

**PHASE 2 ENVIRONMENTAL
INVESTIGATION
NO 3888/16
AT
THE POND HOUSE (PH)
738 OXFORD ROAD, READING
BERKSHIRE. RG30 1EH
FOR
PROPOSED HOUSING DEVELOPMENT**

APPENDIX A

**Exploratory Hole Location Plan
&
Logs**



PAGE: 5		JOB 3888					BOREHOLE WS1		
DATE:20.10.16		THE POND HOUSE, OXFORD ROAD, READING							
DESCRIPTION	REDUCED	DEPTH	LEGEND	SAMPLE		THICKNESS	SPT	REMARKS	
	LEVEL m				TYPE				DEPTH
		0.00			C	0.00	0.06	-- 3000/WS1 / 0.0C	
Tarmac		0.06					0.14		
Medium dense brown red sandy angular fine to coarse GRAVEL of brick and concrete with cobbles of brick. (MADE GROUND)							0.10		
Concrete		0.20					0.20		
Medium dense brown red sandy angular fine to coarse GRAVEL of brick and concrete with cobbles of brick. (MADE GROUND)		0.30			D	0.20	0.50	-- 3000/WS1 / 0.2D	
Loose to medium dense brown silty gravelly fine to coarse SAND. Gravel is angular to sub-rounded fine to coarse of flint and brick. (MADE GROUND)		0.50		SPT	C	1.00	1.00	31 -- 3000/WS1 / 1.0C	
Medium dense brown mottled white slightly clayey very sandy angular fine to coarse GRAVEL of flint. (TAPLOW GRAVEL FORMATION)		1.00			D	1.50	0.20	-- 3000/WS1 / 1.5D	
Medium dense brown gravelly fine to coarse SAND. Gravel is angular fine to coarse of flint. (TAPLOW GRAVEL FORMATION)		1.20		SPT		2.00	24	-	
					D	2.50	0.20	-- 3000/WS1 / 2.5D	
Structureless CHALK: White gravelly SILT. Gravel is angular to sub-angular fine to coarse of flint and chalk. (Class Dm) (SEAFORD CHALK FORMATION & NEWHAVEN CHALK FORMATION)		2.20		SPT	D	3.00	3.00	11 -- 3000/WS1 / 3.0D	
		4.00w		SPT		4.00	2.30	6 Water strike No sample recovery from 4.0 to 5.0m with no SPT test carried out at 5.0m	
		5.00							
 TERRAMECH INVESTIGATIONS LIMITED 183 LONG LANE TILEHURST READING			REMARKS: Borehole was drilled using a windowless sampling rig Borehole was backfilled with arisings.						
U1000100mm dia. UNDISTURBED SAMPLE		U30030mm dia. UNDISTURBED SAMPLE		D0SMALL DISTURBED SAMPLE					
B0BULK SAMPLE W0WATER SAMPLE		SPT0STANDARD PENETRATION TEST		CPT0CONE PENETRATION TEST					

PAGE: 6

DATE:20.10.16

JOB 3888

THE POND HOUSE, OXFORD ROAD, READING

BOREHOLE
WS2

DESCRIPTION	REDUCED	DEPTH	LEGEND	SAMPLE		THICKNESS	SPT	REMARKS
	LEVEL m			TYPE	DEPTH			
		0.00				0.06		
Tarmac		0.06				0.24		
Loose to medium dense grey sandy angular fine to coarse GRAVEL of concrete. (MADE GROUND)		0.30		C	0.30			-- 3000/WS2 / 0.3C
Soft to firm brown very sandy gravelly CLAY. Sand is fine to coarse. Gravel is sub-angular to sub-rounded fine to coarse of flint and pebbles.				D	0.80	0.80		-- 3000/WS2 / 0.8D
		1.00		SPT	1.00		15	-
Medium dense brown slightly clayey very sandy angular fine to coarse GRAVEL of flint. Sand is fine to coarse. (TAPLOW GRAVEL FORMATION)				C	1.50			-- 3000/WS2 / 1.5C
				D	1.50	1.00		-- 3000/WS2 / 1.5D
		2.00		SPT	2.00		14	-
Medium dense brown gravelly fine to coarse SAND. Gravel is angular fine to coarse of flint. (TAPLOW GRAVEL FORMATION)				D	2.20	0.60		-- 3000/WS2 / 2.2D
		2.60						
Loose to medium dense brown white gravelly fine to coarse SAND with chalk fragments. Gravel is angular fine to coarse of flint. (TAPLOW GRAVEL FORMATION)		2.80w		D	2.80			-- 3000/WS2 / 2.8D
				SPT	3.00	1.00	6	-
		3.60						
Structureless CHALK: white mottled brown very gravelly SILT. Gravel is sub-angular fine to coarse of CHALK. (SEAFORD CHALK FORMATION & NEWHAVEN CHALK FORMATION)				SPT	4.00	1.40		Poor recovery from 400 from 4.00 to 5.00m
		5.00		SPT	5.00		5	-



TERRAMECH INVESTIGATIONS LIMITED
183 LONG LANE TILEHURST READING

REMARKS: Borehole was drilled using a windowless sampling rig
Borehole was backfilled with arisings.

U100100mm dia. UNDISTURBED SAMPLE

B1BULK SAMPLE

W1WATER SAMPLE

U3030mm dia. UNDISTURBED SAMPLE

SPT1STANDARD PENETRATION TEST

D1SMALL DISTURBED SAMPLE

CPT1CONE PENETRATION TEST

PAGE: 7

DATE:20.10.16

JOB 3888

THE POND HOUSE, OXFORD ROAD, READING

BOREHOLE
WS3

DESCRIPTION	REDUCED	DEPTH	LEGEND	SAMPLE		THICKNESS	SPT	REMARKS
	LEVEL m			TYPE	DEPTH			
		0.00						
Tarmac		0.10		C	0.10	0.10		-- 3000/WS3 / 0.1C
Dense orange gravelly fine to coarse SAND. Gravel is angular fine to coarse of brick. (MADE GROUND)		0.20				0.10		
Dense black sandy angular fine to coarse GRAVEL of clinker and slag. Sand is fine to coarse. (MADE GROUND)		0.30				0.10		
Medium dense brown silty slightly gravelly fine to coarse SAND. Gravel is sub-angular fine to coarse of flint. (TAPLOW GRAVEL FORMATION)		1.00		D	0.20	0.20		-- 3000/WS3 / 0.2D
Firm brown very sandy CLAY with occasional gravel. Sand is fine to coarse. Gravel is angular fine to coarse of flint. (TAPLOW GRAVEL FORMATION)		1.00		SPT	1.00		2	-
		1.00		C	1.00			-- 3000/WS3 / 1.0C
		1.55		D	1.20	0.55		-- 3000/WS3 / 1.2D
Medium dense brown gravelly fine to coarse SAND. Gravel is angular fine to coarse of flint. (TAPLOW GRAVEL FORMATION)		2.50		D	1.20			-- 3000/WS3 / 1.2D
		2.50		SPT	2.00	0.25	22	-
		2.50						
Medium dense brown very sandy angular to rounded fine to coarse GRAVEL of flint with cobbles of flint. (TAPLOW GRAVEL FORMATION)		2.50		D	2.60			-- 3000/WS3 / 2.6D
		2.00w		SPT	3.00		23	Exploratory hole collapsed back to 2.00m from 4.00m. Water strike
				SPT	4.00	2.50	24	-
		5.00		SPT	5.00		14	-



TERRAMECH INVESTIGATIONS LIMITED
183 LONG LANE TILEHURST READING

REMARKS: Borehole was drilled using a windowless sampling rig
Borehole was backfilled with arisings.

U100=100mm dia. UNDISTURBED SAMPLE

B=BULK SAMPLE

W=WATER SAMPLE

U300=300mm dia. UNDISTURBED SAMPLE

SPT=STANDARD PENETRATION TEST

D=SMALL DISTURBED SAMPLE

CPT=CONE PENETRATION TEST

PAGE: 8

DATE:20.10.16

JOB 3888

THE POND HOUSE, OXFORD ROAD, READING

BOREHOLE
WS4

DESCRIPTION	REDUCED	DEPTH	LEGEND	SAMPLE		THICKNESS	SPT	REMARKS
	LEVEL m			TYPE	DEPTH			
		0.00				0.05		
Tarmac		0.05				0.45		
Medium dense brown mottled black and redsandy angular fine to coarse GRAVEL of brick tamac and concrete. (MADE GROUND)		0.50		C	0.60			-- 3000/WS4 / 0.6C
				D	0.80			-- 3000/WS4 / 0.8D
Medium dense brown silty fine to coarse SAND with occasional gravel. Gravel is sub-angular to rounded of flint. (TAPLOW GRAVEL FORMATION)				SPT	1.00	1.00	10	-
				D	1.20			-- 3000/WS4 / 1.2D
		1.50						
Medium dense brown mottled grey and white slightly sandy very clayey angular fine to coarse GRAVEL of flint. Sand is fine to medium. (TAPLOW GRAVEL FORMATION)				D	1.80	0.50		-- 3000/WS4 / 1.8D
		2.00		SPT	2.00		35	-
Medium dense brown mottled white/grey sandy angular fine to coarse GRAVEL of flint. Sand is fine to coarse.				D	2.50			-- 3000/WS4 / 2.5D
		3.00w		SPT	3.00		20	-
						2.80		
				SPT	4.00		18	-
				CPT	4.50		20	-
Structureless CHALK: White gravelly SILT. Gravel is sub-angular fine to coarse of chalk. (Class Dm) (SEAFORD CHALK FORMATION & NEWHAVEN CHALK FORMATION)		4.80		CPT	5.00	0.20	10	-
		5.00						



TERRAMECH INVESTIGATIONS LIMITED
183 LONG LANE TILEHURST READING

REMARKS: Borehole was drilled using a windowless sampling rig
Borehole was backfilled with arisings.

U100=100mm dia. UNDISTURBED SAMPLE
B=BULK SAMPLE W=WATER SAMPLE

U30=30mm dia. UNDISTURBED SAMPLE
SPT=STANDARD PENETRATION TEST

D=SMALL DISTURBED SAMPLE
CPT=CONE PENETRATION TEST

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APPENDIX B
Contamination Analysis**



Exova Jones Environmental

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

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

Terramech Investigations Ltd
183 Long Lane
Tilehurst
Reading
Berkshire
RG31 6YW

Tel: +44 (0) 1244 833780

Fax: +44 (0) 1244 833781



Attention :	Tom Leigh
Date :	15th November, 2016
Your reference :	3888
Our reference :	Test Report 16/16797 Batch 1
Location :	The Pond House, 738 Oxford Road, Reading
Date samples received :	8th November, 2016
Status :	Final report
Issue :	1

Seven samples were received for analysis on 8th November, 2016 of which two were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.

All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Compiled By:

Phil Sommerton BSc
Project Manager

Client Name: Terramech Investigations Ltd
Reference: 3888
Location: The Pond House, 738 Oxford Road, Reading
Contact: Tom Leigh
JE Job No.: 16/16797

Report : Solid

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

J E Sample No.	7-9	16-18									Please see attached notes for all abbreviations and acronyms		
Sample ID	WS2/ES1	WS3/ES2											
Depth	0.30-1.00	1.00-2.00											
COC No / misc													
Containers	V J T	V J T											
Sample Date	02/11/2016	02/11/2016											
Sample Type	Soil	Soil											
Batch Number	1	1											
Date of Receipt	08/11/2016	08/11/2016									LOD/LOR	Units	Method No.
Arsenic ^{#M}	24.2	18.8									<0.5	mg/kg	TM30/PM15
Barium ^{#M}	458	43									<1	mg/kg	TM30/PM15
Beryllium	1.2	1.0									<0.5	mg/kg	TM30/PM15
Cadmium ^{#M}	<0.1	<0.1									<0.1	mg/kg	TM30/PM15
Chromium ^{#M}	103.4	150.2									<0.5	mg/kg	TM30/PM15
Copper ^{#M}	18	13									<1	mg/kg	TM30/PM15
Lead ^{#M}	352	10									<5	mg/kg	TM30/PM15
Mercury ^{#M}	<0.1	<0.1									<0.1	mg/kg	TM30/PM15
Nickel ^{#M}	30.3	34.4									<0.7	mg/kg	TM30/PM15
Selenium ^{#M}	<1	<1									<1	mg/kg	TM30/PM15
Vanadium	46	53									<1	mg/kg	TM30/PM15
Water Soluble Boron ^{#M}	0.6	0.5									<0.1	mg/kg	TM74/PM32
Zinc ^{#M}	104	48									<5	mg/kg	TM30/PM15
PAH MS													
Naphthalene ^{#M}	<0.04	<0.04									<0.04	mg/kg	TM4/PM8
Acenaphthylene	0.06	<0.03									<0.03	mg/kg	TM4/PM8
Acenaphthene ^{#M}	0.08	<0.05									<0.05	mg/kg	TM4/PM8
Fluorene ^{#M}	0.16	<0.04									<0.04	mg/kg	TM4/PM8
Phenanthrene ^{#M}	1.31	<0.03									<0.03	mg/kg	TM4/PM8
Anthracene [#]	0.36	<0.04									<0.04	mg/kg	TM4/PM8
Fluoranthene ^{#M}	1.91	<0.03									<0.03	mg/kg	TM4/PM8
Pyrene [#]	1.37	<0.03									<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene [#]	0.82	<0.06									<0.06	mg/kg	TM4/PM8
Chrysene ^{#M}	0.82	<0.02									<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene ^{#M}	1.35	<0.07									<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene [#]	0.75	<0.04									<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene ^{#M}	0.55	<0.04									<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene [#]	0.08	<0.04									<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene [#]	0.44	<0.04									<0.04	mg/kg	TM4/PM8
Coronene	0.07	<0.04									<0.04	mg/kg	TM4/PM8
PAH 17 Total	10.13	<0.64									<0.64	mg/kg	TM4/PM8
Benzo(b)fluoranthene	0.97	<0.05									<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	0.38	<0.02									<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	95	97									<0	%	TM4/PM8
Mineral Oil (C10-C40)	<30	<30									<30	mg/kg	TM5/PM16
MTBE [#]	<5	<5									<5	ug/kg	TM31/PM12
Benzene [#]	<5	<5									<5	ug/kg	TM31/PM12
Toluene [#]	<5	<5									<5	ug/kg	TM31/PM12
Ethylbenzene [#]	<5	<5									<5	ug/kg	TM31/PM12
m/p-Xylene [#]	<5	<5									<5	ug/kg	TM31/PM12
o-Xylene [#]	<5	<5									<5	ug/kg	TM31/PM12

Please see attached notes for all abbreviations and acronyms

Mass of sample taken (kg)	-	Moisture Content Ratio (%) =	10.7					
Mass of dry sample (kg) =	0.09	Dry Matter Content Ratio (%) =	90.3					
Particle Size <4mm =	>95%							
JEFL Job No	16/16797		Landfill Waste Acceptance Criteria Limits					
Sample No	9							
Client Sample No	WS2/ES1							
Depth/Other	0.30-1.00							
Sample Date	02/11/2016							
Batch No	1							
Solid Waste Analysis				Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill		
Total Organic Carbon (%)	0.60		3				5	6
Loss on Ignition (%)	3.2		-				-	10
Sum of BTEX (mg/kg)	<0.025		6				-	-
Sum of 7 PCBs (mg/kg)	<0.035		1				-	-
Mineral Oil (mg/kg)	<30		500				-	-
PAH Sum of 17(mg/kg)	10.13		100				-	-
pH (pH Units)	8.83		-				>6	-
ANC to pH 7 (mol/kg)	0.46		-				to be evaluated	to be evaluated
ANC to pH 4 (mol/kg)	0.16		-				to be evaluated	to be evaluated
Eluate Analysis	10:1 conc ⁿ leached		Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg					
	C ₁₀	A ₁₀						
	mg/l	mg/kg						
Arsenic	0.0093	0.093	0.5	2	25			
Barium	<0.003	<0.03	20	100	300			
Cadmium	<0.0005	<0.005	0.04	1	5			
Chromium	0.0018	0.018	0.5	10	70			
Copper	<0.007	<0.07	2	50	100			
Mercury	<0.001	<0.01	0.01	0.2	2			
Molybdenum	0.003	0.03	0.5	10	30			
Nickel	<0.002	<0.02	0.4	10	40			
Lead	0.005	<0.05	0.5	10	50			
Antimony	<0.002	<0.02	0.06	0.7	5			
Selenium	<0.003	<0.03	0.1	0.5	7			
Zinc	0.006	0.06	4	50	200			
Chloride	<0.3	<3	800	15000	25000			
Fluoride	0.3	<3	10	150	500			
Sulphate as SO4	2.55	25.5	1000	20000	50000			
Total Dissolved Solids	61	610	4000	60000	100000			
Phenol	<0.01	<0.1	1	-	-			
Dissolved Organic Carbon	5	50	500	800	1000			

Mass of sample taken (kg)	-	Moisture Content Ratio (%) =	16.9					
Mass of dry sample (kg) =	0.09	Dry Matter Content Ratio (%) =	85.6					
Particle Size <4mm =	>95%							
JEFL Job No	16/16797		Landfill Waste Acceptance Criteria Limits					
Sample No	18							
Client Sample No	WS3/ES2							
Depth/Other	1.00-2.00							
Sample Date	02/11/2016							
Batch No	1							
Solid Waste Analysis				Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill		
Total Organic Carbon (%)	0.04		3				5	6
Loss on Ignition (%)	2.0		-				-	10
Sum of BTEX (mg/kg)	<0.025		6				-	-
Sum of 7 PCBs (mg/kg)	<0.035		1				-	-
Mineral Oil (mg/kg)	<30		500				-	-
PAH Sum of 17(mg/kg)	<0.64		100				-	-
pH (pH Units)	8.57		-				>6	-
ANC to pH 7 (mol/kg)	<0.03		-				to be evaluated	to be evaluated
ANC to pH 4 (mol/kg)	0.34		-				to be evaluated	to be evaluated
Eluate Analysis	10:1 conc ⁿ leached		Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg					
	C ₁₀	A ₁₀						
	mg/l	mg/kg						
Arsenic	0.0029	0.029	0.5	2	25			
Barium	<0.003	<0.03	20	100	300			
Cadmium	<0.0005	<0.005	0.04	1	5			
Chromium	<0.0015	<0.015	0.5	10	70			
Copper	<0.007	<0.07	2	50	100			
Mercury	<0.001	<0.01	0.01	0.2	2			
Molybdenum	<0.002	<0.02	0.5	10	30			
Nickel	<0.002	<0.02	0.4	10	40			
Lead	<0.005	<0.05	0.5	10	50			
Antimony	<0.002	<0.02	0.06	0.7	5			
Selenium	<0.003	<0.03	0.1	0.5	7			
Zinc	0.004	0.04	4	50	200			
Chloride	0.4	4	800	15000	25000			
Fluoride	0.4	4	10	150	500			
Sulphate as SO4	<0.05	<0.5	1000	20000	50000			
Total Dissolved Solids	93	930	4000	60000	100000			
Phenol	<0.01	<0.1	1	-	-			
Dissolved Organic Carbon	4	40	500	800	1000			

Client Name: Terramech Investigations Ltd

Reference: 3888

Location: The Pond House, 738 Oxford Road, Reading

Contact: Tom Leigh

[illegible]

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

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 16/16797

SOILS

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

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

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

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

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

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

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

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

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

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

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

WATERS

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

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

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

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

DEVIATING SAMPLES

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

SURROGATES

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

DILUTIONS

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

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.

Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

Please include all sections of this report if it is reproduced

ABBREVIATIONS and ACRONYMS USED

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

JE Job No: 16/16797

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.	PM0	No preparation is required.				
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.	PM0	No preparation is required.			AR	
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes	Yes	AR	Yes
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	PM16	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	Yes
PM13	A visual examination of the solid sample is carried out to ascertain sample make up, colour and any other inclusions. This is not a geotechnical description.	PM0	No preparation is required.			AR	
TM17	Modified US EPA method 8270. Determination of specific Polychlorinated Biphenyl congeners by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM20	Modified BS 1377-3: 1990/USEPA 160.3 Gravimetric determination of Total Dissolved Solids/Total Solids	PM0	No preparation is required.			AR	Yes
TM21	Modified USEPA 415.1. Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC turnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection.	PM24	Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis.	Yes		AD	Yes

JE Job No: 16/16797

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM22	Modified USEPA 160.4. Gravimetric determination of Loss on Ignition by temperature controlled Muffle Furnace (450°C)	PM0	No preparation is required.	Yes		AD	Yes
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM0	No preparation is required.			AR	Yes
TM27	Modified US EPA method 9056.Determination of water soluble anions using Dionex (Ion-Chromatography).	PM0	No preparation is required.			AR	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7 and 6010B	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.			AD	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7 and 6010B	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.	Yes	Yes	AD	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7 and 6010B	PM17	Modified method EN12457-2. As received solid samples are leached with water in a 10:1 water to soil ratio for 24 hours, the moisture content of the sample is included in the ratio.	Yes		AR	Yes
TM31	Modified USEPA 8015B. Determination of Methylterbutylether, Benzene, Toluene, Ethylbenzene and Xylene by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM31	Modified USEPA 8015B. Determination of Methylterbutylether, Benzene, Toluene, Ethylbenzene and Xylene by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM38	Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1	PM0	No preparation is required.	Yes		AR	Yes
TM38	Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1	PM20	Extraction of dried and ground samples with deionised water in a 2:1 water to solid ratio for anions. Extraction of as received samples with deionised water in a 2:1 water to solid ratio for ammoniacal nitrogen and hydrazine. Samples are extracted using an orbital shaker.	Yes		AR	Yes

JE Job No: 16/16797

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM60	Modified USEPA 9060. Determination of TOC by calculation from Total Carbon and Inorganic Carbon using a TOC analyser, the carbon in the sample is converted to CO ₂ and then passed through a non-dispersive infrared gas analyser (NDIR).	PM0	No preparation is required.			AR	Yes
TM73	Modified US EPA methods 150.1 and 9045D. Determination of pH by Metrohm automated probe analyser.	PM11	Extraction of as received solid samples using one part solid to 2.5 parts deionised water.	Yes	Yes	AR	No
TM74	Analysis of water soluble boron (20:1 extract) by ICP-OES.	PM32	Hot water soluble boron is extracted from dried and ground samples using a 20:1 ratio.	Yes	Yes	AD	Yes
TM77	Modified DDCE/TS method 15364:2006. Determination of Acid Neutralization Capacity by Metrohm automated probe analyser.	PM0	No preparation is required.			AR	No
NONE	No Method Code	NONE	No Method Code			AR	Yes
NONE	No Method Code	PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.			AR	

**PHASE 2 ENVIRONMENTAL
INVESTIGATION
NO 3888/16
AT
THE POND HOUSE (PH)
738 OXFORD ROAD, READING
BERKSHIRE. RG30 1EH
FOR
PROPOSED HOUSING DEVELOPMENT
APPENDIX C
Contamination Assessment Criteria**



Contamination Assessment Criteria

List 1 (Soils Assessment Criteria for Human Health)

- 1A) - Metals
- 1B) - Aliphatic Hydrocarbons
- 1C) - Aromatic Hydrocarbons
- 1D) - BTEX (Monocyclic Aromatic Hydrocarbons)
- 1E) - PAH (Poly-cyclic Aromatic Hydrocarbons)
- 1F) - PCB (Poly Chlorinated Bi-Phenyls)
- 1G) - Chloroalkanes and Alkenes
- 1H) - Explosives
- 1I) - Pesticides
- 1J) - Chlorobenzenes
- 1K) - Phenol and Chlorophenol
- 1L) - Other
- 1M) - Asbestos

At this time SGVs have been published by the Environment Agency for Arsenic, Cadmium, Nickel, Mercury, Selenium, Benzene, Toluene, Ethylbenzene, Xylene and Phenol together with Dioxins Furans and Dioxin Like PCBs. These were calculated using the CLEA model (v1.04) and Environment Agency guidance documents SR2 (Human Health Toxicological Assessment of Contaminants in Soil) and SR3 (Updated Technical Background to the CLEA Model).

Further numbers of contaminants were assessed on this basis using the CLEA Model by CIEH/LQM (The Chartered Institute of Environmental Health and Land Quality Management Ltd) and guideline values were published in their report on Generic Assessment Criteria for Human Health Assessments (2009). This 2009 guidance has now been replaced by new S4UL values (Suitable '4' Use Levels) which are intended by CIEH/LQM to provide a complete and updated replacement for the values published in their 2009 report (see CIEH/LQM S4UL – 1.1). The S4UL values are the copyright of Land Quality Management Ltd and are reproduced with permission; Publication Number S4UL3262 - All rights reserved.

We have also used C4SL values derived in the DEFRA SP1010 report. These values are used with a different assessment methodology (LLTC or Lower Level Of Toxicological Concern) to the HCVs (Health Condition Values) discussed in Environment Agency SR3 report. The SP1010 publication does however give values determined using the original HCV CLEA methodology. The only contaminant we have considered from this list is Lead.

Where there is no Environment Agency SGV or S4UL, Terramech Investigations have derived values using the CLEA Model with old TOX reports as well as the SR2 report and the SR3 report, as suggested by the Environment Agency.

The assessments should be based on a hierarchy where the Environment Agency SGVs and S4UL from the Chartered Institute of Environmental Health are most preferred, followed by values derived by Terramech using the CLEA model.

CIRIA C733 (Asbestos In Soil And Made Ground) shows how respirable fibre exposure estimates can be carried out based on measured soil concentrations. We have used this methodology to derive guideline values for a number of exposure scenarios based on the risk level of 1 in 100,000 used to derive HCVs for other contaminants. We have also used the most conservative values wherever possible. It should be noted that these values are not corroborated by any other organisation and they are also subject to the notes and caveats set out in the wider CIRIA C733 document.



List 2 (Assessment Criteria for Buried Water Supply Pipes)

Our recommendations are based on the Water Regulation Advisory Scheme information and guidance note No 9-04-03' October 2002 'The Selection of Materials for Water Supply Pipes to be Laid in Contaminated Land' however, the water utility companies now assess contaminants on the basis of their own guidances and we cannot comment on compliance with all these individual guidances.

List 3 (Assessment Criteria For Soil Disposal)

Assessment of soils destined for landfills takes two stages. The first is site characterisation, the second stage is compliance testing to assess the leachability or solubility of any contaminants that are present at elevated concentrations.

Characterisation is carried out by comparing the soil results with the SGVs and GACs in List 1 with respect to human health as well as groundwater protection. If the soils are seen to contain unacceptable concentrations of contaminants then leachate tests will be required to fully classify the soils. The leachate results are then compared with thresholds for different waste categories as set out in BS EN 12457-2.

List 4 (Groundwater Assessment Criteria)

Assessment of groundwater analysis is carried out using Water Supply (Water Quality) Regulations 2000 (SI 2000/3184 as amended) or the Environmental Quality Standard (EQS) values for fresh or saltwater depending on which is the most applicable background water quality scenario for compliance. Where the groundwater is not abstracted and not supplying water to springs or rivers, the results from upstream groundwater analysis would be used for comparison.

When investigations highlight the presence of soil contaminants at concentrations exceeding what could be expected naturally, the measured contaminant concentrations in soil would be assessed at tier 1 stage with respect to the risk posed to groundwater using the Environment Agency R&D Publication 20 Remedial Targets Worksheet, Release 2.2a.

Generic values for soil properties and chemical partition coefficients for contaminants were taken from the Environment Agency CLEA Model (v1.06) and supporting documents under the SC050021 reference. Exceedance of these values should not be taken as demonstrating a risk to controlled waters. Tier 2 and Tier 3 assessments would need to be carried out if exceedances are noted at Tier 1.

Assessment Criteria for Ground Gases

Ground gases are assessed on the basis of the CIRIA C665 document (Assessing Risks Posed by Hazardous Ground Gases to Buildings) which dictates the monitoring period and the frequency of visits required. Worst case flow rates and gas concentrations are then used to derive a Gas Screening Value (GSV) from which a characteristic situation and then a level of protection is defined.

List 1A (Metals mg/kg)					
Contaminant	Generic Exposure Scenario	Terramech (CLEA v1.06 & S4UL methodology)	Environment Agency SGV (CLEA v1.04)	CIEH/LQM S4UL 2015	DEFRA SP1010 C4SL using SR3 HCV
Arsenic	Residential with plant uptake	32	32	37	32.4 _{child} / 32.4 _{adult}
	Residential without plant uptake	35	Not Assessed	40	35 _{child} / 35 _{adult}
	Allotment		43	43	43 _{child} / 43 _{adult}
	Commercial	635	640	640	635 _{child?} / 635 _{adult}
	Public Open Space (Residential)		Not Assessed	79	No HCV based assessment
	Public Open Space (Park)		Not Assessed	170	No HCV based assessment
Beryllium	Residential with plant uptake		Not Assessed	1.7	
	Residential without plant uptake		Not Assessed	1.7	
	Allotment		Not Assessed	35	
	Commercial		Not Assessed	12	
	Public Open Space (Residential)		Not Assessed	2.2	
	Public Open Space (Park)		Not Assessed	63	
Boron	Residential with plant uptake		Not Assessed	Not Assessed	
	Residential without plant uptake		Not Assessed	Not Assessed	
	Allotment		Not Assessed	Not Assessed	
	Commercial		Not Assessed	Not Assessed	
	Public Open Space (Residential)		Not Assessed	Not Assessed	
	Public Open Space (Park)		Not Assessed	Not Assessed	
Cadmium	Residential with plant uptake		10	11	
	Residential without plant uptake		Not Assessed	85	
	Allotment		1.8	1.9	
	Commercial		230	190	
	Public Open Space (Residential)		Not Assessed	120	
	Public Open Space (Park)		Not Assessed	532	
Chromium III	Residential with plant uptake		Not Assessed	910	
	Residential without plant uptake		Not Assessed	910	
	Allotment		Not Assessed	18000	
	Commercial		Not Assessed	8600	
	Public Open Space (Residential)		Not Assessed	1500	
	Public Open Space (Park)		Not Assessed	3300	
Chromium VI	Residential with plant uptake		Not Assessed	6	14.4 _{child} / 6.3 _{adult}
	Residential without plant uptake		Not Assessed	6	14.4 _{child} / 6.3 _{adult}
	Allotment		Not Assessed	1.8	165 _{child} / 165 _{adult}
	Commercial		Not Assessed	33	165 _{child?} / 165 _{adult}
	Public Open Space (Residential)		Not Assessed	7.7	No HCV based assessment
	Public Open Space (Park)		Not Assessed	220	No HCV based assessment
Copper	Residential with plant uptake		Not Assessed	2400	
	Residential without plant uptake		Not Assessed	7100	
	Allotment		Not Assessed	520	
	Commercial		Not Assessed	68000	
	Public Open Space (Residential)		Not Assessed	12000	
	Public Open Space (Park)		Not Assessed	44000	
Lead	Residential with plant uptake	82 ₍₄₎	450 (old SGV) ₍₅₎	Not Assessed	191 _{child} / 82 _{adult}
	Residential without plant uptake	82 ₍₄₎	450 (old SGV) ₍₅₎	Not Assessed	314 _{child} / 141 _{adult}
	Allotment		Not Assessed	Not Assessed	69.6 _{child} / 31.3 _{adult}
	Commercial	1100 ₍₄₎	750 (old SGV) ₍₅₎	Not Assessed	5150 _{child?} / 2320 _{adult}
	Public Open Space (Residential)		Not Assessed	Not Assessed	No HCV based assessment
	Public Open Space (Park)		Not Assessed	Not Assessed	No HCV based assessment
Inorganic Mercury	Residential with plant uptake		170	40	
	Residential without plant uptake		Not Assessed	56	
	Allotment		80	19	
	Commercial		3600	1100	
	Public Open Space (Residential)			120	
	Public Open Space (Park)			240	
Elemental Mercury	Residential with plant uptake		1	1.2	
	Residential without plant uptake		Not Assessed	1.2	
	Allotment		26	21	
	Commercial		26	25.8	
	Public Open Space (Residential)			16	
	Public Open Space (Park)			25.8	
Methyl Mercury	Residential with plant uptake		11	11	
	Residential without plant uptake		Not Assessed	15	
	Allotment		8	6	
	Commercial		410	320	
	Public Open Space (Residential)			40	
	Public Open Space (Park)			68	
Nickel	Residential with plant uptake		130	180	
	Residential without plant uptake		Not Assessed	180	
	Allotment		230	230	
	Commercial		1800	980	
	Public Open Space (Residential)			230	
	Public Open Space (Park)			3400	

List 1A cont. (Metals mg/kg)				
Contaminant	Generic Exposure Scenario	Terramech (CLEA v1.06 & S4UL methodology)	Environment Agency SGV (CLEA v1.04)	CIEH/LQM S4UL 2015 Part 2
Selenium	Residential with plant uptake		350	250
	Residential without plant uptake		Not Assessed	430
	Allotment		120	88
	Commercial		13000	12000
	Public Open Space (Residential)			1100
	Public Open Space (Park)			1800
Vanadium	Residential with plant uptake		Not Assessed	410
	Residential without plant uptake		Not Assessed	1200
	Allotment		Not Assessed	91
	Commercial		Not Assessed	9000
	Public Open Space (Residential)		Not Assessed	2000
	Public Open Space (Park)		Not Assessed	5000
Zinc	Residential with plant uptake		Not Assessed	3700
	Residential without plant uptake		Not Assessed	40000
	Allotment		Not Assessed	620
	Commercial		Not Assessed	730000
	Public Open Space (Residential)		Not Assessed	8100
	Public Open Space (Park)		Not Assessed	17000
Free Cyanide	Residential with plant uptake		Not Assessed	Not Assessed
	Residential without plant uptake		Not Assessed	Not Assessed
	Allotment		Not Assessed	Not Assessed
	Commercial		Not Assessed	Not Assessed
	Public Open Space (Residential)		Not Assessed	Not Assessed
	Public Open Space (Park)		Not Assessed	Not Assessed
Complex Cyanide	Residential with plant uptake		Not Assessed	Not Assessed
	Residential without plant uptake		Not Assessed	Not Assessed
	Allotment		Not Assessed	Not Assessed
	Commercial		Not Assessed	Not Assessed
	Public Open Space (Residential)		Not Assessed	Not Assessed
	Public Open Space (Park)		Not Assessed	Not Assessed
Thiocyanate	Residential with plant uptake		Not Assessed	Not Assessed
	Residential without plant uptake		Not Assessed	Not Assessed
	Allotment		Not Assessed	Not Assessed
	Commercial		Not Assessed	Not Assessed
	Public Open Space (Residential)		Not Assessed	Not Assessed
	Public Open Space (Park)		Not Assessed	Not Assessed
This table is not a list of potential contaminants at any one site All values are subject to ongoing review CIEH - Chartered Institute for Environmental Health LQM - Land Quality Management (commercial research) (1) xx/yy/zz SOM - Soil Organic Matter dependant at 1%/2.5%/6% (2) xx/yy/zz pH - pH dependant at pH6/pH7/pH8 (3) Internal limits exceeded during calculations (4) under review by Terramech (5) Value Withdrawn S4UL values are the copyright of Land Quality Management Ltd and are reproduced with permission; Publication Number S4UL3262 All rights reserved		Terramech Investigations Limited 183 Long Lane Tilehurst Reading RG31 6YW Email - info@terramech.co.uk Tel 01189 439 910 Fax 01189 439 920		



List 1B (Aliphatic Hydrocarbons mg/kg)				
Contaminant	Generic Exposure Scenario	Terramech (CLEA v1.06 & S4UL methodology)	Environment Agency SGV (CLEA v1.04)	CIEH/LQM S4UL 2015 Part 3
Aliphatic C5-C6	Residential with plant uptake		Not Assessed	42/78/160 ₍₁₎
	Residential without plant uptake		Not Assessed	42/76/160 ₍₁₎
	Allotment		Not Assessed	730/1700/3900 ₍₁₎
	Commercial		Not Assessed	3200(304 ^{sol})/5900(558 ^{sol})/12000(1150 ^{sol}) _(1&3)
	Public Open Space (Residential)			570000/590000/60000 ₍₁₎
Aliphatic C6-C8	Public Open Space (Park)			95000(304 ^{sol})/130000(558 ^{sol})/180000(1150 ^{sol}) _(1&3)
	Residential with plant uptake		Not Assessed	100/230/530 ₍₁₎
	Residential without plant uptake		Not Assessed	100/230/530 ₍₁₎
	Allotment		Not Assessed	2300/5600/13000 ₍₁₎
	Commercial		Not Assessed	7800(144 ^{sol})/17000(322 ^{sol})/40000(736 ^{sol}) _(1&3)
Aliphatic C8-C10	Public Open Space (Residential)		Not Assessed	600000/610000/620000 ₍₁₎
	Public Open Space (Park)		Not Assessed	150000(144 ^{sol})/220000(322 ^{sol})/320000(736 ^{sol}) _(1&3)
	Residential with plant uptake		Not Assessed	27/65/150 ₍₁₎
	Residential without plant uptake		Not Assessed	27/65/150 ₍₁₎
	Allotment		Not Assessed	320/77/1700 ₍₁₎
Aliphatic C10-C12	Commercial		Not Assessed	2000(78 ^{sol})/4800(190 ^{vap})/11000(451 ^{vap}) _(1&3)
	Public Open Space (Residential)		Not Assessed	13000/13000/13000 ₍₁₎
	Public Open Space (Park)		Not Assessed	14000(78 ^{sol})/18000(190 ^{vap})/21000(451 ^{vap}) _(1&3)
	Residential with plant uptake		Not Assessed	130(48 ^{vap})/330(118 ^{vap})/760(283 ^{vap}) _(1&3)
	Residential without plant uptake		Not Assessed	130(48 ^{vap})/330(118 ^{vap})/760(283 ^{vap}) _(1&3)
Aliphatic C12-C16	Allotment		Not Assessed	2200/4400/7300 ₍₁₎
	Commercial		Not Assessed	9700(48 ^{sol})/23000(118 ^{vap})/47000(283 ^{vap}) _(1&3)
	Public Open Space (Residential)		Not Assessed	13000/13000/13000 ₍₁₎
	Public Open Space (Park)		Not Assessed	21000(48 ^{sol})/230000(118 ^{vap})/24000(283 ^{vap}) _(1&3)
	Residential with plant uptake		Not Assessed	1100(24 ^{sol})/2400(59 ^{sol})/4300(142 ^{sol}) _(1&3)
Aliphatic C16-C35	Residential without plant uptake		Not Assessed	1100(24 ^{sol})/2400(59 ^{sol})/4300(142 ^{sol}) _(1&3)
	Allotment		Not Assessed	11000/13000/13000 ₍₁₎
	Commercial		Not Assessed	59000(24 ^{sol})/82000(59 ^{sol})/90000(142 ^{sol}) _(1&3)
	Public Open Space (Residential)		Not Assessed	13000/13000/13000 ₍₁₎
	Public Open Space (Park)		Not Assessed	25000(24 ^{sol})/25000(59 ^{sol})/26000(142 ^{sol}) _(1&3)
Aliphatic C35-C44	Residential with plant uptake		Not Assessed	65000(8.48 ^{sol})/92000(21 ^{sol})/110000 _(1&3)
	Residential without plant uptake		Not Assessed	65000(8.48 ^{sol})/92000(21 ^{sol})/110000 _(1&3)
	Allotment		Not Assessed	260000/270000/270000 ₍₁₎
	Commercial		Not Assessed	1600000/1700000/1800000 ₍₁₎
	Public Open Space (Residential)		Not Assessed	3800/3800/3800 ₍₁₎
Aliphatic C44-C70	Public Open Space (Park)		Not Assessed	3800/3800/3800 ₍₁₎
	Residential with plant uptake		Not Assessed	1600/1800/1900
	Residential without plant uptake		Not Assessed	1600/1800/1900
	Allotment		Not Assessed	1200/2100/3000
	Commercial		Not Assessed	28000/28000/28000
Aliphatic C44-C70	Public Open Space (Residential)		Not Assessed	3800/3800/3800
	Public Open Space (Park)		Not Assessed	7800/7800/7800
This table is not a list of potential contaminants at any one site All values are subject to ongoing review CIEH - Chartered Institute for Environmental Health LQM - Land Quality Management (commercial research) (1) xx/yy/zz SOM - Soil Organic Matter dependant at 1%/2.5%/6% (2) xx/yy/zz pH - pH dependant at pH6/pH7/pH8 (3) Internal limits exceeded during calculations. Vapour or solubility saturation limit exceeded (limit presented in brackets) (4) under review by Terramech S4UL values are the copyright of Land Quality Management Ltd and are reproduced with permission; Publication Number S4UL3262 All rights reserved			Terramech Investigations Limited 183 Long Lane Tilehurst Reading RG31 6YW Email - info@terramech.co.uk Tel 01189 439 910 Fax 01189 439 920	



List 1C (Aromatic (Mono-cyclic and Poly-cyclic) Hydrocarbons mg/kg)				
Contaminant	Generic Exposure Scenario	Terramech (CLEA v1.06 & S4UL methodology)	Environment Agency SGV (CLEA v1.04)	CIEH/LQM S4UL 2015 Part 3
Aromatic C5-C7	Residential with plant uptake		Not Assessed	70/140/300 ₍₁₎
	Residential without plant uptake		Not Assessed	370/690/1400 ₍₁₎
	Allotment		Not Assessed	13/27/57 ₍₁₎
	Commercial		Not Assessed	26000(1220 ^{sol})/46000(2260 ^{sol})/86000(4710 ^{sol}) _(1&3)
	Public Open Space (Residential)		Not Assessed	56000/56000/56000 ₍₁₎
	Public Open Space (Park)		Not Assessed	76000(1220 ^{sol})/84000(2260 ^{sol})/92000(4710 ^{sol}) _(1&3)
Aromatic C7-C8	Residential with plant uptake		Not Assessed	130/290/660 ₍₁₎
	Residential without plant uptake		Not Assessed	860/1800/3900 ₍₁₎
	Allotment		Not Assessed	22/51/120 ₍₁₎
	Commercial		Not Assessed	56000(869 ^{vap})/110000(1920 ^{sol})/180000(4360 ^{vap}) _(1&3)
	Public Open Space (Residential)		Not Assessed	56000/56000/56000 ₍₁₎
	Public Open Space (Park)		Not Assessed	87000(869 ^{vap})/95000(1920 ^{sol})/100000(4360 ^{vap}) _(1&3)
Aromatic C8-C10	Residential with plant uptake		Not Assessed	34/83/190 ₍₁₎
	Residential without plant uptake		Not Assessed	47/110/270 ₍₁₎
	Allotment		Not Assessed	8.6/21/51 ₍₁₎
	Commercial		Not Assessed	3500(613 ^{vap})/8100(1500 ^{vap})/17000(3580 ^{vap}) _(1&3)
	Public Open Space (Residential)		Not Assessed	5000/5000/5000 ₍₁₎
	Public Open Space (Park)		Not Assessed	7200(613 ^{vap})/8500(1500 ^{vap})/9300(3580 ^{vap}) _(1&3)
Aromatic C10-C12	Residential with plant uptake		Not Assessed	74/180/380 ₍₁₎
	Residential without plant uptake		Not Assessed	250/590/1200 ₍₁₎
	Allotment		Not Assessed	13/31/74 ₍₁₎
	Commercial		Not Assessed	16000(364 ^{sol})/28000(899 ^{sol})/34000(2150 ^{sol}) _(1&3)
	Public Open Space (Residential)		Not Assessed	5000/5000/5000 ₍₁₎
	Public Open Space (Park)		Not Assessed	9200(364 ^{sol})/9700(899 ^{sol})/10000 _(1&3)
Aromatic C12-C16	Residential with plant uptake		Not Assessed	140/330/660 ₍₁₎
	Residential without plant uptake		Not Assessed	1800/2300(419 ^{sol})/2500 _(1&3)
	Allotment		Not Assessed	23/57/130 ₍₁₎
	Commercial		Not Assessed	36000/(169 ^{sol})/37000/38000 _(1&3)
	Public Open Space (Residential)		Not Assessed	5100/5100/5000 ₍₁₎
	Public Open Space (Park)		Not Assessed	10000/10000/10000 ₍₁₎
Aromatic C16-C21	Residential with plant uptake		Not Assessed	260/540/930 ₍₁₎
	Residential without plant uptake		Not Assessed	1900/1900/1900 ₍₁₎
	Allotment		Not Assessed	46/110/260 ₍₁₎
	Commercial		Not Assessed	28000/28000/28000 ₍₁₎
	Public Open Space (Residential)		Not Assessed	3800/3800/3800 ₍₁₎
	Public Open Space (Park)		Not Assessed	7600/7700/7800 ₍₁₎
Aromatic C21-C35	Residential with plant uptake		Not Assessed	1100/1500/1700 ₍₁₎
	Residential without plant uptake		Not Assessed	1900/1900/1900 ₍₁₎
	Allotment		Not Assessed	370/820/1600 ₍₁₎
	Commercial		Not Assessed	28000/28000/28000 ₍₁₎
	Public Open Space (Residential)		Not Assessed	3800/3800/3800 ₍₁₎
	Public Open Space (Park)		Not Assessed	7800/7800/7900 ₍₁₎
Aromatic C35-C44	Residential with plant uptake		Not Assessed	1100/1500/1700 ₍₁₎
	Residential without plant uptake		Not Assessed	1900/1900/1900 ₍₁₎
	Allotment		Not Assessed	370/820/1600 ₍₁₎
	Commercial		Not Assessed	28000/28000/28000 ₍₁₎
	Public Open Space (Residential)		Not Assessed	3800/3800/3800 ₍₁₎
	Public Open Space (Park)		Not Assessed	7800/7800/7900 ₍₁₎
Aromatic C44-C70	Residential with plant uptake		Not Assessed	1600/1800/1900 ₍₁₎
	Residential without plant uptake		Not Assessed	1900/1900/1900 ₍₁₎
	Allotment		Not Assessed	1200/2100/3000 ₍₁₎
	Commercial		Not Assessed	28000/28000/28000 ₍₁₎
	Public Open Space (Residential)		Not Assessed	3800/3800/3800 ₍₁₎
	Public Open Space (Park)		Not Assessed	7800/7800/7900 ₍₁₎
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List 1D (BTEX Mono-cyclic Aromatic Hydrocarbons mg/kg)				
Contaminant	Generic Exposure Scenario	Terramech (CLEA v1.06 & S4UL methodology)	Environment Agency SGV (CLEA v1.04)	CIEH/LQM S4UL 2015 Part 3
Benzene	Residential with plant uptake		0.33	0.87/0.17/0.37 ⁽¹⁾
	Residential without plant uptake		Not Assessed	0.38/0.70/1.4 ⁽¹⁾
	Allotment		0.07	0.017/0.034/0.075 ⁽¹⁾
	Commercial		95	27/47/90 ⁽¹⁾
	Public Open Space (Residential)		Not Assessed	72/72/73 ⁽¹⁾
	Public Open Space (Park)		Not Assessed	90/11/110 ⁽¹⁾
Toluene	Residential with plant uptake		610	130/290/660
	Residential without plant uptake		Not Assessed	880(869 ^{vap})/1900/3900 ^(1&3)
	Allotment		120	22/51/120 ⁽¹⁾
	Commercial		4400	56000(869 ^{vap})/56000(1920 ^{vap})/56000(4360 ^{vap}) ^(1&3)
	Public Open Space (Residential)		Not Assessed	5600/5600/5600 ⁽¹⁾
	Public Open Space (Park)		Not Assessed	87000(869 ^{vap})/95000(1920 ^{vap})/100000(4360 ^{vap}) ^(1&3)
Ethylbenzene	Residential with plant uptake		350	47/110/260 ⁽¹⁾
	Residential without plant uptake		Not Assessed	83/190/440 ⁽¹⁾
	Allotment		90	16/39/91 ⁽¹⁾
	Commercial		2800	5700(518 ^{vap})/13000(1220 ^{vap})/27000(2840 ^{vap}) ^(1&3)
	Public Open Space (Residential)		Not Assessed	24000/24000/25000 ⁽¹⁾
	Public Open Space (Park)		Not Assessed	17000(518 ^{vap})/22000(1220 ^{vap})/27000(2840 ^{vap}) ^(1&3)
o-Xylene	Residential with plant uptake		250	60/140/330 ⁽¹⁾
	Residential without plant uptake		Not Assessed	88/210/480 ⁽¹⁾
	Allotment		160	28/67/160 ⁽¹⁾
	Commercial		2600	6600(478 ^{sol})/15000(1120 ^{sol})/33000(2620 ^{sol}) ^(1&3)
	Public Open Space (Residential)		Not Assessed	41000/42000/43000 ⁽¹⁾
	Public Open Space (Park)		Not Assessed	17000(478 ^{sol})/24000(1120 ^{sol})/33000(2620 ^{sol}) ^(1&3)
m-Xylene	Residential with plant uptake		240	59/140/320 ⁽¹⁾
	Residential without plant uptake		Not Assessed	52/190/450 ⁽¹⁾
	Allotment		180	31/74/170 ⁽¹⁾
	Commercial		3500	6200(625 ^{vap})/14000(1470 ^{vap})/31000(3460 ^{vap}) ^(1&3)
	Public Open Space (Residential)		Not Assessed	41000/42000/43000 ⁽¹⁾
	Public Open Space (Park)		Not Assessed	17000(625 ^{vap})/24000(1470 ^{vap})/32000(3460 ^{vap}) ^(1&3)
p-Xylene	Residential with plant uptake		230	56/130/310 ⁽¹⁾
	Residential without plant uptake		Not Assessed	79/180/430 ⁽¹⁾
	Allotment		160	29/69/160 ⁽¹⁾
	Commercial		3200	59000(576 ^{sol})/14000(1350 ^{sol})/30000(3170 ^{sol}) ^(1&3)
	Public Open Space (Residential)		Not Assessed	41000/42000/43000 ⁽¹⁾
	Public Open Space (Park)		Not Assessed	17000(576 ^{sol})/23000(1350 ^{sol})/31000(3170 ^{sol}) ^(1&3)
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List 1E (Poly-cyclic Aromatic Hydrocarbons or PAH - mg/kg)				
Contaminant	Generic Exposure Scenario	Terramech (CLEA v1.06 & S4UL methodology)	Environment Agency SGV (CLEA v1.04)	CIEH/LQM S4UL 2015 Part 4
Acenaphthene	Residential with plant uptake		Not Assessed	210/610/1100 ₍₁₎
	Residential without plant uptake		Not Assessed	3000/(57 ^{sol})/4700(141 ^{sol})/6000(336 ^{sol}) _(1&3)
	Allotment		Not Assessed	34/85/200 ₍₁₎
	Commercial		Not Assessed	8400(57 ^{sol})/97000(141 ^{sol})/100000 _(1&3)
	Public Open Space (Residential)		Not Assessed	15000/15000/15000 ₍₁₎
	Public Open Space (Park)		Not Assessed	29000/30000/30000 ₍₁₎
Acenaphthylene	Residential with plant uptake		Not Assessed	170/420/920 ₍₁₎
	Residential without plant uptake		Not Assessed	2900(86.1 ^{sol})/4600(212 ^{sol})/6000(506 ^{sol}) _(1&3)
	Allotment		Not Assessed	28/69/160 ₍₁₎
	Commercial		Not Assessed	83000(86.1 ^{sol})/97000(212 ^{sol})/100000 _(1&3)
	Public Open Space (Residential)		Not Assessed	15000/15000/15000 ₍₁₎
	Public Open Space (Park)		Not Assessed	29000/30000/30000 ₍₁₎
Anthracene	Residential with plant uptake		Not Assessed	2400/5400/11000 ₍₁₎
	Residential without plant uptake		Not Assessed	31000(1.17 ^{vsp})/35000/37000 _(1&3)
	Allotment		Not Assessed	380/950/2200 ₍₁₎
	Commercial		Not Assessed	520000/540000/540000 ₍₁₎
	Public Open Space (Residential)		Not Assessed	74000/74000/74000 ₍₁₎
	Public Open Space (Park)		Not Assessed	150000/150000/150000 ₍₁₎
Benzo (a) Anthracene	Residential with plant uptake		Not Assessed	7.2/11/13 ₍₁₎
	Residential without plant uptake		Not Assessed	11/14/15 ₍₁₎
	Allotment		Not Assessed	2.9/6.5/13 ₍₁₎
	Commercial		Not Assessed	170/170/180 ₍₁₎
	Public Open Space (Residential)		Not Assessed	29/29/29 ₍₁₎
	Public Open Space (Park)		Not Assessed	49/56/62 ₍₁₎
Benzo (a) Pyrene	Residential with plant uptake		Not Assessed	2.2/2.7/3.0 ₍₁₎
	Residential without plant uptake		Not Assessed	3.2/3.2/3.2 ₍₁₎
	Allotment		Not Assessed	0.97/2.0/3.5 ₍₁₎
	Commercial		Not Assessed	35/35/36 ₍₁₎
	Public Open Space (Residential)		Not Assessed	5.7/5.7/5.7 ₍₁₎
	Public Open Space (Park)		Not Assessed	11/12/13 ₍₁₎
Benzo (b) Fluoranthene	Residential with plant uptake		Not Assessed	2.6/3.3/3.7 ₍₁₎
	Residential without plant uptake		Not Assessed	3.9/4.0/4.0 ₍₁₎
	Allotment		Not Assessed	0.99/2.1/3.9 ₍₁₎
	Commercial		Not Assessed	44/44/45 ₍₁₎
	Public Open Space (Residential)		Not Assessed	7.1/7.2/7.2 ₍₁₎
	Public Open Space (Park)		Not Assessed	13/15/16 ₍₁₎
Benzo (ghi) Perylene	Residential with plant uptake		Not Assessed	320/340/350 ₍₁₎
	Residential without plant uptake		Not Assessed	360/360/360 ₍₁₎
	Allotment		Not Assessed	290/470/640 ₍₁₎
	Commercial		Not Assessed	3900/4000/4000 ₍₁₎
	Public Open Space (Residential)		Not Assessed	640/640/640 ₍₁₎
	Public Open Space (Park)		Not Assessed	1400/1500/1600 ₍₁₎
Benzo (k) Fluoranthene	Residential with plant uptake		Not Assessed	77/93/100 ₍₁₎
	Residential without plant uptake		Not Assessed	110/110/110 ₍₁₎
	Allotment		Not Assessed	37/75/130 ₍₁₎
	Commercial		Not Assessed	1200/1200/1200 ₍₁₎
	Public Open Space (Residential)		Not Assessed	190/190/190 ₍₁₎
	Public Open Space (Park)		Not Assessed	370/410/440 ₍₁₎
Chrysene	Residential with plant uptake		Not Assessed	15/22/27 ₍₁₎
	Residential without plant uptake		Not Assessed	30/31/32 ₍₁₎
	Allotment		Not Assessed	4.1/9.4/19 ₍₁₎
	Commercial		Not Assessed	350/350/350 ₍₁₎
	Public Open Space (Residential)		Not Assessed	57/57/57 ₍₁₎
	Public Open Space (Park)		Not Assessed	93/110/120 ₍₁₎
Dibenzo (ah) Anthracene	Residential with plant uptake		Not Assessed	0.24/0.28/0.3 ₍₁₎
	Residential without plant uptake		Not Assessed	0.31/0.32/0.32 ₍₁₎
	Allotment		Not Assessed	0.14/0.27/0.43 ₍₁₎
	Commercial		Not Assessed	3.5/3.6/3.6 ₍₁₎
	Public Open Space (Residential)		Not Assessed	0.57/0.57/0.58 ₍₁₎
	Public Open Space (Park)		Not Assessed	1.1/1.3/1.4 ₍₁₎
Fluoranthene	Residential with plant uptake		Not Assessed	280/560/890 ₍₁₎
	Residential without plant uptake		Not Assessed	1500/1600/1600 ₍₁₎
	Allotment		Not Assessed	52/130/290 ₍₁₎
	Commercial		Not Assessed	23000/23000/23000 ₍₁₎
	Public Open Space (Residential)		Not Assessed	3100/3100/3100 ₍₁₎
	Public Open Space (Park)		Not Assessed	6300/6300/6400 ₍₁₎
Fluorene	Residential with plant uptake		Not Assessed	170/400/860 ₍₁₎
	Residential without plant uptake		Not Assessed	2800(30.9 ^{sol})/3800(76.5 ^{sol})/4500(183 ^{sol}) _(1&3)
	Allotment		Not Assessed	27/67/160 ₍₁₎
	Commercial		Not Assessed	63000(30.9 ^{sol})/68000/71000 _(1&3)
	Public Open Space (Residential)		Not Assessed	9900/9900/9900 ₍₁₎
	Public Open Space (Park)		Not Assessed	20000/20000/20000 ₍₁₎

List 1E cont (Poly-cyclic Aromatic Hydrocarbons or PAH - mg/kg)				
Contaminant	Generic Exposure Scenario	Terramech (CLEA v1.06 & S4UL methodology)	Environment Agency SGV (CLEA v1.04)	CIEH/LQM S4UL 2015 Part 4
Indeno (cd) Pyrene	Residential with plant uptake		Not Assessed	27/36/41 ₍₁₎
	Residential without plant uptake		Not Assessed	45/46/46 ₍₁₎
	Allotment		Not Assessed	9.5/21/39 ₍₁₎
	Commercial		Not Assessed	500/510/510 ₍₁₎
	Public Open Space (Residential)		Not Assessed	82/82/82 ₍₁₎
	Public Open Space (Park)		Not Assessed	150/170/180 ₍₁₎
Naphthalene	Residential with plant uptake		Not Assessed	2.3/5.6/13 ₍₁₎
	Residential without plant uptake		Not Assessed	2.3/5.6/13 ₍₁₎
	Allotment		Not Assessed	4.1/10/24 ₍₁₎
	Commercial		Not Assessed	190(76.4 ^{sol})/460(183 ^{sol})/1100(432 ^{sol}) _(1&3)
	Public Open Space (Residential)		Not Assessed	4900/4900/4900 ₍₁₎
	Public Open Space (Park)		Not Assessed	1200(76.4 ^{sol})/1900(183 ^{sol})/3000 _(1&3)
Phenanthrene	Residential with plant uptake		Not Assessed	95/220/440 ₍₁₎
	Residential without plant uptake		Not Assessed	1300(36 ^{sol})/1500/1500 _(1&3)
	Allotment		Not Assessed	15/38/90 ₍₁₎
	Commercial		Not Assessed	22000/22000/23000 ₍₁₎
	Public Open Space (Residential)		Not Assessed	3100/3100/3100 ₍₁₎
	Public Open Space (Park)		Not Assessed	6200/6200/6300 ₍₁₎
Pyrene	Residential with plant uptake		Not Assessed	620/1200/2000 ₍₁₎
	Residential without plant uptake		Not Assessed	3700/3800/3800 ₍₁₎
	Allotment		Not Assessed	110/270/620 ₍₁₎
	Commercial		Not Assessed	54000/54000/54000 ₍₁₎
	Public Open Space (Residential)		Not Assessed	7400/7400/7400 ₍₁₎
	Public Open Space (Park)		Not Assessed	15000/15000/15000 ₍₁₎
Coal Tar (Benzo (a) Pyrene as surrogate)	Residential with plant uptake		Not Assessed	0.79/0.98/1.1 ₍₁₎
	Residential without plant uptake		Not Assessed	1.2/1.2/1.2 ₍₁₎
	Allotment		Not Assessed	0.32/0.67/1.2 ₍₁₎
	Commercial		Not Assessed	15/15/15 ₍₁₎
	Public Open Space (Residential)		Not Assessed	2.2/2.2/2.2 ₍₁₎
	Public Open Space (Park)		Not Assessed	4.4/4.7/4.8 ₍₁₎
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List 1F. (PCBs $\mu\text{g/kg}$)				
Contaminant	Generic Exposure Scenario	Terramech (CLEA v1.06 & S4UL methodology)	Environment Agency New SGV (CLEA v1.04)	CIEH/LQM 2nd Ed 2009 or CIEH/LQM S4UL 2015
Sum of PCDDs, PCDFs and dioxin-like PCBs	Residential with plant uptake		8	Not Assessed
	Residential without plant uptake		8	Not Assessed
	Allotment			Not Assessed
	Commercial		240	Not Assessed
PCB-77	Residential with plant uptake		0.0774	Not Assessed
	Residential without plant uptake		0.0783	Not Assessed
	Allotment		0.233	Not Assessed
	Commercial		2.33	Not Assessed
PCB-81	Residential with plant uptake		0.0774	Not Assessed
	Residential without plant uptake		0.0783	Not Assessed
	Allotment		0.233	Not Assessed
	Commercial		2.33	Not Assessed
PCB-126	Residential with plant uptake		0.0777	Not Assessed
	Residential without plant uptake		0.0783	Not Assessed
	Allotment		0.247	Not Assessed
	Commercial		2.33	Not Assessed
PCB-169	Residential with plant uptake		0.0777	Not Assessed
	Residential without plant uptake		0.0783	Not Assessed
	Allotment		0.251	Not Assessed
	Commercial		2.33	Not Assessed
PCB-105	Residential with plant uptake		0.0777	Not Assessed
	Residential without plant uptake		0.0783	Not Assessed
	Allotment		0.247	Not Assessed
	Commercial		2.33	Not Assessed
PCB-114	Residential with plant uptake		0.0777	Not Assessed
	Residential without plant uptake		0.0783	Not Assessed
	Allotment		0.247	Not Assessed
	Commercial		2.33	Not Assessed
PCB-118	Residential with plant uptake		0.0777	Not Assessed
	Residential without plant uptake		0.0783	Not Assessed
	Allotment		0.247	Not Assessed
	Commercial		2.33	Not Assessed
PCB-123	Residential with plant uptake		0.0777	Not Assessed
	Residential without plant uptake		0.0783	Not Assessed
	Allotment		0.247	Not Assessed
	Commercial		2.33	Not Assessed
PCB-156	Residential with plant uptake		0.0777	Not Assessed
	Residential without plant uptake		0.0783	Not Assessed
	Allotment		0.251	Not Assessed
	Commercial		2.33	Not Assessed
PCB-157	Residential with plant uptake		0.0777	Not Assessed
	Residential without plant uptake		0.0783	Not Assessed
	Allotment		0.251	Not Assessed
	Commercial		2.33	Not Assessed
PCB-156	Residential with plant uptake		0.0777	Not Assessed
	Residential without plant uptake		0.0783	Not Assessed
	Allotment		0.251	Not Assessed
	Commercial		2.33	Not Assessed
PCB-157	Residential with plant uptake		0.0777	Not Assessed
	Residential without plant uptake		0.0783	Not Assessed
	Allotment		0.251	Not Assessed
	Commercial		2.33	Not Assessed
PCB-167	Residential with plant uptake		0.0777	Not Assessed
	Residential without plant uptake		0.0783	Not Assessed
	Allotment		0.251	Not Assessed
	Commercial			Not Assessed
PCB-189	Residential with plant uptake		0.0778	Not Assessed
	Residential without plant uptake		0.0783	Not Assessed
	Allotment		0.252	Not Assessed
	Commercial		2.33	Not Assessed
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List 1G (ChloroAlkanes & Alkenes mg/kg)				
Contaminant	Generic Exposure Scenario	Terramech (CLEA v1.06 & S4UL methodology)	Environment Agency SGV (CLEA v1.04)	CIEH/LQM S4UL 2015 Part5
1,2 Dichloroethane (1,2 -DCA)	Residential with plant uptake		Not Assessed	0.0071/0.011/0.019
	Residential without plant uptake		Not Assessed	0.0092/0.013/0.023
	Allotment		Not Assessed	0.0046/0.0083/0.016
	Commercial		Not Assessed	0.67/0.97/1.7
	Public Open Space (Residential)		Not Assessed	29/29/29
	Public Open Space (Park)		Not Assessed	21/24/28
1,1,1 Trichloroethane	Residential with plant uptake		Not Assessed	8.8/18/39
	Residential without plant uptake		Not Assessed	9.0/18/40
	Allotment		Not Assessed	48/110/240
	Commercial		Not Assessed	660/1300/3000
	Public Open Space (Residential)		Not Assessed	14000/14000/14000
	Public Open Space (Park)		Not Assessed	57000(1425 ^{vap})/76000(2915 ^{vap})/100000(6392 ^{vap})
1,1,2,2 Tetrachloroethanes	Residential with plant uptake		Not Assessed	1.6/3.4/7.5
	Residential without plant uptake		Not Assessed	3.9/8.0/17
	Allotment		Not Assessed	0.41/0.89/2.0
	Commercial		Not Assessed	270/550/1100
	Public Open Space (Residential)		Not Assessed	1400/1400/1400
	Public Open Space (Park)		Not Assessed	1800/2100/2300
1,1,1,2 Tetrachloroethanes	Residential with plant uptake		Not Assessed	1.2/2.8/6.4
	Residential without plant uptake		Not Assessed	1.5/3.5/8.2
	Allotment		Not Assessed	0.79/1.9/4.4
	Commercial		Not Assessed	110/250/560
	Public Open Space (Residential)		Not Assessed	1400/1400/1400
	Public Open Space (Park)		Not Assessed	1500/1800/2100
Tetrachloroethene	Residential with plant uptake		Not Assessed	0.18/0.39/0.9
	Residential without plant uptake		Not Assessed	0.18/0.4/0.92
	Allotment		Not Assessed	0.65/1.5/3.6
	Commercial		Not Assessed	19/42/95
	Public Open Space (Residential)		Not Assessed	1400/1400/1400
	Public Open Space (Park)		Not Assessed	820(424 ^{sol})/1100(951 ^{sol})/1500
Tetrachloromethane Aka Carbon Tetrachloride	Residential with plant uptake		Not Assessed	0.026/0.058/0.13
	Residential without plant uptake		Not Assessed	0.026/0.058/0.13
	Allotment		Not Assessed	0.45/1.0/2.4
	Commercial		Not Assessed	2.9/6.3/14
	Public Open Space (Residential)		Not Assessed	890/920/950
	Public Open Space (Park)		Not Assessed	190/270/400
Trichloroethene	Residential with plant uptake		Not Assessed	0.016/0.034/0.075
	Residential without plant uptake		Not Assessed	0.017/0.036/0.08
	Allotment		Not Assessed	0.041/0.091/0.21
	Commercial		Not Assessed	1.2/2.6/6.7
	Public Open Space (Residential)		Not Assessed	120/120/120
	Public Open Space (Park)		Not Assessed	70/91/120
Trichloromethane Aka Chloroform	Residential with plant uptake		Not Assessed	0.91/1.7/3.4
	Residential without plant uptake		Not Assessed	1.2/2.1/4.2
	Allotment		Not Assessed	0.42/0.83/1.7
	Commercial		Not Assessed	99/170/350
	Public Open Space (Residential)		Not Assessed	2500/2500/2500
	Public Open Space (Park)		Not Assessed	2600/2800/3100
Chloroethene Aka Vinyl Chloride	Residential with plant uptake		Not Assessed	0.00064/0.00087/0.0014
	Residential without plant uptake		Not Assessed	0.00077/0.0010/0.0015
	Allotment		Not Assessed	0.000550.0010/0.0018
	Commercial		Not Assessed	0.059/0.077/0.12
	Public Open Space (Residential)		Not Assessed	3.5/3.5/3.5
	Public Open Space (Park)		Not Assessed	4.8/5.0/5.4
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List 1H (Explosives mg/kg)				
Contaminant	Generic Exposure Scenario	Terramech (CLEA v1.06 & S4UL methodology)	Environment Agency SGV (CLEA v1.04)	CIEH/LQM S4UL 2015 Part 6
2,4,6 Trinitrotoluene Aka TNT	Residential with plant uptake		Not Assessed	1.6/3.7/8.1
	Residential without plant uptake		Not Assessed	65/66/66
	Allotment		Not Assessed	0.24/0.58/1.4
	Commercial		Not Assessed	1000/1000/1000
	Public Open Space (Residential)		Not Assessed	130/130/130
	Public Open Space (Park)		Not Assessed	260/270/270
RDX	Residential with plant uptake		Not Assessed	120/250/540
	Residential without plant uptake		Not Assessed	13000/13000/13000
	Allotment		Not Assessed	17/38/85
	Commercial		Not Assessed	21000/21000/21000
	Public Open Space (Residential)		Not Assessed	26000/26000/27000
	Public Open Space (Park)		Not Assessed	49000(18.7sol)/51000/53000
HMX	Residential with plant uptake		Not Assessed	5.7/13/26
	Residential without plant uptake		Not Assessed	6700/6700/6700
	Allotment		Not Assessed	0.86/1.9/3.9
	Commercial		Not Assessed	11000/11000/11000
	Public Open Space (Residential)		Not Assessed	13000/13000/13000
	Public Open Space (Park)		Not Assessed	23000(0.36 ^{vap})/23000(0.39 ^{vap})/24000(0.48 ^{vap})
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List 11 (Pesticides mg/kg)				
Contaminant	Generic Exposure Scenario	Terramech (CLEA v1.06 & S4UL methodology)	Environment Agency SGV (CLEA v1.04)	CIEH/LQM S4UL 2015 Part 7
Aldrin	Residential with plant uptake		Not Assessed	5.7/6.6/7.1 ₍₁₎
	Residential without plant uptake		Not Assessed	7.3/7.4/7.5 ₍₁₎
	Allotment		Not Assessed	3.2/6.1/9.6 ₍₁₎
	Commercial		Not Assessed	170/170/170 ₍₁₎
	Public Open Space (Residential)		Not Assessed	18/18/18 ₍₁₎
	Public Open Space (Park)		Not Assessed	30/30/31 ₍₁₎
Dieldrin	Residential with plant uptake		Not Assessed	0.97/2/3.5 ₍₁₎
	Residential without plant uptake		Not Assessed	7/7.3/7.4 ₍₁₎
	Allotment		Not Assessed	0.17/0.41/0.96 ₍₁₎
	Commercial		Not Assessed	170/170/170 ₍₁₎
	Public Open Space (Residential)		Not Assessed	18/18/18 ₍₁₎
	Public Open Space (Park)		Not Assessed	30/30/30 ₍₁₎
Atrazine	Residential with plant uptake		Not Assessed	3.3/7.6/17.4 ₍₁₎
	Residential without plant uptake		Not Assessed	610/620/620 ₍₁₎
	Allotment		Not Assessed	0.5/1.2/2.7 ₍₁₎
	Commercial		Not Assessed	9300/9300/9400 ₍₁₎
	Public Open Space (Residential)		Not Assessed	1200/1200/1200 ₍₁₎
	Public Open Space (Park)		Not Assessed	2300/2400/2400 ₍₁₎
Dichlorvos	Residential with plant uptake		Not Assessed	0.032/0.066/0.14 ₍₁₎
	Residential without plant uptake		Not Assessed	6.4/6.5/6.6 ₍₁₎
	Allotment		Not Assessed	0.0049/0.010/0.022 ₍₁₎
	Commercial		Not Assessed	140/140/140 ₍₁₎
	Public Open Space (Residential)		Not Assessed	16/16/16 ₍₁₎
	Public Open Space (Park)		Not Assessed	26/26/27 ₍₁₎
Alpha Endosulfan	Residential with plant uptake		Not Assessed	7.4/18/41 ₍₁₎
	Residential without plant uptake		Not Assessed	160(0.003 ^{vap})/280(0.007 ^{vap})/410(0.016 ^{vap}) _(1 & 3)
	Allotment		Not Assessed	1.2/2.9/6.6 ₍₁₎
	Commercial		Not Assessed	5600(0.016 ^{vap})/7400(0.016 ^{vap})/8400(0.016 ^{vap}) _(1 & 3)
	Public Open Space (Residential)		Not Assessed	1200/1200/1200 ₍₁₎
	Public Open Space (Park)		Not Assessed	2400/2400/2500 ₍₁₎
Beta Endosulfan	Residential with plant uptake		Not Assessed	7.0/17/39 ₍₁₎
	Residential without plant uptake		Not Assessed	150(0.00007 ^{vap})/320(0.0002 ^{vap})/440(0.0004 ^{vap}) _(1 & 3)
	Allotment		Not Assessed	1.1/2.7/6.4 ₍₁₎
	Commercial		Not Assessed	6300(0.00007 ^{vap})/7800(0.0002 ^{vap})/8700(0.0004 ^{vap}) _(1 & 3)
	Public Open Space (Residential)		Not Assessed	1200/1200/1200 ₍₁₎
	Public Open Space (Park)		Not Assessed	2400/2400/2500 ₍₁₎
Alpha BHC (Hexachlorocyclohexane) Inc Lindane	Residential with plant uptake		Not Assessed	0.23/0.66/1.2 ₍₁₎
	Residential without plant uptake		Not Assessed	6.9/9.2/11 ₍₁₎
	Allotment		Not Assessed	0.035/0.087/0.21 ₍₁₎
	Commercial		Not Assessed	170/180/180 ₍₁₎
	Public Open Space (Residential)		Not Assessed	24/24/24 ₍₁₎
	Public Open Space (Park)		Not Assessed	47/48/48 ₍₁₎
Beta BHC (Hexachlorocyclohexane) Inc Lindane	Residential with plant uptake		Not Assessed	0.085/0.2/0.46 ₍₁₎
	Residential without plant uptake		Not Assessed	3.7/3.8/3.8 ₍₁₎
	Allotment		Not Assessed	0.013/0.032/0.077 ₍₁₎
	Commercial		Not Assessed	65/65/65 ₍₁₎
	Public Open Space (Residential)		Not Assessed	8.1/8.1/8.1 ₍₁₎
	Public Open Space (Park)		Not Assessed	15/15/16 ₍₁₎
Gamma BHC (Hexachlorocyclohexane) Inc Lindane	Residential with plant uptake		Not Assessed	0.06/0.14/0.33 ₍₁₎
	Residential without plant uptake		Not Assessed	2.9/3.3/3.5 ₍₁₎
	Allotment		Not Assessed	0.0092/0.023/0.054 ₍₁₎
	Commercial		Not Assessed	67/69/70 ₍₁₎
	Public Open Space (Residential)		Not Assessed	8.2/8.2/8.2 ₍₁₎
	Public Open Space (Park)		Not Assessed	14/15/15 ₍₁₎
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List 1J (Chlorobenzenes mg/kg)				
Contaminant	Generic Exposure Scenario	Terramech (CLEA v1.06 & S4UL methodology)	Environment Agency SGV (CLEA v1.04)	CIEH/LQM S4UL 2015 Part8
Chlorobenzene	Residential with plant uptake		Not Assessed	0.46/1.0/2.4
	Residential without plant uptake		Not Assessed	0.46/1.0/2.4
	Allotment		Not Assessed	5.9/14/32
	Commercial		Not Assessed	56/130/290
	Public Open Space (Residential)		Not Assessed	11000/13000/14000
	Public Open Space (Park)		Not Assessed	1300(675 ^{sol})/2000(1520 ^{sol})/2900
1,2 Dichlorobenzene	Residential with plant uptake		Not Assessed	23/56/130
	Residential without plant uptake		Not Assessed	24/57/130
	Allotment		Not Assessed	94/230/540
	Commercial		Not Assessed	2000(571 ^{sol})/4800(1370 ^{sol})/11000(3240 ^{sol})
	Public Open Space (Residential)		Not Assessed	90000/95000/98000
	Public Open Space (Park)		Not Assessed	24000(571 ^{sol})/36000(1370 ^{sol})/51000(3240 ^{sol})
1,3 Dichlorobenzene	Residential with plant uptake		Not Assessed	0.4/0.1/2.3
	Residential without plant uptake		Not Assessed	0.44/1.1/2.5
	Allotment		Not Assessed	0.25/0.6/1.5
	Commercial		Not Assessed	30/73/170
	Public Open Space (Residential)		Not Assessed	300/300/300
	Public Open Space (Park)		Not Assessed	390/440/470
1,4 Dichlorobenzene	Residential with plant uptake		Not Assessed	61/150/350
	Residential without plant uptake		Not Assessed	61/150/350
	Allotment		Not Assessed	19/37/88
	Commercial		Not Assessed	4400(224 ^{vap})/10000(540 ^{vap})/25000(1280 ^{vap})
	Public Open Space (Residential)		Not Assessed	17000/17000/17000
	Public Open Space (Park)		Not Assessed	36000(224 ^{vap})/36000(540 ^{vap})/36000(1280 ^{vap})
1,2,3 Trichlorobenzene	Residential with plant uptake		Not Assessed	1.5/3.6/8.6
	Residential without plant uptake		Not Assessed	1.5/3.7/8.8
	Allotment		Not Assessed	4.7/12/28
	Commercial		Not Assessed	102/250/590
	Public Open Space (Residential)		Not Assessed	1800/1800/1800
	Public Open Space (Park)		Not Assessed	770(134 ^{vap})/1100(330 ^{vap})/1600(789 ^{vap})
1,2,4 Trichlorobenzene	Residential with plant uptake		Not Assessed	2.6/6.4/15
	Residential without plant uptake		Not Assessed	2.6/6.4/15
	Allotment		Not Assessed	55/140/320
	Commercial		Not Assessed	220/530/1300
	Public Open Space (Residential)		Not Assessed	15000/17000/19000
	Public Open Space (Park)		Not Assessed	1700(318 ^{vap})/2600(786 ^{vap})/4000(1880 ^{vap})
1,3,5 Trichlorobenzene	Residential with plant uptake		Not Assessed	0.33/0.81/1.9
	Residential without plant uptake		Not Assessed	0.33/0.81/1.9
	Allotment		Not Assessed	4.7/12/28
	Commercial		Not Assessed	23/55/130
	Public Open Space (Residential)		Not Assessed	1700/1700/1800
	Public Open Space (Park)		Not Assessed	380(36.7 ^{vap})/580(90.8 ^{vap})/860(217 ^{vap})
1,2,3,4 Tetrachlorobenzenes	Residential with plant uptake		Not Assessed	15/36/78
	Residential without plant uptake		Not Assessed	24/56/120
	Allotment		Not Assessed	4.4/11/26
	Commercial		Not Assessed	1700(122 ^{vap})/3080(304 ^{vap})/4400(728 ^{vap})
	Public Open Space (Residential)		Not Assessed	830/830/830
	Public Open Space (Park)		Not Assessed	1500(122 ^{vap})/1600/1600
1,2,3,5 Tetrachlorobenzenes	Residential with plant uptake		Not Assessed	0.66/1.6/3.7
	Residential without plant uptake		Not Assessed	0.75/1.9/4.3
	Allotment		Not Assessed	0.38/0.9/2.2
	Commercial		Not Assessed	49(39.4 ^{vap})/120(98.1 ^{vap})/240235 ^{vap})
	Public Open Space (Residential)		Not Assessed	78/79/79
	Public Open Space (Park)		Not Assessed	110(39 ^{vap})/120/130
1,2,4,5 Tetrachlorobenzenes	Residential with plant uptake		Not Assessed	0.33/0.77/1.6
	Residential without plant uptake		Not Assessed	0.73/1.7/3.5
	Allotment		Not Assessed	0.06/0.16/0.37
	Commercial		Not Assessed	42(19.7 ^{sol})/72(49.1 ^{sol})/96
	Public Open Space (Residential)		Not Assessed	13/13/13
	Public Open Space (Park)		Not Assessed	25/26/26
Pentachlorobenzene	Residential with plant uptake		Not Assessed	5.8/12/22
	Residential without plant uptake		Not Assessed	19/30/38
	Allotment		Not Assessed	1.2/3.1/7.0
	Commercial		Not Assessed	640(43.0 ^{sol})/770(107 ^{sol})/830
	Public Open Space (Residential)		Not Assessed	100/100/100
	Public Open Space (Park)		Not Assessed	190/190/190

List 1J (Chlorobenzenes mg/kg) cont				
Contaminant	Generic Exposure Scenario	Terramech (CLEA v1.06 & S4UL methodology)	Environment Agency SGV (CLEA v1.04)	CIEH/LQM S4UL 2015 Part8
Hexachlorobenzene	Residential with plant uptake		Not Assessed	1.3(0.2 ^{vap})/3.3(0.5 ^{vap})/4.9
	Residential without plant uptake		Not Assessed	4.1(0.2 ^{vap})/5.7(0.5 ^{vap})/6.7(1.2 ^{vap})
	Allotment		Not Assessed	0.47/1.1/2.5
	Commercial		Not Assessed	110(0.2 ^{vap})/120/120
	Public Open Space (Residential)		Not Assessed	16/16/16
	Public Open Space (Park)		Not Assessed	30/30/30
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List 1K (Phenols & Chlorophenols mg/kg)				
Contaminant	Generic Exposure Scenario	Terramech (CLEA v1.06 & S4UL methodology)	Environment Agency SGV (CLEA v1.04)	CIEH/LQM S4UL 2015 Part9
Phenol	Residential with plant uptake		Not Assessed	280/550/1100
	Residential without plant uptake		Not Assessed	750/1300/2300
	Allotment		Not Assessed	66/140/280
	Commercial		Not Assessed	760/1500/3200
	Public Open Space (Residential)		Not Assessed	760/1500/3200
	Public Open Space (Park)		Not Assessed	760/1500/3200
Chlorophenol	Residential with plant uptake		Not Assessed	0.87/2.0/4.5
	Residential without plant uptake		Not Assessed	94/150/210
	Allotment		Not Assessed	0.13/0.30/0.7
	Commercial		Not Assessed	3500/4000/4300
	Public Open Space (Residential)		Not Assessed	620/620/620
	Public Open Space (Park)		Not Assessed	1100/1100/1100
Pentachlorophenol	Residential with plant uptake		Not Assessed	0.22/0.52/1.2
	Residential without plant uptake		Not Assessed	27(16.4 ^{vap})/29/31
	Allotment		Not Assessed	0.03/0.08/0.19
	Commercial		Not Assessed	400/400/400
	Public Open Space (Residential)		Not Assessed	60/60/60
	Public Open Space (Park)		Not Assessed	110/120/120
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List 1L (Other mg/kg)				
Contaminant	Generic Exposure Scenario	Terramech (CLEA v1.06 & S4UL methodology)	Environment Agency SGV (CLEA v1.04)	CIEH/LQM S4UL 2015 Part 10
Carbon Disulphide	Residential with plant uptake		Not Assessed	0.14/0.29/0.62
	Residential without plant uptake		Not Assessed	0.14/0.29/0.62
	Allotment		Not Assessed	4.8/10/23
	Commercial		Not Assessed	11/22/47
	Public Open Space (Residential)		Not Assessed	11000/11000/12000
	Public Open Space (Park)		Not Assessed	1300/1900/2700
Hexachlorobutadiene	Residential with plant uptake		Not Assessed	0.29/0.7/1.6
	Residential without plant uptake		Not Assessed	0.32/0.78/1.8
	Allotment		Not Assessed	0.25/0.61/1.4
	Commercial		Not Assessed	31/66/120
	Public Open Space (Residential)		Not Assessed	25/25/25
	Public Open Space (Park)		Not Assessed	48/50/51
This table is not a list of potential contaminants at any one site All values are subject to ongoing review CIEH - Chartered Institute for Environmental Health LQM - Land Quality Management (commercial research) (1) xx/yy/zz SOM - Soil Organic Matter dependant at 1%/2.5%/6% (2) xx/yy/zz pH - pH dependant at pH6/pH7/pH8 (3) Internal limits exceeded during calculations. Vapour or solubility saturation limit exceeded (limit presented in brackets) (4) under review by Terramech S4UL values are the copyright of Land Quality Management Ltd and are reproduced with permission; Publication Number S4UL3262 All rights reserved			Terramech Investigations Limited 183 Long Lane Tilehurst Reading RG31 6YW Email - info@terramech.co.uk Tel 01189 439 910 Fax 01189 439 920 	

List 1M (Natural Mineral Fibres quantified % weight in soil)				
Contaminant	Generic Exposure Scenario	Terramech (CIRIA C733 methodology)	Environment Agency SGV	CIEH/LQM
Chrysotile Asbestos	Residential with active gardening Sandy Soil	0.01%		
	Residential with active gardening Int Soil	0.05%		
	Residential with active gardening Clay Soil	0.1%		
	Allotment Sandy Soil	0.002%		
	Allotment Intermediate Soil	0.005%		
	Allotment Clay Soil	0.01%		
	Commercial Sandy Soil	0.05%		
	Commercial Intermediate Soil	0.2%		
	Commercial Clay Soil	0.25%		
	Public Open Space Sandy Soil (Residential)	0.0015%		
	Public Open Space Int Soil (Residential)	0.0025%		
	Public Open Space Clay Soil (Residential)	0.001% (clay overtakes sand)		
Amosite Asbestos	Residential with active gardening Sandy Soil	Any detectable concentration		
	Residential with active gardening Int Soil	Any detectable concentration		
	Residential with active gardening Clay Soil	Any detectable concentration		
	Allotment Sandy Soil	Any detectable concentration		
	Allotment Intermediate Soil	Any detectable concentration		
	Allotment Clay Soil	Any detectable concentration		
	Commercial Sandy Soil	0.001%		
	Commercial Intermediate Soil	0.001%		
	Commercial Clay Soil	0.009%		
	Public Open Space Sandy Soil (Residential)	Any detectable concentration		
	Public Open Space Int Soil (Residential)	Any detectable concentration		
	Public Open Space Clay Soil (Residential)	Any detectable concentration		
Crocidolite Asbestos	Residential with active gardening Sandy Soil	Any detectable concentration		
	Residential with active gardening Int Soil	Any detectable concentration		
	Residential with active gardening Clay Soil	Any detectable concentration		
	Allotment Sandy Soil	Any detectable concentration		
	Allotment Intermediate Soil	Any detectable concentration		
	Allotment Clay Soil	Any detectable concentration		
	Commercial Sandy Soil	Any detectable concentration		
	Commercial Intermediate Soil	Any detectable concentration		
	Commercial Clay Soil	Any detectable concentration		
	Public Open Space Sandy Soil (Residential)	Any detectable concentration		
	Public Open Space Int Soil (Residential)	Any detectable concentration		
	Public Open Space Clay Soil (Residential)	Any detectable concentration		
This table is not a list of potential contaminants at any one site All values are subject to ongoing review CIEH - Chartered Institute for Environmental Health LQM - Land Quality Management (commercial research) C733 - CIRIA - Construction Industry Research & Information Association - Asbestos in Made Ground Dilution of airborne fibre concentrations from the point of origin has not been considered. Residential assume 90 hours per year gardening that results in dust being raised. (Addison et al 1988) Allotment assume 260 hours per year (2.5 hrs per day every weekend) of activities that result in dust being raised. Commercial assume 24 hours per year when service trenches could be excavated that results in dust being raised Public Open space assume not more than four 8hr maintenance days per year (32hrs/yr) that result in dust being raised as well as game playing in summer hols when soil surface is dry and veg layer is compromised (6wks 8hrs/day + maintenance = 368hrs/yr Limit of detection usually 0.001%			Terramech Investigations Limited 183 Long Lane Tilehurst Reading RG31 6YW Email - info@terramech.co.uk Tel 01189 439 910 Fax 01189 439 920 	

List 2 (Waste Acceptance Criteria (WAC) Analysis)			
	Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Solid Waste Analysis - Limit values for compliance			
Total Organic Carbon (%)	3	5	6
Loss on Ignition (%)	-	-	10
Sum of BTEX (mg/kg)	6	-	-
Sum of 7 PCBs (mg/kg)	1	-	-
Mineral Oil (mg/kg)	500	-	-
PAH Sum of 17 (mg/kg)	100	-	-
pH (pH Units)	-	>6	-
Eluate Analysis - Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg (mg/kg)			
Arsenic	0.5	2	25
Barium	20	100	300
Cadmium	0.04	1	5
Chromium	0.5	10	70
Copper	2	50	100
Mercury	0.01	0.2	2
Molybdenum	0.5	10	30
Nickel	0.4	10	40
Lead	0.5	10	50
Antimony	0.06	0.7	5
Selenium	0.1	0.5	7
Zinc	4	50	200
Chloride	800	15000	25000
Fluoride	10	150	500
Sulphate as SO ₄	1000	20000	50000
Total Dissolved Solids	4000	60000	100000
Phenol Index	1	-	-
Dissolved Organic Carbon	500	800	1000
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List 3 (Generic Soil Screening Values for the Selection of Appropriate Water Supply Pipe Materials)		
Contaminant (mg/kg dry weight soil)	Threshold levels Water Supply Pipes (mg/kg dried soil)	Guidance reference
(Corrosion)		WRAS, Water Regulations Advisory Scheme Contaminated Ground Guidance Note 9-04-03
Sulphate	2000	
Sulphur	5000	
Sulphide	250	
pH		
(Toxicity)		
Antimony	10	
Arsenic	10*	
Cadmium	3	
Chromium (Hexavalent)	25	
Chromium (total)	600	
Cyanide (free)	25*	
Cyanide (complexes)	250*	
Lead	500	
Mercury	1	
Selenium	3	
Thiocyanate	50	
(Organics)		
Coal Tar	50	
Cyclohexane extractable	50	
Phenol	5	
Poly Aromatic Hydrocarbons	50	
Toluene extractable	50	
Petroleum Hydrocarbons	50	
Note 1 * It is not recommended that water pipes should be laid in sites where these substances are identified or suspected.		
Type Of Contaminant	SuitableWater Supply Pipe Material	
None	No special requirements	
Flammable	Metallic – in the absence of corrosive contaminants, Wrapped iron – if corrosive and flammable contaminants are present.	
Toxic	Metallic or plastic – but see Note 1	
Organic	Metallic (iron, copper) or composite Polyethylene/Aluminium/ Polyethylene pipe	
Corrosive	Plastic pipe, plastic coated copper or wrapped iron	
Organic and Corrosive	Wrapped iron or composite Polyethylene/Aluminium/ Polyethylene pipe	
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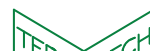
List 3 (Generic Soil Screening Values for the Selection of Appropriate Water Supply Pipe Materials - Thames Water Utilities Ltd)	
Aliphatic C5 - C12	0.5 mg/kg
Aromatic C5 - C12	0.5 mg/kg
Aliphatic C12 - C21 (not chlorinated)	10 mg/kg
Aromatic C12 - C21 (not BTEX)	10 mg/kg
Aliphatic C21 - C35	500 mg/kg
Aromatic C21 - C35	500 mg/kg
Chlorinated short chain aliphatic hydrocarbons	0.5 mg/kg
Chlorinated short chain aromatic hydrocarbons	2 mg/kg
BTEX compounds	0.1 mg/kg
MTBE compounds	0.1 mg/kg
Naphthalene	5 mg/kg
Phenols (unless present with BTEX)	5 mg/kg
Phenols (in conjunction with BTEX)	2 mg/kg
Phenols (chlorinated)	2 mg/kg
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List 4 (Tier 1 Generic Soil Target Concentrations for Groundwater Protection - EA R&D 20 method)	
Contaminant	Remedial Target (Mg/kg)
Arsenic	5.0 (Natural soils 0 to 35) ⁽³⁾
Cadmium	1.13
Chromium VI	10
Copper	255
Lead	590
Mercury (inorganic)	0.5
Nickel	10 (Average rural soils 21.1mg/kg) ⁽²⁾
Selenium	0.5
Zinc	105
Poly Cyclic Aromatics (Total Aromatics C ₅ to C ₄₄)	4.5 x 10 ⁻⁵ ⁽¹⁾
Total Petroleum Hydrocarbons (Aliphatic and Aromatic C ₅ to C ₄₄)	5.8 x 10 ⁻³ ⁽¹⁾
⁽¹⁾ organic carbon content sensitive, actual values should be used if possible	
⁽²⁾ Nickel in Rural soils 1.16 to 216mg/kg average 21.1 mg/kg (ref - EA SC050021 / Nickel SGV)	
⁽³⁾ Arsenic in Natural Soils 0 to 35mg/kg (ref - BGS Soils Beneath Our Feet website)	
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List 4 (Selected Generic Groundwater Screening Values mg/litre)						
Contaminant Mg/litre	EQS Freshwater	EQS Saltwater	WHO (health)	WHO (ATO)	EU Drinking water	UK Drinking water
Antimony	-	-	0.005	-	0.005	0.005
Arsenic	0.05	0.025	0.01	-	0.01	0.01
Boron	0.002	0.007	0.0003	-	0.001	0.001
Cadmium	0.005	0.0025	0.003	-	0.005	0.005
Chromium	0.005-0.025	0.015	0.05	-	0.05	0.05
Copper	0.001-0.028	0.005	2	1	2	2
Lead	0.004-0.025	0.025	0.01	-	0.01	0.01
Mercury	0.001	0.0003	0.001	-	0.001	0.001
Molybdenum	-	-	0.07	-	-	-
Nickel	0.05-0.2	0.03	0.02	-	0.02	0.02
Selenium	-	-	0.01	-	0.01	0.01
Vanadium	0.02-0.06	0.1	-	-	-	-
Zinc	0.008-0.5	-	-	3	-	5
Hydrocarbons (dissolved/emulsion)	-	-	-	-	-	0.01
Poly-cyclic Aromatic Hydrocarbons	-	-	-	-	0.0001	0.0001
Benzene	0.3	0.3	0.01	-	0.001	0.001
Toluene	0.5	0.5	0.7	24-170	-	-
Ethylbenzene	-	-	0.3	-	-	-
Xylene	0.03	0.03	0.5	20-1800	-	-
Benzo (a) Pyrene	-	-	0.0007	-	0.00001	0.00001
Phenol	0.03	0.03	-	-	0.0005	0.0005
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List 4 Drinking Water Regulations

Contaminant	units	EQS freshwater (1)	EQS saltwater (1)	WHO Health (2)	WHO ATO (2)	EU Drinking Water Standards (3)	UK Drinking Water Standards (4)
Acrylamide	ug/l			0.5		0.1	0.1
Alachlor	ug/l			20		0.1	0.1
Aldicarb	ug/l			10		0.1	0.1
Aldrin	ug/l	0.01	0.01	0.03		0.03	0.03
Aluminium	ug/l				200	200	200
Ammonia (NH ₃ as N)	mg/l	0.015	0.021		1.5		
Ammonium (as NH ₄ ⁺)	mg/l					0.5	0.5
Antimony	ug/l			5		5	5
Arsenic	ug/l	50	25	10		10	10
Atrazine	ug/l	2	2	2		0.1	0.1
Azinphos-methyl	ng/l	10 (40)	10 (40)			100	100
Barium	mg/l			0.7			1
Bentazone	mg/l	0.5	0.5	0.03		0.1	0.1
Benzene	ug/l	30 (300)	30 (300)	10		1	1
Benzo [a] pyrene	ug/l			0.7		0.01	0.01
Biphenyl	ug/l	25	25				
Boron	mg/l	2	7	0.3		1	1
Bromate	ug/l					10	10
Bromoxynil	ug/l	100 (1000)	100 (1000)			0.1	0.1
Cadmium	ug/l	5	2.5	3		5	5
Calcium	mg/l						250
Carbofuran	ug/l			5		0.1	0.1
Chlordane (all isomers)	ug/l			0.2		0.1	0.1
Chlorfenvinphos	ug/l	0.01 (0.1)	0.01 (0.1)			0.1	0.1
Chloride	mg/l	250			250	250	250
Chlorine	ug/l	2	10				
Chloroform	ug/l	12	12	200			
Chloroform extractable substances	ug/l						1000
Chlorphenylid	ug/l	0.05	0.05			0.1	0.1
Chloronitrotoluenes	ug/l	10	10				
Chlorothalonil	ug/l	0.1	0.1			0.1	0.1
Chlorpropham	ug/l	10	10			0.1	0.1
Chlorotoluron	ug/l	2	2	30		0.1	0.1
Chromium	ug/l	5 - 250	15	50		50	50
Copper	ug/l	1 - 28	5	2000	1000	2000	2000
Coumaphos	ug/l	0.01 (0.1)	0.04 (0.4)			0.1	0.1
Cyanide	ug/l			70		50	50
Cyfluthrin	ug/l	0.001	0.001			0.1	0.1

Contaminant	units	EQS freshwater (1)	EQS saltwater (1)	WHO Health (2)	WHO ATO (2)	EU Drinking Water Standards (3)	UK Drinking Water Standards (4)
2,4-dichlorophenoxyacetic acid (2,4-D), (ester form)	ug/l	1	1	30		0.1	0.1
Demetons	ug/l	0.5	0.5			0.1	0.1
Diazinon	ug/l	0.01 (0.1)	0.015 (0.15)			0.1	0.1
Dichlorodiphenyltrichloroethane (all isomers)	ug/l	0.025	0.025				
Para, para-DDT	ug/l	0.01	0.01	2		0.1	0.1
1,2-Dichloroethane (1,2-DCA)	ug/l	10	10	30		3	3
1,1-Dichloroethene (1,1-DCE)	ug/l			30			
1,2-Dichloroethene (1,2-DCE)	ug/l			50			
1,2-dibromo-3-chloropropane	ug/l			1		0.1	0.1
1,2-Dichlorobenzene	ug/l			1000	1 to 10		
1,2-Dichloropropane	ug/l			20		0.1	0.1
1,3-Dichloropropene	ug/l			20		0.1	0.1
1,4-Dichlorobenzene	ug/l			300	0.3 to 30		
Di(2-ethylhexyl)adipate	ug/l			80			
Di(2-ethylhexyl)phthalate	ug/l			8			
Dichloromethane	ug/l			20			
Dichloroprop (DCPP)	ug/l			100		0.1	0.1
Dichlorvos	ng/l	1	40			100	100
Dieldrin	ug/l	0.01	0.01	0.03		0.03	0.03
Dimethoate	ug/l	1	1			0.1	0.1
Drins (total)	ug/l	0.03	0.03			0.1	0.1
Edetic Acid (EDTA)	ug/l			200			
Endosulfan	ng/l	3	3			100	100
Endrin	ug/l	0.005	0.005			0.1	0.1
Epichlorohydrin	ug/l			0.4		0.1	0.1
Ethylbenzene	ug/l			300	2 to 200		
Fenchlorphos	ug/l	0.01 (0.1)	0.01 (0.1)			0.1	0.1
Fenoprop	ug/l			9		0.1	0.1
Fenitrothion	ng/l	10 (250)	10 (250)			100	100
Flucifuron	ug/l	1				0.1	0.1
Fluoride	ug/l			1500		1500	1500
Formaldehyde	ug/l	5 (50)	n/a	900		0.1	0.1
Heptachlor	ug/l			0.03		0.03	0.03
Hexachlorobenzene	ug/l	0.03	0.03	1		0.1	0.1
Hexachlorobutadiene	ug/l	0.1	0.1	0.6			
Hexachlorocyclohexane (lindane)	ug/l	0.1	0.02	2		0.1	0.1
Hydrocarbons (dissolved/emulsions)	ug/l						10
Hydrogen sulphide (H2S as S)	ug/l	0.25 to 1.0	10				

Contaminant	units	EQS freshwater (1)	EQS saltwater (1)	WHO Health (2)	WHO ATO (2)	EU Drinking Water Standards (3)	UK Drinking Water Standards (4)
loxynil	ug/l	10 (100)	10 (100)			0.1	0.1
Iron	mg/l	1	1		0.3	0.2	0.2
Isodrin	ug/l	0.005	0.005			0.1	0.1
Isoproturon	ug/l	2 to 20		9		0.1	0.1
Lead (inorganic - dissolved)	ug/l	4 - 250	25	10		10	25 (reducing to 10)
Linuron	ug/l	2	2			0.1	0.1
Magnesium	mg/l						50
Malachite green	ug/l	0.5 (100)					
Malathion	ng/l	10 (500)	20 (500)			100	100
Manganese	ug/l			500	100	50	50
MCPA	ug/l	2	2	2		0.1	0.1
Mecoprop (MCPP)	ug/l	20 (200)	20 (200)	10		0.1	0.1
Mercury	ug/l	1	0.3	1		1	1
Methylbenzene	ug/l	50 (500)	40				
Methoxychlor	ug/l			20		0.1	0.1
Metolachlor	ug/l			10		0.1	0.1
Molinate	ug/l			6		0.1	0.1
Molybdenum	ug/l			70			
Monochlorobenzene	ug/l			300	10 to 120		
Naphthalene	ug/l	10 (100)	5 (80)				
Nickel	ug/l	50 - 200	30	20		20	20
Nitrate (as NO3)	mg/l			50		50	50
Nitrite (as NO2)	ug/l			3		500	100
Nitriloacetic acid	ug/l			200			
Oils/hydrocarbons (by Pet Ether extract)	ug/l						10
Omethoate	ug/l	0.01				0.1	0.1
Polycyclic Aromatic (PAH) Hydrocarbons	ug/l					0.1	0.1
Pendimethalin	ug/l			20		0.1	0.1
Pentachlorophenol	ug/l	2	2	9		0.1	0.1
Permethrin	ug/l	0.01		20		0.1	0.1
Pesticides (individual species, unless specified)	ug/l					0.1	0.1
Pesticides (total)	ug/l					0.5	0.5
Phenol	ug/l	30 (300)	30 (300)			0.5	0.5
Pirimicarb	ug/l	1	1			0.1	0.1
Phosphorous	ug/l					400 (5000)	2200
Potassium	mg/l					10 (12)	12

Contaminant	units	EQS freshwater (1)	EQS saltwater (1)	WHO Health (2)	WHO ATO (2)	EU Drinking Water Standards (3)	UK Drinking Water Standards (4)
Propanil	ug/l			20		0.1	0.1
Propetamphos	ug/l	0.01 (0.1)	0.01 (0.1)			0.1	0.1
Pryidate	ug/l			100		0.1	0.1
Selenium	ug/l			10		10	10
Silver	ug/l	0.05 (0.1)	0.5 (1)				10
Simazine	ug/l	2 (10)	2 (10)	2		0.1	0.1
Sodium	mg/l	170			200	200	200
Styrene	ug/l	50 (500)	50 (500)	20	4 to 2600		
Sulcofuron	ug/l	25	25			0.1	0.1
Sulphate	mg/l	400	250		250	250	250
Sulphide	ug/l	0.25	n/a				
Surfactants	ug/l						200
2,4,5-trichlorophenoxyacetic acid (2,4,5-T)	ug/l			9		0.1	0.1
Tecnazene	ug/l	1 (10)	1				
Tetrachloroethene (PCE)	ug/l	10	10	40		10 (with TCE)	10 (with TCE)
Tetrachloromethane (PCM, carbon tetrachloride)	ug/l	12	12	2			3
Thiabendazole	ug/l	5	5			0.1	0.1
Tin (inorganic)	ug/l	25	10				
Toluene	ug/l	50 (500)	40 (400)	700	24 to 170		
Triazophos	ng/l	5 (50)	5 (50)			100	100
Tributyltin (oxide)	ug/l	0.02	0.02	0.02			
1,1,1-Trichloroethane (1,1,1-TCA)	ug/l	100 (1000)	100 (1000)				
1,1,2-Trichloroethane (1,1,2-TCA)	ug/l	400 (4000)	300 (3000)				
Trichloroethene (TCE)	ug/l	10	10	70		10 (with PCE)	10 (with PCE)
Trichlorobenzenes (total)	ug/l	0.4	0.4	20	5 to 50		
2,4,6-Trichlorophenol	ug/l			200		2-300	
Trihalomethanes (total)	ug/l					150 reducing to 100 by 2008	100
Trifluralin	ug/l	0.1 (1)	0.1 (1)	20		0.1	0.1
Triphenyltin	ug/l	0.02	0.008				
Vanadium	ug/l	20 - 60	100				
Vinyl chloride (chloroethene)	ug/l			5		0.5	0.5
Xylene	ug/l	30	30	500	20 to 1800		
Zinc	ug/l	8 - 500			3000		5000