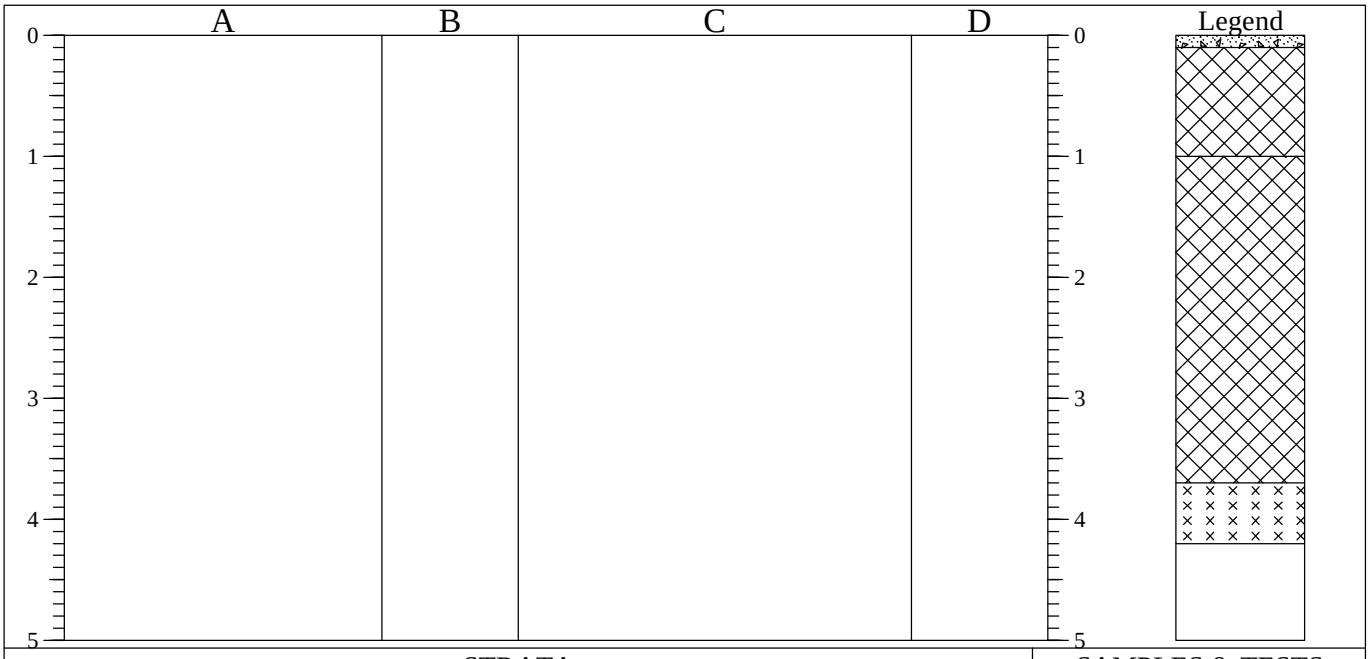
Solum House, Unit 1 Elliott Court
St Johns Road, Meadowfield
Durham, DH7 8PN
Telephone: 01913786380

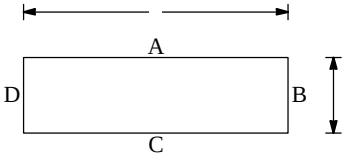
TRIAL PIT LOG

Project				TRIAL PIT No
Serpentine Road, Cleckheaton				**TP08**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
16-075	01-02-16			
Contractor				Sheet
Arc Environmental Ltd				1 of 1



STRATA			SAMPLES & TESTS		
Depth	No	DESCRIPTION	Depth	No	Remarks/Tests
0.00-0.10		Reinforced concrete with 8mm rebar (MADE GROUND).			
0.10-1.00		Reddish black gravelly sand with red shale, slag and occasional ash and fragments of concrete (MADE GROUND).	0.30	J/D	
			0.80	J/D	
1.00-3.70		Light brown sandy with medium coarse sub rounded sandstone gravels and cobbles of sandstone with occasional fine brick rubble (MADE GROUND).			
			1.50	J/D	
			2.00	D	
3.70-4.20		Light brown grey weathered SILTSTONE (LOWER COAL MEASURES).			

Shoring/Support:
Stability: Trial pit walls remained stable.



GENERAL REMARKS

No water encountered.

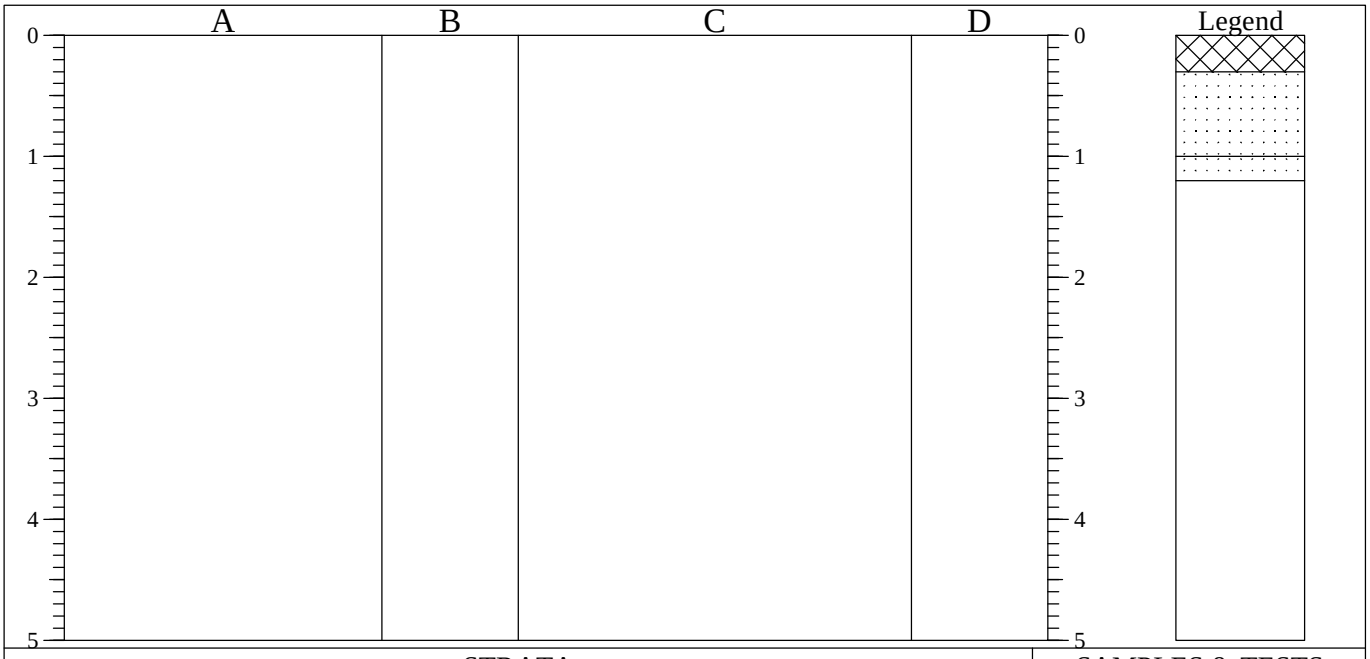
All dimensions in metres Scale 1:62.5	Client McCarthy & Stone Retirement Lifestyles	Method/ Plant Used 360 Excavator	Logged By SDT

AGS3 UK TP 16-075 LOGS.GPJ AGS3_ALL.GDT 5/4/16

Solum House, Unit 1 Elliott Court
St Johns Road, Meadowfield
Durham, DH7 8PN
Telephone: 01913786380

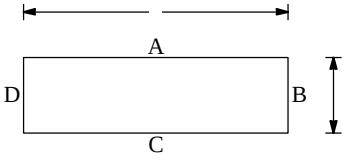
TRIAL PIT LOG

Project				TRIAL PIT No
Serpentine Road, Cleckheaton				**TP09**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
16-075	01-02-16			
Contractor				Sheet
Arc Environmental Ltd				1 of 1



STRATA			SAMPLES & TESTS		
Depth	No	DESCRIPTION	Depth	No	Remarks/Tests
0.00-0.30		Dark grey sandy gravel with bricks and sandstone cobbles (MADE GROUND).	0.20	J/D	
0.30-1.00		Light brown fine completely weathered SANDSTONE recovered as a slightly clayey fine to coarse sand with sandstone cobbles (LOWER COAL MEASURES).	0.50	D	
1.00-1.20		Light brown fine weathered SANDSTONE (LOWER COAL MEASURES).			

Shoring/Support:
Stability: Trial pit walls remained stable.



GENERAL REMARKS

No water encountered.

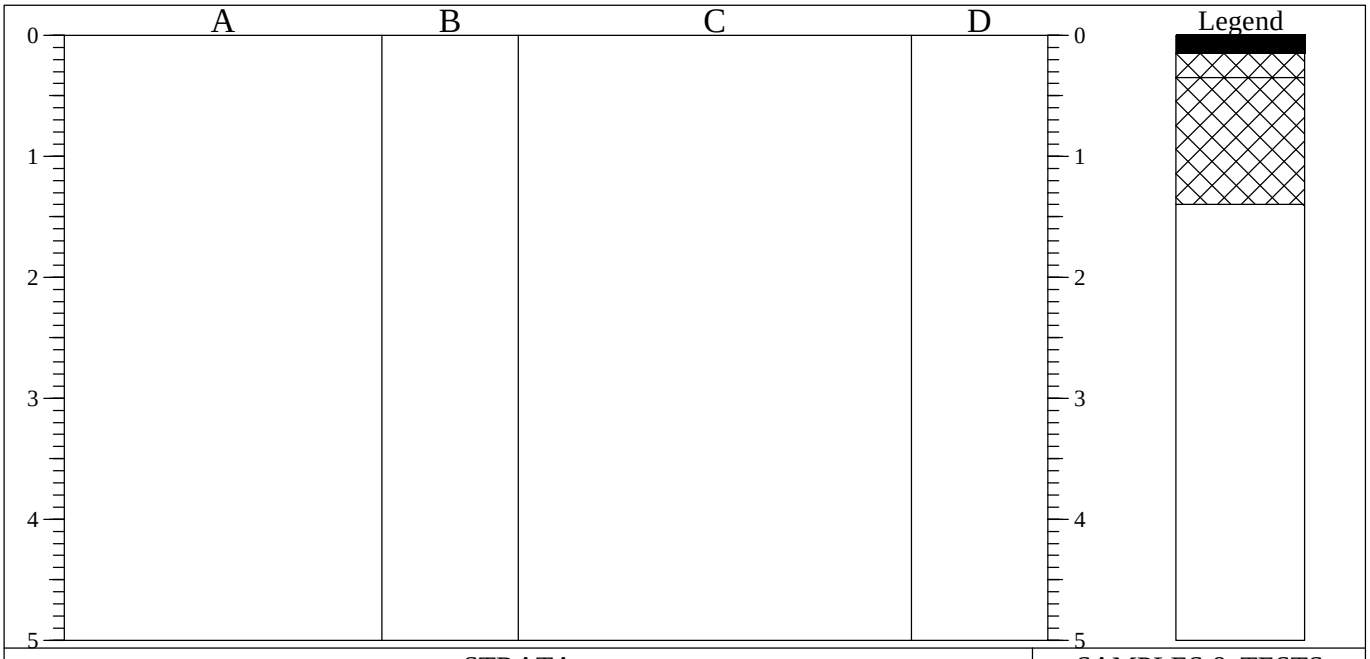
All dimensions in metres Scale 1:62.5	Client McCarthy & Stone Retirement Lifestyles	Method/ Plant Used JCB 3CX	Logged By MR

AGS3 UK TP 16-075 LOGS.GPJ AGS3_ALL.GDT 5/4/16

Solum House, Unit 1 Elliott Court
St Johns Road, Meadowfield
Durham, DH7 8PN
Telephone: 01913786380

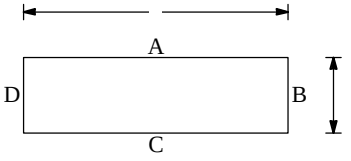
TRIAL PIT LOG

Project				TRIAL PIT No
Serpentine Road, Cleckheaton				**TP10**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
16-075	01-02-16			
Contractor				Sheet
Arc Environmental Ltd				1 of 1



STRATA			SAMPLES & TESTS		
Depth	No	DESCRIPTION	Depth	No	Remarks/Tests
0.00-0.15		Asphalt (MADE GROUND).			
0.15-0.35		Brown black very ashy sand with concrete and bricks (MADE GROUND).	0.20	J/D	
0.35-1.40		Brown sandy reworked clay (MADE GROUND).			
			1.00	J/D	
1.40		Sandstone obstruction (inferred relict culvert structure).			

Shoring/Support:
Stability: Trial pit walls remained stable.



GENERAL REMARKS

No water encountered.

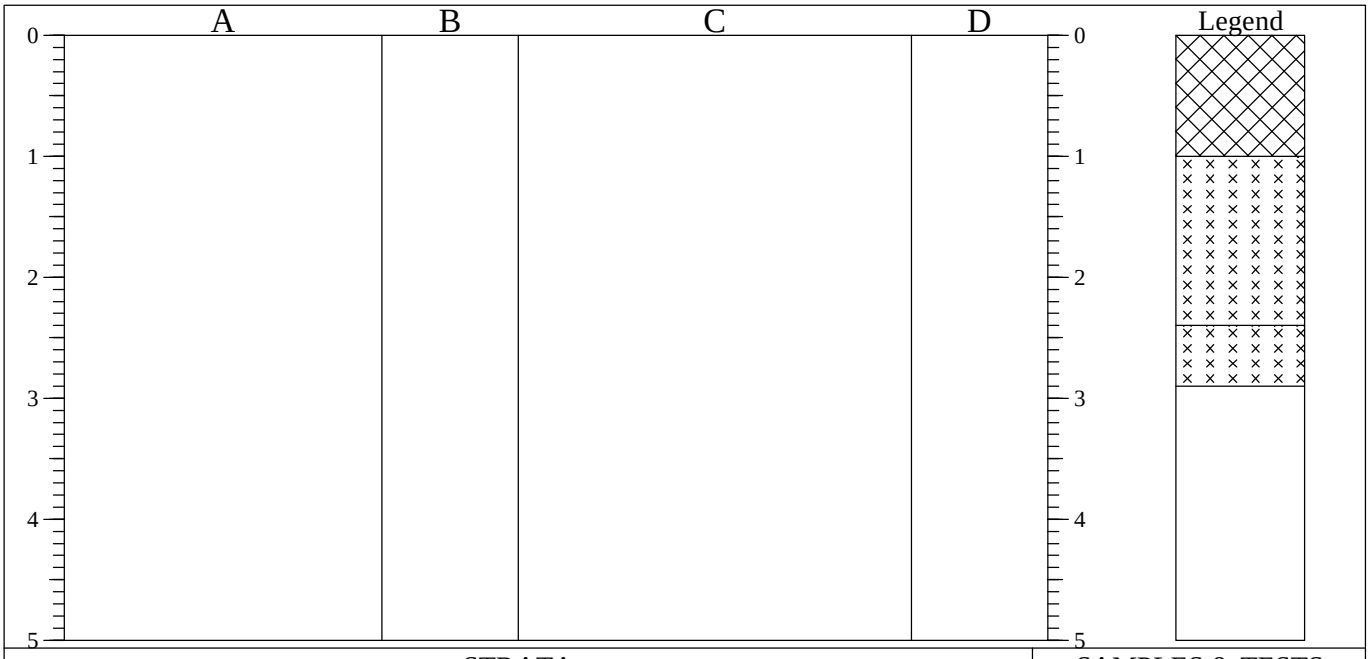
All dimensions in metres Scale 1:62.5	Client McCarthy & Stone Retirement Lifestyles	Method/ Plant Used JCB 3CX	Logged By MR

AGS3 UK TP 16-075 LOGS.GPJ AGS3_ALL.GDT 5/4/16

Solum House, Unit 1 Elliott Court
St Johns Road, Meadowfield
Durham, DH7 8PN
Telephone: 01913786380

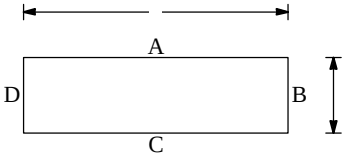
TRIAL PIT LOG

Project				TRIAL PIT No
Serpentine Road, Cleckheaton				**TP11**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
16-075	01-02-16			
Contractor				Sheet
Arc Environmental Ltd				1 of 1



STRATA			SAMPLES & TESTS		
Depth	No	DESCRIPTION	Depth	No	Remarks/Tests
0.00-1.00		Reddish black gravelly sand with red shale (MADE GROUND).	0.20	J/D	
			0.60	J/D	
1.00-2.40		Light brown grey completely weathered SILTSTONE. Siltstone recovered as a firm sandy silt (LOWER COAL MEASURES).	2.00	B	
			2.00	V	56 kPa
2.40-2.90		Light brown grey weathered SILTSTONE (LOWER COAL MEASURES).			

Shoring/Support:
Stability: Trial pit walls remained stable.



GENERAL REMARKS

No water encountered.

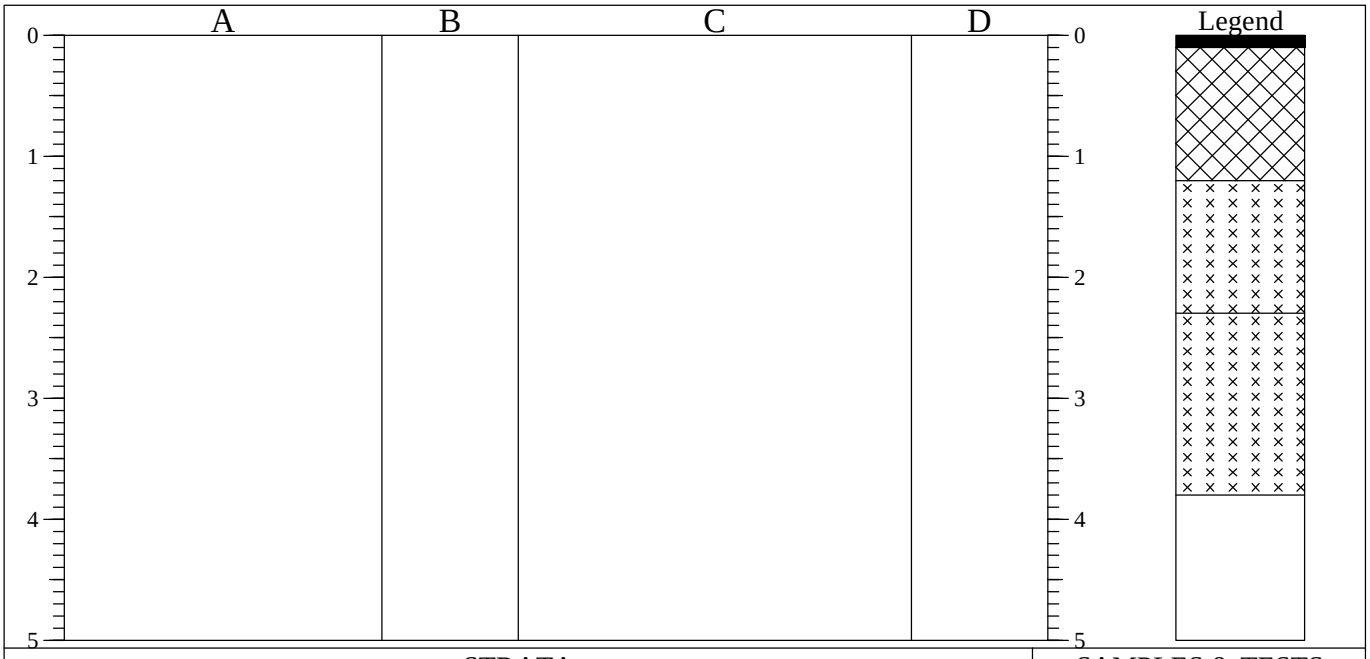
All dimensions in metres Scale 1:62.5	Client McCarthy & Stone Retirement Lifestyles	Method/ Plant Used JCB 3CX	Logged By MR

AGS3 UK TP 16-075 LOGS.GPJ AGS3_ALL.GDT 5/4/16

Solum House, Unit 1 Elliott Court
St Johns Road, Meadowfield
Durham, DH7 8PN
Telephone: 01913786380

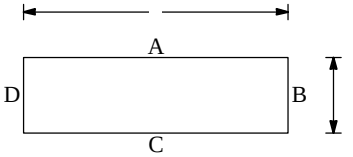
TRIAL PIT LOG

Project				TRIAL PIT No
Serpentine Road, Cleckheaton				**TP12**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
16-075	01-02-16			
Contractor				Sheet
Arc Environmental Ltd				1 of 1



STRATA			SAMPLES & TESTS		
Depth	No	DESCRIPTION	Depth	No	Remarks/Tests
0.00-0.10		Asphalt (MADE GROUND).			
0.10-1.20		Brown grey slightly silty very gravelly sand with bricks and occasional ash and coal (MADE GROUND).	0.20	J/D	
			0.50	D	
1.20-2.30		Light brown grey completely weathered SILTSTONE. Siltstone recovered as a firm sandy silt (LOWER COAL MEASURES).	1.50	V	48 kPa
2.30-3.80		Light brown grey weathered SILTSTONE (LOWER COAL MEASURES).			

Shoring/Support:
Stability: Trial pit walls remained stable.



GENERAL REMARKS

No water encountered.

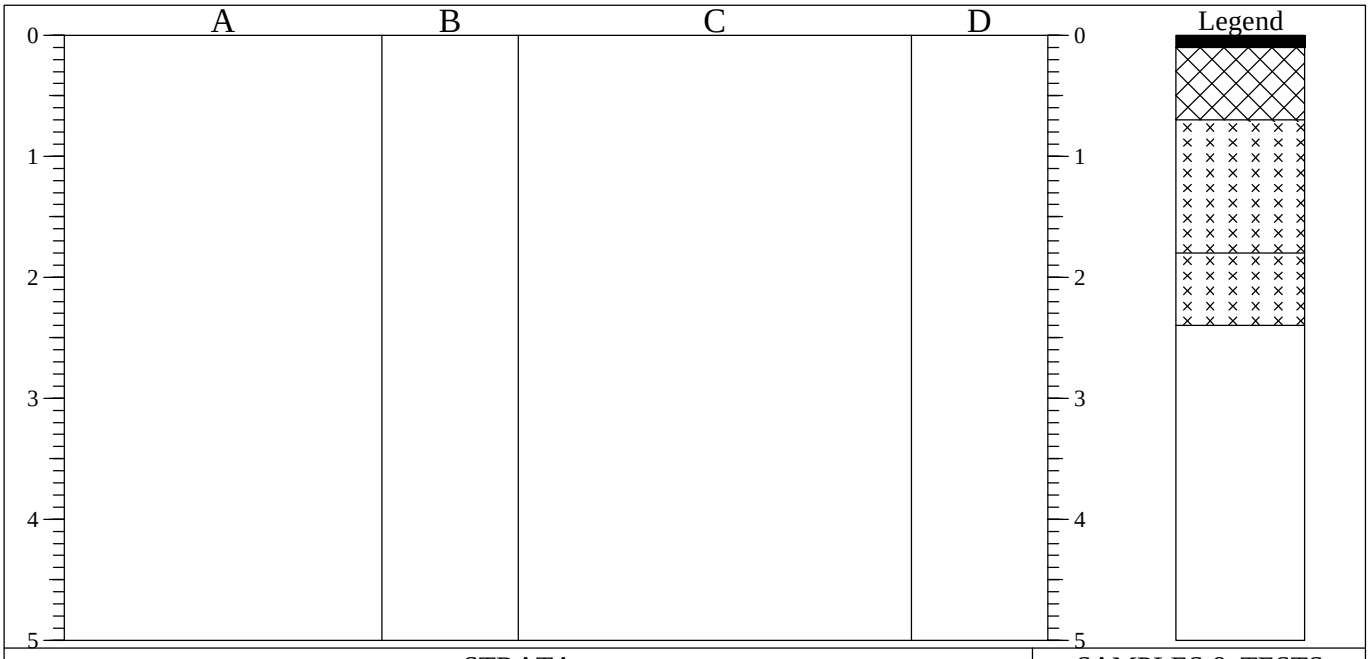
All dimensions in metres Scale 1:62.5	Client McCarthy & Stone Retirement Lifestyles	Method/ Plant Used 360 Excavator	Logged By SDT

AGS3 UK TP 16-075 LOGS.GPJ AGS3_ALL.GDT 5/4/16

Solum House, Unit 1 Elliott Court
St Johns Road, Meadowfield
Durham, DH7 8PN
Telephone: 01913786380

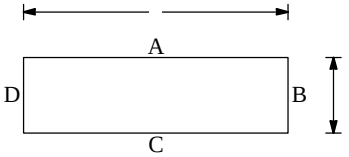
TRIAL PIT LOG

Project				TRIAL PIT No
Serpentine Road, Cleckheaton				**TP13**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
16-075	01-02-16			
Contractor				Sheet
Arc Environmental Ltd				1 of 1



STRATA			SAMPLES & TESTS		
Depth	No	DESCRIPTION	Depth	No	Remarks/Tests
0.00-0.10		Asphalt (MADE GROUND).			
0.10-0.70		Brown black sandy ash with slag and occasional bricks (MADE GROUND).	0.20	J/D	
0.70-1.80		Light brown grey completely weathered SILTSTONE. Siltstone recovered as a firm sandy silt (LOWER COAL MEASURES).	1.00 1.00	D J/D	
1.80-2.40		Light brown grey weathered SILTSTONE (LOWER COAL MEASURES).			

Shoring/Support:
Stability: Trial pit walls remained stable.



GENERAL REMARKS

No water encountered.

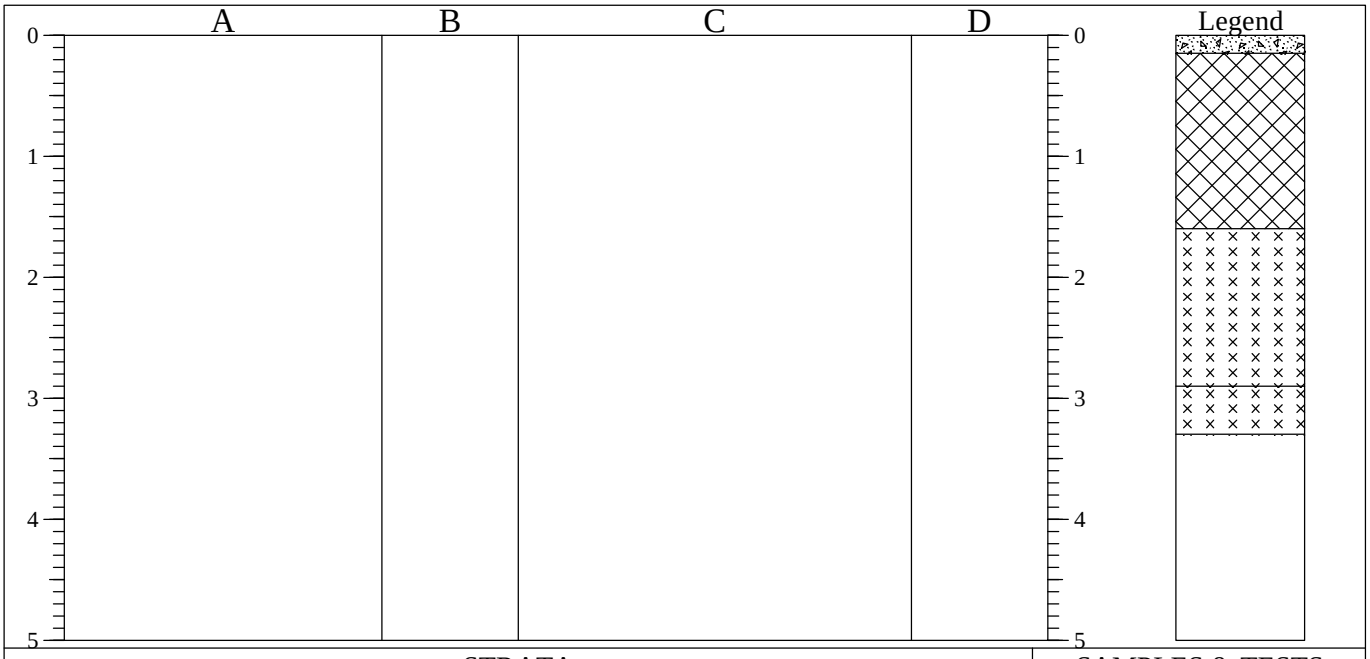
All dimensions in metres Scale 1:62.5	Client McCarthy & Stone Retirement Lifestyles	Method/ Plant Used 360 Excavator	Logged By SDT

AGS3 UK TP 16-075 LOGS.GPJ AGS3_ALL.GDT 5/4/16

Solum House, Unit 1 Elliott Court
St Johns Road, Meadowfield
Durham, DH7 8PN
Telephone: 01913786380

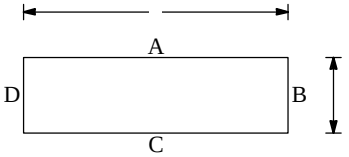
TRIAL PIT LOG

Project				TRIAL PIT No
Serpentine Road, Cleckheaton				**TP14**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
16-075	01-02-16			
Contractor				Sheet
Arc Environmental Ltd				1 of 1



STRATA			SAMPLES & TESTS		
Depth	No	DESCRIPTION	Depth	No	Remarks/Tests
0.00-0.15		Concrete (MADE GROUND).			
0.15-1.60		Brown black very ashy sand with concrete, bricks and occasional metal (MADE GROUND).	0.80	J/D	
			1.50	D	
1.60-2.90		Light brown grey completely weathered SILTSTONE. Siltstone recovered as a firm sandy silt (LOWER COAL MEASURES).	1.80	V	44 kPa
2.90-3.30		Light brown grey weathered SILTSTONE (LOWER COAL MEASURES).			

Shoring/Support:
Stability: Trial pit walls remained stable.



GENERAL REMARKS

No water encountered.

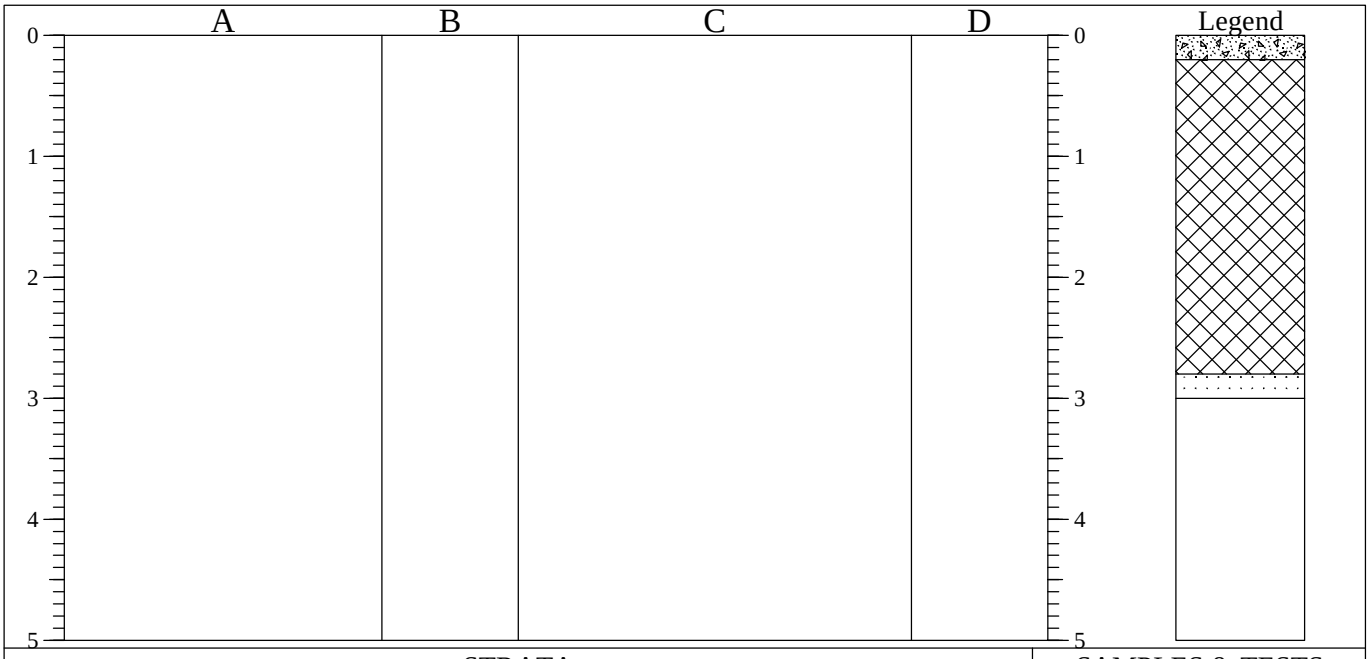
All dimensions in metres Scale 1:62.5	Client McCarthy & Stone Retirement Lifestyles	Method/ Plant Used 360 Excavator	Logged By SDT

AGS3 UK TP 16-075 LOGS.GPJ AGS3_ALL.GDT 5/4/16

Solum House, Unit 1 Elliott Court
St Johns Road, Meadowfield
Durham, DH7 8PN
Telephone: 01913786380

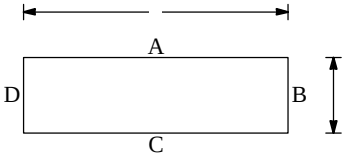
TRIAL PIT LOG

Project				TRIAL PIT No
Serpentine Road, Cleckheaton				**TP15**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
16-075	01-02-16			
Contractor				Sheet
Arc Environmental Ltd				1 of 1



STRATA			SAMPLES & TESTS		
Depth	No	DESCRIPTION	Depth	No	Remarks/Tests
0.00-0.20		Concrete (MADE GROUND).			
0.20-2.80		Brown black very ashy sand with concrete, bricks and occasional slag (MADE GROUND).	0.40	J/D	
			1.00	J/D	
			2.00	J/D	
2.80-3.00		Light brown fine weathered SANDSTONE (LOWER COAL MEASURES).			

Shoring/Support:
Stability: Trial pit walls remained stable.



GENERAL REMARKS

No water encountered.

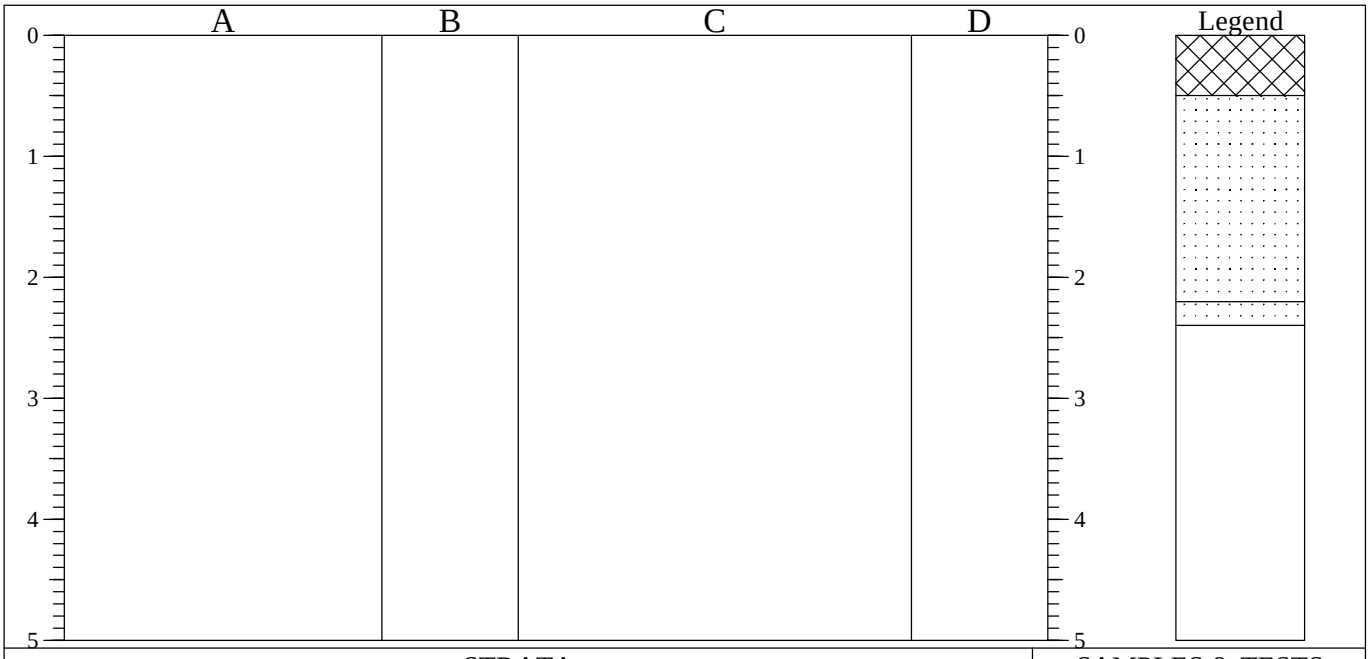
All dimensions in metres Scale 1:62.5	Client McCarthy & Stone Retirement Lifestyles	Method/ Plant Used JCB 3CX	Logged By MR

AGS3 UK TP 16-075 LOGS.GPJ AGS3_ALL.GDT 5/4/16

Solum House, Unit 1 Elliott Court
St Johns Road, Meadowfield
Durham, DH7 8PN
Telephone: 01913786380

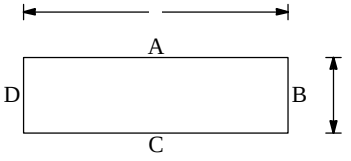
TRIAL PIT LOG

Project				TRIAL PIT No
Serpentine Road, Cleckheaton				**TP16**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
16-075	01-02-16			
Contractor				Sheet
Arc Environmental Ltd				1 of 1



STRATA			SAMPLES & TESTS		
Depth	No	DESCRIPTION	Depth	No	Remarks/Tests
0.00-0.50		Dark brown clayey sand with concrete and bricks (MADE GROUND).			
0.50-2.20		Light brown fine completely weathered SANDSTONE recovered as a slightly clayey fine to coarse sand with sandstone cobbles (LOWER COAL MEASURES).	0.40	J/D	
			1.00	B	
2.20-2.40		Light brown fine weathered SANDSTONE (LOWER COAL MEASURES).			

Shoring/Support:
Stability: Trial pit walls remained stable.



GENERAL REMARKS

No water encountered.

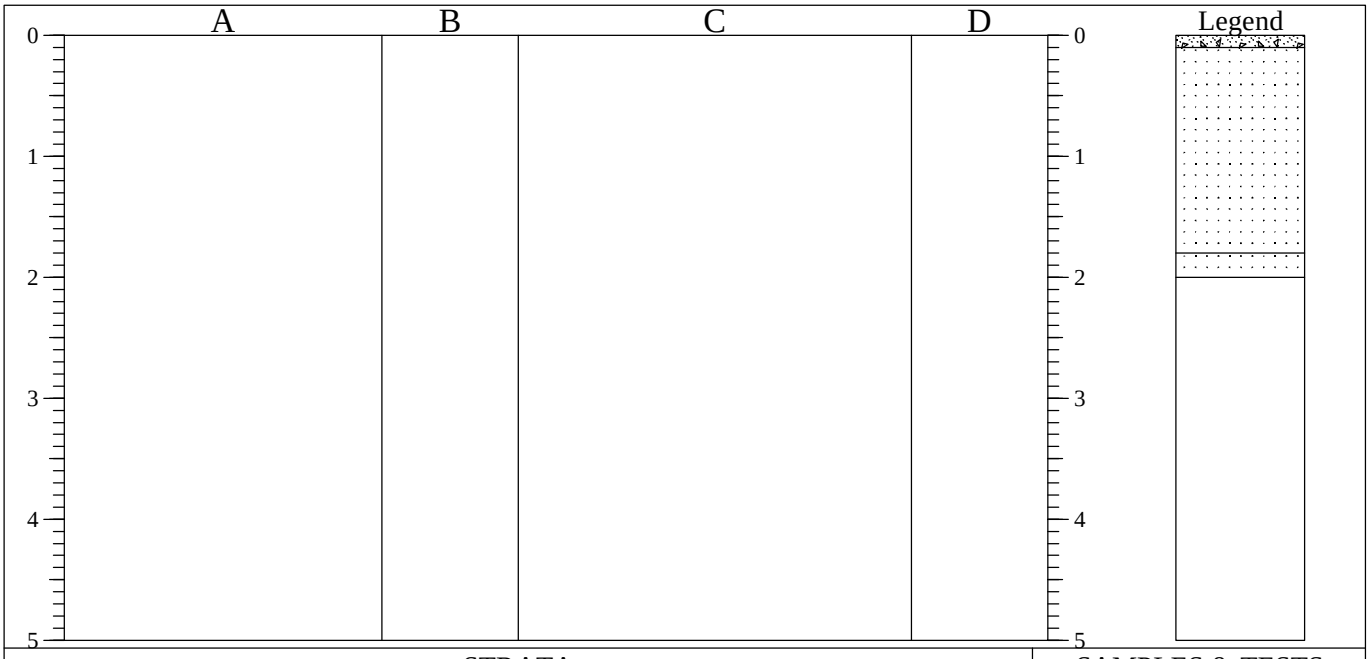
All dimensions in metres Scale 1:62.5	Client McCarthy & Stone Retirement Lifestyles	Method/ Plant Used JCB 3CX	Logged By MR

AGS3 UK TP 16-075 LOGS.GPJ AGS3_ALL.GDT 5/4/16

Solum House, Unit 1 Elliott Court
St Johns Road, Meadowfield
Durham, DH7 8PN
Telephone: 01913786380

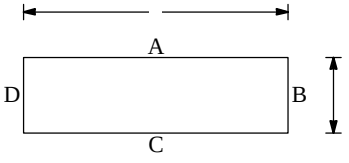
TRIAL PIT LOG

Project				TRIAL PIT No
Serpentine Road, Cleckheaton				**TP17**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
16-075	01-02-16			
Contractor				Sheet
Arc Environmental Ltd				1 of 1



STRATA			SAMPLES & TESTS		
Depth	No	DESCRIPTION	Depth	No	Remarks/Tests
0.00-0.10		Concrete (MADE GROUND).			
0.10-1.80		Light brown fine completely weathered SANDSTONE recovered as a slightly clayey fine to coarse sand with sandstone cobbles (LOWER COAL MEASURES).	0.20	J/D	
			1.00	B	
1.80-2.00		Light brown fine weathered SANDSTONE (LOWER COAL MEASURES).			

Shoring/Support:
Stability: Trial pit walls remained stable.



GENERAL REMARKS

No water encountered.

All dimensions in metres Scale 1:62.5	Client McCarthy & Stone Retirement Lifestyles	Method/ Plant Used JCB 3CX	Logged By MR

AGS3 UK TP 16-075 LOGS.GPJ AGS3_ALL.GDT 5/4/16

APPENDIX III

Laboratory Testing Results
(Geotechnical & Ground Contamination)

LABORATORY REPORT

4043

Contract Number: PSL16/0646

Report Date: 19 February 2016

Client's Reference: 16-075

Client Name: Arc Environmental
Solum House
Unit 1 Elliott Court
St Johns Road, Meadowfield
Durham
DH7 8PN

For the attention of: Stephen Telford

Contract Title: Serpentine Road, Cleckheaton

Date Received: 12/02/2016
Date Commenced: 12/02/2016
Date Completed: 19/02/2016

Notes: Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. 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 in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

R Gunson (Director)
A Watkins (Director)
M Beastall (Laboratory Manager)

D Lambe (Senior Technician)
S Royle (Senior Technician)

5 – 7 Hexthorpe Road, Hexthorpe,
Doncaster DN4 0AR
tel: +44 (0)844 815 6641
fax: +44 (0)844 815 6642
e-mail: rgunson@prosoils.co.uk
awatkins@prosoils.co.uk

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
TP1		B	2.50		Brown very gravelly very clayey very silty SAND.
TP8		B	2.00		Brown very gravelly very clayey very silty SAND.
TP14		B	1.50		Brown very gravelly very clayey very silty SAND.

UKAS TESTING 4043

PSL Professional Soils Laboratory

Checked / Approved		Date	19/02/16	Contract No:
Serpentine Road, Cleckheaton				PSL16/0646
				Client Ref:
				16-075

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
TP1		B	2.50		12			28	20	8	59	Low plasticity CL.
TP8		B	2.00		15			29	21	8	60	Low plasticity CL.
TP14		B	1.50		17			30	21	9	59	Low plasticity CL.

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

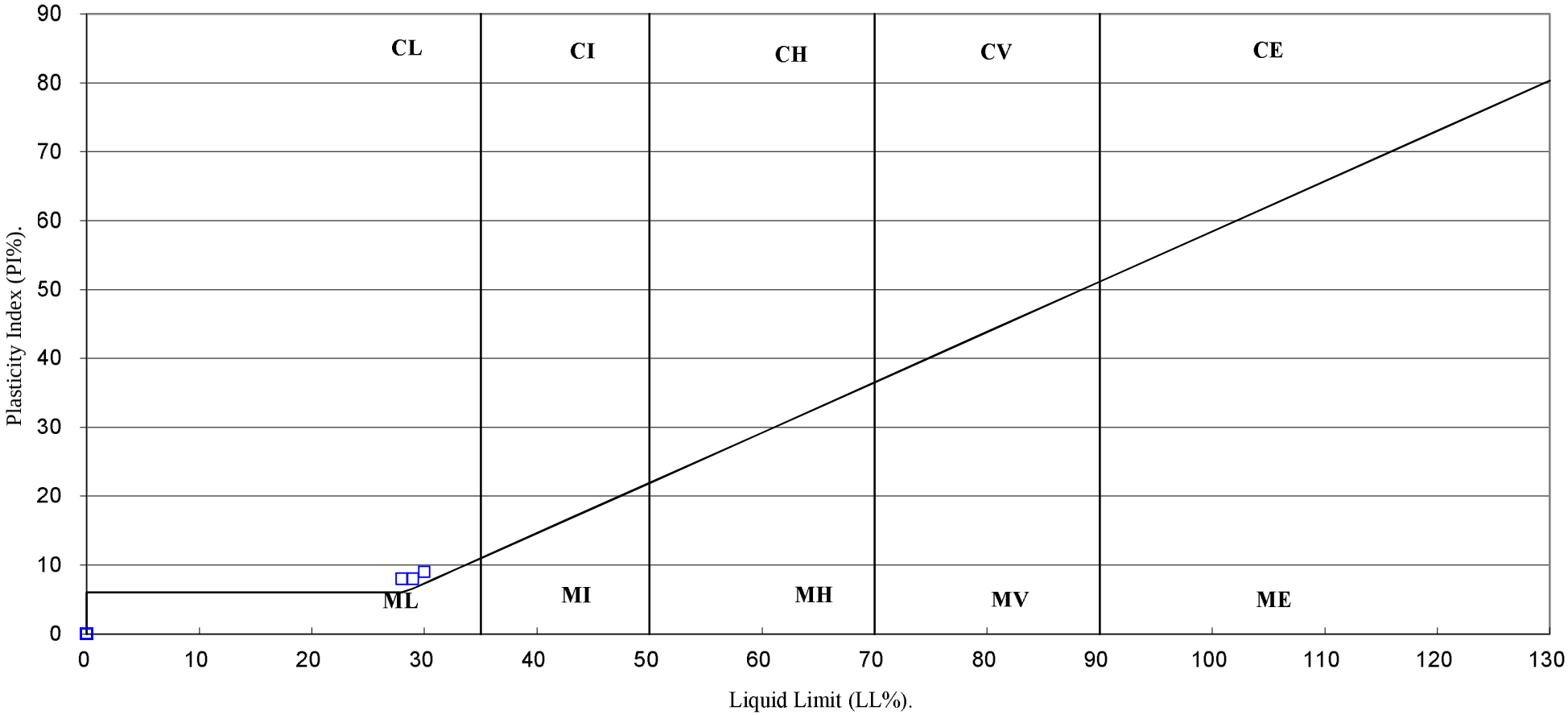
UKAS TESTING 4043

PSL Professional Soils Laboratory

Checked / Approved		Date	19/02/16	Contract No:
Serpentine Road, Cleckheaton				PSL16/0646
				Client Ref:
				16-075

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.

(BS5930 :2015)



UKAS TESTING 4043	PSL Professional Soils Laboratory	Checked /Approved	Date 19/02/16	Contract No: PSL16/0646
		Serpentine Road, Cleckheaton		Client Ref: 16-075

2531

ANALYTICAL TEST REPORT

Contract no: 58513

Contract name: Serpentine Road, Cleckheaton

Client reference: 16-075

Clients name: ARC Environmental

Clients address: Solum House, Unit 1 Elliott Court
St Johns Road
Meadowfield
DH7 8PN

Samples received: 10 February 2016

Analysis started: 10 February 2016

Analysis completed 17 February 2016

Report issued: 17 February 2016

Notes:
Opinions and interpretations expressed herein are outside the UKAS accreditation scope.
Unless otherwise stated, Chemtech Environmental Ltd was not responsible for sampling.
Methods, procedures and performance data are available on request.
Results reported herein relate only to the material supplied to the laboratory.
This report shall not be reproduced except in full, withour prior written approval.
Samples will be disposed of 6 weeks from initial receipt unless otherwise instructed.

Key:
U UKAS accredited test
M MCERTS & UKAS accredited test
$ Test carried out by an approved subcontractor
I/S Insufficient sample to carry out test
N/S Sample not suitable for testing
NAD No Asbestos Detected

Approved by:

Karan Campbell
Director

John Campbell
Director

Dave Bowerbank
Customer Services Co-ordinator

Chemtech Environmental Limited

SAMPLE INFORMATION

MCERTS (Soils):

Soil descriptions are only intended to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions. MCERTS accreditation applies for sand, clay and loam/topsoil, or combinations of these whether these are derived from naturally occurring soils or from made ground, as long as these materials constitute the major part of the sample. Other materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

All results are reported on a dry basis. Samples dried at no more than 30°C in a drying cabinet.
Analytical results are inclusive of stones.

Lab ref	Sample id	Depth (m)	Sample description	Material removed	% Removed	% Moisture
58513-1	HDTP1	0.50	Sand with Gravel, Brick & Slag	-	-	9.7
58513-2	HDTP2	0.50	Sandy Clay with Gravel	-	-	18.6
58513-3	TP1	0.50	Clay	-	-	21.6
58513-4	TP1	1.50	Sand with Coal	-	-	17.7
58513-5	TP2	0.20	Sandy Clay with Gravel	-	-	13.8
58513-6	TP4	0.20	Sand with Gravel & Slag	-	-	9.3
58513-7	TP4	2.00	Clay	-	-	16.7
58513-8	TP6	0.50	Sand with Gravel	-	-	13.4
58513-9	TP7	0.20	Sand with Gravel & Slag	-	-	9.2
58513-10	TP7	1.50	Sand with Slag	-	-	25.9
58513-11	TP8	0.30	Sand with Shale	-	-	15.1
58513-12	TP10	1.00	Clay with Gravel	-	-	15.7
58513-13	TP11	0.20	Sand with Gravel	-	-	12.0
58513-14	TP12	0.20	Sandy Clay with Gravel	-	-	11.9
58513-15	TP13	0.20	Sand with Gravel & Slag	-	-	15.5
58513-16	TP13	1.00	Clay	-	-	14.7
58513-17	TP14	0.20	Sand with Gravel, Brick & Slag	-	-	14.5
58513-18	TP15	0.40	Sand with Gravel	-	-	15.1
58513-19	TP16	0.40	Sandy Clay with Gravel	-	-	18.2
58513-20	TP17	0.40	Silty Sandy Clay	-	-	12.6

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SOILS

Lab number			58513-1	58513-2	58513-3	58513-4	58513-5	58513-6
Sample id			HDTP1	HDTP2	TP1	TP1	TP2	TP4
Depth (m)			0.50	0.50	0.50	1.50	0.20	0.20
Date sampled			01/02/2016	01/02/2016	01/02/2016	01/02/2016	01/02/2016	01/02/2016
Test	**Method**	**Units**						
Arsenic (total)	CE127 M	mg/kg As	-	-	8.5	-	14	11
Cadmium (total)	CE127 M	mg/kg Cd	-	-	<0.2	-	0.3	<0.2
Chromium (total)	CE127 M	mg/kg Cr	-	-	35	-	60	3418
Chromium (III)	-	mg/kg CrIII	-	-	35	-	60	3418
Chromium (VI)	CE146	mg/kg CrVI	-	-	<1	-	<1	<1
Copper (total)	CE127 M	mg/kg Cu	-	-	35	-	142	23
Lead (total)	CE127 M	mg/kg Pb	-	-	33	-	80	14
Mercury (total)	CE127 M	mg/kg Hg	-	-	<0.5	-	<0.5	<0.5
Nickel (total)	CE127 M	mg/kg Ni	-	-	50	-	33	55
Selenium (total)	CE127 M	mg/kg Se	-	-	1.4	-	1.0	0.6
Zinc (total)	CE127 M	mg/kg Zn	-	-	101	-	88	119
pH	CE004 M	units	-	-	7.5	5.3	8.8	11.6
Sulphate (2:1 water soluble)	CE061 M	mg/l SO_4	-	-	50	94	521	344
Cyanide (free)	CE077	mg/kg CN	-	-	<1	-	<1	<1
Total Organic Carbon (TOC)	CE072 M	% w/w C	-	-	1.69	-	3.41	3.40
Calorific value	CE069	kJ/kg	-	-	-	7766	-	-
PAH								
Acenaphthene	CE087 M	mg/kg	-	-	<0.01	-	0.42	<0.01
Acenaphthylene	CE087 M	mg/kg	-	-	<0.01	-	<0.01	<0.01
Anthracene	CE087 U	mg/kg	-	-	<0.02	-	1.13	<0.02
Benzo(a)anthracene	CE087 U	mg/kg	-	-	<0.02	-	1.65	<0.02
Benzo(a)pyrene	CE087 U	mg/kg	-	-	<0.02	-	1.29	0.03
Benzo(b)fluoranthene	CE087 M	mg/kg	-	-	<0.02	-	1.55	0.04
Benzo(ghi)perylene	CE087 M	mg/kg	-	-	<0.02	-	0.75	<0.02
Benzo(k)fluoranthene	CE087 M	mg/kg	-	-	<0.02	-	0.64	<0.02
Chrysene	CE087 M	mg/kg	-	-	<0.01	-	1.39	0.03
Dibenz(ah)anthracene	CE087 M	mg/kg	-	-	<0.02	-	0.20	<0.02
Fluoranthene	CE087 M	mg/kg	-	-	<0.02	-	4.10	0.07
Fluorene	CE087 U	mg/kg	-	-	<0.01	-	0.32	<0.01
Indeno(123cd)pyrene	CE087 M	mg/kg	-	-	<0.02	-	0.93	<0.02
Naphthalene	CE087 M	mg/kg	-	-	0.01	-	0.39	0.10
Phenanthrene	CE087 M	mg/kg	-	-	0.05	-	3.65	0.12
Pyrene	CE087 M	mg/kg	-	-	<0.02	-	3.54	0.06
PAH (total of USEPA 16)	CE087	mg/kg	-	-	<0.27	-	22.0	0.45
Benzo(j)fluoranthene	CE087	mg/kg	-	-	<0.02	-	0.17	<0.02
PAH (total of OIL 8)	CE087	mg/kg	-	-	<0.15	-	7.82	<0.15
TPH								
Benzene	CE066	mg/kg	-	-	<0.01	-	<0.01	<0.01
Toluene	CE066	mg/kg	-	-	<0.01	-	<0.01	<0.01
Ethylbenzene	CE066	mg/kg	-	-	<0.01	-	<0.01	<0.01
m & p-Xylene	CE066	mg/kg	-	-	<0.01	-	<0.01	0.02

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SOILS

Lab number			58513-1	58513-2	58513-3	58513-4	58513-5	58513-6
Sample id			HDTP1	HDTP2	TP1	TP1	TP2	TP4
Depth (m)			0.50	0.50	0.50	1.50	0.20	0.20
Date sampled			01/02/2016	01/02/2016	01/02/2016	01/02/2016	01/02/2016	01/02/2016
Test	**Method**	**Units**						
o-Xylene	CE066	mg/kg	-	-	<0.01	-	<0.01	<0.01
TPH Aliphatic EC5-EC6	CE068	mg/kg	-	-	<0.1	-	<0.1	<0.1
TPH Aliphatic EC6-EC8	CE068	mg/kg	-	-	<0.1	-	<0.1	<0.1
TPH Aliphatic EC8-EC10	CE068	mg/kg	-	-	<0.1	-	<0.1	<0.1
TPH Aliphatic EC10-EC12	CE068	mg/kg	-	-	7	-	<1	2
TPH Aliphatic EC12-EC16	CE068	mg/kg	-	-	43	-	4	8
TPH Aliphatic EC16-EC35	CE068	mg/kg	-	-	491	-	285	406
TPH Aliphatic EC35-EC44	CE068	mg/kg	-	-	53	-	32	53
TPH Aromatic EC5-EC7	CE068	mg/kg	-	-	<0.01	-	<0.01	<0.01
TPH Aromatic EC7-EC8	CE068	mg/kg	-	-	<0.01	-	<0.01	<0.01
TPH Aromatic EC8-EC10	CE068	mg/kg	-	-	<0.01	-	<0.01	0.02
TPH Aromatic EC10-EC12	CE068	mg/kg	-	-	<1	-	<1	<1
TPH Aromatic EC12-EC16	CE068	mg/kg	-	-	<1	-	<1	<1
TPH Aromatic EC16-EC21	CE068	mg/kg	-	-	2	-	13	2
TPH Aromatic EC21-EC35	CE068	mg/kg	-	-	4	-	10	4
TPH Aromatic EC35-EC44	CE068	mg/kg	-	-	1	-	2	<1
PCB								
PCB Congener 28	CE137 M	mg/kg	<0.004	<0.004	-	-	-	-
PCB Congener 52	CE137 M	mg/kg	<0.004	<0.004	-	-	-	-
PCB Congener 101	CE137 M	mg/kg	<0.008	<0.008	-	-	-	-
PCB Congener 118	CE137 M	mg/kg	<0.006	<0.006	-	-	-	-
PCB Congener 138	CE137 M	mg/kg	<0.006	<0.006	-	-	-	-
PCB Congener 153	CE137 M	mg/kg	<0.009	<0.009	-	-	-	-
PCB Congener 180	CE137 M	mg/kg	<0.008	<0.008	-	-	-	-
Subcontracted analysis								
Asbestos (qualitative)	$	-	-	-	NAD	-	NAD	NAD

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SOILS

Lab number			58513-7	58513-8	58513-9	58513-10	58513-11	58513-12
Sample id			TP4	TP6	TP7	TP7	TP8	TP10
Depth (m)			2.00	0.50	0.20	1.50	0.30	1.00
Date sampled			01/02/2016	01/02/2016	01/02/2016	01/02/2016	01/02/2016	01/02/2016
Test	**Method**	**Units**						
Arsenic (total)	CE127 M	mg/kg As	-	12	21	47	-	-
Cadmium (total)	CE127 M	mg/kg Cd	-	0.2	0.9	0.3	-	-
Chromium (total)	CE127 M	mg/kg Cr	-	92	60	51	-	-
Chromium (III)	-	mg/kg CrIII	-	92	60	51	-	-
Chromium (VI)	CE146	mg/kg CrVI	-	<1	<1	<1	-	-
Copper (total)	CE127 M	mg/kg Cu	-	65	102	166	-	-
Lead (total)	CE127 M	mg/kg Pb	-	165	1146	124	-	-
Mercury (total)	CE127 M	mg/kg Hg	-	<0.5	<0.5	<0.5	-	-
Nickel (total)	CE127 M	mg/kg Ni	-	22	25	34	-	-
Selenium (total)	CE127 M	mg/kg Se	-	0.7	0.9	1.7	-	-
Zinc (total)	CE127 M	mg/kg Zn	-	194	257	175	-	-
pH	CE004 M	units	4.4	8.1	7.7	7.8	10.1	8.1
Sulphate (2:1 water soluble)	CE061 M	mg/l SO_4	373	1126	178	96	735	22
Cyanide (free)	CE077	mg/kg CN	-	<1	<1	<1	-	-
Total Organic Carbon (TOC)	CE072 M	% w/w C	-	1.82	2.99	14.53	-	-
Calorific value	CE069	kJ/kg	-	-	-	-	-	-
PAH								
Acenaphthene	CE087 M	mg/kg	-	0.09	5.87	0.31	-	-
Acenaphthylene	CE087 M	mg/kg	-	0.01	0.64	<0.01	-	-
Anthracene	CE087 U	mg/kg	-	0.32	25.28	1.51	-	-
Benzo(a)anthracene	CE087 U	mg/kg	-	1.03	62.83	4.13	-	-
Benzo(a)pyrene	CE087 U	mg/kg	-	0.92	58.23	5.91	-	-
Benzo(b)fluoranthene	CE087 M	mg/kg	-	1.12	64.48	6.48	-	-
Benzo(ghi)perylene	CE087 M	mg/kg	-	0.55	29.43	4.51	-	-
Benzo(k)fluoranthene	CE087 M	mg/kg	-	0.48	28.90	2.50	-	-
Chrysene	CE087 M	mg/kg	-	0.81	50.94	3.80	-	-
Dibenz(ah)anthracene	CE087 M	mg/kg	-	0.15	9.06	0.97	-	-
Fluoranthene	CE087 M	mg/kg	-	2.31	163.24	7.80	-	-
Fluorene	CE087 U	mg/kg	-	0.06	4.74	0.26	-	-
Indeno(123cd)pyrene	CE087 M	mg/kg	-	0.69	40.11	5.12	-	-
Naphthalene	CE087 M	mg/kg	-	0.20	0.29	0.43	-	-
Phenanthrene	CE087 M	mg/kg	-	1.04	67.66	4.68	-	-
Pyrene	CE087 M	mg/kg	-	2.02	139.54	6.72	-	-
PAH (total of USEPA 16)	CE087	mg/kg	-	11.8	751	55.1	-	-
Benzo(j)fluoranthene	CE087	mg/kg	-	0.13	7.62	0.68	-	-
PAH (total of OIL 8)	CE087	mg/kg	-	5.35	322	29.6	-	-
TPH								
Benzene	CE066	mg/kg	-	<0.01	<0.01	<0.01	-	-
Toluene	CE066	mg/kg	-	<0.01	<0.01	<0.01	-	-
Ethylbenzene	CE066	mg/kg	-	<0.01	<0.01	<0.01	-	-
m & p-Xylene	CE066	mg/kg	-	<0.01	<0.01	<0.01	-	-

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SOILS

Lab number			58513-7	58513-8	58513-9	58513-10	58513-11	58513-12
Sample id			TP4	TP6	TP7	TP7	TP8	TP10
Depth (m)			2.00	0.50	0.20	1.50	0.30	1.00
Date sampled			01/02/2016	01/02/2016	01/02/2016	01/02/2016	01/02/2016	01/02/2016
Test	**Method**	**Units**						
o-Xylene	CE066	mg/kg	-	<0.01	<0.01	<0.01	-	-
TPH Aliphatic EC5-EC6	CE068	mg/kg	-	<0.1	<0.1	<0.1	-	-
TPH Aliphatic EC6-EC8	CE068	mg/kg	-	<0.1	<0.1	<0.1	-	-
TPH Aliphatic EC8-EC10	CE068	mg/kg	-	<0.1	<0.1	<0.1	-	-
TPH Aliphatic EC10-EC12	CE068	mg/kg	-	2	7	7	-	-
TPH Aliphatic EC12-EC16	CE068	mg/kg	-	6	104	15	-	-
TPH Aliphatic EC16-EC35	CE068	mg/kg	-	190	4052	136	-	-
TPH Aliphatic EC35-EC44	CE068	mg/kg	-	36	454	18	-	-
TPH Aromatic EC5-EC7	CE068	mg/kg	-	<0.01	<0.01	<0.01	-	-
TPH Aromatic EC7-EC8	CE068	mg/kg	-	<0.01	<0.01	<0.01	-	-
TPH Aromatic EC8-EC10	CE068	mg/kg	-	<0.01	<0.01	<0.01	-	-
TPH Aromatic EC10-EC12	CE068	mg/kg	-	<1	<1	<1	-	-
TPH Aromatic EC12-EC16	CE068	mg/kg	-	1	10	2	-	-
TPH Aromatic EC16-EC21	CE068	mg/kg	-	7	406	22	-	-
TPH Aromatic EC21-EC35	CE068	mg/kg	-	6	322	29	-	-
TPH Aromatic EC35-EC44	CE068	mg/kg	-	2	34	6	-	-
PCB								
PCB Congener 28	CE137 M	mg/kg	-	-	-	-	-	-
PCB Congener 52	CE137 M	mg/kg	-	-	-	-	-	-
PCB Congener 101	CE137 M	mg/kg	-	-	-	-	-	-
PCB Congener 118	CE137 M	mg/kg	-	-	-	-	-	-
PCB Congener 138	CE137 M	mg/kg	-	-	-	-	-	-
PCB Congener 153	CE137 M	mg/kg	-	-	-	-	-	-
PCB Congener 180	CE137 M	mg/kg	-	-	-	-	-	-
Subcontracted analysis								
Asbestos (qualitative)	$	-	-	NAD	NAD	NAD	-	-

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SOILS

Lab number			58513-13	58513-14	58513-15	58513-16	58513-17	58513-18
Sample id			TP11	TP12	TP13	TP13	TP14	TP15
Depth (m)			0.20	0.20	0.20	1.00	0.20	0.40
Date sampled			01/02/2016	01/02/2016	01/02/2016	01/02/2016	01/02/2016	01/02/2016
Test	**Method**	**Units**						
Arsenic (total)	CE127 M	mg/kg As	-	12	32	-	19	14
Cadmium (total)	CE127 M	mg/kg Cd	-	0.3	0.3	-	<0.2	0.3
Chromium (total)	CE127 M	mg/kg Cr	-	51	44	-	60	52
Chromium (III)	-	mg/kg CrIII	-	51	44	-	60	52
Chromium (VI)	CE146	mg/kg CrVI	-	<1	<1	-	<1	<1
Copper (total)	CE127 M	mg/kg Cu	-	166	22	-	125	53
Lead (total)	CE127 M	mg/kg Pb	-	124	44	-	119	151
Mercury (total)	CE127 M	mg/kg Hg	-	<0.5	<0.5	-	2.1	<0.5
Nickel (total)	CE127 M	mg/kg Ni	-	34	28	-	36	22
Selenium (total)	CE127 M	mg/kg Se	-	1.7	1.1	-	0.9	0.9
Zinc (total)	CE127 M	mg/kg Zn	-	175	108	-	92	208
pH	CE004 M	units	8.3	8.3	7.8	5.8	8.0	10.3
Sulphate (2:1 water soluble)	CE061 M	mg/l SO_4	71	44	872	54	2481	289
Cyanide (free)	CE077	mg/kg CN	-	<1	<1	-	<1	<1
Total Organic Carbon (TOC)	CE072 M	% w/w C	-	0.32	9.84	-	10.25	4.06
Calorific value	CE069	kJ/kg	-	-	-	-	-	-
PAH								
Acenaphthene	CE087 M	mg/kg	-	0.02	0.11	-	<0.01	0.30
Acenaphthylene	CE087 M	mg/kg	-	<0.01	0.05	-	<0.01	0.04
Anthracene	CE087 U	mg/kg	-	0.05	0.34	-	0.02	0.67
Benzo(a)anthracene	CE087 U	mg/kg	-	0.07	2.11	-	0.08	1.57
Benzo(a)pyrene	CE087 U	mg/kg	-	0.06	4.26	-	0.11	1.40
Benzo(b)fluoranthene	CE087 M	mg/kg	-	0.07	4.85	-	0.14	1.63
Benzo(ghi)perylene	CE087 M	mg/kg	-	0.04	2.37	-	0.08	0.83
Benzo(k)fluoranthene	CE087 M	mg/kg	-	0.04	1.90	-	0.06	0.70
Chrysene	CE087 M	mg/kg	-	0.06	1.93	-	0.10	1.38
Dibenz(ah)anthracene	CE087 M	mg/kg	-	<0.02	0.65	-	0.02	0.20
Fluoranthene	CE087 M	mg/kg	-	0.15	1.88	-	0.15	3.74
Fluorene	CE087 U	mg/kg	-	0.02	0.08	-	<0.01	0.27
Indeno(123cd)pyrene	CE087 M	mg/kg	-	0.05	2.91	-	0.08	0.98
Naphthalene	CE087 M	mg/kg	-	0.01	0.17	-	0.09	0.29
Phenanthrene	CE087 M	mg/kg	-	0.16	0.76	-	0.11	2.83
Pyrene	CE087 M	mg/kg	-	0.12	2.49	-	0.15	3.15
PAH (total of USEPA 16)	CE087	mg/kg	-	0.91	26.9	-	1.20	20.0
Benzo(j)fluoranthene	CE087	mg/kg	-	<0.02	0.51	-	<0.02	0.20
PAH (total of OIL 8)	CE087	mg/kg	-	0.36	19.1	-	0.60	8.06
TPH								
Benzene	CE066	mg/kg	-	<0.01	<0.01	-	<0.01	<0.01
Toluene	CE066	mg/kg	-	<0.01	<0.01	-	<0.01	<0.01
Ethylbenzene	CE066	mg/kg	-	<0.01	<0.01	-	<0.01	<0.01
m & p-Xylene	CE066	mg/kg	-	<0.01	<0.01	-	<0.01	<0.01

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SOILS

Lab number			58513-13	58513-14	58513-15	58513-16	58513-17	58513-18
Sample id			TP11	TP12	TP13	TP13	TP14	TP15
Depth (m)			0.20	0.20	0.20	1.00	0.20	0.40
Date sampled			01/02/2016	01/02/2016	01/02/2016	01/02/2016	01/02/2016	01/02/2016
Test	**Method**	**Units**						
o-Xylene	CE066	mg/kg	-	<0.01	<0.01	-	<0.01	<0.01
TPH Aliphatic EC5-EC6	CE068	mg/kg	-	<0.1	<0.1	-	<0.1	<0.1
TPH Aliphatic EC6-EC8	CE068	mg/kg	-	<0.1	<0.1	-	<0.1	<0.1
TPH Aliphatic EC8-EC10	CE068	mg/kg	-	<0.1	<0.1	-	<0.1	<0.1
TPH Aliphatic EC10-EC12	CE068	mg/kg	-	2	3	-	2	2
TPH Aliphatic EC12-EC16	CE068	mg/kg	-	2	14	-	7	7
TPH Aliphatic EC16-EC35	CE068	mg/kg	-	334	198	-	229	182
TPH Aliphatic EC35-EC44	CE068	mg/kg	-	129	55	-	25	42
TPH Aromatic EC5-EC7	CE068	mg/kg	-	<0.01	<0.01	-	<0.01	<0.01
TPH Aromatic EC7-EC8	CE068	mg/kg	-	<0.01	<0.01	-	<0.01	<0.01
TPH Aromatic EC8-EC10	CE068	mg/kg	-	<0.01	<0.01	-	<0.01	<0.01
TPH Aromatic EC10-EC12	CE068	mg/kg	-	<1	<1	-	<1	<1
TPH Aromatic EC12-EC16	CE068	mg/kg	-	<1	1	-	<1	1
TPH Aromatic EC16-EC21	CE068	mg/kg	-	3	7	-	1	12
TPH Aromatic EC21-EC35	CE068	mg/kg	-	3	19	-	3	8
TPH Aromatic EC35-EC44	CE068	mg/kg	-	1	3	-	<1	2
PCB								
PCB Congener 28	CE137 M	mg/kg	-	-	-	-	-	-
PCB Congener 52	CE137 M	mg/kg	-	-	-	-	-	-
PCB Congener 101	CE137 M	mg/kg	-	-	-	-	-	-
PCB Congener 118	CE137 M	mg/kg	-	-	-	-	-	-
PCB Congener 138	CE137 M	mg/kg	-	-	-	-	-	-
PCB Congener 153	CE137 M	mg/kg	-	-	-	-	-	-
PCB Congener 180	CE137 M	mg/kg	-	-	-	-	-	-
Subcontracted analysis								
Asbestos (qualitative)	$	-	-	NAD	NAD	-	NAD	NAD

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SOILS

Lab number			58513-19	58513-20
Sample id			TP16	TP17
Depth (m)			0.40	0.40
Date sampled			01/02/2016	01/02/2016
Test	**Method**	**Units**		
Arsenic (total)	CE127 M	mg/kg As	18	10
Cadmium (total)	CE127 M	mg/kg Cd	0.3	0.4
Chromium (total)	CE127 M	mg/kg Cr	59	42
Chromium (III)	-	mg/kg CrIII	59	42
Chromium (VI)	CE146	mg/kg CrVI	<1	<1
Copper (total)	CE127 M	mg/kg Cu	127	47
Lead (total)	CE127 M	mg/kg Pb	218	51
Mercury (total)	CE127 M	mg/kg Hg	<0.5	<0.5
Nickel (total)	CE127 M	mg/kg Ni	21	28
Selenium (total)	CE127 M	mg/kg Se	1.0	1.1
Zinc (total)	CE127 M	mg/kg Zn	101	103
pH	CE004 M	units	7.9	7.6
Sulphate (2:1 water soluble)	CE061 M	mg/l SO_4	300	87
Cyanide (free)	CE077	mg/kg CN	<1	<1
Total Organic Carbon (TOC)	CE072 M	% w/w C	3.89	0.23
Calorific value	CE069	kJ/kg	-	-
PAH				
Acenaphthene	CE087 M	mg/kg	<0.01	<0.01
Acenaphthylene	CE087 M	mg/kg	<0.01	<0.01
Anthracene	CE087 U	mg/kg	<0.02	<0.02
Benzo(a)anthracene	CE087 U	mg/kg	0.10	<0.02
Benzo(a)pyrene	CE087 U	mg/kg	0.09	<0.02
Benzo(b)fluoranthene	CE087 M	mg/kg	0.11	<0.02
Benzo(ghi)perylene	CE087 M	mg/kg	0.05	<0.02
Benzo(k)fluoranthene	CE087 M	mg/kg	0.05	<0.02
Chrysene	CE087 M	mg/kg	0.09	<0.01
Dibenz(ah)anthracene	CE087 M	mg/kg	<0.02	<0.02
Fluoranthene	CE087 M	mg/kg	0.16	<0.02
Fluorene	CE087 U	mg/kg	<0.01	<0.01
Indeno(123cd)pyrene	CE087 M	mg/kg	0.06	<0.02
Naphthalene	CE087 M	mg/kg	0.05	<0.01
Phenanthrene	CE087 M	mg/kg	0.13	<0.02
Pyrene	CE087 M	mg/kg	0.15	<0.02
PAH (total of USEPA 16)	CE087	mg/kg	1.03	<0.27
Benzo(j)fluoranthene	CE087	mg/kg	<0.02	<0.02
PAH (total of OIL 8)	CE087	mg/kg	0.49	<0.15
TPH				
Benzene	CE066	mg/kg	<0.01	<0.01
Toluene	CE066	mg/kg	<0.01	<0.01
Ethylbenzene	CE066	mg/kg	<0.01	<0.01
m & p-Xylene	CE066	mg/kg	<0.01	<0.01

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SOILS

Lab number			58513-19	58513-20
Sample id			TP16	TP17
Depth (m)			0.40	0.40
Date sampled			01/02/2016	01/02/2016
Test	**Method**	**Units**		
o-Xylene	CE066	mg/kg	<0.01	<0.01
TPH Aliphatic EC5-EC6	CE068	mg/kg	<0.1	<0.1
TPH Aliphatic EC6-EC8	CE068	mg/kg	<0.1	<0.1
TPH Aliphatic EC8-EC10	CE068	mg/kg	<0.1	<0.1
TPH Aliphatic EC10-EC12	CE068	mg/kg	2	<1
TPH Aliphatic EC12-EC16	CE068	mg/kg	4	1
TPH Aliphatic EC16-EC35	CE068	mg/kg	34	11
TPH Aliphatic EC35-EC44	CE068	mg/kg	7	4
TPH Aromatic EC5-EC7	CE068	mg/kg	<0.01	<0.01
TPH Aromatic EC7-EC8	CE068	mg/kg	<0.01	<0.01
TPH Aromatic EC8-EC10	CE068	mg/kg	<0.01	<0.01
TPH Aromatic EC10-EC12	CE068	mg/kg	<1	<1
TPH Aromatic EC12-EC16	CE068	mg/kg	<1	<1
TPH Aromatic EC16-EC21	CE068	mg/kg	1	<1
TPH Aromatic EC21-EC35	CE068	mg/kg	1	1
TPH Aromatic EC35-EC44	CE068	mg/kg	<1	<1
PCB				
PCB Congener 28	CE137 M	mg/kg	-	-
PCB Congener 52	CE137 M	mg/kg	-	-
PCB Congener 101	CE137 M	mg/kg	-	-
PCB Congener 118	CE137 M	mg/kg	-	-
PCB Congener 138	CE137 M	mg/kg	-	-
PCB Congener 153	CE137 M	mg/kg	-	-
PCB Congener 180	CE137 M	mg/kg	-	-
Subcontracted analysis				
Asbestos (qualitative)	$	-	NAD	NAD

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PREPARED LEACHATES

Lab number			58513-6L	58513-10L	58513-14L	58513-19L
Sample id			TP4	TP7	TP12	TP16
Depth (m)			0.20	1.50	0.20	0.40
Test	**Method**	**Units**				
Arsenic (dissolved)	CE128 U	µg/l As	2.02	5.57	2.84	2.07
Boron (dissolved)	CE128 U	µg/l B	6	8	32	6
Cadmium (dissolved)	CE128 U	µg/l Cd	<0.07	<0.07	<0.07	<0.07
Chromium (dissolved)	CE128 U	µg/l Cr	42.6	1.5	15.1	0.8
Copper (dissolved)	CE128 U	µg/l Cu	2.7	4.3	6.1	6.4
Lead (dissolved)	CE128 U	µg/l Pb	<0.2	4.9	5.3	4.0
Mercury (dissolved)	CE128 U	µg/l Hg	<0.008	0.017	<0.008	0.030
Nickel (dissolved)	CE128 U	µg/l Ni	<0.5	1.1	8.3	<0.5
Selenium (dissolved)	CE128 U	µg/l Se	0.53	0.19	0.57	0.30
Zinc (dissolved)	CE128 U	µg/l Zn	<1	18	25	2
pH	CE004 U	units	10.9	7.6	7.2	7.5
Sulphate	CE049 U	mg/l SO_4	41	<10	<10	<10
Cyanide (free)	CE147	µg/l CN	<20	<20	<20	<20
PAH						
Acenaphthene	CE051	µg/l	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	CE051	µg/l	<0.1	<0.1	<0.1	<0.1
Anthracene	CE051	µg/l	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	CE051	µg/l	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	CE051	µg/l	<0.1	<0.1	<0.1	<0.1
Benzo(b)fluoranthene	CE051	µg/l	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	CE051	µg/l	<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	CE051	µg/l	<0.1	<0.1	<0.1	<0.1
Chrysene	CE051	µg/l	<0.1	<0.1	<0.1	<0.1
Dibenz(ah)anthracene	CE051	µg/l	<0.1	<0.1	<0.1	<0.1
Fluoranthene	CE051	µg/l	<0.1	<0.1	<0.1	<0.1
Fluorene	CE051	µg/l	<0.1	<0.1	<0.1	<0.1
Indeno(123cd)pyrene	CE051	µg/l	<0.1	<0.1	<0.1	<0.1
Naphthalene	CE051	µg/l	<0.1	<0.1	<0.1	<0.1
Phenanthrene	CE051	µg/l	<0.1	<0.1	<0.1	<0.1
Pyrene	CE051	µg/l	<0.1	<0.1	<0.1	<0.1
PAH (total of USEPA 16)	CE051	µg/l	<1.6	<1.6	<1.6	<1.6
Benzo(j)fluoranthene	CE051	µg/l	<0.1	<0.1	<0.1	<0.1
PAH (total of OIL 8)	CE051	µg/l	<0.8	<0.8	<0.8	<0.8
TPH						
Benzene	CE066	µg/l	<1	<1	<1	<1
Toluene	CE066	µg/l	<1	<1	<1	<1
Ethylbenzene	CE066	µg/l	<1	<1	<1	<1
m & p-Xylene	CE066	µg/l	<1	<1	<1	<1
o-Xylene	CE066	µg/l	<1	<1	<1	<1
TPH Aliphatic EC5-EC6	CE068	µg/l	<1	<1	<1	<1
TPH Aliphatic EC6-EC8	CE068	µg/l	<1	<1	<1	<1

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PREPARED LEACHATES

Lab number			58513-6L	58513-10L	58513-14L	58513-19L
Sample id			TP4	TP7	TP12	TP16
Depth (m)			0.20	1.50	0.20	0.40
Test	**Method**	**Units**				
TPH Aliphatic EC8-EC10	CE068	µg/l	<1	<1	<1	<1
TPH Aliphatic EC10-EC12	CE068	µg/l	<1	<1	<1	<1
TPH Aliphatic EC12-EC16	CE068	µg/l	<1	<1	<1	<1
TPH Aliphatic EC16-EC35	CE068	µg/l	<1	<1	<1	<1
TPH Aliphatic EC35-EC44	CE068	µg/l	<1	<1	<1	<1
TPH Aromatic EC5-EC7	CE068	µg/l	<1	<1	<1	<1
TPH Aromatic EC7-EC8	CE068	µg/l	<1	<1	<1	<1
TPH Aromatic EC8-EC10	CE068	µg/l	<1	<1	<1	<1
TPH Aromatic EC10-EC12	CE068	µg/l	<1	<1	<1	<1
TPH Aromatic EC12-EC16	CE068	µg/l	<1	<1	<1	<1
TPH Aromatic EC16-EC21	CE068	µg/l	<1	<1	<1	<1
TPH Aromatic EC21-EC35	CE068	µg/l	<1	<1	<1	<1
TPH Aromatic EC35-EC44	CE068	µg/l	<1	<1	<1	<1

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METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE127	Arsenic (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg As
CE127	Cadmium (total)	Aqua regia digest, ICP-MS	Dry	M	0.2	mg/kg Cd
CE127	Chromium (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Cr
-	Chromium (III)	Calculation: Cr (total) - Cr (VI)	Dry		1	mg/kg CrIII
CE146	Chromium (VI)	Acid extraction, Colorimetry	Dry		1	mg/kg CrVI
CE127	Copper (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Cu
CE127	Lead (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Pb
CE127	Mercury (total)	Aqua regia digest, ICP-MS	Dry	M	0.5	mg/kg Hg
CE127	Nickel (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Ni
CE127	Selenium (total)	Aqua regia digest, ICP-MS	Dry	M	0.3	mg/kg Se
CE127	Zinc (total)	Aqua regia digest, ICP-MS	Dry	M	5	mg/kg Zn
CE004	pH	Based on BS 1377, pH Meter	Wet	M	-	units
CE061	Sulphate (2:1 water soluble)	Aqueous extraction, ICP-OES	Dry	M	10	mg/l SO_4
CE077	Cyanide (free)	Extraction, Continuous Flow Colorimetry	Wet		1	mg/kg CN
CE072	Total Organic Carbon (TOC)	Removal of IC by acidification, Carbon Analyser	Dry	M	0.1	% w/w C
CE069	Calorific value	Combustion, Carbon analyser	Dry		100	kJ/kg
CE087	Acenaphthene	Solvent extraction, GC-MS	Wet	M	0.01	mg/kg
CE087	Acenaphthylene	Solvent extraction, GC-MS	Wet	M	0.01	mg/kg
CE087	Anthracene	Solvent extraction, GC-MS	Wet	U	0.02	mg/kg
CE087	Benzo(a)anthracene	Solvent extraction, GC-MS	Wet	U	0.02	mg/kg
CE087	Benzo(a)pyrene	Solvent extraction, GC-MS	Wet	U	0.02	mg/kg
CE087	Benzo(b)fluoranthene	Solvent extraction, GC-MS	Wet	M	0.02	mg/kg
CE087	Benzo(ghi)perylene	Solvent extraction, GC-MS	Wet	M	0.02	mg/kg
CE087	Benzo(k)fluoranthene	Solvent extraction, GC-MS	Wet	M	0.02	mg/kg
CE087	Chrysene	Solvent extraction, GC-MS	Wet	M	0.01	mg/kg
CE087	Dibenz(ah)anthracene	Solvent extraction, GC-MS	Wet	M	0.02	mg/kg
CE087	Fluoranthene	Solvent extraction, GC-MS	Wet	M	0.02	mg/kg
CE087	Fluorene	Solvent extraction, GC-MS	Wet	U	0.01	mg/kg
CE087	Indeno(123cd)pyrene	Solvent extraction, GC-MS	Wet	M	0.02	mg/kg
CE087	Naphthalene	Solvent extraction, GC-MS	Wet	M	0.01	mg/kg
CE087	Phenanthrene	Solvent extraction, GC-MS	Wet	M	0.02	mg/kg
CE087	Pyrene	Solvent extraction, GC-MS	Wet	M	0.02	mg/kg
CE087	PAH (total of USEPA 16)	Solvent extraction, GC-MS	Wet		0.27	mg/kg
CE087	Benzo(j)fluoranthene	Solvent extraction, GC-MS	Wet		0.02	mg/kg
CE087	PAH (total of OIL 8)	Solvent extraction, GC-MS	Wet		0.15	mg/kg
CE066	Benzene	Headspace GC-MS	Wet		0.01	mg/kg
CE066	Toluene	Headspace GC-MS	Wet		0.01	mg/kg
CE066	Ethylbenzene	Headspace GC-MS	Wet		0.01	mg/kg
CE066	m & p-Xylene	Headspace GC-MS	Wet		0.01	mg/kg
CE066	o-Xylene	Headspace GC-MS	Wet		0.01	mg/kg
CE068	TPH Aliphatic/Aromatic fractions (C5-C10)	Headspace GC-FID	Wet		0.01-0.1	mg/kg
CE068	TPH Aliphatic/Aromatic fractions (C10-C44)	Solvent extraction, GC-FID	Wet		1	mg/kg
CE137	PCB Congener 28	Solvent extraction, GC-MS	Wet	M	0.004	mg/kg

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METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE137	PCB Congener 52	Solvent extraction, GC-MS	Wet	M	0.004	mg/kg
CE137	PCB Congener 101	Solvent extraction, GC-MS	Wet	M	0.008	mg/kg
CE137	PCB Congener 118	Solvent extraction, GC-MS	Wet	M	0.006	mg/kg
CE137	PCB Congener 138	Solvent extraction, GC-MS	Wet	M	0.006	mg/kg
CE137	PCB Congener 153	Solvent extraction, GC-MS	Wet	M	0.009	mg/kg
CE137	PCB Congener 180	Solvent extraction, GC-MS	Wet	M	0.008	mg/kg
$	Asbestos (qualitative)	HSG 248, Microscopy	Dry	U	-	-

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METHOD DETAILS

METHOD	PREPARED LEACHATES	METHOD SUMMARY	STATUS	LOD	UNITS
CE001	Leachate preparation (EA)	L:S 10:1		-	-
CE128	Arsenic (dissolved)	ICP-MS	U	0.06	µg/l As
CE128	Boron (dissolved)	ICP-MS	U	6	µg/l B
CE128	Cadmium (dissolved)	ICP-MS	U	0.07	µg/l Cd
CE128	Chromium (dissolved)	ICP-MS	U	0.2	µg/l Cr
CE128	Copper (dissolved)	ICP-MS	U	0.4	µg/l Cu
CE128	Lead (dissolved)	ICP-MS	U	0.2	µg/l Pb
CE128	Mercury (dissolved)	ICP-MS	U	0.008	µg/l Hg
CE128	Nickel (dissolved)	ICP-MS	U	0.5	µg/l Ni
CE128	Selenium (dissolved)	ICP-MS	U	0.07	µg/l Se
CE128	Zinc (dissolved)	ICP-MS	U	1	µg/l Zn
CE004	pH	Based on BS 1377, pH Meter	U	-	units
CE049	Sulphate	Ion Chromatography	U	10	mg/l SO_4
CE147	Cyanide (free)	Distillation, Colorimetry		20	µg/l CN
CE051	PAH (speciated)	Solvent extraction, GC-MS		0.1	µg/l
CE066	Benzene	Headspace GC-MS		1	µg/l
CE066	Toluene	Headspace GC-MS		1	µg/l
CE066	Ethylbenzene	Headspace GC-MS		1	µg/l
CE066	m & p-Xylene	Headspace GC-MS		1	µg/l
CE066	o-Xylene	Headspace GC-MS		1	µg/l
CE068	TPH Aliphatic/Aromatic fractions (C5-C10)	Headspace GC-FID		1	µg/l
CE068	TPH Aliphatic/Aromatic fractions (C10-C44)	Solvent extraction, GC-FID		1	µg/l

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DEVIATING SAMPLE INFORMATION

Comments
Sample deviation is determined in accordance with the UKAS note "Guidance on Deviating Samples" and based on reference standards and laboratory trials.
For samples identified as deviating, test result(s) may be compromised and may not be representative of the sample at the time of sampling.
Chemtech Environmental Ltd cannot be held responsible for the integrity of sample(s) received if Chemtech Environmental Ltd did not undertake the sampling. Such samples may be deviating.

Key

N	No (not deviating sample)
Y	Yes (deviating sample)
A	Sampling date not provided
B	Sampling time not provided (waters only)
C	Sample exceeded holding time(s)
D	Sample not received in appropriate containers
E	Headspace present in sample container
F	Sample not chemically fixed (where appropriate)
G	Sample not cooled
H	Other (specify)

Lab ref	Sample id	Depth (m)	Deviating	Tests (Reason for deviation)
58513-1	HDTP1	0.50	N	
58513-2	HDTP2	0.50	N	
58513-3	TP1	0.50	N	
58513-4	TP1	1.50	N	
58513-5	TP2	0.20	N	
58513-6	TP4	0.20	N	
58513-7	TP4	2.00	N	
58513-8	TP6	0.50	N	
58513-9	TP7	0.20	N	
58513-10	TP7	1.50	N	
58513-11	TP8	0.30	N	
58513-12	TP10	1.00	N	
58513-13	TP11	0.20	N	
58513-14	TP12	0.20	N	
58513-15	TP13	0.20	N	
58513-16	TP13	1.00	N	
58513-17	TP14	0.20	N	
58513-18	TP15	0.40	N	
58513-19	TP16	0.40	N	
58513-20	TP17	0.40	N	

APPENDIX IV

Ground Contamination Risk Assessment Data: Methodology
Notes for Off-Site Disposal
CL:AIRE Statistical Analysis Sheets

Ground Contamination Risk Assessment

Assessment Framework:-

Ground contamination risk assessments are undertaken to identify potential risks from historical and recent land contamination on a given site and enable appropriate risk management actions to be undertaken in accordance with the regulatory context of the site and any future development. There are a range of technical approaches to the assessment of chemical contaminants in the UK, all of which broadly fit within a tiered/phased approach and the current UK approach is set out in the Defra and Environment Agency Publication: CLR 11: Model Procedures for the Management of Land Contamination (*Defra/EA 2004*).

ARC's approach to undertaking ground contamination risk assessments is based on the tiered/phased framework in accordance with CLR11, and for Human Health, the recently updated CLEA (Contaminated Land Exposure Assessment) framework and model for assessing potentially contaminated land in the UK. This framework and model is based primarily on the following publications and software: Science Reports SC050021/SR2 (EA 2008b Human Health toxicological assessment of contaminants in soil) and SC050021/SR3 (Updated technical background to CLEA model – replaces the previous guidance documents CLR9, CLR10 and Briefing notes 1 – 4); Science Report SC050021/SR4 (CLEA Software (version 1.06 beta) handbook) and the new CLEA software (replaces Science Report SC050021/H CLEA UK Handbook (draft) and the CLEA UK Software version 1.0 beta), along with the publication of a review of body weight and height data used within the Contaminated Land Exposure Assessment model (CLEA), Project no. SC050021/Technical Review 1.

All SGV's (Soil Guidance Values) published as part of the CLEA UK Handbook (draft) and software (version 1.0 beta), have been withdrawn along with guidance documents CLR7 and CLR8, and replacement of the SGV values to provide new Generic Assessment Criteria values (GAC's), using the updated model and software (version 1.07) has been derived by a combination of regulatory and non-governmental organisations (Defra, CL:AIRE and LQM). The newly published GAC's are known as Suitable 4 Use Levels (S4UL's) & Category 4 Screening Levels (C4SL's), and where assessment values for certain contaminants are not available the most appropriate alternative values from other sources will be utilised.

When considering ground contamination risk assessments for Controlled Waters (groundwater & Surface waters), ARC follows the EA guidance on Remedial Targets Methodology, Hydrogeological Risk Assessment for Land Contamination, 2006.

Methodology:-

ARC consider that the most appropriate methodology for completing a ground contamination risk assessment for soils on this site is to utilise the recently published GAC values (S4UL's – Arsenic, Cadmium, Chromium III & VI, Copper, Mercury Nickel Selenium, Zinc, Benzene, Toluene, Ethylbenzene, Xylenes, Phenol, speciated PAH's, speciated TPH's and other organic compounds, C4SL's – Lead), combined with other published and recognised GAC's (generic assessment criteria) for the remaining analytes. It is widely recognised by ground contamination risk assessment practitioners that the new CLEA model will generally result in higher SGV and GAC (generic assessment criteria) values for the standard end uses, and consequently continued use of the former CLEA model will result in a slightly more conservative assessment.

For general soil surface contamination, the new S4UL value for inorganic Mercury can be compared with chemical analysis for total mercury content, as the concentrations of elemental and methylmercury compounds are likely to be very low, in accordance with Science Report SC050021 / Mercury SGV. In addition, the updated C4SL values are based upon a Soil Organic Matter (SOM) content of 6%, in line with the most recent Defra and EA guidance. Once all the relevant data is available, a reassessment of the ground contamination present on this site can be carried out, if felt necessary, as this may result in a reduction in the scope of remediation works (if required). It should be noted that guidance document CLR11: Model Procedures for the Management of Land Contamination has not been withdrawn.

Ground Contamination Risk Assessment (Cont'd)

Methodology (Cont'd):-

ARC ground contamination risk assessments, in accordance with CLR11, are based on the established *source-pathway-receptor* pollutant linkage methodology and 'suitable for use' approach (Part IIA, EPA 1990 - inserted through Section 57 EA 1995), and adopts the tiered/phased approach beginning with a preliminary assessment (also referred to a desk top study). If potential pollutant linkages are identified from the preliminary assessment, for both Human Health and/or Controlled Waters, then Level 1 Quantitative Risk Assessments are appropriate guideline values. For soils these typically comprise Generic Assessment Criteria values (GAC's) or site specific assessment criteria (SSAC) and for Controlled Waters, Environmental Quality Standards (EQS) or UK Drinking Water Standards.

Where any Level 1 criteria have been exceeded, various courses of action are available for recommendation, in order to try and 'break' the pollutant linkage by designing into the proposed development works and/or by recommending appropriate remediation works, i.e. removal of source, treatment of contaminants, installation of permanent barriers, etc. and/or by carrying out more detailed site specific quantitative risk assessment (DQRA, i.e. Level 2 or above). Completing further DQRA for any contaminants present, can take into account factors such as the introduction of physical barrier and the actual availability of plausible contaminant migration pathways, as well as site specific data such as the type, properties and characteristics (permeability, porosity, density, etc.) of the soil present on site, groundwater depth and flow, site specific exposure criteria and values, and contaminant retardation, attenuation, dilution and degradation. Similarly, when considering potential risks to off-site receptors, these are considered by assessing the potential risks to on-site receptors, as well as the potential mobility of any contaminants present within either the soils or water/groundwater below this site.

For the purpose of this report, the preliminary and level 1 risk assessment considers two main categories of receptor, and these are as follows:

- On site Human Health – (CLEA Model).
- Controlled Waters – (Surface water & groundwater) – (EA Remedial Targets Methodology).

When considering the environmental setting, with no groundwater or surface water abstractions recorded within a plausible distance to the site, no Level 1 Controlled Waters Risk Assessment has been carried out.

When considering the risk to construction workforce, the results of the screening can be used by the Main Contractor/Project Coordinator, when devising an adequate Site Health & Safety Plan, in accordance with current CDM Regulations, and when assessing the level of PPE required on site. Similarly, when considering the risks to building materials, again the results of the contamination screening can be used to determine the level of protection that may be required, and reference should be made to the utilities suppliers for their comments.

Level 1 - Human Health:-

Level 1 human health related assessments are based upon the current CLEA Model, with site values assessed against published Generic Assessment Criteria Values (GAC's – S4UL's & C4SL's), and where these values are not available against the published CIEM (Chartered Institute of Environmental Health)/LQM Generic Assessment Criteria (GAC), CL:AIRE, Atkins ATRISKsoil© SSV values and USEPA Region 9 Screening Values (2009).

Where screening has been undertaken, the maximum site values recorded (C_M) at each location have been compared to the chosen Level 1 Critical Concentration (C_C), with no requirement for statistical analysis to be undertaken for these samples.

Ground Contamination Risk Assessment (Cont'd)

Methodology (Cont'd):-

Level 1 – Controlled Waters:-

The Level 1 controlled waters risk assessment has been carried out (in accordance with the guidance; Remedial Targets Methodology, Hydrogeological Risk Assessment for Land Contamination, Environment Agency, 2006) by comparing samples of leachate, with the chosen Level 1 Critical Concentration (C_C) value, based on an appropriate water quality standard (EQS, UK Drinking Water, etc.), and which is also taken as the Level 1 Leachate Remedial Target (LTC_1).

The number of samples chosen for screening is determined by assessing the potential risk of contamination reaching a sensitive receptor, i.e. shallow groundwater, nearby surface water feature, etc., based on the results of the preliminary investigation, as well as olfactory, visual, anecdotal and analytical evidence collected during the intrusive investigation works.

Where the potential risk is considered to be low between 0% and c.25% of the samples are targeted for screening, c.25% to c.50% where the risk is considered to be moderate and c.75% to 100% where the risk is considered to be high. This is to ensure that the potential risk is adequately assessed without carrying out unnecessary testing. When considering any 'hot spots' identified, samples are specifically targeted for screening on a sample by sample and analyte by analyte basis.

Notes for Off-Site Disposal

When considering the removal of any materials from this site as a waste, to be disposed of at a landfill, it can be seen that where the uncontaminated natural strata (excluding any 'topsoil' or 'peat' materials) can be kept separate from any made ground or contaminated natural strata, then these materials can be considered as 'inert' and taken to an Inert Landfill Site. Prior to disposal of these 'inert' materials, full WAC screening may need to be undertaken, with the number of samples to be screened dependant upon the volume of material to be disposed of.

Where made ground or contaminated natural strata is to be removed off site as a 'waste', a preliminary classification assessment, regarding off-site disposal, can be made utilising the contamination soils screening undertaken as part of the Level 1 Risk Assessment for Human Health. If there is sufficient screening to classify these materials as Non-Hazardous, then they can be disposed of at a Non-Hazardous Landfill. If insufficient preliminary screening has been undertaken to carryout the classification assessment, then further preliminary soils screening should be undertaken, where required.

If the results of the preliminary classification assessment indicate that the materials to be removed from site as a 'waste' should be classified as Hazardous Waste, then prior to disposal, full WAC screening should be completed so that these materials can be classified as either Stable Non-Reactive Hazardous Waste or Hazardous Waste, and disposed of at a suitable waste disposal facility.

If possible, removal of materials from site as a 'waste' should be kept to a minimum, however, if materials have to be removed to accommodate finished ground levels etc., it is recommended that the volume to be disposed of is calculated, as the amount of additional screening required, including any full WAC screening, will be dependant upon the volume of material to be disposed of.

CL:AIRE Statistical Analysis Calculation Sheet -BTEX

Client/client ref: McCarthy & Stone
Project ref: 16-075
Site ref: Serpentine Road, Cleckheaton
Data description: Contamination Results
Contaminant(s): BTEX
Test scenario:
Date: 0 January 1900
User details: ST

	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylene (mg/kg)												
Critical concentration, C_c	**1.4**	**3900**	**440**	**180**												
Notes	GAC: S4UL, LQM (Residential witout homegrown produce, 6% SOM)	GAC: S4UL, LQM (Residential witout homegrown produce, 6% SOM)	GAC: S4UL, LQM (Residential witout homegrown produce, 6% SOM)	GAC: S4UL, LQM (Residential witout homegrown produce, 6% SOM)												
Sample size, n	10	10	10	10	0	0	0	0	0	0	0	0	0	0	0	0
Sample mean,	0.005	0.005	0.005	0.005	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data
Standard deviation, s	9.1428E-19	9.1428E-19	9.1428E-19	9.1428E-19												
Number of non-detects	**10**	**10**	**10**	**10**												
Set non-detect values to:	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Outliers?	No	No	No	No												
Distribution	Non-normal	Non-normal	Non-normal	Non-normal												
Statistical approach	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3

Test scenario:					**Evidence level required:**		**95%**									
t statistic, t_0 (or k_0)	-2.40384E+18	-6.57164E+21	-6.57148E+20	-6.2256E+20												
Upper confidence limit (on true mean concentration, μ)	0.005	0.005	0.005	0.005												
Evidence level	**100%**	**100%**	**100%**	**100%**												
Base decision on:	2	1	2	2	1	2	2	2	2	2	2	2	2	2	2	2
Result	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**												
Select dataset																

CL:AIRE Statistical Analysis Calculation Sheet -Speciated PAH's

Client/client ref: McCarthy & Stone
Project ref: 16-075
Site ref: Serpentine Road. Cleckheaton
Data description: Contamination Results
Contaminant(s): Speciated PAH (USEPA 16)
Test scenario: Planning
Date: 31 March 2016

	Acenaphthene (mg/kg)	Acenaphthylene (mg/kg)	Anthracene (mg/kg)	Benzo(a)anthracene (mg/kg)	Benzo(a)pyrene (mg/kg)	Benzo(b)fluoranthene (mg/kg)	Benzo(ghi)perylene (mg/kg)	Benzo(k)fluoranthene (mg/kg)	Chrysene (mg/kg)	Dibenz(ah)anthracene (mg/kg)	Fluoranthene (mg/kg)	Fluorene (mg/kg)	Indeno(123cd)pyrene (mg/kg)	Naphthalene (mg/kg)	Phenanthrene (mg/kg)	Pyrene (mg/kg)	
Critical concentration, C_c	**6000**	**6000**	**3700**	**14**	**3.2**	**4**	**360**	**110**	**31**	**0.32**	**1600**	**3800**	**46**	**5.6**	**1500**	**3800**	
Notes	GAC: S4UL, LQM (Residential without homegrown produce 6% SOM)	GAC: S4UL, LQM (Residential without homegrown produce 6% SOM)	GAC: S4UL, LQM (Residential without homegrown produce 6% SOM)	GAC: S4UL, LQM (Residential without homegrown produce 6% SOM)	GAC: S4UL, LQM (Residential without homegrown produce 6% SOM)	GAC: S4UL, LQM (Residential without homegrown produce 6% SOM)	GAC: S4UL, LQM (Residential without homegrown produce 6% SOM)	GAC: S4UL, LQM (Residential without homegrown produce 6% SOM)	GAC: S4UL, LQM (Residential without homegrown produce 6% SOM)	GAC: S4UL, LQM (Residential without homegrown produce 6% SOM)	GAC: S4UL, LQM (Residential without homegrown produce 6% SOM)	GAC: S4UL, LQM (Residential without homegrown produce 6% SOM)	GAC: S4UL, LQM (Residential without homegrown produce 6% SOM)	GAC: S4UL, LQM (Residential without homegrown produce 6% SOM)	GAC: S4UL, LQM (Residential without homegrown produce 6% SOM)	GAC: S4UL, LQM (Residential without homegrown produce 6% SOM)	
Sample size, n	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	0
Sample mean,	0.71211095	0.07746282	2.93014328	7.34508252	7.21523019	8.02864131	3.85341547	3.51963898	6.03756854	1.12763226	18.3314251	0.57503949	5.08226555	0.19411673	8.09494214	15.7686295	No Data
Standard deviation, s	1.81945137	0.19873064	7.87175634	19.5399446	18.0361004	19.9584395	9.09873156	8.95762439	15.820857	2.80688586	50.9764346	1.46865572	12.4165218	0.15408607	20.9974907	43.5428143	
Number of non-detects	**4**	**6**	**4**	**3**	**2**	**2**	**3**	**3**	**2**	**4**	**2**	**4**	**3**	**1**	**1**	**2**	
Set non-detect values to:	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Outliers?	No	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	No	
Distribution	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Normal	Non-normal	Non-normal	
Statistical approach	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3

Test scenario:					**Evidence level required:**		**95%**										
t statistic, t_0 (or k_0)	-10426.99707	-95473.05434	-1485.203671	-1.077009034	0.703992131	0.638310546	-123.7792742	-37.59037579	-4.989498324	0.909890029	-98.11739947	-8180.839446	-10.42105348	-110.9438613	-224.6848494	-274.828132	
Upper confidence limit (on true mean concentration, μ)	3.22005158	0.3513941	13.7806106	34.2790375	32.0762789	35.5394516	16.3951514	15.8668721	27.8451149	4.99665741	88.5975911	2.5994417	22.1972597	0.28343753	37.0379857	75.788257	
Evidence level	**100%**	**100%**	**100%**	**54%**	**0%**	**0%**	**100%**	**100%**	**96%**	**0%**	**100%**	**100%**	**99%**	**100%**	**100%**	**100%**	
Base decision on:	2	1	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2
Result	μ < Cc	μ < Cc	μ < Cc	μ ≈≥ Cc	μ ≥ Cc	μ ≥ Cc	μ < Cc	μ < Cc	μ < Cc	μ ≥ Cc	μ < Cc	μ < Cc	μ < Cc	μ < Cc	μ < Cc	μ < Cc	
Select dataset																	

CL:AIRE Statistical Analysis Calculation Sheet -Speciated TPH

Client/client ref:
Project ref: 16-075
Site ref: Serpentine Road, Cleckheaton
Data description: Contamination Results
Contaminant(s): TPH (Aliphatic/Aromatic Fractions)
Test scenario: Planning
Date: 31 March 2016

	TPH Ali C5-C6 (mg/kg)	TPH Ali C6-C8 (mg/kg)	TPH Ali C8-C10 (mg/kg)	TPH Ali C10-C12 (mg/kg)	TPH Ali C12-C16 (mg/kg)	TPH Ali C16-C35 (mg/kg)	TPH Ali C35-C44 (mg/kg)	TPH Aro C5-C7 (mg/kg)	TPH Aro C7-C8 (mg/kg)	TPH Aro C8-C10 (mg/kg)	TPH Aro C10-C12 (mg/kg)	TPH Aro C12-C16 (mg/kg)	TPH Aro C16-C21 (mg/kg)	TPH Aro C21-C35 (mg/kg)	TPH Aro C35-C44 (mg/kg)		
Critical concentration, C_c	**160**	**530**	**150**	**770**	**4400**	**110000**	**110000**	**1400**	**3900**	**270**	**1200**	**2500**	**1900**	**1900**	**1900**		
Notes	GAC: S4UL, LQM (Residential without homegrown produce, 6% SOM)	GAC: S4UL, LQM (Residential without homegrown produce, 6% SOM)	GAC: S4UL, LQM (Residential without homegrown produce, 6% SOM)	GAC: S4UL, LQM (Residential without homegrown produce, 6% SOM)	GAC: S4UL, LQM (Residential without homegrown produce, 6% SOM)	GAC: S4UL, LQM (Residential without homegrown produce, 6% SOM)	GAC: S4UL, LQM (Residential without homegrown produce, 6% SOM)	GAC: S4UL, LQM (Residential without homegrown produce, 6% SOM)	GAC: S4UL, LQM (Residential without homegrown produce, 6% SOM)	GAC: S4UL, LQM (Residential without homegrown produce, 6% SOM)	GAC: S4UL, LQM (Residential without homegrown produce, 6% SOM)	GAC: S4UL, LQM (Residential without homegrown produce, 6% SOM)	GAC: S4UL, LQM (Residential without homegrown produce, 6% SOM)	GAC: S4UL, LQM (Residential without homegrown produce, 6% SOM)	GAC: S4UL, LQM (Residential without homegrown produce, 6% SOM)		
Sample size, n	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	0	0
Sample mean,	0.05	0.05	0.05	3.3	20.6	598.5	75.4	0.005	0.005	0.0065	0.5	1.75	47.25	40.4	5.15	No Data	No Data
Standard deviation, s	7.3142E-18	7.3142E-18	7.3142E-18	2.65832027	31.665614	1222.56672	134.321505	9.1428E-19	9.1428E-19	0.00474342	0	2.93683503	126.233745	99.3302013	10.2714545		
Number of non-detects	**10**	**10**	**10**	**2**	0	0	0	**10**	**10**	**9**	**10**	**5**	**1**	0	**3**		
Set non-detect values to:	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Outliers?	#DIV/0!	#DIV/0!	#DIV/0!	No	No	No	No	No	No	Yes	No	Yes	Yes	No	Yes		
Distribution	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Single value	Non-normal	Non-normal	Non-normal	Non-normal		
Statistical approach	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3

Test scenario:					**Evidence level required:**		**95%**										
t statistic, t_0 (or k_0)	-6.91537E+19	-2.29122E+20	-6.48302E+19	-912.0489762	-437.3475524	-282.9767188	-2587.911052	-4.84225E+21	-1.34892E+22	-179995.6667	N/A	-2690.025174	-46.41318328	-59.20225128	-583.3683845		
Upper confidence limit (on true mean concentration, μ)	0.05	0.05	0.05	6.96424162	64.2480367	2283.69193	260.549417	0.005	0.005	0.01303835	0.5	5.79814772	221.251209	177.317234	19.308223		
Evidence level	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**		
Base decision on:	2	1	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2
Result	μ < Cc	μ < Cc	μ < Cc	μ < Cc	μ < Cc	μ < Cc	μ < Cc	μ < Cc	μ < Cc	μ < Cc	μ < Cc	μ < Cc	μ < Cc	μ < Cc	μ < Cc		
Select dataset																	

ARC Environmental Ltd. - CL:AIRE Statistical Analysis Sheet - Metals Suite

Client/client ref: McCarthy & Stone
Project ref: 16-075
Site ref: Serpentine Road, Cleckheaton
Data description: Contamination Screening Results - Metals and Inorganic Chemicals
Contaminant(s): Metals and Inorganics
Test scenario: Planning
Date: 31 March 2016

	Arsenic (mg/kg)	Cadmium (mg/kg)	Chromium III (mg/kg)	Chromium VI (mg/kg)	Copper (mg/kg)	Lead (mg/kg)	Mercury (mg/kg)	Nickel (mg/kg)	Selenium (mg/kg)	Zinc (mg/kg)	Cyanide (mg/kg)
Critical concentration, C_c	**40**	**85**	**910**	**6**	**7100**	**310**	**56**	**180**	**430**	**40000**	**34**
Notes	GAC: S4UL, LQM (Residential without homegrown produce, 6% SOM)	GAC: S4UL, LQM (Residential without homegrown produce, 6% SOM)	GAC: S4UL, LQM (Residential without homegrown produce, 6% SOM)	GAC: S4UL, LQM (Residential without homegrown produce, 6% SOM)	GAC: S4UL, LQM (Residential without homegrown produce, 6% SOM)	GAC: S4UL, LQM (Residential without homegrown produce, 6% SOM)	GAC: S4UL, LQM (Residential without homegrown produce, 6% SOM)	GAC: S4UL, LQM (Residential without homegrown produce, 6% SOM)	GAC: S4UL, LQM (Residential without homegrown produce, 6% SOM)	GAC: S4UL, LQM (Residential without homegrown produce, 6% SOM)	GAC: S4UL, LQM (Residential without homegrown produce, 6% SOM)
Sample size, n	10	10	10	10	10	10	10	10	10	10	10
Sample mean,	18.754	0.32	391.3	0.5	78.2	202.6	0.25	31.8	1.027	145.4	0.5
Standard deviation, s	12.0683537	0.22509257	1063.58629	0	52.2617345	337.967191	0	11.8302813	0.31979334	58.4450359	0
Number of non-detects	0	**2**	0	**10**	0	0	**10**	0	0	0	**10**
Set non-detect values to:	2	2	2	2	2	2	2	2	2	2	2
Outliers?	No	No	Yes	No	No	No	No	No	No	No	No
Distribution	Normal	Non-normal	Non-normal	Single value	Normal	Non-normal	Single value	Normal	Normal	Normal	Single value
Statistical approach	3	3	3	3	3	3	3	3	3	3	3

Test scenario:					**Evidence level required:**		**95%**				
t statistic, t_0 (or k_0)	-5.567101618	-1189.651298	-1.542210014	N/A	-424.8783838	-1.00491595	N/A	-39.61440455	-4241.901196	-2156.407457	N/A
Upper confidence limit (on true mean concentration, μ)	25.7497978	0.6302687	1857.35252	0.5	108.495145	668.455624	0.25	38.6577917	1.21237819	179.279489	0.5
Evidence level	**100%**	**100%**	**70%**	**100%**	**100%**	**50%**	**100%**	**100%**	**100%**	**100%**	**100%**
Base decision on:	2	1	2	2	2	2	2	2	2	2	2
Result	μ < Cc	μ < Cc	μ ≈≥ Cc	μ < Cc	μ < Cc	μ ≥ Cc	μ < Cc	μ < Cc	μ < Cc	μ < Cc	μ < Cc
Select dataset											

ARC Environmental Ltd. - CL:AIRE Statistical Analysis Sheet - Metals Suite

Client/client ref: McCarthy & Stone
Project ref: 16-075
Site ref: Serpentine Road, Cleckheaton
Data description: Contamination Screening Results - Metals and Inorganic Chemicals
Contaminant(s): Metals and Inorganics
Test scenario: Planning
Date: 31 March 2016

Critical concentration, C_c						
Notes						
Sample size, n	0	0	0	0	0	0
Sample mean,	No Data	No Data	No Data	No Data	No Data	No Data
Standard deviation, s						
Number of non-detects						
Set non-detect values to:	2	2	2	2	2	2
Outliers?						
Distribution						
Statistical approach	3	3	3	3	3	3

Test scenario:						
t statistic, t_0 (or k_0)						
Upper confidence limit (on true mean concentration, μ)						
Evidence level						
Base decision on:	2	2	2	2	2	2
Result						
Select dataset						