HAVANT THICKET WINTER STORAGE RESERVOIR
FACTUAL REPORT ON GROUND INVESTIGATION

Report No A9031-19

PART 2 OF 2

April 2020

Issue No 4

Carried out for:
Portsmouth Water Limited
PO Box No 8
West Street
Havant
Hampshire
PO9 1LG

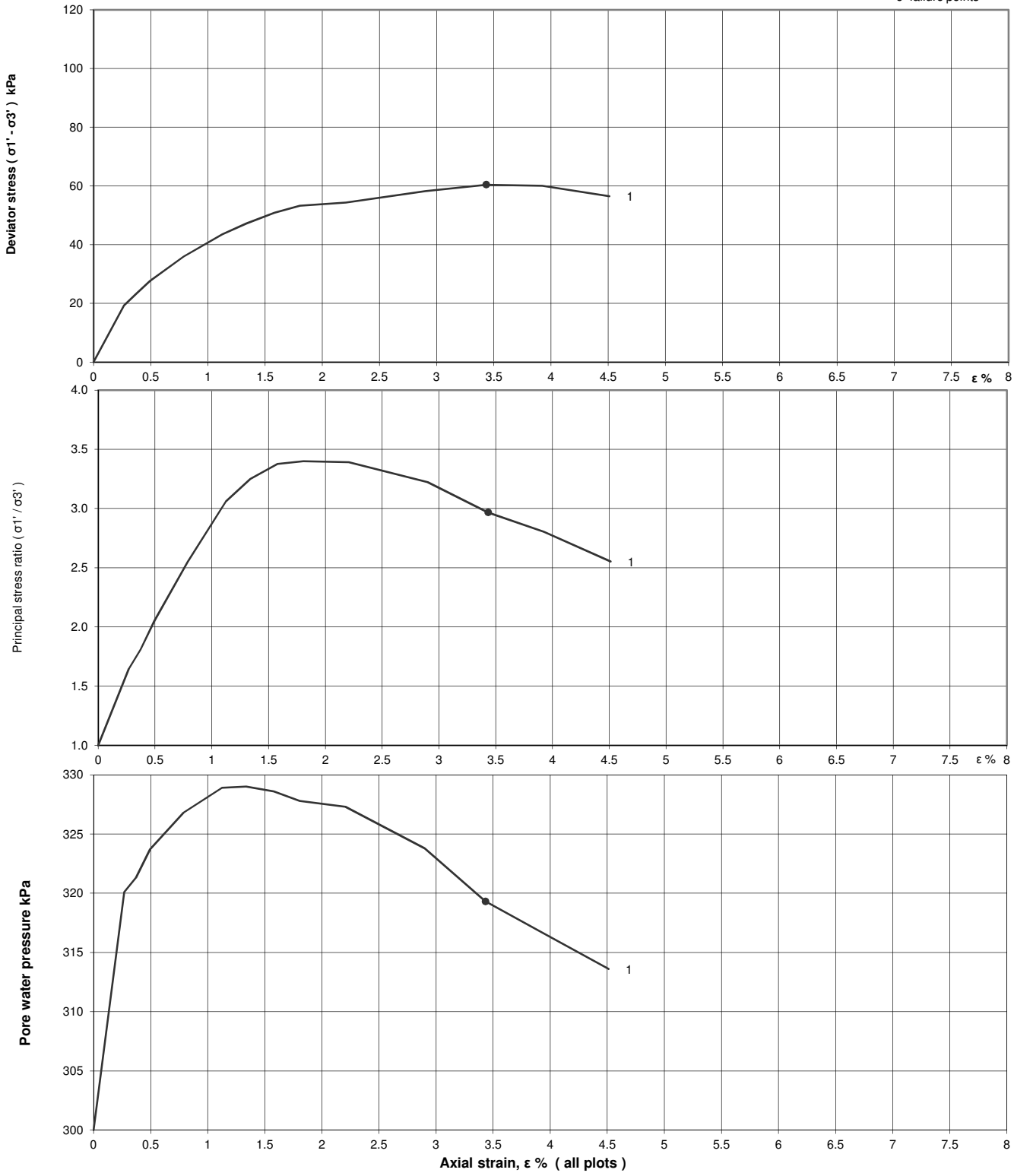
Investigation Supervisor:
Atkins
Woodcote Grove
Ashley Road
Epsom
Surrey
KT18 5BW

Consolidated Undrained Triaxial Compression test with Measurement of Pore Water Pressure
(BS1377 : Part 8 : 1990)

Project No	A9031-19	Sample Details:	Hole No	ATK-CP-05		
Project Name	HAVANT THICKET WATER STORAGE		Depth (m BGL)	4.00		
			No	19	Type	UT
			ID			
			Spec Ref			

Shearing stages - graphical data

o failure points



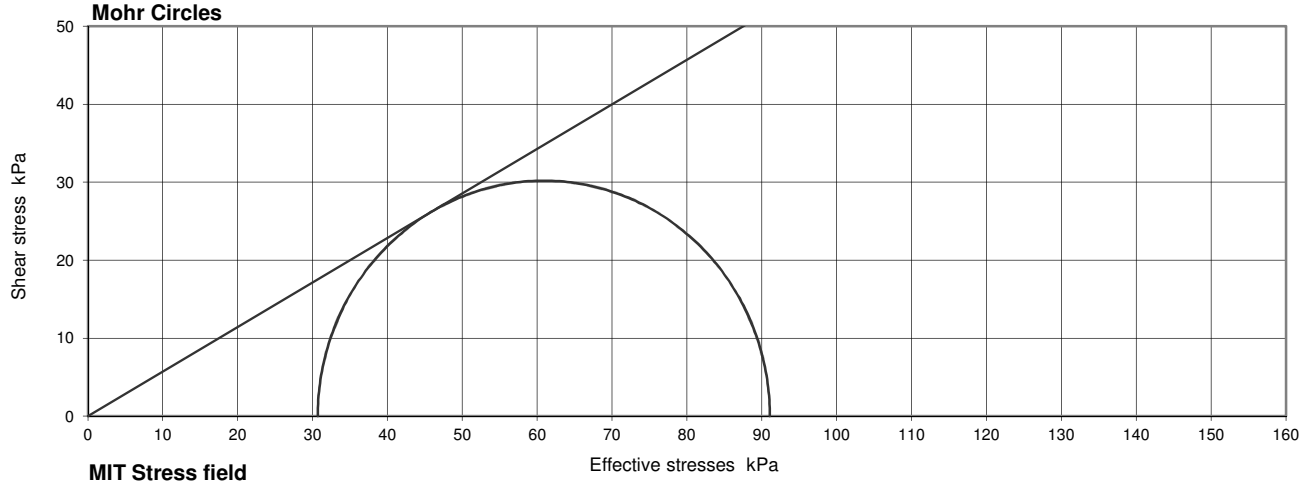
Ref			Figure
SLR8.1 Rev 86.0 Feb18	SOCOTEC UKAS TESTING 1157	Printed:14/01/2020 09:17	**CU** sheet 2 of 3

© Copyright 2017 SOCOTEC UK Limited. All rights reserved

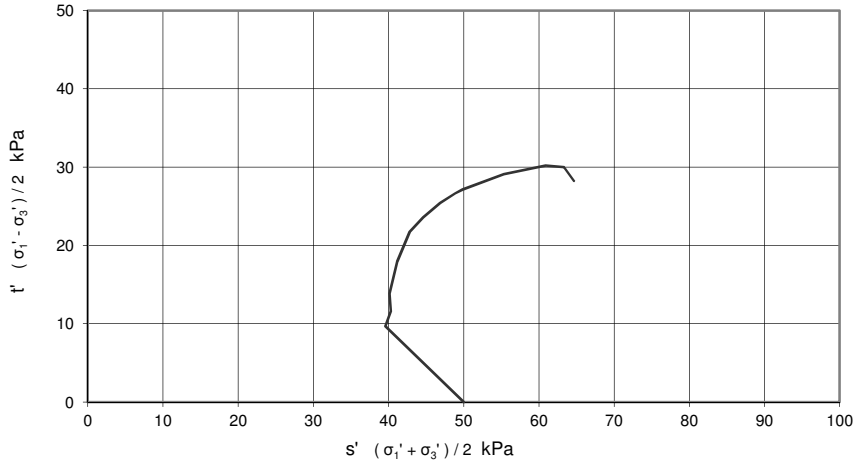
Consolidated Undrained Triaxial Compression test with Measurement of Pore Water Pressure
(BS1377 : Part 8 : 1990)

Project No	A9031-19	Sample Details:	Hole No	ATK-CP-05		
Project Name	HAVANT THICKET WATER STORAGE		Depth (m BGL)	4.00		
			No	19	Type	UT
			ID			
			Spec Ref			

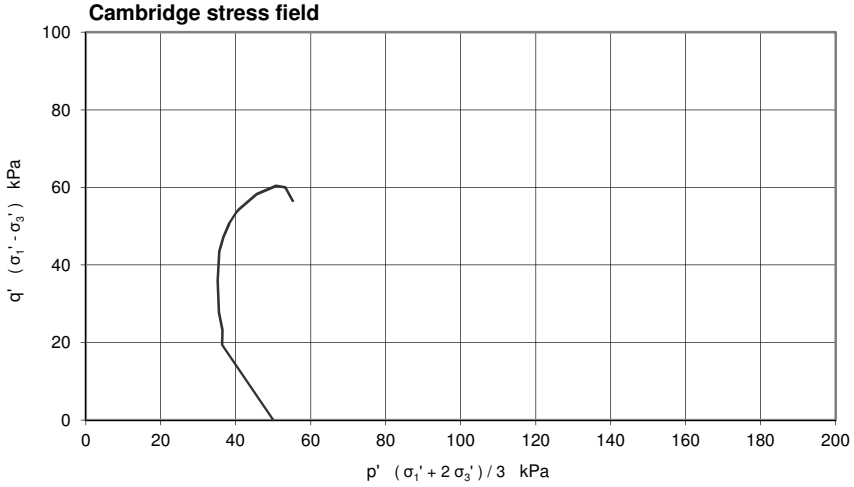
Mohr Circles



MIT Stress field



Cambridge stress field



Compression stages

Specimen	1	2	3	
Cell pressure	350			kPa
Initial pwp	300			kPa
Initial σ_3'	50			kPa
Rate of strain	2.00			%/hr

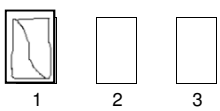
Failure conditions

Criterion	Maximum deviator stress			
Axial strain	3.43			%
$(\sigma_1' / \sigma_3')_f$	2.967			
$(\sigma_1' - \sigma_3')_f$	60.4			kPa
u_f	319			kPa
$\sigma_3'_f$	31			kPa
$\sigma_1'_f$	91			kPa
A_f	0.32			
Time to failure	1.7			hrs

Shear Strength Parameters

		Linear regression
c '	kPa	0.0
Ø '	degrees	29.7
		Manual re-assessment
c '	kPa	-
Ø '	degrees	-

Mode of failure



Notes : Deviator stresses corrected for area change, and 0.329 mm thick rubber membrane(s)

NO SIDE DRAINS

Ref			Figure
SLR8.1 Rev 86.0 Feb18	SOCOTEC UKAS TESTING 1157	Printed:14/01/2020 09:17	**CU** sheet 3 of 3

© Copyright 2017 SOCOTEC UK Limited. All rights reserved

Consolidated Undrained Triaxial Compression test with Measurement of Pore Water Pressure
(BS1377 : Part 8 : 1990)

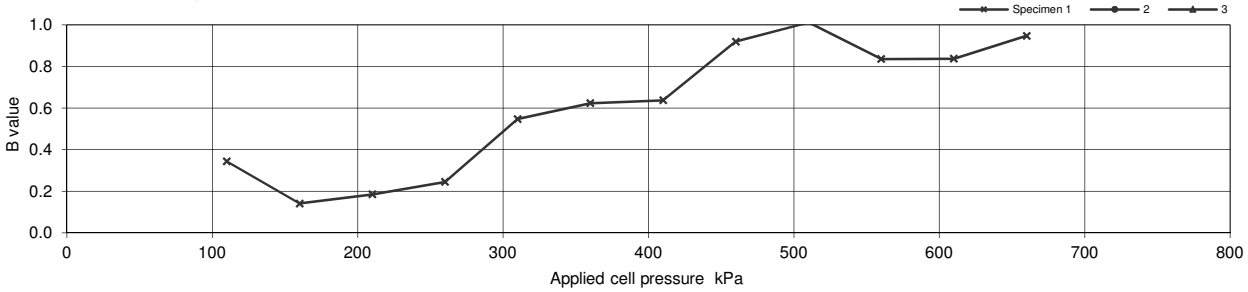
Project No	A9031-19	Sample Details:	Hole No	ATK-CP-05	
Project Name	HAVANT THICKET WATER STORAGE		Depth (m BGL)	8.00	
			No	34	Type UT
			ID		
			Spec Ref		

Specimen Details			1	2	3
Initial	Length	mm	203.33		
	Diameter	mm	102.95		
	Bulk Density	Mg/m³	2.07		
	Water Content	%	23		
	Dry density	Mg/m³	1.68		
After consolidation	Length	mm	204.26		
	Diameter	mm	103.42		
	Bulk Density*	Mg/m³	2.06		
	Water Content*	%	24		
	Dry density*	Mg/m³	1.66		

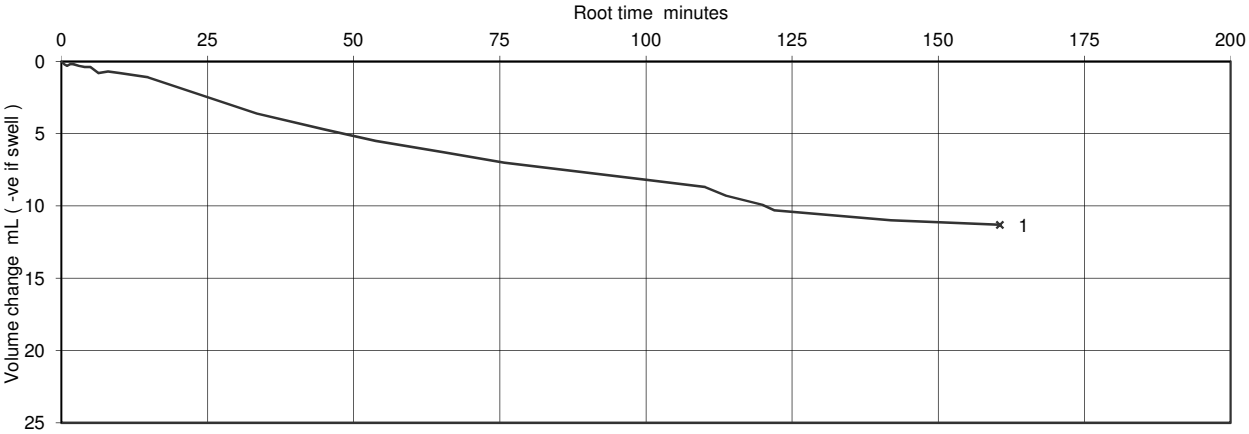
* for undrained test, after consolidation and after test are the same.

Soil Description	Stiff brown silty CLAY.
Specimen Type /Preparation	UNDISTURBED

Saturation Details		Method of Saturation		
		Increments of cell and back pressure		
Cell pressure increments	kPa	50		
Differential Pressure	kPa	10		
Final Cell Pressure	kPa	660		
Final pore water pressure	kPa	591.3		
Final B Value		0.96		



Consolidation Details	Drainage Conditions		From one end			
	Specimen No.		1	2	3	
	Cell Pressure applied		700			kPa
	Back Pressure applied		600			kPa
	Effective Pressure		100			kPa
	Pore pressure at start of consolidation		630			kPa
	Pore pressure at end of consolidation		557			kPa
	Pore pressure dissipation at end of consolidation		243			%
Consolidation parameters (see note to BS1377 : pt 8, clause 6.3.4)	Coefficient of Consolidation	C_{vi}	2.07			m^2/year
	Coefficient of Compressibility	M_{vi}	0.08			m^2/MN
	Coefficient of Permeability (calculated)	k_{vi}	5.1E-11			m/s



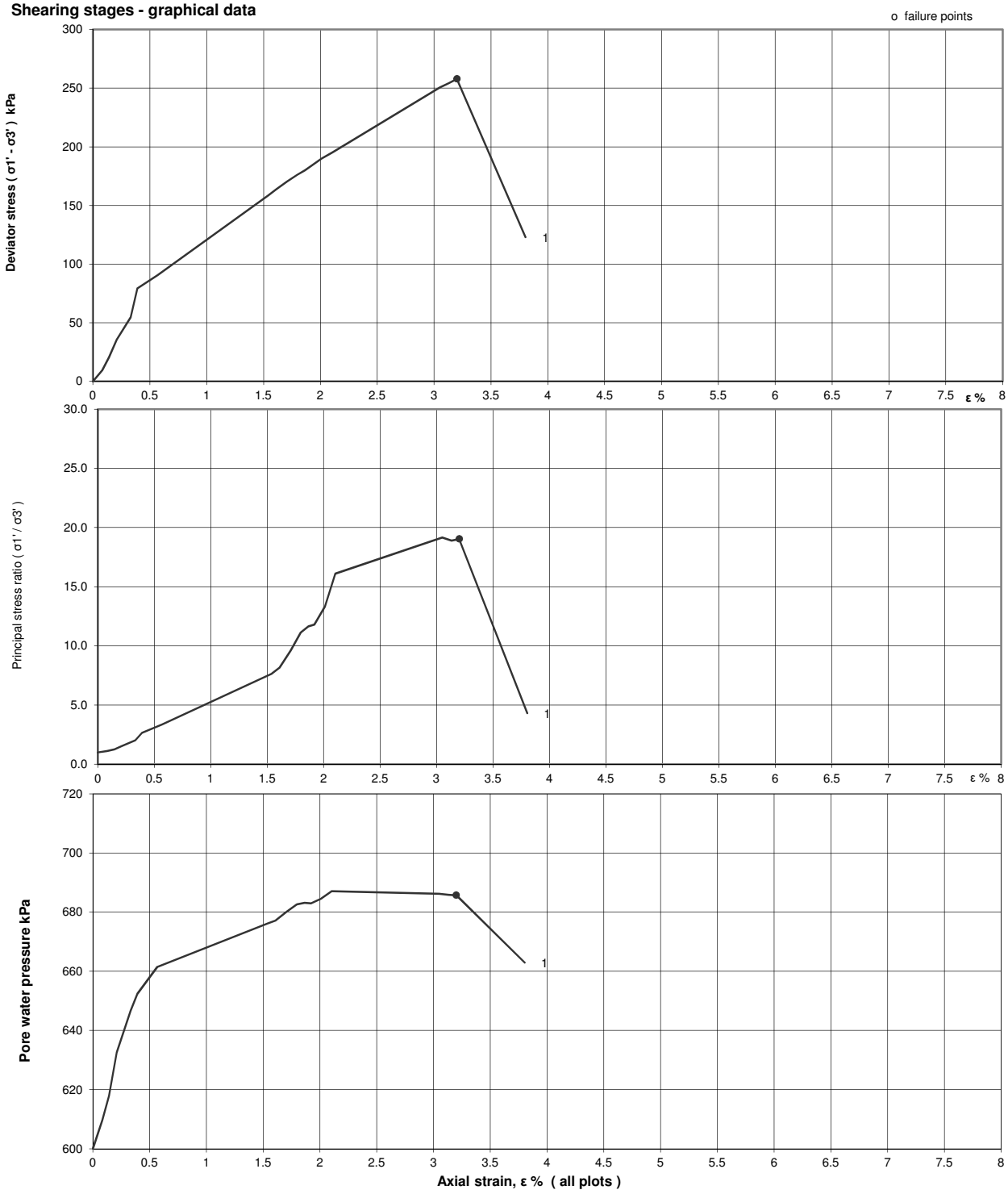
Ref			Figure
SLR8.1 Rev 86.0 Feb18	SOCOTEC	Printed:18/02/2020 07:05	CU
	UKAS TESTING 1157		sheet 1 of 3

© Copyright 2017 SOCOTEC UK Limited. All rights reserved

Consolidated Undrained Triaxial Compression test with Measurement of Pore Water Pressure (BS1377 : Part 8 : 1990)

Project No	A9031-19	Sample Details:	Hole No	ATK-CP-05		
Project Name	HAVANT THICKET WATER STORAGE		Depth (m BGL)	8.00		
			No	34	Type	UT
			ID			
			Spec Ref			

Shearing stages - graphical data



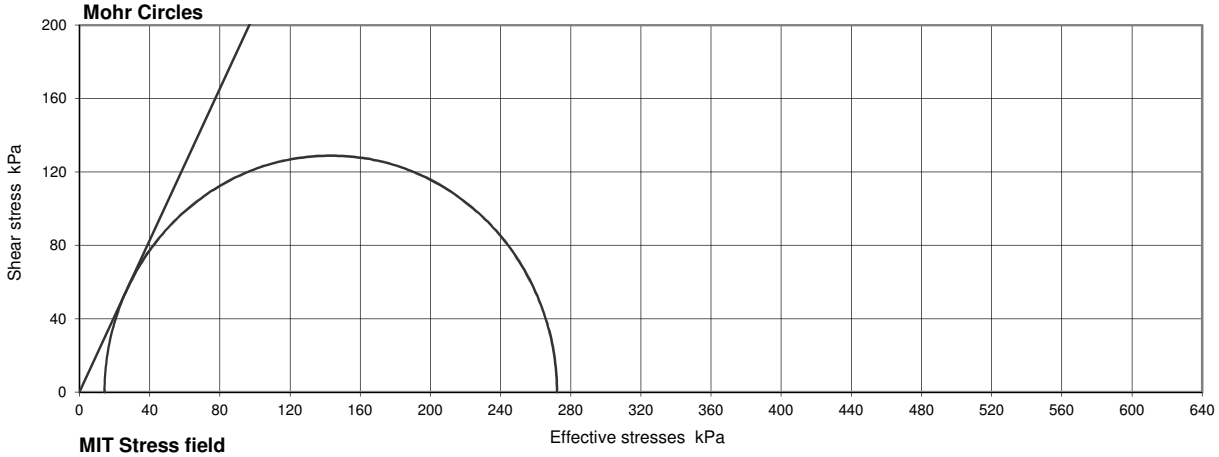
Ref SLR8.1 Rev 86.0 Feb18	SOCOTEC	Printed:18/02/2020 07:05	**Figure** **CU** sheet 2 of 3
	UKAS TESTING 1157		

© Copyright 2017 SOCOTEC UK Limited. All rights reserved

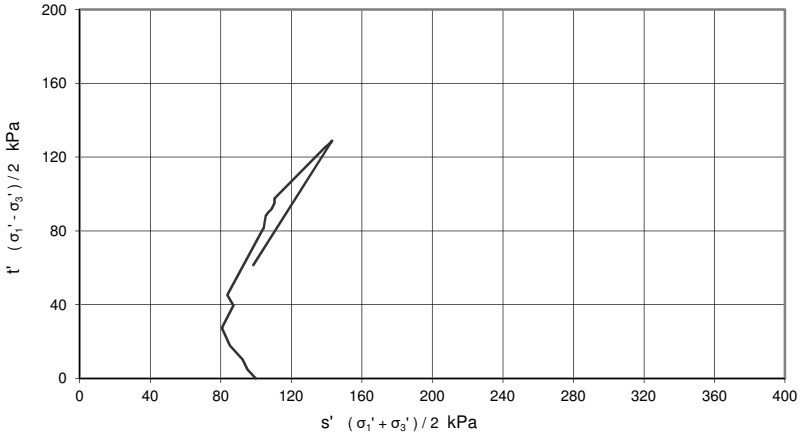
Consolidated Undrained Triaxial Compression test with Measurement of Pore Water Pressure
(BS1377 : Part 8 : 1990)

Project No	A9031-19	Sample Details:	Hole No	ATK-CP-05		
Project Name	HAVANT THICKET WATER STORAGE		Depth (m BGL)	8.00		
			No	34	Type	UT
			ID			
			Spec Ref			

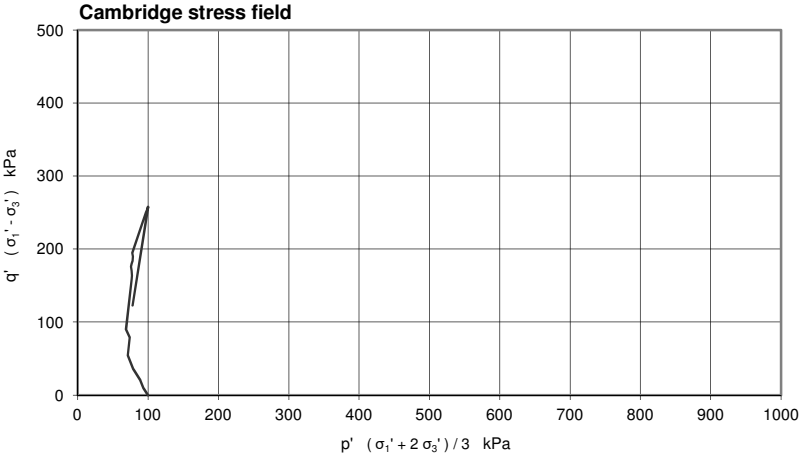
Mohr Circles



MIT Stress field



Cambridge stress field



Compression stages

Specimen	1	2	3	
Cell pressure	700			kPa
Initial pwp	600			kPa
Initial σ_3'	100			kPa
Rate of strain	0.06			%/hr

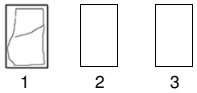
Failure conditions

Criterion	Maximum deviator stress			
Axial strain	3.20			%
$(\sigma_1' / \sigma_3')_f$	19.032			
$(\sigma_1' - \sigma_3')_f$	257.9			kPa
u_f	686			kPa
$\sigma_3'_f$	14			kPa
$\sigma_1'_f$	272			kPa
A_f	0.33			
Time to failure	53.4			hrs

Shear Strength Parameters

		Linear regression
c '	kPa	0.0
Ø '	degrees	64.2
		Manual re-assessment
c '	kPa	-
Ø '	degrees	-

Mode of failure



Notes : Deviator stresses corrected for area change, and 0.329 mm thick rubber membrane(s)

Ref			Figure
SLR8.1 Rev 86.0 Feb18	SOCOTEC UKAS TESTING 1157	Printed:18/02/2020 07:05	**CU** sheet 3 of 3

© Copyright 2017 SOCOTEC UK Limited. All rights reserved

Consolidated Undrained Triaxial Compression test with Measurement of Pore Water Pressure
(BS1377 : Part 8 : 1990)

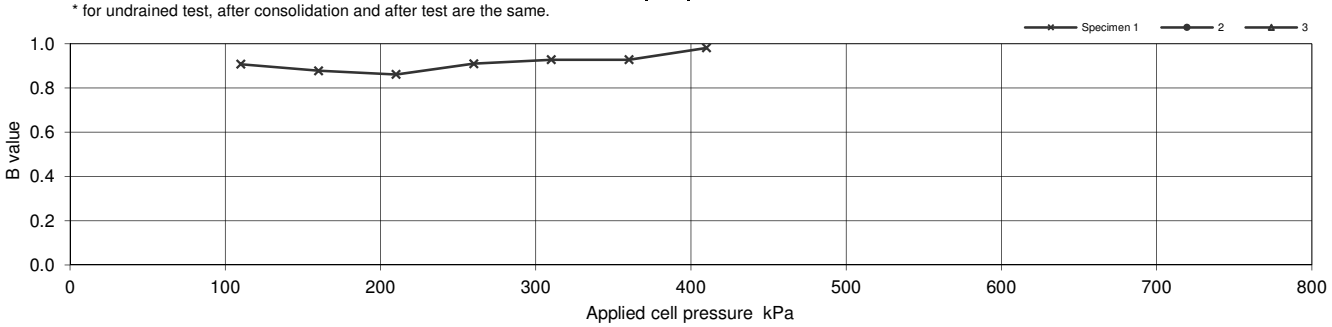
Project No	A9031-19	Sample Details:	Hole No	ATK-CP-06	
Project Name	HAVANT THICKET WATER STORAGE		Depth (m BGL)	6-6.45	
			No	27	Type UT
			ID		
			Spec Ref		

Specimen Details			1	2	3
Initial	Length	mm	203.75		
	Diameter	mm	102.79		
	Bulk Density	Mg/m³	2.18		
	Water Content	%	17		
	Dry density	Mg/m³	1.87		
After consolidation	Length	mm	205.44		
	Diameter	mm	103.63		
	Bulk Density*	Mg/m³	2.15		
	Water Content*	%	18		
	Dry density*	Mg/m³	1.82		

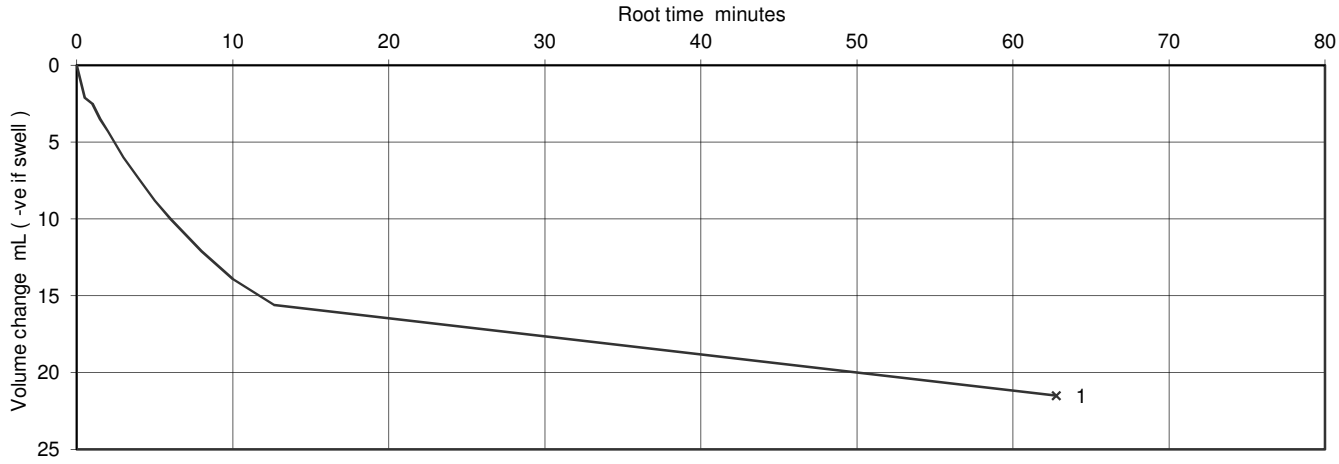
* for undrained test, after consolidation and after test are the same.

Soil Description	Firm multicoloured slightly sandy CLAY
Specimen Type /Preparation	UNDISTURBED

Saturation Details		Method of Saturation		
		Increments of cell and back pressure		
Cell pressure increments	kPa	50		
Differential Pressure	kPa	10		
Final Cell Pressure	kPa	410		
Final pore water pressure	kPa	381.5		
Final B Value		0.98		



Consolidation Details	Drainage Conditions		From radial boundary and one end			
	Specimen No.		1	2	3	
	Cell Pressure applied		420			kPa
	Back Pressure applied		350			kPa
	Effective Pressure		70			kPa
	Pore pressure at start of consolidation		396			kPa
	Pore pressure at end of consolidation		350			kPa
	Pore pressure dissipation at end of consolidation		100			%
Consolidation parameters (see note to BS1377 : pt 8, clause 6.3.4)	Coefficient of Consolidation	C_{vi}	0.42			m^2/year
	Coefficient of Compressibility	M_{vi}	0.27			m^2/MN
	Coefficient of Permeability (calculated)	k_{vi}	3.5E-11			m/s

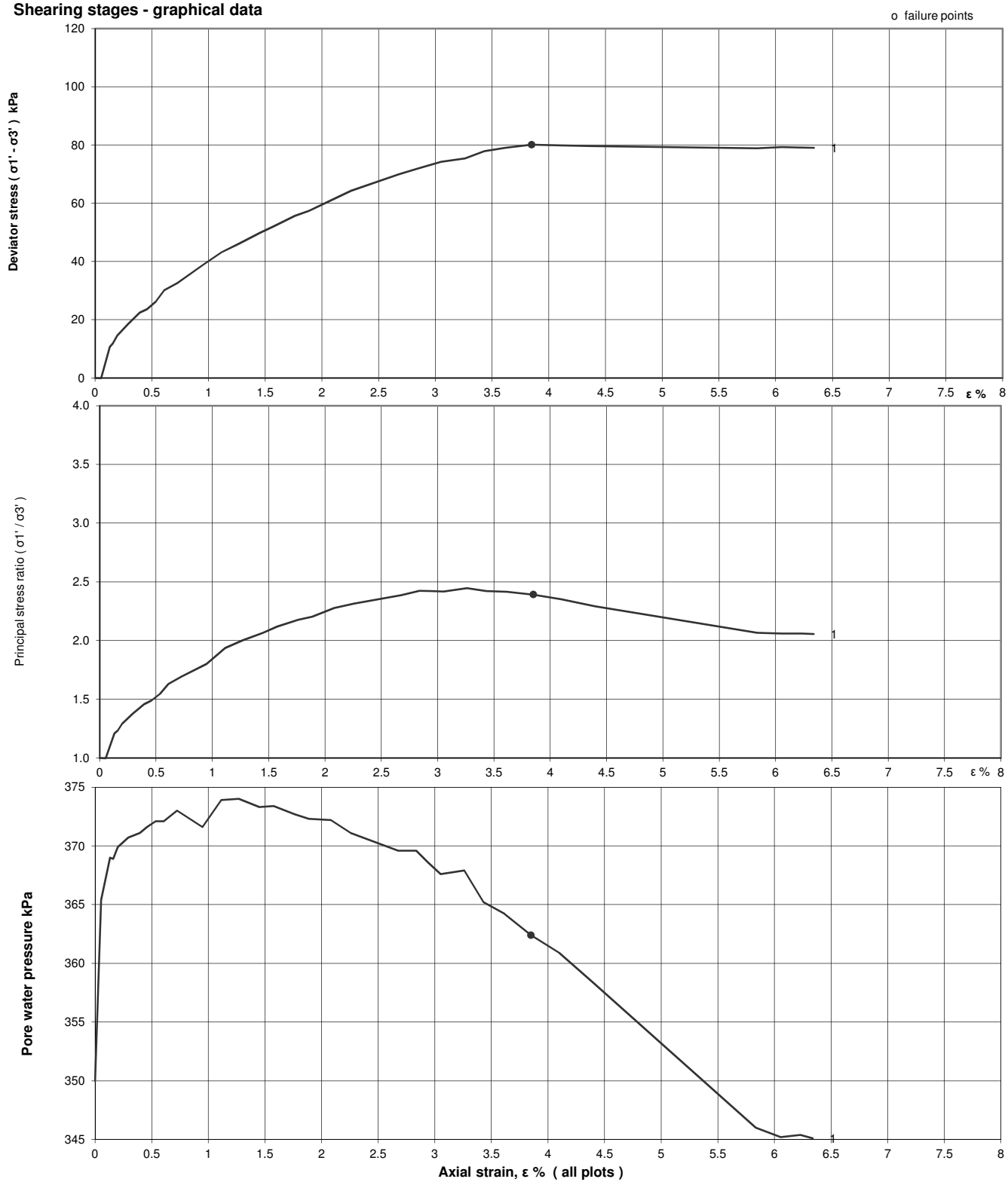


© Copyright 2017 SOCOTEC UK Limited. All rights reserved

Consolidated Undrained Triaxial Compression test with Measurement of Pore Water Pressure
(BS1377 : Part 8 : 1990)

Project No	A9031-19	Sample Details:	Hole No	ATK-CP-06		
Project Name	HAVANT THICKET WATER STORAGE		Depth (m BGL)	6-6.45		
			No	27	Type	UT
			ID			
			Spec Ref			

Shearing stages - graphical data



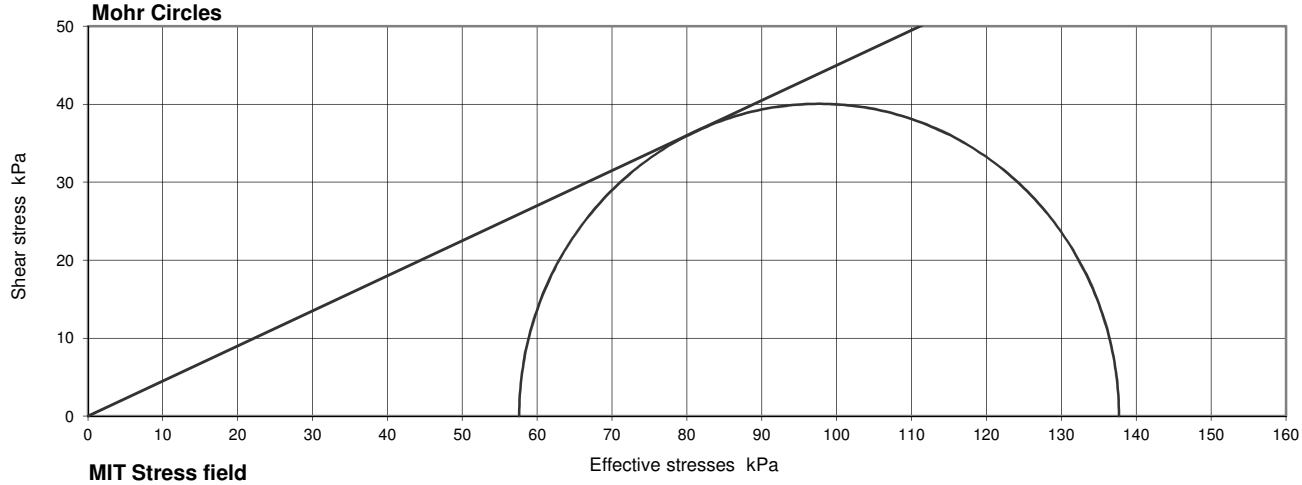
Ref			Figure
SLR8.1 Rev 86.0 Feb18	SOCOTEC	1157	**CU**
		Printed:15/01/2020 09:30	sheet 2 of 3

© Copyright 2017 SOCOTEC UK Limited. All rights reserved

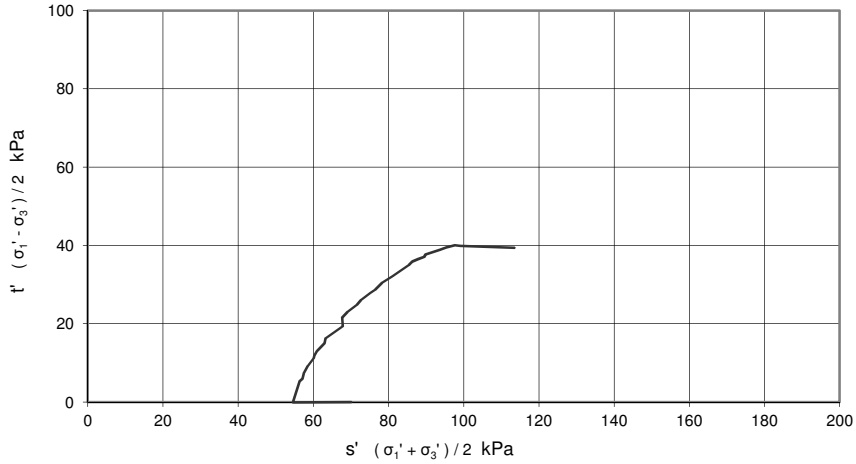
Consolidated Undrained Triaxial Compression test with Measurement of Pore Water Pressure
(BS1377 : Part 8 : 1990)

Project No	A9031-19	Sample Details:	Hole No	ATK-CP-06		
Project Name	HAVANT THICKET WATER STORAGE		Depth (m BGL)	6-6.45		
			No	27	Type	UT
			ID			
			Spec Ref			

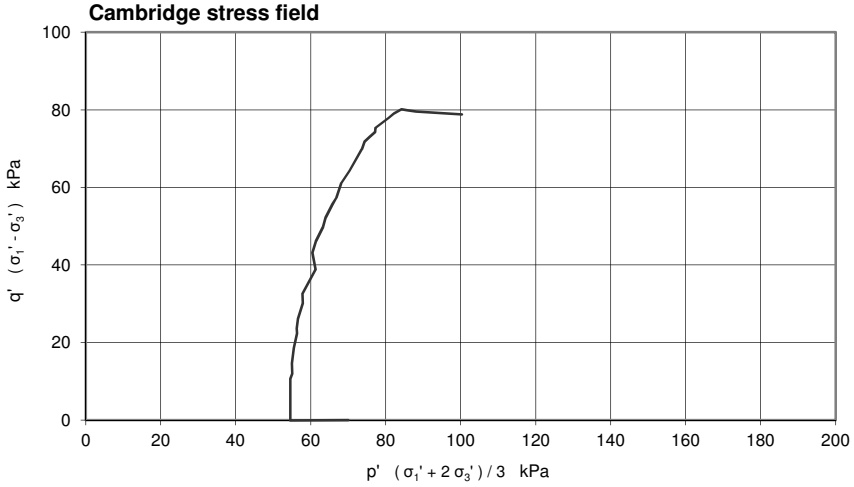
Mohr Circles



MIT Stress field



Cambridge stress field



Compression stages

Specimen	1	2	3	
Cell pressure	420			kPa
Initial pwp	350			kPa
Initial σ_3'	70			kPa
Rate of strain	0.62			%/hr

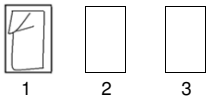
Failure conditions

Criterion	Maximum deviator stress			
Axial strain	3.85			%
$(\sigma_1' / \sigma_3')_f$	2.391			
$(\sigma_1' - \sigma_3')_f$	80.1			kPa
u_f	362			kPa
$\sigma_3'_f$	58			kPa
$\sigma_1'_f$	138			kPa
A_f	0.15			
Time to failure	6.2			hrs

Shear Strength Parameters

		Linear regression
c '	kPa	0.0
Ø '	degrees	24.2
		Manual re-assessment
c '	kPa	-
Ø '	degrees	-

Mode of failure



Notes : Deviator stresses corrected for area change, vertical side drains and 0.329 mm thick rubber membrane(s)

© Copyright 2017 SOCOTEC UK Limited. All rights reserved

Consolidated Undrained Triaxial Compression test with Measurement of Pore Water Pressure
(BS1377 : Part 8 : 1990)

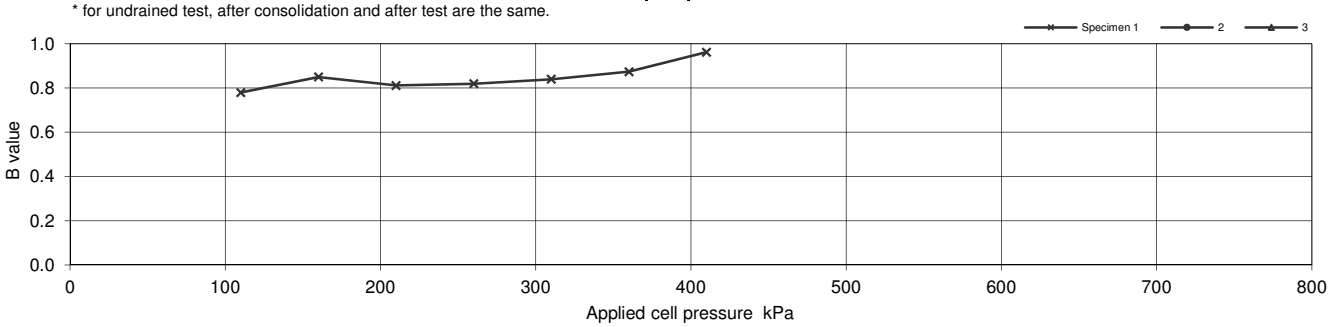
Project No	A9031-19	Sample Details:	Hole No	ATK-CP-06	
Project Name	HAVANT THICKET WATER STORAGE		Depth (m BGL)	8.00-8.45	
			No	34	Type UT
			ID		
			Spec Ref		

Specimen Details			1	2	3
Initial	Length	mm	203.73		
	Diameter	mm	103.55		
	Bulk Density	Mg/m³	2.26		
	Water Content	%	13		
	Dry density	Mg/m³	1.99		
After consolidation	Length	mm	205.07		
	Diameter	mm	104.22		
	Bulk Density*	Mg/m³	2.24		
	Water Content*	%	15		
	Dry density*	Mg/m³	1.95		

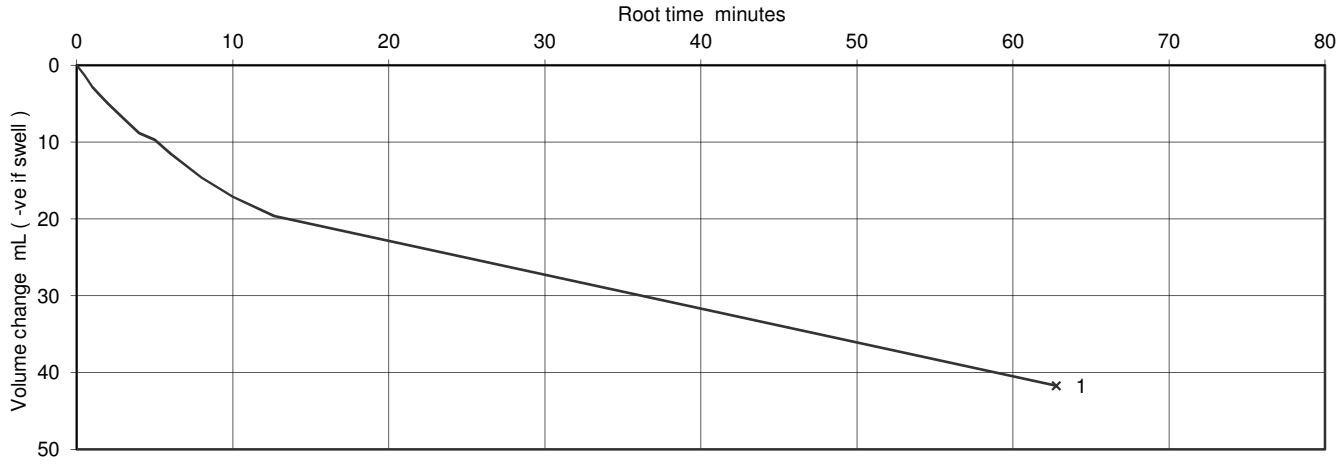
* for undrained test, after consolidation and after test are the same.

Soil Description	Stiff multicoloured slightly sandy CLAY
Specimen Type /Preparation	UNDISTURBED

Saturation Details		Method of Saturation		
		Increments of cell and back pressure		
Cell pressure increments	kPa	50		
Differential Pressure	kPa	10		
Final Cell Pressure	kPa	410		
Final pore water pressure	kPa	388.4		
Final B Value		0.96		



Consolidation Details	Drainage Conditions		From radial boundary and one end			
	Specimen No.		1	2	3	
	Cell Pressure applied		440			kPa
	Back Pressure applied		350			kPa
	Effective Pressure		90			kPa
	Pore pressure at start of consolidation		420			kPa
	Pore pressure at end of consolidation		350			kPa
	Pore pressure dissipation at end of consolidation		100			%
Consolidation parameters (see note to BS1377 : pt 8, clause 6.3.4)	Coefficient of Consolidation	C_{vi}	0.22			m^2/year
	Coefficient of Compressibility	M_{vi}	0.33			m^2/MN
	Coefficient of Permeability (calculated)	k_{vi}	2.3E-11			m/s



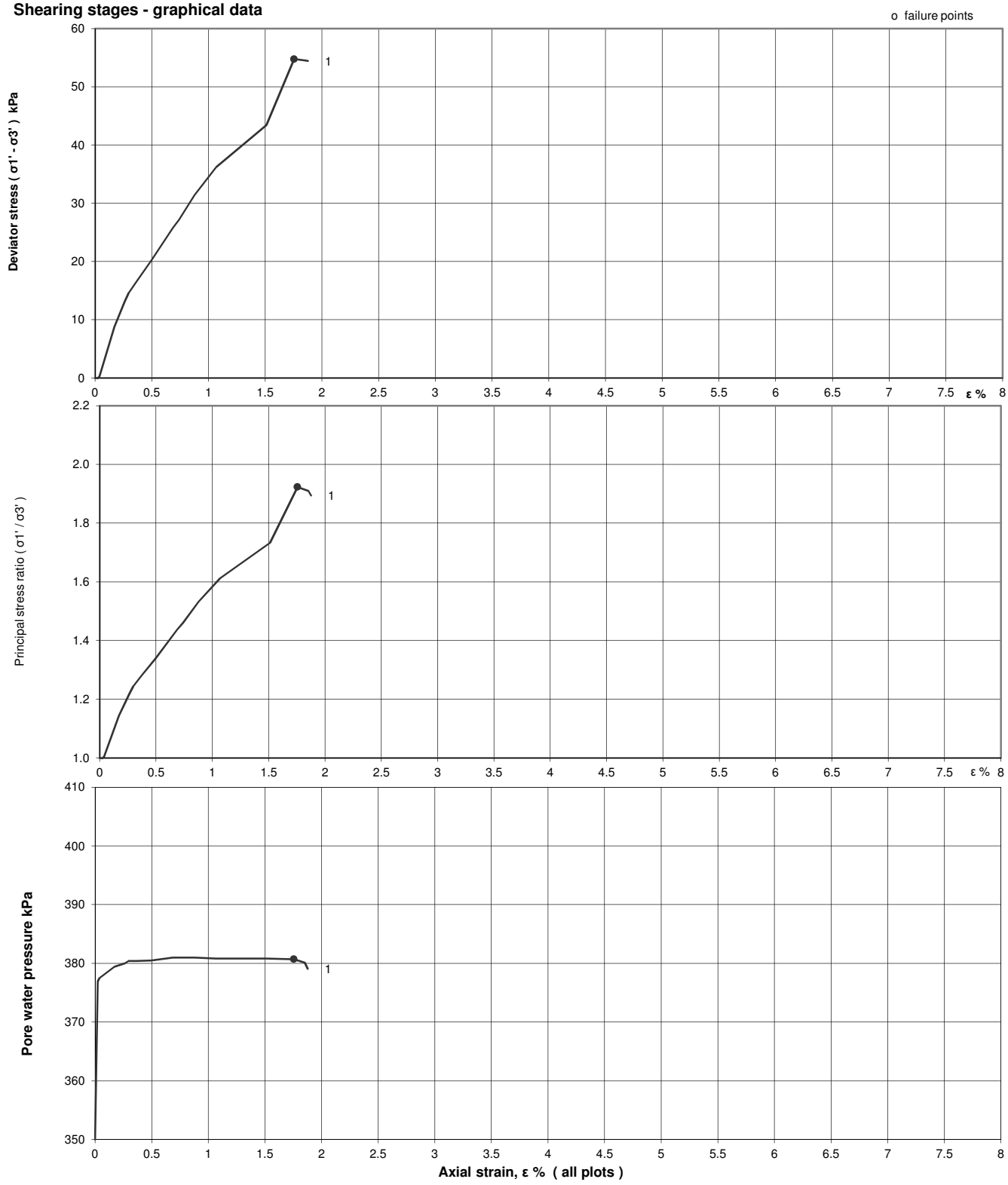
Ref		Figure
SLR8.1 Rev 86.0 Feb18	SOCOTEC UKAS TESTING 1157	Printed:15/01/2020 09:46
		CU
		sheet 1 of 3

© Copyright 2017 SOCOTEC UK Limited. All rights reserved

Consolidated Undrained Triaxial Compression test with Measurement of Pore Water Pressure
(BS1377 : Part 8 : 1990)

Project No	A9031-19	Sample Details:	Hole No	ATK-CP-06		
Project Name	HAVANT THICKET WATER STORAGE		Depth (m BGL)	8.00-8.45		
			No	34	Type	UT
			ID			
			Spec Ref			

Shearing stages - graphical data



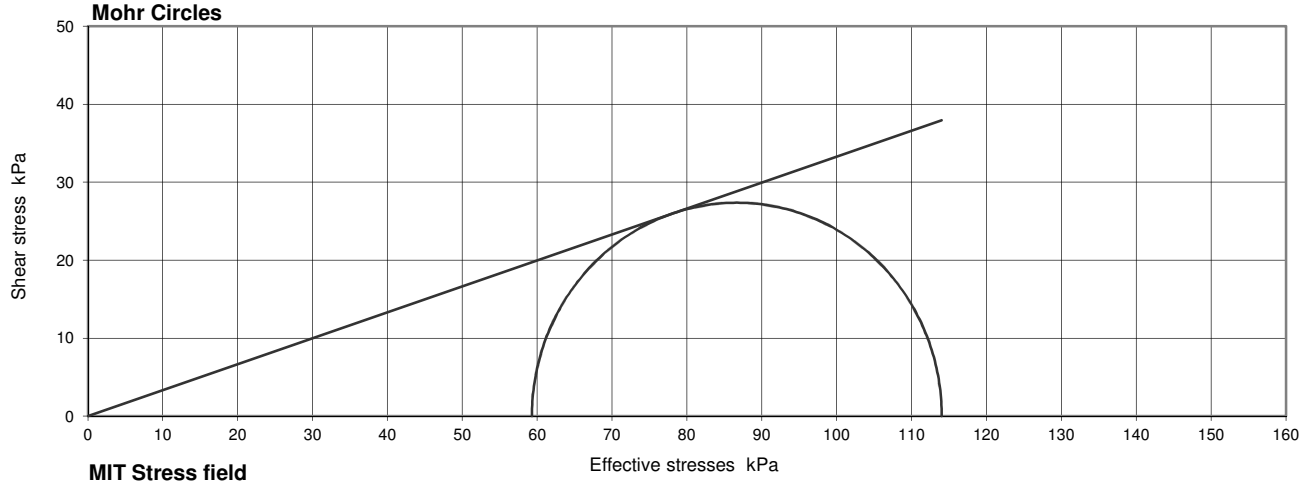
Ref			Figure
SLR8.1 Rev 86.0 Feb18	SOCOTEC	Printed:15/01/2020 09:46	**CU**
	UKAS TESTING 1157		sheet 2 of 3

© Copyright 2017 SOCOTEC UK Limited. All rights reserved

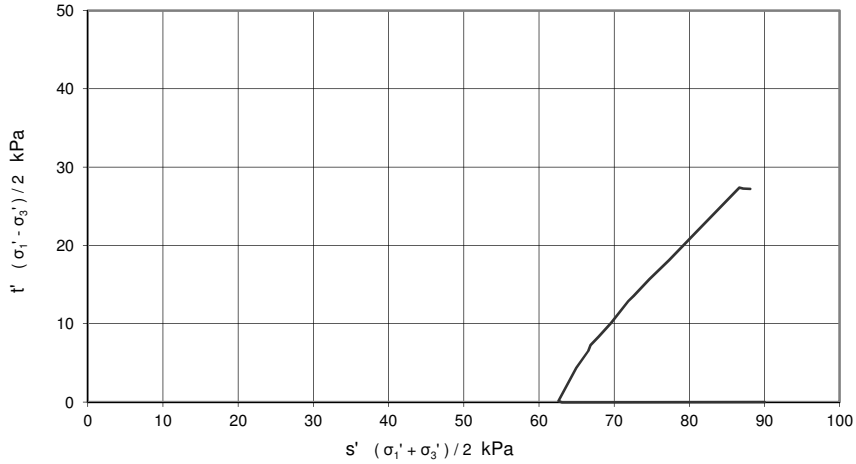
Consolidated Undrained Triaxial Compression test with Measurement of Pore Water Pressure
(BS1377 : Part 8 : 1990)

Project No	A9031-19	Sample Details:	Hole No	ATK-CP-06		
Project Name	HAVANT THICKET WATER STORAGE		Depth (m BGL)	8.00-8.45		
			No	34	Type	UT
			ID			
			Spec Ref			

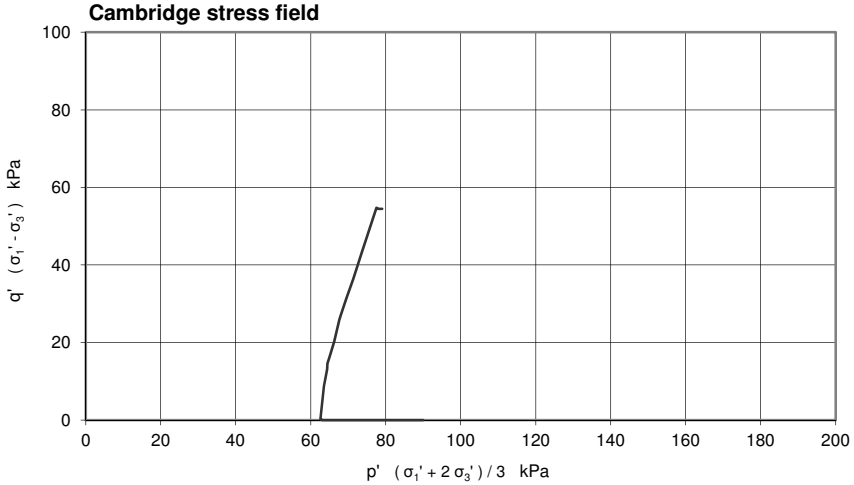
Mohr Circles



MIT Stress field



Cambridge stress field



Compression stages

Specimen	1	2	3	
Cell pressure	440			kPa
Initial pwp	350			kPa
Initial σ_3'	90			kPa
Rate of strain	0.16			%/hr

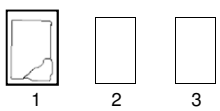
Failure conditions

Criterion	Maximum deviator stress			
Axial strain	1.76			%
$(\sigma_1' / \sigma_3')_f$	1.923			
$(\sigma_1' - \sigma_3')_f$	54.7			kPa
u_f	381			kPa
$\sigma_3'_f$	59			kPa
$\sigma_1'_f$	114			kPa
A_f	0.56			
Time to failure	11.0			hrs

Shear Strength Parameters

		Linear regression
c '	kPa	0.0
Ø '	degrees	18.4
		Manual re-assessment
c '	kPa	-
Ø '	degrees	-

Mode of failure



Notes : Deviator stresses corrected for area change, vertical side drains and 0.329 mm thick rubber membrane(s)

Ref			Figure
SLR8.1 Rev 86.0 Feb18	SOCOTEC UKAS TESTING 1157	Printed:15/01/2020 09:46	**CU** sheet 3 of 3

© Copyright 2017 SOCOTEC UK Limited. All rights reserved

Consolidated Undrained Triaxial Compression test with Measurement of Pore Water Pressure
(BS1377 : Part 8 : 1990)

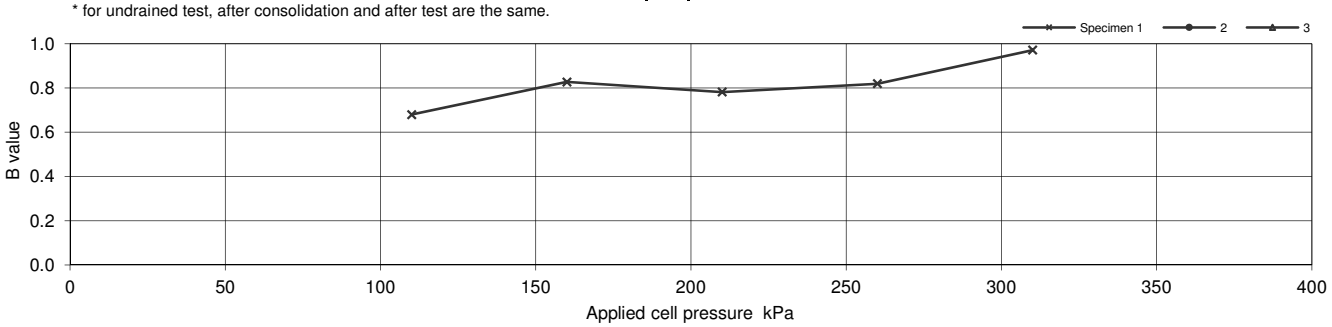
Project No	A9031-19	Sample Details:	Hole No	ATK-CP-11	
Project Name	HAVANT THICKET WATER STORAGE		Depth (m BGL)	6.00	
			No	27	Type UT
			ID		
			Spec Ref		

Specimen Details			1	2	3
Initial	Length	mm	203.65		
	Diameter	mm	103.68		
	Bulk Density	Mg/m³	1.97		
	Water Content	%	29		
	Dry density	Mg/m³	1.53		
After consolidation	Length	mm	204.12		
	Diameter	mm	103.92		
	Bulk Density*	Mg/m³	1.97		
	Water Content*	%	30		
	Dry density*	Mg/m³	1.52		

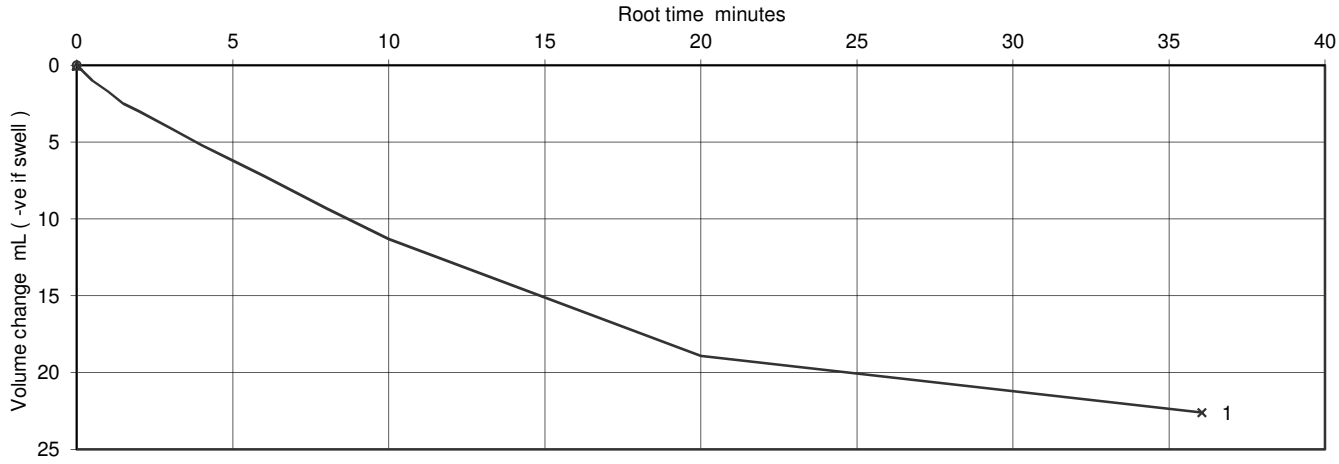
* for undrained test, after consolidation and after test are the same.

Soil Description	Firm brown laminated CLAY.Laminae are silt.
Specimen Type /Preparation	UNDISTURBED

Saturation Details		Method of Saturation		
		Increments of cell and back pressure		
Cell pressure increments	kPa	50		
Differential Pressure	kPa	10		
Final Cell Pressure	kPa	310		
Final pore water pressure	kPa	293.7		
Final B Value		0.97		



Consolidation Details	Drainage Conditions		From radial boundary and one end			
	Specimen No.		1	2	3	
	Cell Pressure applied		375			kPa
	Back Pressure applied		300			kPa
	Effective Pressure		75			kPa
	Pore pressure at start of consolidation		355			kPa
	Pore pressure at end of consolidation		302			kPa
	Pore pressure dissipation at end of consolidation		97			%
Consolidation parameters (see note to BS1377 : pt 8, clause 6.3.4)	Coefficient of Consolidation	C_{vi}	0.58			m^2/year
	Coefficient of Compressibility	M_{vi}	0.24			m^2/MN
	Coefficient of Permeability (calculated)	k_{vi}	4.4E-11			m/s

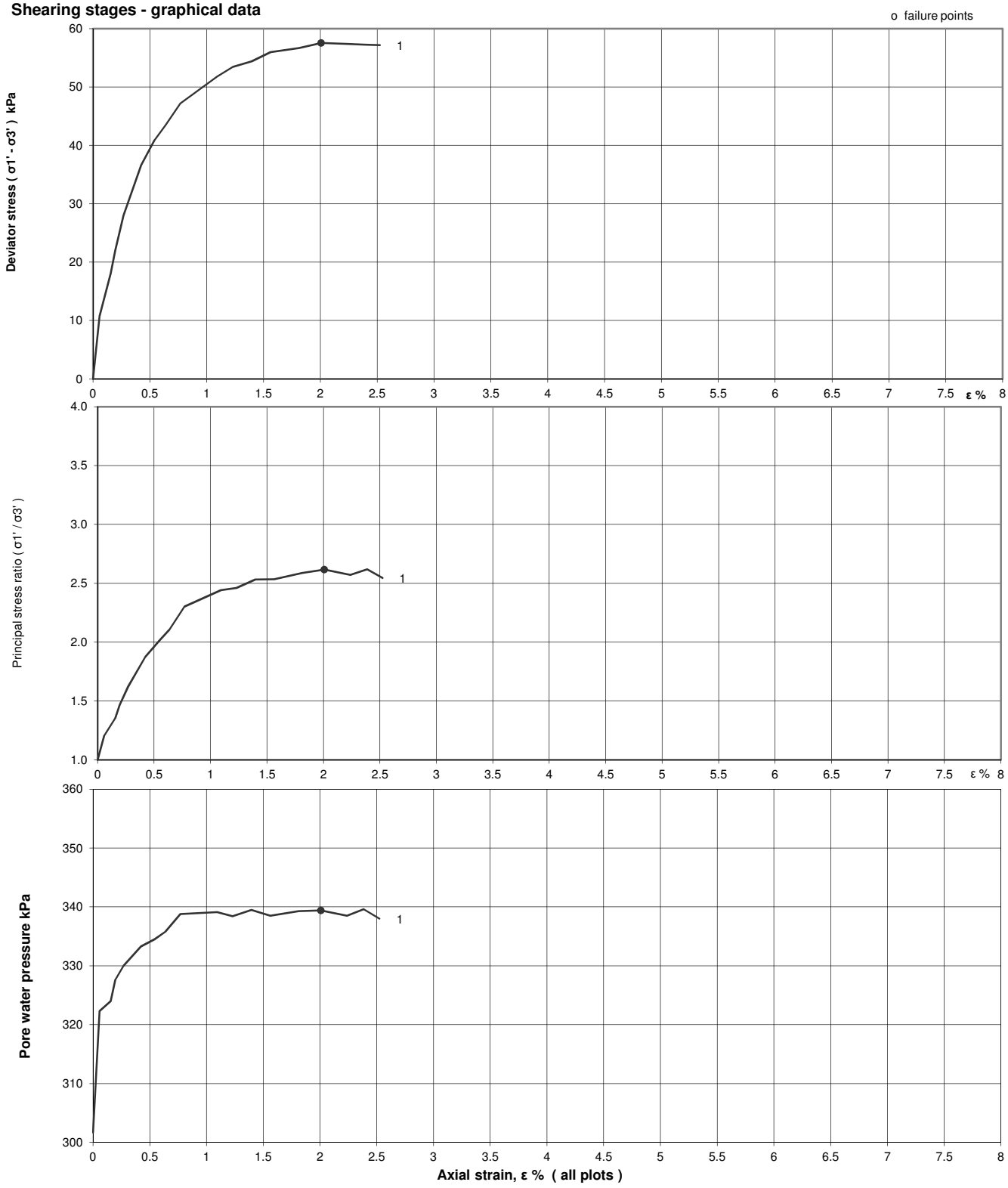


© Copyright 2017 SOCOTEC UK Limited. All rights reserved

Consolidated Undrained Triaxial Compression test with Measurement of Pore Water Pressure
(BS1377 : Part 8 : 1990)

Project No	A9031-19	Sample Details:	Hole No	ATK-CP-11		
Project Name	HAVANT THICKET WATER STORAGE		Depth (m BGL)	6.00		
			No	27	Type	UT
			ID			
			Spec Ref			

Shearing stages - graphical data



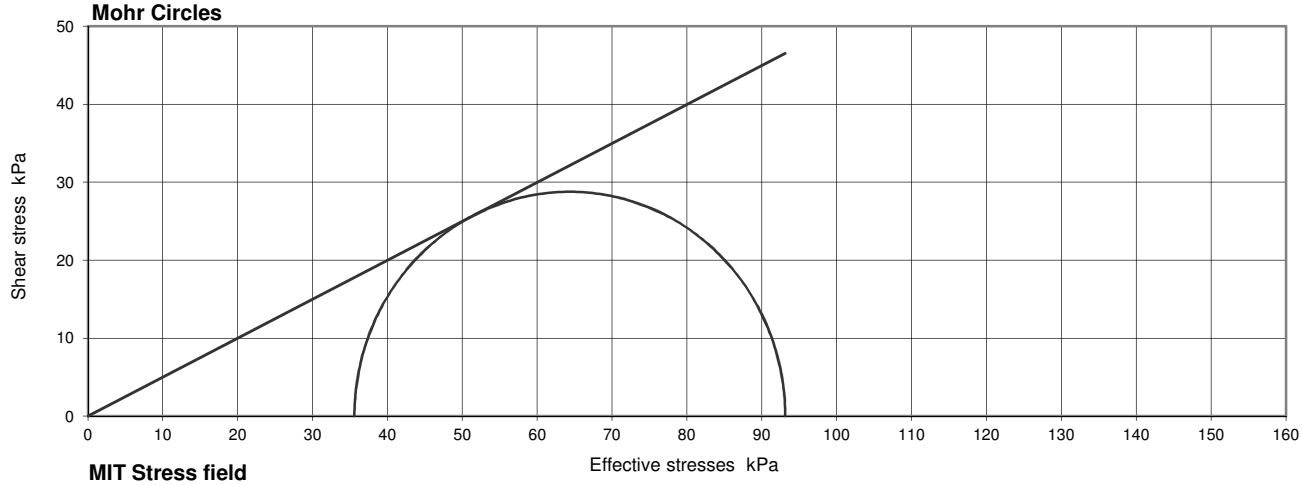
Ref			Figure
SLR8.1 Rev 86.0 Feb18	SOCOTEC	1157	Printed:15/01/2020 14:20	**CU** sheet 2 of 3

© Copyright 2017 SOCOTEC UK Limited. All rights reserved

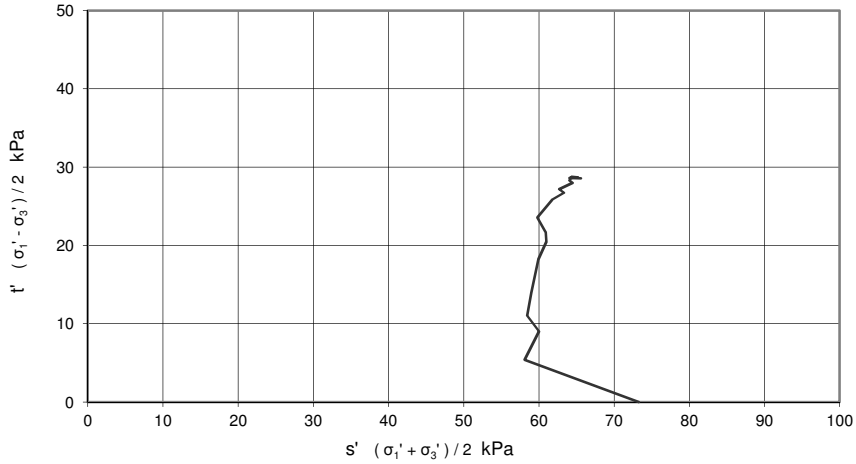
Consolidated Undrained Triaxial Compression test with Measurement of Pore Water Pressure
(BS1377 : Part 8 : 1990)

Project No	A9031-19	Sample Details:	Hole No	ATK-CP-11		
Project Name	HAVANT THICKET WATER STORAGE		Depth (m BGL)	6.00		
			No	27	Type	UT
			ID			
			Spec Ref			

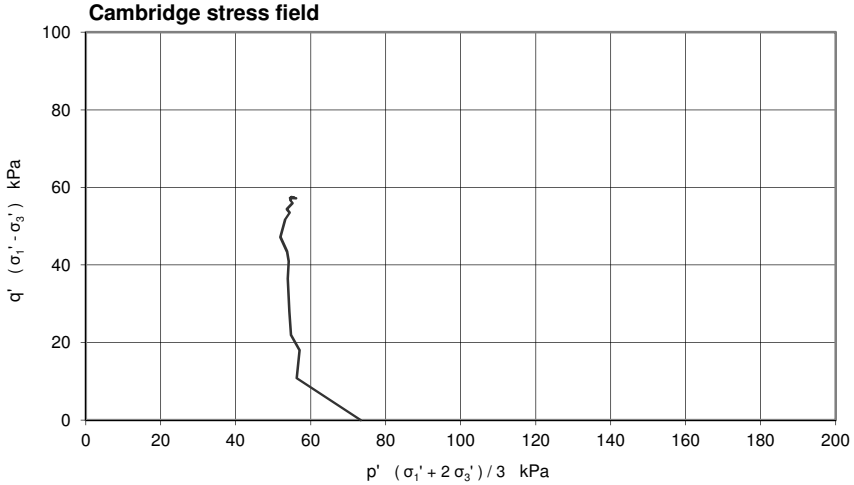
Mohr Circles



MIT Stress field



Cambridge stress field



Compression stages

Specimen	1	2	3	
Cell pressure	375			kPa
Initial pwp	302			kPa
Initial σ_3'	73			kPa
Rate of strain	0.83			%/hr

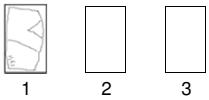
Failure conditions

Criterion	Maximum deviator stress			
Axial strain	2.01			%
$(\sigma_1' / \sigma_3')_f$	2.616			
$(\sigma_1' - \sigma_3')_f$	57.5			kPa
u_f	339			kPa
$\sigma_3'_f$	36			kPa
$\sigma_1'_f$	93			kPa
A_f	0.66			
Time to failure	2.4			hrs

Shear Strength Parameters

		Linear regression
c '	kPa	0.0
Ø '	degrees	26.5
		Manual re-assessment
c '	kPa	-
Ø '	degrees	-

Mode of failure



Notes : Deviator stresses corrected for area change, vertical side drains and 0.329 mm thick rubber membrane(s)

Ref			Figure
SLR8.1 Rev 86.0 Feb18	SOCOTEC UKAS TESTING 1157	Printed:15/01/2020 14:20	**CU** sheet 3 of 3

© Copyright 2017 SOCOTEC UK Limited. All rights reserved

Consolidated Undrained Triaxial Compression test with Measurement of Pore Water Pressure
(BS1377 : Part 8 : 1990)

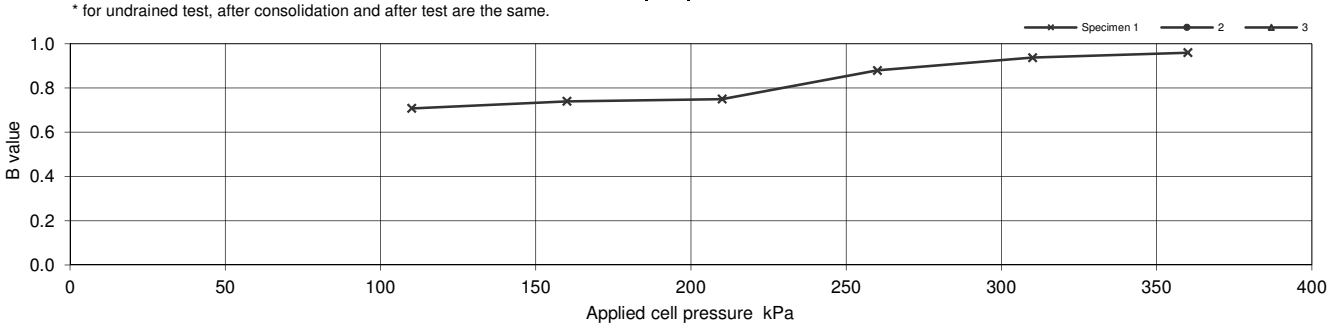
Project No	A9031-19	Sample Details:	Hole No	ATK-CP-15	
Project Name	HAVANT THICKET WATER STORAGE		Depth (m BGL)	5.00	
			No	21	Type UT
			ID		
			Spec Ref		

Specimen Details			1	2	3
Initial	Length	mm	203.50		
	Diameter	mm	103.58		
	Bulk Density	Mg/m³	1.96		
	Water Content	%	28		
	Dry density	Mg/m³	1.53		
After consolidation	Length	mm	205.08		
	Diameter	mm	104.38		
	Bulk Density*	Mg/m³	1.94		
	Water Content*	%	30		
	Dry density*	Mg/m³	1.50		

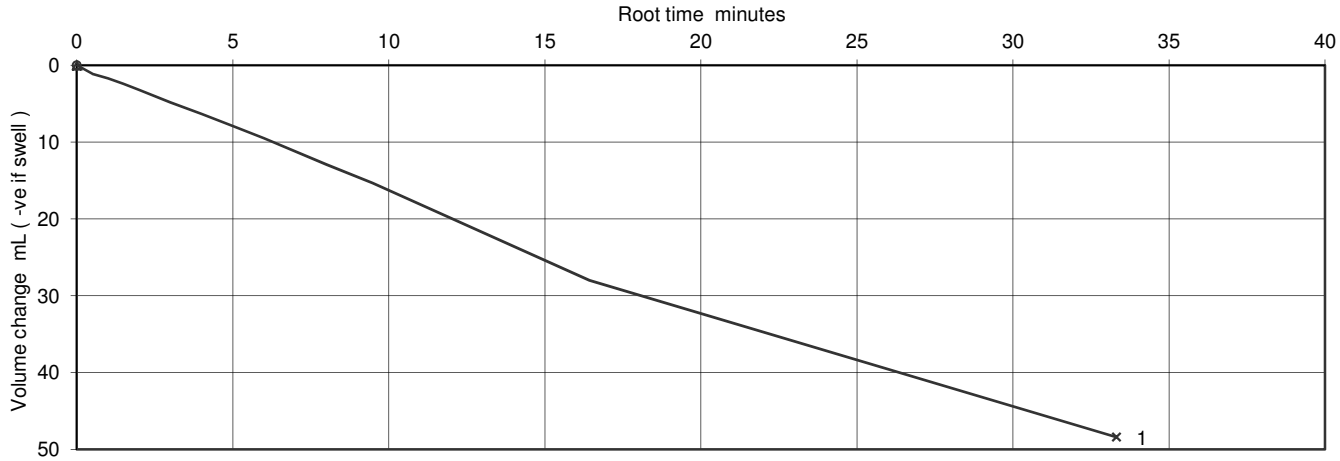
* for undrained test, after consolidation and after test are the same.

Soil Description	Firm greyish brown laminated CLAY.Laminae are silt
Specimen Type /Preparation	UNDISTURBED

Saturation Details		Method of Saturation		
		Increments of cell and back pressure		
Cell pressure increments	kPa	50		
Differential Pressure	kPa	10		
Final Cell Pressure	kPa	360		
Final pore water pressure	kPa	344.8		
Final B Value		0.96		



Consolidation Details	Drainage Conditions		From radial boundary and one end			
	Specimen No.		1	2	3	
	Cell Pressure applied		400			kPa
	Back Pressure applied		300			kPa
	Effective Pressure		100			kPa
	Pore pressure at start of consolidation		384			kPa
	Pore pressure at end of consolidation		304			kPa
	Pore pressure dissipation at end of consolidation		96			%
Consolidation parameters (see note to BS1377 : pt 8, clause 6.3.4)	Coefficient of Consolidation	C_{vi}	0.30			m^2/year
	Coefficient of Compressibility	M_{vi}	0.34			m^2/MN
	Coefficient of Permeability (calculated)	k_{vi}	3.2E-11			m/s



Ref			Figure
SLR8.1 Rev 86.0 Feb18	SOCOTEC	1157	CU
		Printed:15/01/2020 08:55	sheet 1 of 3

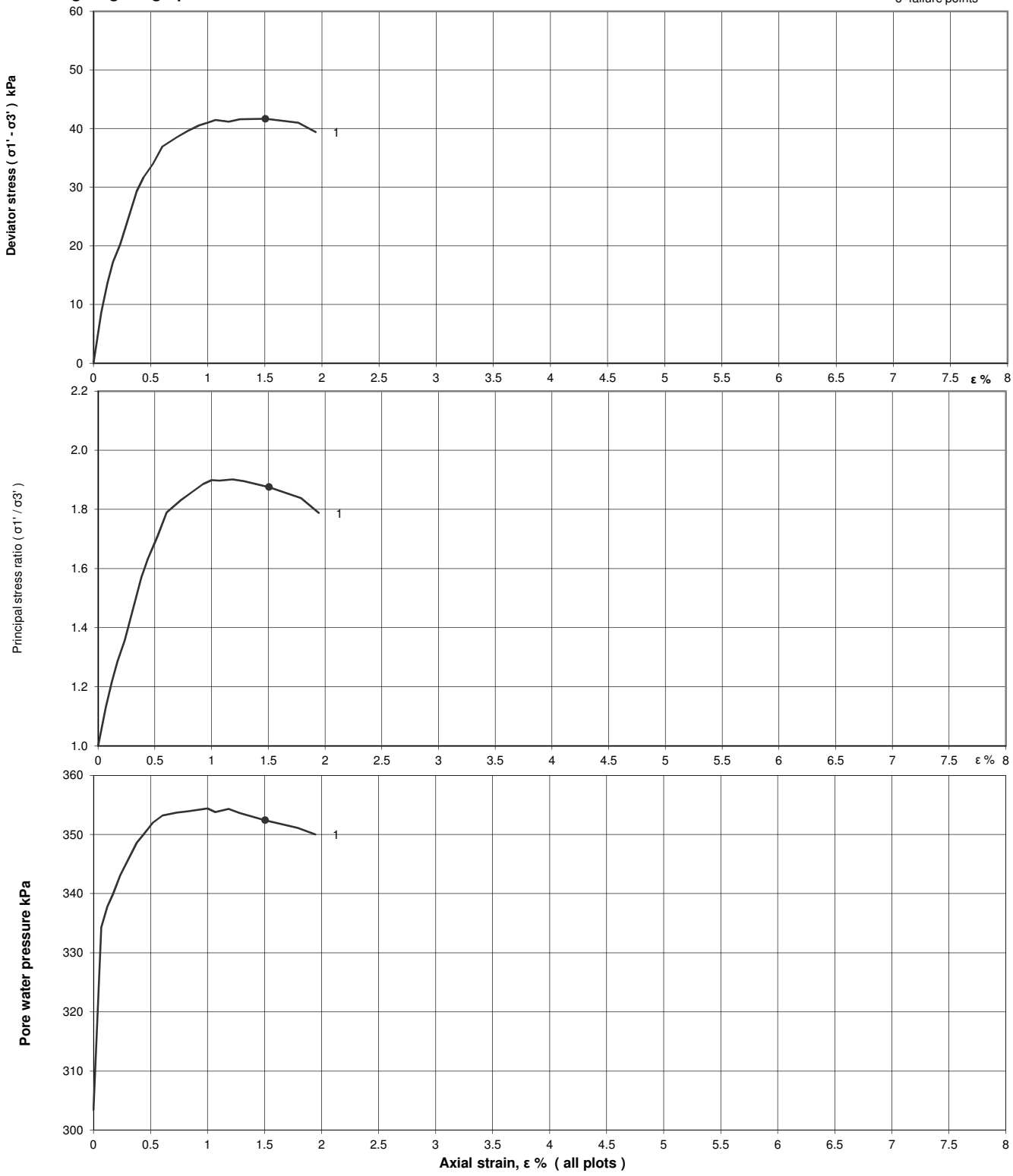
© Copyright 2017 SOCOTEC UK Limited. All rights reserved

Consolidated Undrained Triaxial Compression test with Measurement of Pore Water Pressure
(BS1377 : Part 8 : 1990)

Project No	A9031-19	Sample Details:	Hole No	ATK-CP-15		
Project Name	HAVANT THICKET WATER STORAGE		Depth (m BGL)	5.00		
			No	21	Type	UT
			ID			
			Spec Ref			

Shearing stages - graphical data

o failure points



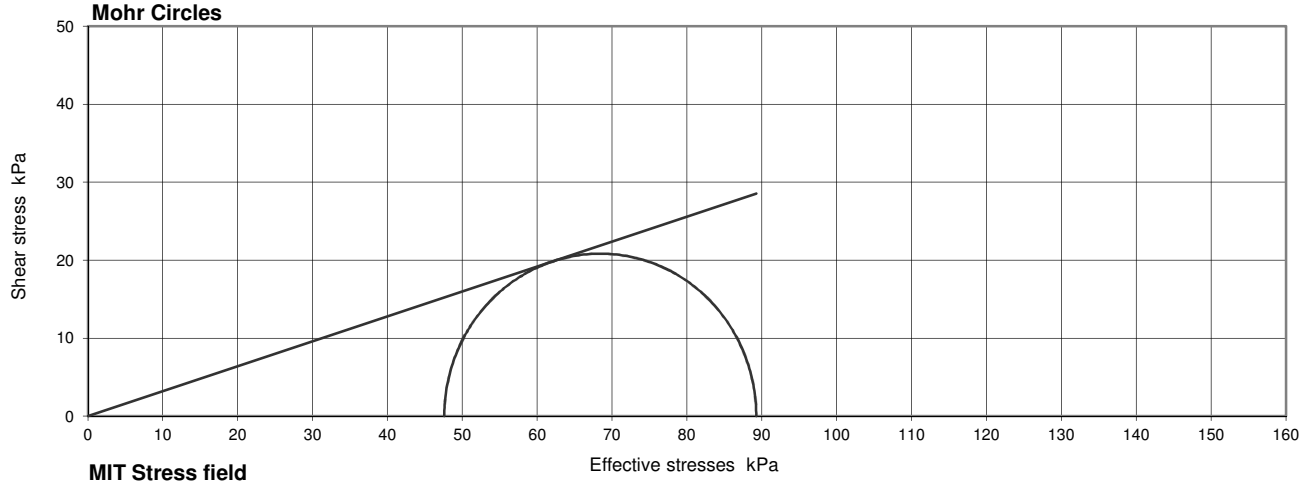
Ref SLR8.1 Rev 86.0 Feb18	SOCOTEC UKAS TESTING 1157	Printed:15/01/2020 08:55	**Figure** **CU** sheet 2 of 3

© Copyright 2017 SOCOTEC UK Limited. All rights reserved

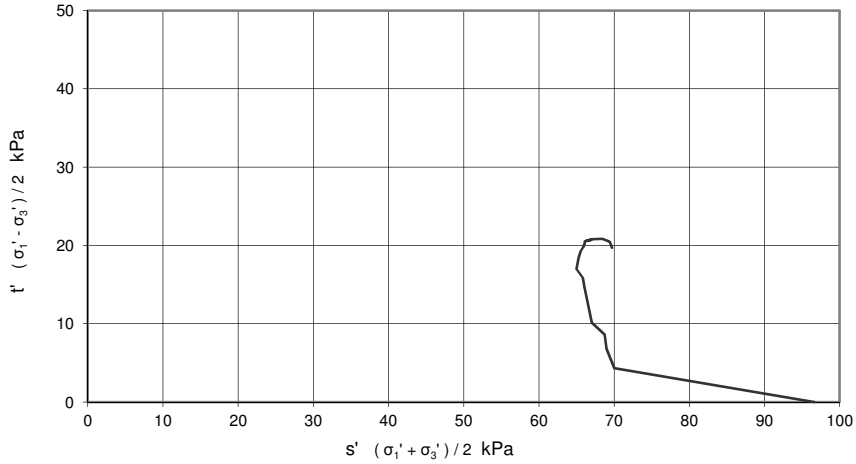
Consolidated Undrained Triaxial Compression test with Measurement of Pore Water Pressure
(BS1377 : Part 8 : 1990)

Project No	A9031-19	Sample Details:	Hole No	ATK-CP-15		
Project Name	HAVANT THICKET WATER STORAGE		Depth (m BGL)	5.00		
			No	21	Type	UT
			ID			
			Spec Ref			

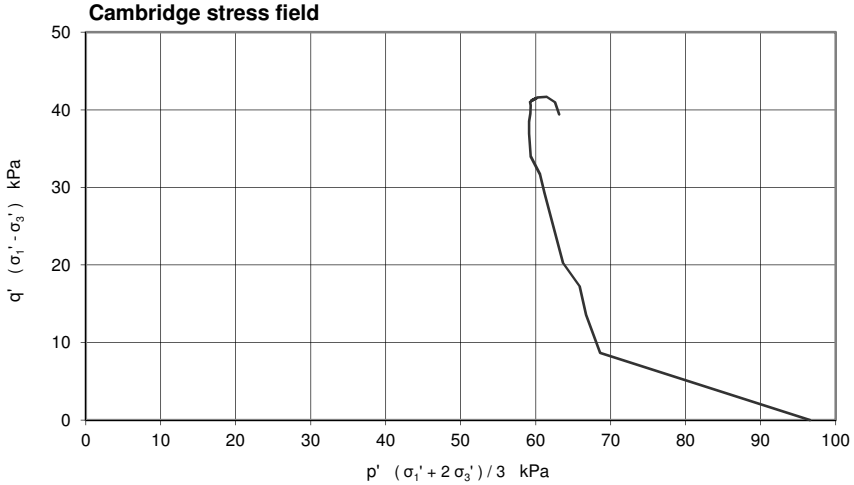
Mohr Circles



MIT Stress field



Cambridge stress field



Compression stages

Specimen	1	2	3	
Cell pressure	400			kPa
Initial pwp	303			kPa
Initial σ_3'	97			kPa
Rate of strain	0.43			%/hr

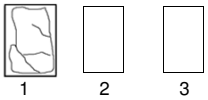
Failure conditions

Criterion	Maximum deviator stress			
Axial strain	1.51			%
$(\sigma_1' / \sigma_3')_f$	1.875			
$(\sigma_1' - \sigma_3')_f$	41.7			kPa
u_f	352			kPa
$\sigma_3'_f$	48			kPa
$\sigma_1'_f$	89			kPa
A_f	1.18			
Time to failure	3.5			hrs

Shear Strength Parameters

		Linear regression
c '	kPa	0.0
Ø '	degrees	17.7
		Manual re-assessment
c '	kPa	-
Ø '	degrees	-

Mode of failure



Notes : Deviator stresses corrected for area change, vertical side drains and 0.329 mm thick rubber membrane(s)

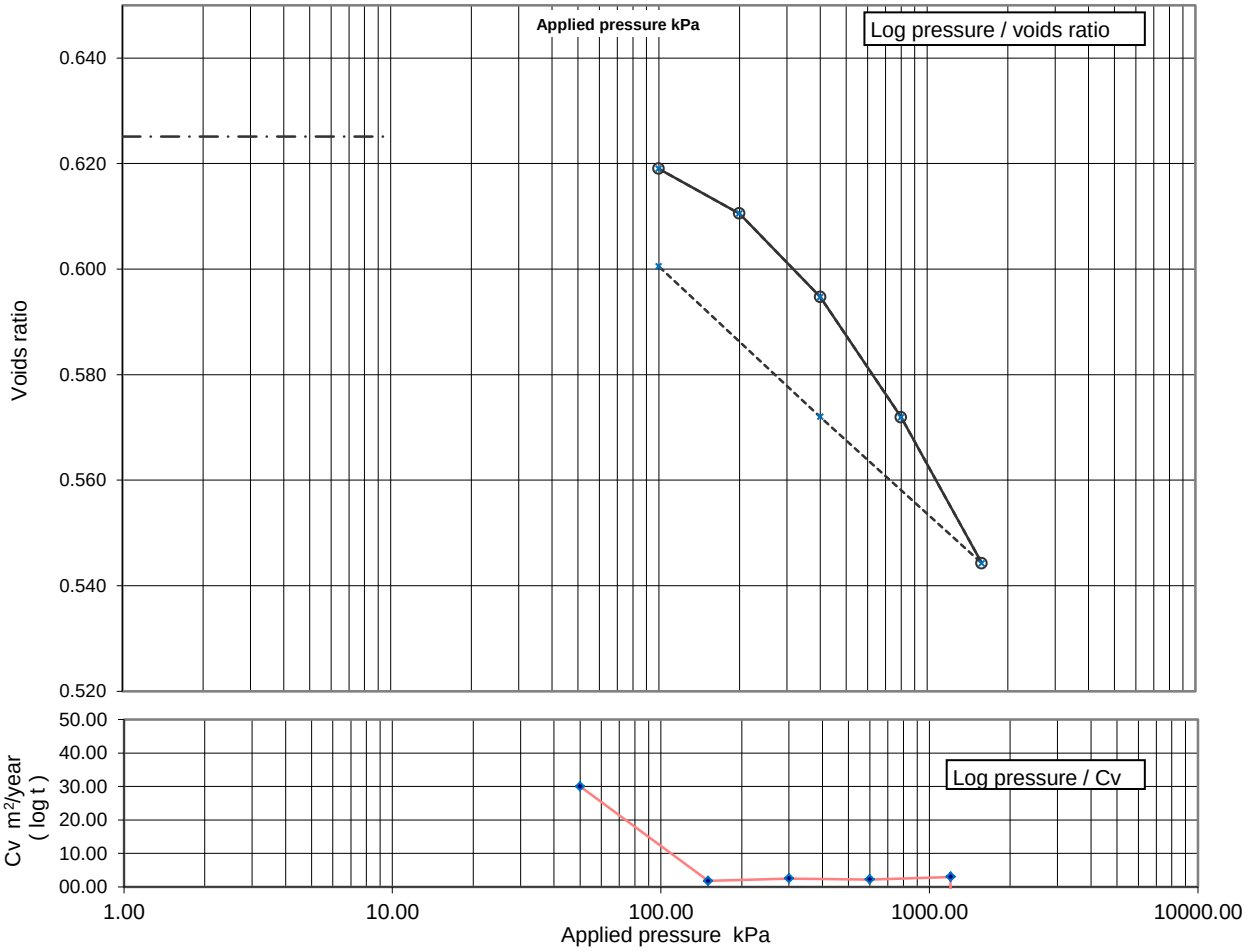
Ref			Figure
SLR8.1 Rev 86.0 Feb18	SOCOTEC UKAS TESTING 1157	Printed:15/01/2020 08:55	**CU** sheet 3 of 3

© Copyright 2017 SOCOTEC UK Limited. All rights reserved

ONE DIMENSIONAL CONSOLIDATION TEST
BS 1377 : Part 5 : 1990 : clause 3

Sample Details:	SAMPLE ID:
	A9031-1920191112123119

Hole No	ATK-CP-01
Sample Depth (m BGL)	8
Sample Type and No	UT34
Specimen Ref	



Soil description	Stiff friable greyish brown slightly sandy silty CLAY.
Preparation	Undisturbed
Index properties	Liquid limit % / Plastic limit %

(if available)

Specimen details	Initial	Final	
Particle density	2.72	assumed	Mg/m3
Diameter	75.06		mm
Height	19.15	18.86	mm
Voids ratio	0.625	0.600	
Moisture content	23	23	%
Bulk density	2.06	2.09	Mg/m3
Dry density	1.67	1.70	Mg/m3
Saturation	100	103	%
Average temperature for test	21		oC

Swelling pressure: not measured kPa

Notes :

Specimen taken 120 mm from base of sample

Applied Pressure kPa	Voids ratio	mv m2/MN	cv (t50, log) m2/year	cv (t90, root) m2/year	
0	0.6251				
100	0.6190	0.038	30	32	
200	0.6105	0.052	1.8	2	
400	0.5947	0.049	2.5	2.6	
800	0.5719	0.036	2.2	2.4	
1600	0.5442	0.022	3	3.2	
400	0.5720	0.015	-	-	
100	0.6005	0.060	-	-	

QA Ref
SLR 5.3
Rev 2.21
Feb 19

UKAS TESTING
0001

SOCOTEC

Project No A9031-19

Project Name HAVANT THICKET WATER STORAGE

Figure

OED

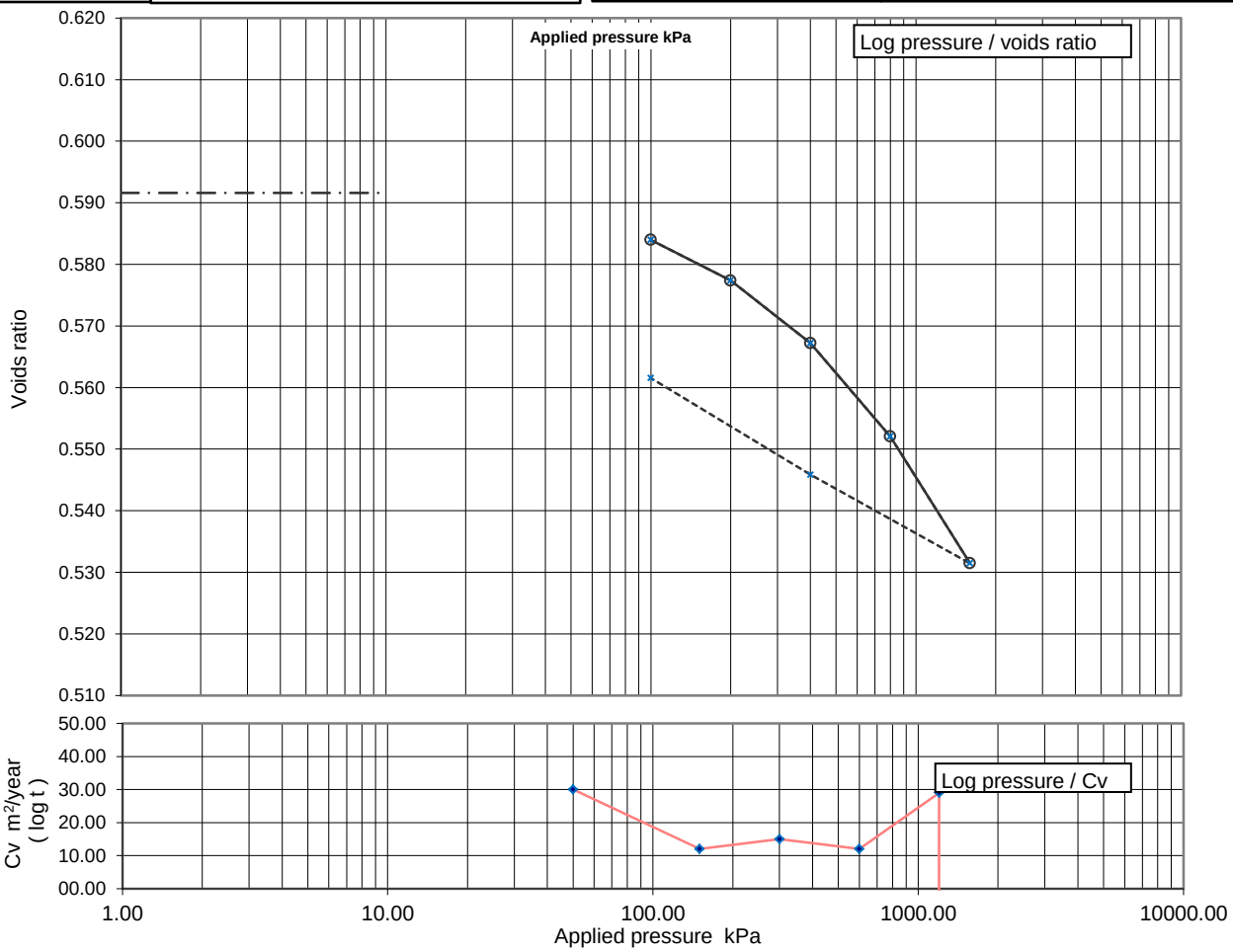
The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2019 SOCOTEC UK Limited

Printed:
28/02/2020 09:02

ONE DIMENSIONAL CONSOLIDATION TEST
BS 1377 : Part 5 : 1990 : clause 3

Sample Details:	SAMPLE ID:
	A9031-1920191114125018

Hole No	ATK-CP-02
Sample Depth (m BGL)	11.50 - 11.95
Sample Type and No	UT37
Specimen Ref	



Soil description	Stiff friable greyish brown slightly sandy silty CLAY.
Preparation	Undisturbed
Index properties	Liquid limit % / Plastic limit %

(if available)

Specimen details	Initial	Final	
Particle density	2.74	assumed	Mg/m3
Diameter	74.99		mm
Height	18.79	18.44	mm
Voids ratio	0.592	0.562	
Moisture content	21	21	%
Bulk density	2.09	2.13	Mg/m3
Dry density	1.72	1.75	Mg/m3
Saturation	99	105	%
Average temperature for test	20		oC

Swelling pressure: not measured kPa

Notes :

Specimen taken 100 mm from base of sample

Applied Pressure kPa	Voids ratio	mv m2/MN	cv (t50, log) m2/year	cv (t90, root) m2/year	
0	0.5916				
100	0.5840	0.048	30	32	
200	0.5774	0.042	12	13	
400	0.5672	0.032	15	16	
800	0.5520	0.024	12	13	
1600	0.5315	0.017	29	31	
400	0.5459	0.008	-	-	
100	0.5615	0.034	-	-	

QA Ref
SLR 5.3
Rev 2.21
Feb 19

UKAS TESTING
0001

SOCOTEC

Project No A9031-19

Project Name HAVANT THICKET WATER STORAGE

Figure

OED

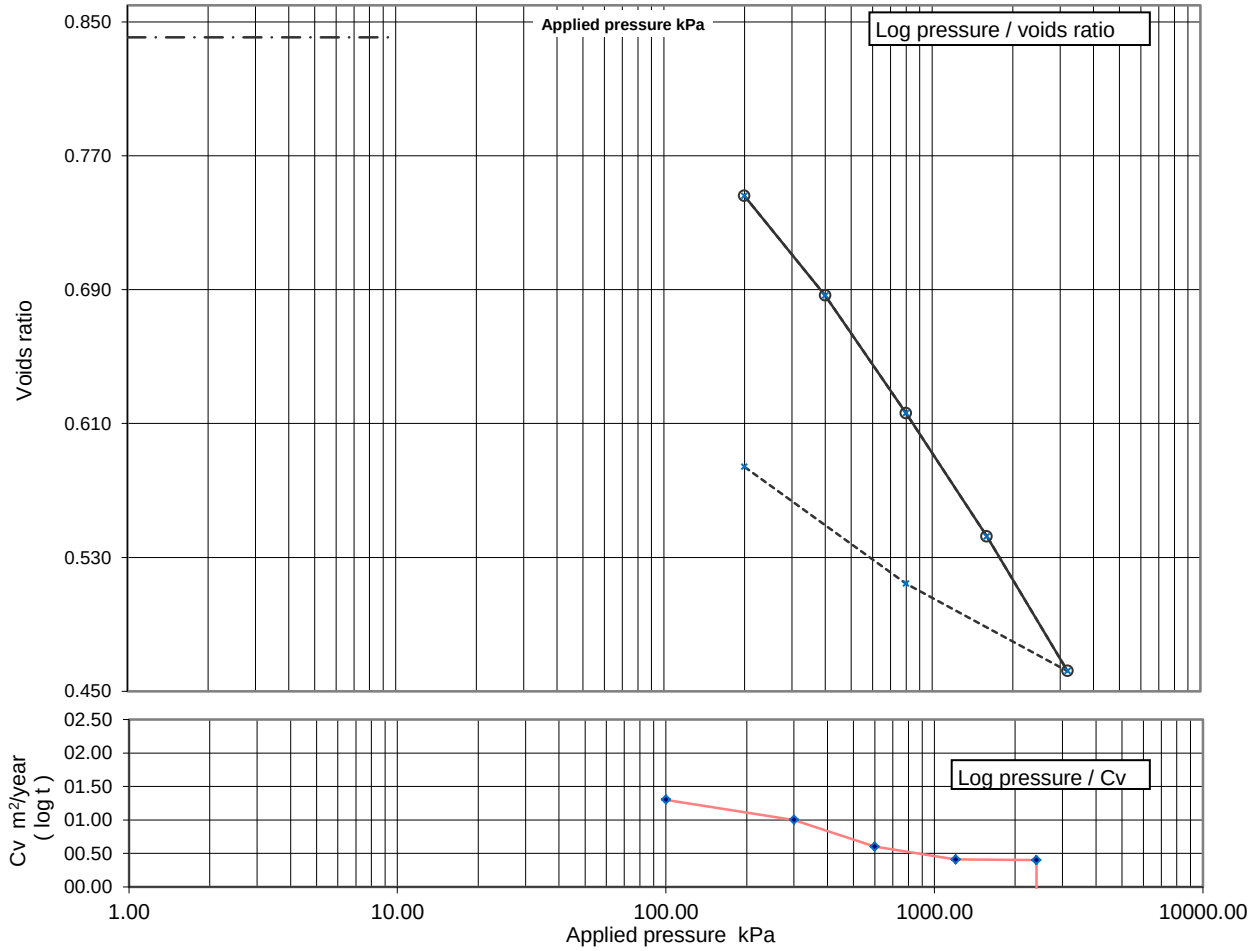
The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2019 SOCOTEC UK Limited

Printed:
28/02/2020 09:02

ONE DIMENSIONAL CONSOLIDATION TEST
BS 1377 : Part 5 : 1990 : clause 3

Sample Details:	SAMPLE ID:
	A9031-1920191212034612

Hole No	ATK-CP-03
Sample Depth (m BGL)	5.00 - 5.45
Sample Type and No	UT22
Specimen Ref	



Soil description	Firm greyish brown slightly sandy CLAY.
Preparation	Undisturbed
Index properties	Liquid limit % / Plastic limit %

(if available)

Specimen details	Initial	Final	
Particle density	2.65	assumed	Mg/m3
Diameter	74.92		mm
Height	18.90	16.26	mm
Voids ratio	0.841	0.584	
Moisture content	31	23	%
Bulk density	1.88	2.06	Mg/m3
Dry density	1.44	1.67	Mg/m3
Saturation	96	105	%
Average temperature for test	21		oC

Swelling pressure	not measured	kPa

Notes :

Specimen taken 70 mm from base of sample

Applied Pressure kPa	Voids ratio	mv m2/MN	cv (t50, log) m2/year	cv (t90, root) m2/year	
0	0.8408				
200	0.7459	0.260	1.3	1.3	
400	0.6864	0.170	1	1.1	
800	0.6161	0.100	0.6	0.64	
1600	0.5425	0.057	0.41	0.44	
3200	0.4620	0.033	0.4	0.44	
800	0.5142	0.015	-	-	
200	0.5841	0.077	-	-	

QA Ref
SLR 5.3
Rev 2.21
Feb 19

UKAS TESTING
0001

SOCOTEC

Project No	A9031-19
Project Name	HAVANT THICKET WATER STORAGE

Figure
OED

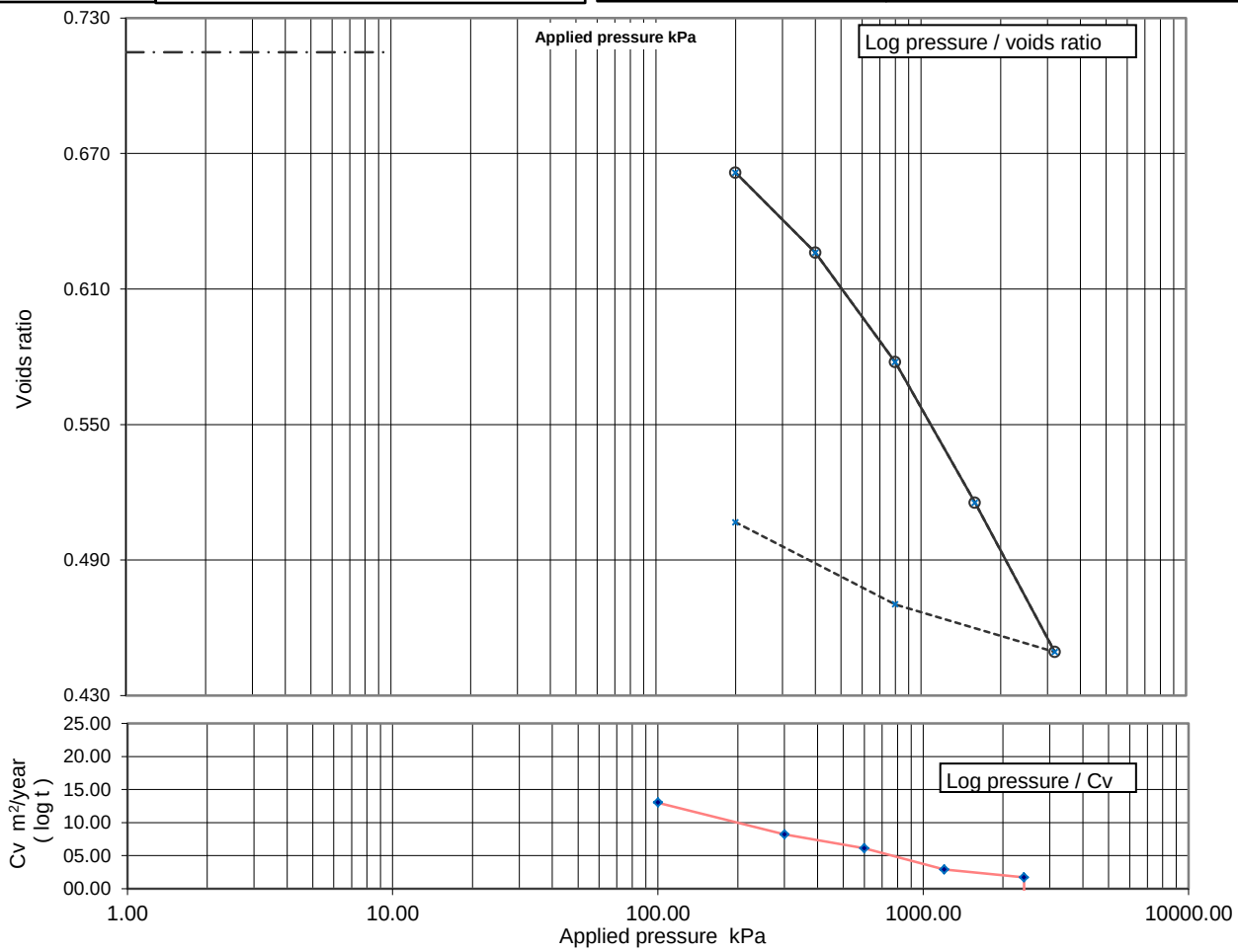
The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2019 SOCOTEC UK Limited

Printed:
28/02/2020 09:02

ONE DIMENSIONAL CONSOLIDATION TEST
BS 1377 : Part 5 : 1990 : clause 3

Sample Details:	SAMPLE ID:
	A9031-1920191119084456

Hole No	ATK-CP-04
Sample Depth (m BGL)	6
Sample Type and No	UT26
Specimen Ref	



Soil description	Firm to stiff greyish brown slightly sandy silty CLAY.
Preparation	Undisturbed
Index properties	Liquid limit % / Plastic limit %

(if available)

Specimen details	Initial	Final	
Particle density	2.65	assumed	Mg/m3
Diameter	74.95		mm
Height	18.97	16.67	mm
Voids ratio	0.715	0.507	
Moisture content	26	20	%
Bulk density	1.95	2.11	Mg/m3
Dry density	1.55	1.76	Mg/m3
Saturation	97	105	%
Average temperature for test	20		oC

Swelling pressure: not measured kPa

Notes :

Specimen taken 60 mm from base of sample

Applied Pressure kPa	Voids ratio	mv m2/MN	cv (t50, log) m2/year	cv (t90, root) m2/year	
0	0.7148				
200	0.6615	0.160	13	13	
400	0.6261	0.110	8.2	9	
800	0.5775	0.075	6.1	6.4	
1600	0.5153	0.049	2.9	3	
3200	0.4492	0.027	1.7	1.8	
800	0.4703	0.006	-	-	
200	0.5067	0.041	-	-	

QA Ref
SLR 5.3
Rev 2.21
Feb 19

UKAS TESTING
0001

SOCOTEC

Project No A9031-19

Project Name HAVANT THICKET WATER STORAGE

Figure

OED

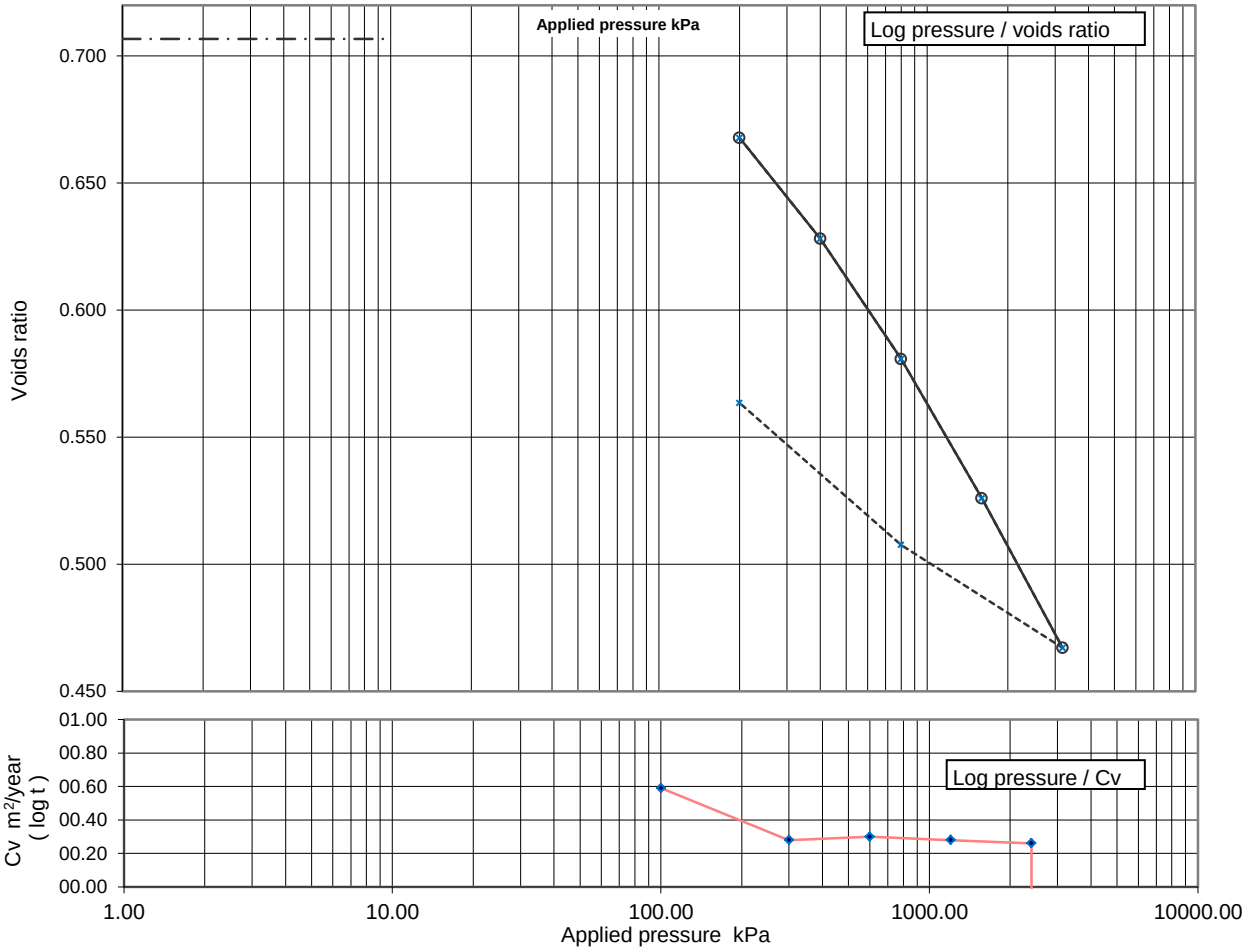
The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2019 SOCOTEC UK Limited

Printed:
28/02/2020 09:02

ONE DIMENSIONAL CONSOLIDATION TEST
BS 1377 : Part 5 : 1990 : clause 3

Sample Details:	SAMPLE ID:
	A9031-1920191119084657

Hole No	ATK-CP-04
Sample Depth (m BGL)	10
Sample Type and No	UT42
Specimen Ref	



Soil description	Firm to stiff greyish brown slightly sandy CLAY.
Preparation	
Index properties	Liquid limit % : Plastic limit % :

(if available)

Specimen details	Initial	Final	
Particle density	2.70	assumed	Mg/m3
Diameter	74.97		mm
Height	18.96	17.37	mm
Voids ratio	0.707	0.563	
Moisture content	26	22	%
Bulk density	1.99	2.11	Mg/m3
Dry density	1.58	1.73	Mg/m3
Saturation	100	105	%
Average temperature for test	21		oC

Swelling pressure: not measured kPa

Notes :

Specimen taken 80 mm from base of sample

Applied Pressure kPa	Voids ratio	mv m2/MN	cv (t50, log) m2/year	cv (t90, root) m2/year	
0					
200	0.6678	#########	0.59	0.66	
400	0.6281	0.120	0.28	0.3	
800	0.5807	0.073	0.3	0.32	
1600	0.5259	0.043	0.28	0.3	
3200	0.4670	0.024	0.26	0.28	
800	0.5075	0.012	-	-	
200	0.5635	0.062	-	-	

QA Ref
SLR 5.3
Rev 2.21
Feb 19

UKAS TESTING
0001

SOCOTEC

Project No A9031-19

Project Name HAVANT THICKET WATER STORAGE

Figure
OED

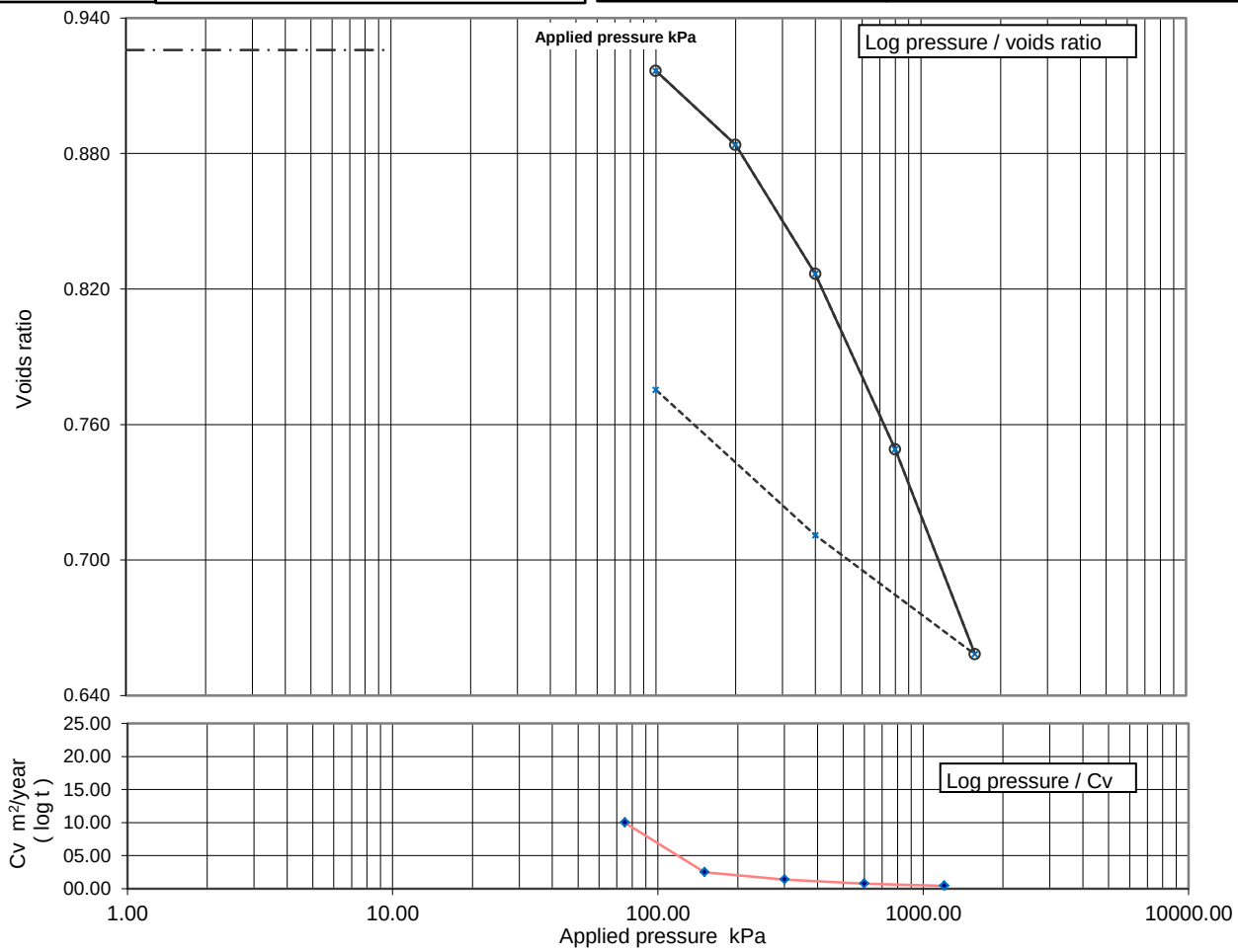
The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2019 SOCOTEC UK Limited

Printed:
28/02/2020 09:02

ONE DIMENSIONAL CONSOLIDATION TEST
BS 1377 : Part 5 : 1990 : clause 3

Sample Details:	SAMPLE ID:
	A9031-1920191121113644

Hole No	ATK-CP-05
Sample Depth (m BGL)	2
Sample Type and No	UT11
Specimen Ref	



Soil description	Firm to stiff greyish brown mottled orangish brown slightly sandy CLAY with occasional mica fragmnets.
Preparation	Undisturbed
Index properties	Liquid limit % [ ] Plastic limit % [ ]

(if available)

Specimen details	Initial	Final	
Particle density	2.65	assumed	Mg/m3
Diameter	75.02		mm
Height	18.84	17.37	mm
Voids ratio	0.926	0.775	
Moisture content	35	31	%
Bulk density	1.85	1.95	Mg/m3
Dry density	1.38	1.49	Mg/m3
Saturation	99	105	%
Average temperature for test	20		oC

Swelling pressure >50 kPa

Notes :

Applied Pressure kPa	Voids ratio	mv m2/MN	cv (t50, log) m2/year	cv (t90, root) m2/year	
50	0.9258				
100	0.9166	0.096	10	13	
200	0.8838	0.170	2.5	2.7	
400	0.8266	0.150	1.4	1.5	
800	0.7489	0.110	0.77	0.83	
1600	0.6582	0.065	0.43	0.46	
400	0.7109	0.027	-	-	
100	0.7753	0.130	-	-	

Specimen taken 90 mm from base of sample

QA Ref
SLR 5.3
Rev 2.21
Feb 19

UKAS TESTING
0001

SOCOTEC

Project No A9031-19

Project Name HAVANT THICKET WATER STORAGE

Figure

OED

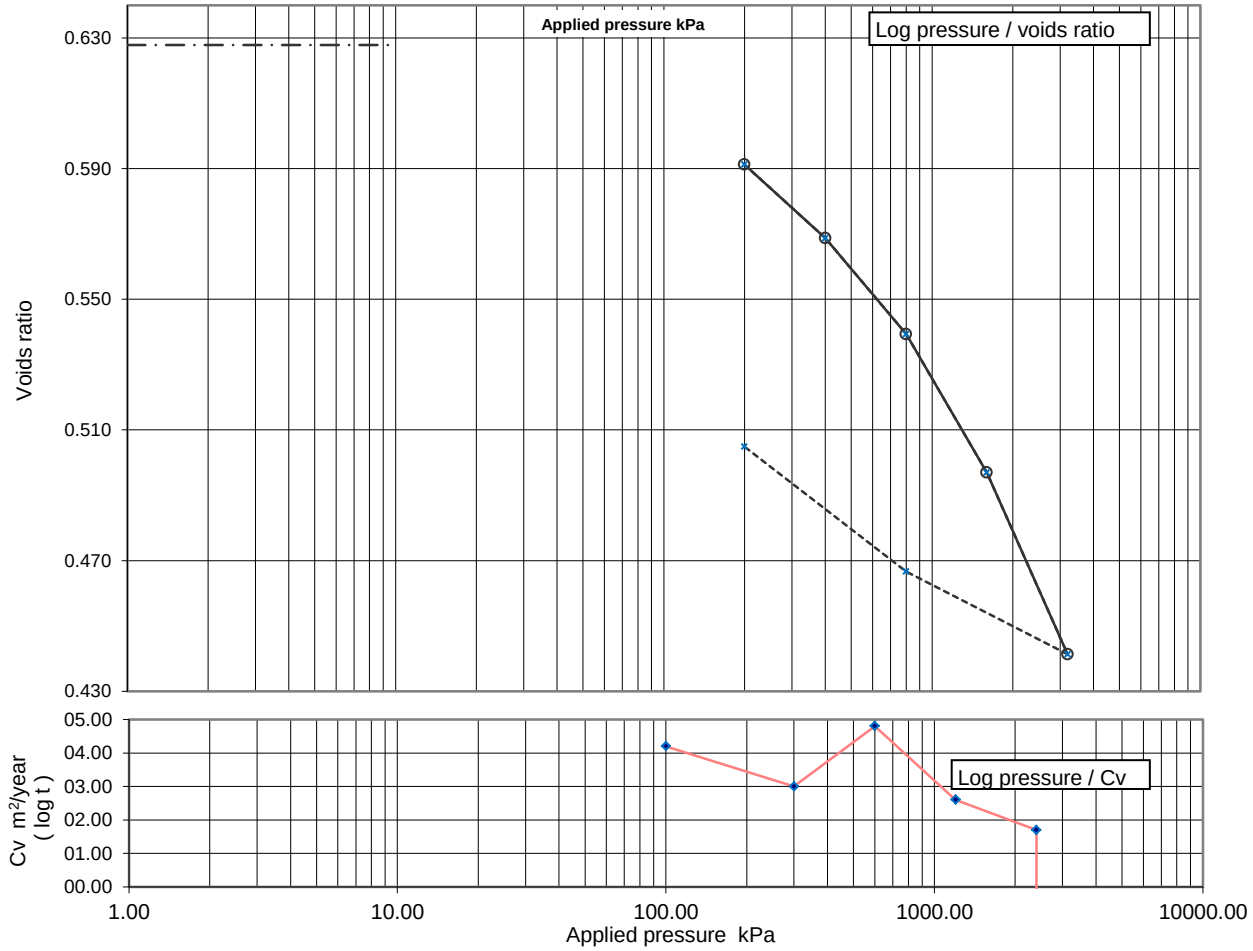
The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2019 SOCOTEC UK Limited

Printed:
28/02/2020 09:02

ONE DIMENSIONAL CONSOLIDATION TEST
BS 1377 : Part 5 : 1990 : clause 3

Sample Details:	SAMPLE ID:
	A9031-1920191121113751

Hole No	ATK-CP-05
Sample Depth (m BGL)	6
Sample Type and No	UT26
Specimen Ref	



Soil description	Firm to stiff greyish brown slightly sandy silty CLAY.
Preparation	Undisturbed
Index properties	Liquid limit % | Plastic limit %

(if available)

Specimen details	Initial	Final	
Particle density	2.70	assumed	Mg/m3
Diameter	74.96		mm
Height	18.87	17.45	mm
Voids ratio	0.628	0.505	
Moisture content	23	20	%
Bulk density	2.04	2.15	Mg/m3
Dry density	1.66	1.79	Mg/m3
Saturation	99	105	%
Average temperature for test	20		oC

Swelling pressure	not measured	kPa

Notes :

Applied Pressure kPa	Voids ratio	mv m2/MN	cv (t50, log) m2/year	cv (t90, root) m2/year	
0	0.6278				
200	0.5912	0.110	4.2	4.5	
400	0.5687	0.071	3	3	
800	0.5393	0.047	4.8	5.2	
1600	0.4969	0.034	2.6	2.7	
3200	0.4413	0.023	1.7	1.8	
800	0.4667	0.007	-	-	
200	0.5049	0.043	-	-	

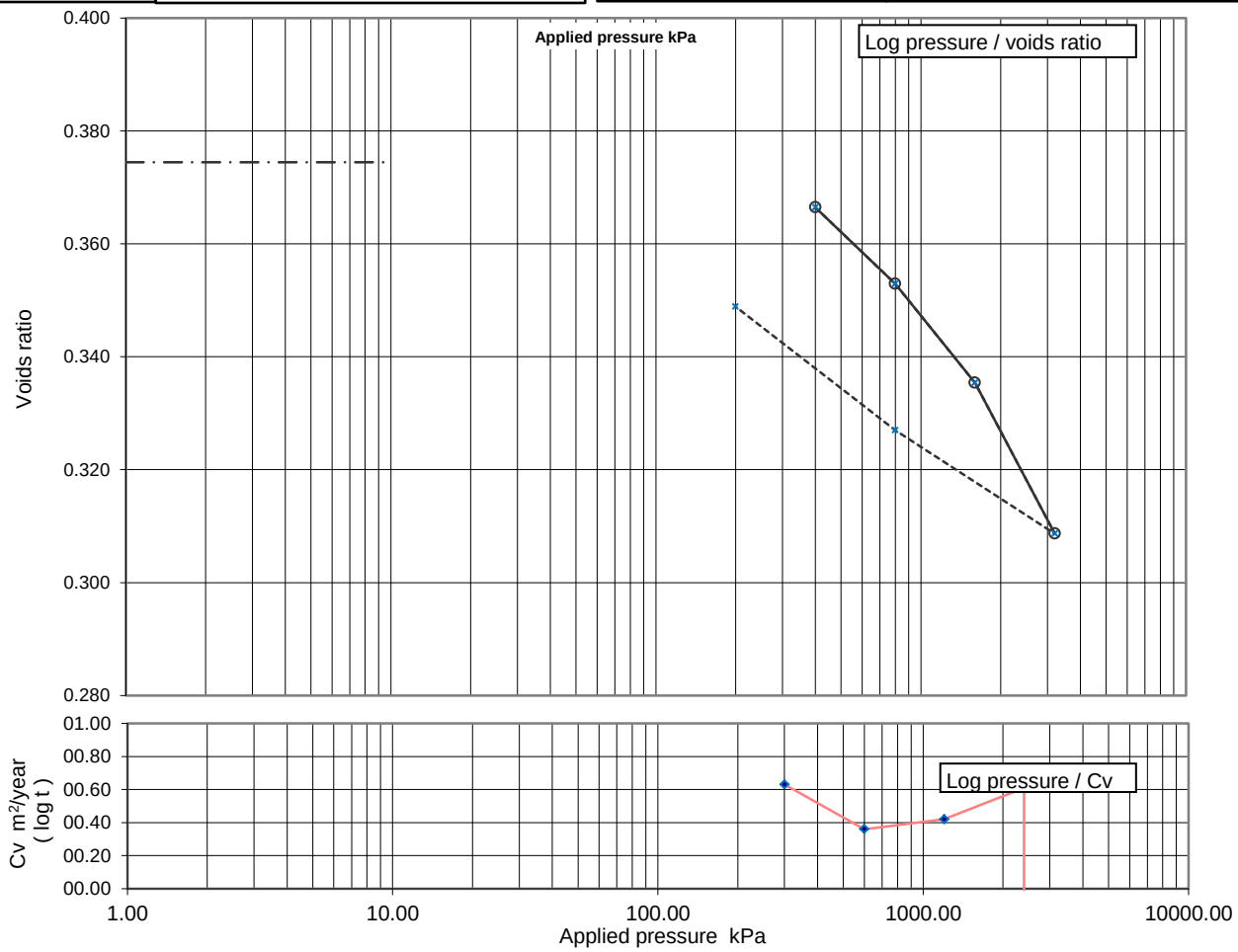
Specimen taken 0 mm from base of sample

The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2019 SOCOTEC UK Limited

ONE DIMENSIONAL CONSOLIDATION TEST
BS 1377 : Part 5 : 1990 : clause 3

Sample Details:	SAMPLE ID:
	A9031-1920191122124841

Hole No	ATK-CP-05
Sample Depth (m BGL)	11.5
Sample Type and No	UT45
Specimen Ref	



Soil description	Very stiff reddish brown mottled grey slightly sandy CLAY.
Preparation	Undisturbed
Index properties	Liquid limit %		Plastic limit %	

(if available)

Specimen details	Initial	Final	
Particle density	2.70	assumed	Mg/m3
Diameter	74.96		mm
Height	18.97	18.62	mm
Voids ratio	0.374	0.349	
Moisture content	14	13	%
Bulk density	2.23	2.27	Mg/m3
Dry density	1.96	2.00	Mg/m3
Saturation	98	104	%
Average temperature for test	20		oC

Swelling pressure >200 kPa

Notes :

Specimen taken 50 mm from base of sample

Applied Pressure kPa	Voids ratio	mv m2/MN	cv (t50, log) m2/year	cv (t90, root) m2/year	
200	0.3744				
400	0.3665	0.029	0.63	0.69	
800	0.3529	0.025	0.36	0.39	
1600	0.3354	0.016	0.42	0.45	
3200	0.3087	0.013	0.61	0.66	
800	0.3270	0.006	-	-	
200	0.3489	0.027	-	-	

QA Ref
SLR 5.3
Rev 2.21
Feb 19

UKAS TESTING
0001

SOCOTEC

Project No	A9031-19
Project Name	HAVANT THICKET WATER STORAGE

Figure
OED

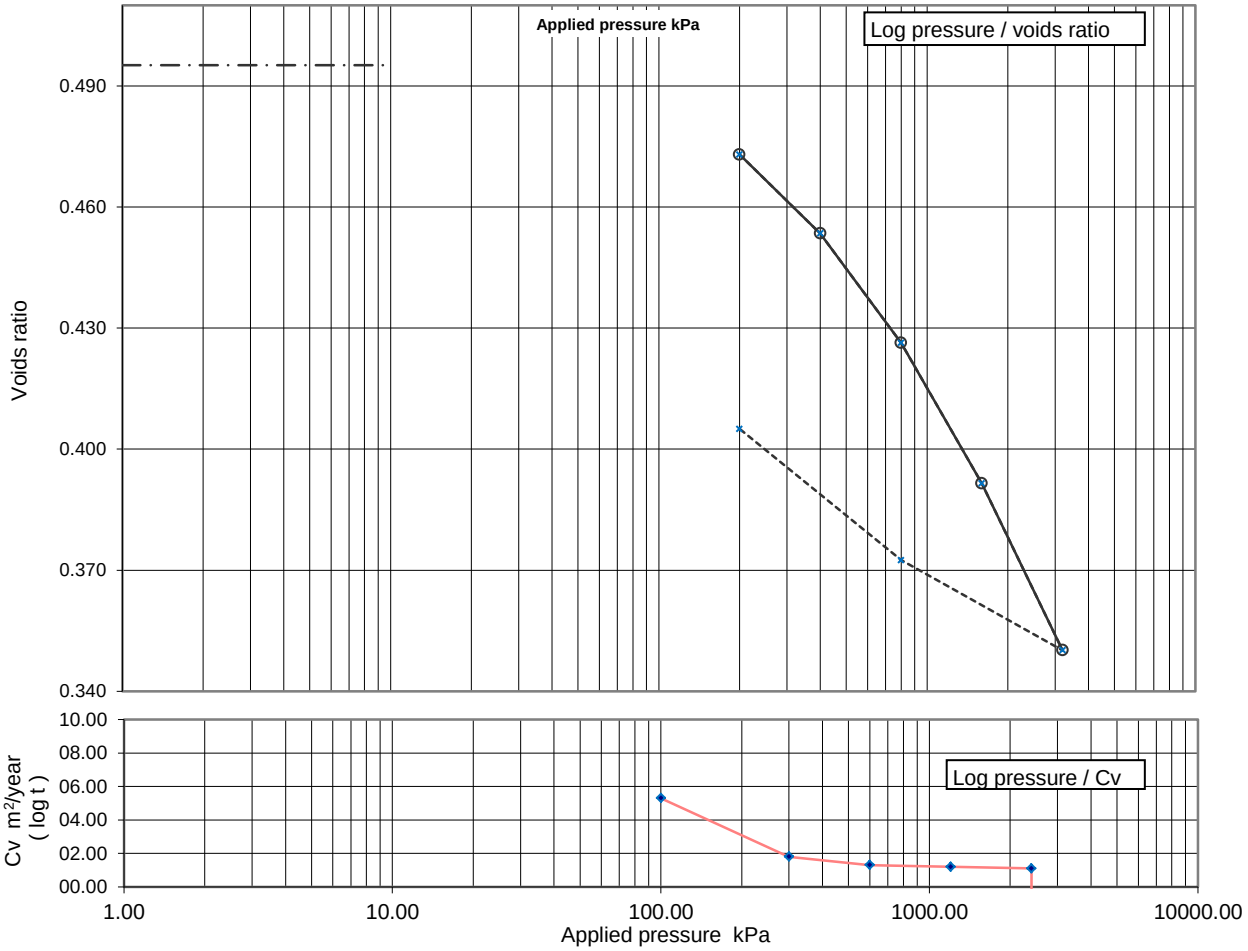
The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2019 SOCOTEC UK Limited

Printed:
28/02/2020 09:02

ONE DIMENSIONAL CONSOLIDATION TEST
BS 1377 : Part 5 : 1990 : clause 3

Sample Details:	SAMPLE ID:
	A9031-1920191122125000

Hole No	ATK-CP-05
Sample Depth (m BGL)	14.5
Sample Type and No	UT55
Specimen Ref	



Soil description	Firm to stiff light brownish grey mottled reddish brown slightly sandy silty CLAY.
Preparation	Undisturbed
Index properties	Liquid limit % / Plastic limit %

(if available)

Specimen details	Initial	Final	
Particle density	2.75	assumed	Mg/m3
Diameter	74.95		mm
Height	18.89	17.75	mm
Voids ratio	0.495	0.405	
Moisture content	18	15	%
Bulk density	2.17	2.26	Mg/m3
Dry density	1.84	1.96	Mg/m3
Saturation	100	105	%
Average temperature for test	20		oC

Swelling pressure: not measured kPa

Notes :

Applied Pressure kPa	Voids ratio	mv m2/MN	cv (t50, log) m2/year	cv (t90, root) m2/year	
0	0.4951				
200	0.4730	0.074	5.3	5.7	
400	0.4534	0.066	1.8	1.9	
800	0.4263	0.047	1.3	1.4	
1600	0.3915	0.031	1.2	1.3	
3200	0.3502	0.019	1.1	1.2	
800	0.3725	0.007	-	-	
200	0.4050	0.039	-	-	

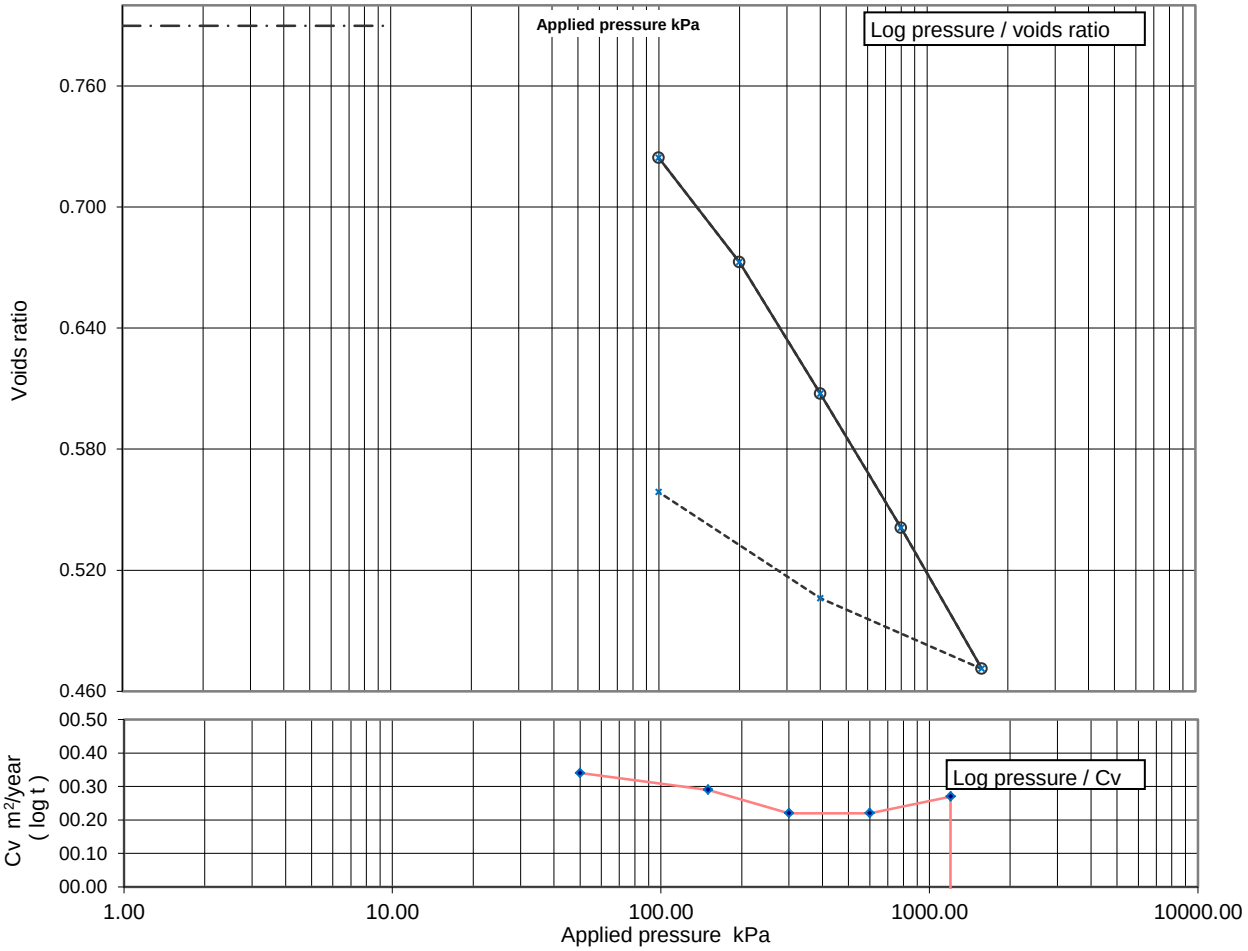
Specimen taken 70 mm from base of sample

The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2019 SOCOTEC UK Limited

ONE DIMENSIONAL CONSOLIDATION TEST
BS 1377 : Part 5 : 1990 : clause 3

Sample Details:	SAMPLE ID:
	A9031-1920191205122348

Hole No	ATK-CP-06
Sample Depth (m BGL)	4.00 - 4.45
Sample Type and No	UT20
Specimen Ref	



Soil description	Firm red and grey mottled slightly sandy CLAY
Preparation	
Index properties	Liquid limit % | Plastic limit %

(if available)

Specimen details	Initial	Final	
Particle density	2.76	assumed	Mg/m3
Diameter	75.02		mm
Height	20.12	17.52	mm
Voids ratio	0.790	0.559	
Moisture content	29	21	%
Bulk density	1.99	2.15	Mg/m3
Dry density	1.54	1.77	Mg/m3
Saturation	100	105	%
Average temperature for test	20		oC

Swelling pressure	not measured	kPa

Notes :

Applied Pressure kPa	Voids ratio	mv m2/MN	cv (t50, log) m2/year	cv (t90, root) m2/year	
0	0.7898				
100	0.7243	0.370	0.34	0.36	
200	0.6726	0.300	0.29	0.31	
400	0.6075	0.190	0.22	0.23	
800	0.5409	0.100	0.22	0.24	
1600	0.4711	0.057	0.27	0.29	
400	0.5060	0.020	-	-	
100	0.5587	0.120	-	-	

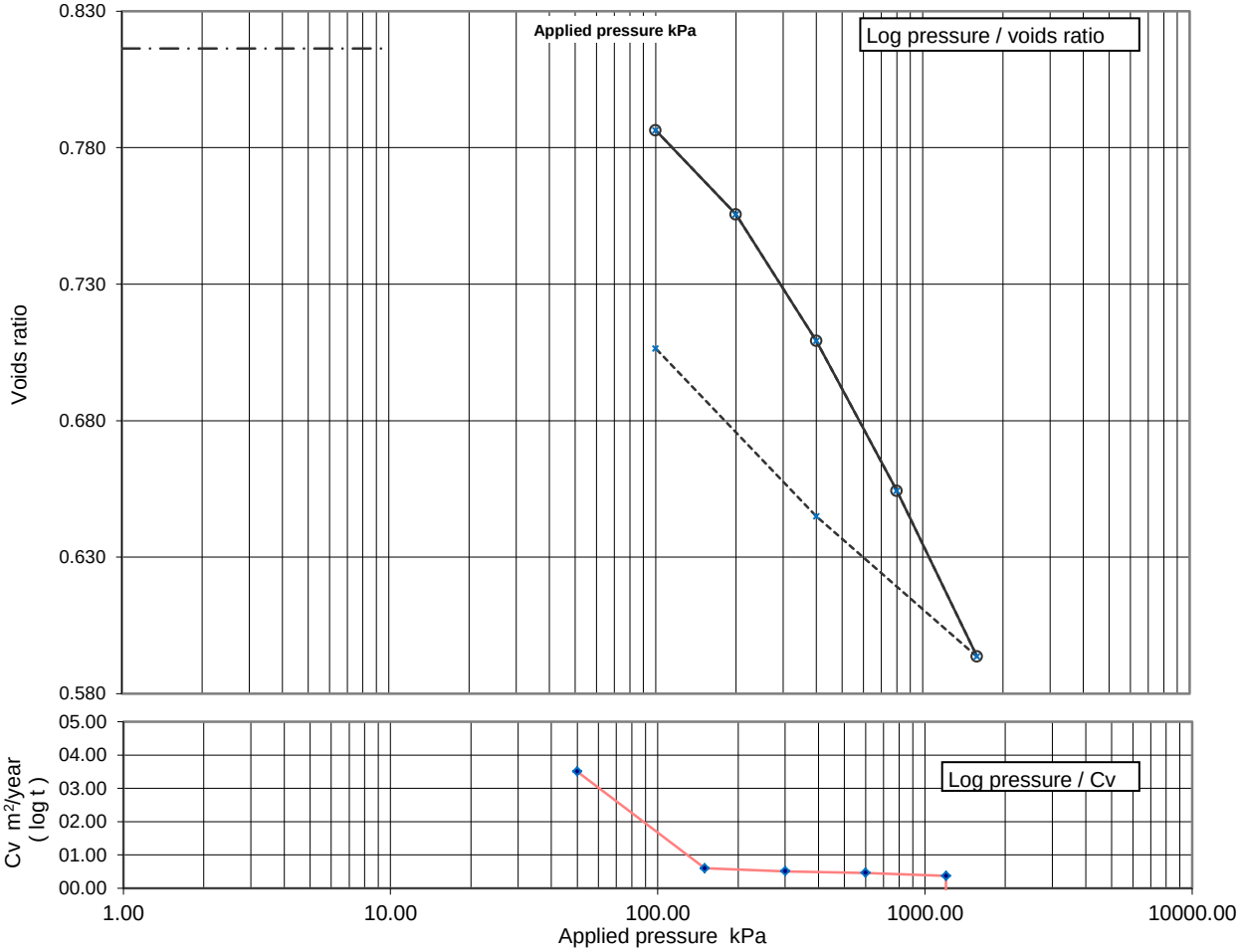
Specimen taken 120 mm from base of sample

The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2019 SOCOTEC UK Limited

ONE DIMENSIONAL CONSOLIDATION TEST
BS 1377 : Part 5 : 1990 : clause 3

Sample Details:	SAMPLE ID:
	A9031-1920191219105028

Hole No	ATK-CP-11
Sample Depth (m BGL)	4
Sample Type and No	UT19
Specimen Ref	



Soil description	Firm to stiff greyish brown slightly sandy CLAY
Preparation	Undisturbed.
Index properties	Liquid limit % | Plastic limit %

(if available)

Specimen details	Initial	Final	
Particle density	2.70	assumed	Mg/m3
Diameter	74.96		mm
Height	18.91	17.77	mm
Voids ratio	0.816	0.706	
Moisture content	30	27	%
Bulk density	1.94	2.02	Mg/m3
Dry density	1.49	1.58	Mg/m3
Saturation	100	105	%
Average temperature for test	20		oC

Swelling pressure: not measured kPa

Notes :

Specimen taken 0 mm from base of sample

Applied Pressure kPa	Voids ratio	mv m2/MN	cv (t50, log) m2/year	cv (t90, root) m2/year	
0	0.8163				
100	0.7863	0.160	3.5	4.1	
200	0.7555	0.170	0.6	0.65	
400	0.7092	0.130	0.51	0.55	
800	0.6543	0.080	0.46	0.49	
1600	0.5935	0.046	0.37	0.39	
400	0.6449	0.027	-	-	
100	0.7064	0.120	-	-	

QA Ref
SLR 5.3
Rev 2.21
Feb 19

UKAS TESTING
0001

SOCOTEC

Project No A9031-19

Project Name HAVANT THICKET WATER STORAGE

Figure
OED

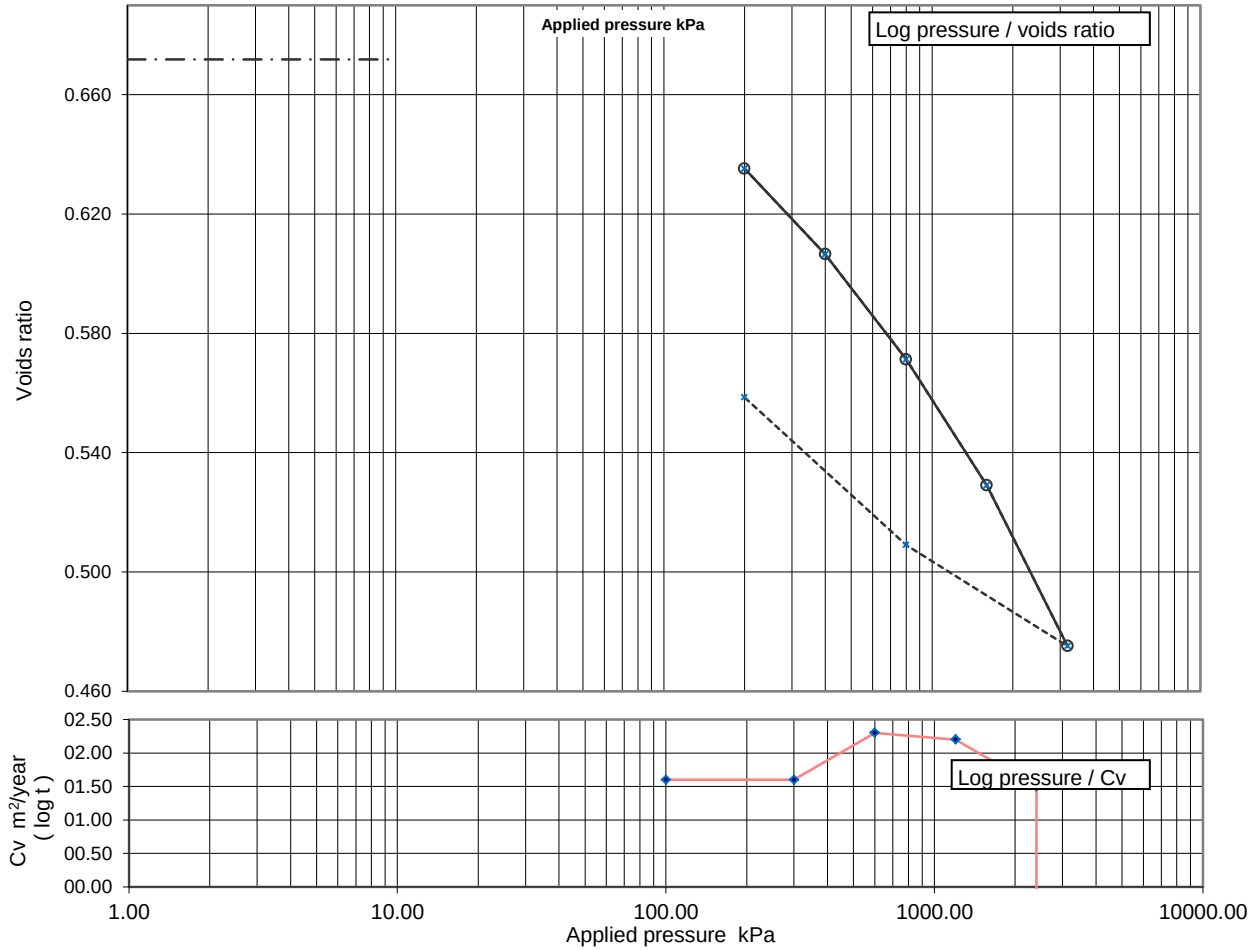
The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2019 SOCOTEC UK Limited

Printed:
28/02/2020 09:02

ONE DIMENSIONAL CONSOLIDATION TEST
BS 1377 : Part 5 : 1990 : clause 3

Sample Details:	SAMPLE ID:
	A9031-1920191219105229

Hole No	ATK-CP-11
Sample Depth (m BGL)	8
Sample Type and No	UT35
Specimen Ref	



Soil description	Stiff greyish brown slightly sandy silty CLAY.
Preparation	Undisturbed.
Index properties	Liquid limit %		Plastic limit %	

(if available)

Specimen details	Initial	Final	
Particle density	2.72	assumed	Mg/m3
Diameter	74.98		mm
Height	18.88	17.60	mm
Voids ratio	0.672	0.559	
Moisture content	25	22	%
Bulk density	2.03	2.12	Mg/m3
Dry density	1.63	1.75	Mg/m3
Saturation	100	105	%
Average temperature for test	20		oC

Swelling pressure	not measured	kPa

Notes :

Applied Pressure kPa	Voids ratio	mv m2/MN	cv (t50, log) m2/year	cv (t90, root) m2/year	
0	0.6718				
200	0.6352	0.110	1.6	1.5	
400	0.6065	0.088	1.6	1.7	
800	0.5713	0.055	2.3	2.5	
1600	0.5290	0.034	2.2	2.3	
3200	0.4751	0.022	1.5	1.6	
800	0.5090	0.010	-	-	
200	0.5585	0.055	-	-	

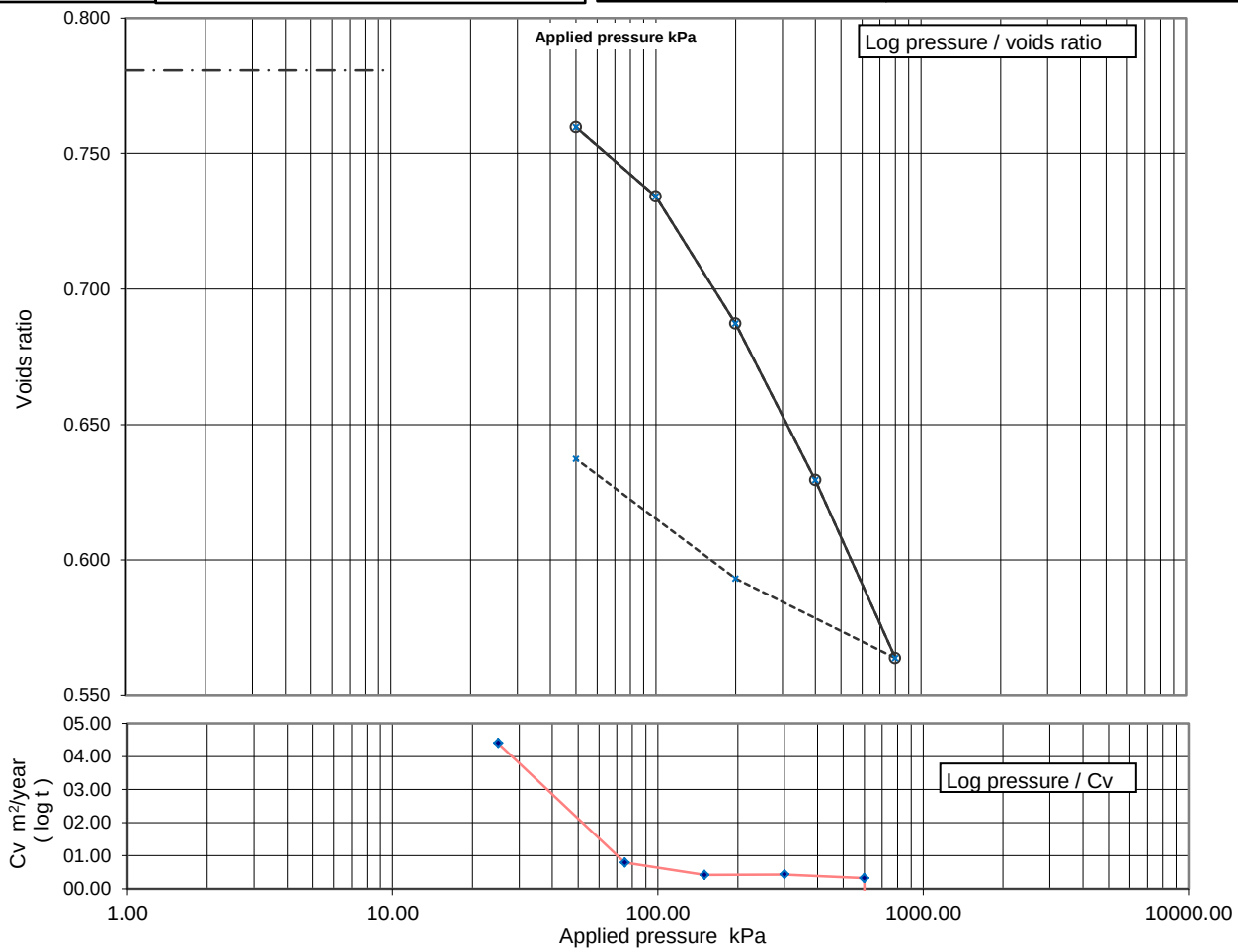
Specimen taken 120 mm from base of sample

The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2019 SOCOTEC UK Limited

ONE DIMENSIONAL CONSOLIDATION TEST
BS 1377 : Part 5 : 1990 : clause 3

Sample Details:	SAMPLE ID:
	A9031-1920191218101917

Hole No	ATK-CP-14
Sample Depth (m BGL)	2.00 - 2.45
Sample Type and No	UT7
Specimen Ref	



Soil description	Soft to firm brown slightly sandy CLAY.
Preparation	Undisturbed
Index properties	Liquid limit % / Plastic limit %

(if available)

Specimen details	Initial	Final	
Particle density	2.65	assumed	Mg/m3
Diameter	74.98		mm
Height	18.92	17.40	mm
Voids ratio	0.781	0.637	
Moisture content	27	25	%
Bulk density	1.89	2.02	Mg/m3
Dry density	1.49	1.62	Mg/m3
Saturation	93	102	%
Average temperature for test	20		oC

Swelling pressure	not measured	kPa

Notes :

Specimen taken 90 mm from base of sample

Applied Pressure kPa	Voids ratio	mv m2/MN	cv (t50, log) m2/year	cv (t90, root) m2/year	
0	0.7808				
50	0.7596	0.240	4.4	4.7	
100	0.7341	0.290	0.79	0.84	
200	0.6872	0.270	0.42	0.6	
400	0.6294	0.170	0.43	0.46	
800	0.5638	0.100	0.32	0.34	
200	0.5931	0.031	-	-	
50	0.6373	0.190	-	-	

QA Ref
SLR 5.3
Rev 2.21
Feb 19

UKAS TESTING
0001

SOCOTEC

Project No	A9031-19
Project Name	HAVANT THICKET WATER STORAGE

Figure
OED

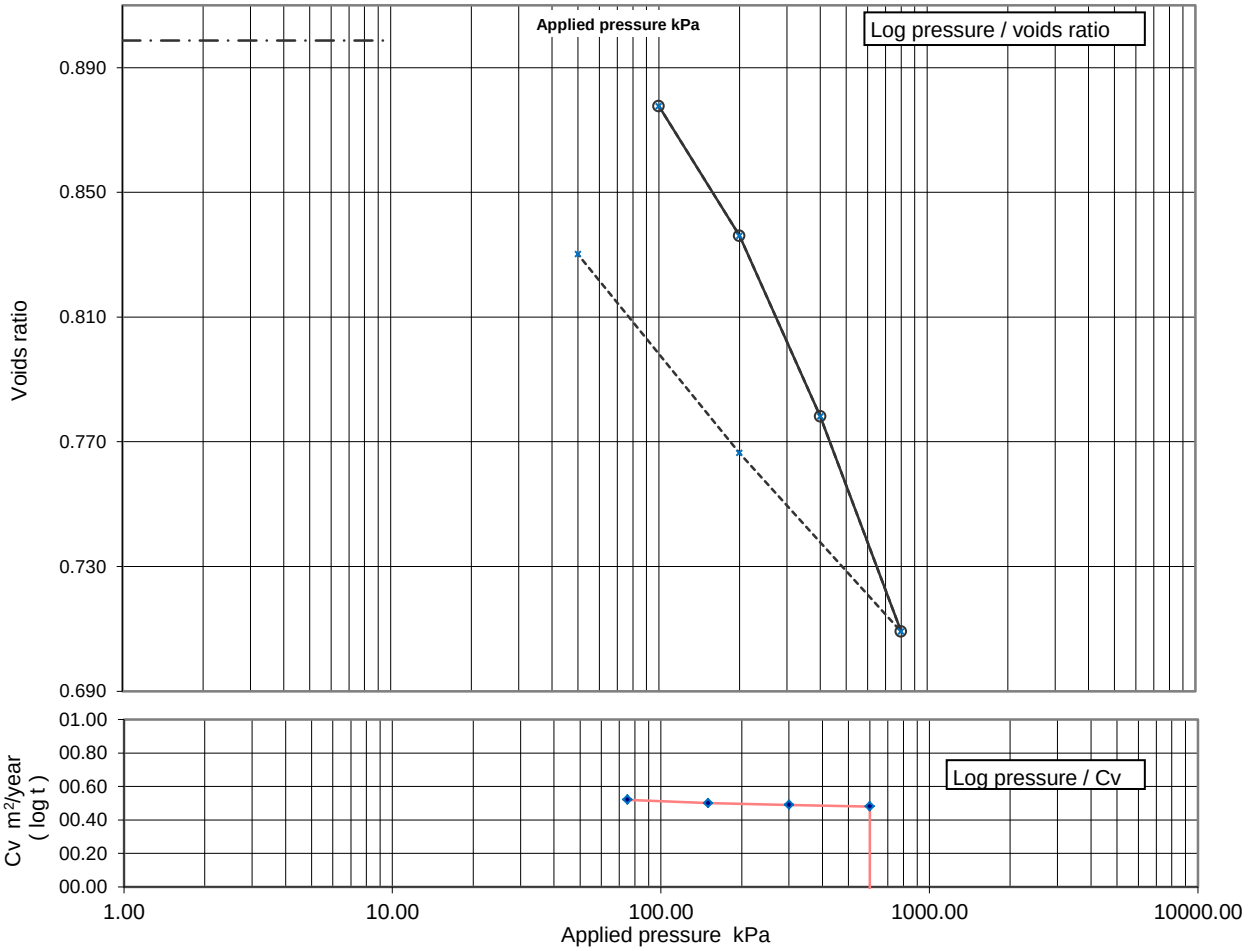
The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2019 SOCOTEC UK Limited

Printed:
28/02/2020 09:02

ONE DIMENSIONAL CONSOLIDATION TEST
BS 1377 : Part 5 : 1990 : clause 3

Sample Details:	SAMPLE ID:
	A9031-1920191212110429

Hole No	ATK-CP-15
Sample Depth (m BGL)	3
Sample Type and No	UT14
Specimen Ref	



Soil description	Firm to stiff brown slightly sandy CLAY.		
Preparation	Undisturbed		
Index properties	Liquid limit %		Plastic limit %

(if available)

Specimen details	Initial	Final	
Particle density	2.68	assumed	Mg/m3
Diameter	75.01		mm
Height	18.67	18.00	mm
Voids ratio	0.899	0.830	
Moisture content	33	33	%
Bulk density	1.88	1.94	Mg/m3
Dry density	1.41	1.46	Mg/m3
Saturation	99	105	%
Average temperature for test	20		oC

Swelling pressure	>50	kPa

Notes :

Specimen taken 220 mm from base of sample

Applied Pressure kPa	Voids ratio	mv m2/MN	cv (t50, log) m2/year	cv (t90, root) m2/year	
50	0.8987				
100	0.8776	0.220	0.52	0.57	
200	0.8360	0.220	0.5	0.54	
400	0.7782	0.160	0.49	0.51	
800	0.7091	0.097	0.48	0.52	
200	0.7664	0.056	-	-	
50	0.8301	0.240	-	-	

QA Ref
SLR 5.3
Rev 2.21
Feb 19

UKAS TESTING
0001

SOCOTEC

Project No A9031-19

Project Name HAVANT THICKET WATER STORAGE

Figure

OED

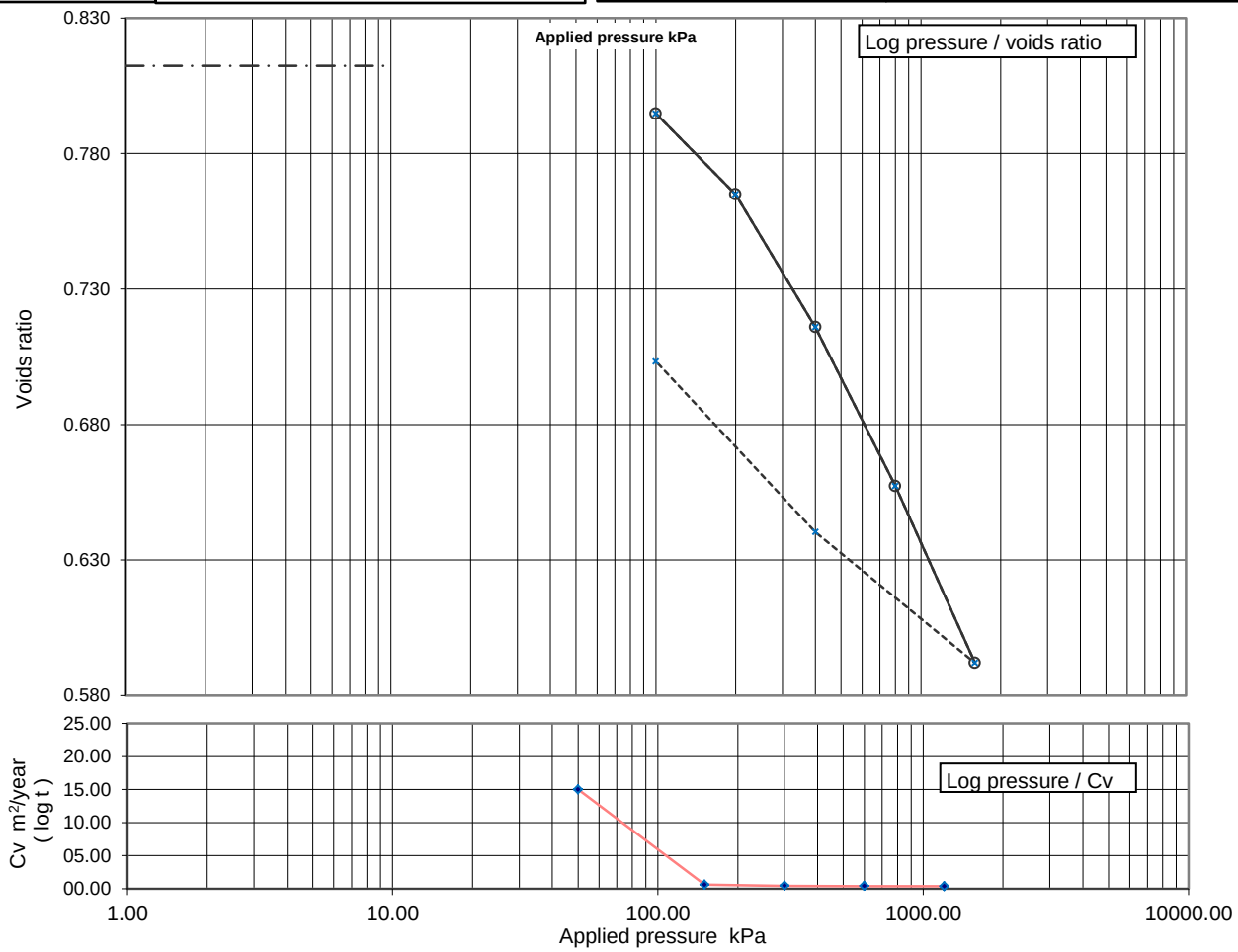
The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2019 SOCOTEC UK Limited

Printed:
28/02/2020 09:02

ONE DIMENSIONAL CONSOLIDATION TEST
BS 1377 : Part 5 : 1990 : clause 3

Sample Details:	SAMPLE ID:
	A9031-1920191204052634

Hole No	ATK-CP-15
Sample Depth (m BGL)	7
Sample Type and No	UT29
Specimen Ref	



Soil description	Firm to stiff dark greyish brown silty CLAY.
Preparation	Undisturbed
Index properties	Liquid limit % / Plastic limit %

(if available)

Specimen details	Initial	Final	
Particle density	2.70	assumed	Mg/m3
Diameter	75.03		mm
Height	18.77	17.64	mm
Voids ratio	0.812	0.703	
Moisture content	30	27	%
Bulk density	1.94	2.02	Mg/m3
Dry density	1.49	1.59	Mg/m3
Saturation	100	105	%
Average temperature for test	20		oC

Swelling pressure	not measured	kPa

Notes :

Specimen taken 90 mm from base of sample

Applied Pressure kPa	Voids ratio	mv m2/MN	cv (t50, log) m2/year	cv (t90, root) m2/year	
0	0.8123				
100	0.7947	0.097	15	16	
200	0.7649	0.170	0.6	0.63	
400	0.7159	0.140	0.44	0.51	
800	0.6573	0.085	0.39	0.41	
1600	0.5920	0.049	0.36	0.38	
400	0.6403	0.025	-	-	
100	0.7033	0.130	-	-	

QA Ref
SLR 5.3
Rev 2.21
Feb 19

UKAS TESTING
0001

SOCOTEC

Project No A9031-19

Project Name HAVANT THICKET WATER STORAGE

Figure

OED

The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2019 SOCOTEC UK Limited

Printed:
28/02/2020 09:02

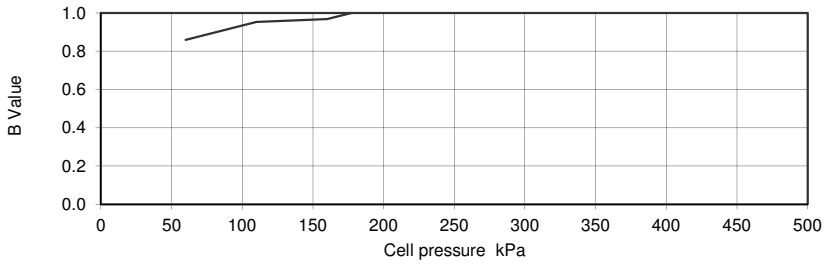
Determination of Permeability in a Triaxial Cell
(BS1377 : Part 6 : 1990, clause 6 - Constant Head test)

Project No	A9031-19	Sample Details:	Hole No.	ATK-CP-02		
Project Name	HAVANT THICKET WATER STORAGE		Depth (m BGL)	2.50-3.00		
			Sample No	8	Type	B
			ID			
			Spec Ref			

Specimen Details

				Initial	Final	
Soil Description	Brown clayey SAND.					
Specimen Type /Preparation	RECOMPACTED using 4.5kg effort at as received moisture content.		Bulk Density	2.04	2.13	Mg/m³
			Water Content	27.0	23.9	%
Length	98.0	mm	Dry density	1.61	1.72	Mg/m³
Diameter	102.0	mm	Voids ratio	0.65	0.54	
Particle density	2.65	Mg/m³ Assumed	Degree of saturation	110	117	%

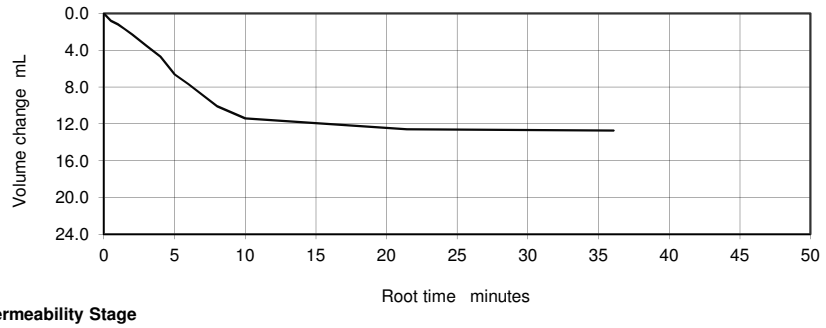
Saturation Stage



Method:
Increments of cell pressure only

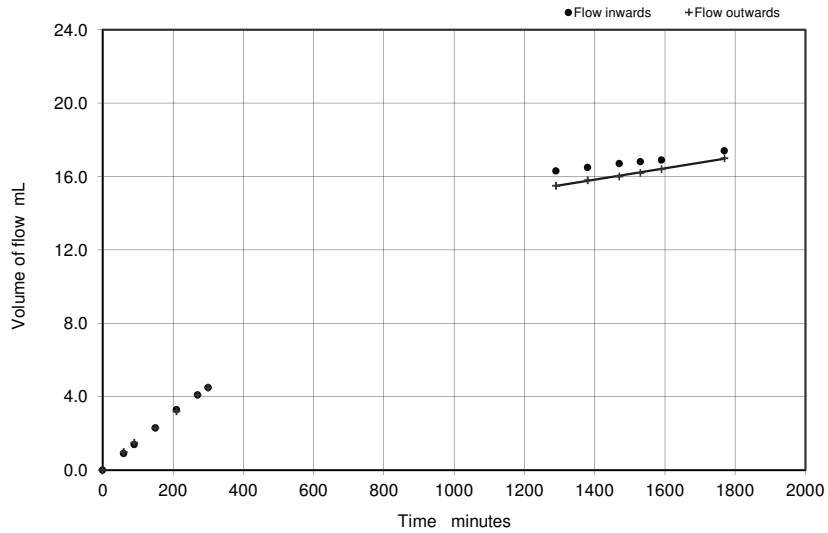
Cell pressure increments	50	kPa
Differential Pressure	0	kPa
Final Cell Pressure	210	kPa
Final pore water pressure	201	kPa
Final B Value	1.00	

Consolidation Stage



Drainage Condition	to one end only	
Cell pressure applied	360	kPa
Back pressure applied	300	kPa
Effective stress	60	kPa

Permeability Stage



Cell Pressure	365	kPa
Top Pressure	300	kPa
Base Pressure	310	kPa
Mean Effective Stress	60	kPa
Differential Pressure	10	kPa
Hydraulic gradient	10	
Mean rate of flow	0.00309	ml/min
Temperature during test	20	°C

PERMEABILITY, *kv*

(at 20°C) **6.0 x 10^{-10}** **m/s**

Notes

Ref

SLR6.6
Rev 2.0
Feb18

SOCOTEC

UKAS TESTING
1157

Printed:29/01/2020 16:14

Figure

TXLP 1

sheet 1 of 1

© Copyright 2017 SOCOTEC UK Limited. All rights reserved

Determination of Permeability in a Triaxial Cell
(BS1377 : Part 6 : 1990, clause 6 - Constant Head test)

Project No	A9031-19	Sample Details:	Hole No.	ATK-CP-08		
Project Name	HAVANT THICKET WATER STORAGE		Depth (m BGL)	0.50-1.00		
			Sample No	4	Type	B
			ID			
			Spec Ref			

Specimen Details

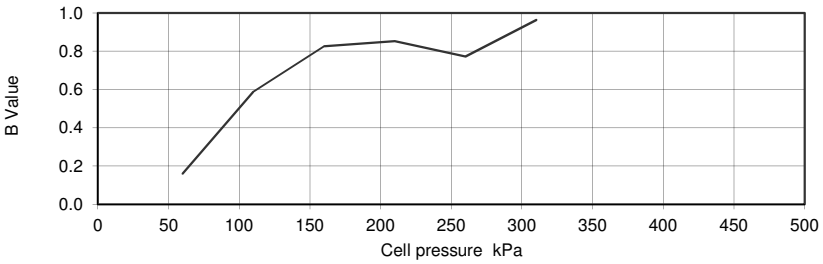
Soil Description: Soft brown slightly sandy CLAY.

Specimen Type /Preparation: RECOMPACTED using 4.5kg effort at as received moisture content.

Length	98.7	mm	
Diameter	103.4	mm	
Particle density	2.65	Mg/m³	Assumed

	Initial	Final	
Bulk Density	1.89	1.99	Mg/m³
Water Content	32.7	31.6	%
Dry density	1.43	1.51	Mg/m³
Voids ratio	0.86	0.75	
Degree of saturation	101	111	%

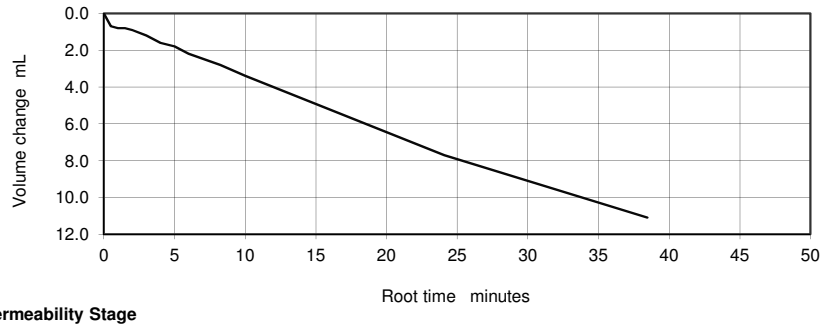
Saturation Stage



Method:
Increments of cell and back pressure

Cell pressure increments	50	kPa
Differential Pressure	10	kPa
Final Cell Pressure	310	kPa
Final pore water pressure	296	kPa
Final B Value	0.96	

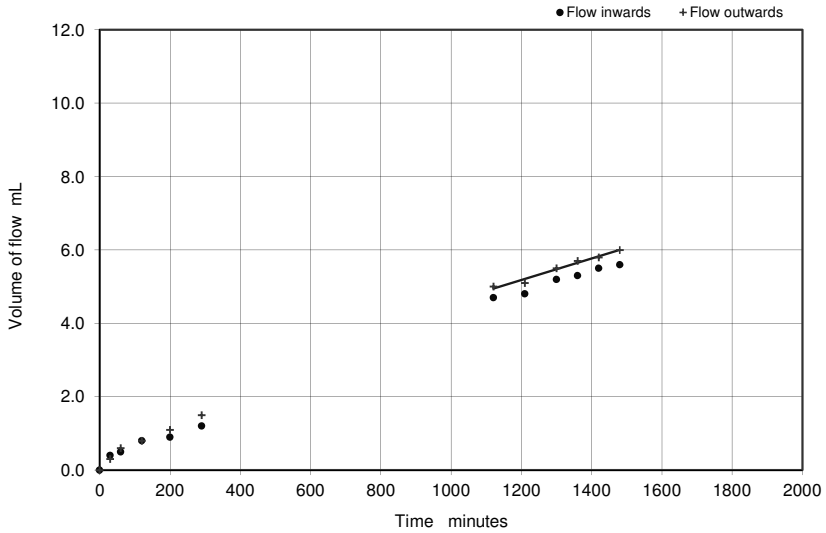
Consolidation Stage



Drainage Condition

Cell pressure applied	325	kPa
Back pressure applied	300	kPa
Effective stress	25	kPa

Permeability Stage



Cell Pressure	330	kPa
Top Pressure	300	kPa
Base Pressure	310	kPa
Mean Effective Stress	25	kPa
Differential Pressure	10	kPa
Hydraulic gradient	10	
Mean rate of flow	0.00293	ml/min
Temperature during test	20	°C

PERMEABILITY, *kv*

(at 20°C) **5.6×10^{-10}** m/s

Notes

Ref SLR6.6 Rev 2.0 Feb18	SOCOTEC	1157	Printed:29/01/2020 16:15
Figure **TXLP 1** sheet 1 of 1			

© Copyright 2017 SOCOTEC UK Limited. All rights reserved

Determination of Permeability in a Triaxial Cell
(BS1377 : Part 6 : 1990, clause 6 - Constant Head test)

Project No	A9031-19	Sample Details:	Hole No.	ATK-CP -09		
Project Name	HAVANT THICKET WATER STORAGE		Depth (m BGL)	1.65-2.20		
			Sample No	8	Type	B
			ID			
			Spec Ref			

Specimen Details

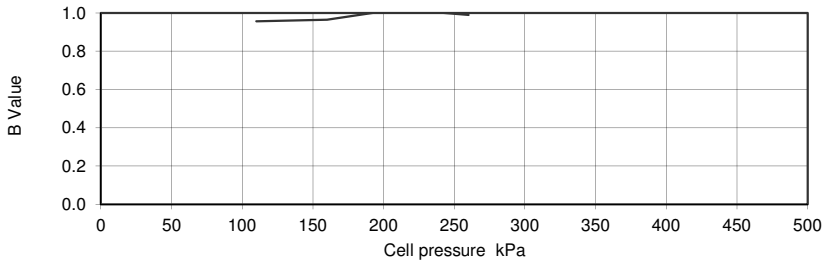
Soil Description: Stiff brown slightly gravelly slightly clayey SAND.

Specimen Type /Preparation: RECOMPACTED using 4.5kg effort at as received moisture content.

Length	90.3	mm	
Diameter	102.2	mm	
Particle density	2.65	Mg/m³	Assumed

	Initial	Final	
Bulk Density	2.00	2.26	Mg/m³
Water Content	29.8	26.9	%
Dry density	1.54	1.78	Mg/m³
Voids ratio	0.72	0.49	
Degree of saturation	110	147	%

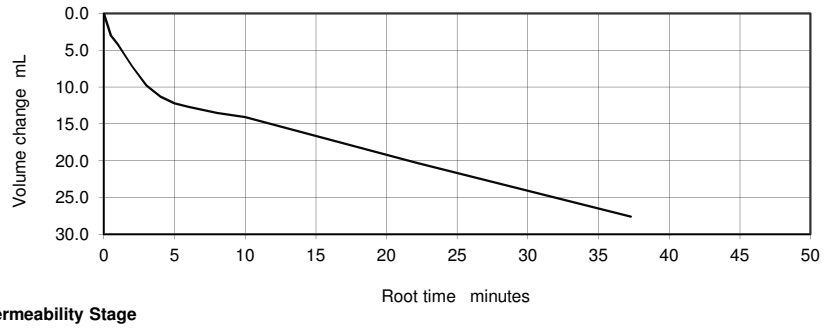
Saturation Stage



Method: Increments of cell and back pressure

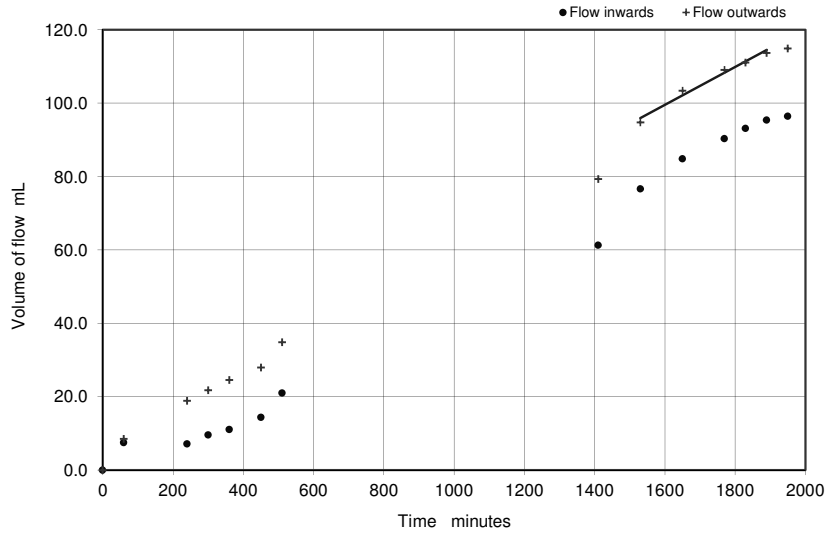
Cell pressure increments	50	kPa
Differential Pressure		kPa
Final Cell Pressure	260	kPa
Final pore water pressure	258	kPa
Final B Value	0.99	

Consolidation Stage



Drainage Condition	to one end only	
Cell pressure applied	340	kPa
Back pressure applied	300	kPa
Effective stress	40	kPa

Permeability Stage



Cell Pressure	345	kPa
Top Pressure	300	kPa
Base Pressure	310	kPa
Mean Effective Stress	40	kPa
Differential Pressure	10	kPa
Hydraulic gradient	11	
Mean rate of flow	0.05155	ml/min
Temperature during test		°C

PERMEABILITY, *kv*

(at 20°C) **1.3** **-8** **m/s**

Notes

Ref SLR6.6 Rev 2.0 Feb18	SOCOTEC	1157	Printed:29/01/2020 16:13
Figure **TXLP 1** sheet 1 of 1			

© Copyright 2017 SOCOTEC UK Limited. All rights reserved

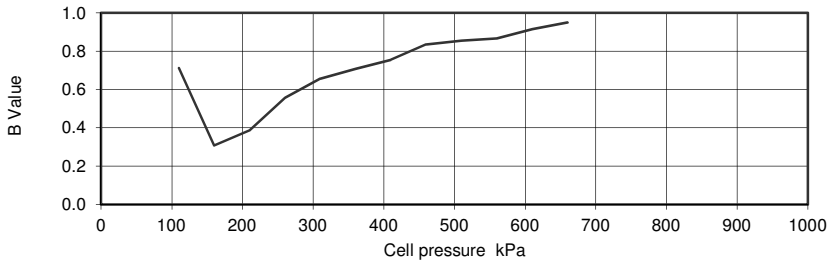
Determination of Permeability in a Triaxial Cell
(BS1377 : Part 6 : 1990, clause 6 - Constant Head test)

Project No	A9031-19	Sample Details:	Hole No.	ATK-RC-02		
Project Name	HAVANT THICKET WATER STORAGE		Depth (m BGL)	2.00-2.50		
			Sample No	12	Type	B
			ID			
			Spec Ref			

Specimen Details

				Initial	Final	
Soil Description	Brown slightly clayey SAND.					
Specimen Type /Preparation	RECOMPACTED using 4.5Kg effort at as received moisture content.		Bulk Density	2.00	2.17	Mg/m³
			Water Content	22.0	22.6	%
Length	93.8	mm	Dry density	1.64	1.77	Mg/m³
Diameter	103.4	mm	Voids ratio	0.65	0.53	
Particle density	2.70	Mg/m³ Assumed	Degree of saturation	92	115	%

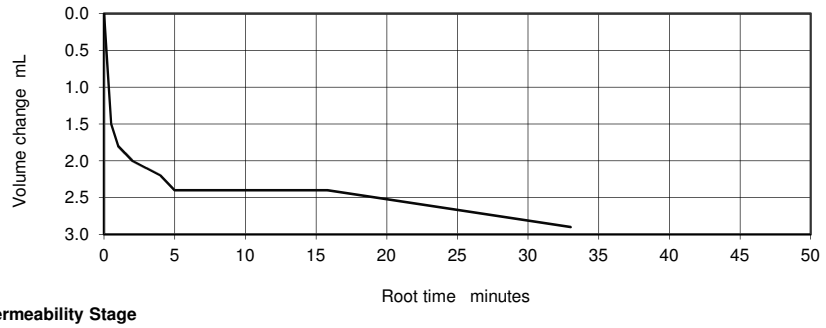
Saturation Stage



Method:
Increments of cell and back pressure

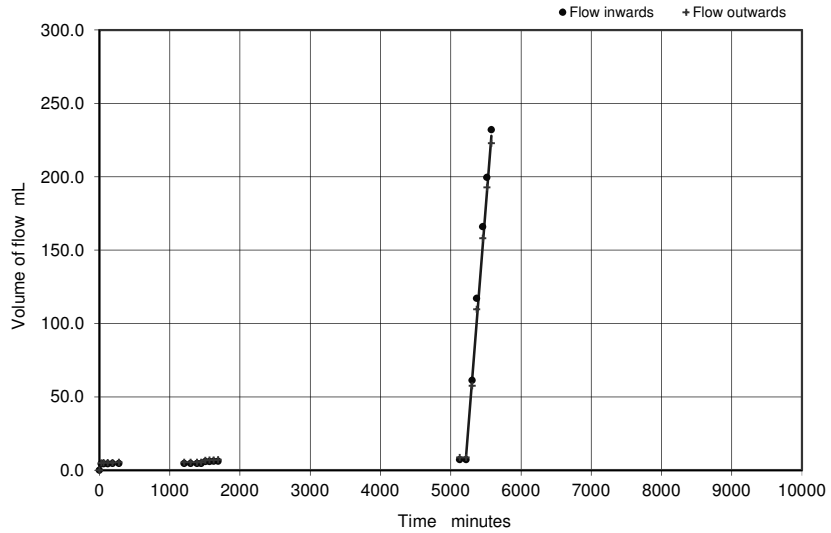
Cell pressure increments	50	kPa
Differential Pressure	10	kPa
Final Cell Pressure	660	kPa
Final pore water pressure	600	kPa
Final B Value	0.95	

Consolidation Stage



Drainage Condition	to one end only	
Cell pressure applied	700	kPa
Back pressure applied	650	kPa
Effective stress	50	kPa

Permeability Stage



Cell Pressure	705	kPa
Top Pressure	640	kPa
Base Pressure	670	kPa
Mean Effective Stress	50	kPa
Differential Pressure	30	kPa
Hydraulic gradient	33	
Mean rate of flow	0.60556	ml/min
Temperature during test	20	°C

PERMEABILITY, *kv*

(at 20°C) **3.7 x 10^{-8}** **m/s**

Notes Differential pressure increased to 30kPa after 5220 minutes due to insufficient flow.
Sample noted as very wet.

Ref SLR6.6 Rev 2.0 Feb18	SOCOTEC	1157	Printed:17/02/2020 11:24
Figure **TXLP** sheet 1 of 1			

© Copyright 2017 SOCOTEC UK Limited. All rights reserved

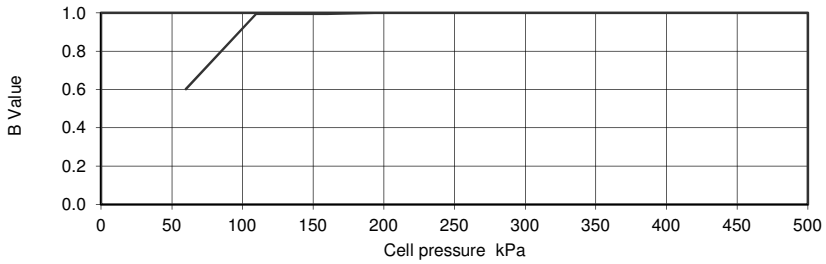
Determination of Permeability in a Triaxial Cell
(BS1377 : Part 6 : 1990, clause 6 - Constant Head test)

Project No	A9031-19	Sample Details:	Hole No.	ATK-RC-02		
Project Name	HAVANT THICKET WATER STORAGE		Depth (m BGL)	4.00-4.50		
			Sample No	20	Type	B
			ID			
			Spec Ref			

Specimen Details

				Initial	Final	
Soil Description	Brown clayey SAND					
Specimen Type /Preparation	RECOMPACTED using 4.5kg effort at as received moisture content.		Bulk Density	2.06	2.13	Mg/m³
			Water Content	27.7	22.8	%
Length	96.8	mm	Dry density	1.61	1.73	Mg/m³
Diameter	101.0	mm	Voids ratio	0.71	0.59	
Particle density	2.75	Mg/m³ Assumed	Degree of saturation	108	107	%

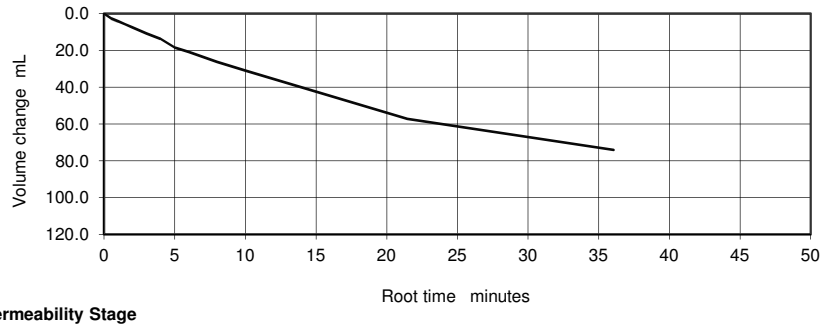
Saturation Stage



Method:
Increments of cell pressure only

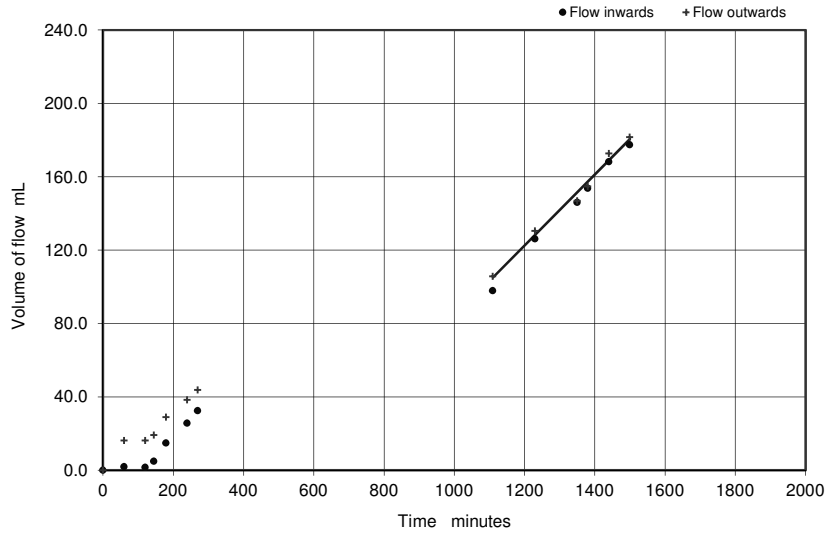
Cell pressure increments	50	kPa
Differential Pressure	0	kPa
Final Cell Pressure	210	kPa
Final pore water pressure	186	kPa
Final B Value	1.00	

Consolidation Stage



Drainage Condition	to one end only	
Cell pressure applied	380	kPa
Back pressure applied	300	kPa
Effective stress	80	kPa

Permeability Stage



Cell Pressure	385	kPa
Top Pressure	285	kPa
Base Pressure	325	kPa
Mean Effective Stress	80	kPa
Differential Pressure	40	kPa
Hydraulic gradient	42	
Mean rate of flow	0.19349	ml/min
Temperature during test	20	°C

PERMEABILITY, *kv*

(at 20°C) **9.5 x 10^{-9}** **m/s**

Notes H.G = 10kPa increasing to 20kPa due to insufficient flow

Ref			Figure
SLR6.6 Rev 2.0 Feb18	SOCOTEC UKAS TESTING 1157	Printed:17/02/2020 12:05	**TXLP** sheet 1 of 1

© Copyright 2017 SOCOTEC UK Limited. All rights reserved

Determination of Permeability in a Triaxial Cell
(BS1377 : Part 6 : 1990, clause 6 - Constant Head test)

Project No	A9031-19	Sample Details:	Hole No.	ATK-TP-05		
Project Name	HAVANT THICKET WATER STORAGE		Depth (m BGL)	0.40-0.50		
			Sample No	3	Type	B
			ID			
			Spec Ref			

Specimen Details

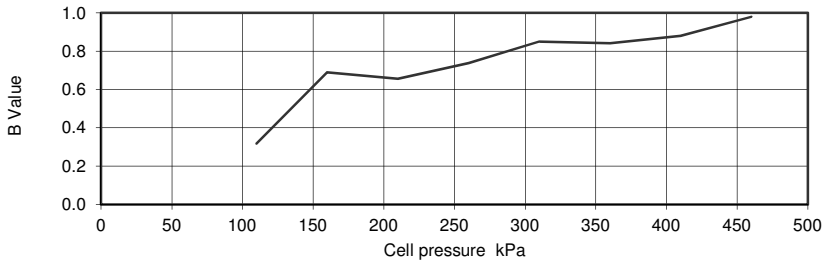
Soil Description: Soft brown sandy CLAY.

Specimen Type /Preparation: RECOMPACTED using 4.5kg effort at as received moisture content.

Length	98.6	mm	
Diameter	101.0	mm	
Particle density	2.65	Mg/m³	Assumed

	Initial	Final	
Bulk Density	2.02	2.04	Mg/m³
Water Content	26.1	24.9	%
Dry density	1.60	1.64	Mg/m³
Voids ratio	0.65	0.62	
Degree of saturation	106	106	%

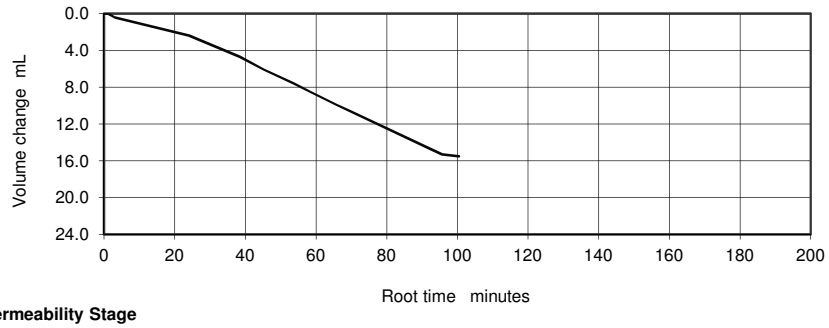
Saturation Stage



Method: Increments of cell and back pressure

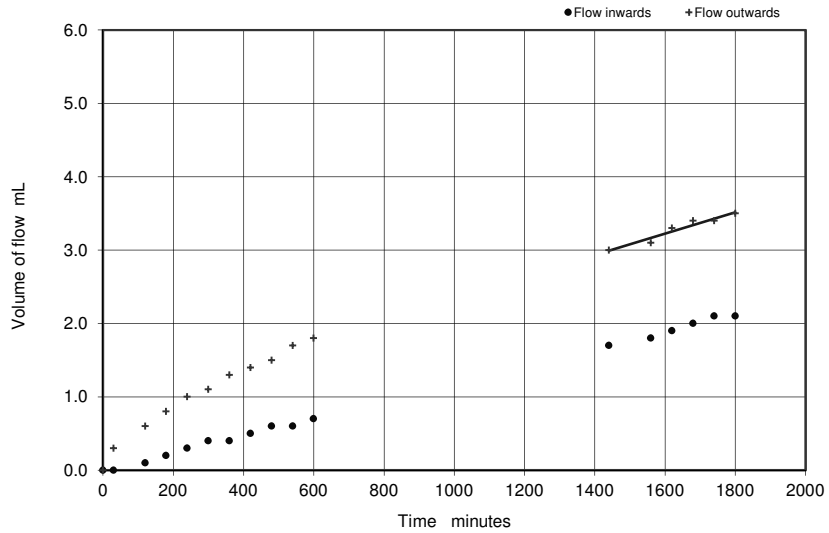
Cell pressure increments	50	kPa
Differential Pressure	10	kPa
Final Cell Pressure	460	kPa
Final pore water pressure	442	kPa
Final B Value	1.00	

Consolidation Stage



Drainage Condition	to one end only	
Cell pressure applied	475	kPa
Back pressure applied	450	kPa
Effective stress	25	kPa

Permeability Stage



Cell Pressure	480	kPa
Top Pressure	450	kPa
Base Pressure	460	kPa
Mean Effective Stress	25	kPa
Differential Pressure	10	kPa
Hydraulic gradient	10	
Mean rate of flow	0.00145	ml/min
Temperature during test	19.7	°C

PERMEABILITY, *kv*

(at 20°C) **2.9×10^{-10}** m/s

Notes H.G=10kPa

Ref SLR6.6 Rev 2.0 Feb18	SOCOTEC	1157	Printed:17/02/2020 12:50
Figure **TXLP** sheet 1 of 1			

© Copyright 2017 SOCOTEC UK Limited. All rights reserved

Determination of Permeability in a Triaxial Cell
(BS1377 : Part 6 : 1990, clause 6 - Constant Head test)

Project No	A9031-19	Sample Details:	Hole No.	ATK-TP-05		
Project Name	HAVANT THICKET WATER STORAGE		Depth (m BGL)	0.90-1.00		
			Sample No	6	Type	B
			ID			
			Spec Ref			

Specimen Details

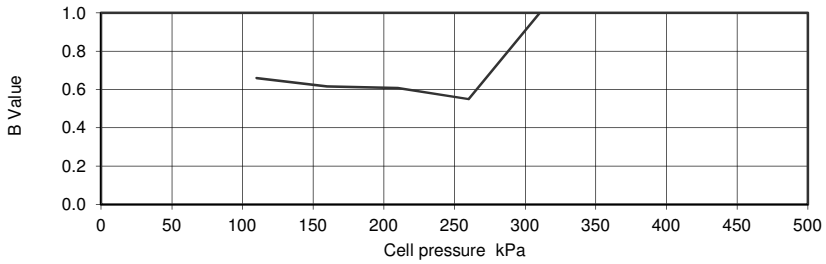
Soil Description: Soft brown very sandy CLAY.

Specimen Type /Preparation: RECOMPACTED using 4.5kg effort at as received moisture content.

Length	96.1	mm	
Diameter	101.3	mm	
Particle density	2.70	Mg/m³	Assumed

	Initial	Final	
Bulk Density	1.96	2.08	Mg/m³
Water Content	26.7	27.4	%
Dry density	1.54	1.64	Mg/m³
Voids ratio	0.75	0.65	
Degree of saturation	96	113	%

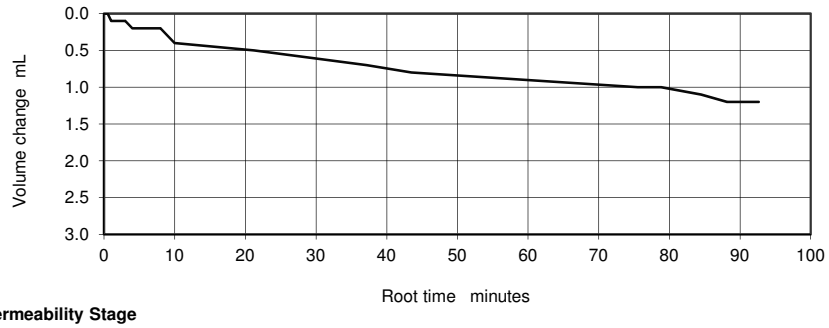
Saturation Stage



Method:
Increments of cell and back pressure

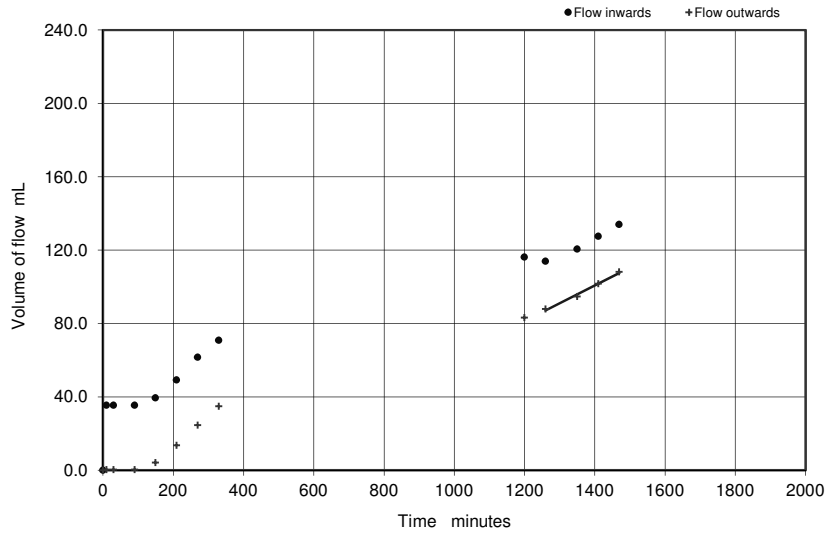
Cell pressure increments	50	kPa
Differential Pressure	10	kPa
Final Cell Pressure	310	kPa
Final pore water pressure	292	kPa
Final B Value	1.04	

Consolidation Stage



Drainage Condition	to one end only	
Cell pressure applied	325	kPa
Back pressure applied	300	kPa
Effective stress	25	kPa

Permeability Stage



Cell Pressure	330	kPa
Top Pressure	300	kPa
Base Pressure	310	kPa
Mean Effective Stress	25	kPa
Differential Pressure	10	kPa
Hydraulic gradient	11	
Mean rate of flow	0.09741	ml/min
Temperature during test	20.4	°C

PERMEABILITY, *kv*

(at 20°C) **1.9 x 10^{-8}** **m/s**

Notes Differential pressure increased to 20kPa after 330 minutes due to insufficient flow.

Ref SLR6.6 Rev 2.0 Feb18	SOCOTEC	1157	Printed:18/02/2020 06:21
Figure **TXLP** sheet 1 of 1			

© Copyright 2017 SOCOTEC UK Limited. All rights reserved

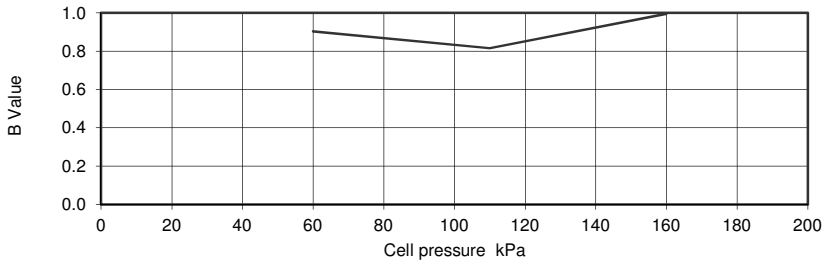
Determination of Permeability in a Triaxial Cell
(BS1377 : Part 6 : 1990, clause 6 - Constant Head test)

Project No	A9031-19	Sample Details:	Hole No.	ATK-TP-07		
Project Name	HAVANT THICKET WATER STORAGE		Depth (m BGL)	1.60-1.70		
			Sample No	9	Type	B
			ID			
			Spec Ref			

Specimen Details

Soil Description	Brown SAND.			Initial	Final	
Specimen Type /Preparation	RECOMPACTED using 4.5kg effort at as received moisture content.		Bulk Density	1.98	2.09	Mg/m³
			Water Content	29.3	28.9	%
Length	92.7	mm	Dry density	1.53	1.62	Mg/m³
Diameter	100.7	mm	Voids ratio	0.80	0.69	
Particle density	2.75	Mg/m³ Assumed	Degree of saturation	101	114	%

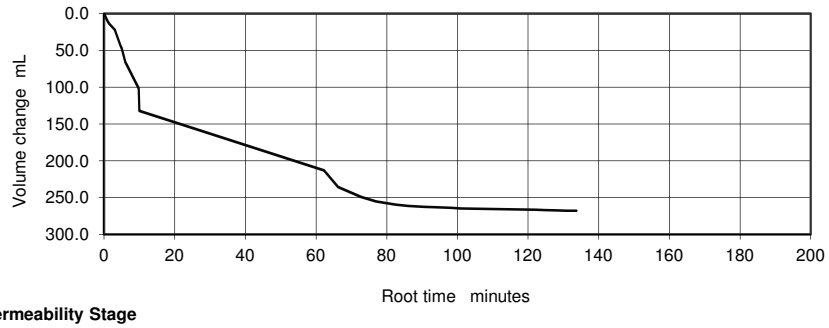
Saturation Stage



Method:
Increments of cell and back pressure

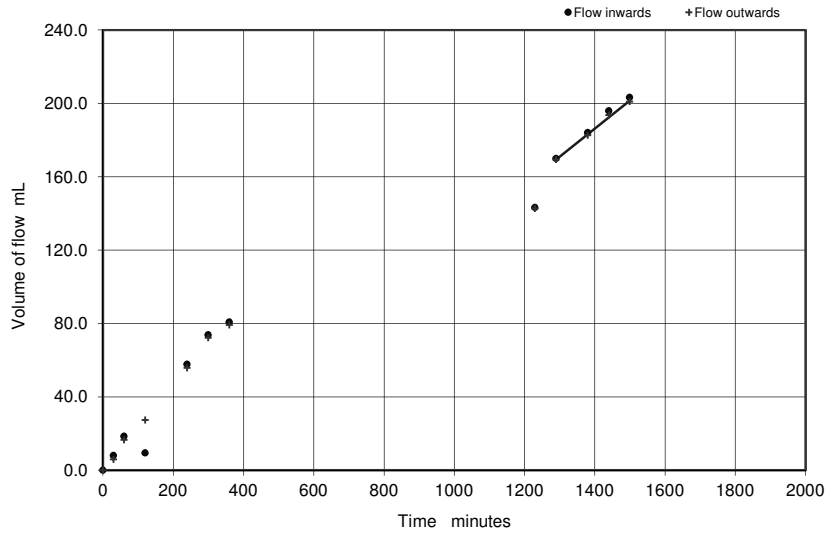
Cell pressure increments	50	kPa
Differential Pressure	10	kPa
Final Cell Pressure	160	kPa
Final pore water pressure	154	kPa
Final B Value	1.00	

Consolidation Stage



Drainage Condition	to one end only	
Cell pressure applied	330	kPa
Back pressure applied	300	kPa
Effective stress	30	kPa

Permeability Stage



Cell Pressure	335	kPa
Top Pressure	300	kPa
Base Pressure	310	kPa
Mean Effective Stress	30	kPa
Differential Pressure	10	kPa
Hydraulic gradient	11	
Mean rate of flow	0.15340	ml/min
Temperature during test	20.4	°C

PERMEABILITY, *kv*

(at 20°C) **2.9 x 10^{-8}** **m/s**

Notes

Ref SLR6.6 Rev 2.0 Feb18	SOCOTEC	1157	Printed:18/02/2020 06:34
Figure **TXLP** sheet 1 of 1			

© Copyright 2017 SOCOTEC UK Limited. All rights reserved

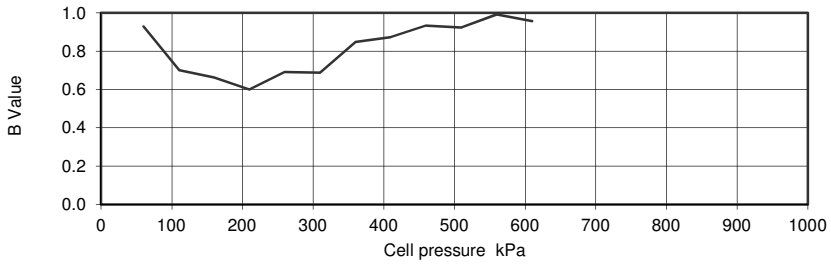
Determination of Permeability in a Triaxial Cell
(BS1377 : Part 6 : 1990, clause 6 - Constant Head test)

Project No	A9031-19	Sample Details:	Hole No.	ATK-TP-08		
Project Name	HAVANT THICKET WATER STORAGE		Depth (m BGL)	1.50		
			Sample No	11	Type	B
			ID			
			Spec Ref			

Specimen Details

				Initial	Final	
Soil Description	Brown slightly clayey SAND.					
Specimen Type /Preparation	RECOMPACTED using 4.5kg effort at as received moisture content.		Bulk Density	1.97	1.99	Mg/m³
			Water Content	28.7	29.4	%
Length	99.1	mm	Dry density	1.53	1.54	Mg/m³
Diameter	100.1	mm	Voids ratio	0.73	0.72	
Particle density	2.65	Mg/m³ Assumed	Degree of saturation	104	108	%

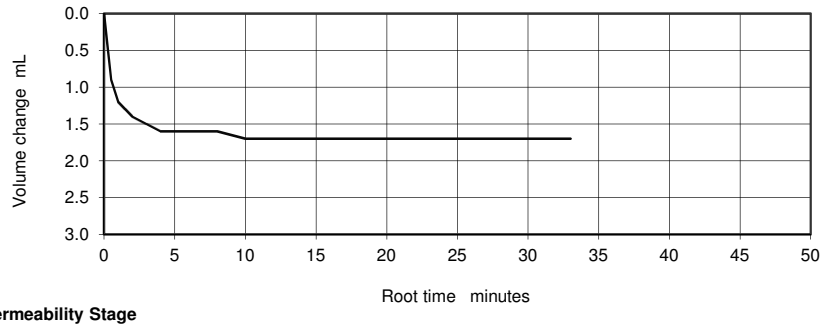
Saturation Stage



Method:
Increments of cell and back pressure

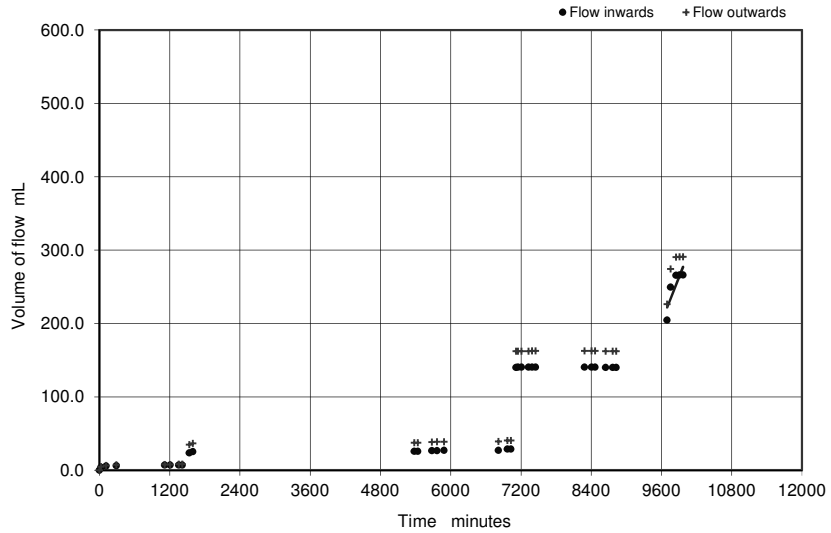
Cell pressure increments	50	kPa
Differential Pressure	10	kPa
Final Cell Pressure	610	kPa
Final pore water pressure	540	kPa
Final B Value	0.96	

Consolidation Stage



Drainage Condition	to one end only	
Cell pressure applied	580	kPa
Back pressure applied	550	kPa
Effective stress	30	kPa

Permeability Stage



Cell Pressure	585	kPa
Top Pressure	550	kPa
Base Pressure	580	kPa
Mean Effective Stress	20	kPa
Differential Pressure	30	kPa
Hydraulic gradient	31	
Mean rate of flow	0.20427	ml/min
Temperature during test	20.2	°C

PERMEABILITY, *kv*

(at 20°C) **1.4×10^{-8}** **m/s**

Notes Differential pressure increased from 10kPa to 30kPa after 8710 minutes due to insufficient flow.

Ref SLR6.6 Rev 2.0 Feb18	SOCOTEC	1157	Printed:18/02/2020 06:47
Figure **TXLP** sheet 1 of 1			

© Copyright 2017 SOCOTEC UK Limited. All rights reserved

Determination of shear strength by direct shear (Small shearbox apparatus)
(BS1377 : Part 7 : clause 4 : 1990)

Project No	A9031-19	Sample Details:	Hole No.	ATK-CP-03		
Project Name	Havant Thicket Water Storage		Depth (m BGL)	5.00-5.45		
			Sample No	22	Type	UT
			ID			
			Spec Ref			

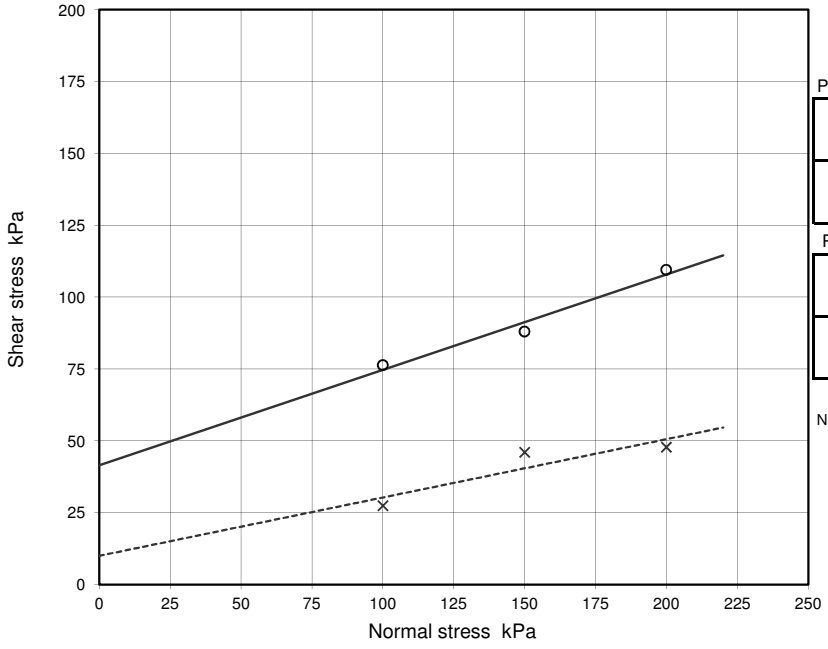
Soil Description	Firm greyish brown slightly sandy CLAY.
Specimen Type /Preparation	Undisturbed.

Specimen(s) nominally 60mm x 60mm square
Test(s) carried out in submerged condition
Particle density, assumed 2.65 Mg/m^3

Specimen Details		No.	1	2	3	4	5	6
Initial	Height	mm	25.1	25.1	25.1			
	Bulk Density	Mg/m^3	1.92	1.94	1.93			
	Water Content	%	27.2	25.4	26.5			
	Dry density	Mg/m^3	1.51	1.55	1.52			
	Voids ratio		0.753	0.709	0.740			
	Degree of Saturation	%	96	95	95			
Consol^n	Consolidation / Normal Stress applied	kPa	**100**	**150**	**200**			
	Change in height during consolidation	mm	-0.510	-0.458	-0.620			
	Voids ratio after consolidation		0.718	0.678	0.697			
Shear see note 1	Voids ratio at end of test		0.700	0.560	0.694			
	Moisture content at end of test	%	26.4	21.1	26.2			
	Saturation at end of test	%	100	100	100			

Shearing stage

Rate of displacement	Peak	mm/min	0.041	0.041	0.041			
	Residual	mm/min	0.103	0.103	0.103			
Peak values, (o)	Relative displacement	mm	1.79	2.02	1.24			
	Shear stress	kPa	76.3	88.0	109.5			
Residual values, (x)	No. of reversals		2	2	2			
	Relative displacement	mm	30.00	29.04	30.00			
	Shear stress	kPa	27.5	46.0	47.8			



Shear Strength Parameters

Peak strength, (o)		Regression	Manual
c '	kPa	41	-
Ø '	degrees	18½	-

Residual strength, (x)			
c'_R	kPa	10	-
$Ø'_R$	degrees	11½	-

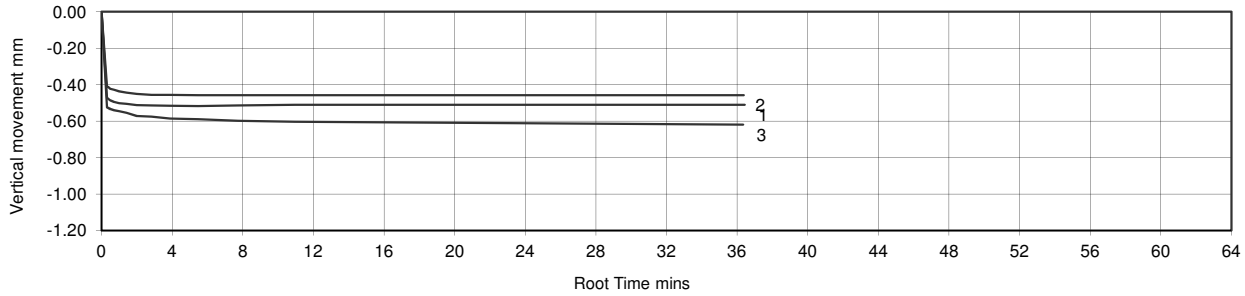
Notes :

1. After shear values based on BS1377. Pt 7 cl. 4.6.1.6 using δH calculated from consolidation and shear stages.

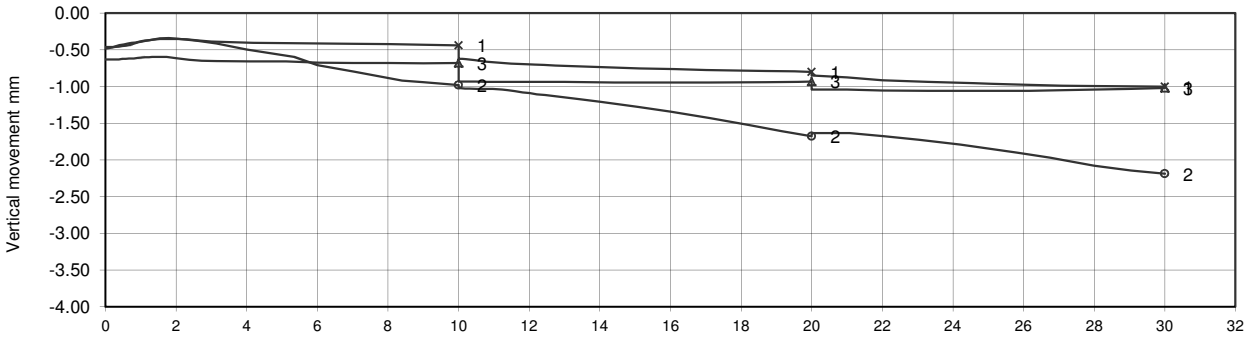
Determination of shear strength by direct shear (Small shearbox apparatus)
(BS1377 : Part 7 : clause 4 : 1990)

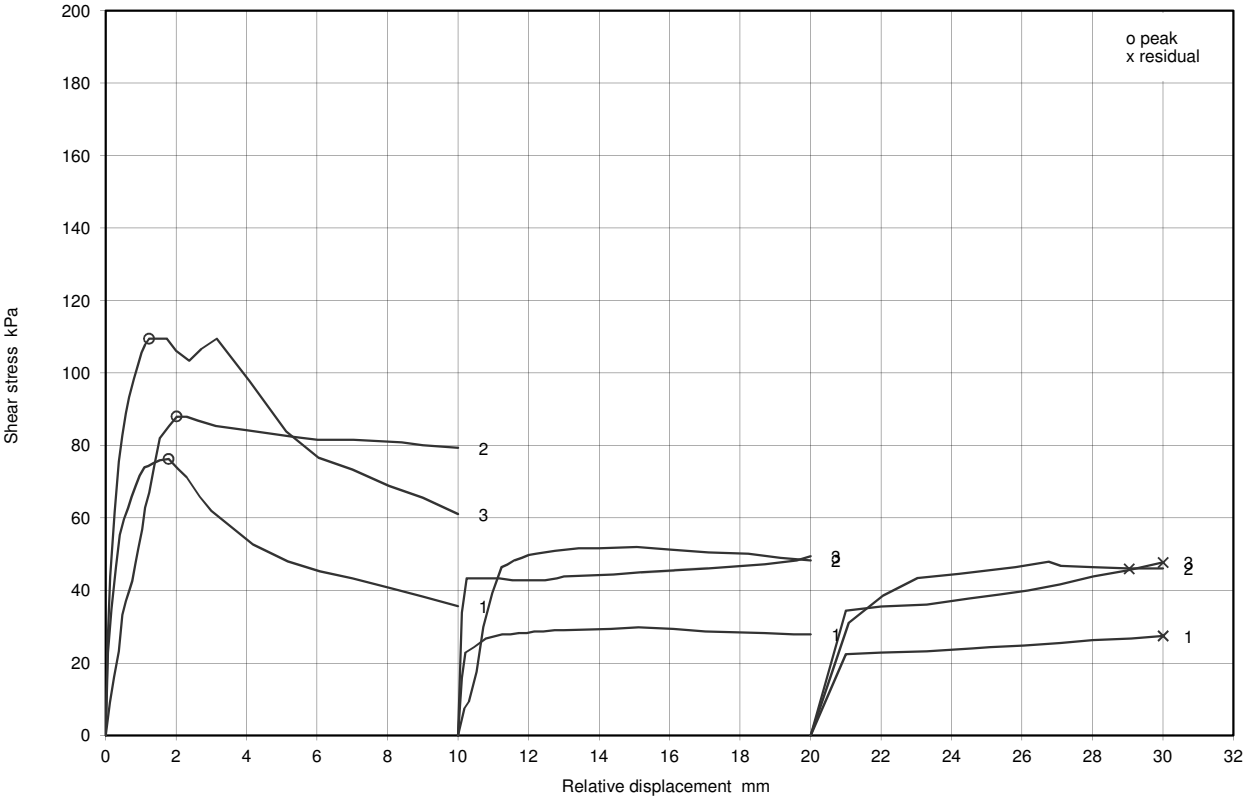
Project No	A9031-19	Sample Details:	Hole No.	ATK-CP-03		
Project Name	Havant Thicket Water Storage		Depth (m BGL)	5.00-5.45		
			Sample No	22	Type	UT
			ID			
			Spec Ref			

Consolidation stage(s)



Shearing stage(s)





Ref			Figure
SLR7.4 Rev 86.0 Feb18	SOCOTEC UKAS TESTING 0001	Printed:28/02/2020 10:04	**SSB** sheet 2 of 2

Determination of shear strength by direct shear (Small shearbox apparatus)
(BS1377 : Part 7 : clause 4 : 1990)

Project No	A9031-19	Sample Details:	Hole No.	ATK-CP-04		
Project Name	Havant Thicket Water Storage		Depth (m BGL)	2.00		
			Sample No	11	Type	UT
			ID			
			Spec Ref			

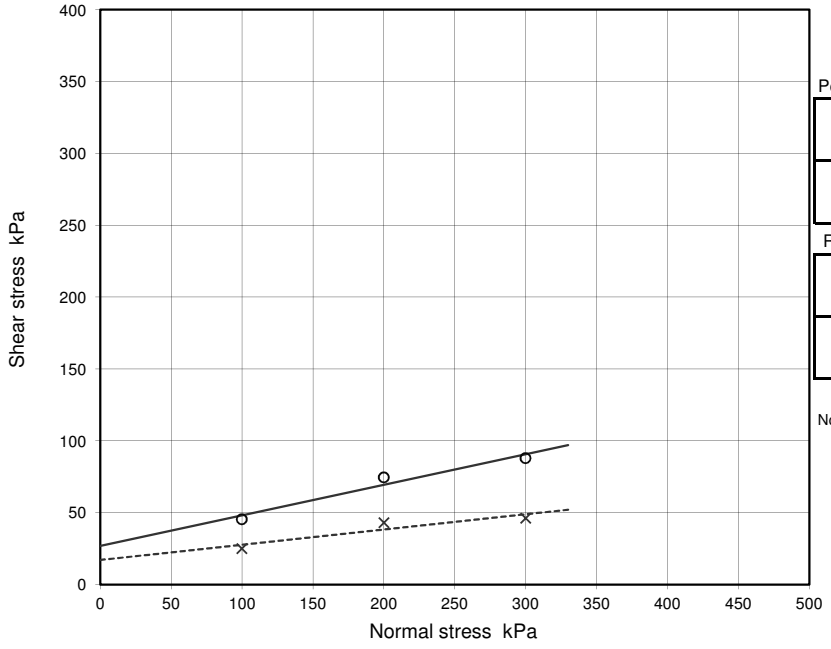
Soil Description	Firm brown CLAY.
Specimen Type /Preparation	Undisturbed.

Specimen(s) nominally 60mm x 60mm square
Test(s) carried out in submerged condition
Particle density, assumed 2.65 Mg/m^3

Specimen Details		No.	1	2	3	4	5	6
Initial	Height	mm	25.0	25.0	25.0			
	Bulk Density	Mg/m^3	1.88	1.89	1.86			
	Water Content	%	30.1	29.3	29.4			
	Dry density	Mg/m^3	1.45	1.46	1.44			
	Voids ratio		0.833	0.816	0.844			
	Degree of Saturation	%	96	95	92			
Consol^n	Consolidation / Normal Stress applied	kPa	**100**	**200**	**300**			
	Change in height during consolidation	mm	-0.676	-1.398	-2.330			
	Voids ratio after consolidation		0.784	0.715	0.672			
Shear see note 1	Voids ratio at end of test		0.745	0.618	0.623			
	Moisture content at end of test	%	28.1	23.3	23.5			
	Saturation at end of test	%	100	100	100			

Shearing stage

Rate of displacement	Peak	mm/min	0.028	0.028	0.028			
	Residual	mm/min	0.070	0.070	0.070			
Peak values, (o)	Relative displacement	mm	1.87	2.80	2.15			
	Shear stress	kPa	45.4	74.6	87.9			
Residual values, (x)	No. of reversals		2	2	2			
	Relative displacement	mm	30.00	30.00	30.00			
	Shear stress	kPa	25.1	43.2	46.2			



Shear Strength Parameters

Peak strength, (o)		Regression	Manual
c '	kPa	27	-
Ø '	degrees	12	-

Residual strength, (x)			
c'_R	kPa	17	-
$Ø'_R$	degrees	6	-

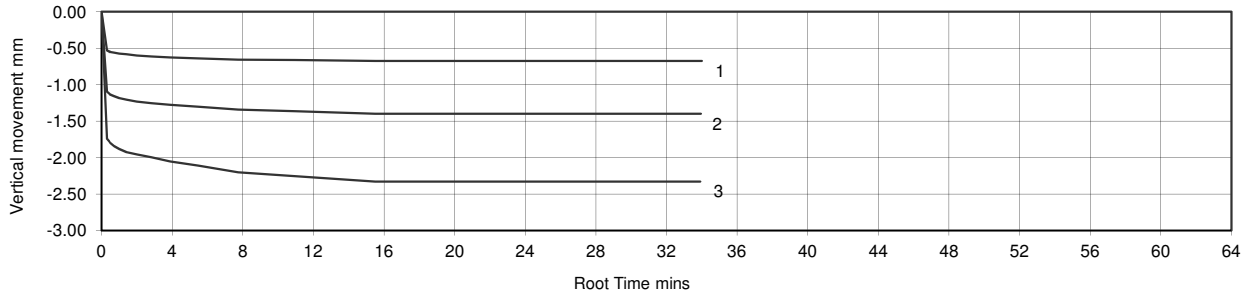
Notes :

1 After shear values based on BS1377. Pt 7 cl. 4.6.1.6 using δH calculated from consolidation and shear stages

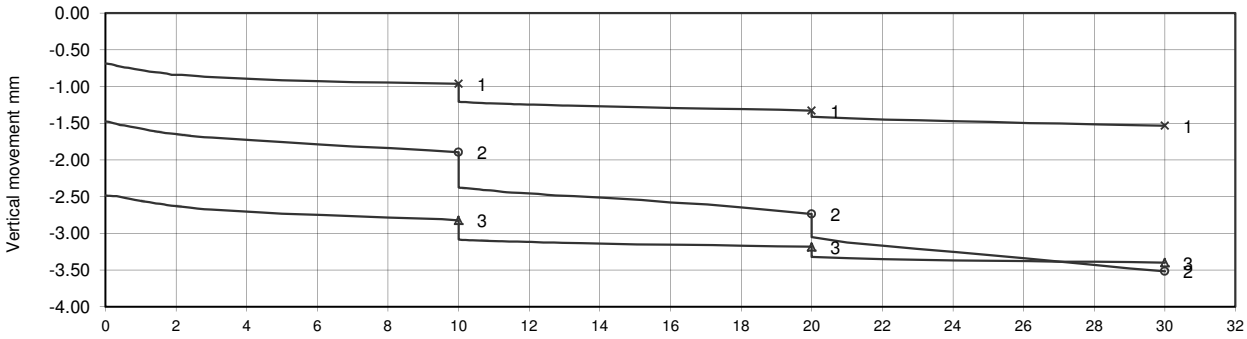
Determination of shear strength by direct shear (Small shearbox apparatus)
(BS1377 : Part 7 : clause 4 : 1990)

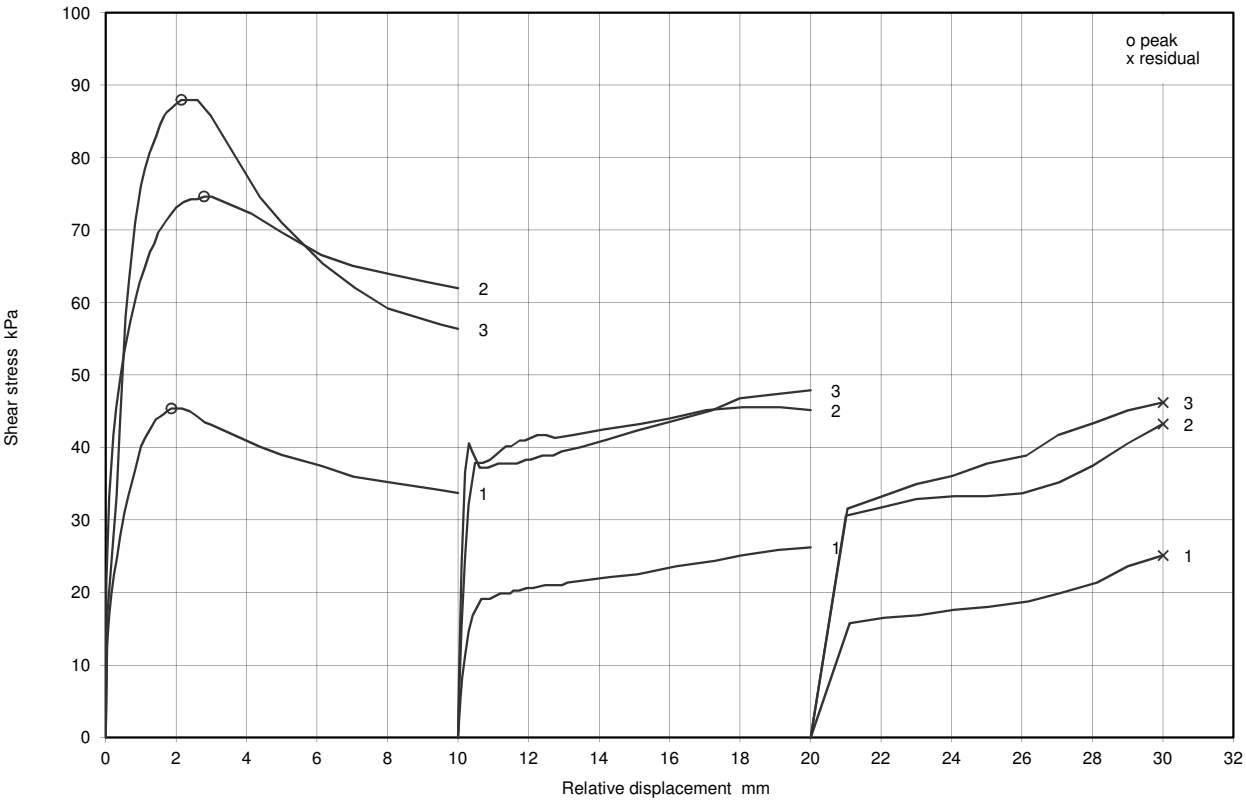
Project No	A9031-19	Sample Details:	Hole No.	ATK-CP-04		
Project Name	Havant Thicket Water Storage		Depth (m BGL)	2.00		
			Sample No	11	Type	UT
			ID			
			Spec Ref			

Consolidation stage(s)



Shearing stage(s)





Ref			Figure
SLR7.4 Rev 86.0 Feb18	SOCOTEC UKAS TESTING 0001	Printed:28/02/2020 10:10	**SSB** sheet 2 of 2

Determination of shear strength by direct shear (Small shearbox apparatus)
(BS1377 : Part 7 : clause 4 : 1990)

Project No	A9031-19	Sample Details:	Hole No.	ATK-CP-04		
Project Name	Havant Thicket Water Storage		Depth (m BGL)	10.00		
			Sample No	42	Type	UT
			ID			
			Spec Ref			

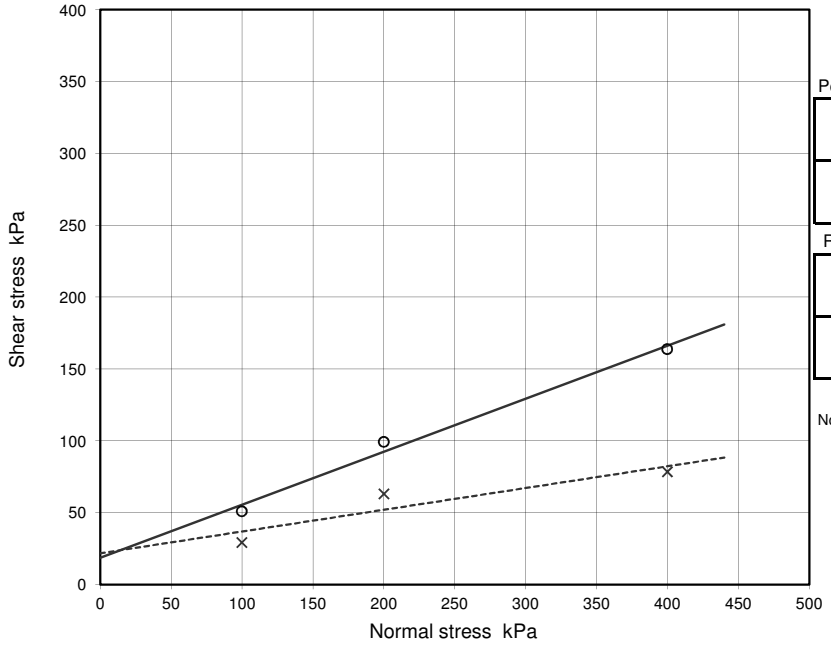
Soil Description	Firm grey CLAY.
Specimen Type /Preparation	Undisturbed.

Specimen(s) nominally 60mm x 60mm square
Test(s) carried out in submerged condition
Particle density, assumed 2.65 Mg/m^3

Specimen Details		No.	1	2	3	4	5	6
Initial	Height	mm	25.0	25.0	25.0			
	Bulk Density	Mg/m^3	1.98	2.00	1.98			
	Water Content	%	25.9	23.9	24.3			
	Dry density	Mg/m^3	1.58	1.61	1.59			
	Voids ratio		0.682	0.641	0.667			
	Degree of Saturation	%	101	99	97			
Consol^n	Consolidation / Normal Stress applied	kPa	**100**	**200**	**400**			
	Change in height during consolidation	mm	-0.504	-0.878	-1.404			
	Voids ratio after consolidation		0.648	0.583	0.573			
Shear see note 1	Voids ratio at end of test		0.560	0.537	0.507			
	Moisture content at end of test	%	21.1	20.3	19.1			
	Saturation at end of test	%	100	100	100			

Shearing stage

Rate of displacement	Peak	mm/min	0.030	0.030	0.030			
	Residual	mm/min	0.075	0.075	0.075			
Peak values, (o)	Relative displacement	mm	2.13	2.12	1.96			
	Shear stress	kPa	50.8	99.3	163.8			
Residual values, (x)	No. of reversals		2	2	2			
	Relative displacement	mm	30.00	30.00	30.00			
	Shear stress	kPa	29.3	63.2	78.5			



Shear Strength Parameters

Peak strength, (o)		Regression	Manual
c '	kPa	19	-
Ø '	degrees	20	-

Residual strength, (x)			
c'_R	kPa	22	-
$Ø'_R$	degrees	8½	-

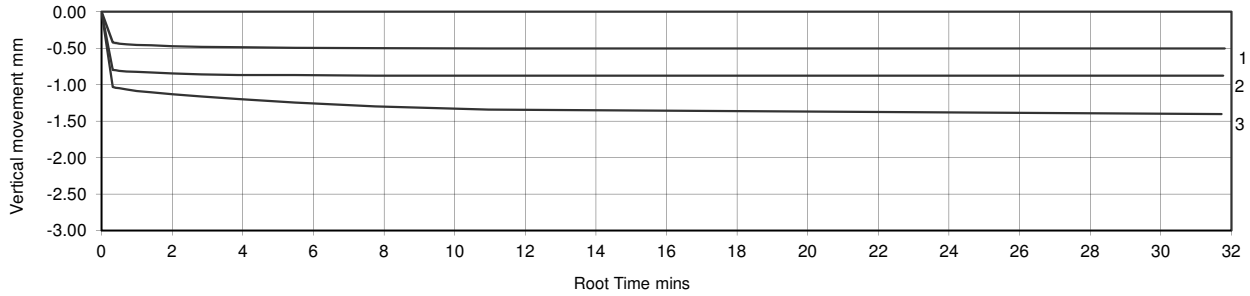
Notes :

1 After shear values based on BS1377. Pt 7 cl. 4.6.1.6 using δH calculated from consolidation and shear stages

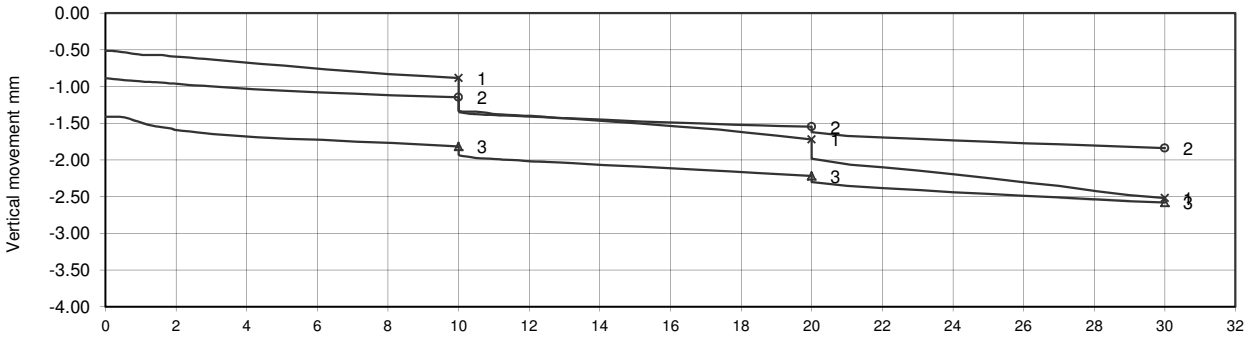
Determination of shear strength by direct shear (Small shearbox apparatus)
(BS1377 : Part 7 : clause 4 : 1990)

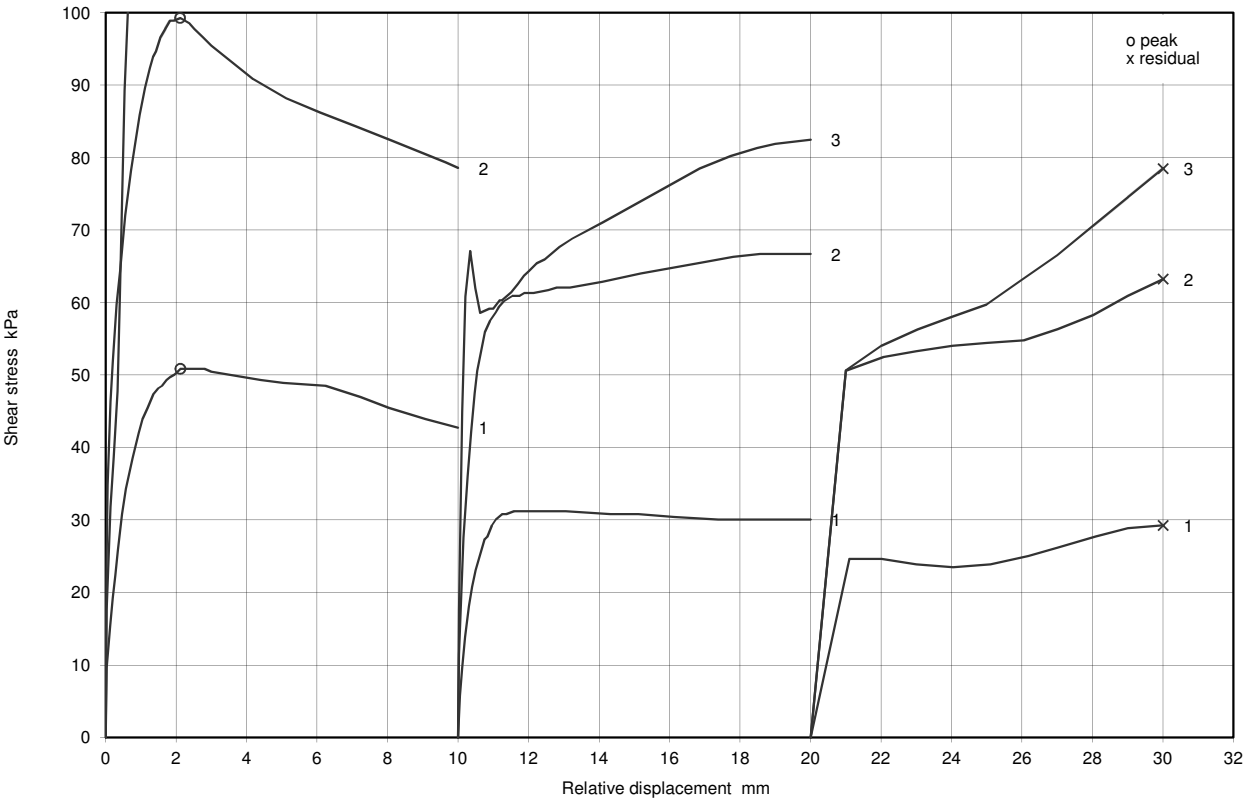
Project No	A9031-19	Sample Details:	Hole No.	ATK-CP-04		
Project Name	Havant Thicket Water Storage		Depth (m BGL)	10.00		
			Sample No	42	Type	UT
			ID			
			Spec Ref			

Consolidation stage(s)



Shearing stage(s)





Ref			Figure
SLR7.4 Rev 86.0 Feb18	SOCOTEC UKAS TESTING 0001	Printed:10/02/2020 18:14	**SSB** sheet 2 of 2

Determination of shear strength by direct shear (Small shearbox apparatus)
(BS1377 : Part 7 : clause 4 : 1990)

Project No	A9031-19	Sample Details:	Hole No.	ATK-CP-05		
Project Name	Havant Thicket Water Storage		Depth (m BGL)	2.00		
			Sample No	11	Type	UT
			ID			
			Spec Ref			

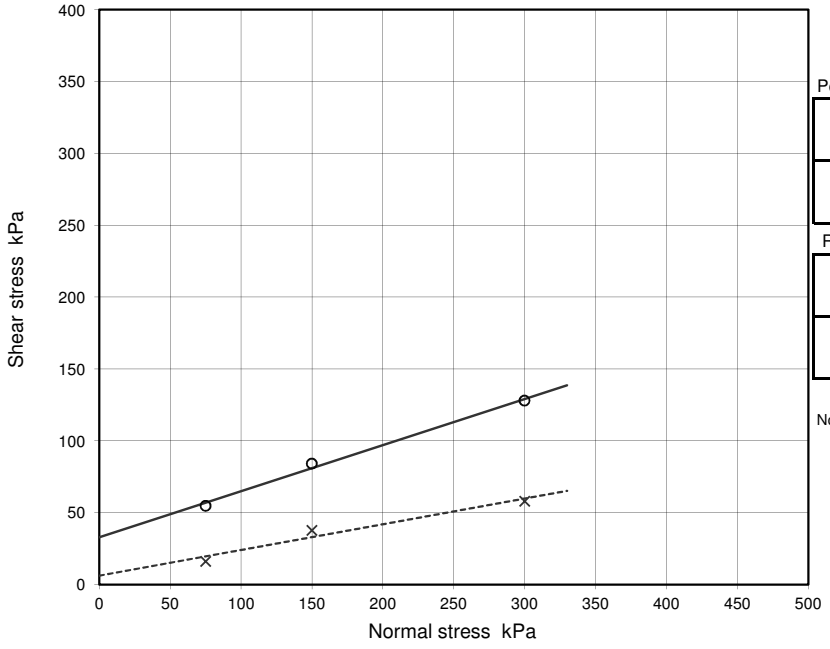
Soil Description	Firm brown CLAY.
Specimen Type /Preparation	Undisturbed.

Specimen(s) nominally 60mm x 60mm square
Test(s) carried out in submerged condition
Particle density, assumed 2.65 Mg/m^3

Specimen Details		No.	1	2	3	4	5	6
Initial	Height	mm	25.0	25.0	25.0			
	Bulk Density	Mg/m^3	1.86	1.87	1.85			
	Water Content	%	31.9	33.3	32.4			
	Dry density	Mg/m^3	1.41	1.40	1.40			
	Voids ratio		0.882	0.890	0.899			
	Degree of Saturation	%	96	99	95			
Consol^n	Consolidation / Normal Stress applied	kPa	**75**	**150**	**300**			
	Change in height during consolidation	mm	-0.360	-0.572	-1.466			
	Voids ratio after consolidation		0.855	0.847	0.787			
Shear see note 1	Voids ratio at end of test		0.866	0.828	0.713			
	Moisture content at end of test	%	32.7	31.2	26.9			
	Saturation at end of test	%	100	100	100			

Shearing stage

Rate of displacement	Peak	mm/min	0.038	0.038	0.038			
	Residual	mm/min	0.094	0.094	0.094			
Peak values, (o)	Relative displacement	mm	1.26	1.31	2.07			
	Shear stress	kPa	54.7	84.2	128.0			
Residual values, (x)	No. of reversals		2	2	2			
	Relative displacement	mm	16.00	30.00	30.00			
	Shear stress	kPa	16.1	37.9	58.1			



Shear Strength Parameters

Peak strength, (o)		Regression	Manual
c '	kPa	33	-
Ø '	degrees	18	-

Residual strength, (x)			
c'_R	kPa	6.0	-
$Ø'_R$	degrees	10	-

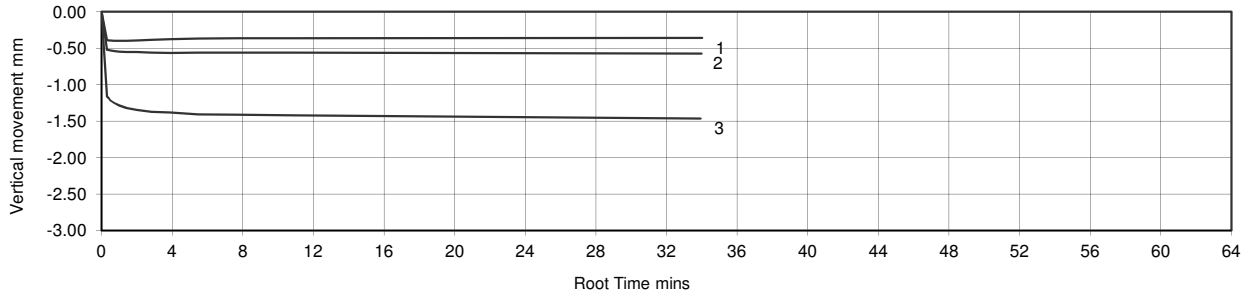
Notes :

1 After shear values based on BS1377. Pt 7 cl. 4.6.1.6 using δH calculated from consolidation and shear stages

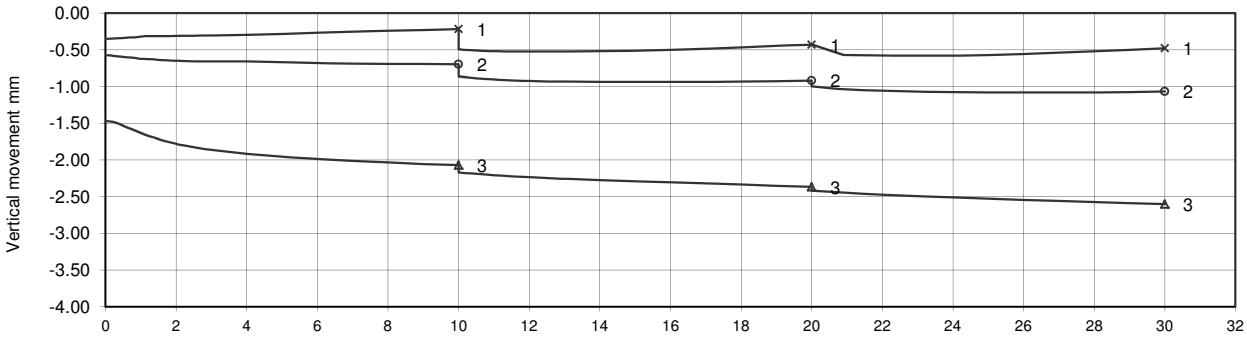
Determination of shear strength by direct shear (Small shearbox apparatus)
(BS1377 : Part 7 : clause 4 : 1990)

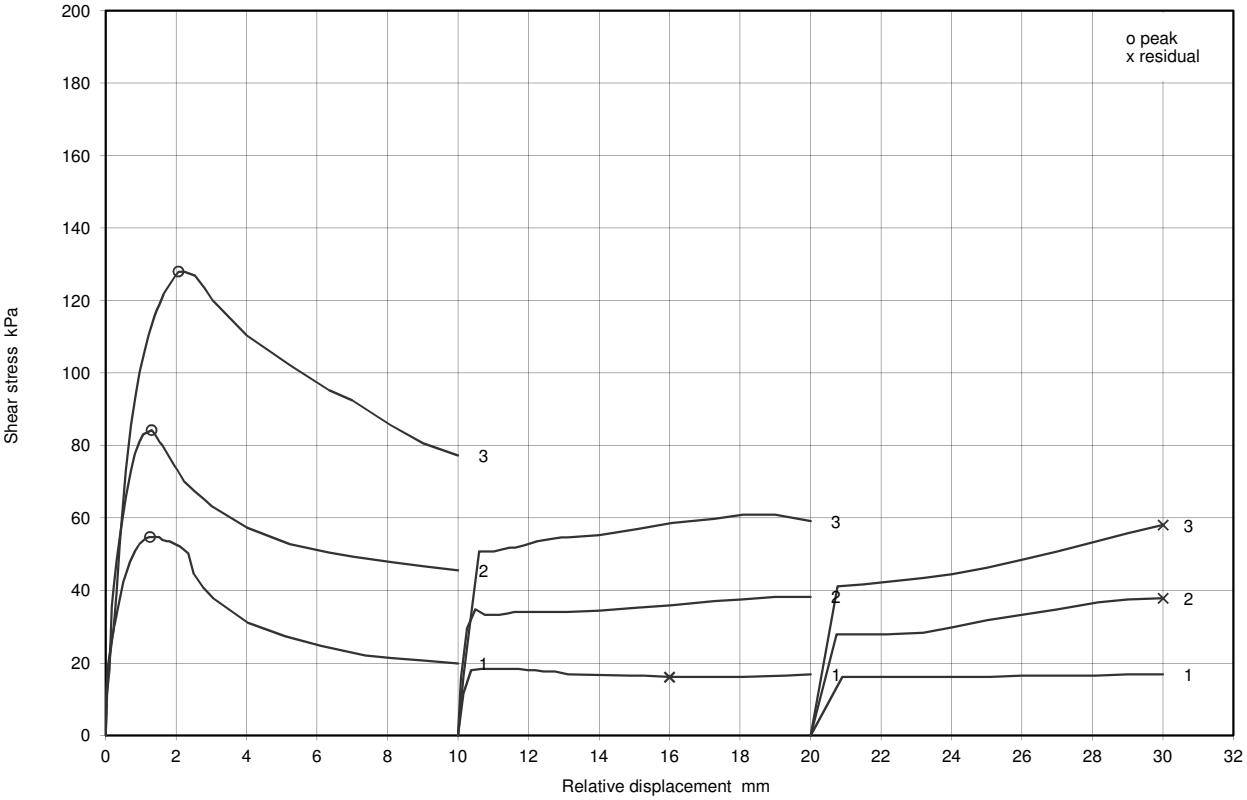
Project No	A9031-19	Sample Details:	Hole No.	ATK-CP-05		
Project Name	Havant Thicket Water Storage		Depth (m BGL)	2.00		
			Sample No	11	Type	UT
			ID			
			Spec Ref			

Consolidation stage(s)



Shearing stage(s)





Ref			Figure
SLR7.4 Rev 86.0 Feb18	SOCOTEC UKAS TESTING 0001	Printed:10/02/2020 18:14	**SSB** sheet 2 of 2

Determination of shear strength by direct shear (Small shearbox apparatus)
(BS1377 : Part 7 : clause 4 : 1990)

Project No	A9031-19	Sample Details:	Hole No.	ATK-CP-05		
Project Name	Havant Thicket Water Storage		Depth (m BGL)	6.00		
			Sample No	26	Type	UT
			ID			
			Spec Ref			

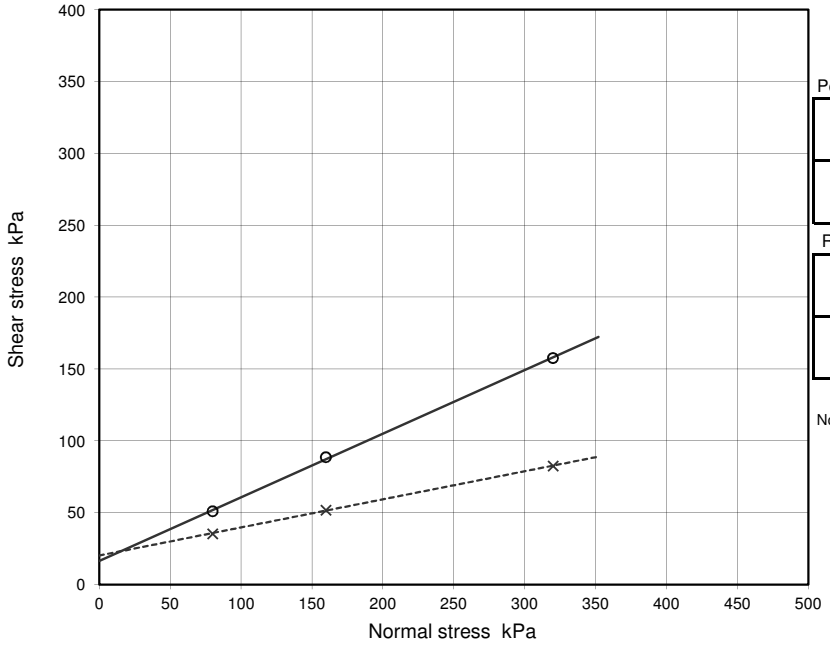
Soil Description	Firm grey CLAY.
Specimen Type /Preparation	Undisturbed.

Specimen(s) nominally 60mm x 60mm square
Test(s) carried out in submerged condition
Particle density, assumed 2.65 Mg/m^3

Specimen Details		No.	1	2	3	4	5	6
Initial	Height	mm	25.0	25.0	25.0			
	Bulk Density	Mg/m^3	1.97	1.99	1.99			
	Water Content	%	24.5	25.0	23.8			
	Dry density	Mg/m^3	1.58	1.59	1.61			
	Voids ratio		0.678	0.668	0.649			
	Degree of Saturation	%	96	99	97			
Consol^n	Consolidation / Normal Stress applied	kPa	**80**	**160**	**320**			
	Change in height during consolidation	mm	-0.120	-0.404	-1.210			
	Voids ratio after consolidation		0.669	0.641	0.569			
Shear see note 1	Voids ratio at end of test		0.643	0.618	0.423			
	Moisture content at end of test	%	24.3	22.1	16.0			
	Saturation at end of test	%	100	95	100			

Shearing stage

Rate of displacement	Peak	mm/min	0.038	0.038	0.038			
	Residual	mm/min	0.094	0.094				
Peak values, (o)	Relative displacement	mm	2.59	2.33	2.52			
	Shear stress	kPa	50.8	88.5	157.5			
Residual values, (x)	No. of reversals		2	2	2			
	Relative displacement	mm	10.00	30.00	30.00			
	Shear stress	kPa	35.4	51.7	82.5			



Shear Strength Parameters

Peak strength, (o)		Regression	Manual
c '	kPa	16	-
Ø '	degrees	24	-

Residual strength, (x)			
c'_R	kPa	20	-
$Ø'_R$	degrees	11	-

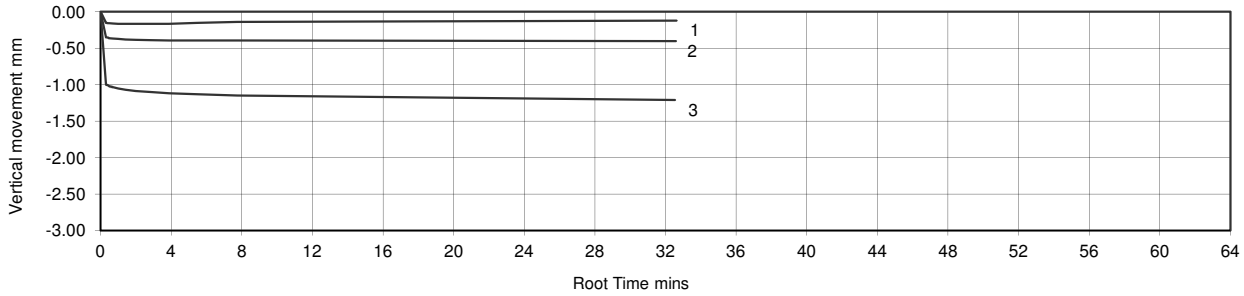
Notes :

1 After shear values based on BS1377. Pt 7 cl. 4.6.1.6 using δH calculated from consolidation and shear stages

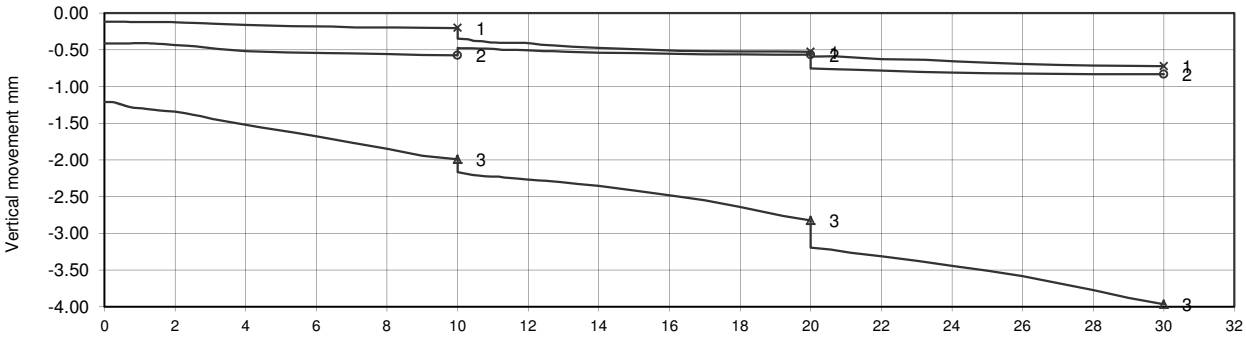
Determination of shear strength by direct shear (Small shearbox apparatus)
(BS1377 : Part 7 : clause 4 : 1990)

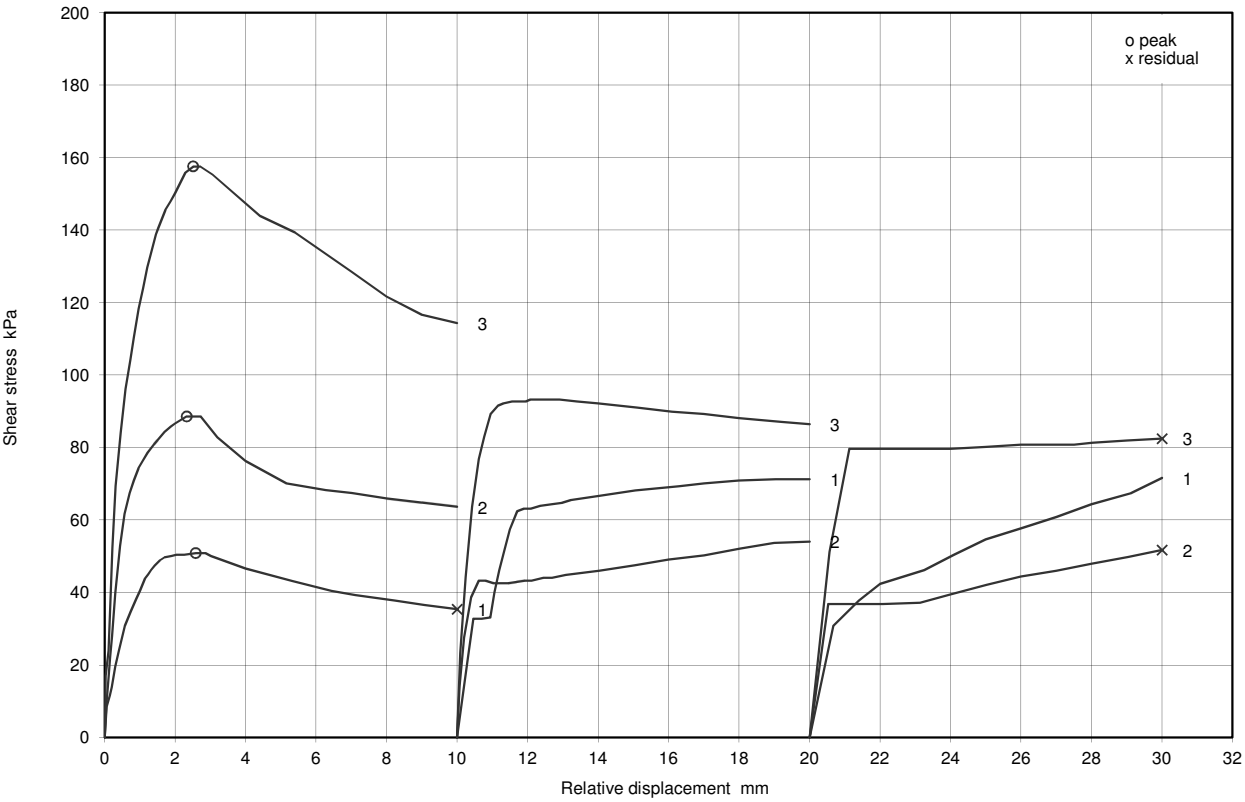
Project No	A9031-19	Sample Details:	Hole No.	ATK-CP-05		
Project Name	Havant Thicket Water Storage		Depth (m BGL)	6.00		
			Sample No	26	Type	UT
			ID			
			Spec Ref			

Consolidation stage(s)



Shearing stage(s)





Ref			Figure
SLR7.4 Rev 86.0 Feb18	SOCOTEC UKAS TESTING 0001	Printed:10/02/2020 18:15	**SSB** sheet 2 of 2

Determination of shear strength by direct shear (Small shearbox apparatus)
(BS1377 : Part 7 : clause 4 : 1990)

Project No	A9031-19	Sample Details:	Hole No.	ATK-CP-05		
Project Name	Havant Thicket Water Storage		Depth (m BGL)	14.50		
			Sample No	55	Type	UT
			ID			
			Spec Ref			

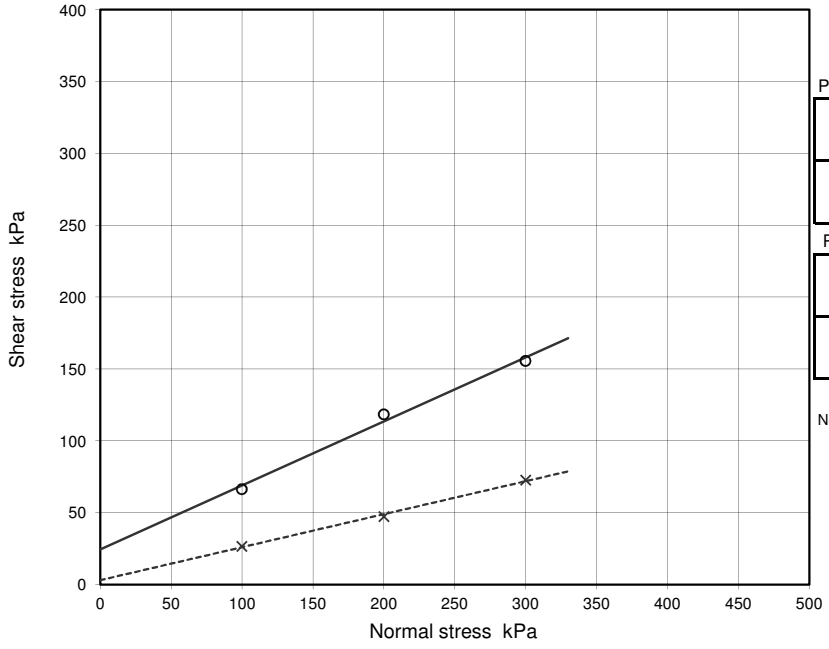
Soil Description	Firm to stiff light brownish grey mottled reddish brown slightly sandy silty CLAY.
Specimen Type /Preparation	Undisturbed.

Specimen(s) nominally 60mm x 60mm square
Test(s) carried out in submerged condition
Particle density, assumed 2.65 Mg/m^3

Specimen Details		No.	1	2	3	4	5	6
Initial	Height	mm	25.2	25.2	25.2			
	Bulk Density	Mg/m^3	2.09	2.12	2.11			
	Water Content	%	17.6	16.5	16.3			
	Dry density	Mg/m^3	1.78	1.82	1.81			
	Voids ratio		0.491	0.456	0.463			
	Degree of Saturation	%	95	96	94			
Consol^n	Consolidation / Normal Stress applied	kPa	**100**	**200**	**300**			
	Change in height during consolidation	mm	-0.254	-0.468	-0.800			
	Voids ratio after consolidation		0.476	0.429	0.417			
Shear see note 1	Voids ratio at end of test		0.368	0.282	0.284			
	Moisture content at end of test	%	13.9	10.6	10.7			
	Saturation at end of test	%	100	100	100			

Shearing stage

Rate of displacement	Peak	mm/min	0.038	0.038	0.038			
	Residual	mm/min	0.094	0.094	0.094			
Peak values, (o)	Relative displacement	mm	5.09	2.84	5.26			
	Shear stress	kPa	66.4	118.4	155.4			
Residual values, (x)	No. of reversals		2	2	2			
	Relative displacement	mm	30.00	28.00	30.00			
	Shear stress	kPa	26.7	47.4	72.6			



Shear Strength Parameters

Peak strength, (o)		Regression	Manual
c '	kPa	24	-
Ø '	degrees	24	-

Residual strength, (x)			
c'_R	kPa	3.0	-
$Ø'_R$	degrees	13	-

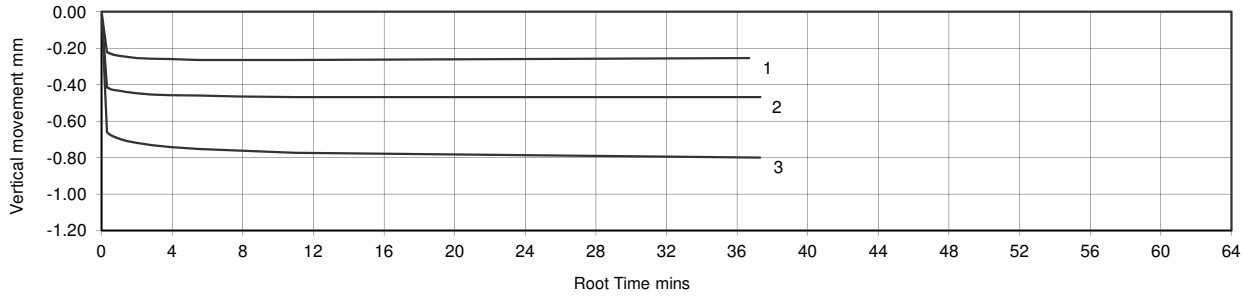
Notes :

1. After shear values based on BS1377. Pt 7 cl. 4.6.1.6 using δH calculated from consolidation and shear stages.

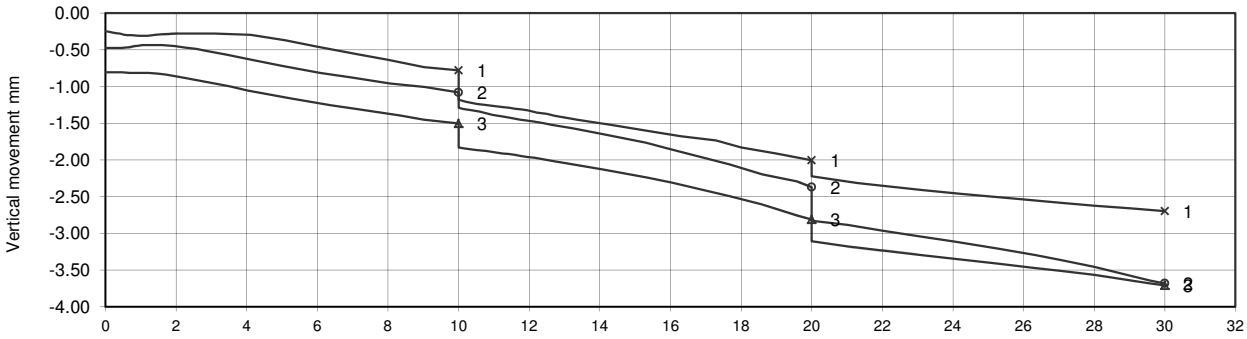
Determination of shear strength by direct shear (Small shearbox apparatus)
(BS1377 : Part 7 : clause 4 : 1990)

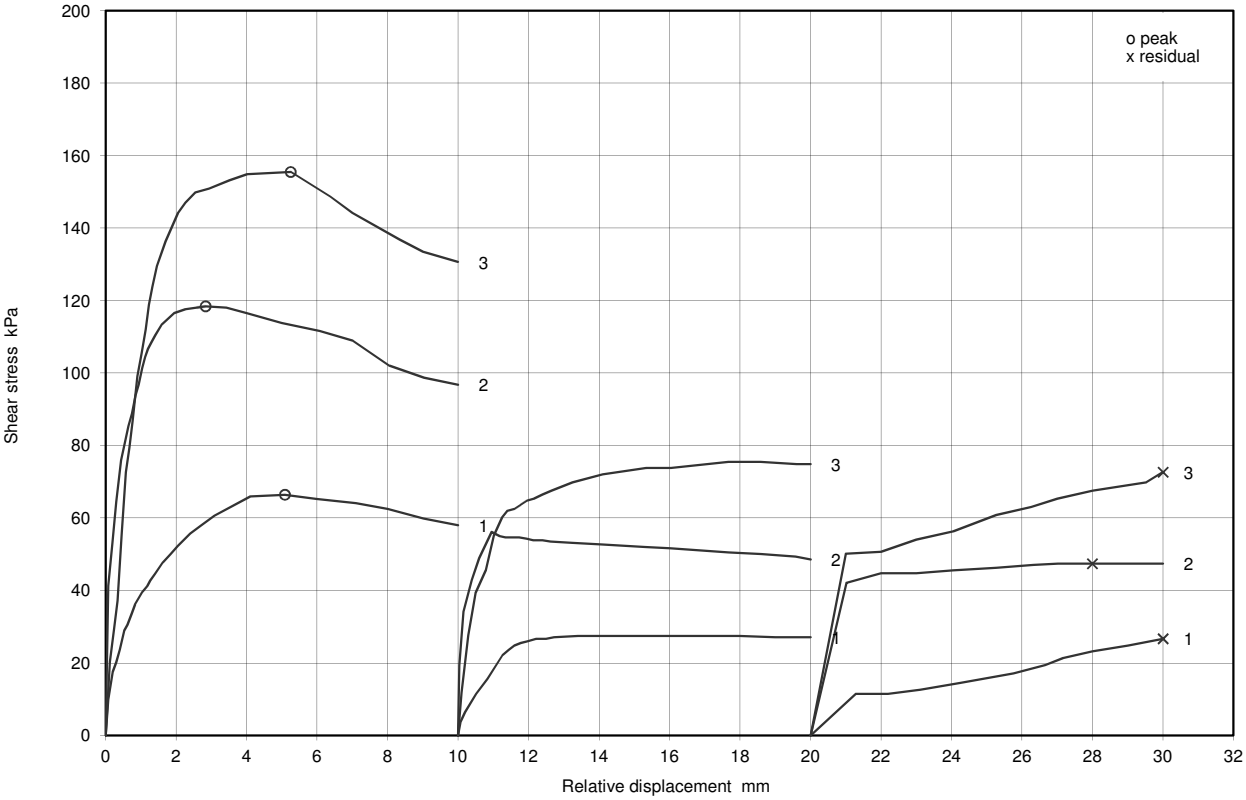
Project No	A9031-19	Sample Details:	Hole No.	ATK-CP-05		
Project Name	Havant Thicket Water Storage		Depth (m BGL)	14.50		
			Sample No	55	Type	UT
			ID			
			Spec Ref			

Consolidation stage(s)



Shearing stage(s)





Ref			Figure
SLR7.4 Rev 86.0 Feb18	SOCOTEC UKAS TESTING 0001	Printed:28/02/2020 10:14	**SSB** sheet 2 of 2

Determination of shear strength by direct shear (Small shearbox apparatus)
(BS1377 : Part 7 : clause 4 : 1990)

Project No	A9031-19	Sample Details:	Hole No.	ATK-CP-06		
Project Name	Havant Thicket Water Storage		Depth (m BGL)	4.00-4.45		
			Sample No	20	Type	UT
			ID			
			Spec Ref			

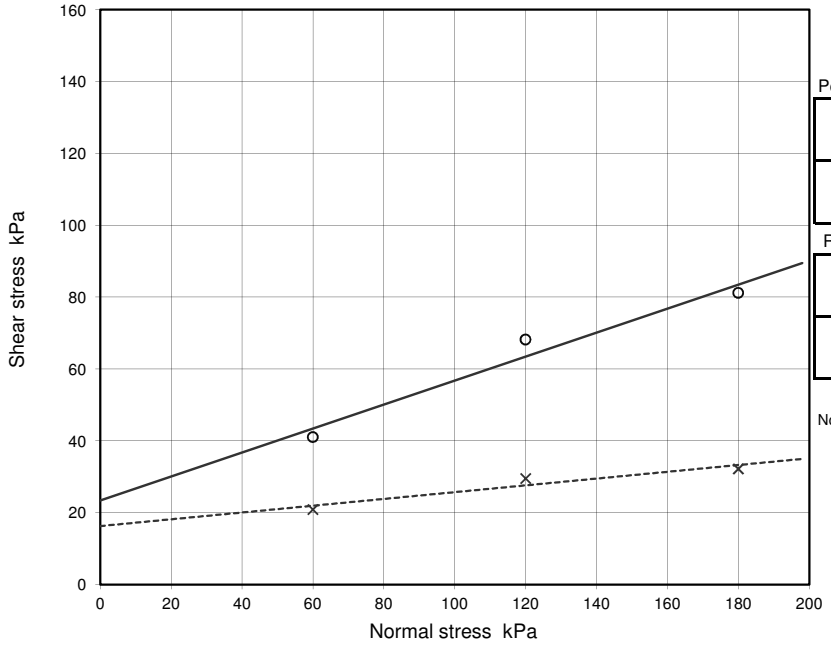
Soil Description	Firm reddish brown CLAY.
Specimen Type /Preparation	Undisturbed.

Specimen(s) nominally 60mm x 60mm square
Test(s) carried out in submerged condition
Particle density, assumed 2.65 Mg/m^3

Specimen Details		No.	1	2	3	4	5	6
Initial	Height	mm	25.2	25.2	25.2			
	Bulk Density	Mg/m^3	2.02	2.02	2.01			
	Water Content	%	21.7	21.6	21.5			
	Dry density	Mg/m^3	1.66	1.66	1.66			
	Voids ratio		0.596	0.592	0.601			
	Degree of Saturation	%	96	97	95			
Consol^n	Consolidation / Normal Stress applied	kPa	**60**	**120**	**180**			
	Change in height during consolidation	mm	-0.228	-0.356	-0.562			
	Voids ratio after consolidation		0.582	0.570	0.565			
Shear see note 1	Voids ratio at end of test		0.521	0.543	0.509			
	Moisture content at end of test	%	19.7	20.5	19.2			
	Saturation at end of test	%	100	100	100			

Shearing stage

Rate of displacement	Peak	mm/min	0.038	0.038	0.038			
	Residual	mm/min	0.094	0.094	0.094			
Peak values, (o)	Relative displacement	mm	2.20	2.04	1.72			
	Shear stress	kPa	41.1	68.2	81.1			
Residual values, (x)	No. of reversals		2	2	2			
	Relative displacement	mm	30.00	30.00	30.00			
	Shear stress	kPa	20.9	29.6	32.2			



Shear Strength Parameters

Peak strength, (o)		Regression	Manual
c '	kPa	23	-
Ø '	degrees	18½	-

Residual strength, (x)			
c'_R	kPa	16	-
$Ø'_R$	degrees	5½	-

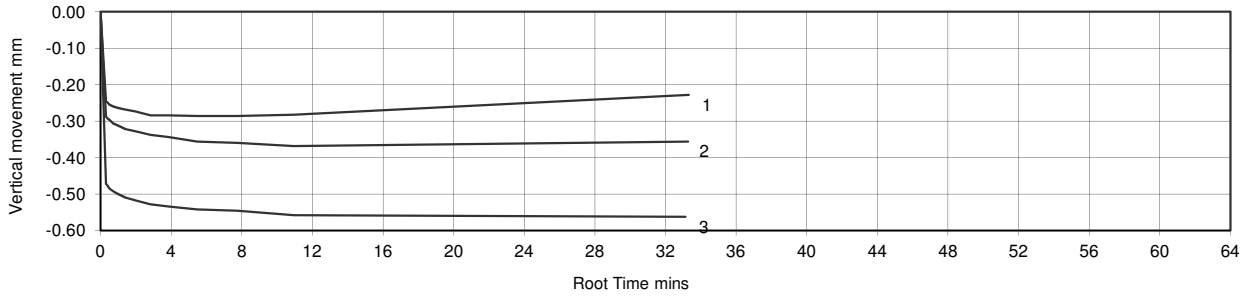
Notes :

1. After shear values based on BS1377. Pt 7 cl. 4.6.1.6 using δH calculated from consolidation and shear stages.

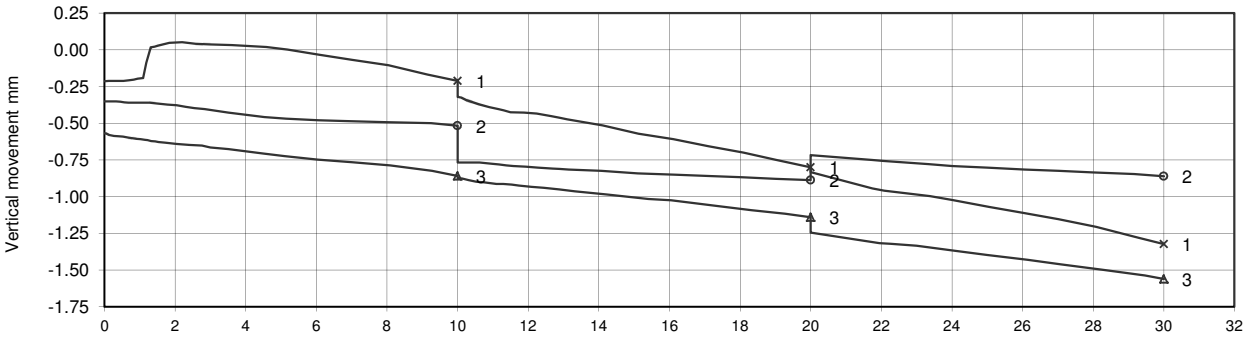
Determination of shear strength by direct shear (Small shearbox apparatus)
(BS1377 : Part 7 : clause 4 : 1990)

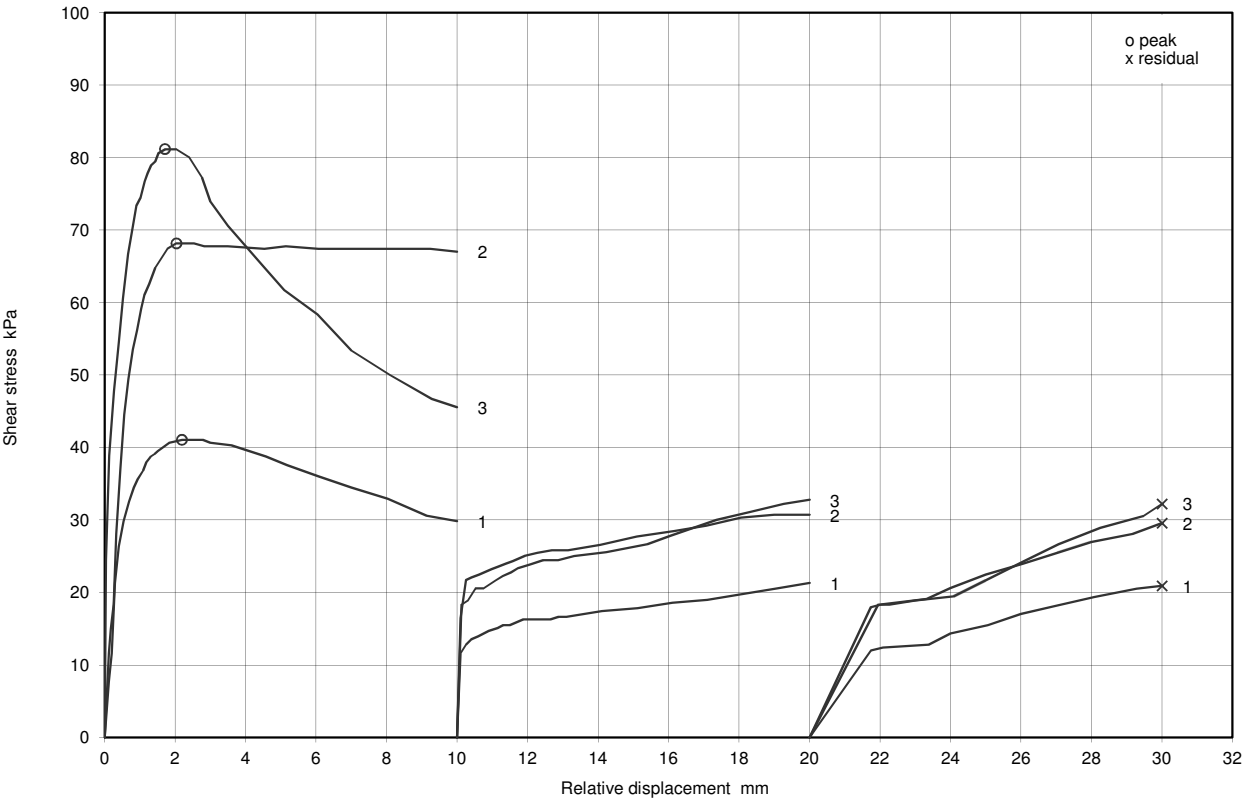
Project No	A9031-19	Sample Details:	Hole No.	ATK-CP-06		
Project Name	Havant Thicket Water Storage		Depth (m BGL)	4.00-4.45		
			Sample No	20	Type	UT
			ID			
			Spec Ref			

Consolidation stage(s)



Shearing stage(s)





Ref			Figure
SLR7.4 Rev 86.0 Feb18	SOCOTEC UKAS TESTING 0001	Printed:28/02/2020 10:14	**SSB** sheet 2 of 2

Determination of shear strength by direct shear (Small shearbox apparatus)
(BS1377 : Part 7 : clause 4 : 1990)

Project No	A9031-19	Sample Details:	Hole No.	ATK-CP-10		
Project Name	Havant Thicket Water Storage		Depth (m BGL)	5.00-5.45		
			Sample No	19	Type	UT
			ID			
			Spec Ref			

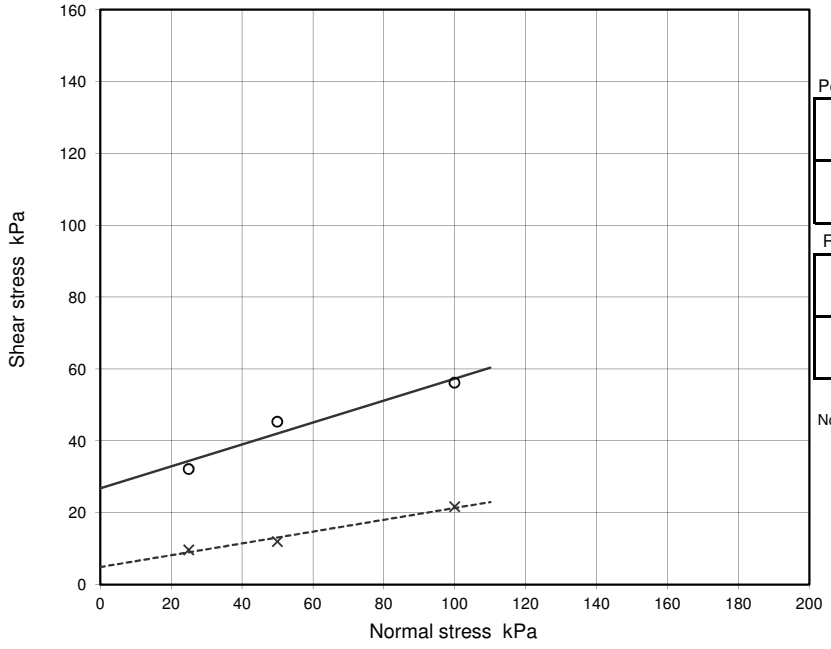
Soil Description	Firm grey CLAY.
Specimen Type /Preparation	Undisturbed.

Specimen(s) nominally 60mm x 60mm square
Test(s) carried out in submerged condition
Particle density, assumed 2.65 Mg/m^3

Specimen Details		No.	1	2	3	4	5	6
Initial	Height	mm	25.2	25.2	25.2			
	Bulk Density	Mg/m^3	1.91	1.90	1.93			
	Water Content	%	27.9	28.8	27.6			
	Dry density	Mg/m^3	1.50	1.48	1.51			
	Voids ratio		0.772	0.792	0.755			
	Degree of Saturation	%	96	96	97			
Consoln	Consolidation / Normal Stress applied	kPa	**25**	**50**	**100**			
	Change in height during consolidation	mm	0.182	0.064	-0.356			
	Voids ratio after consolidation		0.785	0.797	0.730			
Shear see note 1	Voids ratio at end of test		0.830	0.804	0.725			
	Moisture content at end of test	%	31.3	30.3	27.4			
	Saturation at end of test	%	100	100	100			

Shearing stage

Rate of displacement	Peak	mm/min	0.038	0.038	0.038			
	Residual	mm/min						
Peak values, (o)	Relative displacement	mm	1.55	2.55	1.14			
	Shear stress	kPa	32.2	45.3	56.2			
Residual values, (x)	No. of reversals		2	2	2			
	Relative displacement	mm	20.00	16.00	20.00			
	Shear stress	kPa	9.7	12.0	21.7			



Shear Strength Parameters

Peak strength, (o)		Regression	Manual
c '	kPa	27	-
Ø '	degrees	17	-

Residual strength, (x)			
c'_R	kPa	4.8	-
$Ø'_R$	degrees	9½	-

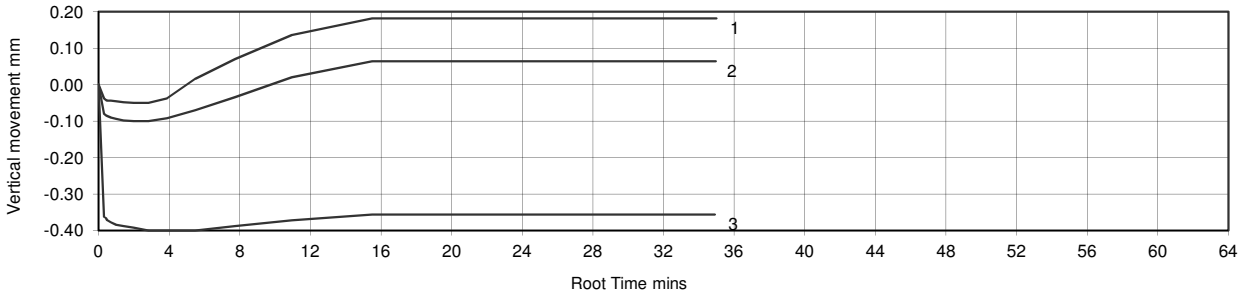
Notes :

1. After shear values based on BS1377. Pt 7 cl. 4.6.1.6 using δH calculated from consolidation and shear stages.

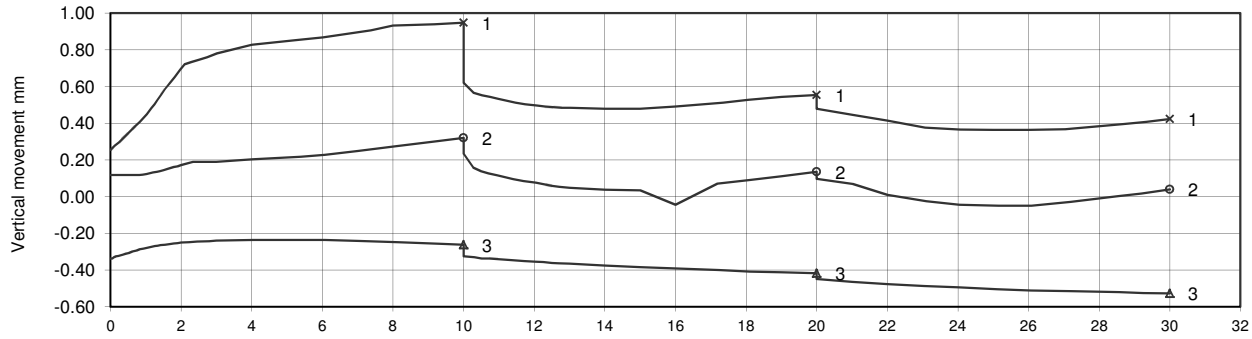
Determination of shear strength by direct shear (Small shearbox apparatus)
(BS1377 : Part 7 : clause 4 : 1990)

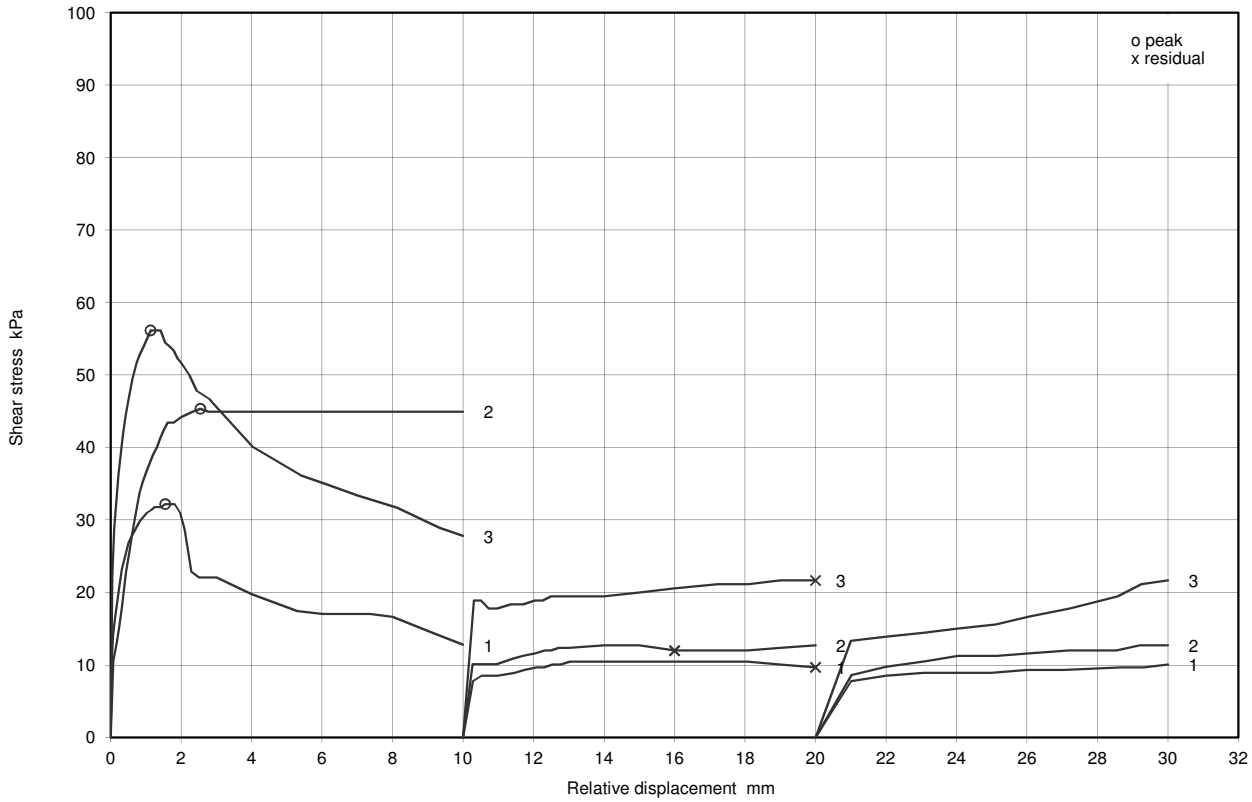
Project No	A9031-19	Sample Details:	Hole No.	ATK-CP-10		
Project Name	Havant Thicket Water Storage		Depth (m BGL)	5.00-5.45		
			Sample No	19	Type	UT
			ID			
			Spec Ref			

Consolidation stage(s)



Shearing stage(s)





Ref			Figure
SLR7.4 Rev 86.0 Feb18	SOCOTEC UKAS TESTING 0001	Printed:10/02/2020 18:15	**SSB** sheet 2 of 2

Determination of shear strength by direct shear (Small shearbox apparatus)
(BS1377 : Part 7 : clause 4 : 1990)

Project No	A9031-19	Sample Details:	Hole No.	ATK-CP-11		
Project Name	Havant Thicket Water Storage		Depth (m BGL)	4.00		
			Sample No	19	Type	UT
			ID			
			Spec Ref			

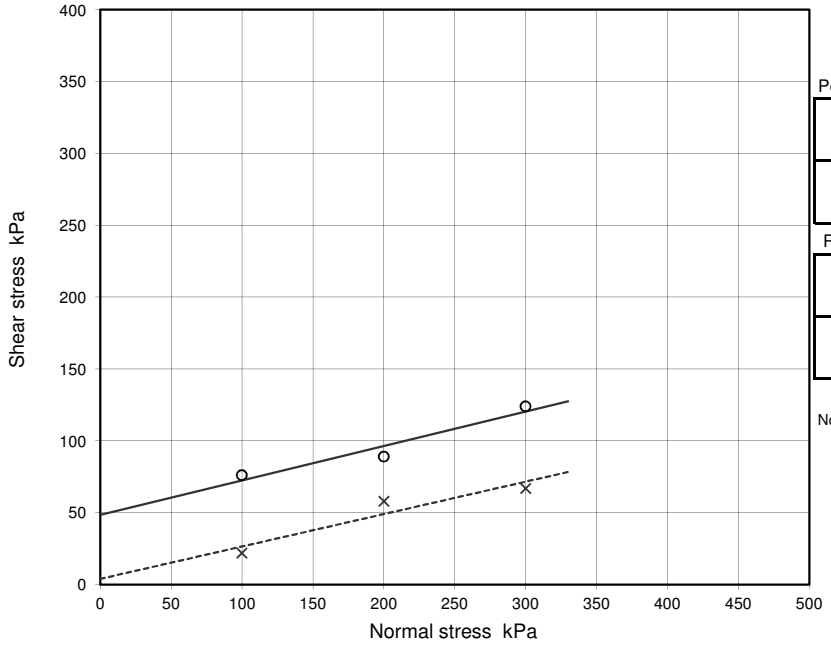
Soil Description	Firm to stiff greyish brown slightly sandy CLAY.
Specimen Type /Preparation	Undisturbed.

Specimen(s) nominally 60mm x 60mm square
Test(s) carried out in submerged condition
Particle density, assumed 2.65 Mg/m^3

Specimen Details		No.	1	2	3	4	5	6
Initial	Height	mm	25.2	25.2	25.2			
	Bulk Density	Mg/m^3	1.88	1.87	1.87			
	Water Content	%	29.5	29.9	29.7			
	Dry density	Mg/m^3	1.45	1.44	1.44			
	Voids ratio		0.827	0.843	0.837			
	Degree of Saturation	%	95	94	94			
Consol^n	Consolidation / Normal Stress applied	kPa	**100**	**200**	**300**			
	Change in height during consolidation	mm	-0.432	-1.294	-1.244			
	Voids ratio after consolidation		0.796	0.749	0.746			
Shear see note 1	Voids ratio at end of test		0.813	0.728	0.678			
	Moisture content at end of test	%	30.7	27.5	25.6			
	Saturation at end of test	%	100	100	100			

Shearing stage

Rate of displacement	Peak	mm/min	0.041	0.041	0.041			
	Residual	mm/min	0.103	0.103	0.103			
Peak values, (o)	Relative displacement	mm	1.96	2.14	2.49			
	Shear stress	kPa	76.1	89.0	123.9			
Residual values, (x)	No. of reversals		2	2	2			
	Relative displacement	mm	30.00	30.00	30.00			
	Shear stress	kPa	21.9	57.9	67.0			



Shear Strength Parameters

Peak strength, (o)		Regression	Manual
c '	kPa	49	-
Ø '	degrees	13½	-
Residual strength, (x)			
c'_R	kPa	3.9	-
$Ø'_R$	degrees	12½	-

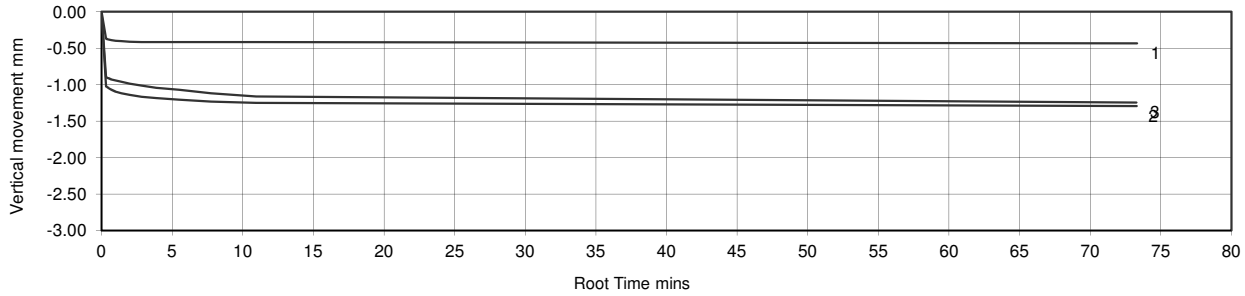
Notes :

1. After shear values based on BS1377. Pt 7 cl. 4.6.1.6 using δH calculated from consolidation and shear stages.

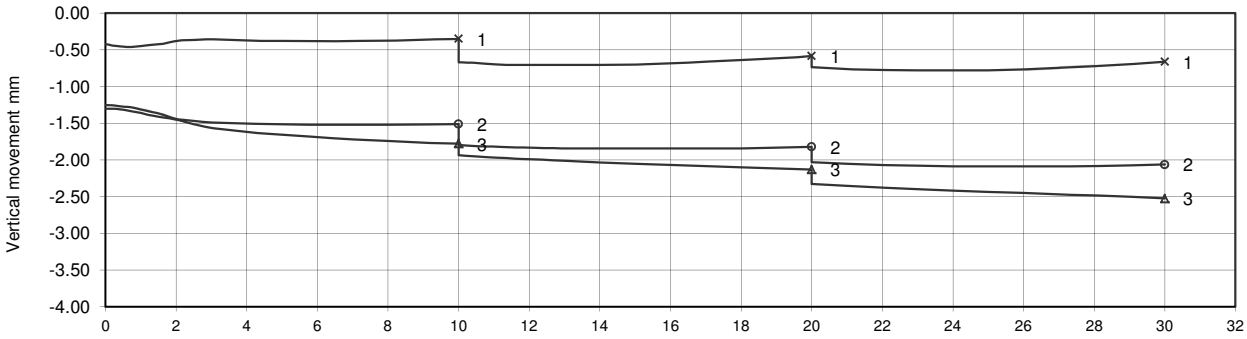
Determination of shear strength by direct shear (Small shearbox apparatus)
(BS1377 : Part 7 : clause 4 : 1990)

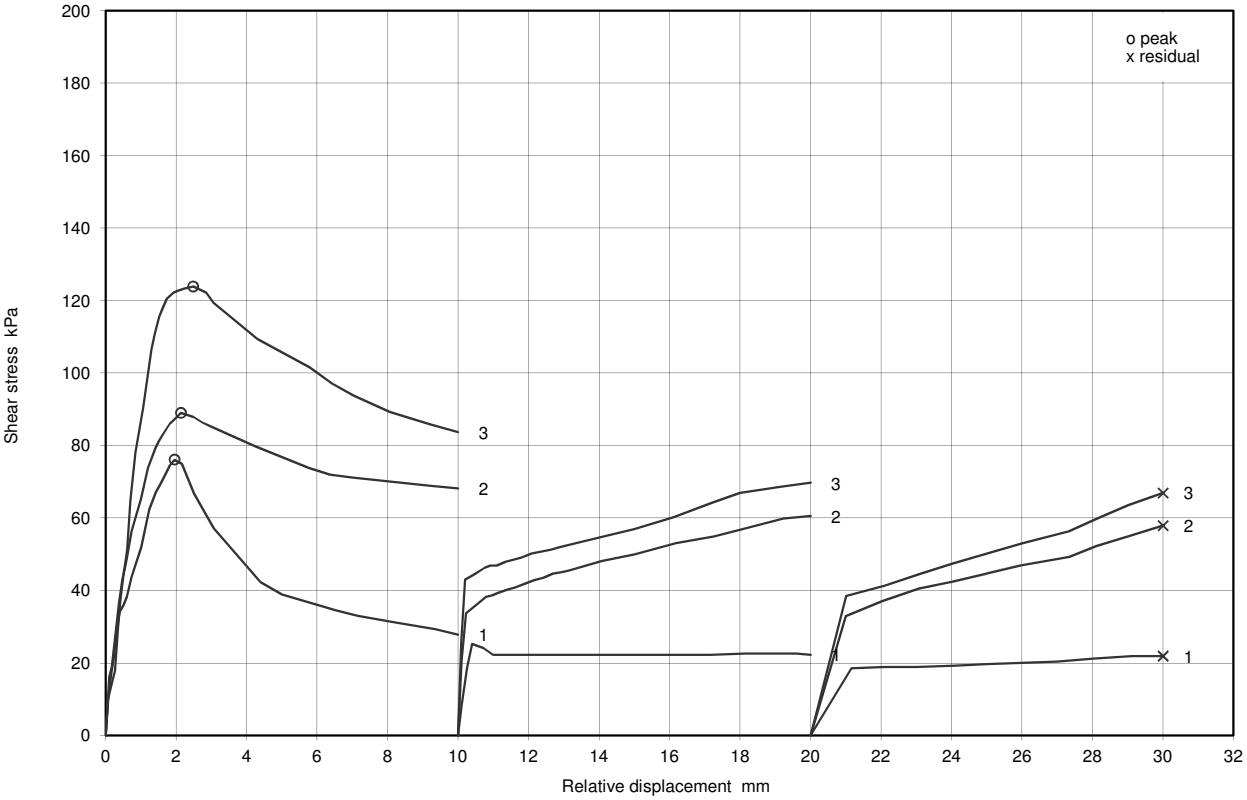
Project No	A9031-19	Sample Details:	Hole No.	ATK-CP-11		
Project Name	Havant Thicket Water Storage		Depth (m BGL)	4.00		
			Sample No	19	Type	UT
			ID			
			Spec Ref			

Consolidation stage(s)



Shearing stage(s)





Ref			Figure
SLR7.4 Rev 86.0 Feb18	SOCOTEC UKAS TESTING 0001	Printed:28/02/2020 10:15	**SSB** sheet 2 of 2

Determination of shear strength by direct shear (Small shearbox apparatus)
(BS1377 : Part 7 : clause 4 : 1990)

Project No	A9031-19	Sample Details:	Hole No.	ATK-CP-15		
Project Name	Havant Thicket Water Storage		Depth (m BGL)	3.00		
			Sample No	14	Type	UT
			ID			
			Spec Ref			

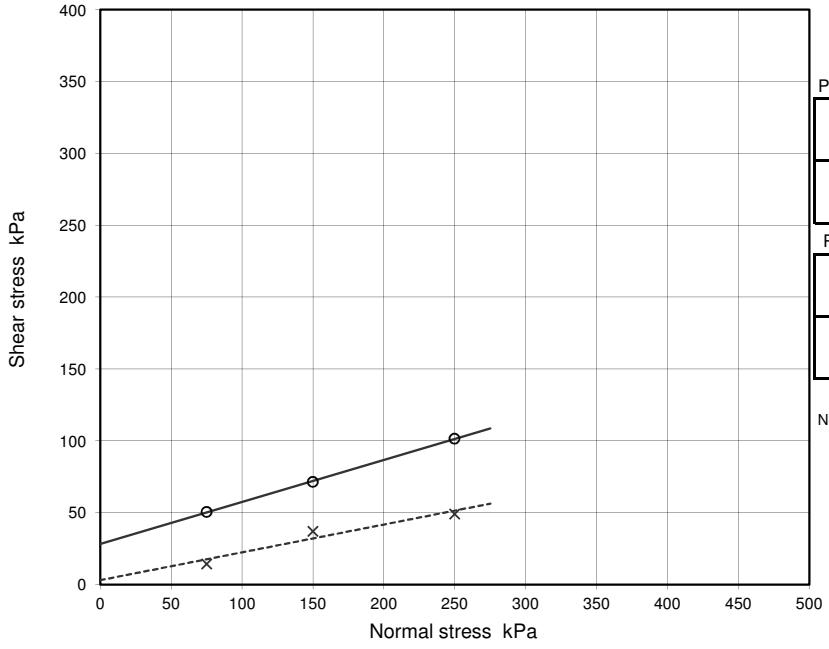
Soil Description	Firm brownish grey CLAY.
Specimen Type /Preparation	Undisturbed.

Specimen(s) nominally 60mm x 60mm square
Test(s) carried out in submerged condition
Particle density, assumed 2.65 Mg/m^3

Specimen Details		No.	1	2	3	4	5	6
Initial	Height	mm	25.2	25.2	25.2			
	Bulk Density	Mg/m^3	1.88	1.87	1.86			
	Water Content	%	31.5	32.3	32.5			
	Dry density	Mg/m^3	1.43	1.42	1.41			
	Voids ratio		0.850	0.870	0.884			
	Degree of Saturation	%	98	98	97			
Consol^n	Consolidation / Normal Stress applied	kPa	**75**	**150**	**250**			
	Change in height during consolidation	mm	-0.310	-0.598	-1.052			
	Voids ratio after consolidation		0.827	0.826	0.805			
Shear see note 1	Voids ratio at end of test		0.838	0.698	0.720			
	Moisture content at end of test	%	31.6	26.3	27.2			
	Saturation at end of test	%	100	100	100			

Shearing stage

Rate of displacement	Peak	mm/min	0.032	0.032	0.032			
	Residual	mm/min	0.081	0.081	0.081			
Peak values, (o)	Relative displacement	mm	2.25	1.50	2.84			
	Shear stress	kPa	50.4	71.4	101.5			
Residual values, (x)	No. of reversals		2	2	2			
	Relative displacement	mm	10.35	30.00	30.00			
	Shear stress	kPa	14.5	37.2	49.1			



Shear Strength Parameters

Peak strength, (o)		Regression	Manual
c '	kPa	28	-
Ø '	degrees	16½	-

Residual strength, (x)			
c'_R	kPa	3.0	-
$Ø'_R$	degrees	11	-

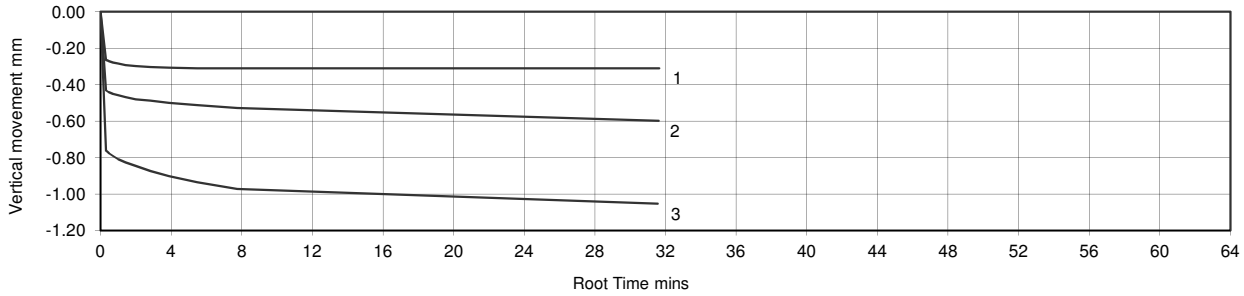
Notes :

1. After shear values based on BS1377. Pt 7 cl. 4.6.1.6 using δH calculated from consolidation and shear stages.

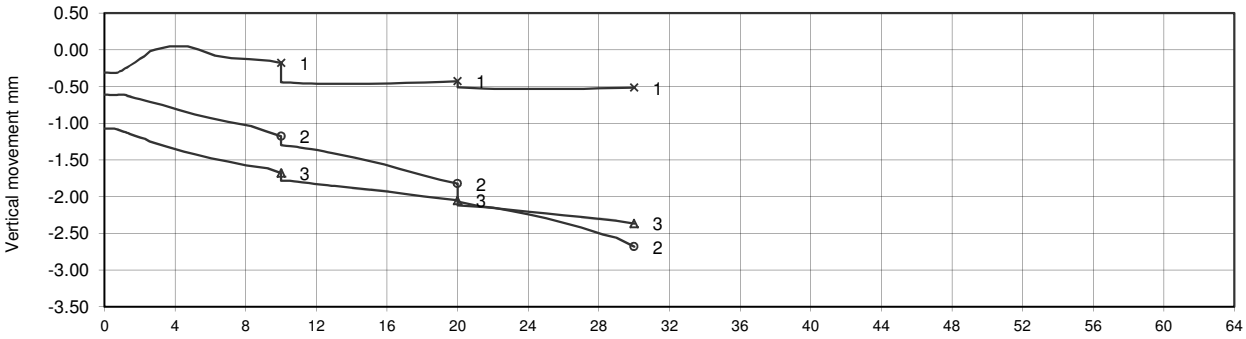
Determination of shear strength by direct shear (Small shearbox apparatus)
(BS1377 : Part 7 : clause 4 : 1990)

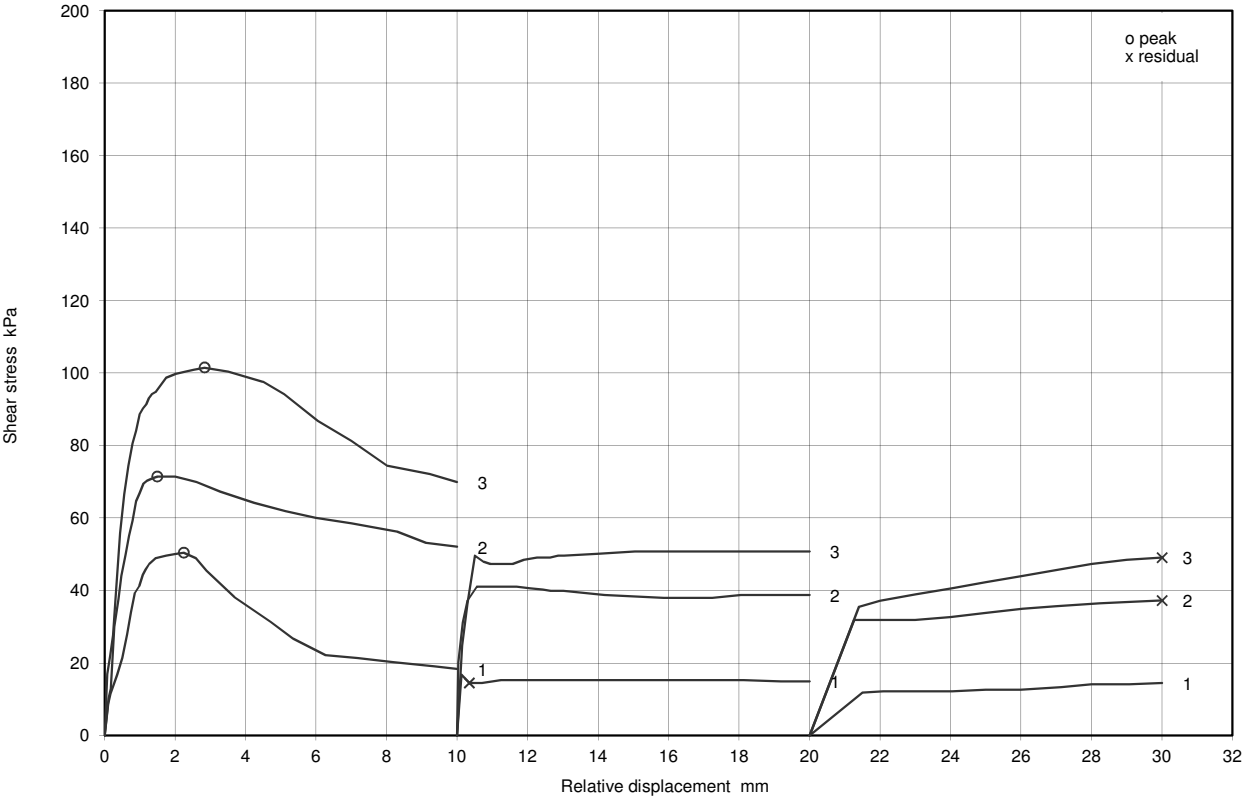
Project No	A9031-19	Sample Details:	Hole No.	ATK-CP-15		
Project Name	Havant Thicket Water Storage		Depth (m BGL)	3.00		
			Sample No	14	Type	UT
			ID			
			Spec Ref			

Consolidation stage(s)



Shearing stage(s)





Ref			Figure
SLR7.4 Rev 86.0 Feb18	SOCOTEC UKAS TESTING 0001	Printed:28/02/2020 10:16	**SSB** sheet 2 of 2

Determination of residual shear strength using ring shear apparatus

Sample Details:	SAMPLE ID:
	A9031-1920191122013450

Hole No	ATK-CP-10
Sample Depth (m BGL)	7.00 - 7.45
Sample Type and No	UT26
Specimen Ref	

Soil Description Very stiff thinly laminated dark brown slightly sandy CLAY.

Specimen Description

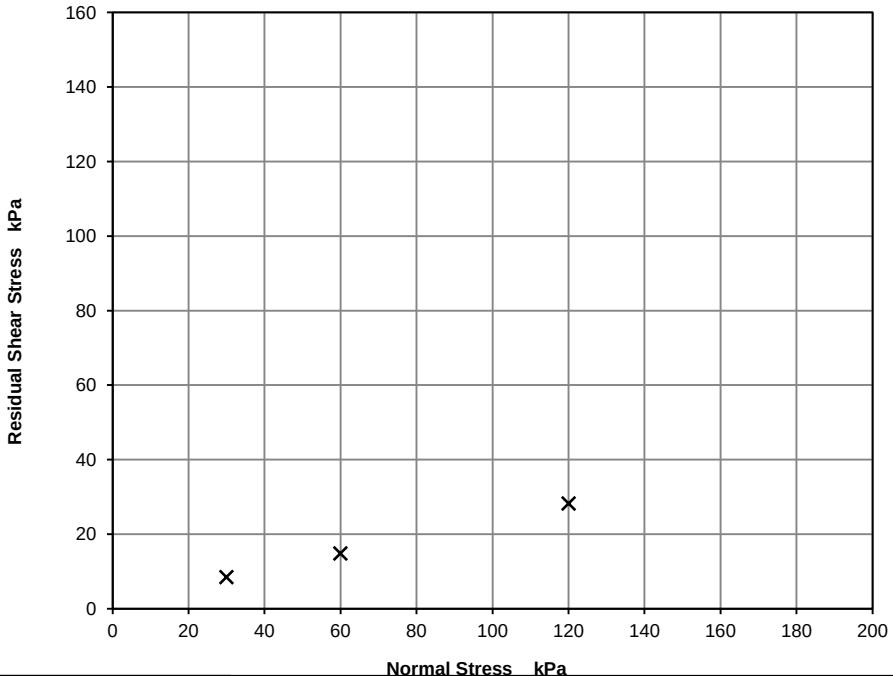
Preparation Details -1.18mm material. Remoulded into base assembly at as received moisture content.

Material removed 0 % above 0 mm sieve

Specimen Details

Outer diameter	100.0	mm
Inner diameter	70.0	mm
Height	5.00	mm
Bulk Density	2.23	Mg/m³
Moisture Content (trimmings)	21.0	%
Dry density	1.84	Mg/m³
Moisture content after test	29.0	%

			Stage 1	2	3				
Consolidation	Normal Stress applied		**30**	**60**	**120**				kPa
	Change in height during consolidation		-0.020	-0.054	-0.118				mm
Shearing	Number of rotations prior to shearing								
	Distance between force application points		150.0	150.0	150.0				mm
	Rate of rotation/displacement applied	angular	0.120	0.120	0.120				o/min
		linear	0.089	0.089	0.089				mm/min
Residual values	Corrected mean linear displacement, cumulative		14.0	28.0	42.7				mm
	Residual Shear stress		8.4	14.8	28.2				kPa
	Vertical Movement at residual shear stress		0.02	-0.05	-0.04				mm



Residual Shear Strength Parameters

c'R **Assumed zero**

ϕ'R **13.5 °**

General Remarks

ϕ'r derived by linear regression assuming c'R = 0

Water added to cell immediately after first load applied

QA Ref SLR 7.6 Rev 2.8 May 17

UKAS TESTING 0001

SOCOTEC

Project No A9031-19

Project Name HAVANT THICKET WATER STORAGE

Figure **RS**

The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation.
© Copyright 2017 SOCOTEC UK Limited

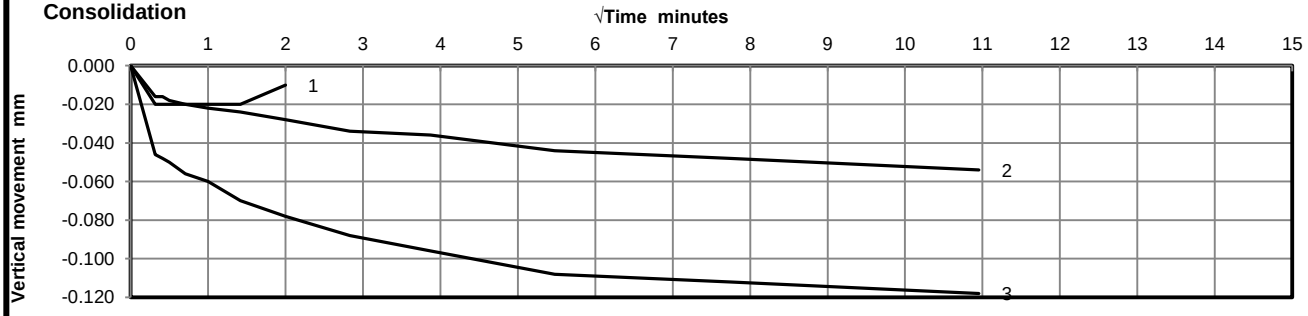
Printed: 28/02/2020 09:18

Determination of residual shear strength using ring shear apparatus

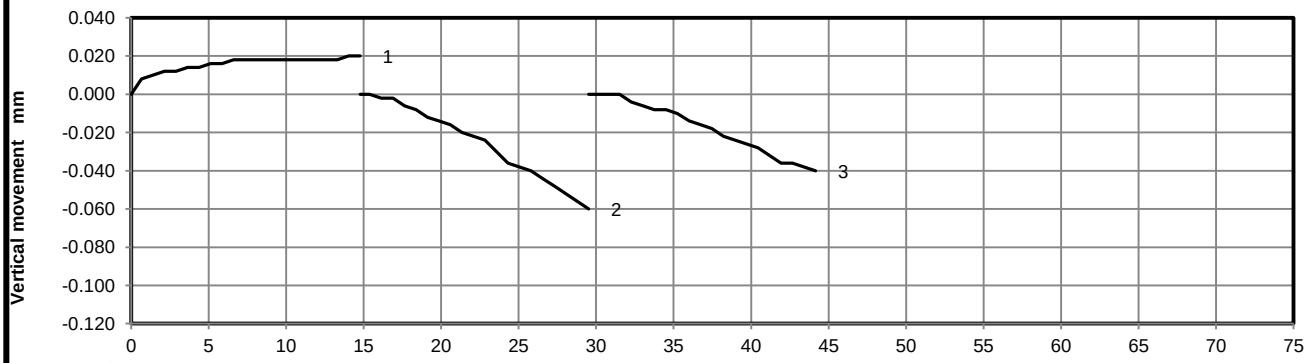
Sample Details:	SAMPLE ID:
	A9031-1920191122013450

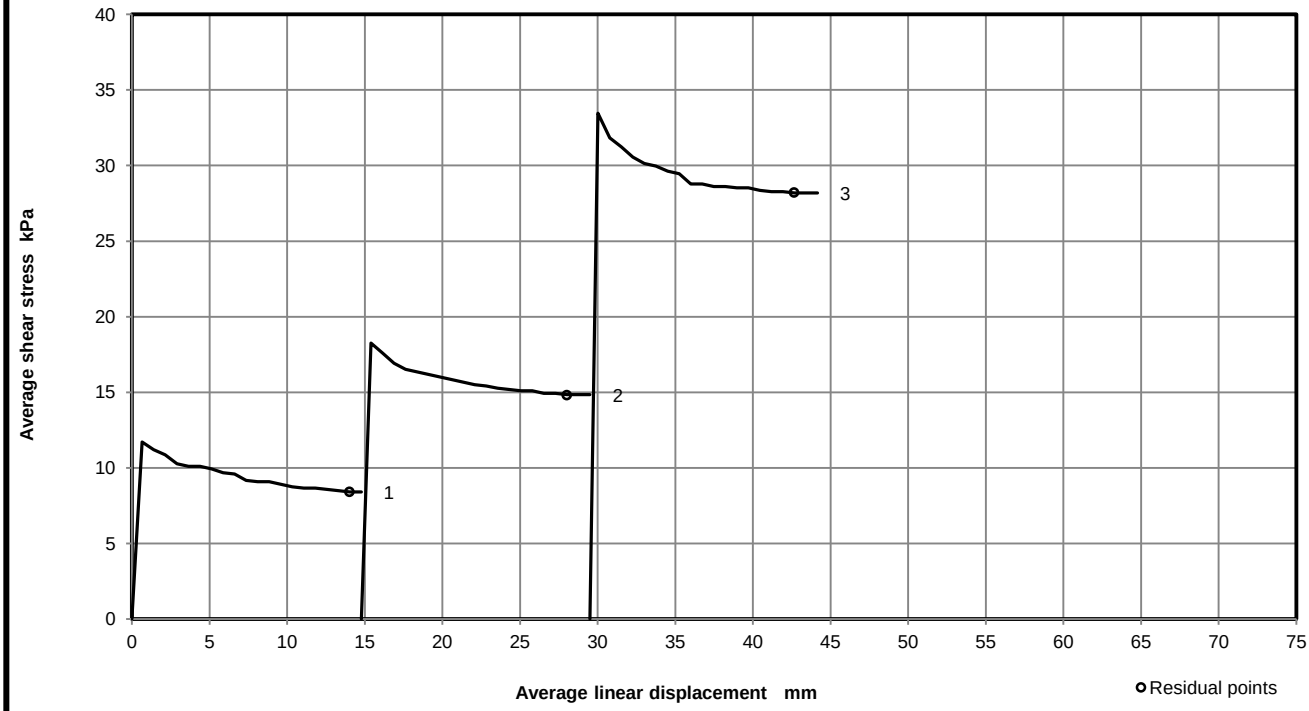
Hole No	ATK-CP-10
Sample Depth (m BGL)	7.00 - 7.45
Sample Type and No	UT26
Specimen Ref	

Consolidation



Shear





QA Ref SLR 7.6 Rev 2.8 May 17	UKAS TESTING 0001	Project No A9031-19 Project Name HAVANT THICKET WATER STORAGE	**Figure** **RS**

The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation.
© Copyright 2017 SOCOTEC UK Limited

Printed: 28/02/2020 09:18

Determination of residual shear strength using ring shear apparatus

Sample Details:	SAMPLE ID:	Hole No	ATK-CP-11
	A9031-1920191219105047	Sample Depth (m BGL)	4.60 - 5.00
		Sample Type and No	B21
		Specimen Ref	

Soil Description Greyish brown CLAY.

Specimen Description

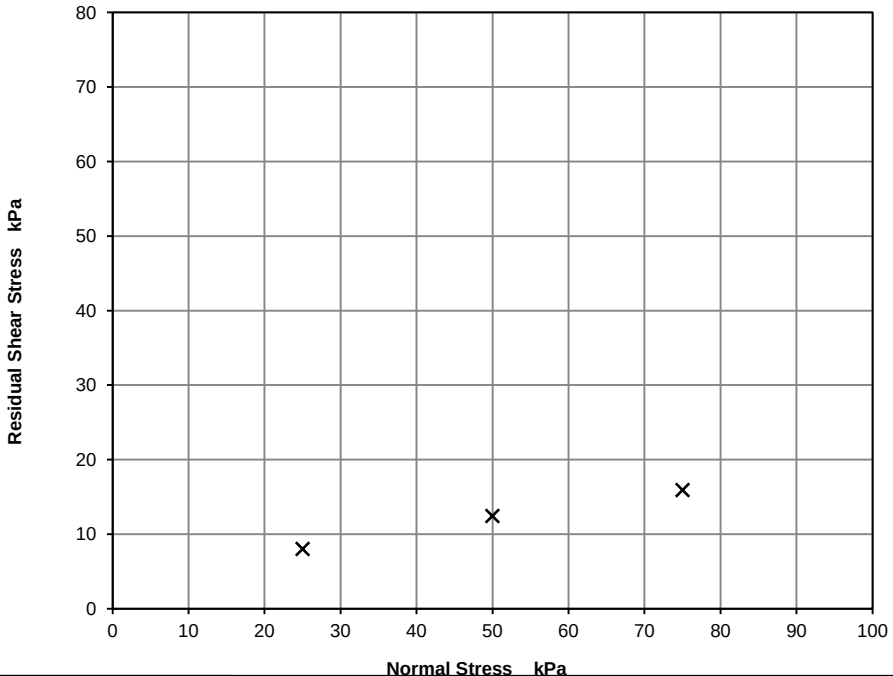
Preparation Details -1.18mm material. Remoulded into base assembly at as received moisture content.

Material removed 0 % above 0 mm sieve

Specimen Details

Outer diameter	100.0 mm
Inner diameter	70.0 mm
Height	5.00 mm
Bulk Density	1.94 Mg/m³
Moisture Content (trimmings)	36.0 %
Dry density	1.43 Mg/m³
Moisture content after test	44.0 %

		Stage	1	2	3				
Consolidation	Normal Stress applied		**25**	**50**	**75**				kPa
	Change in height during consolidation		-0.006	-0.076	-0.080				mm
Shearing	Number of rotations prior to shearing								
	Distance between force application points		150.0	150.0	150.0				mm
	Rate of rotation/displacement applied	angular	0.120	0.120	0.120				o/min
		linear	0.089	0.089	0.089				mm/min
Residual values	Corrected mean linear displacement, cumulative		14.0	28.8	43.5				mm
	Residual Shear stress		8.0	12.4	15.9				kPa
	Vertical Movement at residual shear stress		-0.01	-0.03	-0.05				mm



Residual Shear Strength Parameters

c'R **Assumed zero**

ϕ'R **13.0 °**

General Remarks

ϕ'r derived by linear regression assuming c'R = 0

Water added to cell immediately after first load applied

QA Ref SLR 7.6 Rev 2.8 May 17

UKAS TESTING 0001

SOCOTEC

Project No A9031-19

Project Name HAVANT THICKET WATER STORAGE

Figure **RS**

The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation.
© Copyright 2017 SOCOTEC UK Limited

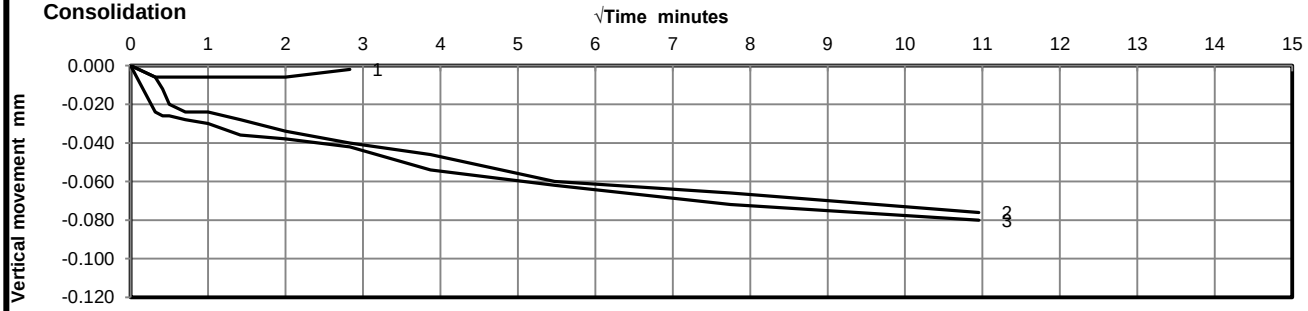
Printed: 28/02/2020 09:18

Determination of residual shear strength using ring shear apparatus

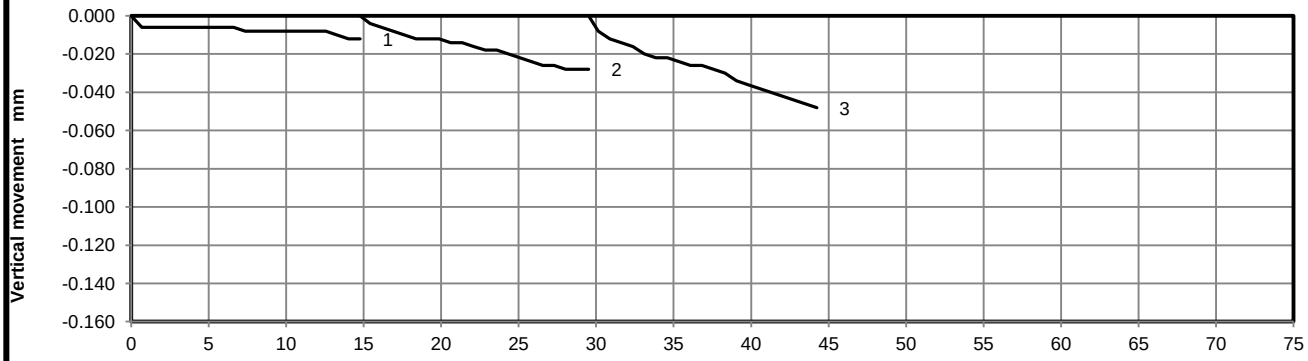
Sample Details:	SAMPLE ID:
	A9031-1920191219105047

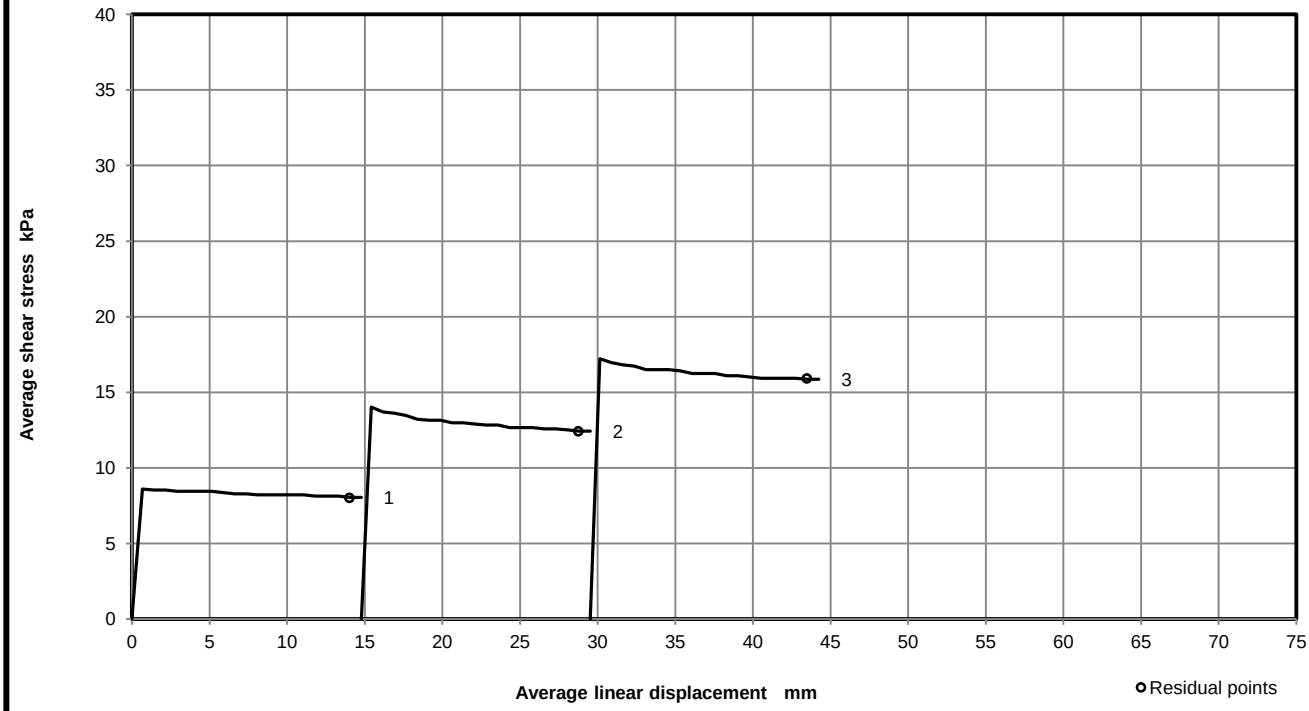
Hole No	ATK-CP-11
Sample Depth (m BGL)	4.60 - 5.00
Sample Type and No	B21
Specimen Ref	

Consolidation



Shear





QA Ref SLR 7.6 Rev 2.8 May 17	UKAS TESTING 0001	Project No A9031-19 Project Name HAVANT THICKET WATER STORAGE	**Figure** **RS**
	SOCOTEC	The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2017 SOCOTEC UK Limited	Printed: 28/02/2020 09:18

Determination of residual shear strength using ring shear apparatus

Sample Details:	SAMPLE ID:	Hole No	ATK-CP-13A
	A9031-1920191127033738	Sample Depth (m BGL)	3.50 - 4.00
		Sample Type and No	B17
		Specimen Ref	

Soil Description Brown silty CLAY.

Specimen Description

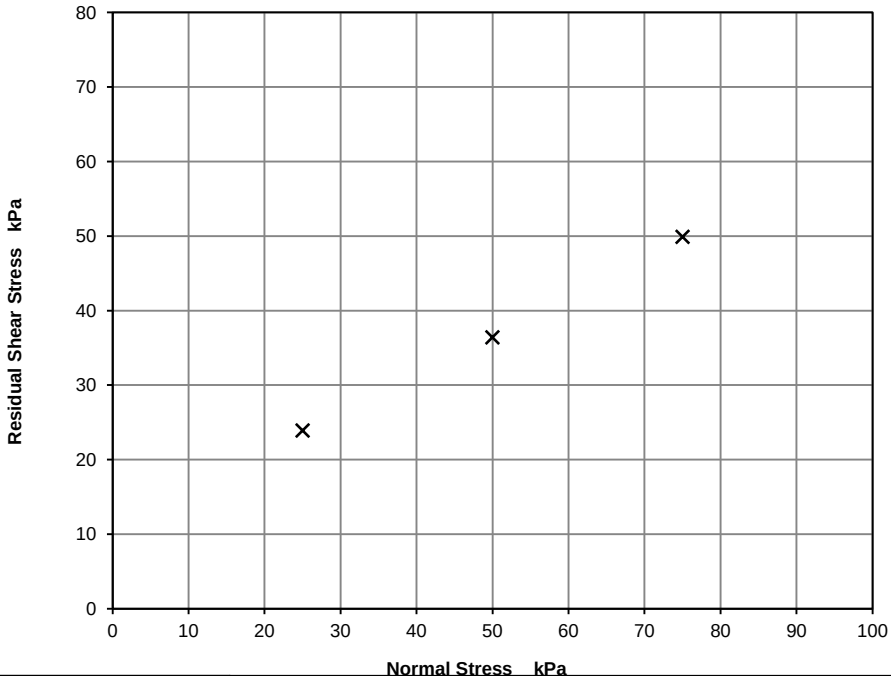
Preparation Details -1.18mm material. Remoulded into base assembly at as received moisture content.

Material removed 0 % above 0 mm sieve

Specimen Details

Outer diameter	100.0 mm
Inner diameter	70.0 mm
Height	5.00 mm
Bulk Density	2.05 Mg/m³
Moisture Content (trimmings)	28.0 %
Dry density	1.60 Mg/m³
Moisture content after test	28.0 %

		Stage	1	2	3				
Consolidation	Normal Stress applied		**25**	**50**	**75**				kPa
	Change in height during consolidation		0.000	0.000	0.000				mm
Shearing	Number of rotations prior to shearing								
	Distance between force application points		150.0	150.0	150.0				mm
	Rate of rotation/displacement applied	angular	0.120	0.120	0.120				o/min
		linear	0.089	0.089	0.089				mm/min
Residual values	Corrected mean linear displacement, cumulative		12.5	25.6	40.9				mm
	Residual Shear stress		23.9	36.4	49.9				kPa
	Vertical Movement at residual shear stress		0.04	0.03	0.05				mm



Residual Shear Strength Parameters

c'R **Assumed zero**

ϕ'R **35.0 °**

General Remarks

ϕ'r derived by linear regression assuming c'R = 0

Water added to cell immediately after first load applied

QA Ref SLR 7.6 Rev 2.8 May 17

UKAS TESTING 0001

SOCOTEC

Project No A9031-19

Project Name HAVANT THICKET WATER STORAGE

Figure **RS**

The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation.
© Copyright 2017 SOCOTEC UK Limited

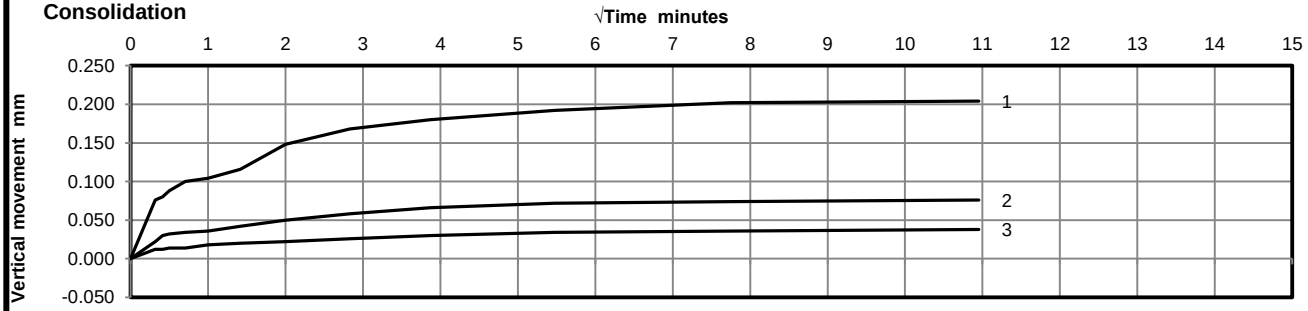
Printed: 28/02/2020 09:18

Determination of residual shear strength using ring shear apparatus

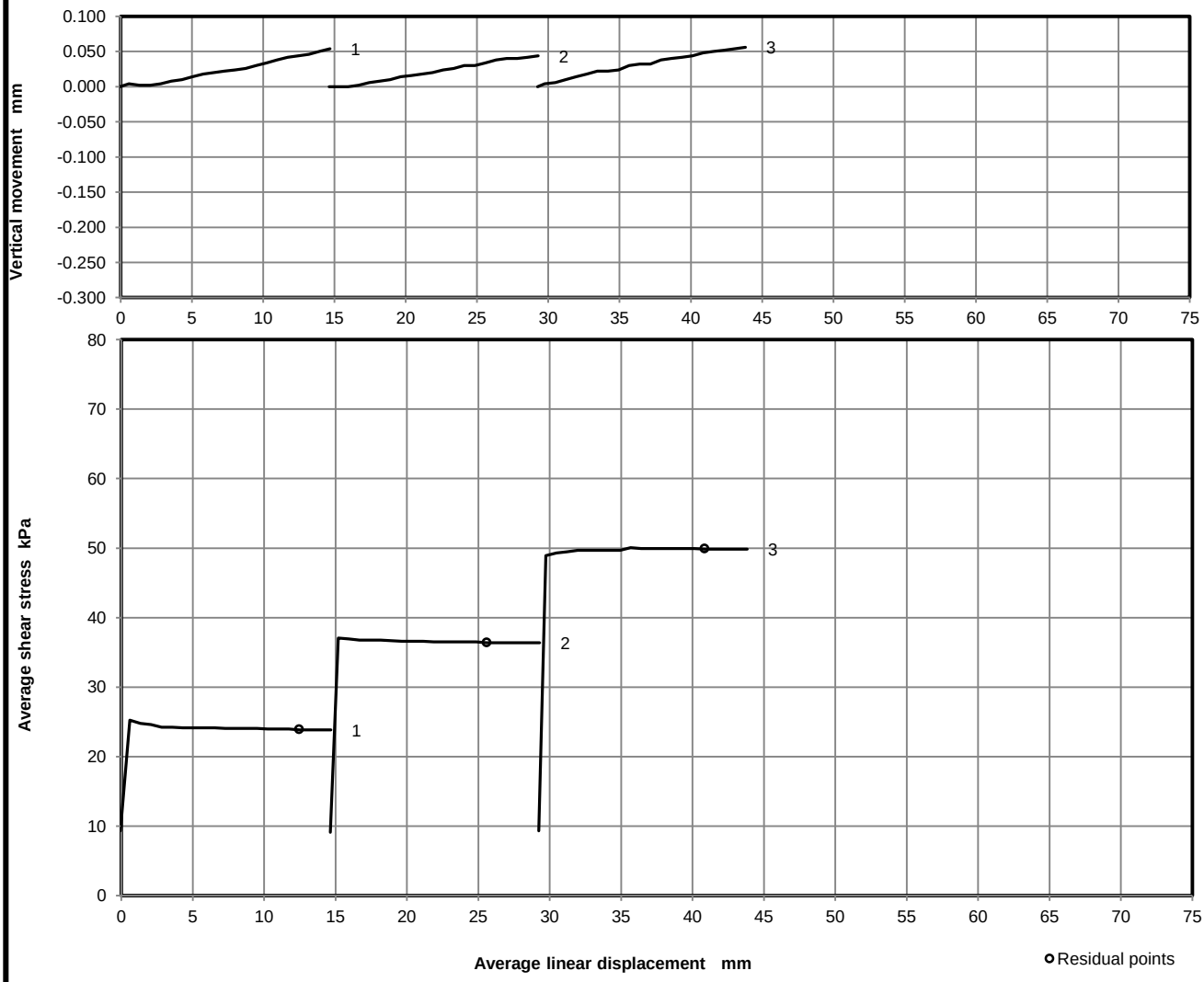
Sample Details:	SAMPLE ID:
	A9031-1920191127033738

Hole No	ATK-CP-13A
Sample Depth (m BGL)	3.50 - 4.00
Sample Type and No	B17
Specimen Ref	

Consolidation



Shear



QA Ref SLR 7.6 Rev 2.8 May 17	UKAS TESTING 0001	Project No	A9031-19
		Project Name	HAVANT THICKET WATER STORAGE
			Figure **RS**

SOCOTEC

The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation.
© Copyright 2017 SOCOTEC UK Limited

Printed: 28/02/2020 09:18

Determination of residual shear strength using ring shear apparatus

Sample Details:	SAMPLE ID:	Hole No	ATK-CP-14
	A9031-1920191218101917	Sample Depth (m BGL)	2.00 - 2.45
		Sample Type and No	UT7
		Specimen Ref	

Soil Description Soft to firm brown slightly sandy CLAY.

Specimen Description

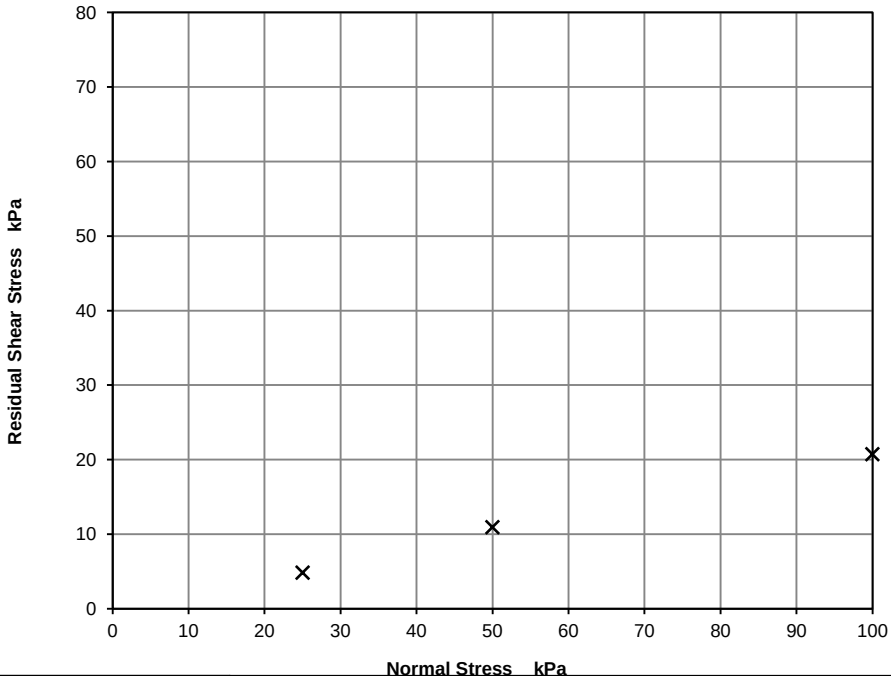
Preparation Details -1.18mm material. Remoulded into base assebly at as received moisture content.

Material removed 0 % above 0 mm sieve

Specimen Details

Outer diameter	100.0	mm
Inner diameter	70.0	mm
Height	5.00	mm
Bulk Density	2.06	Mg/m³
Moisture Content (trimmings)	28.0	%
Dry density	1.61	Mg/m³
Moisture content after test	34.0	%

			Stage 1	2	3				
Consolidation	Normal Stress applied		**25**	**50**	**100**				kPa
	Change in height during consolidation		-0.020	-0.064	-0.126				mm
Shearing	Number of rotations prior to shearing								
	Distance between force application points		150.0	150.0	150.0				mm
	Rate of rotation/displacement applied	angular	0.120	0.120	0.120				o/min
		linear	0.089	0.089	0.089				mm/min
Residual values	Corrected mean linear displacement, cumulative		15.6	30.4	45.1				mm
	Residual Shear stress		4.8	10.9	20.7				kPa
	Vertical Movement at residual shear stress		0.02	-0.04	-0.07				mm



Residual Shear Strength Parameters

c'R **Assumed zero**

ϕ'R **12.0 °**

General Remarks

ϕ'r derived by linear regression assuming c'R = 0

Water added to cell immediately after first load applied

QA Ref SLR 7.6 Rev 2.8 May 17

UKAS TESTING 0001

SOCOTEC

Project No A9031-19

Project Name HAVANT THICKET WATER STORAGE

Figure **RS**

The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation.
© Copyright 2017 SOCOTEC UK Limited

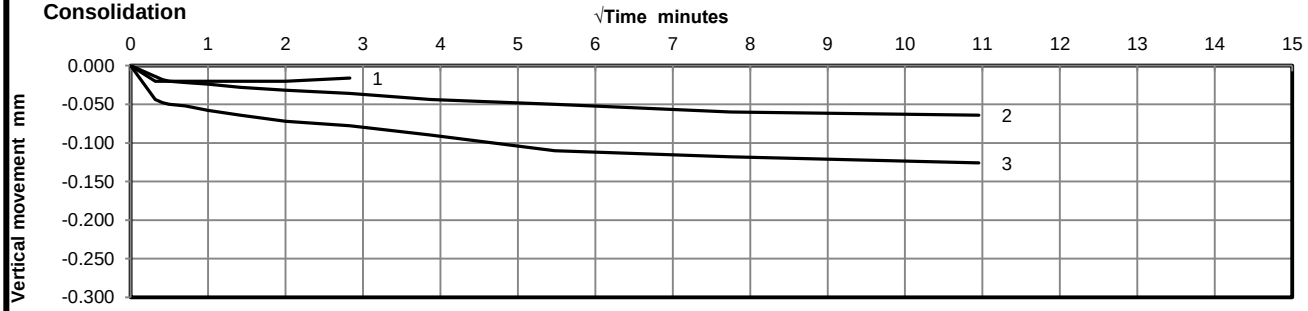
Printed: 28/02/2020 09:18

Determination of residual shear strength using ring shear apparatus

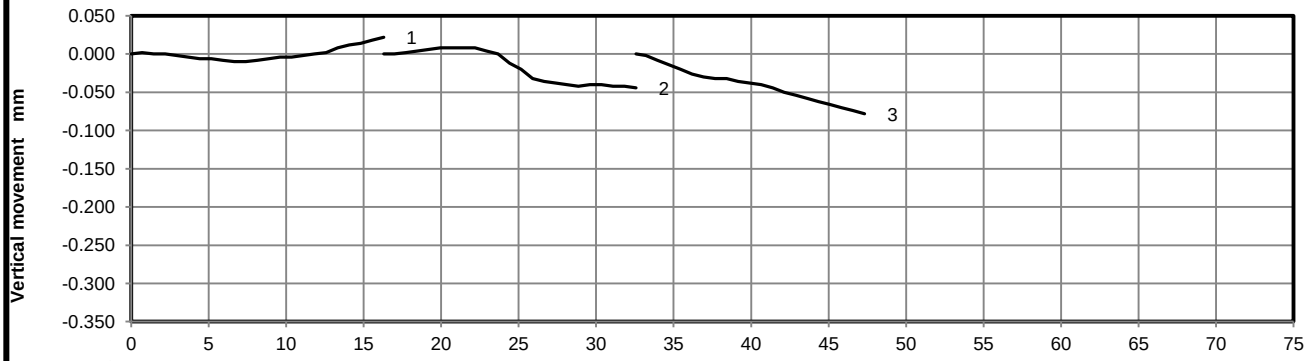
Sample Details:	SAMPLE ID:
	A9031-1920191218101917

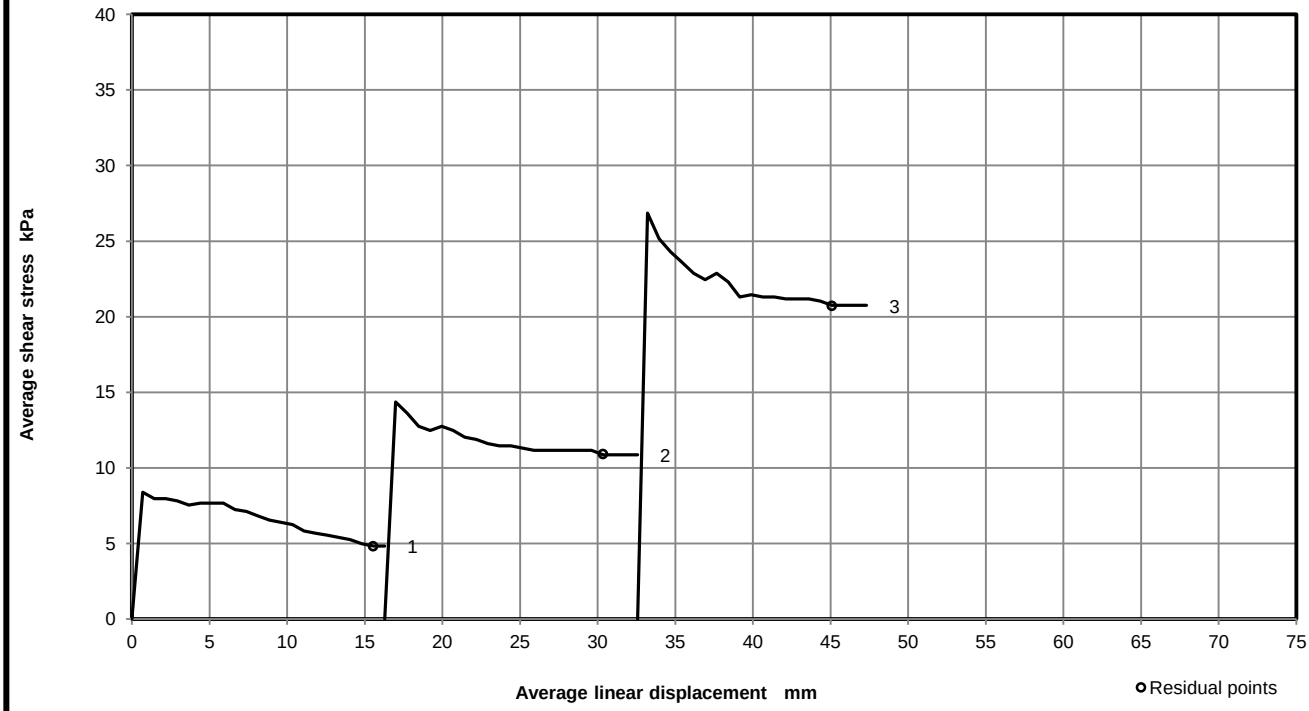
Hole No	ATK-CP-14
Sample Depth (m BGL)	2.00 - 2.45
Sample Type and No	UT7
Specimen Ref	

Consolidation



Shear





QA Ref SLR 7.6 Rev 2.8 May 17	UKAS TESTING 0001	SOCOTEC	Project No A9031-19 Project Name HAVANT THICKET WATER STORAGE
			Figure **RS**
		The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2017 SOCOTEC UK Limited	Printed: 28/02/2020 09:18

TEST REPORT

DETERMINATION OF DISPERSIBILITY - PINHOLE METHOD - BS1377: Part 5: 1990: CLAUSE 6.2

Project No	A9031-19	Sample Details:	Hole No.	ATK-CP-06
			Depth (m BGL)	4.00-4.45
Project Name	HAVANT THICKET WATER STORAGE		No.	20
			Type	UT
			ID	

Soil Description : Red mottled grey slightly sandy CLAY.

Natural Moisture Content (%) :

Liquid Limit (%) :

Plastic Limit (%) :

The sample was passed over a 2.00mm sieve and no coarse material was removed.

Test Specimen Details

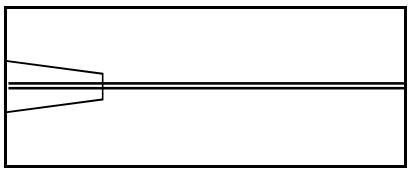
Moisture Content (%) : 22

Bulk Density (Mg/m3) : 2.020

Dry Density (Mg/m3) : 1.660

Head of Water (mm)	Rate of Flow (mL/s)	Duration (s)	Discharge Apperance
50	0.26	21.16	Clear
180	0.28	21.37	Clear
380	1.15	21.32	Clear
1020	1.63	14.43	Clear

The diameter of the pinhole showed no significant measurable change.



The soil would be classified as ND1.

© Copyright 2017 SOCOTEC UK Limited. All rights reserved

TEST REPORT

DETERMINATION OF DISPERSIBILITY - PINHOLE METHOD - BS1377: Part 5: 1990: CLAUSE 6.2

Project No	A9031-19	Sample Details:	Hole No.	ATK-CP-06
			Depth (m BGL)	6.00
Project Name	HAVANT THICKET WATER STORAGE		No.	27
			Type	UT
			ID	

Soil Description : Brown slightly sandy CLAY.

Natural Moisture Content (%) :

Liquid Limit (%) :

Plastic Limit (%) :

The sample was passed over a 2.00mm sieve and no coarse material was removed.

Test Specimen Details

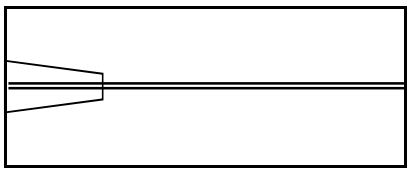
Moisture Content (%) : 20

Bulk Density (Mg/m3) : 2.000

Dry Density (Mg/m3) : 1.670

Head of Water (mm)	Rate of Flow (mL/s)	Duration (s)	Discharge Apperance
50	0.29	20.38	Clear
180	0.41	20.82	Clear
380	0.54	21.21	Clear
1020	1.28	20.31	Clear

The diameter of the pinhole showed no significant measurable change.



The soil would be classified as ND1.

© Copyright 2017 SOCOTEC UK Limited. All rights reserved

TEST REPORT

DETERMINATION OF DISPERSIBILITY - PINHOLE METHOD - BS1377: Part 5: 1990: CLAUSE 6.2

Project No	A9031-19	Sample Details:	Hole No.	ATK-CP-07A
			Depth (m BGL)	6.00-6.45
Project Name	HAVANT THICKET WATER STORAGE		No.	21
			Type	UT
			ID	

Soil Description : Red mottled grey slightly sandy CLAY.

Natural Moisture Content (%) :

Liquid Limit (%) :

Plastic Limit (%) :

The sample was passed over a 2.00mm sieve and no coarse material was removed.

Test Specimen Details

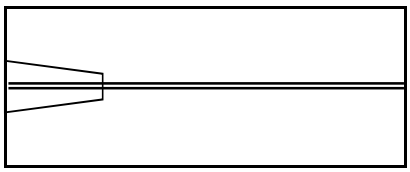
Moisture Content (%) : 12

Bulk Density (Mg/m3) : 2.200

Dry Density (Mg/m3) : 1.960

Head of Water (mm)	Rate of Flow (mL/s)	Duration (s)	Discharge Apperance
50	0.41	20.5	Clear
180	1.15	10.87	Clear
380	2.04	10.03	Clear
1020			

The diameter of the pinhole showed no significant measurable change.



The soil would be classified as ND3.

© Copyright 2017 SOCOTEC UK Limited. All rights reserved

TEST REPORT

DETERMINATION OF DISPERSIBILITY - PINHOLE METHOD - BS1377: Part 5: 1990: CLAUSE 6.2

Project No	A9031-19	Sample Details:	Hole No.	ATK-CP-07A
			Depth (m BGL)	8.00-8.45
Project Name	HAVANT THICKET WATER STORAGE		No.	28
			Type	UT
			ID	

Soil Description : Reddish grey slightly sandy CLAY.

Natural Moisture Content (%) :

Liquid Limit (%) :

Plastic Limit (%) :

The sample was passed over a 2.00mm sieve and no coarse material was removed.

Test Specimen Details

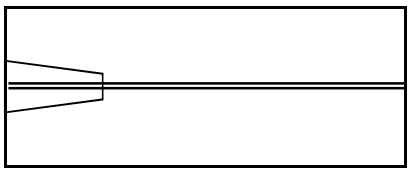
Moisture Content (%) : 18

Bulk Density (Mg/m3) : 2.070

Dry Density (Mg/m3) : 1.760

Head of Water (mm)	Rate of Flow (mL/s)	Duration (s)	Discharge Apperance
50	0.13	42.25	Clear
180	0.14	47.06	Clear
380	0.24	45.5	Clear
1020	0.6	33.21	Clear

The diameter of the pinhole showed no significant measurable change.



The soil would be classified as ND1.

© Copyright 2017 SOCOTEC UK Limited. All rights reserved

TEST REPORT

DETERMINATION OF DISPERSIBILITY - PINHOLE METHOD - BS1377: Part 5: 1990: CLAUSE 6.2

Project No	A9031-19	Sample Details:	Hole No.	ATK-CP-07A
			Depth (m BGL)	10.00-10.35
Project Name	HAVANT THICKET WATER STORAGE		No.	35
			Type	UT
			ID	

Soil Description : Red mottled grey slightly sandy CLAY.

Natural Moisture Content (%) :

Liquid Limit (%) :

Plastic Limit (%) :

The sample was passed over a 2.00mm sieve and no coarse material was removed.

Test Specimen Details

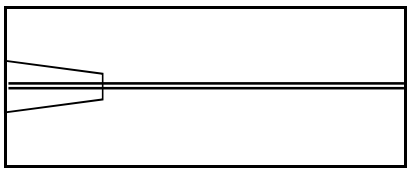
Moisture Content (%) : 19

Bulk Density (Mg/m3) : 2.130

Dry Density (Mg/m3) : 1.790

Head of Water (mm)	Rate of Flow (mL/s)	Duration (s)	Discharge Apperance
50	0.18	31.19	Clear
180	0.27	31.41	Clear
380	0.43	31.22	Clear
1020	1.26	17.85	Clear

The diameter of the pinhole showed no significant measurable change.



The soil would be classified as ND1.

© Copyright 2017 SOCOTEC UK Limited. All rights reserved

TEST REPORT

DETERMINATION OF DISPERSIBILITY - PINHOLE METHOD - BS1377: Part 5: 1990: CLAUSE 6.2

Project No	A9031-19	Sample Details:	Hole No.	ATK-CP-09
			Depth (m BGL)	4.2
Project Name	HAVANT THICKET WATER STORAGE		No.	16
			Type	UT
			ID	

Soil Description : Red mottled grey CLAY.

Natural Moisture Content (%) :

Liquid Limit (%) :

Plastic Limit (%) :

The sample was passed over a 2.00mm sieve and no coarse material was removed.

Test Specimen Details

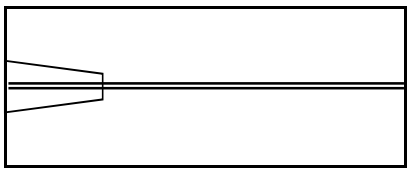
Moisture Content (%) : 18

Bulk Density (Mg/m3) : 2.050

Dry Density (Mg/m3) : 1.730

Head of Water (mm)	Rate of Flow (mL/s)	Duration (s)	Discharge Apperance
50	0.09	48.31	Clear
180	0.1	47.2	Clear
380	0.11	48.03	Clear
1020	0.53	34.28	Clear

The diameter of the pinhole showed no significant measurable change.



The soil would be classified as ND1.

© Copyright 2017 SOCOTEC UK Limited. All rights reserved

TEST REPORT

DETERMINATION OF DISPERSIBILITY - PINHOLE METHOD - BS1377: Part 5: 1990: CLAUSE 6.2

Project No	A9031-19	Sample Details:	Hole No.	ATK-CP-10
			Depth (m BGL)	7.00-7.45
Project Name	HAVANT THICKET WATER STORAGE		No.	26
			Type	UT
			ID	

Soil Description : Dark greyish brown slightly sandy slightly gravelly CLAY.

Natural Moisture Content (%) :

Liquid Limit (%) :

Plastic Limit (%) :

The sample was passed over a 2.00mm sieve and no coarse material was removed.

Test Specimen Details

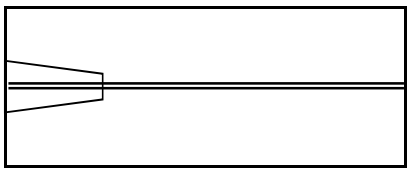
Moisture Content (%) : 20

Bulk Density (Mg/m3) : 2.100

Dry Density (Mg/m3) : 1.750

Head of Water (mm)	Rate of Flow (mL/s)	Duration (s)	Discharge Apperance
50	0.17	32.09	Clear
180	0.58	15.35	Clear
380	1.14	15.35	Clear
1020	2.68	8.03	Clear

The diameter of the pinhole showed no significant measurable change.



The soil would be classified as ND1.

© Copyright 2017 SOCOTEC UK Limited. All rights reserved

TEST REPORT

DETERMINATION OF DISPERSIBILITY - PINHOLE METHOD - BS1377: Part 5: 1990: CLAUSE 6.2

Project No	A9031-19	Sample Details:	Hole No.	ATK-CP-11
			Depth (m BGL)	4
Project Name	HAVANT THICKET WATER STORAGE		No.	19
			Type	UT
			ID	

Soil Description : Dark greyish brown slightly sandy CLAY.

Natural Moisture Content (%) :

Liquid Limit (%) :

Plastic Limit (%) :

The sample was passed over a 2.00mm sieve and no coarse material was removed.

Test Specimen Details

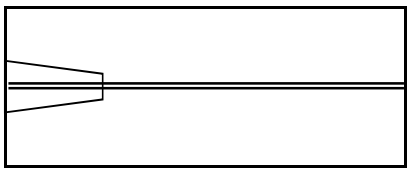
Moisture Content (%) : 24

Bulk Density (Mg/m3) : 1.950

Dry Density (Mg/m3) : 1.580

Head of Water (mm)	Rate of Flow (mL/s)	Duration (s)	Discharge Apperance
50	0.08	51.32	Clear
180	0.33	50.47	Clear
380	0.36	36.18	Clear
1020	0.78	21.84	Clear

The diameter of the pinhole showed no significant measurable change.



The soil would be classified as ND1.

© Copyright 2017 SOCOTEC UK Limited. All rights reserved

TEST REPORT

DETERMINATION OF DISPERSIBILITY - PINHOLE METHOD - BS1377: Part 5: 1990: CLAUSE 6.2

Project No	A9031-19	Sample Details:	Hole No.	ATK-CP-11
			Depth (m BGL)	6
Project Name	HAVANT THICKET WATER STORAGE		No.	27
			Type	UT
			ID	

Soil Description : Brown slightly sandy CLAY.

Natural Moisture Content (%) :

Liquid Limit (%) :

Plastic Limit (%) :

The sample was passed over a 2.00mm sieve and no coarse material was removed.

Test Specimen Details

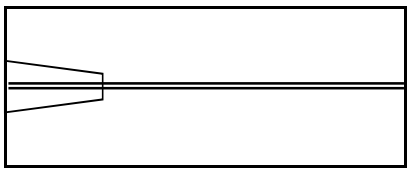
Moisture Content (%) : 22

Bulk Density (Mg/m3) : 1.950

Dry Density (Mg/m3) : 1.600

Head of Water (mm)	Rate of Flow (mL/s)	Duration (s)	Discharge Apperance
50	0.1	61.25	Clear
180	0.38	21.03	Clear
380	0.45	21.22	Clear
1020	0.71	21.18	Clear

The diameter of the pinhole showed no significant measurable change.



The soil would be classified as ND1.

© Copyright 2017 SOCOTEC UK Limited. All rights reserved

TEST REPORT

DETERMINATION OF DISPERSIBILITY - PINHOLE METHOD - BS1377: Part 5: 1990: CLAUSE 6.2

Project No	A9031-19	Sample Details:	Hole No.	ATK-CP-12
			Depth (m BGL)	6.00-6.50
Project Name	HAVANT THICKET WATER STORAGE		No.	24
			Type	B
			ID	

Soil Description : Red and light grey slightly sandy CLAY.

Natural Moisture Content (%) :

Liquid Limit (%) :

Plastic Limit (%) :

The sample was passed over a 2.00mm sieve and no coarse material was removed.

Test Specimen Details

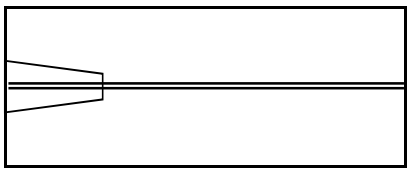
Moisture Content (%) : 15

Bulk Density (Mg/m3) : 2.170

Dry Density (Mg/m3) : 1.890

Head of Water (mm)	Rate of Flow (mL/s)	Duration (s)	Discharge Apperance
50	0.21	30.5	Clear
180	0.23	32.28	Clear
380	0.49	30.66	Clear
1020	1.59	11.97	Clear

The diameter of the pinhole showed no significant measurable change.



The soil would be classified as ND1.

© Copyright 2017 SOCOTEC UK Limited. All rights reserved

TEST REPORT

DETERMINATION OF DISPERSIBILITY - PINHOLE METHOD - BS1377: Part 5: 1990: CLAUSE 6.2

Project No	A9031-19	Sample Details:	Hole No.	ATK-CP-14
			Depth (m BGL)	5.00-5.40
Project Name	HAVANT THICKET WATER STORAGE		No.	17
			Type	D
			ID	

Soil Description : Dark brown slightly sandy CLAY.

Natural Moisture Content (%) :

Liquid Limit (%) :

Plastic Limit (%) :

The sample was passed over a 2.00mm sieve and no coarse material was removed.

Test Specimen Details

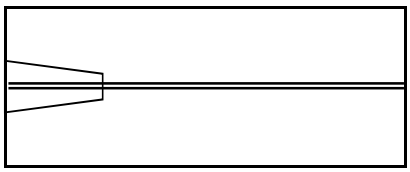
Moisture Content (%) : 20

Bulk Density (Mg/m3) : 2.080

Dry Density (Mg/m3) : 1.740

Head of Water (mm)	Rate of Flow (mL/s)	Duration (s)	Discharge Apperance
50	0.36	20.8	Clear
180	0.73	11.73	Clear
380	1.5	10.33	Clear
1020	3.92	4.34	Clear

The diameter of the pinhole showed no significant measurable change.



The soil would be classified as ND2.

© Copyright 2017 SOCOTEC UK Limited. All rights reserved

TEST REPORT

DETERMINATION OF DISPERSIBILITY - PINHOLE METHOD - BS1377: Part 5: 1990: CLAUSE 6.2

Project No	A9031-19	Sample Details:	Hole No.	ATK-CP-15
			Depth (m BGL)	7
Project Name	HAVANT THICKET WATER STORAGE		No.	29
			Type	UT
			ID	

Soil Description : Dark greyish brown slightly sandy CLAY.

Natural Moisture Content (%) :

Liquid Limit (%) :

Plastic Limit (%) :

The sample was passed over a 2.00mm sieve and no coarse material was removed.

Test Specimen Details

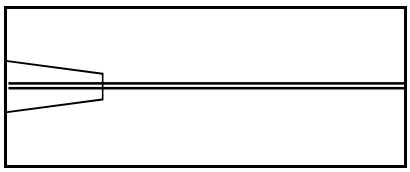
Moisture Content (%) : 24

Bulk Density (Mg/m3) : 1.930

Dry Density (Mg/m3) : 1.560

Head of Water (mm)	Rate of Flow (mL/s)	Duration (s)	Discharge Apperance
50	0.18	30.66	Clear
180	0.2	43.06	Clear
380	0.22	44.1	Clear
1020	0.86	25.68	Clear

The diameter of the pinhole showed no significant measurable change.



The soil would be classified as ND1.

© Copyright 2017 SOCOTEC UK Limited. All rights reserved

TEST REPORT

DETERMINATION OF DISPERSIBILITY - PINHOLE METHOD - BS1377: Part 5: 1990: CLAUSE 6.2

Project No	A9031-19	Sample Details:	Hole No.	ATK-TP-01
			Depth (m BGL)	3.00-3.10
Project Name	HAVANT THICKET WATER STORAGE		No.	14
			Type	B
			ID	

Soil Description : Brown slightly sandy CLAY.

Natural Moisture Content (%) :

Liquid Limit (%) :

Plastic Limit (%) :

The sample was passed over a 2.00mm sieve and no coarse material was removed.

Test Specimen Details

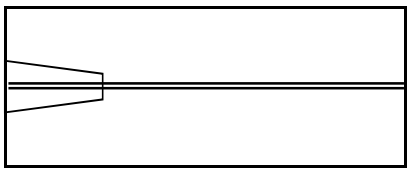
Moisture Content (%) : 23

Bulk Density (Mg/m3) : 1.980

Dry Density (Mg/m3) : 1.610

Head of Water (mm)	Rate of Flow (mL/s)	Duration (s)	Discharge Apperance
50	0.2	30.5	Clear
180	0.23	30.41	Clear
380	0.61	30.47	Clear
1020	3.12	7.22	Clear

The diameter of the pinhole showed no significant measurable change.



The soil would be classified as ND2.

© Copyright 2017 SOCOTEC UK Limited. All rights reserved

TEST REPORT

DETERMINATION OF DISPERSIBILITY - PINHOLE METHOD - BS1377: Part 5: 1990: CLAUSE 6.2

Project No	A9031-19	Sample Details:	Hole No.	ATK-TP-02
			Depth (m BGL)	2.20-2.40
Project Name	HAVANT THICKET WATER STORAGE		No.	8
			Type	B
			ID	

Soil Description : Light brown slightly sandy CLAY.

Natural Moisture Content (%) :

Liquid Limit (%) :

Plastic Limit (%) :

The sample was passed over a 2.00mm sieve and no coarse material was removed.

Test Specimen Details

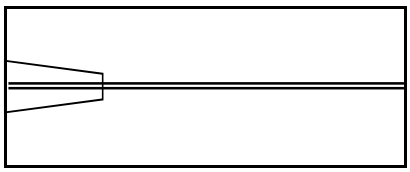
Moisture Content (%) : 24

Bulk Density (Mg/m3) : 2.030

Dry Density (Mg/m3) : 1.640

Head of Water (mm)	Rate of Flow (mL/s)	Duration (s)	Discharge Apperance
50	0.35	20.21	Clear
180	0.62	13.64	Clear
380	1	9.96	Clear
1020	1.87	10.14	Clear

The diameter of the pinhole showed no significant measurable change.



The soil would be classified as ND1.

© Copyright 2017 SOCOTEC UK Limited. All rights reserved

TEST REPORT

DETERMINATION OF DISPERSIBILITY - PINHOLE METHOD - BS1377: Part 5: 1990: CLAUSE 6.2

Project No	A9031-19	Sample Details:	Hole No.	ATK-TP-03
			Depth (m BGL)	1.6
Project Name	HAVANT THICKET WATER STORAGE		No.	8
			Type	D
			ID	

Soil Description : Brown sandy CLAY.

Natural Moisture Content (%) :

Liquid Limit (%) :

Plastic Limit (%) :

The sample was passed over a 2.00mm sieve and no coarse material was removed.

Test Specimen Details

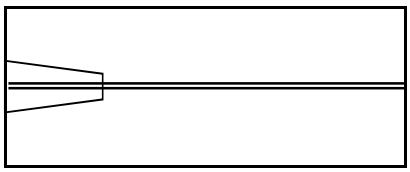
Moisture Content (%) : 25

Bulk Density (Mg/m3) : 2.010

Dry Density (Mg/m3) : 1.600

Head of Water (mm)	Rate of Flow (mL/s)	Duration (s)	Discharge Apperance
50	0.06	93.05	Clear
180	0.21	28.17	Clear
380	0.63	11.91	Clear
1020	2.16	5.33	Clear

The diameter of the pinhole showed no significant measurable change.



The soil would be classified as ND1.

© Copyright 2017 SOCOTEC UK Limited. All rights reserved

TEST REPORT

DETERMINATION OF DISPERSIBILITY - PINHOLE METHOD - BS1377: Part 5: 1990: CLAUSE 6.2

Project No	A9031-19	Sample Details:	Hole No.	ATK-TP-03
			Depth (m BGL)	3.10-3.20
Project Name	HAVANT THICKET WATER STORAGE		No.	12
			Type	D
			ID	

Soil Description : Brown slightly sandy CLAY.

Natural Moisture Content (%) :

Liquid Limit (%) :

Plastic Limit (%) :

The sample was passed over a 2.00mm sieve and no coarse material was removed.

Test Specimen Details

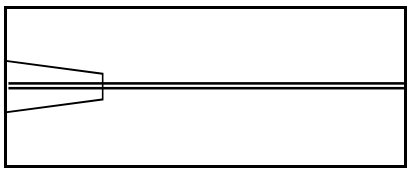
Moisture Content (%) : 20

Bulk Density (Mg/m3) : 2.080

Dry Density (Mg/m3) : 1.730

Head of Water (mm)	Rate of Flow (mL/s)	Duration (s)	Discharge Apperance
50	0.12	51.16	Clear
180	0.88	1084	Clear
380	2.22	9.67	Clear
1020			

The diameter of the pinhole showed no significant measurable change.



The soil would be classified as ND3.

© Copyright 2017 SOCOTEC UK Limited. All rights reserved

TEST REPORT

DETERMINATION OF DISPERSIBILITY - PINHOLE METHOD - BS1377: Part 5: 1990: CLAUSE 6.2

Project No	A9031-19	Sample Details:	Hole No.	ATK-TP-05
			Depth (m BGL)	3.3
Project Name	HAVANT THICKET WATER STORAGE		No.	15
			Type	D
			ID	

Soil Description : Brown slightly sandy CLAY.

Natural Moisture Content (%) :

Liquid Limit (%) :

Plastic Limit (%) :

The sample was passed over a 2.00mm sieve and no coarse material was removed.

Test Specimen Details

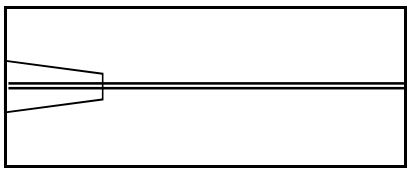
Moisture Content (%) : 21

Bulk Density (Mg/m3) : 2.050

Dry Density (Mg/m3) : 1.700

Head of Water (mm)	Rate of Flow (mL/s)	Duration (s)	Discharge Apperance
50	0.47	13.95	Clear
180	0.5	17.15	Clear
380	1.22	13.89	Clear
1020	3.6	6.25	Clear

The diameter of the pinhole showed no significant measurable change.



The soil would be classified as ND2.

© Copyright 2017 SOCOTEC UK Limited. All rights reserved

TEST REPORT

DETERMINATION OF DISPERSIBILITY - PINHOLE METHOD - BS1377: Part 5: 1990: CLAUSE 6.2

Project No	A9031-19	Sample Details:	Hole No.	ATK-TP-06
			Depth (m BGL)	0.9
Project Name	HAVANT THICKET WATER STORAGE		No.	7
			Type	D
			ID	

Soil Description : Light brown slightly sandy CLAY.

Natural Moisture Content (%) :

Liquid Limit (%) :

Plastic Limit (%) :

The sample was passed over a 2.00mm sieve and no coarse material was removed.

Test Specimen Details

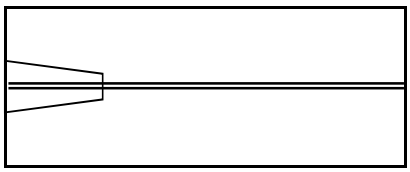
Moisture Content (%) : 22

Bulk Density (Mg/m3) : 2.020

Dry Density (Mg/m3) : 1.660

Head of Water (mm)	Rate of Flow (mL/s)	Duration (s)	Discharge Apperance
50	0.29	20.44	Clear
180	0.34	20.5	Clear
380	0.96	20.35	Clear
1020	1.63	10.41	Clear

The diameter of the pinhole showed no significant measurable change.



The soil would be classified as ND1.

© Copyright 2017 SOCOTEC UK Limited. All rights reserved

TEST REPORT

DETERMINATION OF DISPERSIBILITY - PINHOLE METHOD - BS1377: Part 5: 1990: CLAUSE 6.2

Project No	A9031-19	Sample Details:	Hole No.	ATK-TP-06
			Depth (m BGL)	3.00
Project Name	HAVANT THICKET WATER STORAGE		No.	12
			Type	D
			ID	

Soil Description : Light brown slightly sandy CLAY.

Natural Moisture Content (%) :

Liquid Limit (%) :

Plastic Limit (%) :

The sample was passed over a 2.00mm sieve and no coarse material was removed.

Test Specimen Details

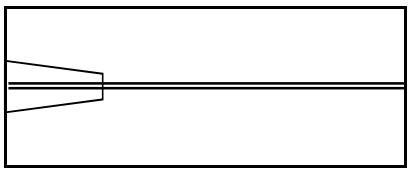
Moisture Content (%) : 21

Bulk Density (Mg/m3) : 2.060

Dry Density (Mg/m3) : 1.700

Head of Water (mm)	Rate of Flow (mL/s)	Duration (s)	Discharge Apperance
50	0.14	45.53	Clear
180	0.19	45.36	Clear
380	0.38	46.57	Clear
1020	1.98	8.85	Clear

The diameter of the pinhole showed no significant measurable change.



The soil would be classified as ND1.

© Copyright 2017 SOCOTEC UK Limited. All rights reserved

TEST REPORT

DETERMINATION OF DISPERSIBILITY - PINHOLE METHOD - BS1377: Part 5: 1990: CLAUSE 6.2

Project No	A9031-19	Sample Details:	Hole No.	ATK-TPM-03
			Depth (m BGL)	1.60-1.70
Project Name	HAVANT THICKET WATER STORAGE		No.	6
			Type	B
			ID	

Soil Description : Light brown slightly sandy CLAY.

Natural Moisture Content (%) :

Liquid Limit (%) :

Plastic Limit (%) :

The sample was passed over a 2.00mm sieve and no coarse material was removed.

Test Specimen Details

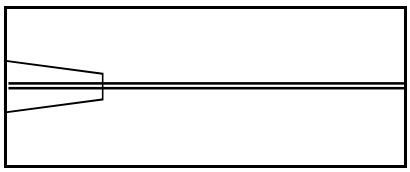
Moisture Content (%) : 21

Bulk Density (Mg/m3) : 1.980

Dry Density (Mg/m3) : 1.640

Head of Water (mm)	Rate of Flow (mL/s)	Duration (s)	Discharge Apperance
50	0.45	14.31	Clear
180	0.88	10.21	Clear
380	1.4	8.23	Clear
1020	2.74	6.21	Clear

The diameter of the pinhole showed no significant measurable change.



The soil would be classified as ND1.

© Copyright 2017 SOCOTEC UK Limited. All rights reserved

TEST REPORT

DETERMINATION OF DISPERSIBILITY - PINHOLE METHOD - BS1377: Part 5: 1990: CLAUSE 6.2

Project No	A9031-19	Sample Details:	Hole No.	ATK-TPM-03
			Depth (m BGL)	3.60-3.70
Project Name	HAVANT THICKET WATER STORAGE		No.	12
			Type	B
			ID	

Soil Description : Brown slightly sandy CLAY.

Natural Moisture Content (%) :

Liquid Limit (%) :

Plastic Limit (%) :

The sample was passed over a 2.00mm sieve and no coarse material was removed.

Test Specimen Details

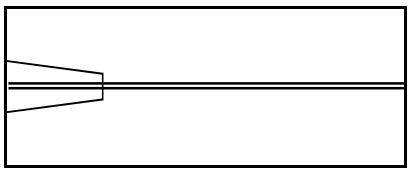
Moisture Content (%) : 22

Bulk Density (Mg/m3) : 1.920

Dry Density (Mg/m3) : 1.570

Head of Water (mm)	Rate of Flow (mL/s)	Duration (s)	Discharge Apperance
50	0.34	20.56	Clear
180	0.47	20.41	Clear
380	0.51	20.43	Clear
1020	0.8	20.62	Clear

The diameter of the pinhole showed no significant measurable change.



The soil would be classified as ND1.

© Copyright 2017 SOCOTEC UK Limited. All rights reserved

TEST REPORT

DETERMINATION OF DISPERSIBILITY - PINHOLE METHOD - BS1377: Part 5: 1990: CLAUSE 6.2

Project No	A9031-19	Sample Details:	Hole No.	ATK-TPM-05
			Depth (m BGL)	2.2
Project Name	HAVANT THICKET WATER STORAGE		No.	101
			Type	D
			ID	

Soil Description : Light brown slightly sandy CLAY.

Natural Moisture Content (%) :

Liquid Limit (%) :

Plastic Limit (%) :

The sample was passed over a 2.00mm sieve and no coarse material was removed.

Test Specimen Details

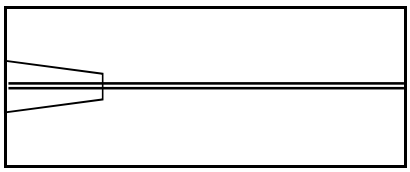
Moisture Content (%) : 24

Bulk Density (Mg/m3) : 2.030

Dry Density (Mg/m3) : 1.640

Head of Water (mm)	Rate of Flow (mL/s)	Duration (s)	Discharge Apperance
50	0.39	16.87	Clear
180	1.14	11.31	Clear
380	1.8	10.56	Clear
1020			

The diameter of the pinhole showed no significant measurable change.



The soil would be classified as ND3.

© Copyright 2017 SOCOTEC UK Limited. All rights reserved

TEST REPORT

DETERMINATION OF DISPERSIBILITY - PINHOLE METHOD - BS1377: Part 5: 1990: CLAUSE 6.2

Project No	A9031-19	Sample Details:	Hole No.	ATK-TPM-05
			Depth (m BGL)	3.3
Project Name	HAVANT THICKET WATER STORAGE		No.	15
			Type	B
			ID	

Soil Description : Brown slightly sandy CLAY.

Natural Moisture Content (%) :

Liquid Limit (%) :

Plastic Limit (%) :

The sample was passed over a 2.00mm sieve and no coarse material was removed.

Test Specimen Details

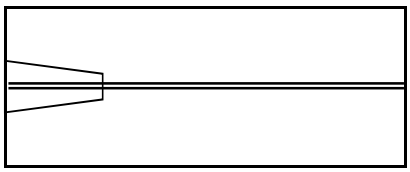
Moisture Content (%) : 22

Bulk Density (Mg/m3) : 2.020

Dry Density (Mg/m3) : 1.660

Head of Water (mm)	Rate of Flow (mL/s)	Duration (s)	Discharge Apperance
50	0.205	31.66	Clear
180	0.27	27.57	Clear
380	1.08	10.67	Clear
1020	3.32	4.67	Clear

The diameter of the pinhole showed no significant measurable change.



The soil would be classified as ND2.

© Copyright 2017 SOCOTEC UK Limited. All rights reserved

TEST REPORT

DETERMINATION OF DISPERSIBILITY - PINHOLE METHOD - BS1377: Part 5: 1990: CLAUSE 6.2

Project No	A9031-19	Sample Details:	Hole No.	ATK-TPM-05
			Depth (m BGL)	4.40-4.50
Project Name	HAVANT THICKET WATER STORAGE		No.	17
			Type	B
			ID	

Soil Description : Dark brown slightly sandy CLAY.

Natural Moisture Content (%) :

Liquid Limit (%) :

Plastic Limit (%) :

The sample was passed over a 2.00mm sieve and no coarse material was removed.

Test Specimen Details

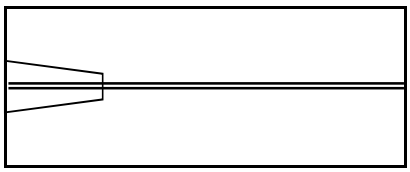
Moisture Content (%) : 22

Bulk Density (Mg/m3) : 2.030

Dry Density (Mg/m3) : 1.660

Head of Water (mm)	Rate of Flow (mL/s)	Duration (s)	Discharge Apperance
50	0.08	65.24	Clear
180	0.09	61.86	Clear
380	0.34	16.18	Clear
1020	1.18	10.61	Clear

The diameter of the pinhole showed no significant measurable change.



The soil would be classified as ND1.

© Copyright 2017 SOCOTEC UK Limited. All rights reserved

TEST REPORT

1252

Report No. EFS/205161 (Ver. 1)

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

Site: A9031-19 Havant Thicket Winter Storage

The 3 samples described in this report were registered for analysis by SOCOTEC UK Limited on 04-Feb-2020. This report supersedes any versions previously issued by the laboratory.

The analysis was completed by: 07-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)
Analytical and Deviating Sample Overview (Page 3)
Table of Method Descriptions (Page 4)
Table of Report Notes (Page 5)
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: 07-Feb-2020

Tests marked '^' 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 :			mg/kg	mg/l	%	pH Units												
Method Codes :			ICPACIDS	ICPWSS	TSBRE1	WSLM50												
Method Reporting Limits :			20	10	0.005													
UKAS Accredited :			Yes	Yes	No	No												
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**SO4-- (acid sol)**	**SO4-- (H2O sol) mg/l**	**Total Sulphur.**	**pH (BS1377)**												
2084619	BH02 D 6 1.80	13-Dec-19	1320	299	0.073	8.3												
2084620	BH02 D 10 3.40	13-Dec-19	929	391	0.064	8.1												
2084621	BH02 D 15 4.60	13-Dec-19	1240	430	0.384	8.2												

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

Contact Neil Cooke

A9031-19 Havant Thicket Winter Storage

Sample Analysis

Date Printed	**07-Feb-2020**
Report Number	**EFS/205161**
Table Number	**1**

Where individual results are flagged see report notes for status.

Analytical and Deviating Sample Overview

Customer SOCOTEC UK Doncaster
Site A9031-19 Havant Thicket Winter Storage
Report No S205161

Consignment No S90954
Date Logged 04-Feb-2020
In-House Report Due 12-Feb-2020

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

ID Number	Description	MethodID	CustServ	Dep.Opt			ICPACIDS	ICPBRE	ICPWSS	KONECL	KoneNO3	TSBRE1	WSLM50
		Sampled	REPORT A	DO Cl if pH<5.5	DO Mg if SO4(W)>3000	DO NO3 if pH<5.5	SO4-- (acid sol)	Magnesium (BRE)	SO4-- (H2O sol) mg/l	Chloride:(2:1)	Nitrate (BRE 2:1): mg/l	Total Sulphur.	pH (BS1377)
							✓		✓				
CL/2084619	BH02 1.80	13/12/19							E				
CL/2084620	BH02 3.40	13/12/19							E				
CL/2084621	BH02 4.60	13/12/19							E				

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.

 The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Soil	ICPACIDS	Oven Dried @ < 35°C	Determination of Total Sulphate in soil samples by Hydrochloric Acid extraction followed by ICPOES detection
Soil	ICPWSS	Oven Dried @ < 35°C	Determination of Water Soluble Sulphate in soil samples by water extraction followed by ICPOES detection
Soil	TSBRE1	Oven Dried @ < 35°C	Determination of Total Carbon and/or Total Sulphur in solid samples by high temperature combustion/infrared detection
Soil	WSLM50	Oven Dried @ < 35°C	Determination of pH of 2.5:1 deionised water to soil extracts using 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 105ºC 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/cm^3@ 15^{o}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 Anthophylite
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
Þ 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_5161

Note: major constituent in upper case

Lab ID Number	Client ID	Description
CL/2084619	BH02 D 6 1.80	Brown Gravel CLAY
CL/2084620	BH02 D 10 3.40	Brown CLAY
CL/2084621	BH02 D 15 4.60	Brown CLAY

TEST REPORT

1252

Report No. EFS/205162 (Ver. 1)

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

Site: A9031-19 Havant Thicket Winter Storage

The 1 sample described in this report were registered for analysis by SOCOTEC UK Limited on 04-Feb-2020. This report supersedes any versions previously issued by the laboratory.
The analysis was completed by: 07-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)
Analytical and Deviating Sample Overview (Page 3)
Table of Method Descriptions (Page 4)
Table of Report Notes (Page 5)
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: 07-Feb-2020

Tests marked '^' 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 :			mg/kg	mg/l	%	pH Units												
Method Codes :			ICPACIDS	ICPWSS	TSBRE1	WSLM50												
Method Reporting Limits :			20	10	0.005													
UKAS Accredited :			Yes	Yes	No	No												
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**SO4-- (acid sol)**	**SO4-- (H2O sol) mg/l**	**Total Sulphur.**	**pH (BS1377)**												
2084622	ATK-CP-02 D 6 1.70	**15-Nov-19**	289	60	0.048	6.8												

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**
Contact	Neil Cooke

A9031-19 Havant Thicket Winter Storage

Sample Analysis

Date Printed	**07-Feb-2020**
Report Number	**EFS/205162**
Table Number	**1**

Where individual results are flagged see report notes for status.

Analytical and Deviating Sample Overview

Customer SOCOTEC UK Doncaster
Site A9031-19 Havant Thicket Winter Storage
Report No S205162

Consignment No S91103
Date Logged 04-Feb-2020
In-House Report Due 12-Feb-2020

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

ID Number	Description	Sampled	MethodID	CustServ	Dep.Opt			ICPACIDS	ICPBRE	ICPWSS	KONECL	KoneNO3	TSBRE1	WSLM50
				REPORT A	DO Cl if pH<5.5	DO Mg if SO4(W)>3000	DO NO3 if pH<5.5	SO4-- (acid sol)	Magnesium (BRE)	SO4-- (H2O sol) mg/l	Chloride:(2:1)	Nitrate (BRE 2:1): mg/l	Total Sulphur.	pH (BS1377)
								✓		✓				
CL/2084622	ATK-CP-02 1.70	15/11/19								E				

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.

 The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Soil	ICPACIDS	Oven Dried @ < 35°C	Determination of Total Sulphate in soil samples by Hydrochloric Acid extraction followed by ICPOES detection
Soil	ICPWSS	Oven Dried @ < 35°C	Determination of Water Soluble Sulphate in soil samples by water extraction followed by ICPOES detection
Soil	TSBRE1	Oven Dried @ < 35°C	Determination of Total Carbon and/or Total Sulphur in solid samples by high temperature combustion/infrared detection
Soil	WSLM50	Oven Dried @ < 35°C	Determination of pH of 2.5:1 deionised water to soil extracts using 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 105ºC 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/cm^3@ 15^{o}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 Anthophylite
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
Þ 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_5162

Note: major constituent in upper case

Lab ID Number	Client ID	Description
CL/2084622	ATK-CP-02 D 6 1.70	Brown SAND

TEST REPORT

1252

Report No. EFS/205163 (Ver. 1)

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

Site: A9031-19 Havant Thicket Water Storage

The 1 sample described in this report were registered for analysis by SOCOTEC UK Limited on 04-Feb-2020. This report supersedes any versions previously issued by the laboratory.
The analysis was completed by: 07-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)
Analytical and Deviating Sample Overview (Page 3)
Table of Method Descriptions (Page 4)
Table of Report Notes (Page 5)
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: 07-Feb-2020

Tests marked '^' 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 :			mg/kg	mg/l	%	pH Units												
Method Codes :			ICPACIDS	ICPWSS	TSBRE1	WSLM50												
Method Reporting Limits :			20	10	0.005													
UKAS Accredited :			Yes	Yes	No	No												
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**SO4-- (acid sol)**	**SO4-- (H2O sol) mg/l**	**Total Sulphur.**	**pH (BS1377)**												
2084623	ATK-CP-01 D 12 2.50	**13-Dec-19**	155	33	0.140	7.2												

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**
Contact	Neil Cooke

A9031-19 Havant Thicket Water Storage

Sample Analysis

Date Printed	**07-Feb-2020**
Report Number	**EFS/205163**
Table Number	**1**

Analytical and Deviating Sample Overview

Customer SOCOTEC UK Doncaster
Site A9031-19 Havant Thicket Water Storage
Report No S205163

Consignment No S91103
Date Logged 04-Feb-2020
In-House Report Due 12-Feb-2020

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

ID Number	Description	MethodID	CustServ	Dep.Opt			ICPACIDS	ICPBRE	ICPWSS	KONECL	KoneNO3	TSBRE1	WSLM50
		Sampled	REPORT A	DO Cl if pH<5.5	DO Mg if SO4(W)>3000	DO NO3 if pH<5.5	SO4-- (acid sol)	Magnesium (BRE)	SO4-- (H2O sol) mg/l	Chloride:(2:1)	Nitrate (BRE 2:1): mg/l	Total Sulphur.	pH (BS1377)
							✓		✓				
CL/2084623	ATK-CP-01 2.50	13/12/19							E				

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.

 The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Soil	ICPACIDS	Oven Dried @ < 35°C	Determination of Total Sulphate in soil samples by Hydrochloric Acid extraction followed by ICPOES detection
Soil	ICPWSS	Oven Dried @ < 35°C	Determination of Water Soluble Sulphate in soil samples by water extraction followed by ICPOES detection
Soil	TSBRE1	Oven Dried @ < 35°C	Determination of Total Carbon and/or Total Sulphur in solid samples by high temperature combustion/infrared detection
Soil	WSLM50	Oven Dried @ < 35°C	Determination of pH of 2.5:1 deionised water to soil extracts using 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 105ºC 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/cm^3@ 15^{o}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 Anthophylite
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
Þ 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 Water Storage
Report Number : S20_5163

Note: major constituent in upper case

Lab ID Number	Client ID	Description
CL/2084623	ATK-CP-01 D 12 2.50	Brown CLAY

TEST REPORT

1252

Report No. EFS/205164 (Ver. 1)

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

Site: A9031-19 Havant Thicket Winter Storage

The 3 samples described in this report were registered for analysis by SOCOTEC UK Limited on 04-Feb-2020. This report supersedes any versions previously issued by the laboratory.

The analysis was completed by: 07-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)
Analytical and Deviating Sample Overview (Page 3)
Table of Method Descriptions (Page 4)
Table of Report Notes (Page 5)
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: 07-Feb-2020

Tests marked '^' 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 :			mg/kg	mg/l	%	pH Units												
Method Codes :			ICPACIDS	ICPWSS	TSBRE1	WSLM50												
Method Reporting Limits :			20	10	0.005													
UKAS Accredited :			Yes	Yes	No	No												
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**SO4-- (acid sol)**	**SO4-- (H2O sol) mg/l**	**Total Sulphur.**	**pH (BS1377)**												
2084624	ATK-CP-07A D 3 1.20	27-Nov-19	1520	58	0.068	5.8												
2084625	ATK-CP-07A D 12 3.50	27-Nov-19	329	21	0.034	8.1												
2084626	ATK-CP-07A D 22	27-Nov-19	90	16	0.024	8.6												

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

Contact Neil Cooke

A9031-19 Havant Thicket Winter Storage

Sample Analysis

Date Printed	**07-Feb-2020**
Report Number	**EFS/205164**
Table Number	**1**

Where individual results are flagged see report notes for status.

Analytical and Deviating Sample Overview

Customer SOCOTEC UK Doncaster
Site A9031-19 Havant Thicket Winter Storage
Report No S205164

Consignment No S91266
Date Logged 04-Feb-2020
In-House Report Due 12-Feb-2020

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

ID Number	Description	MethodID	CustServ	Dep.Opt			ICPACIDS	ICPBRE	ICPWSS	KONECL	KoneNO3	TSBRE1	WSLM50
		Sampled	REPORT A	DO Cl if pH<5.5	DO Mg if SO4(W)>3000	DO NO3 if pH<5.5	SO4-- (acid sol)	Magnesium (BRE)	SO4-- (H2O sol) mg/l	Chloride:(2:1)	Nitrate (BRE 2:1): mg/l	Total Sulphur.	pH (BS1377)
							✓		✓				
CL/2084624	ATK-CP-07A 1.20-1.65	27/11/19							E				
CL/2084625	ATK-CP-07A 3.50-4.00	27/11/19							E				
CL/2084626	ATK-CP-07A 6.40	27/11/19							E				

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.

 The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Soil	ICPACIDS	Oven Dried @ < 35°C	Determination of Total Sulphate in soil samples by Hydrochloric Acid extraction followed by ICPOES detection
Soil	ICPWSS	Oven Dried @ < 35°C	Determination of Water Soluble Sulphate in soil samples by water extraction followed by ICPOES detection
Soil	TSBRE1	Oven Dried @ < 35°C	Determination of Total Carbon and/or Total Sulphur in solid samples by high temperature combustion/infrared detection
Soil	WSLM50	Oven Dried @ < 35°C	Determination of pH of 2.5:1 deionised water to soil extracts using 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 105ºC 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/cm^3@ 15^{o}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 Anthophylite
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
Þ 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_5164

Note: major constituent in upper case

Lab ID Number	Client ID	Description
CL/2084624	ATK-CP-07A D 3 1.20	Brown CLAY
CL/2084625	ATK-CP-07A D 12 3.50	Brown Silt CLAY Gravel
CL/2084626	ATK-CP-07A D 22	Brown CLAY

TEST REPORT

1252

Report No. EFS/205165 (Ver. 1)

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

Site: A9031-19 Havant Thicket Winter Storage

The 1 sample described in this report were registered for analysis by SOCOTEC UK Limited on 04-Feb-2020. This report supersedes any versions previously issued by the laboratory.
The analysis was completed by: 07-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)
Analytical and Deviating Sample Overview (Page 3)
Table of Method Descriptions (Page 4)
Table of Report Notes (Page 5)
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: 07-Feb-2020

Tests marked '^' 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 :			mg/kg	mg/l	%	pH Units												
Method Codes :			ICPACIDS	ICPWSS	TSBRE1	WSLM50												
Method Reporting Limits :			20	10	0.005													
UKAS Accredited :			Yes	Yes	No	No												
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**SO4-- (acid sol)**	**SO4-- (H2O sol) mg/l**	**Total Sulphur.**	**pH (BS1377)**												
2084627	ATK-CP07A D 34 9.50	**27-Nov-19**	123	27	0.023	8.4												

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**
Contact	Neil Cooke

A9031-19 Havant Thicket Winter Storage

Sample Analysis

Date Printed	**07-Feb-2020**
Report Number	**EFS/205165**
Table Number	**1**

Where individual results are flagged see report notes for status.

Analytical and Deviating Sample Overview

Customer SOCOTEC UK Doncaster
Site A9031-19 Havant Thicket Winter Storage
Report No S205165

Consignment No S91266
Date Logged 04-Feb-2020
In-House Report Due 12-Feb-2020

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

ID Number	Description	MethodID	CustServ	Dep.Opt			ICPACIDS	ICPBRE	ICPWSS	KONECL	KoneNO3	TSBRE1	WSLM50
		Sampled	REPORT A	DO Cl if pH<5.5	DO Mg if SO4(W)>3000	DO NO3 if pH<5.5	SO4-- (acid sol)	Magnesium (BRE)	SO4-- (H2O sol) mg/l	Chloride:(2:1)	Nitrate (BRE 2:1): mg/l	Total Sulphur.	pH (BS1377)
							✓		✓				
CL/2084627	ATK-CP-07A 9.50	27/11/19							E				

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.

 The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Soil	ICPACIDS	Oven Dried @ < 35°C	Determination of Total Sulphate in soil samples by Hydrochloric Acid extraction followed by ICPOES detection
Soil	ICPWSS	Oven Dried @ < 35°C	Determination of Water Soluble Sulphate in soil samples by water extraction followed by ICPOES detection
Soil	TSBRE1	Oven Dried @ < 35°C	Determination of Total Carbon and/or Total Sulphur in solid samples by high temperature combustion/infrared detection
Soil	WSLM50	Oven Dried @ < 35°C	Determination of pH of 2.5:1 deionised water to soil extracts using 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 105ºC 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/cm^3@ 15^{o}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 Anthophylite
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
Þ 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_5165

Note: major constituent in upper case

Lab ID Number	Client ID	Description
CL/2084627	ATK-CP07A D 34 9.50	Brown CLAY

TEST REPORT

1252

Report No. EFS/205166 (Ver. 1)

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

Site: A9031-19 Havant Thicket Winter Storage

The 1 sample described in this report were registered for analysis by SOCOTEC UK Limited on 04-Feb-2020. This report supersedes any versions previously issued by the laboratory.
The analysis was completed by: 07-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)
Analytical and Deviating Sample Overview (Page 3)
Table of Method Descriptions (Page 4)
Table of Report Notes (Page 5)
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: 07-Feb-2020

Tests marked '^' 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 :			mg/kg	mg/l	%	pH Units												
Method Codes :			ICPACIDS	ICPWSS	TSBRE1	WSLM50												
Method Reporting Limits :			20	10	0.005													
UKAS Accredited :			Yes	Yes	No	No												
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**SO4-- (acid sol)**	**SO4-- (H2O sol) mg/l**	**Total Sulphur.**	**pH (BS1377)**												
2084628	ATK-TP-06 D 10 2.00	10-Dec-19	1610	18	0.060	8.0												

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**
Contact	Neil Cooke

A9031-19 Havant Thicket Winter Storage

Sample Analysis

Date Printed	**07-Feb-2020**
Report Number	**EFS/205166**
Table Number	**1**

Where individual results are flagged see report notes for status.

Analytical and Deviating Sample Overview

Customer SOCOTEC UK Doncaster
Site A9031-19 Havant Thicket Winter Storage
Report No S205166

Consignment No S91103
Date Logged 04-Feb-2020
In-House Report Due 12-Feb-2020

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

ID Number	Description	MethodID	CustServ	Dep.Opt			ICPACIDS	ICPBRE	ICPWSS	KONECL	KoneNO3	TSBRE1	WSLM50
		Sampled	REPORT A	DO Cl if pH<5.5	DO Mg if SO4(W)>3000	DO NO3 if pH<5.5	SO4-- (acid sol)	Magnesium (BRE)	SO4-- (H2O sol) mg/l	Chloride:(2:1)	Nitrate (BRE 2:1): mg/l	Total Sulphur.	pH (BS1377)
							✓		✓				
CL/2084628	ATK-TP-06 2.00	10/12/19							E				

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.

 The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Soil	ICPACIDS	Oven Dried @ < 35°C	Determination of Total Sulphate in soil samples by Hydrochloric Acid extraction followed by ICPOES detection
Soil	ICPWSS	Oven Dried @ < 35°C	Determination of Water Soluble Sulphate in soil samples by water extraction followed by ICPOES detection
Soil	TSBRE1	Oven Dried @ < 35°C	Determination of Total Carbon and/or Total Sulphur in solid samples by high temperature combustion/infrared detection
Soil	WSLM50	Oven Dried @ < 35°C	Determination of pH of 2.5:1 deionised water to soil extracts using 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 105ºC 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/cm^3@ 15^{o}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 Anthophylite
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
Þ 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_5166

Note: major constituent in upper case

Lab ID Number	Client ID	Description
CL/2084628	ATK-TP-06 D 10 2.00	Soil

TEST REPORT

1252

Report No. EFS/205167 (Ver. 1)

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

Site: A9031-19 Havant Thicket Winter Storage

The 2 samples described in this report were registered for analysis by SOCOTEC UK Limited on 04-Feb-2020. This report supersedes any versions previously issued by the laboratory.

The analysis was completed by: 07-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)
Analytical and Deviating Sample Overview (Page 3)
Table of Method Descriptions (Page 4)
Table of Report Notes (Page 5)
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: 07-Feb-2020

Tests marked '^' 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 :			mg/kg	mg/l	%	pH Units												
Method Codes :			ICPACIDS	ICPWSS	TSBRE1	WSLM50												
Method Reporting Limits :			20	10	0.005													
UKAS Accredited :			Yes	Yes	No	No												
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**SO4-- (acid sol)**	**SO4-- (H2O sol) mg/l**	**Total Sulphur.**	**pH (BS1377)**												
2084629	ATK RC-02 D 7 1.50	**13-Nov-19**	234	20	0.032	4.9												
2084630	ATK-RC-02 D 15 3.00	**13-Nov-19**	208	20	0.028	5.0												

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**
Contact	Neil Cooke

A9031-19 Havant Thicket Winter Storage

Sample Analysis

Date Printed	**07-Feb-2020**
Report Number	**EFS/205167**
Table Number	**1**

Where individual results are flagged see report notes for status.

Analytical and Deviating Sample Overview

Customer SOCOTEC UK Doncaster
Site A9031-19 Havant Thicket Winter Storage
Report No S205167

Consignment No S91220
Date Logged 04-Feb-2020
In-House Report Due 12-Feb-2020

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

ID Number	Description	MethodID	CustServ	Dep.Opt			ICPACIDS	ICPBRE	ICPWSS	KONECL	KoneNO3	TSBRE1	WSLM50
		Sampled	REPORT A	DO Cl if pH<5.5	DO Mg if SO4(W)>3000	DO NO3 if pH<5.5	SO4-- (acid sol)	Magnesium (BRE)	SO4-- (H2O sol) mg/l	Chloride:(2:1)	Nitrate (BRE 2:1): mg/l	Total Sulphur.	pH (BS1377)
							✓		✓				
CL/2084629	ATK RC-02 1.50	13/11/19							E				
CL/2084630	ATK-RC-02 3.00	13/11/19							E				

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.

 The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Soil	ICPACIDS	Oven Dried @ < 35°C	Determination of Total Sulphate in soil samples by Hydrochloric Acid extraction followed by ICPOES detection
Soil	ICPWSS	Oven Dried @ < 35°C	Determination of Water Soluble Sulphate in soil samples by water extraction followed by ICPOES detection
Soil	TSBRE1	Oven Dried @ < 35°C	Determination of Total Carbon and/or Total Sulphur in solid samples by high temperature combustion/infrared detection
Soil	WSLM50	Oven Dried @ < 35°C	Determination of pH of 2.5:1 deionised water to soil extracts using 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 105ºC 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/cm^3@ 15^{o}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 Anthophylite
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
Þ 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_5167

Note: major constituent in upper case

Lab ID Number	Client ID	Description
CL/2084629	ATK RC-02 D 7 1.50	Brown Silt CLAY
CL/2084630	ATK-RC-02 D 15 3.00	Brown SAND

APPENDIX F

GEOENVIRONMENTAL LABORATORY TEST RESULTS

Test Reports – Soil	EFS/20_3736, EFS/20_4276, EFS/20_4466, EFS/20_4476, EFS/20_4802, EFS/20_4803, EFS/20_4804, EFS/20_4805, EFS/20_4806, EFS/20_4807, EFS/20_4808, EFS/20_4809, EFS/20_4810, EFS/20_4811
Test Reports – Water	EXR/298004, EXR/299837, 20010330
Test Report – Topsoil Analysis	EFS_240820

TEST REPORT

1252

Report No. EFS/203736 (Ver. 1)

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

Site: A9031-19 Havant Thicket Water Storage Reservoir

The 2 samples described in this report were registered for analysis by SOCOTEC UK Limited on 22-Nov-2019. This report supersedes any versions previously issued by the laboratory.
The analysis was completed by: 05-Dec-2019

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 (Pages 2 to 6)
Analytical and Deviating Sample Overview (Pages 7 to 8)
Table of Additional Report Notes (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: 05-Dec-2019

Tests marked '^' 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.

Units :			mg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	% M/M	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			AMMAR	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	FOCS	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA
Method Reporting Limits :			0.5	10	10	20	10	10	30	0.04	0.2	0.2	0.2	0.2	0.2	0.01	0.2	0.2
UKAS Accredited :			Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Exchange.Ammonium AR**	**Benzene**	**Ethyl Benzene**	**m/p Xylenes**	**o Xylene**	**Toluene**	**Xylenes**	**S.O.M. % (Calc)**	**GRO**	**GRO (>C5 - C6)**	**GRO (>C7 - C8)**	**GRO (>C8 - C10)**	**GRO (C5-C6 Aliphatic)**	**GRO (C5-C7 Aromatic)**	**GRO (C6-C7)**	**GRO (C6-C8 Aliphatic)**
1979269	ATK-TP-03 ES 1 0.20	**14-Nov-19**	0.5	< 10.0	< 10.0	< 20.0	< 10.0	< 10.0	< 30.0	2.97	< 0.200	< 0.200	< 0.200	< 0.200	< 0.200	< 0.010	< 0.200*	< 0.200*
1979270	ATK-TP-03 ES 14 3.40	**14-Nov-19**	1.3	< 10.0	< 10.0	< 20.0	< 10.0	< 10.0	< 30.0	0.85	< 0.200	< 0.200	< 0.200	< 0.200	< 0.200	< 0.010	< 0.200*	< 0.200*

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

Contact Neil Cooke

A9031-19 Havant Thicket Water Storage Reservoir

Sample Analysis

Date Printed	**05-Dec-2019**
Report Number	**EFS/203736**
Table Number	**1**

Where individual results are flagged see report notes for status.

Units :			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			GROHSA	ICPACIDS	ICPBOR	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPSOIL	KONECR
Method Reporting Limits :			0.01	20	0.5	0.3	0.1	0.5	0.5	0.5	1	0.1	0.5	0.5	0.6	3	36	0.1
UKAS Accredited :			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**GRO (C7-C8 Aromatic)**	**SO4-- (acid sol)**	**Boron (H20 Soluble)**	**Arsenic (MS)**	**Cadmium (MS)**	**Chromium (MS)**	**Copper (MS)**	**Lead (MS)**	**Manganese (MS)**	**Mercury (MS)**	**Nickel (MS)**	**Selenium (MS)**	**Vanadium (MS)**	**Zinc (MS)**	**Iron**	**Chromium vi:**
1979269	ATK-TP-03 ES 1 0.20	**14-Nov-19**	< 0.010	725	0.9	11.2	0.22	36.9	13.8	32.8	200.8	<0.1	47.7	0.6	42.8	59.2	23000	<0.1
1979270	ATK-TP-03 ES 14 3.40	**14-Nov-19**	< 0.010	1310	1.2	10.3	0.3	41.6	16.7	13.1	97.1	<0.1	26.7	1	50.1	105.7	21900	<0.1

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

Contact Neil Cooke

A9031-19 Havant Thicket Water Storage Reservoir

Sample Analysis

Date Printed	**05-Dec-2019**
Report Number	**EFS/203736**
Table Number	**1**

Where individual results are flagged see report notes for status.

Units :			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS
Method Reporting Limits :			0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
UKAS Accredited :			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Acenaphthene**	**Acenaphthylene**	**Anthracene**	**Benzo(a)anthracene**	**Benzo(a)pyrene**	**Benzo(b)fluoranthene**	**Benzo(ghi)perylene**	**Benzo(k)fluoranthene**	**Chrysene**	**Dibenzo(ah)anthracene**	**Fluoranthene**	**Fluorene**	**Indeno(123-cd)pyrene**	**Naphthalene**	**Phenanthrene**	**Pyrene**
1979269	ATK-TP-03 ES 1 0.20	**14-Nov-19**	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
1979270	ATK-TP-03 ES 14 3.40	**14-Nov-19**	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08

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

Contact Neil Cooke

A9031-19 Havant Thicket Water Storage Reservoir

Sample Analysis

Date Printed	**05-Dec-2019**
Report Number	**EFS/203736**
Table Number	**1**

Where individual results are flagged see report notes for status.

Units :			mg/kg	pH Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			PAHMSUS	PHSOIL	SFAPI	SFAPI	SFAPI	SFAS	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI
Method Reporting Limits :			1.28		0.5	0.5	0.5	0.5	4	4	4	11.88	8.75	5.62	4	4	20	20
UKAS Accredited :			Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Total PAH (Sum of USEPA 16)**	**pH units (AR)**	**Cyanide(Free) (AR)**	**Cyanide(Total) (AR)**	**Phenol Index.(AR)**	**Sulphide as S (AR)**	**TPH Ali Band >C10-C12**	**TPH Ali Band >C12-C16**	**TPH Ali Band >C16-C21**	**TPH Ali Band >C16-C35**	**TPH Ali Band >C21-C35**	**TPH Ali Band >C35-C44**	**TPH Ali Band >C40-C44**	**TPH Ali Band >C8-C10**	**TPH Ali Band >C8-C40**	**TPH Ali Band >C8-C44**
1979269	ATK-TP-03 ES 1 0.20	14-Nov-19	< 1.28	4.7	<0.5	<0.5	<0.5	<0.5	< 4.00	< 4.00	< 4.00	< 11.9	< 8.76	< 5.62	< 4.00	< 4.00	< 20.0	< 20.0
1979270	ATK-TP-03 ES 14 3.40	14-Nov-19	< 1.28	7.4	<0.5	<0.5	<0.5	<0.5	< 4.00	< 4.00	< 4.00	< 11.9	< 8.76	< 5.62	< 4.00	< 4.00	< 20.0	< 20.0

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

Contact Neil Cooke

A9031-19 Havant Thicket Water Storage Reservoir

Sample Analysis

Date Printed	**05-Dec-2019**
Report Number	**EFS/203736**
Table Number	**1**

Where individual results are flagged see report notes for status.

Units :			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	% M/M						
Method Codes :			TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	WSLM59						
Method Reporting Limits :			4	4	4	8.75	5.62	4	4	20	20	0.02						
UKAS Accredited :			Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	Yes						
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**TPH Aro Band >C10-C12**	**TPH Aro Band >C12-C16**	**TPH Aro Band >C16-C21**	**TPH Aro Band >C21-C35**	**TPH Aro Band >C35-C44**	**TPH Aro Band >C40-C44**	**TPH Aro Band >C8-C10**	**TPH Aro Band >C8-C40**	**TPH Aro Band >C8-C44**	**Total Organic Carbon**						
1979269	ATK-TP-03 ES 1 0.20	**14-Nov-19**	< 4.00	< 4.00	6.53	< 8.76	< 5.62	< 4.00	< 4.00	< 20.0	< 20.0	1.72						
1979270	ATK-TP-03 ES 14 3.40	**14-Nov-19**	< 4.00	< 4.00	7.34	< 8.76	7.26	< 4.00	< 4.00	< 20.0	20.3	0.49						

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

Contact Neil Cooke

A9031-19 Havant Thicket Water Storage Reservoir

Sample Analysis

Date Printed	**05-Dec-2019**
Report Number	**EFS/203736**
Table Number	**1**

Where individual results are flagged see report notes for status.

Analytical and Deviating Sample Overview

Customer SOCOTEC UK Doncaster
Site A9031-19 Havant Thicket Water Storage Reservoir
Report No S203736

Consignment No S89793
Date Logged 22-Nov-2019
In-House Report Due 03-Dec-2019

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

ID Number	Description	MethodID	AMMAR	GustServ	FOCS	GROHSA	ICPACIDS	ICPBOR	ICPMSS										ICPSOIL	KONECR	PAHMSUS	PHSOIL	SFAPI			SFAS
		Sampled	Exchange.Ammonium AR	REPORT A	S.O.M. % (Calc)	GRO (AA-UK) HSA-GCFID	SO4-- (acid sol)	Boron (H20 Soluble)	Arsenic (MS)	Cadmium (MS)	Chromium (MS)	Copper (MS)	Lead (MS)	Manganese (MS)	Mercury (MS)	Nickel (MS)	Selenium (MS)	Vanadium (MS)	Zinc (MS)	Iron	Chromium vi:	PAH (16) by GCMS	pH units (AR)	Cyanide(Free) (AR)	Cyanide(Total) (AR)	Phenol Index.(AR)	Sulphide as S (AR)
			✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	✓	✓	✓	
CL/1979269	ATK-TP-03 ES 1 0.20	14/11/19																									
CL/1979270	ATK-TP-03 ES 14 3.40	14/11/19																									

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.

The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Analytical and Deviating Sample Overview

Customer SOCOTEC UK Doncaster
Site A9031-19 Havant Thicket Water Storage Reservoir
Report No S203736

Consignment No S89793
Date Logged 22-Nov-2019
In-House Report Due 03-Dec-2019

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

ID Number	Description	Sampled	TPH by GCFID (Si-UKCWG)>44	Total Organic Carbon
MethodID			TPHUSSI	WSLM59
			✓	✓
CL/1979269	ATK-TP-03 ES 1 0.20	14/11/19		
CL/1979270	ATK-TP-03 ES 14 3.40	14/11/19		

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.

The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Report Number : EFS/203736

Additional Report Notes

Method Code	Sample ID	The following information should be taken into consideration when using the data contained within this report
GROHSA	CL1979269 CL1979270	The Secondary 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 (including the Primary Process Control) 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 (C6-C7, C6-C8 Ali) . These circumstances should be taken into consideration when utilising the data.

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Soil	AMMAR	As Received	Determination of Exchangeable Ammonium in Soil using potassium chloride extraction, discrete colorimetric detection
Soil	BTEXHSA	As Received	Determination of Benzene, Toluene, Ethyl benzene and Xylenes (BTEX) by Headspace GCFID
Soil	FOCS	Oven Dried @ < 35°C	Calculation of Soil Organic Matter content from Organic Carbon content of soil samples
Soil	GROHSA	As Received	Determination of Total Gasoline Range Organics Hydrocarbons (GRO) by Headspace GCFID
Soil	ICPACIDS	Oven Dried @ < 35°C	Determination of Total Sulphate in soil samples by Hydrochloric Acid extraction followed by ICPOES detection
Soil	ICPBOR	Oven Dried @ < 35°C	Determination of Boron in soil samples by hot water extraction followed by ICPOES detection
Soil	ICPMSS	Oven Dried @ < 35°C	Determination of Metals in Marine Sediments and Soil samples by aqua regia digestion followed by ICPMS detection
Soil	ICPSOIL	Oven Dried @ < 35°C	Determination of Metals in soil samples by aqua regia digestion followed by ICPOES detection
Soil	KONECR	Oven Dried @ < 35°C	Determination of Chromium vi in soil samples by water extraction followed by colorimetric detection
Soil	PAHMSUS	As Received	Determination of Polycyclic Aromatic Hydrocarbons (PAH) by hexane/acetone extraction followed by GCMS detection
Soil	PHSOIL	As Received	Determination of pH of 2.5:1 deionised water to soil extracts using pH probe.
Soil	SFAPI	As Received	Segmented flow analysis with colorimetric detection
Soil	SFAS	As Received	Segmented flow analysis with colorimetric detection
Soil	TPHUSSI	As Received	Determination of hexane/acetone extractable Hydrocarbons in soil with GCFID detection including quantitation of Aromatic and Aliphatic fractions.
Soil	WSLM59	Oven Dried @ < 35°C	Determination of Organic Carbon in soil using sulphurous Acid digestion followed by high temperature combustion and IR 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 105ºC 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/cm^3@ 15^{o}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 Anthophylite
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
Þ 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 Water Storage Reservoir
Report Number : S20_3736

Note: major constituent in upper case

Lab ID Number	Client ID	Description
CL/1979269	ATK-TP-03 ES 1 0.20	Brown Gravel CLAY
CL/1979270	ATK-TP-03 ES 14 3.40	Brown Silt CLAY

TEST REPORT

1252

Report No. EFS/204276 (Ver. 2)

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

Site: A9031-19 Havant Thicket Water Storage

The 2 samples described in this report were registered for analysis by SOCOTEC UK Limited on 13-Dec-2019. This report supersedes any versions previously issued by the laboratory.
The analysis was completed by: 15-Jan-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 (Pages 2 to 6)
Analytical and Deviating Sample Overview (Pages 7 to 8)
Table of Method Descriptions (Page 9)
Table of Report Notes (Page 10)
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: 15-Jan-2020

Tests marked '^' 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 :			mg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	% M/M	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			AMMAR	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	FOCS	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA
Method Reporting Limits :			0.5	10	10	20	10	10	30	0.04	0.2	0.2	0.2	0.2	0.2	0.2	0.01	0.2	0.2
UKAS Accredited :			Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Exchange.Ammonium AR**	**Benzene**	**Ethyl Benzene**	**m/p Xylenes**	**o Xylene**	**Toluene**	**Xylenes**	**S.O.M. % (Calc)**	**GRO**	**GRO (>C5 - C6)**	**GRO (>C7 - C8)**	**GRO (>C8 - C10)**	**GRO (C5-C6 Aliphatic)**	**GRO (C5-C7 Aromatic)**	**GRO (C6-C7)**	**GRO (C6-C8 Aliphatic)**	
1981190	ATK-CP06 ES 14 2.50	**04-Dec-19**	<0.5	< 10.0	< 10.0	< 20.0	< 10.0	< 10.0	< 30.0	0.86	< 0.200	< 0.200	< 0.200	< 0.200	< 0.200	< 0.010	< 0.200	< 0.200	
1981191	ATK-CP06 ES 19 4.00	**04-Dec-19**	<0.5	< 10.0	< 10.0	< 20.0	< 10.0	< 10.0	< 30.0	0.40	< 0.200	< 0.200	< 0.200	< 0.200	< 0.200	< 0.010	< 0.200	< 0.200	

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

Contact Neil Cooke

A9031-19 Havant Thicket Water Storage

Sample Analysis

Date Printed	**15-Jan-2020**
Report Number	**EFS/204276**
Table Number	**1**

Where individual results are flagged see report notes for status.

			Units :	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
			Method Codes :	GROHSA	ICPACIDS	ICPBOR	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPSOIL	KONECR
			Method Reporting Limits :	0.01	20	0.5	0.3	0.1	0.5	0.5	0.5	1	0.1	0.5	0.5	0.6	3	36	0.1
			UKAS Accredited :	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No
LAB ID Number CL/	Client Sample Description	Sample Date		GRO (C7-C8 Aromatic)	SO4-- (acid sol)	Boron (H20 Soluble)	Arsenic (MS)	Cadmium (MS)	Chromium (MS)	Copper (MS)	Lead (MS)	Manganese (MS)	Mercury (MS)	Nickel (MS)	Selenium (MS)	Vanadium (MS)	Zinc (MS)	Iron	Chromium vi:
1981190	ATK-CP06 ES 14 2.50	04-Dec-19		< 0.010	558	0.9	14.8	0.23	28.9	22.9	12	131.1	<0.1	49.8	1	48.5	72.3	27400	<0.1
1981191	ATK-CP06 ES 19 4.00	04-Dec-19		< 0.010	173	1	4	<0.1	35.5	38.7	12.2	130.2	0.16	8.9	1.8	52.5	26.1	37400	<0.1

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
Contact	Neil Cooke

A9031-19 Havant Thicket Water Storage

Sample Analysis

Date Printed	15-Jan-2020
Report Number	EFS/204276
Table Number	1

Where individual results are flagged see report notes for status.

Units :			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS
Method Reporting Limits :			0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
UKAS Accredited :			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Acenaphthene**	**Acenaphthylene**	**Anthracene**	**Benzo(a)anthracene**	**Benzo(a)pyrene**	**Benzo(b)fluoranthene**	**Benzo(ghi)perylene**	**Benzo(k)fluoranthene**	**Chrysene**	**Dibenzo(ah)anthracene**	**Fluoranthene**	**Fluorene**	**Indeno(123-cd)pyrene**	**Naphthalene**	**Phenanthrene**	**Pyrene**
1981190	ATK-CP06 ES 14 2.50	**04-Dec-19**	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
1981191	ATK-CP06 ES 19 4.00	**04-Dec-19**	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08

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

Contact Neil Cooke

A9031-19 Havant Thicket Water Storage

Sample Analysis

Date Printed	**15-Jan-2020**
Report Number	**EFS/204276**
Table Number	**1**

Where individual results are flagged see report notes for status.

Units :			mg/kg	pH Units	mg/kg	mg/kg	mg/kg	mg/kg	%	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			PAHMSUS	PHSOIL	SFAPI	SFAPI	SFAPI	SFAS	TMSS	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI
Method Reporting Limits :			1.28		0.5	0.5	0.5	0.5	0.1	4	4	4	11.88	8.75	5.62	4	4	20
UKAS Accredited :			Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Total PAH (Sum of USEPA 16)**	**pH units (AR)**	**Cyanide(Free) (AR)**	**Cyanide(Total) (AR)**	**Phenol Index (AR)**	**Sulphide as S (AR)**	**Tot.Moisture @ 105C**	**TPH Ali Band >C10-C12**	**TPH Ali Band >C12-C16**	**TPH Ali Band >C16-C21**	**TPH Ali Band >C16-C35**	**TPH Ali Band >C21-C35**	**TPH Ali Band >C35-C44**	**TPH Ali Band >C40-C44**	**TPH Ali Band >C8-C10**	**TPH Ali Band >C8-C40**
1981190	ATK-CP06 ES 14 2.50	04-Dec-19	< 1.28	8.2	<0.5	<0.5	<0.5	<0.5	21.7	< 4.00	< 4.00	< 4.00	< 11.9	< 8.76	< 5.62	< 4.00	< 4.00	< 20.0
1981191	ATK-CP06 ES 19 4.00	04-Dec-19	< 1.28	8.4	<0.5	<0.5	<0.5	<0.5	21.0	< 4.00	< 4.00	< 4.00	< 11.9	8.79	< 5.62	< 4.00	< 4.00	< 20.0

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

Contact Neil Cooke

A9031-19 Havant Thicket Water Storage

Sample Analysis

Date Printed	**15-Jan-2020**
Report Number	**EFS/204276**
Table Number	**1**

Where individual results are flagged see report notes for status.

Units :			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	% M/M						
Method Codes :			TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	WSLM59						
Method Reporting Limits :			20	4	4	4	8.75	5.62	4	4	20	20	0.02						
UKAS Accredited :			No	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	Yes						
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**TPH Ali Band >C8-C44**	**TPH Aro Band >C10-C12**	**TPH Aro Band >C12-C16**	**TPH Aro Band >C16-C21**	**TPH Aro Band >C21-C35**	**TPH Aro Band >C35-C44**	**TPH Aro Band >C40-C44**	**TPH Aro Band >C8-C10**	**TPH Aro Band >C8-C40**	**TPH Aro Band >C8-C44**	**Total Organic Carbon**						
1981190	ATK-CP06 ES 14 2.50	**04-Dec-19**	< 20.0	< 4.00	< 4.00	6.90	15.0	< 5.62	< 4.00	< 4.00	25.4	25.4	0.50						
1981191	ATK-CP06 ES 19 4.00	**04-Dec-19**	< 20.0	< 4.00	< 4.00	5.20	< 8.76	< 5.62	< 4.00	< 4.00	< 20.0	< 20.0	0.23						

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**
Contact	Neil Cooke

A9031-19 Havant Thicket Water Storage

Sample Analysis

Date Printed	**15-Jan-2020**
Report Number	**EFS/204276**
Table Number	**1**

Where individual results are flagged see report notes for status.

Analytical and Deviating Sample Overview

Customer SOCOTEC UK Doncaster
Site A9031-19 Havant Thicket Water Storage
Report No S204276

Consignment No S90462
Date Logged 13-Dec-2019
In-House Report Due 23-Dec-2019

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

ID Number	Description	MethodID	AMMAR	CustServ	FOCS	GROHSA	ICPACIDS	ICPBOR	ICPMSS										ICPSOIL	KONECR	PAHMSUS	PHSOIL	SFAPI			SFAS
		Sampled	Exchange.Ammonium AR	REPORT A	S.O.M. % (Calc)	GRO (AA-UK) HSA-GCFID	SO4-- (acid sol)	Boron (H20 Soluble)	Arsenic (MS)	Cadmium (MS)	Chromium (MS)	Copper (MS)	Lead (MS)	Manganese (MS)	Mercury (MS)	Nickel (MS)	Selenium (MS)	Vanadium (MS)	Zinc (MS)	Iron	Chromium vi:	PAH (16) by GCMS	pH units (AR)	Cyanide(Free) (AR)	Cyanide(Total) (AR)	Phenol Index.(AR)	Sulphide as S (AR)
			✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	✓	✓	✓	
CL/1981190	ATK-CP06 2.50	04/12/19				E																					
CL/1981191	ATK-CP06 4.00	04/12/19				E																					

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.

The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Analytical and Deviating Sample Overview

Customer SOCOTEC UK Doncaster
Site A9031-19 Havant Thicket Water Storage
Report No S204276

Consignment No S90462
Date Logged 13-Dec-2019
In-House Report Due 23-Dec-2019

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

ID Number	Description	Sampled	MethodID	TMSS	TPHUSSI	WSLM59
				Tot.Moisture @ 105C	TPH by GCFID (Si-UKCWG)>44	Total Organic Carbon
				✓	✓	✓
CL/1981190	ATK-CP06 2.50	04/12/19				
CL/1981191	ATK-CP06 4.00	04/12/19				

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.

The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Soil	AMMAR	As Received	Determination of Exchangeable Ammonium in Soil using potassium chloride extraction, discrete colorimetric detection
Soil	BTEXHSA	As Received	Determination of Benzene, Toluene, Ethyl benzene and Xylenes (BTEX) by Headspace GCFID
Soil	FOCS	Oven Dried @ < 35°C	Calculation of Soil Organic Matter content from Organic Carbon content of soil samples
Soil	GROHSA	As Received	Determination of Total Gasoline Range Organics Hydrocarbons (GRO) by Headspace GCFID
Soil	ICPACIDS	Oven Dried @ < 35°C	Determination of Total Sulphate in soil samples by Hydrochloric Acid extraction followed by ICPOES detection
Soil	ICPBOR	Oven Dried @ < 35°C	Determination of Boron in soil samples by hot water extraction followed by ICPOES detection
Soil	ICPMSS	Oven Dried @ < 35°C	Determination of Metals in Marine Sediments and Soil samples by aqua regia digestion followed by ICPMS detection
Soil	ICPSOIL	Oven Dried @ < 35°C	Determination of Metals in soil samples by aqua regia digestion followed by ICPOES detection
Soil	KONECR	Oven Dried @ < 35°C	Determination of Chromium vi in soil samples by water extraction followed by colorimetric detection
Soil	PAHMSUS	As Received	Determination of Polycyclic Aromatic Hydrocarbons (PAH) by hexane/acetone extraction followed by GCMS detection
Soil	PHSOIL	As Received	Determination of pH of 2.5:1 deionised water to soil extracts using pH probe.
Soil	SFAPI	As Received	Segmented flow analysis with colorimetric detection
Soil	SFAS	As Received	Segmented flow analysis with colorimetric detection
Soil	TMSS	As Received	Determination of the Total Moisture content at 105ºC by loss on oven drying gravimetric analysis (% based upon wet weight)
Soil	TPHUSSI	As Received	Determination of hexane/acetone extractable Hydrocarbons in soil with GCFID detection including quantitation of Aromatic and Aliphatic fractions.
Soil	WSLM59	Oven Dried @ < 35°C	Determination of Organic Carbon in soil using sulphurous Acid digestion followed by high temperature combustion and IR 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 105ºC 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/cm^3@ 15^{o}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 Anthophylite
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
Þ 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 Water Storage

Report Number : S20_4276

Note: major constituent in upper case

Lab ID Number	Client ID	Description
CL/1981190	ATK-CP06 ES 14 2.50	Brown CLAY
CL/1981191	ATK-CP06 ES 19 4.00	Brown CLAY

TEST REPORT

1252

Report No. EFS/204466 (Ver. 1)

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

Site: A9031-19 Havant Thicket Water Storage

The 1 sample described in this report were registered for analysis by SOCOTEC UK Limited on 20-Dec-2019. This report supersedes any versions previously issued by the laboratory.
The analysis was completed by: 16-Jan-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 4)
The accreditation status of subcontracted analysis is displayed on the appended subcontracted analysis reports.
Analytical and Deviating Sample Overview (Page 5)
Table of Method Descriptions (Page 6)
Table of Report Notes (Page 7)
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: 16-Jan-2020

Tests marked '^' 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 :	Sub020															
		Method Reporting Limits :																
		UKAS Accredited :	Yes															
LAB ID Number CL/	Client Sample Description	Sample Date	^Asbestos ID (Stage 1)															
1981989	ATK-TP-06 ES 2 0.10		NADIS															

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**
Contact	Neil Cooke

A9031-19 Havant Thicket Water Storage

Sample Analysis

Date Printed	**16-Jan-2020**
Report Number	**EFS/204466**
Table Number	**1**

CONTRACT NO: S10328-6
DATE OF ISSUE: 15.01.20

RESULTS: (cont.)

Table 1: Qualitative Results

SOCOTEC Job I.D: S204466

IOM sample number	Client sample number	ACM type detected	PLM result
S69759	S1981989 ATK-TP-06 0.10	-	No Asbestos Detected

Our detection limit for this method is 0.001%.

COMMENTS:

IOM Consulting cannot accept responsibility for samples that have been incorrectly collected or despatched by external clients.

Any opinions and interpretations expressed herein are out with the scope of our UKAS accreditation.

AUTHORISED BY: .....
D Third
Scientific Technician

working for a healthy and sustainable world

CERTIFICATE OF ANALYSIS

ANALYSIS REQUESTED BY: SOCOTEC UK Ltd
Environmental Chemistry
PO Box 100
Burton upon Trent
Staffordshire
DE15 0XD

CONTRACT NO: S10328-6

DATE OF ISSUE: 15.01.20

DATE SAMPLE RECEIVED: 03.01.20

DATE SAMPLE ANALYSED: 14.01.20

DESCRIPTION: One soil/loose aggregate sample.

ANALYSIS REQUESTED: Qualitative analysis of a sample for determination of presence/type of asbestos.

METHODS:

Our method involves initial examination of the samples followed by detailed analysis of a representative sub-sample. The sub-sample is analysed qualitatively for asbestos by polarised light and dispersion staining as described by the Health and Safety Executive in HSG 248.

RESULTS:

Initial Screening

No asbestos was detected in the soil sample by stereo-binocular and polarised light microscopy.

A summary of the results is given in Table 1.

www.iom-world.org

Registered Address: Research Avenue North, Riccarton, Edinburgh, EH14 4AP, United Kingdom
Tel: 0131 449 8000 Fax: 0131 449 8084 Email: iom@iom-world.org

IOM CONSULTING LIMITED, registered in Scotland No. SC205670

UKAS TESTING
0374

Analytical and Deviating Sample Overview

Customer SOCOTEC UK Doncaster
Site A9031-19 Havant Thicket Water Storage
Report No S204466

Consignment No S90465
Date Logged 20-Dec-2019
In-House Report Due 08-Jan-2020

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

ID Number	Description	Sampled	MethodID	CustServ	Sub020
				REPORT A	^Asbestos ID (Stage 1)
					✓
CL/1981989	ATK-TP-06 0.10	D		D	D

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.

 The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Soil	SubCon*	*	Contact Laboratory for details of the methodology used by the sub-contractor.

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 105ºC 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/cm^3@ 15^{o}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 Anthophylite
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
Þ 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 Water Storage
Report Number : S20_4466

Note: major constituent in upper case

Lab ID Number	Client ID	Description
CL/1981989	ATK-TP-06 ES 2 0.10	Brown Gravel SILT

TEST REPORT

1252

Report No. EFS/204476 (Ver. 1)

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

Site: A9031-19 Havant Thicket Winter Storage

The 1 sample described in this report were registered for analysis by SOCOTEC UK Limited on 20-Dec-2019. This report supersedes any versions previously issued by the laboratory.

The analysis was completed by: 10-Jan-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 (Pages 2 to 6)
Analytical and Deviating Sample Overview (Pages 7 to 8)
Table of Method Descriptions (Page 9)
Table of Report Notes (Page 10)
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: 10-Jan-2020

Tests marked '^' 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.

Units :			mg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	% M/M	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			AMMAR	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	FOCS	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA
Method Reporting Limits :			0.5	10	10	20	10	10	30	0.04	0.2	0.2	0.2	0.2	0.2	0.01	0.2	0.2
UKAS Accredited :			Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Exchange.Ammonium AR**	**Benzene**	**Ethyl Benzene**	**m/p Xylenes**	**o Xylene**	**Toluene**	**Xylenes**	**S.O.M. % (Calc)**	**GRO**	**GRO (>C5 - C6)**	**GRO (>C7 - C8)**	**GRO (>C8 - C10)**	**GRO (C5-C6 Aliphatic)**	**GRO (C5-C7 Aromatic)**	**GRO (C6-C7)**	**GRO (C6-C8 Aliphatic)**
1982004	ATK-CP16 3.50	17-Dec-19	1.2	< 10.0	< 10.0	< 20.0	< 10.0	< 10.0	< 30.0	1.21	< 0.200	< 0.200	< 0.200	< 0.200	< 0.200	< 0.010	< 0.200	< 0.200

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**
Contact	Neil Cooke

A9031-19 Havant Thicket Winter Storage

Sample Analysis

Date Printed	**10-Jan-2020**
Report Number	**EFS/204476**
Table Number	**1**

Units :			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			GROHSA	ICPACIDS	ICPBOR	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPSOIL	KONECR
Method Reporting Limits :			0.01	20	0.5	0.3	0.1	0.5	0.5	0.5	1	0.1	0.5	0.5	0.6	3	36	0.1
UKAS Accredited :			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**GRO (C7-C8 Aromatic)**	**SO4-- (acid sol)**	**Boron (H20 Soluble)**	**Arsenic (MS)**	**Cadmium (MS)**	**Chromium (MS)**	**Copper (MS)**	**Lead (MS)**	**Manganese (MS)**	**Mercury (MS)**	**Nickel (MS)**	**Selenium (MS)**	**Vanadium (MS)**	**Zinc (MS)**	**Iron**	**Chromium vi:**
1982004	ATK-CP16 3.50	17-Dec-19	< 0.010	64	1.6	0.7	<0.1	3.8	25.2	2.5	8.4	<0.1	0.7	<0.5	6.6	8.3	4020	<0.1

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**
Contact	Neil Cooke

A9031-19 Havant Thicket Winter Storage

Sample Analysis

Date Printed	**10-Jan-2020**
Report Number	**EFS/204476**
Table Number	**1**

Units :			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS
Method Reporting Limits :			0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
UKAS Accredited :			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Acenaphthene**	**Acenaphthylene**	**Anthracene**	**Benzo(a)anthracene**	**Benzo(a)pyrene**	**Benzo(b)fluoranthene**	**Benzo(ghi)perylene**	**Benzo(k)fluoranthene**	**Chrysene**	**Dibenzo(ah)anthracene**	**Fluoranthene**	**Fluorene**	**Indeno(123-cd)pyrene**	**Naphthalene**	**Phenanthrene**	**Pyrene**
1982004	ATK-CP16 3.50	**17-Dec-19**	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08

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**
Contact	Neil Cooke

A9031-19 Havant Thicket Winter Storage

Sample Analysis

Date Printed	**10-Jan-2020**
Report Number	**EFS/204476**
Table Number	**1**

Where individual results are flagged see report notes for status.

Units :			mg/kg	pH Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			PAHMSUS	PHSOIL	SFAPI	SFAPI	SFAPI	SFAS	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI
Method Reporting Limits :			1.28		0.5	0.5	0.5	0.5	4	4	4	11.88	8.75	5.62	4	4	20	20
UKAS Accredited :			Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Total PAH (Sum of USEPA 16)**	**pH units (AR)**	**Cyanide(Free) (AR)**	**Cyanide(Total) (AR)**	**Phenol Index.(AR)**	**Sulphide as S (AR)**	**TPH Ali Band >C10-C12**	**TPH Ali Band >C12-C16**	**TPH Ali Band >C16-C21**	**TPH Ali Band >C16-C35**	**TPH Ali Band >C21-C35**	**TPH Ali Band >C35-C44**	**TPH Ali Band >C40-C44**	**TPH Ali Band >C8-C10**	**TPH Ali Band >C8-C40**	**TPH Ali Band >C8-C44**
1982004	ATK-CP16 3.50	17-Dec-19	< 1.28	8.7	<0.5	<0.5	<0.5	<0.5	< 4.00	< 4.00	< 4.00	< 11.9	< 8.76	< 5.62	< 4.00	< 4.00	< 20.0	< 20.0

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**
Contact	Neil Cooke

A9031-19 Havant Thicket Winter Storage

Sample Analysis

Date Printed	**10-Jan-2020**
Report Number	**EFS/204476**
Table Number	**1**

		Units :	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	% M/M						
		Method Codes :	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	WSLM59						
		Method Reporting Limits :	4	4	4	8.75	5.62	4	4	20	20	0.02						
		UKAS Accredited :	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	Yes						
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**TPH Aro Band >C10-C12**	**TPH Aro Band >C12-C16**	**TPH Aro Band >C16-C21**	**TPH Aro Band >C21-C35**	**TPH Aro Band >C35-C44**	**TPH Aro Band >C40-C44**	**TPH Aro Band >C8-C10**	**TPH Aro Band >C8-C40**	**TPH Aro Band >C8-C44**	**Total Organic Carbon**						
1982004	ATK-CP16 3.50	**17-Dec-19**	< 4.00	< 4.00	< 4.00	< 8.76	< 5.62	< 4.00	< 4.00	< 20.0	< 20.0	0.7						

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**
Contact	Neil Cooke

A9031-19 Havant Thicket Winter Storage

Sample Analysis

Date Printed	**10-Jan-2020**
Report Number	**EFS/204476**
Table Number	**1**

Analytical and Deviating Sample Overview

Customer **SOCOTEC UK Doncaster**
Site **A9031-19 Havant Thicket Winter Storage**
Report No **S204476**

Consignment No S90675
Date Logged 20-Dec-2019
In-House Report Due 08-Jan-2020

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

ID Number	Description	Sampled	MethodID	AMMAR	CustServ	FOCS	GROHSA	ICPACIDS	ICPBOR	ICPMSS										ICPSOIL	KONECR	PAHMSUS	PHSOIL	SFAPI			SFAS
				Exchange.Ammonium AR	REPORT A	S.O.M. % (Calc)	GRO (AA-UK) HSA-GCFID	SO4-- (acid sol)	Boron (H20 Soluble)	Arsenic (MS)	Cadmium (MS)	Chromium (MS)	Copper (MS)	Lead (MS)	Manganese (MS)	Mercury (MS)	Nickel (MS)	Selenium (MS)	Vanadium (MS)	Zinc (MS)	Iron	Chromium vi:	PAH (16) by GCMS	pH units (AR)	Cyanide(Free) (AR)	Cyanide(Total) (AR)	Phenol Index.(AR)	Sulphide as S (AR)
				✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	✓	✓	✓	
CL/1982004	ATK-CP16 3.50	17/12/19					E																				

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.

The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Analytical and Deviating Sample Overview

Customer **SOCOTEC UK Doncaster**
Site **A9031-19 Havant Thicket Winter Storage**
Report No **S204476**

Consignment No S90675
Date Logged 20-Dec-2019
In-House Report Due 08-Jan-2020

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

ID Number	Description	Sampled	MethodID	TPHUSSI	WSLM59
				TPH by GCFID (Si-UKCWG)>44	Total Organic Carbon
				✓	✓
CL/1982004	ATK-CP16 3.50	17/12/19			

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.

The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Soil	AMMAR	As Received	Determination of Exchangeable Ammonium in Soil using potassium chloride extraction, discrete colorimetric detection
Soil	BTEXHSA	As Received	Determination of Benzene, Toluene, Ethyl benzene and Xylenes (BTEX) by Headspace GCFID
Soil	FOCS	Oven Dried @ < 35°C	Calculation of Soil Organic Matter content from Organic Carbon content of soil samples
Soil	GROHSA	As Received	Determination of Total Gasoline Range Organics Hydrocarbons (GRO) by Headspace GCFID
Soil	ICPACIDS	Oven Dried @ < 35°C	Determination of Total Sulphate in soil samples by Hydrochloric Acid extraction followed by ICPOES detection
Soil	ICPBOR	Oven Dried @ < 35°C	Determination of Boron in soil samples by hot water extraction followed by ICPOES detection
Soil	ICPMSS	Oven Dried @ < 35°C	Determination of Metals in Marine Sediments and Soil samples by aqua regia digestion followed by ICPMS detection
Soil	ICPSOIL	Oven Dried @ < 35°C	Determination of Metals in soil samples by aqua regia digestion followed by ICPOES detection
Soil	KONECR	Oven Dried @ < 35°C	Determination of Chromium vi in soil samples by water extraction followed by colorimetric detection
Soil	PAHMSUS	As Received	Determination of Polycyclic Aromatic Hydrocarbons (PAH) by hexane/acetone extraction followed by GCMS detection
Soil	PHSOIL	As Received	Determination of pH of 2.5:1 deionised water to soil extracts using pH probe.
Soil	SFAPI	As Received	Segmented flow analysis with colorimetric detection
Soil	SFAS	As Received	Segmented flow analysis with colorimetric detection
Soil	TPHUSSI	As Received	Determination of hexane/acetone extractable Hydrocarbons in soil with GCFID detection including quantitation of Aromatic and Aliphatic fractions.
Soil	WSLM59	Oven Dried @ < 35°C	Determination of Organic Carbon in soil using sulphurous Acid digestion followed by high temperature combustion and IR 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 105ºC 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/cm^3@ 15^{o}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 Anthophylite
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
Þ 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_4476

Note: major constituent in upper case

Lab ID Number	Client ID	Description
CL/1982004	ATK-CP16 3.50	Brown/Grey CLAY

TEST REPORT

1252

Report No. EFS/204802 (Ver. 1)

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

Site: A9031-19 Havant Thicket Winter Storage

The 2 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: 27-Jan-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 (Pages 2 to 6)
Analytical and Deviating Sample Overview (Pages 7 to 8)
Table of Method Descriptions (Page 9)
Table of Report Notes (Page 10)
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: 27-Jan-2020

Tests marked '^' 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 :			mg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	% M/M	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			AMMAR	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	FOCS	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA
Method Reporting Limits :			0.5	10	10	20	10	10	30	0.04	0.2	0.2	0.2	0.2	0.2	0.01	0.2	0.2
UKAS Accredited :			Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Exchange.Ammonium AR**	**Benzene**	**Ethyl Benzene**	**m/p Xylenes**	**o Xylene**	**Toluene**	**Xylenes**	**S.O.M. % (Calc)**	**GRO**	**GRO (>C5 - C6)**	**GRO (>C7 - C8)**	**GRO (>C8 - C10)**	**GRO (C5-C6 Aliphatic)**	**GRO (C5-C7 Aromatic)**	**GRO (C6-C7)**	**GRO (C6-C8 Aliphatic)**
2083384	ATK-TP-02 ES 1 0.30	**15-Jan-20**	0.5	< 10.0	< 10.0	< 20.0	< 10.0	< 10.0	< 30.0	1.40	< 0.200	< 0.200	< 0.200	< 0.200	< 0.200	< 0.010	< 0.200	< 0.200
2083385	ATK-TP-02 ES 4 1.00	**15-Jan-20**	0.6	< 10.0	< 10.0	< 20.0	< 10.0	< 10.0	< 30.0	1.07	< 0.200	< 0.200	< 0.200	< 0.200	< 0.200	< 0.010	< 0.200	< 0.200

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

Contact Neil Cooke

A9031-19 Havant Thicket Winter Storage

Sample Analysis

Date Printed	**27-Jan-2020**
Report Number	**EFS/204802**
Table Number	**1**

Where individual results are flagged see report notes for status.

			Units :	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
			Method Codes :	GROHSA	ICPACIDS	ICPBOR	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPSOIL	KONECR
			Method Reporting Limits :	0.01	20	0.5	0.3	0.1	0.5	0.5	0.5	1	0.1	0.5	0.5	0.6	3	36	0.1
			UKAS Accredited :	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No
LAB ID Number CL/	Client Sample Description	Sample Date		GRO (C7-C8 Aromatic)	SO4-- (acid sol)	Boron (H20 Soluble)	Arsenic (MS)	Cadmium (MS)	Chromium (MS)	Copper (MS)	Lead (MS)	Manganese (MS)	Mercury (MS)	Nickel (MS)	Selenium (MS)	Vanadium (MS)	Zinc (MS)	Iron	Chromium vi:
2083384	ATK-TP-02 ES 1 0.30	15-Jan-20		< 0.010	984	1.4	6.4	0.43	19	19.5	27.1	124.6	<0.1	7.6	<0.5	32.8	70.2	22200	<0.1
2083385	ATK-TP-02 ES 4 1.00	15-Jan-20		< 0.010	208	0.8	7.1	<0.1	20.4	7.2	14.3	99.8	<0.1	7.8	<0.5	37	37	20700	0.1

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
Contact	Neil Cooke

A9031-19 Havant Thicket Winter Storage

Sample Analysis

Date Printed	27-Jan-2020
Report Number	EFS/204802
Table Number	1

Where individual results are flagged see report notes for status.

Units :			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS
Method Reporting Limits :			0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
UKAS Accredited :			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Acenaphthene**	**Acenaphthylene**	**Anthracene**	**Benzo(a)anthracene**	**Benzo(a)pyrene**	**Benzo(b)fluoranthene**	**Benzo(ghi)perylene**	**Benzo(k)fluoranthene**	**Chrysene**	**Dibenzo(ah)anthracene**	**Fluoranthene**	**Fluorene**	**Indeno(123-cd)pyrene**	**Naphthalene**	**Phenanthrene**	**Pyrene**	
2083384	ATK-TP-02 ES 1 0.30	**15-Jan-20**	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	0.09	< 0.08	< 0.08	
2083385	ATK-TP-02 ES 4 1.00	**15-Jan-20**	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	0.11	< 0.08	< 0.08	

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

Contact Neil Cooke

A9031-19 Havant Thicket Winter Storage

Sample Analysis

Date Printed	**27-Jan-2020**
Report Number	**EFS/204802**
Table Number	**1**

Where individual results are flagged see report notes for status.

Units :			mg/kg	pH Units	mg/kg	mg/kg	mg/kg	mg/kg	%	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			PAHMSUS	PHSOIL	SFAPI	SFAPI	SFAPI	SFAS	TMSS	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI
Method Reporting Limits :			1.28		0.5	0.5	0.5	0.5	0.1	4	4	4	11.88	8.75	5.62	4	4	20
UKAS Accredited :			Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Total PAH (Sum of USEPA 16)**	**pH units (AR)**	**Cyanide(Free) (AR)**	**Cyanide(Total) (AR)**	**Phenol Index.(AR)**	**Sulphide as S (AR)**	**Tot.Moisture @ 105C**	**TPH Ali Band >C10-C12**	**TPH Ali Band >C12-C16**	**TPH Ali Band >C16-C21**	**TPH Ali Band >C16-C35**	**TPH Ali Band >C21-C35**	**TPH Ali Band >C35-C44**	**TPH Ali Band >C40-C44**	**TPH Ali Band >C8-C10**	**TPH Ali Band >C8-C40**
2083384	ATK-TP-02 ES 1 0.30	15-Jan-20	< 1.29	6.1	<0.5	<0.5	<0.5	<0.5	21.8	< 4.00	< 4.00	< 4.00	< 11.9	< 8.76	8.37	5.19	< 4.00	< 20.0
2083385	ATK-TP-02 ES 4 1.00	15-Jan-20	< 1.31	5.4	<0.5	<0.5	<0.5	<0.5	31.4	< 4.00	< 4.00	< 4.00	< 11.9	< 8.76	8.37	5.29	< 4.00	< 20.0

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

Contact Neil Cooke

A9031-19 Havant Thicket Winter Storage

Sample Analysis

Date Printed	**27-Jan-2020**
Report Number	**EFS/204802**
Table Number	**1**

Where individual results are flagged see report notes for status.

Units :			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	% M/M					
Method Codes :			TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	WSLM59	Sub020				
Method Reporting Limits :			20	4	4	4	8.75	5.62	4	4	20	20	0.02					
UKAS Accredited :			No	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	Yes	Yes				
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**TPH Ali Band >C8-C44**	**TPH Aro Band >C10-C12**	**TPH Aro Band >C12-C16**	**TPH Aro Band >C16-C21**	**TPH Aro Band >C21-C35**	**TPH Aro Band >C35-C44**	**TPH Aro Band >C40-C44**	**TPH Aro Band >C8-C10**	**TPH Aro Band >C8-C40**	**TPH Aro Band >C8-C44**	**Total Organic Carbon**	**^Asbestos ID (Stage 1)**				
2083384	ATK-TP-02 ES 1 0.30	**15-Jan-20**	< 20.0	< 4.00	< 4.00	< 4.00	< 8.76	8.98	< 4.00	< 4.00	< 20.0	< 20.0	0.81	NADIS				
2083385	ATK-TP-02 ES 4 1.00	**15-Jan-20**	< 20.0	< 4.00	< 4.00	< 4.00	< 8.76	8.20	< 4.00	< 4.00	< 20.0	< 20.0	0.62					

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**
Contact	Neil Cooke

A9031-19 Havant Thicket Winter Storage

Sample Analysis

Date Printed	**27-Jan-2020**
Report Number	**EFS/204802**
Table Number	**1**

Where individual results are flagged see report notes for status.

IOM

working for a healthy and sustainable world

CERTIFICATE OF ANALYSIS

ANALYSIS REQUESTED BY: SOCOTEC UK Ltd
Environmental Chemistry
PO Box 100
Burton upon Trent
Staffordshire
DE15 0XD

CONTRACT NO: S10328-1

DATE OF ISSUE: 15.01.20

DATE SAMPLE RECEIVED: 03.01.20

DATE SAMPLE ANALYSED: 14.01.20

DESCRIPTION: One soil/loose aggregate sample.

ANALYSIS REQUESTED: Qualitative analysis of a sample for determination of presence/type of asbestos.

METHODS:

Our method involves initial examination of the sample followed by detailed analysis of a representative sub-sample. The sub-sample is analysed qualitatively for asbestos by polarised light and dispersion staining as described by the Health and Safety Executive in HSG 248.

RESULTS:

Initial Screening

No asbestos was detected in the soil sample by stereo-binocular and polarised light microscopy.

A summary of the results is given in Table 1.

www.iom-world.org

Registered Address: Research Avenue North, Riccarton, Edinburgh, EH14 4AP, United Kingdom
Tel: 0131 449 8000 Fax: 0131 449 8084 Email: iom@iom-world.org

IOM CONSULTING LIMITED, registered in Scotland No. SC205670

UKAS TESTING
0374

CONTRACT NO: S10328-1
DATE OF ISSUE: 15.01.20

RESULTS: (cont.)

Table 1: Qualitative Results

SOCOTEC Job I.D: S203737

IOM sample number	Client sample number	ACM type detected	PLM result
S69754	S1979271 ATH-TP-02 0.30	-	No Asbestos Detected

Our detection limit for this method is 0.001%.

COMMENTS:

IOM Consulting cannot accept responsibility for samples that have been incorrectly collected or despatched by external clients.

Any opinions and interpretations expressed herein are out with the scope of our UKAS accreditation.

AUTHORISED BY: .....
D Third
Scientific Technician

Analytical and Deviating Sample Overview

Customer SOCOTEC UK Doncaster
Site A9031-19 Havant Thicket Winter Storage
Report No S204802

Consignment No S91036
Date Logged 16-Jan-2020
In-House Report Due 27-Jan-2020

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

ID Number	Description	MethodID	AMMAR	CustServ	FOCS	GROHSA	ICPACIDS	ICPBOR	ICPMSS										ICPSOIL	KONECR	PAHMSUS	PHSOIL	SFAPI			SFAS
		Sampled	Exchange.Ammonium AR	REPORT A	S.O.M. % (Calc)	GRO (AA-UK) HSA-GCFID	SO4-- (acid sol)	Boron (H20 Soluble)	Arsenic (MS)	Cadmium (MS)	Chromium (MS)	Copper (MS)	Lead (MS)	Manganese (MS)	Mercury (MS)	Nickel (MS)	Selenium (MS)	Vanadium (MS)	Zinc (MS)	Iron	Chromium vi:	PAH (16) by GCMS	pH units (AR)	Cyanide(Free) (AR)	Cyanide(Total) (AR)	Phenol Index.(AR)	Sulphide as S (AR)
			✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	✓	✓	✓	
CL/2083384	ATK-TP-02 0.30	15/01/20																									
CL/2083385	ATK-TP-02 1.00	15/01/20																									

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.

The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Analytical and Deviating Sample Overview

Customer SOCOTEC UK Doncaster
Site A9031-19 Havant Thicket Winter Storage
Report No S204802

Consignment No S91036
Date Logged 16-Jan-2020
In-House Report Due 27-Jan-2020

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

ID Number	Description	Sampled	MethodID	TMSS	TPHUSSI	WSLM59
				Tot.Moisture @ 105C	TPH by GCFID (Si-UKCWG)>44	Total Organic Carbon
				✓	✓	✓
CL/2083384	ATK-TP-02 0.30	15/01/20				
CL/2083385	ATK-TP-02 1.00	15/01/20				

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.

The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Soil	AMMAR	As Received	Determination of Exchangeable Ammonium in Soil using potassium chloride extraction, discrete colorimetric detection
Soil	BTEXHSA	As Received	Determination of Benzene, Toluene, Ethyl benzene and Xylenes (BTEX) by Headspace GCFID
Soil	FOCS	Oven Dried @ < 35°C	Calculation of Soil Organic Matter content from Organic Carbon content of soil samples
Soil	GROHSA	As Received	Determination of Total Gasoline Range Organics Hydrocarbons (GRO) by Headspace GCFID
Soil	ICPACIDS	Oven Dried @ < 35°C	Determination of Total Sulphate in soil samples by Hydrochloric Acid extraction followed by ICPOES detection
Soil	ICPBOR	Oven Dried @ < 35°C	Determination of Boron in soil samples by hot water extraction followed by ICPOES detection
Soil	ICPMSS	Oven Dried @ < 35°C	Determination of Metals in Marine Sediments and Soil samples by aqua regia digestion followed by ICPMS detection
Soil	ICPSOIL	Oven Dried @ < 35°C	Determination of Metals in soil samples by aqua regia digestion followed by ICPOES detection
Soil	KONECR	Oven Dried @ < 35°C	Determination of Chromium vi in soil samples by water extraction followed by colorimetric detection
Soil	PAHMSUS	As Received	Determination of Polycyclic Aromatic Hydrocarbons (PAH) by hexane/acetone extraction followed by GCMS detection
Soil	PHSOIL	As Received	Determination of pH of 2.5:1 deionised water to soil extracts using pH probe.
Soil	SFAPI	As Received	Segmented flow analysis with colorimetric detection
Soil	SFAS	As Received	Segmented flow analysis with colorimetric detection
Soil	TMSS	As Received	Determination of the Total Moisture content at 105ºC by loss on oven drying gravimetric analysis (% based upon wet weight)
Soil	TPHUSSI	As Received	Determination of hexane/acetone extractable Hydrocarbons in soil with GCFID detection including quantitation of Aromatic and Aliphatic fractions.
Soil	WSLM59	Oven Dried @ < 35°C	Determination of Organic Carbon in soil using sulphurous Acid digestion followed by high temperature combustion and IR 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 105ºC 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/cm^3@ 15^{o}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 Anthophylite
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
Þ 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_4802

Note: major constituent in upper case

Lab ID Number	Client ID	Description
CL/2083384	ATK-TP-02 ES 1 0.30	Brown CLAY
CL/2083385	ATK-TP-02 ES 4 1.00	Brown CLAY

TEST REPORT

1252

Report No. EFS/204803 (Ver. 1)

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

Site: A9031-19 Havant Thicket Winter Storage

The 2 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: 27-Jan-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 (Pages 2 to 6)
Analytical and Deviating Sample Overview (Pages 7 to 8)
Table of Method Descriptions (Page 9)
Table of Report Notes (Page 10)
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: 27-Jan-2020

Tests marked '^' 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 :			mg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	% M/M	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			AMMAR	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	FOCS	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA
Method Reporting Limits :			0.5	10	10	20	10	10	30	0.04	0.2	0.2	0.2	0.2	0.2	0.01	0.2	0.2
UKAS Accredited :			Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Exchange.Ammonium AR**	**Benzene**	**Ethyl Benzene**	**m/p Xylenes**	**o Xylene**	**Toluene**	**Xylenes**	**S.O.M. % (Calc)**	**GRO**	**GRO (>C5 - C6)**	**GRO (>C7 - C8)**	**GRO (>C8 - C10)**	**GRO (C5-C6 Aliphatic)**	**GRO (C5-C7 Aromatic)**	**GRO (C6-C7)**	**GRO (C6-C8 Aliphatic)**
2083386	ATK-TP-01 ES 1 0.20	**15-Jan-20**	1.9	< 10.0	< 10.0	< 20.0	< 10.0	< 10.0	< 30.0	0.86	< 0.200	< 0.200	< 0.200	< 0.200	< 0.200	< 0.010	< 0.200	< 0.200
2083387	ATK-TP-01 ES 6 1.00	**15-Jan-20**	0.7	< 10.0	< 10.0	< 20.0	< 10.0	< 10.0	< 30.0	0.55	< 0.200	< 0.200	< 0.200	< 0.200	< 0.200	< 0.010	< 0.200	< 0.200

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

Contact Neil Cooke

A9031-19 Havant Thicket Winter Storage

Sample Analysis

Date Printed	**27-Jan-2020**
Report Number	**EFS/204803**
Table Number	**1**

Where individual results are flagged see report notes for status.

			Units :	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
			Method Codes :	GROHSA	ICPACIDS	ICPBOR	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPSOIL	KONECR
			Method Reporting Limits :	0.01	20	0.5	0.3	0.1	0.5	0.5	0.5	1	0.1	0.5	0.5	0.6	3	36	0.1
			UKAS Accredited :	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No
LAB ID Number CL/	Client Sample Description	Sample Date	GRO (C7-C8 Aromatic)	SO4-- (acid sol)	Boron (H20 Soluble)	Arsenic (MS)	Cadmium (MS)	Chromium (MS)	Copper (MS)	Lead (MS)	Manganese (MS)	Mercury (MS)	Nickel (MS)	Selenium (MS)	Vanadium (MS)	Zinc (MS)	Iron	Chromium vi:
2083386	ATK-TP-01 ES 1 0.20	15-Jan-20	< 0.010	663	1.5	10.9	0.11	41	17.1	15.6	52.1	<0.1	14.4	<0.5	63.4	57.5	41200	<0.1
2083387	ATK-TP-01 ES 6 1.00	15-Jan-20	< 0.010	242	1.4	9.2	0.15	33.3	20.4	15	43.5	<0.1	15.8	<0.5	46.5	58.5	29800	<0.1

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

Contact Neil Cooke

A9031-19 Havant Thicket Winter Storage

Sample Analysis

Date Printed	**27-Jan-2020**
Report Number	**EFS/204803**
Table Number	**1**

Where individual results are flagged see report notes for status.

Units :			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS
Method Reporting Limits :			0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
UKAS Accredited :			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Acenaphthene**	**Acenaphthylene**	**Anthracene**	**Benzo(a)anthracene**	**Benzo(a)pyrene**	**Benzo(b)fluoranthene**	**Benzo(ghi)perylene**	**Benzo(k)fluoranthene**	**Chrysene**	**Dibenzo(ah)anthracene**	**Fluoranthene**	**Fluorene**	**Indeno(123-cd)pyrene**	**Naphthalene**	**Phenanthrene**	**Pyrene**	
2083386	ATK-TP-01 ES 1 0.20	**15-Jan-20**	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	0.09	< 0.08	< 0.08	
2083387	ATK-TP-01 ES 6 1.00	**15-Jan-20**	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	0.09	< 0.08	< 0.08	

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

Contact Neil Cooke

A9031-19 Havant Thicket Winter Storage

Sample Analysis

Date Printed	**27-Jan-2020**
Report Number	**EFS/204803**
Table Number	**1**

Where individual results are flagged see report notes for status.

Units :			mg/kg	pH Units	mg/kg	mg/kg	mg/kg	mg/kg	%	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			PAHMSUS	PHSOIL	SFAPI	SFAPI	SFAPI	SFAS	TMSS	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI
Method Reporting Limits :			1.28		0.5	0.5	0.5	0.5	0.1	4	4	4	11.88	8.75	5.62	4	4	20
UKAS Accredited :			Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Total PAH (Sum of USEPA 16)**	**pH units (AR)**	**Cyanide(Free) (AR)**	**Cyanide(Total) (AR)**	**Phenol Index.(AR)**	**Sulphide as S (AR)**	**Tot.Moisture @ 105C**	**TPH Ali Band >C10-C12**	**TPH Ali Band >C12-C16**	**TPH Ali Band >C16-C21**	**TPH Ali Band >C16-C35**	**TPH Ali Band >C21-C35**	**TPH Ali Band >C35-C44**	**TPH Ali Band >C40-C44**	**TPH Ali Band >C8-C10**	**TPH Ali Band >C8-C40**
2083386	ATK-TP-01 ES 1 0.20	**15-Jan-20**	< 1.29	5.1	<0.5	<0.5	<0.5	<0.5	24.0	< 4.00	< 4.00	< 4.00	< 11.9	< 8.76	6.40	< 4.00	< 4.00	< 20.0
2083387	ATK-TP-01 ES 6 1.00	**15-Jan-20**	< 1.29	5.3	<0.5	<0.5	<0.5	<0.5	21.2	< 4.00	< 4.00	< 4.00	< 11.9	< 8.76	7.09	4.41	< 4.00	< 20.0

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

Contact Neil Cooke

A9031-19 Havant Thicket Winter Storage

Sample Analysis

Date Printed	**27-Jan-2020**
Report Number	**EFS/204803**
Table Number	**1**

Where individual results are flagged see report notes for status.

Units :			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	% M/M					
Method Codes :			TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	WSLM59					
Method Reporting Limits :			20	4	4	4	8.75	5.62	4	4	20	20	0.02					
UKAS Accredited :			No	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	Yes					
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**TPH Ali Band >C8-C44**	**TPH Aro Band >C10-C12**	**TPH Aro Band >C12-C16**	**TPH Aro Band >C16-C21**	**TPH Aro Band >C21-C35**	**TPH Aro Band >C35-C44**	**TPH Aro Band >C40-C44**	**TPH Aro Band >C8-C10**	**TPH Aro Band >C8-C40**	**TPH Aro Band >C8-C44**	**Total Organic Carbon**					
2083386	ATK-TP-01 ES 1 0.20	**15-Jan-20**	< 20.0	< 4.00	< 4.00	< 4.00	< 8.76	8.33	< 4.00	< 4.00	< 20.0	< 20.0	0.50					
2083387	ATK-TP-01 ES 6 1.00	**15-Jan-20**	< 20.0	< 4.00	< 4.00	< 4.00	< 8.76	7.87	< 4.00	< 4.00	< 20.0	< 20.0	0.32					

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**
Contact	Neil Cooke

A9031-19 Havant Thicket Winter Storage

Sample Analysis

Date Printed	**27-Jan-2020**
Report Number	**EFS/204803**
Table Number	**1**

Where individual results are flagged see report notes for status.

Analytical and Deviating Sample Overview

Customer SOCOTEC UK Doncaster
Site A9031-19 Havant Thicket Winter Storage
Report No S204803

Consignment No S91036
Date Logged 16-Jan-2020
In-House Report Due 27-Jan-2020

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

ID Number	Description	MethodID	AMMAR	CustServ	FOCS	GROHSA	ICPACIDS	ICPBOR	ICPMSS										ICPSOIL	KONECR	PAHMSUS	PHSOIL	SFAPI			SFAS
		Sampled	Exchange.Ammonium AR	REPORT A	S.O.M. % (Calc)	GRO (AA-UK) HSA-GCFID	SO4-- (acid sol)	Boron (H20 Soluble)	Arsenic (MS)	Cadmium (MS)	Chromium (MS)	Copper (MS)	Lead (MS)	Manganese (MS)	Mercury (MS)	Nickel (MS)	Selenium (MS)	Vanadium (MS)	Zinc (MS)	Iron	Chromium vi:	PAH (16) by GCMS	pH units (AR)	Cyanide(Free) (AR)	Cyanide(Total) (AR)	Phenol Index.(AR)	Sulphide as S (AR)
			✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	✓	✓	✓	
CL/2083386	ATK-TP-01 0.20	15/01/20																									
CL/2083387	ATK-TP-01 1.00	15/01/20																									

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.

The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Analytical and Deviating Sample Overview

Customer SOCOTEC UK Doncaster
Site A9031-19 Havant Thicket Winter Storage
Report No S204803

Consignment No S91036
Date Logged 16-Jan-2020
In-House Report Due 27-Jan-2020

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

ID Number	Description	Sampled	MethodID	TMSS	TPHUSSI	WSLM59
				Tot.Moisture @ 105C	TPH by GCFID (Si-UKCWG)>44	Total Organic Carbon
				✓	✓	✓
CL/2083386	ATK-TP-01 0.20	15/01/20				
CL/2083387	ATK-TP-01 1.00	15/01/20				

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.

The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Soil	AMMAR	As Received	Determination of Exchangeable Ammonium in Soil using potassium chloride extraction, discrete colorimetric detection
Soil	BTEXHSA	As Received	Determination of Benzene, Toluene, Ethyl benzene and Xylenes (BTEX) by Headspace GCFID
Soil	FOCS	Oven Dried @ < 35°C	Calculation of Soil Organic Matter content from Organic Carbon content of soil samples
Soil	GROHSA	As Received	Determination of Total Gasoline Range Organics Hydrocarbons (GRO) by Headspace GCFID
Soil	ICPACIDS	Oven Dried @ < 35°C	Determination of Total Sulphate in soil samples by Hydrochloric Acid extraction followed by ICPOES detection
Soil	ICPBOR	Oven Dried @ < 35°C	Determination of Boron in soil samples by hot water extraction followed by ICPOES detection
Soil	ICPMSS	Oven Dried @ < 35°C	Determination of Metals in Marine Sediments and Soil samples by aqua regia digestion followed by ICPMS detection
Soil	ICPSOIL	Oven Dried @ < 35°C	Determination of Metals in soil samples by aqua regia digestion followed by ICPOES detection
Soil	KONECR	Oven Dried @ < 35°C	Determination of Chromium vi in soil samples by water extraction followed by colorimetric detection
Soil	PAHMSUS	As Received	Determination of Polycyclic Aromatic Hydrocarbons (PAH) by hexane/acetone extraction followed by GCMS detection
Soil	PHSOIL	As Received	Determination of pH of 2.5:1 deionised water to soil extracts using pH probe.
Soil	SFAPI	As Received	Segmented flow analysis with colorimetric detection
Soil	SFAS	As Received	Segmented flow analysis with colorimetric detection
Soil	TMSS	As Received	Determination of the Total Moisture content at 105ºC by loss on oven drying gravimetric analysis (% based upon wet weight)
Soil	TPHUSSI	As Received	Determination of hexane/acetone extractable Hydrocarbons in soil with GCFID detection including quantitation of Aromatic and Aliphatic fractions.
Soil	WSLM59	Oven Dried @ < 35°C	Determination of Organic Carbon in soil using sulphurous Acid digestion followed by high temperature combustion and IR 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 105ºC 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/cm^3@ 15^{o}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 Anthophylite
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
Þ 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_4803

Note: major constituent in upper case

Lab ID Number	Client ID	Description
CL/2083386	ATK-TP-01 ES 1 0.20	Brown CLAY
CL/2083387	ATK-TP-01 ES 6 1.00	Brown CLAY

TEST REPORT

1252

Report No. EFS/204804 (Ver. 1)

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

Site: A9031-19 Havant Thicket Winter Storage

The 2 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: 29-Jan-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 (Pages 2 to 6)
Subcontracted Analysis Reports (Pages 7 to 8)
The accreditation status of subcontracted analysis is displayed on the appended subcontracted analysis reports.
Analytical and Deviating Sample Overview (Pages 9 to 10)
Table of Method Descriptions (Page 11)
Table of Report Notes (Page 12)
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: 29-Jan-2020

Tests marked '^' 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.

Units :			mg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	% M/M	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			AMMAR	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	FOCS	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA
Method Reporting Limits :			0.5	10	10	20	10	10	30	0.04	0.2	0.2	0.2	0.2	0.2	0.2	0.01	0.2	0.2
UKAS Accredited :			Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Exchange.Ammonium AR**	**Benzene**	**Ethyl Benzene**	**m/p Xylenes**	**o Xylene**	**Toluene**	**Xylenes**	**S.O.M. % (Calc)**	**GRO**	**GRO (>C5 - C6)**	**GRO (>C7 - C8)**	**GRO (>C8 - C10)**	**GRO (C5-C6 Aliphatic)**	**GRO (C5-C7 Aromatic)**	**GRO (C6-C7)**	**GRO (C6-C8 Aliphatic)**	
2083388	ATK-RC-03 ES 1 0.20	**15-Jan-20**	3.6	< 10.0	< 10.0	< 20.0	< 10.0	< 10.0	< 30.0	2.71	< 0.200	< 0.200	< 0.200	< 0.200	< 0.200	< 0.010	< 0.200	< 0.200	
2083389	ATK-RC-03 ES 2 0.50	**15-Jan-20**	0.6	< 10.0	< 10.0	< 20.0	< 10.0	< 10.0	< 30.0	0.64	< 0.200	< 0.200	< 0.200	< 0.200	< 0.200	< 0.010	< 0.200	< 0.200	

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

Contact Neil Cooke

A9031-19 Havant Thicket Winter Storage

Sample Analysis

Date Printed	**29-Jan-2020**
Report Number	**EFS/204804**
Table Number	**1**

Where individual results are flagged see report notes for status.

			Units :	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
			Method Codes :	GROHSA	ICPACIDS	ICPBOR	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPSOIL	KONECR
			Method Reporting Limits :	0.01	20	0.5	0.3	0.1	0.5	0.5	0.5	1	0.1	0.5	0.5	0.6	3	36	0.1
			UKAS Accredited :	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No
LAB ID Number CL/	Client Sample Description	Sample Date		GRO (C7-C8 Aromatic)	SO4-- (acid sol)	Boron (H20 Soluble)	Arsenic (MS)	Cadmium (MS)	Chromium (MS)	Copper (MS)	Lead (MS)	Manganese (MS)	Mercury (MS)	Nickel (MS)	Selenium (MS)	Vanadium (MS)	Zinc (MS)	Iron	Chromium vi:
2083388	ATK-RC-03 ES 1 0.20	15-Jan-20		< 0.010	319	1.5	20.6	0.14	22.8	9.8	39.8	344.7	<0.1	10.8	<0.5	34.3	49.5	23200	<0.1
2083389	ATK-RC-03 ES 2 0.50	15-Jan-20		< 0.010	311	1.5	9	0.16	31	12.4	14.2	612.1	<0.1	16.8	<0.5	44.4	59.7	28900	<0.1

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
Contact	Neil Cooke

A9031-19 Havant Thicket Winter Storage

Sample Analysis

Date Printed	29-Jan-2020
Report Number	EFS/204804
Table Number	1

Where individual results are flagged see report notes for status.

Units :			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS
Method Reporting Limits :			0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
UKAS Accredited :			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Acenaphthene**	**Acenaphthylene**	**Anthracene**	**Benzo(a)anthracene**	**Benzo(a)pyrene**	**Benzo(b)fluoranthene**	**Benzo(ghi)perylene**	**Benzo(k)fluoranthene**	**Chrysene**	**Dibenzo(ah)anthracene**	**Fluoranthene**	**Fluorene**	**Indeno(123-cd)pyrene**	**Naphthalene**	**Phenanthrene**	**Pyrene**
2083388	ATK-RC-03 ES 1 0.20	**15-Jan-20**	< 0.08	< 0.08	< 0.08	< 0.08	0.08	0.09	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
2083389	ATK-RC-03 ES 2 0.50	**15-Jan-20**	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	0.09	< 0.08	< 0.08

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

Contact Neil Cooke

A9031-19 Havant Thicket Winter Storage

Sample Analysis

Date Printed	**29-Jan-2020**
Report Number	**EFS/204804**
Table Number	**1**

Where individual results are flagged see report notes for status.

Units :			mg/kg	pH Units	mg/kg	mg/kg	mg/kg	mg/kg	%	%	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			PAHMSUS	PHSOIL	SFAPI	SFAPI	SFAPI	SFAS	Sub020	TMSS	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI
Method Reporting Limits :			1.28		0.5	0.5	0.5	0.5	0.1	0.1	4	4	4	11.88	8.75	5.62	4	4
UKAS Accredited :			Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Total PAH (Sum of USEPA 16)**	**pH units (AR)**	**Cyanide(Free) (AR)**	**Cyanide(Total) (AR)**	**Phenol Index (AR)**	**Sulphide as S (AR)**	**^Asbestos ID and Quant (1 & 2)**	**Tot.Moisture @ 105C**	**TPH Ali Band >C10-C12**	**TPH Ali Band >C12-C16**	**TPH Ali Band >C16-C21**	**TPH Ali Band >C16-C35**	**TPH Ali Band >C21-C35**	**TPH Ali Band >C35-C44**	**TPH Ali Band >C40-C44**	**TPH Ali Band >C8-C10**
2083388	ATK-RC-03 ES 1 0.20	**15-Jan-20**	< 1.3	7.3	<0.5	<0.5	<0.5	<0.5	NADIS	30.1	< 4.00	< 4.00	< 4.00	< 11.9	< 8.76	6.86	4.14	< 4.00
2083389	ATK-RC-03 ES 2 0.50	**15-Jan-20**	< 1.29	6.7	<0.5	<0.5	<0.5	<0.5		13.5	< 4.00	< 4.00	< 4.00	< 11.9	< 8.76	8.40	5.13	< 4.00

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

Contact Neil Cooke

A9031-19 Havant Thicket Winter Storage

Sample Analysis

Date Printed	**29-Jan-2020**
Report Number	**EFS/204804**
Table Number	**1**

Where individual results are flagged see report notes for status.

Units :			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	% M/M				
Method Codes :			TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	WSLM59				
Method Reporting Limits :			20	20	4	4	4	8.75	5.62	4	4	20	20	0.02				
UKAS Accredited :			Yes	No	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	Yes				
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**TPH Ali Band >C8-C40**	**TPH Ali Band >C8-C44**	**TPH Aro Band >C10-C12**	**TPH Aro Band >C12-C16**	**TPH Aro Band >C16-C21**	**TPH Aro Band >C21-C35**	**TPH Aro Band >C35-C44**	**TPH Aro Band >C40-C44**	**TPH Aro Band >C8-C10**	**TPH Aro Band >C8-C40**	**TPH Aro Band >C8-C44**	**Total Organic Carbon**				
2083388	ATK-RC-03 ES 1 0.20	**15-Jan-20**	< 20.0	< 20.0	< 4.00	< 4.00	< 4.00	< 8.76	8.14	< 4.00	< 4.00	< 20.0	< 20.0	1.57				
2083389	ATK-RC-03 ES 2 0.50	**15-Jan-20**	< 20.0	< 20.0	< 4.00	< 4.00	< 4.00	< 8.76	7.85	< 4.00	< 4.00	< 20.0	< 20.0	0.37				

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**
Contact	Neil Cooke

A9031-19 Havant Thicket Winter Storage

Sample Analysis

Date Printed	**29-Jan-2020**
Report Number	**EFS/204804**
Table Number	**1**

Where individual results are flagged see report notes for status.

CONTRACT NO: S10686-2
DATE OF ISSUE: 28.01.20

RESULTS: (cont.)

Table 1: Qualitative Results

SOCOTEC Job I.D: S204804

IOM sample number	Client sample number	ACM type detected	PLM result
S70053	S2083388 ATK-RC-03 0.20	-	No Asbestos Detected

Our detection limit for this method is 0.001%.

COMMENTS:

IOM Consulting cannot accept responsibility for samples that have been incorrectly collected or despatched by external clients.

Any opinions and interpretations expressed herein are out with the scope of our UKAS accreditation.

AUTHORISED BY: .....
D Third
Scientific Technician

IOM

working for a healthy and sustainable world

CERTIFICATE OF ANALYSIS

ANALYSIS REQUESTED BY: SOCOTEC UK Ltd
Environmental Chemistry
PO Box 100
Burton upon Trent
Staffordshire
DE15 0XD

CONTRACT NO: S10686-2

DATE OF ISSUE: 28.01.20

DATE SAMPLE RECEIVED: 21.01.20

DATE SAMPLE ANALYSED: 28.01.20

DESCRIPTION: One soil/loose aggregate sample weighing approximately 1.2kg.

ANALYSIS REQUESTED: Qualitative and quantitative analysis of a soil/loose aggregate sample for mass determination of asbestos.

METHODS:

Qualitative - The sample was analysed qualitatively for asbestos by polarised light and dispersion staining as described by the Health and Safety Executive in HSG 248.

Quantitative - The analysis was carried out using our documented in-house method based on HSE Contract Research Report No. 83/1996: Development and Validation of an analytical method to determine the amount of asbestos in soils and loose aggregates (Davies *et al*, 1996) and HSG 248. Our method includes initial examination of the entire sample, detailed analysis of a representative sub-sample and quantification by hand picking/weighing and/or fibre counting/sizing as appropriate.

RESULTS:

Initial Screening

No asbestos was detected in the soil sample by stereo-binocular and polarised light microscopy.

A summary of the results is given in Table 1.

www.iom-world.org

Registered Address: Research Avenue North, Riccarton, Edinburgh, EH14 4AP, United Kingdom
Tel: 0131 449 8000 Fax: 0131 449 8084 Email: iom@iom-world.org

IOM CONSULTING LIMITED, registered in Scotland No. SC205670

UKAS TESTING
0374

Analytical and Deviating Sample Overview

Customer **SOCOTEC UK Doncaster**
Site **A9031-19 Havant Thicket Winter Storage**
Report No **S204804**

Consignment No S91037
Date Logged 16-Jan-2020
In-House Report Due 27-Jan-2020

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

ID Number	Description	Sampled	MethodID	AMMAR	CustServ	FOCS	GROHSA	ICPACIDS	ICPBOR	ICPMSS									ICPSOIL	KONECR	PAHMSUS	PHSOIL	SFAPI			SFAS
				Exchange.Ammonium AR	REPORT A	S.O.M. % (Calc)	GRO (AA-UK) HSA-GCFID	SO4-- (acid sol)	Boron (H20 Soluble)	Arsenic (MS)	Cadmium (MS)	Chromium (MS)	Copper (MS)	Lead (MS)	Manganese (MS)	Mercury (MS)	Nickel (MS)	Selenium (MS)	Vanadium (MS)	Zinc (MS)	Iron	Chromium vi:	PAH (16) by GCMS	pH units (AR)	Cyanide(Free) (AR)	Cyanide(Total) (AR)	Phenol Index.(AR)	Sulphide as S (AR)
				✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	✓	✓	✓	
CL/2083388	ATK-RC-03 0.20	15/01/20																									
CL/2083389	ATK-RC-03 0.50	15/01/20																									

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.

The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Analytical and Deviating Sample Overview

Customer SOCOTEC UK Doncaster
Site A9031-19 Havant Thicket Winter Storage
Report No S204804

Consignment No S91037
Date Logged 16-Jan-2020
In-House Report Due 27-Jan-2020

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

ID Number	Description	Sampled	MethodID	Sub020	TMSS	TPHUSSI	WSLM59
				^Asbestos ID and Quant (1 & 2)	Tot.Moisture @ 105C	TPH by GCFID (Si-UKCWG)>44	Total Organic Carbon
				✓	✓	✓	✓
CL/2083388	ATK-RC-03 0.20	15/01/20					
CL/2083389	ATK-RC-03 0.50	15/01/20					

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.

The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Soil	AMMAR	As Received	Determination of Exchangeable Ammonium in Soil using potassium chloride extraction, discrete colorimetric detection
Soil	BTEXHSA	As Received	Determination of Benzene, Toluene, Ethyl benzene and Xylenes (BTEX) by Headspace GCFID
Soil	FOCS	Oven Dried @ < 35°C	Calculation of Soil Organic Matter content from Organic Carbon content of soil samples
Soil	GROHSA	As Received	Determination of Total Gasoline Range Organics Hydrocarbons (GRO) by Headspace GCFID
Soil	ICPACIDS	Oven Dried @ < 35°C	Determination of Total Sulphate in soil samples by Hydrochloric Acid extraction followed by ICPOES detection
Soil	ICPBOR	Oven Dried @ < 35°C	Determination of Boron in soil samples by hot water extraction followed by ICPOES detection
Soil	ICPMSS	Oven Dried @ < 35°C	Determination of Metals in Marine Sediments and Soil samples by aqua regia digestion followed by ICPMS detection
Soil	ICPSOIL	Oven Dried @ < 35°C	Determination of Metals in soil samples by aqua regia digestion followed by ICPOES detection
Soil	KONECR	Oven Dried @ < 35°C	Determination of Chromium vi in soil samples by water extraction followed by colorimetric detection
Soil	PAHMSUS	As Received	Determination of Polycyclic Aromatic Hydrocarbons (PAH) by hexane/acetone extraction followed by GCMS detection
Soil	PHSOIL	As Received	Determination of pH of 2.5:1 deionised water to soil extracts using pH probe.
Soil	SFAPI	As Received	Segmented flow analysis with colorimetric detection
Soil	SFAS	As Received	Segmented flow analysis with colorimetric detection
Soil	SubCon*	*	Contact Laboratory for details of the methodology used by the sub-contractor.
Soil	TMSS	As Received	Determination of the Total Moisture content at 105ºC by loss on oven drying gravimetric analysis (% based upon wet weight)
Soil	TPHUSSI	As Received	Determination of hexane/acetone extractable Hydrocarbons in soil with GCFID detection including quantitation of Aromatic and Aliphatic fractions.
Soil	WSLM59	Oven Dried @ < 35°C	Determination of Organic Carbon in soil using sulphurous Acid digestion followed by high temperature combustion and IR 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 105ºC 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/cm^3@ 15^{o}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 Anthophylite
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
Þ 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_4804

Note: major constituent in upper case

Lab ID Number	Client ID	Description
CL/2083388	ATK-RC-03 ES 1 0.20	Brown CLAY
CL/2083389	ATK-RC-03 ES 2 0.50	Brown CLAY

TEST REPORT

1252

Report No. EFS/204805 (Ver. 1)

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

Site: A9031-19 Havant Thicket Winter Storage

The 1 sample 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: 27-Jan-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 (Pages 2 to 6)
Analytical and Deviating Sample Overview (Pages 7 to 8)
Table of Method Descriptions (Page 9)
Table of Report Notes (Page 10)
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: 27-Jan-2020

Tests marked '^' 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 :			mg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	% M/M	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			AMMAR	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	FOCS	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA
Method Reporting Limits :			0.5	10	10	20	10	10	30	0.04	0.2	0.2	0.2	0.2	0.2	0.2	0.01	0.2	0.2
UKAS Accredited :			Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Exchange.Ammonium AR**	**Benzene**	**Ethyl Benzene**	**m/p Xylenes**	**o Xylene**	**Toluene**	**Xylenes**	**S.O.M. % (Calc)**	**GRO**	**GRO (>C5 - C6)**	**GRO (>C7 - C8)**	**GRO (>C8 - C10)**	**GRO (C5-C6 Aliphatic)**	**GRO (C5-C7 Aromatic)**	**GRO (C6-C7)**	**GRO (C6-C8 Aliphatic)**
2083390	ATK-TP-06 ES 2 0.10	**15-Jan-20**	2.9	< 10.0	< 10.0	< 20.0	< 10.0	< 10.0	< 30.0	3.38	< 0.200	< 0.200	< 0.200	< 0.200	< 0.200	< 0.010	< 0.200	< 0.200

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

Contact Neil Cooke

A9031-19 Havant Thicket Winter Storage

Sample Analysis

Date Printed	**27-Jan-2020**
Report Number	**EFS/204805**
Table Number	**1**

Where individual results are flagged see report notes for status.

Units :			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			GROHSA	ICPACIDS	ICPBOR	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPSOIL	KONECR
Method Reporting Limits :			0.01	20	0.5	0.3	0.1	0.5	0.5	0.5	1	0.1	0.5	0.5	0.6	3	36	0.1
UKAS Accredited :			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**GRO (C7-C8 Aromatic)**	**SO4-- (acid sol)**	**Boron (H20 Soluble)**	**Arsenic (MS)**	**Cadmium (MS)**	**Chromium (MS)**	**Copper (MS)**	**Lead (MS)**	**Manganese (MS)**	**Mercury (MS)**	**Nickel (MS)**	**Selenium (MS)**	**Vanadium (MS)**	**Zinc (MS)**	**Iron**	**Chromium vi:**
2083390	ATK-TP-06 ES 2 0.10	**15-Jan-20**	< 0.010	427	1.2	13	<0.1	22.9	12.7	30.7	785.2	<0.1	17.6	<0.5	39.9	59	39900	<0.1

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**
Contact	Neil Cooke

A9031-19 Havant Thicket Winter Storage

Sample Analysis

Date Printed	**27-Jan-2020**
Report Number	**EFS/204805**
Table Number	**1**

Where individual results are flagged see report notes for status.

Units :			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS
Method Reporting Limits :			0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
UKAS Accredited :			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Acenaphthene**	**Acenaphthylene**	**Anthracene**	**Benzo(a)anthracene**	**Benzo(a)pyrene**	**Benzo(b)fluoranthene**	**Benzo(ghi)perylene**	**Benzo(k)fluoranthene**	**Chrysene**	**Dibenzo(ah)anthracene**	**Fluoranthene**	**Fluorene**	**Indeno(123-cd)pyrene**	**Naphthalene**	**Phenanthrene**	**Pyrene**	
2083390	ATK-TP-06 ES 2 0.10	**15-Jan-20**	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	

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

Contact Neil Cooke

A9031-19 Havant Thicket Winter Storage

Sample Analysis

Date Printed	**27-Jan-2020**
Report Number	**EFS/204805**
Table Number	**1**

Where individual results are flagged see report notes for status.

Units :			mg/kg	pH Units	mg/kg	mg/kg	mg/kg	mg/kg	%	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			PAHMSUS	PHSOIL	SFAPI	SFAPI	SFAPI	SFAS	TMSS	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI
Method Reporting Limits :			1.28		0.5	0.5	0.5	0.5	0.1	4	4	4	11.88	8.75	5.62	4	4	20
UKAS Accredited :			Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Total PAH (Sum of USEPA 16)**	**pH units (AR)**	**Cyanide(Free) (AR)**	**Cyanide(Total) (AR)**	**Phenol Index.(AR)**	**Sulphide as S (AR)**	**Tot.Moisture @ 105C**	**TPH Ali Band >C10-C12**	**TPH Ali Band >C12-C16**	**TPH Ali Band >C16-C21**	**TPH Ali Band >C16-C35**	**TPH Ali Band >C21-C35**	**TPH Ali Band >C35-C44**	**TPH Ali Band >C40-C44**	**TPH Ali Band >C8-C10**	**TPH Ali Band >C8-C40**
2083390	ATK-TP-06 ES 2 0.10	**15-Jan-20**	< 1.28	5.9	<0.5	<0.5	<0.5	<0.5	29.1	< 4.00	< 4.00	< 4.00	< 11.9	< 8.76	7.28	4.63	< 4.00	< 20.0

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**
Contact	Neil Cooke

A9031-19 Havant Thicket Winter Storage

Sample Analysis

Date Printed	**27-Jan-2020**
Report Number	**EFS/204805**
Table Number	**1**

Where individual results are flagged see report notes for status.

Units :			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	% M/M						
Method Codes :			TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	WSLM59						
Method Reporting Limits :			20	4	4	4	8.75	5.62	4	4	20	20	0.02						
UKAS Accredited :			No	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	Yes						
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**TPH Ali Band >C8-C44**	**TPH Aro Band >C10-C12**	**TPH Aro Band >C12-C16**	**TPH Aro Band >C16-C21**	**TPH Aro Band >C21-C35**	**TPH Aro Band >C35-C44**	**TPH Aro Band >C40-C44**	**TPH Aro Band >C8-C10**	**TPH Aro Band >C8-C40**	**TPH Aro Band >C8-C44**	**Total Organic Carbon**						
2083390	ATK-TP-06 ES 2 0.10	**15-Jan-20**	20.7	< 4.00	< 4.00	< 4.00	< 8.76	8.04	< 4.00	< 4.00	< 20.0	< 20.0	1.96						

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**
Contact	Neil Cooke

A9031-19 Havant Thicket Winter Storage

Sample Analysis

Date Printed	**27-Jan-2020**
Report Number	**EFS/204805**
Table Number	**1**

Where individual results are flagged see report notes for status.

Analytical and Deviating Sample Overview

Customer SOCOTEC UK Doncaster
Site A9031-19 Havant Thicket Winter Storage
Report No S204805

Consignment No S91037
Date Logged 16-Jan-2020
In-House Report Due 27-Jan-2020

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

ID Number	Description	MethodID	AMMAR	CustServ	FOCS	GROHSA	ICPACIDS	ICPBOR	ICPMSS										ICPSOIL	KONECR	PAHMSUS	PHSOIL	SFAPI			SFAS
		Sampled	Exchange.Ammonium AR	REPORT A	S.O.M. % (Calc)	GRO (AA-UK) HSA-GCFID	SO4-- (acid sol)	Boron (H20 Soluble)	Arsenic (MS)	Cadmium (MS)	Chromium (MS)	Copper (MS)	Lead (MS)	Manganese (MS)	Mercury (MS)	Nickel (MS)	Selenium (MS)	Vanadium (MS)	Zinc (MS)	Iron	Chromium vi:	PAH (16) by GCMS	pH units (AR)	Cyanide(Free) (AR)	Cyanide(Total) (AR)	Phenol Index.(AR)	Sulphide as S (AR)
			✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	✓	✓	✓	
CL/2083390	ATK-TP-06 0.10	15/01/20																									

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.

The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Analytical and Deviating Sample Overview

Customer SOCOTEC UK Doncaster
Site A9031-19 Havant Thicket Winter Storage
Report No S204805

Consignment No S91037
Date Logged 16-Jan-2020
In-House Report Due 27-Jan-2020

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

ID Number	Description	Sampled	MethodID	TMSS	TPHUSSI	WSLM59
				Tot.Moisture @ 105C	TPH by GCFID (Si-UKCWG)>44	Total Organic Carbon
				✓	✓	✓
CL/2083390	ATK-TP-06 0.10	15/01/20				

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.

The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Soil	AMMAR	As Received	Determination of Exchangeable Ammonium in Soil using potassium chloride extraction, discrete colorimetric detection
Soil	BTEXHSA	As Received	Determination of Benzene, Toluene, Ethyl benzene and Xylenes (BTEX) by Headspace GCFID
Soil	FOCS	Oven Dried @ < 35°C	Calculation of Soil Organic Matter content from Organic Carbon content of soil samples
Soil	GROHSA	As Received	Determination of Total Gasoline Range Organics Hydrocarbons (GRO) by Headspace GCFID
Soil	ICPACIDS	Oven Dried @ < 35°C	Determination of Total Sulphate in soil samples by Hydrochloric Acid extraction followed by ICPOES detection
Soil	ICPBOR	Oven Dried @ < 35°C	Determination of Boron in soil samples by hot water extraction followed by ICPOES detection
Soil	ICPMSS	Oven Dried @ < 35°C	Determination of Metals in Marine Sediments and Soil samples by aqua regia digestion followed by ICPMS detection
Soil	ICPSOIL	Oven Dried @ < 35°C	Determination of Metals in soil samples by aqua regia digestion followed by ICPOES detection
Soil	KONECR	Oven Dried @ < 35°C	Determination of Chromium vi in soil samples by water extraction followed by colorimetric detection
Soil	PAHMSUS	As Received	Determination of Polycyclic Aromatic Hydrocarbons (PAH) by hexane/acetone extraction followed by GCMS detection
Soil	PHSOIL	As Received	Determination of pH of 2.5:1 deionised water to soil extracts using pH probe.
Soil	SFAPI	As Received	Segmented flow analysis with colorimetric detection
Soil	SFAS	As Received	Segmented flow analysis with colorimetric detection
Soil	TMSS	As Received	Determination of the Total Moisture content at 105ºC by loss on oven drying gravimetric analysis (% based upon wet weight)
Soil	TPHUSSI	As Received	Determination of hexane/acetone extractable Hydrocarbons in soil with GCFID detection including quantitation of Aromatic and Aliphatic fractions.
Soil	WSLM59	Oven Dried @ < 35°C	Determination of Organic Carbon in soil using sulphurous Acid digestion followed by high temperature combustion and IR 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 105ºC 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/cm^3@ 15^{o}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 Anthophylite
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
Þ 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_4805

Note: major constituent in upper case

Lab ID Number	Client ID	Description
CL/2083390	ATK-TP-06 ES 2 0.10	Brown CLAY

TEST REPORT

1252

Report No. EFS/204806 (Ver. 1)

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

Site: A9031-19 Havant Thicket Winter Storage

The 1 sample 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: 30-Jan-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 (Pages 2 to 6)
Analytical and Deviating Sample Overview (Pages 7 to 8)
Table of Method Descriptions (Page 9)
Table of Report Notes (Page 10)
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: 30-Jan-2020

Tests marked '^' 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.

Units :			mg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	% M/M	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			AMMAR	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	FOCS	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA
Method Reporting Limits :			0.5	10	10	20	10	10	30	0.04	0.2	0.2	0.2	0.2	0.2	0.01	0.2	0.2
UKAS Accredited :			Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Exchange.Ammonium AR**	**Benzene**	**Ethyl Benzene**	**m/p Xylenes**	**o Xylene**	**Toluene**	**Xylenes**	**S.O.M. % (Calc)**	**GRO**	**GRO (>C5 - C6)**	**GRO (>C7 - C8)**	**GRO (>C8 - C10)**	**GRO (C5-C6 Aliphatic)**	**GRO (C5-C7 Aromatic)**	**GRO (C6-C7)**	**GRO (C6-C8 Aliphatic)**
2083391	ATK-TPM-02 ES 1 0.20	**15-Jan-20**	1.2	< 10.0	< 10.0	< 20.0	< 10.0	< 10.0	< 30.0	2.02	< 0.200	< 0.200	< 0.200	< 0.200	< 0.200	< 0.010	< 0.200	< 0.200

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**
Contact	Neil Cooke

A9031-19 Havant Thicket Winter Storage

Sample Analysis

Date Printed	**30-Jan-2020**
Report Number	**EFS/204806**
Table Number	**1**

Where individual results are flagged see report notes for status.

Units :			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			GROHSA	ICPACIDS	ICPBOR	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPSOIL	KONECR
Method Reporting Limits :			0.01	20	0.5	0.3	0.1	0.5	0.5	0.5	1	0.1	0.5	0.5	0.6	3	36	0.1
UKAS Accredited :			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**GRO (C7-C8 Aromatic)**	**SO4-- (acid sol)**	**Boron (H20 Soluble)**	**Arsenic (MS)**	**Cadmium (MS)**	**Chromium (MS)**	**Copper (MS)**	**Lead (MS)**	**Manganese (MS)**	**Mercury (MS)**	**Nickel (MS)**	**Selenium (MS)**	**Vanadium (MS)**	**Zinc (MS)**	**Iron**	**Chromium vi:**
2083391	ATK-TPM-02 ES 1 0.20	**15-Jan-20**	< 0.010	370	1.1	9.5	<0.1	18.3	9	24.4	82.2	<0.1	7.1	<0.5	33	33	27900	<0.1

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**
Contact	Neil Cooke

A9031-19 Havant Thicket Winter Storage

Sample Analysis

Date Printed	**30-Jan-2020**
Report Number	**EFS/204806**
Table Number	**1**

Where individual results are flagged see report notes for status.

Units :			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS
Method Reporting Limits :			0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
UKAS Accredited :			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Acenaphthene**	**Acenaphthylene**	**Anthracene**	**Benzo(a)anthracene**	**Benzo(a)pyrene**	**Benzo(b)fluoranthene**	**Benzo(ghi)perylene**	**Benzo(k)fluoranthene**	**Chrysene**	**Dibenzo(ah)anthracene**	**Fluoranthene**	**Fluorene**	**Indeno(123-cd)pyrene**	**Naphthalene**	**Phenanthrene**	**Pyrene**	
2083391	ATK-TPM-02 ES 1 0.20	**15-Jan-20**	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	0.09	< 0.08	< 0.08	

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**
Contact	Neil Cooke

A9031-19 Havant Thicket Winter Storage

Sample Analysis

Date Printed	**30-Jan-2020**
Report Number	**EFS/204806**
Table Number	**1**

Where individual results are flagged see report notes for status.

Units :			mg/kg	pH Units	mg/kg	mg/kg	mg/kg	mg/kg	%	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			PAHMSUS	PHSOIL	SFAPI	SFAPI	SFAPI	SFAS	TMSS	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI
Method Reporting Limits :			1.28		0.5	0.5	0.5	0.5	0.1	4	4	4	11.88	8.75	5.62	4	4	20	
UKAS Accredited :			Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Total PAH (Sum of USEPA 16)**	**pH units (AR)**	**Cyanide(Free) (AR)**	**Cyanide(Total) (AR)**	**Phenol Index.(AR)**	**Sulphide as S (AR)**	**Tot.Moisture @ 105C**	**TPH Ali Band >C10-C12**	**TPH Ali Band >C12-C16**	**TPH Ali Band >C16-C21**	**TPH Ali Band >C16-C35**	**TPH Ali Band >C21-C35**	**TPH Ali Band >C35-C44**	**TPH Ali Band >C40-C44**	**TPH Ali Band >C8-C10**	**TPH Ali Band >C8-C40**	
2083391	ATK-TPM-02 ES 1 0.20	**15-Jan-20**	< 1.29	6.4	<0.5	<0.5	<0.5	<0.5	23.8	< 4.00	4.58	< 4.00	< 11.9	< 8.76	< 5.62	< 4.00	< 4.00	< 20.0	

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

Contact Neil Cooke

A9031-19 Havant Thicket Winter Storage

Sample Analysis

Date Printed	**30-Jan-2020**
Report Number	**EFS/204806**
Table Number	**1**

Where individual results are flagged see report notes for status.

Units :			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	% M/M					
Method Codes :			TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	WSLM59	Sub020				
Method Reporting Limits :			20	4	4	4	8.75	5.62	4	4	20	20	0.02					
UKAS Accredited :			No	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	Yes	Yes				
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**TPH Ali Band >C8-C44**	**TPH Aro Band >C10-C12**	**TPH Aro Band >C12-C16**	**TPH Aro Band >C16-C21**	**TPH Aro Band >C21-C35**	**TPH Aro Band >C35-C44**	**TPH Aro Band >C40-C44**	**TPH Aro Band >C8-C10**	**TPH Aro Band >C8-C40**	**TPH Aro Band >C8-C44**	**Total Organic Carbon**	**^Asbestos ID (Stage 1)**				
2083391	ATK-TPM-02 ES 1 0.20	**15-Jan-20**	< 20.0	< 4.00	< 4.00	4.95	< 8.76	6.56	4.40	< 4.00	< 20.0	24	1.17	NADIS				

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**
Contact	Neil Cooke

A9031-19 Havant Thicket Winter Storage

Sample Analysis

Date Printed	**30-Jan-2020**
Report Number	**EFS/204806**
Table Number	**1**

Where individual results are flagged see report notes for status.

working for a healthy and sustainable world

CERTIFICATE OF ANALYSIS

ANALYSIS REQUESTED BY: SOCOTEC UK Ltd
Environmental Chemistry
PO Box 100
Burton upon Trent
Staffordshire
DE15 0XD

CONTRACT NO: S10328-4

DATE OF ISSUE: 15.01.20

DATE SAMPLE RECEIVED: 03.01.20

DATE SAMPLE ANALYSED: 14.01.20

DESCRIPTION: One soil/loose aggregate sample.

ANALYSIS REQUESTED: Qualitative analysis of a sample for determination of presence/type of asbestos.

METHODS:

Our method involves initial examination of the sample followed by detailed analysis of a representative sub-sample. The sub-sample is analysed qualitatively for asbestos by polarised light and dispersion staining as described by the Health and Safety Executive in HSG 248.

RESULTS:

Initial Screening

No asbestos was detected in the soil sample by stereo-binocular and polarised light microscopy.

A summary of the results is given in Table 1.

www.iom-world.org

Registered Address: Research Avenue North, Riccarton, Edinburgh, EH14 4AP, United Kingdom
Tel: 0131 449 8000 Fax: 0131 449 8084 Email: iom@iom-world.org

IOM CONSULTING LIMITED, registered in Scotland No. SC205670

UKAS TESTING
0374

CONTRACT NO: S10328-4
DATE OF ISSUE: 15.01.20

RESULTS: (cont.)

Table 1: Qualitative Results

SOCOTEC Job I.D: S204272

IOM sample number	Client sample number	ACM type detected	PLM result
S69757	S1981183 ATK-TPM-02 0.20	-	No Asbestos Detected

Our detection limit for this method is 0.001%.

COMMENTS:

IOM Consulting cannot accept responsibility for samples that have been incorrectly collected or despatched by external clients.

Any opinions and interpretations expressed herein are out with the scope of our UKAS accreditation.

AUTHORISED BY: .....
D Third
Scientific Technician

Analytical and Deviating Sample Overview

Customer **SOCOTEC UK Doncaster** Consignment No S91036
Site **A9031-19 Havant Thicket Winter Storage** Date Logged 16-Jan-2020
Report No **S204806** In-House Report Due 27-Jan-2020

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

ID Number	Description	MethodID	AMMAR	GustServ	FOCS	GROHSA	ICPACIDS	ICPBOR	ICPMSS										ICPSOIL	KONECR	PAHMSUS	PHSOIL	SFAPI			SFAS
		Sampled	Exchange.Ammonium AR	REPORT A	S.O.M. % (Calc)	GRO (AA-UK) HSA-GCFID	SO4-- (acid sol)	Boron (H20 Soluble)	Arsenic (MS)	Cadmium (MS)	Chromium (MS)	Copper (MS)	Lead (MS)	Manganese (MS)	Mercury (MS)	Nickel (MS)	Selenium (MS)	Vanadium (MS)	Zinc (MS)	Iron	Chromium vi:	PAH (16) by GCMS	pH units (AR)	Cyanide(Free) (AR)	Cyanide(Total) (AR)	Phenol Index.(AR)	Sulphide as S (AR)
			✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	✓	✓	✓	
CL/2083391	ATK-TPM-02 0.20	15/01/20																									

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.

The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Analytical and Deviating Sample Overview

Customer SOCOTEC UK Doncaster
Site A9031-19 Havant Thicket Winter Storage
Report No S204806

Consignment No S91036
Date Logged 16-Jan-2020
In-House Report Due 27-Jan-2020

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

ID Number	Description	Sampled	MethodID	TMSS	TPHUSSI	WSLM59
				Tot.Moisture @ 105C	TPH by GCFID (Si-UKCWG)>44	Total Organic Carbon
				✓	✓	✓
CL/2083391	ATK-TPM-02 0.20	15/01/20				

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.

The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Soil	AMMAR	As Received	Determination of Exchangeable Ammonium in Soil using potassium chloride extraction, discrete colorimetric detection
Soil	BTEXHSA	As Received	Determination of Benzene, Toluene, Ethyl benzene and Xylenes (BTEX) by Headspace GCFID
Soil	FOCS	Oven Dried @ < 35°C	Calculation of Soil Organic Matter content from Organic Carbon content of soil samples
Soil	GROHSA	As Received	Determination of Total Gasoline Range Organics Hydrocarbons (GRO) by Headspace GCFID
Soil	ICPACIDS	Oven Dried @ < 35°C	Determination of Total Sulphate in soil samples by Hydrochloric Acid extraction followed by ICPOES detection
Soil	ICPBOR	Oven Dried @ < 35°C	Determination of Boron in soil samples by hot water extraction followed by ICPOES detection
Soil	ICPMSS	Oven Dried @ < 35°C	Determination of Metals in Marine Sediments and Soil samples by aqua regia digestion followed by ICPMS detection
Soil	ICPSOIL	Oven Dried @ < 35°C	Determination of Metals in soil samples by aqua regia digestion followed by ICPOES detection
Soil	KONECR	Oven Dried @ < 35°C	Determination of Chromium vi in soil samples by water extraction followed by colorimetric detection
Soil	PAHMSUS	As Received	Determination of Polycyclic Aromatic Hydrocarbons (PAH) by hexane/acetone extraction followed by GCMS detection
Soil	PHSOIL	As Received	Determination of pH of 2.5:1 deionised water to soil extracts using pH probe.
Soil	SFAPI	As Received	Segmented flow analysis with colorimetric detection
Soil	SFAS	As Received	Segmented flow analysis with colorimetric detection
Soil	TMSS	As Received	Determination of the Total Moisture content at 105ºC by loss on oven drying gravimetric analysis (% based upon wet weight)
Soil	TPHUSSI	As Received	Determination of hexane/acetone extractable Hydrocarbons in soil with GCFID detection including quantitation of Aromatic and Aliphatic fractions.
Soil	WSLM59	Oven Dried @ < 35°C	Determination of Organic Carbon in soil using sulphurous Acid digestion followed by high temperature combustion and IR 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 105ºC 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/cm^3@ 15^{o}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 Anthophylite
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
Þ 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_4806

Note: major constituent in upper case

Lab ID Number	Client ID	Description
CL/2083391	ATK-TPM-02 ES 1 0.20	Brown Gravel CLAY Rootlets

TEST REPORT

1252

Report No. EFS/204807 (Ver. 1)

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

Site: A9031-19 Havant Thicket Winter Storage

The 1 sample 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: 27-Jan-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 (Pages 2 to 6)
Analytical and Deviating Sample Overview (Pages 7 to 8)
Table of Method Descriptions (Page 9)
Table of Report Notes (Page 10)
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: 27-Jan-2020

Tests marked '^' 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 :			mg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	% M/M	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			AMMAR	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	FOCS	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA
Method Reporting Limits :			0.5	10	10	20	10	10	30	0.04	0.2	0.2	0.2	0.2	0.2	0.2	0.01	0.2	0.2
UKAS Accredited :			Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Exchange.Ammonium AR**	**Benzene**	**Ethyl Benzene**	**m/p Xylenes**	**o Xylene**	**Toluene**	**Xylenes**	**S.O.M. % (Calc)**	**GRO**	**GRO (>C5 - C6)**	**GRO (>C7 - C8)**	**GRO (>C8 - C10)**	**GRO (C5-C6 Aliphatic)**	**GRO (C5-C7 Aromatic)**	**GRO (C6-C7)**	**GRO (C6-C8 Aliphatic)**
2083392	ATK-TP-08 ES 1 0.10	**15-Jan-20**	3.2	< 10.0	< 10.0	< 20.0	< 10.0	< 10.0	< 30.0	3.48	< 0.200	< 0.200	< 0.200	< 0.200	< 0.200	< 0.010	< 0.200	< 0.200

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

Contact Neil Cooke

A9031-19 Havant Thicket Winter Storage

Sample Analysis

Date Printed	**27-Jan-2020**
Report Number	**EFS/204807**
Table Number	**1**

Where individual results are flagged see report notes for status.

Units :			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			GROHSA	ICPACIDS	ICPBOR	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPSOIL	KONECR
Method Reporting Limits :			0.01	20	0.5	0.3	0.1	0.5	0.5	0.5	1	0.1	0.5	0.5	0.6	3	36	0.1
UKAS Accredited :			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**GRO (C7-C8 Aromatic)**	**SO4-- (acid sol)**	**Boron (H20 Soluble)**	**Arsenic (MS)**	**Cadmium (MS)**	**Chromium (MS)**	**Copper (MS)**	**Lead (MS)**	**Manganese (MS)**	**Mercury (MS)**	**Nickel (MS)**	**Selenium (MS)**	**Vanadium (MS)**	**Zinc (MS)**	**Iron**	**Chromium vi:**
2083392	ATK-TP-08 ES 1 0.10	**15-Jan-20**	< 0.010	440	0.9	12.4	0.2	14.4	46.3	29.8	85.9	0.32	6.6	<0.5	29	94.1	22400	<0.1

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**
Contact	Neil Cooke

A9031-19 Havant Thicket Winter Storage

Sample Analysis

Date Printed	**27-Jan-2020**
Report Number	**EFS/204807**
Table Number	**1**

Where individual results are flagged see report notes for status.

Units :			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS
Method Reporting Limits :			0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
UKAS Accredited :			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Acenaphthene**	**Acenaphthylene**	**Anthracene**	**Benzo(a)anthracene**	**Benzo(a)pyrene**	**Benzo(b)fluoranthene**	**Benzo(ghi)perylene**	**Benzo(k)fluoranthene**	**Chrysene**	**Dibenzo(ah)anthracene**	**Fluoranthene**	**Fluorene**	**Indeno(123-cd)pyrene**	**Naphthalene**	**Phenanthrene**	**Pyrene**	
2083392	ATK-TP-08 ES 1 0.10	**15-Jan-20**	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	

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**
Contact	Neil Cooke

A9031-19 Havant Thicket Winter Storage

Sample Analysis

Date Printed	**27-Jan-2020**
Report Number	**EFS/204807**
Table Number	**1**

Where individual results are flagged see report notes for status.

Units :			mg/kg	pH Units	mg/kg	mg/kg	mg/kg	mg/kg	%	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			PAHMSUS	PHSOIL	SFAPI	SFAPI	SFAPI	SFAS	TMSS	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI
Method Reporting Limits :			1.28		0.5	0.5	0.5	0.5	0.1	4	4	4	11.88	8.75	5.62	4	4	20
UKAS Accredited :			Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Total PAH (Sum of USEPA 16)**	**pH units (AR)**	**Cyanide(Free) (AR)**	**Cyanide(Total) (AR)**	**Phenol Index.(AR)**	**Sulphide as S (AR)**	**Tot.Moisture @ 105C**	**TPH Ali Band >C10-C12**	**TPH Ali Band >C12-C16**	**TPH Ali Band >C16-C21**	**TPH Ali Band >C16-C35**	**TPH Ali Band >C21-C35**	**TPH Ali Band >C35-C44**	**TPH Ali Band >C40-C44**	**TPH Ali Band >C8-C10**	**TPH Ali Band >C8-C40**
2083392	ATK-TP-08 ES 1 0.10	**15-Jan-20**	< 1.28	6.3	<0.5	<0.5	<0.5	0.6	21.3	< 4.00	< 4.00	< 4.00	< 11.9	< 8.76	8.20	5.10	< 4.00	< 20.0

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

Contact Neil Cooke

A9031-19 Havant Thicket Winter Storage

Sample Analysis

Date Printed	**27-Jan-2020**
Report Number	**EFS/204807**
Table Number	**1**

Where individual results are flagged see report notes for status.

Units :			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	% M/M					
Method Codes :			TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	WSLM59					
Method Reporting Limits :			20	4	4	4	8.75	5.62	4	4	20	20	0.02					
UKAS Accredited :			No	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	Yes					
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**TPH Ali Band >C8-C44**	**TPH Aro Band >C10-C12**	**TPH Aro Band >C12-C16**	**TPH Aro Band >C16-C21**	**TPH Aro Band >C21-C35**	**TPH Aro Band >C35-C44**	**TPH Aro Band >C40-C44**	**TPH Aro Band >C8-C10**	**TPH Aro Band >C8-C40**	**TPH Aro Band >C8-C44**	**Total Organic Carbon**					
2083392	ATK-TP-08 ES 1 0.10	**15-Jan-20**	< 20.0	< 4.00	< 4.00	< 4.00	< 8.76	8.46	< 4.00	< 4.00	< 20.0	< 20.0	2.02					

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**
Contact	Neil Cooke

A9031-19 Havant Thicket Winter Storage

Sample Analysis

Date Printed	**27-Jan-2020**
Report Number	**EFS/204807**
Table Number	**1**

Where individual results are flagged see report notes for status.

Analytical and Deviating Sample Overview

Customer SOCOTEC UK Doncaster
Site A9031-19 Havant Thicket Winter Storage
Report No S204807

Consignment No S91037
Date Logged 16-Jan-2020
In-House Report Due 27-Jan-2020

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

ID Number	Description	MethodID	AMMAR	CustServ	FOCS	GROHSA	ICPACIDS	ICPBOR	ICPMSS										ICPSOIL	KONECR	PAHMSUS	PHSOIL	SFAPI			SFAS
		Sampled	Exchange.Ammonium AR	REPORT A	S.O.M. % (Calc)	GRO (AA-UK) HSA-GCFID	SO4-- (acid sol)	Boron (H20 Soluble)	Arsenic (MS)	Cadmium (MS)	Chromium (MS)	Copper (MS)	Lead (MS)	Manganese (MS)	Mercury (MS)	Nickel (MS)	Selenium (MS)	Vanadium (MS)	Zinc (MS)	Iron	Chromium vi:	PAH (16) by GCMS	pH units (AR)	Cyanide(Free) (AR)	Cyanide(Total) (AR)	Phenol Index.(AR)	Sulphide as S (AR)
			✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	✓	✓	✓	
CL/2083392	ATK-TP-08 0.10	15/01/20																									

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.

The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Analytical and Deviating Sample Overview

Customer SOCOTEC UK Doncaster
Site A9031-19 Havant Thicket Winter Storage
Report No S204807

Consignment No S91037
Date Logged 16-Jan-2020
In-House Report Due 27-Jan-2020

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

ID Number	Description	Sampled	MethodID	TMSS	TPHUSSI	WSLM59
				Tot.Moisture @ 105C	TPH by GCFID (Si-UKCWG)>44	Total Organic Carbon
				✓	✓	✓
CL/2083392	ATK-TP-08 0.10	15/01/20				

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.

The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Soil	AMMAR	As Received	Determination of Exchangeable Ammonium in Soil using potassium chloride extraction, discrete colorimetric detection
Soil	BTEXHSA	As Received	Determination of Benzene, Toluene, Ethyl benzene and Xylenes (BTEX) by Headspace GCFID
Soil	FOCS	Oven Dried @ < 35°C	Calculation of Soil Organic Matter content from Organic Carbon content of soil samples
Soil	GROHSA	As Received	Determination of Total Gasoline Range Organics Hydrocarbons (GRO) by Headspace GCFID
Soil	ICPACIDS	Oven Dried @ < 35°C	Determination of Total Sulphate in soil samples by Hydrochloric Acid extraction followed by ICPOES detection
Soil	ICPBOR	Oven Dried @ < 35°C	Determination of Boron in soil samples by hot water extraction followed by ICPOES detection
Soil	ICPMSS	Oven Dried @ < 35°C	Determination of Metals in Marine Sediments and Soil samples by aqua regia digestion followed by ICPMS detection
Soil	ICPSOIL	Oven Dried @ < 35°C	Determination of Metals in soil samples by aqua regia digestion followed by ICPOES detection
Soil	KONECR	Oven Dried @ < 35°C	Determination of Chromium vi in soil samples by water extraction followed by colorimetric detection
Soil	PAHMSUS	As Received	Determination of Polycyclic Aromatic Hydrocarbons (PAH) by hexane/acetone extraction followed by GCMS detection
Soil	PHSOIL	As Received	Determination of pH of 2.5:1 deionised water to soil extracts using pH probe.
Soil	SFAPI	As Received	Segmented flow analysis with colorimetric detection
Soil	SFAS	As Received	Segmented flow analysis with colorimetric detection
Soil	TMSS	As Received	Determination of the Total Moisture content at 105ºC by loss on oven drying gravimetric analysis (% based upon wet weight)
Soil	TPHUSSI	As Received	Determination of hexane/acetone extractable Hydrocarbons in soil with GCFID detection including quantitation of Aromatic and Aliphatic fractions.
Soil	WSLM59	Oven Dried @ < 35°C	Determination of Organic Carbon in soil using sulphurous Acid digestion followed by high temperature combustion and IR 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 105ºC 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/cm^3@ 15^{o}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 Anthophylite
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
Þ 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_4807

Note: major constituent in upper case

Lab ID Number	Client ID	Description
CL/2083392	ATK-TP-08 ES 1 0.10	Brown Gravel SILT Rootlets

TEST REPORT

1252

Report No. EFS/204808 (Ver. 1)

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

Site: A9031-19 Havant Thicket Winter Storage

The 2 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: 27-Jan-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 (Pages 2 to 6)
Analytical and Deviating Sample Overview (Pages 7 to 8)
Table of Method Descriptions (Page 9)
Table of Report Notes (Page 10)
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: 27-Jan-2020

Tests marked '^' 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 :			mg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	% M/M	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			AMMAR	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	FOCS	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA
Method Reporting Limits :			0.5	10	10	20	10	10	30	0.04	0.2	0.2	0.2	0.2	0.2	0.01	0.2	0.2
UKAS Accredited :			Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Exchange.Ammonium AR**	**Benzene**	**Ethyl Benzene**	**m/p Xylenes**	**o Xylene**	**Toluene**	**Xylenes**	**S.O.M. % (Calc)**	**GRO**	**GRO (>C5 - C6)**	**GRO (>C7 - C8)**	**GRO (>C8 - C10)**	**GRO (C5-C6 Aliphatic)**	**GRO (C5-C7 Aromatic)**	**GRO (C6-C7)**	**GRO (C6-C8 Aliphatic)**
2083393	ATK-TP-04 ES 1 0.20	**15-Jan-20**	7.1	< 10.0	< 10.0	< 20.0	< 10.0	< 10.0	< 30.0	2.24	< 0.200	< 0.200	< 0.200	< 0.200	< 0.200	< 0.010	< 0.200	< 0.200
2083394	ATK-TP-04 ES 6 1.00	**15-Jan-20**	0.8	< 10.0	< 10.0	< 20.0	< 10.0	< 10.0	< 30.0	0.38	< 0.200	< 0.200	< 0.200	< 0.200	< 0.200	< 0.010	< 0.200	< 0.200

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

Contact Neil Cooke

A9031-19 Havant Thicket Winter Storage

Sample Analysis

Date Printed	**27-Jan-2020**
Report Number	**EFS/204808**
Table Number	**1**

Where individual results are flagged see report notes for status.

			Units :	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
			Method Codes :	GROHSA	ICPACIDS	ICPBOR	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPSOIL	KONECR
			Method Reporting Limits :	0.01	20	0.5	0.3	0.1	0.5	0.5	0.5	1	0.1	0.5	0.5	0.6	3	36	0.1
			UKAS Accredited :	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No
LAB ID Number CL/	Client Sample Description	Sample Date		GRO (C7-C8 Aromatic)	SO4-- (acid sol)	Boron (H20 Soluble)	Arsenic (MS)	Cadmium (MS)	Chromium (MS)	Copper (MS)	Lead (MS)	Manganese (MS)	Mercury (MS)	Nickel (MS)	Selenium (MS)	Vanadium (MS)	Zinc (MS)	Iron	Chromium vi:
2083393	ATK-TP-04 ES 1 0.20	15-Jan-20		< 0.010	127	1.4	7.4	<0.1	15	9.2	21.3	270.9	0.11	5.1	<0.5	23.5	29.8	14700	<0.1
2083394	ATK-TP-04 ES 6 1.00	15-Jan-20		< 0.010	349	1.3	9.5	0.1	24.2	12.8	10.9	165.9	<0.1	16.6	<0.5	38.2	52	20400	<0.1

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
Contact	Neil Cooke

A9031-19 Havant Thicket Winter Storage

Sample Analysis

Date Printed	27-Jan-2020
Report Number	EFS/204808
Table Number	1

Where individual results are flagged see report notes for status.

Units :			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS
Method Reporting Limits :			0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
UKAS Accredited :			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Acenaphthene**	**Acenaphthylene**	**Anthracene**	**Benzo(a)anthracene**	**Benzo(a)pyrene**	**Benzo(b)fluoranthene**	**Benzo(ghi)perylene**	**Benzo(k)fluoranthene**	**Chrysene**	**Dibenzo(ah)anthracene**	**Fluoranthene**	**Fluorene**	**Indeno(123-cd)pyrene**	**Naphthalene**	**Phenanthrene**	**Pyrene**
2083393	ATK-TP-04 ES 1 0.20	**15-Jan-20**	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
2083394	ATK-TP-04 ES 6 1.00	**15-Jan-20**	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	0.10	< 0.08	< 0.08

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

Contact Neil Cooke

A9031-19 Havant Thicket Winter Storage

Sample Analysis

Date Printed	**27-Jan-2020**
Report Number	**EFS/204808**
Table Number	**1**

Where individual results are flagged see report notes for status.

		Units :	mg/kg	pH Units	mg/kg	mg/kg	mg/kg	mg/kg	%	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		Method Codes :	PAHMSUS	PHSOIL	SFAPI	SFAPI	SFAPI	SFAS	TMSS	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI
		Method Reporting Limits :	1.28		0.5	0.5	0.5	0.5	0.1	4	4	4	11.88	8.75	5.62	4	4	20
		UKAS Accredited :	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes
LAB ID Number CL/	Client Sample Description	Sample Date	Total PAH (Sum of USEPA 16)	pH units (AR)	Cyanide(Free) (AR)	Cyanide(Total) (AR)	Phenol Index.(AR)	Sulphide as S (AR)	Tot.Moisture @ 105C	TPH Ali Band >C10-C12	TPH Ali Band >C12-C16	TPH Ali Band >C16-C21	TPH Ali Band >C16-C35	TPH Ali Band >C21-C35	TPH Ali Band >C35-C44	TPH Ali Band >C40-C44	TPH Ali Band >C8-C10	TPH Ali Band >C8-C40
2083393	ATK-TP-04 ES 1 0.20	15-Jan-20	< 1.28	6	<0.5	<0.5	<0.5	<0.5	20.6	< 4.00	< 4.00	< 4.00	< 11.9	< 8.76	6.90	4.25	< 4.00	< 20.0
2083394	ATK-TP-04 ES 6 1.00	15-Jan-20	< 1.3	5.9	<0.5	<0.5	<0.5	<0.5	24.5	< 4.00	< 4.00	< 4.00	< 11.9	< 8.76	8.31	4.80	< 4.00	< 20.0

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
Contact	Neil Cooke

A9031-19 Havant Thicket Winter Storage

Sample Analysis

Date Printed	27-Jan-2020
Report Number	EFS/204808
Table Number	1

Where individual results are flagged see report notes for status.

Units :			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	% M/M					
Method Codes :			TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	WSLM59	Sub020				
Method Reporting Limits :			20	4	4	4	8.75	5.62	4	4	20	20	0.02					
UKAS Accredited :			No	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	Yes	Yes				
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**TPH Ali Band >C8-C44**	**TPH Aro Band >C10-C12**	**TPH Aro Band >C12-C16**	**TPH Aro Band >C16-C21**	**TPH Aro Band >C21-C35**	**TPH Aro Band >C35-C44**	**TPH Aro Band >C40-C44**	**TPH Aro Band >C8-C10**	**TPH Aro Band >C8-C40**	**TPH Aro Band >C8-C44**	**Total Organic Carbon**	**^Asbestos ID (Stage 1)**				
2083393	ATK-TP-04 ES 1 0.20	**15-Jan-20**	< 20.0	< 4.00	4.90	< 4.00	12.2	12.7	< 4.00	< 4.00	32.0	33.4	1.30	NADIS				
2083394	ATK-TP-04 ES 6 1.00	**15-Jan-20**	< 20.0	< 4.00	4.66	< 4.00	11.9	12.6	< 4.00	< 4.00	29.3	31.1	0.22					

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**
Contact	Neil Cooke

A9031-19 Havant Thicket Winter Storage

Sample Analysis

Date Printed	**27-Jan-2020**
Report Number	**EFS/204808**
Table Number	**1**

Where individual results are flagged see report notes for status.

IOM

working for a healthy and sustainable world

CERTIFICATE OF ANALYSIS

ANALYSIS REQUESTED BY: SOCOTEC UK Ltd
Environmental Chemistry
PO Box 100
Burton upon Trent
Staffordshire
DE15 0XD

CONTRACT NO: S10328-3

DATE OF ISSUE: 15.01.20

DATE SAMPLE RECEIVED: 03.01.20

DATE SAMPLE ANALYSED: 14.01.20

DESCRIPTION: One soil/loose aggregate sample.

ANALYSIS REQUESTED: Qualitative analysis of a sample for determination of presence/type of asbestos.

METHODS:

Our method involves initial examination of the sample followed by detailed analysis of a representative sub-sample. The sub-sample is analysed qualitatively for asbestos by polarised light and dispersion staining as described by the Health and Safety Executive in HSG 248.

RESULTS:

Initial Screening

No asbestos was detected in the soil sample by stereo-binocular and polarised light microscopy.

A summary of the results is given in Table 1.

www.iom-world.org

Registered Address: Research Avenue North, Riccarton, Edinburgh, EH14 4AP, United Kingdom
Tel: 0131 449 8000 Fax: 0131 449 8084 Email: iom@iom-world.org

IOM CONSULTING LIMITED, registered in Scotland No. SC205670

UKAS TESTING
0374

CONTRACT NO: S10328-3
DATE OF ISSUE: 15.01.20

RESULTS: (cont.)

Table 1: Qualitative Results

SOCOTEC Job I.D: S204057

IOM sample number	Client sample number	ACM type detected	PLM result
S69756	S1980288 ATK-TP04 0.10	-	No Asbestos Detected

Our detection limit for this method is 0.001%.

COMMENTS:

IOM Consulting cannot accept responsibility for samples that have been incorrectly collected or despatched by external clients.

Any opinions and interpretations expressed herein are out with the scope of our UKAS accreditation.

AUTHORISED BY: .....
D Third
Scientific Technician

Analytical and Deviating Sample Overview

Customer SOCOTEC UK Doncaster
Site A9031-19 Havant Thicket Winter Storage
Report No S204808

Consignment No S91037
Date Logged 16-Jan-2020
In-House Report Due 27-Jan-2020

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

ID Number	Description	MethodID	AMMAR	CustServ	FOCS	GROHSA	ICPACIDS	ICPBOR	ICPMSS										ICPSOIL	KONECR	PAHMSUS	PHSOIL	SFAPI			SFAS
		Sampled	Exchange.Ammonium AR	REPORT A	S.O.M. % (Calc)	GRO (AA-UK) HSA-GCFID	SO4-- (acid sol)	Boron (H20 Soluble)	Arsenic (MS)	Cadmium (MS)	Chromium (MS)	Copper (MS)	Lead (MS)	Manganese (MS)	Mercury (MS)	Nickel (MS)	Selenium (MS)	Vanadium (MS)	Zinc (MS)	Iron	Chromium vi:	PAH (16) by GCMS	pH units (AR)	Cyanide(Free) (AR)	Cyanide(Total) (AR)	Phenol Index.(AR)	Sulphide as S (AR)
			✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	✓	✓	✓	
CL/2083393	ATK-TP-04 0.20	15/01/20																									
CL/2083394	ATK-TP-04 1.00	15/01/20																									

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.

The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Analytical and Deviating Sample Overview

Customer SOCOTEC UK Doncaster
Site A9031-19 Havant Thicket Winter Storage
Report No S204808

Consignment No S91037
Date Logged 16-Jan-2020
In-House Report Due 27-Jan-2020

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

ID Number	Description	Sampled	MethodID	TMSS	TPHUSSI	WSLM59
				Tot.Moisture @ 105C	TPH by GCFID (Si-UKCWG)>44	Total Organic Carbon
				✓	✓	✓
CL/2083393	ATK-TP-04 0.20	15/01/20				
CL/2083394	ATK-TP-04 1.00	15/01/20				

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.

The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Soil	AMMAR	As Received	Determination of Exchangeable Ammonium in Soil using potassium chloride extraction, discrete colorimetric detection
Soil	BTEXHSA	As Received	Determination of Benzene, Toluene, Ethyl benzene and Xylenes (BTEX) by Headspace GCFID
Soil	FOCS	Oven Dried @ < 35°C	Calculation of Soil Organic Matter content from Organic Carbon content of soil samples
Soil	GROHSA	As Received	Determination of Total Gasoline Range Organics Hydrocarbons (GRO) by Headspace GCFID
Soil	ICPACIDS	Oven Dried @ < 35°C	Determination of Total Sulphate in soil samples by Hydrochloric Acid extraction followed by ICPOES detection
Soil	ICPBOR	Oven Dried @ < 35°C	Determination of Boron in soil samples by hot water extraction followed by ICPOES detection
Soil	ICPMSS	Oven Dried @ < 35°C	Determination of Metals in Marine Sediments and Soil samples by aqua regia digestion followed by ICPMS detection
Soil	ICPSOIL	Oven Dried @ < 35°C	Determination of Metals in soil samples by aqua regia digestion followed by ICPOES detection
Soil	KONECR	Oven Dried @ < 35°C	Determination of Chromium vi in soil samples by water extraction followed by colorimetric detection
Soil	PAHMSUS	As Received	Determination of Polycyclic Aromatic Hydrocarbons (PAH) by hexane/acetone extraction followed by GCMS detection
Soil	PHSOIL	As Received	Determination of pH of 2.5:1 deionised water to soil extracts using pH probe.
Soil	SFAPI	As Received	Segmented flow analysis with colorimetric detection
Soil	SFAS	As Received	Segmented flow analysis with colorimetric detection
Soil	TMSS	As Received	Determination of the Total Moisture content at 105ºC by loss on oven drying gravimetric analysis (% based upon wet weight)
Soil	TPHUSSI	As Received	Determination of hexane/acetone extractable Hydrocarbons in soil with GCFID detection including quantitation of Aromatic and Aliphatic fractions.
Soil	WSLM59	Oven Dried @ < 35°C	Determination of Organic Carbon in soil using sulphurous Acid digestion followed by high temperature combustion and IR 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 105ºC 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/cm^3@ 15^{o}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 Anthophylite
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
Þ 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_4808

Note: major constituent in upper case

Lab ID Number	Client ID	Description
CL/2083393	ATK-TP-04 ES 1 0.20	Brown Gravel SILT Rootlets
CL/2083394	ATK-TP-04 ES 6 1.00	Brown CLAY

TEST REPORT

1252

Report No. EFS/204809 (Ver. 1)

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

Site: A9031-19 Havant Thicket Winter Storage

The 2 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: 27-Jan-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 (Pages 2 to 6)
Analytical and Deviating Sample Overview (Pages 7 to 8)
Table of Method Descriptions (Page 9)
Table of Report Notes (Page 10)
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: 27-Jan-2020

Tests marked '^' 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 :			mg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	% M/M	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			AMMAR	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	FOCS	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA
Method Reporting Limits :			0.5	10	10	20	10	10	30	0.04	0.2	0.2	0.2	0.2	0.2	0.01	0.2	0.2
UKAS Accredited :			Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Exchange.Ammonium AR**	**Benzene**	**Ethyl Benzene**	**m/p Xylenes**	**o Xylene**	**Toluene**	**Xylenes**	**S.O.M. % (Calc)**	**GRO**	**GRO (>C5 - C6)**	**GRO (>C7 - C8)**	**GRO (>C8 - C10)**	**GRO (C5-C6 Aliphatic)**	**GRO (C5-C7 Aromatic)**	**GRO (C6-C7)**	**GRO (C6-C8 Aliphatic)**
2083395	ATK-TP-05 ES 1 0.20	**15-Jan-20**	6.1	< 10.0	< 10.0	< 20.0	< 10.0	< 10.0	< 30.0	2.83	< 0.200	< 0.200	< 0.200	< 0.200	< 0.200	< 0.010	< 0.200	< 0.200
2083396	ATK-TP-05 ES 7 1.00	**15-Jan-20**	0.7	< 10.0	< 10.0	< 20.0	< 10.0	< 10.0	< 30.0	0.53	< 0.200	< 0.200	< 0.200	< 0.200	< 0.200	< 0.010	< 0.200	< 0.200

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

Contact Neil Cooke

A9031-19 Havant Thicket Winter Storage

Sample Analysis

Date Printed	**27-Jan-2020**
Report Number	**EFS/204809**
Table Number	**1**

Where individual results are flagged see report notes for status.

			Units :	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
			Method Codes :	GROHSA	ICPACIDS	ICPBOR	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPSOIL	KONECR
			Method Reporting Limits :	0.01	20	0.5	0.3	0.1	0.5	0.5	0.5	1	0.1	0.5	0.5	0.6	3	36	0.1
			UKAS Accredited :	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No
LAB ID Number CL/	Client Sample Description	Sample Date		GRO (C7-C8 Aromatic)	SO4-- (acid sol)	Boron (H20 Soluble)	Arsenic (MS)	Cadmium (MS)	Chromium (MS)	Copper (MS)	Lead (MS)	Manganese (MS)	Mercury (MS)	Nickel (MS)	Selenium (MS)	Vanadium (MS)	Zinc (MS)	Iron	Chromium vi:
2083395	ATK-TP-05 ES 1 0.20	15-Jan-20		< 0.010	266	1.1	5.7	0.12	15.4	4.4	20.9	136.6	<0.1	8	<0.5	21.6	35.2	13700	<0.1
2083396	ATK-TP-05 ES 7 1.00	15-Jan-20		< 0.010	103	0.9	3.2	<0.1	17.5	4.9	7.9	129.6	<0.1	9.2	<0.5	20.3	30.9	11500	<0.1

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
Contact	Neil Cooke

A9031-19 Havant Thicket Winter Storage

Sample Analysis

Date Printed	27-Jan-2020
Report Number	EFS/204809
Table Number	1

Where individual results are flagged see report notes for status.

Units :			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS
Method Reporting Limits :			0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
UKAS Accredited :			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Acenaphthene**	**Acenaphthylene**	**Anthracene**	**Benzo(a)anthracene**	**Benzo(a)pyrene**	**Benzo(b)fluoranthene**	**Benzo(ghi)perylene**	**Benzo(k)fluoranthene**	**Chrysene**	**Dibenzo(ah)anthracene**	**Fluoranthene**	**Fluorene**	**Indeno(123-cd)pyrene**	**Naphthalene**	**Phenanthrene**	**Pyrene**	
2083395	ATK-TP-05 ES 1 0.20	**15-Jan-20**	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	0.10	< 0.08	< 0.08	
2083396	ATK-TP-05 ES 7 1.00	**15-Jan-20**	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	0.09	< 0.08	< 0.08	

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

Contact Neil Cooke

A9031-19 Havant Thicket Winter Storage

Sample Analysis

Date Printed	**27-Jan-2020**
Report Number	**EFS/204809**
Table Number	**1**

Where individual results are flagged see report notes for status.

Units :			mg/kg	pH Units	mg/kg	mg/kg	mg/kg	mg/kg	%	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			PAHMSUS	PHSOIL	SFAPI	SFAPI	SFAPI	SFAS	TMSS	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI
Method Reporting Limits :			1.28		0.5	0.5	0.5	0.5	0.1	4	4	4	11.88	8.75	5.62	4	4	20
UKAS Accredited :			Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Total PAH (Sum of USEPA 16)**	**pH units (AR)**	**Cyanide(Free) (AR)**	**Cyanide(Total) (AR)**	**Phenol Index.(AR)**	**Sulphide as S (AR)**	**Tot.Moisture @ 105C**	**TPH Ali Band >C10-C12**	**TPH Ali Band >C12-C16**	**TPH Ali Band >C16-C21**	**TPH Ali Band >C16-C35**	**TPH Ali Band >C21-C35**	**TPH Ali Band >C35-C44**	**TPH Ali Band >C40-C44**	**TPH Ali Band >C8-C10**	**TPH Ali Band >C8-C40**
2083395	ATK-TP-05 ES 1 0.20	**15-Jan-20**	< 1.3	6.4	<0.5	<0.5	<0.5	<0.5	26.1	< 4.00	4.06	< 4.00	< 11.9	< 8.76	7.82	4.86	< 4.00	< 20.0
2083396	ATK-TP-05 ES 7 1.00	**15-Jan-20**	< 1.29	6.8	<0.5	<0.5	<0.5	<0.5	18.5	< 4.00	< 4.00	< 4.00	< 11.9	< 8.76	8.12	5.07	< 4.00	< 20.0

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

Contact Neil Cooke

A9031-19 Havant Thicket Winter Storage

Sample Analysis

Date Printed	**27-Jan-2020**
Report Number	**EFS/204809**
Table Number	**1**

Where individual results are flagged see report notes for status.

Units :			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	% M/M						
Method Codes :			TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	WSLM59						
Method Reporting Limits :			20	4	4	4	8.75	5.62	4	4	20	20	0.02						
UKAS Accredited :			No	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	Yes						
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**TPH Ali Band >C8-C44**	**TPH Aro Band >C10-C12**	**TPH Aro Band >C12-C16**	**TPH Aro Band >C16-C21**	**TPH Aro Band >C21-C35**	**TPH Aro Band >C35-C44**	**TPH Aro Band >C40-C44**	**TPH Aro Band >C8-C10**	**TPH Aro Band >C8-C40**	**TPH Aro Band >C8-C44**	**Total Organic Carbon**						
2083395	ATK-TP-05 ES 1 0.20	**15-Jan-20**	< 20.0	< 4.00	< 4.00	< 4.00	8.89	8.63	< 4.00	< 4.00	21.6	23.2	1.64						
2083396	ATK-TP-05 ES 7 1.00	**15-Jan-20**	< 20.0	< 4.00	< 4.00	< 4.00	10.1	12.1	< 4.00	< 4.00	29.6	31.2	0.31						

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**
Contact	Neil Cooke

A9031-19 Havant Thicket Winter Storage

Sample Analysis

Date Printed	**27-Jan-2020**
Report Number	**EFS/204809**
Table Number	**1**

Where individual results are flagged see report notes for status.

Analytical and Deviating Sample Overview

Customer SOCOTEC UK Doncaster
Site A9031-19 Havant Thicket Winter Storage
Report No S204809

Consignment No S91037
Date Logged 16-Jan-2020
In-House Report Due 27-Jan-2020

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

ID Number	Description	MethodID	AMMAR	CustServ	FOCS	GROHSA	ICPACIDS	ICPBOR	ICPMSS										ICPSOIL	KONECR	PAHMSUS	PHSOIL	SFAPI			SFAS
		Sampled	Exchange.Ammonium AR	REPORT A	S.O.M. % (Calc)	GRO (AA-UK) HSA-GCFID	SO4-- (acid sol)	Boron (H20 Soluble)	Arsenic (MS)	Cadmium (MS)	Chromium (MS)	Copper (MS)	Lead (MS)	Manganese (MS)	Mercury (MS)	Nickel (MS)	Selenium (MS)	Vanadium (MS)	Zinc (MS)	Iron	Chromium vi:	PAH (16) by GCMS	pH units (AR)	Cyanide(Free) (AR)	Cyanide(Total) (AR)	Phenol Index.(AR)	Sulphide as S (AR)
			✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	✓	✓	✓	
CL/2083395	ATK-TP-05 0.20	15/01/20																									
CL/2083396	ATK-TP-05 1.00	15/01/20																									

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.

The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Analytical and Deviating Sample Overview

Customer SOCOTEC UK Doncaster
Site A9031-19 Havant Thicket Winter Storage
Report No S204809

Consignment No S91037
Date Logged 16-Jan-2020
In-House Report Due 27-Jan-2020

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

ID Number	Description	Sampled	MethodID	TMSS	TPHUSSI	WSLM59
				Tot.Moisture @ 105C	TPH by GCFID (Si-UKCWG)>44	Total Organic Carbon
				✓	✓	✓
CL/2083395	ATK-TP-05 0.20	15/01/20				
CL/2083396	ATK-TP-05 1.00	15/01/20				

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.

The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Soil	AMMAR	As Received	Determination of Exchangeable Ammonium in Soil using potassium chloride extraction, discrete colorimetric detection
Soil	BTEXHSA	As Received	Determination of Benzene, Toluene, Ethyl benzene and Xylenes (BTEX) by Headspace GCFID
Soil	FOCS	Oven Dried @ < 35°C	Calculation of Soil Organic Matter content from Organic Carbon content of soil samples
Soil	GROHSA	As Received	Determination of Total Gasoline Range Organics Hydrocarbons (GRO) by Headspace GCFID
Soil	ICPACIDS	Oven Dried @ < 35°C	Determination of Total Sulphate in soil samples by Hydrochloric Acid extraction followed by ICPOES detection
Soil	ICPBOR	Oven Dried @ < 35°C	Determination of Boron in soil samples by hot water extraction followed by ICPOES detection
Soil	ICPMSS	Oven Dried @ < 35°C	Determination of Metals in Marine Sediments and Soil samples by aqua regia digestion followed by ICPMS detection
Soil	ICPSOIL	Oven Dried @ < 35°C	Determination of Metals in soil samples by aqua regia digestion followed by ICPOES detection
Soil	KONECR	Oven Dried @ < 35°C	Determination of Chromium vi in soil samples by water extraction followed by colorimetric detection
Soil	PAHMSUS	As Received	Determination of Polycyclic Aromatic Hydrocarbons (PAH) by hexane/acetone extraction followed by GCMS detection
Soil	PHSOIL	As Received	Determination of pH of 2.5:1 deionised water to soil extracts using pH probe.
Soil	SFAPI	As Received	Segmented flow analysis with colorimetric detection
Soil	SFAS	As Received	Segmented flow analysis with colorimetric detection
Soil	TMSS	As Received	Determination of the Total Moisture content at 105ºC by loss on oven drying gravimetric analysis (% based upon wet weight)
Soil	TPHUSSI	As Received	Determination of hexane/acetone extractable Hydrocarbons in soil with GCFID detection including quantitation of Aromatic and Aliphatic fractions.
Soil	WSLM59	Oven Dried @ < 35°C	Determination of Organic Carbon in soil using sulphurous Acid digestion followed by high temperature combustion and IR 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 105ºC 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/cm^3@ 15^{o}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 Anthophylite
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
Þ 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_4809

Note: major constituent in upper case

Lab ID Number	Client ID	Description
CL/2083395	ATK-TP-05 ES 1 0.20	Brown/Grey Silt CLAY Gravel
CL/2083396	ATK-TP-05 ES 7 1.00	Grey Gravel CLAY

TEST REPORT

1252

Report No. EFS/204810 (Ver. 1)

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

Site: A9031-19 Havant Thicket Winter Storage

The 1 sample 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: 27-Jan-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 (Pages 2 to 6)
Analytical and Deviating Sample Overview (Pages 7 to 8)
Table of Method Descriptions (Page 9)
Table of Report Notes (Page 10)
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: 27-Jan-2020

Tests marked '^' 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 :			mg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	% M/M	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			AMMAR	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	FOCS	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA
Method Reporting Limits :			0.5	10	10	20	10	10	30	0.04	0.2	0.2	0.2	0.2	0.2	0.2	0.01	0.2	0.2
UKAS Accredited :			Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Exchange.Ammonium AR**	**Benzene**	**Ethyl Benzene**	**m/p Xylenes**	**o Xylene**	**Toluene**	**Xylenes**	**S.O.M. % (Calc)**	**GRO**	**GRO (>C5 - C6)**	**GRO (>C7 - C8)**	**GRO (>C8 - C10)**	**GRO (C5-C6 Aliphatic)**	**GRO (C5-C7 Aromatic)**	**GRO (C6-C7)**	**GRO (C6-C8 Aliphatic)**
2083397	ATK-TP-07 ES 1 0.20	**15-Jan-20**	4.7	< 10.0	< 10.0	< 20.0	< 10.0	< 10.0	< 30.0	1.86	< 0.200	< 0.200	< 0.200	< 0.200	< 0.200	< 0.010	< 0.200	< 0.200

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

Contact Neil Cooke

A9031-19 Havant Thicket Winter Storage

Sample Analysis

Date Printed	**27-Jan-2020**
Report Number	**EFS/204810**
Table Number	**1**

Where individual results are flagged see report notes for status.

Units :			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			GROHSA	ICPACIDS	ICPBOR	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPSOIL	KONECR
Method Reporting Limits :			0.01	20	0.5	0.3	0.1	0.5	0.5	0.5	1	0.1	0.5	0.5	0.6	3	36	0.1
UKAS Accredited :			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**GRO (C7-C8 Aromatic)**	**SO4-- (acid sol)**	**Boron (H20 Soluble)**	**Arsenic (MS)**	**Cadmium (MS)**	**Chromium (MS)**	**Copper (MS)**	**Lead (MS)**	**Manganese (MS)**	**Mercury (MS)**	**Nickel (MS)**	**Selenium (MS)**	**Vanadium (MS)**	**Zinc (MS)**	**Iron**	**Chromium vi:**
2083397	ATK-TP-07 ES 1 0.20	**15-Jan-20**	< 0.010	222	1.1	7.9	<0.1	15.8	4.5	21.8	251	<0.1	5.8	<0.5	25.9	29.6	17400	<0.1

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

Contact Neil Cooke

A9031-19 Havant Thicket Winter Storage

Sample Analysis

Date Printed	**27-Jan-2020**
Report Number	**EFS/204810**
Table Number	**1**

Where individual results are flagged see report notes for status.

Units :			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS
Method Reporting Limits :			0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
UKAS Accredited :			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Acenaphthene**	**Acenaphthylene**	**Anthracene**	**Benzo(a)anthracene**	**Benzo(a)pyrene**	**Benzo(b)fluoranthene**	**Benzo(ghi)perylene**	**Benzo(k)fluoranthene**	**Chrysene**	**Dibenzo(ah)anthracene**	**Fluoranthene**	**Fluorene**	**Indeno(123-cd)pyrene**	**Naphthalene**	**Phenanthrene**	**Pyrene**	
2083397	ATK-TP-07 ES 1 0.20	**15-Jan-20**	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	0.10	< 0.08	< 0.08	

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**
Contact	Neil Cooke

A9031-19 Havant Thicket Winter Storage

Sample Analysis

Date Printed	**27-Jan-2020**
Report Number	**EFS/204810**
Table Number	**1**

Where individual results are flagged see report notes for status.

Units :			mg/kg	pH Units	mg/kg	mg/kg	mg/kg	mg/kg	%	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			PAHMSUS	PHSOIL	SFAPI	SFAPI	SFAPI	SFAS	TMSS	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI
Method Reporting Limits :			1.28		0.5	0.5	0.5	0.5	0.1	4	4	4	11.88	8.75	5.62	4	4	20
UKAS Accredited :			Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Total PAH (Sum of USEPA 16)**	**pH units (AR)**	**Cyanide(Free) (AR)**	**Cyanide(Total) (AR)**	**Phenol Index.(AR)**	**Sulphide as S (AR)**	**Tot.Moisture @ 105C**	**TPH Ali Band >C10-C12**	**TPH Ali Band >C12-C16**	**TPH Ali Band >C16-C21**	**TPH Ali Band >C16-C35**	**TPH Ali Band >C21-C35**	**TPH Ali Band >C35-C44**	**TPH Ali Band >C40-C44**	**TPH Ali Band >C8-C10**	**TPH Ali Band >C8-C40**
2083397	ATK-TP-07 ES 1 0.20	**15-Jan-20**	< 1.3	6.5	<0.5	<0.5	<0.5	<0.5	27.1	< 4.00	< 4.00	< 4.00	< 11.9	< 8.76	8.32	4.93	< 4.00	< 20.0

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**
Contact	Neil Cooke

A9031-19 Havant Thicket Winter Storage

Sample Analysis

Date Printed	**27-Jan-2020**
Report Number	**EFS/204810**
Table Number	**1**

Where individual results are flagged see report notes for status.

Units :			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	% M/M					
Method Codes :			TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	WSLM59	Sub020				
Method Reporting Limits :			20	4	4	4	8.75	5.62	4	4	20	20	0.02					
UKAS Accredited :			No	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	Yes	Yes				
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**TPH Ali Band >C8-C44**	**TPH Aro Band >C10-C12**	**TPH Aro Band >C12-C16**	**TPH Aro Band >C16-C21**	**TPH Aro Band >C21-C35**	**TPH Aro Band >C35-C44**	**TPH Aro Band >C40-C44**	**TPH Aro Band >C8-C10**	**TPH Aro Band >C8-C40**	**TPH Aro Band >C8-C44**	**Total Organic Carbon**	**^Asbestos ID (Stage 1)**				
2083397	ATK-TP-07 ES 1 0.20	**15-Jan-20**	< 20.0	< 4.00	< 4.00	4.03	< 8.76	8.56	< 4.00	< 4.00	< 20.0	< 20.0	1.08	NADIS				

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**
Contact	Neil Cooke

A9031-19 Havant Thicket Winter Storage

Sample Analysis

Date Printed	**27-Jan-2020**
Report Number	**EFS/204810**
Table Number	**1**

Where individual results are flagged see report notes for status.

IOM

working for a healthy and sustainable world

CERTIFICATE OF ANALYSIS

ANALYSIS REQUESTED BY: SOCOTEC UK Ltd
Environmental Chemistry
PO Box 100
Burton upon Trent
Staffordshire
DE15 0XD

CONTRACT NO: S10328-2

DATE OF ISSUE: 15.01.20

DATE SAMPLE RECEIVED: 03.01.20

DATE SAMPLE ANALYSED: 14.01.20

DESCRIPTION: One soil/loose aggregate sample.

ANALYSIS REQUESTED: Qualitative analysis of a sample for determination of presence/type of asbestos.

METHODS:

Our method involves initial examination of the sample followed by detailed analysis of a representative sub-sample. The sub-sample is analysed qualitatively for asbestos by polarised light and dispersion staining as described by the Health and Safety Executive in HSG 248.

RESULTS:

Initial Screening

No asbestos was detected in the soil sample by stereo-binocular and polarised light microscopy.

A summary of the results is given in Table 1.

www.iom-world.org

Registered Address: Research Avenue North, Riccarton, Edinburgh, EH14 4AP, United Kingdom
Tel: 0131 449 8000 Fax: 0131 449 8084 Email: iom@iom-world.org

IOM CONSULTING LIMITED, registered in Scotland No. SC205670

UKAS TESTING
0374

CONTRACT NO: S10328-2
DATE OF ISSUE: 15.01.20

RESULTS: (cont.)

Table 1: Qualitative Results

SOCOTEC Job I.D: S204056

IOM sample number	Client sample number	ACM type detected	PLM result
S69755	S1980287 ATK-TP07 0.20	-	No Asbestos Detected

Our detection limit for this method is 0.001%.

COMMENTS:

IOM Consulting cannot accept responsibility for samples that have been incorrectly collected or despatched by external clients.

Any opinions and interpretations expressed herein are out with the scope of our UKAS accreditation.

AUTHORISED BY: .....
D Third
Scientific Technician

Analytical and Deviating Sample Overview

Customer SOCOTEC UK Doncaster
Site A9031-19 Havant Thicket Winter Storage
Report No S204810

Consignment No S91037
Date Logged 16-Jan-2020
In-House Report Due 27-Jan-2020

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

ID Number	Description	MethodID	AMMAR	CustServ	FOCS	GROHSA	ICPACIDS	ICPBOR	ICPMSS										ICPSOIL	KONECR	PAHMSUS	PHSOIL	SFAPI			SFAS
		Sampled	Exchange.Ammonium AR	REPORT A	S.O.M. % (Calc)	GRO (AA-UK) HSA-GCFID	SO4-- (acid sol)	Boron (H20 Soluble)	Arsenic (MS)	Cadmium (MS)	Chromium (MS)	Copper (MS)	Lead (MS)	Manganese (MS)	Mercury (MS)	Nickel (MS)	Selenium (MS)	Vanadium (MS)	Zinc (MS)	Iron	Chromium vi:	PAH (16) by GCMS	pH units (AR)	Cyanide(Free) (AR)	Cyanide(Total) (AR)	Phenol Index.(AR)	Sulphide as S (AR)
			✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	✓	✓	✓	
CL/2083397	ATK-TP-07 0.20	15/01/20																									

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.

The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Analytical and Deviating Sample Overview

Customer SOCOTEC UK Doncaster
Site A9031-19 Havant Thicket Winter Storage
Report No S204810

Consignment No S91037
Date Logged 16-Jan-2020
In-House Report Due 27-Jan-2020

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

ID Number	Description	Sampled	MethodID	TMSS	TPHUSSI	WSLM59
				Tot.Moisture @ 105C	TPH by GCFID (Si-UKCWG)>44	Total Organic Carbon
				✓	✓	✓
CL/2083397	ATK-TP-07 0.20	15/01/20				

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.

The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Soil	AMMAR	As Received	Determination of Exchangeable Ammonium in Soil using potassium chloride extraction, discrete colorimetric detection
Soil	BTEXHSA	As Received	Determination of Benzene, Toluene, Ethyl benzene and Xylenes (BTEX) by Headspace GCFID
Soil	FOCS	Oven Dried @ < 35°C	Calculation of Soil Organic Matter content from Organic Carbon content of soil samples
Soil	GROHSA	As Received	Determination of Total Gasoline Range Organics Hydrocarbons (GRO) by Headspace GCFID
Soil	ICPACIDS	Oven Dried @ < 35°C	Determination of Total Sulphate in soil samples by Hydrochloric Acid extraction followed by ICPOES detection
Soil	ICPBOR	Oven Dried @ < 35°C	Determination of Boron in soil samples by hot water extraction followed by ICPOES detection
Soil	ICPMSS	Oven Dried @ < 35°C	Determination of Metals in Marine Sediments and Soil samples by aqua regia digestion followed by ICPMS detection
Soil	ICPSOIL	Oven Dried @ < 35°C	Determination of Metals in soil samples by aqua regia digestion followed by ICPOES detection
Soil	KONECR	Oven Dried @ < 35°C	Determination of Chromium vi in soil samples by water extraction followed by colorimetric detection
Soil	PAHMSUS	As Received	Determination of Polycyclic Aromatic Hydrocarbons (PAH) by hexane/acetone extraction followed by GCMS detection
Soil	PHSOIL	As Received	Determination of pH of 2.5:1 deionised water to soil extracts using pH probe.
Soil	SFAPI	As Received	Segmented flow analysis with colorimetric detection
Soil	SFAS	As Received	Segmented flow analysis with colorimetric detection
Soil	TMSS	As Received	Determination of the Total Moisture content at 105ºC by loss on oven drying gravimetric analysis (% based upon wet weight)
Soil	TPHUSSI	As Received	Determination of hexane/acetone extractable Hydrocarbons in soil with GCFID detection including quantitation of Aromatic and Aliphatic fractions.
Soil	WSLM59	Oven Dried @ < 35°C	Determination of Organic Carbon in soil using sulphurous Acid digestion followed by high temperature combustion and IR 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 105ºC 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/cm^3@ 15^{o}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 Anthophylite
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
Þ 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_4810

Note: major constituent in upper case

Lab ID Number	Client ID	Description
CL/2083397	ATK-TP-07 ES 1 0.20	Brown Gravel CLAY

TEST REPORT

1252

Report No. EFS/204811 (Ver. 1)

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

Site: A9031-19 Havant Thicket Winter Storage

The 1 sample 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: 29-Jan-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 (Pages 2 to 6)
Analytical and Deviating Sample Overview (Pages 7 to 8)
Table of Method Descriptions (Page 9)
Table of Report Notes (Page 10)
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: 29-Jan-2020

Tests marked '^' 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 :			mg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	% M/M	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			AMMAR	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	FOCS	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA
Method Reporting Limits :			0.5	10	10	20	10	10	30	0.04	0.2	0.2	0.2	0.2	0.2	0.2	0.01	0.2	0.2
UKAS Accredited :			Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Exchange.Ammonium AR**	**Benzene**	**Ethyl Benzene**	**m/p Xylenes**	**o Xylene**	**Toluene**	**Xylenes**	**S.O.M. % (Calc)**	**GRO**	**GRO (>C5 - C6)**	**GRO (>C7 - C8)**	**GRO (>C8 - C10)**	**GRO (C5-C6 Aliphatic)**	**GRO (C5-C7 Aromatic)**	**GRO (C6-C7)**	**GRO (C6-C8 Aliphatic)**
2083398	ATK-TPM-04 ES 1 0.20	**15-Jan-20**	1.9	< 10.0	< 10.0	< 20.0	< 10.0	< 10.0	< 30.0	3.45	< 0.200	< 0.200	< 0.200	< 0.200	< 0.200	< 0.010	< 0.200	< 0.200

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**
Contact	Neil Cooke

A9031-19 Havant Thicket Winter Storage

Sample Analysis

Date Printed	**29-Jan-2020**
Report Number	**EFS/204811**
Table Number	**1**

Where individual results are flagged see report notes for status.

Units :			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			GROHSA	ICPACIDS	ICPBOR	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPSOIL	KONECR
Method Reporting Limits :			0.01	20	0.5	0.3	0.1	0.5	0.5	0.5	1	0.1	0.5	0.5	0.6	3	36	0.1
UKAS Accredited :			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**GRO (C7-C8 Aromatic)**	**SO4-- (acid sol)**	**Boron (H20 Soluble)**	**Arsenic (MS)**	**Cadmium (MS)**	**Chromium (MS)**	**Copper (MS)**	**Lead (MS)**	**Manganese (MS)**	**Mercury (MS)**	**Nickel (MS)**	**Selenium (MS)**	**Vanadium (MS)**	**Zinc (MS)**	**Iron**	**Chromium vi:**
2083398	ATK-TPM-04 ES 1 0.20	**15-Jan-20**	< 0.010	342	1.7	8	0.1	21.3	10.8	44.4	49.2	<0.1	9	<0.5	39.2	40.3	23000	<0.1

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**
Contact	Neil Cooke

A9031-19 Havant Thicket Winter Storage

Sample Analysis

Date Printed	**29-Jan-2020**
Report Number	**EFS/204811**
Table Number	**1**

Where individual results are flagged see report notes for status.

Units :			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS
Method Reporting Limits :			0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
UKAS Accredited :			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Acenaphthene**	**Acenaphthylene**	**Anthracene**	**Benzo(a)anthracene**	**Benzo(a)pyrene**	**Benzo(b)fluoranthene**	**Benzo(ghi)perylene**	**Benzo(k)fluoranthene**	**Chrysene**	**Dibenzo(ah)anthracene**	**Fluoranthene**	**Fluorene**	**Indeno(123-cd)pyrene**	**Naphthalene**	**Phenanthrene**	**Pyrene**	
2083398	ATK-TPM-04 ES 1 0.20	**15-Jan-20**	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	

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**
Contact	Neil Cooke

A9031-19 Havant Thicket Winter Storage

Sample Analysis

Date Printed	**29-Jan-2020**
Report Number	**EFS/204811**
Table Number	**1**

Where individual results are flagged see report notes for status.

Units :			mg/kg	pH Units	mg/kg	mg/kg	mg/kg	mg/kg	%	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			PAHMSUS	PHSOIL	SFAPI	SFAPI	SFAPI	SFAS	TMSS	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI
Method Reporting Limits :			1.28		0.5	0.5	0.5	0.5	0.1	4	4	4	11.88	8.75	5.62	4	4	20
UKAS Accredited :			Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Total PAH (Sum of USEPA 16)**	**pH units (AR)**	**Cyanide(Free) (AR)**	**Cyanide(Total) (AR)**	**Phenol Index.(AR)**	**Sulphide as S (AR)**	**Tot.Moisture @ 105C**	**TPH Ali Band >C10-C12**	**TPH Ali Band >C12-C16**	**TPH Ali Band >C16-C21**	**TPH Ali Band >C16-C35**	**TPH Ali Band >C21-C35**	**TPH Ali Band >C35-C44**	**TPH Ali Band >C40-C44**	**TPH Ali Band >C8-C10**	**TPH Ali Band >C8-C40**
2083398	ATK-TPM-04 ES 1 0.20	**15-Jan-20**	< 1.28	6	<0.5	<0.5	<0.5	0.6	26.3	< 4.00	< 4.00	< 4.00	< 11.9	< 8.76	7.78	4.66	< 4.00	< 20.0

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

Contact Neil Cooke

A9031-19 Havant Thicket Winter Storage

Sample Analysis

Date Printed	**29-Jan-2020**
Report Number	**EFS/204811**
Table Number	**1**

Where individual results are flagged see report notes for status.

Units :			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	% M/M					
Method Codes :			TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	WSLM59					
Method Reporting Limits :			20	4	4	4	8.75	5.62	4	4	20	20	0.02					
UKAS Accredited :			No	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	Yes					
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**TPH Ali Band >C8-C44**	**TPH Aro Band >C10-C12**	**TPH Aro Band >C12-C16**	**TPH Aro Band >C16-C21**	**TPH Aro Band >C21-C35**	**TPH Aro Band >C35-C44**	**TPH Aro Band >C40-C44**	**TPH Aro Band >C8-C10**	**TPH Aro Band >C8-C40**	**TPH Aro Band >C8-C44**	**Total Organic Carbon**					
2083398	ATK-TPM-04 ES 1 0.20	**15-Jan-20**	< 20.0	< 4.00	< 4.00	< 4.00	< 8.76	8.40	< 4.00	< 4.00	< 20.0	< 20.0	2.00					

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**
Contact	Neil Cooke

A9031-19 Havant Thicket Winter Storage

Sample Analysis

Date Printed	**29-Jan-2020**
Report Number	**EFS/204811**
Table Number	**1**

Where individual results are flagged see report notes for status.

Analytical and Deviating Sample Overview

Customer SOCOTEC UK Doncaster
Site A9031-19 Havant Thicket Winter Storage
Report No S204811

Consignment No S91036
Date Logged 16-Jan-2020
In-House Report Due 27-Jan-2020

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

ID Number	Description	MethodID	AMMAR	CustServ	FOCS	GROHSA	ICPACIDS	ICPBOR	ICPMSS										ICPSOIL	KONECR	PAHMSUS	PHSOIL	SFAPI			SFAS
		Sampled	Exchange.Ammonium AR	REPORT A	S.O.M. % (Calc)	GRO (AA-UK) HSA-GCFID	SO4-- (acid sol)	Boron (H20 Soluble)	Arsenic (MS)	Cadmium (MS)	Chromium (MS)	Copper (MS)	Lead (MS)	Manganese (MS)	Mercury (MS)	Nickel (MS)	Selenium (MS)	Vanadium (MS)	Zinc (MS)	Iron	Chromium vi:	PAH (16) by GCMS	pH units (AR)	Cyanide(Free) (AR)	Cyanide(Total) (AR)	Phenol Index.(AR)	Sulphide as S (AR)
			✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	✓	✓	✓	
CL/2083398	ATK-TPM-04 0.20	15/01/20																									

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.

The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Analytical and Deviating Sample Overview

Customer SOCOTEC UK Doncaster
Site A9031-19 Havant Thicket Winter Storage
Report No S204811

Consignment No S91036
Date Logged 16-Jan-2020
In-House Report Due 27-Jan-2020

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

ID Number	Description	Sampled	MethodID	TMSS	TPHUSSI	WSLM59
				Tot.Moisture @ 105C	TPH by GCFID (Si-UKCWG)>44	Total Organic Carbon
				✓	✓	✓
CL/2083398	ATK-TPM-04 0.20	15/01/20				

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.

The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Soil	AMMAR	As Received	Determination of Exchangeable Ammonium in Soil using potassium chloride extraction, discrete colorimetric detection
Soil	BTEXHSA	As Received	Determination of Benzene, Toluene, Ethyl benzene and Xylenes (BTEX) by Headspace GCFID
Soil	FOCS	Oven Dried @ < 35°C	Calculation of Soil Organic Matter content from Organic Carbon content of soil samples
Soil	GROHSA	As Received	Determination of Total Gasoline Range Organics Hydrocarbons (GRO) by Headspace GCFID
Soil	ICPACIDS	Oven Dried @ < 35°C	Determination of Total Sulphate in soil samples by Hydrochloric Acid extraction followed by ICPOES detection
Soil	ICPBOR	Oven Dried @ < 35°C	Determination of Boron in soil samples by hot water extraction followed by ICPOES detection
Soil	ICPMSS	Oven Dried @ < 35°C	Determination of Metals in Marine Sediments and Soil samples by aqua regia digestion followed by ICPMS detection
Soil	ICPSOIL	Oven Dried @ < 35°C	Determination of Metals in soil samples by aqua regia digestion followed by ICPOES detection
Soil	KONECR	Oven Dried @ < 35°C	Determination of Chromium vi in soil samples by water extraction followed by colorimetric detection
Soil	PAHMSUS	As Received	Determination of Polycyclic Aromatic Hydrocarbons (PAH) by hexane/acetone extraction followed by GCMS detection
Soil	PHSOIL	As Received	Determination of pH of 2.5:1 deionised water to soil extracts using pH probe.
Soil	SFAPI	As Received	Segmented flow analysis with colorimetric detection
Soil	SFAS	As Received	Segmented flow analysis with colorimetric detection
Soil	TMSS	As Received	Determination of the Total Moisture content at 105ºC by loss on oven drying gravimetric analysis (% based upon wet weight)
Soil	TPHUSSI	As Received	Determination of hexane/acetone extractable Hydrocarbons in soil with GCFID detection including quantitation of Aromatic and Aliphatic fractions.
Soil	WSLM59	Oven Dried @ < 35°C	Determination of Organic Carbon in soil using sulphurous Acid digestion followed by high temperature combustion and IR 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 105ºC 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/cm^3@ 15^{o}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 Anthophylite
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
Þ 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_4811

Note: major constituent in upper case

Lab ID Number	Client ID	Description
CL/2083398	ATK-TPM-04 ES 1 0.20	Brown Clay SILT

TEST REPORT

Report No. EXR/298004 (Ver. 1)

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

Site: A9031-19 Havant Thicket Water Storage

The 4 samples described in this report were registered for analysis by SOCOTEC UK Limited on 15-Jan-2020. This report supersedes any versions previously issued by the laboratory.

The analysis was completed by: 27-Jan-2020

The following tables are contained in this report:

Table 1 Main Analysis Results (Pages 2 to 7)
Analytical and Deviating Sample Overview (Pages 8 to 9)
Table of Additional Report Notes (Page 10)
Table of Method Descriptions (Page 11)
Table of Report Notes (Page 12)
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: 27-Jan-2020

Tests marked '^' 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.

Units :			µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
Method Codes :			BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	CALC_NH3	FNH3CALC	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA
Method Reporting Limits :			5	5	10	5	5	15	0.01	0.01	0.1	0.1	0.005	0.1	0.1	0.1	0.005	0.1
LAB ID Number EXR	**Client Sample Description**	**Sample Date**	**Benzene**	**Ethyl Benzene**	**m/p Xylenes**	**o Xylene**	**Toluene**	**Xylenes**	**Ammoniacal Nitrogen as NH3**	**Ammonia (Free) as N calc a**	**GRO >C5->C6**	**GRO >C5->C6 Aliphatic**	**GRO >C5->C7 Aromatic**	**GRO >C6->C7**	**GRO C6->C8 Aliphatic**	**GRO >C7->C8**	**GRO >C7->C8 Aromatic**	**GRO >C8->C10**
2033023	ATK-CP-12 1.00 EW 1 1.00	14-Jan-20	< 5.0	< 5.0	< 10.0	< 5.0	< 5.0	< 15.0	0.73	<0.01	< 0.100	< 0.100	< 0.005	< 0.100	< 0.100	< 0.100	< 0.005	< 0.100*
2033024	ATK-CP-05 6.00 EW 1 6.00	14-Jan-20	< 5.0	< 5.0	< 10.0	< 5.0	< 5.0	< 15.0	0.17	<0.01	< 0.100	< 0.100	< 0.005	< 0.100	< 0.100	< 0.100	< 0.005	< 0.100*
2033025	ATK-CP-01 3.00 EW 1 3.00	14-Jan-20	< 5.0	< 5.0	< 10.0	< 5.0	< 5.0	< 15.0	0.05	<0.01	< 0.100	< 0.100	< 0.005	< 0.100	< 0.100	< 0.100	< 0.005	< 0.100*
2033026	ATK-CP-06 1.00 EW 1 1.00	14-Jan-20	< 5.0	< 5.0	< 10.0	< 5.0	< 5.0	< 15.0	0.49	<0.01	< 0.100	< 0.100	< 0.005	< 0.100	< 0.100	< 0.100	< 0.005	< 0.100*

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

Contact Neil Cooke

A9031-19 Havant Thicket Water Storage

Sample Analysis

Date Printed	**27-Jan-2020**
Report Number	**EXR/298004**
Table Number	**1**

Where individual results are flagged see report notes for status.

Units :			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
Method Codes :			GROHSA	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPWATVAR	ICPWATVAR	ICPWATVAR	ICPWATVAR
Method Reporting Limits :			0.1	0.001	0.001	0.00002	0.001	0.001	0.001	0.00003	0.001	0.001	0.001	0.002	0.01	0.01	0.01	0.1
LAB ID Number EX/	**Client Sample Description**	**Sample Date**	**GRO-HSA o**	**Antimony as Sb (Dissolved)**	**Arsenic as As (Dissolved)**	**Cadmium as Cd (Dissolved)**	**Chromium as Cr (Dissolved)**	**Copper as Cu (Dissolved)**	**Lead as Pb (Dissolved)**	**Mercury as Hg (Dissolved)**	**Nickel as Ni (Dissolved)**	**Selenium as Se (Dissolved)**	**Vanadium as V (Dissolved)**	**Zinc as Zn (Dissolved)**	**Aluminium as Al (Dissolved) a**	**Boron as B (Dissolved) a**	**Iron as Fe (Dissolved) a**	**Phosphorus as P (Dissolved) a**
2033023	ATK-CP-12 1.00 EW 1 1.00	14-Jan-20	< 0.100	<0.001	0.002	0.00004	<0.001	<0.001	<0.001	<0.00003	0.007	<0.001	0.003	0.012	0.01	0.06	<0.01	<0.1
2033024	ATK-CP-05 6.00 EW 1 6.00	14-Jan-20	< 0.100	<0.001	0.002	0.00006	<0.001	<0.001	<0.001	0.00009	0.002	<0.001	0.001	0.077	0.01	0.04	0.01	<0.1
2033025	ATK-CP-01 3.00 EW 1 3.00	14-Jan-20	< 0.100	0.001	0.004	0.00022	<0.001	0.005	0.02	<0.00003	0.011	0.006	0.006	0.401	0.01	0.04	0.04	<0.1
2033026	ATK-CP-06 1.00 EW 1 1.00	14-Jan-20	< 0.100	<0.001	0.003	0.00007	<0.001	<0.001	<0.001	<0.00003	0.006	<0.001	<0.001	0.027	<0.01	0.15	0.34	<0.1

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

Contact Neil Cooke

A9031-19 Havant Thicket Water Storage

Sample Analysis

Date Printed	**27-Jan-2020**
Report Number	**EXR/298004**
Table Number	**1**

Where individual results are flagged see report notes for status.

Units :			mg/l	mg/l	mg/l	mg/l	mg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
Method Codes :			ICPWATVAR	KONENS	KONENS	KONENS	KONENS	PAHMSW	PAHMSW	PAHMSW	PAHMSW	PAHMSW	PAHMSW	PAHMSW	PAHMSW	PAHMSW	PAHMSW	PAHMSW
Method Reporting Limits :			3	0.01	1	0.003	0.2	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
LAB ID Number EXR	**Client Sample Description**	**Sample Date**	**Total Sulphur as SO4 (Dissolved) a**	**Ammoniacal Nitrogen as N**	**Chloride as Cl w**	**Chromium VI as Cr**	**Nitrate as N**	**Acenaphthene**	**Acenaphthylene**	**Anthracene**	**Benzo(a)anthracene**	**Benzo(b)fluoranthene**	**Benzo(ghi)perylene**	**Benzo(k)fluoranthene**	**Benzo-a-Pyrene**	**Chrysene**	**Dibenzo(a,h)anthracene**	**Fluoranthene**
2033023	ATK-CP-12 1.00 EW 1 1.00	14-Jan-20	302	0.6	109	<0.003	<0.2	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
2033024	ATK-CP-05 6.00 EW 1 6.00	14-Jan-20	123	0.14	92	<0.003	0.4	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
2033025	ATK-CP-01 3.00 EW 1 3.00	14-Jan-20	472	0.04	88	<0.003	<0.2	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04
2033026	ATK-CP-06 1.00 EW 1 1.00	14-Jan-20	18	0.4	60	<0.003	0.4	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01

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

Contact Neil Cooke

A9031-19 Havant Thicket Water Storage

Sample Analysis

Date Printed	**27-Jan-2020**
Report Number	**EXR/298004**
Table Number	**1**

Where individual results are flagged see report notes for status.

Units :			µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
Method Codes :			PAHMSW	PAHMSW	PAHMSW	PAHMSW	PAHMSW	PAHMSW	PHEHPLCVL	PHEHPLCVL	PHEHPLCVL	PHEHPLCVL	SFAPI	SFAPI	SFAS	TPHFID-Si	TPHFID-Si	TPHFID-Si
Method Reporting Limits :			0.01	0.01	0.01	0.01	0.01	0.16	0.0005	0.0005	0.0005	0.0005	0.02	0.02	0.02	0.01	0.01	0.01
LAB ID Number EXR	**Client Sample Description**	**Sample Date**	**Fluorene**	**Indeno(1,2,3-cd)pyrene**	**Naphthalene**	**Phenanthrene**	**Pyrene**	**Total PAH (Sum of USEPA 16)**	**Cresols**	**Dimethylphenols**	**Phenol**	**Trimethylphenols**	**Cyanide (Free) as CN**	**Cyanide (Total) as CN**	**Sulphide as S**	**TPH Ali Band >C10-C12**	**TPH Ali Band >C12-C16**	**TPH Ali Band >C16-C21**
2033023	ATK-CP-12 1.00 EW 1 1.00	14-Jan-20	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.16	<0.0005	<0.0005	<0.0005	<0.0005	<0.02	<0.02	<0.02	< 0.010	< 0.010	< 0.010
2033024	ATK-CP-05 6.00 EW 1 6.00	14-Jan-20	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.16	<0.0005	<0.0005	<0.0005	<0.0005	<0.02	<0.02	0.05	< 0.010	< 0.010	< 0.010
2033025	ATK-CP-01 3.00 EW 1 3.00	14-Jan-20	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.64	<0.0005	<0.0005	<0.0005	<0.0005	<0.02	<0.02	0.25	< 0.010	< 0.010	< 0.010
2033026	ATK-CP-06 1.00 EW 1 1.00	14-Jan-20	< 0.01	< 0.01	0.05	0.01	< 0.01	< 0.2	<0.0005	<0.0005	<0.0005	<0.0005	<0.02	<0.02	0.28	< 0.010	< 0.010	< 0.010

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

Contact Neil Cooke

A9031-19 Havant Thicket Water Storage

Sample Analysis

Date Printed	**27-Jan-2020**
Report Number	**EXR/298004**
Table Number	**1**

Where individual results are flagged see report notes for status.

Units :			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
Method Codes :			TPHFID-Si	TPHFID-Si	TPHFID-Si	TPHFID-Si	TPHFID-Si	TPHFID-Si	TPHFID-Si	TPHFID-Si	TPHFID-Si	TPHFID-Si	TPHFID-Si	TPHFID-Si	TPHFID-Si	TPHFID-Si	TPHFID-Si	TPHFID-Si
Method Reporting Limits :			0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
LAB ID Number EX/	**Client Sample Description**	**Sample Date**	**TPH Ali Band >C16-C35**	**TPH Ali Band >C21-C35**	**TPH Ali Band >C35-C44**	**TPH Ali Band >C40-C44**	**TPH Ali Band >C8-C10**	**TPH Ali Band >C8-C40**	**TPH Ali Band >C8-C44**	**TPH Aro Band >C10-C12**	**TPH Aro Band >C12-C16**	**TPH Aro Band >C16-C21**	**TPH Aro Band >C21-C35**	**TPH Aro Band >C35-C44**	**TPH Aro Band >C40-C44**	**TPH Aro Band >C8-C10**	**TPH Aro Band >C8-C40**	**TPH Aro Band >C8-C44**
2033023	ATK-CP-12 1.00 EW 1 1.00	14-Jan-20	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	0.011	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	0.012	0.013
2033024	ATK-CP-05 6.00 EW 1 6.00	14-Jan-20	0.062	0.056	0.059	< 0.010	< 0.010	0.114	0.123	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	0.015	0.015
2033025	ATK-CP-01 3.00 EW 1 3.00	14-Jan-20	0.016	0.014	0.058	0.045	< 0.010	0.035	0.08	< 0.010	< 0.010	0.013	0.017	< 0.010	< 0.010	< 0.010	0.036	0.038
2033026	ATK-CP-06 1.00 EW 1 1.00	14-Jan-20	< 0.010	< 0.010	0.011	< 0.010	< 0.010	0.012	0.021	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	0.011	0.011

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

Contact Neil Cooke

A9031-19 Havant Thicket Water Storage

Sample Analysis

Date Printed	**27-Jan-2020**
Report Number	**EXR/298004**
Table Number	**1**

Where individual results are flagged see report notes for status.

Units :			mg/l	pH units														
Method Codes :			WSLM13	WSLM3														
Method Reporting Limits :			0.2															
LAB ID Number EXR	**Client Sample Description**	**Sample Date**	**Total Organic Carbon w**	**pH units w**														
2033023	ATK-CP-12 1.00 EW 1 1.00	14-Jan-20	2.3	7.5														
2033024	ATK-CP-05 6.00 EW 1 6.00	14-Jan-20	2.1	7.6														
2033025	ATK-CP-01 3.00 EW 1 3.00	14-Jan-20	18	8.1														
2033026	ATK-CP-06 1.00 EW 1 1.00	14-Jan-20	3.9	7.3														

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**
Contact	Neil Cooke

A9031-19 Havant Thicket Water Storage

Sample Analysis

Date Printed	**27-Jan-2020**
Report Number	**EXR/298004**
Table Number	**1**

Analytical and Deviating Sample Overview

Customer **SOCOTEC UK Doncaster**
Site **A9031-19 Havant Thicket Water Storage**
Report No **W298004**

Consignment No W166576
Date Logged 15-Jan-2020
In-House Report Due 24-Jan-2020

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

ID Number	Description	Matrix Type	Sampled	MethodID	CALC_NH3	CUSTSERV	FNH3CALC	GROHSA	ICPMSW											ICPWATVAR		
					Ammoniacal Nitrogen as NH3(Kone) Calc	Report A	Ammonia (Free) as N calc	GRO-HSA GCFID (AA-UK)	Nickel as Ni MS (Dissolved)	Chromium as Cr MS (Dissolved)	Cadmium as Cd MS (Dissolved)	Copper as Cu MS (Dissolved)	Lead as Pb MS (Dissolved)	Zinc as Zn MS (Dissolved)	Arsenic as As MS (Dissolved)	Mercury as Hg MS (Dissolved)	Selenium as Se MS (Dissolved)	Vanadium as V MS (Dissolved)	Antimony as Sb MS (Dissolved)	Total Sulphur as SO4 (Diss) VAR	Iron as Fe (Dissolved) VAR	Aluminium as Al (Dissolved) VAR
					✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
EX/2033023	ATK-CP-12 1.00	Unclassified	14/01/20																			
EX/2033024	ATK-CP-05 6.00	Unclassified	14/01/20																			
EX/2033025	ATK-CP-01 3.00	Unclassified	14/01/20																			
EX/2033026	ATK-CP-06 1.00	Unclassified	14/01/20																			

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**

The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.
Where individual results are flagged see report notes for status.

Analytical and Deviating Sample Overview

Customer **SOCOTEC UK Doncaster**
Site **A9031-19 Havant Thicket Water Storage**
Report No **W298004**

Consignment No W166576
Date Logged 15-Jan-2020
In-House Report Due 24-Jan-2020

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

ID Number	Description	Matrix Type	Sampled	Boron as B (Dissolved) VAR	Phosphorus as P (Dissolved) VAR	Chloride as Cl (Kone)	Ammoniacal Nitrogen (Kone)	Nitrate as N (Kone calc)	Chromium VI. as Cr (Kone)	PAH GC-MS (16)	Phenols by HPLC (Low Level)	Cyanide (Free) as CN SFA	Cyanide (Total) as CN SFA	Sulphide as S SFA	TPH by GC (CWG UKEA Banding >44)	Total Organic Carbon	Temperature C°	pH units
MethodID				ICPWATVAR		KONENS				PAHMSW	PHEHPLCVL	SFAPI		SFAS	TPHFID-SI	WSLM13	WSLM3	
				✓		✓	✓	✓	✓	✓		✓	✓	✓	✓	✓		✓
EX/2033023	ATK-CP-12 1.00	Unclassified	14/01/20															
EX/2033024	ATK-CP-05 6.00	Unclassified	14/01/20															
EX/2033025	ATK-CP-01 3.00	Unclassified	14/01/20															
EX/2033026	ATK-CP-06 1.00	Unclassified	14/01/20															

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**

The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.
Where individual results are flagged see report notes for status.

Report Number : W/EXR/298004

Additional Report Notes

Method Code	Sample ID	The following information should be taken into consideration when using the data contained within this report
GROHSA	2033023-3026	The Secondary 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 (including the Primary Process Control) 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 (C8-C10) . These circumstances should be taken into consideration when utilising the data.
PAHMSW	EX2033025	The matrix of this sample has been found to interfere with the result for this test. The sample has therefore been diluted to improve the signal to noise ratio but in doing so, the detection limit for this test has been elevated.

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Water	BTEXHSA	As Received	Benzene, Toluene, Ethylbenzene, & Xylenes by headspace extraction GCFID quantitation
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 105ºC 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/cm^3@ 15^{o}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 Anthophylite
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
Þ 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 Water Storage

Report Number : W29_8004

Lab ID Number	Client ID	Description
EX/2033023	ATK-CP-12 1.00 EW 1 1.00	Unclassified
EX/2033024	ATK-CP-05 6.00 EW 1 6.00	Unclassified
EX/2033025	ATK-CP-01 3.00 EW 1 3.00	Unclassified
EX/2033026	ATK-CP-06 1.00 EW 1 1.00	Unclassified

TEST REPORT

Report No. EXR/299837 (Ver. 1)

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

Site: A9031-19 Havant Thicket Winter Storage

The 4 samples described in this report were registered for analysis by SOCOTEC UK Limited on 14-Feb-2020. This report supersedes any versions previously issued by the laboratory.

The analysis was completed by: 24-Feb-2020

The following tables are contained in this report:

Table 1 Main Analysis Results (Pages 2 to 7)
Analytical and Deviating Sample Overview (Pages 8 to 9)
Table of Additional Report Notes (Page 10)
Table of Method Descriptions (Page 11)
Table of Report Notes (Page 12)
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: 24-Feb-2020

Tests marked '^' 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.

Units :			µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
Method Codes :			BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	CALCNH4	FNH3CALC	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA
Method Reporting Limits :			5	5	10	5	5	15	0.01	0.01	0.1	0.1	0.005	0.1	0.1	0.1	0.005	0.1
LAB ID Number EXR	**Client Sample Description**	**Sample Date**	**Benzene**	**Ethyl Benzene**	**m/p Xylenes**	**o Xylene**	**Toluene**	**Xylenes**	**Ammoniacal Nitrogen as NH4**	**Ammonia (Free) as N calc a**	**GRO >C5->C6**	**GRO >C5->C6 Aliphatic**	**GRO >C5->C7 Aromatic**	**GRO >C6->C7**	**GRO C6->C8 Aliphatic**	**GRO >C7->C8**	**GRO >C7->C8 Aromatic**	**GRO >C8->C10**
2040809	ATK-CP-01 2.50 EW 3 2.50	12-Feb-20	< 5.0	< 5.0	< 10.0	< 5.0	< 5.0	< 15.0	0.01	<0.01	< 0.100	< 0.100	< 0.005	< 0.100	< 0.100	< 0.100	< 0.005	< 0.100
2040810	ATK-CP-05 4.50 EW 3 4.50	12-Feb-20	< 5.0	< 5.0	< 10.0	< 5.0	< 5.0	< 15.0	0.09	<0.01	< 0.100	< 0.100	< 0.005	< 0.100	< 0.100	< 0.100	< 0.005	< 0.100
2040811	ATK-CP-06 1.00 EW 3 1.00	12-Feb-20	< 5.0	< 5.0	< 10.0	< 5.0	< 5.0	< 15.0	0.01	<0.01	< 0.100	< 0.100	< 0.005	< 0.100	< 0.100	< 0.100	< 0.005	< 0.100
2040812	ATK-CP-12 2.50 EW 3 2.50	12-Feb-20	< 5.0	< 5.0	< 10.0	< 5.0	< 5.0	< 15.0	0.22	<0.01	< 0.100	< 0.100	< 0.005	< 0.100	< 0.100	< 0.100	< 0.005	< 0.100

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

Contact Neil Cooke

A9031-19 Havant Thicket Winter Storage

Sample Analysis

Date Printed	**24-Feb-2020**
Report Number	**EXR/299837**
Table Number	**1**

Where individual results are flagged see report notes for status.

Units :			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
Method Codes :			GROHSA	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPWATVAR	ICPWATVAR	ICPWATVAR	ICPWATVAR
Method Reporting Limits :			0.1	0.001	0.001	0.00002	0.001	0.001	0.001	0.00003	0.001	0.001	0.001	0.002	0.01	0.01	0.01	0.1
LAB ID Number EX/	**Client Sample Description**	**Sample Date**	**GRO-HSA o**	**Antimony as Sb (Dissolved)**	**Arsenic as As (Dissolved)**	**Cadmium as Cd (Dissolved)**	**Chromium as Cr (Dissolved)**	**Copper as Cu (Dissolved)**	**Lead as Pb (Dissolved)**	**Mercury as Hg (Dissolved)**	**Nickel as Ni (Dissolved)**	**Selenium as Se (Dissolved)**	**Vanadium as V (Dissolved)**	**Zinc as Zn (Dissolved)**	**Aluminium as Al (Dissolved) a**	**Boron as B (Dissolved) a**	**Iron as Fe (Dissolved) a**	**Phosphorus as P (Dissolved) a**
2040809	ATK-CP-01 2.50 EW 3 2.50	12-Feb-20	< 0.100	0.001	0.003	0.00003	0.001	0.006	0.003	<0.00003	0.007	<0.001	0.004	0.412	0.77	0.32	0.84	<0.1
2040810	ATK-CP-05 4.50 EW 3 4.50	12-Feb-20	< 0.100	0.002	0.002	<0.00002	<0.001	<0.001	<0.001	<0.00003	0.002	<0.001	<0.001	0.005	0.01	0.04	0.05	<0.1
2040811	ATK-CP-06 1.00 EW 3 1.00	12-Feb-20	< 0.100	<0.001	0.001	<0.00002	<0.001	0.001	<0.001	<0.00003	0.006	<0.001	0.001	0.173	0.54	0.16	0.31	<0.1
2040812	ATK-CP-12 2.50 EW 3 2.50	12-Feb-20	< 0.100	0.001	0.002	<0.00002	<0.001	<0.001	<0.001	<0.00003	0.004	<0.001	0.001	0.174	0.19	0.14	0.15	<0.1

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**
Contact	Neil Cooke

A9031-19 Havant Thicket Winter Storage

Sample Analysis

Date Printed	**24-Feb-2020**
Report Number	**EXR/299837**
Table Number	**1**

Where individual results are flagged see report notes for status.

Units :			mg/l	mg/l	mg/l	mg/l	mg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
Method Codes :			ICPWATVAR	KONENS	KONENS	KONENS	KONENS	PAHMSW	PAHMSW	PAHMSW	PAHMSW	PAHMSW	PAHMSW	PAHMSW	PAHMSW	PAHMSW	PAHMSW	PAHMSW
Method Reporting Limits :			3	0.01	1	0.003	0.2	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
LAB ID Number EXR	**Client Sample Description**	**Sample Date**	**Total Sulphur as SO4 (Dissolved) a**	**Ammoniacal Nitrogen as N**	**Chloride as Cl w**	**Chromium VI as Cr**	**Nitrate as N**	**Acenaphthene**	**Acenaphthylene**	**Anthracene**	**Benzo(a)anthracene**	**Benzo(b)fluoranthene**	**Benzo(ghi)perylene**	**Benzo(k)fluoranthene**	**Benzo-a-Pyrene**	**Chrysene**	**Dibenzo(a,h)anthracene**	**Fluoranthene**
2040809	ATK-CP-01 2.50 EW 3 2.50	12-Feb-20	374	0.23	86	<0.003	<0.2	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
2040810	ATK-CP-05 4.50 EW 3 4.50	12-Feb-20	101	0.07	91	<0.003	<0.2	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
2040811	ATK-CP-06 1.00 EW 3 1.00	12-Feb-20	29	0.01	38	0.006	0.3	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
2040812	ATK-CP-12 2.50 EW 3 2.50	12-Feb-20	297	0.17	110	<0.003	<0.2	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01

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

Contact Neil Cooke

A9031-19 Havant Thicket Winter Storage

Sample Analysis

Date Printed	**24-Feb-2020**
Report Number	**EXR/299837**
Table Number	**1**

Where individual results are flagged see report notes for status.

			Units :	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
			Method Codes :	PAHMSW	PAHMSW	PAHMSW	PAHMSW	PAHMSW	PAHMSW	PHEHPLCVL	PHEHPLCVL	PHEHPLCVL	PHEHPLCVL	SFAPI	SFAPI	SFAS	TPHFID-Si	TPHFID-Si	TPHFID-Si
			Method Reporting Limits :	0.01	0.01	0.01	0.01	0.01	0.16	0.0005	0.0005	0.0005	0.0005	0.02	0.02	0.02	0.01	0.01	0.01
LAB ID Number EXR	Client Sample Description	Sample Date		Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene	Total PAH (Sum of USEPA 16)	Cresols	Dimethylphenols	Phenol	Trimethylphenols	Cyanide (Free) as CN	Cyanide (Total) as CN	Sulphide as S	TPH Ali Band >C10-C12	TPH Ali Band >C12-C16	TPH Ali Band >C16-C21
2040809	ATK-CP-01 2.50 EW 3 2.50	12-Feb-20		< 0.01	< 0.01	0.01	< 0.01	< 0.01	< 0.16	<0.0005	<0.0005	<0.0005	<0.0005	<0.02	<0.02	0.65	< 0.010	< 0.010	< 0.010*
2040810	ATK-CP-05 4.50 EW 3 4.50	12-Feb-20		< 0.01	< 0.01	0.02	< 0.01	< 0.01	< 0.17	<0.0005	<0.0005	<0.0005	<0.0005	<0.02	<0.02	1.17	< 0.010	< 0.010	< 0.010*
2040811	ATK-CP-06 1.00 EW 3 1.00	12-Feb-20		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.16	<0.0005	<0.0005	<0.0005	<0.0005	<0.02	<0.02	0.05	< 0.010	< 0.010	< 0.010*
2040812	ATK-CP-12 2.50 EW 3 2.50	12-Feb-20		< 0.01	< 0.01	0.01	< 0.01	< 0.01	< 0.16	<0.0005	<0.0005	<0.0005	<0.0005	<0.02	<0.02	0.67	< 0.010	< 0.010	< 0.010*

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
Contact	Neil Cooke

A9031-19 Havant Thicket Winter Storage

Sample Analysis

Date Printed	24-Feb-2020
Report Number	EXR/299837
Table Number	1

Where individual results are flagged see report notes for status.

Units :			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
Method Codes :			TPHFID-Si	TPHFID-Si	TPHFID-Si	TPHFID-Si	TPHFID-Si	TPHFID-Si	TPHFID-Si	TPHFID-Si	TPHFID-Si	TPHFID-Si	TPHFID-Si	TPHFID-Si	TPHFID-Si	TPHFID-Si	TPHFID-Si	TPHFID-Si
Method Reporting Limits :			0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
LAB ID Number EX/	**Client Sample Description**	**Sample Date**	**TPH Ali Band >C16-C35**	**TPH Ali Band >C21-C35**	**TPH Ali Band >C35-C44**	**TPH Ali Band >C40-C44**	**TPH Ali Band >C8-C10**	**TPH Ali Band >C8-C40**	**TPH Ali Band >C8-C44**	**TPH Aro Band >C10-C12**	**TPH Aro Band >C12-C16**	**TPH Aro Band >C16-C21**	**TPH Aro Band >C21-C35**	**TPH Aro Band >C35-C44**	**TPH Aro Band >C40-C44**	**TPH Aro Band >C8-C10**	**TPH Aro Band >C8-C40**	**TPH Aro Band >C8-C44**
2040809	ATK-CP-01 2.50 EW 3 2.50	12-Feb-20	< 0.010*	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010*	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
2040810	ATK-CP-05 4.50 EW 3 4.50	12-Feb-20	0.01*	< 0.010	< 0.010	< 0.010	< 0.010	0.014	0.015	< 0.010	< 0.010	0.021	0.029*	< 0.010	< 0.010	< 0.010	0.057	0.059
2040811	ATK-CP-06 1.00 EW 3 1.00	12-Feb-20	0.011*	0.010	< 0.010	< 0.010	< 0.010	0.014	0.015	< 0.010	< 0.010	< 0.010	< 0.010*	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
2040812	ATK-CP-12 2.50 EW 3 2.50	12-Feb-20	< 0.010*	< 0.010	< 0.010	< 0.010	< 0.010	0.010	0.011	< 0.010	< 0.010	< 0.010	< 0.010*	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010

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

Contact Neil Cooke

A9031-19 Havant Thicket Winter Storage

Sample Analysis

Date Printed	**24-Feb-2020**
Report Number	**EXR/299837**
Table Number	**1**

Where individual results are flagged see report notes for status.

Units :			mg/l	pH units														
Method Codes :			WSLM13	WSLM3														
Method Reporting Limits :			0.2															
LAB ID Number EXR	**Client Sample Description**	**Sample Date**	**Total Organic Carbon w**	**pH units w**														
2040809	ATK-CP-01 2.50 EW 3 2.50	12-Feb-20	12	7.9														
2040810	ATK-CP-05 4.50 EW 3 4.50	12-Feb-20	6.3	7.6														
2040811	ATK-CP-06 1.00 EW 3 1.00	12-Feb-20	2.2	7.3														
2040812	ATK-CP-12 2.50 EW 3 2.50	12-Feb-20	4.2	7.4														

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**
Contact	Neil Cooke

A9031-19 Havant Thicket Winter Storage

Sample Analysis

Date Printed	**24-Feb-2020**
Report Number	**EXR/299837**
Table Number	**1**

Where individual results are flagged see report notes for status.

Analytical and Deviating Sample Overview

Customer SOCOTEC UK Doncaster
Site A9031-19 Havant Thicket Winter Storage
Report No W299837

Consignment No W168168
Date Logged 14-Feb-2020
In-House Report Due 24-Feb-2020

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

ID Number	Description	Matrix Type	Sampled	MethodID	CALCNH4	CUSTSERV	FNH3CALC	GROHSA	ICPMSW											ICPWATVAR		
					Ammoniacal Nitrogen as NH4 Calc	Report A	Ammonia (Free) as N calc	GRO-HSA GCFID (AA-UK)	Nickel as Ni MS (Dissolved)	Chromium as Cr MS (Dissolved)	Cadmium as Cd MS (Dissolved)	Copper as Cu MS (Dissolved)	Lead as Pb MS (Dissolved)	Zinc as Zn MS (Dissolved)	Arsenic as As MS (Dissolved)	Mercury as Hg MS (Dissolved)	Selenium as Se MS (Dissolved)	Vanadium as V MS (Dissolved)	Antimony as Sb MS (Dissolved)	Total Sulphur as SO4 (Diss) VAR	Iron as Fe (Dissolved) VAR	Aluminium as Al (Dissolved) VAR
					✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
EX/2040809	ATK-CP-01	Unclassified	12/02/20																			
EX/2040810	ATK-CP-05	Unclassified	12/02/20																			
EX/2040811	ATK-CP-06	Unclassified	12/02/20																			
EX/2040812	ATK-CP-12	Unclassified	12/02/20																			

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**

The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.
Where individual results are flagged see report notes for status.

Analytical and Deviating Sample Overview

Customer **SOCOTEC UK Doncaster**
Site **A9031-19 Havant Thicket Winter Storage**
Report No **W299837**

Consignment No W168168
Date Logged 14-Feb-2020
In-House Report Due 24-Feb-2020

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

ID Number	Description	Matrix Type	Sampled	Boron as B (Dissolved) VAR	Phosphorus as P (Dissolved) VAR	Chloride as Cl (Kone)	Ammoniacal Nitrogen (Kone)	Nitrate as N (Kone calc)	Chromium VI. as Cr (Kone)	PAH GC-MS (16)	Phenols by HPLC (Low Level)	Cyanide (Free) as CN SFA	Cyanide (Total) as CN SFA	Sulphide as S SFA	TPH by GC (CWG UKEA Banding >44)	Total Organic Carbon	Temperature C°	pH units
MethodID				ICPWATVAR		KONENS				PAHMSW	PHENPLCVL	SFAPI		SFAS	TPHFID-SI	WSLM13	WSLM3	
				✓		✓	✓	✓	✓	✓		✓	✓	✓	✓	✓		✓
EX/2040809	ATK-CP-01	Unclassified	12/02/20															
EX/2040810	ATK-CP-05	Unclassified	12/02/20															
EX/2040811	ATK-CP-06	Unclassified	12/02/20							A	A				A			
EX/2040812	ATK-CP-12	Unclassified	12/02/20															

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**

The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.
Where individual results are flagged see report notes for status.

Report Number : W/EXR/299837

Additional Report Notes

Method Code	Sample ID	The following information should be taken into consideration when using the data contained within this report
TPHFID-Si	EX2040809 TO EX2040812	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 (C21-C35) on the aromatic fraction. These circumstances should be taken into consideration when utilising the data.

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 NH4, 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 105ºC 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/cm^3@ 15^{o}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 Anthophylite
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
Þ 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

Lab ID Number	Client ID	Description
EX/2040809	ATK-CP-01 2.50 EW 3 2.50	Unclassified
EX/2040810	ATK-CP-05 4.50 EW 3 4.50	Unclassified
EX/2040811	ATK-CP-06 1.00 EW 3 1.00	Unclassified
EX/2040812	ATK-CP-12 2.50 EW 3 2.50	Unclassified

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

					Project ID	20010330			
					Sample ID	001	002	003	004
					Customer ID	ATK-CP-01	ATK-CP-05	ATK-CP-06	ATK-CP-12
					Sample Type	WATER	WATER	WATER	WATER
					Sampling Date	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*

					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*

					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*

Report Number :

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.

LIMS-F002 - Report Notes

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

Analysis	Analysis Type	Analysis Basis
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

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 '^' 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 :			%	%	mg/l	mg/l	mg/kg	mg/kg	mg/kg	%	pH Units	%		%	uS/cm	mg/l		
Method Codes :			ANC	CNRCALC	ICPEXCH	ICPEXCH	ICPTSNIT	ICPTSNIT	ICPTSNIT	LOI(%MM)	PHSOIL51	Sub022	Sub025	TCCALC	TSCON	WSLM60		
Method Reporting Limits :			0.12						3	0.2		0.04		0.02		6		
UKAS Accredited :			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

Contact Neil Cooke

A9031-19 Havant Thicket Winter Storage

Sample Analysis

Date Printed	**26-Feb-2020**
Report Number	**EFS/204820**
Table Number	**1**

Where individual results are flagged see report notes for status.

SOCOTEC

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**
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 ✓
Visibile 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

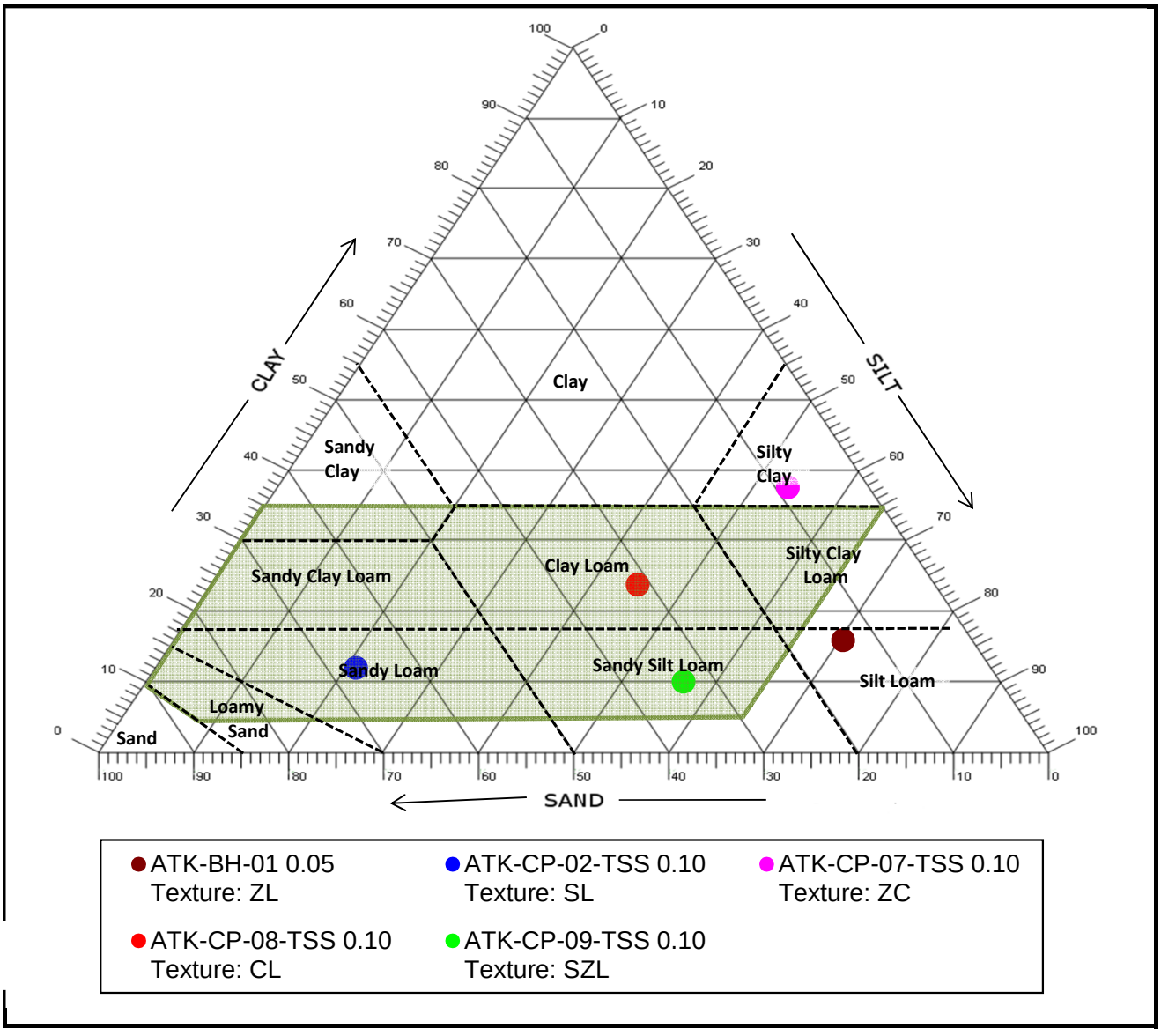
† $CaSO_4$ extract

' 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		


CLAY
SILT
SAND
Clay
Sandy Clay
Silty Clay
Sandy Clay Loam
Clay Loam
Silty Clay Loam
Sandy Loam
Sandy Silt Loam
Silt Loam
Loamy Sand
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

SOCOTEC

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 ✓	1 ✓
Stones 20-50mm	%w/w	11 ×	4 ✓	3 ✓	10 ✓	0 ✓
Stones >50mm	%w/w	42 ×	0 ✓	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 ✓
Visibile 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

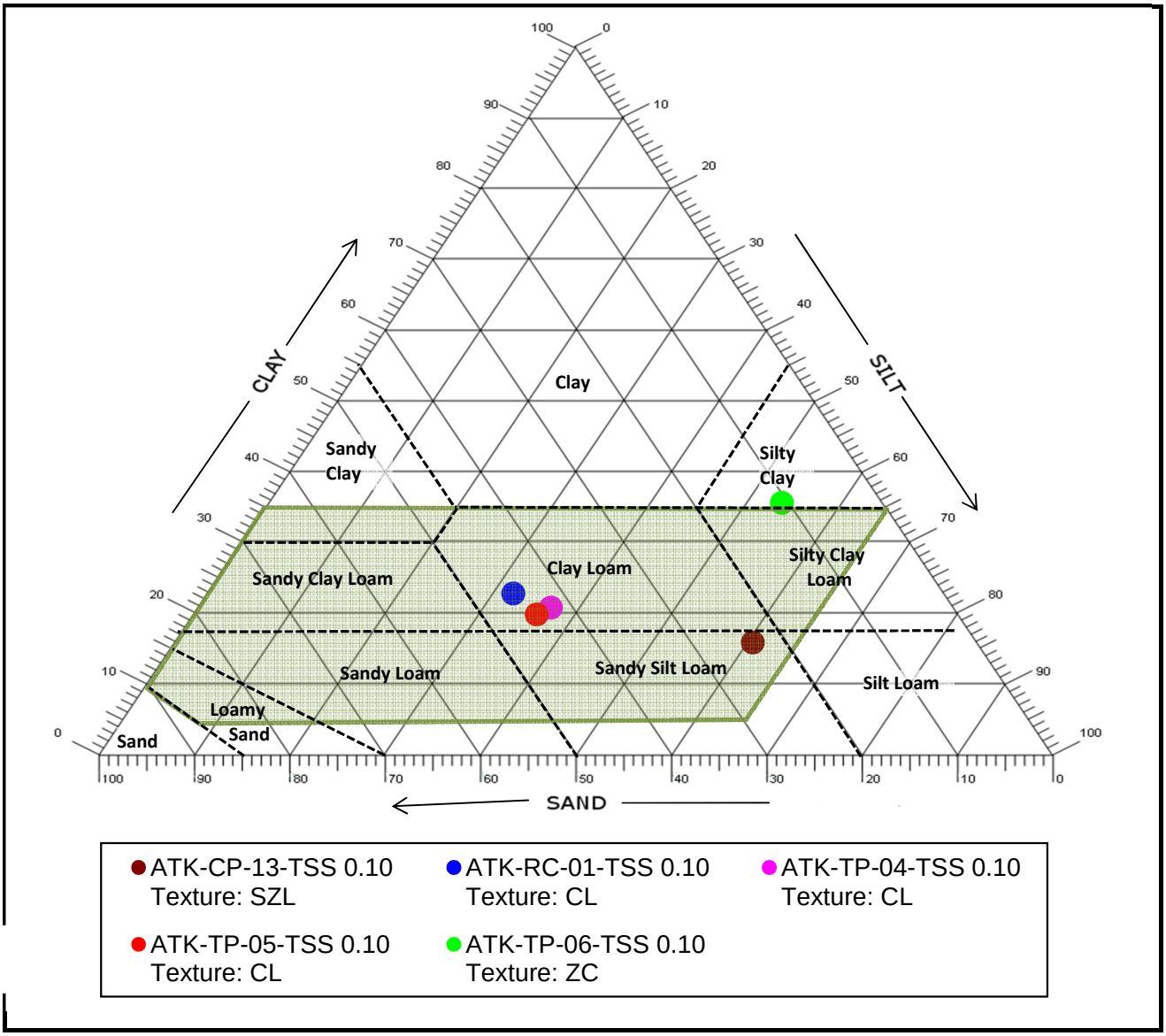
† $CaSO_4$ extract

' 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		


CLAY
SILT
SAND
Clay
Sandy Clay
Silty Clay
Sandy Clay Loam
Clay Loam
Silty Clay Loam
Sandy Loam
Sandy Silt Loam
Silt Loam
Loamy Sand
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	✓
Visibile 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

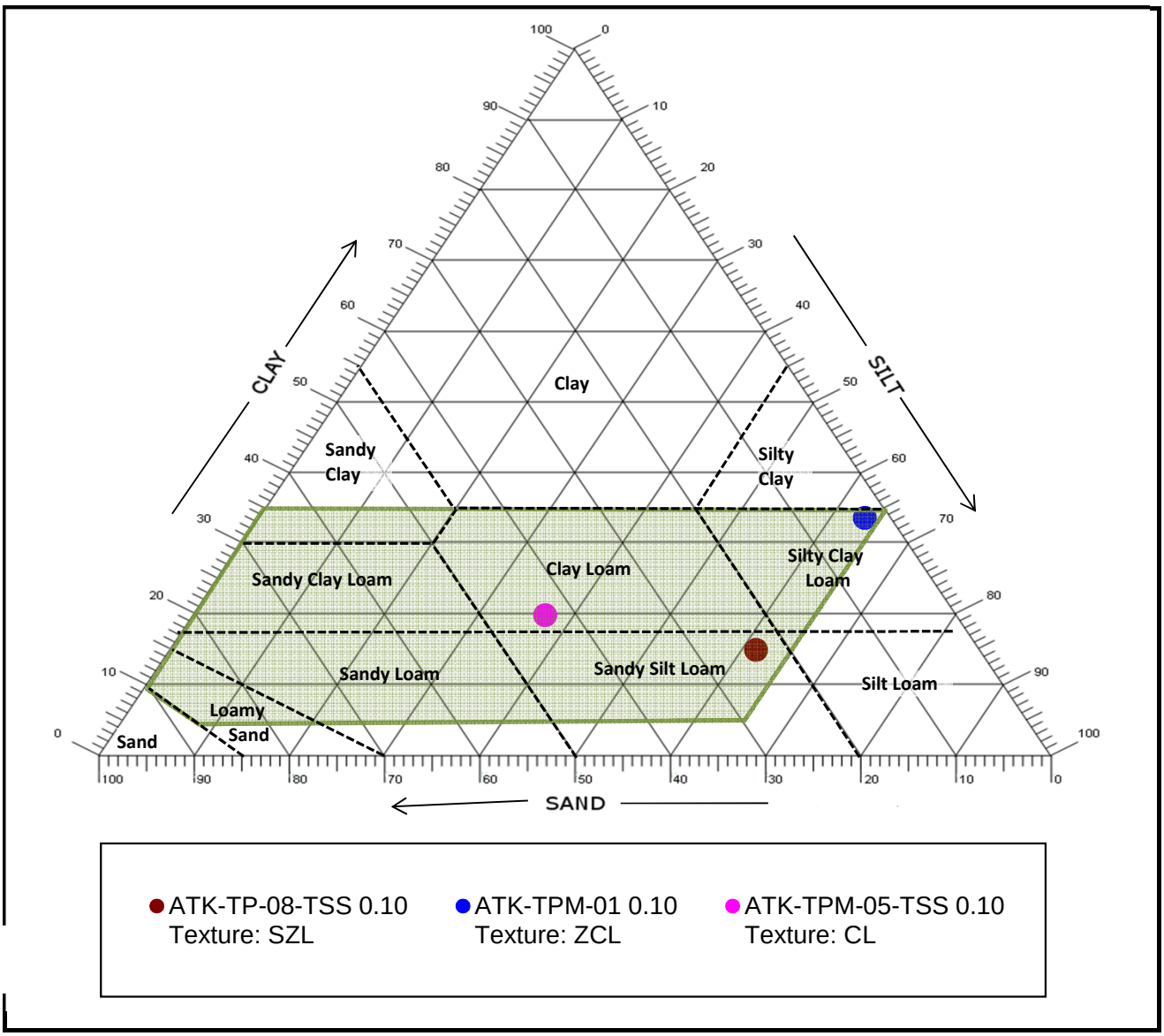
† $CaSO_4$ extract

' 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		


CLAY
SILT
SAND
Clay
Sandy Clay
Silty Clay
Sandy Clay Loam
Clay Loam
Silty Clay Loam
Sandy Loam
Sandy Silt Loam
Silt Loam
Loamy Sand
Sand
ATK-TP-08-TSS 0.10
Texture: SZL
ATK-TPM-01 0.10
Texture: ZCL
ATK-TPM-05-TSS 0.10
Texture: CL

Analytical and Deviating Sample Overview

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.

ID Number	Description	MethodID	ANC	CNRCALC	CustServ	ICPEXCH		ICPTSNIT			LOI(%MM)	PHSOIL51	Sub022	Sub025	TCCALC	TSCON	WSLM60
		Sampled	Carbonate %	C:N Ratio to BS3882	Report B	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
																	✓
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.

The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

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 105ºC 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/cm^3@ 15^{o}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 Anthophylite
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
Þ 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

Lab ID Number	Client ID	Description
CL/2083412	ATK-BH-01 LB 1 0.05	Brown CLAY
CL/2083413	ATK-CP-02-TSS LB 1 0.10	Brown Gravel SILT Rootlets
CL/2083414	ATK-CP-07-TSS LB 1 0.10	Brown CLAY
CL/2083415	ATK-CP-08-TSS LB 1 0.10	Brown Gravel CLAY
CL/2083416	ATK-CP-09-TSS LB 1 0.10	Brown Gravel CLAY
CL/2083417	ATK-CP-13-TSS LB 1 0.10	Brown Silt CLAY Gravel
CL/2083418	ATK-RC-01-TSS LB 1 0.10	Brown Clay SILT Gravel
CL/2083419	ATK-TP-04-TSS LB 1 0.10	Brown Clay SILT Gravel
CL/2083420	ATK-TP-05-TSS LB 1 0.10	Brown Gravel CLAY
CL/2083421	ATK-TP-06-TSS LB 1 0.10	Brown Gravel CLAY
CL/2083422	ATK-TP-08-TSS LB 1 0.10	Brown Clay SILT Gravel
CL/2083423	ATK-TPM-01 LB 1 0.10	Brown Silt CLAY
CL/2083424	ATK-TPM-05-TSS LB 1 0.10	Brown Gravel CLAY

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	Plate
	Project No.	A9031-19	1
	Carried out for	Portsmouth Water	

Rotary Core Photographs





Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate
	Project No.	A9031-19	2
	Carried out for	Portsmouth Water	

Rotary Core Photographs





Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate
	Project No.	A9031-19	3
	Carried out for	Portsmouth Water	

Rotary Core Photographs





Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate
	Project No.	A9031-19	4
	Carried out for	Portsmouth Water	

Rotary Core Photographs





Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate
	Project No.	A9031-19	5
	Carried out for	Portsmouth Water	

Rotary Core Photographs





Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate
	Project No.	A9031-19	6
	Carried out for	Portsmouth Water	

Rotary Core Photographs





Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate
	Project No.	A9031-19	7
	Carried out for	Portsmouth Water	

Rotary Core Photographs





Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate
	Project No.	A9031-19	8
	Carried out for	Portsmouth Water	

Rotary Core Photographs





Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate
	Project No.	A9031-19	9
	Carried out for	Portsmouth Water	

Rotary Core Photographs





Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate
	Project No.	A9031-19	10
	Carried out for	Portsmouth Water	

Rotary Core Photographs





Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate
	Project No.	A9031-19	11
	Carried out for	Portsmouth Water	

Rotary Core Photographs





Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate
	Project No.	A9031-19	12
	Carried out for	Portsmouth Water	

Rotary Core Photographs





Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate
	Project No.	A9031-19	13
	Carried out for	Portsmouth Water	

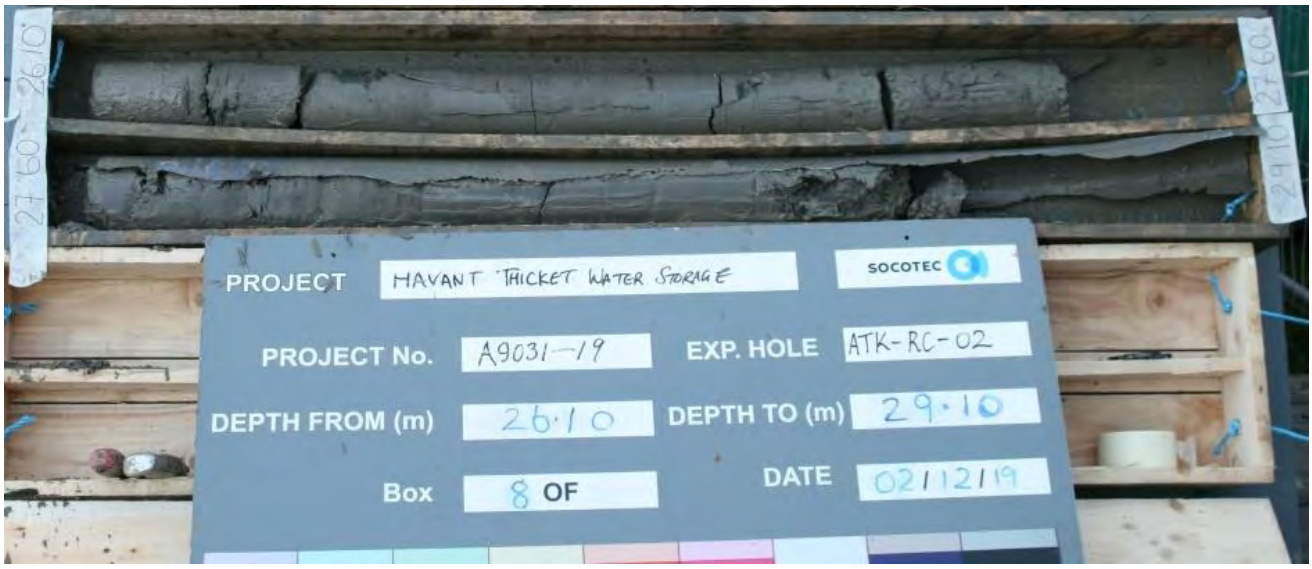
Rotary Core Photographs





Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate
	Project No.	A9031-19	14
	Carried out for	Portsmouth Water	

Rotary Core Photographs





Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate
	Project No.	A9031-19	15
	Carried out for	Portsmouth Water	

Rotary Core Photographs





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

Rotary Core Photographs





Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate
	Project No.	A9031-19	17
	Carried out for	Portsmouth Water	

Rotary Core Photographs





Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate
	Project No.	A9031-19	18
	Carried out for	Portsmouth Water	

Rotary Core Photographs





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

Rotary Core Photographs

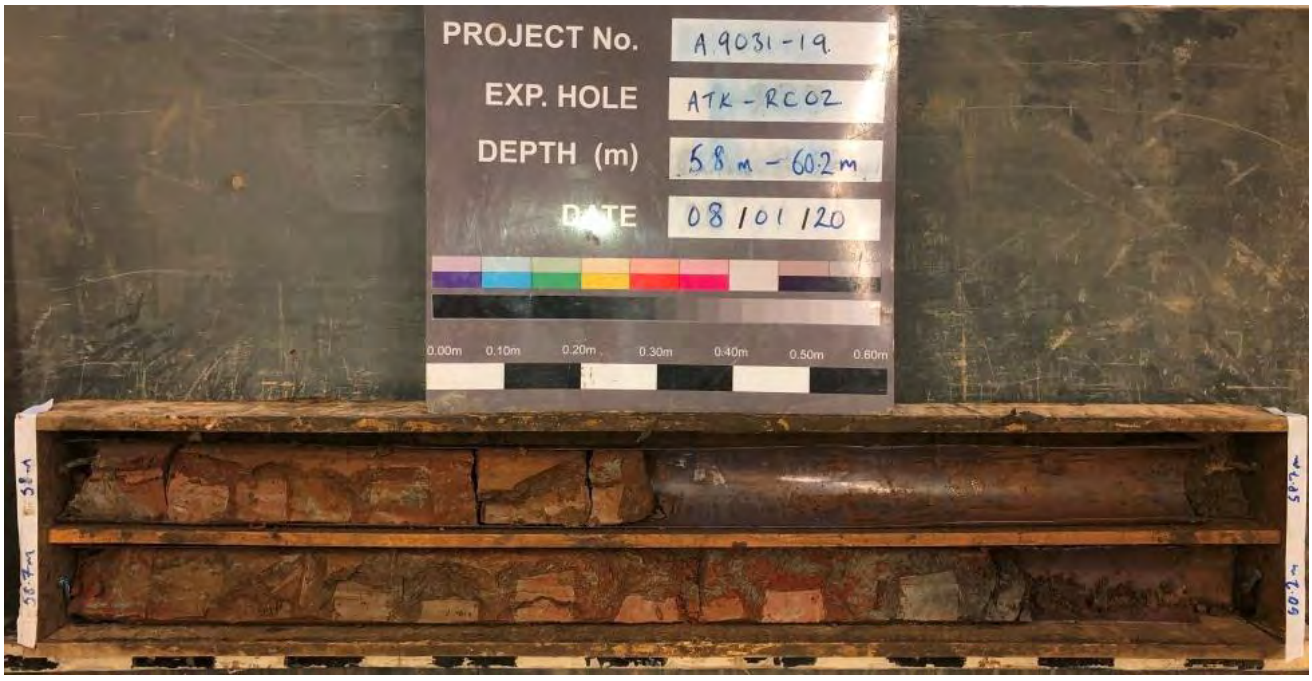




Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate
	Project No.	A9031-19	20
	Carried out for	Portsmouth Water	

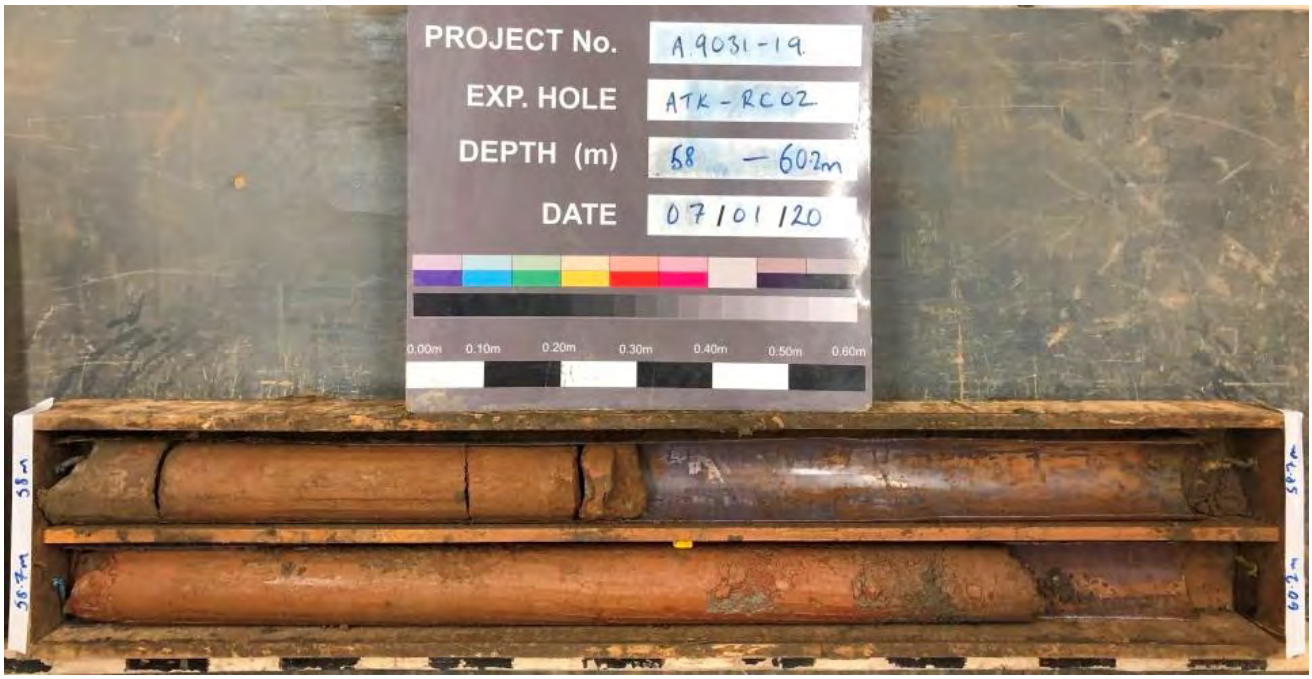
Rotary Core Photographs





Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate
	Project No.	A9031-19	21
	Carried out for	Portsmouth Water	

Rotary Core Photographs





Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate
	Project No.	A9031-19	22
	Carried out for	Portsmouth Water	

Rotary Core Photographs

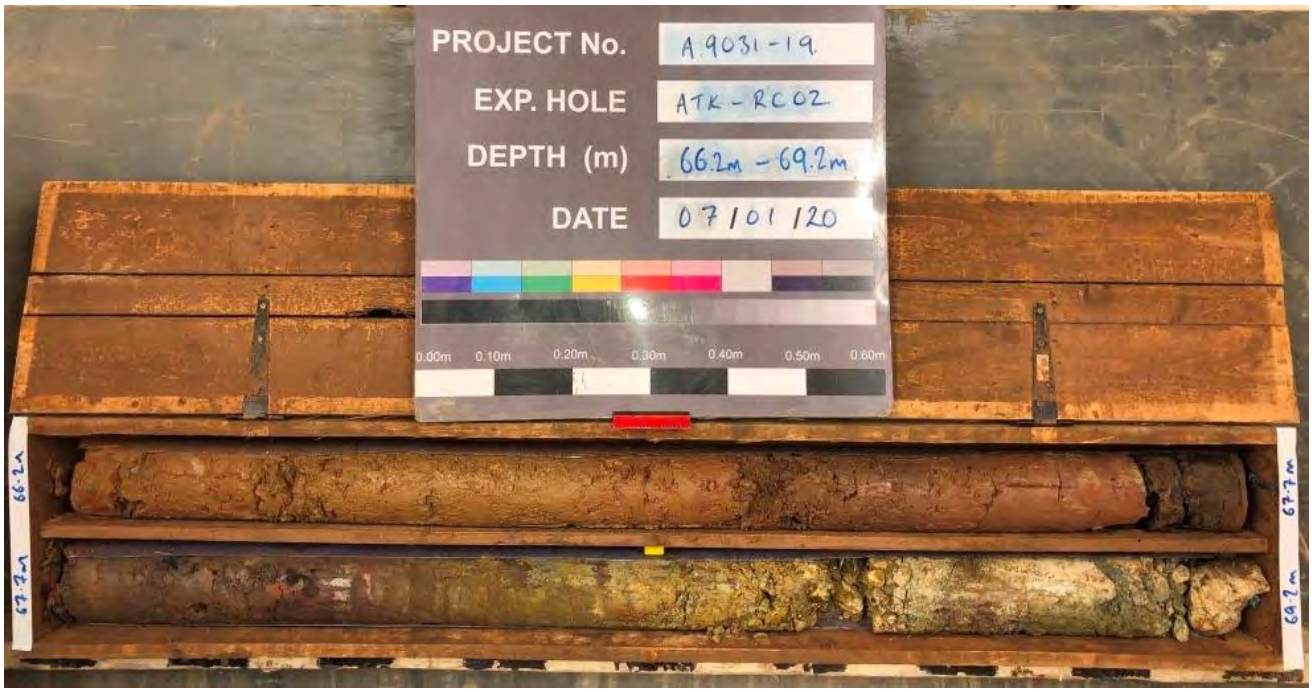




Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate
	Project No.	A9031-19	23
	Carried out for	Portsmouth Water	

Rotary Core Photographs





Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate
	Project No.	A9031-19	24
	Carried out for	Portsmouth Water	

Rotary Core Photographs





Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate
	Project No.	A9031-19	25
	Carried out for	Portsmouth Water	

Rotary Core Photographs

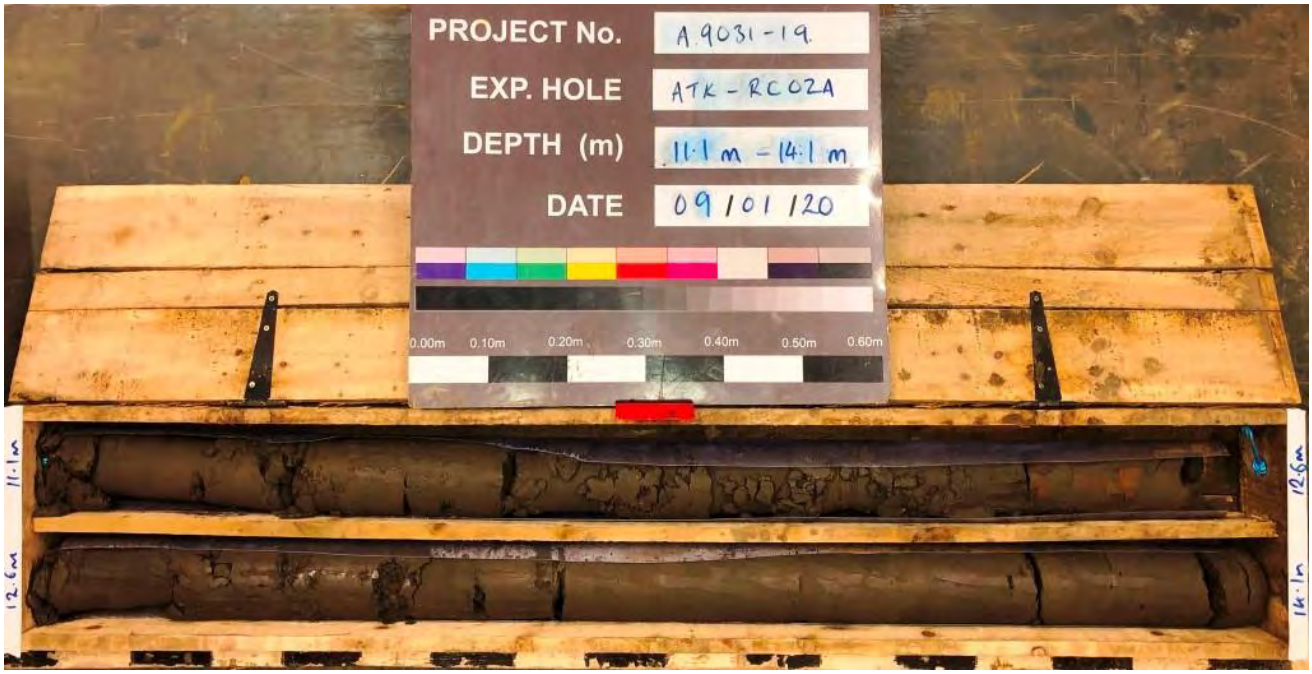




Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate
	Project No.	A9031-19	26
	Carried out for	Portsmouth Water	

Rotary Core Photographs





Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate
	Project No.	A9031-19	27
	Carried out for	Portsmouth Water	

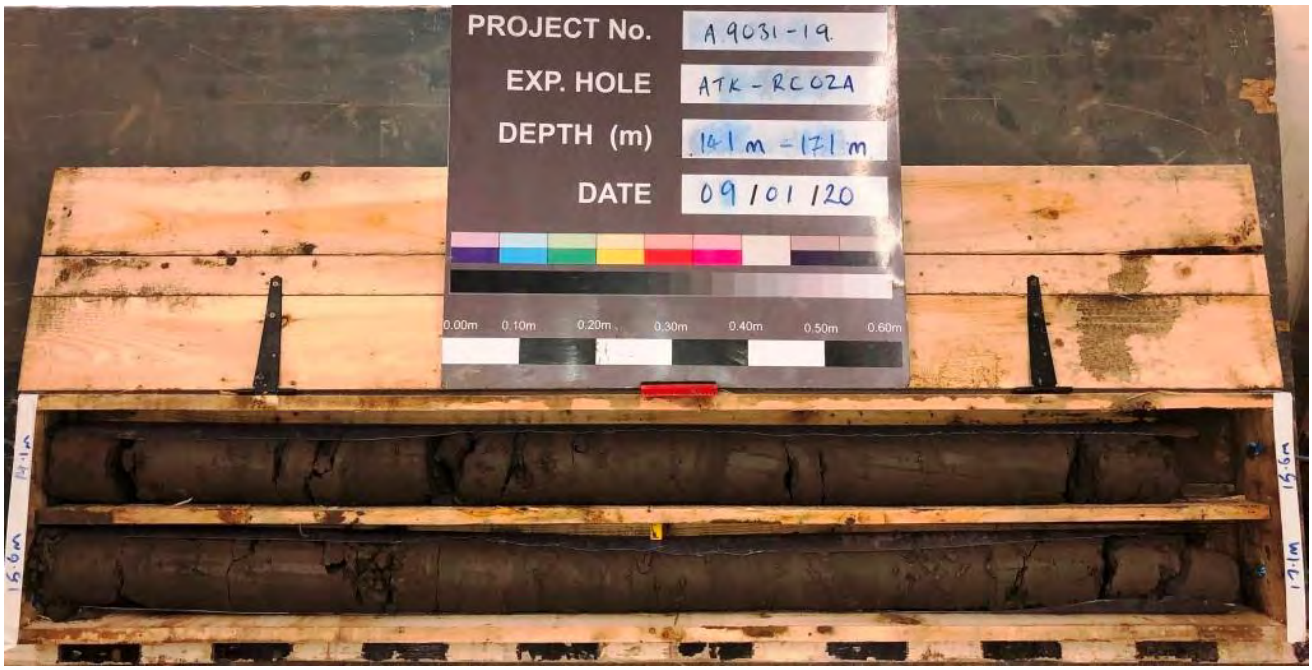
Rotary Core Photographs





Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate
	Project No.	A9031-19	28
	Carried out for	Portsmouth Water	

Rotary Core Photographs





Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate
	Project No.	A9031-19	29
	Carried out for	Portsmouth Water	

Rotary Core Photographs





Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate
	Project No.	A9031-19	30
	Carried out for	Portsmouth Water	

Rotary Core Photographs





Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate
	Project No.	A9031-19	31
	Carried out for	Portsmouth Water	

Rotary Core Photographs





Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate
	Project No.	A9031-19	32
	Carried out for	Portsmouth Water	

Rotary Core Photographs





Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate
	Project No.	A9031-19	33
	Carried out for	Portsmouth Water	

Rotary Core Photographs





Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate
	Project No.	A9031-19	34
	Carried out for	Portsmouth Water	

Rotary Core Photographs



Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate
	Project No.	A9031-19	35
	Carried out for	Portsmouth Water	

Photographs



A9031-19 ATK-TP-01 Pre Condition



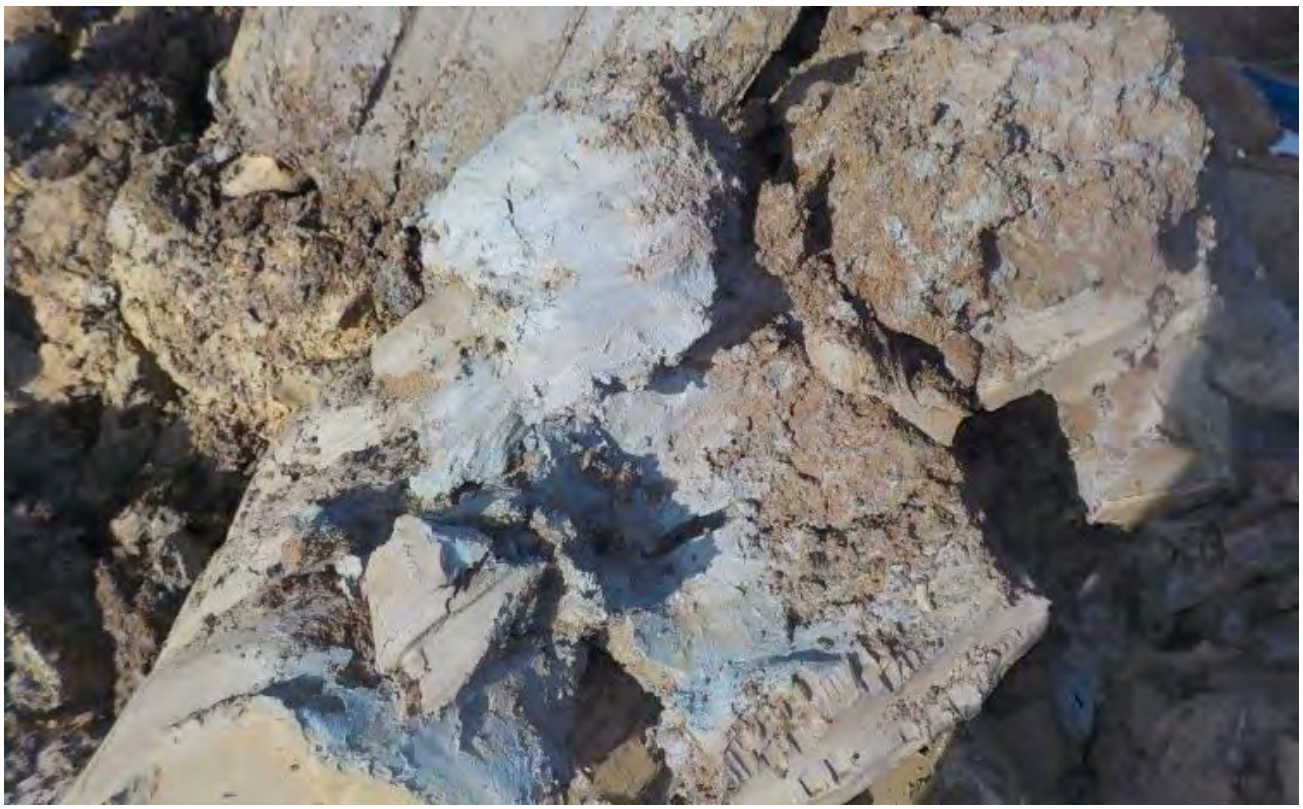
A9031-19 ATK-TP-01 FACE A

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

Photographs



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
	Project No.	A9031-19	37
	Carried out for	Portsmouth Water	

Photographs



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



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

Photographs



A9031-19 ATK-TP-01 Post Condition



A9031-19 ATK-TP-01 SPOIL

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

Photographs



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	

Photographs



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



A9031-19 ATK-TP-02 FACE B

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

Photographs



A9031-19 ATK-TP-02 Post Condition



A9031-19 ATK-TP-02 SPOIL

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

Photographs



A9031-19 ATK-TP-03 Pre Condition



A9031-19 ATK-TP-03 FACE B

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

Photographs



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	

Photographs



A9031-19 ATK-TP-03 SPOIL



A9031-19 ATK-TP-04 Pre Condition

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

Photographs



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	46
	Carried out for	Portsmouth Water	

Photographs



A9031-19 ATK-TP-04 Post Condition



A9031-19 ATK-TP-04 SPOIL

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

Photographs



A9031-19 ATK-TP-05 Pre Condition



A9031-19 ATK-TP-05 FACE B

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

Photographs



A9031-19 ATK-TP-05 FACE C



A9031-19 ATK-TP-05 Post Condition

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

Photographs



A9031-19 ATK-TP-05 SPOIL



A9031-19 ATK-TP-06 Pre Condition

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

Photographs



A9031-19 ATK-TP-06 FACE A



A9031-19 ATK-TP-06 FACE B

Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate
	Project No.	A9031-19	51
	Carried out for	Portsmouth Water	

Photographs



A9031-19 ATK-TP-06 Post Condition



A9031-19 ATK-TP-06 SPOIL

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

Photographs



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	

Photographs



A9031-19 ATK-TP-07 FACE C



A9031-19 ATK-TP-07 SPOIL

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

Photographs



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	

Photographs



A9031-19 ATK-TP-08 FACE C



A9031-19 ATK-TP-08 Post Condition

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

Photographs



A9031-19 ATK-TP-08 SPOIL



A9031-19 ATK-TPM-02 Pre Condition

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

Photographs



A9031-19 ATK-TPM-02 FACE A



A9031-19 ATK-TPM-02 FACE B

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

Photographs



A9031-19 ATK-TPM-02 Post Condition



A9031-19 ATK-TPM-02 SPOIL

Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate
	Project No.	A9031-19	59
	Carried out for	Portsmouth Water	

Photographs



A9031-19 ATK-TPM-04 Pre Condition



A9031-19 ATK-TPM-04 FACE A

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

Photographs



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	

Photographs



A9031-19 ATK-TPM-04 SPOIL



A9031-19 ATK-TPM-05 Pre Condition

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

Photographs



A9031-19 ATK-TPM-05 FACE A



A9031-19 ATK-TPM-P05 FACE B

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

Photographs



A9031-19 ATK-TPM-05 FACE D Collapse



A9031-19 ATK-TPM-05 Post Condition

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

Photographs



A9031-19 ATK-TPM-05 SPOIL

Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate
	Project No.	A9031-19	65
	Carried out for	Portsmouth Water	

Sample Split and Describe Photographs





Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate
	Project No.	A9031-19	66
	Carried out for	Portsmouth Water	

Sample Split and Describe Photographs





Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate
	Project No.	A9031-19	67
	Carried out for	Portsmouth Water	

Sample Split and Describe Photographs





Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate
	Project No.	A9031-19	68
	Carried out for	Portsmouth Water	

Sample Split and Describe Photographs





Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate
	Project No.	A9031-19	69
	Carried out for	Portsmouth Water	

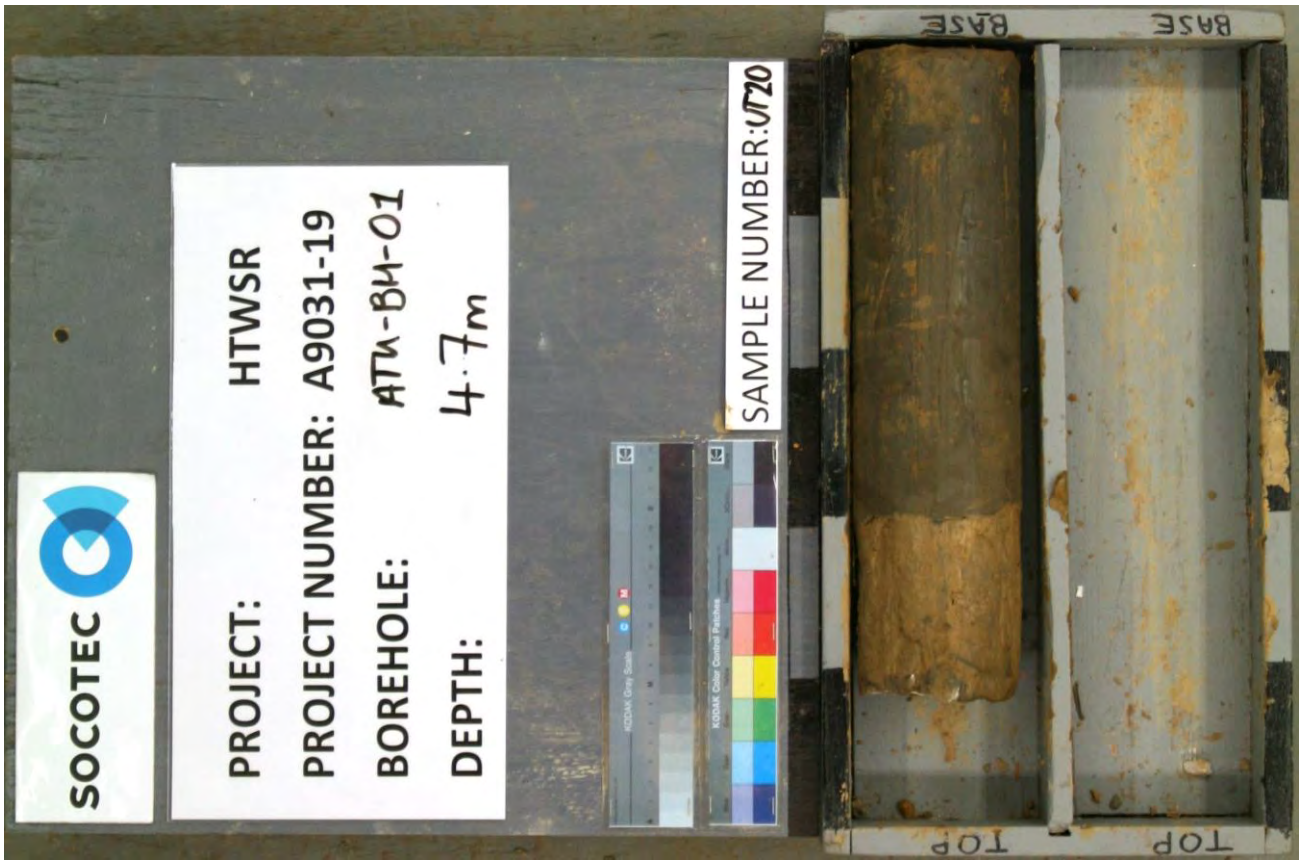
Sample Split and Describe Photographs

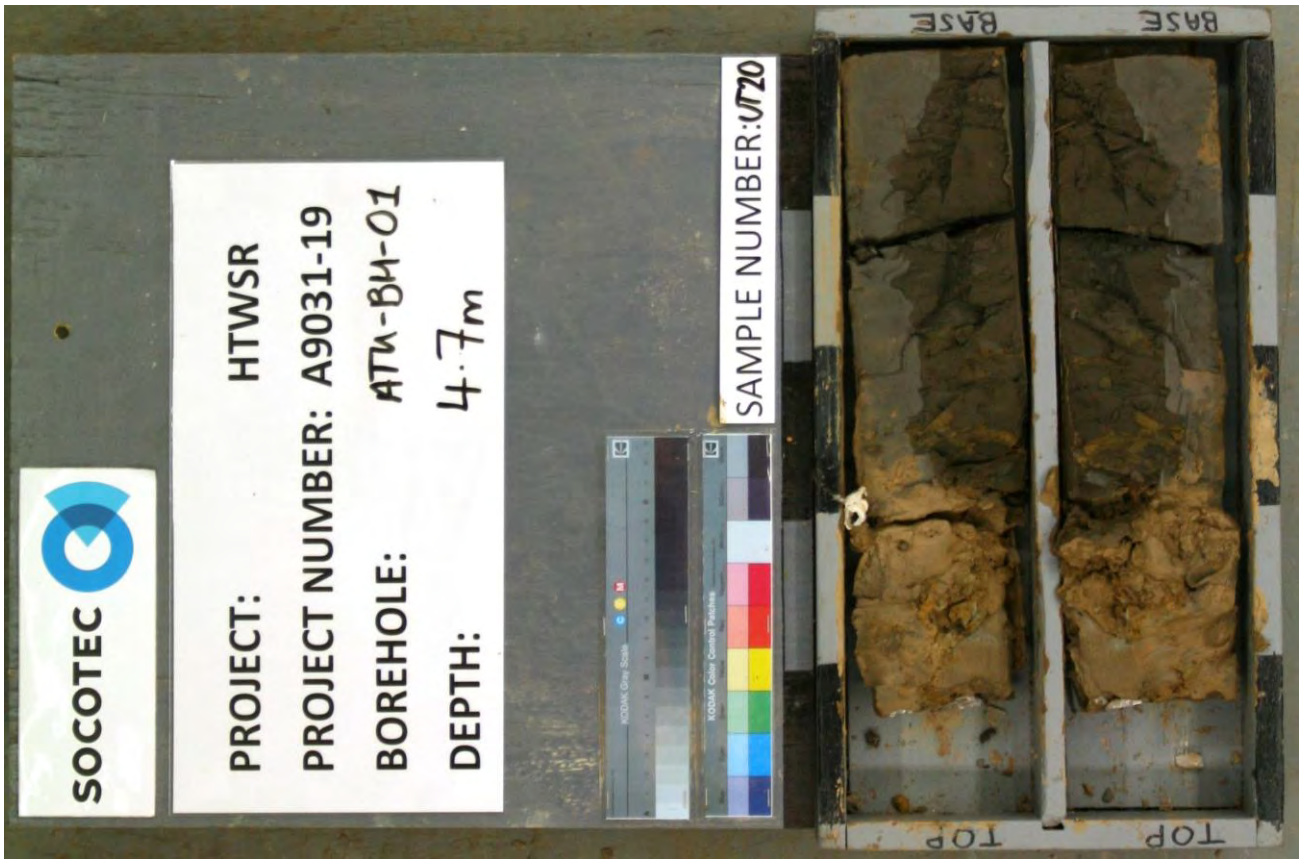




Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate
	Project No.	A9031-19	70
	Carried out for	Portsmouth Water	

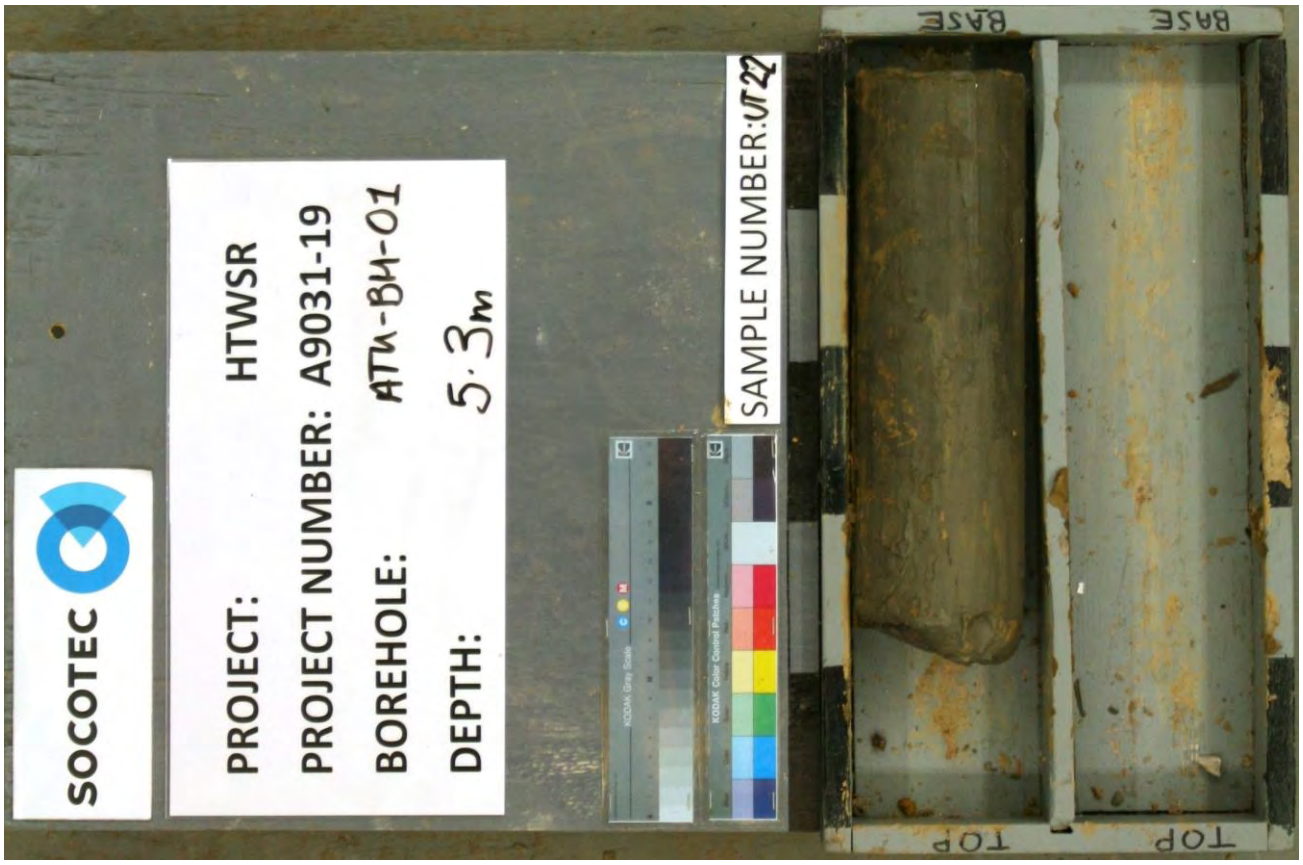
Sample Split and Describe Photographs





Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate
	Project No.	A9031-19	71
	Carried out for	Portsmouth Water	

Sample Split and Describe Photographs

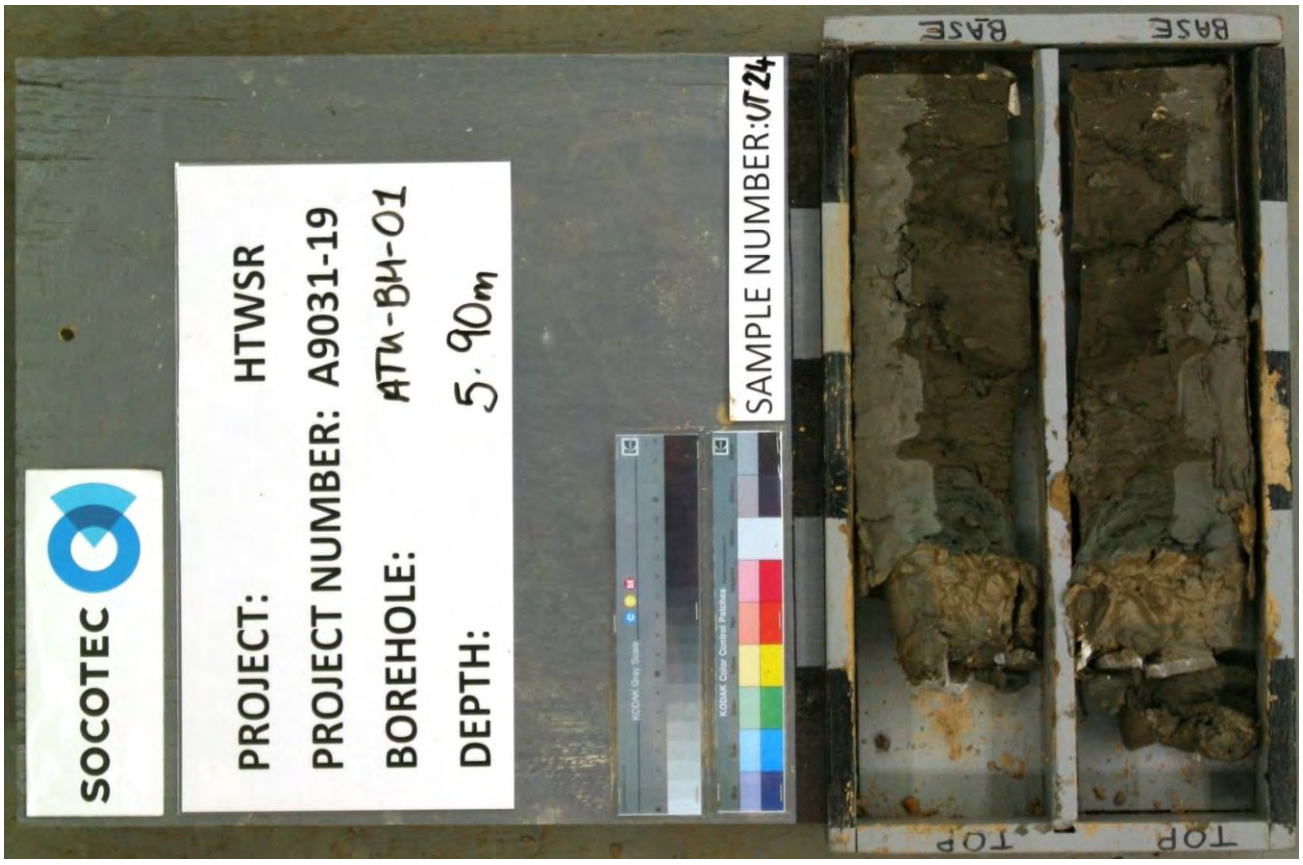




Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate
	Project No.	A9031-19	72
	Carried out for	Portsmouth Water	

Sample Split and Describe Photographs

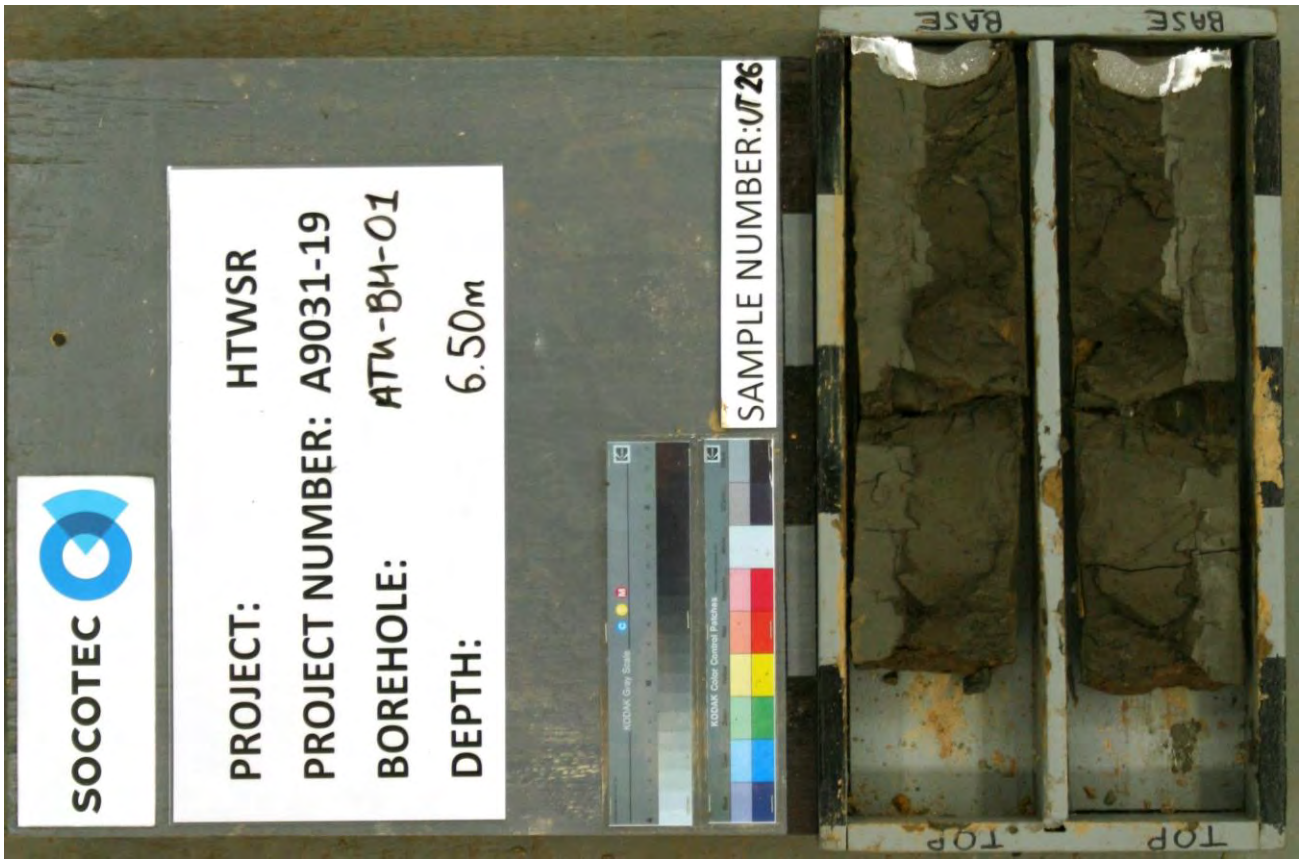




Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate
	Project No.	A9031-19	73
	Carried out for	Portsmouth Water	

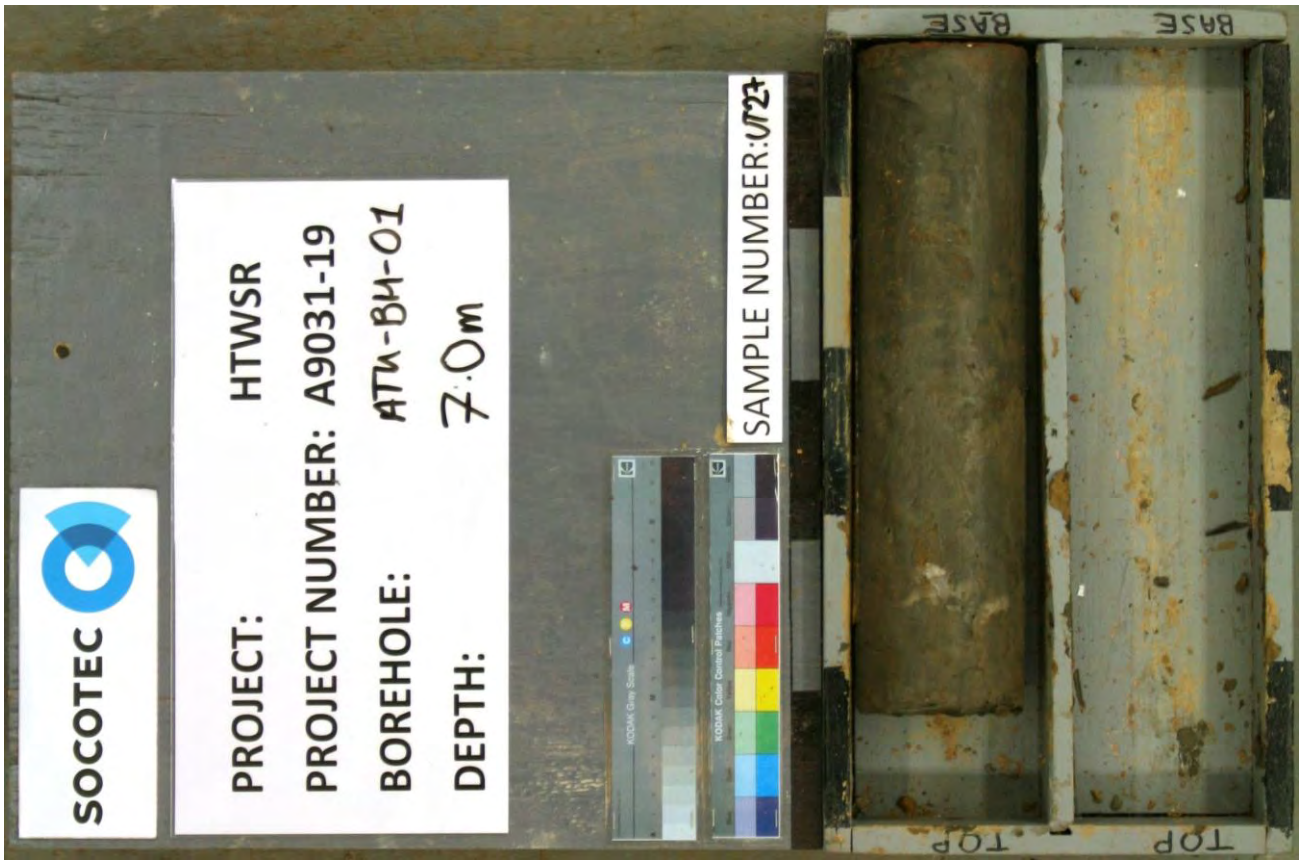
Sample Split and Describe Photographs

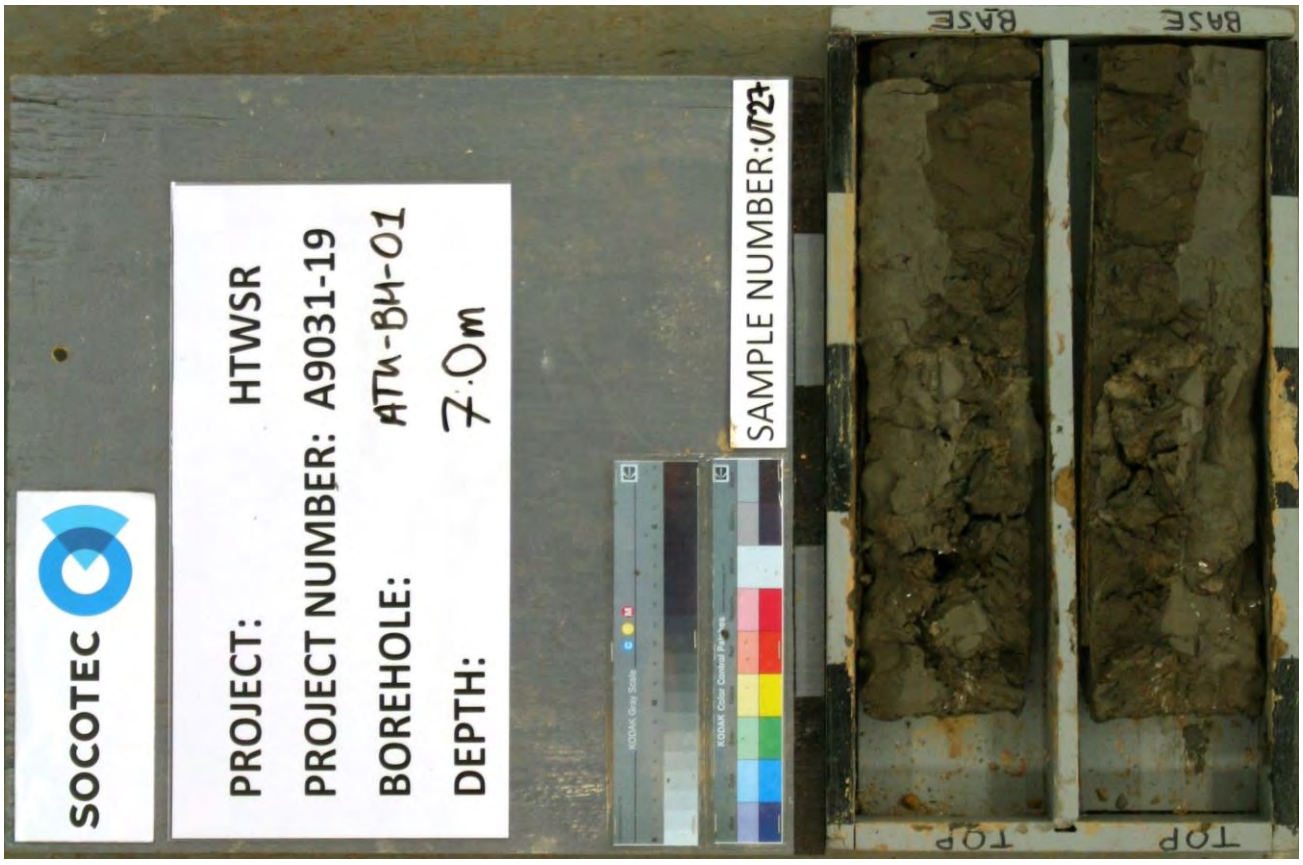




Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate
	Project No.	A9031-19	74
	Carried out for	Portsmouth Water	

Sample Split and Describe Photographs





Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate
	Project No.	A9031-19	75
	Carried out for	Portsmouth Water	

Sample Split and Describe Photographs





Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate
	Project No.	A9031-19	76
	Carried out for	Portsmouth Water	

Sample Split and Describe Photographs





Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate
	Project No.	A9031-19	77
	Carried out for	Portsmouth Water	

Sample Split and Describe Photographs

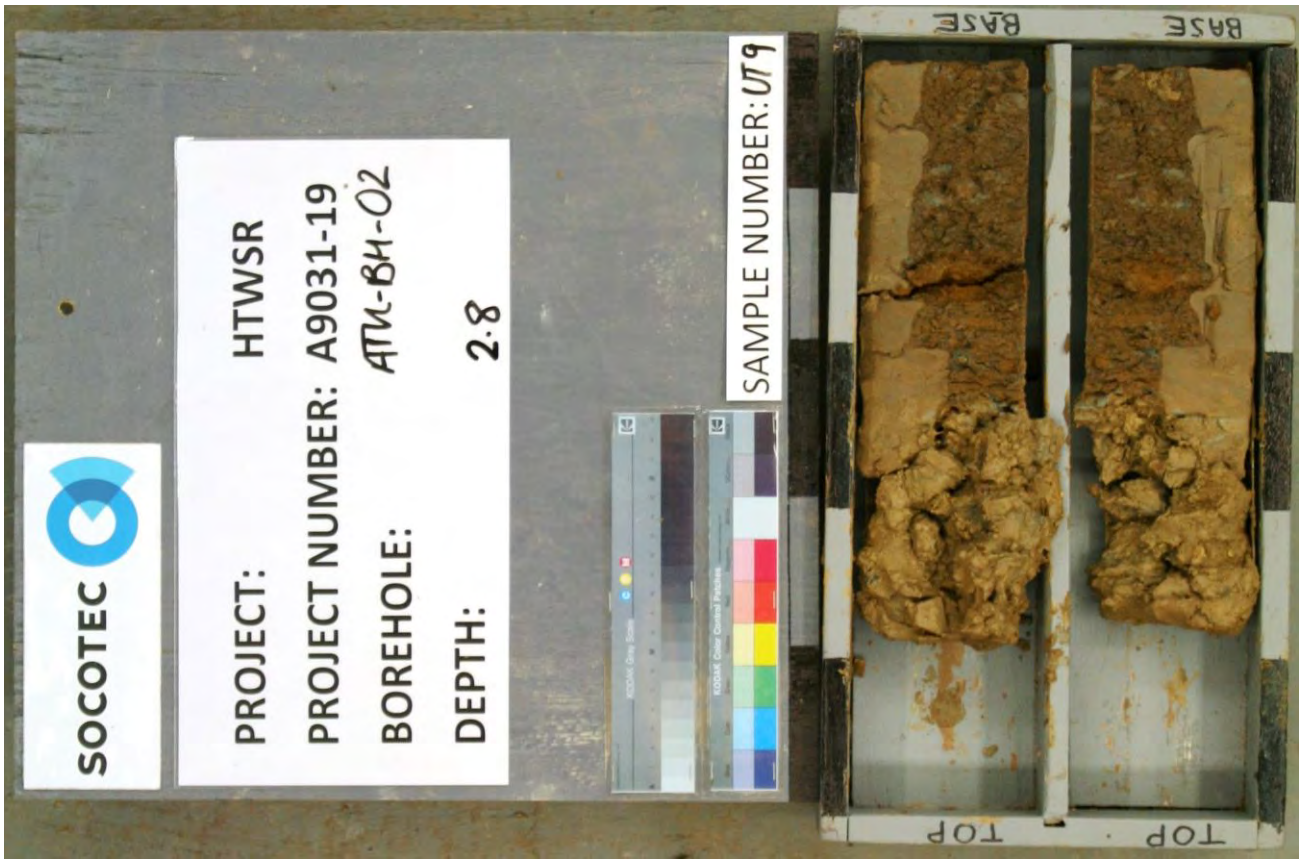




Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate
	Project No.	A9031-19	78
	Carried out for	Portsmouth Water	

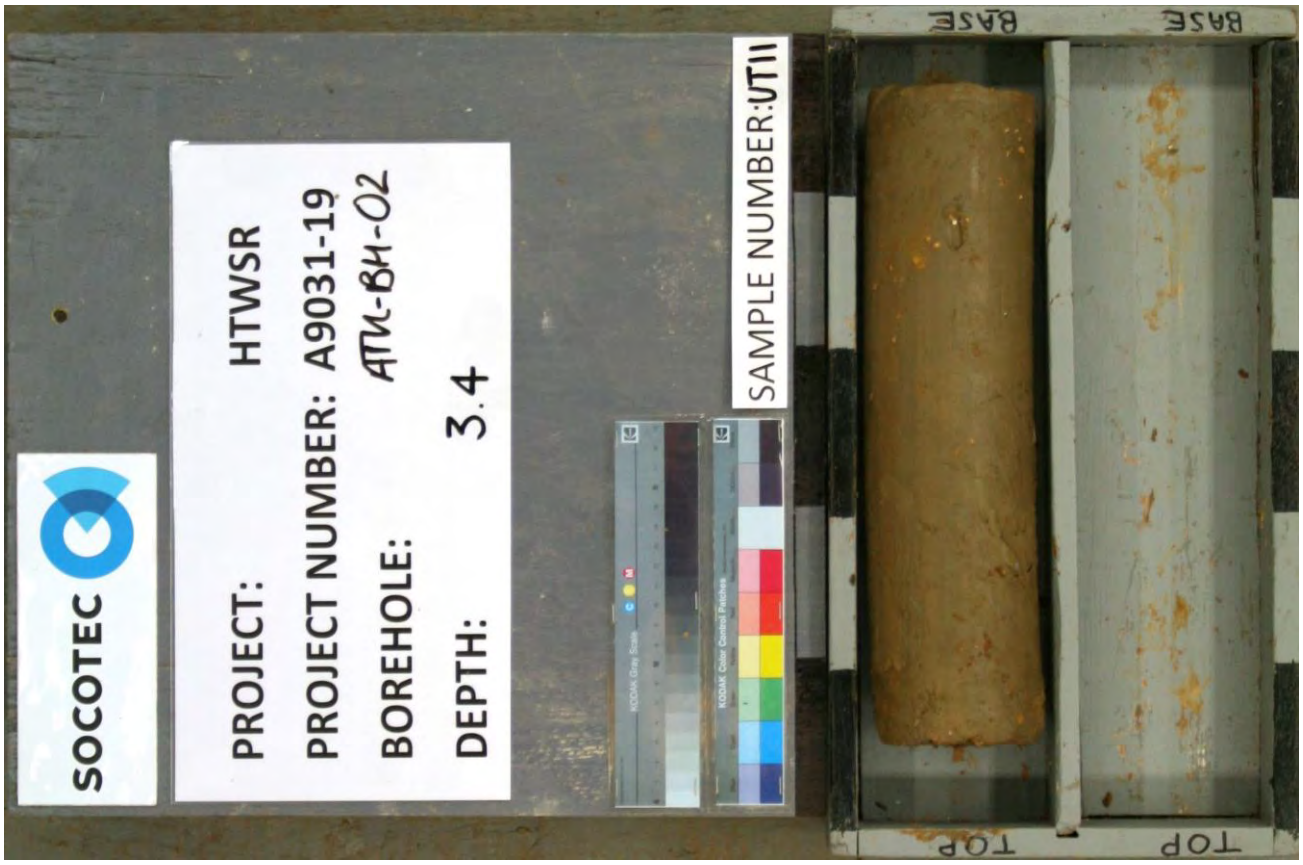
Sample Split and Describe Photographs





Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate
	Project No.	A9031-19	79
	Carried out for	Portsmouth Water	

Sample Split and Describe Photographs





Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate
	Project No.	A9031-19	80
	Carried out for	Portsmouth Water	

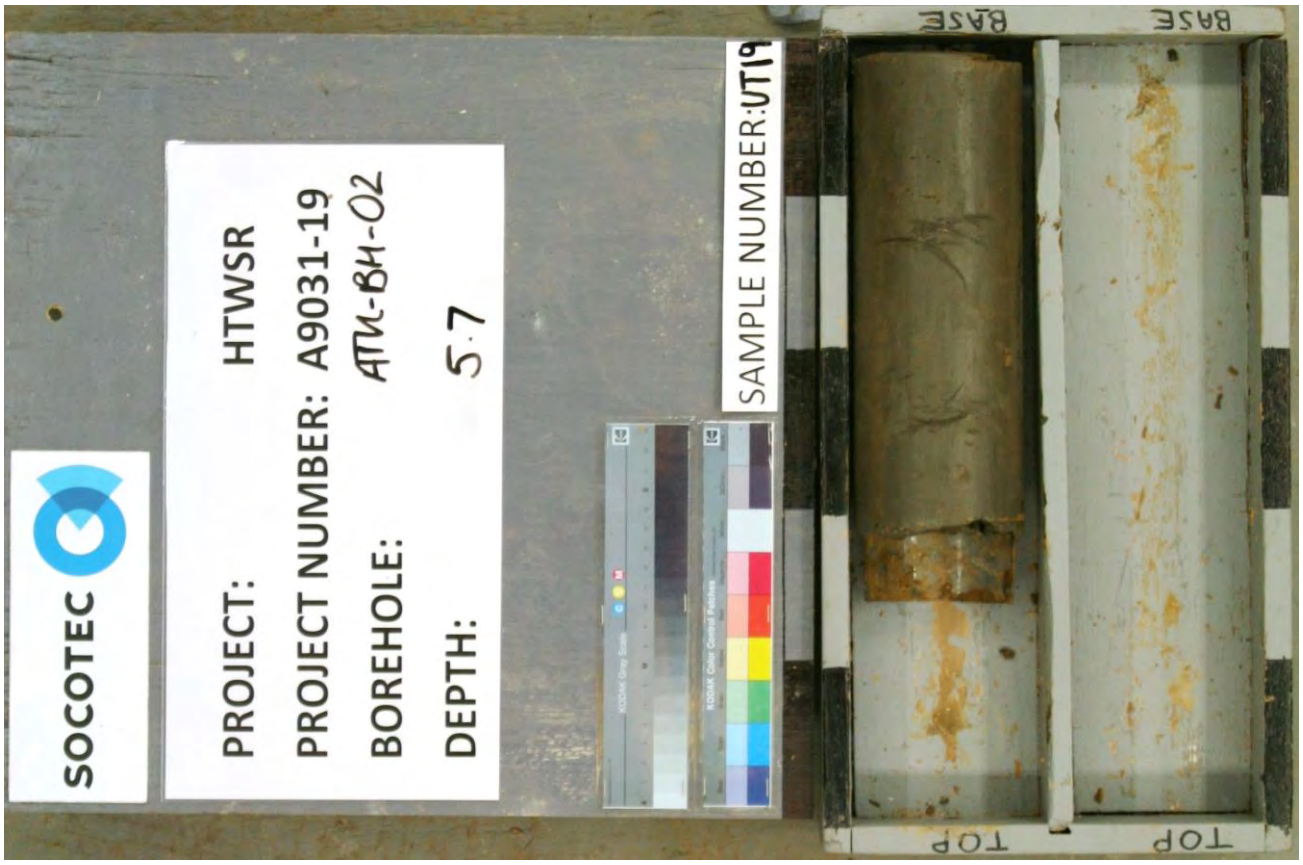
Sample Split and Describe Photographs





Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate
	Project No.	A9031-19	81
	Carried out for	Portsmouth Water	

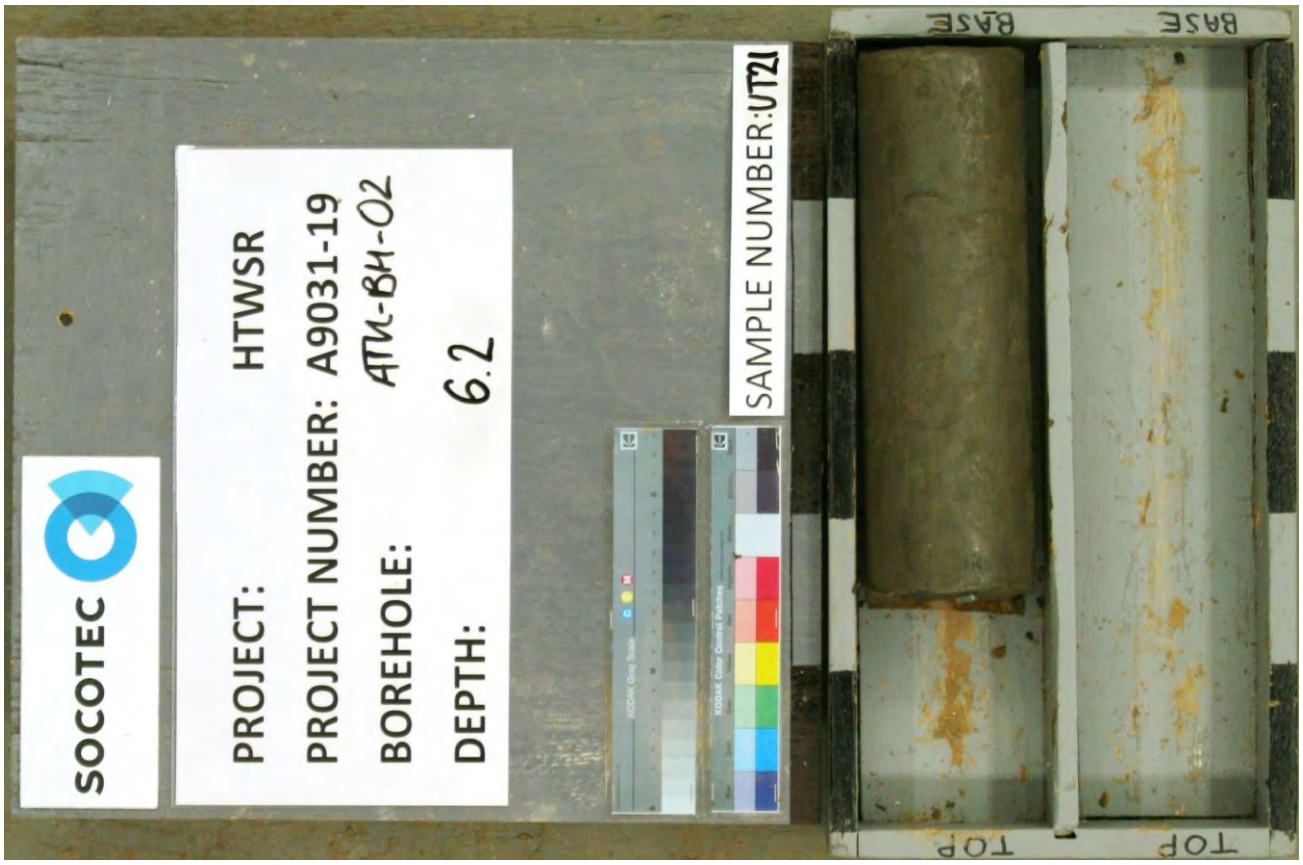
Sample Split and Describe Photographs

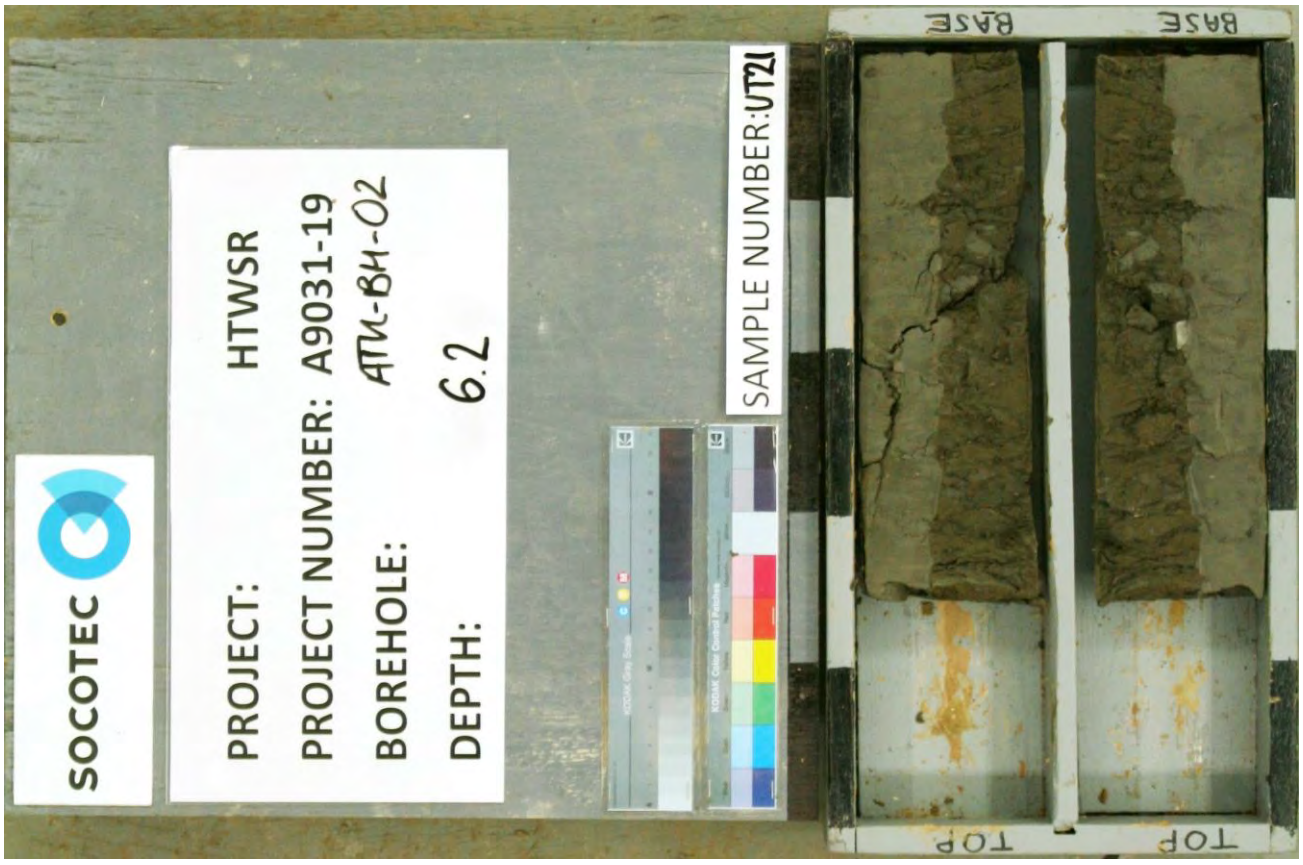




Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate
	Project No.	A9031-19	82
	Carried out for	Portsmouth Water	

Sample Split and Describe Photographs





Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate
	Project No.	A9031-19	83
	Carried out for	Portsmouth Water	

Shear Surface Photographs (Supplied by IS)



ATK-TP-01 – Shear Surfaces



Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate
	Project No.	A9031-19	84
	Carried out for	Portsmouth Water	

Shear Surface Photographs (Supplied by IS)



ATK-TP-01 – Shear Surfaces

Notes:	Project	HAVANT THICKET WINTER STORAGE RESERVOIR	Plate
	Project No.	A9031-19	85
	Carried out for	Portsmouth Water	