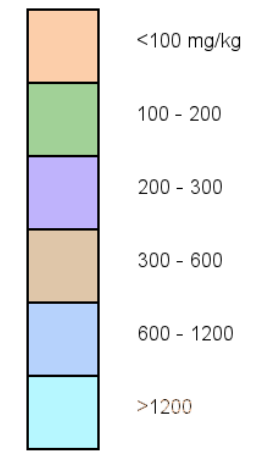


General

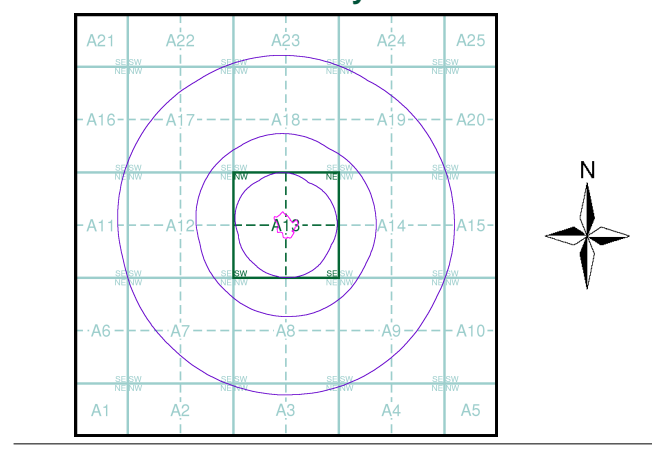
- Specified Site
- Specified Buffer(s)
- ✕ Bearing Reference Point

Estimated Soil Chemistry Lead

Lead Concentrations mg/kg



Estimated Soil Chemistry Lead - Slice A

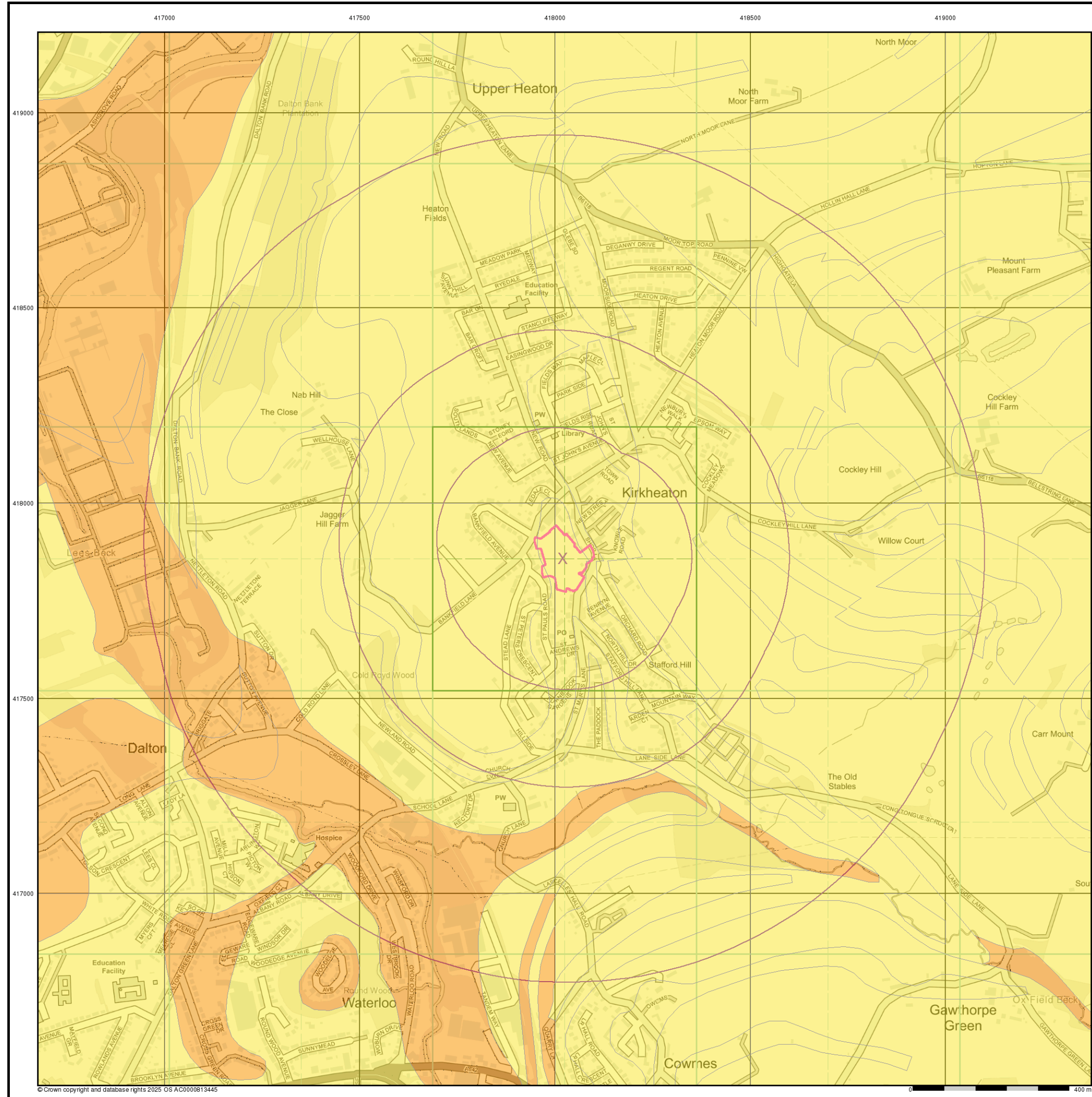


Order Details

Order Details: 378395479_1_1
 Customer Ref: WOR/01
 National Grid Reference: 418020, 417860
 Slice: A
 Site Area (Ha): 1.43
 Search Buffer (m): 1000

Site Details

2, Shop Lane, HUDDERSFIELD, HD5 0DB

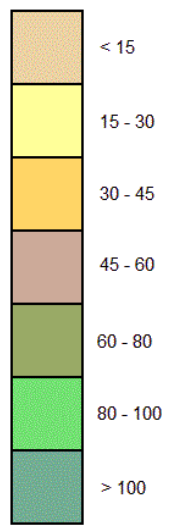


General

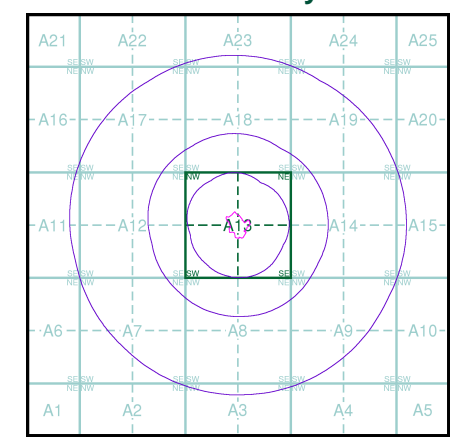
- ⬢ Specified Site
- ⬢ Specified Buffer(s)
- X Bearing Reference Point

Estimated Soil Chemistry Nickel

Nickel Concentrations mg/kg



Estimated Soil Chemistry Nickel - Slice A

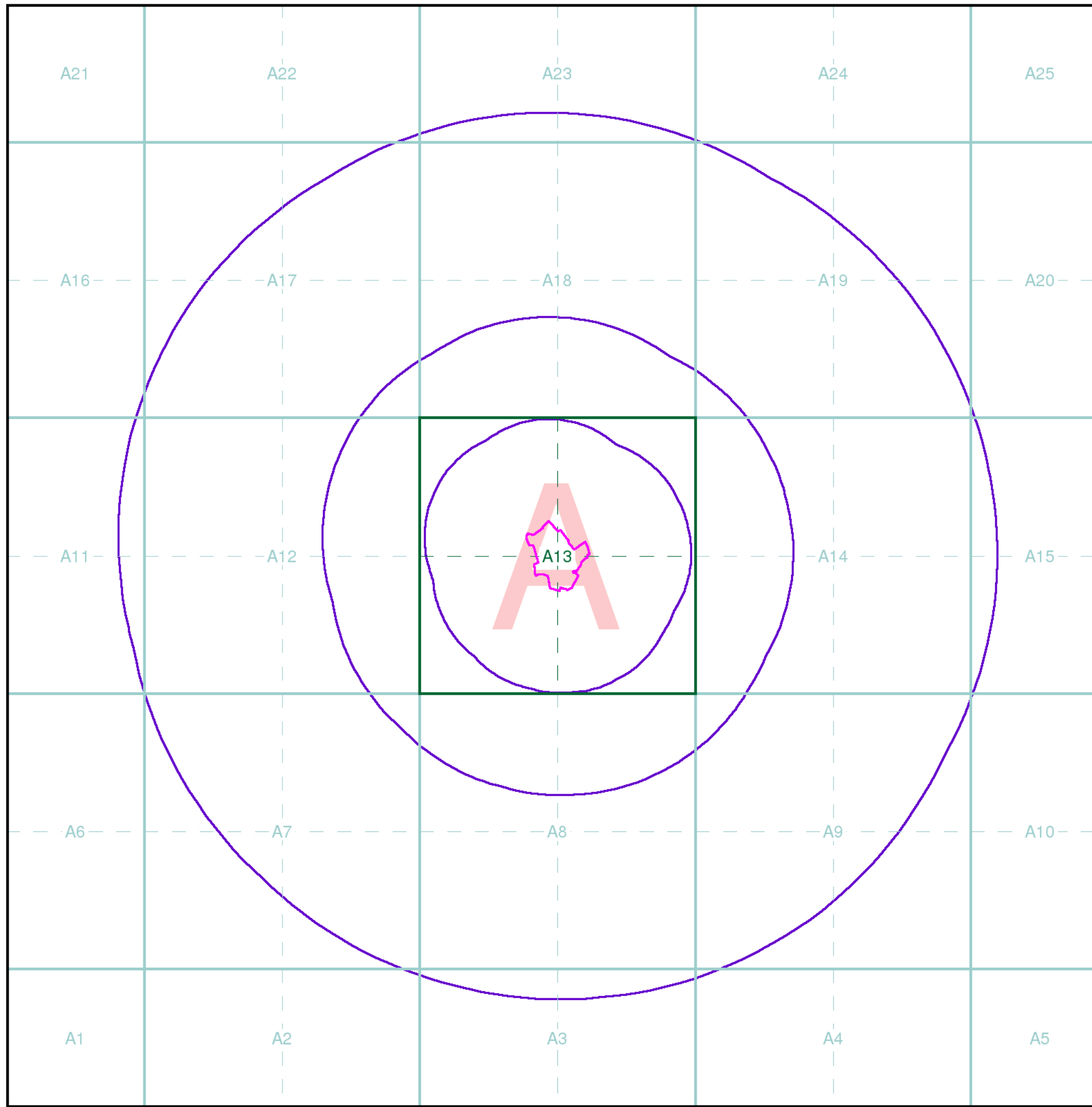


Order Details

Order Details: 378395479_1_1
 Customer Ref: WOR/01
 National Grid Reference: 418020, 417860
 Slice: A
 Site Area (Ha): 1.43
 Search Buffer (m): 1000

Site Details

2, Shop Lane, HUDDERSFIELD, HD5 0DB



ARP GEOTECHNICAL LTD

Index Map

For ease of identification, your site and buffer have been split into Slices, Segments and Quadrants. These are illustrated on the Index Map opposite and explained further below.

Slice

Each slice represents a 1:10,000 plot area (2.7km x 2.7km) for your site and buffer. A large site and buffer may be made up of several slices (represented by a red outline), that are referenced by letters of the alphabet, starting from the bottom left corner of the slice "grid". This grid does not relate to National Grid lines but is designed to give best fit over the site and buffer.

Segment

A segment represents a 1:2,500 plot area. Segments that have plot files associated with them are shown in dark green, others in light blue. These are numbered from the bottom left hand corner within each slice.

Quadrant

A quadrant is a quarter of a segment. These are labelled as NW, NE, SW, SE and are referenced in the datasheet to allow features to be quickly located on plots. Therefore a feature that has a quadrant reference of A7NW will be in Slice A, Segment 7 and the NW Quadrant.

A selection of organisations who provide data within this report:



Envirocheck reports are compiled from 136 different sources of data.

Client Details

Mr J Race, ARP Geotechnical Ltd, Northwest House, 5-6 Northwest Business Park, Servia Hill, Leeds, LS6 2QH

Order Details

Order Number: 378395479_1_1
 Customer Ref: WOR/01
 National Grid Reference: 418020, 417860
 Site Area (Ha): 1.43
 Search Buffer (m): 1000

Site Details

2, Shop Lane, HUDDERSFIELD, HD5 0DB

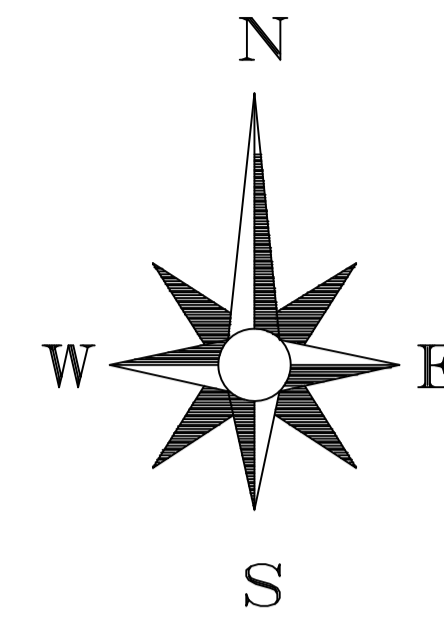
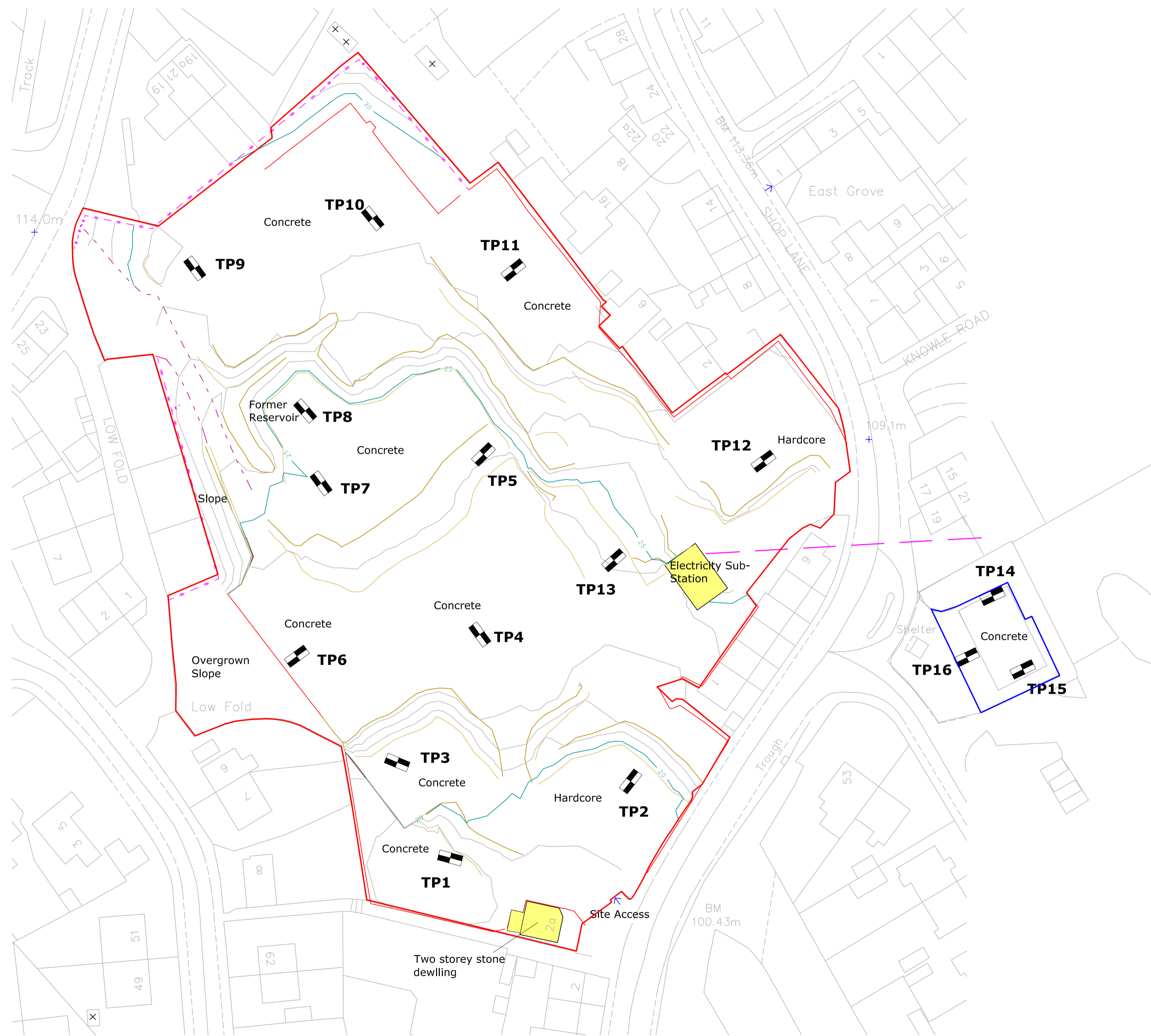
Full Terms and Conditions can be found on the following link:
<http://www.landmarkinfo.co.uk/Terms/Show/515>


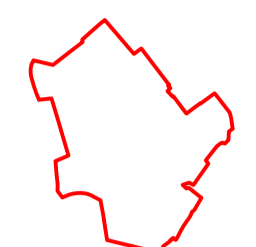





Tel: 0844 844 9952
 Fax: 0844 844 9951
 Web: www.envirocheck.co.uk

APPENDIX C

**INVESTIGATION PLAN, SCREENING VALUES & CONTAMINATION TEST
CERTIFICATES**



- NOTES
-  Location of Trial Pit
 -  Approximate Site Boundary: Area 1
 -  Approximate Site Boundary: Area 2
 -  Approximate Line of Geological Fault
 -  Existing Site Building

Based on Encia Demolition Drawing No. 51587-POST-001 'SHOP LANE, KIRKHEATON POST DEMOLITION TOPO SURVEY' dated May 2009

REV.	DESCRIPTION	DATE

ENCIA Environmental
 ENCIA HOUSE
 AUDBY LANE
 WETHERBY
 LS22 7RD
 TEL: 01937 589955
 FAX: 01937 589944
 E-Mail: info@enciagroup.co.uk
 Web: www.enciagroup.co.uk

CLIENT
HARTLEY QUALITY HOMES

JOB TITLE
SHOP LANE, KIRKHEATON

DRAWING TITLE
EXPLORATORY HOLE LOCATIONS AND CURRENT SITE FEATURES PLAN

DRAWN	DATE	STATUS
ASw	02.06.09	FOR COMMENT <input type="checkbox"/>
RJH	02.06.09	FOR APPROVAL <input type="checkbox"/>
		DRAFT <input type="checkbox"/>
		FINAL <input checked="" type="checkbox"/>

SCALE	SHEET	DRAWING NO.	REVISION
1:500	A1	9557/5	A



ARP GEOTECHNICAL LIMITED
IMPORTED SOIL CONTAMINANT SCREENING VALUES
RESIDENTIAL WITH HOME-GROWN PRODUCE

Determinand	S4UL (unless stated otherwise) (mg/kg)			C4SL (mg/kg)		
	1% SOM	2.5% SOM	6% SOM	1% SOM	2.5% SOM	6% SOM
Arsenic	37			37		
Cadmium	11			22		
Chromium (trivalent) (MAFF)	400					
Chromium (hexavalent)	6			21		
Copper (MAFF)	80#					
Lead				200		
Inorganic Mercury	40			200		
Nickel (MAFF)	50#					
Selenium	250					
Zinc (MAFF)	200#					
Acidity (pH)	*Should be Greater Than 5			*Should be Greater Than 5		
	1% SOM	2.5% SOM	6% SOM	1% SOM	2.5% SOM	6% SOM
Naphthalene	2.3	5.6	13	15	36	85
Acenaphthylene	170	420	920			
Acenaphthene	210	510	1,100			
Fluorene	170	400	860			
Phenanthrene	95	220	440			
Anthracene	2,400	5,400	11,000			
Fluoranthene	280	560	890			
Pyrene	620	1,200	2,000			
Benzo(a)anthracene	7.2	11	13			
Chrysene	15	22	27			
Benzo(b)fluoranthene	2.6	3.3	3.7			
Benzo(k)fluoranthene	77	93	100			
Benzo(a)pyrene	2.2	2.7	3			5
Indeno(1,2,3-cd)pyrene	27	36	41			
Dibenzo(a,h)anthracene	0.24	0.28	0.30			
Benzo(g,h,i)perylene	320	340	350			
Phenols	120	200	380			
Total TPH	*Above 500, speciate and compare with values below:					
C5 to C6 Aliphatic	42	78	160			
C6 to C8 Aliphatic	100	230	530			
C8 to C10 Aliphatic	27	65	150			
C10 to C12 Aliphatic	130	330	760			
C12 to C16 Aliphatic	1100	2,400	4,300			
C16 to C35 Aliphatic	65,000	92,000	110,000			
C35 TO C44 Aliphatic	65,000	92,000	110,000			
C5 to C7 Aromatic (Benzene)	70	140	300			
C7 to C8 Aromatic (Toluene)	130	290	660			
C8 to C10 Aromatic	34	83	190			
C10 to C12 Aromatic	74	180	380			
C12 to C16 Aromatic	140	330	660			
C16 to C21 Aromatic	260	540	930			
C21 TO C35 Aromatic	1100	1,500	1,700			
C35 TO C44 Aromatic	1100	1,500	1,700			
Asbestos	*Should be None Detected			*Should be None Detected		

* In House Value/Approach S4UL = Suitable 4 Use Level, CIEH/LQM 2014 C4SL = Cat 4 Screening Level, DEFRA, 2014

Blank cell indicates no published value or in-house value. Some values presented are above saturation limits.

S4ULs: Copyright Land Quality Management Ltd reproduced with permission; Publication No. S4UL3378. All rights reserved.

MAFF: Ministry of Agriculture, Fisheries and Food - "Code of Good Agricultural Practice for the Protection of Soil

#pH dependent. If exceeded, to be compared against appropriate MAFF value for the pH



Scientific Analysis Laboratories

Certificate of Analysis

Hadfield House
Hadfield Street
Cornbrook
Manchester
M16 9FE
Tel : 0161 874 2400
Fax : 0161 874 2468

Scientific Analysis Laboratories is a
limited company registered in England and
Wales (No 2514788) whose address is at
Hadfield House, Hadfield Street, Manchester M16 9FE

Report Number: 164223-1

Date of Report: 20-May-2009

Customer: ENCIA Environmental Limited

Encia House
Audby Lane
Wetherby
West Yorkshire
LS22 7RD

Customer Contact: Mr Rupert Wilks

Customer Job Reference: 9557/1/RW/001

Customer Site Reference: Shop Lane, Kirkheaton

Date Job Recieved at SAL: 05-May-2009

Date Analysis Started: 11-May-2009

Date Analysis Completed: 20-May-2009

The results reported relate to samples received in the laboratory
Opinions and interpretations expressed herein are outside the scope of UKAS accreditation
This report should not be reproduced except in full without the written approval of the laboratory
Tests covered by this certificate were conducted in accordance with SAL SOPs



Report checked
and authorised by :
Amelia McVennon
Project Manager

Issued by :

Index to symbols used in this report

Value	Description
M105	Analysis conducted on an "as received" aliquot. Results are reported on a dry weight basis where moisture content was determined by assisted drying of sample at 105C
10:1	Leachate
AR	As Received
-	Not Required
M40	Analysis conducted on sample assisted dried at no more than 40C. Results are reported on a dry weight basis.
9	LOD raised due to dilution of sample
13	Results have been blank corrected.
157	No obvious asbestos containing materials detected. Customers should be clear that this test does not confirm the absence of asbestos from the sample
S	Analysis was subcontracted
U	Analysis is UKAS accredited
M	Analysis is MCERTS accredited
N	Analysis is not accredited

Methods

Value	Description
T40	Bomb calorimetry
T81	GC/FID (LV)
T207	GC/MS(MCERTS)
T1	GC/MS (HR)
T7	Probe
T161	Visual
T4	Colorimetry
T277	Grav (1 Dec) (40 C)
T11	IC
T206	GC/FID (MCERTS)
T281	ICP/MS (Filtered)
T6	ICP/OES
T85	Calc
T42	PID
T8	GC/FID
T162	Grav (1 Dec) (105 C)
T209	GC/MS(Head Space)(MCERTS)

Accreditation Summary

Determinand	Method	Test Sample	LOD	Units	Symbol	SAL References
As (Dissolved)	T281	-	0.2	µg/l	U	001
Boron	T6	-	0.01	mg/l	N	001
Cd (Dissolved)	T281	-	0.02	µg/l	U	001
Cr (Dissolved)	T281	-	1.0	µg/l	U	001
Cu (Dissolved)	T281	-	0.5	µg/l	U	001
Pb (Dissolved)	T281	-	0.3	µg/l	U	001
Hg (Dissolved)	T281	-	0.05	µg/l	U	001
Ni (Dissolved)	T281	-	1.0	µg/l	U	001
Se (Dissolved)	T281	-	0.5	µg/l	U	001
Zn (Dissolved)	T281	-	2.0	µg/l	U	001
pH	T7	-			U	001
PAH(total)	T207	M105	0.1	mg/kg	U	002-004,006,012,014,018
Ammoniacal nitrogen	T4	-	0.05	mg/l	U	001
Calorific value	T40	M40	0.1	MJ/kg	SN	003,006,009,013,016,019
Cyanide(Total)	T4	AR	1.0	mg/kg	U	003,006,011,013,018-019
Magnesium water soluble	T6	AR	0.1	g/l	N	002-003,006,010-011,017,019
SO4(2:1)	T6	AR	0.1	g/l	N	002-003,006,010-011,017,019
Chloride (2:1)	T11	M40	0.5	mg/l	SN	002-003,006,010-011,017,019
Nitrate (2:1)	T11	M40	0.5	mg/l	SN	002-003,006,010-011,017,019
As (Dissolved)	T281	10:1	0.2	µg/l	U	003,005-007,009-010,013,018-019
Boron	T6	10:1	0.01	mg/l	N	003,005-007,009-010,013,018-019
Cd (Dissolved)	T281	10:1	0.02	µg/l	U	003,005-007,009-010,013,018-019
Cr (Dissolved)	T281	10:1	1.0	µg/l	U	003,005-007,009-010,013,018-019
Cu (Dissolved)	T281	10:1	0.5	µg/l	U	003,005-007,009-010,013,018-019
Pb (Dissolved)	T281	10:1	0.3	µg/l	U	003,005-007,009-010,013,018-019
Hg (Dissolved)	T281	10:1	0.05	µg/l	U	003,005-007,009-010,013,018-019
Ni (Dissolved)	T281	10:1	1.0	µg/l	U	003,005-007,009-010,013,018-019
Se (Dissolved)	T281	10:1	0.5	µg/l	U	003,005-007,009-010,013,018-019

Determinand	Method	Test Sample	LOD	Units	Symbol	SAL References
Zn (Dissolved)	T281	10:1	2.0	µg/l	U	003,005-007,009-010,013,018-019
pH	T7	10:1			U	003,005-007,009-010,013,018-019
Arsenic	T6	M40	2.0	mg/kg	M	002-003,005-007,009-014,016-019
Boron (water-soluble)	T6	AR	1.0	mg/kg	N	002-003,005-007,009-014,016-019
Cadmium	T6	M40	1.0	mg/kg	M	002-003,005-007,009-014,016-019
Chromium	T6	M40	1.0	mg/kg	M	002-003,005-007,009-014,016-019
Copper	T6	M40	1.0	mg/kg	M	002-003,005-007,009-014,016-019
Lead	T6	M40	1.0	mg/kg	M	002-003,005-007,009-014,016-019
Mercury	T6	M40	1.0	mg/kg	M	002-003,005-007,009-014,016-019
Nickel	T6	M40	1.0	mg/kg	M	002-003,005-007,009-014,016-019
Selenium	T6	M40	3.0	mg/kg	M	002-003,005-007,009-014,016-019
Zinc	T6	M40	1.0	mg/kg	M	002-003,005-007,009-014,016-019
pH	T7	AR			M	002-003,005-007,009-014,016-019
Acenaphthene	T207	M105	0.1	mg/kg	M	003,006,018-019
Acenaphthylene	T207	M105	0.1	mg/kg	U	003,006,018-019
Anthracene	T207	M105	0.1	mg/kg	U	003,006,018-019
Benzo(a)Anthracene	T207	M105	0.1	mg/kg	M	003,006,018-019
Benzo(a)Pyrene	T207	M105	0.1	mg/kg	M	003,006,018-019
Benzo(b)fluoranthene	T207	M105	0.1	mg/kg	M	003,006,018-019
Benzo(ghi)Perylene	T207	M105	0.1	mg/kg	M	003,006,018-019
Benzo(k)fluoranthene	T207	M105	0.1	mg/kg	M	003,006,018-019
Chrysene	T207	M105	0.1	mg/kg	M	003,006,018-019
Dibenzo(ah)Anthracene	T207	M105	0.1	mg/kg	M	003,006,018-019
Fluoranthene	T207	M105	0.1	mg/kg	M	003,006,018-019
Fluorene	T207	M105	0.1	mg/kg	M	003,006,018-019
Indeno(123-cd)Pyrene	T207	M105	0.1	mg/kg	M	003,006,018-019
Naphthalene	T207	M105	0.1	mg/kg	M	003,006,018-019
Phenanthrene	T207	M105	0.1	mg/kg	M	003,006,018-019
Pyrene	T207	M105	0.1	mg/kg	M	003,006,018-019
Gasoline Range Organics	T42	AR	10.0	mg/kg	N	002,004,012,014,019
TPH (C10-C12)	T206	M105	1.0	mg/kg	M	002,004,012,014,019
TPH (C12-C16)	T206	M105	1.0	mg/kg	M	002,004,012,014,019
TPH (C16-C21)	T206	M105	1.0	mg/kg	M	002,004,012,014,019
TPH (C21-C35)	T206	M105	1.0	mg/kg	M	002,004,012,014,019
TPH (C35-C40)	T8	M105	1.0	mg/kg	N	002,004,012,014,019
TPH (Sum of Bands)	T85	M105			N	002,004,012,014,019
Moisture	T277	AR	0.1	%	N	002-007,009-014,016-019
Moisture @ 105 C	T162	AR	0.1	%	N	002-007,009-014,016-019
TPH (C10-C12) DW	T81	-	0.01	mg/l	U	001
TPH (C12-C16) DW	T81	-	0.01	mg/l	U	001
TPH (C16-C21) DW	T81	-	0.01	mg/l	U	001
TPH (C21-C35) DW	T81	-	0.01	mg/l	U	001
TPH (C35-C40)	T81	-	0.01	mg/l	N	001
TPH (Sum of Bands)	T85	-			N	001
Methyl tert-Butyl Ether	T209	M105	10.0	µg/kg	M	003,018
TPH (C5-C6 aliphatic)	T209	M105	0.1	mg/kg	N	003,018
TPH (C6-C8 aliphatic)	T209	M105	0.1	mg/kg	N	003,018
TPH (C8-C10 aliphatic)	T209	M105	0.1	mg/kg	N	003,018
TPH (C10-C12 aliphatic)	T206	M105	1.0	mg/kg	M	003,018
TPH (C12-C16 aliphatic)	T206	M105	2.0	mg/kg	M	003,018
TPH (C16-C21 aliphatic)	T206	M105	1.0	mg/kg	M	003,018
TPH (C21-C35 aliphatic)	T206	M105	4.0	mg/kg	M	003,018
TPH (C6-C7 aromatic)	T209	M105	0.1	mg/kg	N	003,018
TPH (C7-C8 aromatic)	T209	M105	0.1	mg/kg	N	003,018
TPH (C8-C10 aromatic)	T209	M105	0.1	mg/kg	N	003,018
TPH (C10-C12 aromatic)	T206	M105	1.0	mg/kg	M	003,018
TPH (C12-C16 aromatic)	T8	M105	1.0	mg/kg	N	003,018
TPH (C16-C21 aromatic)	T206	M105	1.0	mg/kg	M	003,018
TPH (C21-C35 aromatic)	T206	M105	1.0	mg/kg	M	003,018
1,1,1,2-Tetrachloroethane	T209	M105	50.0	µg/kg	M	002,012,014,018-019
1,1,1-Trichloroethane	T209	M105	50.0	µg/kg	M	002,012,014,018-019
1,1,2,2-Tetrachloroethane	T209	M105	50.0	µg/kg	U	002,012,014,018-019
1,1,2-Trichloroethane	T209	M105	50.0	µg/kg	M	002,012,014,018-019
1,1-Dichloroethane	T209	M105	50.0	µg/kg	M	002,012,014,018-019
1,1-Dichloroethylene	T209	M105	50.0	µg/kg	M	002,012,014,018-019
1,1-Dichloropropene	T209	M105	50.0	µg/kg	M	002,012,014,018-019
1,2,3-Trichloropropane	T209	M105	50.0	µg/kg	U	002,012,014,018-019
1,2,4-Trimethylbenzene	T209	M105	50.0	µg/kg	M	002,012,014,018-019
1,2-dibromoethane	T209	M105	50.0	µg/kg	M	002,012,014,018-019
1,2-Dichlorobenzene	T209	M105	50.0	µg/kg	M	002,012,014,018-019

Determinand	Method	Test Sample	LOD	Units	Symbol	SAL References
1,2-Dichloroethane	T209	M105	50.0	µg/kg	M	002,012,014,018-019
1,2-Dichloropropane	T209	M105	50.0	µg/kg	M	002,012,014,018-019
1,3,5-Trimethylbenzene	T209	M105	50.0	µg/kg	M	002,012,014,018-019
1,3-Dichlorobenzene	T209	M105	50.0	µg/kg	M	002,012,014,018-019
1,3-Dichloropropane	T209	M105	50.0	µg/kg	M	002,012,014,018-019
1,4-Dichlorobenzene	T209	M105	50.0	µg/kg	M	002,012,014,018-019
2,2-Dichloropropane	T209	M105	50.0	µg/kg	U	002,012,014,018-019
2-Chlorotoluene	T209	M105	50.0	µg/kg	U	002,012,014,018-019
4-Chlorotoluene	T209	M105	50.0	µg/kg	U	002,012,014,018-019
Benzene	T209	M105	10.0	µg/kg	M	002-003,012,014,018-019
Bromobenzene	T209	M105	50.0	µg/kg	M	002,012,014,018-019
Bromochloromethane	T209	M105	50.0	µg/kg	M	002,012,014,018-019
Bromodichloromethane	T209	M105	50.0	µg/kg	M	002,012,014,018-019
Bromoform	T209	M105	50.0	µg/kg	M	002,012,014,018-019
Bromomethane	T209	M105	50.0	µg/kg	U	002,012,014,018-019
Carbon tetrachloride	T209	M105	50.0	µg/kg	M	002,012,014,018-019
Chlorobenzene	T209	M105	50.0	µg/kg	M	002,012,014,018-019
Chlorodibromomethane	T209	M105	50.0	µg/kg	M	002,012,014,018-019
Chloroethane	T209	M105	50.0	µg/kg	M	002,012,014,018-019
Chloroform	T209	M105	50.0	µg/kg	M	002,012,014,018-019
Chloromethane	T209	M105	50.0	µg/kg	U	002,012,014,018-019
Cis-1,2-Dichloroethylene	T209	M105	50.0	µg/kg	M	002,012,014,018-019
Cis-1,3-Dichloropropene	T209	M105	50.0	µg/kg	M	002,012,014,018-019
Dibromomethane	T209	M105	50.0	µg/kg	M	002,012,014,018-019
Dichlorodifluoromethane	T209	M105	50.0	µg/kg	M	002,012,014,018-019
Dichloromethane	T209	M105	50.0	µg/kg	U	002,012,014,018-019
EthylBenzene	T209	M105	10.0	µg/kg	M	002-003,012,014,018-019
Isopropyl benzene	T209	M105	50.0	µg/kg	M	002,012,014,018-019
M/P Xylene	T209	M105	10.0	µg/kg	M	002-003,012,014,018-019
n-Propylbenzene	T209	M105	50.0	µg/kg	M	002,012,014,018-019
O Xylene	T209	M105	10.0	µg/kg	M	002-003,012,014,018-019
p-Isopropyltoluene	T209	M105	50.0	µg/kg	M	002,012,014,018-019
S-Butylbenzene	T209	M105	50.0	µg/kg	M	002,012,014,018-019
Styrene	T209	M105	50.0	µg/kg	U	002,012,014,018-019
T-Butylbenzene	T209	M105	50.0	µg/kg	M	002,012,014,018-019
Tetrachloroethylene	T209	M105	50.0	µg/kg	M	002,012,014,018-019
Toluene	T209	M105	10.0	µg/kg	M	002-003,012,014,018-019
Trans-1,2-Dichloroethene	T209	M105	50.0	µg/kg	M	002,012,014,018-019
Trans-1,3-Dichloropropene	T209	M105	50.0	µg/kg	M	002,012,014,018-019
Trichloroethylene	T209	M105	50.0	µg/kg	M	002,012,014,018-019
Trichlorofluoromethane	T209	M105	50.0	µg/kg	M	002,012,014,018-019
Vinyl chloride	T209	M105	50.0	µg/kg	M	002,012,014,018-019
Asbestos(Screen Only)	T161	AR			N	005,011,016,019
PCB (Aroclor)	T1	AR			N	019



SAL Reference: 164223 Project Site: Shop Lane, Kirkheaton Customer Reference: 9557/1/RW/001																	
Soil					Analysed as Soil												
MCERTS Preparation																	
SAL Reference		164223 002		164223 003		164223 004		164223 005		164223 006		164223 007		164223 009		164223 010	
Customer Sample Reference		TP1 1 D 0.6-1.5 COHESIVE MADE GROUND		TP1 4-6 DJV 1.9-3 GRANULAR MADE GROUND		TP1 8 J 3.7-3.7 WEATHERED COAL MEASURES		TP2 1-3 DJV 0.0-1.0 GRANULAR MADE GROUND		TP3 1-3 DDJ 0.15-0.9 ASH AND CLINKER		TP5 1 D 0.0-0.2 COHESIVE MADE GROUND		TP6 1-2 DJ 0.6-0.65 ASH AND CLINKER		TP6 3-4 DJ 0.65-1.1 COHESIVE MADE GROUND	
Top Depth		0.6		1.9		3.7		0.0		0.15		0.0		0.6		0.65	
Bottom Depth		1.5		3		3.7		1.0		0.9		0.2		0.65		1.1	
Type		Clay		Clay		Clay		Sand		Sand		Sand		Sand		Clay	
Determinand	Method	Test Sample	LOD	Units													
Moisture	T277	AR	0.1	%	22	12	12	9.4	8.3	15	21	14					
Moisture @ 105 C	T162	AR	0.1	%	17	11	12	10	8.7	12	18	11					

SAL Reference: 164223 Project Site: Shop Lane, Kirkheaton Customer Reference: 9557/1/RW/001																	
Soil					Analysed as Soil												
MCERTS Preparation																	
SAL Reference		164223 011		164223 012		164223 013		164223 014		164223 016		164223 017		164223 018		164223 019	
Customer Sample Reference		TP7 1 D 0.2-0.9 RUBBLE		TP8 2-4 DJV 0.0-0.55 RUBBLE		TP9 1-3 DJV 0.2-1.5 GRANULAR MADE GROUND		TP9 6-7 JV 1.5-1.7 RELICT TOPSOIL		TP11 1 D 0.15-0.7 GRANULAR MADE GROUND		TP12 1 D 0.0-2.3 GRANULAR MADE GROUND		TP12 6-9 JVDJ 2.4-2.9 POND SILT		TP13 1-5 DJVDJ 0.4-2.5 RUBBLE	
Top Depth		0.2		0.0		0.2		1.5		0.15		0.0		2.4		0.4	
Bottom Depth		0.9		0.55		1.5		1.7		0.7		2.3		2.9		2.5	
Type		Sand		Sand		Clay		Clay		Sand		Sand		Clay		Sand	
Determinand	Method	Test Sample	LOD	Units													
Moisture	T277	AR	0.1	%	17	18	12	23	11	10	44	11					
Moisture @ 105 C	T162	AR	0.1	%	8.0	21	11	21	12	10	29	11					

SAL Reference: 164223 Project Site: Shop Lane, Kirkheaton Customer Reference: 9557/1/RW/001													
Soil					Analysed as Soil								
Encia pH and Metals													
SAL Reference		164223 002		164223 003		164223 005		164223 006		164223 007			
Customer Sample Reference		TP1 1 D 0.6-1.5 COHESIVE MADE GROUND		TP1 4-6 DJV 1.9-3 GRANULAR MADE GROUND		TP2 1-3 DJV 0.0-1.0 GRANULAR MADE GROUND		TP3 1-3 DDJ 0.15-0.9 ASH AND CLINKER		TP5 1 D 0.0-0.2 COHESIVE MADE GROUND			
Top Depth		0.6		1.9		0.0		0.15		0.0			
Bottom Depth		1.5		3		1.0		0.9		0.2			
Type		Clay		Clay		Sand		Sand		Sand			
Determinand	Method	Test Sample	LOD	Units									
Arsenic	T6	M40	2	mg/kg	25	9	10	14	16				
Boron (water-soluble)	T6	AR	1	mg/kg	<1	<1	<1	<1	<1				
Cadmium	T6	M40	1	mg/kg	<1	<1	<1	<1	<1				
Chromium	T6	M40	1	mg/kg	34	40	25	21	39				
Copper	T6	M40	1	mg/kg	44	31	33	65	43				
Lead	T6	M40	1	mg/kg	110	31	310	32	650				
Mercury	T6	M40	1	mg/kg	<1	<1	<1	<1	1				
Nickel	T6	M40	1	mg/kg	32	47	26	12	35				
Selenium	T6	M40	3	mg/kg	<3	<3	<3	<3	<3				
Zinc	T6	M40	1	mg/kg	110	110	190	28	320				
pH	T7	AR			8.1	7.6	8.4	9.0	7.7				

SAL Reference: 164223					
Project Site: Shop Lane, Kirkheaton					
Customer Reference: 9557/1/RW/001					
Soil Analysed as Soil					
Enicia Speciated PAH					
SAL Reference		164223 003	164223 006	164223 018	164223 019
Customer Sample Reference		TP1 4-6 DJV 1.9-3 GRANULAR MADE GROUND	TP3 1-3 DDJ 0.15-0.9 ASH AND CLINKER	TP12 6-9 JVDJ 2.4-2.9 POND SILT	TP13 1-5 DJVDJ 0.4 - 2.5 RUBBLE
Top Depth		1.9	0.15	2.4	0.4
Bottom Depth		3	0.9	2.9	2.5
Type		Clay	Sand	Clay	Sand
Determinand	Method	Test Sample	LOD	Units	
Acenaphthene	T207	M105	0.1	mg/kg	<0.1
Acenaphthylene	T207	M105	0.1	mg/kg	<0.1
Anthracene	T207	M105	0.1	mg/kg	<0.1
Benzo(a)Anthracene	T207	M105	0.1	mg/kg	<0.1
Benzo(a)Pyrene	T207	M105	0.1	mg/kg	<0.1
Benzo(b)fluoranthene	T207	M105	0.1	mg/kg	0.1
Benzo(ghi)Perylene	T207	M105	0.1	mg/kg	<0.1
Benzo(k)fluoranthene	T207	M105	0.1	mg/kg	<0.1
Chrysene	T207	M105	0.1	mg/kg	<0.1
Dibenzo(ah)Anthracene	T207	M105	0.1	mg/kg	<0.1
Fluoranthene	T207	M105	0.1	mg/kg	0.2
Fluorene	T207	M105	0.1	mg/kg	<0.1
Indeno(123-cd)Pyrene	T207	M105	0.1	mg/kg	<0.1
Naphthalene	T207	M105	0.1	mg/kg	<0.1
Phenanthrene	T207	M105	0.1	mg/kg	<0.1
Pyrene	T207	M105	0.1	mg/kg	0.2
PAH(total)	T207	M105	0.1	mg/kg	0.5

SAL Reference: 164223									
Project Site: Shop Lane, Kirkheaton									
Customer Reference: 9557/1/RW/001									
Soil Analysed as Soil									
PAH (Total)									
SAL Reference		164223 002	164223 003	164223 004	164223 006	164223 012	164223 014	164223 018	164223 019
Customer Sample Reference		TP1 1 D 0.6-1.5 COHESIVE MADE GROUND	TP1 4-6 DJV 1.9-3 GRANULAR MADE GROUND	TP1 8 J 3.7-3.7 WEATHERED COAL MEASURES	TP3 1-3 DDJ 0.15-0.9 ASH AND CLINKER	TP8 2-4 DJV 0.0-0.55 RUBBLE	TP9 6-7 JV 1.5 -1.7 RELICT TOPSOIL	TP12 6-9 JVDJ 2.4-2.9 POND SILT	TP13 1-5 DJVDJ 0.4 - 2.5 RUBBLE
Top Depth		0.6	1.9	3.7	0.15	0.0	1.5	2.4	0.4
Bottom Depth		1.5	3	3.7	0.9	0.55	1.7	2.9	2.5
Type		Clay	Clay	Clay	Sand	Sand	Clay	Clay	Sand
Determinand	Method	Test Sample	LOD	Units					
PAH(total)	T207	M105	0.1	mg/kg	4.0	0.5	<0.1	9.0	190

SAL Reference: 164223
 Project Site: Shop Lane, Kirkheaton
 Customer Reference: 9557/1/RW/001

Soil
 Encia TPH (C6-C40) Basic Screen

SAL Reference	164223 002	164223 004	164223 012	164223 014	164223 019
Customer Sample Reference	TP1 1 D 0.6-1.5 COHESIVE MADE GROUND	TP1 8 J 3.7-3.7 WEATHERED COAL MEASURES	TP8 2-4 DJV 0.0-0.55 RUBBLE	TP9 6-7 JV 1.5-1.7 RELICT TOPSOIL	TP13 1-5 DJVDJ 0.4 - 2.5 RUBBLE
Top Depth	0.6	3.7	0.0	1.5	0.4
Bottom Depth	1.5	3.7	0.55	1.7	2.5
Type	Clay	Clay	Sand	Clay	Sand

Determinand	Method	Test Sample	LOD	Units	164223 002	164223 004	164223 012	164223 014	164223 019
Gasoline Range Organics	T42	AR	10	mg/kg	<10	<10	<10	<10	<10
TPH (C10-C12)	T206	M105	1	mg/kg	13	2	2	2	(9) <10
TPH (C12-C16)	T206	M105	1	mg/kg	91	16	18	11	(9) <10
TPH (C16-C21)	T206	M105	1	mg/kg	90	15	66	18	82
TPH (C21-C35)	T206	M105	1	mg/kg	39	2	140	57	500
TPH (C35-C40)	T8	M105	1	mg/kg	<1	<1	23	8	140
TPH (Sum of Bands)	T85	M105			230	35	250	96	720

SAL Reference: 164223
 Project Site: Shop Lane, Kirkheaton
 Customer Reference: 9557/1/RW/001

Soil
 Total Petroleum Hydrocarbons CWG

SAL Reference	164223 003	164223 018
Customer Sample Reference	TP1 4-6 DJV 1.9-3 GRANULAR MADE GROUND	TP12 6-9 JVDJ 2.4-2.9 POND SILT
Top Depth	1.9	2.4
Bottom Depth	3	2.9
Type	Clay	Clay

Determinand	Method	Test Sample	LOD	Units	164223 003	164223 018
Benzene	T209	M105	10	µg/kg	<10	<10
EthylBenzene	T209	M105	10	µg/kg	<10	<10
M/P Xylene	T209	M105	10	µg/kg	<10	<10
Methyl tert-Butyl Ether	T209	M105	10	µg/kg	<10	<10
O Xylene	T209	M105	10	µg/kg	<10	<10
Toluene	T209	M105	10	µg/kg	<10	<10
TPH (C5-C6 aliphatic)	T209	M105	0.100	mg/kg	<0.100	<0.100
TPH (C6-C8 aliphatic)	T209	M105	0.100	mg/kg	<0.100	<0.100
TPH (C8-C10 aliphatic)	T209	M105	0.100	mg/kg	<0.100	<0.100
TPH (C10-C12 aliphatic)	T206	M105	1	mg/kg	<1	<1
TPH (C12-C16 aliphatic)	T206	M105	2	mg/kg	<2	<2
TPH (C16-C21 aliphatic)	T206	M105	1	mg/kg	<1	<1
TPH (C21-C35 aliphatic)	T206	M105	4	mg/kg	<4	<4
TPH (C6-C7 aromatic)	T209	M105	0.100	mg/kg	<0.100	<0.100
TPH (C7-C8 aromatic)	T209	M105	0.100	mg/kg	<0.100	<0.100
TPH (C8-C10 aromatic)	T209	M105	0.100	mg/kg	<0.100	<0.100
TPH (C10-C12 aromatic)	T206	M105	1	mg/kg	<1	<1
TPH (C12-C16 aromatic)	T8	M105	1	mg/kg	<1	<1
TPH (C16-C21 aromatic)	T206	M105	1	mg/kg	<1	<1
TPH (C21-C35 aromatic)	T206	M105	1	mg/kg	<1	<1

SAL Reference: 164223

Project Site: Shop Lane, Kirkheaton

Customer Reference: 95571/RW/001

Soil
Analysed as Soil
Volatile Organic Compounds (USEPA 624) (MCERTS)

SAL Reference					164223 002	164223 012	164223 014	164223 018	164223 019
Customer Sample Reference					TP1 1 D 0.6-1.5 COHESIVE MADE GROUND	TP8 2-4 DJV 0.0-0.55 RUBBLE	TP9 6-7 JV 1.5-1.7 RELICT TOPSOIL	TP12 6-9 JVDJ 2.4-2.9 POND SILT	TP13 1-5 DJVDJ 0.4 - 2.5 RUBBLE
Top Depth					0.6	0.0	1.5	2.4	0.4
Bottom Depth					1.5	0.55	1.7	2.9	2.5
Type					Clay	Sand	Clay	Clay	Sand
Determinand	Method	Test Sample	LOD	Units					
1,1,1,2-Tetrachloroethane	T209	M105	50	µg/kg	<50	<50	<50	<50	<50
1,1,1-Trichloroethane	T209	M105	50	µg/kg	<50	<50	<50	<50	<50
1,1,2,2-Tetrachloroethane	T209	M105	50	µg/kg	<50	<50	<50	<50	<50
1,1,2-Trichloroethane	T209	M105	50	µg/kg	<50	<50	<50	<50	<50
1,1-Dichloroethane	T209	M105	50	µg/kg	<50	<50	<50	<50	<50
1,1-Dichloroethylene	T209	M105	50	µg/kg	<50	<50	<50	<50	<50
1,1-Dichloropropene	T209	M105	50	µg/kg	<50	<50	<50	<50	<50
1,2,3-Trichloropropane	T209	M105	50	µg/kg	<50	<50	<50	<50	<50
1,2,4-Trimethylbenzene	T209	M105	50	µg/kg	<50	<50	<50	<50	<50
1,2-dibromoethane	T209	M105	50	µg/kg	<50	<50	<50	<50	<50
1,2-Dichlorobenzene	T209	M105	50	µg/kg	<50	<50	<50	<50	<50
1,2-Dichloroethane	T209	M105	50	µg/kg	<50	<50	<50	<50	<50
1,2-Dichloropropane	T209	M105	50	µg/kg	<50	<50	<50	<50	<50
1,3,5-Trimethylbenzene	T209	M105	50	µg/kg	<50	<50	<50	<50	<50
1,3-Dichlorobenzene	T209	M105	50	µg/kg	<50	<50	<50	<50	<50
1,3-Dichloropropane	T209	M105	50	µg/kg	<50	<50	<50	<50	<50
1,4-Dichlorobenzene	T209	M105	50	µg/kg	<50	<50	<50	<50	<50
2,2-Dichloropropane	T209	M105	50	µg/kg	<50	<50	<50	<50	<50
2-Chlorotoluene	T209	M105	50	µg/kg	<50	<50	<50	<50	<50
4-Chlorotoluene	T209	M105	50	µg/kg	<50	<50	<50	<50	<50
Benzene	T209	M105	10	µg/kg	<10	<10	<10	<10	<10
Bromobenzene	T209	M105	50	µg/kg	<50	<50	<50	<50	<50
Bromochloromethane	T209	M105	50	µg/kg	<50	<50	<50	<50	<50
Bromodichloromethane	T209	M105	50	µg/kg	<50	<50	<50	<50	<50
Bromoform	T209	M105	50	µg/kg	<50	<50	<50	<50	<50
Bromomethane	T209	M105	50	µg/kg	<50	<50	<50	<50	<50
Carbon tetrachloride	T209	M105	50	µg/kg	<50	<50	<50	<50	<50
Chlorobenzene	T209	M105	50	µg/kg	<50	<50	<50	<50	<50
Chlorodibromomethane	T209	M105	50	µg/kg	<50	<50	<50	<50	<50
Chloroethane	T209	M105	50	µg/kg	<50	<50	<50	<50	<50
Chloroform	T209	M105	50	µg/kg	<50	<50	<50	<50	<50
Chloromethane	T209	M105	50	µg/kg	<50	<50	<50	<50	<50
Cis-1,2-Dichloroethylene	T209	M105	50	µg/kg	<50	<50	<50	<50	<50
Cis-1,3-Dichloropropene	T209	M105	50	µg/kg	<50	<50	<50	<50	<50
Dibromomethane	T209	M105	50	µg/kg	<50	<50	<50	<50	<50
Dichlorodifluoromethane	T209	M105	50	µg/kg	<50	<50	<50	<50	<50
Dichloromethane	T209	M105	50	µg/kg	(13) <50	(13) <50	(13) <50	(13) <50	(13) <50
EthylBenzene	T209	M105	10	µg/kg	<10	<10	<10	<10	<10
Isopropyl benzene	T209	M105	50	µg/kg	<50	<50	<50	<50	<50
M/P Xylene	T209	M105	10	µg/kg	<10	<10	<10	<10	<10
n-Propylbenzene	T209	M105	50	µg/kg	<50	<50	<50	<50	<50
O Xylene	T209	M105	10	µg/kg	<10	<10	<10	<10	<10
p-Isopropyltoluene	T209	M105	50	µg/kg	<50	<50	<50	<50	<50
S-Butylbenzene	T209	M105	50	µg/kg	<50	<50	<50	<50	<50
Styrene	T209	M105	50	µg/kg	<50	<50	<50	<50	<50
T-Butylbenzene	T209	M105	50	µg/kg	<50	<50	<50	<50	<50
Tetrachloroethylene	T209	M105	50	µg/kg	<50	<50	<50	<50	<50
Toluene	T209	M105	10	µg/kg	<10	<10	<10	<10	<10
Trans-1,2-Dichloroethene	T209	M105	50	µg/kg	<50	<50	<50	<50	<50
Trans-1,3-Dichloropropene	T209	M105	50	µg/kg	<50	<50	<50	<50	<50
Trichloroethylene	T209	M105	50	µg/kg	<50	<50	<50	<50	<50
Trichlorofluoromethane	T209	M105	50	µg/kg	<50	<50	<50	<50	<50
Vinyl chloride	T209	M105	50	µg/kg	<50	<50	<50	<50	<50

SAL Reference: 164223													
Project Site: Shop Lane, Kirkheaton													
Customer Reference: 9557/1/RW/001													
Leachate					Analysed as Water								
Encia pH and Metals													
SAL Reference		164223 003	164223 005	164223 006	164223 007	164223 009	164223 010	164223 013	164223 018	164223 019			
Customer Sample Reference		TP1 4-6 DJV 1.9-3 GRANULAR MADE GROUND	TP2 1-3 DJV 0.0-1.0 GRANULAR MADE GROUND	TP3 1-3 DDJ 0.15-0.9 ASH AND CLINKER	TP5 1 D 0.0-0.2 COHESIVE MADE GROUND	TP6 1-2 DJ 0.6-0.65 ASH AND CLINKER	TP6 3-4 DJ 0.65-1.1 COHESIVE MADE GROUND	TP9 1-3 DJV 0.2-1.5 GRANULAR MADE GROUND	TP12 6-9 JVDJ 2.4-2.9 POND SILT	TP13 1-5 DJVDJ 0.4 - 2.5 RUBBLE			
Top Depth		1.9	0.0	0.15	0.0	0.6	0.65	0.2	2.4	0.4			
Bottom Depth		3	1.0	0.9	0.2	0.65	1.1	1.5	2.9	2.5			
Type		Clay	Sand	Sand	Sand	Sand	Clay	Clay	Clay	Sand			
Determinand	Method	Test Sample	LOD	Units									
As (Dissolved)	T281	10:1	0.2	µg/l	<0.2	0.8	2.4	1.0	3.1	0.3	2.7	6.2	17
Boron	T6	10:1	0.01	mg/l	<0.01	0.02	0.07	0.02	0.02	<0.01	<0.01	0.02	0.06
Cd (Dissolved)	T281	10:1	0.02	µg/l	<0.02	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.03
Cr (Dissolved)	T281	10:1	1	µg/l	1	3	2	4	2	1	5	<1	3
Cu (Dissolved)	T281	10:1	0.5	µg/l	<0.5	1.6	0.7	1.8	0.6	2.5	1.5	0.6	1.9
Pb (Dissolved)	T281	10:1	0.3	µg/l	<0.3	3.6	0.4	3.5	0.4	0.5	1.9	1.9	0.5
Hg (Dissolved)	T281	10:1	0.05	µg/l	<0.05	<0.05	<0.05	0.07	<0.05	<0.05	<0.05	<0.05	<0.05
Ni (Dissolved)	T281	10:1	1	µg/l	<1	3	1	2	<1	<1	1	<1	5
Se (Dissolved)	T281	10:1	0.5	µg/l	<0.5	0.7	1.3	0.9	<0.5	<0.5	0.7	<0.5	9.5
Zn (Dissolved)	T281	10:1	2	µg/l	<2	2	<2	3	2	2	<2	<2	3
pH	T7	10:1			7.8	9.1	9.1	8.0	9.4	8.4	10.5	7.1	8.5

SAL Reference: 164223				
Project Site: Shop Lane, Kirkheaton				
Customer Reference: 9557/1/RW/001				
Water		Analysed as Water		
Encia pH and Metals				
SAL Reference		164223 001		
Customer Sample Reference		TP8 1 W 0.1 PERCHED WATER		
Top Depth		0.1		
Bottom Depth		0.1		
Determinand	Method	Test Sample	LOD	Units
As (Dissolved)	T281	-	0.2	µg/l
Boron	T6	-	0.01	mg/l
Cd (Dissolved)	T281	-	0.02	µg/l
Cr (Dissolved)	T281	-	1	µg/l
Cu (Dissolved)	T281	-	0.5	µg/l
Pb (Dissolved)	T281	-	0.3	µg/l
Hg (Dissolved)	T281	-	0.05	µg/l
Ni (Dissolved)	T281	-	1	µg/l
Se (Dissolved)	T281	-	0.5	µg/l
Zn (Dissolved)	T281	-	2	µg/l
pH	T7	-		

SAL Reference: 164223				
Project Site: Shop Lane, Kirkheaton				
Customer Reference: 9557/1/RW/001				
Water		Analysed as Water		
Miscellaneous				
SAL Reference		164223 001		
Customer Sample Reference		TP8 1 W 0.1 PERCHED WATER		
Top Depth		0.1		
Bottom Depth		0.1		
Determinand	Method	Test Sample	LOD	Units
Ammoniacal nitrogen	T4	-	0.05	mg/l



Scientific Analysis Laboratories

Certificate of Analysis

Hadfield House
Hadfield Street
Cornbrook
Manchester
M16 9FE
Tel : 0161 874 2400
Fax : 0161 874 2468

Scientific Analysis Laboratories is a
limited company registered in England and
Wales (No 2514788) whose address is at
Hadfield House, Hadfield Street, Manchester M16 9FE

Report Number: 165447-1

Date of Report: 27-May-2009

Customer: ENCIA Environmental Limited
Encia House
Audby Lane
Wetherby
West Yorkshire
LS22 7RD

Customer Contact: Mr Rupert Wilks

Customer Job Reference: 9557

Customer Purchase Order: 51587-ZB-006674

Customer Site Reference: Shop Lane Kirkheaton

Date Job Recieved at SAL: 19-May-2009

Date Analysis Started: 21-May-2009

Date Analysis Completed: 27-May-2009

The results reported relate to samples received in the laboratory
Opinions and interpretations expressed herein are outside the scope of UKAS accreditation
This report should not be reproduced except in full without the written approval of the laboratory
Tests covered by this certificate were conducted in accordance with SAL SOPs



Report checked
and authorised by :
Amelia McVennon
Project Manager

Issued by :

Index to symbols used in this report

Value	Description
10:1	Leachate
M105	Analysis conducted on an "as received" aliquot. Results are reported on a dry weight basis where moisture content was determined by assisted drying of sample at 105C
-	Not Required
M40	Analysis conducted on sample assisted dried at no more than 40C. Results are reported on a dry weight basis.
AR	As Received
N.D.	Not Detected
13	Results have been blank corrected.
U	Analysis is UKAS accredited
M	Analysis is MCERTS accredited
N	Analysis is not accredited

Notes

Fill samples are outside the scope of MCERTS accreditation. Results are UKAS only.

Methods

Value	Description
T11	IC
T54	GC/MS (Headspace)
T207	GC/MS(MCERTS)
T162	Grav (1 Dec) (105 C)
T85	Calc
T42	PID
T6	ICP/OES
T7	Probe
T277	Grav (1 Dec) (40 C)
T281	ICP/MS (Filtered)
T8	GC/FID
T206	GC/FID (MCERTS)
T209	GC/MS(Head Space)(MCERTS)

Accreditation Summary

Determinand	Method	Test Sample	LOD	Units	Symbol	SAL References
Benzene	T209	M105	10.0	µg/kg	U	002
EthylBenzene	T209	M105	10.0	µg/kg	U	002
Gasoline Range Organics	T54	-	100.0	µg/kg	N	002-003
M/P Xylene	T209	M105	10.0	µg/kg	U	002
Methyl tert-Butyl Ether	T209	M105	10.0	µg/kg	U	002
Methyl tert-Butyl Ether	T209	M105	10.0	µg/kg	M	003
O Xylene	T209	M105	10.0	µg/kg	U	002
Toluene	T209	M105	10.0	µg/kg	U	002
Chloride (2:1)	T11	M40	0.5	mg/l	N	001-003
Magnesium water soluble	T6	-	0.1	g/l	N	001-003
Nitrate (2:1)	T11	M40	0.5	mg/l	N	001-003
SO4(2:1)	T6	-	0.1	g/l	N	001-003
As (Dissolved)	T281	10:1	0.2	µg/l	U	001,003
Boron	T6	10:1	0.01	mg/l	N	001,003
Cd (Dissolved)	T281	10:1	0.02	µg/l	U	001,003
Cr (Dissolved)	T281	10:1	1.0	µg/l	U	001,003
Cu (Dissolved)	T281	10:1	0.5	µg/l	U	001,003
Pb (Dissolved)	T281	10:1	0.3	µg/l	U	001,003
Hg (Dissolved)	T281	10:1	0.05	µg/l	U	001,003
Ni (Dissolved)	T281	10:1	1.0	µg/l	U	001,003
Se (Dissolved)	T281	10:1	0.5	µg/l	U	001,003
Zn (Dissolved)	T281	10:1	2.0	µg/l	U	001,003
pH	T7	10:1			U	001,003
Arsenic	T6	M40	2.0	mg/kg	M	001,003
Boron (water-soluble)	T6	AR	1.0	mg/kg	N	001,003

Determinand	Method	Test Sample	LOD	Units	Symbol	SAL References
Cadmium	T6	M40	1.0	mg/kg	M	001,003
Chromium	T6	M40	1.0	mg/kg	M	001,003
Copper	T6	M40	1.0	mg/kg	M	001,003
Lead	T6	M40	1.0	mg/kg	M	001,003
Mercury	T6	M40	1.0	mg/kg	M	001,003
Nickel	T6	M40	1.0	mg/kg	M	001,003
Selenium	T6	M40	3.0	mg/kg	M	001,003
Zinc	T6	M40	1.0	mg/kg	M	001,003
pH	T7	AR			M	001,003
Acenaphthene	T207	M105	0.1	mg/kg	U	002
Acenaphthene	T207	M105	0.1	mg/kg	M	003
Acenaphthylene	T207	M105	0.1	mg/kg	U	002-003
Anthracene	T207	M105	0.1	mg/kg	U	002-003
Benzo(a)Anthracene	T207	M105	0.1	mg/kg	U	002
Benzo(a)Anthracene	T207	M105	0.1	mg/kg	M	003
Benzo(a)Pyrene	T207	M105	0.1	mg/kg	U	002
Benzo(a)Pyrene	T207	M105	0.1	mg/kg	M	003
Benzo(b)fluoranthene	T207	M105	0.1	mg/kg	U	002
Benzo(b)fluoranthene	T207	M105	0.1	mg/kg	M	003
Benzo(ghi)Perylene	T207	M105	0.1	mg/kg	U	002
Benzo(ghi)Perylene	T207	M105	0.1	mg/kg	M	003
Benzo(k)fluoranthene	T207	M105	0.1	mg/kg	U	002
Benzo(k)fluoranthene	T207	M105	0.1	mg/kg	M	003
Chrysene	T207	M105	0.1	mg/kg	U	002
Chrysene	T207	M105	0.1	mg/kg	M	003
Dibenzo(ah)Anthracene	T207	M105	0.1	mg/kg	U	002
Dibenzo(ah)Anthracene	T207	M105	0.1	mg/kg	M	003
Fluoranthene	T207	M105	0.1	mg/kg	U	002
Fluoranthene	T207	M105	0.1	mg/kg	M	003
Fluorene	T207	M105	0.1	mg/kg	U	002
Fluorene	T207	M105	0.1	mg/kg	M	003
Indeno(123-cd)Pyrene	T207	M105	0.1	mg/kg	U	002
Indeno(123-cd)Pyrene	T207	M105	0.1	mg/kg	M	003
Naphthalene	T207	M105	0.1	mg/kg	U	002
Naphthalene	T207	M105	0.1	mg/kg	M	003
Phenanthrene	T207	M105	0.1	mg/kg	U	002
Phenanthrene	T207	M105	0.1	mg/kg	M	003
Pyrene	T207	M105	0.1	mg/kg	U	002
Pyrene	T207	M105	0.1	mg/kg	M	003
Gasoline Range Organics	T42	AR	10.0	mg/kg	N	001-003
TPH (C10-C12)	T206	M105	1.0	mg/kg	M	001,003
TPH (C10-C12)	T206	M105	1.0	mg/kg	U	002
TPH (C12-C16)	T206	M105	1.0	mg/kg	M	001,003
TPH (C12-C16)	T206	M105	1.0	mg/kg	U	002
TPH (C16-C21)	T206	M105	1.0	mg/kg	M	001,003
TPH (C16-C21)	T206	M105	1.0	mg/kg	U	002
TPH (C21-C35)	T206	M105	1.0	mg/kg	M	001,003
TPH (C21-C35)	T206	M105	1.0	mg/kg	U	002
TPH (C35-C40)	T8	M105	1.0	mg/kg	N	001-003
TPH (Sum of Bands)	T85	M105			N	001-003
PAH(total)	T207	M105	0.1	mg/kg	U	001
Moisture	T277	AR	0.1	%	N	001-003
Moisture @ 105 C	T162	AR	0.1	%	N	001-003
1,1,1,2-Tetrachloroethane	T209	M105	50.0	µg/kg	M	001
1,1,1-Trichloroethane	T209	M105	50.0	µg/kg	M	001
1,1,2,2-Tetrachloroethane	T209	M105	50.0	µg/kg	U	001
1,1,2-Trichloroethane	T209	M105	50.0	µg/kg	M	001
1,1-Dichloroethane	T209	M105	50.0	µg/kg	M	001
1,1-Dichloroethylene	T209	M105	50.0	µg/kg	M	001
1,1-Dichloropropene	T209	M105	50.0	µg/kg	M	001
1,2,3-Trichloropropane	T209	M105	50.0	µg/kg	U	001
1,2,4-Trimethylbenzene	T209	M105	50.0	µg/kg	M	001
1,2-dibromoethane	T209	M105	50.0	µg/kg	M	001
1,2-Dichlorobenzene	T209	M105	50.0	µg/kg	M	001
1,2-Dichloroethane	T209	M105	50.0	µg/kg	M	001
1,2-Dichloropropane	T209	M105	50.0	µg/kg	M	001
1,3,5-Trimethylbenzene	T209	M105	50.0	µg/kg	M	001
1,3-Dichlorobenzene	T209	M105	50.0	µg/kg	M	001
1,3-Dichloropropane	T209	M105	50.0	µg/kg	M	001
1,4-Dichlorobenzene	T209	M105	50.0	µg/kg	M	001

Determinand	Method	Test Sample	LOD	Units	Symbol	SAL References
2,2-Dichloropropane	T209	M105	50.0	µg/kg	U	001
2-Chlorotoluene	T209	M105	50.0	µg/kg	U	001
4-Chlorotoluene	T209	M105	50.0	µg/kg	U	001
Benzene	T209	M105	10.0	µg/kg	M	001,003
Bromobenzene	T209	M105	50.0	µg/kg	M	001
Bromochloromethane	T209	M105	50.0	µg/kg	M	001
Bromodichloromethane	T209	M105	50.0	µg/kg	M	001
Bromoform	T209	M105	50.0	µg/kg	M	001
Bromomethane	T209	M105	50.0	µg/kg	U	001
Carbon tetrachloride	T209	M105	50.0	µg/kg	M	001
Chlorobenzene	T209	M105	50.0	µg/kg	M	001
Chlorodibromomethane	T209	M105	50.0	µg/kg	M	001
Chloroethane	T209	M105	50.0	µg/kg	M	001
Chloroform	T209	M105	50.0	µg/kg	M	001
Chloromethane	T209	M105	50.0	µg/kg	U	001
Cis-1,2-Dichloroethylene	T209	M105	50.0	µg/kg	M	001
Cis-1,3-Dichloropropene	T209	M105	50.0	µg/kg	M	001
Dibromomethane	T209	M105	50.0	µg/kg	M	001
Dichlorodifluoromethane	T209	M105	50.0	µg/kg	M	001
Dichloromethane	T209	M105	50.0	µg/kg	U	001
EthylBenzene	T209	M105	10.0	µg/kg	M	001,003
Isopropyl benzene	T209	M105	50.0	µg/kg	M	001
M/P Xylene	T209	M105	10.0	µg/kg	M	001,003
n-Propylbenzene	T209	M105	50.0	µg/kg	M	001
O Xylene	T209	M105	10.0	µg/kg	M	001,003
p-Isopropyltoluene	T209	M105	50.0	µg/kg	M	001
S-Butylbenzene	T209	M105	50.0	µg/kg	M	001
Styrene	T209	M105	50.0	µg/kg	U	001
T-Butylbenzene	T209	M105	50.0	µg/kg	M	001
Tetrachloroethylene	T209	M105	50.0	µg/kg	M	001
Toluene	T209	M105	10.0	µg/kg	M	001,003
Trans-1,2-Dichloroethene	T209	M105	50.0	µg/kg	M	001
Trans-1,3-Dichloropropene	T209	M105	50.0	µg/kg	M	001
Trichloroethylene	T209	M105	50.0	µg/kg	M	001
Trichlorofluoromethane	T209	M105	50.0	µg/kg	M	001
Vinyl chloride	T209	M105	50.0	µg/kg	M	001



SAL Reference: 165447							
Project Site: Shop Lane Kirkheaton							
Customer Reference: 9557							
Soil				Analysed as Soil			
MCERTS Preparation							
SAL Reference		165447 001		165447 002		165447 003	
Customer Sample Reference		TP14 0-1 GRANULAR MADE GROUND		TP15 0.2-0.8 MUDSTONE		TP16 0-1 GRANULAR MADE GROUND	
Top Depth		0		0.2		0	
Bottom Depth		1		0.8		1	
Type		Clay		Fill		Sand	
Determinand	Method	Test Sample	LOD	Units			
Moisture	T277	AR	0.1	%	10	9.6	12
Moisture @ 105 C	T162	AR	0.1	%	10	13	13

SAL Reference: 165447							
Project Site: Shop Lane Kirkheaton							
Customer Reference: 9557							
Soil				Analysed as Soil			
Encia pH and Metals							
SAL Reference		165447 001		165447 003			
Customer Sample Reference		TP14 0-1 GRANULAR MADE GROUND		TP16 0-1 GRANULAR MADE GROUND			
Top Depth		0		0			
Bottom Depth		1		1			
Type		Clay		Sand			
Determinand	Method	Test Sample	LOD	Units			
Arsenic	T6	M40	2	mg/kg	5	6	
Boron (water-soluble)	T6	AR	1	mg/kg	4	<1	
Cadmium	T6	M40	1	mg/kg	<1	1	
Chromium	T6	M40	1	mg/kg	46	50	
Copper	T6	M40	1	mg/kg	22	22	
Lead	T6	M40	1	mg/kg	31	35	
Mercury	T6	M40	1	mg/kg	<1	<1	
Nickel	T6	M40	1	mg/kg	40	47	
Selenium	T6	M40	3	mg/kg	<3	<3	
Zinc	T6	M40	1	mg/kg	91	130	
pH	T7	AR			8.7	7.4	

SAL Reference: 165447					
Project Site: Shop Lane Kirkheaton					
Customer Reference: 9557					
Soil Analysed as Soil					
Encia Speciated PAH					
SAL Reference		165447 002		165447 003	
Customer Sample Reference		TP15 0.2-0.8 MUDSTONE		TP16 0-1 GRANULAR MADE GROUND	
Top Depth		0.2		0	
Bottom Depth		0.8		1	
Type		Fill		Sand	
Determinand	Method	Test Sample	LOD	Units	
Acenaphthene	T207	M105	0.1	mg/kg	<0.1
Acenaphthylene	T207	M105	0.1	mg/kg	<0.1
Anthracene	T207	M105	0.1	mg/kg	<0.1
Benzo(a)Anthracene	T207	M105	0.1	mg/kg	<0.1
Benzo(a)Pyrene	T207	M105	0.1	mg/kg	<0.1
Benzo(b)fluoranthene	T207	M105	0.1	mg/kg	<0.1
Benzo(ghi)Perylene	T207	M105	0.1	mg/kg	<0.1
Benzo(k)fluoranthene	T207	M105	0.1	mg/kg	<0.1
Chrysene	T207	M105	0.1	mg/kg	<0.1
Dibenzo(ah)Anthracene	T207	M105	0.1	mg/kg	<0.1
Fluoranthene	T207	M105	0.1	mg/kg	<0.1
Fluorene	T207	M105	0.1	mg/kg	<0.1
Indeno(123-cd)Pyrene	T207	M105	0.1	mg/kg	<0.1
Naphthalene	T207	M105	0.1	mg/kg	<0.1
Phenanthrene	T207	M105	0.1	mg/kg	<0.1
Pyrene	T207	M105	0.1	mg/kg	<0.1
PAH(total)	T207	M105	0.1	mg/kg	<0.1

SAL Reference: 165447					
Project Site: Shop Lane Kirkheaton					
Customer Reference: 9557					
Soil Analysed as Soil					
PAH (Total)					
SAL Reference		165447 001		165447 002	
Customer Sample Reference		TP14 0-1 GRANULAR MADE GROUND		TP15 0.2-0.8 MUDSTONE	
Top Depth		0		0.2	
Bottom Depth		1		0.8	
Type		Clay		Fill	
Determinand	Method	Test Sample	LOD	Units	
PAH(total)	T207	M105	0.1	mg/kg	<0.1

SAL Reference: 165447					
Project Site: Shop Lane Kirkheaton					
Customer Reference: 9557					
Soil Analysed as Soil					
Encia TPH (C6-C40) Basic Screen					
SAL Reference		165447 001		165447 002	
Customer Sample Reference		TP14 0-1 GRANULAR MADE GROUND		TP15 0.2-0.8 MUDSTONE	
Top Depth		0		0.2	
Bottom Depth		1		0.8	
Type		Clay		Fill	
Determinand	Method	Test Sample	LOD	Units	
Gasoline Range Organics	T42	AR	10	mg/kg	<10
TPH (C10-C12)	T206	M105	1	mg/kg	<1
TPH (C12-C16)	T206	M105	1	mg/kg	<1
TPH (C16-C21)	T206	M105	1	mg/kg	<1
TPH (C21-C35)	T206	M105	1	mg/kg	<1
TPH (C35-C40)	T8	M105	1	mg/kg	<1
TPH (Sum of Bands)	T85	M105			N.D.

SAL Reference: 165447
 Project Site: Shop Lane Kirkheaton
 Customer Reference: 9557

Soil
 Analysed as Soil
 Volatile Organic Compounds (USEPA 624) (MCERTS)

SAL Reference					165447 001
Customer Sample Reference					TP14 0-1 GRANULAR MADE GROUND
Top Depth					0
Bottom Depth					1
Type					Clay
Determinand	Method	Test Sample	LOD	Units	
1,1,1,2-Tetrachloroethane	T209	M105	50	µg/kg	<50
1,1,1-Trichloroethane	T209	M105	50	µg/kg	<50
1,1,2,2-Tetrachloroethane	T209	M105	50	µg/kg	<50
1,1,2-Trichloroethane	T209	M105	50	µg/kg	<50
1,1-Dichloroethane	T209	M105	50	µg/kg	<50
1,1-Dichloroethylene	T209	M105	50	µg/kg	<50
1,1-Dichloropropene	T209	M105	50	µg/kg	<50
1,2,3-Trichloropropane	T209	M105	50	µg/kg	<50
1,2,4-Trimethylbenzene	T209	M105	50	µg/kg	<50
1,2-dibromoethane	T209	M105	50	µg/kg	<50
1,2-Dichlorobenzene	T209	M105	50	µg/kg	<50
1,2-Dichloroethane	T209	M105	50	µg/kg	<50
1,2-Dichloropropane	T209	M105	50	µg/kg	<50
1,3,5-Trimethylbenzene	T209	M105	50	µg/kg	<50
1,3-Dichlorobenzene	T209	M105	50	µg/kg	<50
1,3-Dichloropropane	T209	M105	50	µg/kg	<50
1,4-Dichlorobenzene	T209	M105	50	µg/kg	<50
2,2-Dichloropropane	T209	M105	50	µg/kg	<50
2-Chlorotoluene	T209	M105	50	µg/kg	<50
4-Chlorotoluene	T209	M105	50	µg/kg	<50
Benzene	T209	M105	10	µg/kg	<10
Bromobenzene	T209	M105	50	µg/kg	<50
Bromochloromethane	T209	M105	50	µg/kg	<50
Bromodichloromethane	T209	M105	50	µg/kg	<50
Bromoform	T209	M105	50	µg/kg	<50
Bromomethane	T209	M105	50	µg/kg	<50
Carbon tetrachloride	T209	M105	50	µg/kg	<50
Chlorobenzene	T209	M105	50	µg/kg	<50
Chlorodibromomethane	T209	M105	50	µg/kg	<50
Chloroethane	T209	M105	50	µg/kg	<50
Chloroform	T209	M105	50	µg/kg	<50
Chloromethane	T209	M105	50	µg/kg	<50
Cis-1,2-Dichloroethylene	T209	M105	50	µg/kg	<50
Cis-1,3-Dichloropropene	T209	M105	50	µg/kg	<50
Dibromomethane	T209	M105	50	µg/kg	<50
Dichlorodifluoromethane	T209	M105	50	µg/kg	<50
Dichloromethane	T209	M105	50	µg/kg	⁽¹³⁾ <50
EthylBenzene	T209	M105	10	µg/kg	<10
Isopropyl benzene	T209	M105	50	µg/kg	<50
M/P Xylene	T209	M105	10	µg/kg	<10
n-Propylbenzene	T209	M105	50	µg/kg	<50
O Xylene	T209	M105	10	µg/kg	<10
p-Isopropyltoluene	T209	M105	50	µg/kg	<50
S-Butylbenzene	T209	M105	50	µg/kg	<50
Styrene	T209	M105	50	µg/kg	<50
T-Butylbenzene	T209	M105	50	µg/kg	<50
Tetrachloroethylene	T209	M105	50	µg/kg	<50
Toluene	T209	M105	10	µg/kg	<10
Trans-1,2-Dichloroethene	T209	M105	50	µg/kg	<50
Trans-1,3-Dichloropropene	T209	M105	50	µg/kg	<50
Trichloroethylene	T209	M105	50	µg/kg	<50
Trichlorofluoromethane	T209	M105	50	µg/kg	<50
Vinyl chloride	T209	M105	50	µg/kg	<50



Scientific Analysis Laboratories

Certificate of Analysis

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Scientific Analysis Laboratories is a
limited company registered in England and
Wales (No 2514788) whose address is at
Hadfield House, Hadfield Street, Manchester M16 9FE

Report Number: 166643-2

Date of Report: 05-Jun-2009

Customer: ENCIA Environmental Limited
Encia House
Audby Lane
Wetherby
West Yorkshire
LS22 7RD

Customer Contact: Mr Rupert Wilks

Customer Job Reference: 9557/1/RW/001

Customer Purchase Order: 51587-ZB-006718

Customer Site Reference: Shop Lane, Kirkheaton

Date Job Recieved at SAL: 05-May-2009

Date Analysis Started: 03-Jun-2009

Date Analysis Completed: 05-Jun-2009

The results reported relate to samples received in the laboratory
Opinions and interpretations expressed herein are outside the scope of UKAS accreditation
This report should not be reproduced except in full without the written approval of the laboratory
Tests covered by this certificate were conducted in accordance with SAL SOPs



Report checked
and authorised by :
Amelia McVennon
Project Manager

Issued by :

Index to symbols used in 166643-2

Value	Description
-	Not Required
AR	As Received
U	Analysis is UKAS accredited

Methods

Value	Description
T1	GC/MS (HR)

Accreditation Summary

Determinand	Method	Test Sample	LOD	Units	Symbol	SAL References
PCB (Total Tri-Hepta)	T1	-	0.05	µg/kg	U	001



APPENDIX D

RISK CATEGORISATION TABLES

Severity of Consequence

Severe	Short term (acute) risks to human health, likely to result in significant harm. Major pollution of (watercourses or groundwater)
Medium	Long-term (Chronic) damage (significant harm) to human health. Pollution of sensitive water resources.
Mild	Pollution of non-sensitive water resources.
Minor	Non-permanent health effects easily prevented by use of personal protective equipment during site works.

Probability of Risk Event Occurring

High Likelihood	There is a pollutant linkage and an event that either appears very likely in the short term, almost inevitable in the long term, or there is evidence of harm or pollution at the receptor.
Likely	There is a pollution linkage and all the elements are present and in the right place, so that a risk event is possible in the short term and likely over the long term.
Low Likelihood	There is a pollution linkage and circumstances are possible under which a risk event could occur. However, it is not certain that such an event would take place even over a longer period, and even less likely in the short term.
unlikely	There is a pollution linkage, but circumstances are such that it is improbable that an event would occur even in the very long term.

Comparison of Probability Against Severity of Consequence

		Severity of Consequence			
		Severe	Medium	Mild	Minor
Probability	High Likelihood	Very High Risk	High Risk	Moderate Risk	Moderate/ Low Risk
	Likely	High Risk	Moderate Risk	Moderate/ Low Risk	Low Risk
	Low Likelihood	Moderate Risk	Moderate/ Low Risk	Low Risk	Very Low Risk
	Unlikely	Moderate/ Low Risk	Low Risk	Very Low Risk	Very Low Risk

Risk Categories - Definitions

Very High Risk	High probability that severe harm could arise to a receptor, or there is evidence that severe harm is already occurring. Urgent investigation is required and urgent remediation is likely to be required.
High Risk	Harm is likely to arise to a receptor. Urgent investigation is required and remediation may be necessary in the short term and likely over the longer term.
Moderate Risk	Possible that harm could arise to a receptor, but low likelihood that such harm would be severe. Harm is likely to be mild. Investigation normally required to clarify risk. Some remedial works may be required in the long-term.
Moderate/ Low Risk	Possible that harm could arise to a receptor, but where a combination of likelihood and consequence results in a risk that is above low, but is not of sufficient concern to be classified as mild. Limited further investigation may be required to clarify the risk. If necessary, remediation works are likely to be limited in extent.
Low Risk	Possible that harm could arise to a receptor. Such harm, at worst, would normally be mild.
Very Low Risk	Low possibility that harm could arise to a receptor. Such harm is unlikely to be any worse than mild.

APPENDIX E

REMEDIATION STATEMENT



CONTAMINATION REMEDIATION STATEMENT

FOR

LAND OFF SHOP LANE

KIRKHEATON

ON BEHALF OF

WORSTEDS DEVELOPMENTS LTD

ARP GEOTECHNICAL LTD

CHARTERED CONSULTING ENGINEERS



Northwest House 5/6 Northwest Business Park Servia Hill Leeds LS6 2QH

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CLIENT: WORSTEADS DEVELOPMENTS LTD
 JOB NUMBER: WOR/01
 PROJECT: SHOP LANE, KIRKHEATON
 REPORT TYPE: CONTAMINATION REMEDIATION STATEMENT
 REPORT REFERENCE: WOR/01rem2

	Name	Signature
Prepared By:	J Race BSc CGeol FGS EurGeol	
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ISSUE	DATE	STATUS
1	12 TH JUNE 2025	V1 FINAL

1.0 Introduction

- 1.1 This document has been prepared to provide information for the Client and other interested parties, such as the regulatory authorities, outlining how contamination encountered on the site will be managed to ensure that the site is environmentally suitable for the intended residential use. The document should be agreed, prior to implementation, with the relevant regulatory authorities, usually the local planning authority and building control provider.

2.0 The Site

- 2.1 The Encia Environmental Ltd Stage 2 Geo-Environmental Report, dated June 2009 under reference 9557/1, identifies the engineering proposals for the development, and makes an assessment of contamination. Subsequent ARP letter report WOR/01/JRjcl5 dated 12th June 2025, provides a re-assessment and update of the environmental risk assessment carried out by Encia.
- 2.2 The conceptual site model is for a residential development including both private gardens and communal landscaping.
- 2.3 The overall site comprises two parcels of land divided by Shop Lane. At the time of the 2009 investigation, the larger site to the west (Area 1) was occupied by a two-storey brick built former residential building in the south and an electricity substation in the east, which remains in use. A large textile mill building covered much of the rest of Area 1, until it was demolished around 2008/2009 leaving just the floor slabs behind. The smaller parcel of land to the east (Area 2) is currently undeveloped. A garage was previously present prior to 2008/2009. The site and surrounding area gently slope downwards from northeast to southwest.
- 2.4 Archive maps show Area 1 was formerly occupied by Kirkheaton Mill (Worsted) and Area 2 by a vehicle maintenance garage, both up until around 2008/2009.
- 2.5 Geological maps show the site to be underlain by Lower Coal Measures, with Grenoside Rock (sandstone) in the far east of the site. A single fault is located in the southeast of the site trending east to west, with the downthrow to the south.
- 2.6 The site can be considered stable with regard to coal mining.
- 2.7 No radon protective measures are required for new buildings constructed on the site. There are no known significant sources of landfill gas in the locality and gas protection measures are concluded not to be required.
- 2.8 The ground investigation revealed Area 1 to be underlain by between 0.3m and 3.7m thickness of made ground, but generally around 1.1m thickness, overlying natural weathered cohesive and granular sandstone deposits. The made ground comprises granular and cohesive made ground, rubble, and lesser amounts of ash and clinker, and relict topsoil. Underlying the made ground, natural strata comprising weathered Coal Measures or weathered Grenoside Rock were encountered.

- 2.9 The made ground across Area 1 was found to contain widespread elevated concentrations of lead, with a 95% UCL of 378mg/kg, above the 200mg/kg screening value, and zinc, with a 95% UCL of 237mg/kg, above the 200mg/kg screening value. The made ground also contained elevated concentrations of arsenic at up to 110mg/kg, at two locations, but the 95% UCL was below the screening value. These locations or arsenic exceedance do not need to be considered separately, particularly given the widespread elevated lead and zinc concentrations. A degree of chromium leachability was evident.
- 2.10 Ash and clinker within the made ground was found to have calorific values up to 5.3MJ/kg, making it potentially combustible.

3.0 Remediation Strategy

- 3.1 Where any garden or landscape areas overlie the existing made ground, a minimum 0.6m thick cover blanket of uncontaminated soils (topsoil and subsoil) should be provided. The cover blanket should include at least 0.45m thickness of subsoil with at least 35% silt/clay content (at least 35% passing a 63-micron sieve), for example clay, sandy clay, or gravelly clay, to minimise downward water percolation. The cover blanket is normally placed around the buildings as they are nearing completion and scaffolding has been removed. Where hardstanding or roads are present, no cover blanket is required. The required profile is given below

Thickness (m)	Description
Minimum 0.15	Topsoil
Minimum 0.45 #	Subsoil with at least 35% silt/clay content) for example clay, sandy clay, or gravelly clay

Thickened to 0.85m where potentially combustible ash and/or clinker is present

- 3.2 Where any of the existing made ground to be covered is suspected to comprise potentially combustible ash and clinker, then the subsoil should be thickened to 0.85m, to give an overall 1m thick soil cover. This is required to reduce the risk of any future combustion to negligible levels.
- 3.3 Any soils used in the cover blanket, whether imported or site-won, will need to be verified as suitable by inspection and testing, in accordance with guidance supplied in the document produced by the Yorkshire and Lincolnshire Pollution Advisory Group (YALPAG): "Guidance on the Verification Requirements for Cover Systems". The measures described below will be required to ensure compliance with the document.
- 3.4 If removal of made ground from site is required to achieve the cover soil thickness, the waste receiver may require Waste Acceptance Criteria Testing (WAC) and asbestos quantification.

4.0 Validation

- 4.1 Following placement of the cover soils in residential garden areas and public open spaces, it will be necessary to confirm the required cover (0.6m generally, or 1m above ash and clinker) of uncontaminated soil has been placed, by excavating small trial pits to 1m depth across these areas on the basis of one pit per every three plots and pits on a maximum 25m spacing on public open space. The trial pits will be photographed, to include a reference scale, and the photographs included within any report to enable the location on site to be identified.
- 4.2 If the contaminated made ground is removed from site to form an uncontaminated area, then the surface will need to be inspected by an Engineer and sampled and tested on a maximum 25m spacing to confirm its uncontaminated status. The area will be photographed and all the details included within a Validation Letter Report.
- 4.3 For any contaminated material disposed off-site, the disposal/transfer documents should be retained for inclusion in the Validation Report.

5.0 Laboratory Testing

- 5.1 For any imported subsoil and topsoil used, or any site-won uncontaminated topsoil and subsoil to be re-used on the site, the source will need to be confirmed, and the material tested for the attached suite of contaminants, to comply with the maximum screening values listed. The frequency of testing is given on the table below. Any samples already tested in the site investigation carried out to date can be considered part of the overall total required.

Material Type	Number of Samples
Topsoil or subsoil from greenfield / manufactured source	Minimum 3No. or 1 per 250m ³ (whichever is greater)
Topsoil or subsoil from brownfield / screened source.	Minimum 6No. or 1 per 100m ³ (whichever is greater)

- 5.2 When a potential source of soil is identified, the Client may provide ARP Geotechnical Ltd with supplier certificates, and we will comment on the apparent acceptability of the material. If no certificates are available, the Client may wish us to sample the material at source prior to import, or sample an example load delivered to site, to minimise potential for any problems later. The test results will be available approximately one week, or slightly more, after the site visit.
- 5.3 Provided the results of the above are acceptable, there are two options for validation: -
- A. Import a stockpile of material to site sufficient to complete the required areas and invite ARP to take sufficient further samples of the stockpile for testing to fully approve it as a source. The stockpile should be isolated from any other materials on the site (becoming a "Quarantined Stockpile"), fenced off to avoid any cross contamination, and must not be added to without further testing. The test results will be available approximately one week, or slightly more, after the site visit.

OR:

B. Import and place the material as and when required and invite ARP to sample the material when in place, during the inspection pits noted in Section 4.1. The samples will be issued to the laboratory for contamination testing to confirm acceptability. The test results will be available approximately one week, or slightly more, after the site visit. Our letter report will be available a day or two later. Therefore, Clients should allow for receiving the final letter report two weeks after the site visit.

5.4 Any cross contamination of materials should be avoided, and further sampling testing will need to be carried out where any cross contamination is suspected to have occurred.

5.5 The results of all the laboratory analysis, excavation logs, plans, photographs, and import documents will form part of the Remediation Validation Report for the group of plots.

6.0 Timescales for Remediation and Validation

6.1 It is anticipated that the clean soil cover blankets will be placed progressively around a group of plots as their construction is nearing completion (usually following removal of scaffolding) and not sooner. This is to ensure that the soils will not be subjected to trafficking or cross contamination by construction activities once placed.

6.2 As soon as the soils are in place around a group of plots, validation can take place via inspection pits, as per Section 4.1 above.

6.3 Soils in any landscaped areas can be placed as soon as those areas are safe from any further construction trafficking.

6.4 If imported soils are to be used on the site then these can be imported at any time, for future use as quarantined stockpiles, provided there is sufficient space for storage.

6.5 The very latest a Validation Report for a group of plots should be issued is a week before the programmed Council of Mortgage Lenders "Finalling", and preferably before. The Planning Condition relating to contamination remediation validation cannot normally be discharged for a site until all the validation reports have been issued to the local authority, on completion of the development, or a combined Validation Report for the whole site is issued.

7.0 Unexpected Contamination

7.1 Any unexpected contamination uncovered during the works shall be inspected, sampled and analysed in laboratory for the suite of determinands appended to this Remediation Statement, and compared to the maximum concentration levels listed on the enclosure. Works on the affected materials shall cease until the appraisal is complete and, if necessary, a revised Remediation Statement is to be prepared and approved by the Planning Authority before work is recommenced.

8.0 Protection of Workers and the Public During Development Works

- 8.1 Damping down of the contaminated made ground must be implemented during dry periods, and timely placement of the contaminated material below barriers.
- 8.2 Washing facilities and a clean mess room should be provided.
- 8.3 Site fencing will be provided to exclude access to members of the public, and contaminated material will be contained within the site boundary and placed below barriers as soon as possible.
- 8.4 Workers will be educated to use adequate hygiene and PPE.
- 8.5 Movement of contamination off-site on vehicle wheels shall be minimised by cleaning of vehicle wheels and/or use of road sweeper, as required.



ARP GEOTECHNICAL LIMITED
IMPORTED SOIL CONTAMINANT SCREENING VALUES
RESIDENTIAL WITH HOME-GROWN PRODUCE

Determinand	S4UL (unless stated otherwise) (mg/kg)			C4SL (mg/kg)		
	1% SOM	2.5% SOM	6% SOM	1% SOM	2.5% SOM	6% SOM
Arsenic	37			37		
Cadmium	11			22		
Chromium (trivalent) (MAFF)	400					
Chromium (hexavalent)	6			21		
Copper (MAFF)	80#					
Lead				200		
Inorganic Mercury	40			200		
Nickel (MAFF)	50#					
Selenium	250					
Zinc (MAFF)	200#					
Acidity (pH)	*Should be Greater Than 5			*Should be Greater Than 5		
	1% SOM	2.5% SOM	6% SOM	1% SOM	2.5% SOM	6% SOM
Naphthalene	2.3	5.6	13	15	36	85
Acenaphthylene	170	420	920			
Acenaphthene	210	510	1,100			
Fluorene	170	400	860			
Phenanthrene	95	220	440			
Anthracene	2,400	5,400	11,000			
Fluoranthene	280	560	890			
Pyrene	620	1,200	2,000			
Benzo(a)anthracene	7.2	11	13			
Chrysene	15	22	27			
Benzo(b)fluoranthene	2.6	3.3	3.7			
Benzo(k)fluoranthene	77	93	100			
Benzo(a)pyrene	2.2	2.7	3			5
Indeno(1,2,3-cd)pyrene	27	36	41			
Dibenzo(a,h)anthracene	0.24	0.28	0.30			
Benzo(g,h,i)perylene	320	340	350			
Phenols	120	200	380			
Total TPH	*Above 500, speciate and compare with values below:					
C5 to C6 Aliphatic	42	78	160			
C6 to C8 Aliphatic	100	230	530			
C8 to C10 Aliphatic	27	65	150			
C10 to C12 Aliphatic	130	330	760			
C12 to C16 Aliphatic	1100	2,400	4,300			
C16 to C35 Aliphatic	65,000	92,000	110,000			
C35 TO C44 Aliphatic	65,000	92,000	110,000			
C5 to C7 Aromatic (Benzene)	70	140	300			
C7 to C8 Aromatic (Toluene)	130	290	660			
C8 to C10 Aromatic	34	83	190			
C10 to C12 Aromatic	74	180	380			
C12 to C16 Aromatic	140	330	660			
C16 to C21 Aromatic	260	540	930			
C21 TO C35 Aromatic	1100	1,500	1,700			
C35 TO C44 Aromatic	1100	1,500	1,700			
Asbestos	*Should be None Detected			*Should be None Detected		

* In House Value/Approach S4UL = Suitable 4 Use Level, CIEH/LQM 2014 C4SL = Cat 4 Screening Level, DEFRA, 2014

Blank cell indicates no published value or in-house value. Some values presented are above saturation limits.

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MAFF: Ministry of Agriculture, Fisheries and Food - "Code of Good Agricultural Practice for the Protection of Soil

#pH dependent. If exceeded, to be compared against appropriate MAFF value for the pH