

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Water	BTEXHSA	As Received	Benzene, Toluene, Ethylbenzene, & Xylenes by headspace extraction GCFID quantitation
Water	CALCNH4	As Received	Ammoniacal Nitrogen expressed as NH ₄ , calculated from Ammoniacal Nitrogen expressed as N
Water	FNH3CALC	As Received	Calculation of Free Ammonia from Ammonium
Water	GROHSA	As Received	Determination of Total Gasoline Range Organics Hydrocarbons (GRO) by Headspace FID
Water	ICPMSW	As Received	Direct quantitative determination of Metals in water samples using ICPMS
Water	ICPWATVAR	As Received	Direct determination of Metals and Sulphate in water samples using ICPOES
Water	KONENS	As Received	Direct analysis using discrete colorimetric analysis
Water	PAHMSW	As Received	Determination of PolyAromatic Hydrocarbons in water by pentane extraction GCMS quantitation
Water	PHEHPLCVL	As Received	Determination of Phenols by HPLC
Water	SFAPI	As Received	Segmented flow analysis with colorimetric detection
Water	SFAS	As Received	Determination of Sulphide by segmented flow analysis with colorimetric detection
Water	TPHFID-Si	As Received	Determination of speciated pentane extractable hydrocarbons in water by GCFID
Water	WSLM13	As Received	Instrumental analysis using acid/persulphate digestion and non-dispersive IR detection
Water	WSLM3	As Received	Determination of the pH of water samples by pH probe

Where individual results are flagged see report notes for status.

Report Notes

Generic Notes

Soil/Solid Analysis

Unless stated otherwise,

- Results expressed as mg/kg have been calculated on the basis indicated in the Method Description table.
All results on MCERTS reports are reported on a 105°C dry weight basis with the exception of pH and conductivity.
- Sulphate analysis not conducted in accordance with BS1377
- Water Soluble Sulphate is on a 2:1 water:soil extract

Waters Analysis

Unless stated otherwise results are expressed as mg/l

Nil: Where "Nil" has been entered against Total Alkalinity or Total Acidity this indicates that a measurement was not required due to the inherent pH of the sample.

Oil analysis specific

Unless stated otherwise,

- Results are expressed as mg/kg
- SG is expressed as g/cm³@ 15°C

Gas (Tedlar bag) Analysis

Unless stated otherwise, results are expressed as ug/l

Asbestos Analysis

CH Denotes Chrysotile

TR Denotes Tremolite

CR Denotes Crocidolite

AC Denotes Actinolite

AM Denotes Amosite

AN Denotes Anthophyllite

NAIIS No Asbestos Identified in Sample

NADIS No Asbestos Detected In Sample

Symbol Reference

^ Sub-contracted analysis.

\$\$ Unable to analyse due to the nature of the sample

¶ Samples submitted for this analyte were not preserved on site in accordance with laboratory protocols.

This may have resulted in deterioration of the sample(s) during transit to the laboratory.

Consequently the reported data may not represent the concentration of the target analyte present in the sample at the time of sampling

¥ Results for guidance only due to possible interference

& Blank corrected result

I.S Insufficient sample to complete requested analysis

I.S(g) Insufficient sample to re-analyse, results for guidance only

Intf Unable to analyse due to interferences

N.D Not determined

N.Det Not detected

N.F No Flow

NS Information Not Supplied

Req Analysis requested, see attached sheets for results

▮ Raised detection limit due to nature of the sample

* All accreditation has been removed by the laboratory for this result

‡ MCERTS accreditation has been removed for this result

§ accreditation has been removed for this result as it is a non-accredited matrix

Note: The Laboratory may only claim that data is accredited when all of the requirements of our Quality System have been met. Where these requirements have not been met the laboratory may elect to include the data in its final report and remove the accreditation from individual data items if it believes that the validity of the data has not been affected. If further details are required of the circumstances which have led to the removal of accreditation then please do not hesitate to contact the laboratory.

Sample Descriptions

Client	SOCOTEC UK Doncaster
Site	A9031-19 Havant Thicket Winter Storage
Report Number	W29_9837



SOCOTEC

Environmental Chemistry
SOCOTEC UK
Ashby Rd, Bretby,
Burton-on-Trent, UK
DE15 0YZ

Certificate of Analysis

Project No: 20010330

Client: SOCOTEC Geotechnical

Quote Number: BEC19114718

Project Reference: A9031-19

Site Name: A9031-19: Havant Thicket Winter Storage

Contact: Neil Cooke

Address: Askern Road
Carcroft
Doncaster
South Yorkshire

Post Code: DN6 8DG

E-Mail: Neil.Cooke@socotec.com

Phone No: 07764 834574

Number of Samples Received: 4

Date Received: 31/01/2020

Analysis Date: 12/02/2020

Date Issued: 12/02/2020

Job Status: Complete

Account Manager
Laura Moore

Authorised by the Operations Manager
Becky Batham



Client: SOCOTEC Geotechnical

Project Name: A9031-19: Havant Thicket Winter Storage

Project No: 20010330

Date Issued: 12/02/2020

Samples Analysed

Sample Reference	Text ID	Sample Date	Sample Type	Sample Description
ATK-CP-01	20010330-001	29/01/2020 00:00:00	WATER	Unclassified Liquid
ATK-CP-05	20010330-002	29/01/2020 00:00:00	WATER	Unclassified Liquid
ATK-CP-06	20010330-003	29/01/2020 00:00:00	WATER	Unclassified Liquid
ATK-CP-12	20010330-004	29/01/2020 00:00:00	WATER	Unclassified Liquid



Client: SOCOTEC Geotechnical
 Project Name: A9031-19: Havant Thicket Winter Storage
 Project No: 20010330
 Date Issued: 12/02/2020

Analysis Results

					20010330			
					001	002	003	004
					ATK-CP-01	ATK-CP-05	ATK-CP-06	ATK-CP-12
					WATER	WATER	WATER	WATER
					29/01/2020	29/01/2020	29/01/2020	29/01/2020
Analysis	Method Code	MDL	Units	Accred				
Ammoniacal Nitrogen as N	KONENS	0.01	mg/l	U	0.06*	0.17*	<0.01*	0.2*
Ammonia (Free) as NH3	CALC FNH3	0.02	mg/l	U	<0.02*	<0.02*	<0.02*	<0.02*
Ammoniacal Nitrogen as NH4	CALC NH4	0.02	mg/l	U	0.07716*	0.21862*	<0.02*	0.2572*
>C6-C8 Aliphatic	GROHSA/BTEXHSA	0.1	mg/l	N	<0.1	<0.1	<0.1	<0.1
>C7-C8 Aromatic	GROHSA/BTEXHSA	0.005	mg/l	U	<0.005*	<0.005*	<0.005*	<0.005*
>C8-C10 Aliphatic	GROHSA/BTEXHSA	0.1	mg/l	N	<0.1	<0.1	<0.1	<0.1
>C8-C10 Aromatic	GROHSA/BTEXHSA	0.02	mg/l	U	<0.02*	<0.02*	<0.02*	<0.02*
C5-C6 Aliphatic	GROHSA/BTEXHSA	0.1	mg/l	N	<0.1	<0.1	<0.1	<0.1
C5-C7 Aromatic	GROHSA/BTEXHSA	0.005	mg/l	U	<0.005*	<0.005*	<0.005*	<0.005*
Total GRO	GROHSA/BTEXHSA	0.1	mg/l	U	<0.1*	<0.1*	<0.1*	<0.1*
pH	WSLM2 & 3	1	pH units	U	8.2*	7.8*	7.4*	7.8*
Temperature	WSLM2 & 3	0	°C	N	18.8	18.8	18.8	18.8
Chloride as Cl	KONENS	1	mg/l	U	86*	91*	43*	107*
Chromium (VI) as Cr	KONENS	0.003	mg/l	U	<0.003*	<0.003*	<0.003*	<0.003*
Nitrate as NO3	KONENS	0.9	mg/l	U	<0.9*	<0.9*	1.8*	<0.9*
Free Cyanide	SFAPI	0.02	mg/l	U	<0.02*	<0.02*	<0.02*	<0.02*



Client: SOCOTEC Geotechnical
 Project Name: A9031-19: Havant Thicket Winter Storage
 Project No: 20010330
 Date Issued: 12/02/2020

					20010330			
					001	002	003	004
					ATK-CP-01	ATK-CP-05	ATK-CP-06	ATK-CP-12
					WATER	WATER	WATER	WATER
					29/01/2020	29/01/2020	29/01/2020	29/01/2020
Sulphide as S	SFAPI	0.02	mg/l	U	0.15*	0.20*	0.12*	<0.02*
Total Cyanide	SFAPI	0.02	mg/l	U	<0.02*	<0.02*	<0.02*	<0.02*
Total Organic Carbon	WSLM13	0.2	mg/l	U	9.9*	2.4*	2.0*	2.9*
Antimony as Sb	ICPMSW (Dissolved)	0.001	mg/l	U	<0.001*	<0.001*	<0.001*	<0.001*
Arsenic as As	ICPMSW (Dissolved)	0.001	mg/l	U	0.003*	0.002*	0.002*	0.002*
Cadmium as Cd	ICPMSW (Dissolved)	0.00002	mg/l	U	0.00003*	0.00005*	0.00005*	0.00006*
Total Chromium as Cr	ICPMSW (Dissolved)	0.001	mg/l	U	<0.001*	<0.001*	<0.001*	<0.001*
Copper as Cu	ICPMSW (Dissolved)	0.001	mg/l	U	<0.001*	<0.001*	<0.001*	<0.001*
Lead as Pb	ICPMSW (Dissolved)	0.001	mg/l	U	<0.001*	<0.001*	<0.001*	<0.001*
Mercury as Hg	ICPMSW (Dissolved)	0.00003	mg/l	U	<0.00003*	<0.00003*	<0.00003*	<0.00003*
Nickel as Ni	ICPMSW (Dissolved)	0.001	mg/l	U	0.004*	0.002*	0.004*	0.003*
Selenium as Se	ICPMSW (Dissolved)	0.001	mg/l	U	0.002*	<0.001*	<0.001*	<0.001*
Vanadium as V	ICPMSW (Dissolved)	0.001	mg/l	U	0.003*	0.001*	<0.001*	0.004*
Zinc as Zn	ICPMSW (Dissolved)	0.002	mg/l	U	0.031*	0.152*	0.174*	0.159*
Aluminium as Al	ICPWATVAR (Dissolved)	0.01	mg/l	U	0.01*	<0.01*	<0.01*	0.01*
Boron as B	ICPWATVAR (Dissolved)	0.01	mg/l	U	0.12*	0.07*	0.10*	0.07*
Iron as Fe	ICPWATVAR (Dissolved)	0.01	mg/l	U	0.02*	0.01*	0.01*	<0.01*
Phosphorus as P	ICPWATVAR (Dissolved)	0.1	mg/l	N	<0.1	<0.1	<0.1	<0.1



Client: SOCOTEC Geotechnical
 Project Name: A9031-19: Havant Thicket Winter Storage
 Project No: 20010330
 Date Issued: 12/02/2020

					20010330			
					001	002	003	004
					ATK-CP-01	ATK-CP-05	ATK-CP-06	ATK-CP-12
					WATER	WATER	WATER	WATER
					29/01/2020	29/01/2020	29/01/2020	29/01/2020
Total Sulphur as SO4	ICPWATVAR (Dissolved)	3	mg/l	U	326*	120*	18*	303*
Benzene	BTEXHSA	5	µg/l	U	<5*	<5*	<5*	<5*
Ethylbenzene	BTEXHSA	5	µg/l	U	<5*	<5*	<5*	<5*
m/p-Xylene	BTEXHSA	10	µg/l	U	<10*	<10*	<10*	<10*
o-Xylene	BTEXHSA	5	µg/l	U	<5*	<5*	<5*	<5*
Toluene	BTEXHSA	5	µg/l	U	<5*	<5*	<5*	<5*
Acenaphthene	PAHMSW	0.01	µg/l	U	<0.01*	<0.01*	<0.01*	<0.01*
Acenaphthylene	PAHMSW	0.01	µg/l	U	<0.01*	<0.01*	<0.01*	<0.01*
Anthracene	PAHMSW	0.01	µg/l	U	<0.01*	<0.01*	<0.01*	<0.01*
Benzo[a]anthracene	PAHMSW	0.01	µg/l	U	0.01*	0.01*	<0.01*	<0.01*
Benzo[a]pyrene	PAHMSW	0.01	µg/l	U	<0.01*	<0.01*	<0.01*	<0.01*
Benzo[b]fluoranthene	PAHMSW	0.01	µg/l	U	<0.01*	<0.01*	<0.01*	<0.01*
Benzo[g,h,i]perylene	PAHMSW	0.01	µg/l	U	<0.01*	<0.01*	<0.01*	<0.01*
Benzo[k]fluoranthene	PAHMSW	0.01	µg/l	U	<0.01*	<0.01*	<0.01*	<0.01*
Chrysene	PAHMSW	0.01	µg/l	U	<0.01*	<0.01*	<0.01*	<0.01*
Dibenzo[a,h]anthracene	PAHMSW	0.01	µg/l	U	<0.01*	<0.01*	<0.01*	<0.01*
Fluoranthene	PAHMSW	0.01	µg/l	U	<0.01*	<0.01*	<0.01*	<0.01*
Fluorene	PAHMSW	0.01	µg/l	U	<0.01*	<0.01*	<0.01*	<0.01*



Client: SOCOTEC Geotechnical
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					20010330			
					001	002	003	004
					ATK-CP-01	ATK-CP-05	ATK-CP-06	ATK-CP-12
					WATER	WATER	WATER	WATER
					29/01/2020	29/01/2020	29/01/2020	29/01/2020
Indeno[1,2,3-cd]pyrene	PAHMSW	0.01	µg/l	U	<0.01*	<0.01*	<0.01*	<0.01*
Naphthalene	PAHMSW	0.01	µg/l	U	<0.01*	<0.01*	<0.01*	<0.01*
Phenanthrene	PAHMSW	0.01	µg/l	U	<0.01*	<0.01*	<0.01*	<0.01*
Pyrene	PAHMSW	0.01	µg/l	U	<0.01*	<0.01*	<0.01*	<0.01*
Total PAH 16	PAHMSW	0.16	µg/l	U	<0.20*	<0.16*	<0.16*	<0.16*
Dimethylphenols	PHEHPLC	0.0005	mg/l	N	<0.0005	<0.0005	<0.0005	<0.0005
Methylphenols	PHEHPLC	0.0005	mg/l	N	<0.0005	<0.0005	<0.0005	<0.0005
Phenol	PHEHPLC	0.0005	mg/l	N	<0.0005	<0.0005	<0.0005	<0.0005
Total Phenols	PHEHPLC	0.002	mg/l	N	<0.0020	<0.0020	<0.0020	<0.0020
Trimethylphenols	PHEHPLC	0.0005	mg/l	N	<0.0005	<0.0005	<0.0005	<0.0005
>C10-C12 (Aliphatic)	TPHFID (Aliphatic)	0.01	mg/l	U	<0.01*	<0.01*	<0.01*	<0.01*
>C12-C16 (Aliphatic)	TPHFID (Aliphatic)	0.01	mg/l	U	<0.01*	<0.01*	<0.01*	<0.01*
>C16-C21 (Aliphatic)	TPHFID (Aliphatic)	0.01	mg/l	U	<0.01*	<0.01*	<0.01*	<0.01*
>C21-C35 (Aliphatic)	TPHFID (Aliphatic)	0.01	mg/l	U	0.03*	0.02*	0.01*	0.05*
>C35-C44 (Aliphatic)	TPHFID (Aliphatic)	0.01	mg/l	N	<0.01	<0.01	<0.01	<0.01
Total TPH (Aliphatic)	TPHFID (Aliphatic)	0.01	mg/l	U	0.05*	0.04*	0.02*	0.06*
>C10-C12 (Aromatic)	TPHFID (Aromatic)	0.01	mg/l	U	<0.01*	<0.01*	<0.01*	<0.01*
>C12-C16 (Aromatic)	TPHFID (Aromatic)	0.01	mg/l	U	<0.01*	<0.01*	<0.01*	<0.01*



Client: SOCOTEC Geotechnical
 Project Name: A9031-19: Havant Thicket Winter Storage
 Project No: 20010330
 Date Issued: 12/02/2020

					20010330			
					001	002	003	004
					ATK-CP-01	ATK-CP-05	ATK-CP-06	ATK-CP-12
					WATER	WATER	WATER	WATER
					29/01/2020	29/01/2020	29/01/2020	29/01/2020
>C16-C21 (Aromatic)	TPHFID (Aromatic)	0.01	mg/l	U	<0.01*	<0.01*	<0.01*	<0.01*
>C21-C35 (Aromatic)	TPHFID (Aromatic)	0.01	mg/l	U	<0.01*	<0.01*	<0.01*	<0.01*
>C35-C44 (Aromatic)	TPHFID (Aromatic)	0.01	mg/l	N	<0.01	<0.01	<0.01	<0.01
Total TPH (Aromatic)	TPHFID (Aromatic)	0.01	mg/l	U	<0.01*	0.01*	0.02*	<0.01*

Additional Report Notes

Method Code	Sample ID	The following information should be taken into consideration when using the data contained within this report
TPHUSSI	20010330-1 TO 20010330-4	The Primary process control data associated with this Test has not wholly met the requirements of the Laboratory Quality Management System QMS with one or more target analytes falling outside acceptable limits. However the remaining data gives the Laboratory confidence that the test has performed satisfactorily and that the validity of the data may not have been significantly affected. However in line with our QMS policy we have removed accreditation, where applicable, from the affected analytes (C16-C21) on the aliphatic fraction and (C10-C12) on the aromatic fraction . These circumstances should be taken into consideration when utilising the data.



Client: SOCOTEC Geotechnical

Project Name: A9031-19: Havant Thicket Winter Storage

Project No: 20010330

Date Issued: 12/02/2020

Deviating Sample Report

Sample Reference	Text ID	Reported Name	Incorrect Container	Incorrect Label	Headspace	Incorrect/No Preservative	No Sampling Date	Holding Time	Handling Time

Analysis Basis

<u>Analysis</u>	<u>Analysis Type</u>	<u>Analysis Basis</u>
BTEXHSA	ORGANIC	Unfiltered
CALC_FNH3	INORGANIC	
CALC_NH4	INORGANIC	
GROHSA	ORGANIC	Unfiltered
ICPMSW (Dissolved)	METALS	Unfiltered
ICPWATVAR (Dissolved)	METALS	Unfiltered
KONENS	INORGANIC	Filtered
PAHMSW	ORGANIC	Unfiltered
PHEHPLC	ORGANIC	Unfiltered
SFAPI	INORGANIC	Unfiltered
TPHFID (Aliphatic)	ORGANIC	Unfiltered
TPHFID (Aromatic)	ORGANIC	Unfiltered
WSLM13	INORGANIC	Unfiltered
WSLM2 & 3	INORGANIC	Unfiltered



Client: SOCOTEC Geotechnical

Project Name: A9031-19: Havant Thicket Winter Storage

Project No: 20010330

Date Issued: 12/02/2020

Additional Information

This report refers to samples as received, and SOCOTEC Uk Ltd takes no responsibility for accuracy or competence of sampling by others.

Results within this report relate only to the samples tested.

In the accreditation column of analysis report the codes are as follows:

- U = UKAS accredited analysis
- M = MCERT accredited analysis
- N = Unaccredited analysis

Any units marked with ^ signify results are reported on a dry weight basis of 105° c

All Air Dried and Ground Samples (ADG) are oven dried at less than 35° c.

This report shall not be reproduced except in full and with approval from the laboratory.

Opinions and interpretations given are outside the scope of our UKAS accreditation.

Any samples marked with * are not covered by our scope of UKAS accreditation, if applicable further report notes have been added.

Any solid samples where the Major Constituents are not one of the following (Sand, Silt, Clay, Made Ground) are not one of our accredited matrix types.

Any samples marked with ‡ have had MCERTS accreditation removed for this result

Any samples marked with a tick in the deviant table is deviant for the specific reason.

Any samples reported as IS, NA, ND mean the following:

- IS = Insufficient Sample to complete analysis
- NA = Sample is not amenable for the required analysis
- ND = Results cannot be determined

End of Certificate of Analysis

TEST REPORT



1252

Report No. EFS/204820 (Ver. 1)

SOCOTEC UK Doncaster
Askern Road
Carcroft
Doncaster
South Yorkshire
DN6 8DG

Site: A9031-19 Havant Thicket Winter Storage Reservoir

The 13 samples described in this report were registered for analysis by SOCOTEC UK Limited on 16-Jan-2020. This report supersedes any versions previously issued by the laboratory.

The analysis was completed by: 26-Feb-2020

Tests where the accreditation is set to N or No, and any individual data items marked with a * are not UKAS accredited. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.

The following tables are contained in this report:

Table 1 Main Analysis Results (Page 2)
Subcontracted Analysis Reports (Pages 3 to 8)
The accreditation status of subcontracted analysis is displayed on the appended subcontracted analysis reports.
Analytical and Deviating Sample Overview (Page 9)
Table of Method Descriptions (Page 10)
Table of Report Notes (Page 11)
Table of Sample Descriptions (Appendix A Page 1 of 1)

On behalf of
SOCOTEC UK Lim
Becky Batham

Operations Manager
Energy & Waste Services

Date of Issue: 26-Feb-2020

Tests marked 'N' have been subcontracted to another laboratory.

Where samples have been flagged as deviant on the Analytical and Deviating Sample Overview, for any reason, the data may not be representative of the sample at the point of sampling and the validity of the data may be affected.

SOCOTEC UK Limited accepts no responsibility for any sampling not carried out by our personnel.

Where individual results are flagged see report notes for status.

Units : Method Codes : Method Reporting Limits : UKAS Accredited :			%	%	mg/l	mg/l	mg/kg	mg/kg	mg/kg	%	pH Units	%		%	uS/cm	mg/l					
			ANC	CNRCALC	ICPEXCH	ICPEXCH	ICPTSNIT	ICPTSNIT	ICPTSNIT	LOI(%MM)	PHSOIL51	Sub022	Sub025	TCCALC	TSCON	WSLM60					
			0.12						3	0.2		0.04		0.02		6					
			No	No	No	No	No	No	No	No	No	No		No	No	Yes					
LAB ID Number	CL/	Client Sample Description	Sample Date	Carbonate %	C:N Ratio to BS3882	Exch. Magnesium (BS3882)	Exch. Potassium (BS3882)	Copper (Nitric Acid) BS3882	Nickel (Nitric Acid) BS3882	Zinc (Nitric Acid) BS3882	BS3882 Loss on Ignition @ 440C	pH units (5:1) BS3882	^Nitrogen	^PSD inc. sedimentation for topsoil	Total Carbon (BS3882)	Conductivity uS/cm (BS3882)	Extractable Phosphate BS3882				
2083412		ATK-BH-01 LB 1 0.05	10-Dec-19	<0.12	15:1	257	223	6.55	8.44	32.1	5.9	6.7	0.23	Req	3.5	2010	10.9				
2083413		ATK-CP-02-TSS LB 1 0.10	10-Dec-19	<0.12	15:1	72	148	6.4	4.19	16.7	4.3	6.7	0.17	Req	2.5	2090	7.58				
2083414		ATK-CP-07-TSS LB 1 0.10	10-Dec-19	<0.12	14:1	273	283	8.51	9.01	31.5	3.2	5.8	0.13	Req	1.9	2130	26.9				
2083415		ATK-CP-08-TSS LB 1 0.10	10-Dec-19	<0.12	16:1	85	137	3.95	5.4	21	2.5	6.5	0.09	Req	1.5	2080	9.26				
2083416		ATK-CP-09-TSS LB 1 0.10	10-Dec-19	<0.12	22:1	50	135	12.1	5.32	31.7	5.7	6.1	0.15	Req	3.3	2040	10.9				
2083417		ATK-CP-13-TSS LB 1 0.10	10-Dec-19	<0.12	17:1	108	183	6.92	8.19	32.7	3.8	6.2	0.13	Req	2.2	2060	<6				
2083418		ATK-RC-01-TSS LB 1 0.10	10-Dec-19	<0.12	17:1	89	140	4.38	5.46	21.2	3.5	6.0	0.12	Req	2.0	2080	6.74				
2083419		ATK-TP-04-TSS LB 1 0.10	10-Dec-19	<0.12	15:1	<5	<5	5.98	5.41	30.7	3.5	6.1	0.14	Req	2.1	2110	9.26				
2083420		ATK-TP-05-TSS LB 1 0.10	10-Dec-19	<0.12	22:1	92	122	4.54	5.7	27.6	4.5	6.5	0.12	Req	2.6	2100	9.26				
2083421		ATK-TP-06-TSS LB 1 0.10	10-Dec-19	0.24	15:1	224	230	6.5	7.28	35.9	3.8	6.1	0.15	Req	2.2	2180	<6				
2083422		ATK-TP-08-TSS LB 1 0.10	10-Dec-19	0.48	16:1	81	239	6.52	5.78	20.4	4.6	6.3	0.17	Req	2.7	2110	<6				
2083423		ATK-TPM-01 LB 1 0.10	10-Dec-19	0.48	12:1	486	264	7.59	8.82	40.7	6.7	6.2	0.32	Req	3.9	2380	<6				
2083424		ATK-TPM-05-TSS LB 1 0.10	10-Dec-19	<0.12	19:1	95	128	4.8	5.89	27.3	4.6	6.6	0.14	Req	2.7	2110	8.52				
SOCOTEC Bretby Business Park, Ashby Road Burton-on-Trent, Staffordshire, DE15 0YZ Tel +44 (0) 1283 554400 Fax +44 (0) 1283 554422			Client Name		SOCOTEC UK Doncaster							Sample Analysis									
			Contact		Neil Cooke																
			A9031-19 Havant Thicket Winter Storage											Date Printed						26-Feb-2020	
														Report Number						EFS/204820	
														Table Number						1	

Certificate of Analysis

Client :	SOCOTEC UK Doncaster	Job Number :	A9031-19
Client Site :	Havant Thicket Winter Storage Reservoir	Date Received :	16/01/2020
Suite ID :	BS3882 : 2015 - Multipurpose Grade	Date Reported :	26/02/2020

Soil Sample Reference :	ATK-BH-01	ATK-CP02TSS	ATK-CP-07TSS	ATK-CP-08TSS	ATK-CP-09TSS
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Particle Size Distribution*		(UK Classification)									
Clay (<0.002mm)	%	16	✓	12	✓	38	✗	24	✓	10	✓
Silt (0.002-0.06mm)	%	70	✗	20	✓	53	✓	44	✓	56	✓
Sand (0.06-2.0mm)	%	14	✓	68	✓	9	✓	32	✓	34	✓
Textural Class		ZL	✗	SL	✓	ZC	✗	CL	✓	SZL	✓

Stone Content (Dry Weight Basis)											
Stones 2-20mm	%w/w	9	✓	21	✓	1	✓	12	✓	19	✓
Stones 20-50mm	%w/w	3	✓	13	✗	0	✓	18	✗	8	✓
Stones >50mm	%w/w	0	✓	0	✓	0	✓	0	✓	0	✓

Soil Reaction & Soluble Salts											
pH Value ‡	units	6.7	✓	6.7	✓	5.8	✓	6.5	✓	6.1	✓
Electrical Conductivity (CaSO ₄)†	µS/cm	2010	✓	2090	✓	2130	✓	2080	✓	2040	✓

Organic Matter & Nutrient Status											
Organic Matter (LOI)	%	5.90	✓	4.3	✓	3.2	✗	2.5	✗	5.7	✓
Total Nitrogen	%	0.23	✓	0.17	✓	0.13	✗	0.09	✗	0.15	✓
Carbon : Nitrogen Ratio		15:1	✓	15:1	✓	14:1	✓	16:1	✓	22:1	✗
Extractable Phosphate	mg/l	10.9	✗	7.58	✗	26.9	✓	9.26	✗	10.9	✗
Extractable Potassium	mg/l	223	✓	148	✓	283	✓	137	✓	135	✓
Extractable Magnesium	mg/l	257	✓	72	✓	273	✓	85	✓	50	✗

Phytotoxic Metals'											
Zinc (Zn)	mg/kg	32.1	✓	16.7	✓	31.5	✓	21	✓	31.7	✓
Copper (Cu)	mg/kg	6.55	✓	6.4	✓	8.51	✓	3.95	✓	12.1	✓
Nickel (Ni)	mg/kg	8.44	✓	4.19	✓	9.01	✓	5.4	✓	5.32	✓

Visible Contaminants (Dry Weight Basis)											
Total foreign matter > 2 mm	%w/w	<0.5	✓	<0.5	✓	<0.5	✓	<0.5	✓	<0.5	✓
... of which plastics	%w/w	<0.25	✓	<0.25	✓	<0.25	✓	<0.25	✓	<0.25	✓
... of which sharps	%w/w	0	✓	0	✓	0	✓	0	✓	0	✓

Soil Description

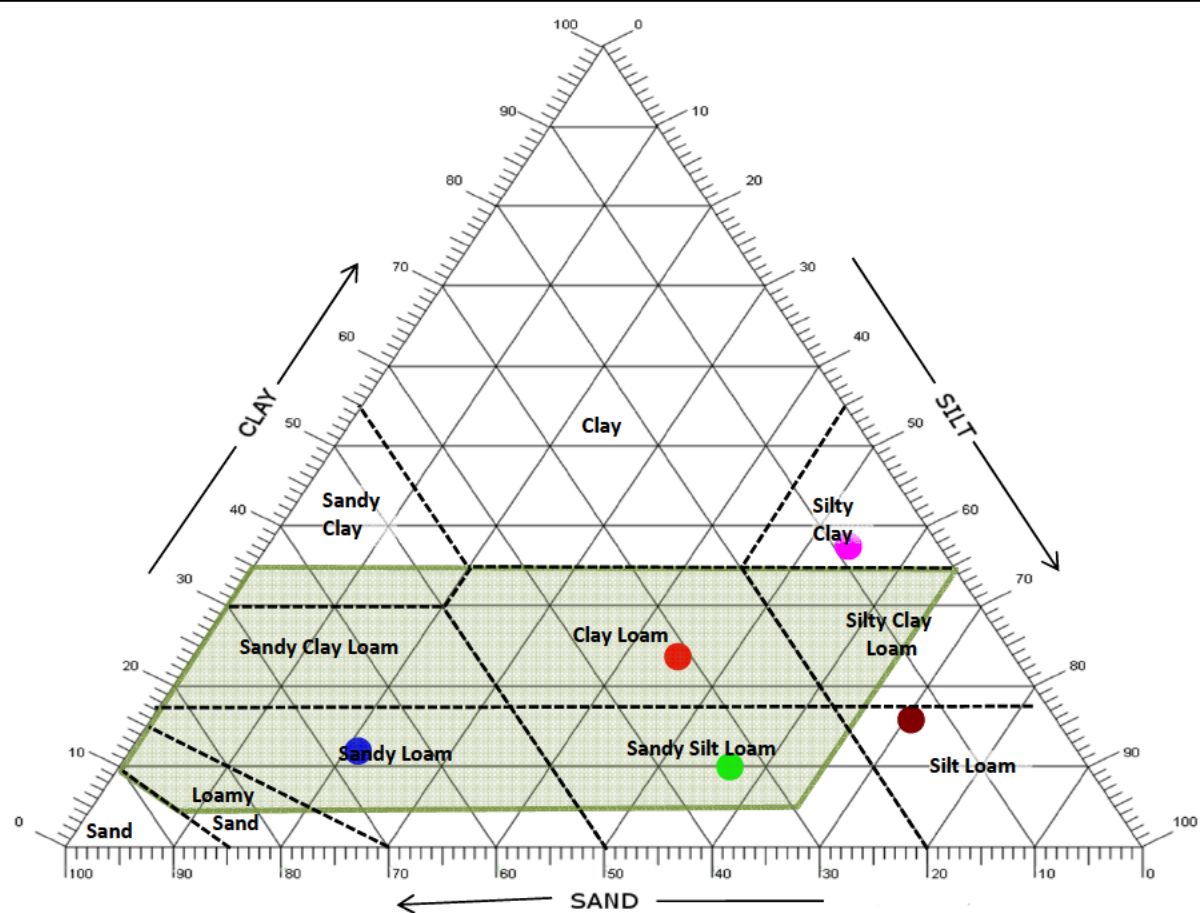
Notes:

- ✓ Conforms to BS3882 : 2015 - Multipurpose Grade
- ✗ Fails to conform to BS3882 : 2015 - Multipurpose Grade

* LASER diffraction
 ‡ 1:2.5 water extract
 † CaSO₄ extract
 ' Total metals
 ne not evaluated

UK Soil Texture Classification

C	Clay	ZC	Silty Clay
SC	Sandy Clay	ZCL	Silty Clay Loam
CL	Clay Loam	SZL	Sandy Silt Loam
SL	Sandy Loam	ZL	Silt Loam
SCL	Sandy Clay Loam	S	Sand
LS	Loamy Sand		



● ATK-BH-01 0.05
Texture: ZL

● ATK-CP-02-TSS 0.10
Texture: SL

● ATK-CP-07-TSS 0.10
Texture: ZC

● ATK-CP-08-TSS 0.10
Texture: CL

● ATK-CP-09-TSS 0.10
Texture: SZL

Certificate of Analysis

Client :	SOCOTEC UK Doncaster	Job Number :	A9031-19
Client Site :	Havant Thicket Winter Storage Reservoir	Date Received :	16/01/2020
Suite ID :	BS3882 : 2015 - Multipurpose Grade	Date Reported :	26/02/2020

Soil Sample Reference :	ATK-CP-13TSS	ATK-RC-01TSS	ATK-TP-04TSS	ATK-TP-05TSS	ATK-TP-06TSS
-------------------------	--------------	--------------	--------------	--------------	--------------

Particle Size Distribution*		(UK Classification)									
Clay (<0.002mm)	%	16 ✓		23 ✓		21 ✓		20 ✓		36 ✗	
Silt (0.002-0.06mm)	%	60 ✓		31 ✓		36 ✓		35 ✓		53 ✓	
Sand (0.06-2.0mm)	%	24 ✓		46 ✓		43 ✓		45 ✓		11 ✓	
Textural Class		SZL ✓		CL ✓		CL ✓		CL ✓		ZC ✗	

Stone Content (Dry Weight Basis)									
Stones 2-20mm	%w/w	9	✓	10	✓	3	✓	24	✓
Stones 20-50mm	%w/w	11	✗	4	✓	3	✓	10	✓
Stones >50mm	%w/w	42	✗	0	✓	0	✓	0	✓

Soil Reaction & Soluble Salts											
pH Value ‡	units	6.2	✓	6	✓	6.1	✓	6.5	✓	6.1	✓
Electrical Conductivity (CaSO ₄)†	µS/cm	2060	✓	2080	✓	2110	✓	2100	✓	2180	✓

Organic Matter & Nutrient Status											
Organic Matter (LOI)	%	3.80	✓	3.5	✗	3.5	✗	4.5	✓	6.1	✓
Total Nitrogen	%	0.13	✗	0.12	✗	0.14	✗	0.12	✗	0.15	✓
Carbon : Nitrogen Ratio		17:1	✓	17:1	✓	15:1	✓	22:1	✗	24:1	✗
Extractable Phosphate	mg/l	6	✗	6.74	✗	9.26	✗	9.26	✗	6	✗
Extractable Potassium	mg/l	183	✓	140	✓	5	✗	122	✓	230	✓
Extractable Magnesium	mg/l	108	✓	89	✓	5	✗	92	✓	224	✓

Phytotoxic Metals'											
Zinc (Zn)	mg/kg	32.7	✓	21.2	✓	30.7	✓	27.6	✓	35.9	✓
Copper (Cu)	mg/kg	6.92	✓	4.38	✓	5.98	✓	4.54	✓	6.5	✓
Nickel (Ni)	mg/kg	8.19	✓	5.46		5.41	✓	5.7	✓	7.28	✓

Visible Contaminants (Dry Weight Basis)									
Total foreign matter > 2 mm	%w/w	<0.5	✓	<0.5	✓	<0.5	✓	<0.5	✓
... of which plastics	%w/w	<0.25	✓	<0.25	✓	<0.25	✓	<0.25	✓
... of which sharps	%w/w	0	✓	0	✓	0	✓	0	✓

Soil Description

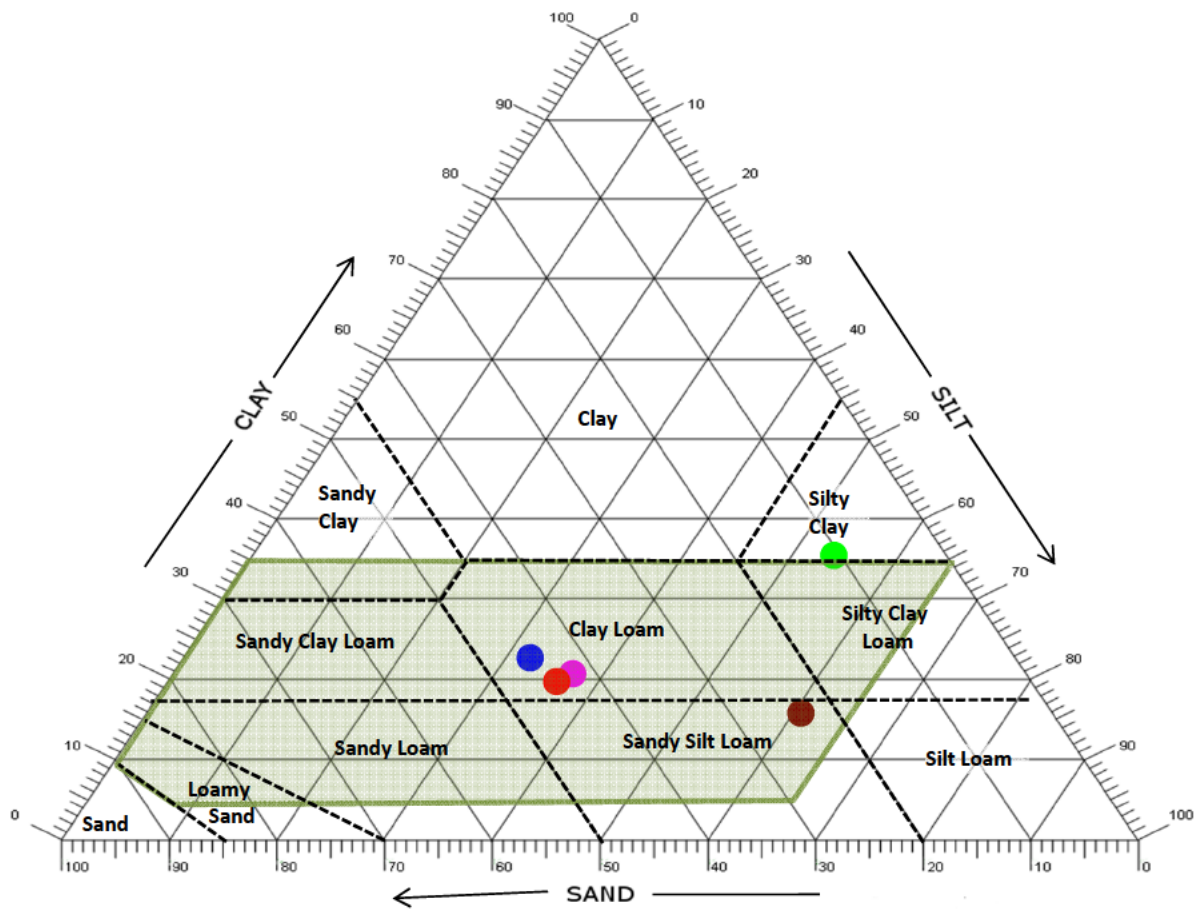
Notes:

- ☒ Conforms to BS3882 : 2015 - Multipurpose Grade
- ☒ Fails to conform to BS3882 : 2015 - Multipurpose Grade

* LASER diffraction
 ‡ 1:2.5 water extract
 † CaSO₄ extract
 ' Total metals
 ne not evaluated

UK Soil Texture Classification

C	Clay	ZC	Silty Clay
SC	Sandy Clay	ZCL	Silty Clay Loam
CL	Clay Loam	SZL	Sandy Silt Loam
SL	Sandy Loam	ZL	Silt Loam
SCL	Sandy Clay Loam	S	Sand
LS	Loamy Sand		



● ATK-CP-13-TSS 0.10
Texture: SZL

● ATK-RC-01-TSS 0.10
Texture: CL

● ATK-TP-04-TSS 0.10
Texture: CL

● ATK-TP-05-TSS 0.10
Texture: CL

● ATK-TP-06-TSS 0.10
Texture: ZC

Certificate of Analysis

Client :	SOCOTEC UK Doncaster	Job Number :	A9031-19
Client Site :	Havant Thicket Winter Storage Reservoir	Date Received :	16/01/2020
Suite ID :	BS3882 : 2015 - Multipurpose Grade	Date Reported :	26/02/2020

Soil Sample Reference : **ATK-TP-08TSS ATK-TPM-01 ATK-TPM-05TSS**

Particle Size Distribution*

(UK Classification)

Clay (<0.002mm)	%	15 ✓	34 ✓	20 ✓
Silt (0.002-0.06mm)	%	61 ✓	63 ✓	36 ✓
Sand (0.06-2.0mm)	%	24 ✓	3 ✓	44 ✓
Textural Class		SZL ✓	ZCL ✓	CL ✓

Stone Content (Dry Weight Basis)

Stones 2-20mm	%w/w	28 ✓	4 ✓	16 ✓
Stones 20-50mm	%w/w	5 ✓	0 ✓	5 ✓
Stones >50mm	%w/w	0 ✓	0 ✓	0 ✓

Soil Reaction & Soluble Salts

pH Value ‡	units	6.3 ✓	6.2 ✓	6.6 ✓
Electrical Conductivity (CaSO ₄)†	µS/cm	2110 ✓	2380 ✓	2110 ✓

Organic Matter & Nutrient Status

Organic Matter (LOI)	%	4.60 ✓	6.7 ✓	4.6 ✓
Total Nitrogen	%	0.17 ✓	0.32 ✓	0.14 *
Carbon : Nitrogen Ratio		16:1 ✓	12:1 ✓	19:1 ✓
Extractable Phosphate	mg/l	6 *	6 *	8.52 *
Extractable Potassium	mg/l	239 ✓	264 ✓	128 ✓
Extractable Magnesium	mg/l	81 ✓	486 ✓	95 ✓

Phytotoxic Metals'

Zinc (Zn)	mg/kg	20.4 ✓	40.7 ✓	27.3 ✓
Copper (Cu)	mg/kg	6.52 ✓	7.59 ✓	4.8 ✓
Nickel (Ni)	mg/kg	5.78 ✓	8.82 ✓	5.89 ✓

Visible Contaminants (Dry Weight Basis)

Total foreign matter > 2 mm	%w/w	<0.5 ✓	<0.5 ✓	<0.5 ✓
... of which plastics	%w/w	<0.25 ✓	<0.25 ✓	<0.25 ✓
... of which sharps	%w/w	0 ✓	0 ✓	0 ✓

Soil Description

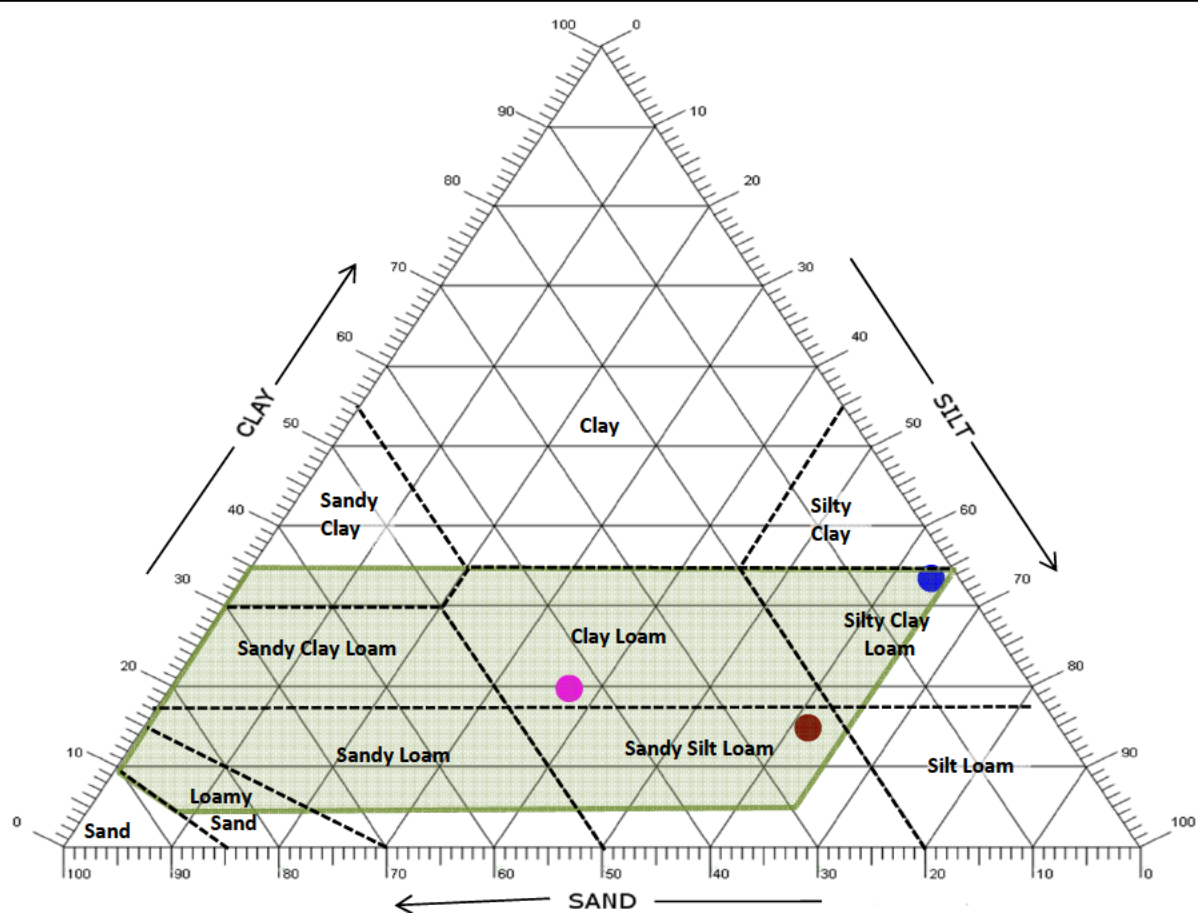
Notes:

- ☒ Conforms to BS3882 : 2015 - Multipurpose Grade
☒ Fails to conform to BS3882 : 2015 - Multipurpose Grade

* LASER diffraction
 ‡ 1:2.5 water extract
 † CaSO₄ extract
 ' Total metals
 ne not evaluated

UK Soil Texture Classification

C	Clay	ZC	Silty Clay
SC	Sandy Clay	ZCL	Silty Clay Loam
CL	Clay Loam	SZL	Sandy Silt Loam
SL	Sandy Loam	ZL	Silt Loam
SCL	Sandy Clay Loam	S	Sand
LS	Loamy Sand		



● ATK-TP-08-TSS 0.10
Texture: SZL

● ATK-TPM-01 0.10
Texture: ZCL

● ATK-TPM-05-TSS 0.10
Texture: CL

Customer SOCOTEC UK Doncaster
 Site A9031-19 Havant Thicket Winter Storage
 Report No S204820

Consignment No S91035
 Date Logged 16-Jan-2020
 In-House Report Due 30-Jan-2020

Please note the results for any subcontracted analysis (identified with a '^') is likely to take up to an additional five working days.

WSTLM60	Extractable Phosphate BS3882	✓
TSCON	Conductivity uS/cm (BS3882)	
TCALC	Total Carbon (BS3882)	
Sub025	^PSD inc. sedimentation for topsoil	
Sub022	^Nitrogen	
PHSOIL.51	pH units (5:1) BS3882	
LOI(%MM)	BS3882 Loss on Ignition @ 440C	
ICPTS/NIT	Zinc (Nitric Acid) BS3882	
	Nickel (Nitric Acid) BS3882	
	Copper (Nitric Acid) BS3882	
	Exch. Potassium (BS3882)	
ICPEXCH	Exch. Magnesium (BS3882)	
CustServ	Report B	
CINRCALC	C:N Ratio to BS3882	
ANC	Carbonate %	
MethodID	Sampled	
ID Number	Description	
CL/2083412	ATK-BH-01 0.05	10/12/19
CL/2083413	ATK-CP-02-TSS 0.10	10/12/19
CL/2083414	ATK-CP-07-TSS 0.10	10/12/19
CL/2083415	ATK-CP-08-TSS 0.10	10/12/19
CL/2083416	ATK-CP-09-TSS 0.10	10/12/19
CL/2083417	ATK-CP-13-TSS 0.10	10/12/19
CL/2083418	ATK-RC-01-TSS 0.10	10/12/19
CL/2083419	ATK-TP-04-TSS 0.10	10/12/19
CL/2083420	ATK-TP-05-TSS 0.10	10/12/19
CL/2083421	ATK-TP-06-TSS 0.10	10/12/19
CL/2083422	ATK-TP-08-TSS 0.10	10/12/19
CL/2083423	ATK-TPM-01 0.10	10/12/19
CL/2083424	ATK-TPM-05-TSS 0.10	10/12/19

Note: We will endeavour to prioritise samples to complete analysis within holding time; however any delay could result in samples becoming deviant whilst being processed in the laboratory.

If sampling dates are missing or matrices unclassified then results will not be ISO 17025 accredited. Please contact us as soon as possible to provide missing information in order to reinstate accreditation.

Deviating Sample Key

- A The sample was received in an inappropriate container for this analysis
- B The sample was received without the correct preservation for this analysis
- C Headspace present in the sample container
- D The sampling date was not supplied so holding time may be compromised - applicable to all analysis
- E Sample processing did not commence within the appropriate holding time
- F Sample processing did not commence within the appropriate handling time

Requested Analysis Key

- Analysis Required
- Analysis dependant upon trigger result - Note: due date may be affected if triggered
- No analysis scheduled
- ^ Analysis Subcontracted - Note: due date may vary

Where individual results are flagged see report notes for status.

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Soil	ANC	Oven Dried @ < 35°C	Quantitative digestion with Hydrochloric Acid back titration with 1M Sodium Hydroxide to pH 7
Soil	CNRCALC	Oven Dried @ < 35°C	Calculated from Total Nitrogen%, and Total Carbon% in accordance with BS3882
Soil	ICPEXCH	Oven Dried @ < 35°C	Determination of Exchangeable Metals in soil samples by ICPOES detection
Soil	ICPTSNIT	Oven Dried @ < 35°C	Determination of Metals in soil samples by Nitric Acid digestion followed by ICPOES detection in accordance with BS3882
Soil	LOI(%MM)	Oven Dried @ < 35°C	Determination of loss on ignition for soil samples at specified temperature by gravimetry
Soil	PHSOIL51	Oven Dried @ < 35°C	Determination of pH of 5:1 deionised water to soil extracts using pH probe.
Soil	SubCon*	*	Contact Laboratory for details of the methodology used by the sub-contractor.
Soil	TCCALC	Oven Dried @ < 35°C	Calculated from LOI @ 440C in accordance with BS3882
Soil	TSCON	Oven Dried @ < 35°C	Determination of conductivity in soil samples by Calcium Sulphate extraction in accordance with BS3882
Soil	WSLM60	Oven Dried @ < 35°C	Determination by extraction from soil samples using Sodium Hydrogen carbonate followed by colorimetric detection

Where individual results are flagged see report notes for status.

Report Notes

Generic Notes

Soil/Solid Analysis

Unless stated otherwise,

- Results expressed as mg/kg have been calculated on the basis indicated in the Method Description table.
All results on MCERTS reports are reported on a 105°C dry weight basis with the exception of pH and conductivity.
- Sulphate analysis not conducted in accordance with BS1377
- Water Soluble Sulphate is on a 2:1 water:soil extract

Waters Analysis

Unless stated otherwise results are expressed as mg/l

Nil: Where "Nil" has been entered against Total Alkalinity or Total Acidity this indicates that a measurement was not required due to the inherent pH of the sample.

Oil analysis specific

Unless stated otherwise,

- Results are expressed as mg/kg
- SG is expressed as g/cm³@ 15°C

Gas (Tedlar bag) Analysis

Unless stated otherwise, results are expressed as ug/l

Asbestos Analysis

CH Denotes Chrysotile

TR Denotes Tremolite

CR Denotes Crocidolite

AC Denotes Actinolite

AM Denotes Amosite

AN Denotes Anthophyllite

NAIIS No Asbestos Identified in Sample

NADIS No Asbestos Detected In Sample

Symbol Reference

^ Sub-contracted analysis.

\$\$ Unable to analyse due to the nature of the sample

¶ Samples submitted for this analyte were not preserved on site in accordance with laboratory protocols.

This may have resulted in deterioration of the sample(s) during transit to the laboratory.

Consequently the reported data may not represent the concentration of the target analyte present in the sample at the time of sampling

¥ Results for guidance only due to possible interference

& Blank corrected result

I.S Insufficient sample to complete requested analysis

I.S(g) Insufficient sample to re-analyse, results for guidance only

Intf Unable to analyse due to interferences

N.D Not determined

N.Det Not detected

N.F No Flow

NS Information Not Supplied

Req Analysis requested, see attached sheets for results

▮ Raised detection limit due to nature of the sample

* All accreditation has been removed by the laboratory for this result

‡ MCERTS accreditation has been removed for this result

§ accreditation has been removed for this result as it is a non-accredited matrix

Note: The Laboratory may only claim that data is accredited when all of the requirements of our Quality System have been met. Where these requirements have not been met the laboratory may elect to include the data in its final report and remove the accreditation from individual data items if it believes that the validity of the data has not been affected. If further details are required of the circumstances which have led to the removal of accreditation then please do not hesitate to contact the laboratory.

Sample Descriptions

Client	SOCOTEC UK Doncaster
Site	A9031-19 Havant Thicket Winter Storage
Report Number	S20_4820

Note: major constituent in upper case

[illegible]



SOCOTEC

APPENDIX G PHOTOGRAPHS

Rotary Cores Photographs

Plate 1 to 35

Trial Pits Photographs

Plate 36 to 65

Sample Split and Describe Photographs

Plate 66 to 83

IS Supplied Shear Surface Photographs (ATK-TP-01)

Plate 84 and 85

Rotary Core Photographs



Notes:

Project HAVANT THICKET WINTER STORAGE RESERVOIR
Project No. A9031-19
Carried out for Portsmouth Water

Plate
1

Rotary Core Photographs



Notes:

Project HAVANT THICKET WINTER STORAGE RESERVOIR

Project No. A9031-19

Carried out for Portsmouth Water

Plate

Rotary Core Photographs



Notes:

Project HAVANT THICKET WINTER STORAGE RESERVOIR
Project No. A9031-19
Carried out for Portsmouth Water

Plate

3

Rotary Core Photographs



Notes:

Project HAVANT THICKET WINTER STORAGE RESERVOIR
Project No. A9031-19
Carried out for Portsmouth Water

Plate

4

Rotary Core Photographs



Notes:

Project HAVANT THICKET WINTER STORAGE RESERVOIR
Project No. A9031-19
Carried out for Portsmouth Water

Plate

5

Rotary Core Photographs



Notes:

Project HAVANT THICKET WINTER STORAGE RESERVOIR
Project No. A9031-19
Carried out for Portsmouth Water

Plate

Rotary Core Photographs



Notes:

Project HAVANT THICKET WINTER STORAGE RESERVOIR
Project No. A9031-19
Carried out for Portsmouth Water

Plate

7

Rotary Core Photographs



Notes:

Project HAVANT THICKET WINTER STORAGE RESERVOIR
Project No. A9031-19
Carried out for Portsmouth Water

Plate

8

Rotary Core Photographs



Notes:

Project HAVANT THICKET WINTER STORAGE RESERVOIR
Project No. A9031-19
Carried out for Portsmouth Water

Plate 9

Rotary Core Photographs



Notes:

Project HAVANT THICKET WINTER STORAGE RESERVOIR
Project No. A9031-19
Carried out for Portsmouth Water

Plate

10

Rotary Core Photographs



Notes:

Project HAVANT THICKET WINTER STORAGE RESERVOIR
Project No. A9031-19
Carried out for Portsmouth Water

Plate

Rotary Core Photographs



Notes:

Project HAVANT THICKET WINTER STORAGE RESERVOIR

Project No. A9031-19

Carried out for Portsmouth Water

Plate

Rotary Core Photographs



Notes:

Project HAVANT THICKET WINTER STORAGE RESERVOIR

Project No. A9031-19

Carried out for Portsmouth Water

Plate

Rotary Core Photographs

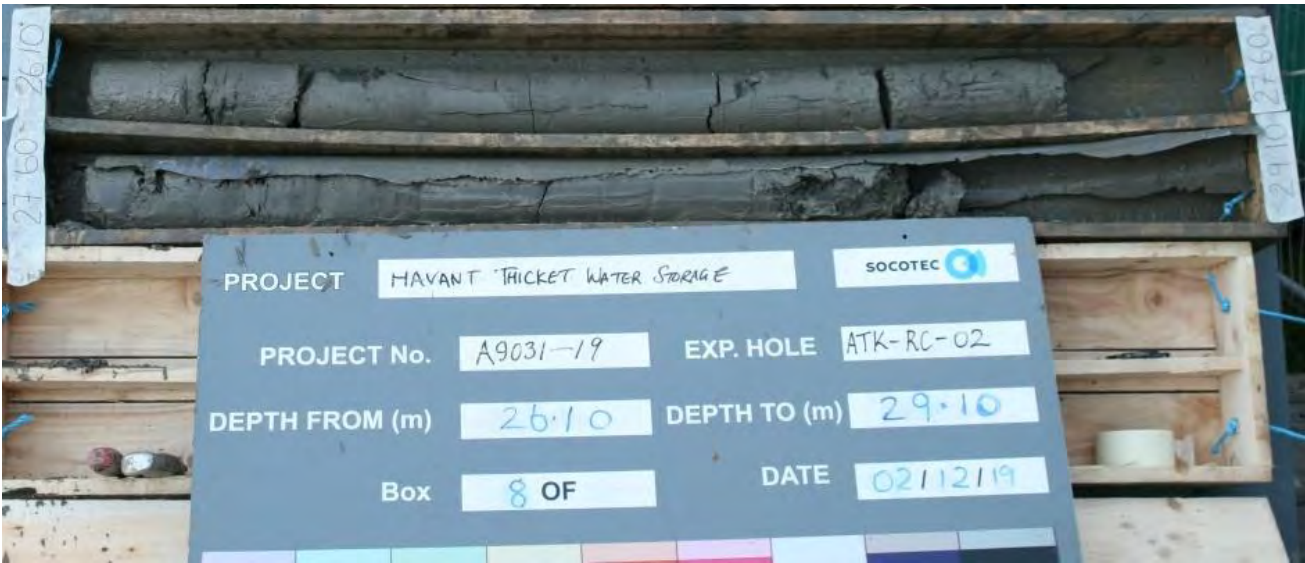


Notes:

Project HAVANT THICKET WATER STORAGE RESERVOIR
Project No. A9031-19
Carried out for Portsmouth Water

Plate

Rotary Core Photographs

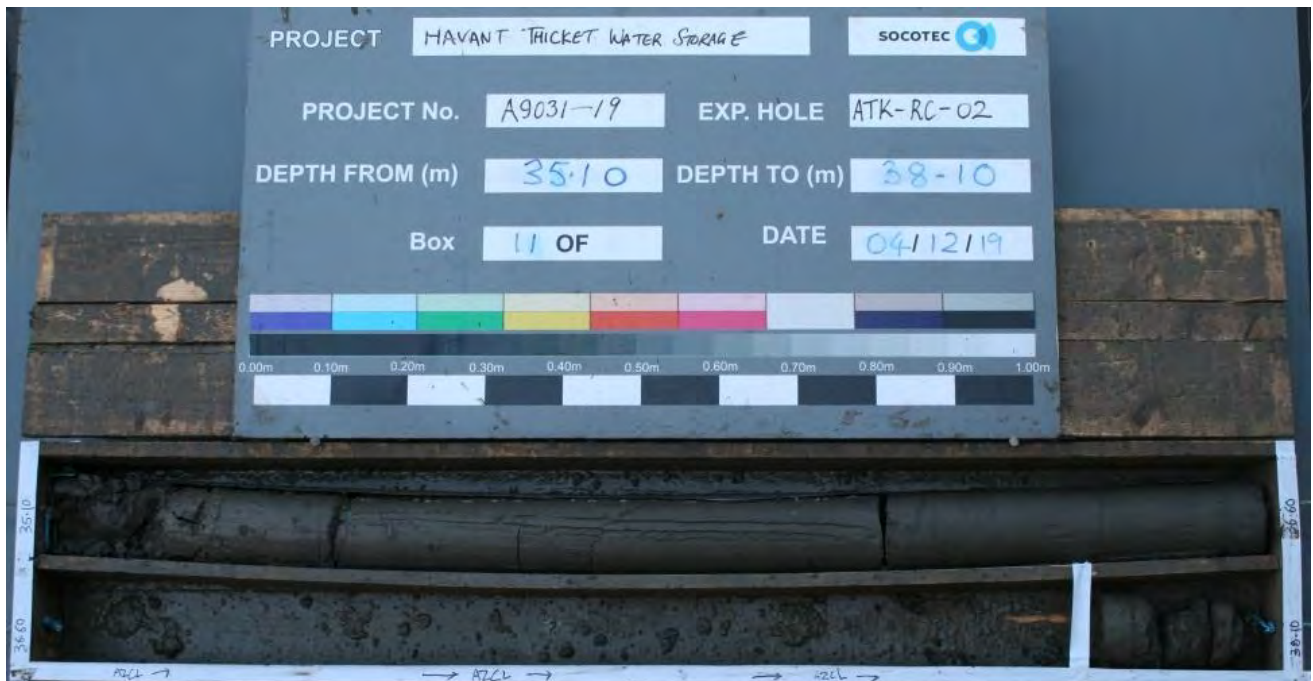


Notes:

Project HAVANT THICKET WINTER STORAGE RESERVOIR
Project No. A9031-19
Carried out for Portsmouth Water

Plate

Rotary Core Photographs



Notes:	Project HAVANT THICKET WINTER STORAGE RESERVOIR Project No. A9031-19 Carried out for Portsmouth Water	Plate 16
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Rotary Core Photographs



Notes:

Project HAVANT THICKET WINTER STORAGE RESERVOIR
Project No. A9031-19
Carried out for Portsmouth Water

Plate

Rotary Core Photographs



Notes:

Project HAVANT THICKET WINTER STORAGE RESERVOIR
Project No. A9031-19
Carried out for Portsmouth Water

Plate

Rotary Core Photographs



Notes:

Project HAVANT THICKET WINTER STORAGE RESERVOIR
Project No. A9031-19
Carried out for Portsmouth Water

Plate

Rotary Core Photographs

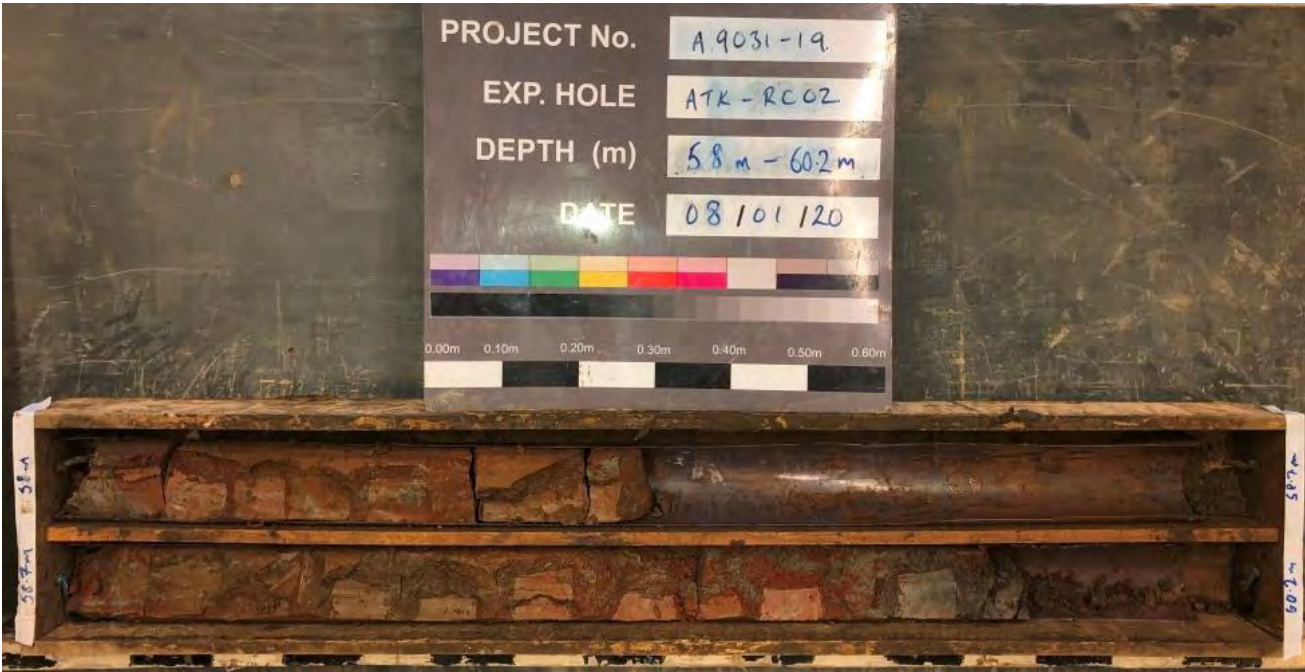


Notes:

Project HAVANT THICKET WINTER STORAGE RESERVOIR
Project No. A9031-19
Carried out for Portsmouth Water

Plate
20

Rotary Core Photographs



Notes:

Project HAVANT THICKET WINTER STORAGE RESERVOIR
Project No. A9031-19
Carried out for Portsmouth Water

Plate

Rotary Core Photographs



Notes:

Project HAVANT THICKET WINTER STORAGE RESERVOIR
Project No. A9031-19
Carried out for Portsmouth Water

Plate

Rotary Core Photographs



Notes:

Project HAVANT THICKET WINTER STORAGE RESERVOIR
Project No. A9031-19
Carried out for Portsmouth Water

Plate

Rotary Core Photographs

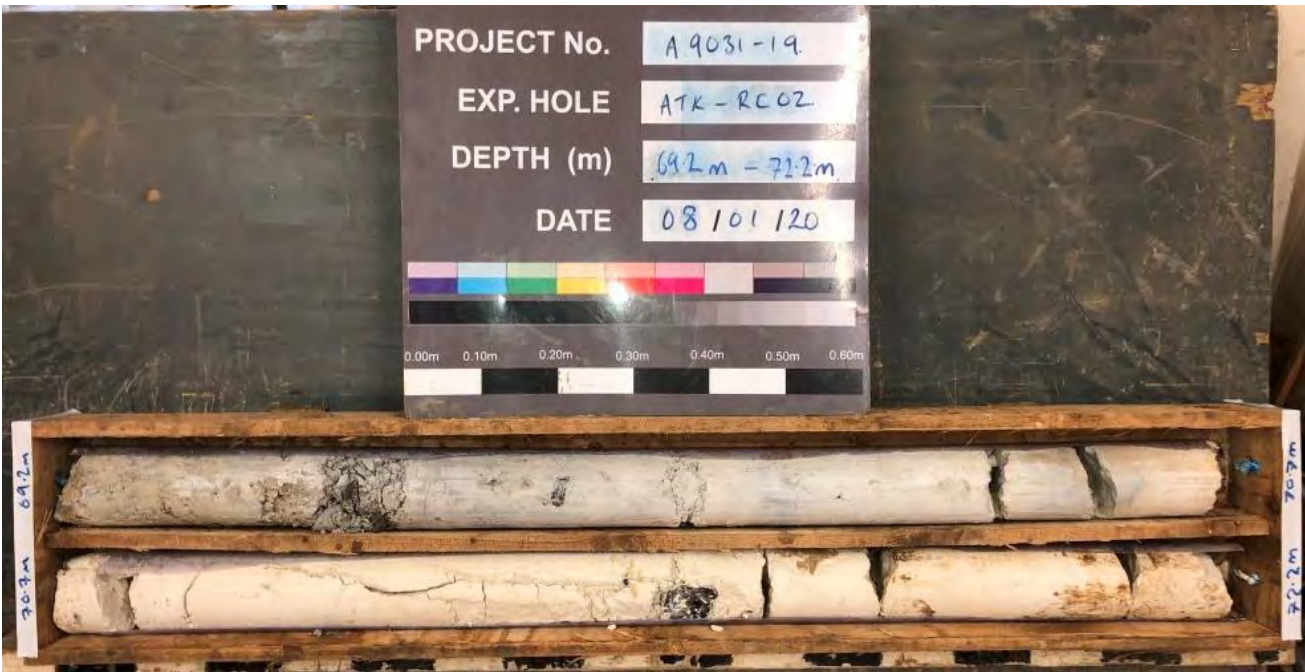


Notes:

Project HAVANT THICKET WINTER STORAGE RESERVOIR
Project No. A9031-19
Carried out for Portsmouth Water

Plate

Rotary Core Photographs



Notes:

Project HAVANT THICKET WINTER STORAGE RESERVOIR
Project No. A9031-19
Carried out for Portsmouth Water

Plate

Rotary Core Photographs



Notes:

Project HAVANT THICKET WINTER STORAGE RESERVOIR
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Project HAVANT THICKET WINTER STORAGE RESERVOIR
Project No. A9031-19
Carried out for Portsmouth Water

Plate
30

Rotary Core Photographs



Notes:

Project HAVANT THICKET WINTER STORAGE RESERVOIR

Project No. A9031-19

Carried out for Portsmouth Water

Plate

31

Rotary Core Photographs



Notes:

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Project No. A9031-19
Carried out for Portsmouth Water

Plate

Rotary Core Photographs



Notes:

Project HAVANT THICKET WINTER STORAGE RESERVOIR
Project No. A9031-19
Carried out for Portsmouth Water

Plate

33

Rotary Core Photographs



Notes:

Project HAVANT THICKET WINTER STORAGE RESERVOIR

Project No. A9031-19

Carried out for Portsmouth Water

Plate

Rotary Core Photographs



Notes:

Project HAVANT THICKET WINTER STORAGE RESERVOIR
Project No. A9031-19
Carried out for Portsmouth Water

Plate



A9031-19 ATK-TP-01 Pre Condition



A9031-19 ATK-TP-01 FACE A

Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate 36
	Project No.	A9031-19	
	Carried out for	Portsmouth Water	



A9031-19 ATK-TP-01 FACE B



A9031-19 ATK-TP-01 – Example of Shear Surfaces in clay

Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate 37
	Project No. Carried out for	A9031-19 Portsmouth Water	



A9031-19 ATK-TP-01 – Examples of Shear Surfaces in clay



Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate 38
	Project No.	A9031-19	
	Carried out for	Portsmouth Water	



A9031-19 ATK-TP-01 Post Condition



A9031-19 ATK-TP-01 SPOIL

Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate
	Project No. Carried out for	A9031-19 Portsmouth Water	39



A9031-19 ATK-TP-02 Pre Condition



A9031-19 ATK-TP-02 FACE A

Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate
	Project No.	A9031-19	40
	Carried out for	Portsmouth Water	



A9031-19 ATK-TP-02 FACE B (1)



A9031-19 ATK-TP-02 FACE B

Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate	41
	Project No. Carried out for	A9031-19 Portsmouth Water		



A9031-19 ATK-TP-02 Post Condition



A9031-19 ATK-TP-02 SPOIL

Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate 42
	Project No.	A9031-19	
	Carried out for	Portsmouth Water	



A9031-19 ATK-TP-03 Pre Condition



A9031-19 ATK-TP-03 FACE B

Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate 43
	Project No.	A9031-19	
	Carried out for	Portsmouth Water	



A9031-19 ATK-TP-03 FACE C



A9031-19 ATK-TP-03 Post Condition

Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate
	Project No.	A9031-19	44
	Carried out for	Portsmouth Water	



A9031-19 ATK-TP-03 SPOIL



A9031-19 ATK-TP-04 Pre Condition

Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate 45
	Project No.	A9031-19	
	Carried out for	Portsmouth Water	



A9031-19 ATK-TP-04 FACE A



A9031-19 ATK-TP-04 FACE D

Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate
	Project No.	A9031-19	
	Carried out for	Portsmouth Water	46



A9031-19 ATK-TP-04 Post Condition



A9031-19 ATK-TP-04 SPOIL

Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate 47
	Project No.	A9031-19	
	Carried out for	Portsmouth Water	



A9031-19 ATK-TP-05 Pre Condition



A9031-19 ATK-TP-05 FACE B

Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate	48
	Project No. Carried out for	A9031-19 Portsmouth Water		



A9031-19 ATK-TP-05 FACE C



A9031-19 ATK-TP-05 Post Condition

Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate 49
	Project No. Carried out for	A9031-19 Portsmouth Water	



A9031-19 ATK-TP-05 SPOIL



A9031-19 ATK-TP-06 Pre Condition

Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate	50
	Project No. Carried out for	A9031-19 Portsmouth Water		



A9031-19 ATK-TP-06 FACE A



A9031-19 ATK-TP-06 FACE B

Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate
	Project No. Carried out for	A9031-19 Portsmouth Water	



A9031-19 ATK-TP-06 Post Condition



A9031-19 ATK-TP-06 SPOIL

Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate 52
	Project No.	A9031-19	
	Carried out for	Portsmouth Water	



A9031-19 ATK-TP-07 Pre Condition



A9031-19 ATK-TP-07 FACE B

Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate
	Project No.	A9031-19	53
	Carried out for	Portsmouth Water	



A9031-19 ATK-TP-07 FACE C



A9031-19 ATK-TP-07 SPOIL

Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate 54
	Project No.	A9031-19	
	Carried out for	Portsmouth Water	



A9031-19 ATK-TP-08 Pre Condition



A9031-19 ATK-TP-08 FACE A

Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate
	Project No.	A9031-19	55
	Carried out for	Portsmouth Water	



A9031-19 ATK-TP-08 FACE C



A9031-19 ATK-TP-08 Post Condition

Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate 56
	Project No.	A9031-19	
	Carried out for	Portsmouth Water	



A9031-19 ATK-TP-08 SPOIL



A9031-19 ATK-TPM-02 Pre Condition

Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate 57
	Project No. Carried out for	A9031-19 Portsmouth Water	



A9031-19 ATK-TPM-02 FACE A



A9031-19 ATK-TPM-02 FACE B

Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate 58
	Project No.	A9031-19	
	Carried out for	Portsmouth Water	



A9031-19 ATK-TPM-02 Post Condition



A9031-19 ATK-TPM-02 SPOIL

Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate
	Project No. Carried out for	A9031-19 Portsmouth Water	



A9031-19 ATK-TPM-04 Pre Condition



A9031-19 ATK-TPM-04 FACE A

Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate 60
	Project No. Carried out for	A9031-19 Portsmouth Water	



A9031-19 ATK-TPM-04 FACE B



A9031-19 ATK-TPM-04 Post Condition

Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate
	Project No.	A9031-19	61
	Carried out for	Portsmouth Water	



A9031-19 ATK-TPM-04 SPOIL



A9031-19 ATK-TPM-05 Pre Condition

Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate 62
	Project No.	A9031-19	
	Carried out for	Portsmouth Water	



A9031-19 ATK-TPM-05 FACE A



A9031-19 ATK-TPM-P05 FACE B

Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate 63
	Project No.	A9031-19	
	Carried out for	Portsmouth Water	



A9031-19 ATK-TPM-05 FACE D Collapse



A9031-19 ATK-TPM-05 Post Condition

Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate 64
	Project No. Carried out for	A9031-19 Portsmouth Water	