SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
TBH1		U	12.50		Brown mottled grey slightly sandy CLAY.
TBH1		U	15.60		Brown mottled grey sandy CLAY.
TBH2		U	23.44		Very stiff brown CLAY.
TBH2		U	29.04		Very stiff brown CLAY.
TBH3		U	19.00		Stiff brown CLAY.
TBH3		U	27.58		Stiff brown mottled grey CLAY.
TBH2		U	12.50		Very stiff brown mottled grey CLAY.
TBH1		U	27.54		Stiff brown CLAY.
TBH3		U	22.55		Brown mottled grey CLAY.
TBH3		B	23.50	25.00	Brown slightly gravelly slightly sandy clayey SILT.
TBH1		B	1.00		Brown slightly sandy clayey GRAVEL.
TBH1		B	2.00	3.00	Brown mottled grey sandy slightly silty GRAVEL with cobbles.
TBH3		B	11.00	12.00	Brown slightly sandy CLAY.
TBH3		B	6.00	7.00	Brown slightly sandy GRAVEL.
TBH2		B	2.00	3.00	Brown very sandy slightly silty GRAVEL.
TBH1		D	10.00		Brown mottled grey slightly gravelly slightly sandy CLAY.
TBH1		D	23.15		Brown mottled grey sandy CLAY.
TBH2		D	17.90		Reddish brown mottled grey slightly gravelly sandy CLAY.
TBH2		D	25.20		Brown very sandy CLAY.

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
TBH1		D	21.50		Brown mottled grey slightly gravelly slightly sandy CLAY.
TBH3		D	28.53		Grey CLAY.
TBH1		D	25.00	25.32	Brown very sandy clayey SILT.
TBH2		D	19.35	19.46	Brown sandy CLAY.

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PSL Professional Soils Laboratory

Harefield Road, Uxbridge

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SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m^3 Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
TBH1		U	12.50		22			56	25	31	100	High plasticity CH.
TBH1		U	15.60		15			38	19	19	100	Intermediate plasticity CI.
TBH2		U	23.44		16			50	21	29	100	High plasticity CH.
TBH2		U	29.04		26			77	29	48	100	Very high plasticity CV.
TBH3		U	19.00		19			53	24	29	100	High plasticity CH.
TBH3		U	27.58		20			53	24	29	100	High plasticity CH.
TBH1		D	10.00		17			61	26	35	96	High plasticity CH.
TBH1		D	23.15		17			48	23	25	100	Intermediate plasticity CI.
TBH2		D	17.90		13			45	23	22	98	Intermediate plasticity CI.
TBH2		D	25.20		28			37	20	17	100	Intermediate plasticity CI.
TBH1		D	21.50		25			64	27	37	98	High plasticity CH.
TBH3		D	28.53		28			87	31	56	100	Very high plasticity CV.

SYMBOLS : **NP : Non Plastic** *** : Liquid Limit and Plastic Limit Wet Sieved.**

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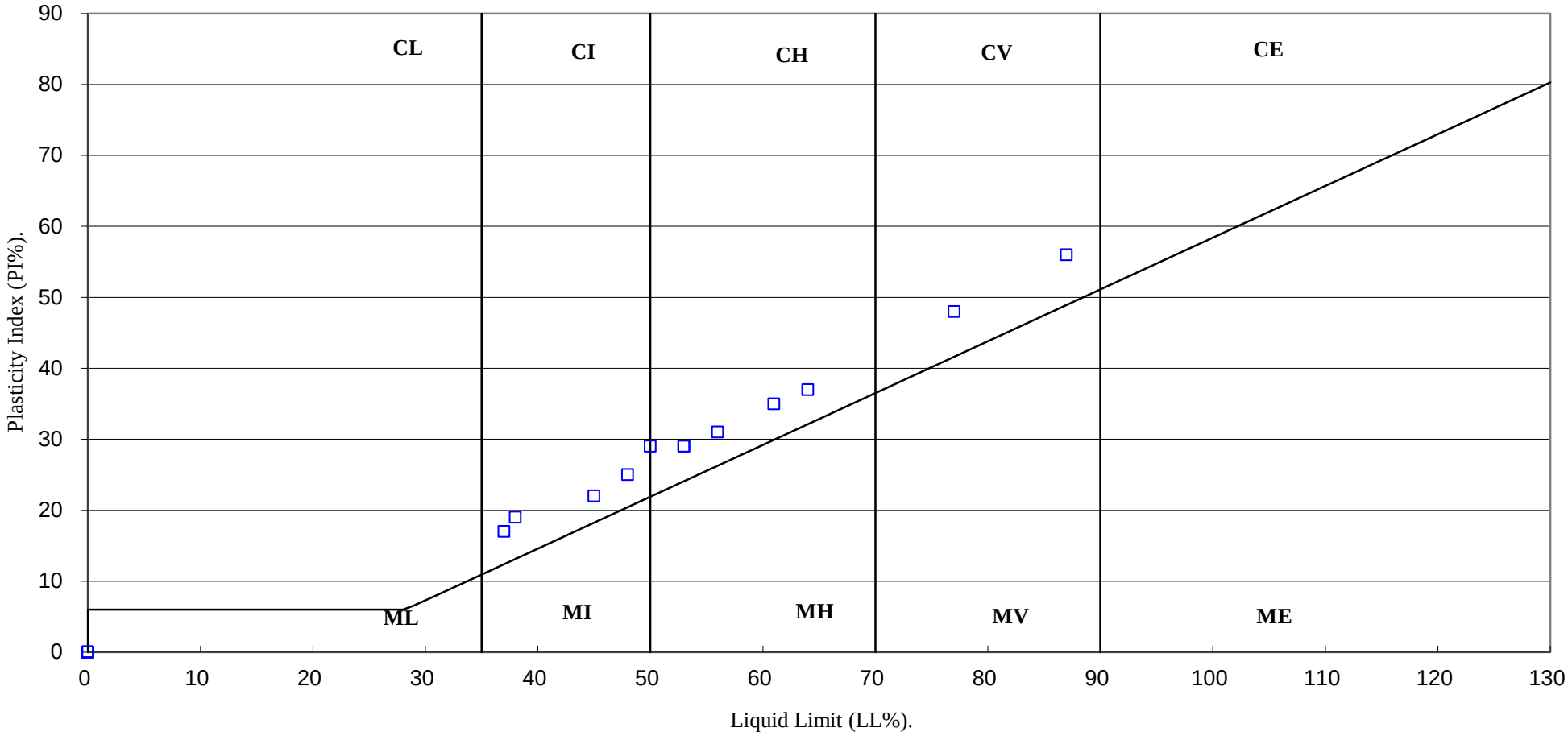
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PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.

(BS5930 :2015)



UKAS TESTING 4043	PSL Professional Soils Laboratory	**Harefield Road, Uxbridge**	**Contract No:**
			PSL17/5213
			Client Ref:
			TE1044

PARTICLE SIZE DISTRIBUTION TEST

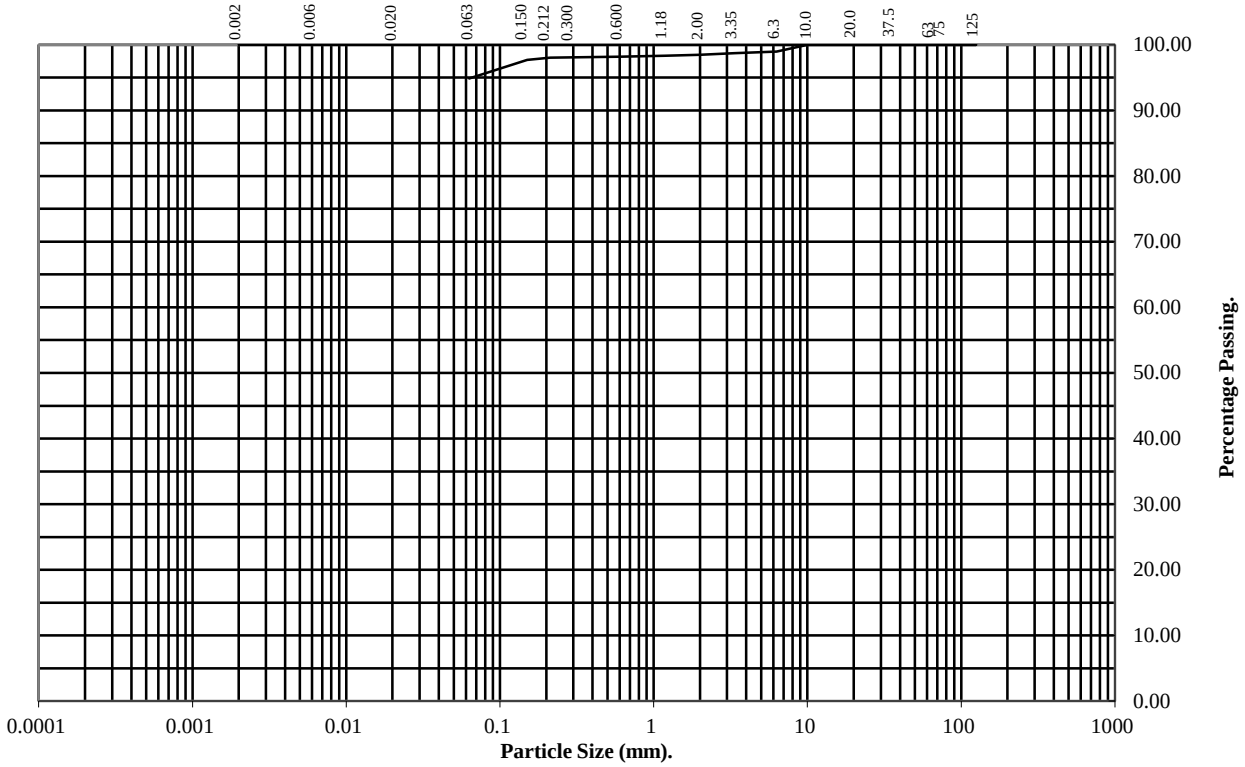
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **TBH3** **Top Depth (m):** **23.50**

Sample Number: **Base Depth(m):** **25.00**

Sample Type: **B**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	99
3.35	99
2	98
1.18	98
0.6	98
0.3	98
0.212	98
0.15	98
0.063	95

Soil Fraction	Total Percentage
Cobbles	0
Gravel	2
Sand	3
Silt/Clay	95

Remarks:
See Summary of Soil Descriptions

UKAS TESTING 4043

PSL Professional Soils Laboratory

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Contract No:
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PARTICLE SIZE DISTRIBUTION TEST

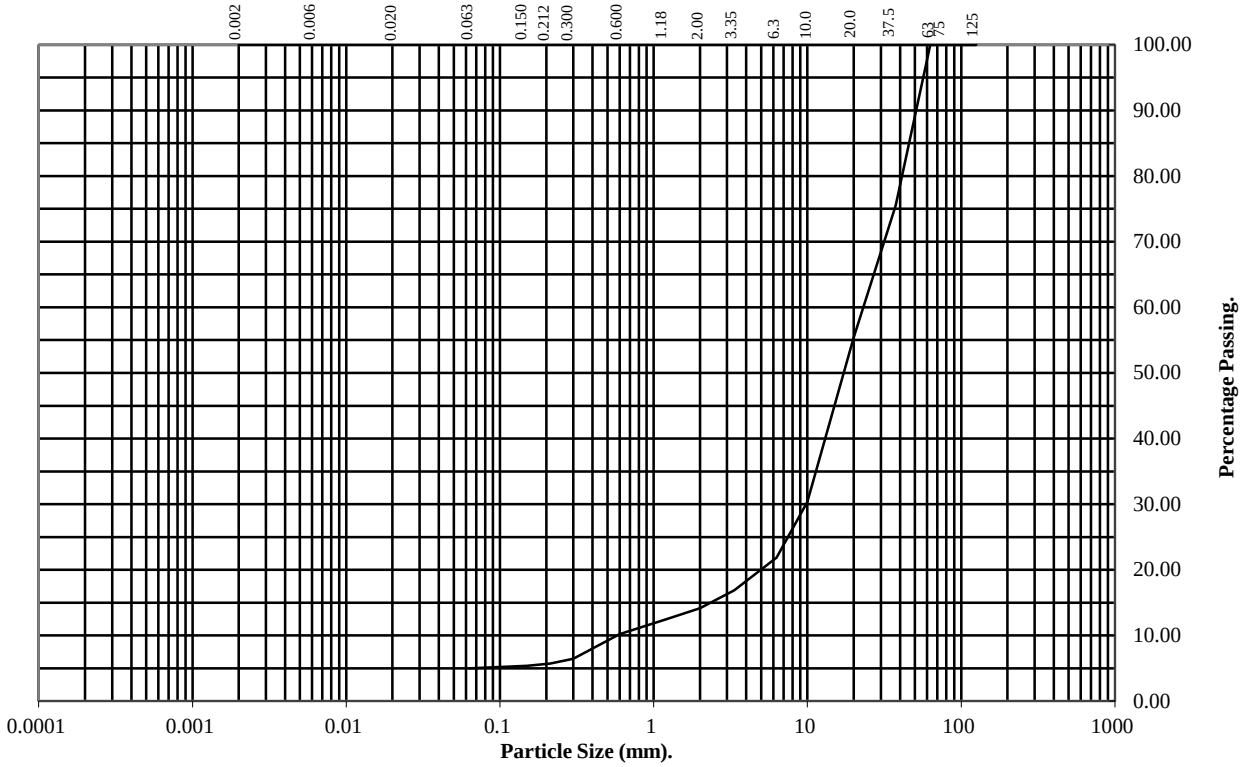
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **TBH1** **Top Depth (m):** **1.00**

Sample Number: **Base Depth(m):**

Sample Type: **B**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	76
20	55
10	30
6.3	22
3.35	17
2	14
1.18	12
0.6	10
0.3	6
0.212	6
0.15	5
0.063	5

Soil Fraction	Total Percentage
Cobbles	0
Gravel	86
Sand	9
Silt/Clay	5

Remarks:
See Summary of Soil Descriptions

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PARTICLE SIZE DISTRIBUTION TEST

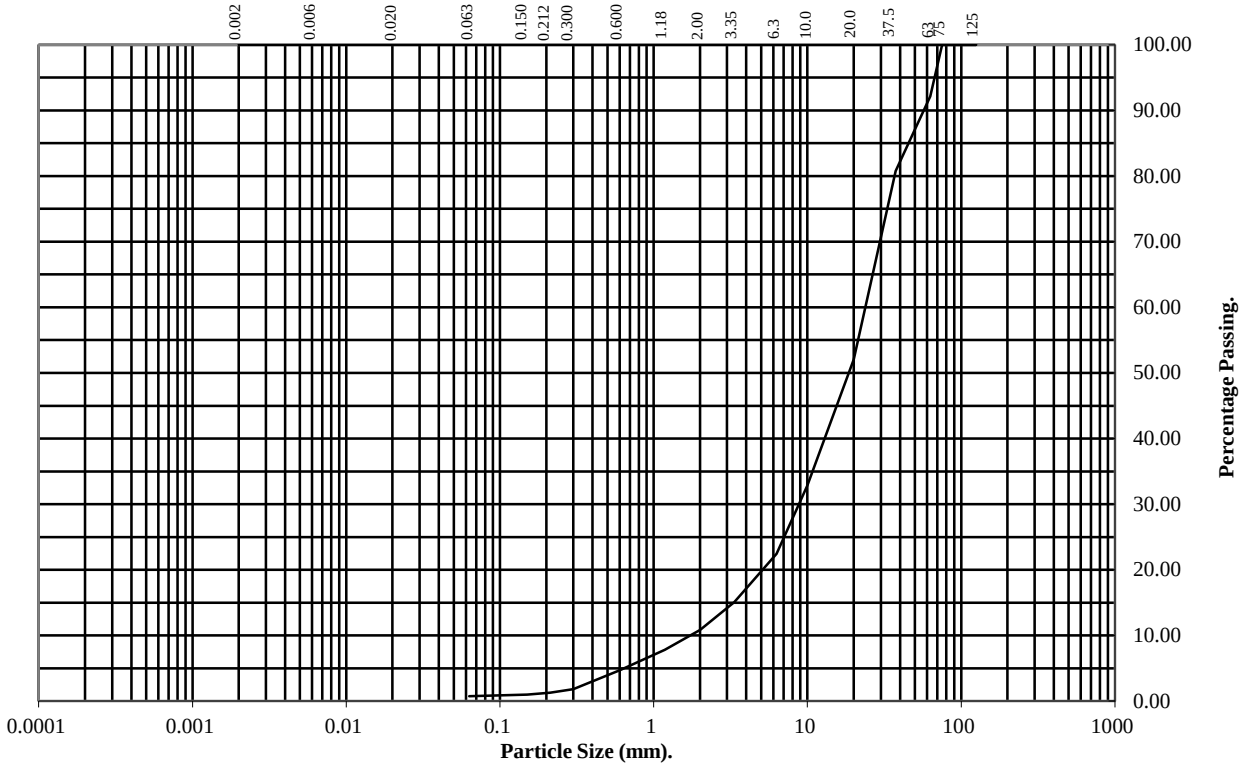
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **TBH1** **Top Depth (m):** **2.00**

Sample Number: **Base Depth(m):** **3.00**

Sample Type: **B**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	92
37.5	81
20	52
10	33
6.3	22
3.35	15
2	11
1.18	8
0.6	5
0.3	2
0.212	1
0.15	1
0.063	1

Soil Fraction	Total Percentage
Cobbles	8
Gravel	81
Sand	10
Silt/Clay	1

Remarks:
See Summary of Soil Descriptions

UKAS TESTING 4043

PSL Professional Soils Laboratory

Harefield Road, Uxbridge

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Client Ref: **TE1044**

PARTICLE SIZE DISTRIBUTION TEST

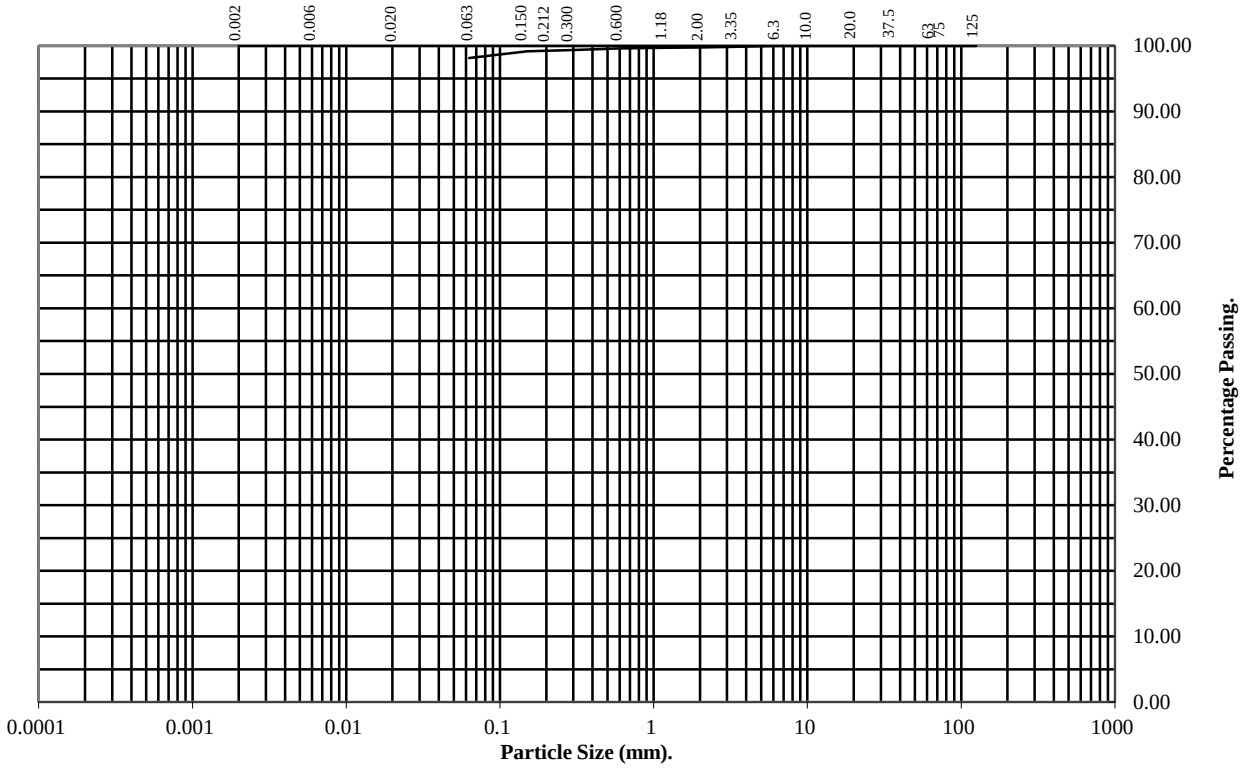
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **TBH3** **Top Depth (m):** **11.00**

Sample Number: **Base Depth(m):** **12.00**

Sample Type: **B**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	100
2	100
1.18	100
0.6	100
0.3	99
0.212	99
0.15	99
0.063	98

Soil Fraction	Total Percentage
Cobbles	0
Gravel	0
Sand	2
Silt/Clay	98

Remarks:
See Summary of Soil Descriptions

UKAS TESTING 4043

PSL Professional Soils Laboratory

Harefield Road, Uxbridge

Contract No:
PSL17/5213
Client Ref:
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PARTICLE SIZE DISTRIBUTION TEST

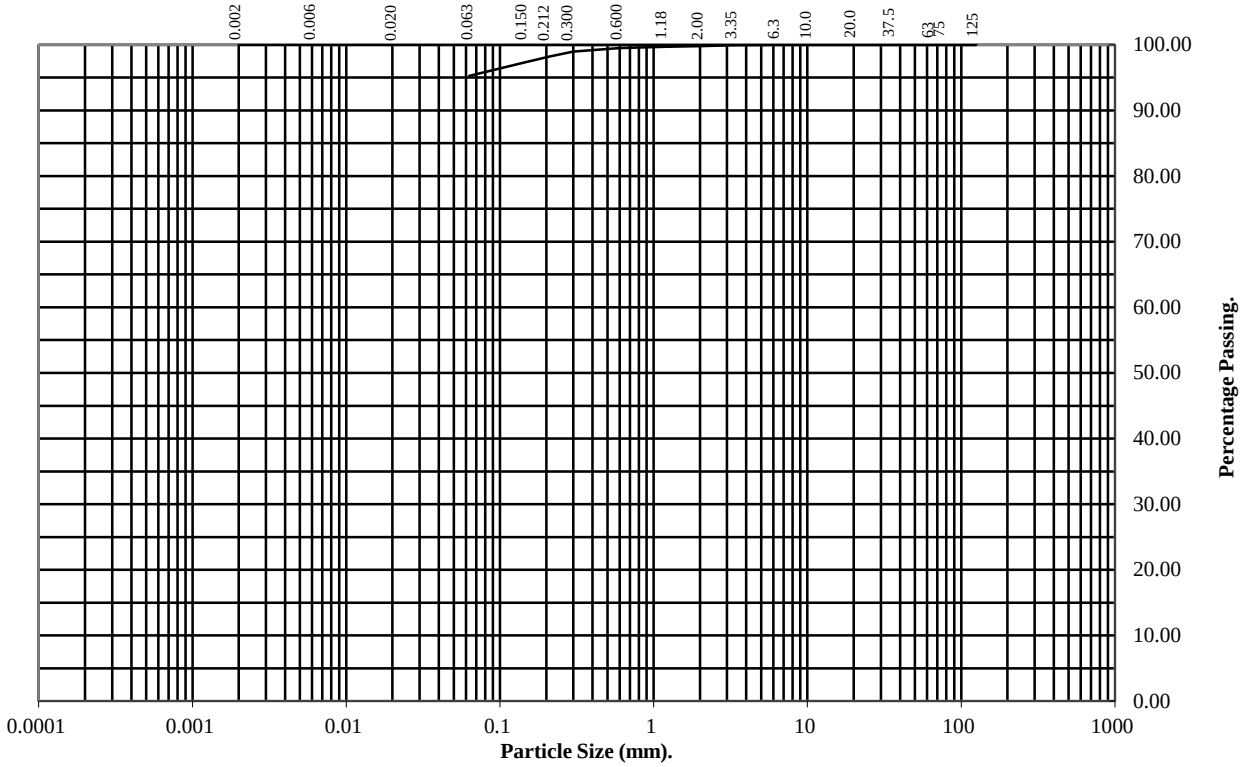
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **TBH1** **Top Depth (m):** **12.50**

Sample Number: **Base Depth(m):**

Sample Type: **U**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	100
2	100
1.18	100
0.6	100
0.3	99
0.212	98
0.15	97
0.063	95

Soil Fraction	Total Percentage
Cobbles	0
Gravel	0
Sand	5
Silt/Clay	95

Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

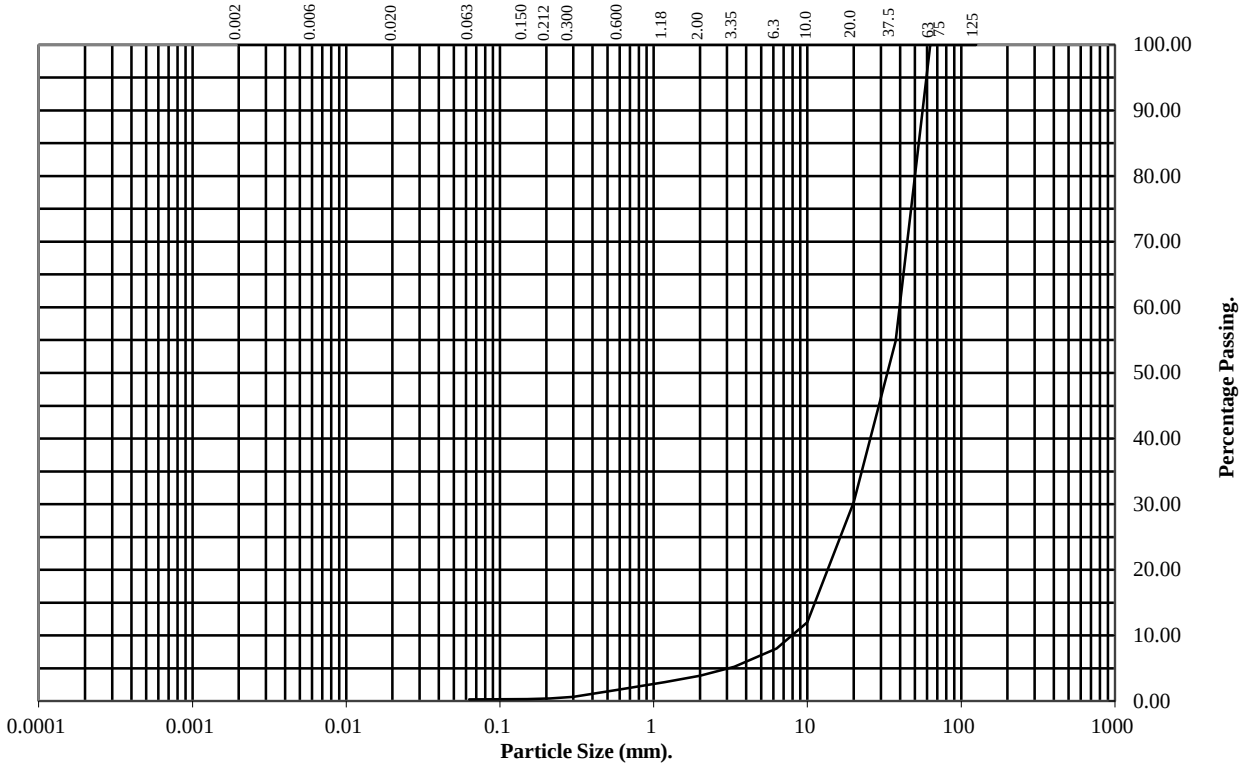
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **TBH3** **Top Depth (m):** **6.00**

Sample Number: **Base Depth(m):** **7.00**

Sample Type: **B**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	55
20	30
10	12
6.3	8
3.35	5
2	4
1.18	3
0.6	2
0.3	1
0.212	0
0.15	0
0.063	0

Soil Fraction	Total Percentage
Cobbles	0
Gravel	96
Sand	4
Silt/Clay	0

Remarks:
See Summary of Soil Descriptions

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PARTICLE SIZE DISTRIBUTION TEST

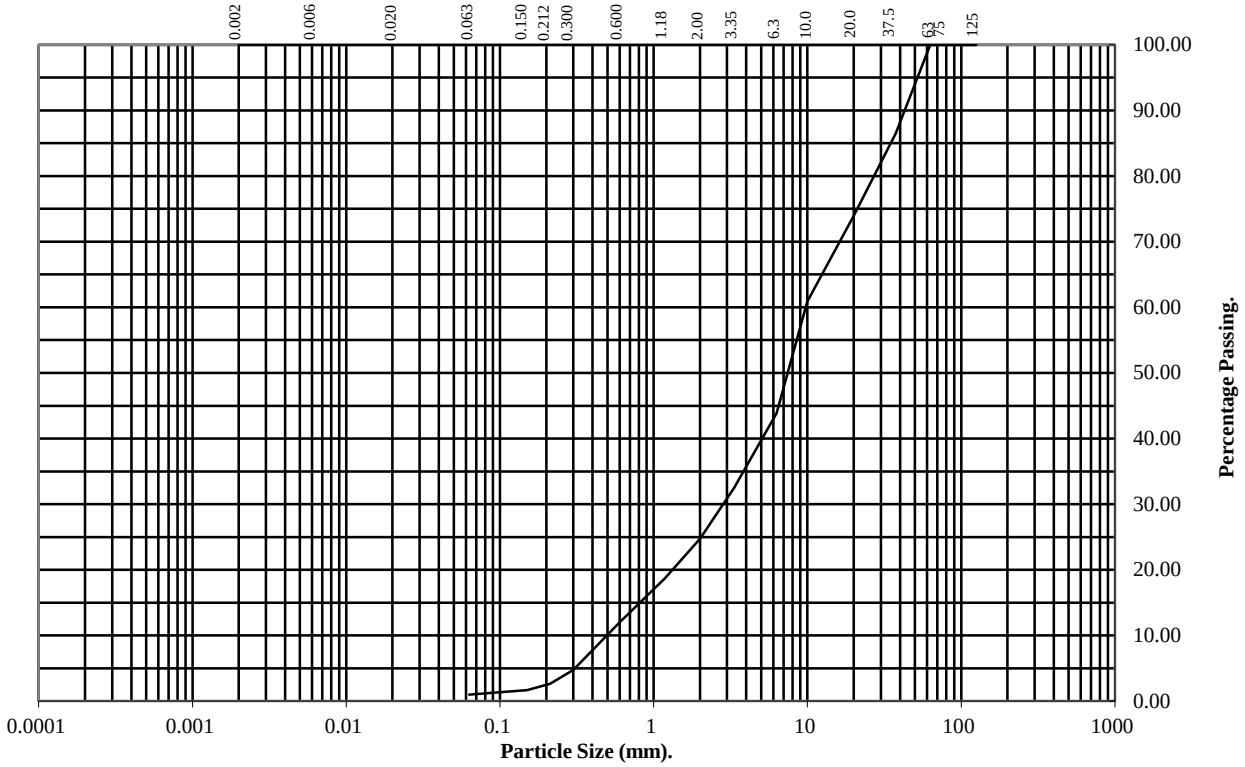
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **TBH2** **Top Depth (m):** **2.00**

Sample Number: **Base Depth(m):** **3.00**

Sample Type: **B**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	86
20	74
10	61
6.3	44
3.35	33
2	25
1.18	19
0.6	12
0.3	5
0.212	3
0.15	2
0.063	1

Soil Fraction	Total Percentage
Cobbles	0
Gravel	75
Sand	24
Silt/Clay	1

Remarks:
See Summary of Soil Descriptions

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PSL Professional Soils Laboratory

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PARTICLE SIZE DISTRIBUTION TEST

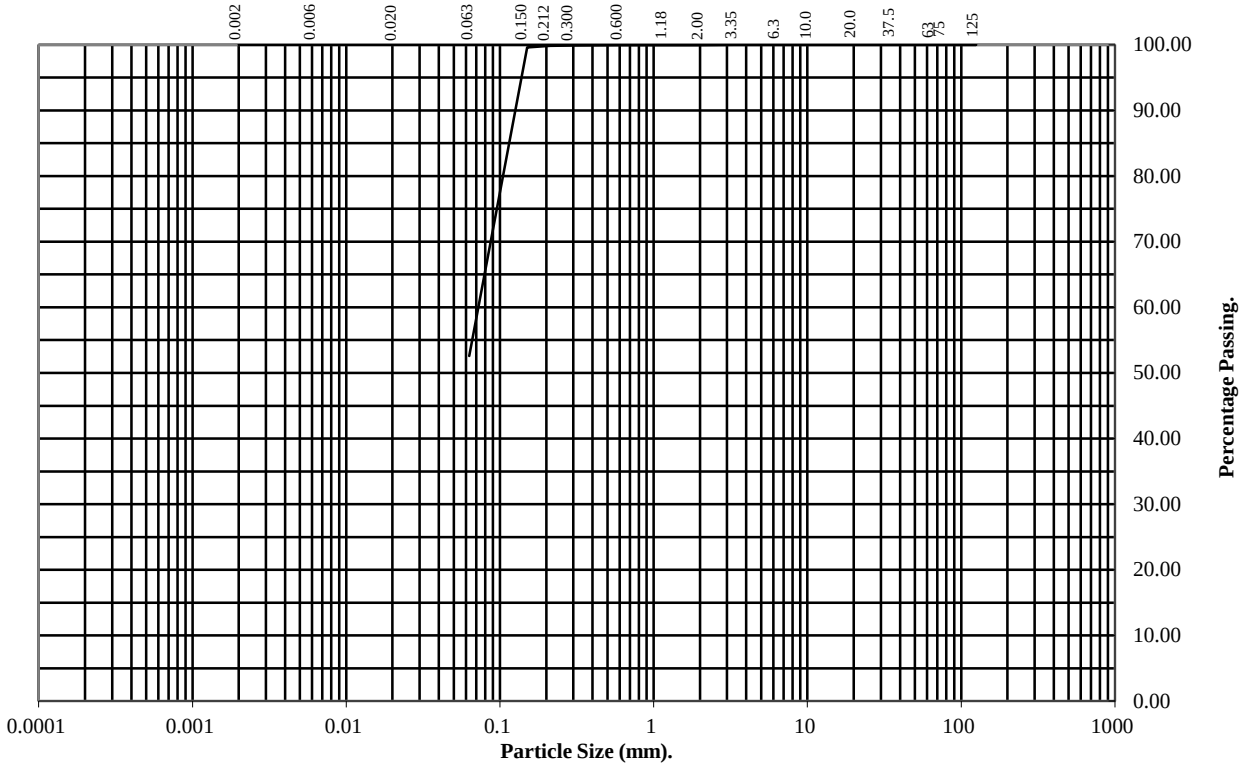
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **TBH1** **Top Depth (m):** **25.00**

Sample Number: **Base Depth(m):** **25.32**

Sample Type: **D**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	100
2	100
1.18	100
0.6	100
0.3	100
0.212	100
0.15	100
0.063	53

Soil Fraction	Total Percentage
Cobbles	0
Gravel	0
Sand	47
Silt/Clay	53

Remarks:
See Summary of Soil Descriptions

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PARTICLE SIZE DISTRIBUTION TEST

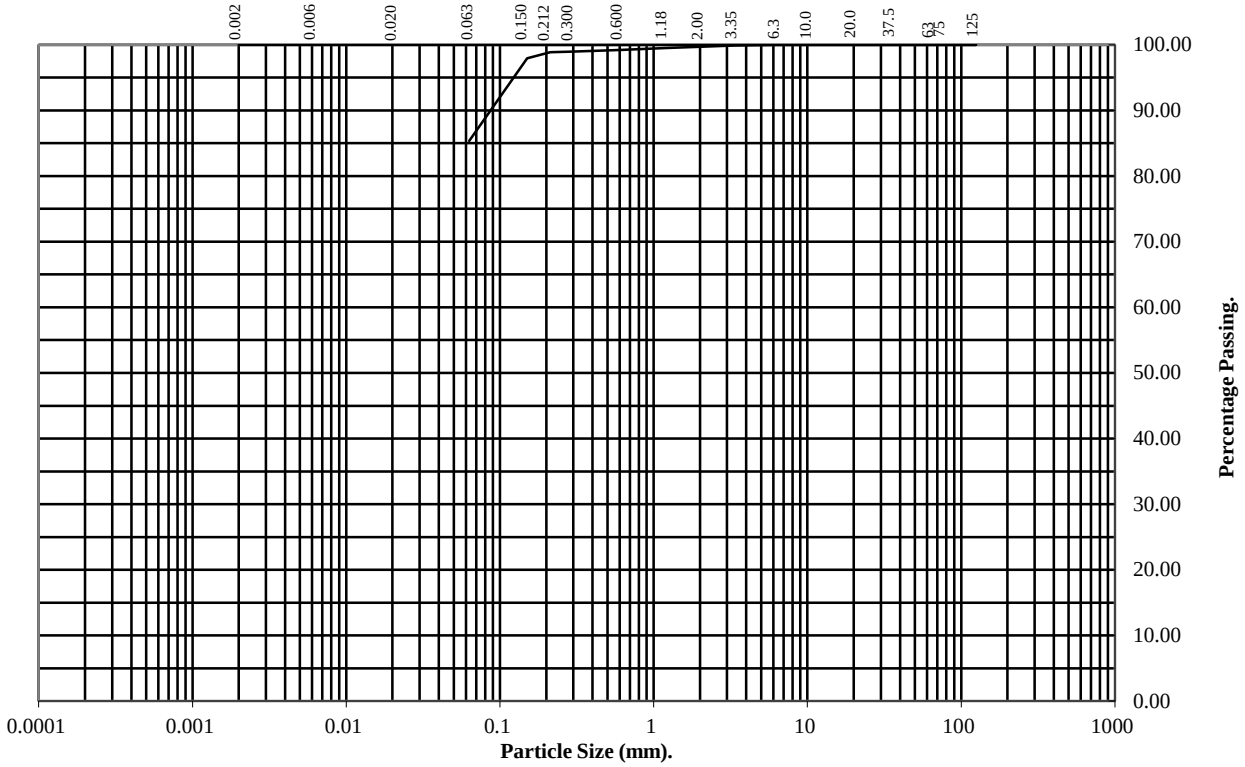
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **TBH2** **Top Depth (m):** **19.35**

Sample Number: **Base Depth(m):** **19.46**

Sample Type: **D**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	100
2	100
1.18	100
0.6	99
0.3	99
0.212	99
0.15	98
0.063	85

Soil Fraction	Total Percentage
Cobbles	0
Gravel	0
Sand	15
Silt/Clay	85

Remarks:
See Summary of Soil Descriptions

UKAS TESTING 4043

PSL Professional Soils Laboratory

Harefield Road, Uxbridge

Contract No: **PSL17/5213**

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ONE DIMENSIONAL CONSOLIDATION TEST

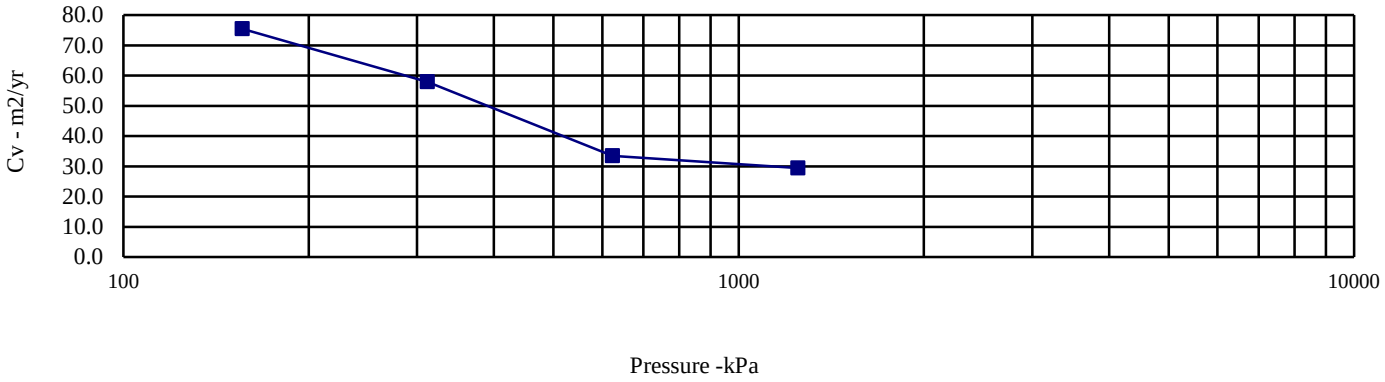
BS 1377: Part 5: 1990: Clause 3

Hole Number: **TBH1** **Top Depth (m):** **15.60**

Sample Number: **Base Depth (m) :**

Sample Type: **U**

Initial Conditions		Pressure Range kPa		Mv m2/MN	Cv m2/yr	Specimen location within tube:	Top
Moisture Content (%):	16						
Bulk Density (Mg/m3):	2.15	0	156	0.174	75.488	Method used to	
Dry Density (Mg/m3):	1.85	156	312	0.075	57.932	determine CV:	T90
Voids Ratio:	0.434	312	624	0.047	33.470	Nominal temperature	
Degree of saturation:	99.8	624	1248	0.030	29.412	during test ' C:	20
Height (mm):	20.03	1248	156	0.012	-	Remarks:	
Diameter (mm)	75.12					See summary of soil descriptions	
Particle Density (Mg/m3): Assumed	2.65						





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ONE DIMENSIONAL CONSOLIDATION TEST

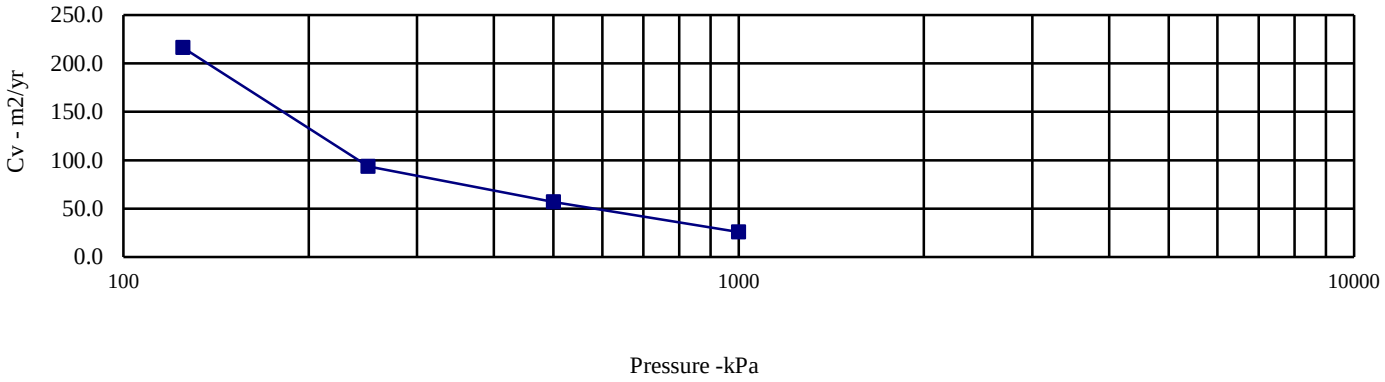
BS 1377: Part 5: 1990: Clause 3

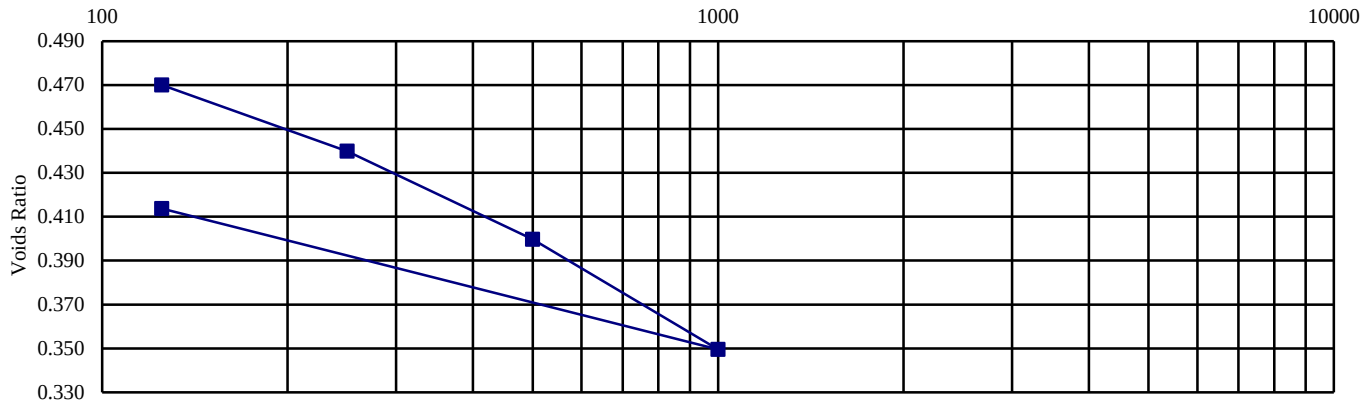
Hole Number: **TBH2** **Top Depth (m):** **12.50**

Sample Number: **Base Depth (m) :**

Sample Type: **U**

Initial Conditions		Pressure Range kPa		Mv m2/MN	Cv m2/yr	Specimen location within tube:	Top
Moisture Content (%):	20						
Bulk Density (Mg/m3):	2.09	0	125	0.283	216.347	Method used to	
Dry Density (Mg/m3):	1.74	125	250	0.164	93.564	determine CV:	T90
Voids Ratio:	0.524	250	500	0.112	56.933	Nominal temperature	
Degree of saturation:	101.0	500	1000	0.072	25.837	during test ' C:	20
Height (mm):	20.15	1000	125	0.054	-	Remarks:	
Diameter (mm)	75.09					See summary of soil descriptions	
Particle Density (Mg/m3): Assumed	2.65						





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ONE DIMENSIONAL CONSOLIDATION TEST

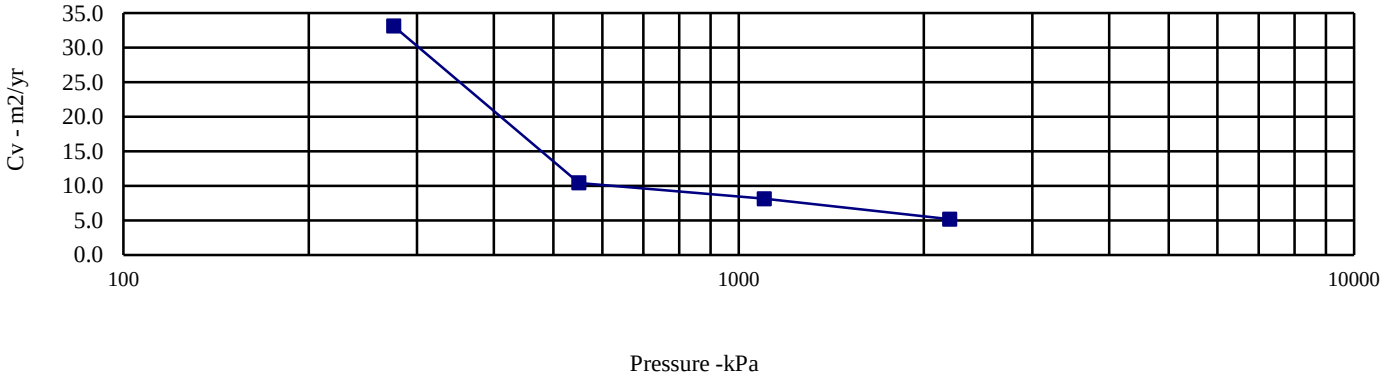
BS 1377: Part 5: 1990: Clause 3

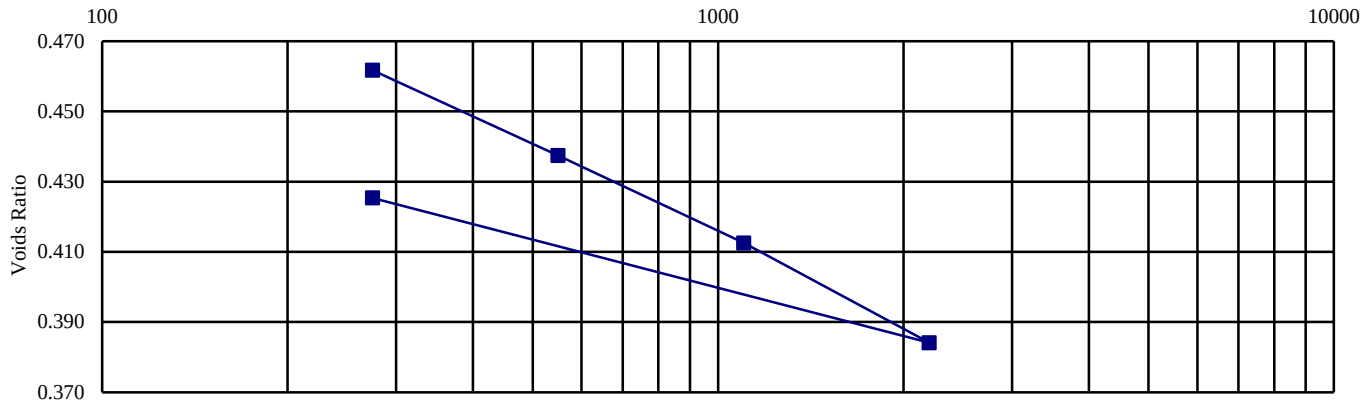
Hole Number: **TBH1** **Top Depth (m):** **27.54**

Sample Number: **Base Depth (m) :**

Sample Type: **U**

Initial Conditions		Pressure Range kPa		Mv m2/MN	Cv m2/yr	Specimen location within tube:	Top
Moisture Content (%):	20						
Bulk Density (Mg/m3):	2.08	0	275	0.169	33.102	Method used to	
Dry Density (Mg/m3):	1.73	275	550	0.060	10.431	determine CV:	T90
Voids Ratio:	0.533	550	1101	0.031	8.129	Nominal temperature	
Degree of saturation:	101.2	1101	2203	0.018	5.183	during test ' C:	20
Height (mm):	20.19	2203	275	0.015	-	Remarks:	
Diameter (mm)	75.1					See summary of soil descriptions	
Particle Density (Mg/m3): Assumed	2.65						





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ONE DIMENSIONAL CONSOLIDATION TEST

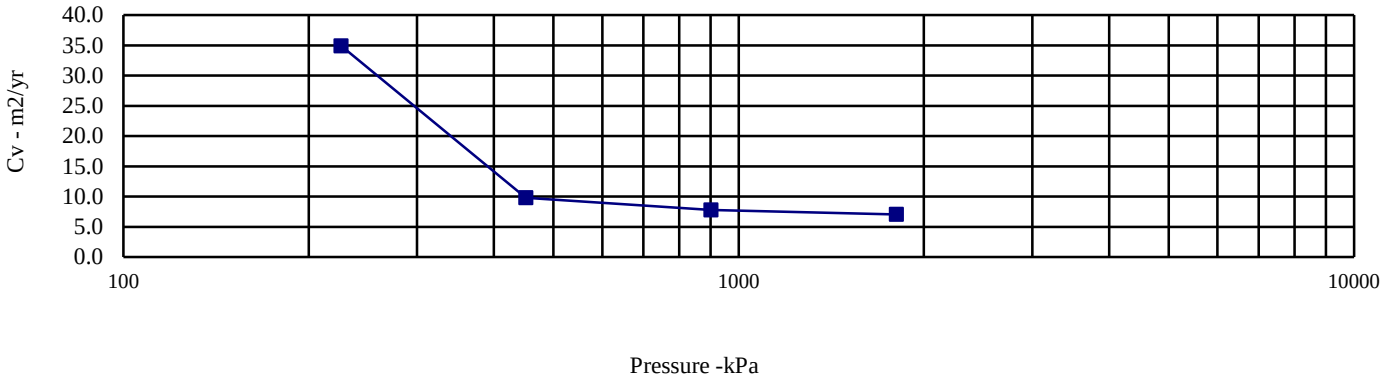
BS 1377: Part 5: 1990: Clause 3

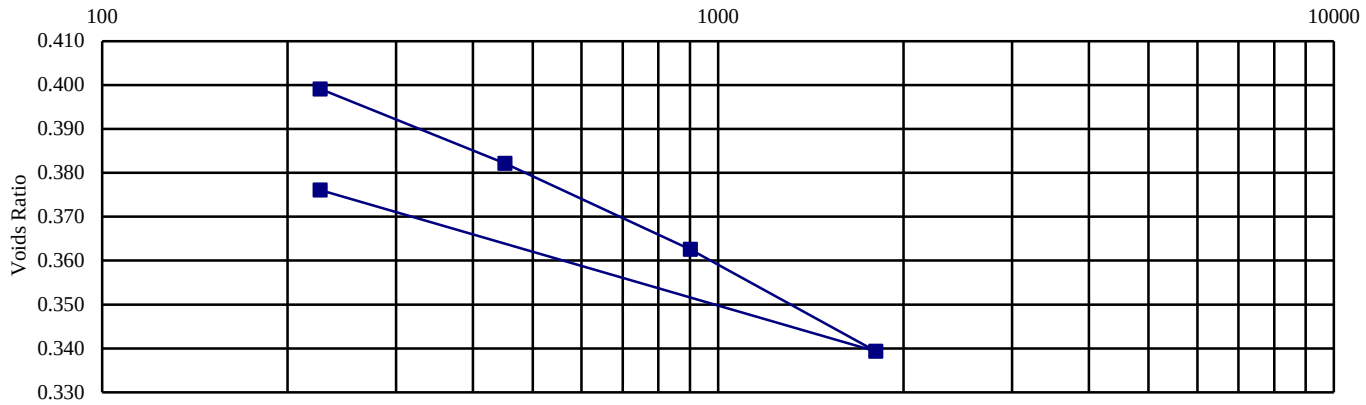
Hole Number: **TBH3** **Top Depth (m):** **22.55**

Sample Number: **Base Depth (m) :**

Sample Type: **U**

Initial Conditions		Pressure Range kPa		Mv m2/MN	Cv m2/yr	Specimen location within tube:	Top
Moisture Content (%):	16						
Bulk Density (Mg/m3):	2.15	0	226	0.105	34.896	Method used to	
Dry Density (Mg/m3):	1.85	226	451	0.054	9.769	determine CV:	T90
Voids Ratio:	0.433	451	902	0.031	7.769	Nominal temperature	
Degree of saturation:	100.9	902	1804	0.019	7.041	during test ' C:	20
Height (mm):	20.19	1804	226	0.017	-	Remarks:	
Diameter (mm)	75.15					See summary of soil descriptions	
Particle Density (Mg/m3): Assumed	2.65						





UKAS TESTING 4043	PSL Professional Soils Laboratory	**Harefield Road, Uxbridge**	**Contract No:** **PSL17/5213** **Client Ref:** **TE1044**

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

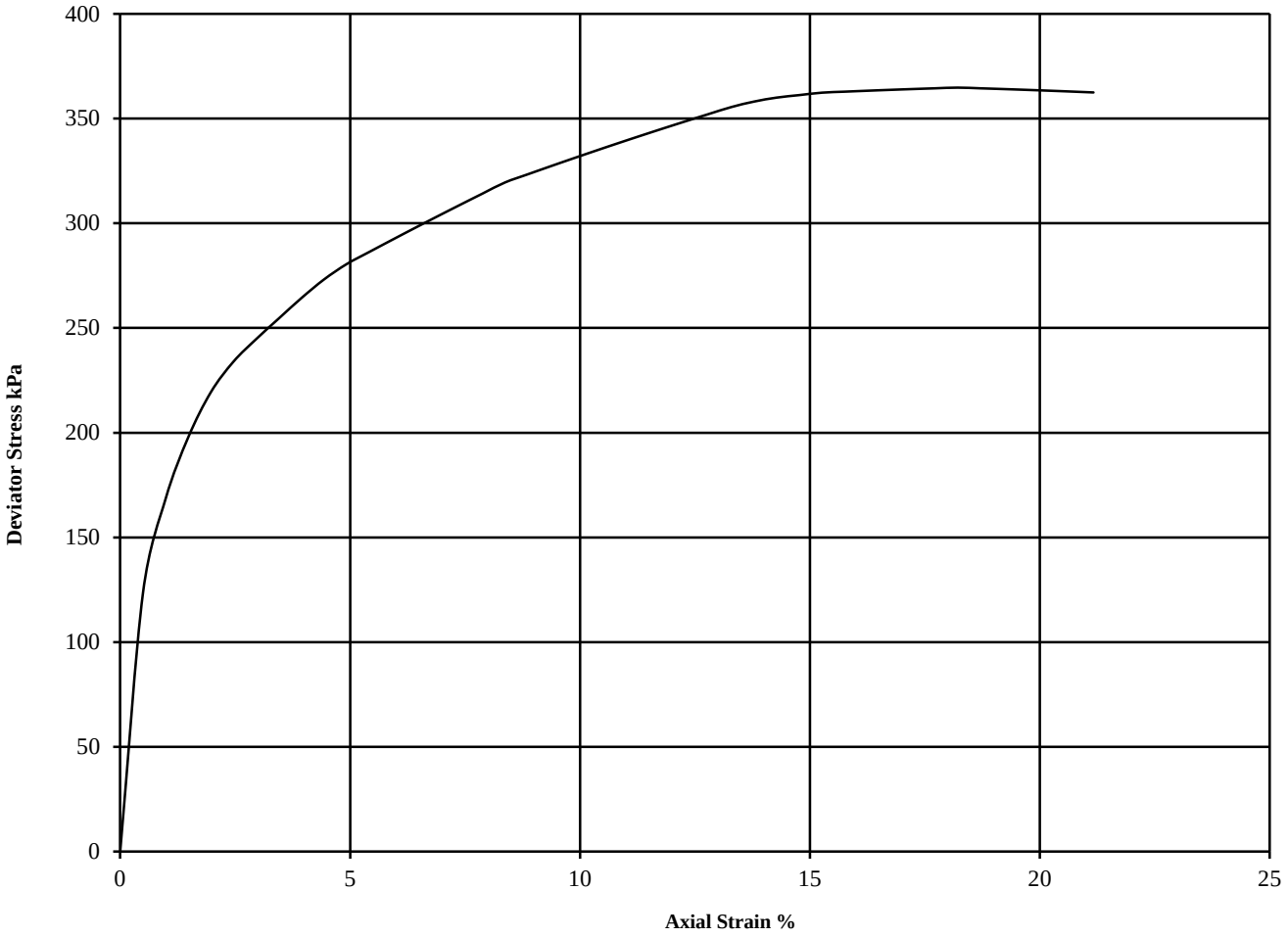
WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 8

Hole Number: TBH2 **Top Depth (m):** 23.44

Sample Number: **Base Depth (m):**

Sample Type U



Diameter (mm):		102.3	Height (mm):		207.8	Test:	UU Single Stage		Remarks:
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa) θ_3	Corr. Max. Deviator Stress (kPa) $(\theta_1-\theta_3)_f$	Shear Strength Cu (kPa) $^1/_2(\theta_1-\theta_3)_f$	Failure Strain (%)	Mode of Failure	Undisturbed Sample Sample taken from top of tube Rate of strain = 2 %/min Latex Membrane used 0.2 mm thick, Correction applied 0.34
1	16	2.27	1.96	469	365	182	18.2	Intermediate	See summary of soil descriptions

UKAS TESTING 4043

PSL Professional Soils Laboratory

Harefield Road, Uxbridge

Contract No: PSL17/5213

Client Ref: TE1044

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

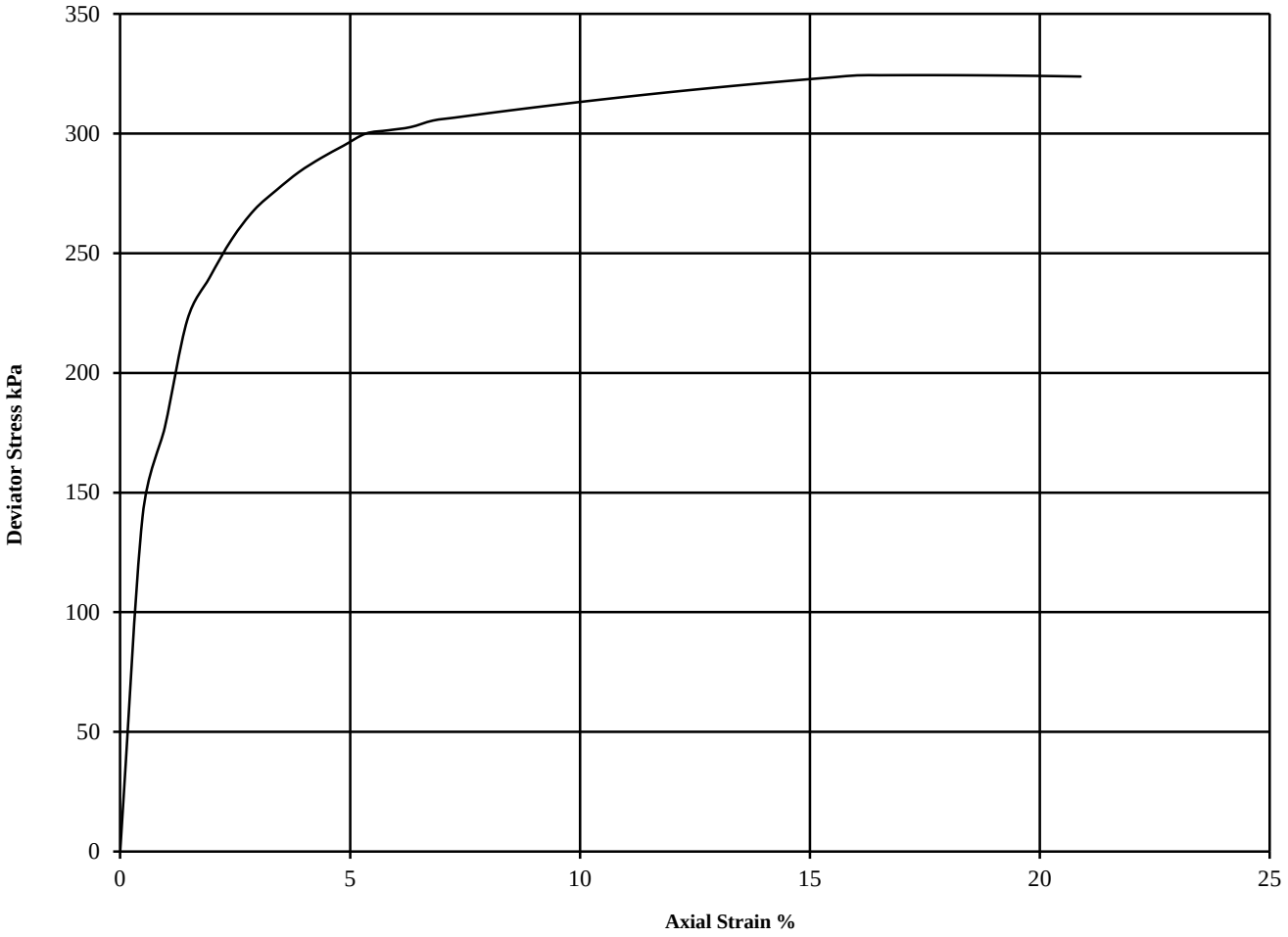
WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 8

Hole Number: **TBH2** **Top Depth (m):** **29.04**

Sample Number: **Base Depth (m):**

Sample Type **U**



Diameter (mm):		102.0	Height (mm):		210.0	Test:	UU Single Stage		Remarks:
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa) θ_3	Corr. Max. Deviator Stress (kPa) $(\theta_1-\theta_3)_f$	Shear Strength Cu (kPa) $^1/_2(\theta_1-\theta_3)_f$	Failure Strain (%)	Mode of Failure	Undisturbed Sample Sample taken from top of tube Rate of strain = 2 %/min Latex Membrane used 0.2 mm thick, Correction applied 0.34
1	26	2.06	1.64	581	324	162	17.5	Plastic	See summary of soil descriptions

UKAS TESTING 4043

PSL Professional Soils Laboratory

Harefield Road, Uxbridge

Contract No: **PSL17/5213**

Client Ref: **TE1044**

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

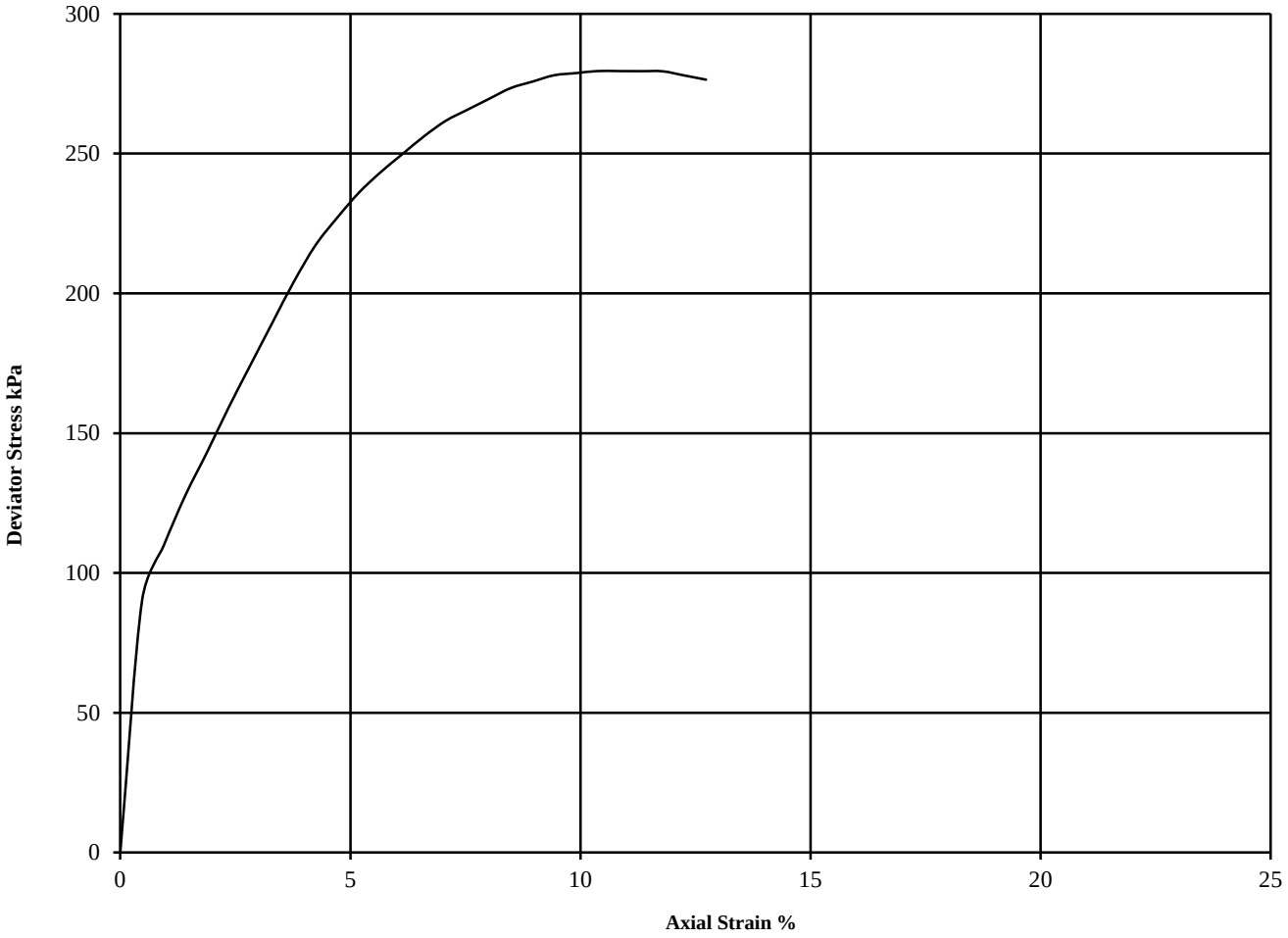
WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 8

Hole Number: **TBH3** **Top Depth (m):** **19.00**

Sample Number: **Base Depth (m):**

Sample Type **U**



Diameter (mm):		99.0	Height (mm):		210.0	Test:	UU Single Stage		Remarks:
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa) θ_3	Corr. Max. Deviator Stress (kPa) $(\theta_1-\theta_3)_f$	Shear Strength Cu (kPa) $^1/_2(\theta_1-\theta_3)_f$	Failure Strain (%)	Mode of Failure	Undisturbed Sample Sample taken from top of tube Rate of strain = 2 %/min Latex Membrane used 0.2 mm thick, Correction applied 0.36
1	19	2.22	1.87	380	280	140	10.4	Plastic	See summary of soil descriptions

UKAS TESTING 4043

PSL Professional Soils Laboratory

Harefield Road, Uxbridge

Contract No: **PSL17/5213**

Client Ref: **TE1044**

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

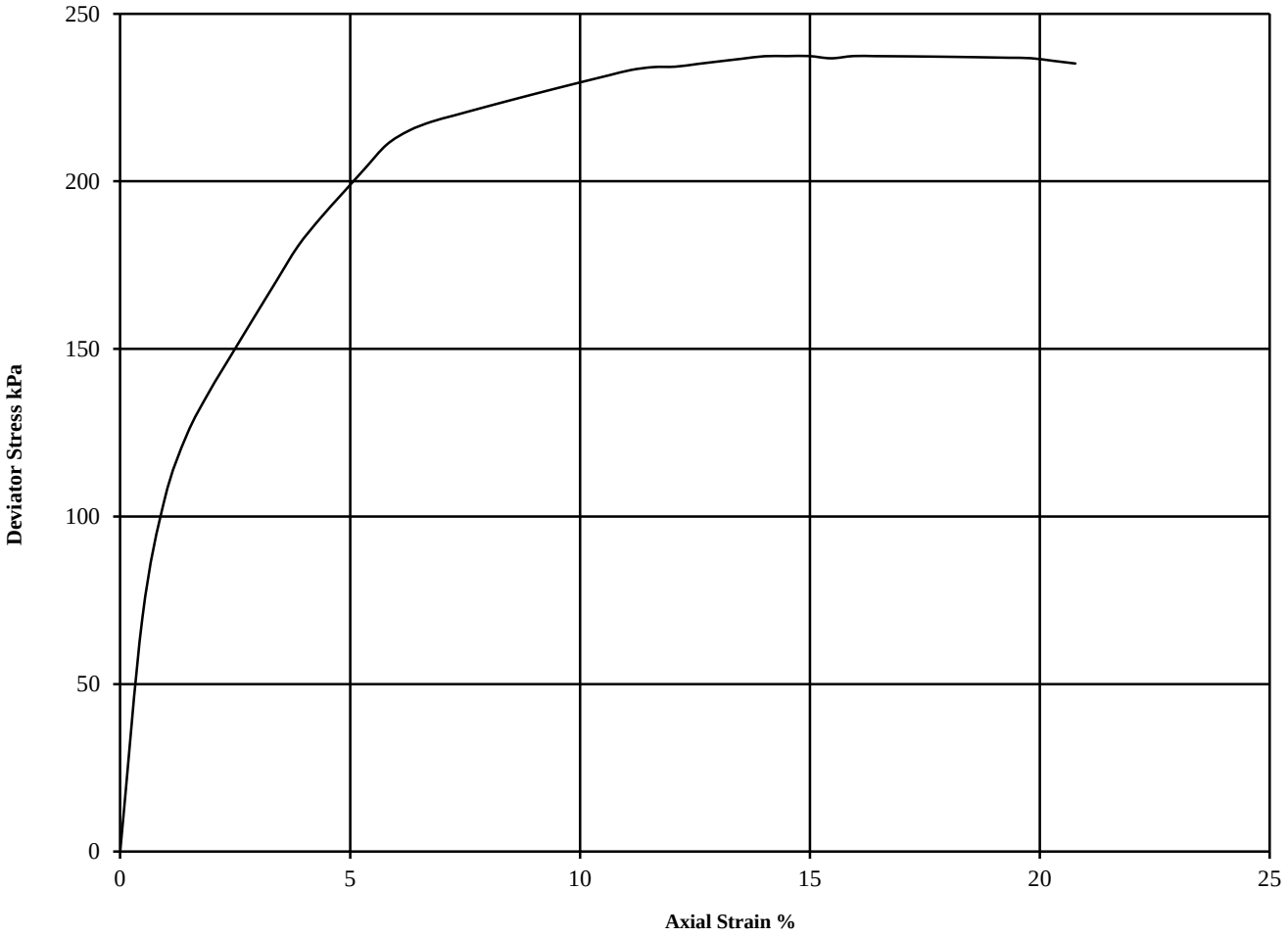
WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 8

Hole Number: **TBH3** **Top Depth (m):** **27.58**

Sample Number: **Base Depth (m):**

Sample Type **U**



Diameter (mm):		100.0	Height (mm):		207.0	Test:	UU Single Stage		Remarks:
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa) θ_3	Corr. Max. Deviator Stress (kPa) $(\theta_1-\theta_3)_f$	Shear Strength Cu (kPa) $^1/_2(\theta_1-\theta_3)_f$	Failure Strain (%)	Mode of Failure	Undisturbed Sample Sample taken from top of tube Rate of strain = 2 %/min Latex Membrane used 0.2 mm thick, Correction applied 0.35
1	20	2.01	1.68	551	237	119	15.0	Intermediate	See summary of soil descriptions

UKAS TESTING 4043

PSL Professional Soils Laboratory

Harefield Road, Uxbridge

Contract No: **PSL17/5213**

Client Ref: **TE1044**

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

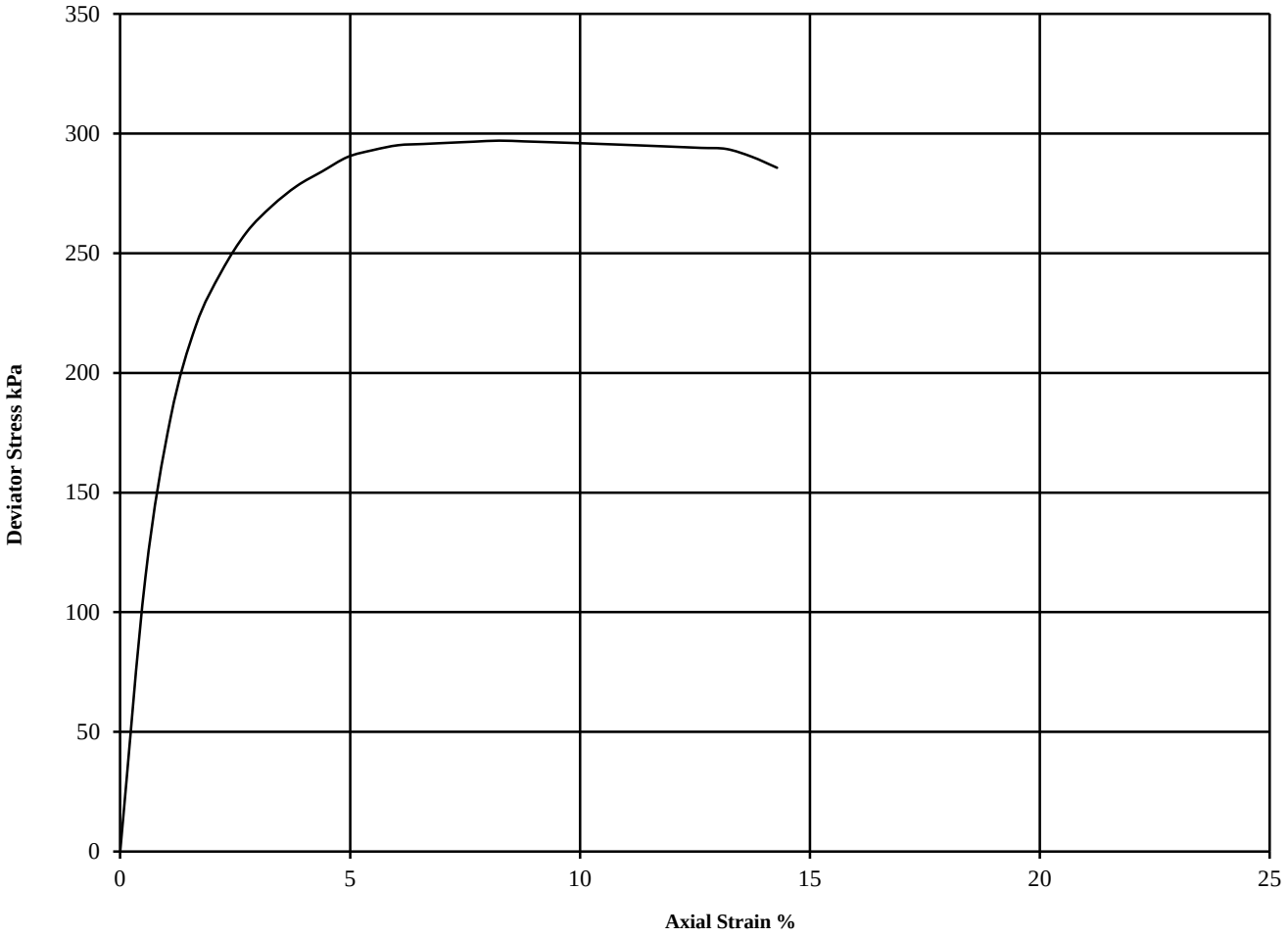
WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 8

Hole Number: **TBH1** **Top Depth (m):** **27.54**

Sample Number: **Base Depth (m):**

Sample Type **U**



Diameter (mm):		100.0	Height (mm):		182.0	Test:	UU Single Stage		Remarks:
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa) θ_3	Corr. Max. Deviator Stress (kPa) $(\theta_1-\theta_3)_f$	Shear Strength Cu (kPa) $^1/_2(\theta_1-\theta_3)_f$	Failure Strain (%)	Mode of Failure	Undisturbed Sample Sample taken from top of tube Rate of strain = 2 %/min Latex Membrane used 0.2 mm thick, Correction applied 0.36
1	20	2.07	1.72	551	297	149	8.2	Brittle	See summary of soil descriptions

UKAS TESTING 4043

PSL Professional Soils Laboratory

Harefield Road, Uxbridge

Contract No: **PSL17/5213**

Client Ref: **TE1044**

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

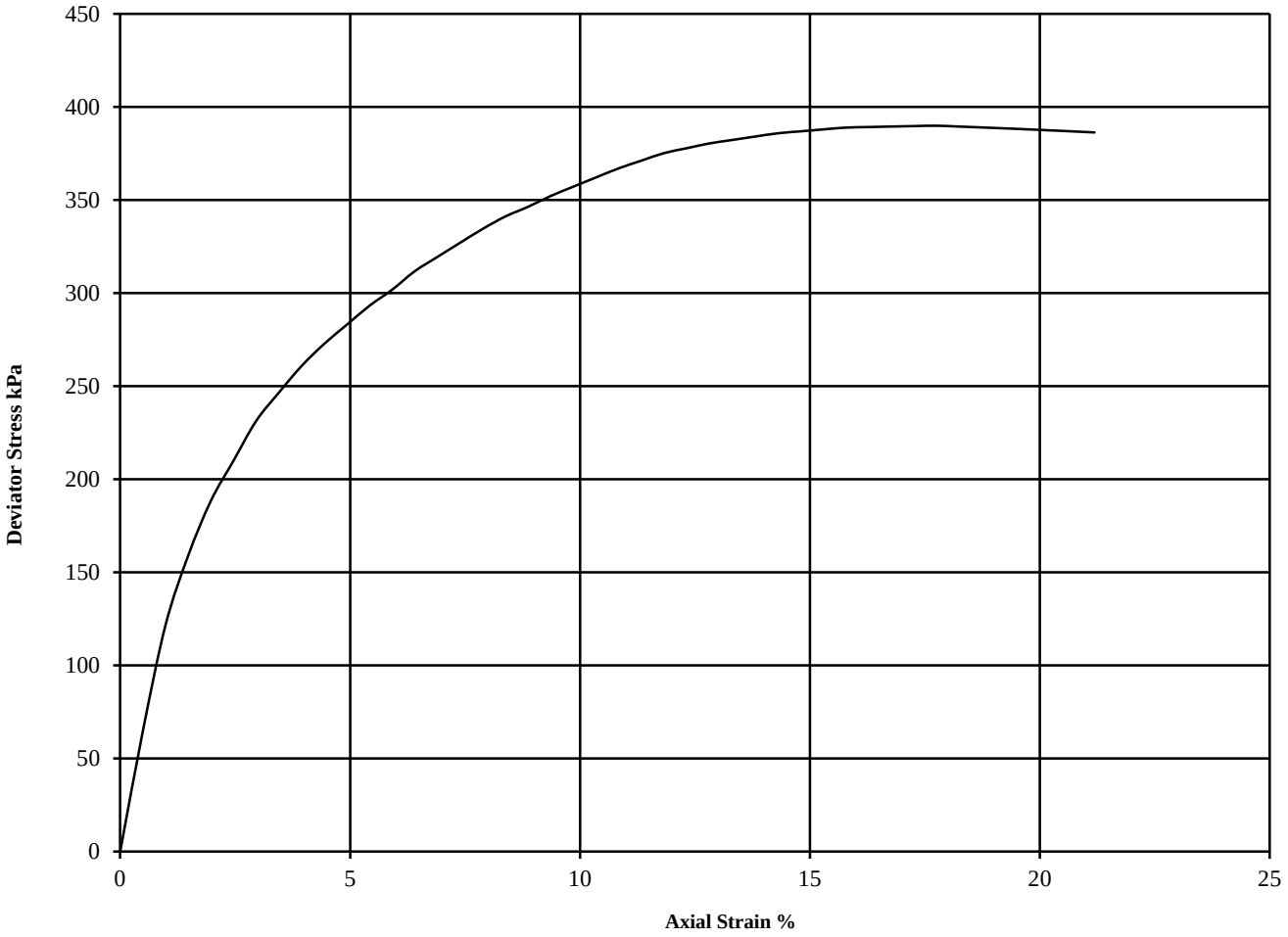
WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 8

Hole Number: **TBH2** **Top Depth (m):** **12.50**

Sample Number: **Base Depth (m):**

Sample Type **U**



Diameter (mm):		102.0	Height (mm):		207.0	Test:	UU Single Stage		Remarks:
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa) θ_3	Corr. Max. Deviator Stress (kPa) $(\theta_1-\theta_3)_f$	Shear Strength Cu (kPa) $^1/_2(\theta_1-\theta_3)_f$	Failure Strain (%)	Mode of Failure	Undisturbed Sample Sample taken from top of tube Rate of strain = 2 %/min Latex Membrane used 0.2 mm thick, Correction applied 0.34
1	21	2.10	1.74	250	390	195	17.7	Intermediate	See summary of soil descriptions

UKAS TESTING 4043

PSL Professional Soils Laboratory

Harefield Road, Uxbridge

Contract No: **PSL17/5213**

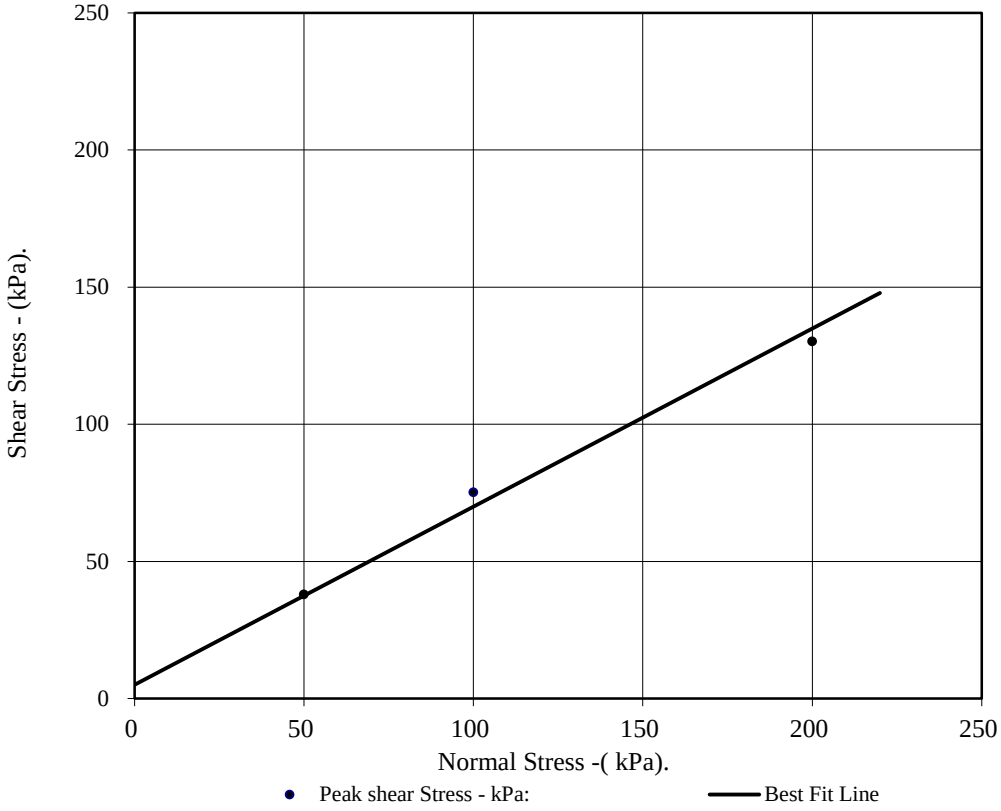
Client Ref: **TE1044**

CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4.5.4

Hole Number:	**TBH3**		Top Depth:	**23.50**
Sample Number:			Base Depth:	**25.00**
Sample Conditions:	Submerged		Sample Type	**B**
Particle Density - Mg/m3:	2.65	Assumed	**Remarks:**	
Sample Preparation:	Remoulded using hand tamped effort. Material tested passing 2mm sieve			
Sample Description:	**Brown slightly gravelly sandy clayey SILT.**			

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	24.51	24.51	24.51
Length - mm:	60.01	60.01	60.01
Moisture Content - %:	24	24	24
Bulk Density - Mg/m3:	2.04	2.05	2.05
Dry Density - Mg/m3:	1.65	1.65	1.66
Voids Ratio:	0.610	0.602	0.601
Normal Pressure- kPa	50	100	200
Consolidation Stage			
Consolidated Height - mm:	23.23	23.19	22.90
Shearing Stage			
Rate of Strain (mm/min)	0.600	0.600	0.600
Displacement at peak shear stress (mm)	4.00	4.00	8.00
Peak shear Stress - kPa:	38	75	130
Final Consolidated Conditons			
Moisture Content - %:	22	21	20
Bulk Density - Mg/m3:	2.15	2.16	2.19
Dry Density - Mg/m3:	1.76	1.80	1.83
Peak			
Angle of Shearing Resistance:(~~θ~~)	**33**		
Effective Cohesion - kPa:	**5**		

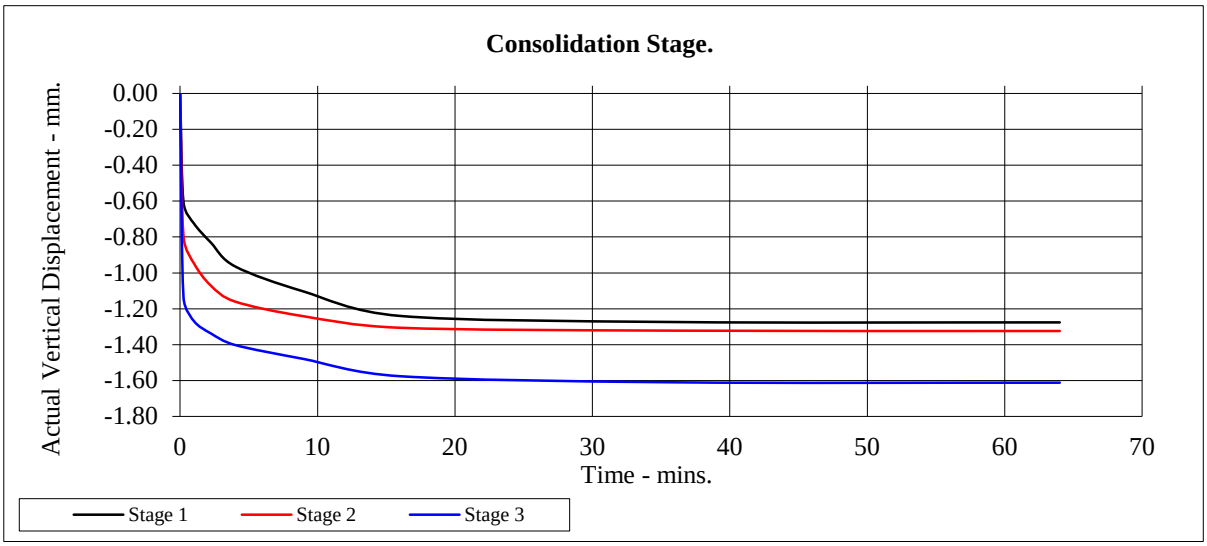


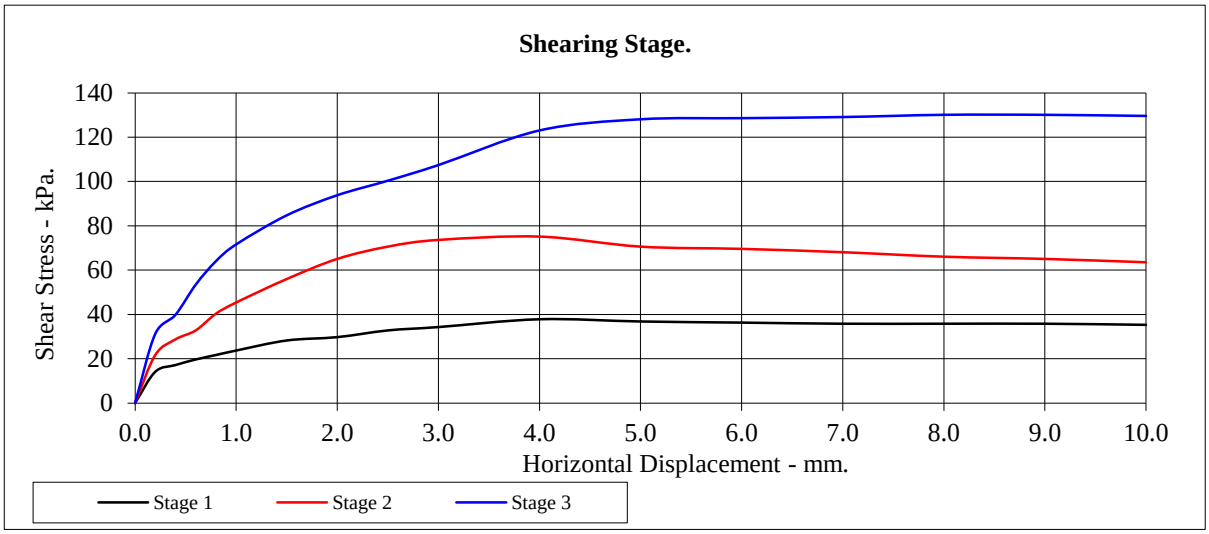
UKAS TESTING 4043	PSL Professional Soils Laboratory	**Harefield Road, Uxbridge**	**Contract No:** **PSL17/5213** **Client Ref:** **TE1044**

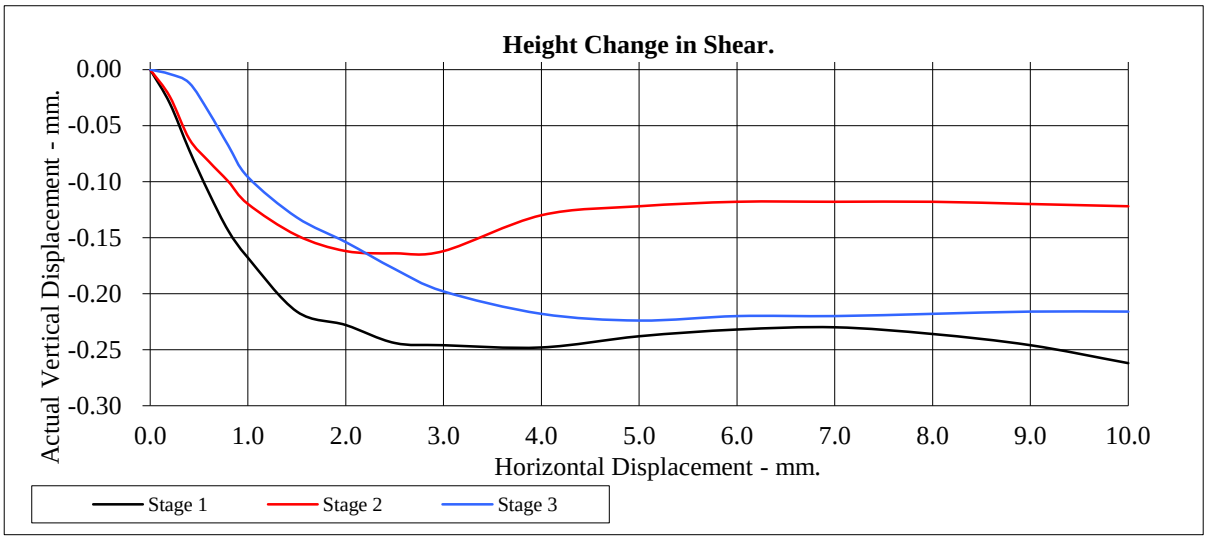
CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4.5.4

Hole Number:	**TBH3**	Top Depth:	**23.50**
Sample Number:		Base Depth:	**25.00**







UKAS TESTING 4043 / PSL Professional Soils Laboratory	**Harefield Road, Uxbridge**	**Contract No:** PSL17/5213 **Client Ref:** TE1044

Certificate of Analysis

Certificate Number 17-14146

02-Nov-17

Client Professional Soils Laboratory Ltd
5/7 Hexthorpe Road
Hexthorpe
DN4 0AR

Our Reference 17-14146

Client Reference PSL17/5213

Order No (not supplied)

Contract Title C Jones

Description 13 Soil samples.

Date Received 28-Oct-17

Date Started 28-Oct-17

Date Completed 02-Nov-17

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Adam Fenwick
Contracts Manager

UKAS TESTING
2139

Summary of Chemical Analysis
Soil Samples

Our Ref 17-14146
Client Ref PSL17/5213
Contract Title C Jones

			Lab No	1249803	1249804	1249805	1249806	1249807	1249808	1249809	1249810	1249811	1249812	1249813
			Sample ID	TBH1	TBH1	TBH2	TBH2	TBH3	TBH3	TBH2	TBH1	TBH1	TBH2	TBH2
			Depth	12.50	15.60	23.44	29.04	19.00	27.58	9.50-10.50	10.00	23.15	17.90	25.20
			Other ID											
			Sample Type	U	U	U	U	U	U	B	D	D	D	D
			Sampling Date	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**											
Metals														
Magnesium Aqueous Extract	DETSC 2076*	10	mg/l	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Inorganics														
pH	DETSC 2008#			8.8	9.0	8.7	8.8	8.7	9.1	8.1	9.0	8.7	8.8	8.5
Chloride Aqueous Extract	DETSC 2055	1	mg/l	7.2	2.4	4.1	11	3.2	7.9	3.5	3.5	3.7	4.6	7.4
Nitrate Aqueous Extract as NO3	DETSC 2055	1	mg/l	1.1	< 1.0	3.7	< 1.0	< 1.0	1.2	< 1.0	< 1.0	< 1.0	1.1	< 1.0
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	14	< 10	18	19	18	18	13	17	21	72	21
Sulphur as S, Total	DETSC 2320	0.01	%	< 0.01	< 0.01	< 0.01	0.65	0.01	0.06	0.77	0.02	0.02	< 0.01	< 0.01
Sulphate as SO4, Total	DETSC 2321#	0.01	%	0.02	0.02	0.02	0.07	0.02	0.04	0.15	0.05	0.03	0.01	0.03

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 17-14146
Client Ref PSL17/5213
Contract Title C Jones

			Lab No	1249814	1249815
			Sample ID	TBH1	TBH3
			Depth	21.50	28.53
			Other ID		
			Sample Type	D	D
			Sampling Date	n/s	n/s
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
Metals					
Magnesium Aqueous Extract	DETSC 2076*	10	mg/l	< 10	< 10
Inorganics					
pH	DETSC 2008#			8.6	8.9
Chloride Aqueous Extract	DETSC 2055	1	mg/l	210	1.4
Nitrate Aqueous Extract as NO3	DETSC 2055	1	mg/l	6.4	< 1.0
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	19	42
Sulphur as S, Total	DETSC 2320	0.01	%	0.01	0.36
Sulphate as SO4, Total	DETSC 2321#	0.01	%	0.03	0.10

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Information in Support of the Analytical Results

Our Ref 17-14146
Client Ref PSL17/5213
Contract C Jones

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1249803	TBH1 12.50 SOIL		PT 500ml	Sample date not supplied, Anions 2:1 (365 days), Total Sulphur ICP (365 days), Total Sulphate ICP (730 days), Metals ICP Prep (365 days), pH + Conductivity (7 days)	
1249804	TBH1 15.60 SOIL		PT 500ml	Sample date not supplied, Anions 2:1 (365 days), Total Sulphur ICP (365 days), Total Sulphate ICP (730 days), Metals ICP Prep (365 days), pH + Conductivity (7 days)	
1249805	TBH2 23.44 SOIL		PT 500ml	Sample date not supplied, Anions 2:1 (365 days), Total Sulphur ICP (365 days), Total Sulphate ICP (730 days), Metals ICP Prep (365 days), pH + Conductivity (7 days)	
1249806	TBH2 29.04 SOIL		PT 500ml	Sample date not supplied, Anions 2:1 (365 days), Total Sulphur ICP (365 days), Total Sulphate ICP (730 days), Metals ICP Prep (365 days), pH + Conductivity (7 days)	
1249807	TBH3 19.00 SOIL		PT 500ml	Sample date not supplied, Anions 2:1 (365 days), Total Sulphur ICP (365 days), Total Sulphate ICP (730 days), Metals ICP Prep (365 days), pH + Conductivity (7 days)	
1249808	TBH3 27.58 SOIL		PT 500ml	Sample date not supplied, Anions 2:1 (365 days), Total Sulphur ICP (365 days), Total Sulphate ICP (730 days), Metals ICP Prep (365 days), pH + Conductivity (7 days)	
1249809	TBH2 9.50-10.50 SOIL		PT 500ml	Sample date not supplied, Anions 2:1 (365 days), Total Sulphur ICP (365 days), Total Sulphate ICP (730 days), Metals ICP Prep (365 days), pH + Conductivity (7 days)	
1249810	TBH1 10.00 SOIL		PT 500ml	Sample date not supplied, Anions 2:1 (365 days), Total Sulphur ICP (365 days), Total Sulphate ICP (730 days), Metals ICP Prep (365 days), pH + Conductivity (7 days)	
1249811	TBH1 23.15 SOIL		PT 500ml	Sample date not supplied, Anions 2:1 (365 days), Total Sulphur ICP (365 days), Total Sulphate ICP (730 days), Metals ICP Prep (365 days), pH + Conductivity (7 days)	
1249812	TBH2 17.90 SOIL		PT 500ml	Sample date not supplied, Anions 2:1 (365 days), Total Sulphur ICP (365 days), Total Sulphate ICP (730 days), Metals ICP Prep (365 days), pH + Conductivity (7 days)	
1249813	TBH2 25.20 SOIL		PT 500ml	Sample date not supplied, Anions 2:1 (365 days), Total Sulphur ICP (365 days), Total Sulphate ICP (730 days), Metals ICP Prep (365 days), pH + Conductivity (7 days)	
1249814	TBH1 21.50 SOIL		PT 500ml	Sample date not supplied, Anions 2:1 (365 days), Total Sulphur ICP (365 days), Total Sulphate ICP (730 days), Metals ICP Prep (365 days), pH + Conductivity (7 days)	

Information in Support of the Analytical Results

Our Ref 17-14146
Client Ref PSL17/5213
Contract C Jones

1249815	TBH3 28.53 SOIL		PT 500ml	Sample date not supplied, Anions 2:1 (365 days), Total Sulphur ICP (365 days), Total Sulphate ICP (730 days), Metals ICP Prep (365 days), pH + Conductivity (7 days)	

Key: P-Plastic T-Tub

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

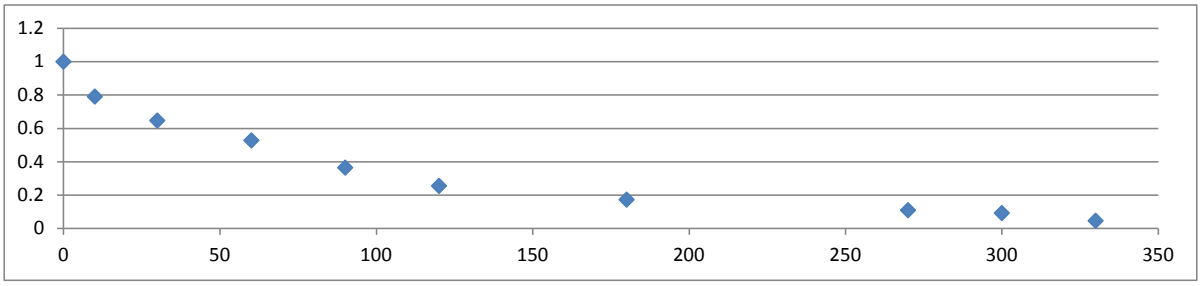
Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

VARIABLE HEAD PERMEABILITY TEST IN BOREHOLE

BOREHOLE No.:	WS203	TEST No.:	1				
	DEPTH (m)	2.00	DATE	30/07/2020	SHEET	1	



Time Elapsed (secs)	Depth of water below top of casing - d_t (m)	h (m) - (d_1-d_t)	h_1/h_0
0	0.9	1.1	1
10	1.13	0.87	0.79090909
30	1.29	0.71	0.64545455
60	1.42	0.58	0.52727273
90	1.6	0.4	0.36363636
120	1.72	0.28	0.25454545
180	1.81	0.19	0.17272727
270	1.88	0.12	0.10909091
300	1.9	0.1	0.09090909
330	1.95	0.05	0.04545455

Test Section Depth	m	2	
Borehole Depth	m	2	
Borehole Diameter	m	0.1	
Casing Depth	m	1	
Depth to Standing Water Level (d_1)	Assumed m	5	
Height of casing agl (h_c)	m	0	
Height of top of casing above water table	m	5	
Depth to Water at Start of Test below casing level (d_0)	m	0	
Depth to Water at End of Test below casing level	m	2	
Depth to Filter at Start of Test	m		
Depth to Filter at End of Test	m		
Response Zone Length	m	1	
Borehole Diameter in Test Section	m	0.1	
Cross-sectional Area of Borehole	m2	0.0079	
Intake factor (BS5930 p51):	Figure 7 (F) =	2.37	
Basic Time Lag = (T) t_1=	0.00	$s.h_1$ =	1.00
t_2=	330.00	$s.h_2$ =	0.05
Coefficient of Permeability (k) ms-1 =			3.10E-05

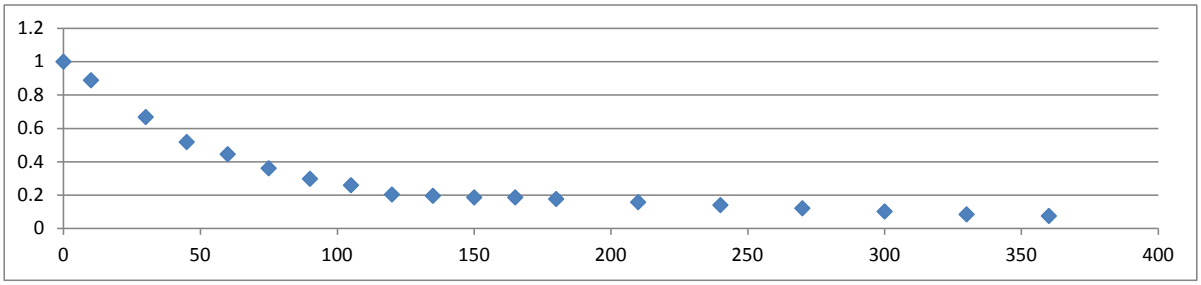
Remarks	Test performed within installed well.			
Compiled By	SM	Date	30/07/2020	
Checked By	SL	Date	30/07/2020	
Geology of Test Section:	Very dense light brown very sandy subangular to rounded fine to coarse GRAVEL of flint. (LYNCH HILL MEMBER)			

Tier Environmental Ltd
Chadwick House
Birchwood Park
Warrington, WA3 6AE
Tel. 01925 818 388

Project Number	TL1306
Project Name	Guild Living, Uxbridge
Client	Cast Real Estate & Construction Consultancy

VARIABLE HEAD PERMEABILITY TEST IN BOREHOLE

BOREHOLE No.:	WS203	TEST No.:	2				
	DEPTH (m)	2.00	DATE	30/07/2020	SHEET	1	



Time Elapsed (secs)	Depth of water below top of casing - d_t (m)	h (m) - (d_1-d_t)	h_1/h_0
0	0.92	1.08	1
10	1.04	0.96	0.88888889
30	1.28	0.72	0.66666667
45	1.44	0.56	0.51851852
60	1.52	0.48	0.44444444
75	1.61	0.39	0.36111111
90	1.68	0.32	0.2962963
105	1.72	0.28	0.25925926
120	1.78	0.22	0.2037037
135	1.79	0.21	0.19444444
150	1.8	0.2	0.18518519
165	1.8	0.2	0.18518519
180	1.81	0.19	0.17592593
210	1.83	0.17	0.15740741
240	1.85	0.15	0.13888889
270	1.87	0.13	0.12037037
300	1.89	0.11	0.10185185
330	1.91	0.09	0.08333333
360	1.92	0.08	0.07407407

Test Section Depth	m	2	
Borehole Depth	m	2	
Borehole Diameter	m	0.1	
Casing Depth	m	1	
Depth to Standing Water Level (d_1)	Assumed m	5	
Height of casing agl (h_c)	m	0	
Height of top of casing above water table	m	5	
Depth to Water at Start of Test below casing level (d_0)	m	0	
Depth to Water at End of Test below casing level	m	2	
Depth to Filter at Start of Test	m		
Depth to Filter at End of Test	m		
Response Zone Length	m	1	
Borehole Diameter in Test Section	m	0.1	
Cross-sectional Area of Borehole	m2	0.0079	
Intake factor (BS5930 p51):	Figure 7 (F) =	2.37	
Basic Time Lag = (T) t_1=	0.00	$s.h_1$ =	1.00
t_2=	360.00	$s.h_2$ =	0.07
Coefficient of Permeability (k) ms-1 =			2.39E-05

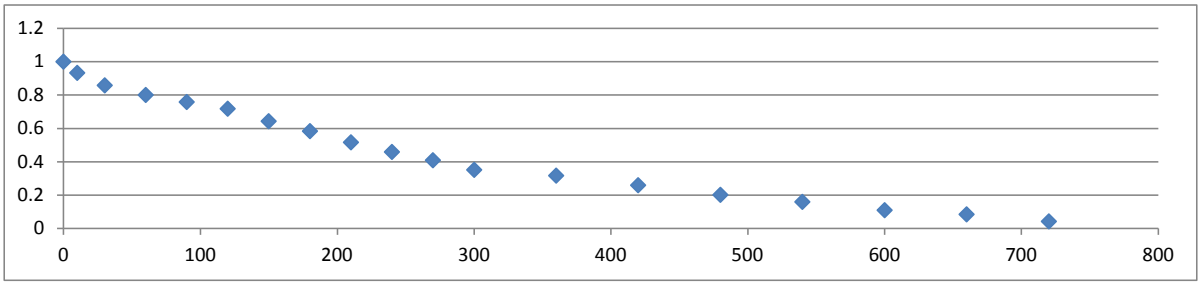
Remarks	Test performed within installed well			
Compiled By	SM	Date	30/07/2020	
Checked By	SL	Date	30/07/2020	
Geology of Test Section:	Very dense light brown very sandy subangular to rounded fine to coarse GRAVEL of flint. (LYNCH HILL MEMBER)			

Tier Environmental Ltd
Chadwick House
Birchwood Park
Warrington, WA3 6AE
Tel. 01925 818 388

Project Number	TL1306
Project Name	Guild Living, Uxbridge
Client	Cast Real Estate & Construction Consultancy

VARIABLE HEAD PERMEABILITY TEST IN BOREHOLE

BOREHOLE No.:	WS203	TEST No.:	3			
	DEPTH (m)	2.00	DATE	30/07/2020	SHEET	1



Time Elapsed (secs)	Depth of water below top of casing - d_t (m)	h (m) - (d_1-d_t)	h_1/h_0
0	0.8	1.2	1
10	0.88	1.12	0.93333333
30	0.97	1.03	0.85833333
60	1.04	0.96	0.8
90	1.09	0.91	0.75833333
120	1.14	0.86	0.71666667
150	1.23	0.77	0.64166667
180	1.3	0.7	0.58333333
210	1.38	0.62	0.51666667
240	1.45	0.55	0.45833333
270	1.51	0.49	0.40833333
300	1.58	0.42	0.35
360	1.62	0.38	0.31666667
420	1.69	0.31	0.25833333
480	1.76	0.24	0.2
540	1.81	0.19	0.15833333
600	1.87	0.13	0.10833333
660	1.9	0.1	0.08333333
720	1.95	0.05	0.04166667

Test Section Depth	m	2	
Borehole Depth	m	2	
Borehole Diameter	m	0.1	
Casing Depth	m	1	
Depth to Standing Water Level (d_1)	Assumed m	5	
Height of casing agl (h_c)	m	0	
Height of top of casing above water table	m	5	
Depth to Water at Start of Test below casing level (d_0)	m	0	
Depth to Water at End of Test below casing level	m	2	
Depth to Filter at Start of Test	m		
Depth to Filter at End of Test	m		
Response Zone Length	m	1	
Borehole Diameter in Test Section	m	0.1	
Cross-sectional Area of Borehole	m2	0.0079	
Intake factor (BS5930 p51):	Figure 7 (F) =	2.37	
Basic Time Lag = (T) t_1=	0.00	$s.h_1$ =	1.00
t_2=	720.00	$s.h_2$ =	0.04
Coefficient of Permeability (k) ms-1 =			1.46E-05

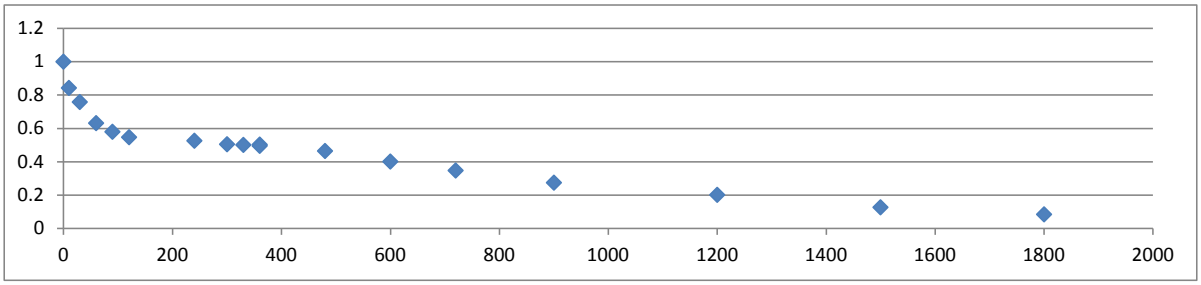
Remarks	Test performed within installed well		
Compiled By	SM	Date	30/07/2020
Checked By	SL	Date	30/07/2020
Geology of Test Section:	Very dense light brown very sandy subangular to rounded fine to coarse GRAVEL of flint. (LYNCH HILL MEMBER)		

Tier Environmental Ltd
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Tel. 01925 818 388

Project Number	TL1306
Project Name	Guild Living, Uxbridge
Client	Cast Real Estate & Construction Consultancy

VARIABLE HEAD PERMEABILITY TEST IN BOREHOLE

BOREHOLE No.:	WS201	TEST No.:	1				
	DEPTH (m)	2.00	DATE	30/07/2020	SHEET	1	



Time Elapsed (secs)	Depth of water below top of casing - d_t (m)	h (m) - (d_1-d_t)	h_1/h_0
0	1.05	0.95	1
10	1.2	0.8	0.84210526
30	1.28	0.72	0.75789474
60	1.4	0.6	0.63157895
90	1.45	0.55	0.57894737
120	1.48	0.52	0.54736842
240	1.5	0.5	0.52631579
300	1.52	0.48	0.50526316
360	1.522	0.478	0.50315789
330	1.525	0.475	0.5
360	1.53	0.47	0.49473684
480	1.56	0.44	0.46315789
600	1.62	0.38	0.4
720	1.67	0.33	0.34736842
900	1.74	0.26	0.27368421
1200	1.81	0.19	0.2
1500	1.88	0.12	0.12631579
1800	1.92	0.08	0.08421053

Test Section Depth	m	2	
Borehole Depth	m	2	
Borehole Diameter	m	0.1	
Casing Depth	m	1	
Depth to Standing Water Level (d_1)	Assumed m	5	
Height of casing agl (h_c)	m	0	
Height of top of casing above water table	m	5	
Depth to Water at Start of Test below casing level (d_0)	m	0	
Depth to Water at End of Test below casing level	m	2	
Depth to Filter at Start of Test	m		
Depth to Filter at End of Test	m		
Response Zone Length	m	1	
Borehole Diameter in Test Section	m	0.1	
Cross-sectional Area of Borehole	m2	0.0079	
Intake factor (BS5930 p51):	Figure 7 (F) =	2.37	
Basic Time Lag = (T) t_1=	30.00	$s.h_1$ =	0.76
t_2=	1800.00	$s.h_2$ =	0.08
Coefficient of Permeability (k) ms-1 =			4.11E-06

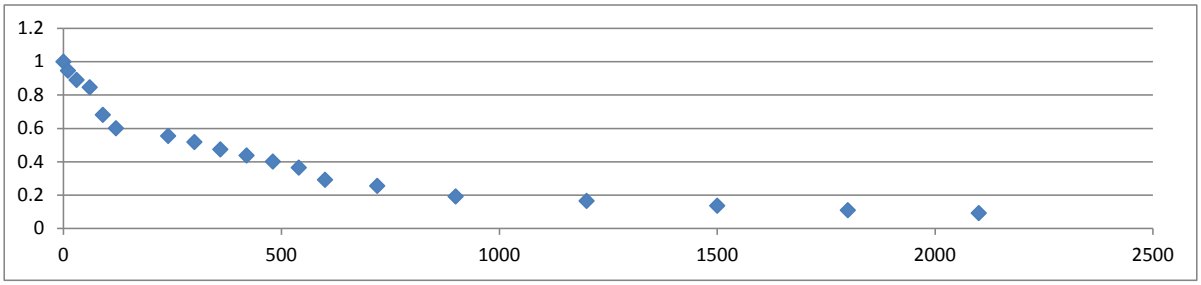
Remarks	Test performed within installed well			
Compiled By	SM	Date	30/07/2020	
Checked By	SL	Date	30/07/2020	
Geology of Test Section:	Very dense light brown very sandy subangular to rounded fine to coarse GRAVEL of flint. (LYNCH HILL MEMBER)			

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Project Number	TL1306
Project Name	Guild Living, Uxbridge
Client	Cast Real Estate & Construction Consultancy

VARIABLE HEAD PERMEABILITY TEST IN BOREHOLE

BOREHOLE No.:	WS201	TEST No.:	2				
	DEPTH (m)	2.00	DATE	30/07/2020	SHEET	1	



Time Elapsed (secs)	Depth of water below top of casing - d_t (m)	h (m) - (d_1-d_t)	h_1/h_0
0	0.9	1.1	1
10	0.96	1.04	0.94545455
30	1.02	0.98	0.89090909
60	1.07	0.93	0.84545455
90	1.25	0.75	0.68181818
120	1.34	0.66	0.6
240	1.39	0.61	0.55454545
300	1.43	0.57	0.51818182
360	1.48	0.52	0.47272727
420	1.52	0.48	0.43636364
480	1.56	0.44	0.4
540	1.6	0.4	0.36363636
600	1.68	0.32	0.29090909
720	1.72	0.28	0.25454545
900	1.79	0.21	0.19090909
1200	1.82	0.18	0.16363636
1500	1.85	0.15	0.13636364
1800	1.88	0.12	0.10909091
2100	1.9	0.1	0.09090909

Test Section Depth	m	2	
Borehole Depth	m	2	
Borehole Diameter	m	0.1	
Casing Depth	m	1	
Depth to Standing Water Level (d_1)	Assumed m	5	
Height of casing agl (h_c)	m	0	
Height of top of casing above water table	m	5	
Depth to Water at Start of Test below casing level (d_0)	m	0	
Depth to Water at End of Test below casing level	m	2	
Depth to Filter at Start of Test	m		
Depth to Filter at End of Test	m		
Response Zone Length	m	1	
Borehole Diameter in Test Section	m	0.1	
Cross-sectional Area of Borehole	m2	0.0079	
Intake factor (BS5930 p51):	Figure 7 (F) =	2.37	
Basic Time Lag = (T) t_1=	0.00	$s.h_1$ =	1.00
t_2=	2100.00	$s.h_2$ =	0.09
Coefficient of Permeability (k) ms-1 =			3.78E-06

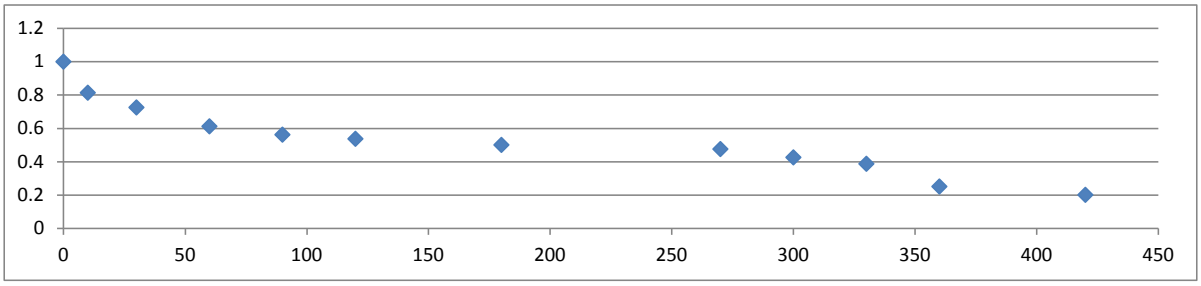
Remarks	Test performed within installed well			
Compiled By	SM	Date	30/07/2020	
Checked By	SL	Date	30/07/2020	
Geology of Test Section:	Very dense light brown very sandy subangular to rounded fine to coarse GRAVEL of flint. (LYNCH HILL MEMBER)			

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Project Number	TL1306
Project Name	Guild Living, Uxbridge
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VARIABLE HEAD PERMEABILITY TEST IN BOREHOLE

BOREHOLE No.:	TWS11	TEST No.:	1			
	DEPTH (m)	1.30	DATE	30/07/2020	SHEET	1



Time Elapsed (secs)	Depth of water below top of casing - d_t (m)	h (m) - (d_1-d_t)	h_1/h_0
0	0.5	0.8	1
10	0.65	0.65	0.8125
30	0.72	0.58	0.725
60	0.81	0.49	0.6125
90	0.85	0.45	0.5625
120	0.87	0.43	0.5375
180	0.9	0.4	0.5
270	0.92	0.38	0.475
300	0.96	0.34	0.425
330	0.99	0.31	0.3875
360	1.1	0.2	0.25
420	1.14	0.16	0.2

Test Section Depth	m	1.3	
Borehole Depth	m	1.3	
Borehole Diameter	m	0.05	
Casing Depth	m	0.4	
Depth to Standing Water Level (d_1)	Assumed m	5	
Height of casing agl (h_c)	m	0	
Height of top of casing above water table	m	5	
Depth to Water at Start of Test below casing level (d_0)	m	0	
Depth to Water at End of Test below casing level	m	1.14	
Depth to Filter at Start of Test	m		
Depth to Filter at End of Test	m		
Response Zone Length	m	0.8	
Borehole Diameter in Test Section	m	0.1	
Cross-sectional Area of Borehole	m2	0.0079	
Intake factor (BS5930 p51):	Figure 7 (F) =	2.05	
Basic Time Lag = (T) t_1=	0.00	$s.h_1$ =	1.00
t_2=	420.00	$s.h_2$ =	0.20
Coefficient of Permeability (k) ms-1 =			1.47E-05

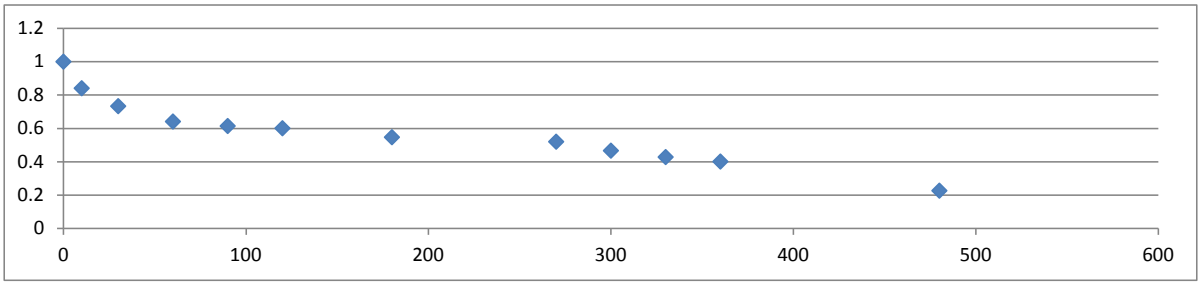
Remarks	Borehole cleaned out prior to test.			
Compiled By	SM	Date	30/07/2020	
Checked By	SL	Date	30/07/2020	
Geology of Test Section:	Orange brown to light brown clayey sandy GRAVEL of subangular to rounded fine to coarse flint. (LYNCH HILL GRAVEL MEMBER)			

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Project Number	TL1306
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VARIABLE HEAD PERMEABILITY TEST IN BOREHOLE

BOREHOLE No.:	TWS11	TEST No.:	2			
	DEPTH (m)	1.30	DATE	30/07/2020	SHEET	1



Time Elapsed (secs)	Depth of water below top of casing - d_t (m)	h (m) - (d_1-d_t)	h_t/h_0
0	0.55	0.75	1
10	0.67	0.63	0.84
30	0.75	0.55	0.73333333
60	0.82	0.48	0.64
90	0.84	0.46	0.61333333
120	0.85	0.45	0.6
180	0.89	0.41	0.54666667
270	0.91	0.39	0.52
300	0.95	0.35	0.46666667
330	0.98	0.32	0.42666667
360	1	0.3	0.4
480	1.13	0.17	0.22666667

Test Section Depth	m	1.3	
Borehole Depth	m	1.3	
Borehole Diameter	m	0.05	
Casing Depth	m	0.4	
Depth to Standing Water Level (d_1)	Assumed m	5	
Height of casing agl (h_c)	m	0	
Height of top of casing above water table	m	5	
Depth to Water at Start of Test below casing level (d_0)	m	0	
Depth to Water at End of Test below casing level	m	1.13	
Depth to Filter at Start of Test	m		
Depth to Filter at End of Test	m		
Response Zone Length	m	0.8	
Borehole Diameter in Test Section	m	0.1	
Cross-sectional Area of Borehole	m2	0.0079	
Intake factor (BS5930 p51):	Figure 7 (F) =	2.05	
Basic Time Lag = (T) t_1=	0.00	$s.h_1$ =	1.00
t_2=	480.00	$s.h_2$ =	0.23
Coefficient of Permeability (k) ms-1 =			1.18E-05

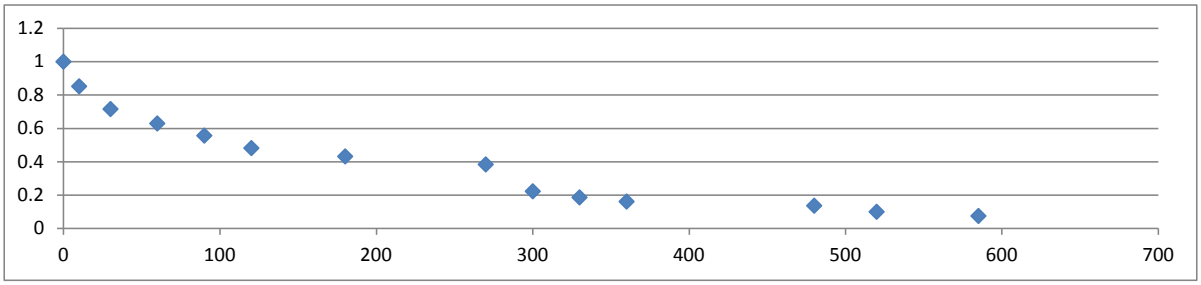
Remarks	Borehole cleaned out prior to test.
Compiled By	SM
Date	30/07/2020
Checked By	SL
Date	30/07/2020
Geology of Test Section:	Orange brown to light brown clayey sandy GRAVEL of subangular to rounded fine to coarse flint. (LYNCH HILL GRAVEL MEMBER)

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Project Number	TL1306
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Client	Cast Real Estate & Construction Consultancy

VARIABLE HEAD PERMEABILITY TEST IN BOREHOLE

BOREHOLE No.:	TWS11	TEST No.:	3				
	DEPTH (m)	1.30	DATE	30/07/2020	SHEET	1	



Time Elapsed (secs)	Depth of water below top of casing - d_t (m)	h (m) - (d_1-d_t)	h_1/h_0
0	0.49	0.81	1
10	0.61	0.69	0.85185185
30	0.72	0.58	0.71604938
60	0.79	0.51	0.62962963
90	0.85	0.45	0.55555556
120	0.91	0.39	0.48148148
180	0.95	0.35	0.43209877
270	0.99	0.31	0.38271605
300	1.12	0.18	0.22222222
330	1.15	0.15	0.18518519
360	1.17	0.13	0.16049383
480	1.19	0.11	0.13580247
520	1.22	0.08	0.09876543
585	1.24	0.06	0.07407407

Test Section Depth	m	1.3		
Borehole Depth	m	1.3		
Borehole Diameter	m	0.05		
Casing Depth	m	0.4		
Depth to Standing Water Level (d_1)	Assumed m	5		
Height of casing agl (h_c)	m	0		
Height of top of casing above water table	m	5		
Depth to Water at Start of Test below casing level (d_0)	m	0		
Depth to Water at End of Test below casing level	m	1.24		
Depth to Filter at Start of Test	m			
Depth to Filter at End of Test	m			
Response Zone Length	m	0.8		
Borehole Diameter in Test Section	m	0.1		
Cross-sectional Area of Borehole	m2	0.0079		
Intake factor (BS5930 p51):	Figure 7 (F) =	2.05		
Basic Time Lag = (T) t_1=	0.00	$s.h_1$ =	1.00	
t_2=	585.00	$s.h_2$ =	0.07	
Coefficient of Permeability (k) ms-1 =			1.70E-05	

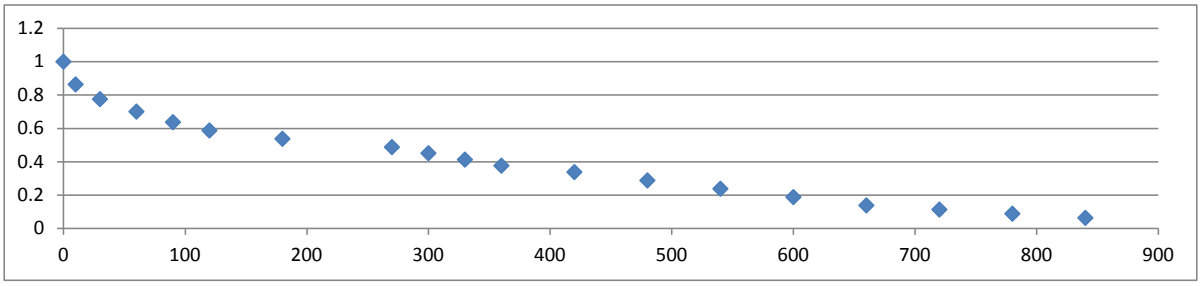
Remarks	Borehole cleaned out prior to test.				
Compiled By	SM	Date	30/07/2020		
Checked By	SL	Date	30/07/2020		
Geology of Test Section:	Orange brown to light brown clayey sandy GRAVEL of subangular to rounded fine to coarse flint. (LYNCH HILL GRAVEL MEMBER)				

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Project Number	TL1306
Project Name	Guild Living, Uxbridge
Client	Cast Real Estate & Construction Consultancy

VARIABLE HEAD PERMEABILITY TEST IN BOREHOLE

BOREHOLE No.:	TWS09	TEST No.:	1			
	DEPTH (m)	1.20	DATE	29/07/2020	SHEET	1



Time Elapsed (secs)	Depth of water below top of casing - d_t (m)	h (m) - (d_1-d_t)	h_1/h_0
0	0.4	0.8	1
10	0.51	0.69	0.8625
30	0.58	0.62	0.775
60	0.64	0.56	0.7
90	0.69	0.51	0.6375
120	0.73	0.47	0.5875
180	0.77	0.43	0.5375
270	0.81	0.39	0.4875
300	0.84	0.36	0.45
330	0.87	0.33	0.4125
360	0.9	0.3	0.375
420	0.93	0.27	0.3375
480	0.97	0.23	0.2875
540	1.01	0.19	0.2375
600	1.05	0.15	0.1875
660	1.09	0.11	0.1375
720	1.11	0.09	0.1125
780	1.13	0.07	0.0875
840	1.15	0.05	0.0625

Test Section Depth	m	1.2	
Borehole Depth	m	1.2	
Borehole Diameter	m	0.1	
Casing Depth	m	0.4	
Depth to Standing Water Level (d_1)	Assumed m	5	
Height of casing agl (h_c)	m	0	
Height of top of casing above water table	m	5	
Depth to Water at Start of Test below casing level (d_0)	m	0	
Depth to Water at End of Test below casing level	m	0.93	
Depth to Filter at Start of Test	m		
Depth to Filter at End of Test	m		
Response Zone Length	m	0.8	
Borehole Diameter in Test Section	m	0.1	
Cross-sectional Area of Borehole	m2	0.0079	
Intake factor (BS5930 p51):	Figure 7 (F) =	2.05	
Basic Time Lag = (T) t_1=	0.00	$s.h_1$ =	1.00
t_2=	840.00	$s.h_2$ =	0.06
Coefficient of Permeability (k) ms-1 =			1.26E-05

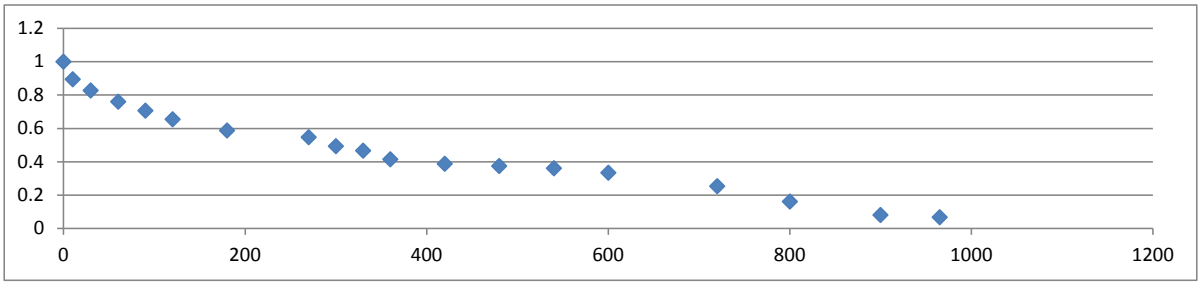
Remarks	Borehole cleaned out prior to test.			
Compiled By	SM	Date	29/07/2020	
Checked By	SL	Date	29/07/2020	
Geology of Test Section:	Orange brown to light brown clayey sandy GRAVEL of subangular to rounded fine to coarse flint. (LYNCH HILL GRAVEL MEMBER)			

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Project Number	TL1306
Project Name	Guild Living, Uxbridge
Client	Cast Real Estate & Construction Consultancy

VARIABLE HEAD PERMEABILITY TEST IN BOREHOLE

BOREHOLE No.:	TWS09	TEST No.:	2			
	DEPTH (m)	1.20	DATE	29/07/2020	SHEET	2



Time Elapsed (secs)	Depth of water below top of casing - d_t (m)	h (m) - (d_1-d_t)	h_1/h_0
0	0.45	0.75	1
10	0.53	0.67	0.89333333
30	0.58	0.62	0.82666667
60	0.63	0.57	0.76
90	0.67	0.53	0.70666667
120	0.71	0.49	0.65333333
180	0.76	0.44	0.58666667
270	0.79	0.41	0.54666667
300	0.83	0.37	0.49333333
330	0.85	0.35	0.46666667
360	0.89	0.31	0.41333333
420	0.91	0.29	0.38666667
480	0.92	0.28	0.37333333
540	0.93	0.27	0.36
600	0.95	0.25	0.33333333
720	1.01	0.19	0.25333333
800	1.08	0.12	0.16
900	1.14	0.06	0.08
965	1.15	0.05	0.06666667

Test Section Depth	m	1.2	
Borehole Depth	m	1.2	
Borehole Diameter	m	0.1	
Casing Depth	m	0.4	
Depth to Standing Water Level (d_1)	Assumed m	5	
Height of casing agl (h_c)	m	0	
Height of top of casing above water table	m	5	
Depth to Water at Start of Test below casing level (d_0)	m	0	
Depth to Water at End of Test below casing level	m	1.01	
Depth to Filter at Start of Test	m		
Depth to Filter at End of Test	m		
Response Zone Length	m	0.8	
Borehole Diameter in Test Section	m	0.1	
Cross-sectional Area of Borehole	m2	0.0079	
Intake factor (BS5930 p51):	Figure 7 (F) =	2.05	
Basic Time Lag = (T) t_1=	0.00	$s.h_1$ =	1.00
t_2=	965.00	$s.h_2$ =	0.07
Coefficient of Permeability (k) ms-1 =			1.07E-05

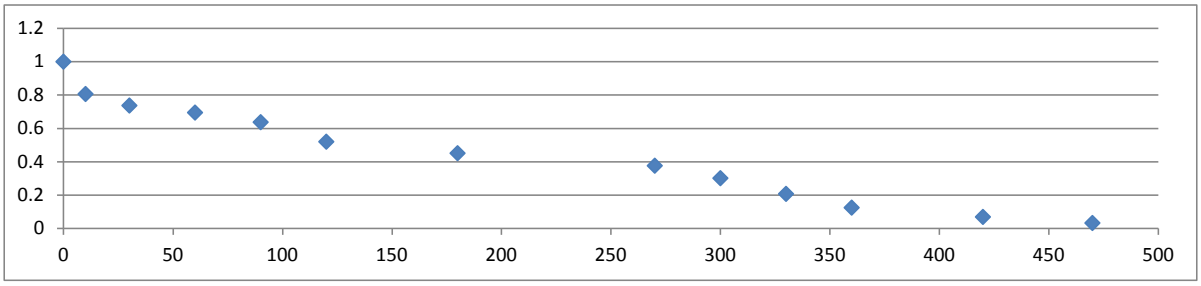
Remarks	Test performed within installed well			
Compiled By	SM	Date	29/07/2020	
Checked By	SL	Date	29/07/2020	
Geology of Test Section:	Orange brown to light brown clayey sandy GRAVEL of subangular to rounded fine to coarse flint. (LYNCH HILL GRAVEL MEMBER)			

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Project Number	TL1306
Project Name	Guild Living, Uxbridge
Client	Cast Real Estate & Construction Consultancy

VARIABLE HEAD PERMEABILITY TEST IN BOREHOLE

BOREHOLE No.:	TWS05	TEST No.:	1			
	DEPTH (m)	2.00	DATE	29/07/2020	SHEET	1



Time Elapsed (secs)	Depth of water below top of casing - d_t (m)	h (m) - (d_1-d_t)	h_1/h_0
0	0.4	1.6	1
10	0.71	1.29	0.80625
30	0.82	1.18	0.7375
60	0.89	1.11	0.69375
90	0.98	1.02	0.6375
120	1.17	0.83	0.51875
180	1.28	0.72	0.45
270	1.4	0.6	0.375
300	1.52	0.48	0.3
330	1.67	0.33	0.20625
360	1.8	0.2	0.125
420	1.89	0.11	0.06875
470	1.95	0.05	0.03125

Test Section Depth	m	2		
Borehole Depth	m	2		
Borehole Diameter	m	0.05		
Casing Depth	m	0.4		
Depth to Standing Water Level (d_1)	Assumed m	5		
Height of casing agl (h_c)	m	0		
Height of top of casing above water table	m	5		
Depth to Water at Start of Test below casing level (d_0)	m	0		
Depth to Water at End of Test below casing level	m	1.89		
Depth to Filter at Start of Test	m			
Depth to Filter at End of Test	m			
Response Zone Length	m	0.8		
Borehole Diameter in Test Section	m	0.1		
Cross-sectional Area of Borehole	m2	0.0079		
Intake factor (BS5930 p51):	Figure 7 (F) =	3.30		
Basic Time Lag = (T) t_1=	0.00	s.h_1 =	1.00	
t_2=	470.00	s.h_2 =	0.03	
Coefficient of Permeability (k) ms-1 =			1.75E-05	

Remarks: Borehole cleaned out prior to test.

Compiled By	SM	Date	29/07/2020
Checked By	SL	Date	29/07/2020

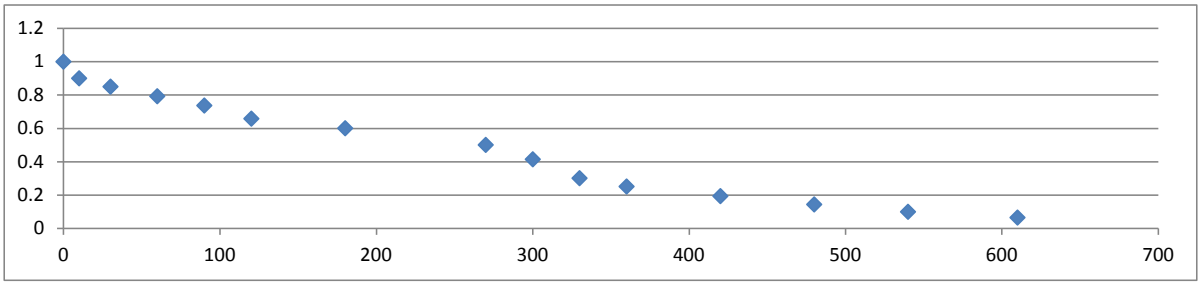
Geology of Test Section: Orange brown to light brown clayey sandy GRAVEL of subangular to rounded fine to coarse flint. (LYNCH HILL GRAVEL MEMBER)

Tier Environmental Ltd
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Tel. 01925 818 388

Project Number	TL1306
Project Name	Guild Living, Uxbridge
Client	Cast Real Estate & Construction Consultancy

VARIABLE HEAD PERMEABILITY TEST IN BOREHOLE

BOREHOLE No.:	TWS05	TEST No.:	2			
	DEPTH (m)	2.00	DATE	29/07/2020	SHEET	1



Time Elapsed (secs)	Depth of water below top of casing - d_t (m)	h (m) - (d_1-d_t)	h_t/h_0
0	0.6	1.4	1
10	0.74	1.26	0.9
30	0.81	1.19	0.85
60	0.89	1.11	0.79285714
90	0.97	1.03	0.73571429
120	1.08	0.92	0.65714286
180	1.16	0.84	0.6
270	1.3	0.7	0.5
300	1.42	0.58	0.41428571
330	1.58	0.42	0.3
360	1.65	0.35	0.25
420	1.73	0.27	0.19285714
480	1.8	0.2	0.14285714
540	1.86	0.14	0.1
610	1.91	0.09	0.06428571

Test Section Depth	m	2		
Borehole Depth	m	2		
Borehole Diameter	m	0.05		
Casing Depth	m	0.4		
Depth to Standing Water Level (d_1)	Assumed m	5		
Height of casing agl (h_c)	m	0		
Height of top of casing above water table	m	5		
Depth to Water at Start of Test below casing level (d_0)	m	0		
Depth to Water at End of Test below casing level	m	0		
Depth to Filter at Start of Test	m			
Depth to Filter at End of Test	m			
Response Zone Length	m	0.8		
Borehole Diameter in Test Section	m	0.1		
Cross-sectional Area of Borehole	m2	0.0079		
Intake factor (BS5930 p51):	Figure 7 (F) =	3.30		
Basic Time Lag = (T) t_1=	0.00	$s.h_1$ =	1.00	
t_2=	610.00	$s.h_2$ =	0.06	
Coefficient of Permeability (k) ms-1 =			1.07E-05	

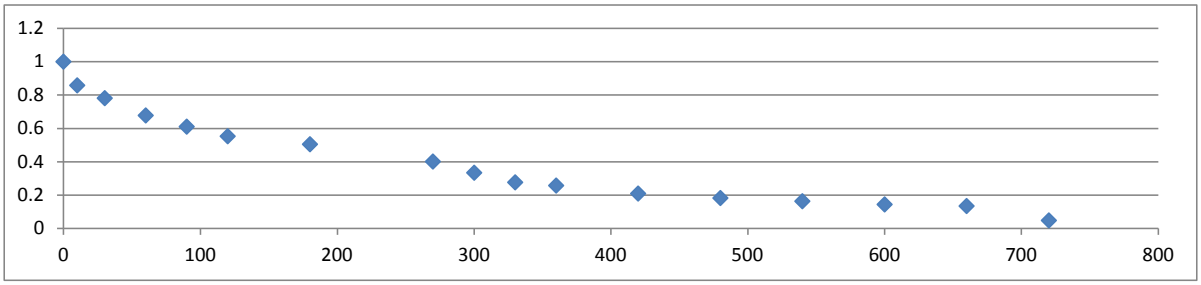
Remarks	Test performed within installed well				
Compiled By	SM	Date	29/07/2020		
Checked By	SL	Date	29/07/2020		
Geology of Test Section:	Orange brown to light brown clayey sandy GRAVEL of subangular to rounded fine to coarse flint. (LYNCH HILL GRAVEL MEMBER)				

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Project Number	TL1306
Project Name	Guild Living, Uxbridge
Client	Cast Real Estate & Construction Consultancy

VARIABLE HEAD PERMEABILITY TEST IN BOREHOLE

BOREHOLE No.:	TWS05	TEST No.:	3			
	DEPTH (m)	2.00	DATE	30/07/2020	SHEET	1



Time Elapsed (secs)	Depth of water below top of casing - d_t (m)	h (m) - (d_1-d_t)	h_1/h_0
0	0.95	1.05	1
10	1.1	0.9	0.85714286
30	1.18	0.82	0.78095238
60	1.29	0.71	0.67619048
90	1.36	0.64	0.60952381
120	1.42	0.58	0.55238095
180	1.47	0.53	0.5047619
270	1.58	0.42	0.4
300	1.65	0.35	0.33333333
330	1.71	0.29	0.27619048
360	1.73	0.27	0.25714286
420	1.78	0.22	0.20952381
480	1.81	0.19	0.18095238
540	1.83	0.17	0.16190476
600	1.85	0.15	0.14285714
660	1.86	0.14	0.13333333
720	1.95	0.05	0.04761905

Test Section Depth	m	2		
Borehole Depth	m	2		
Borehole Diameter	m	0.05		
Casing Depth	m	0.4		
Depth to Standing Water Level (d_1)	Assumed m	5		
Height of casing agl (h_c)	m	0		
Height of top of casing above water table	m	5		
Depth to Water at Start of Test below casing level (d_0)	m	0		
Depth to Water at End of Test below casing level	m	1.86		
Depth to Filter at Start of Test	m			
Depth to Filter at End of Test	m			
Response Zone Length	m	1		
Borehole Diameter in Test Section	m	0.1		
Cross-sectional Area of Borehole	m2	0.0079		
Intake factor (BS5930 p51):	Figure 7 (F) =	3.30		
Basic Time Lag = (T) t_1=	0.00	$s.h_1$ =	1.00	
t_2=	720.00	$s.h_2$ =	0.05	
Coefficient of Permeability (k) ms-1 =			1.01E-05	

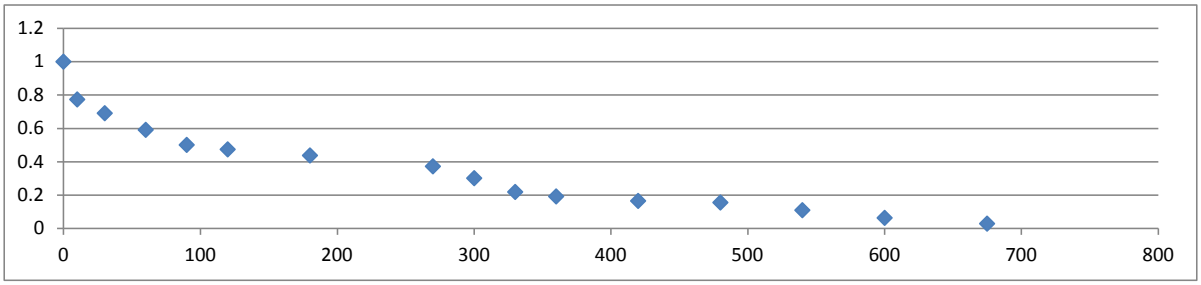
Remarks	Test performed within installed well			
Compiled By	SM	Date	30/07/2020	
Checked By	SL	Date	30/07/2020	
Geology of Test Section:	Orange brown to light brown clayey sandy GRAVEL of subangular to rounded fine to coarse flint. (LYNCH HILL GRAVEL MEMBER)			

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Project Number	TL1306
Project Name	Guild Living, Uxbridge
Client	Cast Real Estate & Construction Consultancy

VARIABLE HEAD PERMEABILITY TEST IN BOREHOLE

BOREHOLE No.:	TWS05	TEST No.:	3			
	DEPTH (m)	2.00	DATE	30/07/2020	SHEET	1



Time Elapsed (secs)	Depth of water below top of casing - d_t (m)	h (m) - (d_1-d_t)	h_1/h_0
0	0.9	1.1	1
10	1.15	0.85	0.77272727
30	1.24	0.76	0.69090909
60	1.35	0.65	0.59090909
90	1.45	0.55	0.5
120	1.48	0.52	0.47272727
180	1.52	0.48	0.43636364
270	1.59	0.41	0.37272727
300	1.67	0.33	0.3
330	1.76	0.24	0.21818182
360	1.79	0.21	0.19090909
420	1.82	0.18	0.16363636
480	1.83	0.17	0.15454545
540	1.88	0.12	0.10909091
600	1.93	0.07	0.06363636
675	1.97	0.03	0.02727273

Test Section Depth	m	2	
Borehole Depth	m	2	
Borehole Diameter	m	0.05	
Casing Depth	m	0.4	
Depth to Standing Water Level (d_1)	Assumed m	5	
Height of casing agl (h_c)	m	0	
Height of top of casing above water table	m	5	
Depth to Water at Start of Test below casing level (d_0)	m	0	
Depth to Water at End of Test below casing level	m	1.97	
Depth to Filter at Start of Test	m		
Depth to Filter at End of Test	m		
Response Zone Length	m	1	
Borehole Diameter in Test Section	m	0.1	
Cross-sectional Area of Borehole	m2	0.0079	
Intake factor (BS5930 p51):	Figure 7 (F) =	3.30	
Basic Time Lag = (T) t_1=	0.00	$s.h_1$ =	1.00
t_2=	675.00	$s.h_2$ =	0.03
Coefficient of Permeability (k) ms-1 =			1.27E-05

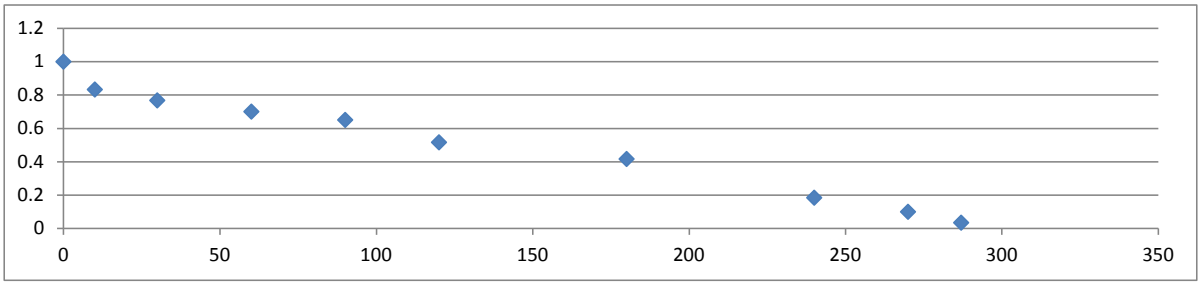
Remarks	Test performed within installed well			
Compiled By	SM	Date	30/07/2020	
Checked By	SL	Date	30/07/2020	
Geology of Test Section:	Orange brown to light brown clayey sandy GRAVEL of subangular to rounded fine to coarse flint. (LYNCH HILL GRAVEL MEMBER)			

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Project Number	TL1306
Project Name	Guild Living, Uxbridge
Client	Cast Real Estate & Construction Consultancy

VARIABLE HEAD PERMEABILITY TEST IN BOREHOLE

BOREHOLE No.:	TWS01	TEST No.:	1				
	DEPTH (m)	1.20	DATE	29/07/2020	SHEET	1	



Time Elapsed (secs)	Depth of water below top of casing - d_t (m)	h (m) - (d_1-d_t)	h_1/h_0
0	0.6	0.6	1
10	0.7	0.5	0.83333333
30	0.74	0.46	0.76666667
60	0.78	0.42	0.7
90	0.81	0.39	0.65
120	0.89	0.31	0.51666667
180	0.95	0.25	0.41666667
240	1.09	0.11	0.18333333
270	1.14	0.06	0.1
287	1.18	0.02	0.03333333

Test Section Depth	m	1.2	
Borehole Depth	m	1.2	
Borehole Diameter	m	0.05	
Casing Depth	m	0.4	
Depth to Standing Water Level (d_1)	Assumed m	5	
Height of casing agl (h_c)	m	0	
Height of top of casing above water table	m	5	
Depth to Water at Start of Test below casing level (d_0)	m	0	
Depth to Water at End of Test below casing level	m	1.27	
Depth to Filter at Start of Test	m		
Depth to Filter at End of Test	m		
Response Zone Length	m	0.8	
Borehole Diameter in Test Section	m	0.1	
Cross-sectional Area of Borehole	m2	0.0079	
Intake factor (BS5930 p51):	Figure 7 (F) =	2.05	
Basic Time Lag = (T) t_1=	0.00	$s.h_1$ =	1.00
t_2=	287.00	$s.h_2$ =	0.03
Coefficient of Permeability (k) ms-1 =			4.54E-05

Remarks: Borehole cleaned out prior to test.

Compiled By	SM	Date	29/07/2020	
Checked By	SL	Date	29/07/2020	

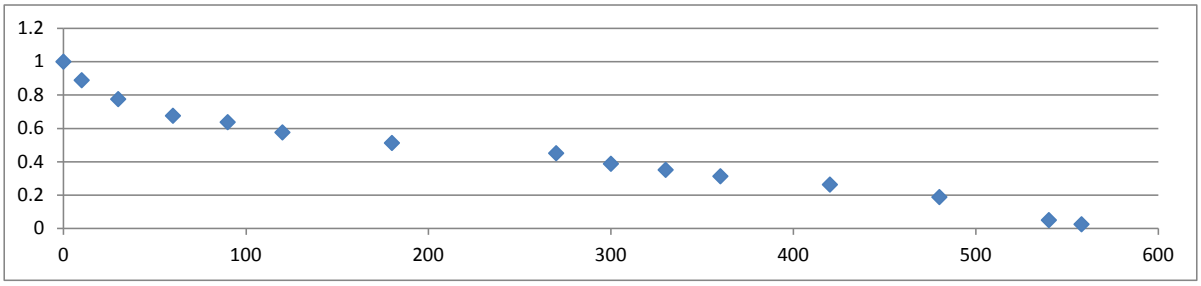
Geology of Test Section: Orange brown to light brown clayey sandy GRAVEL of subangular to rounded fine to coarse flint. (LYNCH HILL GRAVEL MEMBER)

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Project Number	TL1306
Project Name	Guild Living, Uxbridge
Client	Cast Real Estate & Construction Consultancy

VARIABLE HEAD PERMEABILITY TEST IN BOREHOLE

BOREHOLE No.:	TWS01	TEST No.:	2			
	DEPTH (m)	1.20	DATE	29/07/2020	SHEET	1



Time Elapsed (secs)	Depth of water below top of casing - d_t (m)	h (m) - (d_1-d_t)	h_t/h_0
0	0.4	0.8	1
10	0.49	0.71	0.8875
30	0.58	0.62	0.775
60	0.66	0.54	0.675
90	0.69	0.51	0.6375
120	0.74	0.46	0.575
180	0.79	0.41	0.5125
270	0.84	0.36	0.45
300	0.89	0.31	0.3875
330	0.92	0.28	0.35
360	0.95	0.25	0.3125
420	0.99	0.21	0.2625
480	1.05	0.15	0.1875
540	1.16	0.04	0.05
558	1.18	0.02	0.025

Test Section Depth	m	1.2		
Borehole Depth	m	1.2		
Borehole Diameter	m	0.05		
Casing Depth	m	0.4		
Depth to Standing Water Level (d_1)	Assumed m	5		
Height of casing agl (h_c)	m	0		
Height of top of casing above water table	m	5		
Depth to Water at Start of Test below casing level (d_0)	m	0		
Depth to Water at End of Test below casing level	m	0		
Depth to Filter at Start of Test	m			
Depth to Filter at End of Test	m			
Response Zone Length	m	0.8		
Borehole Diameter in Test Section	m	0.1		
Cross-sectional Area of Borehole	m2	0.0079		
Intake factor (BS5930 p51):	Figure 7 (F) =	2.05		
Basic Time Lag = (T) t_1=	0.00	s.h_1 =	1.00	
t_2=	558.00	s.h_2 =	0.03	
Coefficient of Permeability (k) ms-1 =			2.53E-05	

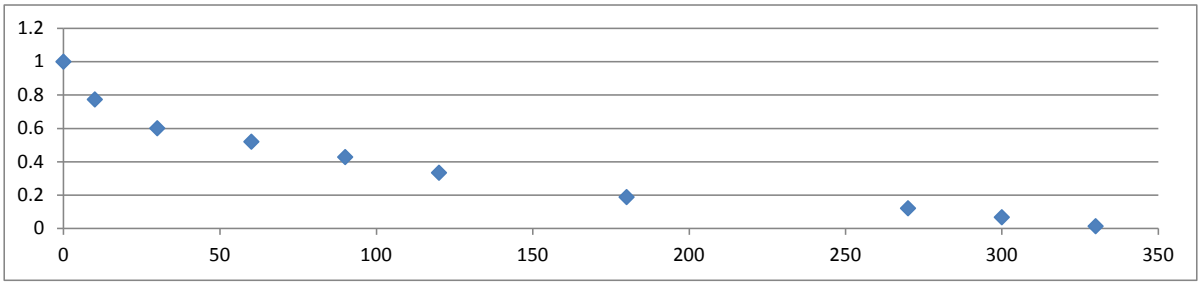
Remarks	Test performed within installed well				
Compiled By	SM	Date	29/07/2020		
Checked By	SL	Date	29/07/2020		
Geology of Test Section:	Orange brown to light brown clayey sandy GRAVEL of subangular to rounded fine to coarse flint. (LYNCH HILL GRAVEL MEMBER)				

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Project Number	TL1306
Project Name	Guild Living, Uxbridge
Client	Cast Real Estate & Construction Consultancy

VARIABLE HEAD PERMEABILITY TEST IN BOREHOLE

BOREHOLE No.:	TWS01	TEST No.:	3			
	DEPTH (m)	1.20	DATE	29/07/2020	SHEET	1



Time Elapsed (secs)	Depth of water below top of casing - d_t (m)	h (m) - (d_1-d_t)	h_1/h_0
0	0.45	0.75	1
10	0.62	0.58	0.77333333
30	0.75	0.45	0.6
60	0.81	0.39	0.52
90	0.88	0.32	0.42666667
120	0.95	0.25	0.33333333
180	1.06	0.14	0.18666667
270	1.11	0.09	0.12
300	1.15	0.05	0.06666667
330	1.19	0.01	0.01333333

Test Section Depth	m	1.2			
Borehole Depth	m	1.2			
Borehole Diameter	m	0.05			
Casing Depth	m	0.4			
Depth to Standing Water Level (d_1)	Assumed m	5			
Height of casing agl (h_c)	m	0			
Height of top of casing above water table	m	5			
Depth to Water at Start of Test below casing level (d_0)	m	0			
Depth to Water at End of Test below casing level	m	0			
Depth to Filter at Start of Test	m				
Depth to Filter at End of Test	m				
Response Zone Length	m	0.8			
Borehole Diameter in Test Section	m	0.1			
Cross-sectional Area of Borehole	m2	0.0079			
Intake factor (BS5930 p51):	Figure 7 (F) =	2.05			
Basic Time Lag = (T) t_1=	0.00	$s.h_1$ =	1.00		
t_2=	330.00	$s.h_2$ =	0.01		
Coefficient of Permeability (k) ms-1 =			5.01E-05		

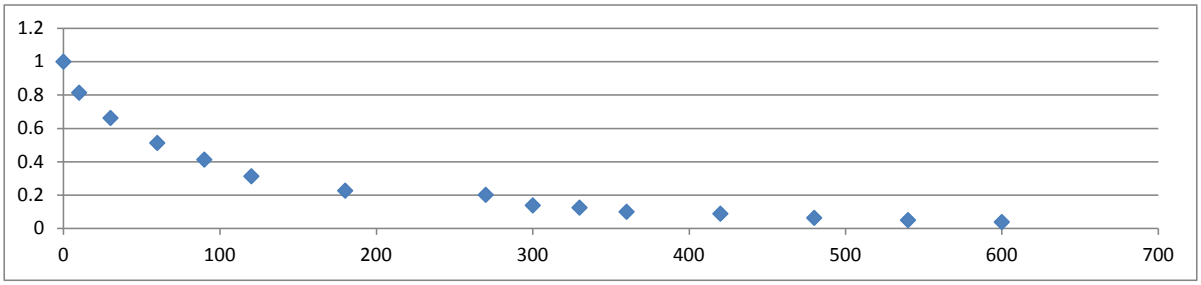
Remarks	Test performed within installed well				
Compiled By	SM	Date	29/07/2020		
Checked By	SL	Date	29/07/2020		
Geology of Test Section:	Orange brown to light brown clayey sandy GRAVEL of subangular to rounded fine to coarse flint. (LYNCH HILL GRAVEL MEMBER)				

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Project Number	TL1306
Project Name	Guild Living, Uxbridge
Client	Cast Real Estate & Construction Consultancy

VARIABLE HEAD PERMEABILITY TEST IN BOREHOLE

BOREHOLE No.:	TWS01	TEST No.:	4				
	DEPTH (m)	1.20	DATE	30/07/2020	SHEET	1	



Time Elapsed (secs)	Depth of water below top of casing - d_t (m)	h (m) - (d_1-d_t)	h_t/h_0
0	0.4	0.8	1
10	0.55	0.65	0.8125
30	0.67	0.53	0.6625
60	0.79	0.41	0.5125
90	0.87	0.33	0.4125
120	0.95	0.25	0.3125
180	1.02	0.18	0.225
270	1.04	0.16	0.2
300	1.09	0.11	0.1375
330	1.1	0.1	0.125
360	1.12	0.08	0.1
420	1.13	0.07	0.0875
480	1.15	0.05	0.0625
540	1.16	0.04	0.05
600	1.17	0.03	0.0375

Test Section Depth	m	1.2		
Borehole Depth	m	1.2		
Borehole Diameter	m	0.05		
Casing Depth	m	0.4		
Depth to Standing Water Level (d_1)	Assumed m	5		
Height of casing agl (h_c)	m	0		
Height of top of casing above water table	m	5		
Depth to Water at Start of Test below casing level (d_0)	m	0		
Depth to Water at End of Test below casing level	m	0		
Depth to Filter at Start of Test	m			
Depth to Filter at End of Test	m			
Response Zone Length	m	0.8		
Borehole Diameter in Test Section	m	0.1		
Cross-sectional Area of Borehole	m2	0.0079		
Intake factor (BS5930 p51):	Figure 7 (F) =	2.05		
Basic Time Lag = (T) t_1=	0.00	$s.h_1$ =	1.00	
t_2=	600.00	$s.h_2$ =	0.04	
Coefficient of Permeability (k) ms-1 =			2.10E-05	

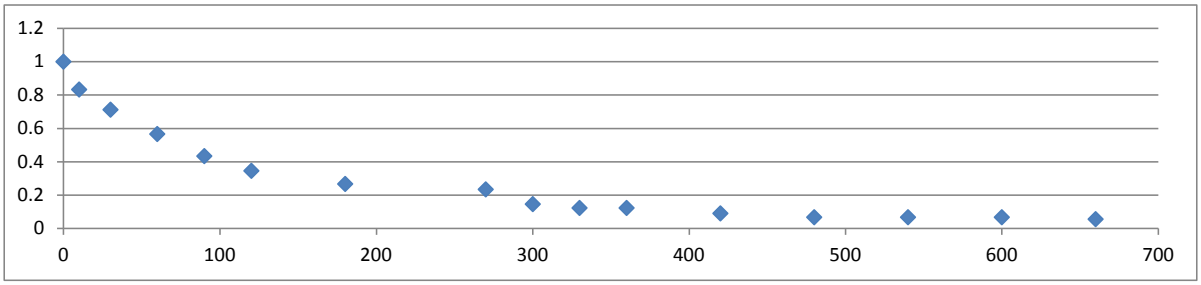
Remarks	Test performed within installed well				
Compiled By	SM	Date	30/07/2020		
Checked By	SL	Date	30/07/2020		
Geology of Test Section:	Orange brown to light brown clayey sandy GRAVEL of subangular to rounded fine to coarse flint. (LYNCH HILL GRAVEL MEMBER)				

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Project Number	TL1306
Project Name	Guild Living, Uxbridge
Client	Cast Real Estate & Construction Consultancy

VARIABLE HEAD PERMEABILITY TEST IN BOREHOLE

BOREHOLE No.:	TWS01	TEST No.:	4				
	DEPTH (m)	1.20	DATE	30/07/2020	SHEET	1	



Time Elapsed (secs)	Depth of water below top of casing - d_t (m)	h (m) - (d_1-d_t)	h_1/h_0
0	0.3	0.9	1
10	0.45	0.75	0.83333333
30	0.56	0.64	0.71111111
60	0.69	0.51	0.56666667
90	0.81	0.39	0.43333333
120	0.89	0.31	0.34444444
180	0.96	0.24	0.26666667
270	0.99	0.21	0.23333333
300	1.07	0.13	0.14444444
330	1.09	0.11	0.12222222
360	1.09	0.11	0.12222222
420	1.12	0.08	0.08888889
480	1.14	0.06	0.06666667
540	1.14	0.06	0.06666667
600	1.14	0.06	0.06666667
660	1.15	0.05	0.05555556

Test Section Depth	m	1.2		
Borehole Depth	m	1.2		
Borehole Diameter	m	0.05		
Casing Depth	m	0.4		
Depth to Standing Water Level (d_1)	Assumed m	5		
Height of casing agl (h_c)	m	0		
Height of top of casing above water table	m	5		
Depth to Water at Start of Test below casing level (d_0)	m	0		
Depth to Water at End of Test below casing level	m	0		
Depth to Filter at Start of Test	m			
Depth to Filter at End of Test	m			
Response Zone Length	m	0.8		
Borehole Diameter in Test Section	m	0.1		
Cross-sectional Area of Borehole	m2	0.0079		
Intake factor (BS5930 p51):	Figure 7 (F) =	2.05		
Basic Time Lag = (T) t_1=	0.00	s.h_1 =	1.00	
t_2=	660.00	s.h_2 =	0.06	
Coefficient of Permeability (k) ms-1 =			1.68E-05	

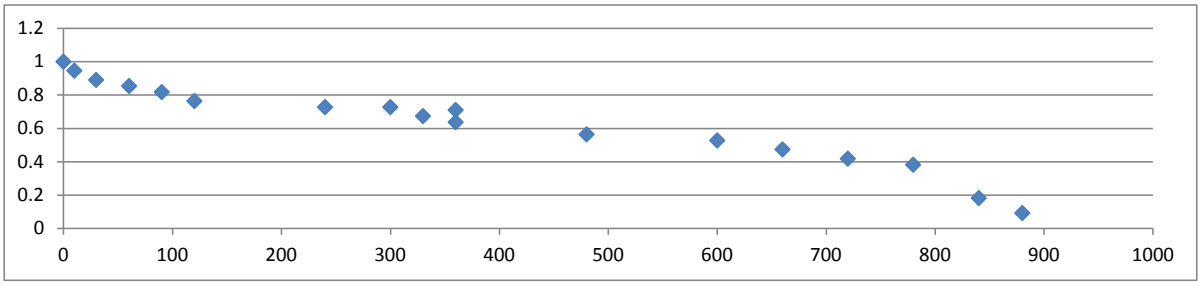
Remarks	Test performed within installed well				
Compiled By	SM	Date	30/07/2020		
Checked By	SL	Date	30/07/2020		
Geology of Test Section:	Orange brown to light brown clayey sandy GRAVEL of subangular to rounded fine to coarse flint. (LYNCH HILL GRAVEL MEMBER)				

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Project Number	TL1306
Project Name	Guild Living, Uxbridge
Client	Cast Real Estate & Construction Consultancy

VARIABLE HEAD PERMEABILITY TEST IN BOREHOLE

BOREHOLE No.:	WS204	TEST No.:	1			
	DEPTH (m)	1.20	DATE	30/07/2020	SHEET	1



Time Elapsed (secs)	Depth of water below top of casing - d_t (m)	h (m) - (d_1-d_t)	h_1/h_0
0	0.65	0.55	1
10	0.68	0.52	0.94545455
30	0.71	0.49	0.89090909
60	0.73	0.47	0.85454545
90	0.75	0.45	0.81818182
120	0.78	0.42	0.76363636
240	0.8	0.4	0.72727273
300	0.8	0.4	0.72727273
360	0.81	0.39	0.70909091
330	0.83	0.37	0.67272727
360	0.85	0.35	0.63636364
480	0.89	0.31	0.56363636
600	0.91	0.29	0.52727273
660	0.94	0.26	0.47272727
720	0.97	0.23	0.41818182
780	0.99	0.21	0.38181818
840	1.1	0.1	0.18181818
880	1.15	0.05	0.09090909

Test Section Depth	m	1.2	
Borehole Depth	m	1.2	
Borehole Diameter	m	0.1	
Casing Depth	m	1	
Depth to Standing Water Level (d_1)	Assumed m	5	
Height of casing agl (h_c)	m	0	
Height of top of casing above water table	m	5	
Depth to Water at Start of Test below casing level (d_0)	m	0	
Depth to Water at End of Test below casing level	m	2	
Depth to Filter at Start of Test	m		
Depth to Filter at End of Test	m		
Response Zone Length	m	0.8	
Borehole Diameter in Test Section	m	0.1	
Cross-sectional Area of Borehole	m2	0.0079	
Intake factor (BS5930 p51):	Figure 7 (F) =	2.05	
Basic Time Lag = (T) t_1=	30.00	$s.h_1$ =	0.89
t_2=	880.00	$s.h_2$ =	0.09
Coefficient of Permeability (k) ms-1 =			1.03E-05

Remarks: Test performed within installed well

Compiled By	SM	Date	30/07/2020
Checked By	SL	Date	30/07/2020

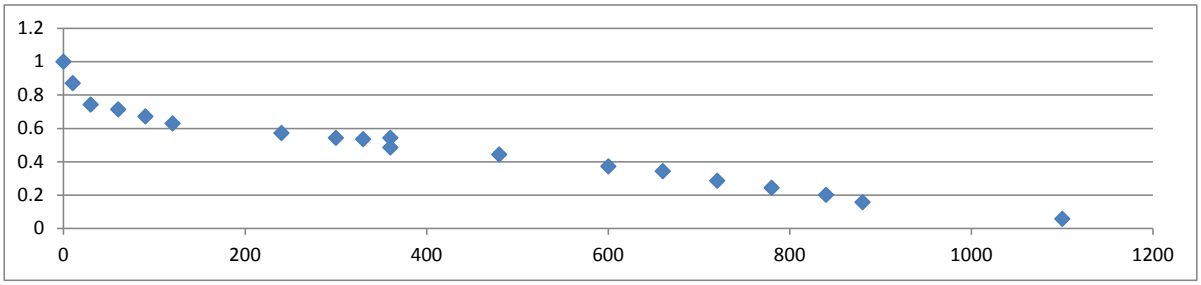
Geology of Test Section: Very dense light brown very sandy subangular to rounded fine to coarse GRAVEL of flint. (LYNCH HILL MEMBER)

Tier Environmental Ltd
Chadwick House
Birchwood Park
Warrington, WA3 6AE
Tel. 01925 818 388

Project Number	TL1306
Project Name	Guild Living, Uxbridge
Client	Cast Real Estate & Construction Consultancy

VARIABLE HEAD PERMEABILITY TEST IN BOREHOLE

BOREHOLE No.:	WS204	TEST No.:	2				
	DEPTH (m)	1.20	DATE	30/07/2020	SHEET	1	



Time Elapsed (secs)	Depth of water below top of casing - d_t (m)	h (m) - (d_1-d_t)	h_t/h_0
0	0.5	0.7	1
10	0.59	0.61	0.87142857
30	0.68	0.52	0.74285714
60	0.7	0.5	0.71428571
90	0.73	0.47	0.67142857
120	0.76	0.44	0.62857143
240	0.8	0.4	0.57142857
300	0.82	0.38	0.54285714
360	0.82	0.38	0.54285714
330	0.825	0.375	0.53571429
360	0.86	0.34	0.48571429
480	0.89	0.31	0.44285714
600	0.94	0.26	0.37142857
660	0.96	0.24	0.34285714
720	1	0.2	0.28571429
780	1.03	0.17	0.24285714
840	1.06	0.14	0.2
880	1.09	0.11	0.15714286
1100	1.16	0.04	0.05714286

Test Section Depth	m	1.2	
Borehole Depth	m	1.2	
Borehole Diameter	m	0.1	
Casing Depth	m	1	
Depth to Standing Water Level (d_1)	Assumed m	5	
Height of casing agl (h_c)	m	0	
Height of top of casing above water table	m	5	
Depth to Water at Start of Test below casing level (d_0)	m	0	
Depth to Water at End of Test below casing level	m	2	
Depth to Filter at Start of Test	m		
Depth to Filter at End of Test	m		
Response Zone Length	m	0.8	
Borehole Diameter in Test Section	m	0.1	
Cross-sectional Area of Borehole	m2	0.0079	
Intake factor (BS5930 p51):	Figure 7 (F) =	2.05	
Basic Time Lag = (T) t_1=	0.00	$s.h_1$ =	1.00
t_2=	1100.00	$s.h_2$ =	0.06
Coefficient of Permeability (k) ms-1 =			9.96E-06

Remarks	Test performed within installed well		
Compiled By	SM	Date	30/07/2020
Checked By	SL	Date	30/07/2020
Geology of Test Section:	Very dense light brown very sandy subangular to rounded fine to coarse GRAVEL of flint. (LYNCH HILL MEMBER)		

Tier Environmental Ltd
Chadwick House
Birchwood Park
Warrington, WA3 6AE
Tel. 01925 818 388

Project Number	TL1306
Project Name	Guild Living, Uxbridge
Client	Cast Real Estate & Construction Consultancy

APPENDIX M – RESULTS OF LABORATORY CHEMICAL ANALYSES

Exova Jones Environmental

Registered Address : Exova (UK) Ltd, Lochend Industrial Estate, Newbridge, Midlothian, EH28 8PL

Unit 3 Deeside Point
Zone 3
Deeside Industrial Park
Deeside
CH5 2UA

Tel: +44 (0) 1244 833780
Fax: +44 (0) 1244 833781

Tier Environmental
Suite 513, Chadwick House
Warrington Rd
Birchwood
Warrington
WA3 6AE

Attention :	Adrian Read
Date :	22nd November, 2017
Your reference :	TE1044
Our reference :	Test Report 17/18951 Batch 1
Location :	Harefield Road, Uxbridge
Date samples received :	17th November, 2017
Status :	Final report
Issue :	1

Three samples were received for analysis on 17th November, 2017 of which three were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Compiled By:

Bruce Leslie
Project Co-ordinator

Client Name: Tier Environmental
Reference: TE1044
Location: Harefield Road, Uxbridge
Contact: Adrian Read
JE Job No.: 17/18951

Report : Liquid

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle
H=H_2SO_4, Z=ZnAc, N=NaOH, HN=$HN0_3$

J E Sample No.	1-6	7-12	13-18									
Sample ID	TBH1	TBH2	BH101									
Depth												
COC No / misc												
Containers	V P G	V P G	V P G									
Sample Date	16/11/2017	16/11/2017	16/11/2017									
Sample Type	Ground Water	Ground Water	Ground Water									
Batch Number	1	1	1									
Date of Receipt	17/11/2017	17/11/2017	17/11/2017									

Please see attached notes for all abbreviations and acronyms

											LOD/LOR	Units	Method No.
Dissolved Arsenic #	<0.9	<0.9	<0.9								<0.9	ug/l	TM30/PM14
Dissolved Cadmium #	<0.03	<0.03	<0.03								<0.03	ug/l	TM30/PM14
Total Dissolved Chromium #	0.3	<0.2	0.3								<0.2	ug/l	TM30/PM14
Dissolved Copper #	<3	<3	<3								<3	ug/l	TM30/PM14
Dissolved Lead #	<0.4	<0.4	<0.4								<0.4	ug/l	TM30/PM14
Dissolved Mercury #	<0.5	<0.5	<0.5								<0.5	ug/l	TM30/PM14
Dissolved Nickel #	3.1	11.1	10.0								<0.2	ug/l	TM30/PM14
Dissolved Selenium #	<1.2	<1.2	<1.2								<1.2	ug/l	TM30/PM14
Dissolved Zinc #	<1.5	<1.5	<1.5								<1.5	ug/l	TM30/PM14
Total Hardness Dissolved (as CaCO3)	440	343	295								<1	mg/l	TM30/PM14
PAH MS													
Naphthalene	<0.1	<0.1	<0.1								<0.1	ug/l	TM4/PM30
Acenaphthylene	<0.01	0.02	0.30								<0.01	ug/l	TM4/PM30
Acenaphthene	<0.01	0.03	0.37								<0.01	ug/l	TM4/PM30
Fluorene	<0.01	0.04	0.46								<0.01	ug/l	TM4/PM30
Phenanthrene	<0.01	0.03	0.19								<0.01	ug/l	TM4/PM30
Anthracene	<0.01	<0.01	0.31								<0.01	ug/l	TM4/PM30
Fluoranthene	<0.01	<0.01	1.27								<0.01	ug/l	TM4/PM30
Pyrene	<0.01	<0.01	1.23								<0.01	ug/l	TM4/PM30
Benzo(a)anthracene	<0.01	<0.01	0.14								<0.01	ug/l	TM4/PM30
Chrysene	<0.01	<0.01	0.12								<0.01	ug/l	TM4/PM30
Benzo(bk)fluoranthene	<0.01	<0.01	0.09								<0.01	ug/l	TM4/PM30
Benzo(a)pyrene	<0.01	<0.01	0.08								<0.01	ug/l	TM4/PM30
Indeno(123cd)pyrene	<0.01	<0.01	0.02								<0.01	ug/l	TM4/PM30
Dibenzo(ah)anthracene	<0.01	<0.01	<0.01								<0.01	ug/l	TM4/PM30
Benzo(ghi)perylene	<0.01	<0.01	0.02								<0.01	ug/l	TM4/PM30
PAH 16 Total	<0.1	0.1	4.6								<0.1	ug/l	TM4/PM30
Benzo(b)fluoranthene	<0.01	<0.01	0.06								<0.01	ug/l	TM4/PM30
Benzo(k)fluoranthene	<0.01	<0.01	0.03								<0.01	ug/l	TM4/PM30
PAH Surrogate % Recovery	71	71	72								<0	%	TM4/PM30
TPH CWG													
Aliphatics													
>C5-C6 #	<10	<10	<10								<10	ug/l	TM36/PM12
>C6-C8 #	<10	11	<10								<10	ug/l	TM36/PM12
>C8-C10 #	<10	<10	<10								<10	ug/l	TM36/PM12
>C10-C12 #	<5	<5	<5								<5	ug/l	TM5/PM30
>C12-C16 #	<10	<10	<10								<10	ug/l	TM5/PM30
>C16-C21 #	<10	<10	<10								<10	ug/l	TM5/PM30
>C21-C35 #	<10	<10	<10								<10	ug/l	TM5/PM30
Total aliphatics C5-35 #	<10	11	<10								<10	ug/l	TM5/TM36/PM30/PM12

Client Name: Tier Environmental
Reference: TE1044
Location: Harefield Road, Uxbridge
Contact: Adrian Read
JE Job No.: 17/18951

Report : Liquid

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle
H=H_2SO_4, Z=ZnAc, N=NaOH, HN=$HN0_3$

J E Sample No.	1-6	7-12	13-18									
Sample ID	TBH1	TBH2	BH101									
Depth												
COC No / misc												
Containers	V P G	V P G	V P G									
Sample Date	16/11/2017	16/11/2017	16/11/2017									
Sample Type	Ground Water	Ground Water	Ground Water									
Batch Number	1	1	1									
Date of Receipt	17/11/2017	17/11/2017	17/11/2017									

Please see attached notes for all abbreviations and acronyms

											LOD/LOR	Units	Method No.
TPH CWG													
Aromatics													
>C5-EC7 #	<10	<10	<10								<10	ug/l	TM36/PM12
>EC7-EC8 #	<10	<10	<10								<10	ug/l	TM36/PM12
>EC8-EC10 #	<10	<10	<10								<10	ug/l	TM36/PM12
>EC10-EC12 #	<5	<5	<5								<5	ug/l	TM5/PM30
>EC12-EC16 #	<10	<10	<10								<10	ug/l	TM5/PM30
>EC16-EC21 #	<10	<10	<10								<10	ug/l	TM5/PM30
>EC21-EC35 #	<10	<10	<10								<10	ug/l	TM5/PM30
Total aromatics C5-35 #	<10	<10	<10								<10	ug/l	TM5/TM36/PM30/PM12
Total aliphatics and aromatics(C5-35) #	<10	11	<10								<10	ug/l	TM5/TM36/PM30/PM12
MTBE #	<5	<5	<5								<5	ug/l	TM31/PM12
Benzene #	<5	<5	<5								<5	ug/l	TM31/PM12
Toluene #	<5	<5	<5								<5	ug/l	TM31/PM12
Ethylbenzene #	<5	<5	<5								<5	ug/l	TM31/PM12
m/p-Xylene #	<5	<5	<5								<5	ug/l	TM31/PM12
o-Xylene #	<5	<5	<5								<5	ug/l	TM31/PM12
Total Phenols HPLC	<0.1	<0.1	<0.1								<0.1	mg/l	TM26/PM0
Sulphate as SO4 #	149.8	29.9	24.2								<0.5	mg/l	TM38/PM0
Total Ammonia as N #	1.16	0.19	0.11								<0.03	mg/l	TM38/PM0
Electrical Conductivity @25C #	1377	848	1050								<2	uS/cm	TM76/PM0
pH #	7.70	7.09	6.93								<0.01	pH units	TM73/PM0

Client Name: Tier Environmental
Reference: TE1044
Location: Harefield Road, Uxbridge
Contact: Adrian Read

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Analysis	Reason
No deviating sample report results for job 17/18951						

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.
Only analyses which are accredited are recorded as deviating if set criteria are not met.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 17/18951

SOILS

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overesitimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

DEVIATING SAMPLES

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any test results that may be compromised highlighted on your deviating samples report.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.
Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa.
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
++	Result outside calibration range, results should be considered as indicative only and are not accredited.
*	Analysis subcontracted to a Jones Environmental approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range

JE Job No: 17/18951

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.				
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.	Yes			
TM5/TM36	please refer to TM5 and TM36 for method details	PM30/PM12	CWG GC-FID	Yes			
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM0	No preparation is required.				
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM14	Analysis of waters and leachates for metals by ICP OES/ICP MS. Samples are filtered for dissolved metals and acidified if required.				
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM14	Analysis of waters and leachates for metals by ICP OES/ICP MS. Samples are filtered for dissolved metals and acidified if required.	Yes			
TM31	Modified USEPA 8015B. Determination of Methyltertbutylether, Benzene, Toluene, Ethylbenzene and Xylene by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes			
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes			
TM38	Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1	PM0	No preparation is required.	Yes			
TM73	Modified US EPA methods 150.1 and 9045D and BS1377:1990. Determination of pH by Metrohm automated probe analyser.	PM0	No preparation is required.	Yes			

JE Job No: 17/18951

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM76	Modified US EPA method 120.1. Determination of Specific Conductance by Metrohm automated probe analyser.	PM0	No preparation is required.	Yes			

Exova Jones Environmental

Registered Address : Exova (UK) Ltd, Lochend Industrial Estate, Newbridge, Midlothian, EH28 8PL

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Deeside Industrial Park
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Tel: +44 (0) 1244 833780
Fax: +44 (0) 1244 833781

Tier Environmental
Suite 513, Chadwick House
Warrington Rd
Birchwood
Warrington
WA3 6AE

Attention :	Adrian Read
Date :	13th November, 2017
Your reference :	TE1006
Our reference :	Test Report 17/18227 Batch 1
Location :	James Wolfe Road Oxford
Date samples received :	3rd November, 2017
Status :	Final report
Issue :	1

Twenty five samples were received for analysis on 3rd November, 2017 of which twelve were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Compiled By:

Bruce Leslie
Project Co-ordinator

Client Name: Tier Environmental
Reference: TE1006
Location: James Wolfe Road Oxford
Contact: Adrian Read
JE Job No.: 17/18227

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	1-2	5-6	11-13	14-16	20-22	26-28	34-36	40-41	44-46	51-52	LOD/LOR	Units	Method No.
Sample ID	TE51	TE52	TE53	TE54	TE55	TE56	TE57	TE58	TE59	TES10			
Depth	0.2	0.3	0.4	0.5	0.3	0.7	0.5	0.3	0.2	0.3			
COC No / misc													
Containers	V J	V J	V J T	V J T	V J T	V J T	V J T	V J	V J	V J			
Sample Date	01/11/2017	01/11/2017	01/11/2017	01/11/2017	01/11/2017	01/11/2017	01/11/2017	02/11/2017	02/11/2017	02/11/2017			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	03/11/2017	03/11/2017	03/11/2017	03/11/2017	03/11/2017	03/11/2017	03/11/2017	03/11/2017	03/11/2017	03/11/2017			
Arsenic #	3.0	5.0	14.6	9.0	5.7	18.3	16.3	6.6	7.8	7.9	<0.5	mg/kg	TM30/PM15
Cadmium #	<0.1	1.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.5	0.1	<0.1	mg/kg	TM30/PM15
Chromium #	22.1	12.1	57.7	31.0	21.0	72.7	67.4	20.2	18.7	25.9	<0.5	mg/kg	TM30/PM15
Copper #	3	2	4	4	3	4	7	2	4	216	<1	mg/kg	TM30/PM15
Lead #	<5	14	11	13	<5	14	20	<5	12	96	<5	mg/kg	TM30/PM15
Mercury #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM30/PM15
Nickel #	13.4	4.0	31.9	11.0	9.3	31.6	27.3	9.3	6.3	7.9	<0.7	mg/kg	TM30/PM15
Selenium #	<1	<1	1	<1	<1	2	<1	<1	<1	<1	<1	mg/kg	TM30/PM15
Total Sulphate as SO4 #	917	438	649	1346	1722	313	567	1027	339	1836	<50	mg/kg	TM50/PM29
Zinc #	13	41	53	24	11	54	52	18	32	59	<5	mg/kg	TM30/PM15
PAH MS													
Naphthalene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.71_{AA}	2.44_{AA}	<0.04	mg/kg	TM4/PM8
Acenaphthylene	<0.03	<0.03	<0.03	0.04	<0.03	<0.03	0.04	0.05	1.45_{AA}	4.31_{AA}	<0.03	mg/kg	TM4/PM8
Acenaphthene #	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	$<0.50_{AA}$	2.04_{AA}	<0.05	mg/kg	TM4/PM8
Fluorene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.04	0.68_{AA}	2.31_{AA}	<0.04	mg/kg	TM4/PM8
Phenanthrene #	<0.03	<0.03	<0.03	0.30	<0.03	<0.03	<0.03	0.40	6.00_{AA}	22.25_{AA}	<0.03	mg/kg	TM4/PM8
Anthracene #	<0.04	<0.04	<0.04	0.10	<0.04	<0.04	<0.04	0.18	3.62_{AA}	11.35_{AA}	<0.04	mg/kg	TM4/PM8
Fluoranthene #	<0.03	<0.03	0.06	0.88	0.04	<0.03	0.10	1.22	28.06_{AA}	85.40_{AA}	<0.03	mg/kg	TM4/PM8
Pyrene #	<0.03	<0.03	0.06	0.78	0.03	<0.03	0.10	1.07	25.84_{AA}	81.20_{AA}	<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	<0.06	<0.06	0.10	0.47	<0.06	<0.06	0.11	0.62	14.99_{AA}	44.51_{AA}	<0.06	mg/kg	TM4/PM8
Chrysene #	<0.02	<0.02	0.06	0.47	0.02	<0.02	0.10	0.53	13.16_{AA}	40.39_{AA}	<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #	<0.07	<0.07	0.13	1.01	<0.07	<0.07	0.37	1.43	37.30_{AA}	77.60_{AA}	<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	<0.04	<0.04	0.07	0.60	<0.04	<0.04	0.26	0.88	22.40_{AA}	42.75_{AA}	<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #	<0.04	<0.04	0.05	0.44	<0.04	<0.04	0.19	0.62	16.99_{AA}	30.16_{AA}	<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	<0.04	<0.04	<0.04	0.10	<0.04	<0.04	0.05	0.13	3.38_{AA}	5.76_{AA}	<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	<0.04	<0.04	0.05	0.39	<0.04	<0.04	0.18	0.58	16.05_{AA}	26.66_{AA}	<0.04	mg/kg	TM4/PM8
Coronene	<0.04	<0.04	<0.04	0.07	<0.04	<0.04	<0.04	0.12	3.18_{AA}	5.52_{AA}	<0.04	mg/kg	TM4/PM8
PAH 16 Total	<0.6	<0.6	<0.6	5.6	<0.6	<0.6	1.5	7.8	190.6_{AA}	479.1_{AA}	<0.6	mg/kg	TM4/PM8
PAH 17 Total	<0.64	<0.64	<0.64	5.65	<0.64	<0.64	1.50	7.87	193.81_{AA}	484.65_{AA}	<0.64	mg/kg	TM4/PM8
Benzo(b)fluoranthene	<0.05	<0.05	0.09	0.73	<0.05	<0.05	0.27	1.03	26.86_{AA}	55.87_{AA}	<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	<0.02	<0.02	0.04	0.28	<0.02	<0.02	0.10	0.40	10.44_{AA}	21.73_{AA}	<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	101	100	96	99	100	98	92	101	97_{AA}	96_{AA}	<0	%	TM4/PM8
Mineral Oil (C10-C40)	<30	<30	<30	<30	<30	<30	<30	<30	107	73	<30	mg/kg	TM5/PM16
MTBE #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM31/PM12
Benzene #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM31/PM12
Toluene #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM31/PM12
Ethylbenzene #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM31/PM12
m/p-Xylene #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM31/PM12
o-Xylene #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM31/PM12
PCB 28 #	<5	<5	<5	<5	<5	<5	<5	<5	$<50_{AA}$	$<50_{AA}$	<5	ug/kg	TM17/PM8

Please see attached notes for all abbreviations and acronyms

Client Name: Tier Environmental
Reference: TE1006
Location: James Wolfe Road Oxford
Contact: Adrian Read
JE Job No.: 17/18227

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	1-2	5-6	11-13	14-16	20-22	26-28	34-36	40-41	44-46	51-52	LOD/LOR	Units	Method No.
Sample ID	TE51	TE52	TE53	TE54	TE55	TE56	TE57	TE58	TE59	TES10			
Depth	0.2	0.3	0.4	0.5	0.3	0.7	0.5	0.3	0.2	0.3			
COC No / misc													
Containers	V J	V J	V J T	V J T	V J T	V J T	V J T	V J	V J	V J			
Sample Date	01/11/2017	01/11/2017	01/11/2017	01/11/2017	01/11/2017	01/11/2017	01/11/2017	02/11/2017	02/11/2017	02/11/2017			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	03/11/2017	03/11/2017	03/11/2017	03/11/2017	03/11/2017	03/11/2017	03/11/2017	03/11/2017	03/11/2017	03/11/2017			
PCB 52 #	<5	<5	<5	<5	<5	<5	<5	<5	<50 AA	<50 AA	<5	ug/kg	TM17/PM8
PCB 101 #	<5	<5	<5	<5	<5	<5	<5	<5	<50 AA	<50 AA	<5	ug/kg	TM17/PM8
PCB 118 #	<5	<5	<5	<5	<5	<5	<5	<5	<50 AA	<50 AA	<5	ug/kg	TM17/PM8
PCB 138 #	<5	<5	<5	<5	<5	<5	<5	<5	<50 AA	<50 AA	<5	ug/kg	TM17/PM8
PCB 153 #	<5	<5	<5	<5	<5	<5	<5	<5	<50 AA	<50 AA	<5	ug/kg	TM17/PM8
PCB 180 #	<5	<5	<5	<5	<5	<5	<5	<5	<50 AA	<50 AA	<5	ug/kg	TM17/PM8
Total 7 PCBs #	<35	<35	<35	<35	<35	<35	<35	<35	<350 AA	<350 AA	<35	ug/kg	TM17/PM8
Total Phenols HPLC	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	0.20	<0.15	mg/kg	TM26/PM21
Natural Moisture Content	9.1	2.8	19.4	11.1	8.0	14.3	20.4	5.8	3.9	4.4	<0.1	%	PM4/PM0
Sulphate as SO4 (2:1 Ext) #	0.0176	0.0132	0.0219	0.0500	0.0123	0.0164	0.0141	0.0132	0.0130	0.0036	<0.0015	g/l	TM38/PM20
Total Organic Carbon #	0.19	0.14	0.64	0.17	0.05	0.58	1.29	0.39	0.49	0.49	<0.02	%	TM21/PM24
ANC at pH4	2.48	1.90	0.39	3.00	2.64	0.18	0.17	2.52	0.06	1.87	<0.03	mol/kg	TM77/PM0
ANC at pH7	0.15	0.15	0.07	0.34	0.32	0.08	<0.03	0.61	<0.03	0.29	<0.03	mol/kg	TM77/PM0
Loss on Ignition #	3.4	<1.0	7.2	2.0	1.8	6.9	7.7	2.5	1.3	2.4	<1.0	%	TM22/PM0
pH #	8.39	9.15	8.37	11.32	11.07	8.36	7.93	8.22	8.60	11.82	<0.01	pH units	TM73/PM11

Please see attached notes for all abbreviations and acronyms

Client Name: Tier Environmental
Reference: TE1006
Location: James Wolfe Road Oxford
Contact: Adrian Read
JE Job No.: 17/18227

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	55-57	58-59											
Sample ID	TES11	TES12											
Depth	0.2	0.19											
COC No / misc													
Containers	V J T	V J											
Sample Date	02/11/2017	02/11/2017											
Sample Type	Soil	Soil											
Batch Number	1	1											
Date of Receipt	03/11/2017	03/11/2017											

Please see attached notes for all abbreviations and acronyms

											LOD/LOR	Units	Method No.
Arsenic #	4.7	7.8									<0.5	mg/kg	TM30/PM15
Cadmium #	<0.1	0.2									<0.1	mg/kg	TM30/PM15
Chromium #	16.6	21.5									<0.5	mg/kg	TM30/PM15
Copper #	3	5									<1	mg/kg	TM30/PM15
Lead #	101	14									<5	mg/kg	TM30/PM15
Mercury #	<0.1	<0.1									<0.1	mg/kg	TM30/PM15
Nickel #	4.2	9.4									<0.7	mg/kg	TM30/PM15
Selenium #	<1	<1									<1	mg/kg	TM30/PM15
Total Sulphate as SO4 #	1538	524									<50	mg/kg	TM50/PM29
Zinc #	47	34									<5	mg/kg	TM30/PM15
PAH MS													
Naphthalene #	<0.04	2.95 AA									<0.04	mg/kg	TM4/PM8
Acenaphthylene	0.09	8.39 AA									<0.03	mg/kg	TM4/PM8
Acenaphthene #	<0.05	5.04 AA									<0.05	mg/kg	TM4/PM8
Fluorene #	<0.04	7.80 AA									<0.04	mg/kg	TM4/PM8
Phenanthrene #	0.14	64.97 AA									<0.03	mg/kg	TM4/PM8
Anthracene #	0.11	24.72 AA									<0.04	mg/kg	TM4/PM8
Fluoranthene #	0.64	87.76 AA									<0.03	mg/kg	TM4/PM8
Pyrene #	0.61	74.72 AA									<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	0.47	48.61 AA									<0.06	mg/kg	TM4/PM8
Chrysene #	0.48	46.17 AA									<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #	1.29	120.88 AA									<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	0.76	71.14 AA									<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #	0.60	55.43 AA									<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	0.15	12.77 AA									<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	0.59	50.93 AA									<0.04	mg/kg	TM4/PM8
Coronene	0.12	10.83 AA									<0.04	mg/kg	TM4/PM8
PAH 16 Total	5.9	682.3 AA									<0.6	mg/kg	TM4/PM8
PAH 17 Total	6.05	693.11 AA									<0.64	mg/kg	TM4/PM8
Benzo(b)fluoranthene	0.93	87.03 AA									<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	0.36	33.85 AA									<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	98	103 AA									<0	%	TM4/PM8
Mineral Oil (C10-C40)	<30	183									<30	mg/kg	TM5/PM16
MTBE #	<5	<5									<5	ug/kg	TM31/PM12
Benzene #	<5	<5									<5	ug/kg	TM31/PM12
Toluene #	<5	<5									<5	ug/kg	TM31/PM12
Ethylbenzene #	<5	<5									<5	ug/kg	TM31/PM12
m/p-Xylene #	<5	<5									<5	ug/kg	TM31/PM12
o-Xylene #	<5	<5									<5	ug/kg	TM31/PM12
PCB 28 #	<5	<50 AA									<5	ug/kg	TM17/PM8

Client Name: Tier Environmental
Reference: TE1006
Location: James Wolfe Road Oxford
Contact: Adrian Read
JE Job No.: 17/18227

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	55-57	58-59									LOD/LOR	Units	Method No.
Sample ID	TES11	TES12											
Depth	0.2	0.19											
COC No / misc													
Containers	V J T	V J											
Sample Date	02/11/2017	02/11/2017											
Sample Type	Soil	Soil											
Batch Number	1	1											
Date of Receipt	03/11/2017	03/11/2017											
PCB 52 #	<5	<50 AA									<5	ug/kg	TM17/PM8
PCB 101 #	<5	<50 AA									<5	ug/kg	TM17/PM8
PCB 118 #	<5	<50 AA									<5	ug/kg	TM17/PM8
PCB 138 #	<5	<50 AA									<5	ug/kg	TM17/PM8
PCB 153 #	<5	<50 AA									<5	ug/kg	TM17/PM8
PCB 180 #	<5	<50 AA									<5	ug/kg	TM17/PM8
Total 7 PCBs #	<35	<350 AA									<35	ug/kg	TM17/PM8
Total Phenols HPLC	<0.15	<0.15									<0.15	mg/kg	TM26/PM21
Natural Moisture Content	7.0	4.0									<0.1	%	PM4/PM0
Sulphate as SO4 (2:1 Ext) #	0.0369	0.0177									<0.0015	g/l	TM38/PM20
Total Organic Carbon #	0.14	0.97									<0.02	%	TM21/PM24
ANC at pH4	3.03	2.37									<0.03	mol/kg	TM77/PM0
ANC at pH7	0.14	0.18									<0.03	mol/kg	TM77/PM0
Loss on Ignition #	1.5	2.0									<1.0	%	TM22/PM0
pH #	9.15	8.74									<0.01	pH units	TM73/PM11

Please see attached notes for all abbreviations and acronyms

Mass of sample taken (kg)	-	Moisture Content Ratio (%) =	11.6
Mass of dry sample (kg) =	0.09	Dry Matter Content Ratio (%) =	89.6
Particle Size <4mm =	>95%		

		Landfill Waste Acceptance Criteria Limits		
JEFL Job No	**17/18227**			
Sample No	**2**			
Client Sample No	**TE51**	**Inert Waste Landfill**	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Depth/Other	**0.2**			
Sample Date	**01/11/2017**			
Batch No	**1**			
Solid Waste Analysis				
Total Organic Carbon (%)	0.19	3	5	6
Loss on Ignition (%)	3.4	-	-	10
Sum of BTEX (mg/kg)	<0.025	6	-	-
Sum of 7 PCBs (mg/kg)	<0.035	1	-	-
Mineral Oil (mg/kg)	<30	500	-	-
PAH Sum of 17(mg/kg)	<0.64	100	-	-
pH (pH Units)	8.39	-	>6	-
ANC to pH 7 (mol/kg)	0.15	-	to be evaluated	to be evaluated
ANC to pH 4 (mol/kg)	2.48	-	to be evaluated	to be evaluated

Eluate Analysis	**10:1 conc^{n} leached**		**Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg**		
	C_{10}	**A_{10}**			
	mg/l	**mg/kg**	**mg/kg**		
Arsenic	<0.0025	<0.025	0.5	2	25
Barium	<0.003	<0.03	20	100	300
Cadmium	<0.0005	<0.005	0.04	1	5
Chromium	<0.0015	<0.015	0.5	10	70
Copper	<0.007	<0.07	2	50	100
Mercury	<0.001	<0.01	0.01	0.2	2
Molybdenum	<0.002	<0.02	0.5	10	30
Nickel	<0.002	<0.02	0.4	10	40
Lead	<0.005	<0.05	0.5	10	50
Antimony	<0.002	<0.02	0.06	0.7	5
Selenium	<0.003	<0.03	0.1	0.5	7
Zinc	<0.003	<0.03	4	50	200
Chloride	<0.3	<3	800	15000	25000
Fluoride	0.3	3	10	150	500
Sulphate as SO4	2.52	25.2	1000	20000	50000
Total Dissolved Solids	90	900	4000	60000	100000
Phenol	<0.01	<0.1	1	-	-
Dissolved Organic Carbon	2	20	500	800	1000

Mass of sample taken (kg)	-	Moisture Content Ratio (%) =	5.0
Mass of dry sample (kg) =	0.09	Dry Matter Content Ratio (%) =	95.2
Particle Size <4mm =	>95%		

		Landfill Waste Acceptance Criteria Limits		
JEFL Job No	**17/18227**			
Sample No	**6**			
Client Sample No	**TE52**	**Inert Waste Landfill**	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Depth/Other	**0.3**			
Sample Date	**01/11/2017**			
Batch No	**1**			
Solid Waste Analysis				
Total Organic Carbon (%)	0.14	3	5	6
Loss on Ignition (%)	<1.0	-	-	10
Sum of BTEX (mg/kg)	<0.025	6	-	-
Sum of 7 PCBs (mg/kg)	<0.035	1	-	-
Mineral Oil (mg/kg)	<30	500	-	-
PAH Sum of 17(mg/kg)	<0.64	100	-	-
pH (pH Units)	9.15	-	>6	-
ANC to pH 7 (mol/kg)	0.15	-	to be evaluated	to be evaluated
ANC to pH 4 (mol/kg)	1.90	-	to be evaluated	to be evaluated

Eluate Analysis	**10:1 conc^{n} leached**		**Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg**		
	C_{10}	**A_{10}**			
	mg/l	**mg/kg**	**mg/kg**		
Arsenic	<0.0025	<0.025	0.5	2	25
Barium	0.289	2.89	20	100	300
Cadmium	<0.0005	<0.005	0.04	1	5
Chromium	<0.0015	<0.015	0.5	10	70
Copper	<0.007	<0.07	2	50	100
Mercury	<0.001	<0.01	0.01	0.2	2
Molybdenum	<0.002	<0.02	0.5	10	30
Nickel	<0.002	<0.02	0.4	10	40
Lead	<0.005	<0.05	0.5	10	50
Antimony	<0.002	<0.02	0.06	0.7	5
Selenium	<0.003	<0.03	0.1	0.5	7
Zinc	<0.003	<0.03	4	50	200
Chloride	0.4	4	800	15000	25000
Fluoride	<0.3	<3	10	150	500
Sulphate as SO4	4.37	43.7	1000	20000	50000
Total Dissolved Solids	86	860	4000	60000	100000
Phenol	<0.01	<0.1	1	-	-
Dissolved Organic Carbon	<2	<20	500	800	1000

Please include all sections of this report if it is reproduced

All solid results are expressed on a dry weight basis unless stated otherwise.

Mass of sample taken (kg)	-	Moisture Content Ratio (%) =	22.3
Mass of dry sample (kg) =	0.09	Dry Matter Content Ratio (%) =	81.7
Particle Size <4mm =	>95%		

JEFL Job No	**17/18227**	**Landfill Waste Acceptance Criteria Limits**		
Sample No	**13**			
Client Sample No	**TE53**	**Inert Waste Landfill**	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Depth/Other	**0.4**			
Sample Date	**01/11/2017**			
Batch No	**1**			
Solid Waste Analysis				
Total Organic Carbon (%)	0.64	3	5	6
Loss on Ignition (%)	7.2	-	-	10
Sum of BTEX (mg/kg)	<0.025	6	-	-
Sum of 7 PCBs (mg/kg)	<0.035	1	-	-
Mineral Oil (mg/kg)	<30	500	-	-
PAH Sum of 17(mg/kg)	<0.64	100	-	-
pH (pH Units)	8.37	-	>6	-
ANC to pH 7 (mol/kg)	0.07	-	to be evaluated	to be evaluated
ANC to pH 4 (mol/kg)	0.39	-	to be evaluated	to be evaluated

Eluate Analysis	**10:1 conc^{n} leached**		**Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg**		
	C_{10}	**A_{10}**			
	mg/l	**mg/kg**	**mg/kg**		
Arsenic	<0.0025	<0.025	0.5	2	25
Barium	<0.003	<0.03	20	100	300
Cadmium	<0.0005	<0.005	0.04	1	5
Chromium	<0.0015	<0.015	0.5	10	70
Copper	<0.007	<0.07	2	50	100
Mercury	<0.001	<0.01	0.01	0.2	2
Molybdenum	0.006	0.06	0.5	10	30
Nickel	<0.002	<0.02	0.4	10	40
Lead	<0.005	<0.05	0.5	10	50
Antimony	<0.002	<0.02	0.06	0.7	5
Selenium	<0.003	<0.03	0.1	0.5	7
Zinc	<0.003	<0.03	4	50	200
Chloride	<0.3	<3	800	15000	25000
Fluoride	0.7	7	10	150	500
Sulphate as SO4	6.44	64.4	1000	20000	50000
Total Dissolved Solids	37	370	4000	60000	100000
Phenol	<0.01	<0.1	1	-	-
Dissolved Organic Carbon	3	30	500	800	1000

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Mass of sample taken (kg)	-	Moisture Content Ratio (%) =	15.6
Mass of dry sample (kg) =	0.09	Dry Matter Content Ratio (%) =	86.5
Particle Size <4mm =	>95%		

		Landfill Waste Acceptance Criteria Limits		
JEFL Job No	**17/18227**			
Sample No	**16**			
Client Sample No	**TE54**	**Inert Waste Landfill**	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Depth/Other	**0.5**			
Sample Date	**01/11/2017**			
Batch No	**1**			
Solid Waste Analysis				
Total Organic Carbon (%)	0.17	3	5	6
Loss on Ignition (%)	2.0	-	-	10
Sum of BTEX (mg/kg)	<0.025	6	-	-
Sum of 7 PCBs (mg/kg)	<0.035	1	-	-
Mineral Oil (mg/kg)	<30	500	-	-
PAH Sum of 17(mg/kg)	5.65	100	-	-
pH (pH Units)	11.32	-	>6	-
ANC to pH 7 (mol/kg)	0.34	-	to be evaluated	to be evaluated
ANC to pH 4 (mol/kg)	3.00	-	to be evaluated	to be evaluated

Eluate Analysis	**10:1 conc^{n} leached**		**Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg**		
	C_{10}	**A_{10}**			
	mg/l	**mg/kg**	**mg/kg**		
Arsenic	<0.0025	<0.025	0.5	2	25
Barium	<0.003	<0.03	20	100	300
Cadmium	<0.0005	<0.005	0.04	1	5
Chromium	<0.0015	<0.015	0.5	10	70
Copper	<0.007	<0.07	2	50	100
Mercury	<0.001	<0.01	0.01	0.2	2
Molybdenum	0.002	0.02	0.5	10	30
Nickel	<0.002	<0.02	0.4	10	40
Lead	<0.005	<0.05	0.5	10	50
Antimony	<0.002	<0.02	0.06	0.7	5
Selenium	<0.003	<0.03	0.1	0.5	7
Zinc	<0.003	<0.03	4	50	200
Chloride	2.8	28	800	15000	25000
Fluoride	<0.3	<3	10	150	500
Sulphate as SO4	8.07	80.7	1000	20000	50000
Total Dissolved Solids	147	1470	4000	60000	100000
Phenol	<0.01	<0.1	1	-	-
Dissolved Organic Carbon	3	30	500	800	1000

Mass of sample taken (kg)	-	Moisture Content Ratio (%) =	11.4
Mass of dry sample (kg) =	0.09	Dry Matter Content Ratio (%) =	89.8
Particle Size <4mm =	>95%		

		Landfill Waste Acceptance Criteria Limits		
JEFL Job No	**17/18227**			
Sample No	**22**			
Client Sample No	**TE55**	**Inert Waste Landfill**	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Depth/Other	**0.3**			
Sample Date	**01/11/2017**			
Batch No	**1**			
Solid Waste Analysis				
Total Organic Carbon (%)	0.05	3	5	6
Loss on Ignition (%)	1.8	-	-	10
Sum of BTEX (mg/kg)	<0.025	6	-	-
Sum of 7 PCBs (mg/kg)	<0.035	1	-	-
Mineral Oil (mg/kg)	<30	500	-	-
PAH Sum of 17(mg/kg)	<0.64	100	-	-
pH (pH Units)	11.07	-	>6	-
ANC to pH 7 (mol/kg)	0.32	-	to be evaluated	to be evaluated
ANC to pH 4 (mol/kg)	2.64	-	to be evaluated	to be evaluated

Eluate Analysis	**10:1 conc^{n} leached**		**Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg**		
	C_{10}	**A_{10}**			
	mg/l	**mg/kg**	**mg/kg**		
Arsenic	<0.0025	<0.025	0.5	2	25
Barium	<0.003	<0.03	20	100	300
Cadmium	<0.0005	<0.005	0.04	1	5
Chromium	<0.0015	<0.015	0.5	10	70
Copper	<0.007	<0.07	2	50	100
Mercury	<0.001	<0.01	0.01	0.2	2
Molybdenum	<0.002	<0.02	0.5	10	30
Nickel	<0.002	<0.02	0.4	10	40
Lead	<0.005	<0.05	0.5	10	50
Antimony	<0.002	<0.02	0.06	0.7	5
Selenium	<0.003	<0.03	0.1	0.5	7
Zinc	<0.003	<0.03	4	50	200
Chloride	1.3	13	800	15000	25000
Fluoride	<0.3	<3	10	150	500
Sulphate as SO4	7.44	74.4	1000	20000	50000
Total Dissolved Solids	145	1450	4000	60000	100000
Phenol	<0.01	<0.1	1	-	-
Dissolved Organic Carbon	4	40	500	800	1000

Mass of sample taken (kg)	-	Moisture Content Ratio (%) =	15.9
Mass of dry sample (kg) =	0.09	Dry Matter Content Ratio (%) =	86.3
Particle Size <4mm =	>95%		

		Landfill Waste Acceptance Criteria Limits		
JEFL Job No	**17/18227**			
Sample No	**28**			
Client Sample No	**TE56**	**Inert Waste Landfill**	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Depth/Other	**0.7**			
Sample Date	**01/11/2017**			
Batch No	**1**			
Solid Waste Analysis				
Total Organic Carbon (%)	0.58	3	5	6
Loss on Ignition (%)	6.9	-	-	10
Sum of BTEX (mg/kg)	<0.025	6	-	-
Sum of 7 PCBs (mg/kg)	<0.035	1	-	-
Mineral Oil (mg/kg)	<30	500	-	-
PAH Sum of 17(mg/kg)	<0.64	100	-	-
pH (pH Units)	8.36	-	>6	-
ANC to pH 7 (mol/kg)	0.08	-	to be evaluated	to be evaluated
ANC to pH 4 (mol/kg)	0.18	-	to be evaluated	to be evaluated

Eluate Analysis	**10:1 conc^{n} leached**		**Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg**		
	C_{10}	**A_{10}**			
	mg/l	**mg/kg**	**mg/kg**		
Arsenic	<0.0025	<0.025	0.5	2	25
Barium	<0.003	<0.03	20	100	300
Cadmium	<0.0005	<0.005	0.04	1	5
Chromium	<0.0015	<0.015	0.5	10	70
Copper	<0.007	<0.07	2	50	100
Mercury	<0.001	<0.01	0.01	0.2	2
Molybdenum	<0.002	<0.02	0.5	10	30
Nickel	<0.002	<0.02	0.4	10	40
Lead	<0.005	<0.05	0.5	10	50
Antimony	<0.002	<0.02	0.06	0.7	5
Selenium	<0.003	<0.03	0.1	0.5	7
Zinc	0.005	0.05	4	50	200
Chloride	0.9	9	800	15000	25000
Fluoride	<0.3	<3	10	150	500
Sulphate as SO4	4.38	43.8	1000	20000	50000
Total Dissolved Solids	103	1030	4000	60000	100000
Phenol	<0.01	<0.1	1	-	-
Dissolved Organic Carbon	4	40	500	800	1000

Mass of sample taken (kg)	-	Moisture Content Ratio (%) =	28.0
Mass of dry sample (kg) =	0.09	Dry Matter Content Ratio (%) =	78.1
Particle Size <4mm =	>95%		

		Landfill Waste Acceptance Criteria Limits		
JEFL Job No	**17/18227**			
Sample No	**36**			
Client Sample No	**TE57**	**Inert Waste Landfill**	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Depth/Other	**0.5**			
Sample Date	**01/11/2017**			
Batch No	**1**			
Solid Waste Analysis				
Total Organic Carbon (%)	1.29	3	5	6
Loss on Ignition (%)	7.7	-	-	10
Sum of BTEX (mg/kg)	<0.025	6	-	-
Sum of 7 PCBs (mg/kg)	<0.035	1	-	-
Mineral Oil (mg/kg)	<30	500	-	-
PAH Sum of 17(mg/kg)	1.50	100	-	-
pH (pH Units)	7.93	-	>6	-
ANC to pH 7 (mol/kg)	<0.03	-	to be evaluated	to be evaluated
ANC to pH 4 (mol/kg)	0.17	-	to be evaluated	to be evaluated

Eluate Analysis	**10:1 conc^{n} leached**		**Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg**		
	C_{10}	**A_{10}**			
	mg/l	**mg/kg**	**mg/kg**		
Arsenic	0.0055	0.055	0.5	2	25
Barium	0.008	0.08	20	100	300
Cadmium	<0.0005	<0.005	0.04	1	5
Chromium	<0.0015	<0.015	0.5	10	70
Copper	<0.007	<0.07	2	50	100
Mercury	<0.001	<0.01	0.01	0.2	2
Molybdenum	0.006	0.06	0.5	10	30
Nickel	0.002	0.02	0.4	10	40
Lead	<0.005	<0.05	0.5	10	50
Antimony	<0.002	<0.02	0.06	0.7	5
Selenium	<0.003	<0.03	0.1	0.5	7
Zinc	<0.003	<0.03	4	50	200
Chloride	0.9	9	800	15000	25000
Fluoride	<0.3	<3	10	150	500
Sulphate as SO4	0.31	3.1	1000	20000	50000
Total Dissolved Solids	295	2951	4000	60000	100000
Phenol	<0.01	<0.1	1	-	-
Dissolved Organic Carbon	16	160	500	800	1000

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Mass of sample taken (kg)	-	Moisture Content Ratio (%) =	10.6
Mass of dry sample (kg) =	0.09	Dry Matter Content Ratio (%) =	90.4
Particle Size <4mm =	>95%		

		Landfill Waste Acceptance Criteria Limits		
JEFL Job No	**17/18227**			
Sample No	**41**			
Client Sample No	**TE58**	**Inert Waste Landfill**	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Depth/Other	**0.3**			
Sample Date	**02/11/2017**			
Batch No	**1**			
Solid Waste Analysis				
Total Organic Carbon (%)	0.39	3	5	6
Loss on Ignition (%)	2.5	-	-	10
Sum of BTEX (mg/kg)	<0.025	6	-	-
Sum of 7 PCBs (mg/kg)	<0.035	1	-	-
Mineral Oil (mg/kg)	<30	500	-	-
PAH Sum of 17(mg/kg)	7.87	100	-	-
pH (pH Units)	8.22	-	>6	-
ANC to pH 7 (mol/kg)	0.61	-	to be evaluated	to be evaluated
ANC to pH 4 (mol/kg)	2.52	-	to be evaluated	to be evaluated

Eluate Analysis	**10:1 conc^{n} leached**		**Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg**		
	C_{10}	**A_{10}**			
	mg/l	**mg/kg**	**mg/kg**		
Arsenic	<0.0025	<0.025	0.5	2	25
Barium	<0.003	<0.03	20	100	300
Cadmium	<0.0005	<0.005	0.04	1	5
Chromium	<0.0015	<0.015	0.5	10	70
Copper	<0.007	<0.07	2	50	100
Mercury	<0.001	<0.01	0.01	0.2	2
Molybdenum	<0.002	<0.02	0.5	10	30
Nickel	<0.002	<0.02	0.4	10	40
Lead	<0.005	<0.05	0.5	10	50
Antimony	<0.002	<0.02	0.06	0.7	5
Selenium	<0.003	<0.03	0.1	0.5	7
Zinc	<0.003	<0.03	4	50	200
Chloride	<0.3	<3	800	15000	25000
Fluoride	<0.3	<3	10	150	500
Sulphate as SO4	2.91	29.1	1000	20000	50000
Total Dissolved Solids	195	1949	4000	60000	100000
Phenol	<0.01	<0.1	1	-	-
Dissolved Organic Carbon	4	40	500	800	1000

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Mass of sample taken (kg)	-	Moisture Content Ratio (%) =	6.6
Mass of dry sample (kg) =	0.09	Dry Matter Content Ratio (%) =	93.8
Particle Size <4mm =	>95%		

		Landfill Waste Acceptance Criteria Limits		
JEFL Job No	**17/18227**			
Sample No	**46**			
Client Sample No	**TE59**	**Inert Waste Landfill**	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Depth/Other	**0.2**			
Sample Date	**02/11/2017**			
Batch No	**1**			
Solid Waste Analysis				
Total Organic Carbon (%)	0.49	3	5	6
Loss on Ignition (%)	1.3	-	-	10
Sum of BTEX (mg/kg)	<0.025	6	-	-
Sum of 7 PCBs (mg/kg)	<0.350	1	-	-
Mineral Oil (mg/kg)	107	500	-	-
PAH Sum of 17(mg/kg)	193.81	100	-	-
pH (pH Units)	8.60	-	>6	-
ANC to pH 7 (mol/kg)	<0.03	-	to be evaluated	to be evaluated
ANC to pH 4 (mol/kg)	0.06	-	to be evaluated	to be evaluated

Eluate Analysis	**10:1 conc^{n} leached**		**Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg**		
	C_{10}	**A_{10}**			
	mg/l	**mg/kg**	**mg/kg**		
Arsenic	<0.0025	<0.025	0.5	2	25
Barium	<0.003	<0.03	20	100	300
Cadmium	<0.0005	<0.005	0.04	1	5
Chromium	<0.0015	<0.015	0.5	10	70
Copper	<0.007	<0.07	2	50	100
Mercury	<0.001	<0.01	0.01	0.2	2
Molybdenum	<0.002	<0.02	0.5	10	30
Nickel	<0.002	<0.02	0.4	10	40
Lead	<0.005	<0.05	0.5	10	50
Antimony	<0.002	<0.02	0.06	0.7	5
Selenium	<0.003	<0.03	0.1	0.5	7
Zinc	<0.003	<0.03	4	50	200
Chloride	<0.3	<3	800	15000	25000
Fluoride	<0.3	<3	10	150	500
Sulphate as SO4	7.71	77.1	1000	20000	50000
Total Dissolved Solids	43	430	4000	60000	100000
Phenol	<0.01	<0.1	1	-	-
Dissolved Organic Carbon	5	50	500	800	1000

Mass of sample taken (kg)	-	Moisture Content Ratio (%) =	3.0
Mass of dry sample (kg) =	0.09	Dry Matter Content Ratio (%) =	97.1
Particle Size <4mm =	>95%		

		Landfill Waste Acceptance Criteria Limits		
JEFL Job No	**17/18227**			
Sample No	**52**			
Client Sample No	**TES10**	**Inert Waste Landfill**	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Depth/Other	**0.3**			
Sample Date	**02/11/2017**			
Batch No	**1**			
Solid Waste Analysis				
Total Organic Carbon (%)	0.49	3	5	6
Loss on Ignition (%)	2.4	-	-	10
Sum of BTEX (mg/kg)	<0.025	6	-	-
Sum of 7 PCBs (mg/kg)	<0.350	1	-	-
Mineral Oil (mg/kg)	73	500	-	-
PAH Sum of 17(mg/kg)	484.65	100	-	-
pH (pH Units)	11.82	-	>6	-
ANC to pH 7 (mol/kg)	0.29	-	to be evaluated	to be evaluated
ANC to pH 4 (mol/kg)	1.87	-	to be evaluated	to be evaluated

Eluate Analysis	**10:1 conc^{n} leached**		**Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg**		
	C_{10}	**A_{10}**			
	mg/l	**mg/kg**	**mg/kg**		
Arsenic	<0.0025	<0.025	0.5	2	25
Barium	0.049	0.49	20	100	300
Cadmium	<0.0005	<0.005	0.04	1	5
Chromium	0.0019	0.019	0.5	10	70
Copper	<0.007	<0.07	2	50	100
Mercury	<0.001	<0.01	0.01	0.2	2
Molybdenum	<0.002	<0.02	0.5	10	30
Nickel	<0.002	<0.02	0.4	10	40
Lead	<0.005	<0.05	0.5	10	50
Antimony	<0.002	<0.02	0.06	0.7	5
Selenium	<0.003	<0.03	0.1	0.5	7
Zinc	<0.003	<0.03	4	50	200
Chloride	4.5	45	800	15000	25000
Fluoride	<0.3	<3	10	150	500
Sulphate as SO4	7.89	78.9	1000	20000	50000
Total Dissolved Solids	302	3019	4000	60000	100000
Phenol	<0.01	<0.1	1	-	-
Dissolved Organic Carbon	5	50	500	800	1000

Mass of sample taken (kg)	-	Moisture Content Ratio (%) =	8.5
Mass of dry sample (kg) =	0.09	Dry Matter Content Ratio (%) =	92.2
Particle Size <4mm =	>95%		

		Landfill Waste Acceptance Criteria Limits		
JEFL Job No	**17/18227**			
Sample No	**57**			
Client Sample No	**TES11**	**Inert Waste Landfill**	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Depth/Other	**0.2**			
Sample Date	**02/11/2017**			
Batch No	**1**			
Solid Waste Analysis				
Total Organic Carbon (%)	0.14	3	5	6
Loss on Ignition (%)	1.5	-	-	10
Sum of BTEX (mg/kg)	<0.025	6	-	-
Sum of 7 PCBs (mg/kg)	<0.035	1	-	-
Mineral Oil (mg/kg)	<30	500	-	-
PAH Sum of 17(mg/kg)	6.05	100	-	-
pH (pH Units)	9.15	-	>6	-
ANC to pH 7 (mol/kg)	0.14	-	to be evaluated	to be evaluated
ANC to pH 4 (mol/kg)	3.03	-	to be evaluated	to be evaluated

Eluate Analysis	**10:1 conc^{n} leached**		**Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg**		
	C_{10}	**A_{10}**			
	mg/l	**mg/kg**	**mg/kg**		
Arsenic	<0.0025	<0.025	0.5	2	25
Barium	0.008	0.08	20	100	300
Cadmium	<0.0005	<0.005	0.04	1	5
Chromium	0.0076	0.076	0.5	10	70
Copper	<0.007	<0.07	2	50	100
Mercury	<0.001	<0.01	0.01	0.2	2
Molybdenum	<0.002	<0.02	0.5	10	30
Nickel	<0.002	<0.02	0.4	10	40
Lead	<0.005	<0.05	0.5	10	50
Antimony	0.003	0.03	0.06	0.7	5
Selenium	<0.003	<0.03	0.1	0.5	7
Zinc	<0.003	<0.03	4	50	200
Chloride	<0.3	<3	800	15000	25000
Fluoride	<0.3	<3	10	150	500
Sulphate as SO4	3.46	34.6	1000	20000	50000
Total Dissolved Solids	160	1599	4000	60000	100000
Phenol	<0.01	<0.1	1	-	-
Dissolved Organic Carbon	2	<20	500	800	1000

Mass of sample taken (kg)	-	Moisture Content Ratio (%) =	7.9
Mass of dry sample (kg) =	0.09	Dry Matter Content Ratio (%) =	92.7
Particle Size <4mm =	>95%		

		Landfill Waste Acceptance Criteria Limits		
JEFL Job No	**17/18227**			
Sample No	**59**			
Client Sample No	**TES12**	**Inert Waste Landfill**	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Depth/Other	**0.19**			
Sample Date	**02/11/2017**			
Batch No	**1**			
Solid Waste Analysis				
Total Organic Carbon (%)	0.97	3	5	6
Loss on Ignition (%)	2.0	-	-	10
Sum of BTEX (mg/kg)	<0.025	6	-	-
Sum of 7 PCBs (mg/kg)	<0.350	1	-	-
Mineral Oil (mg/kg)	183	500	-	-
PAH Sum of 17(mg/kg)	693.11	100	-	-
pH (pH Units)	8.74	-	>6	-
ANC to pH 7 (mol/kg)	0.18	-	to be evaluated	to be evaluated
ANC to pH 4 (mol/kg)	2.37	-	to be evaluated	to be evaluated

Eluate Analysis	**10:1 conc^{n} leached**		**Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg**		
	C_{10}	**A_{10}**			
	mg/l	**mg/kg**	**mg/kg**		
Arsenic	<0.0025	<0.025	0.5	2	25
Barium	0.036	0.36	20	100	300
Cadmium	<0.0005	<0.005	0.04	1	5
Chromium	<0.0015	<0.015	0.5	10	70
Copper	<0.007	<0.07	2	50	100
Mercury	<0.001	<0.01	0.01	0.2	2
Molybdenum	0.003	0.03	0.5	10	30
Nickel	<0.002	<0.02	0.4	10	40
Lead	<0.005	<0.05	0.5	10	50
Antimony	<0.002	<0.02	0.06	0.7	5
Selenium	<0.003	<0.03	0.1	0.5	7
Zinc	<0.003	<0.03	4	50	200
Chloride	0.5	5	800	15000	25000
Fluoride	<0.3	<3	10	150	500
Sulphate as SO4	3.23	32.3	1000	20000	50000
Total Dissolved Solids	153	1530	4000	60000	100000
Phenol	<0.01	<0.1	1	-	-
Dissolved Organic Carbon	3	30	500	800	1000

Client Name: Tier Environmental
Reference: TE1006
Location: James Wolfe Road Oxford
Contact: Adrian Read

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Analysis	Reason
No deviating sample report results for job 17/18227						

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.
Only analyses which are accredited are recorded as deviating if set criteria are not met.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 17/18227

SOILS

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overesitimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

DEVIATING SAMPLES

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any test results that may be compromised highlighted on your deviating samples report.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.
Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa.
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
++	Result outside calibration range, results should be considered as indicative only and are not accredited.
*	Analysis subcontracted to a Jones Environmental approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range
AA	x10 Dilution

JE Job No: 17/18227

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.	PM0	No preparation is required.				
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.	PM0	No preparation is required.			AR	
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	PM16	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	Yes
TM17	Modified US EPA method 8270. Determination of specific Polychlorinated Biphenyl congeners by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM20	Modified BS 1377-3: 1990/USEPA 160.3 Gravimetric determination of Total Dissolved Solids/Total Solids	PM0	No preparation is required.			AR	Yes
TM21	Modified USEPA 415.1. Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection. Organic Matter (SOM) calculated as per EA MCERTS Chemical Testing of Soil, March 2012 v4.	PM24	Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis.	Yes		AD	Yes
TM22	Modified USEPA 160.4. Gravimetric determination of Loss on Ignition by temperature controlled Muffle Furnace (450°C)	PM0	No preparation is required.	Yes		AD	Yes
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM0	No preparation is required.			AR	Yes

JE Job No: 17/18227

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM21	As received solid or water samples are extracted in Methanol: Sodium Hydroxide (0.1M NaOH) (60:40) by orbital shaker.			AR	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.	Yes		AD	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM17	Modified method EN12457-2 As received solid samples are leached with water in a 10:1 water to soil ratio for 24 hours, the moisture content of the sample is included in the ratio.	Yes		AR	Yes
TM31	Modified USEPA 8015B. Determination of Methyltertbutylether, Benzene, Toluene, Ethylbenzene and Xylene by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM31	Modified USEPA 8015B. Determination of Methyltertbutylether, Benzene, Toluene, Ethylbenzene and Xylene by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM38	Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1	PM0	No preparation is required.	Yes		AR	Yes
TM38	Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AD	Yes
TM50	Acid soluble sulphate (Total Sulphate) analysed by ICP-OES	PM29	Dried and ground solid sample is boiled with dilute hydrochloric acid, the resulting liquor is then analysed.	Yes		AD	Yes
TM60	Modified USEPA 9060. Determination of TOC by calculation from Total Carbon and Inorganic Carbon using a TOC analyser, the carbon in the sample is converted to CO2 and then passed through a non-dispersive infrared gas analyser (NDIR).	PM0	No preparation is required.			AR	Yes
TM73	Modified US EPA methods 150.1 and 9045D and BS1377:1990. Determination of pH by Metrohm automated probe analyser.	PM11	Extraction of as received solid samples using one part solid to 2.5 parts deionised water.	Yes		AR	No

JE Job No: 17/18227

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM77	Modified DDCEN/TS method 15364:2006. Determination of Acid Neutralization Capacity by Metrohm automated probe analyser.	PM0	No preparation is required.			AR	No
TM173	Analysis of fluoride by ISE (Ion Selective Electrode) using modified ISE method 340.2	PM0	No preparation is required.			AR	Yes
NONE	No Method Code	PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.			AR	

Exova Jones Environmental

Registered Address : Exova (UK) Ltd, Lochend Industrial Estate, Newbridge, Midlothian, EH28 8PL

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Tier Environmental
Suite 513, Chadwick House
Warrington Rd
Birchwood
Warrington
WA3 6AE

Attention :	Adrian Read
Date :	3rd November, 2017
Your reference :	TE1044
Our reference :	Test Report 17/16834 Batch 1
Location :	Uxbridge
Date samples received :	11th October, 2017
Status :	Final report
Issue :	1

Six samples were received for analysis on 11th October, 2017 of which two were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Compiled By:

Lucas Halliwell
Project Co-ordinator

Client Name: Tier Environmental
Reference: TE1044
Location: Uxbridge
Contact: Adrian Read
JE Job No.: 17/16834

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

Please see attached notes for all abbreviations and acronyms

J E Sample No.	2-3	6-8									LOD/LOR	Units	Method No.
Sample ID	TBH1	TBH1											
Depth	0.20	2.50											
COC No / misc													
Containers	V J	V J T											
Sample Date	09/10/2017	09/10/2017											
Sample Type	Soil	Soil											
Batch Number	1	1											
Date of Receipt	11/10/2017	11/10/2017											
Arsenic #	3.6	14.1									<0.5	mg/kg	TM30/PM15
Cadmium #	<0.1	<0.1									<0.1	mg/kg	TM30/PM15
Chromium #	92.4	105.4									<0.5	mg/kg	TM30/PM15
Copper #	6	7									<1	mg/kg	TM30/PM15
Lead #	<5	6									<5	mg/kg	TM30/PM15
Mercury #	<0.1	<0.1									<0.1	mg/kg	TM30/PM15
Nickel #	7.1	17.1									<0.7	mg/kg	TM30/PM15
Selenium #	<1	<1									<1	mg/kg	TM30/PM15
Total Sulphate as SO4 #	<50	<50									<50	mg/kg	TM50/PM29
Zinc #	13	23									<5	mg/kg	TM30/PM15
PAH MS													
Naphthalene #	<0.04	<0.04									<0.04	mg/kg	TM4/PM8
Acenaphthylene	<0.03	<0.03									<0.03	mg/kg	TM4/PM8
Acenaphthene #	<0.05	<0.05									<0.05	mg/kg	TM4/PM8
Fluorene #	<0.04	<0.04									<0.04	mg/kg	TM4/PM8
Phenanthrene #	<0.03	<0.03									<0.03	mg/kg	TM4/PM8
Anthracene #	<0.04	<0.04									<0.04	mg/kg	TM4/PM8
Fluoranthene #	<0.03	<0.03									<0.03	mg/kg	TM4/PM8
Pyrene #	<0.03	<0.03									<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	<0.06	<0.06									<0.06	mg/kg	TM4/PM8
Chrysene #	<0.02	<0.02									<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #	<0.07	<0.07									<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	<0.04	<0.04									<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #	<0.04	<0.04									<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	<0.04	<0.04									<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	<0.04	<0.04									<0.04	mg/kg	TM4/PM8
PAH 16 Total	<0.6	<0.6									<0.6	mg/kg	TM4/PM8
Benzo(b)fluoranthene	<0.05	<0.05									<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	<0.02	<0.02									<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	98	83									<0	%	TM4/PM8
Total Phenols HPLC	<0.15	<0.15									<0.15	mg/kg	TM26/PM21
Natural Moisture Content	3.5	7.2									<0.1	%	PM4/PM0
Sulphate as SO4 (2:1 Ext) #	<0.0015	0.0112									<0.0015	g/l	TM38/PM20
Total Organic Carbon #	0.04	<0.02									<0.02	%	TM21/PM24
pH #	8.65	7.96									<0.01	pH units	TM73/PM11

Client Name: Tier Environmental
Reference: TE1044
Location: Uxbridge
Contact: Adrian Read

Note:

Asbestos Screen analysis is carried out in accordance with our documented in-house methods PM042 and TM065 and HSG 248 by Stereo and Polarised Light Microscopy using Dispersion Staining Techniques and is covered by our UKAS accreditation. Detailed Gravimetric Quantification and PCOM Fibre Analysis is carried out in accordance with our documented in-house methods PM042 and TM131 and HSG 248 using Stereo and Polarised Light Microscopy and Phase Contrast Optical Microscopy (PCOM). Samples are retained for not less than 6 months from the date of analysis unless specifically requested.

Opinions, including ACM type and Asbestos level, lie outside the scope of our UKAS accreditation.

Where the sample is not taken by a Jones Environmental Laboratory consultant, Jones Environmental Laboratory cannot be responsible for inaccurate or unrepresentative sampling.

Signed on behalf of Jones Environmental Laboratory:



Ryan Butterworth
Asbestos Team Leader

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Date Of Analysis	Analysis	Result
17/16834	1	TBH1	0.20	3	01/11/2017	**General Description (Bulk Analysis)**	soil/sand/stones
					01/11/2017	**Asbestos Fibres**	NAD
					01/11/2017	**Asbestos Fibres (2)**	NAD
					01/11/2017	**Asbestos ACM**	NAD
					01/11/2017	**Asbestos ACM (2)**	NAD
					01/11/2017	**Asbestos Type**	NAD
					01/11/2017	**Asbestos Type (2)**	NAD
					01/11/2017	**Asbestos Level Screen**	NAD

Client Name: Tier Environmental

Reference: TE1044

Location: Uxbridge

Contact: Adrian Read

Matrix : Solid

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Analysis	Reason
17/16834	1	TBH1	0.20	2-3	PAH	Sample holding time exceeded
17/16834	1	TBH1	2.50	6-8	PAH	Sample holding time exceeded

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.

Only analyses which are accredited are recorded as deviating if set criteria are not met.

Please include all sections of this report if it is reproduced

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 17/16834

SOILS

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overesitimate when other sulphides such as Barite (Barium Sulphate) are present.

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ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

DEVIATING SAMPLES

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any test results that may be compromised highlighted on your deviating samples report.

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Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.
Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

ABBREVIATIONS and ACRONYMS USED

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NDP	No Determination Possible
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++	Result outside calibration range, results should be considered as indicative only and are not accredited.
*	Analysis subcontracted to a Jones Environmental approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range

JE Job No: 17/16834

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.	PM0	No preparation is required.				
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM21	Modified USEPA 415.1. Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection. Organic Matter (SOM) calculated as per EA MCERTS Chemical Testing of Soil, March 2012 v4.	PM24	Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis.	Yes		AD	Yes
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM21	As received solid or water samples are extracted in Methanol: Sodium Hydroxide (0.1M NaOH) (60:40) by orbital shaker.			AR	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.	Yes		AD	Yes
TM38	Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AD	Yes
TM50	Acid soluble sulphate (Total Sulphate) analysed by ICP-OES	PM29	Dried and ground solid sample is boiled with dilute hydrochloric acid, the resulting liquor is then analysed.	Yes		AD	Yes
TM65	Asbestos Bulk Identification method based on HSG 248.	PM42	Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.	Yes		AR	
TM73	Modified US EPA methods 150.1 and 9045D and BS1377:1990. Determination of pH by Metrohm automated probe analyser.	PM11	Extraction of as received solid samples using one part solid to 2.5 parts deionised water.	Yes		AR	No

Exova Jones Environmental

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Tier Environmental
Suite 513, Chadwick House
Warrington Rd
Birchwood
Warrington
WA3 6AE

Attention :	Adrian Read
Date :	6th November, 2017
Your reference :	TE1044
Our reference :	Test Report 17/16834 Batch 3
Location :	Uxbridge
Date samples received :	20th October, 2017
Status :	Final report
Issue :	1

Thirty samples were received for analysis on 20th October, 2017 of which eleven were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Compiled By:

Bruce Leslie
Project Co-ordinator

Client Name: Tier Environmental
Reference: TE1044
Location: Uxbridge
Contact: Adrian Read
JE Job No.: 17/16834

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	22-23	28-30	34	42-43	51-53	64-65	69-71	72-73	74-76	86-88	LOD/LOR	Units	Method No.
Sample ID	TWS1	TWS2A	TWS3	TWS4	TWS5	TWS6	TWS7	TWS8	TWS9	TWS11			
Depth	0.3	0.3	0.28	0.3	0.40	0.4	0.70	0.60	0.30	0.50			
COC No / misc													
Containers	V J	V J T	T	V J	V J T	V J	V J T	V J	V J T	V J T			
Sample Date	18/10/2017	18/10/2017	18/10/2017	18/10/2017	18/10/2017	18/10/2017	19/10/2017	18/10/2017	19/10/2017	19/10/2017			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	3	3	3	3	3	3	3	3	3	3			
Date of Receipt	20/10/2017	20/10/2017	20/10/2017	20/10/2017	20/10/2017	20/10/2017	20/10/2017	20/10/2017	20/10/2017	20/10/2017			
Arsenic #	6.6	-	12.9	8.2	-	7.1	8.1	7.3	-	6.5	<0.5	mg/kg	TM30/PM15
Cadmium #	<0.1	-	<0.1	<0.1	-	<0.1	0.1	<0.1	-	<0.1	<0.1	mg/kg	TM30/PM15
Chromium #	82.2	-	89.7	56.7	-	85.9	94.5	96.1	-	114.4	<0.5	mg/kg	TM30/PM15
Copper #	5	-	11	10	-	12	15	15	-	5	<1	mg/kg	TM30/PM15
Lead #	10	-	12	19	-	29	39	71	-	7	<5	mg/kg	TM30/PM15
Mercury #	<0.1	-	<0.1	<0.1	-	<0.1	<0.1	<0.1	-	<0.1	<0.1	mg/kg	TM30/PM15
Nickel #	11.2	-	36.4	14.8	-	14.2	18.7	15.7	-	13.8	<0.7	mg/kg	TM30/PM15
Selenium #	<1	-	<1	<1	-	<1	2	<1	-	<1	<1	mg/kg	TM30/PM15
Total Sulphate as SO4 #	2425	-	1708	2564	-	1708	444	712	-	55	<50	mg/kg	TM50/PM29
Zinc #	33	-	55	66	-	38	79	64	-	23	<5	mg/kg	TM30/PM15
Arsenic	-	16.7	-	-	9.3	-	-	-	11.1	-	<0.5	mg/kg	TM30/PM62
Cadmium	-	0.4	-	-	0.3	-	-	-	0.1	-	<0.1	mg/kg	TM30/PM62
Chromium	-	44.0	-	-	16.0	-	-	-	27.6	-	<0.5	mg/kg	TM30/PM62
Copper	-	92	-	-	27	-	-	-	12	-	<1	mg/kg	TM30/PM62
Lead	-	324	-	-	118	-	-	-	30	-	<5	mg/kg	TM30/PM62
Mercury	-	0.1	-	-	<0.1	-	-	-	<0.1	-	<0.1	mg/kg	TM30/PM62
Nickel	-	32.9	-	-	15.4	-	-	-	18.3	-	<0.7	mg/kg	TM30/PM62
Selenium	-	1	-	-	<1	-	-	-	<1	-	<1	mg/kg	TM30/PM62
Total Sulphate as SO4	-	347	-	-	893	-	-	-	2412	-	<50	mg/kg	TM50/PM29
Zinc	-	242	-	-	125	-	-	-	53	-	<5	mg/kg	TM30/PM62
PAH MS													
Naphthalene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Acenaphthylene	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.04	<0.03	<0.03	mg/kg	TM4/PM8
Acenaphthene #	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	mg/kg	TM4/PM8
Fluorene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Phenanthrene #	0.14	<0.03	<0.03	0.12	0.51	0.15	0.08	0.07	0.28	<0.03	<0.03	mg/kg	TM4/PM8
Anthracene #	<0.04	<0.04	<0.04	0.05	<0.04	0.05	<0.04	<0.04	0.10	<0.04	<0.04	mg/kg	TM4/PM8
Fluoranthene #	0.15	0.09	0.05	0.33	0.73	0.38	0.07	0.18	0.65	<0.03	<0.03	mg/kg	TM4/PM8
Pyrene #	0.11	0.07	0.05	0.30	0.62	0.33	0.06	0.14	0.57	<0.03	<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	0.08	0.07	<0.06	0.20	0.62	0.22	<0.06	0.13	0.31	<0.06	<0.06	mg/kg	TM4/PM8
Chrysene #	0.07	0.06	0.04	0.19	0.48	0.20	0.03	0.11	0.26	<0.02	<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #	0.10	0.10	<0.07	0.30	0.65	0.41	<0.07	0.19	0.40	<0.07	<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	0.06	0.06	<0.04	0.18	<0.04	0.22	<0.04	0.10	0.20	<0.04	<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #	<0.04	<0.04	<0.04	0.11	<0.04	0.16	<0.04	0.07	0.13	<0.04	<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	<0.04	<0.04	<0.04	<0.04	<0.04	0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	<0.04	<0.04	<0.04	0.12	<0.04	0.16	<0.04	0.07	0.13	<0.04	<0.04	mg/kg	TM4/PM8
Coronene	-	-	-	-	<0.04	-	-	-	-	<0.04	<0.04	mg/kg	TM4/PM8
PAH 16 Total	0.7	<0.6	<0.6	1.9	3.6	2.3	<0.6	1.1	3.1	<0.6	<0.6	mg/kg	TM4/PM8
PAH 17 Total	-	-	-	-	3.61	-	-	-	-	<0.64	<0.64	mg/kg	TM4/PM8
Benzo(b)fluoranthene	0.07	0.07	<0.05	0.22	0.47	0.30	<0.05	0.14	0.29	<0.05	<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	0.03	0.03	<0.02	0.08	0.18	0.11	<0.02	0.05	0.11	<0.02	<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	93	96	96	95	98	47	95	95	98	97	<0	%	TM4/PM8

Please see attached notes for all abbreviations and acronyms

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Reference: TE1044
Location: Uxbridge
Contact: Adrian Read
JE Job No.: 17/16834

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	22-23	28-30	34	42-43	51-53	64-65	69-71	72-73	74-76	86-88	LOD/LOR	Units	Method No.
Sample ID	TWS1	TWS2A	TWS3	TWS4	TWS5	TWS6	TWS7	TWS8	TWS9	TWS11			
Depth	0.3	0.3	0.28	0.3	0.40	0.4	0.70	0.60	0.30	0.50			
COC No / misc													
Containers	V J	V J T	T	V J	V J T	V J	V J T	V J	V J T	V J T			
Sample Date	18/10/2017	18/10/2017	18/10/2017	18/10/2017	18/10/2017	18/10/2017	19/10/2017	18/10/2017	19/10/2017	19/10/2017			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	3	3	3	3	3	3	3	3	3	3			
Date of Receipt	20/10/2017	20/10/2017	20/10/2017	20/10/2017	20/10/2017	20/10/2017	20/10/2017	20/10/2017	20/10/2017	20/10/2017			
Mineral Oil (C10-C40)	-	-	-	-	103	-	-	-	-	<30	<30	mg/kg	TM5/PM16
TPH CWG													
Aliphatics													
>C5-C6 #	-	<0.1	-	<0.1	<0.1	-	-	-	-	<0.1	<0.1	mg/kg	TM36/PM12
>C6-C8 #	-	<0.1	-	<0.1	<0.1	-	-	-	-	<0.1	<0.1	mg/kg	TM36/PM12
>C8-C10	-	<0.1	-	<0.1	<0.1	-	-	-	-	<0.1	<0.1	mg/kg	TM36/PM12
>C10-C12 #	-	<0.2	-	<0.2	<0.2	-	-	-	-	<0.2	<0.2	mg/kg	TM5/PM16
>C12-C16 #	-	<4	-	<4	<4	-	-	-	-	<4	<4	mg/kg	TM5/PM16
>C16-C21 #	-	<7	-	<7	<7	-	-	-	-	<7	<7	mg/kg	TM5/PM16
>C21-C35 #	-	43	-	16	67	-	-	-	-	<7	<7	mg/kg	TM5/PM16
Total aliphatics C5-35	-	43	-	<19	67	-	-	-	-	<19	<19	mg/kg	TM5/TM36/PM12/PM16
Aromatics													
>C5-EC7 #	-	<0.1	-	<0.1	<0.1	-	-	-	-	<0.1	<0.1	mg/kg	TM36/PM12
>EC7-EC8 #	-	<0.1	-	<0.1	<0.1	-	-	-	-	<0.1	<0.1	mg/kg	TM36/PM12
>EC8-EC10 #	-	<0.1	-	<0.1	<0.1	-	-	-	-	<0.1	<0.1	mg/kg	TM36/PM12
>EC10-EC12 #	-	<0.2	-	<0.2	<0.2	-	-	-	-	<0.2	<0.2	mg/kg	TM5/PM16
>EC12-EC16 #	-	<4	-	<4	<4	-	-	-	-	<4	<4	mg/kg	TM5/PM16
>EC16-EC21 #	-	<7	-	<7	<7	-	-	-	-	<7	<7	mg/kg	TM5/PM16
>EC21-EC35 #	-	56	-	45	138	-	-	-	-	<7	<7	mg/kg	TM5/PM16
Total aromatics C5-35 #	-	56	-	45	138	-	-	-	-	<19	<19	mg/kg	TM5/TM36/PM12/PM16
Total aliphatics and aromatics(C5-35)	-	99	-	45	205	-	-	-	-	<38	<38	mg/kg	TM5/TM36/PM12/PM16
MTBE #	-	<5	-	<5	<5	-	-	-	-	<5	<5	ug/kg	TM31/PM12
Benzene #	-	<5	-	<5	<5	-	-	-	-	<5	<5	ug/kg	TM31/PM12
Toluene #	-	<5	-	<5	<5	-	-	-	-	<5	<5	ug/kg	TM31/PM12
Ethylbenzene #	-	<5	-	<5	<5	-	-	-	-	<5	<5	ug/kg	TM31/PM12
m/p-Xylene #	-	<5	-	<5	<5	-	-	-	-	<5	<5	ug/kg	TM31/PM12
o-Xylene #	-	<5	-	<5	<5	-	-	-	-	<5	<5	ug/kg	TM31/PM12
PCB 28 #	-	-	-	-	<50 AA	-	-	-	-	<5	<5	ug/kg	TM17/PM8
PCB 52 #	-	-	-	-	<50 AA	-	-	-	-	<5	<5	ug/kg	TM17/PM8
PCB 101 #	-	-	-	-	<50 AA	-	-	-	-	<5	<5	ug/kg	TM17/PM8
PCB 118 #	-	-	-	-	<50 AA	-	-	-	-	<5	<5	ug/kg	TM17/PM8
PCB 138 #	-	-	-	-	<50 AA	-	-	-	-	<5	<5	ug/kg	TM17/PM8
PCB 153 #	-	-	-	-	<50 AA	-	-	-	-	<5	<5	ug/kg	TM17/PM8
PCB 180 #	-	-	-	-	<50 AA	-	-	-	-	<5	<5	ug/kg	TM17/PM8
Total 7 PCBs #	-	-	-	-	<350 AA	-	-	-	-	<35	<35	ug/kg	TM17/PM8
Total Phenols HPLC	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	mg/kg	TM26/PM21
Natural Moisture Content	4.6	-	16.8	13.7	-	7.5	10.7	5.8	-	5.6	<0.1	%	PM4/PM0
Natural Moisture Content	-	22.6	-	-	11.6	-	-	-	11.0	-	<0.1	%	PM4/PM0

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Report : Solid

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J E Sample No.	22-23	28-30	34	42-43	51-53	64-65	69-71	72-73	74-76	86-88	LOD/LOR	Units	Method No.
Sample ID	TWS1	TWS2A	TWS3	TWS4	TWS5	TWS6	TWS7	TWS8	TWS9	TWS11			
Depth	0.3	0.3	0.28	0.3	0.40	0.4	0.70	0.60	0.30	0.50			
COC No / misc													
Containers	V J	V J T	T	V J	V J T	V J	V J T	V J	V J T	V J T			
Sample Date	18/10/2017	18/10/2017	18/10/2017	18/10/2017	18/10/2017	18/10/2017	19/10/2017	18/10/2017	19/10/2017	19/10/2017			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	3	3	3	3	3	3	3	3	3	3			
Date of Receipt	20/10/2017	20/10/2017	20/10/2017	20/10/2017	20/10/2017	20/10/2017	20/10/2017	20/10/2017	20/10/2017	20/10/2017			
Sulphate as SO4 (2:1 Ext) #	0.0040	-	0.2188	0.0447	-	0.1771	0.0974	0.1237	-	0.0138	<0.0015	g/l	TM38/PM20
Sulphate as SO4 (2:1 Ext)	-	0.0503	-	-	0.0510	-	-	-	0.0223	-	<0.0015	g/l	TM38/PM60
Total Organic Carbon #	0.08	NDP	0.22	0.17	NDP	0.50	0.60	0.71	NDP	<0.02	<0.02	%	TM21/PM24
ANC at pH4	-	-	-	-	1.79	-	-	-	-	0.11	<0.03	mol/kg	TM77/PM0
ANC at pH7	-	-	-	-	0.23	-	-	-	-	<0.03	<0.03	mol/kg	TM77/PM0
Loss on Ignition #	-	-	-	-	NDP	-	-	-	-	1.8	<1.0	%	TM22/PM0
pH #	12.04	9.12	11.19	11.99	10.71	11.09	8.67	8.35	11.51	8.93	<0.01	pH units	TM73/PM11

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J E Sample No.	89-90										LOD/LOR	Units	Method No.
Sample ID	HDP1												
Depth	0.5												
COC No / misc													
Containers	V J												
Sample Date	19/10/2017												
Sample Type	Soil												
Batch Number	3												
Date of Receipt	20/10/2017												
Arsenic #	8.1										<0.5	mg/kg	TM30/PM15
Cadmium #	0.2										<0.1	mg/kg	TM30/PM15
Chromium #	86.8										<0.5	mg/kg	TM30/PM15
Copper #	22										<1	mg/kg	TM30/PM15
Lead #	89										<5	mg/kg	TM30/PM15
Mercury #	<0.1										<0.1	mg/kg	TM30/PM15
Nickel #	13.3										<0.7	mg/kg	TM30/PM15
Selenium #	1										<1	mg/kg	TM30/PM15
Total Sulphate as SO4 #	354										<50	mg/kg	TM50/PM29
Zinc #	79										<5	mg/kg	TM30/PM15
Arsenic	-										<0.5	mg/kg	TM30/PM62
Cadmium	-										<0.1	mg/kg	TM30/PM62
Chromium	-										<0.5	mg/kg	TM30/PM62
Copper	-										<1	mg/kg	TM30/PM62
Lead	-										<5	mg/kg	TM30/PM62
Mercury	-										<0.1	mg/kg	TM30/PM62
Nickel	-										<0.7	mg/kg	TM30/PM62
Selenium	-										<1	mg/kg	TM30/PM62
Total Sulphate as SO4	-										<50	mg/kg	TM50/PM29
Zinc	-										<5	mg/kg	TM30/PM62
PAH MS													
Naphthalene #	<0.04										<0.04	mg/kg	TM4/PM8
Acenaphthylene	0.09										<0.03	mg/kg	TM4/PM8
Acenaphthene #	<0.05										<0.05	mg/kg	TM4/PM8
Fluorene #	<0.04										<0.04	mg/kg	TM4/PM8
Phenanthrene #	0.33										<0.03	mg/kg	TM4/PM8
Anthracene #	0.16										<0.04	mg/kg	TM4/PM8
Fluoranthene #	0.91										<0.03	mg/kg	TM4/PM8
Pyrene #	0.77										<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	0.47										<0.06	mg/kg	TM4/PM8
Chrysene #	0.50										<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #	0.95										<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	0.43										<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #	0.35										<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	0.10										<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	0.33										<0.04	mg/kg	TM4/PM8
Coronene	-										<0.04	mg/kg	TM4/PM8
PAH 16 Total	5.4										<0.6	mg/kg	TM4/PM8
PAH 17 Total	-										<0.64	mg/kg	TM4/PM8
Benzo(b)fluoranthene	0.68										<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	0.27										<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	98										<0	%	TM4/PM8

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J E Sample No.	89-90										LOD/LOR	Units	Method No.
Sample ID	HDP1												
Depth	0.5												
COC No / misc													
Containers	V J												
Sample Date	19/10/2017												
Sample Type	Soil												
Batch Number	3												
Date of Receipt	20/10/2017												
Mineral Oil (C10-C40)	-										<30	mg/kg	TM5/PM16
TPH CWG													
Aliphatics													
>C5-C6 #	-										<0.1	mg/kg	TM36/PM12
>C6-C8 #	-										<0.1	mg/kg	TM36/PM12
>C8-C10	-										<0.1	mg/kg	TM36/PM12
>C10-C12 #	-										<0.2	mg/kg	TM5/PM16
>C12-C16 #	-										<4	mg/kg	TM5/PM16
>C16-C21 #	-										<7	mg/kg	TM5/PM16
>C21-C35 #	-										<7	mg/kg	TM5/PM16
Total aliphatics C5-35	-										<19	mg/kg	TM5/TM36/PM12/PM16
Aromatics													
>C5-EC7 #	-										<0.1	mg/kg	TM36/PM12
>EC7-EC8 #	-										<0.1	mg/kg	TM36/PM12
>EC8-EC10 #	-										<0.1	mg/kg	TM36/PM12
>EC10-EC12 #	-										<0.2	mg/kg	TM5/PM16
>EC12-EC16 #	-										<4	mg/kg	TM5/PM16
>EC16-EC21 #	-										<7	mg/kg	TM5/PM16
>EC21-EC35 #	-										<7	mg/kg	TM5/PM16
Total aromatics C5-35 #	-										<19	mg/kg	TM5/TM36/PM12/PM16
Total aliphatics and aromatics(C5-35)	-										<38	mg/kg	TM5/TM36/PM12/PM16
MTBE #	-										<5	ug/kg	TM31/PM12
Benzene #	-										<5	ug/kg	TM31/PM12
Toluene #	-										<5	ug/kg	TM31/PM12
Ethylbenzene #	-										<5	ug/kg	TM31/PM12
m/p-Xylene #	-										<5	ug/kg	TM31/PM12
o-Xylene #	-										<5	ug/kg	TM31/PM12
PCB 28 #	-										<5	ug/kg	TM17/PM8
PCB 52 #	-										<5	ug/kg	TM17/PM8
PCB 101 #	-										<5	ug/kg	TM17/PM8
PCB 118 #	-										<5	ug/kg	TM17/PM8
PCB 138 #	-										<5	ug/kg	TM17/PM8
PCB 153 #	-										<5	ug/kg	TM17/PM8
PCB 180 #	-										<5	ug/kg	TM17/PM8
Total 7 PCBs #	-										<35	ug/kg	TM17/PM8
Total Phenols HPLC	<0.15										<0.15	mg/kg	TM26/PM21
Natural Moisture Content	5.8										<0.1	%	PM4/PM0
Natural Moisture Content	-										<0.1	%	PM4/PM0

Client Name: Tier Environmental
Reference: TE1044
Location: Uxbridge
Contact: Adrian Read
JE Job No.: 17/16834

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	89-90												
Sample ID	HDP1												
Depth	0.5												
COC No / misc													
Containers	V J												
Sample Date	19/10/2017												
Sample Type	Soil												
Batch Number	3												
Date of Receipt	20/10/2017												

Please see attached notes for all abbreviations and acronyms

											LOD/LOR	Units	Method No.
Sulphate as SO4 (2:1 Ext) #	0.0041										<0.0015	g/l	TM38/PM20
Sulphate as SO4 (2:1 Ext)	-										<0.0015	g/l	TM38/PM60
Total Organic Carbon #	1.09										<0.02	%	TM21/PM24
ANC at pH4	-										<0.03	mol/kg	TM77/PM0
ANC at pH7	-										<0.03	mol/kg	TM77/PM0
Loss on Ignition #	-										<1.0	%	TM22/PM0
pH #	7.60										<0.01	pH units	TM73/PM11

Mass of sample taken (kg)	-	Moisture Content Ratio (%) =	15.2
Mass of dry sample (kg) =	0.09	Dry Matter Content Ratio (%) =	86.8
Particle Size <4mm =	>95%		

		Landfill Waste Acceptance Criteria Limits		
JEFL Job No	**17/16834**			
Sample No	**53**			
Client Sample No	**TWS5**	**Inert Waste Landfill**	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Depth/Other	**0.40**			
Sample Date	**18/10/2017**			
Batch No	**3**			
Solid Waste Analysis				
Total Organic Carbon (%)	NDP	3	5	6
Loss on Ignition (%)	NDP	-	-	10
Sum of BTEX (mg/kg)	<0.025	6	-	-
Sum of 7 PCBs (mg/kg)	<0.350	1	-	-
Mineral Oil (mg/kg)	103	500	-	-
PAH Sum of 17(mg/kg)	3.61	100	-	-
pH (pH Units)	10.71	-	>6	-
ANC to pH 7 (mol/kg)	0.23	-	to be evaluated	to be evaluated
ANC to pH 4 (mol/kg)	1.79	-	to be evaluated	to be evaluated

Eluate Analysis	**10:1 conc^{n} leached**		**Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg**		
	C_{10}	**A_{10}**			
	mg/l	**mg/kg**	**mg/kg**		
Arsenic	0.0070	0.070	0.5	2	25
Barium	0.006	0.06	20	100	300
Cadmium	<0.0005	<0.005	0.04	1	5
Chromium	0.0017	0.017	0.5	10	70
Copper	0.017	0.17	2	50	100
Mercury	<0.001	<0.01	0.01	0.2	2
Molybdenum	0.003	0.03	0.5	10	30
Nickel	0.004	0.04	0.4	10	40
Lead	<0.005	<0.05	0.5	10	50
Antimony	<0.002	<0.02	0.06	0.7	5
Selenium	<0.003	<0.03	0.1	0.5	7
Zinc	<0.003	<0.03	4	50	200
Chloride	23.2	232	800	15000	25000
Fluoride	<0.3	<3	10	150	500
Sulphate as SO4	24.43	244.2	1000	20000	50000
Total Dissolved Solids	176	1759	4000	60000	100000
Phenol	<0.01	<0.1	1	-	-
Dissolved Organic Carbon	8	80	500	800	1000

Mass of sample taken (kg)	-	Moisture Content Ratio (%) =	10.3
Mass of dry sample (kg) =	0.09	Dry Matter Content Ratio (%) =	90.7
Particle Size <4mm =	>95%		

		Landfill Waste Acceptance Criteria Limits		
JEFL Job No	**17/16834**			
Sample No	**88**			
Client Sample No	**TWS11**	**Inert Waste Landfill**	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Depth/Other	**0.50**			
Sample Date	**19/10/2017**			
Batch No	**3**			
Solid Waste Analysis				
Total Organic Carbon (%)	<0.02	3	5	6
Loss on Ignition (%)	1.8	-	-	10
Sum of BTEX (mg/kg)	<0.025	6	-	-
Sum of 7 PCBs (mg/kg)	<0.035	1	-	-
Mineral Oil (mg/kg)	<30	500	-	-
PAH Sum of 17(mg/kg)	<0.64	100	-	-
pH (pH Units)	8.93	-	>6	-
ANC to pH 7 (mol/kg)	<0.03	-	to be evaluated	to be evaluated
ANC to pH 4 (mol/kg)	0.11	-	to be evaluated	to be evaluated

Eluate Analysis	**10:1 conc^{n} leached**		**Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg**		
	C_{10}	**A_{10}**			
	mg/l	**mg/kg**	**mg/kg**		
Arsenic	<0.0025	<0.025	0.5	2	25
Barium	<0.003	<0.03	20	100	300
Cadmium	<0.0005	<0.005	0.04	1	5
Chromium	<0.0015	<0.015	0.5	10	70
Copper	<0.007	<0.07	2	50	100
Mercury	<0.001	<0.01	0.01	0.2	2
Molybdenum	<0.002	<0.02	0.5	10	30
Nickel	<0.002	<0.02	0.4	10	40
Lead	<0.005	<0.05	0.5	10	50
Antimony	<0.002	<0.02	0.06	0.7	5
Selenium	<0.003	<0.03	0.1	0.5	7
Zinc	<0.003	<0.03	4	50	200
Chloride	0.6	6	800	15000	25000
Fluoride	0.4	4	10	150	500
Sulphate as SO4	2.30	23.0	1000	20000	50000
Total Dissolved Solids	<35	<350	4000	60000	100000
Phenol	<0.01	<0.1	1	-	-
Dissolved Organic Carbon	6	60	500	800	1000

Please include all sections of this report if it is reproduced

All solid results are expressed on a dry weight basis unless stated otherwise.

Client Name: Tier Environmental
Reference: TE1044
Location: Uxbridge
Contact: Adrian Read

Note:

Asbestos Screen analysis is carried out in accordance with our documented in-house methods PM042 and TM065 and HSG 248 by Stereo and Polarised Light Microscopy using Dispersion Staining Techniques and is covered by our UKAS accreditation. Detailed Gravimetric Quantification and PCOM Fibre Analysis is carried out in accordance with our documented in-house methods PM042 and TM131 and HSG 248 using Stereo and Polarised Light Microscopy and Phase Contrast Optical Microscopy (PCOM). Samples are retained for not less than 6 months from the date of analysis unless specifically requested.

Opinions, including ACM type and Asbestos level, lie outside the scope of our UKAS accreditation.

Where the sample is not taken by a Jones Environmental Laboratory consultant, Jones Environmental Laboratory cannot be responsible for inaccurate or unrepresentative sampling.

Signed on behalf of Jones Environmental Laboratory:



Ryan Butterworth
Asbestos Team Leader

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Date Of Analysis	Analysis	Result
17/16834	3	TWS1	0.3	23	02/11/2017	**General Description (Bulk Analysis)**	soil/stones
					02/11/2017	**Asbestos Fibres**	NAD
					02/11/2017	**Asbestos Fibres (2)**	NAD
					02/11/2017	**Asbestos ACM**	NAD
					02/11/2017	**Asbestos ACM (2)**	NAD
					02/11/2017	**Asbestos Type**	NAD
					02/11/2017	**Asbestos Type (2)**	NAD
					02/11/2017	**Asbestos Level Screen**	NAD
17/16834	3	TWS2A	0.3	29	02/11/2017	**General Description (Bulk Analysis)**	soil/stones
					02/11/2017	**Asbestos Fibres**	Fibre Bundles
					02/11/2017	**Asbestos ACM**	NAD
					02/11/2017	**Asbestos Type**	Chrysotile
					02/11/2017	**Asbestos Level Screen**	less than 0.1%
17/16834	3	TWS3	0.28	34	02/11/2017	**General Description (Bulk Analysis)**	soil/stones
					02/11/2017	**Asbestos Fibres**	NAD
					02/11/2017	**Asbestos Fibres (2)**	NAD
					02/11/2017	**Asbestos ACM**	NAD
					02/11/2017	**Asbestos ACM (2)**	NAD
					02/11/2017	**Asbestos Type**	NAD
					02/11/2017	**Asbestos Type (2)**	NAD
					02/11/2017	**Asbestos Level Screen**	NAD
17/16834	3	TWS4	0.3	43	02/11/2017	**General Description (Bulk Analysis)**	soil/stones
					02/11/2017	**Asbestos Fibres**	NAD
					02/11/2017	**Asbestos Fibres (2)**	NAD
					02/11/2017	**Asbestos ACM**	NAD
					02/11/2017	**Asbestos ACM (2)**	NAD
					02/11/2017	**Asbestos Type**	NAD
					02/11/2017	**Asbestos Type (2)**	NAD
					02/11/2017	**Asbestos Level Screen**	NAD
17/16834	3	TWS5	0.40	52	02/11/2017	**General Description (Bulk Analysis)**	soil/stones
					02/11/2017	**Asbestos Fibres**	Fibre Bundles
					02/11/2017	**Asbestos ACM**	NAD
					02/11/2017	**Asbestos Type**	Amosite
					02/11/2017	**Asbestos Level Screen**	less than 0.1%

Client Name: Tier Environmental
Reference: TE1044
Location: Uxbridge
Contact: Adrian Read

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Date Of Analysis	Analysis	Result
17/16834	3	TWS6	0.4	65	02/11/2017	**General Description (Bulk Analysis)**	soil/stones
					02/11/2017	**Asbestos Fibres**	NAD
					02/11/2017	**Asbestos Fibres (2)**	NAD
					02/11/2017	**Asbestos ACM**	NAD
					02/11/2017	**Asbestos ACM (2)**	NAD
					02/11/2017	**Asbestos Type**	NAD
					02/11/2017	**Asbestos Type (2)**	NAD
					02/11/2017	**Asbestos Level Screen**	NAD
17/16834	3	TWS7	0.70	70	02/11/2017	**General Description (Bulk Analysis)**	soil/stones
					02/11/2017	**Asbestos Fibres**	NAD
					02/11/2017	**Asbestos Fibres (2)**	NAD
					02/11/2017	**Asbestos ACM**	NAD
					02/11/2017	**Asbestos ACM (2)**	NAD
					02/11/2017	**Asbestos Type**	NAD
					02/11/2017	**Asbestos Type (2)**	NAD
					02/11/2017	**Asbestos Level Screen**	NAD
17/16834	3	TWS8	0.60	73	02/11/2017	**General Description (Bulk Analysis)**	soil/stones
					02/11/2017	**Asbestos Fibres**	NAD
					02/11/2017	**Asbestos Fibres (2)**	NAD
					02/11/2017	**Asbestos ACM**	NAD
					02/11/2017	**Asbestos ACM (2)**	NAD
					02/11/2017	**Asbestos Type**	NAD
					02/11/2017	**Asbestos Type (2)**	NAD
					02/11/2017	**Asbestos Level Screen**	NAD
17/16834	3	TWS9	0.30	75	02/11/2017	**General Description (Bulk Analysis)**	soil/stones
					02/11/2017	**Asbestos Fibres**	Fibre Bundles
					02/11/2017	**Asbestos ACM**	NAD
					02/11/2017	**Asbestos Type**	Chrysotile
					02/11/2017	**Asbestos Level Screen**	less than 0.1%
17/16834	3	TWS11	0.50	87	02/11/2017	**General Description (Bulk Analysis)**	soil/stones
					02/11/2017	**Asbestos Fibres**	NAD
					02/11/2017	**Asbestos Fibres (2)**	NAD
					02/11/2017	**Asbestos ACM**	NAD
					02/11/2017	**Asbestos ACM (2)**	NAD
					02/11/2017	**Asbestos Type**	NAD
					02/11/2017	**Asbestos Type (2)**	NAD
					02/11/2017	**Asbestos Level Screen**	NAD
17/16834	3	HDP1	0.5	90	02/11/2017	**General Description (Bulk Analysis)**	soil/stones
					02/11/2017	**Asbestos Fibres**	NAD
					02/11/2017	**Asbestos Fibres (2)**	NAD
					02/11/2017	**Asbestos ACM**	NAD
					02/11/2017	**Asbestos ACM (2)**	NAD
					02/11/2017	**Asbestos Type**	NAD
					02/11/2017	**Asbestos Type (2)**	NAD
					02/11/2017	**Asbestos Level Screen**	NAD

Client Name: Tier Environmental
Reference: TE1044
Location: Uxbridge
Contact: Adrian Read

Matrix : Solid

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	NDP Reason
17/16834	3	TWS2A	0.3	28-30	Asbestos detected in sample
17/16834	3	TWS5	0.40	51-53	Asbestos detected in sample
17/16834	3	TWS9	0.30	74-76	Asbestos detected in sample

Client Name: Tier Environmental
Reference: TE1044
Location: Uxbridge
Contact: Adrian Read

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Analysis	Reason
No deviating sample report results for job 17/16834						

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.
Only analyses which are accredited are recorded as deviating if set criteria are not met.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 17/16834

SOILS

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overesitimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

DEVIATING SAMPLES

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any test results that may be compromised highlighted on your deviating samples report.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.
Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa.
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
++	Result outside calibration range, results should be considered as indicative only and are not accredited.
*	Analysis subcontracted to a Jones Environmental approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range
AA	x10 Dilution

JE Job No: 17/16834

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.	PM0	No preparation is required.				
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.	PM0	No preparation is required.			AR	
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	PM16	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	Yes
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	PM16	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM5/TM36	TM005: Modified USEPA 8015B: Determination of solvent Extractable Petroleum Hydrocarbons (EPH) including column fractionation in the carbon range of C10-35 into aliphatic and aromatic fractions by GC-FID. TM036: Modified USEPA 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C5-10 by headspace GC-FID. Including determination of BTEX and calculation of Aliphatic fractions	PM12/PM16	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis./Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	Yes
TM5/TM36	TM005: Modified USEPA 8015B: Determination of solvent Extractable Petroleum Hydrocarbons (EPH) including column fractionation in the carbon range of C10-35 into aliphatic and aromatic fractions by GC-FID. TM036: Modified USEPA 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C5-10 by headspace GC-FID. Including determination of BTEX and calculation of Aliphatic fractions	PM12/PM16	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis./Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM17	Modified US EPA method 8270. Determination of specific Polychlorinated Biphenyl congeners by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM20	Modified BS 1377-3: 1990/USEPA 160.3 Gravimetric determination of Total Dissolved Solids/Total Solids	PM0	No preparation is required.			AR	Yes

JE Job No: 17/16834

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM21	Modified USEPA 415.1. Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection. Organic Matter (SOM) calculated as per EA MCERTS Chemical Testing of Soil, March 2012 v4.	PM24	Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis.	Yes		AD	Yes
TM22	Modified USEPA 160.4. Gravimetric determination of Loss on Ignition by temperature controlled Muffle Furnace (450°C)	PM0	No preparation is required.	Yes		AD	Yes
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM0	No preparation is required.			AR	Yes
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM21	As received solid or water samples are extracted in Methanol: Sodium Hydroxide (0.1M NaOH) (60:40) by orbital shaker.			AR	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.	Yes		AD	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM17	Modified method EN12457-2 As received solid samples are leached with water in a 10:1 water to soil ratio for 24 hours, the moisture content of the sample is included in the ratio.	Yes		AR	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM62	Acid digestion of as received solid samples using Aqua Regia refluxed at 112.5 °C.			AR	Yes
TM31	Modified USEPA 8015B. Determination of Methyltertbutylether, Benzene, Toluene, Ethylbenzene and Xylene by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM31	Modified USEPA 8015B. Determination of Methyltertbutylether, Benzene, Toluene, Ethylbenzene and Xylene by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes

JE Job No: 17/16834

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM38	Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1	PM0	No preparation is required.	Yes		AR	Yes
TM38	Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AD	Yes
TM38	Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1	PM60	As received solid samples are extracted with deionised water in a 2:1 ratio of water to solid.			AR	Yes
TM50	Acid soluble sulphate (Total Sulphate) analysed by ICP-OES	PM29	Dried and ground solid sample is boiled with dilute hydrochloric acid, the resulting liquor is then analysed.	Yes		AD	Yes
TM50	Acid soluble sulphate (Total Sulphate) analysed by ICP-OES	PM29	Dried and ground solid sample is boiled with dilute hydrochloric acid, the resulting liquor is then analysed.			AR	Yes
TM60	Modified USEPA 9060. Determination of TOC by calculation from Total Carbon and Inorganic Carbon using a TOC analyser, the carbon in the sample is converted to CO2 and then passed through a non-dispersive infrared gas analyser (NDIR).	PM0	No preparation is required.			AR	Yes
TM65	Asbestos Bulk Identification method based on HSG 248.	PM42	Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.	Yes		AR	
TM73	Modified US EPA methods 150.1 and 9045D and BS1377:1990. Determination of pH by Metrohm automated probe analyser.	PM11	Extraction of as received solid samples using one part solid to 2.5 parts deionised water.	Yes		AR	No
TM77	Modified DDCEN/TS method 15364:2006. Determination of Acid Neutralization Capacity by Metrohm automated probe analyser.	PM0	No preparation is required.			AR	No

JE Job No: 17/16834

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM173	Analysis of fluoride by ISE (Ion Selective Electrode) using modified ISE method 340.2	PM0	No preparation is required.			AR	Yes
NONE	No Method Code	PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.			AR	

Exova Jones Environmental

Registered Address : Exova (UK) Ltd, Lochend Industrial Estate, Newbridge, Midlothian, EH28 8PL

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Tier Environmental
Suite 513, Chadwick House
Warrington Rd
Birchwood
Warrington
WA3 6AE

Attention :	Adrian Read
Date :	6th November, 2017
Your reference :	TE1044
Our reference :	Test Report 17/16834 Batch 2
Location :	Uxbridge
Date samples received :	12th October, 2017
Status :	Final report
Issue :	1

Three samples were received for analysis on 12th October, 2017 of which one were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Compiled By:

Bruce Leslie
Project Co-ordinator

Client Name: Tier Environmental
Reference: TE1044
Location: Uxbridge
Contact: Adrian Read
JE Job No.: 17/16834

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

Please see attached notes for all abbreviations and acronyms

J E Sample No.	13-15												
Sample ID	TBH2												
Depth	0.50												
COC No / misc													
Containers	V J T												
Sample Date	10/10/2017												
Sample Type	Soil												
Batch Number	2												
Date of Receipt	12/10/2017												
											LOD/LOR	Units	Method No.
Arsenic #	21.0										<0.5	mg/kg	TM30/PM15
Cadmium #	0.3										<0.1	mg/kg	TM30/PM15
Chromium #	66.3										<0.5	mg/kg	TM30/PM15
Copper #	784_{AA}										<1	mg/kg	TM30/PM15
Lead #	871										<5	mg/kg	TM30/PM15
Mercury #	2.3										<0.1	mg/kg	TM30/PM15
Nickel #	24.9										<0.7	mg/kg	TM30/PM15
Selenium #	<1										<1	mg/kg	TM30/PM15
Total Sulphate as SO4 #	3082										<50	mg/kg	TM50/PM29
Zinc #	580										<5	mg/kg	TM30/PM15
PAH MS													
Naphthalene #	0.32										<0.04	mg/kg	TM4/PM8
Acenaphthylene	0.40										<0.03	mg/kg	TM4/PM8
Acenaphthene #	<0.05										<0.05	mg/kg	TM4/PM8
Fluorene #	0.06										<0.04	mg/kg	TM4/PM8
Phenanthrene #	3.93										<0.03	mg/kg	TM4/PM8
Anthracene #	0.70										<0.04	mg/kg	TM4/PM8
Fluoranthene #	6.17										<0.03	mg/kg	TM4/PM8
Pyrene #	4.79										<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	2.80										<0.06	mg/kg	TM4/PM8
Chrysene #	2.58										<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #	4.51										<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	2.17										<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #	1.57										<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	0.44										<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	1.35										<0.04	mg/kg	TM4/PM8
Coronene	0.26										<0.04	mg/kg	TM4/PM8
PAH 16 Total	31.8										<0.6	mg/kg	TM4/PM8
PAH 17 Total	32.05										<0.64	mg/kg	TM4/PM8
Benzo(b)fluoranthene	3.25										<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	1.26										<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	79										<0	%	TM4/PM8
Mineral Oil (C10-C40)	52										<30	mg/kg	TM5/PM16

Client Name: Tier Environmental
Reference: TE1044
Location: Uxbridge
Contact: Adrian Read
JE Job No.: 17/16834

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

Please see attached notes for all abbreviations and acronyms

J E Sample No.	13-15												
Sample ID	TBH2												
Depth	0.50												
COC No / misc													
Containers	V J T												
Sample Date	10/10/2017												
Sample Type	Soil												
Batch Number	2												
Date of Receipt	12/10/2017												
												LOD/LOR	Units	Method No.
TPH CWG														
Aliphatics														
>C5-C6 #	<0.1 SV											<0.1	mg/kg	TM36/PM12
>C6-C8 #	<0.1 SV											<0.1	mg/kg	TM36/PM12
>C8-C10	0.4 SV											<0.1	mg/kg	TM36/PM12
>C10-C12 #	<0.2											<0.2	mg/kg	TM5/PM16
>C12-C16 #	<4											<4	mg/kg	TM5/PM16
>C16-C21 #	8											<7	mg/kg	TM5/PM16
>C21-C35 #	44											<7	mg/kg	TM5/PM16
Total aliphatics C5-35	52											<19	mg/kg	TM5/TM36/PM12/PM16
Aromatics														
>C5-EC7 #	<0.1 SV											<0.1	mg/kg	TM36/PM12
>EC7-EC8 #	<0.1 SV											<0.1	mg/kg	TM36/PM12
>EC8-EC10 #	<0.1 SV											<0.1	mg/kg	TM36/PM12
>EC10-EC12 #	<0.2											<0.2	mg/kg	TM5/PM16
>EC12-EC16 #	<4											<4	mg/kg	TM5/PM16
>EC16-EC21 #	15											<7	mg/kg	TM5/PM16
>EC21-EC35 #	110											<7	mg/kg	TM5/PM16
Total aromatics C5-35 #	125											<19	mg/kg	TM5/TM36/PM12/PM16
Total aliphatics and aromatics(C5-35)	177											<38	mg/kg	TM5/TM36/PM12/PM16
MTBE #	<5 SV											<5	ug/kg	TM31/PM12
PCB 28 #	<5											<5	ug/kg	TM17/PM8
PCB 52 #	<5											<5	ug/kg	TM17/PM8
PCB 101 #	<5											<5	ug/kg	TM17/PM8
PCB 118 #	<5											<5	ug/kg	TM17/PM8
PCB 138 #	<5											<5	ug/kg	TM17/PM8
PCB 153 #	<5											<5	ug/kg	TM17/PM8
PCB 180 #	<5											<5	ug/kg	TM17/PM8
Total 7 PCBs #	<35											<35	ug/kg	TM17/PM8
Total Phenols HPLC	<0.15											<0.15	mg/kg	TM26/PM21
Natural Moisture Content	13.1											<0.1	%	PM4/PM0
Sulphate as SO4 (2:1 Ext) #	0.2542											<0.0015	g/l	TM38/PM20
Total Organic Carbon #	5.50											<0.02	%	TM21/PM24
ANC at pH4	0.43											<0.03	mol/kg	TM77/PM0
ANC at pH7	0.07											<0.03	mol/kg	TM77/PM0
Loss on Ignition #	10.1											<1.0	%	TM22/PM0
pH #	10.20											<0.01	pH units	TM73/PM11

Mass of sample taken (kg)	-	Moisture Content Ratio (%) =	21.5
Mass of dry sample (kg) =	0.09	Dry Matter Content Ratio (%) =	82.3
Particle Size <4mm =	>95%		

		Landfill Waste Acceptance Criteria Limits		
JEFL Job No	**17/16834**			
Sample No	**15**			
Client Sample No	**TBH2**	**Inert Waste Landfill**	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Depth/Other	**0.50**			
Sample Date	**10/10/2017**			
Batch No	**2**			
Solid Waste Analysis				
Total Organic Carbon (%)	5.50	3	5	6
Loss on Ignition (%)	10.1	-	-	10
Sum of BTEX (mg/kg)	<0.025	6	-	-
Sum of 7 PCBs (mg/kg)	<0.035	1	-	-
Mineral Oil (mg/kg)	52	500	-	-
PAH Sum of 17(mg/kg)	32.05	100	-	-
pH (pH Units)	10.20	-	>6	-
ANC to pH 7 (mol/kg)	0.07	-	to be evaluated	to be evaluated
ANC to pH 4 (mol/kg)	0.43	-	to be evaluated	to be evaluated

Eluate Analysis	**10:1 conc^{n} leached**		**Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg**		
	C_{10}	**A_{10}**			
	mg/l	**mg/kg**	**mg/kg**		
Arsenic	0.0155	0.155	0.5	2	25
Barium	<0.003	<0.03	20	100	300
Cadmium	<0.0005	<0.005	0.04	1	5
Chromium	0.0435	0.435	0.5	10	70
Copper	0.018	0.18	2	50	100
Mercury	<0.001	<0.01	0.01	0.2	2
Molybdenum	0.003	0.03	0.5	10	30
Nickel	<0.002	<0.02	0.4	10	40
Lead	<0.005	<0.05	0.5	10	50
Antimony	<0.002	<0.02	0.06	0.7	5
Selenium	<0.003	<0.03	0.1	0.5	7
Zinc	<0.003	<0.03	4	50	200
Chloride	1.5	15	800	15000	25000
Fluoride	1.4	14	10	150	500
Sulphate as SO4	25.03	250.4	1000	20000	50000
Total Dissolved Solids	62	620	4000	60000	100000
Phenol	<0.01	<0.1	1	-	-
Dissolved Organic Carbon	5	50	500	800	1000

Client Name: Tier Environmental
Reference: TE1044
Location: Uxbridge
Contact: Adrian Read

Note:

Asbestos Screen analysis is carried out in accordance with our documented in-house methods PM042 and TM065 and HSG 248 by Stereo and Polarised Light Microscopy using Dispersion Staining Techniques and is covered by our UKAS accreditation. Detailed Gravimetric Quantification and PCOM Fibre Analysis is carried out in accordance with our documented in-house methods PM042 and TM131 and HSG 248 using Stereo and Polarised Light Microscopy and Phase Contrast Optical Microscopy (PCOM). Samples are retained for not less than 6 months from the date of analysis unless specifically requested.

Opinions, including ACM type and Asbestos level, lie outside the scope of our UKAS accreditation.

Where the sample is not taken by a Jones Environmental Laboratory consultant, Jones Environmental Laboratory cannot be responsible for inaccurate or unrepresentative sampling.

Signed on behalf of Jones Environmental Laboratory:



Ryan Butterworth
Asbestos Team Leader

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Date Of Analysis	Analysis	Result
17/16834	2	TBH2	0.50	14	02/11/2017	**General Description (Bulk Analysis)**	soil/stones
					02/11/2017	**Asbestos Fibres**	NAD
					02/11/2017	**Asbestos Fibres (2)**	NAD
					02/11/2017	**Asbestos ACM**	NAD
					02/11/2017	**Asbestos ACM (2)**	NAD
					02/11/2017	**Asbestos Type**	NAD
					02/11/2017	**Asbestos Type (2)**	NAD
					02/11/2017	**Asbestos Level Screen**	NAD

Client Name: Tier Environmental

Reference: TE1044

Location: Uxbridge

Contact: Adrian Read

Matrix : Solid

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Analysis	Reason
17/16834	2	TBH2	0.50	13-15	EPH, GRO, PAH, PCB	Sample holding time exceeded

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.

Only analyses which are accredited are recorded as deviating if set criteria are not met.

Please include all sections of this report if it is reproduced

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 17/16834

SOILS

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overesitimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

DEVIATING SAMPLES

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any test results that may be compromised highlighted on your deviating samples report.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.
Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa.
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
++	Result outside calibration range, results should be considered as indicative only and are not accredited.
*	Analysis subcontracted to a Jones Environmental approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range
AA	x5 Dilution

JE Job No: 17/16834

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.	PM0	No preparation is required.				
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.	PM0	No preparation is required.			AR	
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	PM16	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	Yes
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	PM16	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM5/TM36	TM005: Modified USEPA 8015B: Determination of solvent Extractable Petroleum Hydrocarbons (EPH) including column fractionation in the carbon range of C10-35 into aliphatic and aromatic fractions by GC-FID. TM036: Modified USEPA 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C5-10 by headspace GC-FID. Including determination of BTEX and calculation of Aliphatic fractions	PM12/PM16	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis./Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	Yes
TM5/TM36	TM005: Modified USEPA 8015B: Determination of solvent Extractable Petroleum Hydrocarbons (EPH) including column fractionation in the carbon range of C10-35 into aliphatic and aromatic fractions by GC-FID. TM036: Modified USEPA 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C5-10 by headspace GC-FID. Including determination of BTEX and calculation of Aliphatic fractions	PM12/PM16	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis./Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM17	Modified US EPA method 8270. Determination of specific Polychlorinated Biphenyl congeners by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM20	Modified BS 1377-3: 1990/USEPA 160.3 Gravimetric determination of Total Dissolved Solids/Total Solids	PM0	No preparation is required.			AR	Yes

JE Job No: 17/16834

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM21	Modified USEPA 415.1. Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection. Organic Matter (SOM) calculated as per EA MCERTS Chemical Testing of Soil, March 2012 v4.	PM24	Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis.	Yes		AD	Yes
TM22	Modified USEPA 160.4. Gravimetric determination of Loss on Ignition by temperature controlled Muffle Furnace (450°C)	PM0	No preparation is required.	Yes		AD	Yes
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM0	No preparation is required.			AR	Yes
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM21	As received solid or water samples are extracted in Methanol: Sodium Hydroxide (0.1M NaOH) (60:40) by orbital shaker.			AR	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.	Yes		AD	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM17	Modified method EN12457-2 As received solid samples are leached with water in a 10:1 water to soil ratio for 24 hours, the moisture content of the sample is included in the ratio.	Yes		AR	Yes
TM31	Modified USEPA 8015B. Determination of Methyltertbutylether, Benzene, Toluene, Ethylbenzene and Xylene by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM31	Modified USEPA 8015B. Determination of Methyltertbutylether, Benzene, Toluene, Ethylbenzene and Xylene by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes

JE Job No: 17/16834

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM38	Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1	PM0	No preparation is required.	Yes		AR	Yes
TM38	Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AD	Yes
TM50	Acid soluble sulphate (Total Sulphate) analysed by ICP-OES	PM29	Dried and ground solid sample is boiled with dilute hydrochloric acid, the resulting liquor is then analysed.	Yes		AD	Yes
TM60	Modified USEPA 9060. Determination of TOC by calculation from Total Carbon and Inorganic Carbon using a TOC analyser, the carbon in the sample is converted to CO2 and then passed through a non-dispersive infrared gas analyser (NDIR).	PM0	No preparation is required.			AR	Yes
TM65	Asbestos Bulk Identification method based on HSG 248.	PM42	Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.	Yes		AR	
TM73	Modified US EPA methods 150.1 and 9045D and BS1377:1990. Determination of pH by Metrohm automated probe analyser.	PM11	Extraction of as received solid samples using one part solid to 2.5 parts deionised water.	Yes		AR	No
TM77	Modified DDCEN/TS method 15364:2006. Determination of Acid Neutralization Capacity by Metrohm automated probe analyser.	PM0	No preparation is required.			AR	No
TM173	Analysis of fluoride by ISE (Ion Selective Electrode) using modified ISE method 340.2	PM0	No preparation is required.			AR	Yes
NONE	No Method Code	PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.			AR	

APPENDIX N – GAS AND GROUNDWATER MONITORING RESULTS

GAS MONITORING ACROSS BOREHOLE LOCATIONS

JOB DETAILS:	Harefield Road, Uxbridge	**Job No:**	TE1044		
Client:	Watkin Jones & Son	**Visit No:**	1	of	6
Site:	Harefield Road	**Operator:**	DB		
Date:	16/11/2017	**Project Manager:**	JB		

Monitoring Point	GAS CONCENTRATIONS												FLOW DATA		WELL AND WATER DATA					Comments
	Methane (%v/v)		%LEL		Carbon dioxide (%v/v)		Carbon monoxide (ppm)		Hydrogen sulphide (ppm)		Oxygen (%v/v)		Flow rate (l/hr)		Water Depth (mbgl)	Depth of Well (mbgl)	Ground Level (mAOD)	Water Level (mAOD)	Response Zone	
	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	Lowest	Steady	Peak	Steady						
WS102	ND	ND	ND	ND	2.0	2.0	ND	ND	ND	ND	18.1	18.1	ND	ND	DRY	1.28				
TWS9	ND	ND	ND	ND	0.3	0.3	ND	ND	ND	ND	20.6	20.6	ND	ND	DRY	1.08				
TWS11	ND	ND	ND	ND	0.2	0.2	ND	ND	ND	ND	21.7	21.7	ND	ND	DRY	1.15				
WS106	ND	ND	ND	ND	0.5	0.5	ND	ND	ND	ND	21.0	21.0	ND	ND	DRY	1.29				
TBH1	ND	ND	ND	ND	0.3	0.3	ND	ND	ND	ND	20.5	20.5	ND	ND	10.20	23.36	42.41	32.21		
TWS5	ND	ND	ND	ND	0.1	0.1	1	ND	ND	ND	20.8	20.8	ND	ND	2.09	2.20				
BH101	ND	ND	ND	ND	2.2	2.2	2	ND	ND	ND	17.9	17.9	-0.1	ND	5.19	6.39	42.45	37.26		
TWS1	ND	ND	ND	ND	ND	ND	5.0	5	ND	ND	21.4	21.4	ND	ND	DRY	1.10				
TBH2	ND	ND	ND	ND	0.5	0.5	ND	ND	ND	ND	20.3	20.3	ND	ND	4.78	8.52	42.71	37.93		
WS107	ND	ND	ND	ND	0.1	0.1	ND	ND	ND	ND	21.5	21.6	ND	ND	DRY	1.51				
TBH3	ND	ND	ND	ND	2.1	2.1	ND	ND	ND	ND	19.6	19.6	ND	ND	4.32		42.45	38.13		
Max	**0.1**	**0.1**	**0.1**	**0.1**	**2.2**	**2.2**	**5.0**	**5.0**	ND	ND	**21.7**	**21.7**	**-0.1**	**0.1**	**10.20**	**23.36**	**42.71**	**38.13**		
Min	**0.1**	**0.1**	**0.0**	**0.0**	**0.1**	**0.1**	ND	ND	ND	ND	**17.9**	**17.9**	**0.1**	**0.1**	**2.09**	**1.08**	**42.41**	**32.21**		

METEOROLOGICAL AND SITE INFORMATION:										
State of ground:		Dry	x	Moist		Wet		Snow		Frozen
Wind:	x	Calm		Light		Moderate		Strong		
Cloud cover:		None	x	Slight		Cloudy		Overcast		
Preciptation:	x	None		Slight		Moderate		Heavy		
Barometric pressure (mbar):			1014	Before			1015	After		
Pressure trend:				Falling	X	Steady		Rising		
Ground gas meter:	**GA2000**									

Ambient Gas concentration:					
CH_4	ND	**CO_2**	0.1%	**O_2**	21.5%

GAS MONITORING ACROSS BOREHOLE LOCATIONS

JOB DETAILS:	Harefield Road, Uxbridge	**Job No:**	TE1044		
Client:	Watkin Jones & Son	**Visit No:**	2	of	6
Site:	Harefield Road	**Operator:**	David Bromley		
Date:	24/11/2017	**Project Manager:**	JB		

Monitoring Point	GAS CONCENTRATIONS												FLOW DATA		WELL AND WATER DATA					Comments
	Methane (%v/v)		%LEL		Carbon dioxide (%v/v)		Carbon monoxide (ppm)		Hydrogen sulphide (ppm)		Oxygen (%v/v)		Flow rate (l/hr)		Water Depth (mbgl)	Depth of Well (mbgl)	Ground Level (mAOD)	Water Level (mAOD)	Response Zone	
	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	Lowest	Steady	Peak	Steady						
WS102	ND	ND	ND	ND	1.9	1.9	ND	ND	ND	ND	19.5	19.5	ND	ND	DRY	1.28				
TWS9	ND	ND	ND	ND	0.1	0.1	ND	ND	ND	ND	21.5	21.5	ND	ND	DRY	1.08				
TWS11	ND	ND	ND	ND	0.2	0.2	ND	ND	ND	ND	21.4	21.4	0.1	ND	DRY	1.15				
WS106	ND	ND	ND	ND	0.5	0.5	ND	ND	ND	ND	21.4	21.4	ND	ND	DRY	1.28				
TBH1	ND	ND	ND	ND	0.5	0.5	ND	ND	ND	ND	20.8	20.8	ND	ND	10.57	22.87	42.41	31.84		
TWS5	ND	ND	ND	ND	0.3	0.3	ND	ND	ND	ND	21.2	21.2	ND	ND	2.02	2.20				
BH101	0.1	0.1	2.0	2.0	1.8	1.8	ND	ND	ND	ND	19.6	19.6	ND	ND	5.67	6.36	42.45	36.78		
TWS1	0.1	0.1	2.0	2.0	0.1	0.1	ND	ND	ND	ND	21.6	21.6	ND	ND	DRY	1.10				
TBH2	ND	ND	ND	ND	1.0	1.0	ND	ND	ND	ND	19.7	19.7	ND	ND	4.80	8.51	42.71	37.91		
WS107	ND	ND	ND	ND	0.1	0.1	ND	ND	ND	ND	21.6	21.6	-0.2	ND	DRY	1.51				
TBH3	0.1	0.1	2.0	2.0	2.2	2.2	ND	ND	ND	ND	19.8	19.8	ND	ND	7.45	7.79	42.45	35.00		
Max	**0.1**	**0.1**	**2.0**	**2.0**	**2.2**	**2.2**	ND	ND	ND	ND	**21.6**	**21.6**	**0.1**	**0.1**	**10.57**	**22.87**	**42.71**	**37.91**		
Min	**0.1**	**0.1**	**2.0**	**2.0**	**0.1**	**0.1**	ND	ND	ND	ND	**19.5**	**19.5**	**0.1**	**0.1**	**2.02**	**1.08**	**42.41**	**31.84**		

METEOROLOGICAL AND SITE INFORMATION:										
State of ground:	X	Dry		Moist		Wet		Snow		Frozen
Wind:	X	Calm		Light		Moderate		Strong		
Cloud cover:	X	None		Slight		Cloudy		Overcast		
Preciptation:	X	None		Slight		Moderate		Heavy		
Barometric pressure (mbar):			1002	Before			1002	After		
Pressure trend:				Falling		Steady	X	Rising		
Ground gas meter:	**GA2000**									
Ambient Gas concentration:	**CH_4**	ND	**CO_2**	0.1%	**O_2**	21.8%				

GAS MONITORING ACROSS BOREHOLE LOCATIONS

JOB DETAILS:	Harefield Road, Uxbridge	**Job No:**	TE1044		
Client:	Watkin Jones & Son	**Visit No:**	3	of	6
Site:	Harefield Road	**Operator:**	David Bromley		
Date:	01/12/2017	**Project Manager:**	JB		

Monitoring Point	GAS CONCENTRATIONS												FLOW DATA		WELL AND WATER DATA					Comments
	Methane (%v/v)		%LEL		Carbon dioxide (%v/v)		Carbon monoxide (ppm)		Hydrogen sulphide (ppm)		Oxygen (%v/v)		Flow rate (l/hr)		Water Depth (mbgl)	Depth of Well (mbgl)	Ground Level (mAOD)	Water Level (mAOD)	Response Zone	
	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	Lowest	Steady	Peak	Steady						
WS102	ND	ND	ND	ND	1.7	1.7	ND	ND	ND	ND	18.6	18.6	ND	ND	DRY	1.27				
TWS9	ND	ND	ND	ND	0.1	0.1	ND	ND	ND	ND	21.6	21.6	ND	ND	DRY	1.08				
TWS11	ND	ND	ND	ND	0.9	0.9	ND	ND	ND	ND	21.1	21.1	ND	ND	DRY	1.15				
WS106	0.1	0.1	2.0	2.0	0.3	0.3	ND	ND	ND	ND	22.1	22.1	ND	ND	DRY	1.28				
TBH1	0.1	0.1	2.0	2.0	0.6	0.6	ND	ND	ND	ND	20.8	20.8	ND	ND	10.59	22.87	42.41	31.82		
TWS5	0.1	0.1	2.0	2.0	0.1	0.1	ND	ND	ND	ND	22.2	22.2	ND	ND	2.15	2.20				
BH101	0.1	0.1	2.0	2.0	2.0	2.0	ND	ND	ND	ND	19.5	19.5	ND	ND	5.68	6.35	42.45	36.77		
TWS1	0.1	0.1	2.0	2.0	0.1	0.1	ND	ND	ND	ND	22.3	22.3	ND	ND	DRY	1.10				
TBH2	0.1	0.1	2.0	2.0	0.3	0.3	ND	ND	ND	ND	22.1	22.1	ND	ND	4.81	8.51	42.71	37.90		
WS107	0.1	0.1	2.0	2.0	0.1	0.1	ND	ND	ND	ND	22.4	22.4	0.1	ND	DRY	1.51				
TBH3	ND	ND	ND	ND	1.7	1.7	ND	ND	ND	ND	20.1	20.1	-0.2	ND	7.47	8.76	42.45	34.98		
Max	**0.1**	**0.1**	**2.0**	**2.0**	**2.0**	**2.0**	ND	ND	ND	ND	**22.4**	**22.4**	**0.1**	**0.1**	**10.59**	**22.87**	**42.71**	**37.90**		
Min	**0.1**	**0.1**	**2.0**	**2.0**	**0.1**	**0.1**	ND	ND	ND	ND	**18.6**	**18.6**	**0.1**	**0.1**	**2.15**	**1.08**	**42.41**	**31.82**		

METEOROLOGICAL AND SITE INFORMATION:												
State of ground:	X	Dry		Moist		Wet		Snow		Frozen		
Wind:	X	Calm		Light		Moderate		Strong				
Cloud cover:	X	None		Slight		Cloudy		Overcast				
Preciptation:	X	None		Slight		Moderate		Heavy				
Barometric pressure (mbar):			1012	Before			1012	After				
Pressure trend:				Falling		Steady	X	Rising				
Ground gas meter:	**GA2000**											
Ambient Gas concentration:	**CH_4**	ND	**CO_2**	ND	**O_2**	21.2%						

GAS MONITORING ACROSS BOREHOLE LOCATIONS

JOB DETAILS:	Harefield Road, Uxbridge	**Job No:**	TE1044		
Client:	Watkin Jones & Son	**Visit No:**	4	of	6
Site:	Harefield Road	**Operator:**	David Bromley		
Date:	19/12/2017	**Project Manager:**	JB		

Monitoring Point	GAS CONCENTRATIONS												FLOW DATA		WELL AND WATER DATA					Comments
	Methane (%v/v)		%LEL		Carbon dioxide (%v/v)		Carbon monoxide (ppm)		Hydrogen sulphide (ppm)		Oxygen (%v/v)		Flow rate (l/hr)		Water Depth (mbgl)	Depth of Well (mbgl)	Ground Level (mAOD)	Water Level (mAOD)	Response Zone	
	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	Lowest	Steady	Peak	Steady						
WS102	0.1	0.1	2.0	2.0	1.4	1.4	ND	ND	ND	ND	19.3	19.3	-0.8	ND	DRY	1.27				
TWS9	0.1	0.1	2.0	2.0	ND	ND	ND	ND	ND	ND	21.3	21.3	ND	ND	DRY	1.08				
TWS11	0.1	0.1	2.0	2.0	0.4	0.4	ND	ND	ND	ND	21.3	21.3	ND	ND	DRY	1.15				
WS106	0.1	0.1	2.0	2.0	0.2	0.2	ND	ND	ND	ND	21.4	21.4	ND	ND	DRY	1.27				
TBH1	0.1	0.1	2.0	2.0	1.0	0.8	ND	ND	ND	ND	19.6	19.6	ND	ND	11.45	22.86	42.41	30.96		
TWS5	0.1	0.1	2.0	2.0	0.4	0.4	ND	ND	ND	ND	21.0	21.0	ND	ND	1.97	2.19				
BH101	0.1	0.1	2.0	2.0	1.6	1.6	ND	ND	ND	ND	19.8	19.8	ND	ND	5.34	6.33	42.45	37.11		
TWS1	0.1	0.1	2.0	2.0	ND	ND	ND	ND	ND	ND	22.1	22.1	ND	ND	DRY	1.10				
TBH2	0.1	0.1	2.0	2.0	0.5	0.5	ND	ND	ND	ND	21.6	21.6	-0.1	ND	4.80	8.50	42.71	37.91		
WS107	0.1	0.1	2.0	2.0	ND	ND	ND	ND	ND	ND	22.1	22.1	ND	ND	DRY	1.50				
TBH3	ND	ND	ND	ND	1.1	1.1	ND	ND	ND	ND	20.7	20.7	ND	ND	7.28	7.75	42.45	35.17		
Max	**0.1**	**0.1**	**2.0**	**2.0**	**1.6**	**1.6**	ND	ND	ND	ND	**22.1**	**22.1**	**-0.1**	**0.1**	**11.45**	**22.86**	**42.71**	**37.91**		
Min	**0.1**	**0.1**	**2.0**	**2.0**	**0.1**	**0.1**	ND	ND	ND	ND	**19.3**	**19.3**	**0.1**	**0.1**	**1.97**	**1.08**	**42.41**	**30.96**		

METEOROLOGICAL AND SITE INFORMATION:												
State of ground:		Dry	X	Moist		Wet		Snow		Frozen
Wind:	X	Calm		Light		Moderate		Strong		
Cloud cover:		None	X	Slight		Cloudy		Overcast		
Preciptation:	X	None		Slight		Moderate		Heavy		
Barometric pressure (mbar):			1027	Before			1027	After		
Pressure trend:				Falling		Steady	X	Rising		
Ground gas meter:	**GA2000**									
Ambient Gas concentration:	**CH_4**	ND	**CO_2**	ND	**O_2**	21.4%				

GAS MONITORING ACROSS BOREHOLE LOCATIONS

JOB DETAILS:	Harefield Road, Uxbridge	**Job No:**	TE1044		
Client:	Watkin Jones & Son	**Visit No:**	5	of	6
Site:	Harefield Road	**Operator:**	Callum Jones		
Date:	13/02/2018	**Project Manager:**	JB		

Monitoring Point	GAS CONCENTRATIONS												FLOW DATA		WELL AND WATER DATA					Comments
	Methane (%v/v)		%LEL		Carbon dioxide (%v/v)		Carbon monoxide (ppm)		Hydrogen sulphide (ppm)		Oxygen (%v/v)		Flow rate (l/hr)		Water Depth (mbgl)	Depth of Well (mbgl)	Ground Level (mAOD)	Water Level (mAOD)	Response Zone	
	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	Lowest	Steady	Peak	Steady						
WS102	0.2	0.1	4.0	2.0	0.9	0.9	ND	ND	ND	ND	20.1	20.3	ND	ND	DRY	1.29				
TWS9	0.1	0.1	2.0	2.0	ND	ND	ND	ND	ND	ND	21.5	21.5	-0.2	-0.2	DRY	1.09				
TWS11	0.1	ND	2.0	ND	0.2	0.1	ND	ND	ND	ND	21.3	21.3	ND	ND	DRY	1.17				
WS106	0.1	0.1	2.0	2.0	0.2	0.2	ND	ND	ND	ND	21.0	21.0	ND	ND	DRY	1.29				
TBH1	0.1	0.1	2.0	2.0	1.0	1.0	ND	ND	ND	ND	17.8	17.9	ND	ND	10.16	22.96	42.41	32.25		
TWS5	ND	ND	ND	ND	0.6	0.6	ND	ND	ND	ND	20.3	20.3	ND	ND	2.17	2.22				
BH101	ND	ND	ND	ND	1.3	1.3	ND	ND	ND	ND	19.4	19.5	ND	ND	5.50	6.43	42.45	36.95		
TWS1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	21.6	21.6	ND	ND	DRY	1.12				
TBH2	ND	ND	ND	ND	0.3	0.3	ND	ND	ND	ND	21.0	21.1	ND	ND	4.71	8.56	42.71	38.00		
WS107																				No Access
TBH3	0.1	ND	2.0	ND	1.4	1.0	ND	ND	ND	ND	20.4	20.7	ND	ND	7.10	7.82	42.45	35.35		
Max	**0.2**	**0.1**	**4.0**	**2.0**	**1.4**	**1.3**	ND	ND	ND	ND	**21.6**	**21.6**	**-0.2**	**-0.2**	**10.16**	**22.96**	**42.71**	**38.00**		
Min	**0.1**	**0.1**	**2.0**	**2.0**	**0.1**	**0.1**	ND	ND	ND	ND	**17.8**	**17.9**	**0.1**	**0.1**	**2.17**	**1.09**	**42.41**	**32.25**		

METEOROLOGICAL AND SITE INFORMATION:									
State of ground:		Dry	X	Moist		Wet		Snow		Frozen
Wind:		Calm	X	Light		Moderate		Strong	
Cloud cover:		None		Slight		Cloudy	X	Overcast	
Preciptation:		None	X	Slight		Moderate		Heavy	
Barometric pressure (mbar):			994	Before			992	After	
Pressure trend:			X	Falling		Steady		Rising	
Ground gas meter:	**GA2000**								
Ambient Gas concentration:		**CH_4** ND		**CO_2** ND		**O_2** 20.6%			

GAS MONITORING ACROSS BOREHOLE LOCATIONS

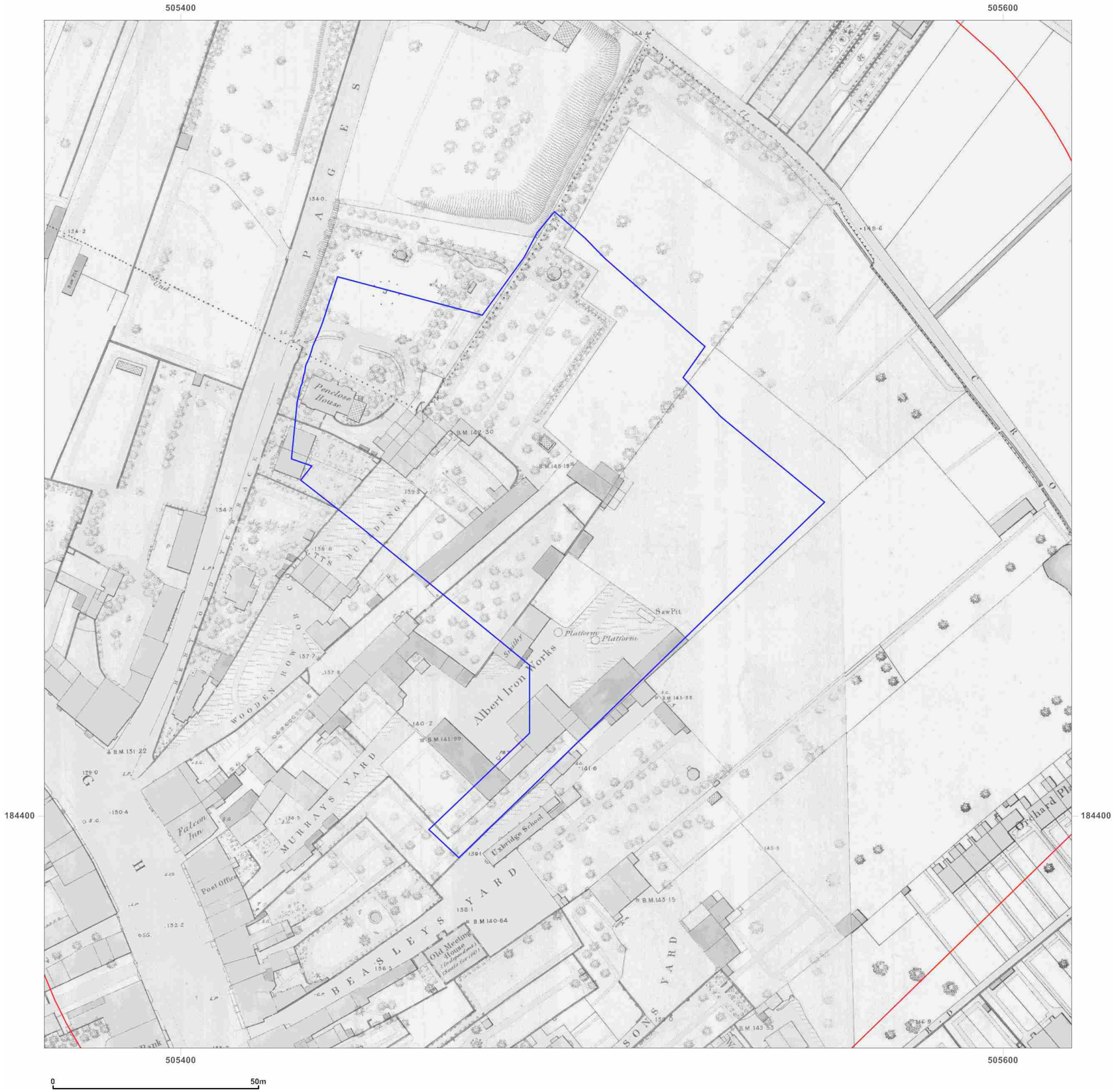
JOB DETAILS:	Harefield Road, Uxbridge	**Job No:**	TE1044		
Client:	Watkin Jones & Son	**Visit No:**	6	of	6
Site:	Harefield Road	**Operator:**	TN		
Date:	06.04.18	**Project Manager:**	JB		

Monitoring Point	GAS CONCENTRATIONS												FLOW DATA		WELL AND WATER DATA					Comments
	Methane (%v/v)		%LEL		Carbon dioxide (%v/v)		Carbon monoxide (ppm)		Hydrogen sulphide (ppm)		Oxygen (%v/v)		Flow rate (l/hr)		Water Depth (mbgl)	Depth of Well (mbgl)	Ground Level (mAOD)	Water Level (mAOD)	Response Zone	
	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	Lowest	Steady	Peak	Steady						
WS102	0.1	0.1	2.0	2.0	0.9	0.9	ND	ND	ND	ND	19.9	19.9	-0.2	-0.2	DRY	1.27				
TWS9	0.1	0.1	2.0	2.0	ND	ND	ND	ND	ND	ND	20.7	20.7	-0.1	-0.1	DRY	1.07				
TWS11	0.1	0.1	2.0	2.0	ND	ND	ND	ND	ND	ND	20.8	20.8	-0.2	-0.2	DRY	1.15				
WS106																				CAR COVERING WELL
TBH1	0.1	0.1	2.0	2.0	1.8	1.8	ND	ND	ND	ND	17.1	17.1	-0.2	-0.2	13.50	23.20				
TWS5	0.1	0.1	2.0	2.0	0.7	0.7	ND	ND	ND	ND	19.7	19.7	0.2	0.3	DRY	2.17				
BH101	0.1	0.1	2.0	2.0	1.0	1.0	ND	ND	ND	ND	19.7	19.7	ND	ND	5.32	6.40				
TWS1	0.1	0.1	2.0	2.0	ND	ND	3	ND	ND	ND	21.3	21.3	-0.1	-0.2	DRY	1.10				
TBH2															4.23	8.52				BUNG DAMAGED
WS107	0.1	0.1	2.0	2.0	ND	ND	36	ND	ND	ND	21.1	21.1	-0.2	-0.2	DRY	1.50				
TBH3	0.1	0.1	2.0	2.0	1.0	1.0	ND	ND	ND	ND	20.2	20.2	0.4	0.3	7.23	7.82				
Max	**0.1**	**0.1**	**2.0**	**2.0**	**1.8**	**1.8**	**36.0**	ND	ND	ND	**21.3**	**21.3**	**0.4**	**0.3**	**13.50**	**23.20**				
Min	**0.1**	**0.1**	**2.0**	**2.0**	**0.1**	**0.1**	ND	ND	ND	ND	**17.1**	**17.1**	**0.1**	**0.1**	**4.23**	**1.07**				

METEOROLOGICAL AND SITE INFORMATION:									
State of ground:	X	Dry		Moist		Wet		Snow		Frozen
Wind:		Calm	X	Light		Moderate		Strong	
Cloud cover:		None		Slight	X	Cloudy		Overcast	
Preciptation:	X	None		Slight		Moderate		Heavy	
Barometric pressure (mbar):			1006	Before			1005	After	
Pressure trend:			X	Falling		Steady		Rising	
Ground gas meter:	**GA2000**								

Ambient Gas concentration:	CH_4	0.1%	CO_2	ND	O_2	21.0%

APPENDIX O – GROUNDSURE REPORT



Groundsure INSIGHTS

Site Details:

WICKES BUILDING SUPPLIES,
12, HAREFIELD ROAD,
UXBRIDGE, UB8 1JS

Client Ref: TE1044_Harefield_Road_Uxbridge
Report Ref: GS-4389326
Grid Ref: 505492, 184468

Map Name: County Series Town Plan

Map date: **1866**

Scale: 1:528

Printed at: 1:1,000

N
W E
S

Surveyed 1866
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

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Client Ref: TE1044_Harefield_Road_Uxbridge
Report Ref: GS-4389326
Grid Ref: 505492, 184468

Map Name: County Series

Map date: **1865-1868**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1865
Revised 1865
Edition 1865
Copyright N/A
Levelled N/A

Surveyed 1864
Revised 1868
Edition 1868
Copyright N/A
Levelled N/A

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Client Ref: TE1044_Harefield_Road_Uxbridge
Report Ref: GS-4389326
Grid Ref: 505492, 184468

Map Name: County Series

Map date: **1881**

Scale: 1:10,560

Printed at: 1:10,560

N
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Surveyed 1875
Revised N/A
Edition 1881
Copyright N/A
Levelled N/A

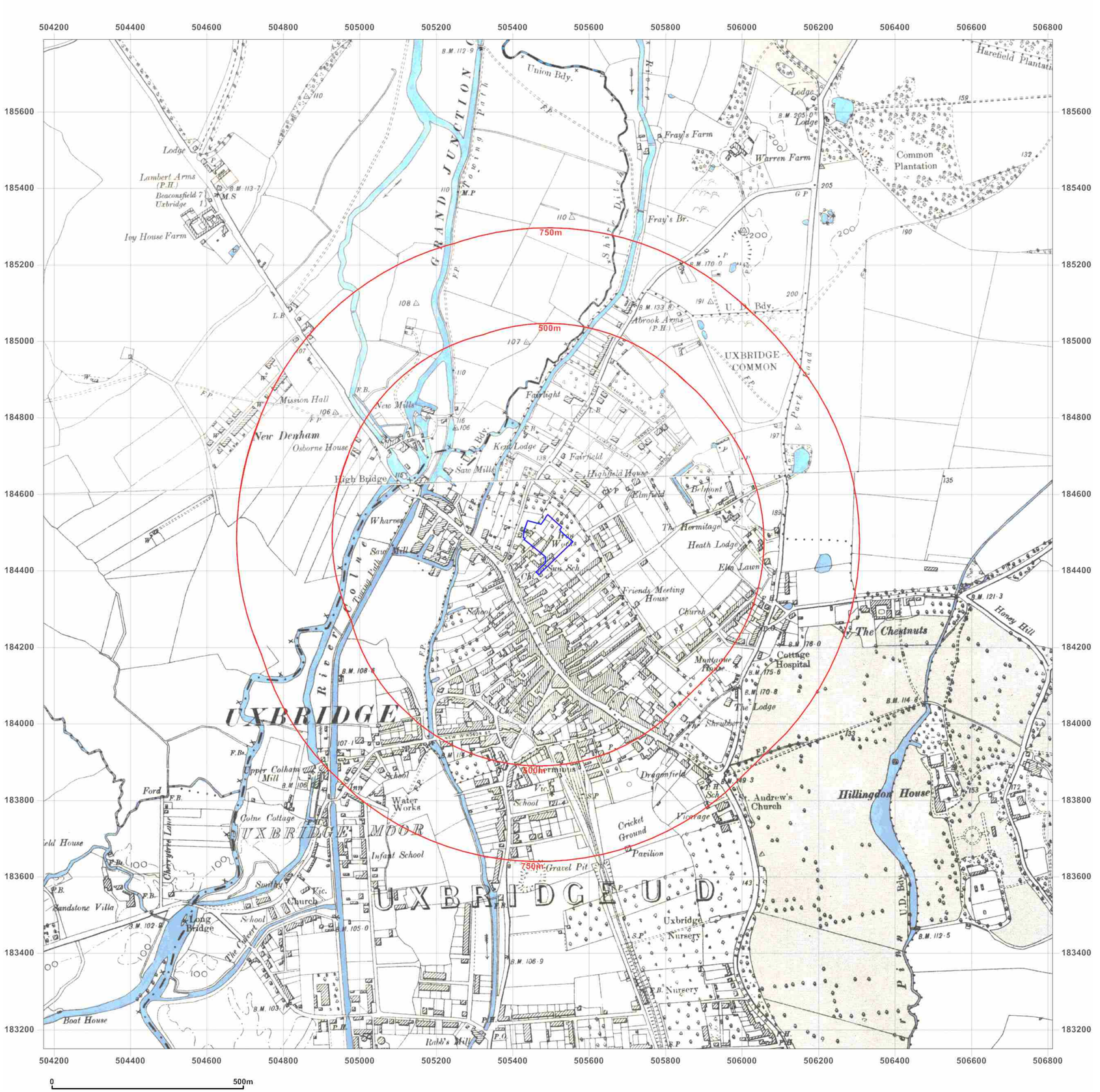
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Client Ref: TE1044_Harefield_Road_Uxbridge
Report Ref: GS-4389326
Grid Ref: 505492, 184468

Map Name: County Series

Map date: **1895-1897**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
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Surveyed 1875
Revised 1895
Edition 1897
Copyright N/A
Levelled N/A

Surveyed 1864
Revised 1895
Edition 1895
Copyright N/A
Levelled N/A

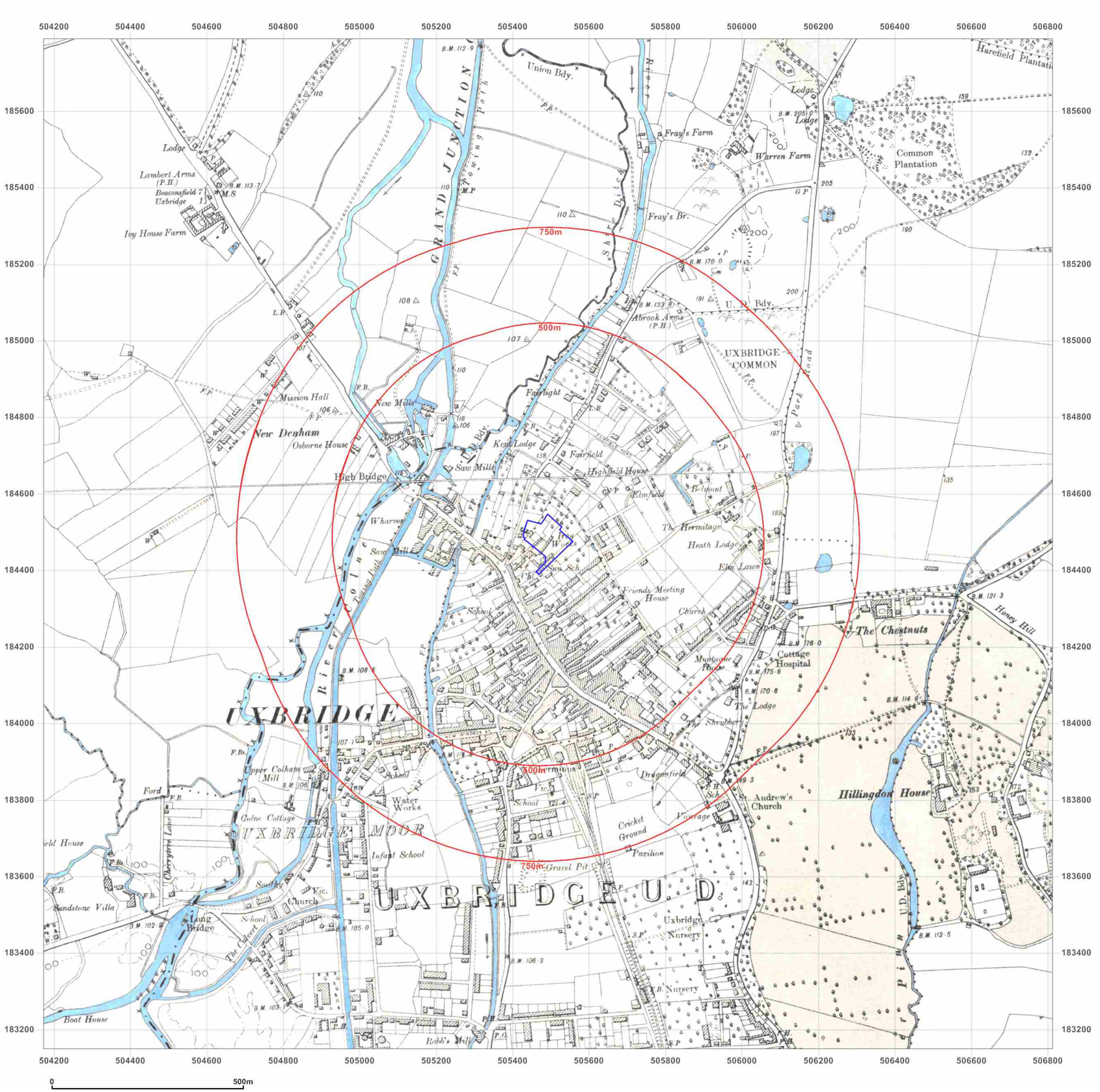
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Client Ref: TE1044_Harefield_Road_Uxbridge
Report Ref: GS-4389326
Grid Ref: 505492, 184468

Map Name: County Series

Map date: **1895-1897**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1864
Revised 1895
Edition 1895
Copyright N/A
Levelled N/A

Surveyed 1875
Revised 1895
Edition 1897
Copyright N/A
Levelled N/A

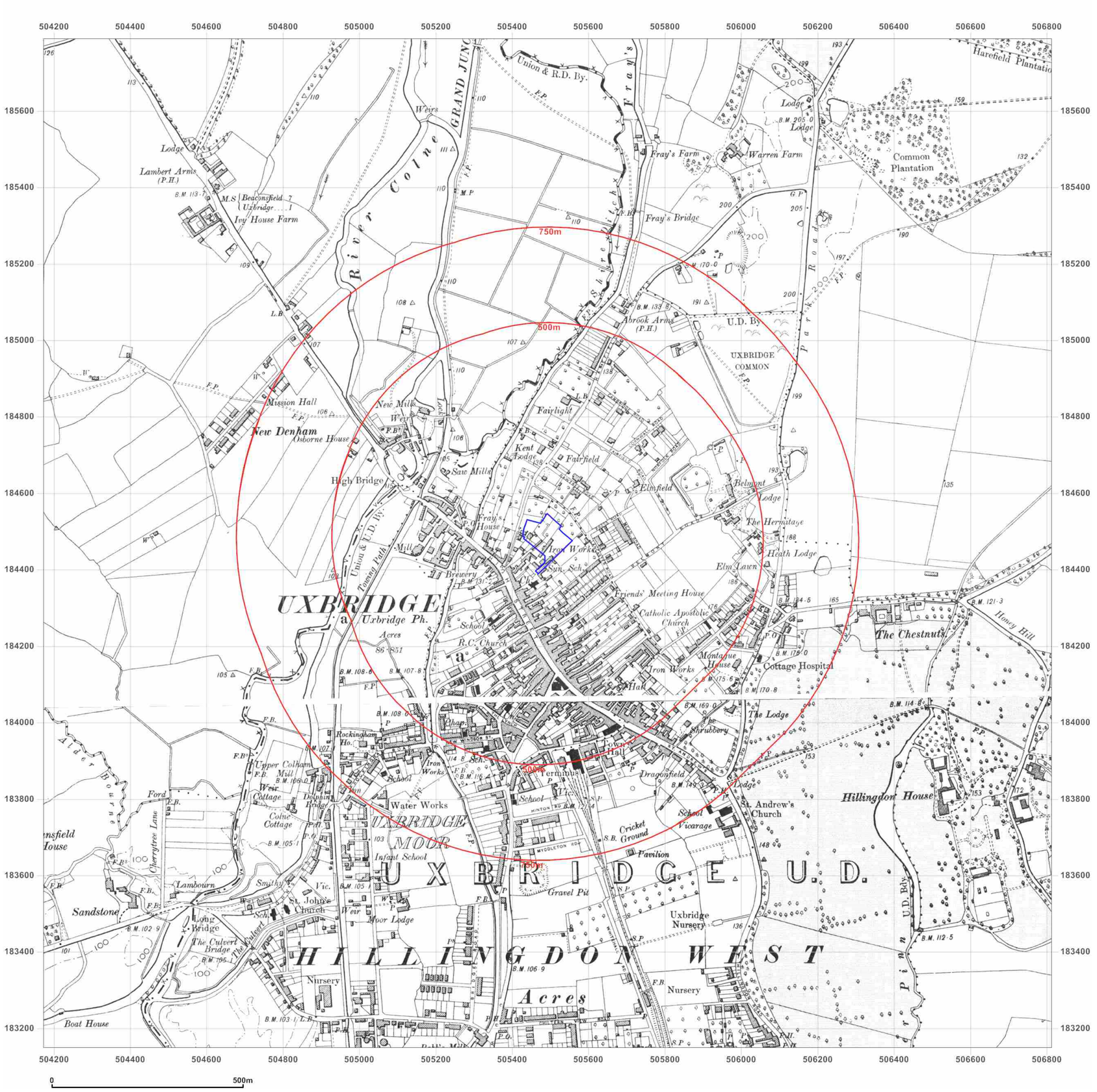
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Client Ref: TE1044_Harefield_Road_Uxbridge
Report Ref: GS-4389326
Grid Ref: 505492, 184468

Map Name: County Series

Map date: **1900**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
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Surveyed 1875
Revised 1897
Edition 1900
Copyright N/A
Levelled N/A

Surveyed 1875
Revised 1900
Edition 1900
Copyright N/A
Levelled N/A

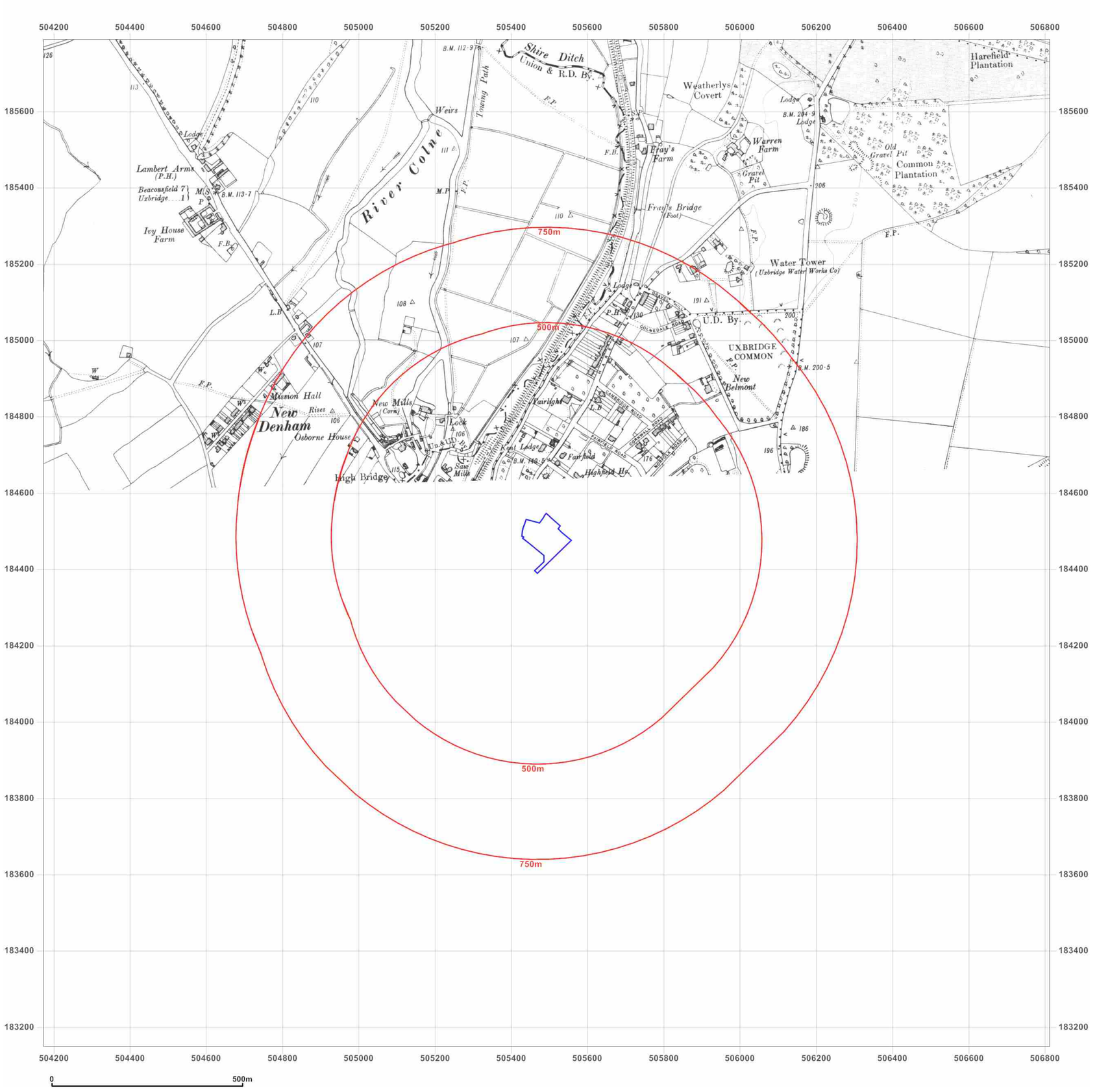
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Client Ref: TE1044_Harefield_Road_Uxbridge
Report Ref: GS-4389326
Grid Ref: 505492, 184468

Map Name: County Series

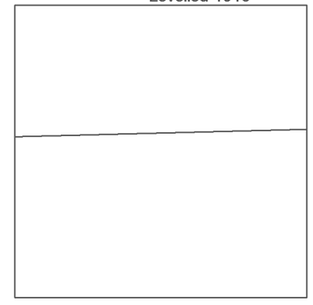
Map date: **1912**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
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Surveyed 1864
Revised 1912
Edition 1920
Copyright N/A
Levelled 1913



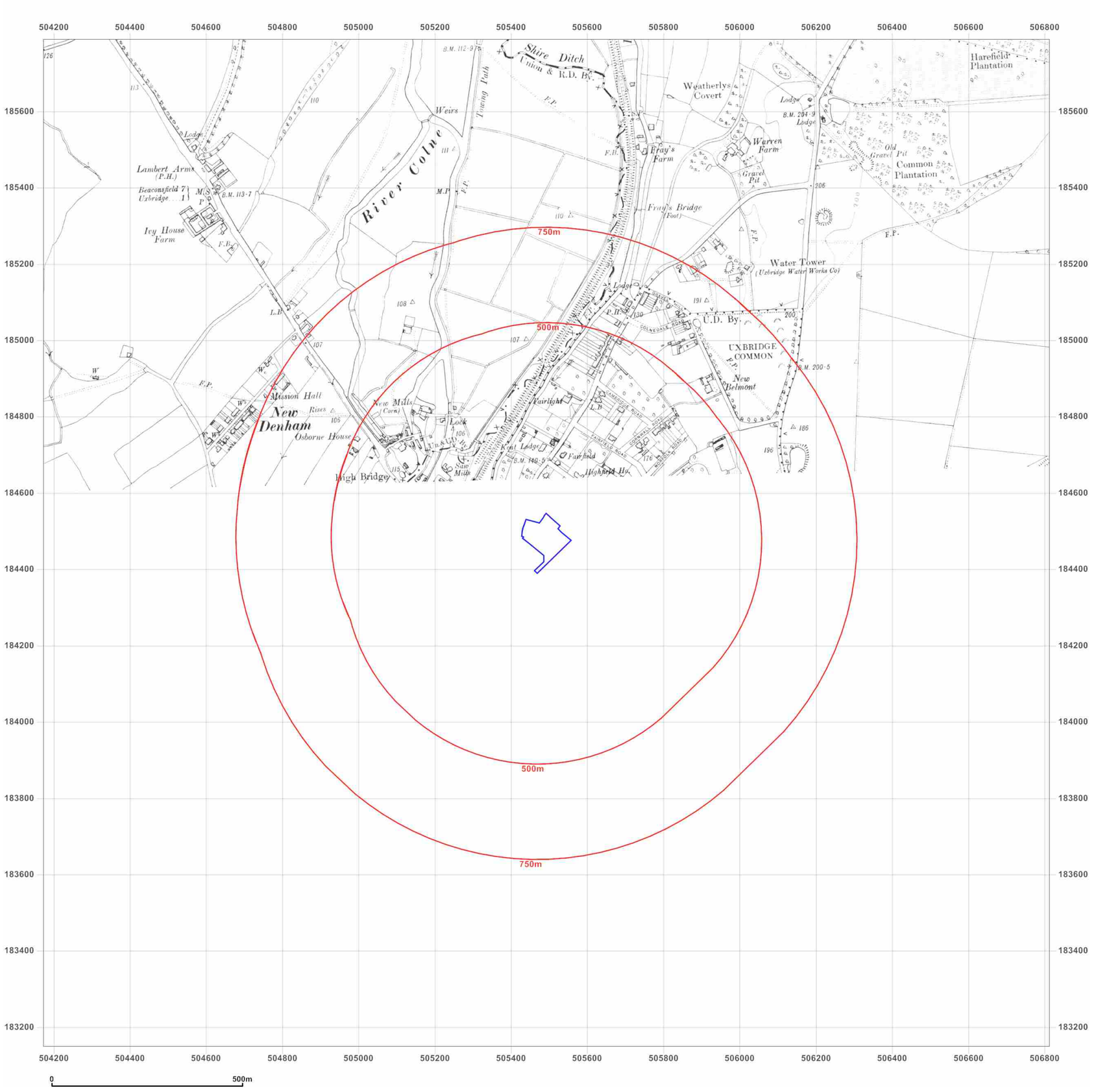
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Report Ref: GS-4389326
Grid Ref: 505492, 184468

Map Name: County Series

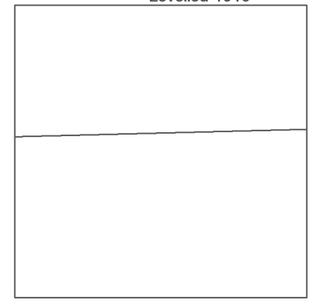
Map date: **1912**

Scale: 1:10,560

Printed at: 1:10,560

N
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Surveyed 1864
Revised 1912
Edition 1920
Copyright N/A
Levelled 1913



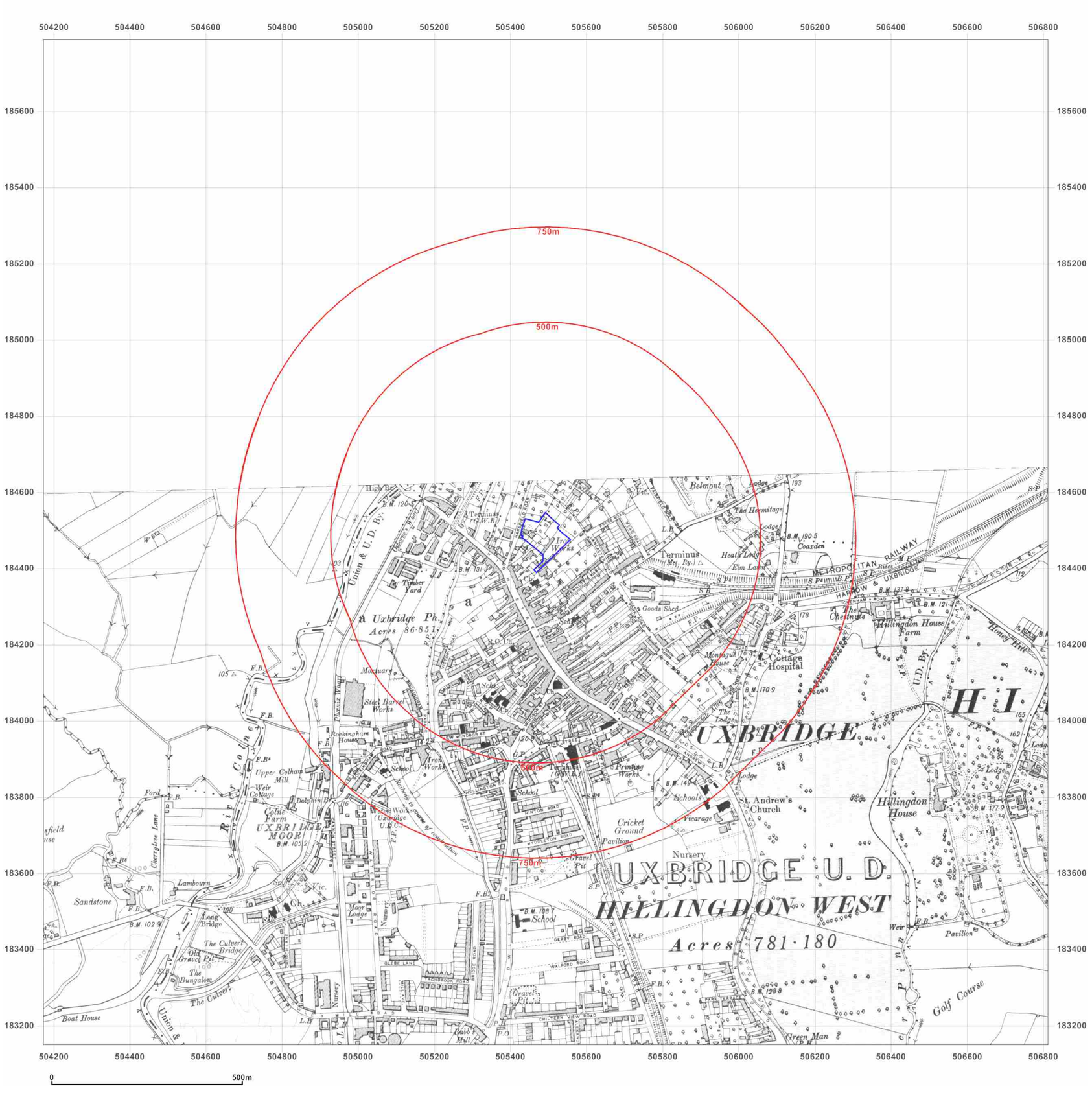
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Client Ref: TE1044_Harefield_Road_Uxbridge
Report Ref: GS-4389326
Grid Ref: 505492, 184468

Map Name: County Series

Map date: **1920**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
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Surveyed 1864
Revised 1913
Edition 1920
Copyright N/A
Levelled 1913

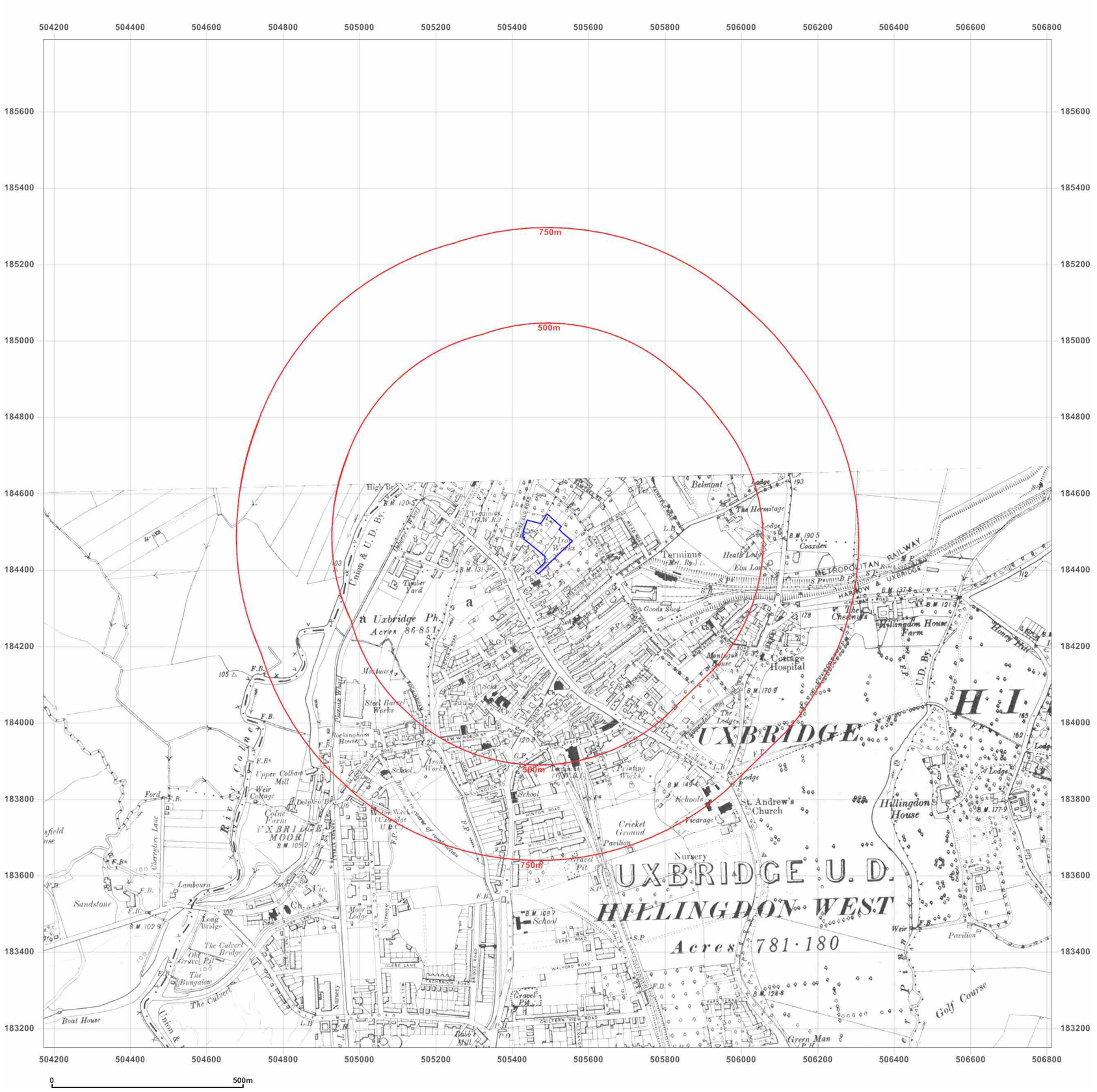
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Grid Ref: 505492, 184468

Map Name: County Series

Map date: **1920**

Scale: 1:10,560

Printed at: 1:10,560

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