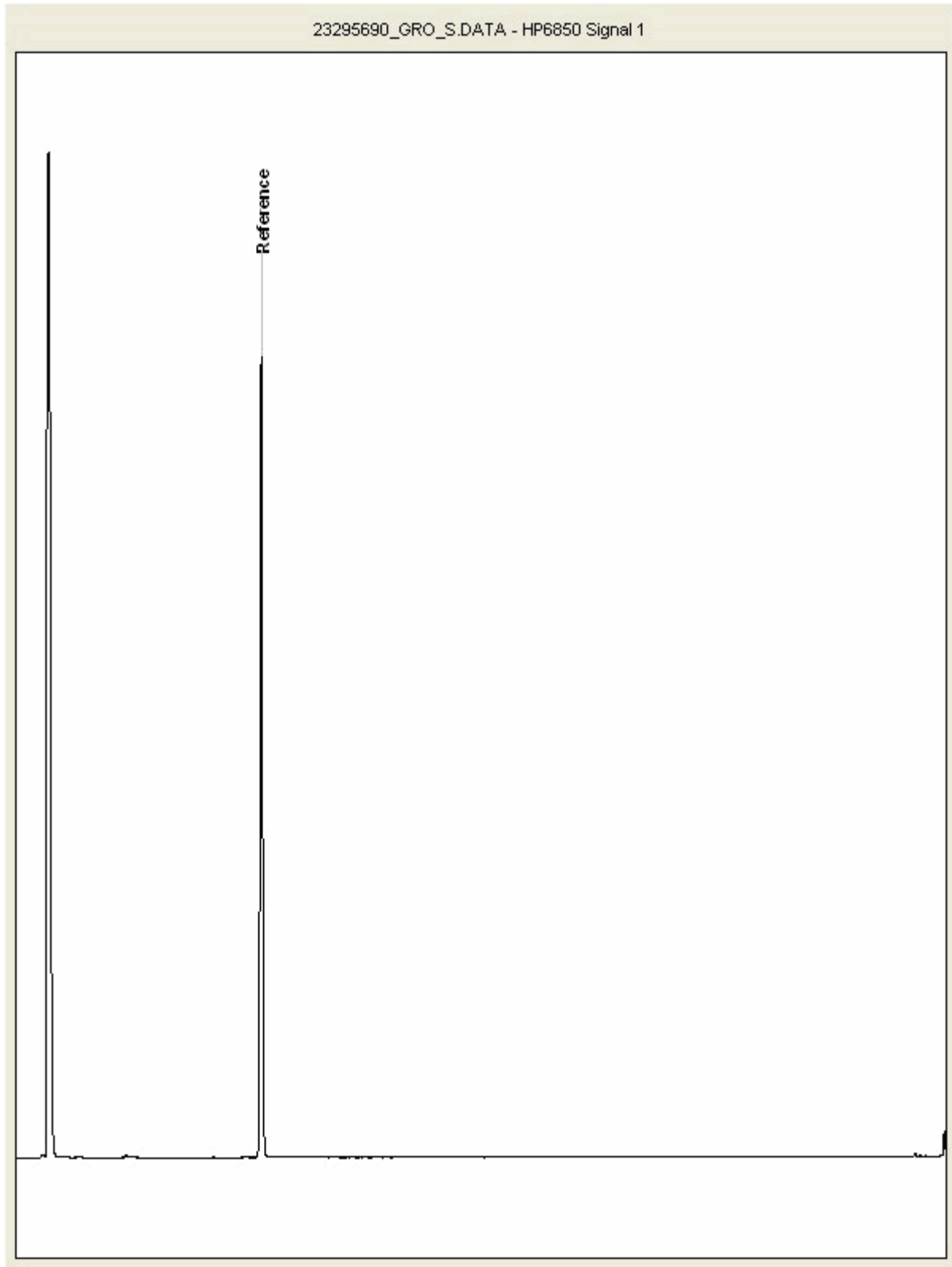
Report Number: 577345
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23295690
Sample ID : TPK

Depth : 0.70





CERTIFICATE OF ANALYSIS

Validated

SDG: 201107-100
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

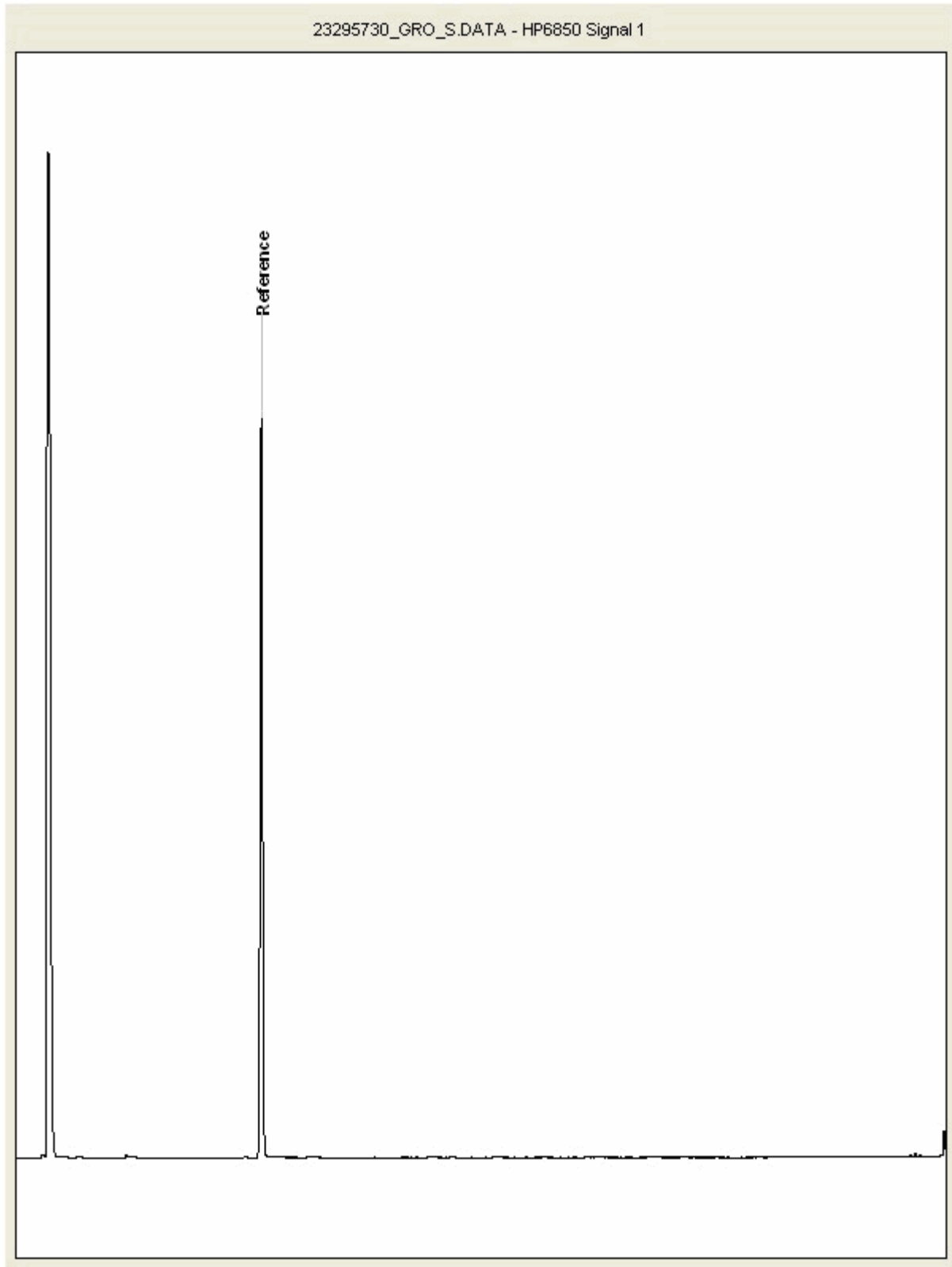
Report Number: 577345
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23295730
Sample ID : TPH

Depth : 0.35





CERTIFICATE OF ANALYSIS

Validated

SDG: 201107-100
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

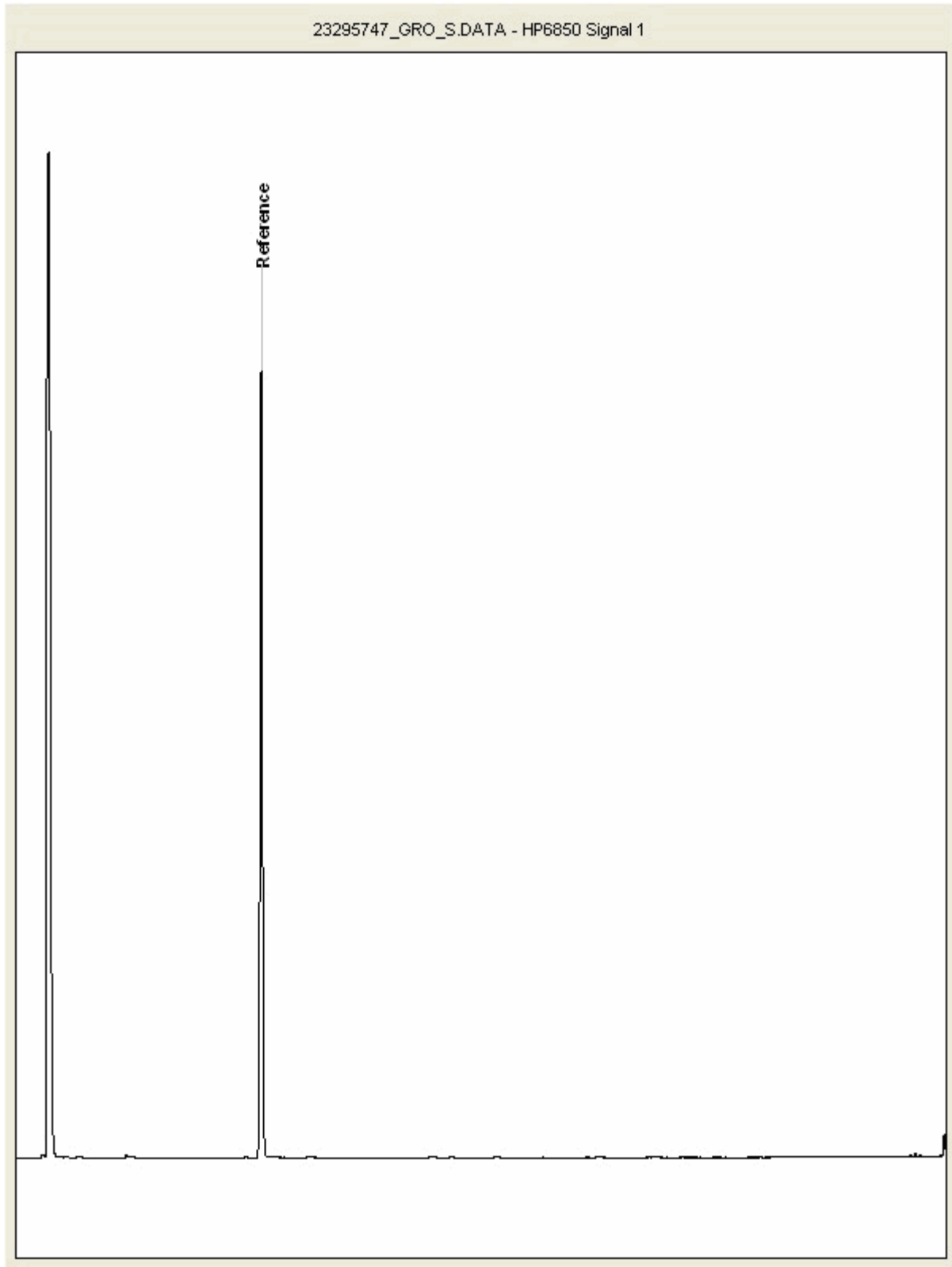
Report Number: 577345
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23295747
Sample ID : TPJ

Depth : 0.70





CERTIFICATE OF ANALYSIS

Validated

SDG: 201107-100
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

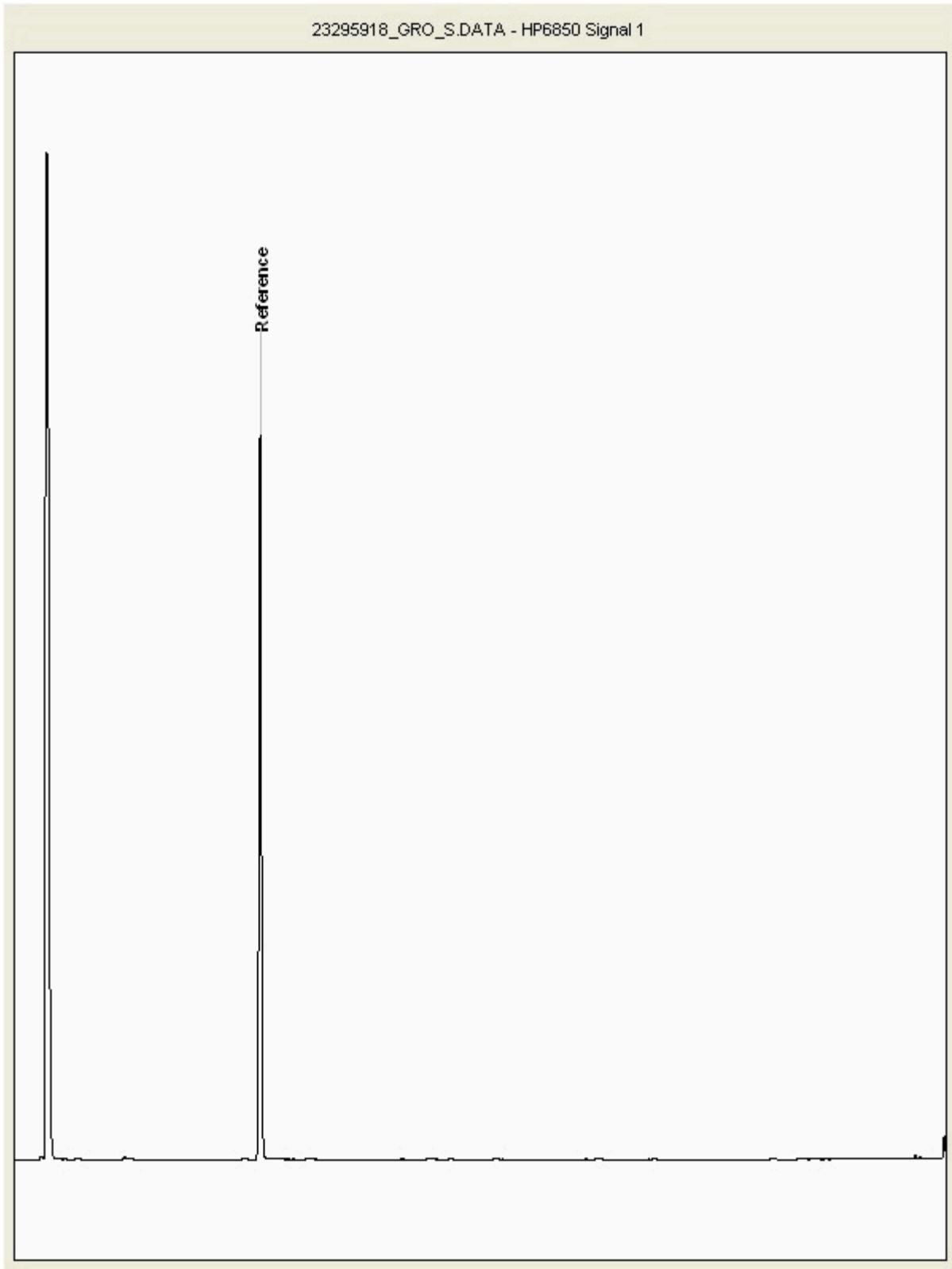
Report Number: 577345
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23295918
Sample ID : TPK

Depth : 0.50





CERTIFICATE OF ANALYSIS

Validated

SDG: 201107-100
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

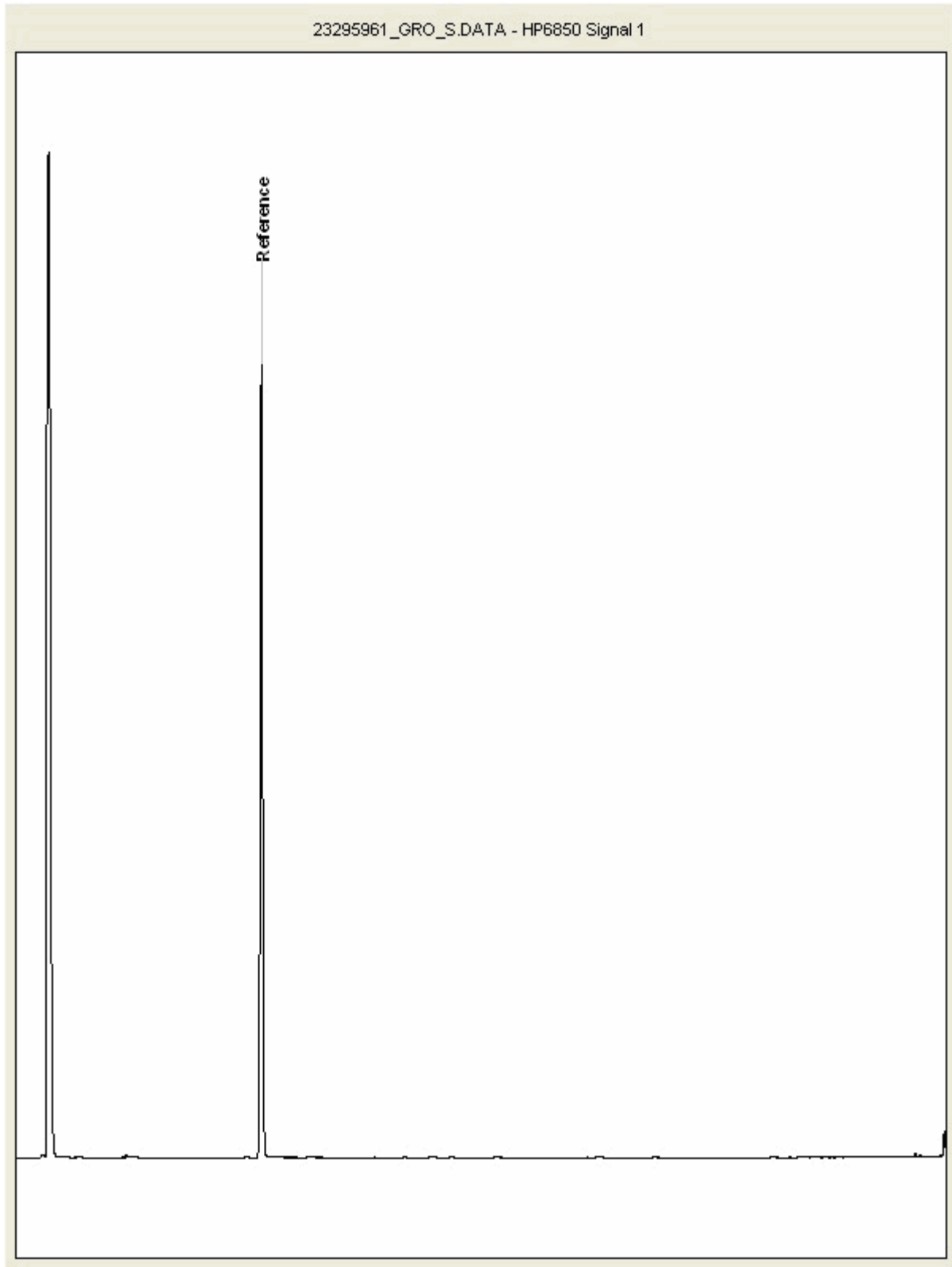
Report Number: 577345
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23295961
Sample ID : TPJ

Depth : 0.40





CERTIFICATE OF ANALYSIS

Validated

SDG: 201107-100
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

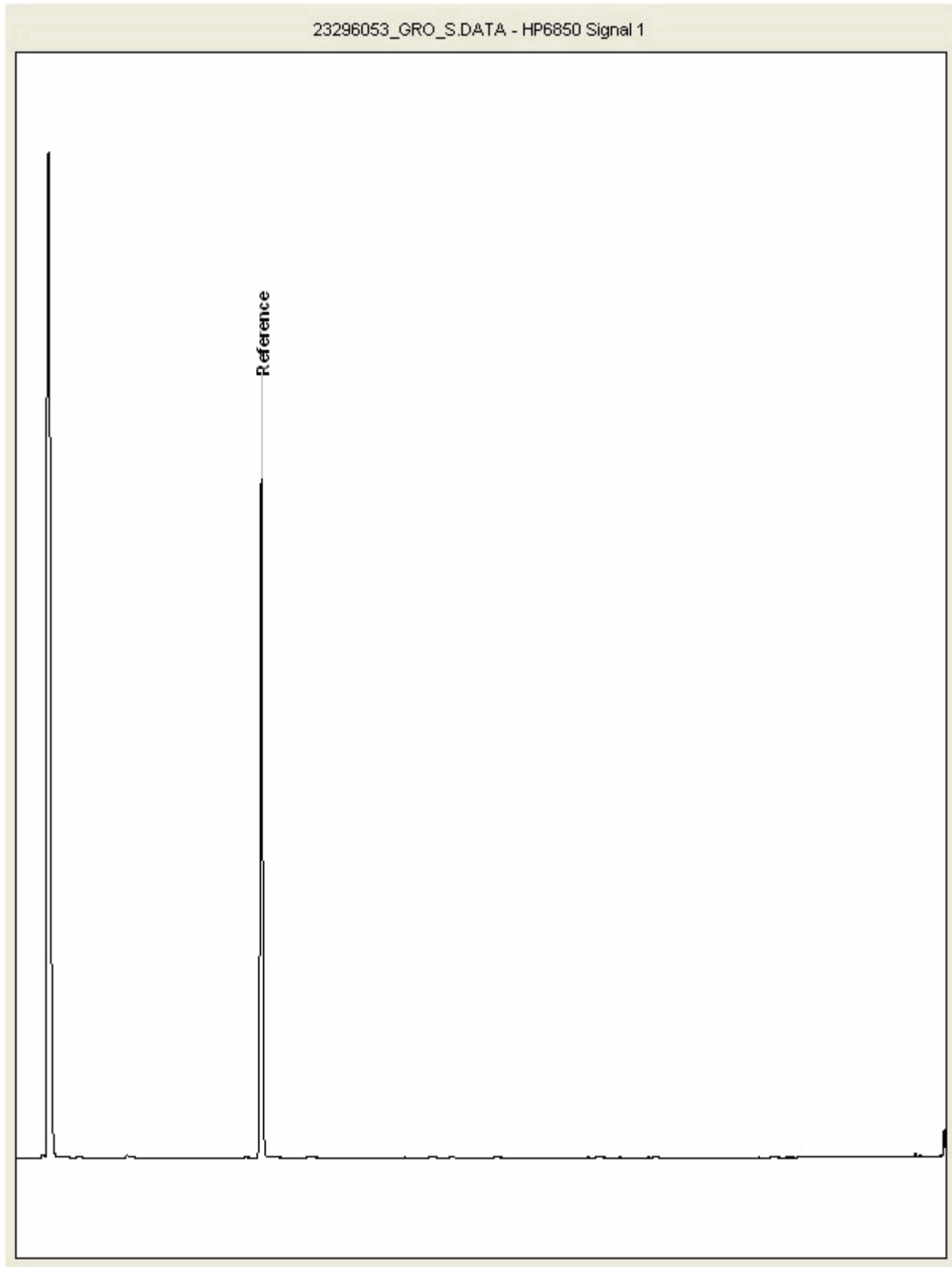
Report Number: 577345
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23296053
Sample ID : TPK

Depth : 0.35





CERTIFICATE OF ANALYSIS

SDG: 201107-100 Client Reference: JFR1451 Report Number: 577345
 Location: A303 Stonehenge Order Number: Superseded Report:

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

19. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung. Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017)*.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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RPS Consultants Ltd
260 Park Avenue
Aztec West
Almondsbury
Bristol
BS32 4SY

Attention: Gary Riches

CERTIFICATE OF ANALYSIS

Date of report Generation: 25 November 2020
Customer: RPS Consultants Ltd
Sample Delivery Group (SDG): 201107-101
Your Reference: JFR1451
Location: A303 Stonehenge
Report No: 577290

We received 2 samples on Saturday November 07, 2020 and 2 of these samples were scheduled for analysis which was completed on Wednesday November 25, 2020. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

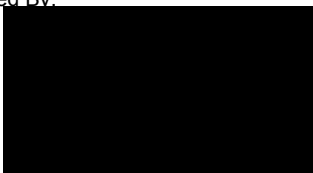
Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

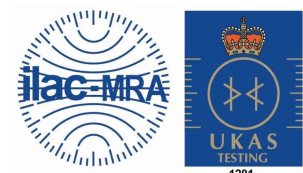
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:



Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 201107-101 **Client Reference:** JFR1451 **Report Number:** 577290
Location: A303 Stonehenge **Order Number:** **Superseded Report:**

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
23201539	TPJ		1.20	06/11/2020
23201540	TPK		1.20	06/11/2020

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 201107-101	Client Reference: JFR1451	Report Number: 577290
Location: A303 Stonehenge	Order Number:	Superseded Report:

Results Legend

- X Test
- N No Determination Possible

Sample Types -

- S - Soil/Solid
- UNS - Unspecified Solid
- GW - Ground Water
- SW - Surface Water
- LE - Land Leachate
- PL - Prepared Leachate
- PR - Process Water
- SA - Saline Water
- TE - Trade Effluent
- TS - Treated Sewage
- US - Untreated Sewage
- RE - Recreational Water
- DW - Drinking Water Non-regulatory
- UNL - Unspecified Liquid
- SL - Sludge
- G - Gas
- OTH - Other

	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container		Sample Type
					250g Amber Jar (ALE210)	60g VOC (ALE215)	
	23201539	TPJ		1.20	250g Amber Jar (ALE210)	60g VOC (ALE215)	S
		TPK		1.20	250g Amber Jar (ALE210)	60g VOC (ALE215)	S
Alkali Metals by iCap-OES (Soil)	All				NDPs: 0 Tests: 2		X X
Alkalinity as CaCO3	All				NDPs: 0 Tests: 2		X X
Ammonium Soil by Titration	All				NDPs: 0 Tests: 2		X X
Anions by Kone (soil)	All				NDPs: 0 Tests: 2		X X
EPH	All				NDPs: 0 Tests: 2		X X
EPH by GCxGC-FID	All				NDPs: 0 Tests: 2		X X
Metals in solid samples by OES	All				NDPs: 0 Tests: 2		X X
PAH by GCMS	All				NDPs: 0 Tests: 2		X X
pH	All				NDPs: 0 Tests: 2		X X
Sample description	All				NDPs: 0 Tests: 2		X X
Total Organic Carbon	All				NDPs: 0 Tests: 2		X X
VOC MS (S)	All				NDPs: 0 Tests: 2		X X



CERTIFICATE OF ANALYSIS

Validated

SDG: 201107-101
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 577290
Superseded Report:

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm
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Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
23201539	TPJ	1.20	Cream	Chalk	None	None
23201540	TPK	1.20	Cream	Chalk	None	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.



CERTIFICATE OF ANALYSIS

Validated

SDG: 201107-101
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 577290
Superseded Report:

Results Legend		Customer Sample Ref.	TPJ	TPK			
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	1.20	1.20			
M	mCERTS accredited.		Soil/Solid (S)	Soil/Solid (S)			
aq	Aqueous / settled sample.		06/11/2020	06/11/2020			
diss.fit	Dissolved / filtered sample.						
tot.unfit	Total / unfiltered sample.		07/11/2020	07/11/2020			
*	Subcontracted - refer to subcontractor report for accreditation status.		201107-101	201107-101			
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		23201539	23201540			
(F)	Trigger breach confirmed						
1-4*\$@	Sample deviation (see appendix)						
Component	LOD/Units	Method					
Moisture Content Ratio (% of as received sample)	%	PM024	22	22			
Exchangeable Ammonia as N	<12 mg/kg	TM024	<12 #	<12 #			
Organic Carbon, Total	<0.2 %	TM132	<0.2 #	<0.2 #			
Fraction Organic Carbon (FOC)	<0.002	TM132	<0.002 #	<0.002 #			
pH	1 pH Units	TM133	9.07 #	9.24 #			
Arsenic	<0.6 mg/kg	TM181	<0.6 #	<0.6 #			
Barium	<0.6 mg/kg	TM181	7.23 #	6.79 #			
Cadmium	<0.02 mg/kg	TM181	0.298 #	0.296 #			
Chromium	<0.9 mg/kg	TM181	<0.9 #	<0.9 #			
Copper	<1.4 mg/kg	TM181	<1.4 #	<1.4 #			
Iron	<1000 mg/kg	TM181	<1000 #	<1000 #			
Lead	<0.7 mg/kg	TM181	<0.7 #	<0.7 #			
Manganese	<0.13 mg/kg	TM181	159 #	192 #			
Mercury	<0.14 mg/kg	TM181	<0.14 #	<0.14 #			
Molybdenum	<0.1 mg/kg	TM181	0.104 #	<0.1 #			
Nickel	<0.2 mg/kg	TM181	0.82 #	1.11 #			
Phosphorus	<1 mg/kg	TM181	237 #	266 #			
Selenium	<1 mg/kg	TM181	<1 #	<1 #			
Zinc	<1.9 mg/kg	TM181	8.61 #	8.41 #			
Calcium	<21 mg/kg	TM224	390000 #	388000 #			
Sodium	<7 mg/kg	TM224	174 #	157 #			
Magnesium	<8 mg/kg	TM224	1060 #	1020 #			
Potassium	<16 mg/kg	TM224	148 #	121 #			
Alkalinity, Bicarbonate as CaCO3	<10 mg/kg	TM230	362 #	102 #			
Alkalinity, Carbonate as CaCO3	<10 mg/kg	TM230	<10 #	19.2 #			
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243	0.0042 #	0.0055 #			
Chloride (soluble)	<5 mg/kg	TM243	9.3 #	8.78 #			
EPH (C5-C40)	<35 mg/kg	TM415	<35 #	<35 #			
EPH Surrogate % recovery**	%	TM415	91.6 #	105 #			
EPH >C10-C40	<35 mg/kg	TM415	<35 #	<35 #			



CERTIFICATE OF ANALYSIS

Validated

SDG: 201107-101 **Client Reference:** JFR1451 **Report Number:** 577290
Location: A303 Stonehenge **Order Number:** **Superseded Report:**

PAH by GCMS

Results Legend		Customer Sample Ref.	TPJ	TPK			
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	1.20	1.20			
M	mCERTS accredited.		Soil/Solid (S)	Soil/Solid (S)			
aq	Aqueous / settled sample.		06/11/2020	06/11/2020			
diss.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.		07/11/2020	07/11/2020			
*	Subcontracted - refer to subcontractor report for accreditation status.		201107-101	201107-101			
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		23201539	23201540			
(F)	Trigger breach confirmed						
1-4*3@	Sample deviation (see appendix)						
Component	LOD/Units		Method				
Naphthalene-d8 % recovery**	%	TM218	95.7	95.9			
Acenaphthene-d10 % recovery**	%	TM218	95.7	94.8			
Phenanthrene-d10 % recovery**	%	TM218	104	101			
Chrysene-d12 % recovery**	%	TM218	104	100			
Perylene-d12 % recovery**	%	TM218	97.2	93.4			
Naphthalene	<9 µg/kg	TM218	<9 #	<9 #			
Acenaphthylene	<12 µg/kg	TM218	<12 #	<12 #			
Acenaphthene	<8 µg/kg	TM218	<8 #	<8 #			
Fluorene	<10 µg/kg	TM218	<10 #	<10 #			
Phenanthrene	<15 µg/kg	TM218	<15 #	<15 #			
Anthracene	<16 µg/kg	TM218	<16 #	<16 #			
Fluoranthene	<17 µg/kg	TM218	<17 #	<17 #			
Pyrene	<15 µg/kg	TM218	<15 #	<15 #			
Benz(a)anthracene	<14 µg/kg	TM218	<14 #	<14 #			
Chrysene	<10 µg/kg	TM218	<10 #	<10 #			
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 #	<15 #			
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 #	<14 #			
Benzo(a)pyrene	<15 µg/kg	TM218	<15 #	<15 #			
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 #	<18 #			
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 #	<23 #			
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 #	<24 #			
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118			



CERTIFICATE OF ANALYSIS

Validated

SDG: 201107-101
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 577290
Superseded Report:

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM224	US EPA Method 6010B	Determination of Alkaline Metals by iCap 6500 Duo ICP-OES
TM230	Methods 2320B and 4500-CO2 D, AWWA/APHA 19th Edition, 1995.	Determination of Alkalinity in Aqueous Sludge and Soil extracts
TM243		Mixed Anions In Soils By Kone
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).



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SDG: 201107-101
Location: A303 Stonehenge

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Order Number:

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Test Completion Dates

Lab Sample No(s)	23201539	23201540
Customer Sample Ref.	TPJ	TPK
AGS Ref.		
Depth	1.20	1.20
Type	Soil/Solid (S)	Soil/Solid (S)

Alkali Metals by iCap-OES (Soil)	25-Nov-2020	25-Nov-2020
Alkalinity as CaCO3	23-Nov-2020	19-Nov-2020
Ammonium Soil by Titration	24-Nov-2020	24-Nov-2020
Anions by Kone (soil)	25-Nov-2020	25-Nov-2020
EPH	23-Nov-2020	23-Nov-2020
EPH by GCxGC-FID	19-Nov-2020	19-Nov-2020
GRO by GC-FID (S)	23-Nov-2020	23-Nov-2020
Metals in solid samples by OES	25-Nov-2020	24-Nov-2020
PAH by GCMS	18-Nov-2020	18-Nov-2020
pH	18-Nov-2020	18-Nov-2020
Sample description	17-Nov-2020	17-Nov-2020
Total Organic Carbon	24-Nov-2020	24-Nov-2020
VOC MS (S)	23-Nov-2020	23-Nov-2020



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Order Number:

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ASSOCIATED AQC DATA

Alkali Metals by iCap-OES (Soil)

Component	Method Code	QC 2366	QC 2340
Calcium	TM224	98.68 80.29 : 119.71	98.94 80.29 : 119.71
Magnesium	TM224	97.58 81.99 : 118.01	98.88 81.99 : 118.01
Potassium	TM224	104.78 72.21 : 127.79	104.14 72.21 : 127.79
Sodium	TM224	96.24 83.09 : 114.47	98.39 83.09 : 114.47

Ammonium Soil by Titration

Component	Method Code	QC 2378
Exchangeable Ammonium as NH4	TM024	96.02 76.20 : 110.13

Anions by Kone (soil)

Component	Method Code	QC 2335
Chloride (soluble)	TM243	144.56 86.68 : 115.67
Water Soluble Sulphate as SO4 2:1 Extract	TM243	157.01 70.00 : 130.00

EPH by GCxGC-FID

Component	Method Code	QC 2300
EPH >C10-C40 Raw	TM415	98.74 59.15 : 115.05

GRO by GC-FID (S)

Component	Method Code	QC 2337
QC	TM089	84.09 70.34 : 111.95

Metals in solid samples by OES



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Metals in solid samples by OES

Component	Method Code	QC 2366	QC 2340
Aluminium	TM181	98.23 73.56 : 108.85	98.23 73.56 : 108.85
Antimony	TM181	96.75 76.89 : 111.24	95.53 76.89 : 111.24
Arsenic	TM181	99.71 88.53 : 111.01	104.07 88.53 : 111.01
Barium	TM181	95.41 77.67 : 105.35	96.33 77.67 : 105.35
Beryllium	TM181	98.13 85.44 : 109.61	104.1 85.44 : 109.61
Boron	TM181	90.54 73.51 : 104.66	93.41 73.51 : 104.66
Cadmium	TM181	89.3 77.67 : 104.12	91.77 77.67 : 104.12
Chromium	TM181	91.28 86.11 : 106.21	93.71 86.11 : 106.21
Cobalt	TM181	89.94 84.60 : 104.13	93.08 84.60 : 104.13
Copper	TM181	92.43 82.40 : 105.45	90.67 82.40 : 105.45
Iron	TM181	96.83 82.95 : 110.58	100.0 82.95 : 110.58
Lead	TM181	89.19 78.24 : 104.05	94.14 78.24 : 104.05
Manganese	TM181	107.22 94.29 : 119.51	113.33 94.29 : 119.51
Mercury	TM181	95.17 83.16 : 107.81	97.1 83.16 : 107.81
Molybdenum	TM181	96.3 87.11 : 106.87	95.47 87.11 : 106.87
Nickel	TM181	91.93 80.26 : 102.28	93.64 80.26 : 102.28
Phosphorus	TM181	104.44 94.56 : 124.28	108.08 94.56 : 124.28
Selenium	TM181	96.08 82.28 : 110.48	100.0 82.28 : 110.48
Strontium	TM181	93.99 79.13 : 102.79	89.98 79.13 : 102.79
Thallium	TM181	98.67 82.94 : 111.86	100.44 82.94 : 111.86
Tin	TM181	100.76 86.72 : 110.03	103.42 86.72 : 110.03
Titanium	TM181	76.34 66.23 : 102.06	80.15 66.23 : 102.06
Vanadium	TM181	95.6 86.19 : 109.45	95.24 86.19 : 109.45
Zinc	TM181	99.59 84.68 : 113.99	102.67 84.68 : 113.99

PAH by GCMS



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PAH by GCMS

Component	Method Code	QC 2361
Acenaphthene	TM218	93.0 76.79 : 103.90
Acenaphthylene	TM218	93.0 78.40 : 108.66
Anthracene	TM218	97.0 70.90 : 109.22
Benz(a)anthracene	TM218	102.0 73.77 : 119.26
Benzo(a)pyrene	TM218	103.5 73.20 : 114.18
Benzo(b)fluoranthene	TM218	95.5 75.36 : 117.58
Benzo(ghi)perylene	TM218	100.0 70.73 : 116.12
Benzo(k)fluoranthene	TM218	103.5 75.98 : 116.59
Chrysene	TM218	103.0 74.82 : 114.18
Dibenzo(ah)anthracene	TM218	98.0 69.17 : 115.30
Fluoranthene	TM218	103.0 75.88 : 112.84
Fluorene	TM218	92.5 76.66 : 107.56
Indeno(123cd)pyrene	TM218	90.0 70.26 : 117.95
Naphthalene	TM218	96.0 74.70 : 101.83
Phenanthrene	TM218	97.0 73.62 : 109.34
Pyrene	TM218	102.5 71.46 : 117.00

pH

Component	Method Code	QC 2344
pH	TM133	101.05 98.79 : 101.47

Total Organic Carbon

Component	Method Code	QC 2350	QC 2366
Total Organic Carbon	TM132	103.13 87.02 : 113.45	99.22 87.02 : 113.45

VOC MS (S)



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Client Reference: JFR1451
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VOC MS (S)

Component	Method Code	QC 2354
1,1,1,2-tetrachloroethane	TM116	98.6 86.59 : 118.97
1,1,1-Trichloroethane	TM116	110.0 86.26 : 117.53
1,1,2-Trichloroethane	TM116	107.2 75.16 : 112.70
1,1-Dichloroethane	TM116	115.0 83.27 : 122.16
1,2-Dichloroethane	TM116	120.2 89.30 : 133.10
1,4-Dichlorobenzene	TM116	118.0 82.59 : 123.23
2-Chlorotoluene	TM116	109.4 66.81 : 118.43
4-Chlorotoluene	TM116	107.0 65.88 : 114.76
Benzene	TM116	107.4 93.16 : 123.63
Carbon Disulphide	TM116	92.8 75.11 : 124.81
Carbontetrachloride	TM116	112.8 82.35 : 126.46
Chlorobenzene	TM116	100.4 85.07 : 118.13
Chloroform	TM116	115.2 88.13 : 122.71
Chloromethane	TM116	137.4 61.62 : 145.66
Cis-1,2-Dichloroethene	TM116	108.2 78.27 : 128.90
Dibromomethane	TM116	93.4 77.47 : 121.29
Dichloromethane	TM116	122.2 87.89 : 134.72
Ethylbenzene	TM116	91.0 79.92 : 110.05
Hexachlorobutadiene	TM116	76.6 16.78 : 153.29
Isopropylbenzene	TM116	88.4 64.20 : 119.59
Naphthalene	TM116	119.2 79.29 : 125.59
o-Xylene	TM116	85.6 74.57 : 112.73
p/m-Xylene	TM116	87.5 76.47 : 108.99
Sec-Butylbenzene	TM116	77.4 44.71 : 117.87
Tetrachloroethene	TM116	93.8 85.86 : 122.95
Toluene	TM116	100.2 87.82 : 116.21
Trichloroethene	TM116	100.4 79.80 : 112.33



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Client Reference: JFR1451
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Report Number: 577290
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VOC MS (S)

		QC 2354
Trichlorofluoromethane	TM116	119.2 80.52 : 132.12
Vinyl Chloride	TM116	127.8 68.07 : 137.84

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis .

The figure detailed is the percentage recovery result for the AQC .

The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control .



CERTIFICATE OF ANALYSIS

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SDG: 201107-101
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

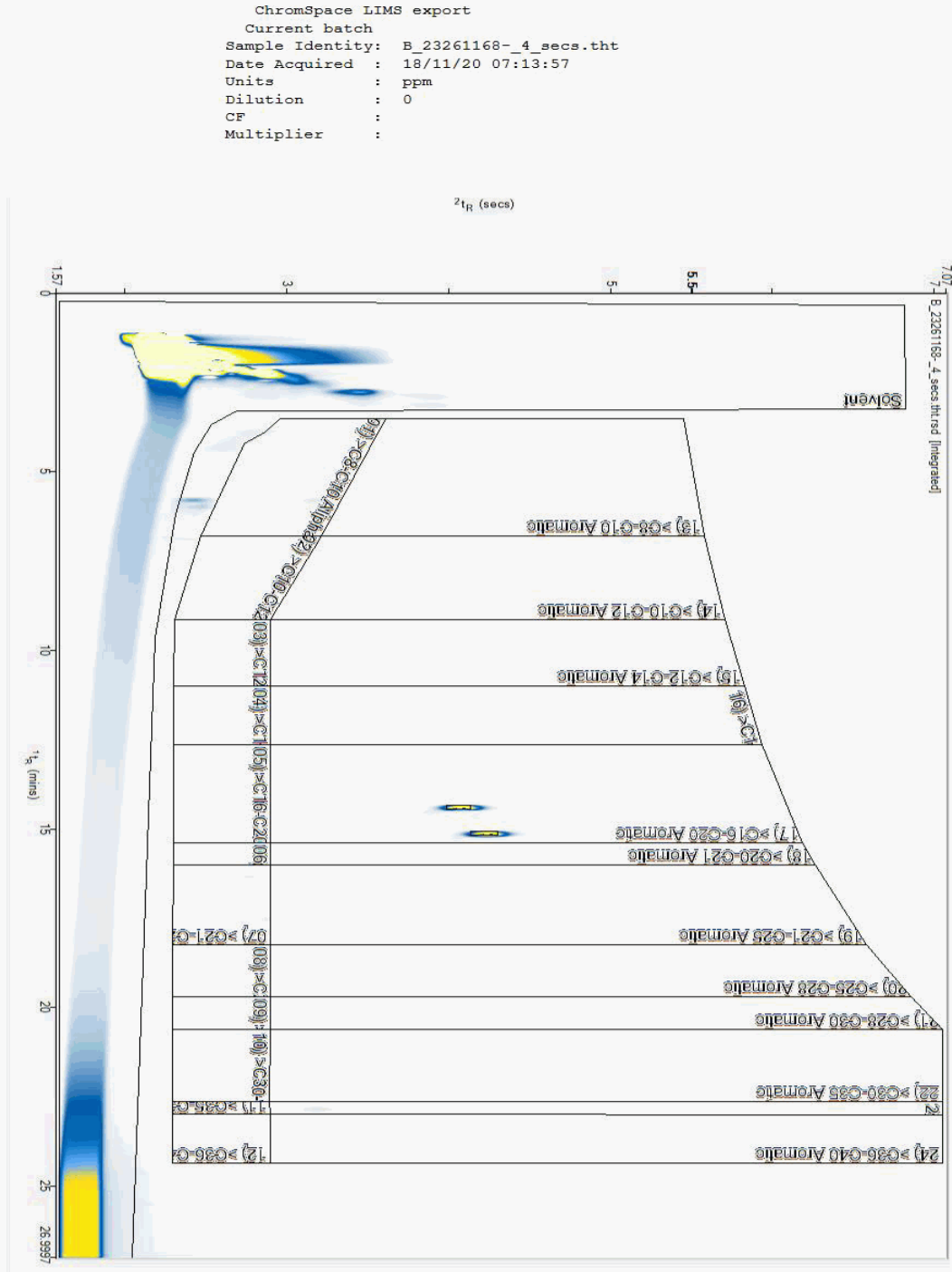
Report Number: 577290
Superseded Report:

Chromatogram

Analysis: EPH by GCxGC-FID

Sample No : 23261168
Sample ID : TPK

Depth : 1.20





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Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

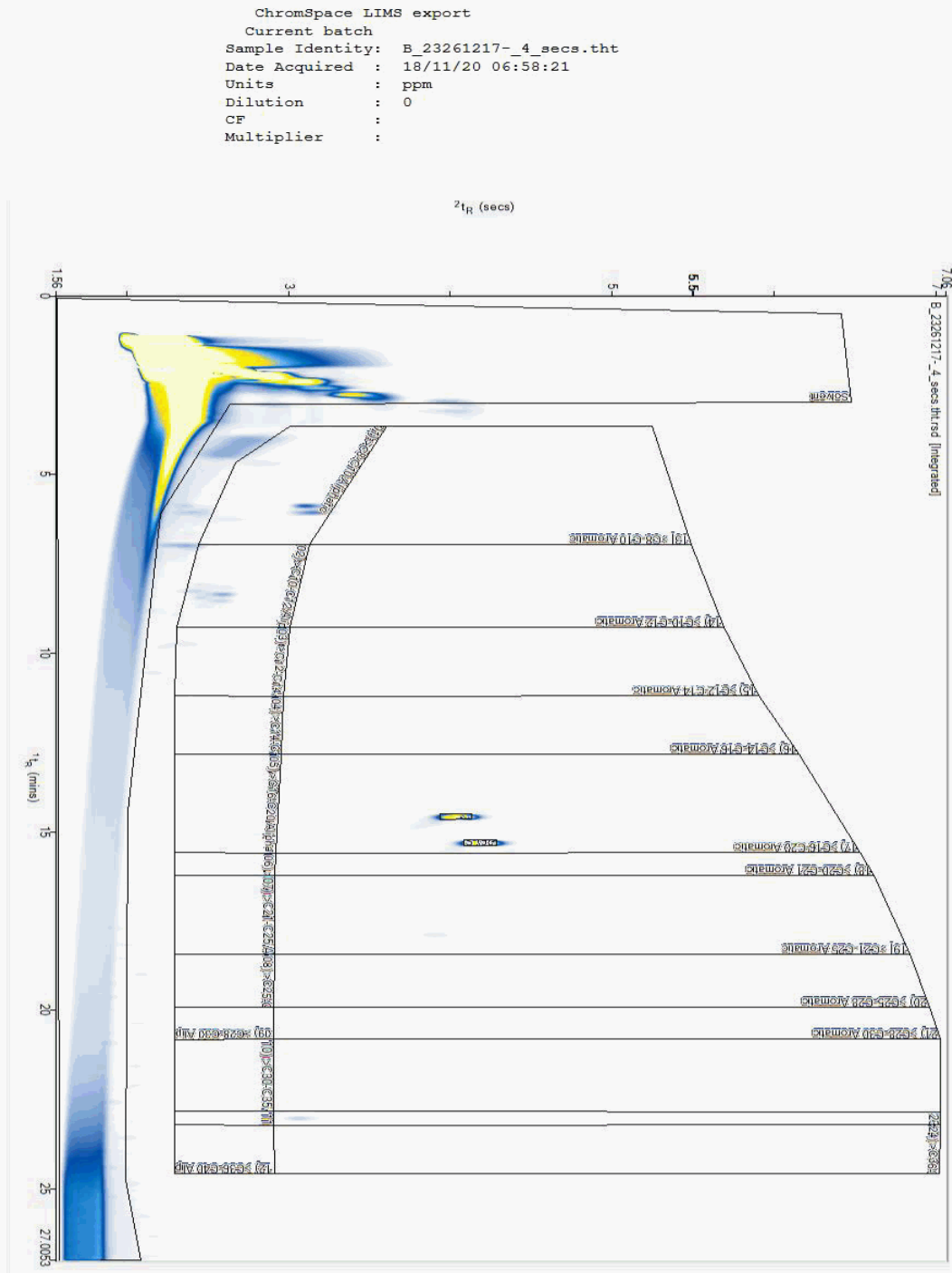
Report Number: 577290
Superseded Report:

Chromatogram

Analysis: EPH by GCxGC-FID

Sample No : 23261217
Sample ID : TPJ

Depth : 1.20





CERTIFICATE OF ANALYSIS

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SDG: 201107-101
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

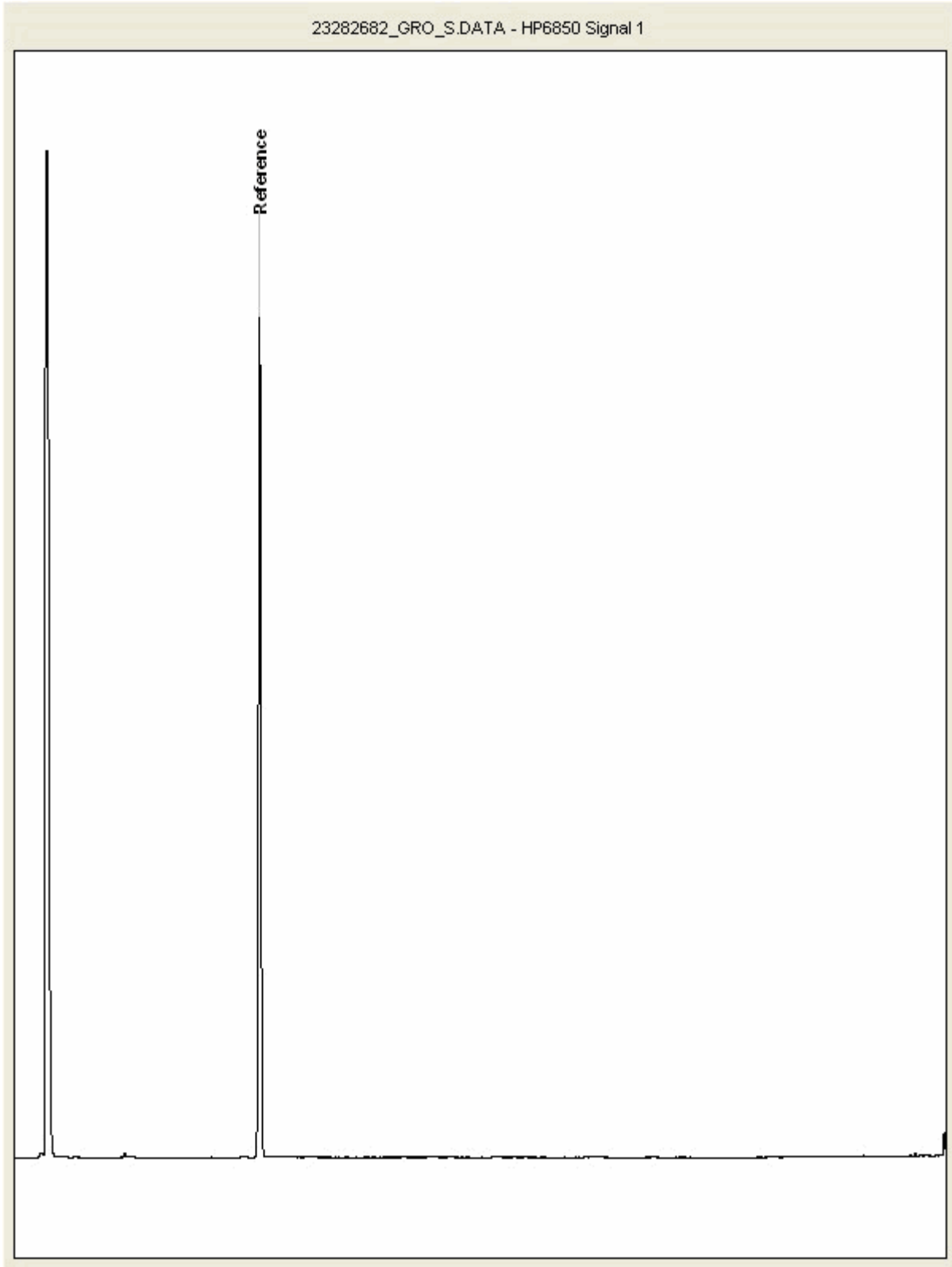
Report Number: 577290
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23282682
Sample ID : TPJ

Depth : 1.20





CERTIFICATE OF ANALYSIS

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SDG: 201107-101
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

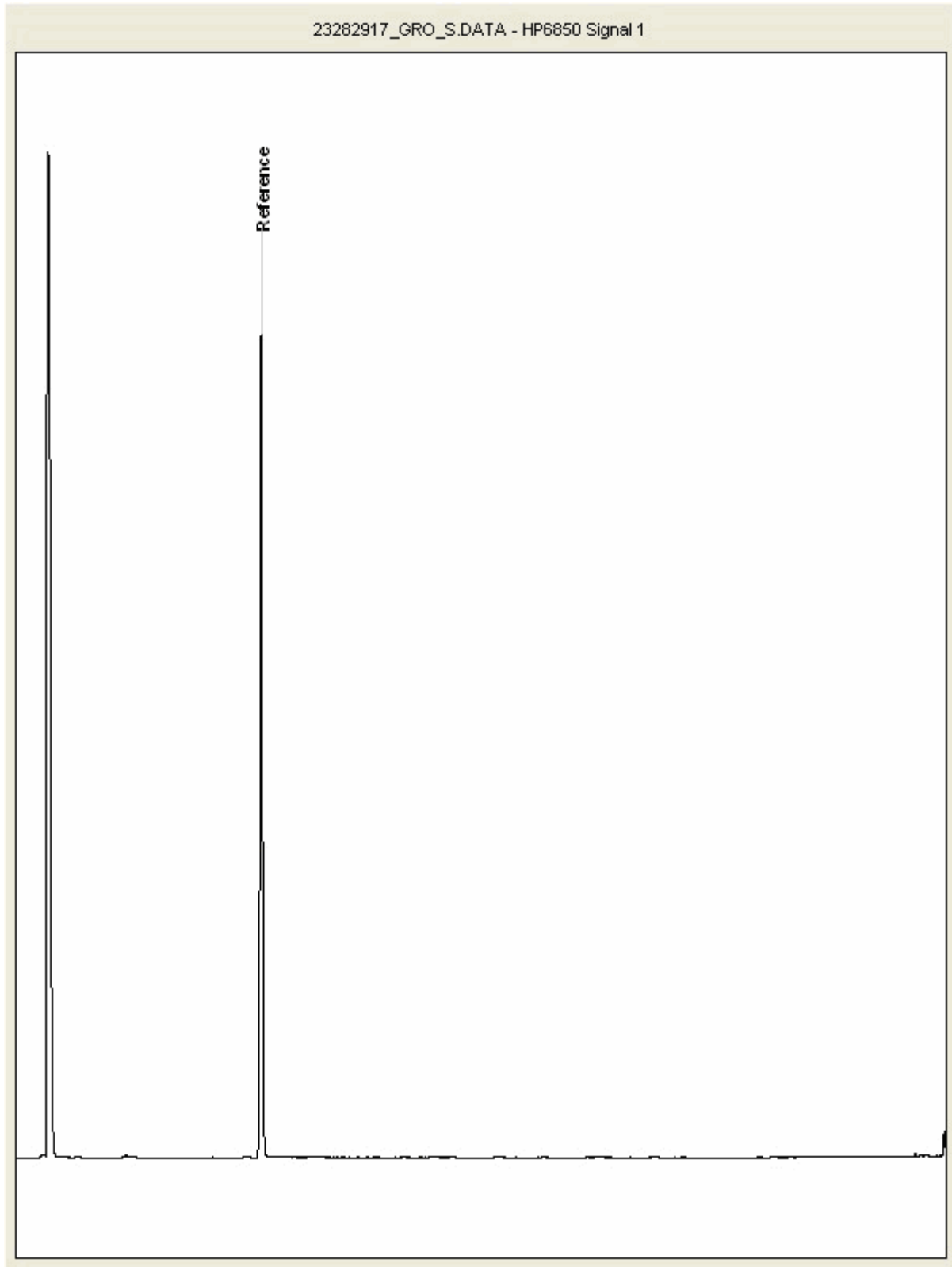
Report Number: 577290
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23282917
Sample ID : TPK

Depth : 1.20





CERTIFICATE OF ANALYSIS

SDG: 201107-101 Client Reference: JFR1451 Report Number: 577290
 Location: A303 Stonehenge Order Number: Superseded Report:

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

19. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung. Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017)*.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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Website: www.alsenvironmental.co.uk

RPS Consultants Ltd
260 Park Avenue
Aztec West
Almondsbury
Bristol
BS32 4SY

Attention: Gary Riches

CERTIFICATE OF ANALYSIS

Date of report Generation: 25 November 2020
Customer: RPS Consultants Ltd
Sample Delivery Group (SDG): 201114-77
Your Reference: JFR1451
Location: A303 Stonehenge
Report No: 577287

We received 2 samples on Saturday November 14, 2020 and 2 of these samples were scheduled for analysis which was completed on Wednesday November 25, 2020. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

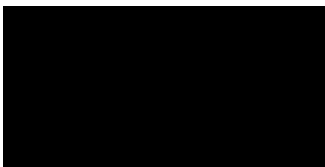
Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:



Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 201114-77 **Client Reference:** JFR1451 **Report Number:** 577287
Location: A303 Stonehenge **Order Number:** **Superseded Report:**

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
23247404	TPF 0.4		0.40	12/11/2020
23247406	TPF 0.8		0.80	12/11/2020

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 201114-77	Client Reference: JFR1451	Report Number: 577287
Location: A303 Stonehenge	Order Number:	Superseded Report:

Results Legend

- X Test
- N No Determination Possible

Sample Types -

- S - Soil/Solid
- UNS - Unspecified Solid
- GW - Ground Water
- SW - Surface Water
- LE - Land Leachate
- PL - Prepared Leachate
- PR - Process Water
- SA - Saline Water
- TE - Trade Effluent
- TS - Treated Sewage
- US - Untreated Sewage
- RE - Recreational Water
- DW - Drinking Water Non-regulatory
- UNL - Unspecified Liquid
- SL - Sludge
- G - Gas
- OTH - Other

Lab Sample No(s)	23247/404	23247/406
Customer Sample Reference	TPF 0.4	TPF 0.8
AGS Reference		
Depth (m)	0.40	0.80
Container	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)
Sample Type	S	S

Test Name	All	NDPs: 0	Tests: 2		
Alkali Metals by iCap-OES (Soil)	All	NDPs: 0	Tests: 2	X	X
Alkalinity as CaCO3	All	NDPs: 0	Tests: 2	X	X
Ammonium Soil by Titration	All	NDPs: 0	Tests: 2	X	X
Anions by Kone (soil)	All	NDPs: 0	Tests: 2	X	X
Metals in solid samples by OES	All	NDPs: 0	Tests: 2	X	X
PAH by GCMS	All	NDPs: 0	Tests: 2	X	X
pH	All	NDPs: 0	Tests: 2	X	X
Sample description	All	NDPs: 0	Tests: 2	X	X
Total Organic Carbon	All	NDPs: 0	Tests: 2	X	X



CERTIFICATE OF ANALYSIS

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SDG: 201114-77
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Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm
-----------	----------	------	-----------------	--------	-------------	--------	------------	-------------	-------

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
23247404	TPF 0.4	0.40	Light Brown	Sandy Loam	Stones	Vegetation
23247406	TPF 0.8	0.80	White	Chalk	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.



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Results Legend		Customer Sample Ref.	TPF 0.4	TPF 0.8			
#	ISO17025 accredited.						
M	mCERTS accredited.						
aq	Aqueous / settled sample.						
diss.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.						
-	Subcontracted - refer to subcontractor report for accreditation status.						
--	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery						
(F)	Trigger breach confirmed						
1-4*#@	Sample deviation (see appendix)						
		Depth (m)	0.40	0.80			
		Sample Type	Soil/Solid (S)	Soil/Solid (S)			
		Date Sampled	12/11/2020	12/11/2020			
		Sample Time					
		Date Received	14/11/2020	14/11/2020			
		SDG Ref	201114-77	201114-77			
		Lab Sample No.(s)	23247404	23247406			
		AGS Reference					
Component	LOD/Units	Method					
Moisture Content Ratio (% of as received sample)	%	PM024	20	21			
Exchangeable Ammonia as N	<12 mg/kg	TM024	<12	<12			
			M	#			
Organic Carbon, Total	<0.2 %	TM132	1.61	<0.2			
			M	#			
Fraction Organic Carbon (FOC)	<0.002	TM132	0.0161	<0.002			
			#	#			
pH	1 pH Units	TM133	8.41	8.89			
			M	#			
Arsenic	<0.6 mg/kg	TM181	5.72	<0.6			
			M	#			
Barium	<0.6 mg/kg	TM181	50.1	10.5			
			#	#			
Cadmium	<0.02 mg/kg	TM181	0.756	0.368			
			M	#			
Chromium	<0.9 mg/kg	TM181	8.57	1.02			
			M	#			
Copper	<1.4 mg/kg	TM181	6.31	<1.4			
			M	#			
Iron	<1000 mg/kg	TM181	8140	<1000			
			#	#			
Lead	<0.7 mg/kg	TM181	14.5	<0.7			
			M	#			
Manganese	<0.13 mg/kg	TM181	624	205			
			M	#			
Mercury	<0.14 mg/kg	TM181	<0.14	<0.14			
			M	#			
Molybdenum	<0.1 mg/kg	TM181	0.165	<0.1			
			#	#			
Nickel	<0.2 mg/kg	TM181	8.55	1.73			
			M	#			
Phosphorus	<1 mg/kg	TM181	852	312			
Selenium	<1 mg/kg	TM181	<1	<1			
			#	#			
Zinc	<1.9 mg/kg	TM181	66.7	12.2			
			M	#			
Calcium	<21 mg/kg	TM224	277000	404000			
Sodium	<7 mg/kg	TM224	144	156			
Magnesium	<8 mg/kg	TM224	1490	917			
Potassium	<16 mg/kg	TM224	937	151			
Alkalinity, Bicarbonate as CaCO3	<10 mg/kg	TM230	206	104			
Alkalinity, Carbonate as CaCO3	<10 mg/kg	TM230	<10	18.9			
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243	<0.004	0.004			
			M	#			
Chloride (soluble)	<5 mg/kg	TM243	11.6	9.5			
			M	#			



CERTIFICATE OF ANALYSIS

Validated

SDG: 201114-77
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 577287
Superseded Report:

PAH by GCMS

Results Legend		Customer Sample Ref.	TPF 0.4		TPF 0.8	
#	ISO17025 accredited.		Depth (m)	0.40	0.80	Soil/Solid (S)	12/11/2020
M	mCERTS accredited.	Sample Type	Soil/Solid (S)	Soil/Solid (S)		
aq	Aqueous / settled sample.	Date Sampled	12/11/2020	12/11/2020		
diss.filt	Dissolved / filtered sample.	Sample Time				
tot.unfilt	Total / unfiltered sample.	Date Received	14/11/2020	14/11/2020		
-	Subcontracted - refer to subcontractor report for accreditation status.	SDG Ref	201114-77	201114-77		
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery	Lab Sample No.(s)	23247404	23247406		
(F)	Trigger breach confirmed	AGS Reference				
1-4*#@	Sample deviation (see appendix)					
Component	LOD/Units	Method				
Naphthalene-d8 % recovery**	%	TM218	96.7	94.2		
Acenaphthene-d10 % recovery**	%	TM218	93.2	92.9		
Phenanthrene-d10 % recovery**	%	TM218	92.2	87.5		
Chrysene-d12 % recovery**	%	TM218	89.2	78.6		
Perylene-d12 % recovery**	%	TM218	92.3	83.6		
Naphthalene	<9 µg/kg	TM218	<9	<9		
			M	#		
Acenaphthylene	<12 µg/kg	TM218	<12	<12		
			M	#		
Acenaphthene	<8 µg/kg	TM218	<8	<8		
			M	#		
Fluorene	<10 µg/kg	TM218	<10	<10		
			M	#		
Phenanthrene	<15 µg/kg	TM218	36.7	<15		
			M	#		
Anthracene	<16 µg/kg	TM218	<16	<16		
			M	#		
Fluoranthene	<17 µg/kg	TM218	122	<17		
			M	#		
Pyrene	<15 µg/kg	TM218	110	<15		
			M	#		
Benz(a)anthracene	<14 µg/kg	TM218	76.3	<14		
			M	#		
Chrysene	<10 µg/kg	TM218	79.9	<10		
			M	#		
Benzo(b)fluoranthene	<15 µg/kg	TM218	150	<15		
			M	#		
Benzo(k)fluoranthene	<14 µg/kg	TM218	55.3	<14		
			M	#		
Benzo(a)pyrene	<15 µg/kg	TM218	97	<15		
			M	#		
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	95.1	<18		
			M	#		
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23	<23		
			M	#		
Benzo(g,h,i)perylene	<24 µg/kg	TM218	83.6	<24		
			M	#		
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	906	<118		



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Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM224	US EPA Method 6010B	Determination of Alkaline Metals by iCap 6500 Duo ICP-OES
TM230	Methods 2320B and 4500-CO2 D, AWWA/APHA 19th Edition, 1995.	Determination of Alkalinity in Aqueous Sludge and Soil extracts
TM243		Mixed Anions In Soils By Kone

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).



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Test Completion Dates

Lab Sample No(s)	23247404	23247406
Customer Sample Ref.	TPF 0.4	TPF 0.8
AGS Ref.		
Depth	0.40	0.80
Type	Soil/Solid (S)	Soil/Solid (S)

Alkali Metals by iCap-OES (Soil)	25-Nov-2020	25-Nov-2020
Alkalinity as CaCO3	19-Nov-2020	19-Nov-2020
Ammonium Soil by Titration	19-Nov-2020	24-Nov-2020
Anions by Kone (soil)	25-Nov-2020	25-Nov-2020
Metals in solid samples by OES	24-Nov-2020	24-Nov-2020
PAH by GCMS	18-Nov-2020	19-Nov-2020
pH	18-Nov-2020	18-Nov-2020
Sample description	17-Nov-2020	17-Nov-2020
Total Organic Carbon	24-Nov-2020	23-Nov-2020



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ASSOCIATED AQC DATA

Alkali Metals by iCap-OES (Soil)

Component	Method Code	QC 2340
Calcium	TM224	98.94 80.29 : 119.71
Magnesium	TM224	98.88 81.99 : 118.01
Potassium	TM224	104.14 72.21 : 127.79
Sodium	TM224	98.39 83.09 : 114.47

Ammonium Soil by Titration

Component	Method Code	QC 2373	QC 2378
Exchangeable Ammonium as NH4	TM024	84.58 76.20 : 110.13	96.02 76.20 : 110.13

Anions by Kone (soil)

Component	Method Code	QC 2323
Chloride (soluble)	TM243	144.56 86.68 : 115.67
Water Soluble Sulphate as SO4 2:1 Extract	TM243	159.81 70.00 : 130.00

Metals in solid samples by OES

Component	Method Code	QC 2340
Aluminium	TM181	98.23 73.56 : 108.85
Antimony	TM181	95.53 76.89 : 111.24
Arsenic	TM181	104.07 88.53 : 111.01
Barium	TM181	96.33 77.67 : 105.35
Beryllium	TM181	104.1 85.44 : 109.61
Boron	TM181	93.41 73.51 : 104.66
Cadmium	TM181	91.77 77.67 : 104.12
Chromium	TM181	93.71 86.11 : 106.21
Cobalt	TM181	93.08 84.60 : 104.13
Copper	TM181	90.67 82.40 : 105.45
Iron	TM181	100.0 82.95 : 110.58



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Metals in solid samples by OES

		QC 2340
Lead	TM181	94.14 78.24 : 104.05
Manganese	TM181	113.33 94.29 : 119.51
Mercury	TM181	97.1 83.16 : 107.81
Molybdenum	TM181	95.47 87.11 : 106.87
Nickel	TM181	93.64 80.26 : 102.28
Phosphorus	TM181	108.08 94.56 : 124.28
Selenium	TM181	100.0 82.28 : 110.48
Strontium	TM181	89.98 79.13 : 102.79
Thallium	TM181	100.44 82.94 : 111.86
Tin	TM181	103.42 86.72 : 110.03
Titanium	TM181	80.15 66.23 : 102.06
Vanadium	TM181	95.24 86.19 : 109.45
Zinc	TM181	102.67 84.68 : 113.99

PAH by GCMS

Component	Method Code	QC 2349	QC 2358
Acenaphthene	TM218	90.0 80.97 : 105.99	86.5 76.79 : 103.90
Acenaphthylene	TM218	88.5 74.76 : 107.36	87.0 78.40 : 108.66
Anthracene	TM218	88.5 73.04 : 106.97	84.0 70.90 : 109.22
Benz(a)anthracene	TM218	78.0 68.79 : 119.64	86.0 73.77 : 119.26
Benzo(a)pyrene	TM218	73.5 66.17 : 117.52	80.5 73.20 : 114.18
Benzo(b)fluoranthene	TM218	73.0 66.40 : 118.34	81.5 75.36 : 117.58
Benzo(ghi)perylene	TM218	73.5 67.68 : 112.07	77.5 70.73 : 116.12
Benzo(k)fluoranthene	TM218	75.5 72.84 : 114.66	81.5 75.98 : 116.59
Chrysene	TM218	79.5 68.39 : 115.56	82.5 74.82 : 114.18
Dibenzo(ah)anthracene	TM218	74.0 69.03 : 110.45	82.5 69.17 : 115.30
Fluoranthene	TM218	80.5 69.37 : 117.19	79.5 75.88 : 112.84
Fluorene	TM218	89.0 75.38 : 105.98	86.5 76.66 : 107.56



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Client Reference: JFR1451
Order Number:

Report Number: 577287
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PAH by GCMS

		QC 2349	QC 2358
Indeno(123cd)pyrene	TM218	67.0 65.91 : 113.61	81.5 70.26 : 117.95
Naphthalene	TM218	89.0 71.40 : 105.87	85.0 74.70 : 101.83
Phenanthrene	TM218	89.0 74.04 : 109.30	83.0 73.62 : 109.34
Pyrene	TM218	80.5 69.68 : 115.27	79.5 71.46 : 117.00

pH

Component	Method Code	QC 2323
pH	TM133	99.47 99.06 : 100.67

Total Organic Carbon

Component	Method Code	QC 2373	QC 2350
Total Organic Carbon	TM132	101.17 87.02 : 113.45	103.13 87.02 : 113.45

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis .
The figure detailed is the percentage recovery result for the AQC .
The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control .



CERTIFICATE OF ANALYSIS

SDG: 201114-77 Client Reference: JFR1451 Report Number: 577287
 Location: A303 Stonehenge Order Number: Superseded Report:

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

19. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung. Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017)*.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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RPS Consultants Ltd
260 Park Avenue
Aztec West
Almondsbury
Bristol
BS32 4SY

Attention: Gary Riches

CERTIFICATE OF ANALYSIS

Date of report Generation: 23 December 2020
Customer: RPS Consultants Ltd
Sample Delivery Group (SDG): 201121-32
Your Reference: JFR1451
Location: A303 Stonehenge
Report No: 581261

We received 1 sample on Saturday November 21, 2020 and 1 of these samples were scheduled for analysis which was completed on Wednesday December 23, 2020. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

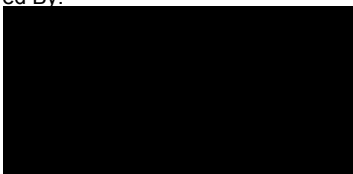
Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:



Sonia McWhan

Operations Manager



CERTIFICATE OF ANALYSIS

Validated

SDG: 201121-32 **Client Reference:** JFR1451 **Report Number:** 581261
Location: A303 Stonehenge **Order Number:** JFR1451 **Superseded Report:**

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
23287409	CP2308A			19/11/2020

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 201121-32
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: JFR1451

Report Number: 581261
Superseded Report:

Results Legend

- X Test
- N No Determination Possible

Sample Types -

- S - Soil/Solid
- UNS - Unspecified Solid
- GW - Ground Water
- SW - Surface Water
- LE - Land Leachate
- PL - Prepared Leachate
- PR - Process Water
- SA - Saline Water
- TE - Trade Effluent
- TS - Treated Sewage
- US - Untreated Sewage
- RE - Recreational Water
- DW - Drinking Water Non-regulatory
- UNL - Unspecified Liquid
- SL - Sludge
- G - Gas
- OTH - Other

	Lab Sample No(s)									
	Customer Sample Reference									
	AGS Reference									
	Depth (m)									
	Container		Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	DO KIT + DO 250 ml glass	330ml plastic bottle (ALE003)	250ml Amber GI. PTFE/PE	0.5l glass bottle (ALE227)
	Sample Type		UNL	UNL	UNL	UNL	UNL	UNL	UNL	
Alkalinity as CaCO3	All	NDPs: 0 Tests: 1		X						
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 1			X					
Anions by Kone (w)	All	NDPs: 0 Tests: 1		X						
Chromium III	All	NDPs: 0 Tests: 1			X					
Conductivity (at 20 deg.C)	All	NDPs: 0 Tests: 1		X						
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 1						X		
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 1			X					
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 1	X							
Dissolved Oxygen by Titration	All	NDPs: 1 Tests: 0				N				
EPH CWG (Aliphatic) Aqueous GC (W)	All	NDPs: 0 Tests: 1		X						
EPH CWG (Aromatic) Aqueous GC (W)	All	NDPs: 0 Tests: 1		X						
Fluoride	All	NDPs: 0 Tests: 1			X					
GRO by GC-FID (W)	All	NDPs: 0 Tests: 1							X	
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 1			X					
Mercury Dissolved	All	NDPs: 0 Tests: 1						X		



CERTIFICATE OF ANALYSIS

Validated

SDG: 201121-32	Client Reference: JFR1451	Report Number: 581261
Location: A303 Stonehenge	Order Number: JFR1451	Superseded Report:

Results Legend <div style="display: flex; flex-direction: column; gap: 5px;"> <div style="display: flex; align-items: center;">X Test</div> <div style="display: flex; align-items: center;">N No Determination Possible</div> </div> Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other	Lab Sample No(s)										
	Customer Sample Reference										
	AGS Reference										
	Depth (m)										
	Container	0.5l glass bottle (ALE27)	250ml Amber Gl. PTFE/PE (ALE27)	330ml plastic bottle (ALE503)	250 ml glass DO KIT + DO (ALE24)	UNL H2SO4 (ALE24)	UNL HNO3 Filtered (ALE204)	UNL NaOH (ALE245)	UNL Vial (ALE297)		
	Sample Type	UNL	UNL	UNL	UNL	UNL	UNL	UNL	UNL		
		All	NDPs: 0 Tests: 1								
Nitrite by Kone (w)	All	NDPs: 0 Tests: 1						X			
PAH Spec MS - Aqueous (W)	All	NDPs: 0 Tests: 1	X								
PCB Congeners - Aqueous (W)	All	NDPs: 0 Tests: 1	X								
Pesticides (Suite I) by GCMS	All	NDPs: 0 Tests: 1	X								
Pesticides (Suite II) by GCMS	All	NDPs: 0 Tests: 1	X								
pH Value	All	NDPs: 0 Tests: 1		X							
Phenols by HPLC (W)	All	NDPs: 0 Tests: 1			X						
Phosphate by Kone (w)	All	NDPs: 0 Tests: 1		X							
SVOC MS (W) - Aqueous	All	NDPs: 0 Tests: 1	X								
Total Dissolved Solids	All	NDPs: 0 Tests: 1		X							
TPH CWG (W)	All	NDPs: 0 Tests: 1	X								
Turbidity in waters	All	NDPs: 0 Tests: 1		X							
VOC MS (W)	All	NDPs: 0 Tests: 1								X	



CERTIFICATE OF ANALYSIS

Validated

SDG:	201121-32	Client Reference:	JFR1451	Report Number:	581261
Location:	A303 Stonehenge	Order Number:	JFR1451	Superseded Report:	

#	ISO17025 accredited.	Customer Sample Ref.	CP2308A			
M	mCERTS accredited.	Depth (m)	Sample Type	Unspecified Liquid (UNL)		
aq	Aqueous / settled sample.	Date Sampled	Date Received	19/11/2020		
diss.filt	Dissolved / filtered sample.	Sampled Time	SDG Ref	11:00:00		
tot.unfilt	Total / unfiltered sample.	Date Received	Lab Sample No.(s)	21/11/2020		
*	Subcontracted - refer to subcontractor report for accreditation status.	AGS Reference		201121-32		
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery			23287409		
(F)	Trigger breach confirmed					
1-4*\$@	Sample deviation (see appendix)					
Component	LOD/Units	Method				
Alkalinity, Total as CaCO3	<2 mg/l	TM043	701	@		
Alkalinity, Bicarbonate as CaCO3	<2 mg/l	TM043	701	@		
Alkalinity, Carbonate as CaCO3	<2 mg/l	TM043	<2	@		
Carbon, Organic (diss.filt)	<3 mg/l	TM090	<3			
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099	<0.2			
Fluoride	<0.5 mg/l	TM104	<0.5	@		
Conductivity @ 20 deg.C	<0.02 mS/cm	TM120	0.445			
Dissolved solids, Total (meter)	<5 mg/l	TM123	350			
Chromium, Trivalent	<0.03 mg/l	TM152	<0.03			
Antimony (diss.filt)	<1 µg/l	TM152	<1			
Arsenic (diss.filt)	<0.5 µg/l	TM152	1.27			
Beryllium (diss.filt)	<0.1 µg/l	TM152	<0.1			
Boron (diss.filt)	<10 µg/l	TM152	22.8			
Cadmium (diss.filt)	<0.08 µg/l	TM152	<0.08			
Chromium (diss.filt)	<1 µg/l	TM152	<1			
Copper (diss.filt)	<0.3 µg/l	TM152	0.391			
Lead (diss.filt)	<0.2 µg/l	TM152	<0.2			
Manganese (diss.filt)	<3 µg/l	TM152	102			
Molybdenum (diss.filt)	<3 µg/l	TM152	<3			
Nickel (diss.filt)	<0.4 µg/l	TM152	1.76			
Phosphorus (diss.filt)	<10 µg/l	TM152	<10			
Selenium (diss.filt)	<1 µg/l	TM152	<1			
Zinc (diss.filt)	<1 µg/l	TM152	4.3			
Sodium (Dis.Filt)	<0.076 mg/l	TM152	8.2			
Magnesium (Dis.Filt)	<0.036 mg/l	TM152	1.31			
Potassium (Dis.Filt)	<0.2 mg/l	TM152	0.56			
Calcium (Dis.Filt)	<0.2 mg/l	TM152	104			
Iron (Dis.Filt)	<0.019 mg/l	TM152	0.0486			
Mercury (diss.filt)	<0.01 µg/l	TM183	<0.01			
Nitrite as NO2	<0.05 mg/l	TM184	<0.05	@		
Phosphate (Ortho as PO4)	<0.05 mg/l	TM184	<0.05	@		
Sulphate	<2 mg/l	TM184	16.4	@		



CERTIFICATE OF ANALYSIS

Validated

SDG: 201121-32
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: JFR1451

Report Number: 581261
Superseded Report:

Results Legend		Customer Sample Ref.	CP2308A				
# ISO17025 accredited. M mCERTS accredited. sq Aqueous / settled sample. dis.fit Dissolved / filtered sample. tot.unfit Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery. (F) Trigger breach confirmed 1.4.4.6@ Sample deviation (see appendix)		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	Unspecified Liquid (UNL) 19/11/2020 11:00:00 21/11/2020 201121-32 23287409				
Component	LOD/Units	Method					
Chloride	<2 mg/l	TM184	17.9	@			
Phosphate (Ortho as P)	<0.02 mg/l	TM184	<0.02	@			
Nitrate as NO3	<0.3 mg/l	TM184	18.6	@			
Turbidity	<0.1 ntu	TM195	780	@			
PCB congener 28	<0.015 µg/l	TM197	<0.03				
PCB congener 52	<0.015 µg/l	TM197	<0.03				
PCB congener 101	<0.015 µg/l	TM197	<0.03				
PCB congener 118	<0.015 µg/l	TM197	<0.03				
PCB congener 138	<0.015 µg/l	TM197	<0.03				
PCB congener 153	<0.015 µg/l	TM197	<0.03				
PCB congener 180	<0.015 µg/l	TM197	<0.03				
Sum of detected EC7 PCB's	<0.105 µg/l	TM197	<0.21				
Cyanide, Total	<0.05 mg/l	TM227	<0.05	@			
Cyanide, Free	<0.05 mg/l	TM227	<0.05	@			
Chromium, Hexavalent	<0.03 mg/l	TM241	<0.03	@			
pH	<1 pH Units	TM256	7.46	@			
Phenol	<0.002 mg/l	TM259	<0.002	@			
Cresols	<0.006 mg/l	TM259	<0.006	@			
Xylenols	<0.008 mg/l	TM259	<0.008	@			
Phenols, Total Detected monohydric	<0.016 mg/l	TM259	<0.016	@			
Trifluralin	<0.01 µg/l	TM343	<0.01				
alpha-HCH	<0.01 µg/l	TM343	<0.01				
gamma-HCH (Lindane)	<0.01 µg/l	TM343	<0.01				
Heptachlor	<0.01 µg/l	TM343	<0.02				
Aldrin	<0.01 µg/l	TM343	<0.01				
beta-HCH	<0.01 µg/l	TM343	<0.01				
Isodrin	<0.01 µg/l	TM343	<0.01				
delta-HCH	<0.01 µg/l	TM343	<0.01				
Heptachlor epoxide	<0.01 µg/l	TM343	<0.01				
o,p'-DDE	<0.01 µg/l	TM343	<0.01				
Endosulphan I	<0.01 µg/l	TM343	<0.01				
trans-Chlordane	<0.01 µg/l	TM343	<0.01				



CERTIFICATE OF ANALYSIS

Validated

SDG: 201121-32
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: JFR1451

Report Number: 581261
Superseded Report:

Results Legend		Customer Sample Ref.	CP2308A				
#	ISO17025 accredited.	Depth (m)	Sample Type				
M	mCERTS accredited.	Sample Type	Date Sampled				
sq	Aqueous / settled sample.	Sampled Time	Date Received				
dis.filt	Dissolved / filtered sample.	Date Received	SDG Ref				
tot.unfilt	Total / unfiltered sample.	Lab Sample No.(s)	AGS Reference				
*	Subcontracted - refer to subcontractor report for accreditation status.						
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery						
(F)	Trigger breach confirmed						
1-4&@	Sample deviation (see appendix)						
Component	LOD/Units	Method					
cis-Chlordane	<0.01 µg/l	TM343	<0.01				
p,p'-DDE	<0.01 µg/l	TM343	<0.01				
Dieldrin	<0.01 µg/l	TM343	<0.01				
o,p'-DDD (TDE)	<0.01 µg/l	TM343	<0.01				
Endrin	<0.01 µg/l	TM343	<0.04				
o,p'-DDT	<0.01 µg/l	TM343	<0.02				
p,p'-DDD (TDE)	<0.01 µg/l	TM343	<0.01				
Endosulphan II	<0.02 µg/l	TM343	<0.02				
p,p'-DDT	<0.01 µg/l	TM343	<0.04				
o,p'-Methoxychlor	<0.01 µg/l	TM343	<0.02				
p,p'-Methoxychlor	<0.01 µg/l	TM343	<0.02				
Endosulphan Sulphate	<0.02 µg/l	TM343	<0.04				
Permethrin I	<0.01 µg/l	TM343	<0.01				
Permethrin II	<0.01 µg/l	TM343	<0.01				
1,3,5-Trichlorobenzene	<0.01 µg/l	TM344	<0.01				
Hexachlorobutadiene	<0.01 µg/l	TM344	<0.01				
1,2,4-Trichlorobenzene	<0.01 µg/l	TM344	<0.01				
1,2,3-Trichlorobenzene	<0.01 µg/l	TM344	<0.01				
Dichlorvos	<0.01 µg/l	TM344	<0.01				
Dichlobenil	<0.01 µg/l	TM344	<0.01				
Mevinphos	<0.01 µg/l	TM344	<0.01				
Tecnazene	<0.01 µg/l	TM344	<0.01				
Hexachlorobenzene	<0.01 µg/l	TM344	<0.01				
Demeton-S-methyl	<0.01 µg/l	TM344	<0.01				
Phorate	<0.01 µg/l	TM344	<0.01				
Diazinon	<0.01 µg/l	TM344	<0.01				
Triallate	<0.01 µg/l	TM344	<0.01				
Atrazine	<0.01 µg/l	TM344	<0.01				
Simazine	<0.01 µg/l	TM344	<0.01				
Disulfoton	<0.01 µg/l	TM344	<0.01				
Propetamphos	<0.01 µg/l	TM344	<0.01				
Chlorpyrifos-methyl	<0.01 µg/l	TM344	<0.01				



CERTIFICATE OF ANALYSIS

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Superseded Report:

PAH Spec MS - Aqueous (W)

Table with columns: Component, LOD/Units, Method, and numerical results for various PAHs like Naphthalene, Acenaphthene, etc.



CERTIFICATE OF ANALYSIS

Validated

SDG: 201121-32
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: JFR1451

Report Number: 581261
Superseded Report:

SVOC MS (W) - Aqueous

Results Legend		Customer Sample Ref.	CP2308A					
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	Unspecified Liquid (UNL) 19/11/2020 11:00:00 21/11/2020 201121-32 23287409					
M	mCERTS accredited.							
aq	Aqueous / settled sample.							
diss.fit	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
*	Subcontracted - refer to subcontractor report for accreditation status.							
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery							
(F)	Trigger breach confirmed							
1-4*3@	Sample deviation (see appendix)							
Component	LOD/Units			Method				
1,2,4-Trichlorobenzene (aq)	<1 µg/l	TM176	<1	@				
1,2-Dichlorobenzene (aq)	<1 µg/l	TM176	<1	@				
1,3-Dichlorobenzene (aq)	<1 µg/l	TM176	<1	@				
1,4-Dichlorobenzene (aq)	<1 µg/l	TM176	<1	@				
2,4,5-Trichlorophenol (aq)	<1 µg/l	TM176	<1	@				
2,4,6-Trichlorophenol (aq)	<1 µg/l	TM176	<1	@				
2,4-Dichlorophenol (aq)	<1 µg/l	TM176	<1	@				
2,4-Dimethylphenol (aq)	<1 µg/l	TM176	<1	@				
2,4-Dinitrotoluene (aq)	<1 µg/l	TM176	<1	@				
2,6-Dinitrotoluene (aq)	<1 µg/l	TM176	<1	@				
2-Chloronaphthalene (aq)	<1 µg/l	TM176	<1	@				
2-Chlorophenol (aq)	<1 µg/l	TM176	<1	@				
2-Methylnaphthalene (aq)	<1 µg/l	TM176	<1	@				
2-Methylphenol (aq)	<1 µg/l	TM176	<1	@				
2-Nitroaniline (aq)	<1 µg/l	TM176	<1	@				
2-Nitrophenol (aq)	<1 µg/l	TM176	<1	@				
3-Nitroaniline (aq)	<1 µg/l	TM176	<1	@				
4-Bromophenylphenylether (aq)	<1 µg/l	TM176	<1	@				
4-Chloro-3-methylphenol (aq)	<1 µg/l	TM176	<1	@				
4-Chloroaniline (aq)	<1 µg/l	TM176	<1	@				
4-Chlorophenylphenylether (aq)	<1 µg/l	TM176	<1	@				
4-Methylphenol (aq)	<1 µg/l	TM176	<1	@				
4-Nitroaniline (aq)	<1 µg/l	TM176	<1	@				
4-Nitrophenol (aq)	<1 µg/l	TM176	<1	@				
Azobenzene (aq)	<1 µg/l	TM176	<1	@				
Acenaphthylene (aq)	<1 µg/l	TM176	<1	@				
Acenaphthene (aq)	<1 µg/l	TM176	<1	@				
Anthracene (aq)	<1 µg/l	TM176	<1	@				
bis(2-Chloroethyl)ether (aq)	<1 µg/l	TM176	<1	@				
bis(2-Chloroethoxy)methane (aq)	<1 µg/l	TM176	<1	@				
bis(2-Ethylhexyl) phthalate (aq)	<2 µg/l	TM176	<2	@				
Butylbenzyl phthalate (aq)	<1 µg/l	TM176	<1	@				



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Client Reference: JFR1451
Order Number: JFR1451

Report Number: 581261
Superseded Report:

SVOC MS (W) - Aqueous

Results Legend		Customer Sample Ref.	CP2308A				
#	ISO17025 accredited.	Depth (m)	Sample Type				
M	mCERTS accredited.	Date Sampled	Sampled Time				
aq	Aqueous / settled sample.	Date Received	SDG Ref				
dis.filt	Dissolved / filtered sample.	Lab Sample No.(s)	AGS Reference				
tot.unfilt	Total / unfiltered sample.						
*	Subcontracted - refer to subcontractor report for accreditation status.						
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery						
(F)	Trigger breach confirmed						
1-4*5@	Sample deviation (see appendix)						
Component	LOD/Units	Method					
Benzo(a)anthracene (aq)	<1 µg/l	TM176	<1 @				
Benzo(b)fluoranthene (aq)	<1 µg/l	TM176	<1 @				
Benzo(k)fluoranthene (aq)	<1 µg/l	TM176	<1 @				
Benzo(a)pyrene (aq)	<1 µg/l	TM176	<1 @				
Benzo(g,h,i)perylene (aq)	<1 µg/l	TM176	<1 @				
Carbazole (aq)	<1 µg/l	TM176	<1 @				
Chrysene (aq)	<1 µg/l	TM176	<1 @				
Dibenzofuran (aq)	<1 µg/l	TM176	<1 @				
n-Dibutyl phthalate (aq)	<1 µg/l	TM176	<1 @				
Diethyl phthalate (aq)	<1 µg/l	TM176	<1 @				
Dibenzo(a,h)anthracene (aq)	<1 µg/l	TM176	<1 @				
Dimethyl phthalate (aq)	<1 µg/l	TM176	<1 @				
n-Dioctyl phthalate (aq)	<5 µg/l	TM176	<5 @				
Fluoranthene (aq)	<1 µg/l	TM176	<1 @				
Fluorene (aq)	<1 µg/l	TM176	<1 @				
Hexachlorobenzene (aq)	<1 µg/l	TM176	<1 @				
Hexachlorobutadiene (aq)	<1 µg/l	TM176	<1 @				
Pentachlorophenol (aq)	<1 µg/l	TM176	<1				
Phenol (aq)	<1 µg/l	TM176	<1				
n-Nitroso-n-dipropylamine (aq)	<1 µg/l	TM176	<1 @				
Hexachloroethane (aq)	<1 µg/l	TM176	<1 @				
Nitrobenzene (aq)	<1 µg/l	TM176	<1 @				
Naphthalene (aq)	<1 µg/l	TM176	<1 @				
Isophorone (aq)	<1 µg/l	TM176	<1 @				
Hexachlorocyclopentadiene (aq)	<1 µg/l	TM176	<1				
Phenanthrene (aq)	<1 µg/l	TM176	<1 @				
Indeno(1,2,3-cd)pyrene (aq)	<1 µg/l	TM176	<1 @				
Pyrene (aq)	<1 µg/l	TM176	<1 @				
SVOC TIC (aq)		TM176	Not Detected @				
Total SVOC TIC	<10 µg/l	TM176	<10				



CERTIFICATE OF ANALYSIS

Validated

SDG: 201121-32
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: JFR1451

Report Number: 581261
Superseded Report:

TPH CWG (W)

Results Legend		Customer Sample Ref.	CP2308A				
# ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	Unspecified Liquid (UNL) 19/11/2020 11:00:00 21/11/2020 201121-32 23287409				
M mCERTS accredited.							
aq Aqueous / settled sample.							
diss.fit Dissolved / filtered sample.							
tot.unfit Total / unfiltered sample.							
* Subcontracted - refer to subcontractor report for accreditation status.							
** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery							
(F) Trigger breach confirmed							
1-4*3@ Sample deviation (see appendix)							
Component	LOD/Units			Method			
GRO Surrogate % recovery**	%	TM245	103	@			
GRO >C5-C12	<50 µg/l	TM245	<50	@			
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245	<3	@			
Benzene	<7 µg/l	TM245	<7	@			
Toluene	<4 µg/l	TM245	<4	@			
Ethylbenzene	<5 µg/l	TM245	<5	@			
m,p-Xylene	<8 µg/l	TM245	<8	@			
o-Xylene	<3 µg/l	TM245	<3	@			
Sum of detected Xylenes	<11 µg/l	TM245	<11	@			
Sum of detected BTEX	<28 µg/l	TM245	<28	@			
Aliphatics >C5-C6	<10 µg/l	TM245	<10	@			
Aliphatics >C6-C8	<10 µg/l	TM245	<10	@			
Aliphatics >C8-C10	<10 µg/l	TM245	<10	@			
Aliphatics >C10-C12	<10 µg/l	TM245	<10	@			
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174	<20				
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174	<20				
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174	<20				
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174	<20				
Aromatics >EC5-EC7	<10 µg/l	TM245	<10	@			
Aromatics >EC7-EC8	<10 µg/l	TM245	<10	@			
Aromatics >EC8-EC10	<10 µg/l	TM245	<10	@			
Aromatics >EC10-EC12	<10 µg/l	TM245	<10	@			
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174	<20				
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174	<20				
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174	<20				
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174	<20				
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174	<20				
Aliphatics >C16-C35 Aqueous	<10 µg/l	TM174	<20				



CERTIFICATE OF ANALYSIS

Validated

SDG: 201121-32
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: JFR1451

Report Number: 581261
Superseded Report:

VOC MS (W)

Results Legend # ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.fit Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery. (F) Trigger breach confirmed 1-4*\$@ Sample deviation (see appendix)		Customer Sample Ref. Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	CP2308A Unspecified Liquid (UNL) 19/11/2020 11:00:00 21/11/2020 201121-32 23287409				
Component	LOD/Units	Method					
Dibromofluoromethane**	%	TM208	110				
Toluene-d8**	%	TM208	95.6				
4-Bromofluorobenzene**	%	TM208	98.5				
Dichlorodifluoromethane	<1 µg/l	TM208	<1	@			
Chloromethane	<1 µg/l	TM208	<1	@			
Vinyl chloride	<1 µg/l	TM208	<1	@			
Bromomethane	<1 µg/l	TM208	<1	@			
Chloroethane	<1 µg/l	TM208	<1	@			
Trichlorofluoromethane	<1 µg/l	TM208	<1	@			
1,1-Dichloroethene	<1 µg/l	TM208	<1	@			
Carbon disulphide	<1 µg/l	TM208	<1	@			
Dichloromethane	<3 µg/l	TM208	<3	@			
Methyl tertiary butyl ether (MTBE)	<1 µg/l	TM208	<1	@			
trans-1,2-Dichloroethene	<1 µg/l	TM208	<1	@			
1,1-Dichloroethane	<1 µg/l	TM208	<1	@			
cis-1,2-Dichloroethene	<1 µg/l	TM208	<1	@			
2,2-Dichloropropane	<1 µg/l	TM208	<1	@			
Bromochloromethane	<1 µg/l	TM208	<1	@			
Chloroform	<1 µg/l	TM208	<1	@			
1,1,1-Trichloroethane	<1 µg/l	TM208	<1	@			
1,1-Dichloropropene	<1 µg/l	TM208	<1	@			
Carbontetrachloride	<1 µg/l	TM208	<1	@			
1,2-Dichloroethane	<1 µg/l	TM208	<1	@			
Benzene	<1 µg/l	TM208	<1	@			
Trichloroethene	<1 µg/l	TM208	<1	@			
1,2-Dichloropropane	<1 µg/l	TM208	<1	@			
Dibromomethane	<1 µg/l	TM208	<1	@			
Bromodichloromethane	<1 µg/l	TM208	<1	@			
cis-1,3-Dichloropropene	<1 µg/l	TM208	<1	@			
Toluene	<1 µg/l	TM208	<1	@			
trans-1,3-Dichloropropene	<1 µg/l	TM208	<1	@			
1,1,2-Trichloroethane	<1 µg/l	TM208	<1	@			



CERTIFICATE OF ANALYSIS

Validated

SDG: 201121-32
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: JFR1451

Report Number: 581261
Superseded Report:

VOC MS (W)

Results Legend		Customer Sample Ref.	CP2308A				
# ISO17025 accredited.		Depth (m)					
M mCERTS accredited.		Sample Type	Unspecified Liquid (UNL)				
mg Aqueous / settled sample.		Date Sampled	19/11/2020				
dis.fit Dissolved / filtered sample.		Sampled Time	11:00:00				
tot.unfit Total / unfiltered sample.		Date Received	21/11/2020				
* Subcontracted - refer to subcontractor report for accreditation status.		SDG Ref	201121-32				
** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		Lab Sample No.(s)	23287409				
(F) Trigger breach confirmed		AGS Reference					
1.4.5@ Sample deviation (see appendix)							
Component	LOD/Units	Method					
1,3-Dichloropropane	<1 µg/l	TM208	<1	@			
Tetrachloroethene	<1 µg/l	TM208	<1	@			
Dibromochloromethane	<1 µg/l	TM208	<1	@			
1,2-Dibromoethane	<1 µg/l	TM208	<1	@			
Chlorobenzene	<1 µg/l	TM208	<1	@			
1,1,1,2-Tetrachloroethane	<1 µg/l	TM208	<1	@			
Ethylbenzene	<1 µg/l	TM208	<1	@			
m,p-Xylene	<1 µg/l	TM208	<1	@			
o-Xylene	<1 µg/l	TM208	<1	@			
Styrene	<1 µg/l	TM208	<1	@			
Bromoform	<1 µg/l	TM208	<1	@			
Isopropylbenzene	<1 µg/l	TM208	<1	@			
1,1,2,2-Tetrachloroethane	<1 µg/l	TM208	<1	@			
1,2,3-Trichloropropane	<1 µg/l	TM208	<1	@			
Bromobenzene	<1 µg/l	TM208	<1	@			
Propylbenzene	<1 µg/l	TM208	<1	@			
2-Chlorotoluene	<1 µg/l	TM208	<1	@			
1,3,5-Trimethylbenzene	<1 µg/l	TM208	<1	@			
4-Chlorotoluene	<1 µg/l	TM208	<1	@			
tert-Butylbenzene	<1 µg/l	TM208	<1	@			
1,2,4-Trimethylbenzene	<1 µg/l	TM208	<1	@			
sec-Butylbenzene	<1 µg/l	TM208	<1	@			
4-iso-Propyltoluene	<1 µg/l	TM208	<1	@			
1,3-Dichlorobenzene	<1 µg/l	TM208	<1	@			
1,4-Dichlorobenzene	<1 µg/l	TM208	<1	@			
n-Butylbenzene	<1 µg/l	TM208	<1	@			
1,2-Dichlorobenzene	<1 µg/l	TM208	<1	@			
1,2-Dibromo-3-chloropropane	<1 µg/l	TM208	<1	@			
1,2,4-Trichlorobenzene	<1 µg/l	TM208	<1	@			
Hexachlorobutadiene	<1 µg/l	TM208	<1	@			
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208	<1	@			
Naphthalene	<1 µg/l	TM208	<1	@			



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Order Number: JFR1451

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Superseded Report:

VOC MS (W)

Table with 7 columns: Component, LOD/Units, Method, and four data columns. Includes Results Legend, Customer Sample Ref. (CP2308A), and rows for 1,2,3-Trichlorobenzene, 1,3,5-Trichlorobenzene, VOC TIC, Sum of detected Xylenes, and Total VOC TIC.



CERTIFICATE OF ANALYSIS

Validated

SDG: 201121-32 **Client Reference:** JFR1451 **Report Number:** 581261
Location: A303 Stonehenge **Order Number:** JFR1451 **Superseded Report:**

Notification of NDPs (No determination possible)

Date Received : 21/11/2020 06:49:41

Sample No	Customer Sample Ref.	Depth (m)	Test	Comment
23287409	CP2308A		Dissolved Oxygen by Titration	Sample unsuitable for analysis



CERTIFICATE OF ANALYSIS

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Superseded Report:

Table of Results - Appendix

Method No	Reference	Description
TM043	Method 2320B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part109 1984	Determination of alkalinity in aqueous samples
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM104	Method 4500F, AWWA/APHA, 20th Ed., 1999	Determination of Fluoride using the Kone Analyser
TM120	Method 2510B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part 9:1970	Determination of Electrical Conductivity using a Conductivity Meter
TM123	BS 2690: Part 121:1981	The Determination of Total Dissolved Solids in Water
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM174	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID
TM176	EPA 8270D Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of SVOCs in Water by GCMS
TM178	Modified: US EPA Method 8100	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS in Waters
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM195	Colour and Turbidity of water. Methods for the Examination of Waters and Associated Materials. HMSO, 1981, ISBN 0 11 751955 3.	Determination of Turbidity in Waters & Associated Matrices
TM197	Modified: US EPA Method 8082.EA Method 174 and 5109631	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Waters
TM208	Modified: US EPA Method 8260b & 624	Determination of Volatile Organic Compounds by Headspace / GC-MS in Waters
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser
TM245	By GC-FID	Determination of GRO by Headspace in waters
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC
TM343	EPA 8270D - Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of Selected Pesticides (Suite I) in Liquids by GCMS
TM344	EPA 8270D – Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of selected pesticides (Suite II) by GCMS

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).



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Client Reference: JFR1451
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Test Completion Dates

Lab Sample No(s)	23287409
Customer Sample Ref.	CP2308A
AGS Ref.	
Depth	
Type	Unspecified Liq

Alkalinity as CaCO3	19-Dec-2020
Ammoniacal Nitrogen	21-Dec-2020
Anions by Kone (w)	19-Dec-2020
Chromium III	21-Dec-2020
Conductivity (at 20 deg.C)	15-Dec-2020
Cyanide Comp/Free/Total/Thiocyanate	16-Dec-2020
Dissolved Metals by ICP-MS	21-Dec-2020
Dissolved Organic/Inorganic Carbon	18-Dec-2020
EPH CWG (Aliphatic) Aqueous GC (W)	20-Dec-2020
EPH CWG (Aromatic) Aqueous GC (W)	20-Dec-2020
Fluoride	17-Dec-2020
GRO by GC-FID (W)	17-Dec-2020
Hexavalent Chromium (w)	17-Dec-2020
Mercury Dissolved	15-Dec-2020
Nitrite by Kone (w)	16-Dec-2020
PAH Spec MS - Aqueous (W)	18-Dec-2020
PCB Congeners - Aqueous (W)	19-Dec-2020
Pesticides (Suite I) by GCMS	21-Dec-2020
Pesticides (Suite II) by GCMS	23-Dec-2020
pH Value	17-Dec-2020
Phenols by HPLC (W)	20-Dec-2020
Phosphate by Kone (w)	16-Dec-2020
Total Dissolved Solids	18-Dec-2020
TPH CWG (W)	20-Dec-2020
Turbidity in waters	16-Dec-2020
VOC MS (W)	17-Dec-2020



CERTIFICATE OF ANALYSIS

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Client Reference: JFR1451
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Superseded Report:

ASSOCIATED AQC DATA

Alkalinity as CaCO3

Component	Method Code	QC 2332
Total Alkalinity as CaCO3	TM043	100.51 94.47 : 104.41

Ammoniacal Nitrogen

Component	Method Code	QC 2390
Ammoniacal Nitrogen as N	TM099	98.4 93.14 : 108.60

Anions by Kone (w)

Component	Method Code	QC 2304
Chloride	TM184	110.0 92.93 : 115.43
Sulphate (soluble)	TM184	103.2 90.53 : 113.03
TON as NO3	TM184	107.0 99.60 : 111.90

Conductivity (at 20 deg.C)

Component	Method Code	QC 2379
Conductivity (at 20 deg.C)	TM120	103.01 100.75 : 105.26

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2371
Free Cyanide (W)	TM227	102.25 90.50 : 114.50
Thiocyanate (W)	TM227	108.0 90.50 : 113.00
Total Cyanide (W)	TM227	107.0 91.75 : 112.75

Dissolved Metals by ICP-MS

Component	Method Code	QC 2327
Aluminium	TM152	104.0 90.98 : 111.82
Antimony	TM152	104.33 90.44 : 113.04
Arsenic	TM152	103.17 88.00 : 112.00



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Dissolved Metals by ICP-MS

		QC 2327
Barium	TM152	104.0 83.57 : 108.18
Beryllium	TM152	106.17 87.77 : 113.97
Bismuth	TM152	107.33 91.90 : 112.20
Borate	TM152	108.02 88.00 : 112.00
Boron	TM152	107.67 96.48 : 114.93
Cadmium	TM152	107.33 96.43 : 110.53
Calcium	TM152	103.33 81.38 : 119.09
Chromium	TM152	101.17 91.84 : 108.67
Cobalt	TM152	95.83 88.00 : 112.00
Copper	TM152	101.67 92.47 : 118.11
Iron	TM152	102.0 92.00 : 113.00
Lead	TM152	105.83 88.00 : 112.00
Lithium	TM152	105.5 91.62 : 113.12
Magnesium	TM152	98.0 94.33 : 111.84
Manganese	TM152	102.33 95.03 : 110.58
Molybdenum	TM152	100.17 88.00 : 112.00
Nickel	TM152	101.0 88.00 : 112.00
Phosphorus	TM152	101.17 88.00 : 112.00
Potassium	TM152	102.0 93.90 : 112.36
Selenium	TM152	106.5 91.58 : 115.98
Silver	TM152	102.83 88.80 : 122.30
Sodium	TM152	98.0 94.28 : 110.71
Strontium	TM152	104.67 88.00 : 112.00
Tellurium	TM152	104.0 93.32 : 114.66
Thallium	TM152	99.17 88.00 : 112.00
Tin	TM152	103.67 94.19 : 113.62
Titanium	TM152	106.5 95.58 : 111.68



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Dissolved Metals by ICP-MS

		QC 2327
Tungsten	TM152	101.33 81.32 : 124.72
Uranium	TM152	105.5 88.00 : 112.00
Vanadium	TM152	105.67 88.00 : 112.00
Zinc	TM152	104.33 92.98 : 118.95

Dissolved Organic/Inorganic Carbon

Component	Method Code	QC 2337
Dissolved Inorganic Carbon	TM090	100.83 93.58 : 112.28
Dissolved Organic Carbon	TM090	101.5 96.13 : 109.53

EPH CWG (Aliphatic) Aqueous GC (W)

Component	Method Code	QC 2389
Total Aliphatics >C10-C40	TM174	102.81 65.58 : 141.57

EPH CWG (Aromatic) Aqueous GC (W)

Component	Method Code	QC 2313
Total Aromatics >EC10-EC40	TM174	86.34 60.75 : 129.09

Fluoride

Component	Method Code	QC 2352
Fluoride	TM104	102.67 96.67 : 108.67

GRO by GC-FID (W)

Component	Method Code	QC 2300
Benzene by GC	TM245	98.0 81.54 : 119.70
Ethylbenzene by GC	TM245	98.5 80.99 : 121.09
m & p Xylene by GC	TM245	97.5 82.77 : 123.19



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GRO by GC-FID (W)

		QC 2300
MTBE GC-FID	TM245	101.5 80.06 : 123.27
o Xylene by GC	TM245	98.5 84.26 : 121.50
QC	TM245	93.82 67.65 : 138.14
Toluene by GC	TM245	97.0 82.78 : 121.99

Hexavalent Chromium (w)

Component	Method Code	QC 2307
Hexavalent Chromium	TM241	99.0 94.17 : 106.17

Mercury Dissolved

Component	Method Code	QC 2361
Mercury Dissolved (CVAf)	TM183	109.0 69.30 : 128.70

PAH Spec MS - Aqueous (W)

Component	Method Code	QC 2323
Acenaphthene by GCMS	TM178	109.6 97.60 : 116.80
Acenaphthylene by GCMS	TM178	99.6 89.20 : 113.20
Anthracene by GCMS	TM178	104.4 92.40 : 116.40
Benz(a)anthracene by GCMS	TM178	104.4 84.40 : 110.80
Benzo(a)pyrene by GCMS	TM178	100.8 87.20 : 106.40
Benzo(b)fluoranthene by GCMS	TM178	100.4 81.20 : 107.60
Benzo(ghi)perylene by GCMS	TM178	101.6 93.60 : 112.80
Benzo(k)fluoranthene by GCMS	TM178	110.0 90.40 : 119.20
Chrysene by GCMS	TM178	103.6 96.80 : 113.60
Dibenzo(ah)anthracene by GCMS	TM178	107.6 88.00 : 112.00
Fluoranthene by GCMS	TM178	108.4 93.49 : 118.20
Fluorene by GCMS	TM178	109.2 94.39 : 118.66



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PAH Spec MS - Aqueous (W)

		QC 2323
Indeno(123cd)pyrene by GCMS	TM178	103.2 90.40 : 114.40
Naphthalene by GCMS	TM178	111.2 94.00 : 115.60
Phenanthrene by GCMS	TM178	104.8 94.80 : 114.00
Pyrene by GCMS	TM178	110.4 96.40 : 115.60

PCB Congeners - Aqueous (W)

Component	Method Code	QC 2316
PCB congener 101	TM197	107.2 85.28 : 119.60
PCB congener 105	TM197	108.8 81.16 : 119.80
PCB congener 114	TM197	108.0 88.32 : 118.08
PCB congener 118	TM197	105.2 87.76 : 117.04
PCB congener 123	TM197	107.2 86.80 : 117.28
PCB congener 126	TM197	106.0 84.56 : 116.00
PCB congener 138	TM197	107.6 83.00 : 117.80
PCB congener 153	TM197	103.2 84.12 : 117.00
PCB congener 156	TM197	106.4 82.24 : 119.20
PCB congener 157	TM197	104.8 84.96 : 116.40
PCB congener 167	TM197	108.0 81.64 : 119.32
PCB congener 169	TM197	104.4 84.60 : 117.96
PCB congener 180	TM197	108.4 80.40 : 119.04
PCB congener 189	TM197	104.4 81.56 : 119.00
PCB congener 28	TM197	104.0 83.20 : 117.04
PCB congener 52	TM197	105.6 81.84 : 119.52
PCB congener 77	TM197	105.6 81.96 : 117.24
PCB congener 81	TM197	104.4 82.28 : 120.20

Pesticides (Suite I) by GCMS



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Client Reference: JFR1451
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Pesticides (Suite I) by GCMS

Component	Method Code	QC 2375
Aldrin - (Inst.)	TM343	56.38 59.75 : 143.00
alpha-HCH - (Inst.)	TM343	74.7 75.03 : 148.38
beta-HCH - (Inst.)	TM343	77.96 75.85 : 146.50
cis-Chlordane - (Inst.)	TM343	74.11 71.78 : 137.03
delta-HCH - (Inst.)	TM343	81.29 76.38 : 138.48
Dieldrin - (Inst.)	TM343	83.05 77.45 : 154.10
Endosulphan I - (Inst.)	TM343	80.0 91.30 : 168.70
Endosulphan II - (Inst.)	TM343	98.54 82.68 : 161.13
Endosulphan Sulphate - (Inst.)	TM343	85.17 60.50 : 159.50
Endrin - (Inst.)	TM343	85.52 85.55 : 163.70
gamma-HCH (Lindane) - (Inst.)	TM343	74.16 72.98 : 157.58
Heptachlor - (Inst.)	TM343	59.66 57.70 : 149.20
Heptachlor epoxide - (Inst.)	TM343	75.23 71.08 : 140.38
Isodrin - (Inst.)	TM343	65.17 55.55 : 144.50
o,p-DDD (TDE) - (Inst.)	TM343	66.6 68.83 : 141.43
o,p-DDE - (Inst.)	TM343	61.16 63.00 : 139.20
o,p-DDT - (Inst.)	TM343	87.19 68.05 : 148.15
o,p-Methoxychlor - (Inst.)	TM343	85.08 63.95 : 156.80
p,p-DDD (TDE) - (Inst.)	TM343	73.5 64.33 : 143.53
p,p-DDE - (Inst.)	TM343	68.65 65.40 : 140.85
p,p-DDT - (Inst.)	TM343	90.62 60.08 : 157.13
p,p-Methoxychlor - (Inst.)	TM343	89.73 59.70 : 157.40
Permethrin I - (Inst.)	TM343	70.02 63.25 : 146.35
Permethrin II - (Inst.)	TM343	66.61 62.23 : 147.28
trans-Chlordane - (Inst.)	TM343	76.49 70.75 : 142.30
Trifluralin - (Inst.)	TM343	58.35 64.73 : 161.48



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pH Value

Component	Method Code	QC 2350
pH	TM256	101.47 99.33 : 102.54

Phenols by HPLC (W)

Component	Method Code	QC 2380
2,3,5 Trimethyl-Phenol by HPLC (W)	TM259	105.0 91.00 : 109.00
2-Isopropyl Phenol by HPLC (W)	TM259	103.0 85.00 : 109.00
Cresols by HPLC (W)	TM259	102.33 92.00 : 110.00
Naphthol by HPLC (W)	TM259	104.0 86.00 : 128.00
Phenol by HPLC (W)	TM259	103.0 88.24 : 111.76
Xylenols by HPLC (W)	TM259	105.67 94.83 : 110.83

Phosphate by Kone (w)

Component	Method Code	QC 2378
Phosphate (Ortho as PO4)	TM184	102.8 96.40 : 109.60

SVOC MS (W) - Aqueous

Component	Method Code	QC 2370
4-Bromophenylphenylether	TM176	85.6 61.60 : 106.72
Benzo(a)anthracene	TM176	88.0 64.64 : 115.52
Benzo(a)pyrene	TM176	94.4 60.56 : 115.28
Butylbenzyl phthalate	TM176	80.0 57.12 : 116.16
Hexachlorobutadiene	TM176	76.16 52.88 : 95.12
Naphthalene	TM176	101.6 65.68 : 110.32
Nitrobenzene	TM176	101.6 57.12 : 109.44
Phenol	TM176	53.92 37.60 : 70.72

Total Dissolved Solids



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Order Number: JFR1451

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Superseded Report:

Total Dissolved Solids

Component	Method Code	QC 2390
Total Dissolved Solids	TM123	101.0 97.30 : 100.92

Turbidity in waters

Component	Method Code	QC 2396
Turbidity	TM195	96.5 83.75 : 121.25

VOC MS (W)

Component	Method Code	QC 2341
1,1,1,2-Tetrachloroethane	TM208	102.5 78.82 : 115.90
1,1,1-Trichloroethane	TM208	100.5 86.83 : 113.41
1,1-Dichloroethane	TM208	105.0 79.99 : 118.57
1,2-Dichloroethane	TM208	102.5 79.35 : 124.02
2-Chlorotoluene	TM208	101.0 79.67 : 114.74
4-Chlorotoluene	TM208	100.0 80.15 : 113.42
Benzene	TM208	104.5 82.57 : 114.10
Bromomethane	TM208	98.0 78.77 : 123.20
Carbon tetrachloride	TM208	103.0 79.73 : 118.91
Chlorobenzene	TM208	100.0 88.28 : 110.81
Chloroform	TM208	102.0 82.31 : 120.71
Chloromethane	TM208	105.5 62.46 : 124.98
Cis-1,2-Dichloroethene	TM208	105.0 83.75 : 118.91
Dichloromethane	TM208	103.0 81.20 : 120.83
Ethylbenzene	TM208	98.0 80.54 : 112.31
Hexachlorobutadiene	TM208	95.0 73.65 : 117.84
o-Xylene	TM208	101.5 86.17 : 109.69



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Client Reference: JFR1451
Order Number: JFR1451

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VOC MS (W)

		QC 2341
p/m-Xylene	TM208	98.5 83.09 : 113.86
Tert-butyl methyl ether	TM208	96.5 70.94 : 119.66
Tetrachloroethene	TM208	102.5 84.41 : 112.73
Toluene	TM208	100.0 81.59 : 111.56
Trichloroethene	TM208	101.5 79.53 : 112.32
Vinyl Chloride	TM208	104.5 71.92 : 126.73

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.

The figure detailed is the percentage recovery result for the AQC.

The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.



CERTIFICATE OF ANALYSIS

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Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: JFR1451

Report Number: 581261
Superseded Report:

Chromatogram

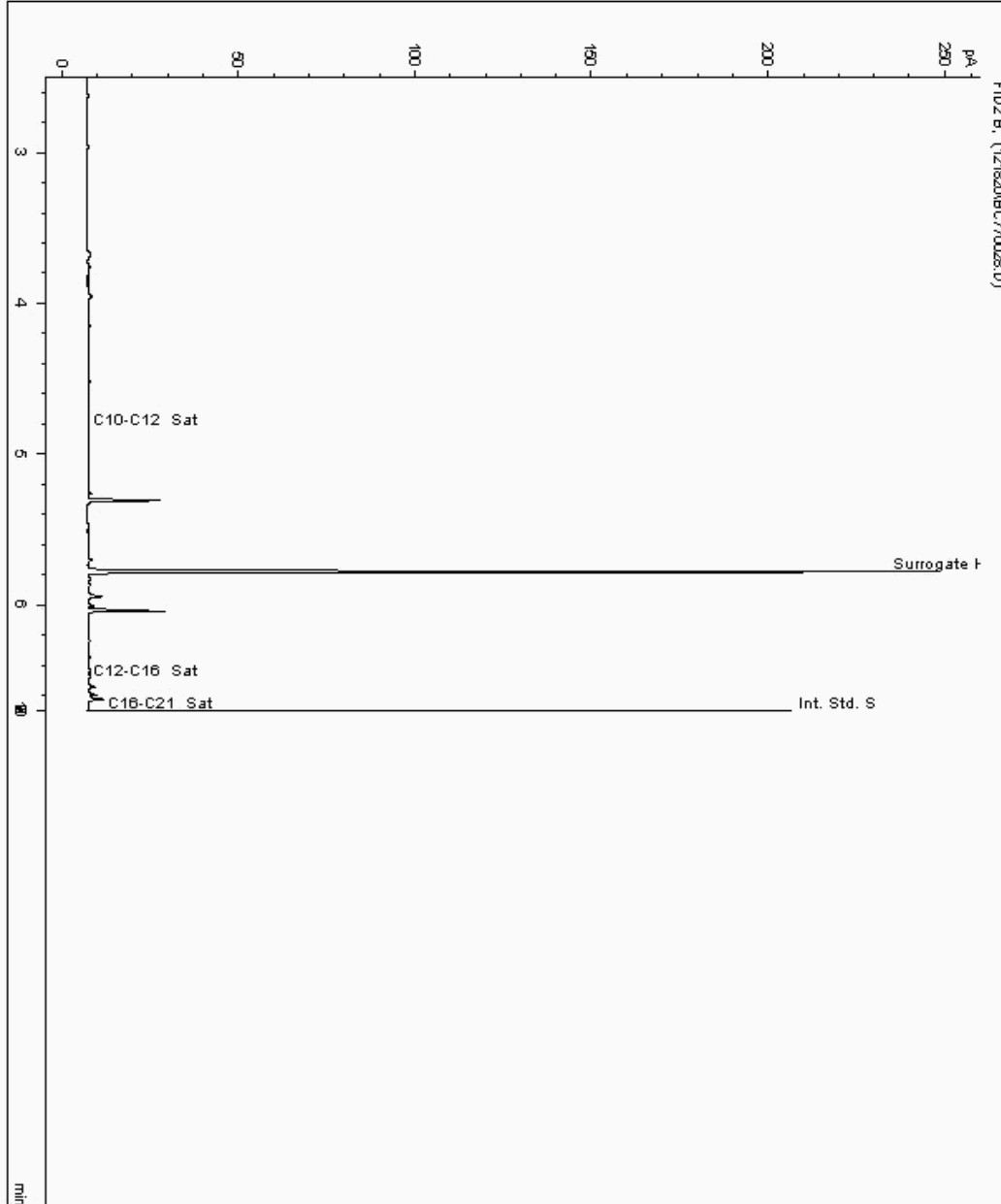
Analysis: EPH CWG (Aliphatic) Aqueous GC (W)

Sample No : 23431822
Sample ID : CP2308A

Depth :

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 21978442-
Date Acquired : 12/18/2020 9:00:56 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.050





CERTIFICATE OF ANALYSIS

Validated

SDG: 201121-32
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: JFR1451

Report Number: 581261
Superseded Report:

Chromatogram

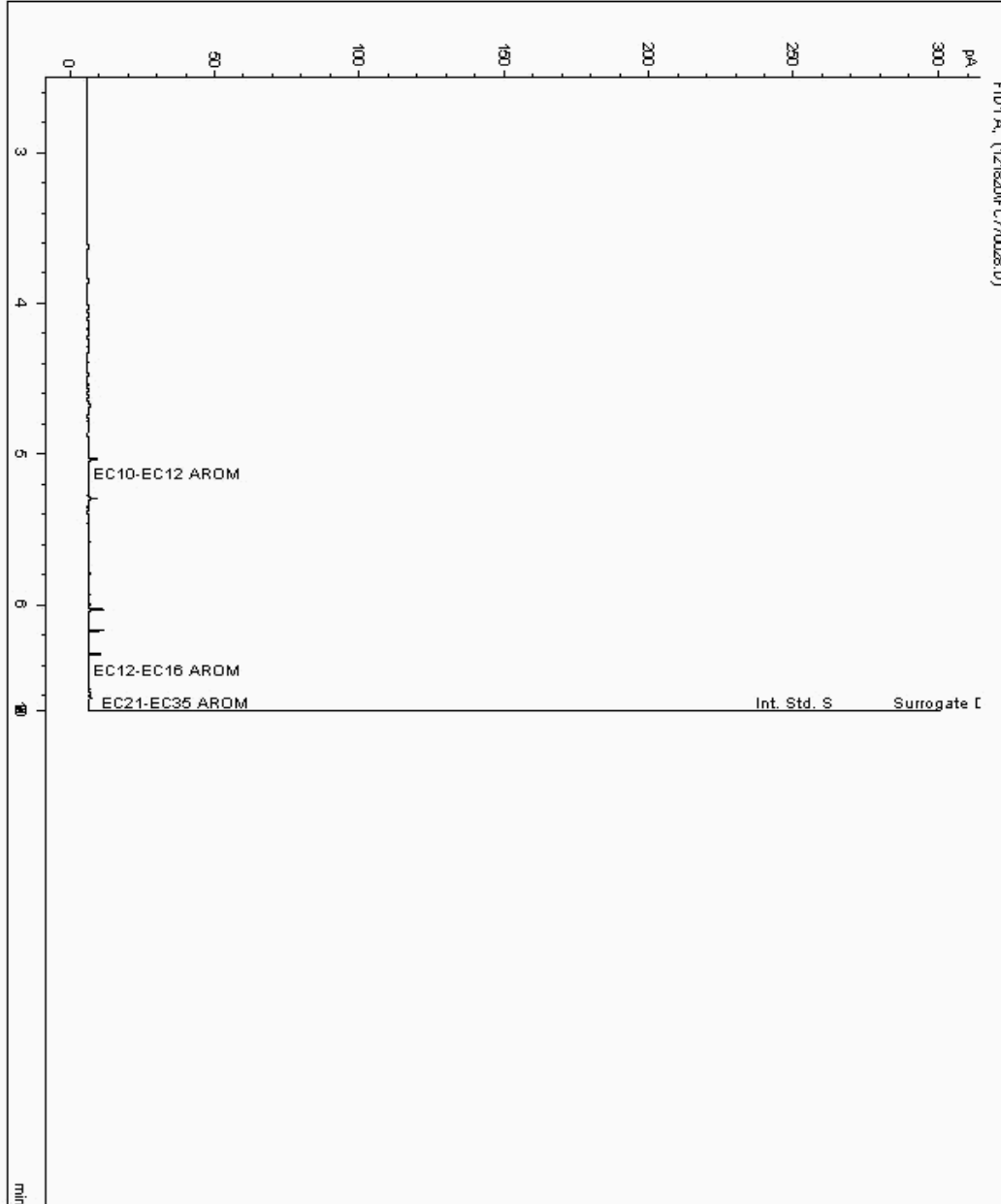
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 23431822
Sample ID : CP2308A

Depth :

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 21978443-
Date Acquired : 12/18/2020 9:00:56 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.050





CERTIFICATE OF ANALYSIS

Validated

SDG: 201121-32
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: JFR1451

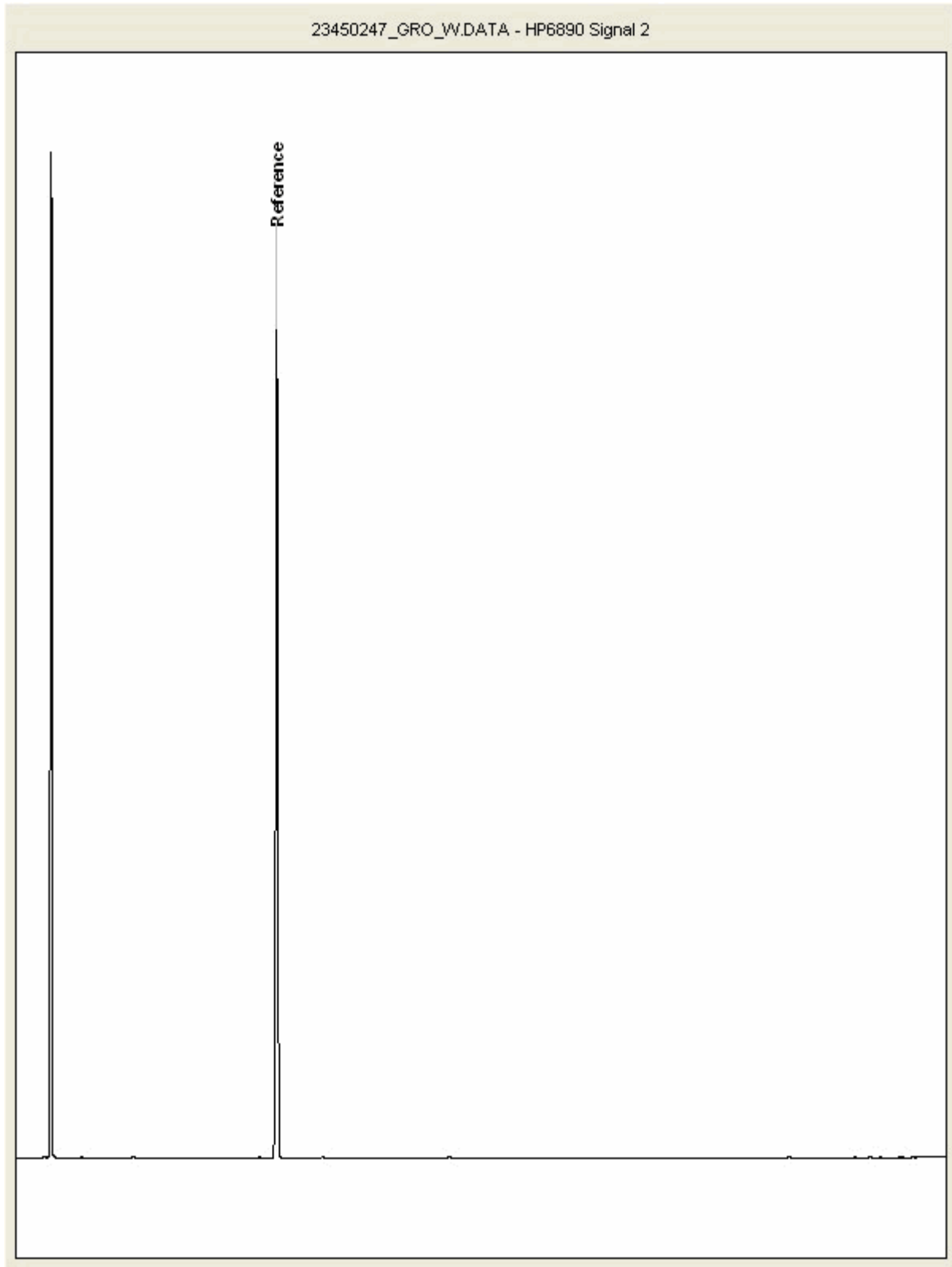
Report Number: 581261
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 23450247
Sample ID : CP2308A

Depth :





CERTIFICATE OF ANALYSIS

SDG: 201121-32	Client Reference: JFR1451	Report Number: 581261
Location: A303 Stonehenge	Order Number: JFR1451	Superseded Report:

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

19. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung. Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017)*.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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CH5 3US

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Fax: (01244) 528701

email: hawardencustomerservices@alsglobal.com

Website: www.alsenvironmental.co.uk

RPS Consultants Ltd
260 Park Avenue
Aztec West
Almondsbury
Bristol
BS32 4SY

Attention: Benjamin Briere

CERTIFICATE OF ANALYSIS

Date of report Generation: 23 December 2020
Customer: RPS Consultants Ltd
Sample Delivery Group (SDG): 201127-27
Your Reference: JFR1451
Location: A303 Stonehenge
Report No: 581283

We received 1 sample on Friday November 27, 2020 and 1 of these samples were scheduled for analysis which was completed on Wednesday December 23, 2020. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

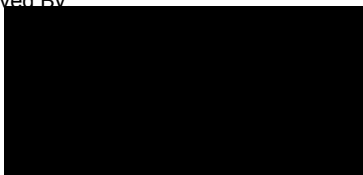
Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

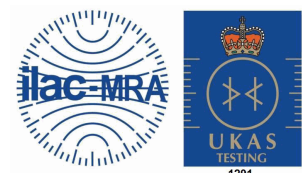
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:



Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 201127-27 **Client Reference:** JFR1451 **Report Number:** 581283
Location: A303 Stonehenge **Order Number:** JFR1451 **Superseded Report:**

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
23320171	CP72310			25/11/2020

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 201127-27
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: JFR1451

Report Number: 581283
Superseded Report:

Results Legend

- X Test
- N No Determination Possible

Sample Types -

- S - Soil/Solid
- UNS - Unspecified Solid
- GW - Ground Water
- SW - Surface Water
- LE - Land Leachate
- PL - Prepared Leachate
- PR - Process Water
- SA - Saline Water
- TE - Trade Effluent
- TS - Treated Sewage
- US - Untreated Sewage
- RE - Recreational Water
- DW - Drinking Water Non-regulatory
- UNL - Unspecified Liquid
- SL - Sludge
- G - Gas
- OTH - Other

Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container							Sample Type
				Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	DO KIT + DO 250 ml glass	330ml plastic bottle (ALE503)	250ml Amber Gl. PTFE/PE (ALE227)		0.5l glass bottle (ALE227)
23320171	CP72310										GW
Alkalinity as CaCO3	All	NDPs: 0 Tests: 1			X						
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 1				X					
Anions by Kone (w)	All	NDPs: 0 Tests: 1			X						
Chromium III	All	NDPs: 0 Tests: 1					X				
Conductivity (at 20 deg.C)	All	NDPs: 0 Tests: 1			X						
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 1						X			
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 1					X				
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 1		X							
Dissolved Oxygen by Titration	All	NDPs: 0 Tests: 1				X					
EPH CWG (Aliphatic) Aqueous GC (W)	All	NDPs: 0 Tests: 1			X						
EPH CWG (Aromatic) Aqueous GC (W)	All	NDPs: 0 Tests: 1			X						
Fluoride	All	NDPs: 0 Tests: 1			X						
GRO by GC-FID (W)	All	NDPs: 0 Tests: 1									X
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 1			X						
Mercury Dissolved	All	NDPs: 0 Tests: 1						X			



CERTIFICATE OF ANALYSIS

Validated

SDG: 201127-27
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: JFR1451

Report Number: 581283
Superseded Report:

Results Legend		Customer Sample Ref.	CP72310			
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4*# Sample deviation (see appendix)		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	Ground Water (GW) 25/11/2020 27/11/2020 201127-27 23320171			
Component	LOD/Units	Method				
Alkalinity, Total as CaCO3	<2 mg/l	TM043	889	@ #		
Alkalinity, Bicarbonate as CaCO3	<2 mg/l	TM043	889	@		
Alkalinity, Carbonate as CaCO3	<2 mg/l	TM043	<2	@		
Carbon, Organic (diss.filt)	<3 mg/l	TM090	<3			
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099	<0.2	#		
Fluoride	<0.5 mg/l	TM104	<0.5	#		
Conductivity @ 20 deg.C	<0.02 mS/cm	TM120	0.571	#		
Dissolved solids, Total (meter)	<5 mg/l	TM123	465	#		
Chromium, Trivalent	<0.03 mg/l	TM152	<0.03			
Antimony (diss.filt)	<1 µg/l	TM152	<1	#		
Arsenic (diss.filt)	<0.5 µg/l	TM152	<0.5	#		
Beryllium (diss.filt)	<0.1 µg/l	TM152	<0.1	#		
Boron (diss.filt)	<10 µg/l	TM152	30.3	#		
Cadmium (diss.filt)	<0.08 µg/l	TM152	<0.08	#		
Chromium (diss.filt)	<1 µg/l	TM152	<1	#		
Copper (diss.filt)	<0.3 µg/l	TM152	0.519	#		
Lead (diss.filt)	<0.2 µg/l	TM152	<0.2	#		
Manganese (diss.filt)	<3 µg/l	TM152	6.53	#		
Molybdenum (diss.filt)	<3 µg/l	TM152	<3	#		
Nickel (diss.filt)	<0.4 µg/l	TM152	3.89	#		
Phosphorus (diss.filt)	<10 µg/l	TM152	31.2	#		
Selenium (diss.filt)	<1 µg/l	TM152	<1	#		
Zinc (diss.filt)	<1 µg/l	TM152	3	#		
Sodium (Dis.Filt)	<0.076 mg/l	TM152	5.87	#		
Magnesium (Dis.Filt)	<0.036 mg/l	TM152	2.39	#		
Potassium (Dis.Filt)	<0.2 mg/l	TM152	0.446	#		
Calcium (Dis.Filt)	<0.2 mg/l	TM152	140	#		
Iron (Dis.Filt)	<0.019 mg/l	TM152	<0.019	#		
Mercury (diss.filt)	<0.01 µg/l	TM183	<0.01	#		
Nitrite as NO2	<0.05 mg/l	TM184	<0.05	#		
Phosphate (Ortho as PO4)	<0.05 mg/l	TM184	0.081	@ #		
Sulphate	<2 mg/l	TM184	27.3	#		



CERTIFICATE OF ANALYSIS

Validated

SDG: 201127-27
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: JFR1451

Report Number: 581283
Superseded Report:

Results Legend		Customer Sample Ref.	CP72310				
# ISO17025 accredited. M mCERTS accredited. sq Aqueous / settled sample. dis.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4*5@ Sample deviation (see appendix)		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	Ground Water (GW) 29/11/2020 27/11/2020 201127-27 23320171				
Component	LOD/Units	Method					
Chloride	<2 mg/l	TM184	16.4	#			
Phosphate (Ortho as P)	<0.02 mg/l	TM184	0.0264	@ #			
Nitrate as NO3	<0.3 mg/l	TM184	60.7	@			
Oxygen, dissolved	<0.3 mg/l	TM187	9.79	@ #			
Turbidity	<0.1 ntu	TM195	1610	@ #			
PCB congener 28	<0.015 µg/l	TM197	<0.075				
PCB congener 52	<0.015 µg/l	TM197	<0.075				
PCB congener 101	<0.015 µg/l	TM197	<0.075				
PCB congener 118	<0.015 µg/l	TM197	<0.075				
PCB congener 138	<0.015 µg/l	TM197	<0.075				
PCB congener 153	<0.015 µg/l	TM197	<0.075				
PCB congener 180	<0.015 µg/l	TM197	<0.075				
Sum of detected EC7 PCB's	<0.105 µg/l	TM197	<0.525				
Cyanide, Total	<0.05 mg/l	TM227	<0.05	@ #			
Cyanide, Free	<0.05 mg/l	TM227	<0.05	@ #			
Chromium, Hexavalent	<0.03 mg/l	TM241	<0.03	@ #			
pH	<1 pH Units	TM256	7.34	@ #			
Phenol	<0.002 mg/l	TM259	<0.002	@ #			
Cresols	<0.006 mg/l	TM259	<0.006	@ #			
Xylenols	<0.008 mg/l	TM259	<0.008	@ #			
Phenols, Total Detected monohydric	<0.016 mg/l	TM259	<0.016	@ #			
Trifluralin	<0.01 µg/l	TM343	<0.01				
alpha-HCH	<0.01 µg/l	TM343	<0.01				
gamma-HCH (Lindane)	<0.01 µg/l	TM343	<0.01				
Heptachlor	<0.01 µg/l	TM343	<0.02				
Aldrin	<0.01 µg/l	TM343	<0.01				
beta-HCH	<0.01 µg/l	TM343	<0.01				
Isodrin	<0.01 µg/l	TM343	<0.01				
delta-HCH	<0.01 µg/l	TM343	<0.01				
Heptachlor epoxide	<0.01 µg/l	TM343	<0.01				
o,p'-DDE	<0.01 µg/l	TM343	<0.01				
Endosulphan I	<0.01 µg/l	TM343	<0.01				



CERTIFICATE OF ANALYSIS

Validated

SDG: 201127-27
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: JFR1451

Report Number: 581283
Superseded Report:

Results Legend		Customer Sample Ref.	CP72310				
#	ISO17025 accredited.	Depth (m)	Sample Type				
M	mCERTS accredited.	Sample Type	Date Sampled				
sq	Aqueous / settled sample.	Sampled Time	Date Received				
dis.filt	Dissolved / filtered sample.	SDG Ref	Lab Sample No.(s)				
tot.unfilt	Total / unfiltered sample.	AGS Reference					
*	Subcontracted - refer to subcontractor report for accreditation status.						
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery						
(F)	Trigger breach confirmed						
1-4*5@	Sample deviation (see appendix)						
Component	LOD/Units	Method					
trans-Chlordane	<0.01 µg/l	TM343	<0.01				
cis-Chlordane	<0.01 µg/l	TM343	<0.01				
p,p'-DDE	<0.01 µg/l	TM343	<0.01				
Dieldrin	<0.01 µg/l	TM343	<0.01				
o,p'-DDD (TDE)	<0.01 µg/l	TM343	<0.01				
Endrin	<0.01 µg/l	TM343	<0.02				
o,p'-DDT	<0.01 µg/l	TM343	<0.04				
p,p'-DDD (TDE)	<0.01 µg/l	TM343	<0.01				
Endosulphan II	<0.02 µg/l	TM343	<0.02				
p,p'-DDT	<0.01 µg/l	TM343	<0.04				
o,p'-Methoxychlor	<0.01 µg/l	TM343	<0.02				
p,p'-Methoxychlor	<0.01 µg/l	TM343	<0.02				
Endosulphan Sulphate	<0.02 µg/l	TM343	<0.04				
Permethrin I	<0.01 µg/l	TM343	<0.01				
Permethrin II	<0.01 µg/l	TM343	<0.01				
1,3,5-Trichlorobenzene	<0.01 µg/l	TM344	<0.01				
Hexachlorobutadiene	<0.01 µg/l	TM344	<0.01				
1,2,4-Trichlorobenzene	<0.01 µg/l	TM344	<0.01				
1,2,3-Trichlorobenzene	<0.01 µg/l	TM344	<0.01				
Dichlorvos	<0.01 µg/l	TM344	<0.01				
Dichlobenil	<0.01 µg/l	TM344	<0.01				
Mevinphos	<0.01 µg/l	TM344	<0.01				
Tecnazene	<0.01 µg/l	TM344	<0.01				
Hexachlorobenzene	<0.01 µg/l	TM344	<0.01				
Demeton-S-methyl	<0.01 µg/l	TM344	<0.01				
Phorate	<0.01 µg/l	TM344	<0.01				
Diazinon	<0.01 µg/l	TM344	<0.01				
Triallate	<0.01 µg/l	TM344	<0.01				
Atrazine	<0.01 µg/l	TM344	<0.01				
Simazine	<0.01 µg/l	TM344	<0.01				
Disulfoton	<0.01 µg/l	TM344	<0.01				
Propetamphos	<0.01 µg/l	TM344	<0.01				



CERTIFICATE OF ANALYSIS

Validated

SDG: 201127-27
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: JFR1451

Report Number: 581283
Superseded Report:

Table with columns: Results Legend, Customer Sample Ref., Depth (m), Sample Type, Date Sampled, Sampled Time, Date Received, SDG Ref, Lab Sample No.(s), AGS Reference, Component, LOD/Units, Method, and numerical results for various pesticides like Chlorpyrifos-methyl, Dimethoate, etc.



CERTIFICATE OF ANALYSIS

Validated

SDG: 201127-27
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: JFR1451

Report Number: 581283
Superseded Report:

PAH Spec MS - Aqueous (W)

Table with columns: Component, LOD/Units, Method, and numerical results. Includes a Results Legend and Customer Sample Ref. information.



CERTIFICATE OF ANALYSIS

Validated

SDG: 201127-27
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: JFR1451

Report Number: 581283
Superseded Report:

SVOC MS (W) - Aqueous

Results Legend		Customer Sample Ref.	CP72310				
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	Ground Water (GW)				
M	mCERTS accredited.		25/11/2020				
aq	Aqueous / settled sample.		27/11/2020				
diss.filt	Dissolved / filtered sample.		201127-27				
tot.unfilt	Total / unfiltered sample.		23320171				
*	Subcontracted - refer to subcontractor report for accreditation status.						
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery						
(F)	Trigger breach confirmed						
1-4*3@	Sample deviation (see appendix)						
Component	LOD/Units		Method				
1,2,4-Trichlorobenzene (aq)	<1 µg/l	TM176	<4 @ #				
1,2-Dichlorobenzene (aq)	<1 µg/l	TM176	<4 @ #				
1,3-Dichlorobenzene (aq)	<1 µg/l	TM176	<4 @ #				
1,4-Dichlorobenzene (aq)	<1 µg/l	TM176	<4 @ #				
2,4,5-Trichlorophenol (aq)	<1 µg/l	TM176	<4 @ #				
2,4,6-Trichlorophenol (aq)	<1 µg/l	TM176	<4 @ #				
2,4-Dichlorophenol (aq)	<1 µg/l	TM176	<4 @ #				
2,4-Dimethylphenol (aq)	<1 µg/l	TM176	<4 @ #				
2,4-Dinitrotoluene (aq)	<1 µg/l	TM176	<4 @ #				
2,6-Dinitrotoluene (aq)	<1 µg/l	TM176	<4 @ #				
2-Chloronaphthalene (aq)	<1 µg/l	TM176	<4 @ #				
2-Chlorophenol (aq)	<1 µg/l	TM176	<4 @ #				
2-Methylnaphthalene (aq)	<1 µg/l	TM176	<4 @ #				
2-Methylphenol (aq)	<1 µg/l	TM176	<4 @ #				
2-Nitroaniline (aq)	<1 µg/l	TM176	<4 @ #				
2-Nitrophenol (aq)	<1 µg/l	TM176	<4 @ #				
3-Nitroaniline (aq)	<1 µg/l	TM176	<4 @ #				
4-Bromophenylphenylether (aq)	<1 µg/l	TM176	<4 @ #				
4-Chloro-3-methylphenol (aq)	<1 µg/l	TM176	<4 @ #				
4-Chloroaniline (aq)	<1 µg/l	TM176	<4 @ #				
4-Chlorophenylphenylether (aq)	<1 µg/l	TM176	<4 @ #				
4-Methylphenol (aq)	<1 µg/l	TM176	<4 @ #				
4-Nitroaniline (aq)	<1 µg/l	TM176	<4 @ #				
4-Nitrophenol (aq)	<1 µg/l	TM176	<4 @ #				
Azobenzene (aq)	<1 µg/l	TM176	<4 @ #				
Acenaphthylene (aq)	<1 µg/l	TM176	<4 @ #				
Acenaphthene (aq)	<1 µg/l	TM176	<4 @ #				
Anthracene (aq)	<1 µg/l	TM176	<4 @ #				
bis(2-Chloroethyl)ether (aq)	<1 µg/l	TM176	<4 @ #				
bis(2-Chloroethoxy)methane (aq)	<1 µg/l	TM176	<4 @ #				
bis(2-Ethylhexyl) phthalate (aq)	<2 µg/l	TM176	<8 @ #				
Butylbenzyl phthalate (aq)	<1 µg/l	TM176	<4 @ #				



CERTIFICATE OF ANALYSIS

Validated

SDG: 201127-27
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: JFR1451

Report Number: 581283
Superseded Report:

SVOC MS (W) - Aqueous

Results Legend		Customer Sample Ref.	CP72310				
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	Ground Water (GW) 29/11/2020 27/11/2020 201127-27 23320171				
M	mCERTS accredited.						
aq	Aqueous / settled sample.						
dis.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.						
*	Subcontracted - refer to subcontractor report for accreditation status.						
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery						
(F)	Trigger breach confirmed						
1-4*5@	Sample deviation (see appendix)						
Component	LOD/Units			Method			
Benzo(a)anthracene (aq)	<1 µg/l	TM176	<4	@ #			
Benzo(b)fluoranthene (aq)	<1 µg/l	TM176	<4	@ #			
Benzo(k)fluoranthene (aq)	<1 µg/l	TM176	<4	@ #			
Benzo(a)pyrene (aq)	<1 µg/l	TM176	<4	@ #			
Benzo(g,h,i)perylene (aq)	<1 µg/l	TM176	<4	@ #			
Carbazole (aq)	<1 µg/l	TM176	<4	@ #			
Chrysene (aq)	<1 µg/l	TM176	<4	@ #			
Dibenzofuran (aq)	<1 µg/l	TM176	<4	@ #			
n-Dibutyl phthalate (aq)	<1 µg/l	TM176	<4	@ #			
Diethyl phthalate (aq)	<1 µg/l	TM176	<4	@ #			
Dibenzo(a,h)anthracene (aq)	<1 µg/l	TM176	<4	@ #			
Dimethyl phthalate (aq)	<1 µg/l	TM176	<4	@ #			
n-Dioctyl phthalate (aq)	<5 µg/l	TM176	<20	@ #			
Fluoranthene (aq)	<1 µg/l	TM176	<4	@ #			
Fluorene (aq)	<1 µg/l	TM176	<4	@ #			
Hexachlorobenzene (aq)	<1 µg/l	TM176	<4	@ #			
Hexachlorobutadiene (aq)	<1 µg/l	TM176	<4	@ #			
Pentachlorophenol (aq)	<1 µg/l	TM176	<4	@ #			
Phenol (aq)	<1 µg/l	TM176	<4	@ #			
n-Nitroso-n-dipropylamine (aq)	<1 µg/l	TM176	<4	@ #			
Hexachloroethane (aq)	<1 µg/l	TM176	<4	@ #			
Nitrobenzene (aq)	<1 µg/l	TM176	<4	@ #			
Naphthalene (aq)	<1 µg/l	TM176	<4	@ #			
Isophorone (aq)	<1 µg/l	TM176	<4	@ #			
Hexachlorocyclopentadiene (aq)	<1 µg/l	TM176	<4	@ #			
Phenanthrene (aq)	<1 µg/l	TM176	<4	@ #			
Indeno(1,2,3-cd)pyrene (aq)	<1 µg/l	TM176	<4	@ #			
Pyrene (aq)	<1 µg/l	TM176	<4	@ #			
SVOC TIC (aq)		TM176	Not Detected	@			
Total SVOC TIC	<10 µg/l	TM176	<40				



CERTIFICATE OF ANALYSIS

Validated

SDG: 201127-27
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: JFR1451

Report Number: 581283
Superseded Report:

TPH CWG (W)

#	ISO17025 accredited.	Customer Sample Ref.	CP72310			
M	mCERTS accredited.	Depth (m)	Sample Type	Ground Water (GW)		
aq	Aqueous / settled sample.	Date Sampled	Sampled Time	25/11/2020		
diss.filt	Dissolved / filtered sample.	Date Received	SDG Ref	27/11/2020		
tot.unfilt	Total / unfiltered sample.	Lab Sample No.(s)	AGS Reference	201127-27		
*	Subcontracted - refer to subcontractor report for accreditation status.			23320171		
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery					
(F)	Trigger breach confirmed					
1-4*\$@	Sample deviation (see appendix)					
Component	LOD/Units	Method				
GRO Surrogate % recovery**	%	TM245	107	@		
GRO >C5-C12	<50 µg/l	TM245	<50	@ #		
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245	<3	@ #		
Benzene	<7 µg/l	TM245	<7	@ #		
Toluene	<4 µg/l	TM245	<4	@ #		
Ethylbenzene	<5 µg/l	TM245	<5	@ #		
m,p-Xylene	<8 µg/l	TM245	<8	@ #		
o-Xylene	<3 µg/l	TM245	<3	@ #		
Sum of detected Xylenes	<11 µg/l	TM245	<11	@		
Sum of detected BTEX	<28 µg/l	TM245	<28	@		
Aliphatics >C5-C6	<10 µg/l	TM245	<10	@		
Aliphatics >C6-C8	<10 µg/l	TM245	<10	@		
Aliphatics >C8-C10	<10 µg/l	TM245	<10	@		
Aliphatics >C10-C12	<10 µg/l	TM245	<10	@		
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174	<50			
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174	<50			
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174	<50			
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174	<50			
Aromatics >EC5-EC7	<10 µg/l	TM245	<10	@		
Aromatics >EC7-EC8	<10 µg/l	TM245	<10	@		
Aromatics >EC8-EC10	<10 µg/l	TM245	<10	@		
Aromatics >EC10-EC12	<10 µg/l	TM245	<10	@		
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174	<50			
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174	<50			
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174	<50			
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174	<50			
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174	<50			
Aliphatics >C16-C35 Aqueous	<10 µg/l	TM174	<50			



CERTIFICATE OF ANALYSIS

Validated

SDG: 201127-27
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: JFR1451

Report Number: 581283
Superseded Report:

VOC MS (W)

Results Legend		Customer Sample Ref.	CP72310				
#	ISO17025 accredited.	Depth (m)	Sample Type				
M	mCERTS accredited.	Date Sampled	Sampled Time				
aq	Aqueous / settled sample.	Date Received	SDG Ref				
diss.filt	Dissolved / filtered sample.	Lab Sample No.(s)	AGS Reference				
tot.unfilt	Total / unfiltered sample.						
*	Subcontracted - refer to subcontractor report for accreditation status.						
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery						
(F)	Trigger breach confirmed						
1-4*\$@	Sample deviation (see appendix)						
Component	LOD/Units	Method					
Dibromofluoromethane**	%	TM208	112				
Toluene-d8**	%	TM208	98.4				
4-Bromofluorobenzene**	%	TM208	96.8				
Dichlorodifluoromethane	<1 µg/l	TM208	<1	@ #			
Chloromethane	<1 µg/l	TM208	<1	@ #			
Vinyl chloride	<1 µg/l	TM208	<1	@ #			
Bromomethane	<1 µg/l	TM208	<1	@ #			
Chloroethane	<1 µg/l	TM208	<1	@ #			
Trichlorofluoromethane	<1 µg/l	TM208	<1	@ #			
1,1-Dichloroethene	<1 µg/l	TM208	<1	@ #			
Carbon disulphide	<1 µg/l	TM208	<1	@ #			
Dichloromethane	<3 µg/l	TM208	<3	@ #			
Methyl tertiary butyl ether (MTBE)	<1 µg/l	TM208	<1	@ #			
trans-1,2-Dichloroethene	<1 µg/l	TM208	<1	@ #			
1,1-Dichloroethane	<1 µg/l	TM208	<1	@ #			
cis-1,2-Dichloroethene	<1 µg/l	TM208	<1	@ #			
2,2-Dichloropropane	<1 µg/l	TM208	<1	@ #			
Bromochloromethane	<1 µg/l	TM208	<1	@ #			
Chloroform	<1 µg/l	TM208	<1	@ #			
1,1,1-Trichloroethane	<1 µg/l	TM208	<1	@ #			
1,1-Dichloropropene	<1 µg/l	TM208	<1	@ #			
Carbontetrachloride	<1 µg/l	TM208	<1	@ #			
1,2-Dichloroethane	<1 µg/l	TM208	<1	@ #			
Benzene	<1 µg/l	TM208	<1	@ #			
Trichloroethene	<1 µg/l	TM208	<1	@ #			
1,2-Dichloropropane	<1 µg/l	TM208	<1	@ #			
Dibromomethane	<1 µg/l	TM208	<1	@ #			
Bromodichloromethane	<1 µg/l	TM208	<1	@ #			
cis-1,3-Dichloropropene	<1 µg/l	TM208	<1	@ #			
Toluene	<1 µg/l	TM208	<1	@ #			
trans-1,3-Dichloropropene	<1 µg/l	TM208	<1	@ #			
1,1,2-Trichloroethane	<1 µg/l	TM208	<1	@ #			



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Validated

SDG: 201127-27
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: JFR1451

Report Number: 581283
Superseded Report:

VOC MS (W)

Results Legend		Customer Sample Ref.	CP72310					
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	Ground Water (GW) 29/11/2020 27/11/2020 201127-27 23320171					
M	mCERTS accredited.							
sq	Aqueous / settled sample.							
dis.fit	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
*	Subcontracted - refer to subcontractor report for accreditation status.							
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery							
(F)	Trigger breach confirmed							
1-4#&@	Sample deviation (see appendix)							
Component	LOD/Units			Method				
1,3-Dichloropropane	<1 µg/l	TM208	<1 @ #					
Tetrachloroethene	<1 µg/l	TM208	<1 @ #					
Dibromochloromethane	<1 µg/l	TM208	<1 @ #					
1,2-Dibromoethane	<1 µg/l	TM208	<1 @ #					
Chlorobenzene	<1 µg/l	TM208	<1 @ #					
1,1,1,2-Tetrachloroethane	<1 µg/l	TM208	<1 @ #					
Ethylbenzene	<1 µg/l	TM208	<1 @ #					
m,p-Xylene	<1 µg/l	TM208	<1 @ #					
o-Xylene	<1 µg/l	TM208	<1 @ #					
Styrene	<1 µg/l	TM208	<1 @ #					
Bromoform	<1 µg/l	TM208	<1 @ #					
Isopropylbenzene	<1 µg/l	TM208	<1 @ #					
1,1,2,2-Tetrachloroethane	<1 µg/l	TM208	<1 @ #					
1,2,3-Trichloropropane	<1 µg/l	TM208	<1 @ #					
Bromobenzene	<1 µg/l	TM208	<1 @ #					
Propylbenzene	<1 µg/l	TM208	<1 @ #					
2-Chlorotoluene	<1 µg/l	TM208	<1 @ #					
1,3,5-Trimethylbenzene	<1 µg/l	TM208	<1 @ #					
4-Chlorotoluene	<1 µg/l	TM208	<1 @ #					
tert-Butylbenzene	<1 µg/l	TM208	<1 @ #					
1,2,4-Trimethylbenzene	<1 µg/l	TM208	<1 @ #					
sec-Butylbenzene	<1 µg/l	TM208	<1 @ #					
4-iso-Propyltoluene	<1 µg/l	TM208	<1 @ #					
1,3-Dichlorobenzene	<1 µg/l	TM208	<1 @ #					
1,4-Dichlorobenzene	<1 µg/l	TM208	<1 @ #					
n-Butylbenzene	<1 µg/l	TM208	<1 @ #					
1,2-Dichlorobenzene	<1 µg/l	TM208	<1 @ #					
1,2-Dibromo-3-chloropropane	<1 µg/l	TM208	<1 @					
1,2,4-Trichlorobenzene	<1 µg/l	TM208	<1 @ #					
Hexachlorobutadiene	<1 µg/l	TM208	<1 @ #					
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208	<1 @ #					
Naphthalene	<1 µg/l	TM208	<1 @ #					



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SDG: 201127-27
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Client Reference: JFR1451
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Superseded Report:

Table of Results - Appendix

Method No	Reference	Description
TM043	Method 2320B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part109 1984	Determination of alkalinity in aqueous samples
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM104	Method 4500F, AWWA/APHA, 20th Ed., 1999	Determination of Fluoride using the Kone Analyser
TM120	Method 2510B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part 9:1970	Determination of Electrical Conductivity using a Conductivity Meter
TM123	BS 2690: Part 121:1981	The Determination of Total Dissolved Solids in Water
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM174	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID
TM176	EPA 8270D Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of SVOCs in Water by GCMS
TM178	Modified: US EPA Method 8100	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS in Waters
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM187	Winkler, L.W, Ber Deutsch. Chem. Ges, 21,2843,1888."	Dissolved Oxygen in Natural and Waste Waters HMSO 1979 ISBN 011 751442
TM195	Colour and Turbidity of water. Methods for the Examination of Waters and Associated Materials. HMSO, 1981, ISBN 0 11 751955 3.	Determination of Turbidity in Waters & Associated Matrices
TM197	Modified: US EPA Method 8082.EA Method 174 and 5109631	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Waters
TM208	Modified: US EPA Method 8260b & 624	Determination of Volatile Organic Compounds by Headspace / GC-MS in Waters
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser
TM245	By GC-FID	Determination of GRO by Headspace in waters
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC
TM343	EPA 8270D - Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of Selected Pesticides (Suite I) in Liquids by GCMS
TM344	EPA 8270D – Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of selected pesticides (Suite II) by GCMS

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).



CERTIFICATE OF ANALYSIS

Validated

SDG: 201127-27
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Client Reference: JFR1451
Order Number: JFR1451

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Superseded Report:

Test Completion Dates

Lab Sample No(s)	23320171
Customer Sample Ref.	CP72310
AGS Ref.	
Depth	
Type	Ground Water

Alkalinity as CaCO3	18-Dec-2020
Ammoniacal Nitrogen	21-Dec-2020
Anions by Kone (w)	19-Dec-2020
Chromium III	21-Dec-2020
Conductivity (at 20 deg.C)	15-Dec-2020
Cyanide Comp/Free/Total/Thiocyanate	16-Dec-2020
Dissolved Metals by ICP-MS	21-Dec-2020
Dissolved Organic/Inorganic Carbon	17-Dec-2020
Dissolved Oxygen by Titration	21-Dec-2020
EPH CWG (Aliphatic) Aqueous GC (W)	20-Dec-2020
EPH CWG (Aromatic) Aqueous GC (W)	20-Dec-2020
Fluoride	17-Dec-2020
GRO by GC-FID (W)	17-Dec-2020
Hexavalent Chromium (w)	17-Dec-2020
Mercury Dissolved	15-Dec-2020
Nitrite by Kone (w)	16-Dec-2020
PAH Spec MS - Aqueous (W)	18-Dec-2020
PCB Congeners - Aqueous (W)	19-Dec-2020
Pesticides (Suite I) by GCMS	21-Dec-2020
Pesticides (Suite II) by GCMS	22-Dec-2020
pH Value	17-Dec-2020
Phenols by HPLC (W)	17-Dec-2020
Phosphate by Kone (w)	17-Dec-2020
Total Dissolved Solids	17-Dec-2020
TPH CWG (W)	20-Dec-2020
Turbidity in waters	16-Dec-2020
VOC MS (W)	17-Dec-2020



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ASSOCIATED AQC DATA

Alkalinity as CaCO3

Component	Method Code	QC 2314
Total Alkalinity as CaCO3	TM043	98.99 94.47 : 104.41

Ammoniacal Nitrogen

Component	Method Code	QC 2390
Ammoniacal Nitrogen as N	TM099	98.4 93.14 : 108.60

Anions by Kone (w)

Component	Method Code	QC 2304
Chloride	TM184	110.0 92.93 : 115.43
Sulphate (soluble)	TM184	103.2 90.53 : 113.03
TON as NO3	TM184	107.0 99.60 : 111.90

Conductivity (at 20 deg.C)

Component	Method Code	QC 2379
Conductivity (at 20 deg.C)	TM120	103.01 100.75 : 105.26

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2371
Free Cyanide (W)	TM227	102.25 90.50 : 114.50
Thiocyanate (W)	TM227	108.0 90.50 : 113.00
Total Cyanide (W)	TM227	107.0 91.75 : 112.75

Dissolved Metals by ICP-MS

Component	Method Code	QC 2327
Aluminium	TM152	104.0 90.98 : 111.82
Antimony	TM152	104.33 90.44 : 113.04
Arsenic	TM152	103.17 88.00 : 112.00



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Dissolved Metals by ICP-MS

		QC 2327
Barium	TM152	104.0 83.57 : 108.18
Beryllium	TM152	106.17 87.77 : 113.97
Bismuth	TM152	107.33 91.90 : 112.20
Borate	TM152	108.02 88.00 : 112.00
Boron	TM152	107.67 96.48 : 114.93
Cadmium	TM152	107.33 96.43 : 110.53
Calcium	TM152	103.33 81.38 : 119.09
Chromium	TM152	101.17 91.84 : 108.67
Cobalt	TM152	95.83 88.00 : 112.00
Copper	TM152	101.67 92.47 : 118.11
Iron	TM152	102.0 92.00 : 113.00
Lead	TM152	105.83 88.00 : 112.00
Lithium	TM152	105.5 91.62 : 113.12
Magnesium	TM152	98.0 94.33 : 111.84
Manganese	TM152	102.33 95.03 : 110.58
Molybdenum	TM152	100.17 88.00 : 112.00
Nickel	TM152	101.0 88.00 : 112.00
Phosphorus	TM152	101.17 88.00 : 112.00
Potassium	TM152	102.0 93.90 : 112.36
Selenium	TM152	106.5 91.58 : 115.98
Silver	TM152	102.83 88.80 : 122.30
Sodium	TM152	98.0 94.28 : 110.71
Strontium	TM152	104.67 88.00 : 112.00
Tellurium	TM152	104.0 93.32 : 114.66
Thallium	TM152	99.17 88.00 : 112.00
Tin	TM152	103.67 94.19 : 113.62
Titanium	TM152	106.5 95.58 : 111.68



CERTIFICATE OF ANALYSIS

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Client Reference: JFR1451
Order Number: JFR1451

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Superseded Report:

Dissolved Metals by ICP-MS

		QC 2327
Tungsten	TM152	101.33 81.32 : 124.72
Uranium	TM152	105.5 88.00 : 112.00
Vanadium	TM152	105.67 88.00 : 112.00
Zinc	TM152	104.33 92.98 : 118.95

Dissolved Organic/Inorganic Carbon

Component	Method Code	QC 2306
Dissolved Inorganic Carbon	TM090	101.5 91.27 : 109.87
Dissolved Organic Carbon	TM090	103.0 96.58 : 107.98

EPH CWG (Aliphatic) Aqueous GC (W)

Component	Method Code	QC 2389
Total Aliphatics >C10-C40	TM174	102.81 65.58 : 141.57

EPH CWG (Aromatic) Aqueous GC (W)

Component	Method Code	QC 2313
Total Aromatics >EC10-EC40	TM174	86.34 60.75 : 129.09

Fluoride

Component	Method Code	QC 2352
Fluoride	TM104	102.67 96.67 : 108.67

GRO by GC-FID (W)

Component	Method Code	QC 2314
Benzene by GC	TM245	102.0 79.13 : 118.84
Ethylbenzene by GC	TM245	102.5 79.54 : 115.99
m & p Xylene by GC	TM245	101.5 78.44 : 116.32



CERTIFICATE OF ANALYSIS

Validated

SDG: 201127-27
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: JFR1451

Report Number: 581283
Superseded Report:

GRO by GC-FID (W)

		QC 2314
MTBE GC-FID	TM245	107.0 81.43 : 120.09
o Xylene by GC	TM245	103.0 76.85 : 120.29
QC	TM245	95.83 71.58 : 131.01
Toluene by GC	TM245	100.0 79.00 : 121.96

Hexavalent Chromium (w)

Component	Method Code	QC 2344
Hexavalent Chromium	TM241	100.0 94.17 : 106.17

Mercury Dissolved

Component	Method Code	QC 2361
Mercury Dissolved (CVAf)	TM183	109.0 69.30 : 128.70

PAH Spec MS - Aqueous (W)

Component	Method Code	QC 2323
Acenaphthene by GCMS	TM178	109.6 97.60 : 116.80
Acenaphthylene by GCMS	TM178	99.6 89.20 : 113.20
Anthracene by GCMS	TM178	104.4 92.40 : 116.40
Benz(a)anthracene by GCMS	TM178	104.4 84.40 : 110.80
Benzo(a)pyrene by GCMS	TM178	100.8 87.20 : 106.40
Benzo(b)fluoranthene by GCMS	TM178	100.4 81.20 : 107.60
Benzo(ghi)perylene by GCMS	TM178	101.6 93.60 : 112.80
Benzo(k)fluoranthene by GCMS	TM178	110.0 90.40 : 119.20
Chrysene by GCMS	TM178	103.6 96.80 : 113.60
Dibenzo(ah)anthracene by GCMS	TM178	107.6 88.00 : 112.00
Fluoranthene by GCMS	TM178	108.4 93.49 : 118.20
Fluorene by GCMS	TM178	109.2 94.39 : 118.66



CERTIFICATE OF ANALYSIS

Validated

SDG: 201127-27
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: JFR1451

Report Number: 581283
Superseded Report:

PAH Spec MS - Aqueous (W)

		QC 2323
Indeno(123cd)pyrene by GCMS	TM178	103.2 90.40 : 114.40
Naphthalene by GCMS	TM178	111.2 94.00 : 115.60
Phenanthrene by GCMS	TM178	104.8 94.80 : 114.00
Pyrene by GCMS	TM178	110.4 96.40 : 115.60

PCB Congeners - Aqueous (W)

Component	Method Code	QC 2316
PCB congener 101	TM197	107.2 85.28 : 119.60
PCB congener 105	TM197	108.8 81.16 : 119.80
PCB congener 114	TM197	108.0 88.32 : 118.08
PCB congener 118	TM197	105.2 87.76 : 117.04
PCB congener 123	TM197	107.2 86.80 : 117.28
PCB congener 126	TM197	106.0 84.56 : 116.00
PCB congener 138	TM197	107.6 83.00 : 117.80
PCB congener 153	TM197	103.2 84.12 : 117.00
PCB congener 156	TM197	106.4 82.24 : 119.20
PCB congener 157	TM197	104.8 84.96 : 116.40
PCB congener 167	TM197	108.0 81.64 : 119.32
PCB congener 169	TM197	104.4 84.60 : 117.96
PCB congener 180	TM197	108.4 80.40 : 119.04
PCB congener 189	TM197	104.4 81.56 : 119.00
PCB congener 28	TM197	104.0 83.20 : 117.04
PCB congener 52	TM197	105.6 81.84 : 119.52
PCB congener 77	TM197	105.6 81.96 : 117.24
PCB congener 81	TM197	104.4 82.28 : 120.20

Pesticides (Suite I) by GCMS



CERTIFICATE OF ANALYSIS

Validated

SDG: 201127-27
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: JFR1451

Report Number: 581283
Superseded Report:

Pesticides (Suite I) by GCMS

Component	Method Code	QC 2375
Aldrin - (Inst.)	TM343	56.38 59.75 : 143.00
alpha-HCH - (Inst.)	TM343	74.7 75.03 : 148.38
beta-HCH - (Inst.)	TM343	77.96 75.85 : 146.50
cis-Chlordane - (Inst.)	TM343	74.11 71.78 : 137.03
delta-HCH - (Inst.)	TM343	81.29 76.38 : 138.48
Dieldrin - (Inst.)	TM343	83.05 77.45 : 154.10
Endosulphan I - (Inst.)	TM343	80.0 91.30 : 168.70
Endosulphan II - (Inst.)	TM343	98.54 82.68 : 161.13
Endosulphan Sulphate - (Inst.)	TM343	85.17 60.50 : 159.50
Endrin - (Inst.)	TM343	85.52 85.55 : 163.70
gamma-HCH (Lindane) - (Inst.)	TM343	74.16 72.98 : 157.58
Heptachlor - (Inst.)	TM343	59.66 57.70 : 149.20
Heptachlor epoxide - (Inst.)	TM343	75.23 71.08 : 140.38
Isodrin - (Inst.)	TM343	65.17 55.55 : 144.50
o,p-DDD (TDE) - (Inst.)	TM343	66.6 68.83 : 141.43
o,p-DDE - (Inst.)	TM343	61.16 63.00 : 139.20
o,p-DDT - (Inst.)	TM343	87.19 68.05 : 148.15
o,p-Methoxychlor - (Inst.)	TM343	85.08 63.95 : 156.80
p,p-DDD (TDE) - (Inst.)	TM343	73.5 64.33 : 143.53
p,p-DDE - (Inst.)	TM343	68.65 65.40 : 140.85
p,p-DDT - (Inst.)	TM343	90.62 60.08 : 157.13
p,p-Methoxychlor - (Inst.)	TM343	89.73 59.70 : 157.40
Permethrin I - (Inst.)	TM343	70.02 63.25 : 146.35
Permethrin II - (Inst.)	TM343	66.61 62.23 : 147.28
trans-Chlordane - (Inst.)	TM343	76.49 70.75 : 142.30
Trifluralin - (Inst.)	TM343	58.35 64.73 : 161.48



CERTIFICATE OF ANALYSIS

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SDG: 201127-27
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: JFR1451

Report Number: 581283
Superseded Report:

pH Value

Component	Method Code	QC 2351
pH	TM256	101.74 99.33 : 102.54

Phenols by HPLC (W)

Component	Method Code	QC 2309
2,3,5 Trimethyl-Phenol by HPLC (W)	TM259	102.0 91.00 : 109.00
2-Isopropyl Phenol by HPLC (W)	TM259	103.0 85.00 : 109.00
Cresols by HPLC (W)	TM259	99.0 92.00 : 110.00
Naphthol by HPLC (W)	TM259	110.0 86.00 : 128.00
Phenol by HPLC (W)	TM259	102.0 88.24 : 111.76
Xylenols by HPLC (W)	TM259	105.33 94.83 : 110.83

Phosphate by Kone (w)

Component	Method Code	QC 2304
Phosphate (Ortho as PO4)	TM184	104.0 96.40 : 109.60

SVOC MS (W) - Aqueous

Component	Method Code	QC 2348
4-Bromophenylphenylether	TM176	87.2 52.80 : 111.84
Benzo(a)anthracene	TM176	82.4 59.28 : 107.76
Benzo(a)pyrene	TM176	81.6 54.40 : 105.76
Butylbenzyl phthalate	TM176	78.32 51.68 : 117.92
Hexachlorobutadiene	TM176	67.28 48.64 : 95.68
Naphthalene	TM176	88.8 63.04 : 111.04
Nitrobenzene	TM176	82.4 59.92 : 108.40
Phenol	TM176	47.36 36.88 : 72.40

Total Dissolved Solids



CERTIFICATE OF ANALYSIS

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SDG: 201127-27
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: JFR1451

Report Number: 581283
Superseded Report:

Total Dissolved Solids

Component	Method Code	QC 2383
Total Dissolved Solids	TM123	99.4 97.30 : 100.92

Turbidity in waters

Component	Method Code	QC 2396
Turbidity	TM195	96.5 83.75 : 121.25

VOC MS (W)

Component	Method Code	QC 2330
1,1,1,2-Tetrachloroethane	TM208	97.0 79.47 : 113.27
1,1,1-Trichloroethane	TM208	97.5 81.01 : 112.00
1,1-Dichloroethane	TM208	101.0 82.09 : 116.41
1,2-Dichloroethane	TM208	101.5 80.28 : 123.63
2-Chlorotoluene	TM208	98.0 83.31 : 110.91
4-Chlorotoluene	TM208	98.5 84.01 : 111.46
Benzene	TM208	102.0 87.46 : 118.30
Bromomethane	TM208	101.0 76.99 : 118.39
Carbon tetrachloride	TM208	99.0 81.73 : 114.22
Chlorobenzene	TM208	99.5 90.24 : 109.71
Chloroform	TM208	101.0 83.67 : 118.08
Chloromethane	TM208	105.0 70.42 : 127.06
Cis-1,2-Dichloroethene	TM208	101.5 83.95 : 112.60
Dichloromethane	TM208	102.5 81.65 : 120.83
Ethylbenzene	TM208	95.5 85.59 : 106.44
Hexachlorobutadiene	TM208	87.5 66.83 : 108.27
o-Xylene	TM208	95.5 78.40 : 110.68



CERTIFICATE OF ANALYSIS

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SDG: 201127-27
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: JFR1451

Report Number: 581283
Superseded Report:

VOC MS (W)

		QC 2330
p/m-Xylene	TM208	96.25 82.64 : 112.12
Tert-butyl methyl ether	TM208	99.5 68.23 : 127.69
Tetrachloroethene	TM208	100.0 81.10 : 112.63
Toluene	TM208	99.0 87.40 : 109.78
Trichloroethene	TM208	97.5 81.17 : 111.80
Vinyl Chloride	TM208	99.5 72.73 : 123.40

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.

The figure detailed is the percentage recovery result for the AQC.

The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.



CERTIFICATE OF ANALYSIS

Validated

SDG: 201127-27
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: JFR1451

Report Number: 581283
Superseded Report:

Chromatogram

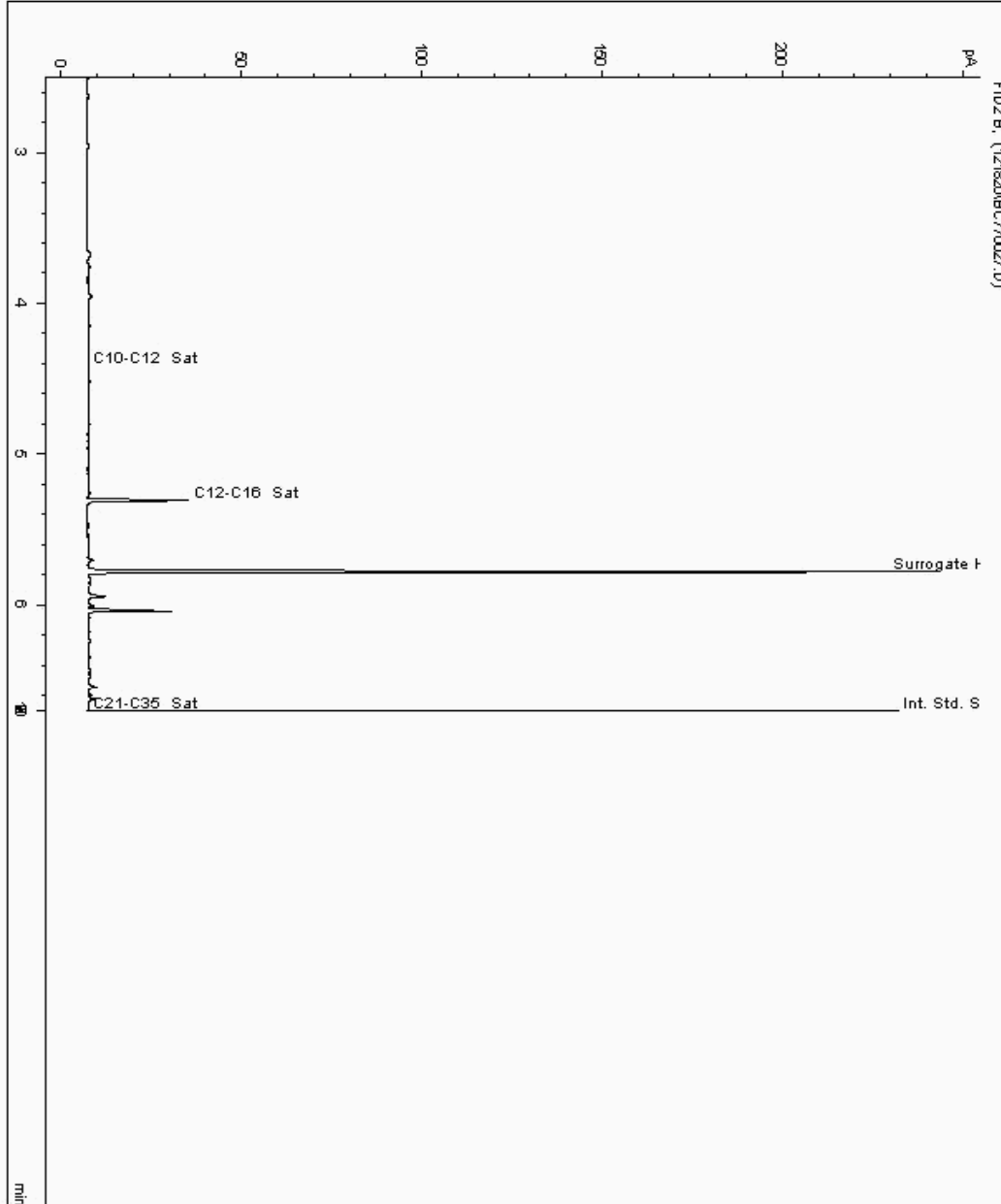
Analysis: EPH CWG (Aliphatic) Aqueous GC (W)

Sample No : 23432250
Sample ID : CP72310

Depth :

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 21978489-
Date Acquired : 12/18/2020 8:36:43 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.125





CERTIFICATE OF ANALYSIS

Validated

SDG: 201127-27
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: JFR1451

Report Number: 581283
Superseded Report:

Chromatogram

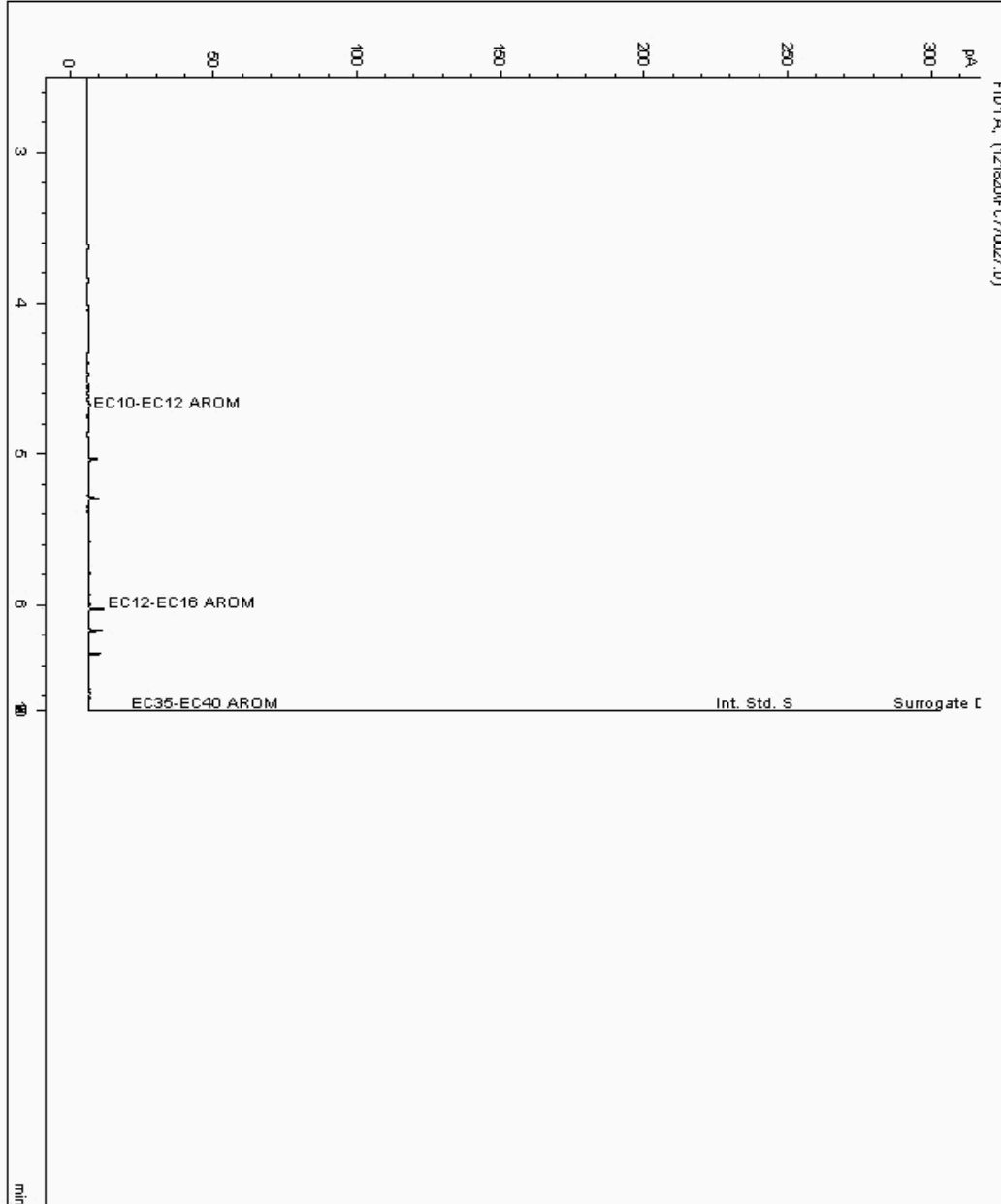
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 23432250
Sample ID : CP72310

Depth :

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 21978490-
Date Acquired : 12/18/2020 8:36:43 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.125





CERTIFICATE OF ANALYSIS

Validated

SDG: 201127-27
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number: JFR1451

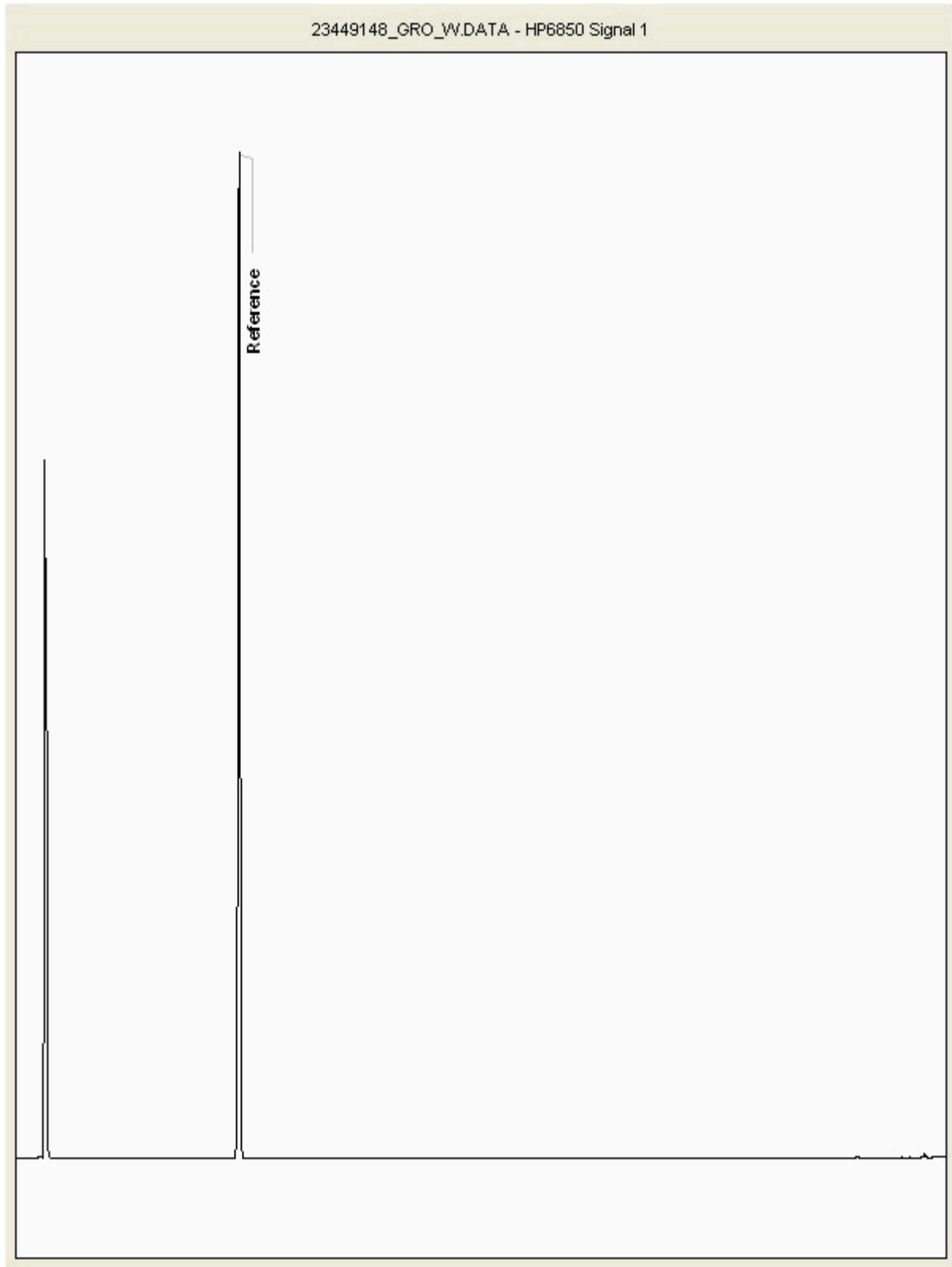
Report Number: 581283
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 23449148
Sample ID : CP72310

Depth :





CERTIFICATE OF ANALYSIS

SDG: 201127-27	Client Reference: JFR1451	Report Number: 581283
Location: A303 Stonehenge	Order Number: JFR1451	Superseded Report:

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

19. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung. Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017)*.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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Website: www.alsenvironmental.co.uk

RPS Consultants Ltd
260 Park Avenue
Aztec West
Almondsbury
Bristol
BS32 4SY

Attention: Gary Riches

CERTIFICATE OF ANALYSIS

Date of report Generation: 22 December 2020
Customer: RPS Consultants Ltd
Sample Delivery Group (SDG): 201202-36
Your Reference: JFR1451
Location: A303 Amesbury
Report No: 581226

We received 1 sample on Tuesday December 01, 2020 and 1 of these samples were scheduled for analysis which was completed on Tuesday December 22, 2020. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

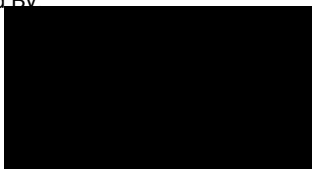
Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:



Sonia McWhan

Operations Manager



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CERTIFICATE OF ANALYSIS

Validated

SDG: 201202-36 **Client Reference:** JFR1451 **Report Number:** 581226
Location: A303 Amesbury **Order Number:** **Superseded Report:**

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
23345376	R71915			30/11/2020

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 201202-36
Location: A303 Amesbury

Client Reference: JFR1451
Order Number:

Report Number: 581226
Superseded Report:

Results Legend

- X Test
- N No Determination Possible

Sample Types -

- S - Soil/Solid
- UNS - Unspecified Solid
- GW - Ground Water
- SW - Surface Water
- LE - Land Leachate
- PL - Prepared Leachate
- PR - Process Water
- SA - Saline Water
- TE - Trade Effluent
- TS - Treated Sewage
- US - Untreated Sewage
- RE - Recreational Water
- DW - Drinking Water Non-regulatory
- UNL - Unspecified Liquid
- SL - Sludge
- G - Gas
- OTH - Other

	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container							Sample Type	
					Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	DO KIT + DO (ALE208)	500ml Plastic (ALE209)	330ml plastic bottle (ALE503)		0.5l glass bottle (ALE227)
	23345376	R71915										GW	
Alkalinity as CaCO3	All											NDPs: 0 Tests: 1	X
Ammoniacal Nitrogen	All											NDPs: 0 Tests: 1	X
Anions by Kone (w)	All											NDPs: 0 Tests: 1	X
Chromium III	All											NDPs: 0 Tests: 1	X
Conductivity (at 20 deg.C)	All											NDPs: 0 Tests: 1	X
Cyanide Comp/Free/Total/Thiocyanate	All											NDPs: 0 Tests: 1	X
Dissolved Metals by ICP-MS	All											NDPs: 0 Tests: 1	X
Dissolved Organic/Inorganic Carbon	All											NDPs: 0 Tests: 1	X
Dissolved Oxygen by Titration	All											NDPs: 0 Tests: 1	X
EPH CWG (Aliphatic) Aqueous GC (W)	All											NDPs: 0 Tests: 1	X
EPH CWG (Aromatic) Aqueous GC (W)	All											NDPs: 0 Tests: 1	X
Fluoride	All											NDPs: 0 Tests: 1	X
GRO by GC-FID (W)	All											NDPs: 0 Tests: 1	X
Hexavalent Chromium (w)	All											NDPs: 0 Tests: 1	X
Mercury Dissolved	All											NDPs: 0 Tests: 1	X



CERTIFICATE OF ANALYSIS

Validated

SDG: 201202-36
Location: A303 Amesbury

Client Reference: JFR1451
Order Number:

Report Number: 581226
Superseded Report:

Results Legend		Customer Sample Ref.	R71915			
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4*\$@ Sample deviation (see appendix)		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	Ground Water (GW) 30/11/2020 01/12/2020 201202-36 23345376			
Component	LOD/Units	Method				
Alkalinity, Total as CaCO3	<2 mg/l	TM043	207	@ #		
Alkalinity, Bicarbonate as CaCO3	<2 mg/l	TM043	207	@		
Alkalinity, Carbonate as CaCO3	<2 mg/l	TM043	<2	@		
Carbon, Organic (diss.filt)	<3 mg/l	TM090	<3			
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099	<0.2	#		
Fluoride	<0.5 mg/l	TM104	<0.5	#		
Conductivity @ 20 deg.C	<0.02 mS/cm	TM120	0.601	#		
Dissolved solids, Total (meter)	<5 mg/l	TM123	477	#		
Chromium, Trivalent	<0.03 mg/l	TM152	<0.03			
Antimony (diss.filt)	<1 µg/l	TM152	<1	#		
Arsenic (diss.filt)	<0.5 µg/l	TM152	<0.5	#		
Beryllium (diss.filt)	<0.1 µg/l	TM152	<0.1	#		
Boron (diss.filt)	<10 µg/l	TM152	10.9	#		
Cadmium (diss.filt)	<0.08 µg/l	TM152	<0.08	#		
Chromium (diss.filt)	<1 µg/l	TM152	<1	#		
Copper (diss.filt)	<0.3 µg/l	TM152	1.01	#		
Lead (diss.filt)	<0.2 µg/l	TM152	0.216	#		
Manganese (diss.filt)	<3 µg/l	TM152	<3	#		
Molybdenum (diss.filt)	<3 µg/l	TM152	3.22	#		
Nickel (diss.filt)	<0.4 µg/l	TM152	1.94	#		
Phosphorus (diss.filt)	<10 µg/l	TM152	<10	#		
Selenium (diss.filt)	<1 µg/l	TM152	<1	#		
Zinc (diss.filt)	<1 µg/l	TM152	3.29	#		
Sodium (Dis.Filt)	<0.076 mg/l	TM152	28.1	#		
Magnesium (Dis.Filt)	<0.036 mg/l	TM152	1.88	#		
Potassium (Dis.Filt)	<0.2 mg/l	TM152	0.46	#		
Calcium (Dis.Filt)	<0.2 mg/l	TM152	106	#		
Iron (Dis.Filt)	<0.019 mg/l	TM152	<0.019	#		
Mercury (diss.filt)	<0.01 µg/l	TM183	<0.01	#		
Nitrite as NO2	<0.05 mg/l	TM184	<0.05	#		
Phosphate (Ortho as PO4)	<0.05 mg/l	TM184	<0.05	#		
Sulphate	<2 mg/l	TM184	26.2	#		



CERTIFICATE OF ANALYSIS

Validated

SDG: 201202-36
Location: A303 Amesbury

Client Reference: JFR1451
Order Number:

Report Number: 581226
Superseded Report:

Results Legend		Customer Sample Ref.						
# ISO17025 accredited. M mCERTS accredited. sq Aqueous / settled sample. dis.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4-#@ Sample deviation (see appendix)	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	R71915 Ground Water (GW) 30/11/2020 01/12/2020 201202-36 23345376						
Component	LOD/Units	Method						
Chloride	<2 mg/l	TM184	54.4	#				
Phosphate (Ortho as P)	<0.02 mg/l	TM184	<0.02	#				
Nitrate as NO3	<0.3 mg/l	TM184	52.2	@				
Oxygen, dissolved	<0.3 mg/l	TM187	10.7	@ #				
Turbidity	<0.1 ntu	TM195	86.7	@ #				
PCB congener 28	<0.015 µg/l	TM197	<0.015					
PCB congener 52	<0.015 µg/l	TM197	<0.015					
PCB congener 101	<0.015 µg/l	TM197	<0.015					
PCB congener 118	<0.015 µg/l	TM197	<0.015					
PCB congener 138	<0.015 µg/l	TM197	<0.015					
PCB congener 153	<0.015 µg/l	TM197	<0.015					
PCB congener 180	<0.015 µg/l	TM197	<0.015					
Sum of detected EC7 PCB's	<0.105 µg/l	TM197	<0.105					
Cyanide, Total	<0.05 mg/l	TM227	<0.05	@ #				
Cyanide, Free	<0.05 mg/l	TM227	<0.05	@ #				
Chromium, Hexavalent	<0.03 mg/l	TM241	<0.03	#				
pH	<1 pH Units	TM256	7.44	@ #				
Phenol	<0.002 mg/l	TM259	<0.002	#				
Cresols	<0.006 mg/l	TM259	<0.006	#				
Xylenols	<0.008 mg/l	TM259	<0.008	#				
Phenols, Total Detected monohydric	<0.016 mg/l	TM259	<0.016	#				
Trifluralin	<0.01 µg/l	TM343	<0.01					
alpha-HCH	<0.01 µg/l	TM343	<0.01					
gamma-HCH (Lindane)	<0.01 µg/l	TM343	<0.01					
Heptachlor	<0.01 µg/l	TM343	<0.02					
Aldrin	<0.01 µg/l	TM343	<0.01					
beta-HCH	<0.01 µg/l	TM343	<0.01					
Isodrin	<0.01 µg/l	TM343	<0.01					
delta-HCH	<0.01 µg/l	TM343	<0.01					
Heptachlor epoxide	<0.01 µg/l	TM343	<0.01					
o,p'-DDE	<0.01 µg/l	TM343	<0.01					
Endosulphan I	<0.01 µg/l	TM343	<0.01					



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SDG: 201202-36
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Superseded Report:

Results Legend		Customer Sample Ref.					
# ISO17025 accredited. M mCERTS accredited. sq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery. (F) Trigger breach confirmed 1-4-#@ Sample deviation (see appendix)		R71915					
		Depth (m)	Ground Water (GW)				
		Sample Type	30/11/2020				
		Date Sampled	01/12/2020				
		Sampled Time	201202-36				
		Date Received	23345376				
		SDG Ref					
		Lab Sample No.(s)					
		AGS Reference					
Component	LOD/Units	Method					
trans-Chlordane	<0.01 µg/l	TM343	<0.01				
cis-Chlordane	<0.01 µg/l	TM343	<0.01				
p,p'-DDE	<0.01 µg/l	TM343	<0.01				
Dieldrin	<0.01 µg/l	TM343	<0.01				
o,p'-DDD (TDE)	<0.01 µg/l	TM343	<0.01				
Endrin	<0.01 µg/l	TM343	<0.01				
o,p'-DDT	<0.01 µg/l	TM343	<0.04				
p,p'-DDD (TDE)	<0.01 µg/l	TM343	<0.01				
Endosulphan II	<0.02 µg/l	TM343	<0.02				
p,p'-DDT	<0.01 µg/l	TM343	<0.08				
o,p'-Methoxychlor	<0.01 µg/l	TM343	<0.05				
p,p'-Methoxychlor	<0.01 µg/l	TM343	<0.1				
Endosulphan Sulphate	<0.02 µg/l	TM343	<0.06				
Permethrin I	<0.01 µg/l	TM343	<0.01				
Permethrin II	<0.01 µg/l	TM343	<0.01				
1,3,5-Trichlorobenzene	<0.01 µg/l	TM344	<0.01				
Hexachlorobutadiene	<0.01 µg/l	TM344	<0.01				
1,2,4-Trichlorobenzene	<0.01 µg/l	TM344	<0.01				
1,2,3-Trichlorobenzene	<0.01 µg/l	TM344	<0.01				
Dichlorvos	<0.01 µg/l	TM344	<0.01				
Dichlobenil	<0.01 µg/l	TM344	<0.01				
Mevinphos	<0.01 µg/l	TM344	<0.01				
Tecnazene	<0.01 µg/l	TM344	<0.01				
Hexachlorobenzene	<0.01 µg/l	TM344	<0.01				
Demeton-S-methyl	<0.01 µg/l	TM344	<0.01				
Phorate	<0.01 µg/l	TM344	<0.01				
Diazinon	<0.01 µg/l	TM344	<0.01				
Triallate	<0.01 µg/l	TM344	<0.01				
Atrazine	<0.01 µg/l	TM344	<0.01				
Simazine	<0.01 µg/l	TM344	<0.01				
Disulfoton	<0.01 µg/l	TM344	<0.01				
Propetamphos	<0.01 µg/l	TM344	<0.01				



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Superseded Report:

Table with columns: Results Legend, Customer Sample Ref., Depth (m), Sample Type, Date Sampled, Sampled Time, Date Received, SDG Ref, Lab Sample No.(s), AGS Reference, Component, LOD/Units, Method, and numerical results for various pesticides like Chlorpyrifos-methyl, Dimethoate, Pirimiphos-methyl, etc.



CERTIFICATE OF ANALYSIS

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Order Number:

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Superseded Report:

PAH Spec MS - Aqueous (W)

Table with columns: Component, LOD/Units, Method, and results. Includes a Results Legend and Customer Sample Ref. (R71915) with details on sample type and date.



CERTIFICATE OF ANALYSIS

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Location: A303 Amesbury

Client Reference: JFR1451
Order Number:

Report Number: 581226
Superseded Report:

SVOC MS (W) - Aqueous

Results Legend		Customer Sample Ref.	R71915				
#	ISO17025 accredited.	Depth (m)	Sample Type				
M	mCERTS accredited.	Date Sampled	Sampled Time				
aq	Aqueous / settled sample.	Date Received	SDG Ref				
diss.filt	Dissolved / filtered sample.	Lab Sample No.(s)	AGS Reference				
tot.unfilt	Total / unfiltered sample.						
*	Subcontracted - refer to subcontractor report for accreditation status.						
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery						
(F)	Trigger breach confirmed						
1-4*§@	Sample deviation (see appendix)						
Component	LOD/Units	Method					
1,2,4-Trichlorobenzene (aq)	<1 µg/l	TM176	<1	@ #			
1,2-Dichlorobenzene (aq)	<1 µg/l	TM176	<1	@ #			
1,3-Dichlorobenzene (aq)	<1 µg/l	TM176	<1	@ #			
1,4-Dichlorobenzene (aq)	<1 µg/l	TM176	<1	@ #			
2,4,5-Trichlorophenol (aq)	<1 µg/l	TM176	<1	@ #			
2,4,6-Trichlorophenol (aq)	<1 µg/l	TM176	<1	@ #			
2,4-Dichlorophenol (aq)	<1 µg/l	TM176	<1	@ #			
2,4-Dimethylphenol (aq)	<1 µg/l	TM176	<1	@ #			
2,4-Dinitrotoluene (aq)	<1 µg/l	TM176	<1	@ #			
2,6-Dinitrotoluene (aq)	<1 µg/l	TM176	<1	@ #			
2-Chloronaphthalene (aq)	<1 µg/l	TM176	<1	@ #			
2-Chlorophenol (aq)	<1 µg/l	TM176	<1	@ #			
2-Methylnaphthalene (aq)	<1 µg/l	TM176	<1	@ #			
2-Methylphenol (aq)	<1 µg/l	TM176	<1	@ #			
2-Nitroaniline (aq)	<1 µg/l	TM176	<1	@ #			
2-Nitrophenol (aq)	<1 µg/l	TM176	<1	@ #			
3-Nitroaniline (aq)	<1 µg/l	TM176	<1	@ #			
4-Bromophenylphenylether (aq)	<1 µg/l	TM176	<1	@ #			
4-Chloro-3-methylphenol (aq)	<1 µg/l	TM176	<1	@ #			
4-Chloroaniline (aq)	<1 µg/l	TM176	<1	@ #			
4-Chlorophenylphenylether (aq)	<1 µg/l	TM176	<1	@ #			
4-Methylphenol (aq)	<1 µg/l	TM176	<1	@ #			
4-Nitroaniline (aq)	<1 µg/l	TM176	<1	@ #			
4-Nitrophenol (aq)	<1 µg/l	TM176	<1	@ #			
Azobenzene (aq)	<1 µg/l	TM176	<1	@ #			
Acenaphthylene (aq)	<1 µg/l	TM176	<1	@ #			
Acenaphthene (aq)	<1 µg/l	TM176	<1	@ #			
Anthracene (aq)	<1 µg/l	TM176	<1	@ #			
bis(2-Chloroethyl)ether (aq)	<1 µg/l	TM176	<1	@ #			
bis(2-Chloroethoxy)methane (aq)	<1 µg/l	TM176	<1	@ #			
bis(2-Ethylhexyl) phthalate (aq)	<2 µg/l	TM176	<2	@ #			
Butylbenzyl phthalate (aq)	<1 µg/l	TM176	<1	@ #			



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Superseded Report:

SVOC MS (W) - Aqueous

Results Legend		Customer Sample Ref.	R71915					
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	Ground Water (GW) 30/11/2020 01/12/2020 201202-36 23345376					
M	mCERTS accredited.							
aq	Aqueous / settled sample.							
dis.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
*	Subcontracted - refer to subcontractor report for accreditation status.							
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery							
(F)	Trigger breach confirmed							
1-4#&@	Sample deviation (see appendix)							
Component	LOD/Units			Method				
Benzo(a)anthracene (aq)	<1 µg/l	TM176	<1 @ #					
Benzo(b)fluoranthene (aq)	<1 µg/l	TM176	<1 @ #					
Benzo(k)fluoranthene (aq)	<1 µg/l	TM176	<1 @ #					
Benzo(a)pyrene (aq)	<1 µg/l	TM176	<1 @ #					
Benzo(g,h,i)perylene (aq)	<1 µg/l	TM176	<1 @ #					
Carbazole (aq)	<1 µg/l	TM176	<1 @ #					
Chrysene (aq)	<1 µg/l	TM176	<1 @ #					
Dibenzofuran (aq)	<1 µg/l	TM176	<1 @ #					
n-Dibutyl phthalate (aq)	<1 µg/l	TM176	<1 @ #					
Diethyl phthalate (aq)	<1 µg/l	TM176	<1 @ #					
Dibenzo(a,h)anthracene (aq)	<1 µg/l	TM176	<1 @ #					
Dimethyl phthalate (aq)	<1 µg/l	TM176	<1 @ #					
n-Dioctyl phthalate (aq)	<5 µg/l	TM176	<5 @ #					
Fluoranthene (aq)	<1 µg/l	TM176	<1 @ #					
Fluorene (aq)	<1 µg/l	TM176	<1 @ #					
Hexachlorobenzene (aq)	<1 µg/l	TM176	<1 @ #					
Hexachlorobutadiene (aq)	<1 µg/l	TM176	<1 @ #					
Pentachlorophenol (aq)	<1 µg/l	TM176	<1					
Phenol (aq)	<1 µg/l	TM176	<1					
n-Nitroso-n-dipropylamine (aq)	<1 µg/l	TM176	<1 @ #					
Hexachloroethane (aq)	<1 µg/l	TM176	<1 @ #					
Nitrobenzene (aq)	<1 µg/l	TM176	<1 @ #					
Naphthalene (aq)	<1 µg/l	TM176	<1 @ #					
Isophorone (aq)	<1 µg/l	TM176	<1 @ #					
Hexachlorocyclopentadiene (aq)	<1 µg/l	TM176	<1					
Phenanthrene (aq)	<1 µg/l	TM176	<1 @ #					
Indeno(1,2,3-cd)pyrene (aq)	<1 µg/l	TM176	<1 @ #					
Pyrene (aq)	<1 µg/l	TM176	<1 @ #					
SVOC TIC (aq)		TM176	Not Detected @					
Total SVOC TIC	<10 µg/l	TM176	<10					



CERTIFICATE OF ANALYSIS

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Client Reference: JFR1451
Order Number:

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Superseded Report:

TPH CWG (W)

Results Legend		Customer Sample Ref.	R71915				
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	Ground Water (GW) 30/11/2020 01/12/2020 201202-36 23345376				
M	mCERTS accredited.						
aq	Aqueous / settled sample.						
diss.fit	Dissolved / filtered sample.						
tot.unfit	Total / unfiltered sample.						
*	Subcontracted - refer to subcontractor report for accreditation status.						
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery						
(F)	Trigger breach confirmed						
1-4*\$@	Sample deviation (see appendix)						
Component	LOD/Units			Method			
GRO Surrogate % recovery**	%	TM245	103	@			
GRO >C5-C12	<50 µg/l	TM245	<50	@ #			
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245	<3	@ #			
Benzene	<7 µg/l	TM245	<7	@ #			
Toluene	<4 µg/l	TM245	<4	@ #			
Ethylbenzene	<5 µg/l	TM245	<5	@ #			
m,p-Xylene	<8 µg/l	TM245	<8	@ #			
o-Xylene	<3 µg/l	TM245	<3	@ #			
Sum of detected Xylenes	<11 µg/l	TM245	<11	@			
Sum of detected BTEX	<28 µg/l	TM245	<28	@			
Aliphatics >C5-C6	<10 µg/l	TM245	<10	@			
Aliphatics >C6-C8	<10 µg/l	TM245	<10	@			
Aliphatics >C8-C10	<10 µg/l	TM245	<10	@			
Aliphatics >C10-C12	<10 µg/l	TM245	<10	@			
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174	<10				
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174	<10				
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174	<10				
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174	<10				
Aromatics >EC5-EC7	<10 µg/l	TM245	<10	@			
Aromatics >EC7-EC8	<10 µg/l	TM245	<10	@			
Aromatics >EC8-EC10	<10 µg/l	TM245	<10	@			
Aromatics >EC10-EC12	<10 µg/l	TM245	<10	@			
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174	<10				
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174	<10				
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174	<10				
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174	<10				
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174	<10				
Aliphatics >C16-C35 Aqueous	<10 µg/l	TM174	<10				



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Superseded Report:

VOC MS (W)

Results Legend # ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4*# Sample deviation (see appendix)		Customer Sample Ref. Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	R71915				
Component	LOD/Units	Method					
Dibromofluoromethane**	%	TM208	120				
Toluene-d8**	%	TM208	99.5				
4-Bromofluorobenzene**	%	TM208	99.7				
Dichlorodifluoromethane	<1 µg/l	TM208	<1	@ #			
Chloromethane	<1 µg/l	TM208	<1	#			
Vinyl chloride	<1 µg/l	TM208	<1	#			
Bromomethane	<1 µg/l	TM208	<1	#			
Chloroethane	<1 µg/l	TM208	<1	#			
Trichlorofluoromethane	<1 µg/l	TM208	<1	#			
1,1-Dichloroethene	<1 µg/l	TM208	<1	#			
Carbon disulphide	<1 µg/l	TM208	<1	#			
Dichloromethane	<3 µg/l	TM208	<3	#			
Methyl tertiary butyl ether (MTBE)	<1 µg/l	TM208	<1	#			
trans-1,2-Dichloroethene	<1 µg/l	TM208	<1	#			
1,1-Dichloroethane	<1 µg/l	TM208	<1	#			
cis-1,2-Dichloroethene	<1 µg/l	TM208	<1	#			
2,2-Dichloropropane	<1 µg/l	TM208	<1	#			
Bromochloromethane	<1 µg/l	TM208	<1	#			
Chloroform	<1 µg/l	TM208	<1	#			
1,1,1-Trichloroethane	<1 µg/l	TM208	<1	#			
1,1-Dichloropropene	<1 µg/l	TM208	<1	#			
Carbontetrachloride	<1 µg/l	TM208	<1	#			
1,2-Dichloroethane	<1 µg/l	TM208	<1	#			
Benzene	<1 µg/l	TM208	<1	#			
Trichloroethene	<1 µg/l	TM208	<1	#			
1,2-Dichloropropane	<1 µg/l	TM208	<1	#			
Dibromomethane	<1 µg/l	TM208	<1	#			
Bromodichloromethane	<1 µg/l	TM208	<1	#			
cis-1,3-Dichloropropene	<1 µg/l	TM208	<1	#			
Toluene	<1 µg/l	TM208	<1	#			
trans-1,3-Dichloropropene	<1 µg/l	TM208	<1	#			
1,1,2-Trichloroethane	<1 µg/l	TM208	<1	#			



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VOC MS (W)

Results Legend		Customer Sample Ref.	R71915				
#	ISO17025 accredited.	Depth (m)	Sample Type				
M	mCERTS accredited.	Sample Type	Date Sampled				
sq	Aqueous / settled sample.	Sampled Time	Date Received				
dis.filt	Dissolved / filtered sample.	SDG Ref	Lab Sample No.(s)				
tot.unfilt	Total / unfiltered sample.	AGS Reference					
*	Subcontracted - refer to subcontractor report for accreditation status.						
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery						
(F)	Trigger breach confirmed						
1-4&@	Sample deviation (see appendix)						
Component	LOD/Units	Method					
1,3-Dichloropropane	<1 µg/l	TM208	<1	#			
Tetrachloroethene	<1 µg/l	TM208	<1	#			
Dibromochloromethane	<1 µg/l	TM208	<1	#			
1,2-Dibromoethane	<1 µg/l	TM208	<1	#			
Chlorobenzene	<1 µg/l	TM208	<1	#			
1,1,1,2-Tetrachloroethane	<1 µg/l	TM208	<1	#			
Ethylbenzene	<1 µg/l	TM208	<1	#			
m,p-Xylene	<1 µg/l	TM208	<1	#			
o-Xylene	<1 µg/l	TM208	<1	#			
Styrene	<1 µg/l	TM208	<1	#			
Bromoform	<1 µg/l	TM208	<1	#			
Isopropylbenzene	<1 µg/l	TM208	<1	#			
1,1,2,2-Tetrachloroethane	<1 µg/l	TM208	<1	#			
1,2,3-Trichloropropane	<1 µg/l	TM208	<1	#			
Bromobenzene	<1 µg/l	TM208	<1	#			
Propylbenzene	<1 µg/l	TM208	<1	#			
2-Chlorotoluene	<1 µg/l	TM208	<1	#			
1,3,5-Trimethylbenzene	<1 µg/l	TM208	<1	#			
4-Chlorotoluene	<1 µg/l	TM208	<1	#			
tert-Butylbenzene	<1 µg/l	TM208	<1	#			
1,2,4-Trimethylbenzene	<1 µg/l	TM208	<1	#			
sec-Butylbenzene	<1 µg/l	TM208	<1	#			
4-iso-Propyltoluene	<1 µg/l	TM208	<1	#			
1,3-Dichlorobenzene	<1 µg/l	TM208	<1	#			
1,4-Dichlorobenzene	<1 µg/l	TM208	<1	#			
n-Butylbenzene	<1 µg/l	TM208	<1	@ #			
1,2-Dichlorobenzene	<1 µg/l	TM208	<1	#			
1,2-Dibromo-3-chloropropane	<1 µg/l	TM208	<1	#			
1,2,4-Trichlorobenzene	<1 µg/l	TM208	<1	#			
Hexachlorobutadiene	<1 µg/l	TM208	<1	@ #			
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208	<1	#			
Naphthalene	<1 µg/l	TM208	<1	#			



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Table of Results - Appendix

Method No	Reference	Description
TM043	Method 2320B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part109 1984	Determination of alkalinity in aqueous samples
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM104	Method 4500F, AWWA/APHA, 20th Ed., 1999	Determination of Fluoride using the Kone Analyser
TM120	Method 2510B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part 9:1970	Determination of Electrical Conductivity using a Conductivity Meter
TM123	BS 2690: Part 121:1981	The Determination of Total Dissolved Solids in Water
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM174	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID
TM176	EPA 8270D Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of SVOCs in Water by GCMS
TM178	Modified: US EPA Method 8100	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS in Waters
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM187	Winkler, L.W, Ber Deutsch. Chem. Ges, 21,2843,1888."	Dissolved Oxygen in Natural and Waste Waters HMSO 1979 ISBN 011 751442
TM195	Colour and Turbidity of water. Methods for the Examination of Waters and Associated Materials. HMSO, 1981, ISBN 0 11 751955 3.	Determination of Turbidity in Waters & Associated Matrices
TM197	Modified: US EPA Method 8082.EA Method 174 and 5109631	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Waters
TM208	Modified: US EPA Method 8260b & 624	Determination of Volatile Organic Compounds by Headspace / GC-MS in Waters
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser
TM245	By GC-FID	Determination of GRO by Headspace in waters
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC
TM343	EPA 8270D - Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of Selected Pesticides (Suite I) in Liquids by GCMS
TM344	EPA 8270D – Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of selected pesticides (Suite II) by GCMS

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).



CERTIFICATE OF ANALYSIS

Validated

SDG: 201202-36
Location: A303 Amesbury

Client Reference: JFR1451
Order Number:

Report Number: 581226
Superseded Report:

Test Completion Dates

Lab Sample No(s) 23345376
 Customer Sample Ref. R71915
 AGS Ref.
 Depth
 Type Ground Water

Alkalinity as CaCO3	21-Dec-2020
Ammoniacal Nitrogen	22-Dec-2020
Anions by Kone (w)	21-Dec-2020
Chromium III	22-Dec-2020
Conductivity (at 20 deg.C)	17-Dec-2020
Cyanide Comp/Free/Total/Thiocyanate	18-Dec-2020
Dissolved Metals by ICP-MS	22-Dec-2020
Dissolved Organic/Inorganic Carbon	18-Dec-2020
Dissolved Oxygen by Titration	21-Dec-2020
EPH CWG (Aliphatic) Aqueous GC (W)	22-Dec-2020
EPH CWG (Aromatic) Aqueous GC (W)	22-Dec-2020
Fluoride	17-Dec-2020
GRO by GC-FID (W)	18-Dec-2020
Hexavalent Chromium (w)	17-Dec-2020
Mercury Dissolved	22-Dec-2020
Nitrite by Kone (w)	17-Dec-2020
PAH Spec MS - Aqueous (W)	22-Dec-2020
PCB Congeners - Aqueous (W)	22-Dec-2020
Pesticides (Suite I) by GCMS	22-Dec-2020
Pesticides (Suite II) by GCMS	22-Dec-2020
pH Value	17-Dec-2020
Phenols by HPLC (W)	17-Dec-2020
Phosphate by Kone (w)	17-Dec-2020
SVOC MS (W) - Aqueous	21-Dec-2020
Total Dissolved Solids	17-Dec-2020
TPH CWG (W)	22-Dec-2020
Turbidity in waters	17-Dec-2020
VOC MS (W)	21-Dec-2020



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ASSOCIATED AQC DATA

Alkalinity as CaCO3

Component	Method Code	QC 2319
Total Alkalinity as CaCO3	TM043	101.52 94.47 : 104.41

Ammoniacal Nitrogen

Component	Method Code	QC 2310
Ammoniacal Nitrogen as N	TM099	98.8 91.28 : 106.64

Anions by Kone (w)

Component	Method Code	QC 2390
Chloride	TM184	110.0 92.93 : 115.43
Sulphate (soluble)	TM184	105.6 90.53 : 113.03
TON as NO3	TM184	106.0 99.60 : 111.90

Conductivity (at 20 deg.C)

Component	Method Code	QC 2338
Conductivity (at 20 deg.C)	TM120	103.76 100.75 : 105.26

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2333
Free Cyanide (W)	TM227	97.75 90.50 : 114.50
Thiocyanate (W)	TM227	102.25 90.50 : 113.00
Total Cyanide (W)	TM227	99.75 91.75 : 112.75

Dissolved Metals by ICP-MS

Component	Method Code	QC 2315	QC 2356
Aluminium	TM152	109.0 94.21 : 111.52	103.0 94.21 : 111.52
Antimony	TM152	101.67 88.37 : 130.57	100.83 88.37 : 130.57
Arsenic	TM152	101.17 92.62 : 113.52	98.17 92.62 : 113.52



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Dissolved Metals by ICP-MS

		QC 2315	QC 2356
Barium	TM152	103.83 88.62 : 113.14	103.17 88.62 : 113.14
Beryllium	TM152	107.83 87.08 : 111.38	101.83 87.08 : 111.38
Bismuth	TM152	100.67 92.62 : 115.02	101.5 92.62 : 115.02
Boron	TM152	116.0 86.31 : 120.88	106.0 86.31 : 120.88
Cadmium	TM152	105.0 93.85 : 111.65	101.17 93.85 : 111.65
Calcium	TM152	102.0 89.20 : 126.91	99.33 89.20 : 126.91
Chromium	TM152	101.83 92.50 : 113.03	97.33 92.50 : 113.03
Cobalt	TM152	100.33 85.01 : 114.87	97.33 85.01 : 114.87
Copper	TM152	103.17 89.87 : 119.73	97.33 89.87 : 119.73
Iron	TM152	104.0 93.02 : 113.86	99.33 93.02 : 113.86
Lead	TM152	103.5 91.11 : 116.98	102.83 91.11 : 116.98
Lithium	TM152	110.67 87.70 : 115.90	99.83 87.70 : 115.90
Magnesium	TM152	102.67 89.60 : 116.61	98.67 89.60 : 116.61
Manganese	TM152	104.5 93.97 : 112.46	100.67 93.97 : 112.46
Molybdenum	TM152	100.17 89.07 : 110.96	97.17 89.07 : 110.96
Nickel	TM152	103.0 93.70 : 112.15	98.0 93.70 : 112.15
Phosphorus	TM152	103.0 89.24 : 114.18	99.17 89.24 : 114.18
Potassium	TM152	102.67 93.20 : 115.55	100.67 93.20 : 115.55
Selenium	TM152	104.0 91.69 : 117.12	100.0 91.69 : 117.12
Silver	TM152	102.67 90.93 : 121.73	97.83 90.93 : 121.73
Sodium	TM152	104.0 92.42 : 113.24	98.0 92.42 : 113.24
Strontium	TM152	105.0 92.14 : 116.24	101.67 92.14 : 116.24
Tellurium	TM152	98.17 89.88 : 111.78	97.5 89.88 : 111.78
Thallium	TM152	97.33 82.43 : 113.83	96.5 82.43 : 113.83
Tin	TM152	102.0 94.62 : 107.79	100.33 94.62 : 107.79
Titanium	TM152	105.17 90.29 : 115.23	102.67 90.29 : 115.23
Tungsten	TM152	101.17 77.61 : 132.31	100.0 77.61 : 132.31



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Dissolved Metals by ICP-MS

		QC 2315	QC 2356
Uranium	TM152	102.5 86.97 : 115.76	101.5 86.97 : 115.76
Vanadium	TM152	102.17 89.61 : 115.48	97.67 89.61 : 115.48
Zinc	TM152	103.33 87.51 : 116.26	99.0 87.51 : 116.26

Dissolved Organic/Inorganic Carbon

Component	Method Code	QC 2383
Dissolved Inorganic Carbon	TM090	104.5 93.58 : 112.28
Dissolved Organic Carbon	TM090	101.67 96.13 : 109.53

EPH CWG (Aliphatic) Aqueous GC (W)

Component	Method Code	QC 2389
Total Aliphatics >C10-C40	TM174	110.56 69.79 : 134.39

EPH CWG (Aromatic) Aqueous GC (W)

Component	Method Code	QC 2303
Total Aromatics >EC10-EC40	TM174	82.68 59.92 : 128.54

Fluoride

Component	Method Code	QC 2391
Fluoride	TM104	103.33 96.67 : 108.67

GRO by GC-FID (W)

Component	Method Code	QC 2326
Benzene by GC	TM245	97.0 79.13 : 118.84
Ethylbenzene by GC	TM245	97.0 79.54 : 115.99
m & p Xylene by GC	TM245	95.75 78.44 : 116.32
MTBE GC-FID	TM245	101.0 81.43 : 120.09



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GRO by GC-FID (W)

		QC 2326
o Xylene by GC	TM245	96.0 76.85 : 120.29
QC	TM245	92.51 71.58 : 131.01
Toluene by GC	TM245	95.0 79.00 : 121.96

Hexavalent Chromium (w)

Component	Method Code	QC 2307
Hexavalent Chromium	TM241	99.0 94.17 : 106.17

Mercury Dissolved

Component	Method Code	QC 2383
Mercury Dissolved (CVAf)	TM183	84.1 0.00 : 0.00

PAH Spec MS - Aqueous (W)

Component	Method Code	QC 2314
Acenaphthene by GCMS	TM178	108.8 90.45 : 118.63
Acenaphthylene by GCMS	TM178	107.2 90.13 : 116.27
Anthracene by GCMS	TM178	103.6 92.40 : 114.00
Benz(a)anthracene by GCMS	TM178	105.2 89.51 : 117.69
Benzo(a)pyrene by GCMS	TM178	101.6 89.43 : 118.57
Benzo(b)fluoranthene by GCMS	TM178	101.6 87.80 : 121.80
Benzo(ghi)perylene by GCMS	TM178	104.0 87.10 : 119.30
Benzo(k)fluoranthene by GCMS	TM178	99.6 93.23 : 123.57
Chrysene by GCMS	TM178	104.8 88.68 : 116.92
Dibenzo(ah)anthracene by GCMS	TM178	102.0 86.24 : 118.56
Fluoranthene by GCMS	TM178	101.2 86.04 : 121.96
Fluorene by GCMS	TM178	106.8 90.76 : 121.24
Indeno(123cd)pyrene by GCMS	TM178	95.2 88.39 : 119.61



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PAH Spec MS - Aqueous (W)

		QC 2314
Naphthalene by GCMS	TM178	108.4 89.40 : 121.80
Phenanthrene by GCMS	TM178	106.0 90.41 : 119.19
Pyrene by GCMS	TM178	99.6 91.00 : 120.20

PCB Congeners - Aqueous (W)

Component	Method Code	QC 2322
PCB congener 101	TM197	101.6 85.28 : 119.60
PCB congener 105	TM197	104.4 81.16 : 119.80
PCB congener 114	TM197	104.0 88.32 : 118.08
PCB congener 118	TM197	103.6 87.76 : 117.04
PCB congener 123	TM197	110.4 86.80 : 117.28
PCB congener 126	TM197	102.8 84.56 : 116.00
PCB congener 138	TM197	104.4 83.00 : 117.80
PCB congener 153	TM197	106.8 84.12 : 117.00
PCB congener 156	TM197	104.4 82.24 : 119.20
PCB congener 157	TM197	105.2 84.96 : 116.40
PCB congener 167	TM197	105.2 81.64 : 119.32
PCB congener 169	TM197	103.6 84.60 : 117.96
PCB congener 180	TM197	106.4 80.40 : 119.04
PCB congener 189	TM197	104.8 81.56 : 119.00
PCB congener 28	TM197	99.6 83.20 : 117.04
PCB congener 52	TM197	101.2 81.84 : 119.52
PCB congener 77	TM197	102.0 81.96 : 117.24
PCB congener 81	TM197	102.0 82.28 : 120.20

Pesticides (Suite I) by GCMS



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Superseded Report:

Pesticides (Suite I) by GCMS

Component	Method Code	QC 2313
Aldrin - (Inst.)	TM343	29.96 59.75 : 143.00
alpha-HCH - (Inst.)	TM343	69.33 75.03 : 148.38
beta-HCH - (Inst.)	TM343	80.2 75.85 : 146.50
cis-Chlordane - (Inst.)	TM343	63.21 71.78 : 137.03
delta-HCH - (Inst.)	TM343	86.04 76.38 : 138.48
Dieldrin - (Inst.)	TM343	85.2 77.45 : 154.10
Endosulphan I - (Inst.)	TM343	71.92 91.30 : 168.70
Endosulphan II - (Inst.)	TM343	79.95 82.68 : 161.13
Endosulphan Sulphate - (Inst.)	TM343	77.39 60.50 : 159.50
Endrin - (Inst.)	TM343	93.06 85.55 : 163.70
gamma-HCH (Lindane) - (Inst.)	TM343	71.7 72.98 : 157.58
Heptachlor - (Inst.)	TM343	40.2 57.70 : 149.20
Heptachlor epoxide - (Inst.)	TM343	64.22 71.08 : 140.38
Isodrin - (Inst.)	TM343	51.94 55.55 : 144.50
o,p-DDD (TDE) - (Inst.)	TM343	77.4 68.83 : 141.43
o,p-DDE - (Inst.)	TM343	54.67 63.00 : 139.20
o,p-DDT - (Inst.)	TM343	95.37 68.05 : 148.15
o,p-Methoxychlor - (Inst.)	TM343	86.98 63.95 : 156.80
p,p-DDD (TDE) - (Inst.)	TM343	71.26 64.33 : 143.53
p,p-DDE - (Inst.)	TM343	61.76 65.40 : 140.85
p,p-DDT - (Inst.)	TM343	96.81 60.08 : 157.13
p,p-Methoxychlor - (Inst.)	TM343	88.52 59.70 : 157.40
Permethrin I - (Inst.)	TM343	73.7 63.25 : 146.35
Permethrin II - (Inst.)	TM343	82.58 62.23 : 147.28
trans-Chlordane - (Inst.)	TM343	64.31 70.75 : 142.30
Trifluralin - (Inst.)	TM343	43.95 64.73 : 161.48



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pH Value

Component	Method Code	QC 2354
pH	TM256	101.6 99.33 : 102.54

Phenols by HPLC (W)

Component	Method Code	QC 2309
2,3,5 Trimethyl-Phenol by HPLC (W)	TM259	102.0 91.00 : 109.00
2-Isopropyl Phenol by HPLC (W)	TM259	103.0 85.00 : 109.00
Cresols by HPLC (W)	TM259	99.0 92.00 : 110.00
Naphthol by HPLC (W)	TM259	110.0 86.00 : 128.00
Phenol by HPLC (W)	TM259	102.0 88.24 : 111.76
Xylenols by HPLC (W)	TM259	105.33 94.83 : 110.83

Phosphate by Kone (w)

Component	Method Code	QC 2383
Phosphate (Ortho as PO4)	TM184	105.6 96.40 : 109.60

SVOC MS (W) - Aqueous

Component	Method Code	QC 2365
4-Bromophenylphenylether	TM176	88.0 61.60 : 106.72
Benzo(a)anthracene	TM176	91.2 64.64 : 115.52
Benzo(a)pyrene	TM176	96.0 60.56 : 115.28
Butylbenzyl phthalate	TM176	80.8 57.12 : 116.16
Hexachlorobutadiene	TM176	73.04 52.88 : 95.12
Naphthalene	TM176	92.0 65.68 : 110.32
Nitrobenzene	TM176	86.4 57.12 : 109.44
Phenol	TM176	48.24 37.60 : 70.72

Total Dissolved Solids



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Total Dissolved Solids

Component	Method Code	QC 2328
Total Dissolved Solids	TM123	98.9 97.30 : 100.92

Turbidity in waters

Component	Method Code	QC 2311
Turbidity	TM195	101.5 83.75 : 121.25

VOC MS (W)

Component	Method Code	QC 2379
1,1,1,2-Tetrachloroethane	TM208	99.0 79.47 : 113.27
1,1,1-Trichloroethane	TM208	98.0 81.01 : 112.00
1,1-Dichloroethane	TM208	102.0 82.09 : 116.41
1,2-Dichloroethane	TM208	102.0 80.28 : 123.63
2-Chlorotoluene	TM208	100.5 83.31 : 110.91
4-Chlorotoluene	TM208	102.0 84.01 : 111.46
Benzene	TM208	101.5 87.46 : 118.30
Bromomethane	TM208	105.0 76.99 : 118.39
Carbon tetrachloride	TM208	99.5 81.73 : 114.22
Chlorobenzene	TM208	102.5 90.24 : 109.71
Chloroform	TM208	101.5 83.67 : 118.08
Chloromethane	TM208	108.0 70.42 : 127.06
Cis-1,2-Dichloroethene	TM208	102.5 83.95 : 112.60
Dichloromethane	TM208	103.5 81.65 : 120.83
Ethylbenzene	TM208	96.0 85.59 : 106.44
Hexachlorobutadiene	TM208	93.5 66.83 : 108.27
o-Xylene	TM208	97.0 78.40 : 110.68



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VOC MS (W)

		QC 2379
p/m-Xylene	TM208	97.0 82.64 : 112.12
Tert-butyl methyl ether	TM208	99.0 68.23 : 127.69
Tetrachloroethene	TM208	101.5 81.10 : 112.63
Toluene	TM208	100.0 87.40 : 109.78
Trichloroethene	TM208	98.5 81.17 : 111.80
Vinyl Chloride	TM208	102.0 72.73 : 123.40

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.

The figure detailed is the percentage recovery result for the AQC.

The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.



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SDG: 201202-36
Location: A303 Amesbury

Client Reference: JFR1451
Order Number:

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Superseded Report:

Chromatogram

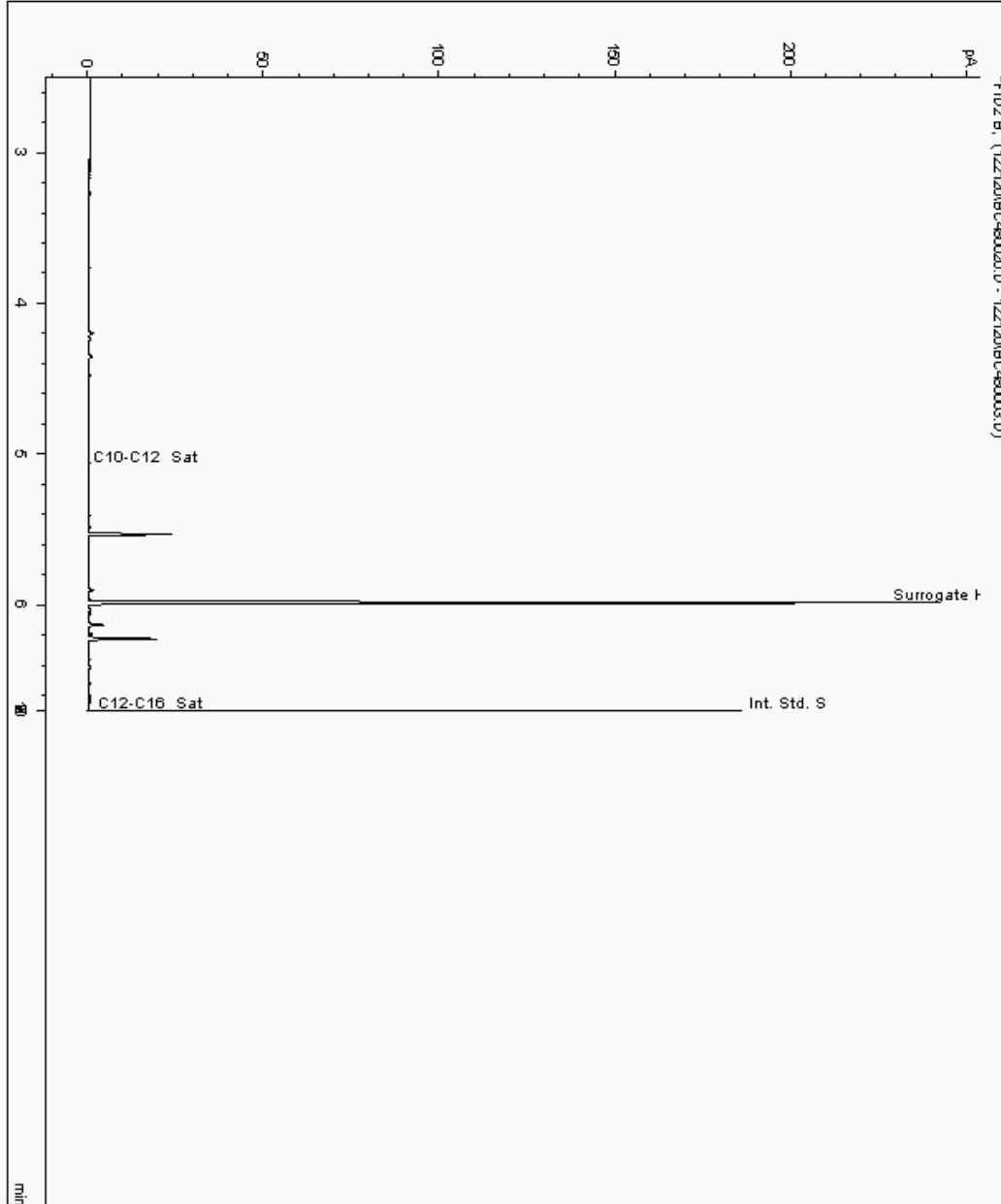
Analysis: EPH CWG (Aliphatic) Aqueous GC (W)

Sample No : 23449952
Sample ID : R71915

Depth :

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 21982461-
Date Acquired : 21/12/2020 23:29:18 PM
Units : ppb
Dilution : SE R71915[1] ->
CF : 1
Multiplier : 0.025





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Report Number: 581226
Superseded Report:

Chromatogram

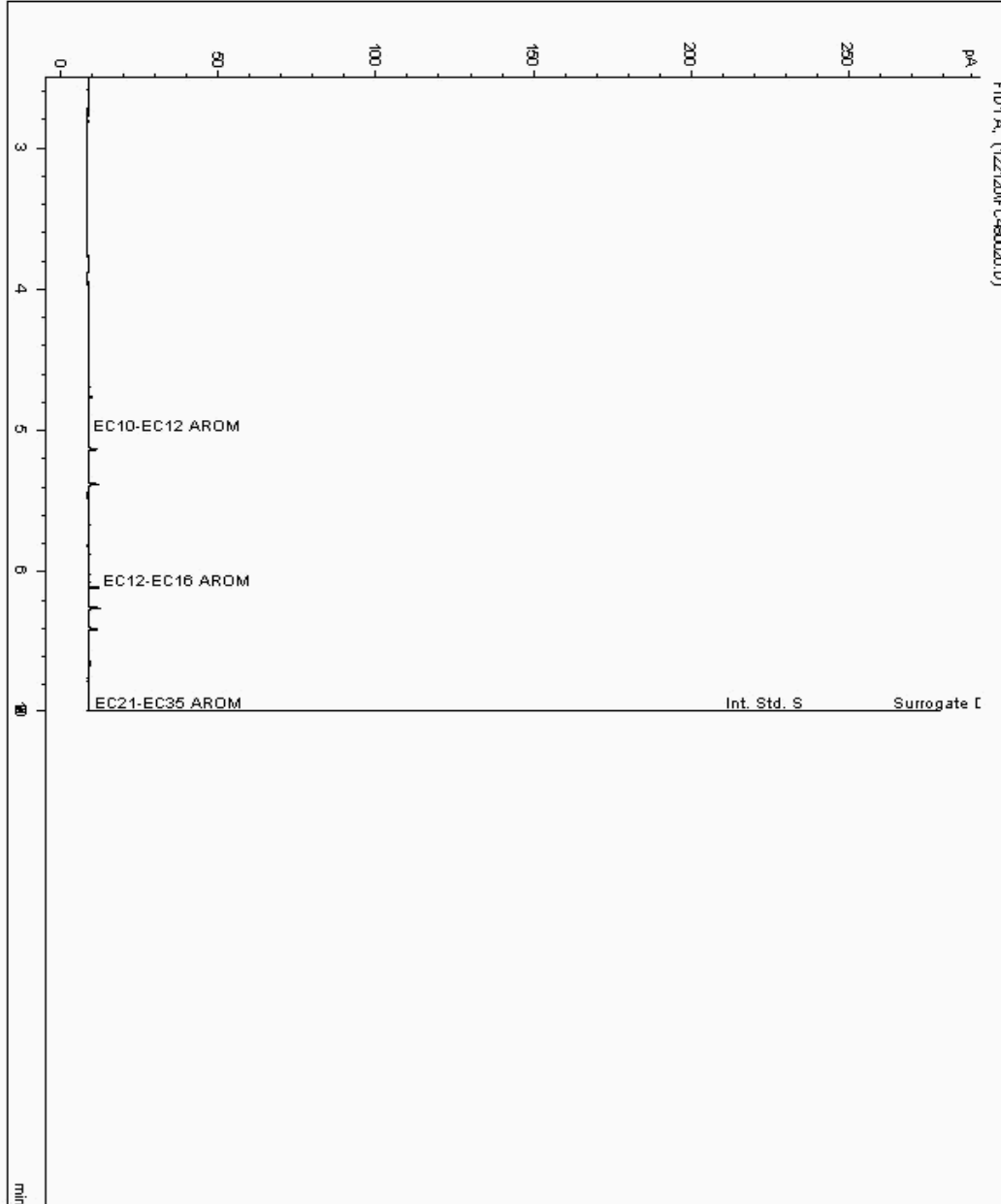
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 23449952
Sample ID : R71915

Depth :

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 21982462-
Date Acquired : 21/12/2020 23:29:17 PM
Units : ppb
Dilution : SE R71915[1] ->
CF : 1
Multiplier : 0.025





CERTIFICATE OF ANALYSIS

Validated

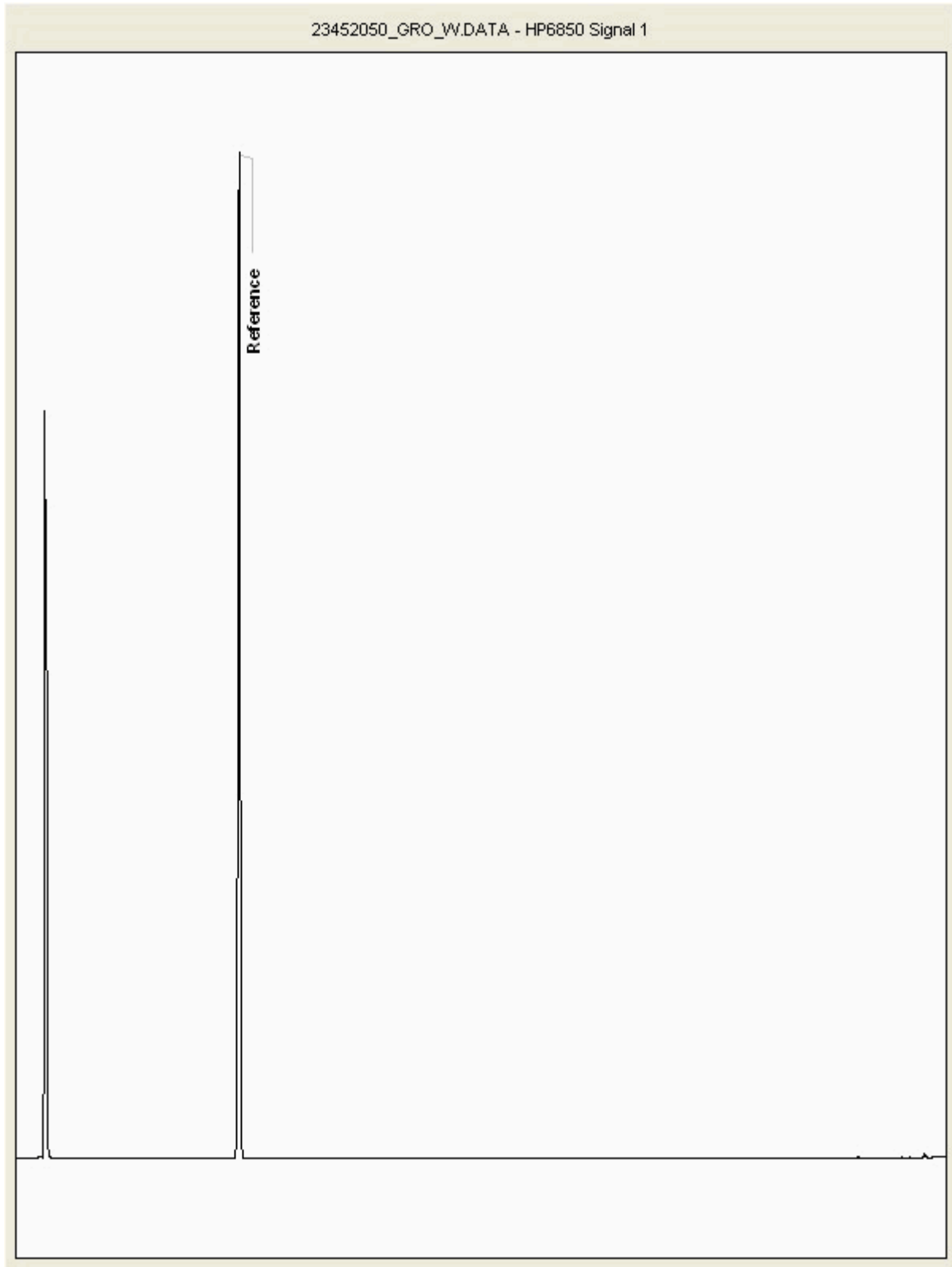
SDG: 201202-36 Client Reference: JFR1451 Report Number: 581226
Location: A303 Amesbury Order Number: Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 23452050
Sample ID : R71915

Depth :





CERTIFICATE OF ANALYSIS

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Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with HeadSpace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

19. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung. Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017)*.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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RPS Consultants Ltd
260 Park Avenue
Aztec West
Almondsbury
Bristol
BS32 4SY

Attention: Gary Riches

CERTIFICATE OF ANALYSIS

Date of report Generation: 16 December 2020
Customer: RPS Consultants Ltd
Sample Delivery Group (SDG): 201204-78
Your Reference: JFR1451
Location: A303 Stonehenge
Report No: 580279

We received 1 sample on Friday December 04, 2020 and 1 of these samples were scheduled for analysis which was completed on Wednesday December 16, 2020. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

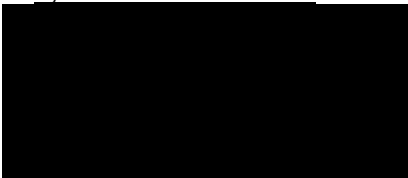
Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

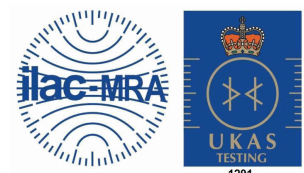
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:



Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 201204-78 **Client Reference:** JFR1451 **Report Number:** 580279
Location: A303 Stonehenge **Order Number:** **Superseded Report:**

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
23365259	R71905			02/12/2020

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG:	201204-78	Client Reference:	JFR1451	Report Number:	580279
Location:	A303 Stonehenge	Order Number:		Superseded Report:	

Results Legend <div style="display: flex; flex-direction: column; gap: 5px;"> <div style="display: flex; align-items: center;">X Test</div> <div style="display: flex; align-items: center;">N No Determination Possible</div> </div> Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other	Lab Sample No(s)										
	Customer Sample Reference										
	AGS Reference										
	Depth (m)										
	Container	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	DO KIT + DO 250 ml glass	330ml plastic bottle (ALE503)	250ml Amber Gl. PTFE/PE	0.5l glass bottle (ALE227)		
	Sample Type	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW
		NDPs: 0	Tests: 1								
Alkalinity as CaCO3	All				X						
Ammoniacal Nitrogen	All								X		
Anions by Kone (w)	All					X					
Chromium III	All								X		
Conductivity (at 20 deg.C)	All					X					
Cyanide Comp/Free/Total/Thiocyanate	All									X	
Dissolved Metals by ICP-MS	All									X	
Dissolved Organic/Inorganic Carbon	All							X			
Dissolved Oxygen by Titration	All								X		
EPH CWG (Aliphatic) Aqueous GC (W)	All									X	
EPH CWG (Aromatic) Aqueous GC (W)	All									X	
Fluoride	All								X		
GRO by GC-FID (W)	All									X	
Hexavalent Chromium (w)	All									X	
Mercury Dissolved	All									X	



CERTIFICATE OF ANALYSIS

Validated

SDG:	201204-78	Client Reference:	JFR1451	Report Number:	580279
Location:	A303 Stonehenge	Order Number:		Superseded Report:	

#	ISO17025 accredited.	Customer Sample Ref.	R71905			
Results Legend		Depth (m)	Sample Type	Date Sampled	Sampled Time	Date Received
M		TM043	Ground Water (GW)	02/12/2020	16:00:00	04/12/2020
aq		TM043				
diss.filt		TM043				
tot.unfilt		TM043				
* Subcontracted - refer to subcontractor report for accreditation status.		TM043				
** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		TM043				
(F) Trigger breach confirmed		TM043				
1-4-8@ Sample deviation (see appendix)		TM043				
Component	LOD/Units	Method				
Alkalinity, Total as CaCO3	<2 mg/l	TM043	422	#		
Alkalinity, Bicarbonate as CaCO3	<2 mg/l	TM043	422	#		
Alkalinity, Carbonate as CaCO3	<2 mg/l	TM043	<2	#		
Carbon, Organic (diss.filt)	<3 mg/l	TM090	<3	#		
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099	<0.2	#		
Fluoride	<0.5 mg/l	TM104	<0.5	#		
Conductivity @ 20 deg.C	<0.02 mS/cm	TM120	0.445	#		
Dissolved solids, Total (meter)	<5 mg/l	TM123	350	#		
Chromium, Trivalent	<0.03 mg/l	TM152	<0.03	#		
Antimony (diss.filt)	<1 µg/l	TM152	<1	#		
Arsenic (diss.filt)	<0.5 µg/l	TM152	<0.5	#		
Beryllium (diss.filt)	<0.1 µg/l	TM152	<0.1	#		
Boron (diss.filt)	<10 µg/l	TM152	<10	#		
Cadmium (diss.filt)	<0.08 µg/l	TM152	<0.08	#		
Chromium (diss.filt)	<1 µg/l	TM152	<1	#		
Copper (diss.filt)	<0.3 µg/l	TM152	0.668	#		
Lead (diss.filt)	<0.2 µg/l	TM152	<0.2	#		
Manganese (diss.filt)	<3 µg/l	TM152	3.05	#		
Molybdenum (diss.filt)	<3 µg/l	TM152	<3	#		
Nickel (diss.filt)	<0.4 µg/l	TM152	1.9	#		
Phosphorus (diss.filt)	<10 µg/l	TM152	<10	#		
Selenium (diss.filt)	<1 µg/l	TM152	<1	#		
Zinc (diss.filt)	<1 µg/l	TM152	2.9	#		
Sodium (Dis.Filt)	<0.076 mg/l	TM152	6.09	#		
Magnesium (Dis.Filt)	<0.036 mg/l	TM152	0.919	#		
Potassium (Dis.Filt)	<0.2 mg/l	TM152	0.329	#		
Calcium (Dis.Filt)	<0.2 mg/l	TM152	87	#		
Iron (Dis.Filt)	<0.019 mg/l	TM152	0.0228	#		
Mercury (diss.filt)	<0.01 µg/l	TM183	<0.01	#		
Nitrite as NO2	<0.05 mg/l	TM184	<0.05	#		
Phosphate (Ortho as PO4)	<0.05 mg/l	TM184	<0.05	#		
Sulphate	<2 mg/l	TM184	10.5	#		



CERTIFICATE OF ANALYSIS

Validated

SDG:	201204-78	Client Reference:	JFR1451	Report Number:	580279
Location:	A303 Stonehenge	Order Number:		Superseded Report:	

Results Legend		Customer Sample Ref.				
# ISO17025 accredited. M mCERTS accredited. sq Aqueous / settled sample. dis.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4-#@ Sample deviation (see appendix)	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	R71905				
Component	LOD/Units	Method				
Chloride	<2 mg/l	TM184	16.7	#		
Phosphate (Ortho as P)	<0.02 mg/l	TM184	<0.02	#		
Nitrate as NO3	<0.3 mg/l	TM184	26.9			
Oxygen, dissolved	<0.3 mg/l	TM187	9	#		
Turbidity	<0.1 ntu	TM195	630	@ #		
PCB congener 28	<0.015 µg/l	TM197	<0.015			
PCB congener 52	<0.015 µg/l	TM197	<0.015			
PCB congener 101	<0.015 µg/l	TM197	<0.015			
PCB congener 118	<0.015 µg/l	TM197	<0.015			
PCB congener 138	<0.015 µg/l	TM197	<0.015			
PCB congener 153	<0.015 µg/l	TM197	<0.015			
PCB congener 180	<0.015 µg/l	TM197	<0.015			
Sum of detected EC7 PCB's	<0.105 µg/l	TM197	<0.105			
Cyanide, Total	<0.05 mg/l	TM227	<0.05	#		
Cyanide, Free	<0.05 mg/l	TM227	<0.05	#		
Chromium, Hexavalent	<0.03 mg/l	TM241	<0.03	#		
pH	<1 pH Units	TM256	7.43	#		
Phenol	<0.002 mg/l	TM259	<0.002	#		
Cresols	<0.006 mg/l	TM259	<0.006	#		
Xylenols	<0.008 mg/l	TM259	<0.008	#		
Phenols, Total Detected monohydric	<0.016 mg/l	TM259	<0.016	#		
Trifluralin	<0.01 µg/l	TM343	<0.01			
alpha-HCH	<0.01 µg/l	TM343	<0.01			
gamma-HCH (Lindane)	<0.01 µg/l	TM343	<0.01			
Heptachlor	<0.01 µg/l	TM343	<0.01			
Aldrin	<0.01 µg/l	TM343	<0.01			
beta-HCH	<0.01 µg/l	TM343	<0.01			
Isodrin	<0.01 µg/l	TM343	<0.01			
delta-HCH	<0.01 µg/l	TM343	<0.01			
Heptachlor epoxide	<0.01 µg/l	TM343	<0.01			
o,p'-DDE	<0.01 µg/l	TM343	<0.01			
Endosulphan I	<0.01 µg/l	TM343	<0.01			



CERTIFICATE OF ANALYSIS

Validated

SDG: 201204-78
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 580279
Superseded Report:

Results Legend		Customer Sample Ref.					
# ISO17025 accredited. M mCERTS accredited. sq Aqueous / settled sample. diss.fit Dissolved / filtered sample. tot.unfit Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery. (F) Trigger breach confirmed 1-4*5@ Sample deviation (see appendix)		R71905					
		Depth (m)					
		Sample Type	Ground Water (GW)				
		Date Sampled	02/12/2020				
		Sampled Time	16:00:00				
		Date Received	04/12/2020				
		SDG Ref	201204-78				
		Lab Sample No.(s)	23365259				
		AGS Reference					
Component	LOD/Units	Method					
trans-Chlordane	<0.01 µg/l	TM343	<0.01				
cis-Chlordane	<0.01 µg/l	TM343	<0.01				
p,p'-DDE	<0.01 µg/l	TM343	<0.01				
Dieldrin	<0.01 µg/l	TM343	<0.01				
o,p'-DDD (TDE)	<0.01 µg/l	TM343	<0.01				
Endrin	<0.01 µg/l	TM343	<0.01				
o,p'-DDT	<0.01 µg/l	TM343	<0.01				
p,p'-DDD (TDE)	<0.01 µg/l	TM343	<0.01				
Endosulphan II	<0.02 µg/l	TM343	<0.02				
p,p'-DDT	<0.01 µg/l	TM343	<0.01				
o,p'-Methoxychlor	<0.01 µg/l	TM343	<0.01				
p,p'-Methoxychlor	<0.01 µg/l	TM343	<0.02				
Endosulphan Sulphate	<0.02 µg/l	TM343	<0.04				
Permethrin I	<0.01 µg/l	TM343	<0.01				
Permethrin II	<0.01 µg/l	TM343	<0.01				
1,3,5-Trichlorobenzene	<0.01 µg/l	TM344	<0.01				
Hexachlorobutadiene	<0.01 µg/l	TM344	<0.01				
1,2,4-Trichlorobenzene	<0.01 µg/l	TM344	<0.01				
1,2,3-Trichlorobenzene	<0.01 µg/l	TM344	<0.01				
Dichlorvos	<0.01 µg/l	TM344	<0.01				
Dichlobenil	<0.01 µg/l	TM344	<0.01				
Mevinphos	<0.01 µg/l	TM344	<0.01				
Tecnazene	<0.01 µg/l	TM344	<0.01				
Hexachlorobenzene	<0.01 µg/l	TM344	<0.01				
Demeton-S-methyl	<0.01 µg/l	TM344	<0.01				
Phorate	<0.01 µg/l	TM344	<0.01				
Diazinon	<0.01 µg/l	TM344	<0.01				
Triallate	<0.01 µg/l	TM344	<0.01				
Atrazine	<0.01 µg/l	TM344	<0.01				
Simazine	<0.01 µg/l	TM344	<0.01				
Disulfoton	<0.01 µg/l	TM344	<0.01				
Propetamphos	<0.01 µg/l	TM344	<0.01				



CERTIFICATE OF ANALYSIS

Validated

SDG:	201204-78	Client Reference:	JFR1451	Report Number:	580279
Location:	A303 Stonehenge	Order Number:		Superseded Report:	

SVOC MS (W) - Aqueous

#	M	aq	diss.fit	tot.unfilt	*	**	(F)	1-4*§@	Customer Sample Ref.	R71905						
Results Legend									Depth (m)	Sample Type	Date Sampled	Sampled Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
ISO17025 accredited. mCERTS accredited. Aqueous / settled sample. Dissolved / filtered sample. Total / unfiltered sample. Subcontracted - refer to subcontractor report for accreditation status. % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery Trigger breach confirmed Sample deviation (see appendix)										Ground Water (GW)	02/12/2020	16:00:00	04/12/2020	201204-78	23365259	
Component	LOD/Units	Method														
1,2,4-Trichlorobenzene (aq)	<1 µg/l	TM176	<8	#												
1,2-Dichlorobenzene (aq)	<1 µg/l	TM176	<8	#												
1,3-Dichlorobenzene (aq)	<1 µg/l	TM176	<8	#												
1,4-Dichlorobenzene (aq)	<1 µg/l	TM176	<8	#												
2,4,5-Trichlorophenol (aq)	<1 µg/l	TM176	<8	#												
2,4,6-Trichlorophenol (aq)	<1 µg/l	TM176	<8	#												
2,4-Dichlorophenol (aq)	<1 µg/l	TM176	<8	#												
2,4-Dimethylphenol (aq)	<1 µg/l	TM176	<8	#												
2,4-Dinitrotoluene (aq)	<1 µg/l	TM176	<8	#												
2,6-Dinitrotoluene (aq)	<1 µg/l	TM176	<8	#												
2-Chloronaphthalene (aq)	<1 µg/l	TM176	<8	#												
2-Chlorophenol (aq)	<1 µg/l	TM176	<8	#												
2-Methylnaphthalene (aq)	<1 µg/l	TM176	<8	#												
2-Methylphenol (aq)	<1 µg/l	TM176	<8	#												
2-Nitroaniline (aq)	<1 µg/l	TM176	<8	#												
2-Nitrophenol (aq)	<1 µg/l	TM176	<8	#												
3-Nitroaniline (aq)	<1 µg/l	TM176	<8	#												
4-Bromophenylphenylether (aq)	<1 µg/l	TM176	<8	#												
4-Chloro-3-methylphenol (aq)	<1 µg/l	TM176	<8	#												
4-Chloroaniline (aq)	<1 µg/l	TM176	<8	#												
4-Chlorophenylphenylether (aq)	<1 µg/l	TM176	<8	#												
4-Methylphenol (aq)	<1 µg/l	TM176	<8	#												
4-Nitroaniline (aq)	<1 µg/l	TM176	<8	#												
4-Nitrophenol (aq)	<1 µg/l	TM176	<8	#												
Azobenzene (aq)	<1 µg/l	TM176	<8	#												
Acenaphthylene (aq)	<1 µg/l	TM176	<8	#												
Acenaphthene (aq)	<1 µg/l	TM176	<8	#												
Anthracene (aq)	<1 µg/l	TM176	<8	#												
bis(2-Chloroethyl)ether (aq)	<1 µg/l	TM176	<8	#												
bis(2-Chloroethoxy)methane (aq)	<1 µg/l	TM176	<8	#												
bis(2-Ethylhexyl) phthalate (aq)	<2 µg/l	TM176	<16	#												
Butylbenzyl phthalate (aq)	<1 µg/l	TM176	<8	#												



CERTIFICATE OF ANALYSIS

Validated

SDG:	201204-78	Client Reference:	JFR1451	Report Number:	580279
Location:	A303 Stonehenge	Order Number:		Superseded Report:	

TPH CWG (W)

#	M	aq	diss.fit	tot.unfit	*	**	(F)	1-4*\$@	Customer Sample Ref.	R71905						
Results Legend									Depth (m)	Sample Type	Date Sampled	Sampled Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
ISO17025 accredited. mCERTS accredited. Aqueous / settled sample. Dissolved / filtered sample. Total / unfiltered sample. Subcontracted - refer to subcontractor report for accreditation status. % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery Trigger breach confirmed Sample deviation (see appendix)										Ground Water (GW)	02/12/2020	16:00:00	04/12/2020	201204-78	23365259	
Component	LOD/Units	Method														
GRO Surrogate % recovery**	%	TM245	114													
GRO >C5-C12	<50 µg/l	TM245	<50	#												
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245	<3	#												
Benzene	<7 µg/l	TM245	<7	#												
Toluene	<4 µg/l	TM245	<4	#												
Ethylbenzene	<5 µg/l	TM245	<5	#												
m,p-Xylene	<8 µg/l	TM245	<8	#												
o-Xylene	<3 µg/l	TM245	<3	#												
Sum of detected Xylenes	<11 µg/l	TM245	<11													
Sum of detected BTEX	<28 µg/l	TM245	<28													
Aliphatics >C5-C6	<10 µg/l	TM245	<10													
Aliphatics >C6-C8	<10 µg/l	TM245	<10													
Aliphatics >C8-C10	<10 µg/l	TM245	<10													
Aliphatics >C10-C12	<10 µg/l	TM245	<10													
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174	<10													
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174	<10													
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174	<10													
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174	<10													
Aromatics >EC5-EC7	<10 µg/l	TM245	<10													
Aromatics >EC7-EC8	<10 µg/l	TM245	<10													
Aromatics >EC8-EC10	<10 µg/l	TM245	<10													
Aromatics >EC10-EC12	<10 µg/l	TM245	<10													
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174	<10													
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174	<10													
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174	<10													
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174	<10													
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174	<10													
Aliphatics >C16-C35 Aqueous	<10 µg/l	TM174	<10													



CERTIFICATE OF ANALYSIS

Validated

SDG: 201204-78	Client Reference: JFR1451	Report Number: 580279
Location: A303 Stonehenge	Order Number:	Superseded Report:

VOC MS (W)

#	ISO17025 accredited.	Customer Sample Ref.	R71905			
Results Legend		Depth (m)	Sample Type	Ground Water (GW)		
M	mCERTS accredited.			02/12/2020		
aq	Aqueous / settled sample.	Date Sampled		16:00:00		
diss.filt	Dissolved / filtered sample.	Sampled Time		04/12/2020		
tot.unfilt	Total / unfiltered sample.	Date Received		201204-78		
*	Subcontracted - refer to subcontractor report for accreditation status.	SDG Ref		23365259		
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery	Lab Sample No.(s)				
(F)	Trigger breach confirmed	AGS Reference				
1-4*§@	Sample deviation (see appendix)					
Component	LOD/Units	Method				
Dibromofluoromethane**	%	TM208	111			
Toluene-d8**	%	TM208	98.8			
4-Bromofluorobenzene**	%	TM208	95.2			
Dichlorodifluoromethane	<1 µg/l	TM208	<1	#		
Chloromethane	<1 µg/l	TM208	<1	#		
Vinyl chloride	<1 µg/l	TM208	<1	#		
Bromomethane	<1 µg/l	TM208	<1	#		
Chloroethane	<1 µg/l	TM208	<1	#		
Trichlorofluoromethane	<1 µg/l	TM208	<1	#		
1,1-Dichloroethene	<1 µg/l	TM208	<1	#		
Carbon disulphide	<1 µg/l	TM208	<1	#		
Dichloromethane	<3 µg/l	TM208	<3	#		
Methyl tertiary butyl ether (MTBE)	<1 µg/l	TM208	<1	#		
trans-1,2-Dichloroethene	<1 µg/l	TM208	<1	#		
1,1-Dichloroethane	<1 µg/l	TM208	<1	#		
cis-1,2-Dichloroethene	<1 µg/l	TM208	<1	#		
2,2-Dichloropropane	<1 µg/l	TM208	<1	#		
Bromochloromethane	<1 µg/l	TM208	<1	#		
Chloroform	<1 µg/l	TM208	<1	#		
1,1,1-Trichloroethane	<1 µg/l	TM208	<1	#		
1,1-Dichloropropene	<1 µg/l	TM208	<1	#		
Carbontetrachloride	<1 µg/l	TM208	<1	#		
1,2-Dichloroethane	<1 µg/l	TM208	<1	#		
Benzene	<1 µg/l	TM208	<1	#		
Trichloroethene	<1 µg/l	TM208	<1	#		
1,2-Dichloropropane	<1 µg/l	TM208	<1	#		
Dibromomethane	<1 µg/l	TM208	<1	#		
Bromodichloromethane	<1 µg/l	TM208	<1	#		
cis-1,3-Dichloropropene	<1 µg/l	TM208	<1	#		
Toluene	<1 µg/l	TM208	<1	#		
trans-1,3-Dichloropropene	<1 µg/l	TM208	<1	#		
1,1,2-Trichloroethane	<1 µg/l	TM208	<1	#		



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Location:	A303 Stonehenge	Order Number:		Superseded Report:	

VOC MS (W)

Results Legend		Customer Sample Ref.	R71905				
#	ISO17025 accredited.	Depth (m)	Sample Type				
M	mCERTS accredited.	Ground Water (GW)	Date Sampled				
sq	Aqueous / settled sample.	Date Sampled	Sampled Time				
dis.filt	Dissolved / filtered sample.	Date Received	Date Received				
tot.unfilt	Total / unfiltered sample.	SDG Ref	Lab Sample No.(s)				
*	Subcontracted - refer to subcontractor report for accreditation status.	AGS Reference					
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery						
(F)	Trigger breach confirmed						
1-4&@	Sample deviation (see appendix)						
Component	LOD/Units	Method					
1,3-Dichloropropane	<1 µg/l	TM208	<1	#			
Tetrachloroethene	<1 µg/l	TM208	<1	#			
Dibromochloromethane	<1 µg/l	TM208	<1	#			
1,2-Dibromoethane	<1 µg/l	TM208	<1	#			
Chlorobenzene	<1 µg/l	TM208	<1	#			
1,1,1,2-Tetrachloroethane	<1 µg/l	TM208	<1	#			
Ethylbenzene	<1 µg/l	TM208	<1	#			
m,p-Xylene	<1 µg/l	TM208	<1	#			
o-Xylene	<1 µg/l	TM208	<1	#			
Styrene	<1 µg/l	TM208	<1	#			
Bromoform	<1 µg/l	TM208	<1	#			
Isopropylbenzene	<1 µg/l	TM208	<1	#			
1,1,2,2-Tetrachloroethane	<1 µg/l	TM208	<1	#			
1,2,3-Trichloropropane	<1 µg/l	TM208	<1	#			
Bromobenzene	<1 µg/l	TM208	<1	#			
Propylbenzene	<1 µg/l	TM208	<1	#			
2-Chlorotoluene	<1 µg/l	TM208	<1	#			
1,3,5-Trimethylbenzene	<1 µg/l	TM208	<1	#			
4-Chlorotoluene	<1 µg/l	TM208	<1	#			
tert-Butylbenzene	<1 µg/l	TM208	<1	#			
1,2,4-Trimethylbenzene	<1 µg/l	TM208	<1	#			
sec-Butylbenzene	<1 µg/l	TM208	<1	#			
4-iso-Propyltoluene	<1 µg/l	TM208	<1	#			
1,3-Dichlorobenzene	<1 µg/l	TM208	<1	#			
1,4-Dichlorobenzene	<1 µg/l	TM208	<1	#			
n-Butylbenzene	<1 µg/l	TM208	<1	#			
1,2-Dichlorobenzene	<1 µg/l	TM208	<1	#			
1,2-Dibromo-3-chloropropane	<1 µg/l	TM208	<1	#			
1,2,4-Trichlorobenzene	<1 µg/l	TM208	<1	#			
Hexachlorobutadiene	<1 µg/l	TM208	<1	#			
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208	<1	#			
Naphthalene	<1 µg/l	TM208	<1	#			



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Table of Results - Appendix

Method No	Reference	Description
TM043	Method 2320B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part109 1984	Determination of alkalinity in aqueous samples
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM104	Method 4500F, AWWA/APHA, 20th Ed., 1999	Determination of Fluoride using the Kone Analyser
TM120	Method 2510B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part 9:1970	Determination of Electrical Conductivity using a Conductivity Meter
TM123	BS 2690: Part 121:1981	The Determination of Total Dissolved Solids in Water
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM174	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID
TM176	EPA 8270D Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of SVOCs in Water by GCMS
TM178	Modified: US EPA Method 8100	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS in Waters
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM187	Winkler, L.W, Ber Deutsch. Chem. Ges, 21,2843,1888."	Dissolved Oxygen in Natural and Waste Waters HMSO 1979 ISBN 011 751442
TM195	Colour and Turbidity of water. Methods for the Examination of Waters and Associated Materials. HMSO, 1981, ISBN 0 11 751955 3.	Determination of Turbidity in Waters & Associated Matrices
TM197	Modified: US EPA Method 8082.EA Method 174 and 5109631	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Waters
TM208	Modified: US EPA Method 8260b & 624	Determination of Volatile Organic Compounds by Headspace / GC-MS in Waters
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser
TM245	By GC-FID	Determination of GRO by Headspace in waters
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC
TM343	EPA 8270D - Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of Selected Pesticides (Suite I) in Liquids by GCMS
TM344	EPA 8270D – Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of selected pesticides (Suite II) by GCMS

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).



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Test Completion Dates

Lab Sample No(s) 23365259
 Customer Sample Ref. R71905
 AGS Ref.
 Depth
 Type Ground Water

Alkalinity as CaCO3	11-Dec-2020
Ammoniacal Nitrogen	10-Dec-2020
Anions by Kone (w)	16-Dec-2020
Chromium III	14-Dec-2020
Conductivity (at 20 deg.C)	09-Dec-2020
Cyanide Comp/Free/Total/Thiocyanate	09-Dec-2020
Dissolved Metals by ICP-MS	14-Dec-2020
Dissolved Organic/Inorganic Carbon	09-Dec-2020
Dissolved Oxygen by Titration	10-Dec-2020
EPH CWG (Aliphatic) Aqueous GC (W)	14-Dec-2020
EPH CWG (Aromatic) Aqueous GC (W)	14-Dec-2020
Fluoride	09-Dec-2020
GRO by GC-FID (W)	10-Dec-2020
Hexavalent Chromium (w)	11-Dec-2020
Mercury Dissolved	09-Dec-2020
Nitrite by Kone (w)	09-Dec-2020
PAH Spec MS - Aqueous (W)	15-Dec-2020
PCB Congeners - Aqueous (W)	14-Dec-2020
Pesticides (Suite I) by GCMS	14-Dec-2020
Pesticides (Suite II) by GCMS	15-Dec-2020
pH Value	10-Dec-2020
Phenols by HPLC (W)	10-Dec-2020
Phosphate by Kone (w)	09-Dec-2020
SVOC MS (W) - Aqueous	14-Dec-2020
Total Dissolved Solids	09-Dec-2020
TPH CWG (W)	14-Dec-2020
Turbidity in waters	09-Dec-2020
VOC MS (W)	10-Dec-2020



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ASSOCIATED AQC DATA

Alkalinity as CaCO3

Component	Method Code	QC 2397
Total Alkalinity as CaCO3	TM043	101.01 94.47 : 104.41

Ammoniacal Nitrogen

Component	Method Code	QC 2379
Ammoniacal Nitrogen as N	TM099	99.2 91.28 : 106.64

Anions by Kone (w)

Component	Method Code	QC 2378	QC 2368
Chloride	TM184	94.6 94.04 : 108.61	107.0 92.93 : 115.43
Sulphate (soluble)	TM184	99.6 91.99 : 109.30	
TON as NO3	TM184	96.5 92.98 : 109.90	

Conductivity (at 20 deg.C)

Component	Method Code	QC 2338
Conductivity (at 20 deg.C)	TM120	103.01 100.75 : 105.26

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2332
Free Cyanide (W)	TM227	101.25 90.50 : 114.50
Thiocyanate (W)	TM227	107.75 90.50 : 113.00
Total Cyanide (W)	TM227	107.25 91.75 : 112.75

Dissolved Metals by ICP-MS

Component	Method Code	QC 2309
Aluminium	TM152	102.33 94.21 : 111.52
Antimony	TM152	102.17 88.37 : 130.57
Arsenic	TM152	97.83 92.62 : 113.52



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Dissolved Metals by ICP-MS

		QC 2309
Barium	TM152	99.0 88.62 : 113.14
Beryllium	TM152	103.0 87.08 : 111.38
Bismuth	TM152	97.0 92.62 : 115.02
Boron	TM152	104.67 86.31 : 120.88
Cadmium	TM152	101.5 93.85 : 111.65
Calcium	TM152	101.33 89.20 : 126.91
Chromium	TM152	98.33 92.50 : 113.03
Cobalt	TM152	99.83 85.01 : 114.87
Copper	TM152	100.67 89.87 : 119.73
Iron	TM152	98.0 93.02 : 113.86
Lead	TM152	97.67 91.11 : 116.98
Lithium	TM152	103.67 91.30 : 123.00
Magnesium	TM152	97.33 89.60 : 116.61
Manganese	TM152	98.83 93.97 : 112.46
Molybdenum	TM152	97.17 89.07 : 110.96
Nickel	TM152	97.67 93.70 : 112.15
Phosphorus	TM152	95.67 89.24 : 114.18
Potassium	TM152	98.67 93.20 : 115.55
Selenium	TM152	99.83 91.69 : 117.12
Silver	TM152	98.83 90.93 : 121.73
Sodium	TM152	98.0 92.42 : 113.24
Strontium	TM152	99.33 92.14 : 116.24
Tellurium	TM152	94.17 89.88 : 111.78
Thallium	TM152	97.33 82.43 : 113.83
Tin	TM152	103.17 94.62 : 107.79
Titanium	TM152	102.67 90.29 : 115.23
Tungsten	TM152	98.33 77.61 : 132.31



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Dissolved Metals by ICP-MS

		QC 2309
Uranium	TM152	101.5 86.97 : 115.76
Vanadium	TM152	100.83 89.61 : 115.48
Zinc	TM152	104.0 87.51 : 116.26

Dissolved Organic/Inorganic Carbon

Component	Method Code	QC 2347
Dissolved Inorganic Carbon	TM090	101.67 91.27 : 109.87
Dissolved Organic Carbon	TM090	102.67 96.58 : 107.98

EPH CWG (Aliphatic) Aqueous GC (W)

Component	Method Code	QC 2397
Total Aliphatics >C10-C40	TM174	107.92 69.79 : 134.39

EPH CWG (Aromatic) Aqueous GC (W)

Component	Method Code	QC 2398
Total Aromatics >EC10-EC40	TM174	92.44 59.92 : 128.54

Fluoride

Component	Method Code	QC 2395
Fluoride	TM104	103.33 96.67 : 108.67

GRO by GC-FID (W)

Component	Method Code	QC 2398
Benzene by GC	TM245	95.0 79.13 : 118.84
Ethylbenzene by GC	TM245	98.5 79.54 : 115.99
m & p Xylene by GC	TM245	97.25 78.44 : 116.32
MTBE GC-FID	TM245	100.0 81.43 : 120.09



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GRO by GC-FID (W)

		QC 2398
o Xylene by GC	TM245	98.5 76.85 : 120.29
QC	TM245	93.76 71.58 : 131.01
Toluene by GC	TM245	95.0 79.00 : 121.96

Hexavalent Chromium (w)

Component	Method Code	QC 2318
Hexavalent Chromium	TM241	102.0 94.17 : 106.17

Mercury Dissolved

Component	Method Code	QC 2394
Mercury Dissolved (CVAf)	TM183	90.9 69.30 : 128.70

PAH Spec MS - Aqueous (W)

Component	Method Code	QC 2322
Acenaphthene by GCMS	TM178	106.0 90.45 : 118.63
Acenaphthylene by GCMS	TM178	108.0 90.13 : 116.27
Anthracene by GCMS	TM178	103.2 92.40 : 114.00
Benz(a)anthracene by GCMS	TM178	106.0 89.51 : 117.69
Benzo(a)pyrene by GCMS	TM178	107.6 89.43 : 118.57
Benzo(b)fluoranthene by GCMS	TM178	108.0 87.80 : 121.80
Benzo(ghi)perylene by GCMS	TM178	104.4 87.10 : 119.30
Benzo(k)fluoranthene by GCMS	TM178	110.4 93.23 : 123.57
Chrysene by GCMS	TM178	106.0 88.68 : 116.92
Dibenzo(ah)anthracene by GCMS	TM178	104.4 86.24 : 118.56
Fluoranthene by GCMS	TM178	102.4 86.04 : 121.96
Fluorene by GCMS	TM178	105.2 90.76 : 121.24
Indeno(123cd)pyrene by GCMS	TM178	106.0 88.39 : 119.61



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PAH Spec MS - Aqueous (W)

		QC 2322
Naphthalene by GCMS	TM178	106.8 89.40 : 121.80
Phenanthrene by GCMS	TM178	107.2 90.41 : 119.19
Pyrene by GCMS	TM178	100.8 91.00 : 120.20

PCB Congeners - Aqueous (W)

Component	Method Code	QC 2336
PCB congener 101	TM197	109.2 85.28 : 119.60
PCB congener 105	TM197	106.8 81.16 : 119.80
PCB congener 114	TM197	112.0 88.32 : 118.08
PCB congener 118	TM197	112.8 87.76 : 117.04
PCB congener 123	TM197	112.8 86.80 : 117.28
PCB congener 126	TM197	111.6 84.56 : 116.00
PCB congener 138	TM197	109.6 83.00 : 117.80
PCB congener 153	TM197	112.0 84.12 : 117.00
PCB congener 156	TM197	110.8 82.24 : 119.20
PCB congener 157	TM197	112.0 84.96 : 116.40
PCB congener 167	TM197	110.4 81.64 : 119.32
PCB congener 169	TM197	110.0 84.60 : 117.96
PCB congener 180	TM197	108.8 80.40 : 119.04
PCB congener 189	TM197	112.8 81.56 : 119.00
PCB congener 28	TM197	104.4 83.20 : 117.04
PCB congener 52	TM197	107.6 81.84 : 119.52
PCB congener 77	TM197	108.8 81.96 : 117.24
PCB congener 81	TM197	108.4 82.28 : 120.20

Pesticides (Suite I) by GCMS



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Pesticides (Suite I) by GCMS

Component	Method Code	QC 2392
Aldrin - (Inst.)	TM343	69.21 59.75 : 143.00
alpha-HCH - (Inst.)	TM343	69.24 75.03 : 148.38
beta-HCH - (Inst.)	TM343	75.69 75.85 : 146.50
cis-Chlordane - (Inst.)	TM343	77.85 71.78 : 137.03
delta-HCH - (Inst.)	TM343	78.54 76.38 : 138.48
Dieldrin - (Inst.)	TM343	77.43 77.45 : 154.10
Endosulphan I - (Inst.)	TM343	94.02 91.30 : 168.70
Endosulphan II - (Inst.)	TM343	73.47 82.68 : 161.13
Endosulphan Sulphate - (Inst.)	TM343	79.24 60.50 : 159.50
Endrin - (Inst.)	TM343	91.38 85.55 : 163.70
gamma-HCH (Lindane) - (Inst.)	TM343	73.18 72.98 : 157.58
Heptachlor - (Inst.)	TM343	83.89 57.70 : 149.20
Heptachlor epoxide - (Inst.)	TM343	76.16 71.08 : 140.38
Isodrin - (Inst.)	TM343	55.47 55.55 : 144.50
o,p-DDD (TDE) - (Inst.)	TM343	64.2 68.83 : 141.43
o,p-DDE - (Inst.)	TM343	67.24 63.00 : 139.20
o,p-DDT - (Inst.)	TM343	112.62 68.05 : 148.15
o,p-Methoxychlor - (Inst.)	TM343	71.99 63.95 : 156.80
p,p-DDD (TDE) - (Inst.)	TM343	67.13 64.33 : 143.53
p,p-DDE - (Inst.)	TM343	72.17 65.40 : 140.85
p,p-DDT - (Inst.)	TM343	75.01 60.08 : 157.13
p,p-Methoxychlor - (Inst.)	TM343	71.47 59.70 : 157.40
Permethrin I - (Inst.)	TM343	70.51 63.25 : 146.35
Permethrin II - (Inst.)	TM343	67.81 62.23 : 147.28
trans-Chlordane - (Inst.)	TM343	82.15 70.75 : 142.30
Trifluralin - (Inst.)	TM343	80.86 64.73 : 161.48



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pH Value

Component	Method Code	QC 2385
pH	TM256	100.53 99.33 : 102.54

Phenols by HPLC (W)

Component	Method Code	QC 2354
2,3,5 Trimethyl-Phenol by HPLC (W)	TM259	98.0 91.00 : 109.00
2-Isopropyl Phenol by HPLC (W)	TM259	95.0 85.00 : 109.00
Cresols by HPLC (W)	TM259	97.67 92.00 : 110.00
Naphthol by HPLC (W)	TM259	102.0 86.00 : 128.00
Phenol by HPLC (W)	TM259	98.0 88.24 : 111.76
Xylenols by HPLC (W)	TM259	101.5 94.83 : 110.83

Phosphate by Kone (w)

Component	Method Code	QC 2386
Phosphate (Ortho as PO4)	TM184	100.4 96.40 : 109.60

SVOC MS (W) - Aqueous

Component	Method Code	QC 2312
4-Bromophenylphenylether	TM176	78.96 61.60 : 106.72
Benzo(a)anthracene	TM176	78.0 64.64 : 115.52
Benzo(a)pyrene	TM176	82.4 60.56 : 115.28
Butylbenzyl phthalate	TM176	80.8 57.12 : 116.16
Hexachlorobutadiene	TM176	69.84 52.88 : 95.12
Naphthalene	TM176	88.0 65.68 : 110.32
Nitrobenzene	TM176	81.6 57.12 : 109.44
Phenol	TM176	46.08 37.60 : 70.72

Total Dissolved Solids



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Total Dissolved Solids

Component	Method Code	QC 2307
Total Dissolved Solids	TM123	98.7 97.30 : 100.92

Turbidity in waters

Component	Method Code	QC 2341
Turbidity	TM195	94.25 83.75 : 121.25

VOC MS (W)

Component	Method Code	QC 2392
1,1,1,2-Tetrachloroethane	TM208	103.0 81.85 : 113.65
1,1,1-Trichloroethane	TM208	106.5 84.51 : 110.07
1,1-Dichloroethane	TM208	109.0 79.60 : 118.57
1,2-Dichloroethane	TM208	103.5 77.72 : 133.33
2-Chlorotoluene	TM208	104.5 82.89 : 116.61
4-Chlorotoluene	TM208	106.5 79.46 : 115.88
Benzene	TM208	108.5 81.22 : 118.60
Bromomethane	TM208	102.5 79.31 : 116.90
Carbon tetrachloride	TM208	105.5 86.16 : 119.10
Chlorobenzene	TM208	107.0 87.25 : 116.65
Chloroform	TM208	107.0 83.01 : 121.64
Chloromethane	TM208	116.5 65.28 : 130.05
Cis-1,2-Dichloroethene	TM208	106.0 85.03 : 112.75
Dichloromethane	TM208	107.0 78.23 : 120.65
Ethylbenzene	TM208	104.0 79.55 : 110.51
Hexachlorobutadiene	TM208	93.5 68.58 : 117.78
o-Xylene	TM208	105.5 85.06 : 114.91



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VOC MS (W)

		QC 2392
p/m-Xylene	TM208	104.25 82.09 : 109.18
Tert-butyl methyl ether	TM208	95.5 68.39 : 125.81
Tetrachloroethene	TM208	103.5 82.09 : 113.14
Toluene	TM208	104.0 79.88 : 116.83
Trichloroethene	TM208	101.5 82.30 : 112.45
Vinyl Chloride	TM208	110.5 71.34 : 122.34

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.

The figure detailed is the percentage recovery result for the AQC.

The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.



CERTIFICATE OF ANALYSIS

Validated

SDG: 201204-78
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 580279
Superseded Report:

Chromatogram

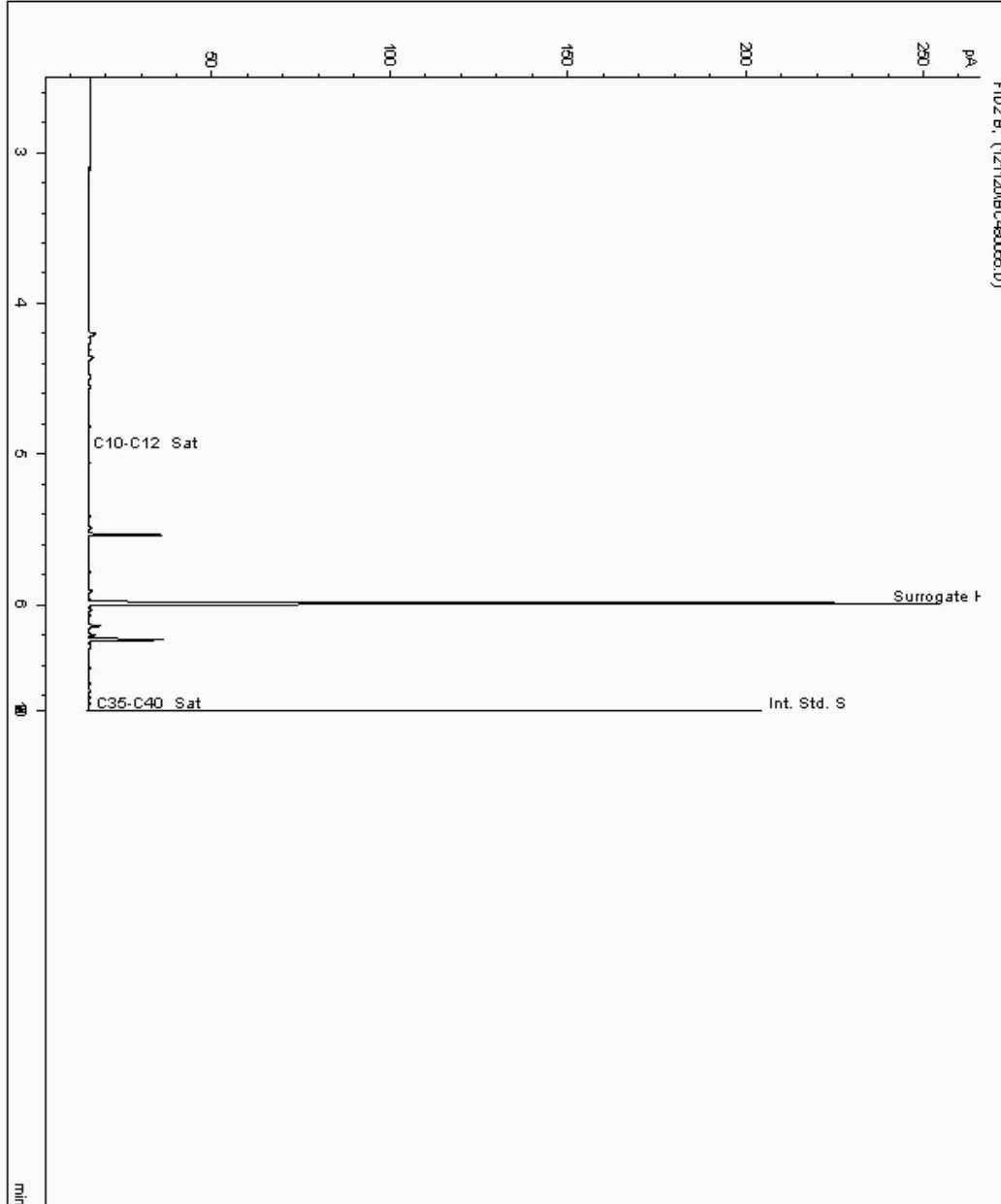
Analysis: EPH CWG (Aliphatic) Aqueous GC (W)

Sample No : 23387797
Sample ID : R71905

Depth :

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 21939303-
Date Acquired : 12/12/2020 18:23:32 PM
Units : ppb
Dilution : SE R71905f1 ->
CF : 1
Multiplier : 0.025





CERTIFICATE OF ANALYSIS

Validated

SDG: 201204-78
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 580279
Superseded Report:

Chromatogram

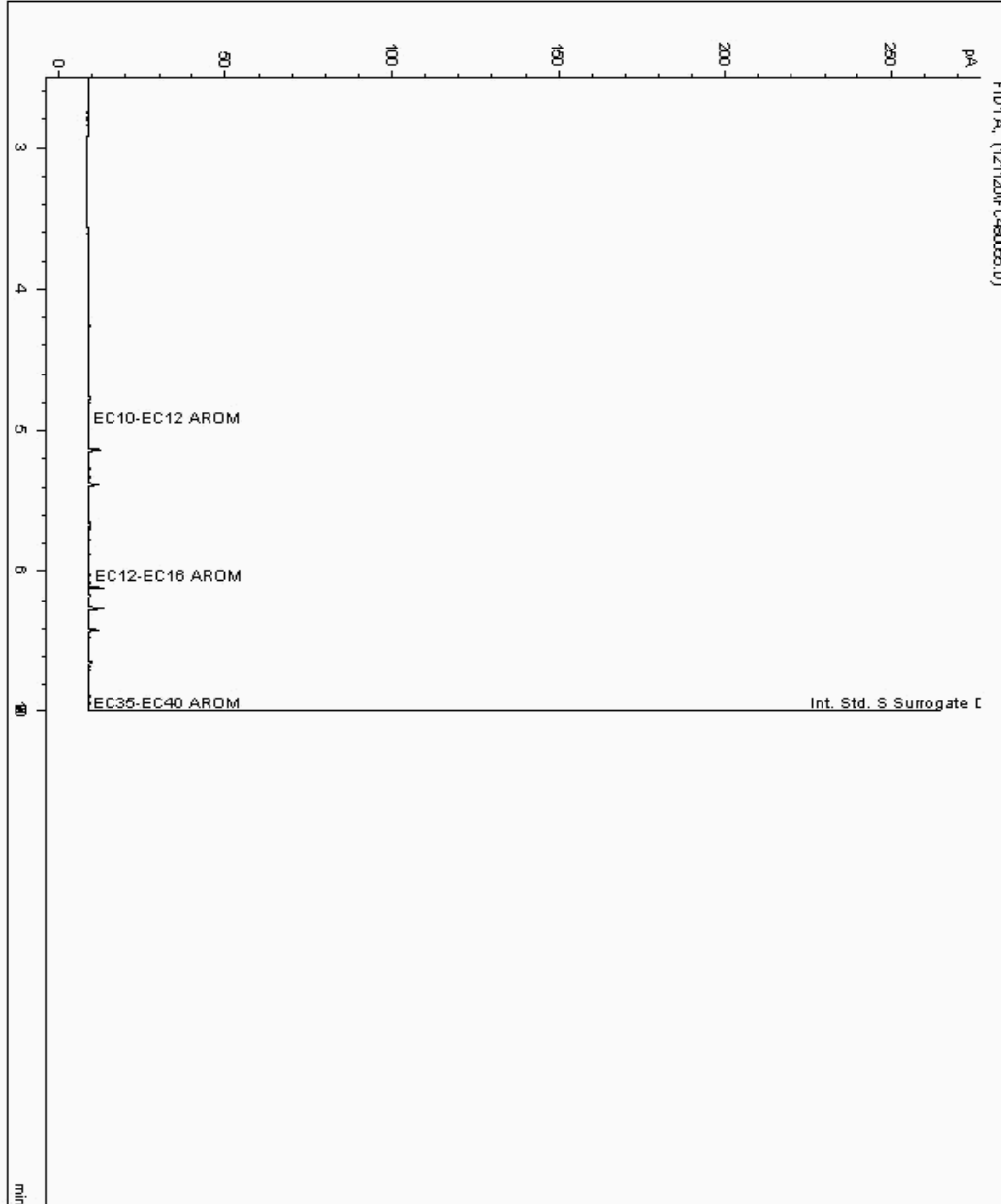
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 23387797
Sample ID : R71905

Depth :

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 21939304-
Date Acquired : 12/12/2020 18:23:32 PM
Units : ppb
Dilution : SE R7190511 ->
CF : 1
Multiplier : 0.025





CERTIFICATE OF ANALYSIS

Validated

SDG: 201204-78
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

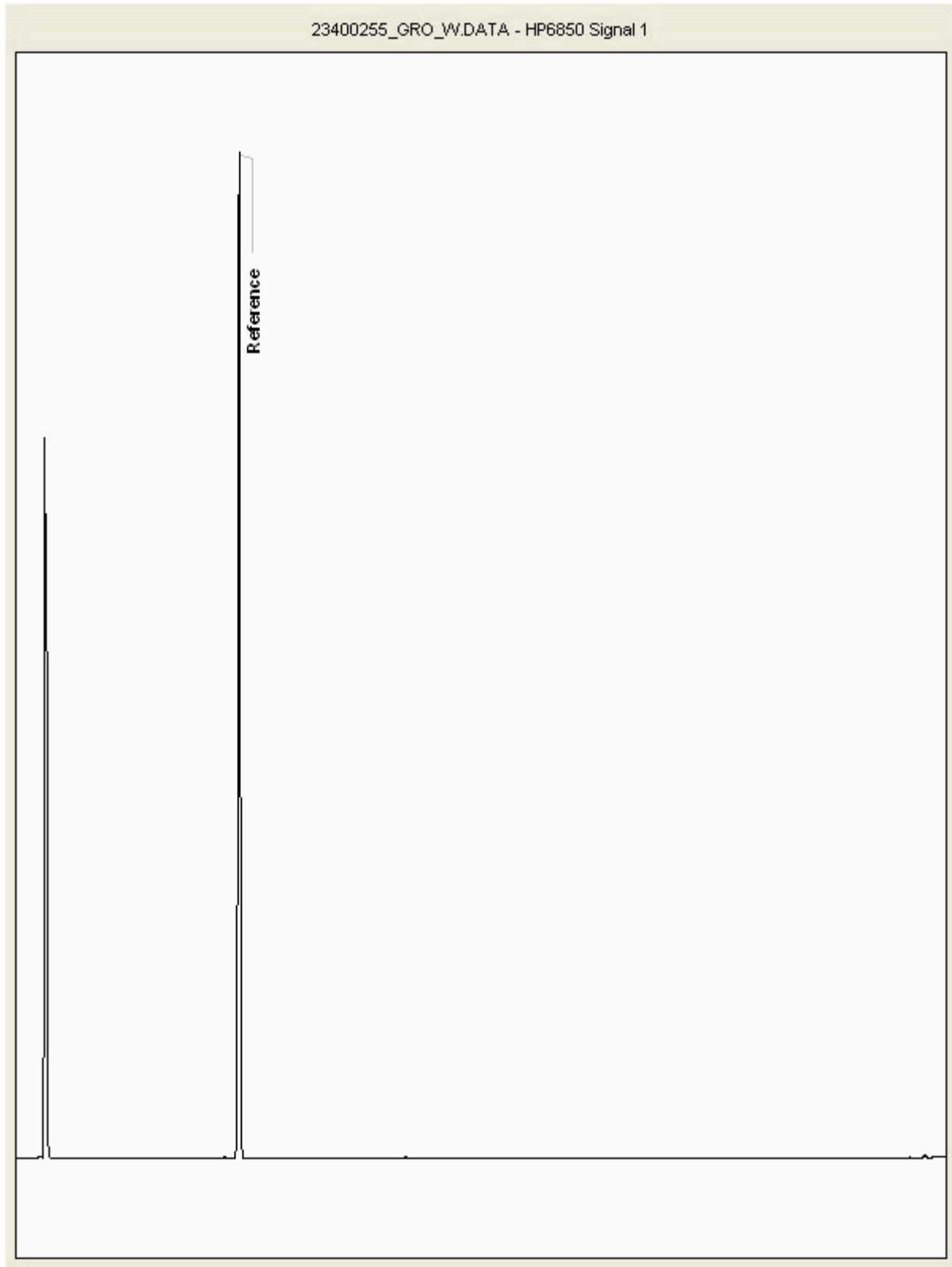
Report Number: 580279
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 23400255
Sample ID : R71905

Depth :





CERTIFICATE OF ANALYSIS

SDG: 201204-78 Client Reference: JFR1451 Report Number: 580279
 Location: A303 Stonehenge Order Number: Superseded Report:

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH₄ by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

19. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung. Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017)*.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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Website: www.alsenvironmental.co.uk

RPS Consultants Ltd
260 Park Avenue
Aztec West
Almondsbury
Bristol
BS32 4SY

Attention: Gary Riches

CERTIFICATE OF ANALYSIS

Date of report Generation: 14 December 2020
Customer: RPS Consultants Ltd
Sample Delivery Group (SDG): 201205-113
Your Reference: JFR1451
Location: A303 Stonehenge
Report No: 579931

We received 32 samples on Saturday December 05, 2020 and 2 of these samples were scheduled for analysis which was completed on Monday December 14, 2020. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

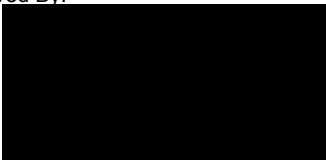
Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:



Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 201205-113
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 579931
Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
23375190	CPES1		0.00	02/12/2020
23375191	CPES1		0.30	02/12/2020
23375192	CPES1		0.50	02/12/2020
23375193	CPES1		1.00	03/12/2020
23375194	CPES1		1.05	03/12/2020
23375211	CPES1		10.00	03/12/2020
23375212	CPES1		10.50	03/12/2020
23375213	CPES1		11.00	03/12/2020
23375215	CPES1		11.50	03/12/2020
23375216	CPES1		12.00	03/12/2020
23375217	CPES1		12.50	03/12/2020
23375218	CPES1		13.00	03/12/2020
23375219	CPES1		13.50	03/12/2020
23375220	CPES1		14.00	03/12/2020
23375221	CPES1		14.50	03/12/2020
23375222	CPES1		15.00	03/12/2020
23375195	CPES1		2.00	03/12/2020
23375196	CPES1		2.50	03/12/2020
23375197	CPES1		3.00	03/12/2020
23375198	CPES1		3.50	03/12/2020
23375199	CPES1		4.00	03/12/2020
23375200	CPES1		4.50	03/12/2020
23375201	CPES1		5.00	03/12/2020
23375202	CPES1		5.50	03/12/2020
23375203	CPES1		6.00	03/12/2020
23375204	CPES1		6.50	03/12/2020
23375205	CPES1		7.00	03/12/2020
23375206	CPES1		7.50	03/12/2020
23375207	CPES1		8.00	03/12/2020
23375208	CPES1		8.50	03/12/2020
23375209	CPES1		9.00	03/12/2020
23375210	CPES1		9.50	03/12/2020

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 201205-113	Client Reference: JFR1451	Report Number: 579931
Location: A303 Stonehenge	Order Number:	Superseded Report:

Results Legend <div style="display: flex; gap: 10px;"> <div style="border: 1px solid black; background-color: yellow; padding: 2px; width: 15px; text-align: center;">X</div> Test <div style="border: 1px solid black; background-color: red; padding: 2px; width: 15px; text-align: center;">N</div> No Determination Possible </div> Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other	Lab Sample No(s)	23375192	23375198	CPE51	CPE51	AGS Reference	Depth (m)	Container	Sample Type	
								0.50	250g Amber Jar (ALE210) 60g VOC (ALE215) 250g Amber Jar (ALE210)	S S S S
	Ammonium Soil by Titration	All	NDPs: 0 Tests: 2	X	X					
	Anions by Kone (soil)	All	NDPs: 0 Tests: 2	X	X					
	Chromium III	All	NDPs: 0 Tests: 2	X	X					
	Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 2	X	X					
	EPH CWG GC (S)	All	NDPs: 0 Tests: 2	X	X					
GRO by GC-FID (S)	All	NDPs: 0 Tests: 2		X	X					
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 2	X	X						
Metals in solid samples by OES	All	NDPs: 0 Tests: 2	X	X						
PAH by GCMS	All	NDPs: 0 Tests: 2	X	X						
pH	All	NDPs: 0 Tests: 2	X	X						
Phenols by HPLC (S)	All	NDPs: 0 Tests: 2	X	X						
Sample description	All	NDPs: 0 Tests: 2	X	X						
Total Organic Carbon	All	NDPs: 0 Tests: 2	X	X						
TPH CWG GC (S)	All	NDPs: 0 Tests: 2	X	X						
VOC MS (S)	All	NDPs: 0 Tests: 2		X	X					



CERTIFICATE OF ANALYSIS

Validated

SDG: 201205-113
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 579931
Superseded Report:

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm
-----------	----------	------	-----------------	--------	-------------	--------	------------	-------------	-------

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
23375192	CPES1	0.50	Dark Brown	Loamy Sand	Vegetation	Stones
23375198	CPES1	3.50	Grey	Sandy Silt Loam	None	Stones

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.



CERTIFICATE OF ANALYSIS

Validated

SDG: 201205-113
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 579931
Superseded Report:

PAH by GCMS

Results Legend		Customer Sample Ref.	CPES1	CPES1			
#	ISO17025 accredited.						
M	mCERTS accredited.						
aq	Aqueous / settled sample.						
diss.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.						
*	Subcontracted - refer to subcontractor report for accreditation status.						
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery						
(F)	Trigger breach confirmed						
1-4*\$@	Sample deviation (see appendix)						
		Depth (m)	0.50	3.50			
		Sample Type	Soil/Solid (S)	Soil/Solid (S)			
		Date Sampled	02/12/2020	03/12/2020			
		Sampled Time					
		Date Received	05/12/2020	05/12/2020			
		SDG Ref	201205-113	201205-113			
		Lab Sample No.(s)	23375192	23375198			
		AGS Reference					
Component	LOD/Units	Method					
Naphthalene-d8 % recovery**	%	TM218	87.7	94.5			
Acenaphthene-d10 % recovery**	%	TM218	86	91.7			
Phenanthrene-d10 % recovery**	%	TM218	86.5	92.6			
Chrysene-d12 % recovery**	%	TM218	79.3	86.2			
Perylene-d12 % recovery**	%	TM218	87.4	85.8			
Naphthalene	<9 µg/kg	TM218	<9 M	<9 M			
Acenaphthylene	<12 µg/kg	TM218	<12 M	<12 M			
Acenaphthene	<8 µg/kg	TM218	<8 M	<8 M			
Fluorene	<10 µg/kg	TM218	<10 M	<10 M			
Phenanthrene	<15 µg/kg	TM218	<15 M	<15 M			
Anthracene	<16 µg/kg	TM218	<16 M	<16 M			
Fluoranthene	<17 µg/kg	TM218	<17 M	<17 M			
Pyrene	<15 µg/kg	TM218	<15 M	<15 M			
Benz(a)anthracene	<14 µg/kg	TM218	<14 M	<14 M			
Chrysene	<10 µg/kg	TM218	<10 M	<10 M			
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 M	<15 M			
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 M	<14 M			
Benzo(a)pyrene	<15 µg/kg	TM218	<15 M	<15 M			
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 M	<18 M			
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 M	<23 M			
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 M	<24 M			
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118			



CERTIFICATE OF ANALYSIS

Validated

SDG: 201205-113 **Client Reference:** JFR1451 **Report Number:** 579931
Location: A303 Stonehenge **Order Number:** **Superseded Report:**

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM243		Mixed Anions In Soils By Kone
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).



CERTIFICATE OF ANALYSIS

Validated

SDG: 201205-113
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 579931
Superseded Report:

Test Completion Dates

Lab Sample No(s)	23375192	23375198
Customer Sample Ref.	CPES1	CPES1
AGS Ref.		
Depth	0.50	3.50
Type	Soil/Solid (S)	Soil/Solid (S)

Ammonium Soil by Titration	14-Dec-2020	14-Dec-2020
Anions by Kone (soil)	11-Dec-2020	11-Dec-2020
Chromium III	11-Dec-2020	11-Dec-2020
Cyanide Comp/Free/Total/Thiocyanate	11-Dec-2020	11-Dec-2020
EPH CWG GC (S)	10-Dec-2020	10-Dec-2020
GRO by GC-FID (S)	11-Dec-2020	11-Dec-2020
Hexavalent Chromium (s)	11-Dec-2020	11-Dec-2020
Metals in solid samples by OES	10-Dec-2020	11-Dec-2020
PAH by GCMS	10-Dec-2020	10-Dec-2020
pH	09-Dec-2020	10-Dec-2020
Phenols by HPLC (S)	11-Dec-2020	14-Dec-2020
Sample description	08-Dec-2020	08-Dec-2020
Total Organic Carbon	14-Dec-2020	14-Dec-2020
TPH CWG GC (S)	11-Dec-2020	11-Dec-2020
VOC MS (S)	10-Dec-2020	10-Dec-2020



CERTIFICATE OF ANALYSIS

Validated

SDG: 201205-113
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 579931
Superseded Report:

ASSOCIATED AQC DATA

Ammonium Soil by Titration

Component	Method Code	QC 2370
Exchangeable Ammonium as NH4	TM024	91.54 76.20 : 110.13

Anions by Kone (soil)

Component	Method Code	QC 2364
Chloride (soluble)	TM243	150.26 86.68 : 115.67
Water Soluble Sulphate as SO4 2:1 Extract	TM243	161.68 70.00 : 130.00

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2381
Free Cyanide	TM153	90.59 78.61 : 114.43
Thiocyanate	TM153	96.15 90.48 : 109.52
Total Cyanide	TM153	90.91 76.80 : 112.96

GRO by GC-FID (S)

Component	Method Code	QC 2389
QC	TM089	95.22 70.34 : 111.95

Hexavalent Chromium (s)

Component	Method Code	QC 2368
Hexavalent Chromium	TM151	106.0 92.00 : 111.20

Metals in solid samples by OES

Component	Method Code	QC 2374	QC 2306	QC 2328
Aluminium	TM181	92.04 73.56 : 108.85	97.35 77.46 : 123.98	102.65 77.46 : 123.98
Antimony	TM181	96.34 76.89 : 111.24	95.93 87.04 : 111.16	110.57 87.04 : 111.16
Arsenic	TM181	94.19 88.53 : 111.01	100.58 87.34 : 110.87	106.98 87.34 : 110.87



CERTIFICATE OF ANALYSIS

Validated

SDG: 201205-113
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 579931
Superseded Report:

Metals in solid samples by OES

		QC 2374	QC 2306	QC 2328
Barium	TM181	88.9 77.67 : 105.35	99.08 80.73 : 115.16	101.83 80.73 : 115.16
Beryllium	TM181	98.13 85.44 : 109.61	102.99 89.47 : 112.97	106.72 89.47 : 112.97
Boron	TM181	89.4 73.51 : 104.66	92.84 76.57 : 104.15	97.71 76.57 : 104.15
Cadmium	TM181	84.36 77.67 : 104.12	91.36 78.94 : 102.43	95.47 78.94 : 102.43
Chromium	TM181	88.03 86.11 : 106.21	92.29 77.55 : 104.47	98.99 77.55 : 104.47
Cobalt	TM181	90.88 84.60 : 104.13	94.97 82.95 : 107.41	99.06 82.95 : 107.41
Copper	TM181	92.25 82.40 : 105.45	96.65 84.36 : 106.14	100.0 84.36 : 106.14
Iron	TM181	92.86 82.95 : 110.58	100.0 81.43 : 115.79	104.76 81.43 : 115.79
Lead	TM181	106.98 78.24 : 104.05	121.17 81.95 : 107.63	99.77 81.95 : 107.63
Manganese	TM181	104.44 94.29 : 119.51	110.0 94.29 : 119.51	113.89 94.29 : 119.51
Mercury	TM181	90.34 83.16 : 107.81	97.34 82.73 : 106.36	102.42 82.73 : 106.36
Molybdenum	TM181	99.18 87.11 : 106.87	101.65 86.61 : 111.07	107.82 86.61 : 111.07
Nickel	TM181	89.49 80.26 : 102.28	94.62 79.72 : 103.80	100.24 79.72 : 103.80
Phosphorus	TM181	110.51 94.56 : 124.28	115.15 92.65 : 125.47	115.56 92.65 : 125.47
Selenium	TM181	99.22 82.28 : 110.48	103.92 88.36 : 111.25	105.88 88.36 : 111.25
Strontium	TM181	89.76 79.13 : 102.79	96.88 78.06 : 99.91	104.45 78.06 : 99.91
Thallium	TM181	103.98 82.94 : 111.86	111.95 88.60 : 116.73	107.08 88.60 : 116.73
Tin	TM181	98.48 86.72 : 110.03	102.66 89.77 : 112.62	107.98 89.77 : 112.62
Titanium	TM181	79.39 66.23 : 102.06	77.86 66.29 : 105.96	89.31 66.29 : 105.96
Vanadium	TM181	97.8 86.19 : 109.45	95.24 75.51 : 108.87	104.76 75.51 : 108.87
Zinc	TM181	97.74 84.68 : 113.99	104.11 84.02 : 111.24	109.24 84.02 : 111.24

PAH by GCMS

Component	Method Code	QC 2335	QC 2395
Acenaphthene	TM218	86.5 80.97 : 105.99	91.0 76.79 : 103.90
Acenaphthylene	TM218	83.5 74.76 : 107.36	91.5 78.40 : 108.66
Anthracene	TM218	86.0 73.04 : 106.97	92.0 70.90 : 109.22
Benz(a)anthracene	TM218	86.0 68.79 : 119.64	91.5 73.77 : 119.26



CERTIFICATE OF ANALYSIS

Validated

SDG:	201205-113	Client Reference:	JFR1451	Report Number:	579931
Location:	A303 Stonehenge	Order Number:		Superseded Report:	

PAH by GCMS

		QC 2335	QC 2395
Benzo(a)pyrene	TM218	96.0 66.17 : 117.52	94.5 73.20 : 114.18
Benzo(b)fluoranthene	TM218	88.0 66.40 : 118.34	93.0 75.36 : 117.58
Benzo(ghi)perylene	TM218	94.0 67.68 : 112.07	85.5 70.73 : 116.12
Benzo(k)fluoranthene	TM218	93.0 72.84 : 114.66	90.5 75.98 : 116.59
Chrysene	TM218	87.0 68.39 : 115.56	85.5 74.82 : 114.18
Dibenzo(ah)anthracene	TM218	90.0 69.03 : 110.45	86.0 69.17 : 115.30
Fluoranthene	TM218	74.0 69.37 : 117.19	89.5 75.88 : 112.84
Fluorene	TM218	87.0 75.38 : 105.98	92.5 76.66 : 107.56
Indeno(123cd)pyrene	TM218	86.0 65.91 : 113.61	93.5 70.26 : 117.95
Naphthalene	TM218	79.5 71.40 : 105.87	87.0 74.70 : 101.83
Phenanthrene	TM218	81.0 74.04 : 109.30	92.0 73.62 : 109.34
Pyrene	TM218	77.0 69.68 : 115.27	88.0 71.46 : 117.00

pH

Component	Method Code	QC 2356	QC 2365
pH	TM133	100.53 98.71 : 102.32	101.05 98.71 : 102.32

Phenols by HPLC (S)

Component	Method Code	QC 2321	QC 2351
2,3,5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	104.55 65.50 : 89.50	104.55 83.23 : 109.71
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	89.47 84.00 : 124.00	97.08 76.34 : 104.11
Catechol by HPLC (S)	TM062 (S)	87.62 19.39 : 135.70	100.0 22.43 : 157.02
Cresols by HPLC (S)	TM062 (S)	94.15 81.00 : 112.20	97.08 85.78 : 116.44
Naphthol by HPLC (S)	TM062 (S)	117.14 57.50 : 102.50	113.57 75.62 : 124.38
Phenol by HPLC (S)	TM062 (S)	100.66 88.67 : 124.67	111.26 79.53 : 120.47
Resorcinol HPLC (S)	TM062 (S)	96.23 69.99 : 127.22	98.74 71.43 : 129.59
Xylenols by HPLC (S)	TM062 (S)	100.1 93.00 : 121.00	97.92 89.90 : 107.23



CERTIFICATE OF ANALYSIS

Validated

SDG: 201205-113
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 579931
Superseded Report:

Total Organic Carbon

Component	Method Code	QC 2392	QC 2312
Total Organic Carbon	TM132	98.44 87.02 : 113.45	96.09 87.02 : 113.45

VOC MS (S)

Component	Method Code	QC 2397
1,1,1,2-tetrachloroethane	TM116	95.6 84.84 : 116.25
1,1,1-Trichloroethane	TM116	95.8 73.73 : 118.05
1,1,2-Trichloroethane	TM116	97.6 77.12 : 116.04
1,1-Dichloroethane	TM116	104.6 74.46 : 129.15
1,2-Dichloroethane	TM116	112.6 92.38 : 131.65
1,4-Dichlorobenzene	TM116	97.2 83.64 : 126.18
2-Chlorotoluene	TM116	96.8 76.03 : 113.25
4-Chlorotoluene	TM116	88.4 66.90 : 112.46
Benzene	TM116	99.2 88.60 : 113.80
Carbon Disulphide	TM116	99.4 74.91 : 122.14
Carbontetrachloride	TM116	101.8 80.31 : 124.50
Chlorobenzene	TM116	98.6 83.81 : 114.18
Chloroform	TM116	106.0 87.40 : 122.49
Chloromethane	TM116	89.6 65.89 : 136.93
Cis-1,2-Dichloroethene	TM116	99.4 80.67 : 126.72
Dibromomethane	TM116	99.8 73.23 : 118.35
Dichloromethane	TM116	114.0 81.11 : 133.25
Ethylbenzene	TM116	86.6 75.92 : 110.41
Hexachlorobutadiene	TM116	61.0 12.82 : 152.73
Isopropylbenzene	TM116	71.0 55.79 : 97.59
Naphthalene	TM116	100.6 80.86 : 128.81
o-Xylene	TM116	73.6 69.99 : 108.74



CERTIFICATE OF ANALYSIS

Validated

SDG: 201205-113
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

Report Number: 579931
Superseded Report:

VOC MS (S)

		QC 2397
p/m-Xylene	TM116	80.1 68.32 : 108.91
Sec-Butylbenzene	TM116	60.2 38.50 : 101.50
Tetrachloroethene	TM116	95.2 76.95 : 121.02
Toluene	TM116	91.2 74.24 : 107.42
Trichloroethene	TM116	96.2 77.61 : 111.54
Trichlorofluoromethane	TM116	103.4 84.55 : 133.27
Vinyl Chloride	TM116	99.6 68.02 : 143.37

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis .

The figure detailed is the percentage recovery result for the AQC .

The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control .



CERTIFICATE OF ANALYSIS

Validated

SDG: 201205-113
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

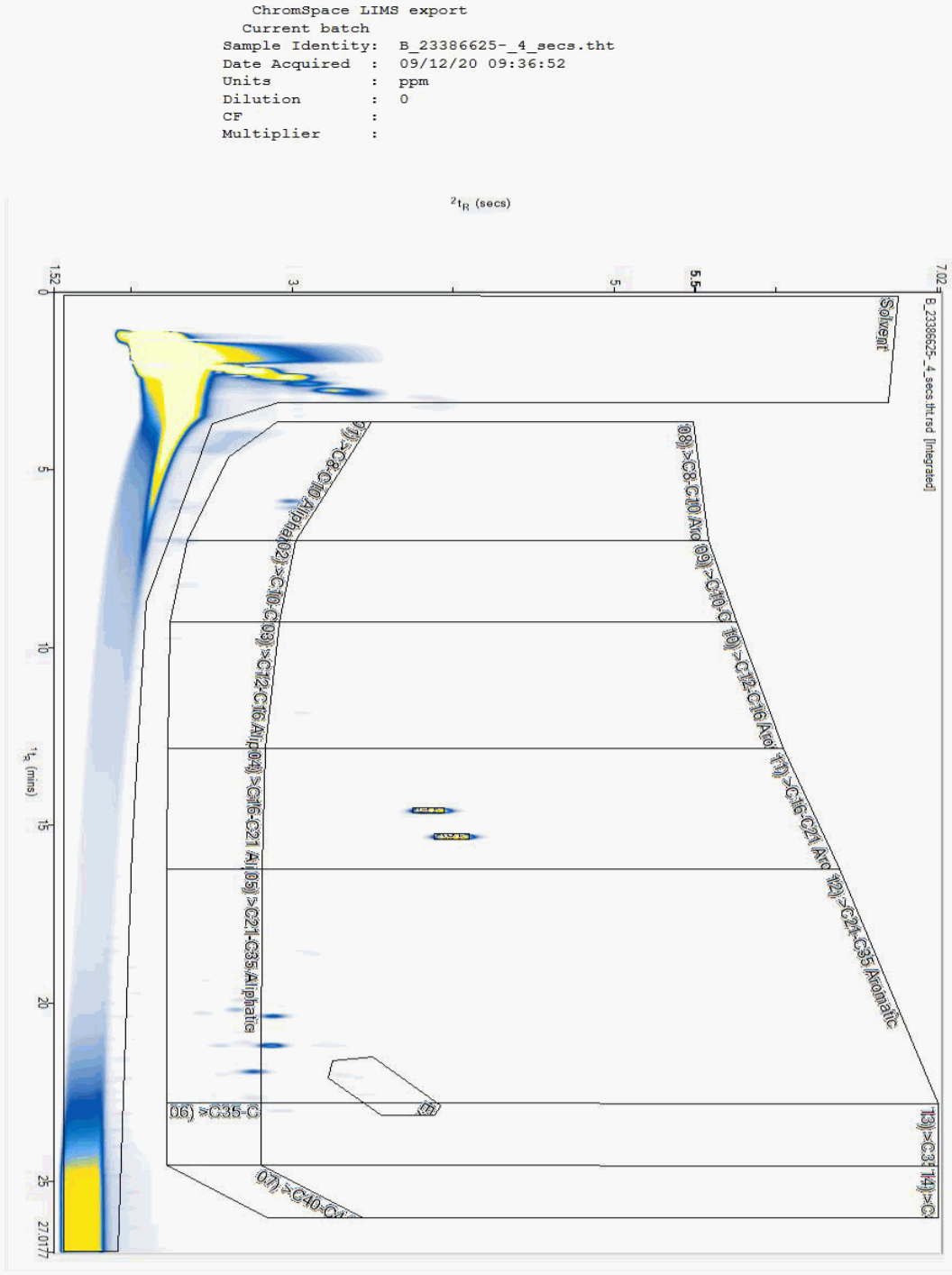
Report Number: 579931
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23386625
Sample ID : CPES1

Depth : 0.50





CERTIFICATE OF ANALYSIS

Validated

SDG: 201205-113
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

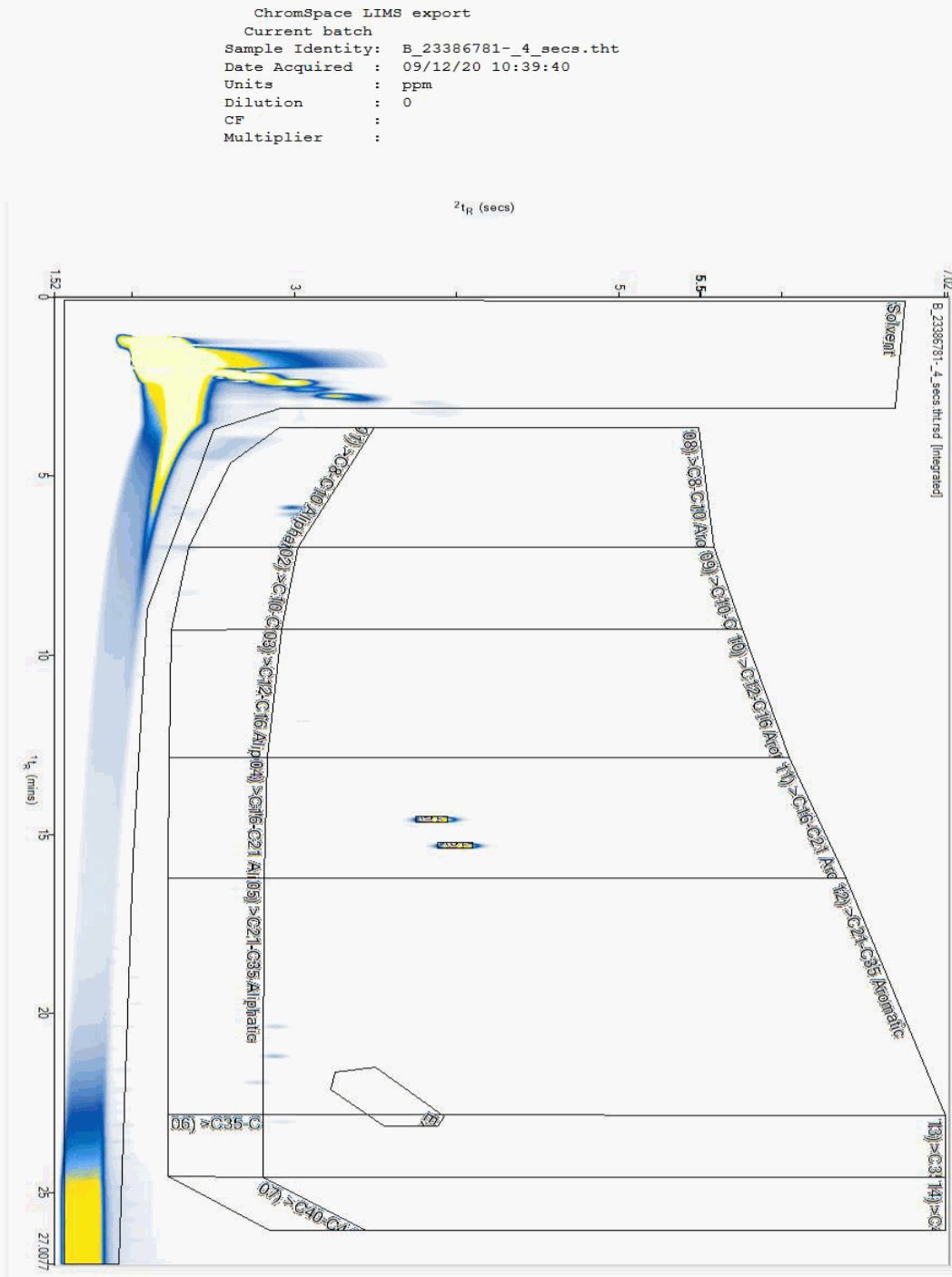
Report Number: 579931
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23386781
Sample ID : CPES1

Depth : 3.50





CERTIFICATE OF ANALYSIS

Validated

SDG: 201205-113
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

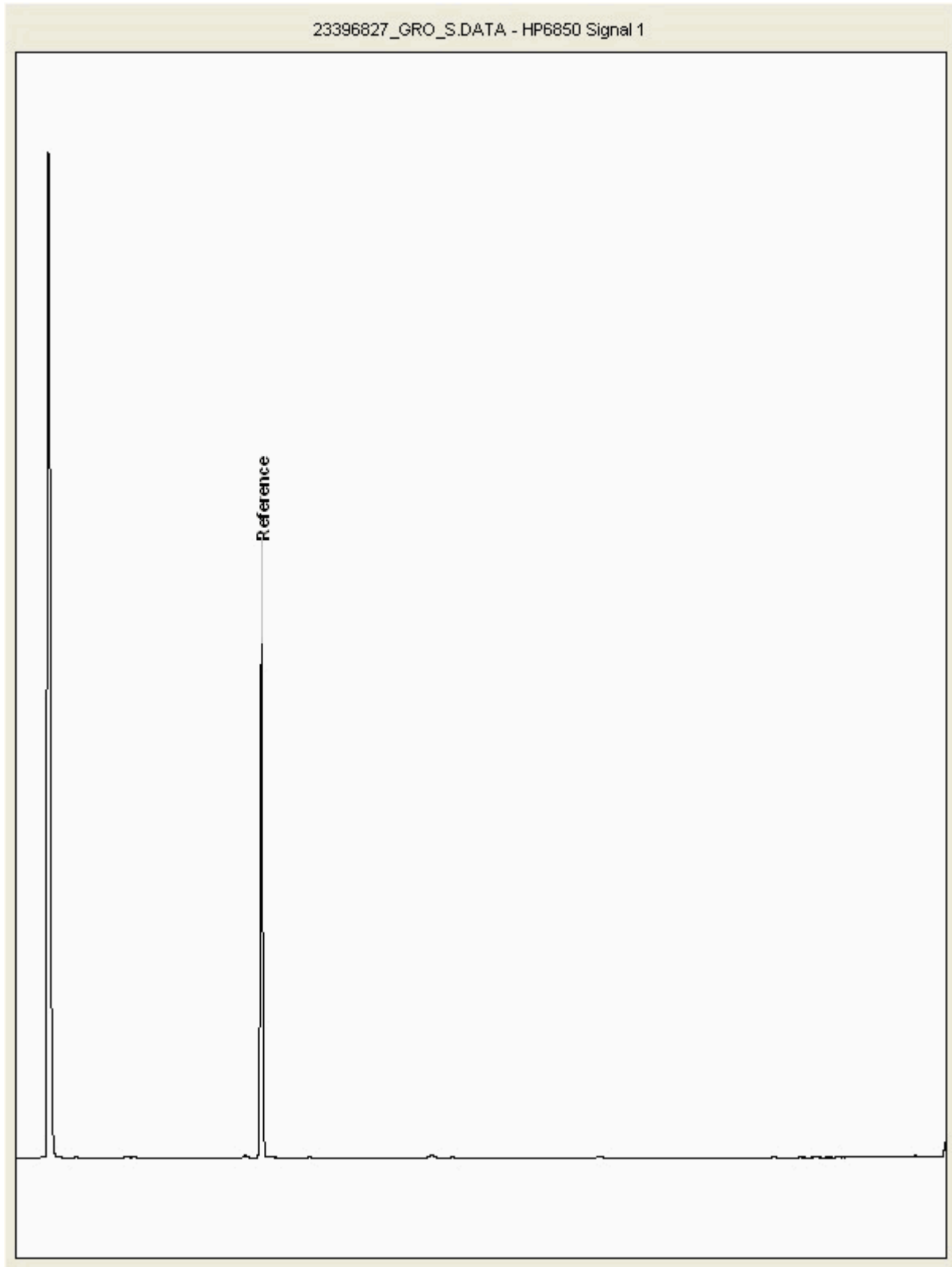
Report Number: 579931
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23396827
Sample ID : CPES1

Depth : 3.50





CERTIFICATE OF ANALYSIS

Validated

SDG: 201205-113
Location: A303 Stonehenge

Client Reference: JFR1451
Order Number:

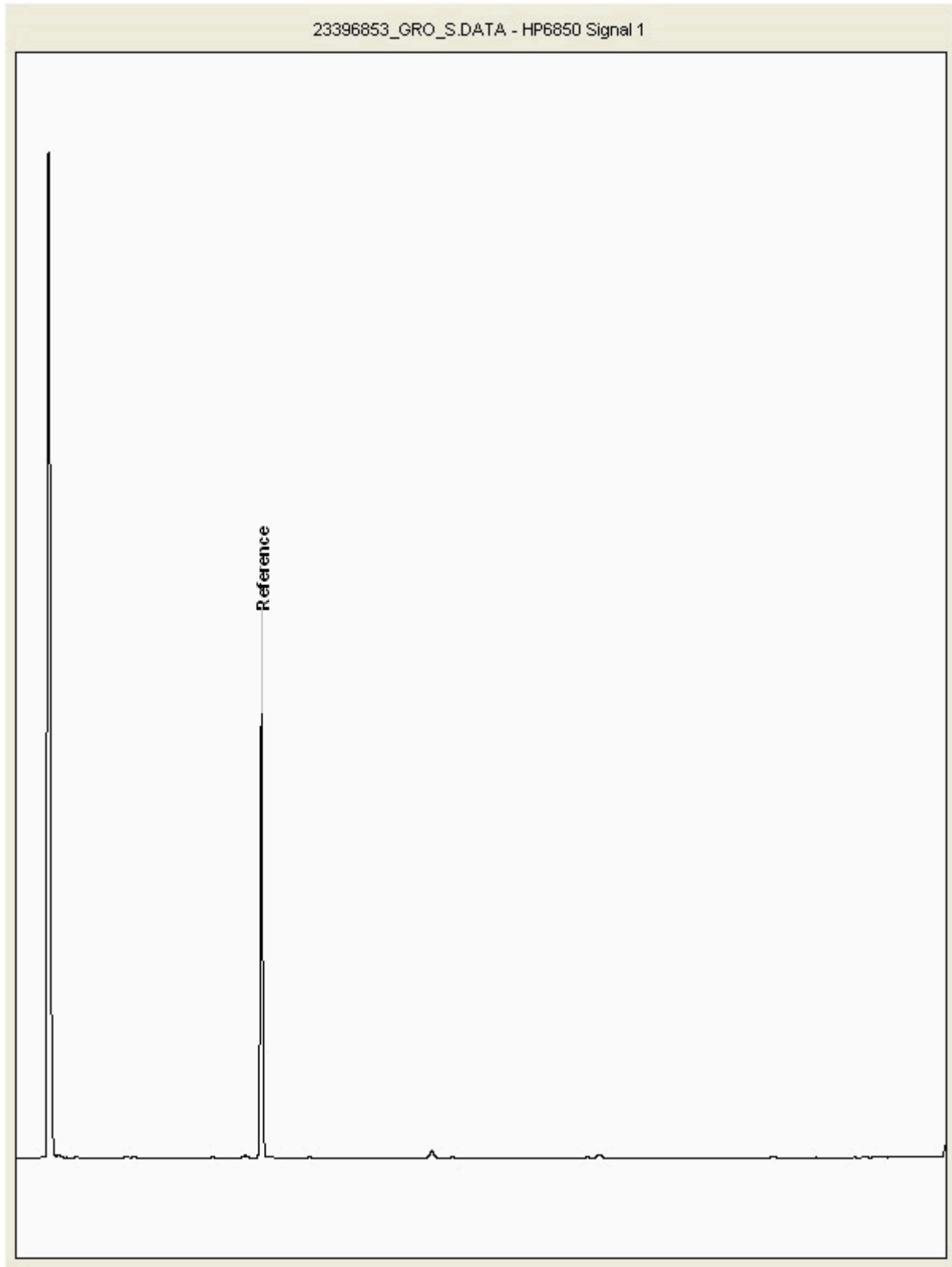
Report Number: 579931
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23396853
Sample ID : CPES1

Depth : 0.50





CERTIFICATE OF ANALYSIS

SDG: 201205-113 Client Reference: JFR1451 Report Number: 579931
 Location: A303 Stonehenge Order Number: Superseded Report:

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

19. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung. Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017)*.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



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RPS Consultants Ltd
260 Park Avenue
Aztec West
Almondsbury
Bristol
BS32 4SY

Attention: Lauren Davies

CERTIFICATE OF ANALYSIS

Date of report Generation: 12 January 2021
Customer: RPS Consultants Ltd
Sample Delivery Group (SDG): 201209-41
Your Reference: JFR1451
Location: A303
Report No: 582769

This report has been revised and directly supersedes 580570 in its entirety.

We received 1 sample on Wednesday December 09, 2020 and 1 of these samples were scheduled for analysis which was completed on Thursday December 17, 2020. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

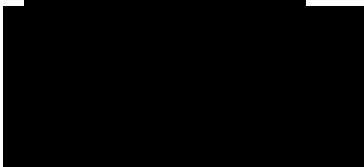
Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:



Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 201209-41 Client Reference: JFR1451 Report Number: 582769
Location: A303 Order Number: PQ20-978 Superseded Report: 580570

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
23390603	CPES1			07/12/2020

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG:	201209-41	Client Reference:	JFR1451
Location:	A303	Order Number:	PO20-978
		Report Number:	582769
		Superseded Report:	580570

Results Legend <div style="display: flex; flex-direction: column; gap: 5px;"> <div style="display: flex; align-items: center;">X Test</div> <div style="display: flex; align-items: center;">N No Determination Possible</div> </div> Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other	Lab Sample No(s)	23390603												
	Customer Sample Reference	CPES1												
	AGS Reference													
	Depth (m)													
	Container	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	DO KIT + DO 250 ml glass	330ml plastic bottle (ALE503)	250ml Amber GI, PTFE/PE	0.5l glass bottle (ALE227)					
	Sample Type	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW		
	Alkalinity as CaCO3	All	NDPs: 0 Tests: 1		X									
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 1			X									
Anions by Kone (w)	All	NDPs: 0 Tests: 1		X										
Chromium III	All	NDPs: 0 Tests: 1							X					
Conductivity (at 20 deg.C)	All	NDPs: 0 Tests: 1			X									
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 1									X			
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 1							X					
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 1	X											
Dissolved Oxygen by Titration	All	NDPs: 0 Tests: 1			X									
EPH CWG (Aliphatic) Aqueous GC (W)	All	NDPs: 0 Tests: 1		X										
EPH CWG (Aromatic) Aqueous GC (W)	All	NDPs: 0 Tests: 1		X										
Fluoride	All	NDPs: 0 Tests: 1			X									
GRO by GC-FID (W)	All	NDPs: 0 Tests: 1											X	
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 1			X									
Mercury Dissolved	All	NDPs: 0 Tests: 1									X			



CERTIFICATE OF ANALYSIS

Validated

SDG:	201209-41	Client Reference:	JFR1451	Report Number:	582769
Location:	A303	Order Number:	PO20-978	Superseded Report:	580570

#	ISO17025 accredited.	Customer Sample Ref.	CPES1			
Results Legend		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	Ground Water (GW) 07/12/2020 13:15:00 09/12/2020 201209-41 23390603			
M	mCERTS accredited.					
aq	Aqueous / settled sample.					
diss.filt	Dissolved / filtered sample.					
tot.unfilt	Total / unfiltered sample.					
*	Subcontracted - refer to subcontractor report for accreditation status.					
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery					
(F)	Trigger breach confirmed					
1-4*\$@	Sample deviation (see appendix)					
Component	LOD/Units	Method				
Alkalinity, Total as CaCO3	<2 mg/l	TM043	417			
Alkalinity, Bicarbonate as CaCO3	<2 mg/l	TM043	417			
Alkalinity, Carbonate as CaCO3	<2 mg/l	TM043	<2			
Carbon, Organic (diss.filt)	<3 mg/l	TM090	<3			
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099	<0.2			
Fluoride	<0.5 mg/l	TM104	<0.5			
Conductivity @ 20 deg.C	<0.02 mS/cm	TM120	0.49			
Dissolved solids, Total (meter)	<5 mg/l	TM123	390			
Chromium, Trivalent	<0.03 mg/l	TM152	<0.03			
Antimony (diss.filt)	<1 µg/l	TM152	<1			
Arsenic (diss.filt)	<0.5 µg/l	TM152	<0.5			
Beryllium (diss.filt)	<0.1 µg/l	TM152	<0.1			
Boron (diss.filt)	<10 µg/l	TM152	13.5			
Cadmium (diss.filt)	<0.08 µg/l	TM152	<0.08			
Chromium (diss.filt)	<1 µg/l	TM152	<1			
Copper (diss.filt)	<0.3 µg/l	TM152	0.579			
Lead (diss.filt)	<0.2 µg/l	TM152	<0.2			
Manganese (diss.filt)	<3 µg/l	TM152	<3			
Molybdenum (diss.filt)	<3 µg/l	TM152	<3			
Nickel (diss.filt)	<0.4 µg/l	TM152	1.03			
Phosphorus (diss.filt)	<10 µg/l	TM152	27			
Selenium (diss.filt)	<1 µg/l	TM152	<1			
Zinc (diss.filt)	<1 µg/l	TM152	4.03			
Sodium (Dis.Filt)	<0.076 mg/l	TM152	6.87	#		
Magnesium (Dis.Filt)	<0.036 mg/l	TM152	1.52			
Potassium (Dis.Filt)	<0.2 mg/l	TM152	0.539			
Calcium (Dis.Filt)	<0.2 mg/l	TM152	107			
Iron (Dis.Filt)	<0.019 mg/l	TM152	<0.019			
Mercury (diss.filt)	<0.01 µg/l	TM183	<0.01			
Nitrite as NO2	<0.05 mg/l	TM184	<0.05			
Phosphate (Ortho as PO4)	<0.05 mg/l	TM184	0.063			
Sulphate	<2 mg/l	TM184	18.2			



CERTIFICATE OF ANALYSIS

Validated

SDG:	201209-41	Client Reference:	JFR1451	Report Number:	582769
Location:	A303	Order Number:	PO20-978	Superseded Report:	580570

#	m	aq	dis.filt	tot.unfilt	*	**	(F)	1-4&@	Customer Sample Ref.	CPES1													
Results Legend ISO17025 accredited. mCERTS accredited. Aqueous / settled sample. Dissolved / filtered sample. Total / unfiltered sample. Subcontracted - refer to subcontractor report for accreditation status. % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery. Trigger breach confirmed Sample deviation (see appendix)									Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	Ground Water (GW) 07/12/2020 13:15:00 09/12/2020 201209-41 23390603													
Component	LOD/Units	Method																					
Chloride	<2 mg/l	TM184	13.3																				
Phosphate (Ortho as P)	<0.02 mg/l	TM184	0.0206																				
Nitrate as NO3	<0.3 mg/l	TM184	35.6																				
Oxygen, dissolved	<0.3 mg/l	TM187	8.19																				
Turbidity	<0.1 ntu	TM195	133																				
PCB congener 28	<0.015 µg/l	TM197	<0.03																				
PCB congener 52	<0.015 µg/l	TM197	<0.03																				
PCB congener 101	<0.015 µg/l	TM197	<0.03																				
PCB congener 118	<0.015 µg/l	TM197	<0.03																				
PCB congener 138	<0.015 µg/l	TM197	<0.03																				
PCB congener 153	<0.015 µg/l	TM197	<0.03																				
PCB congener 180	<0.015 µg/l	TM197	<0.03																				
Sum of detected EC7 PCB's	<0.105 µg/l	TM197	<0.21																				
Cyanide, Total	<0.05 mg/l	TM227	<0.05																				
Cyanide, Free	<0.05 mg/l	TM227	<0.05																				
Chromium, Hexavalent	<0.03 mg/l	TM241	<0.03																				
pH	<1 pH Units	TM256	7.4																				
Phenol	<0.002 mg/l	TM259	<0.002																				
Cresols	<0.006 mg/l	TM259	<0.006																				
Xylenols	<0.008 mg/l	TM259	<0.008																				
Phenols, Total Detected monohydric	<0.016 mg/l	TM259	<0.016																				
Trifluralin	<0.01 µg/l	TM343	<0.01																				
alpha-HCH	<0.01 µg/l	TM343	<0.01																				
gamma-HCH (Lindane)	<0.01 µg/l	TM343	<0.01																				
Heptachlor	<0.01 µg/l	TM343	<0.01																				
Aldrin	<0.01 µg/l	TM343	<0.01																				
beta-HCH	<0.01 µg/l	TM343	<0.01																				
Isodrin	<0.01 µg/l	TM343	<0.01																				
delta-HCH	<0.01 µg/l	TM343	<0.01																				
Heptachlor epoxide	<0.01 µg/l	TM343	<0.01																				
o,p'-DDE	<0.01 µg/l	TM343	<0.01																				
Endosulphan I	<0.01 µg/l	TM343	<0.01																				



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Validated

SDG:	201209-41	Client Reference:	JFR1451	Report Number:	582769
Location:	A303	Order Number:	PO20-978	Superseded Report:	580570

Results Legend			Customer Sample Ref.	CPES1			
# ISO17025 accredited. M MCERTS accredited. aq Aqueous / settled sample. dis.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-446@ Sample deviation (see appendix)	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	Ground Water (GW) 07/12/2020 13:15:00 09/12/2020 201209-41 23390603					
Component	LOD/Units	Method					
trans-Chlordane	<0.01 µg/l	TM343	<0.01				
cis-Chlordane	<0.01 µg/l	TM343	<0.01				
p,p'-DDE	<0.01 µg/l	TM343	<0.01				
Dieldrin	<0.01 µg/l	TM343	<0.01				
o,p'-DDD (TDE)	<0.01 µg/l	TM343	<0.01				
Endrin	<0.01 µg/l	TM343	<0.02				
o,p'-DDT	<0.01 µg/l	TM343	<0.02				
p,p'-DDD (TDE)	<0.01 µg/l	TM343	<0.01				
Endosulphan II	<0.02 µg/l	TM343	<0.02				
p,p'-DDT	<0.01 µg/l	TM343	<0.01				
o,p'-Methoxychlor	<0.01 µg/l	TM343	<0.01				
p,p'-Methoxychlor	<0.01 µg/l	TM343	<0.02				
Endosulphan Sulphate	<0.02 µg/l	TM343	<0.04				
Permethrin I	<0.01 µg/l	TM343	<0.01				
Permethrin II	<0.01 µg/l	TM343	<0.01				
1,3,5-Trichlorobenzene	<0.01 µg/l	TM344	<0.02				
Hexachlorobutadiene	<0.01 µg/l	TM344	<0.02				
1,2,4-Trichlorobenzene	<0.01 µg/l	TM344	<0.02				
1,2,3-Trichlorobenzene	<0.01 µg/l	TM344	<0.02				
Dichlorvos	<0.01 µg/l	TM344	<0.02				
Dichlobenil	<0.01 µg/l	TM344	<0.02				
Mevinphos	<0.01 µg/l	TM344	<0.02				
Tecnazene	<0.01 µg/l	TM344	<0.02				
Hexachlorobenzene	<0.01 µg/l	TM344	<0.02				
Demeton-S-methyl	<0.01 µg/l	TM344	<0.02				
Phorate	<0.01 µg/l	TM344	<0.02				
Diazinon	<0.01 µg/l	TM344	<0.02				
Triallate	<0.01 µg/l	TM344	<0.02				
Atrazine	<0.01 µg/l	TM344	<0.02				
Simazine	<0.01 µg/l	TM344	0.0449				
Disulfoton	<0.01 µg/l	TM344	<0.02				
Propetamphos	<0.01 µg/l	TM344	<0.02				



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Location:	A303	Order Number:	PO20-978	Superseded Report:	580570

SVOC MS (W) - Aqueous

#	ISO17025 accredited.	Customer Sample Ref.	CPES1			
Results Legend		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	Ground Water (GW) 07/12/2020 13:15:00 09/12/2020 201209-41 23390603			
M	mCERTS accredited.					
aq	Aqueous / settled sample.					
diss,filtr	Dissolved / filtered sample.					
tot.unfiltr	Total / unfiltered sample.					
*	Subcontracted - refer to subcontractor report for accreditation status.					
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery					
(F)	Trigger breach confirmed					
1-466@	Sample deviation (see appendix)					
Component	LOD/Units	Method				
1,2,4-Trichlorobenzene (aq)	<1 µg/l	TM176	<8	#		
1,2-Dichlorobenzene (aq)	<1 µg/l	TM176	<8	#		
1,3-Dichlorobenzene (aq)	<1 µg/l	TM176	<8	#		
1,4-Dichlorobenzene (aq)	<1 µg/l	TM176	<8	#		
2,4,5-Trichlorophenol (aq)	<1 µg/l	TM176	<8	#		
2,4,6-Trichlorophenol (aq)	<1 µg/l	TM176	<8	#		
2,4-Dichlorophenol (aq)	<1 µg/l	TM176	<8	#		
2,4-Dimethylphenol (aq)	<1 µg/l	TM176	<8	#		
2,4-Dinitrotoluene (aq)	<1 µg/l	TM176	<8	#		
2,6-Dinitrotoluene (aq)	<1 µg/l	TM176	<8	#		
2-Chloronaphthalene (aq)	<1 µg/l	TM176	<8	#		
2-Chlorophenol (aq)	<1 µg/l	TM176	<8	#		
2-Methylnaphthalene (aq)	<1 µg/l	TM176	<8	#		
2-Methylphenol (aq)	<1 µg/l	TM176	<8	#		
2-Nitroaniline (aq)	<1 µg/l	TM176	<8	#		
2-Nitrophenol (aq)	<1 µg/l	TM176	<8	#		
3-Nitroaniline (aq)	<1 µg/l	TM176	<8	#		
4-Bromophenylphenylether (aq)	<1 µg/l	TM176	<8	#		
4-Chloro-3-methylphenol (aq)	<1 µg/l	TM176	<8	#		
4-Chloroaniline (aq)	<1 µg/l	TM176	<8	#		
4-Chlorophenylphenylether (aq)	<1 µg/l	TM176	<8	#		
4-Methylphenol (aq)	<1 µg/l	TM176	<8	#		
4-Nitroaniline (aq)	<1 µg/l	TM176	<8	#		
4-Nitrophenol (aq)	<1 µg/l	TM176	<8	#		
Azobenzene (aq)	<1 µg/l	TM176	<8	#		
Acenaphthylene (aq)	<1 µg/l	TM176	<8	#		
Acenaphthene (aq)	<1 µg/l	TM176	<8	#		
Anthracene (aq)	<1 µg/l	TM176	<8	#		
bis(2-Chloroethyl)ether (aq)	<1 µg/l	TM176	<8	#		
bis(2-Chloroethoxy)methane (aq)	<1 µg/l	TM176	<8	#		
bis(2-Ethylhexyl) phthalate (aq)	<2 µg/l	TM176	<16	#		
Butylbenzyl phthalate (aq)	<1 µg/l	TM176	<8	#		



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SVOC MS (W) - Aqueous

Results Legend		Customer Sample Ref.	CPES1			
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. dis.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4&@ Sample deviation (see appendix)		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	Ground Water (GW) 07/12/2020 13:15:00 09/12/2020 201209-41 23390603			
Component	LOD/Units	Method				
Benzo(a)anthracene (aq)	<1 µg/l	TM176	<8 #			
Benzo(b)fluoranthene (aq)	<1 µg/l	TM176	<8 #			
Benzo(k)fluoranthene (aq)	<1 µg/l	TM176	<8 #			
Benzo(a)pyrene (aq)	<1 µg/l	TM176	<8 #			
Benzo(g,h,i)perylene (aq)	<1 µg/l	TM176	<8 #			
Carbazole (aq)	<1 µg/l	TM176	<8 #			
Chrysene (aq)	<1 µg/l	TM176	<8 #			
Dibenzofuran (aq)	<1 µg/l	TM176	<8 #			
n-Dibutyl phthalate (aq)	<1 µg/l	TM176	<8 #			
Diethyl phthalate (aq)	<1 µg/l	TM176	<8 #			
Dibenzo(a,h)anthracene (aq)	<1 µg/l	TM176	<8 #			
Dimethyl phthalate (aq)	<1 µg/l	TM176	<8 #			
n-Dioctyl phthalate (aq)	<5 µg/l	TM176	<40 #			
Fluoranthene (aq)	<1 µg/l	TM176	<8 #			
Fluorene (aq)	<1 µg/l	TM176	<8 #			
Hexachlorobenzene (aq)	<1 µg/l	TM176	<8 #			
Hexachlorobutadiene (aq)	<1 µg/l	TM176	<8 #			
Pentachlorophenol (aq)	<1 µg/l	TM176	<8 #			
Phenol (aq)	<1 µg/l	TM176	<8 #			
n-Nitroso-n-dipropylamine (aq)	<1 µg/l	TM176	<8 #			
Hexachloroethane (aq)	<1 µg/l	TM176	<8 #			
Nitrobenzene (aq)	<1 µg/l	TM176	<8 #			
Naphthalene (aq)	<1 µg/l	TM176	<8 #			
Isophorone (aq)	<1 µg/l	TM176	<8 #			
Hexachlorocyclopentadiene (aq)	<1 µg/l	TM176	<8 #			
Phenanthrene (aq)	<1 µg/l	TM176	<8 #			
Indeno(1,2,3-cd)pyrene (aq)	<1 µg/l	TM176	<8 #			
Pyrene (aq)	<1 µg/l	TM176	<8 #			
SVOC TIC (aq)		TM176	Not Detected			
Total SVOC TIC	<10 µg/l	TM176	<80			



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VOC MS (W)

#	Results Legend	Customer Sample Ref.	CPES1				
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	Ground Water (GW) 07/12/2020 13:15:00 09/12/2020 201209-41 23390603				
M	mCERTS accredited.						
aq	Aqueous / settled sample.						
diss,filtr	Dissolved / filtered sample.						
tot.unfiltr	Total / unfiltered sample.						
*	Subcontracted - refer to subcontractor report for accreditation status.						
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery						
(F)	Trigger breach confirmed						
1-4*\$@	Sample deviation (see appendix)						
Component	LOD/Units			Method			
Dibromofluoromethane**	%	TM208	105				
Toluene-d8**	%	TM208	97.4				
4-Bromofluorobenzene**	%	TM208	98.6				
Dichlorodifluoromethane	<1 µg/l	TM208	<1				
Chloromethane	<1 µg/l	TM208	<1				
Vinyl chloride	<1 µg/l	TM208	<1				
Bromomethane	<1 µg/l	TM208	<1				
Chloroethane	<1 µg/l	TM208	<1				
Trichlorofluoromethane	<1 µg/l	TM208	<1				
1,1-Dichloroethene	<1 µg/l	TM208	<1				
Carbon disulphide	<1 µg/l	TM208	<1				
Dichloromethane	<3 µg/l	TM208	<3				
Methyl tertiary butyl ether (MTBE)	<1 µg/l	TM208	<1				
trans-1,2-Dichloroethene	<1 µg/l	TM208	<1				
1,1-Dichloroethane	<1 µg/l	TM208	<1				
cis-1,2-Dichloroethene	<1 µg/l	TM208	<1				
2,2-Dichloropropane	<1 µg/l	TM208	<1				
Bromochloromethane	<1 µg/l	TM208	<1				
Chloroform	<1 µg/l	TM208	<1				
1,1,1-Trichloroethane	<1 µg/l	TM208	<1				
1,1-Dichloropropene	<1 µg/l	TM208	<1				
Carbontetrachloride	<1 µg/l	TM208	<1				
1,2-Dichloroethane	<1 µg/l	TM208	<1				
Benzene	<1 µg/l	TM208	<1				
Trichloroethene	<1 µg/l	TM208	<1				
1,2-Dichloropropane	<1 µg/l	TM208	<1				
Dibromomethane	<1 µg/l	TM208	<1				
Bromodichloromethane	<1 µg/l	TM208	<1				
cis-1,3-Dichloropropene	<1 µg/l	TM208	<1				
Toluene	<1 µg/l	TM208	<1				
trans-1,3-Dichloropropene	<1 µg/l	TM208	<1				
1,1,2-Trichloroethane	<1 µg/l	TM208	<1				



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Location:	A303	Order Number:	PO20-978	Superseded Report:	580570

VOC MS (W)

Results Legend		Customer Sample Ref.	CPES1				
# ISO17025 accredited. M MCERTS accredited. an Aqueous / settled sample. dis.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery. (F) Trigger breach confirmed 1-446@ Sample deviation (see appendix)		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	Ground Water (GW) 07/12/2020 13:15:00 09/12/2020 201209-41 23390603				
Component	LOD/Units	Method					
1,3-Dichloropropane	<1 µg/l	TM208	<1				
Tetrachloroethene	<1 µg/l	TM208	<1				
Dibromochloromethane	<1 µg/l	TM208	<1				
1,2-Dibromoethane	<1 µg/l	TM208	<1				
Chlorobenzene	<1 µg/l	TM208	<1				
1,1,1,2-Tetrachloroethane	<1 µg/l	TM208	<1				
Ethylbenzene	<1 µg/l	TM208	<1				
m,p-Xylene	<1 µg/l	TM208	<1				
o-Xylene	<1 µg/l	TM208	<1				
Styrene	<1 µg/l	TM208	<1				
Bromoform	<1 µg/l	TM208	<1				
Isopropylbenzene	<1 µg/l	TM208	<1				
1,1,2,2-Tetrachloroethane	<1 µg/l	TM208	<1				
1,2,3-Trichloropropane	<1 µg/l	TM208	<1				
Bromobenzene	<1 µg/l	TM208	<1				
Propylbenzene	<1 µg/l	TM208	<1				
2-Chlorotoluene	<1 µg/l	TM208	<1				
1,3,5-Trimethylbenzene	<1 µg/l	TM208	<1				
4-Chlorotoluene	<1 µg/l	TM208	<1				
tert-Butylbenzene	<1 µg/l	TM208	<1				
1,2,4-Trimethylbenzene	<1 µg/l	TM208	<1				
sec-Butylbenzene	<1 µg/l	TM208	<1				
4-iso-Propyltoluene	<1 µg/l	TM208	<1				
1,3-Dichlorobenzene	<1 µg/l	TM208	<1				
1,4-Dichlorobenzene	<1 µg/l	TM208	<1				
n-Butylbenzene	<1 µg/l	TM208	<1				
1,2-Dichlorobenzene	<1 µg/l	TM208	<1				
1,2-Dibromo-3-chloropropane	<1 µg/l	TM208	<1				
1,2,4-Trichlorobenzene	<1 µg/l	TM208	<1				
Hexachlorobutadiene	<1 µg/l	TM208	<1				
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208	<1				
Naphthalene	<1 µg/l	TM208	<1				



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Table of Results - Appendix

Method No	Reference	Description
TM043	Method 2320B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part109 1984	Determination of alkalinity in aqueous samples
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM104	Method 4500F, AWWA/APHA, 20th Ed., 1999	Determination of Fluoride using the Kone Analyser
TM120	Method 2510B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part 9:1970	Determination of Electrical Conductivity using a Conductivity Meter
TM123	BS 2690: Part 121:1981	The Determination of Total Dissolved Solids in Water
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM174	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID
TM176	EPA 8270D Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of SVOCs in Water by GCMS
TM178	Modified: US EPA Method 8100	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS in Waters
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM187	Winkler, L.W, Ber Deutsch. Chem. Ges, 21,2843,1888."	Dissolved Oxygen in Natural and Waste Waters HMSO 1979 ISBN 011 751442
TM195	Colour and Turbidity of water. Methods for the Examination of Waters and Associated Materials. HMSO, 1981, ISBN 0 11 751955 3.	Determination of Turbidity in Waters & Associated Matrices
TM197	Modified: US EPA Method 8082.EA Method 174 and 5109631	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Waters
TM208	Modified: US EPA Method 8260b & 624	Determination of Volatile Organic Compounds by Headspace / GC-MS in Waters
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser
TM245	By GC-FID	Determination of GRO by Headspace in waters
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC
TM343	EPA 8270D - Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of Selected Pesticides (Suite I) in Liquids by GCMS
TM344	EPA 8270D – Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of selected pesticides (Suite II) by GCMS

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).



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Test Completion Dates

Lab Sample No(s)	23390603
Customer Sample Ref.	CPES1
AGS Ref.	
Depth	
Type	Ground Water

Alkalinity as CaCO3	16-Dec-2020
Ammoniacal Nitrogen	16-Dec-2020
Anions by Kone (w)	16-Dec-2020
Chromium III	15-Dec-2020
Conductivity (at 20 deg.C)	14-Dec-2020
Cyanide Comp/Free/Total/Thiocyanate	14-Dec-2020
Dissolved Metals by ICP-MS	16-Dec-2020
Dissolved Organic/Inorganic Carbon	12-Dec-2020
Dissolved Oxygen by Titration	13-Dec-2020
EPH CWG (Aliphatic) Aqueous GC (W)	15-Dec-2020
EPH CWG (Aromatic) Aqueous GC (W)	15-Dec-2020
Fluoride	14-Dec-2020
GRO by GC-FID (W)	11-Dec-2020
Hexavalent Chromium (w)	14-Dec-2020
Mercury Dissolved	11-Dec-2020
Nitrite by Kone (w)	15-Dec-2020
PAH Spec MS - Aqueous (W)	16-Dec-2020
PCB Congeners - Aqueous (W)	16-Dec-2020
Pesticides (Suite I) by GCMS	16-Dec-2020
Pesticides (Suite II) by GCMS	16-Dec-2020
pH Value	14-Dec-2020
Phenols by HPLC (W)	15-Dec-2020
Phosphate by Kone (w)	14-Dec-2020
SVOC MS (W) - Aqueous	17-Dec-2020
Total Dissolved Solids	15-Dec-2020
TPH CWG (W)	15-Dec-2020
Turbidity in waters	14-Dec-2020
VOC MS (W)	10-Dec-2020



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ASSOCIATED AQC DATA

Alkalinity as CaCO3

Component	Method Code	QC 2302
Total Alkalinity as CaCO3	TM043	96.97 94.47 : 104.41

Anions by Kone (w)

Component	Method Code	QC 2334
Chloride	TM184	106.0 92.93 : 115.43
Sulphate (soluble)	TM184	102.4 90.53 : 113.03
TON as NO3	TM184	105.0 99.60 : 111.90

Conductivity (at 20 deg.C)

Component	Method Code	QC 2357
Conductivity (at 20 deg.C)	TM120	102.26 100.75 : 105.26

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2308
Free Cyanide (W)	TM227	98.25 90.50 : 114.50
Thiocyanate (W)	TM227	99.0 90.50 : 113.00
Total Cyanide (W)	TM227	98.5 91.75 : 112.75

Dissolved Metals by ICP-MS

Component	Method Code	QC 2342	QC 2385
Aluminium	TM152	96.0 94.21 : 111.52	100.67 94.21 : 111.52
Antimony	TM152	105.33 88.37 : 130.57	103.0 88.37 : 130.57
Arsenic	TM152	100.83 92.62 : 113.52	99.17 92.62 : 113.52
Barium	TM152	109.83 88.62 : 113.14	100.67 88.62 : 113.14
Beryllium	TM152	91.17 87.08 : 111.38	101.67 87.08 : 111.38
Bismuth	TM152	100.17 92.62 : 115.02	98.83 92.62 : 115.02
Boron	TM152	92.33 86.31 : 120.88	99.33 86.31 : 120.88



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Dissolved Metals by ICP-MS

		QC 2342	QC 2385
Cadmium	TM152	100.33 93.85 : 111.65	100.17 93.85 : 111.65
Calcium	TM152	105.33 89.20 : 126.91	102.0 89.20 : 126.91
Chromium	TM152	100.33 92.50 : 113.03	99.33 92.50 : 113.03
Cobalt	TM152	99.17 85.01 : 114.87	97.83 85.01 : 114.87
Copper	TM152	99.33 89.87 : 119.73	100.33 89.87 : 119.73
Iron	TM152	98.67 93.02 : 113.86	100.67 93.02 : 113.86
Lead	TM152	102.17 91.11 : 116.98	101.83 91.11 : 116.98
Lithium	TM152	89.67 91.30 : 123.00	102.67 91.30 : 123.00
Magnesium	TM152	95.33 89.60 : 116.61	102.67 89.60 : 116.61
Manganese	TM152	99.17 93.97 : 112.46	101.0 93.97 : 112.46
Molybdenum	TM152	97.5 89.07 : 110.96	96.33 89.07 : 110.96
Nickel	TM152	99.67 93.70 : 112.15	99.67 93.70 : 112.15
Phosphorus	TM152	99.5 89.24 : 114.18	100.83 89.24 : 114.18
Potassium	TM152	104.0 93.20 : 115.55	102.67 93.20 : 115.55
Selenium	TM152	103.83 91.69 : 117.12	101.0 91.69 : 117.12
Silver	TM152	99.17 90.93 : 121.73	98.67 90.93 : 121.73
Sodium	TM152	94.67 92.42 : 113.24	103.33 92.42 : 113.24
Strontium	TM152	101.67 92.14 : 116.24	100.0 92.14 : 116.24
Tellurium	TM152	98.5 89.88 : 111.78	96.67 89.88 : 111.78
Thallium	TM152	96.33 82.43 : 113.83	96.17 82.43 : 113.83
Tin	TM152	105.33 94.62 : 107.79	102.67 94.62 : 107.79
Titanium	TM152	98.5 90.29 : 115.23	105.0 90.29 : 115.23
Tungsten	TM152	102.33 77.61 : 132.31	103.33 77.61 : 132.31
Uranium	TM152	96.83 86.97 : 115.76	99.67 86.97 : 115.76
Vanadium	TM152	100.33 89.61 : 115.48	96.0 89.61 : 115.48
Zinc	TM152	99.67 87.51 : 116.26	100.0 87.51 : 116.26

Dissolved Organic/Inorganic Carbon



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Dissolved Organic/Inorganic Carbon

Component	Method Code	QC 2382
Dissolved Inorganic Carbon	TM090	104.17 93.58 : 112.28
Dissolved Organic Carbon	TM090	102.17 96.13 : 109.53

EPH CWG (Aliphatic) Aqueous GC (W)

Component	Method Code	QC 2341
Total Aliphatics >C10-C40	TM174	97.36 65.58 : 141.57

EPH CWG (Aromatic) Aqueous GC (W)

Component	Method Code	QC 2343
Total Aromatics >EC10-EC40	TM174	96.83 60.75 : 129.09

Fluoride

Component	Method Code	QC 2311
Fluoride	TM104	102.0 96.67 : 108.67

GRO by GC-FID (W)

Component	Method Code	QC 2333
Benzene by GC	TM245	88.5 79.13 : 118.84
Ethylbenzene by GC	TM245	90.0 79.54 : 115.99
m & p Xylene by GC	TM245	88.5 78.44 : 116.32
MTBE GC-FID	TM245	102.0 81.43 : 120.09
o Xylene by GC	TM245	91.0 76.85 : 120.29
QC	TM245	84.82 71.58 : 131.01
Toluene by GC	TM245	88.0 79.00 : 121.96

Hexavalent Chromium (w)



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Hexavalent Chromium (w)

Component	Method Code	QC 2389
Hexavalent Chromium	TM241	100.8 94.17 : 106.17

Mercury Dissolved

Component	Method Code	QC 2381
Mercury Dissolved (CVAF)	TM183	95.8 69.30 : 128.70

PAH Spec MS - Aqueous (W)

Component	Method Code	QC 2357
Acenaphthene by GCMS	TM178	101.6 90.45 : 118.63
Acenaphthylene by GCMS	TM178	102.0 90.13 : 116.27
Anthracene by GCMS	TM178	100.0 92.40 : 114.00
Benz(a)anthracene by GCMS	TM178	109.2 89.51 : 117.69
Benzo(a)pyrene by GCMS	TM178	104.8 89.43 : 118.57
Benzo(b)fluoranthene by GCMS	TM178	110.0 87.80 : 121.80
Benzo(ghi)perylene by GCMS	TM178	101.6 87.10 : 119.30
Benzo(k)fluoranthene by GCMS	TM178	101.6 93.23 : 123.57
Chrysene by GCMS	TM178	100.4 88.68 : 116.92
Dibenzo(ah)anthracene by GCMS	TM178	97.2 86.24 : 118.56
Fluoranthene by GCMS	TM178	96.4 86.04 : 121.96
Fluorene by GCMS	TM178	100.4 90.76 : 121.24
Indeno(123cd)pyrene by GCMS	TM178	106.0 88.39 : 119.61
Naphthalene by GCMS	TM178	102.4 89.40 : 121.80
Phenanthrene by GCMS	TM178	101.6 90.41 : 119.19
Pyrene by GCMS	TM178	97.2 91.00 : 120.20

PCB Congeners - Aqueous (W)



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PCB Congeners - Aqueous (W)

Component	Method Code	QC 2359
PCB congener 101	TM197	104.4 85.28 : 119.60
PCB congener 105	TM197	106.4 81.16 : 119.80
PCB congener 114	TM197	106.8 88.32 : 118.08
PCB congener 118	TM197	104.0 87.76 : 117.04
PCB congener 123	TM197	105.6 86.80 : 117.28
PCB congener 126	TM197	106.4 84.56 : 116.00
PCB congener 138	TM197	107.6 83.00 : 117.80
PCB congener 153	TM197	109.6 84.12 : 117.00
PCB congener 156	TM197	107.2 82.24 : 119.20
PCB congener 157	TM197	106.8 84.96 : 116.40
PCB congener 167	TM197	106.8 81.64 : 119.32
PCB congener 169	TM197	106.8 84.60 : 117.96
PCB congener 180	TM197	107.6 80.40 : 119.04
PCB congener 189	TM197	106.4 81.56 : 119.00
PCB congener 28	TM197	102.0 83.20 : 117.04
PCB congener 52	TM197	105.2 81.84 : 119.52
PCB congener 77	TM197	105.2 81.96 : 117.24
PCB congener 81	TM197	105.2 82.28 : 120.20

Pesticides (Suite I) by GCMS

Component	Method Code	QC 2332
Aldrin - (Inst.)	TM343	58.76 59.75 : 143.00
alpha-HCH - (Inst.)	TM343	71.47 75.03 : 148.38
beta-HCH - (Inst.)	TM343	69.75 75.85 : 146.50
cis-Chlordane - (Inst.)	TM343	69.26 71.78 : 137.03
delta-HCH - (Inst.)	TM343	82.62 76.38 : 138.48
Dieldrin - (Inst.)	TM343	75.36 77.45 : 154.10
Endosulphan I - (Inst.)	TM343	75.76 91.30 : 168.70



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Pesticides (Suite I) by GCMS

		QC 2332
Endosulphan II - (Inst.)	TM343	73.08 82.68 : 161.13
Endosulphan Sulphate - (Inst.)	TM343	64.05 60.50 : 159.50
Endrin - (Inst.)	TM343	76.39 85.55 : 163.70
gamma-HCH (Lindane) - (Inst.)	TM343	70.71 72.98 : 157.58
Heptachlor - (Inst.)	TM343	61.71 57.70 : 149.20
Heptachlor epoxide - (Inst.)	TM343	69.85 71.08 : 140.38
Isodrin - (Inst.)	TM343	60.33 55.55 : 144.50
o,p-DDD (TDE) - (Inst.)	TM343	63.88 68.83 : 141.43
o,p-DDE - (Inst.)	TM343	64.69 63.00 : 139.20
o,p-DDT - (Inst.)	TM343	89.87 68.05 : 148.15
o,p-Methoxychlor - (Inst.)	TM343	86.61 63.95 : 156.80
p,p-DDD (TDE) - (Inst.)	TM343	62.66 64.33 : 143.53
p,p-DDE - (Inst.)	TM343	67.21 65.40 : 140.85
p,p-DDT - (Inst.)	TM343	72.07 60.08 : 157.13
p,p-Methoxychlor - (Inst.)	TM343	70.9 59.70 : 157.40
Permethrin I - (Inst.)	TM343	65.36 63.25 : 146.35
Permethrin II - (Inst.)	TM343	67.73 62.23 : 147.28
trans-Chlordane - (Inst.)	TM343	68.58 70.75 : 142.30
Trifluralin - (Inst.)	TM343	68.86 64.73 : 161.48

pH Value

Component	Method Code	QC 2343
pH	TM256	101.2 99.33 : 102.54

Phenols by HPLC (W)



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Phenols by HPLC (W)

Component	Method Code	QC 2351
2,3,5 Trimethyl-Phenol by HPLC (W)	TM259	102.0 91.00 : 109.00
2-Isopropyl Phenol by HPLC (W)	TM259	102.0 85.00 : 109.00
Cresols by HPLC (W)	TM259	101.0 92.00 : 110.00
Napthol by HPLC (W)	TM259	111.0 86.00 : 128.00
Phenol by HPLC (W)	TM259	101.0 88.24 : 111.76
Xylenols by HPLC (W)	TM259	106.0 94.83 : 110.83

Phosphate by Kone (w)

Component	Method Code	QC 2336
Phosphate (Ortho as PO4)	TM184	100.8 96.40 : 109.60

SVOC MS (W) - Aqueous

Component	Method Code	QC 2307
4-Bromophenylphenylether	TM176	82.4 52.80 : 111.84
Benzo(a)anthracene	TM176	79.44 59.28 : 107.76
Benzo(a)pyrene	TM176	78.0 54.40 : 105.76
Butylbenzyl phthalate	TM176	72.0 51.68 : 117.92
Hexachlorobutadiene	TM176	66.48 48.64 : 95.68
Naphthalene	TM176	86.4 63.04 : 111.04
Nitrobenzene	TM176	80.8 59.92 : 108.40
Phenol	TM176	50.4 36.88 : 72.40

Total Dissolved Solids

Component	Method Code	QC 2338
Total Dissolved Solids	TM123	98.9 97.30 : 100.92

Turbidity in waters



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Turbidity in waters

Component	Method Code	QC 2316
Turbidity	TM195	101.75 83.75 : 121.25

VOC MS (W)

Component	Method Code	QC 2351
1,1,1,2-Tetrachloroethane	TM208	101.5 78.82 : 115.90
1,1,1-Trichloroethane	TM208	98.0 86.83 : 113.41
1,1-Dichloroethane	TM208	91.5 79.99 : 118.57
1,2-Dichloroethane	TM208	86.5 79.35 : 124.02
2-Chlorotoluene	TM208	102.0 79.67 : 114.74
4-Chlorotoluene	TM208	105.0 80.15 : 113.42
Benzene	TM208	93.5 82.57 : 114.10
Bromomethane	TM208	96.0 78.77 : 123.20
Carbontetrachloride	TM208	102.0 79.73 : 118.91
Chlorobenzene	TM208	100.0 88.28 : 110.81
Chloroform	TM208	95.5 82.31 : 120.71
Chloromethane	TM208	96.0 62.46 : 124.98
Cis-1,2-Dichloroethene	TM208	96.5 83.75 : 118.91
Dichloromethane	TM208	92.5 81.20 : 120.83
Ethylbenzene	TM208	94.0 80.54 : 112.31
Hexachlorobutadiene	TM208	95.5 73.65 : 117.84
o-Xylene	TM208	99.5 86.17 : 109.69
p/m-Xylene	TM208	96.75 83.09 : 113.86
Tert-butyl methyl ether	TM208	82.0 70.94 : 119.66
Tetrachloroethene	TM208	105.5 84.41 : 112.73
Toluene	TM208	96.5 81.59 : 111.56
Trichloroethene	TM208	97.5 79.53 : 112.32



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VOC MS (W)

		QC 2351
Vinyl Chloride	TM208	90.5 71.92 : 126.73

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.

The figure detailed is the percentage recovery result for the AQC.

The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.



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Chromatogram

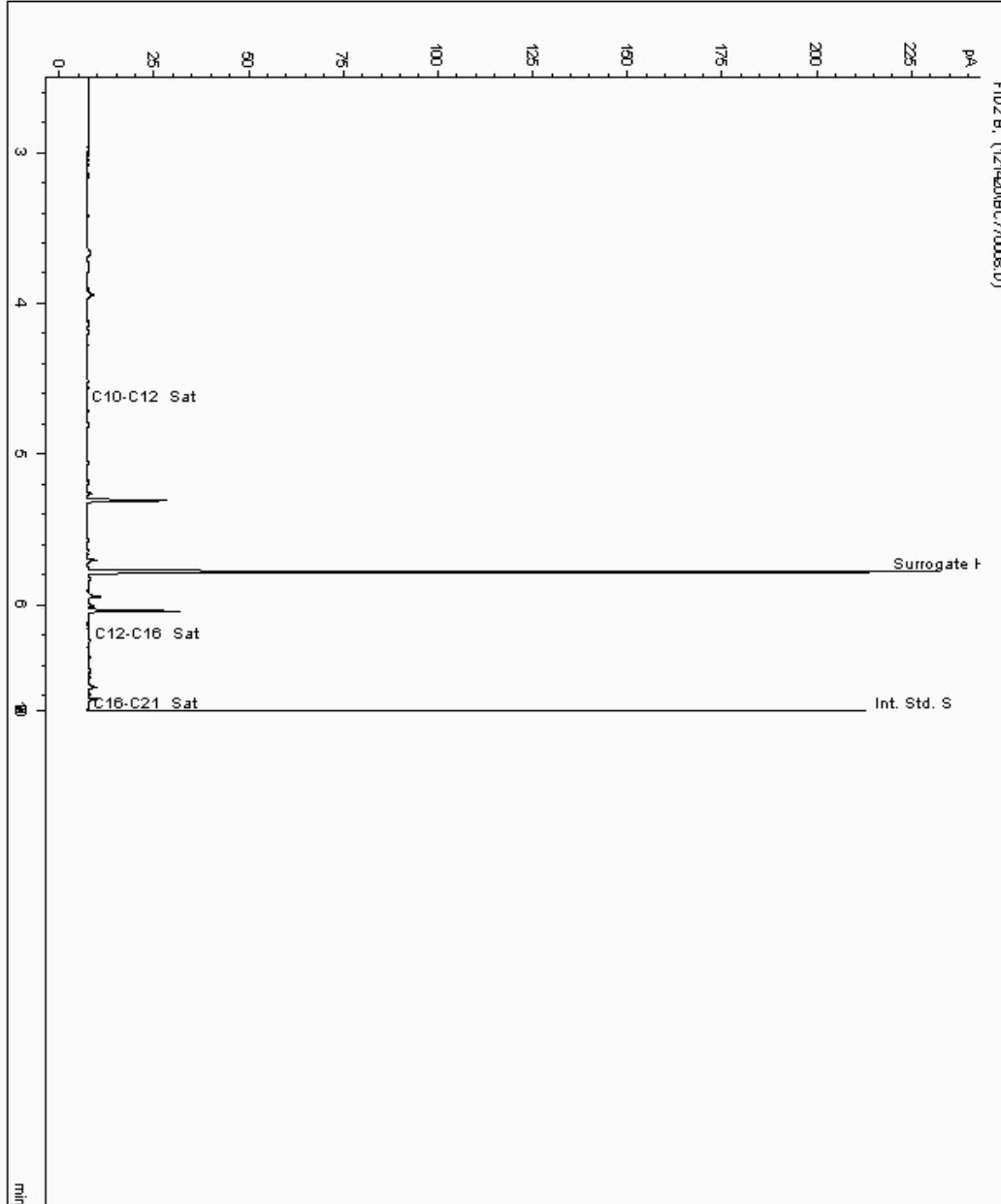
Analysis: EPH CWG (Aliphatic) Aqueous GC (W)

Sample No : 23411058
Sample ID : CPES1

Depth :

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 21948749-
Date Acquired : 12/14/2020 9:49:15 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025





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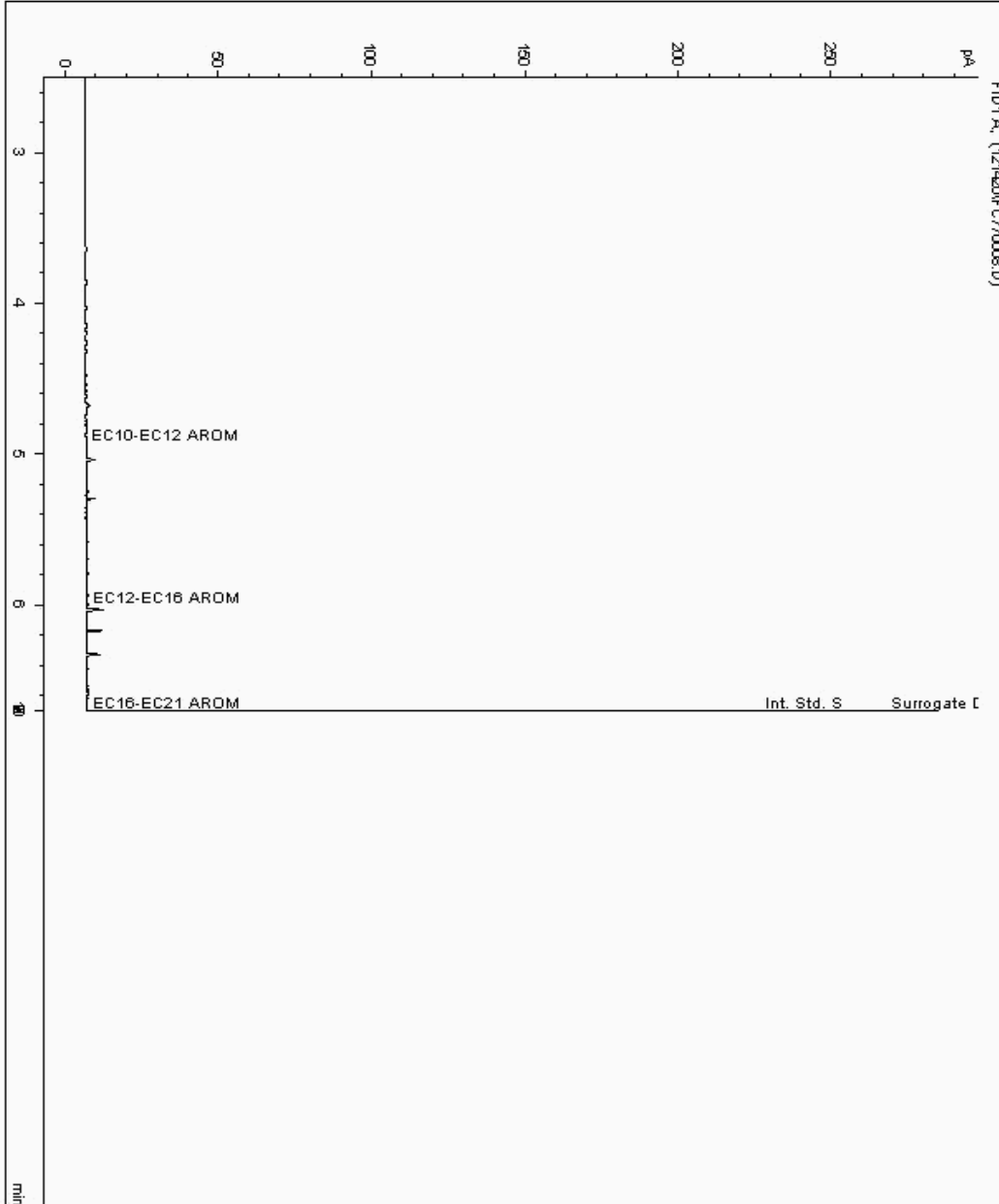
Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) Sample No : 23411058
Sample ID : CPES1

Depth :

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 21948750-
Date Acquired : 12/14/2020 9:49:14 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.050





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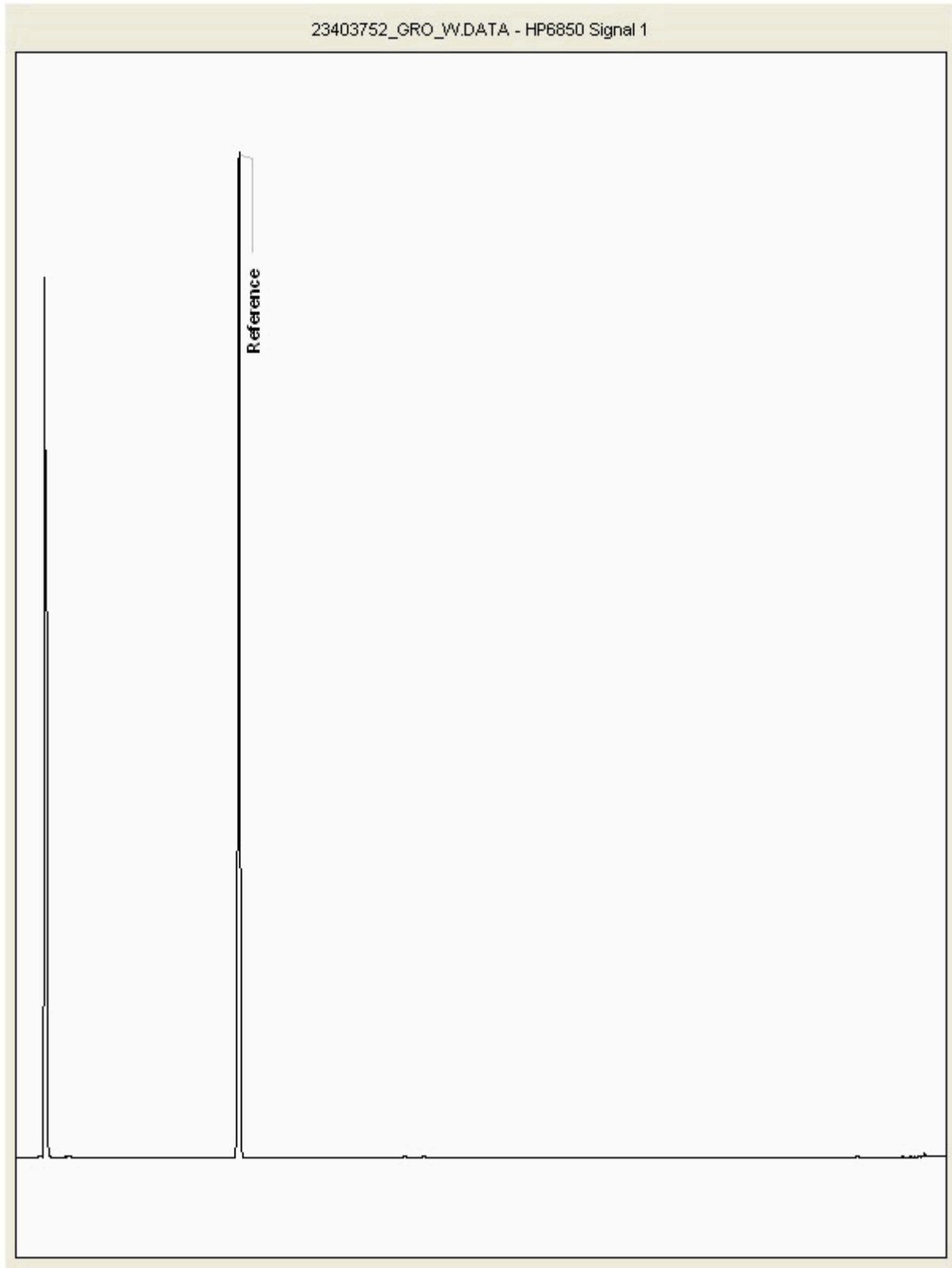
Report Number: 582769
Superseded Report: 580570

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 23403752
Sample ID : CPES1

Depth :



ALS Environmental, Land	QF.7.5.1 Data Amendments Form (Issue No. 4)
	Date: 03/03/2020
	Issued and Authorised by Quality Manager

SDG	Sample Event	Sample ID	Date Amended	Amendment Reason	Previous Reference	New Reference	Supersedes Report
201209-41	23390603	CPESI	12/01/2021	Sample ID Change	CPESI	CPES1	580570



CERTIFICATE OF ANALYSIS

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Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH₄ by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

19. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung. Standing Committee of Analysts, *The Quantification of Asbestos in Soil* (2017).

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

APPENDIX H

DRILLING RIG STANDARD PENETRATION TEST HAMMER CERTIFICATES

SPT Calibration Report

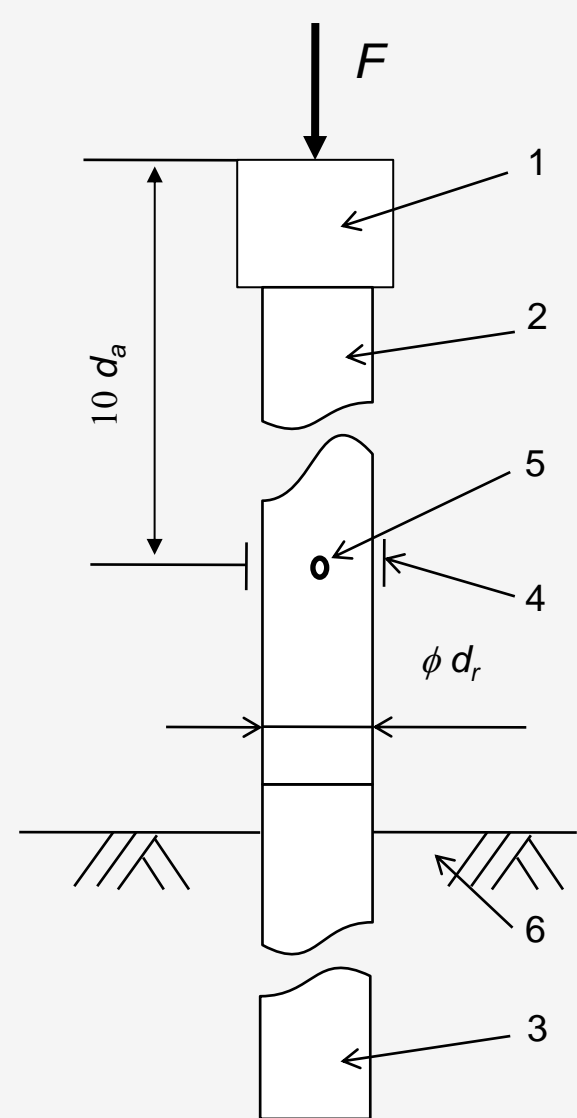
Hammer Energy Measurement Report

Type of Hammer SPT HAMMER
 Test No EQU2413
 Client S M ASSOCIATES

Test Depth (m) 12.50
 Mass of hammer $m = 63.5\text{kg}$
 Falling height $h = 0.76\text{m}$
 $E_{\text{theor}} = m \times g \times h = 473\text{J}$

Characteristics of the instrumented rod

Diameter $d_r = 0.052\text{ m}$
 Length of instrumented rod 0.558 m
 Area $A = 11.61\text{ cm}^2$
 Modulus $E_a = 206843\text{ MPa}$



Key

- 1 Anvil
- 2 Part of instrumented rod
- 3 Drive Rod
- 4 Strain Gauge
- 5 Accelerometer
- 6 Ground

F Force
 d_r Diameter of rod

Fig. B.1 and B.2
 BS EN ISO 22476-3 : 2005 + A1 : 2011

DATE OF TEST VALID UNTIL HAMMER ID

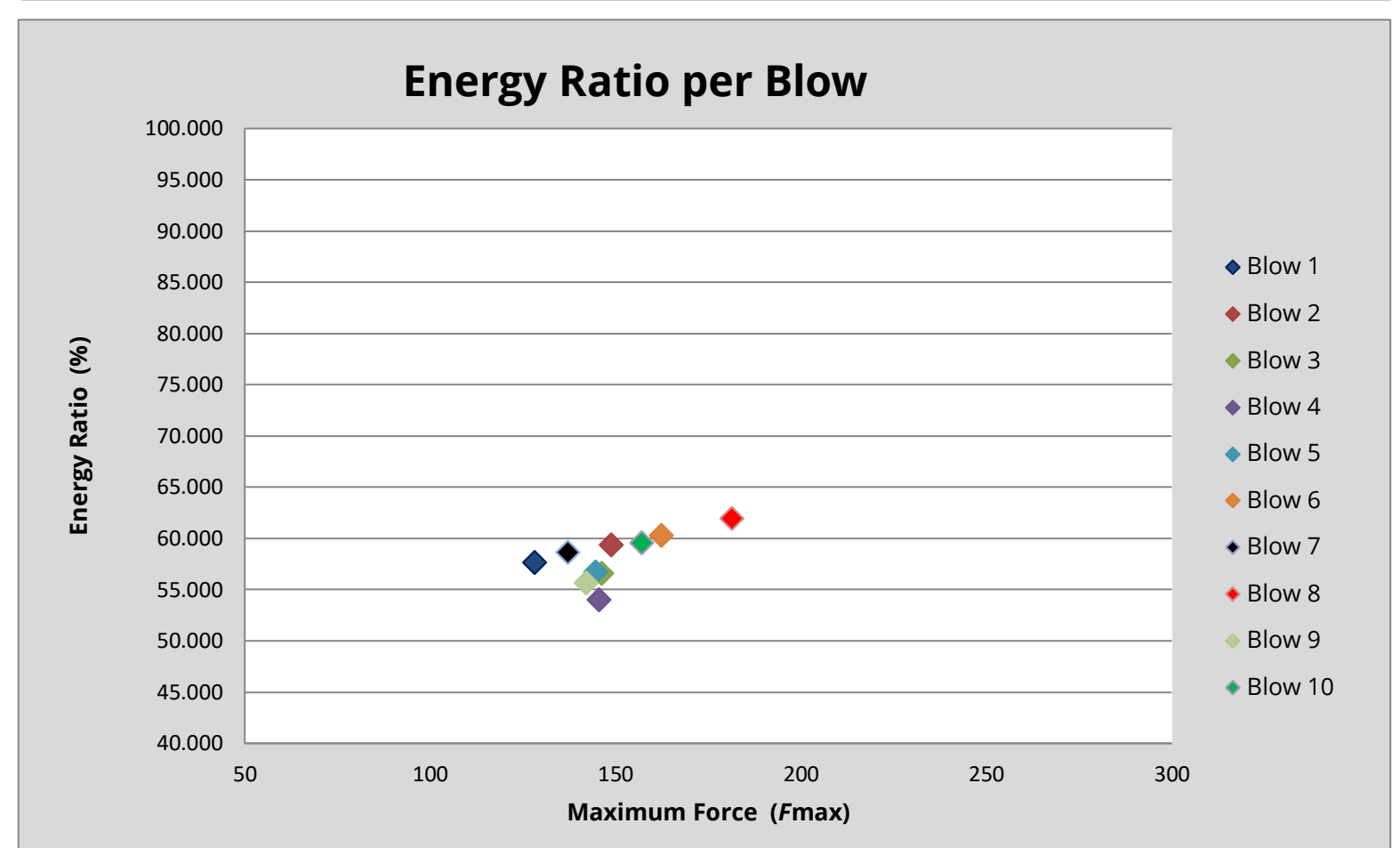
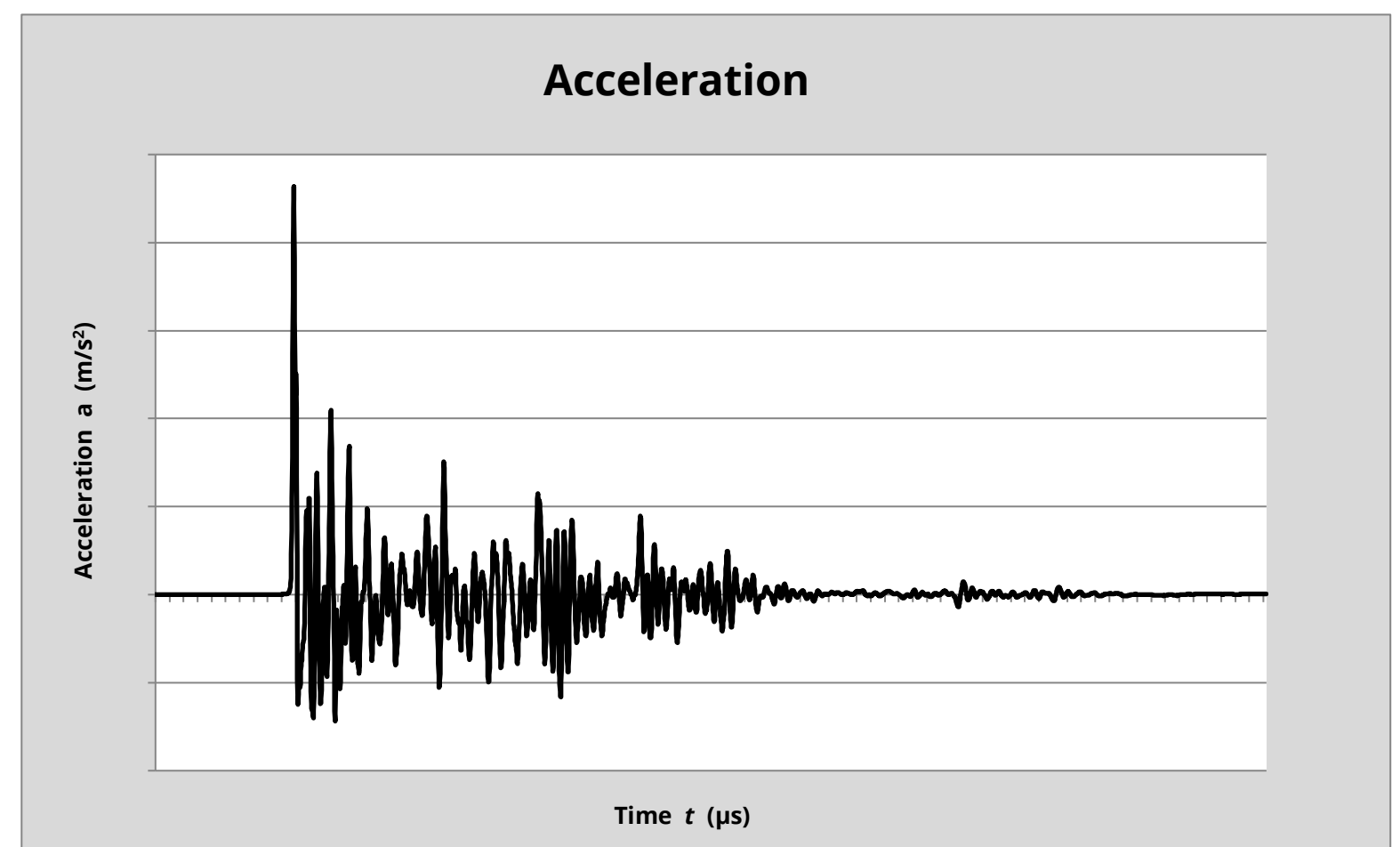
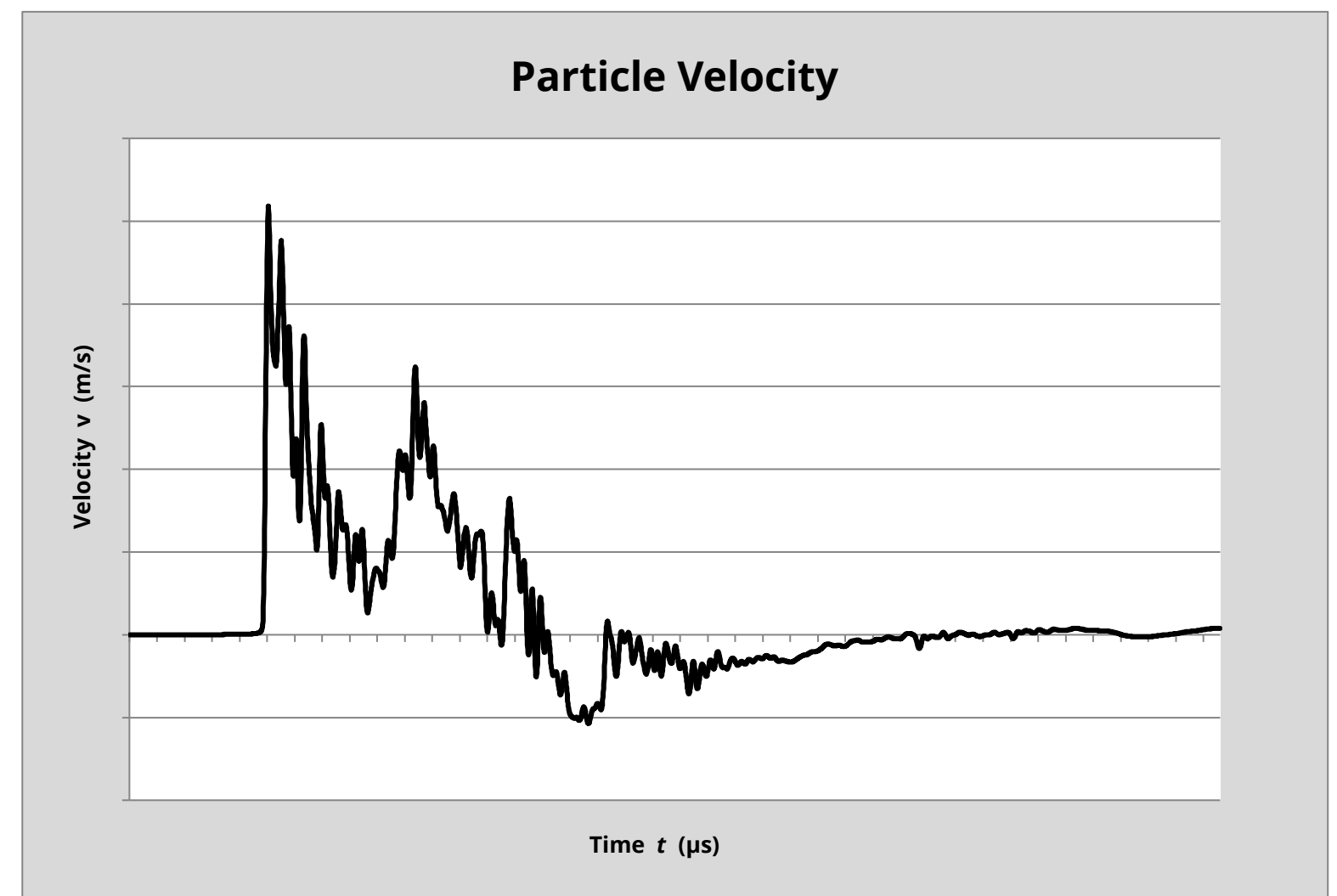
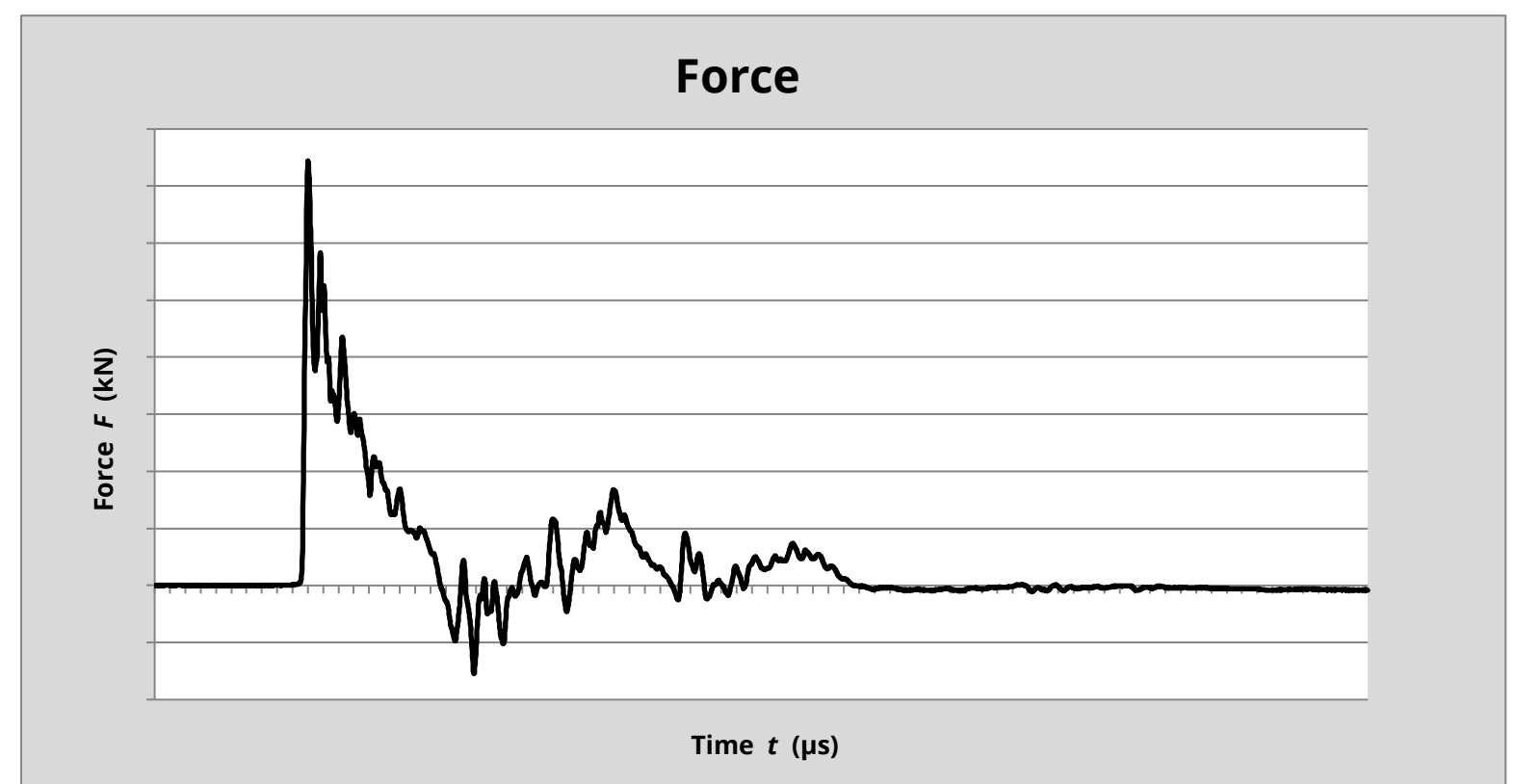
24/10/2019	23/10/2020	DS4-2
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Observations:

1.

$E_{\text{meas}} = 0.274\text{ kN-m}$

$E_{\text{theor}} = 0.473\text{ kN-m}$



Energy Ratio (Er) = $\frac{E_{\text{meas}}}{E_{\text{theor}}}$ 57.85%

EQUIPE GROUP
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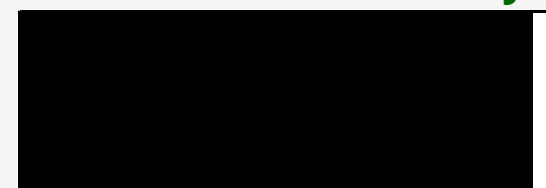
Equipe SPT Analyzer Operator

AF

Certificate prepared by



Certificate checked by



Certificate date

24/10/2019

SPT Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

ARCHWAY ENGINEERING (UK) LTD
AINLEYS INDUSTRIAL ESTATE
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SPT Hammer Ref: AR935
Test Date: 15/08/2019
Report Date: 15/08/2019
File Name: AR935.spt
Test Operator: CM

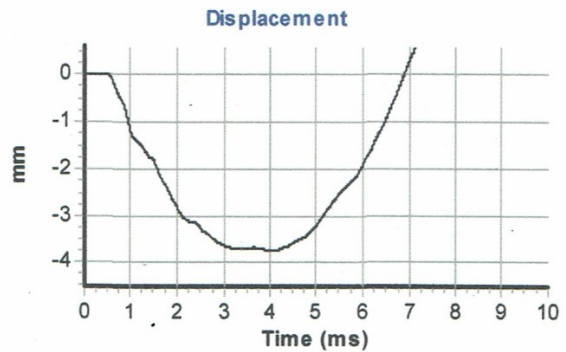
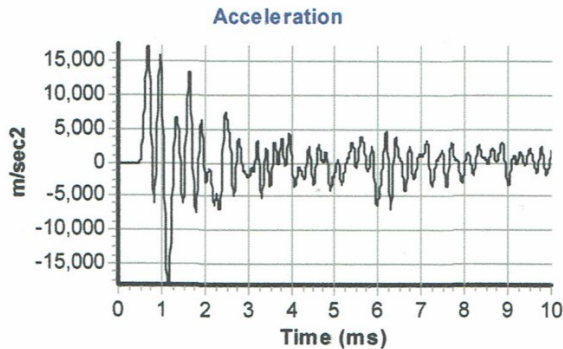
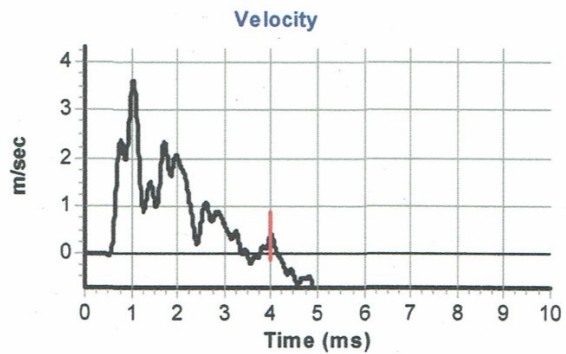
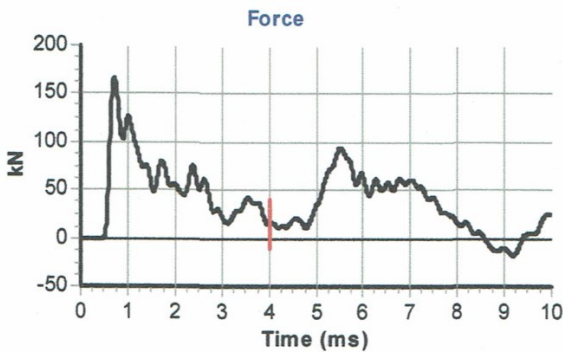
Instrumented Rod Data

Diameter d_r (mm): 54
Wall Thickness t_r (mm): 6.5
Assumed Modulus E_a (GPa): 208
Accelerometer No.1: 7080
Accelerometer No.2: 11609

SPT Hammer Information

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

Comments / Location



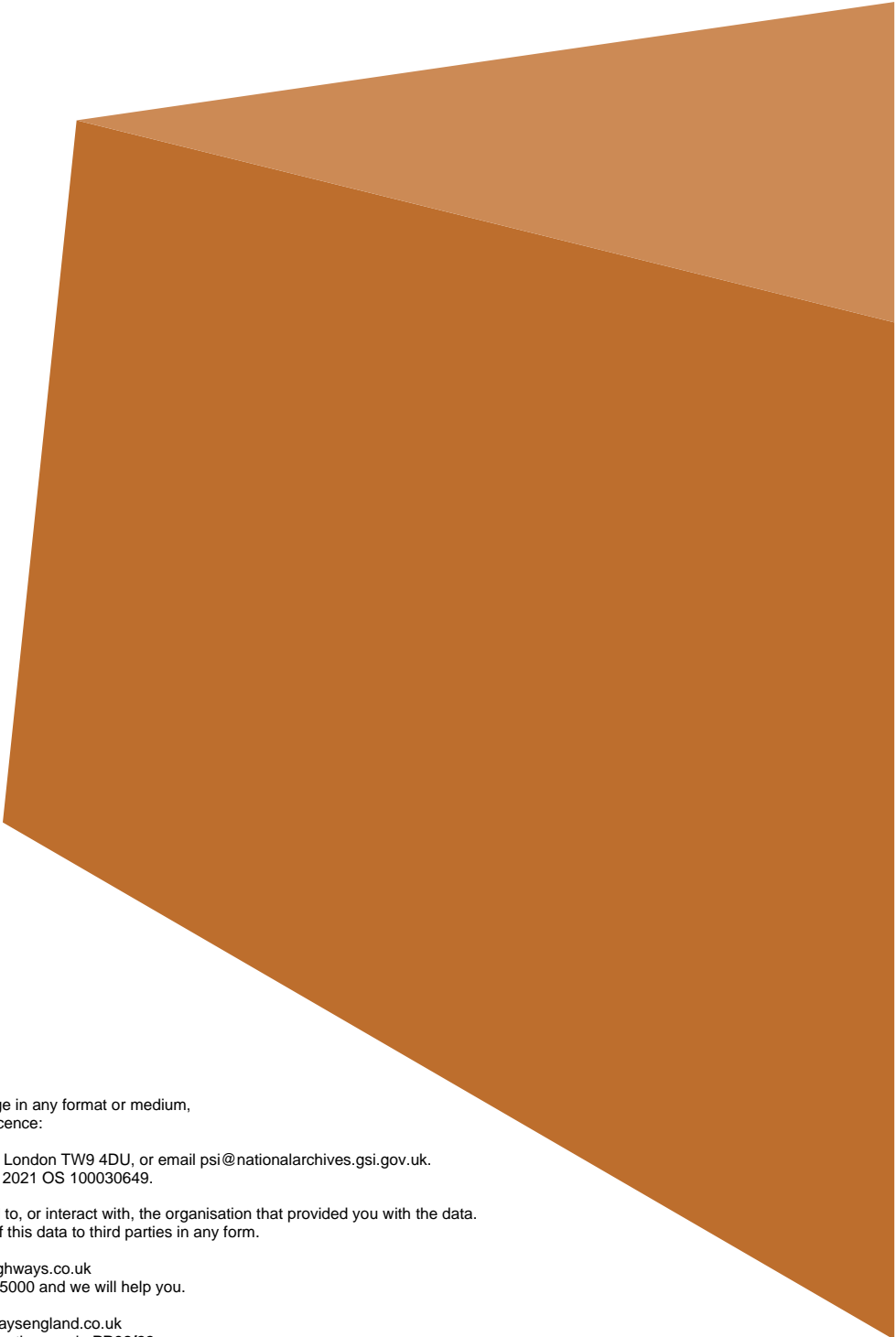
Calculations

Area of Rod A (mm^2): 970
Theoretical Energy E_{theor} (J): 473
Measured Energy E_{meas} (J): 321

Energy Ratio E_r (%): **68**

Signed: C.McCLUSKEY
Title: FITTER

The recommended calibration interval is 12 months



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