

PHASE 2 ENVIRONMENTAL INVESTIGATION

NO 3102A/18

AT

LAND TO THE REAR OF

52, NORCOT ROAD, TILEHURST

FOR

PROPOSED HOUSING DEVELOPMENT

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**PHASE 2 ENVIRONMENTAL INVESTIGATION
NO 3102A/18
AT
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PROPOSED HOUSING DEVELOPMENT**

1 INTRODUCTION

- 1.1 This site investigation was commissioned by the developers, Messrs Trenton Developments, in order to provide an assessment of the ground contamination on the proposed development area.
- 1.2 The site area comprises a section of land adjacent to a decommissioned water tower that has been renovated as a series of apartments. Land to the north east of the water tower, also part of the tower curtilage has also been developed with housing off a new road named Sona Gardens.
- 1.3 Terramech have previously carried out a desk study and physical investigations of the eastern half of the water tower land. The findings of that investigation are documented in our report referenced 3102/10 which should be read in conjunction with this report. Some parts of those investigations are however presented in this report.
- 1.4 The Contamination Assessments have been carried out with reference to CLR 11 (Model Procedures for the Management of Land Contamination). This phased approach is set out below.

2 SITE DETAILS

Site Location

2.1 This site is located about 4.4km west of Reading town centre within an area called Tilehurst which occupies the north western extents of Reading. The site centre is located at grid reference 467280E, 173810N.

Brief Description



Above, a plan showing the proposed development

2.2 The site is part of an area where a water tower and ancillary buildings are sited. The water tower is now decommissioned and has been converted into flats. The surrounding grounds have been cleared and the site area in question is now overgrown and impacted by fly tipped soil and rubble. The open areas adjacent to the access road are currently being used for car parking.

3 SUMMARY OF PRECEDING DESK STUDY

- 3.1 The desk study investigation carried out on the water tower and land to the east of the tower is directly applicable to the land to the west of the tower since it was all part of the overall water tower 'yard'.
- 3.2 The subsequent use of the land as a builder's yard before housing development, was also applicable to the whole water tower 'yard'.

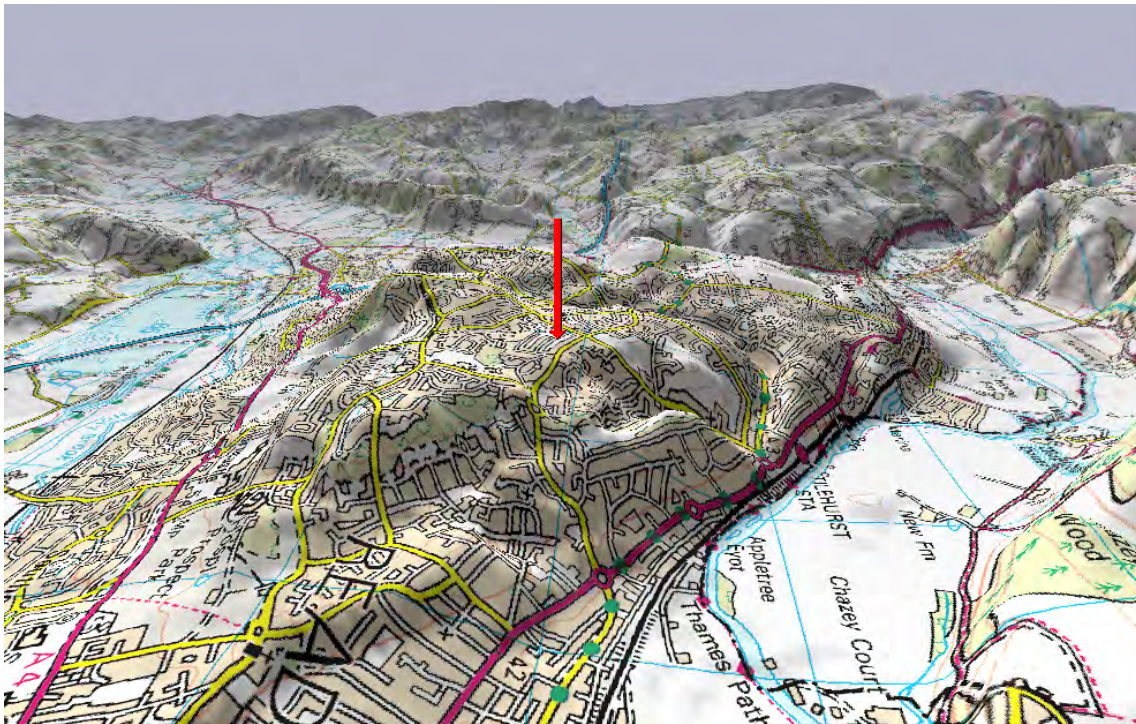
Published Geology

- 3.3 The British Geological Survey Map, Sheet Number 268, shows the site to be underlain by the Winter Hill Gravel Terrace Formation which overlies the Lambeth Group of Formations. Below the Lambeth Group, the mapping shows the Seaford and Newhaven Chalk Formation to be present.

Published Hydrogeology

- 3.4 The Environment Agency Groundwater Maps (<http://maps.environment-agency.gov.uk>) which have replaced the old Groundwater Vulnerability mapping show the site to be underlain by 'Bedrock' deposits (The Lambeth Group of Deposits) which are designated as a Secondary (A) Aquifer. The overlying soils (Winter Hill Gravel Formation) are also shown to be designated as a Secondary (A) Aquifer. The maps do not consider the Chalk underlying the Lambeth Group which is generally designated as a Principal Aquifer.

Topography and Hydrology



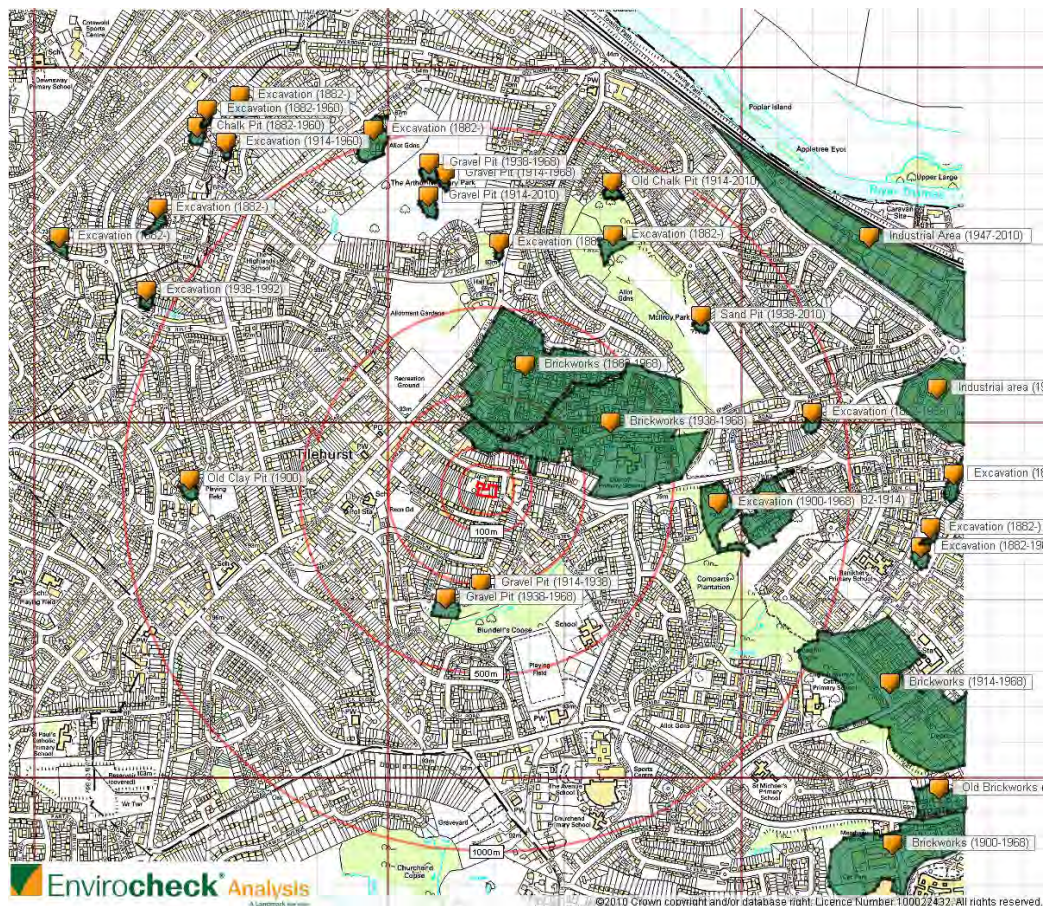
Above a copy of the 1 to 50,000 scale map rendered according the height data given on these maps.

3.5 The site lies on elevated ground on the north western side of Reading. This is a remnant section of land isolated from the undulating set of hills to the north (The Chilterns) by the valleys of the River Thames to the north, the River Kennet to the South and the River Pang to the west of Tilehurst.

Migration of Surface Water and Groundwater

3.6 Migration of surface water and groundwater within the underlying soils would be expected to be north toward the River Thames or south toward the River Kennet.

Site History



A section of the 2010 O-S map with the locations of features seen on preceding historic O-S maps.

- 3.7 The historic maps have highlighted the presence of several old and very large brickworks in the area, the closest being only about 100m north of the site (boundary to boundary). Smaller sand, gravel and chalk pits were also shown. Most are now covered by housing or other developments.
- 3.8 The site area was seen to have been developed as a yard with a water tower some time before 1899 along with housing to the east and west.
- 3.9 The water tower site is shown to have been given an access road and wide apron of hardstanding in the 1960's together with some ancillary buildings. The water tower site is then labelled as a 'builder's yard' on the 1976 map. The 1976 map also shows that water tower yard has expanded to include land behind 54 and 54A Norcot Road.

3.10 The 2010 map then shows the eastern side of the water tower yard to have been developed residentially.

3.11 The site area considered by this report comprises a section of the of the land to the north west of the water tower and a part of the historic garden of 52 Norcot Road further to the north west of the water tower. This land includes an old brick built shed which appears to be as old as the water tower and surrounding housing.

Ground Conditions

3.12 Investigations of the land to the east of the water tower, by machine and hand excavated trial pits, showed that made ground was present at depths of between 1.0m and 1.4m on the slightly elevated ground around the water tower. Made ground was not seen in the trial pit carried out in the former garden areas behind Nos. 54-66 Norcot Road

3.13 The materials comprised a mixture of sand and gravel, which was similar in nature to the materials seen at greater depth, together with brick fragments, ash, glass and some corroded metal. The material exposed in TP2 to a depth of 1.0m was visibly darker than the fill seen in TP1.

3.14 Below 1.4m we have encountered a gravelly slightly clayey sand. The material was consistent with the Winter Gravel Formation shown to be present on the geological mapping.

3.15 A number of samples were taken at various stages of the residential development of the eastern side of the water tower (Jones Environmental lab ref 10/4297, 12/795 and 12/4187). The results are summarised below.

Laboratory Analysis

- 3.16 The analysis of samples from the eastern side of the water tower considered a basic list of toxic metals, petroleum hydrocarbons and tarry combustion residues/coal tars (Polycyclic Aromatic Hydrocarbons or PAH).
- 3.17 The analysis showed that the only contaminants detected at concentrations that are not acceptable in residential gardens were Lead (maximum 521mg/kg) and Benzo (a) Pyrene (PAH, maximum 14.46mg/kg). The values were sporadically high, suggesting that the Lead was from old building materials and pipework.
- 3.18 The PAH, also sporadically detected, were assessed using double ratio plots which confirmed that the PAH compounds detected were associated with combustion residues and not coal tars or from fuel.
- 3.19 At the time of our preceding investigations (2009-2012) there were no clear assessment criteria for Lead concentrations in soil. Environment Agency SGVs for Lead (450mg/kg) had been withdrawn and our only direction at that time was an Atkins 'AtRisk' value of 311mg/kg for a residential soil where plants are grown for the occupant's consumption. New guidelines from DEFRA in the SP1010 Companion Document December 2014 gives a Category 4 value (C4SL) for Lead of 200mg/kg.
- 3.20 Guidance for the assessment of compounds such as Benzo (a) Pyrene have also changed. The previous investigation used a guideline value of 1.58mg/kg for Benzo (a) Pyrene. The most recent guidance on these compounds (CIEH/LQM S4UL – 2015) gives a guideline value of 2.2mg/kg.
- 3.21 This reduces greatly the influence of the elevated PAH concentrations and raised our concerns regarding the Lead concentrations on the land to the west of the water tower with respect to potential soil contamination on that area.

3.22 On this basis of the considerations discussed above, we have carried a physical investigation of the land to the west of the water tower as documented below.

4 GROUND INVESTIGATION

4.1 We have carried out an initial investigation of the ground below area to the west of the water tower as described below.

4.2 The site area was generally overgrown with brambles, grasses and other colonial plant species. We have also noted two piles of fly tipped materials. One comprised brick and concrete rubble with no organic mater or soils. The second pile was seen (below a covering of weeds) to comprise an orange brown clayey gravel with much brick and concrete debris.

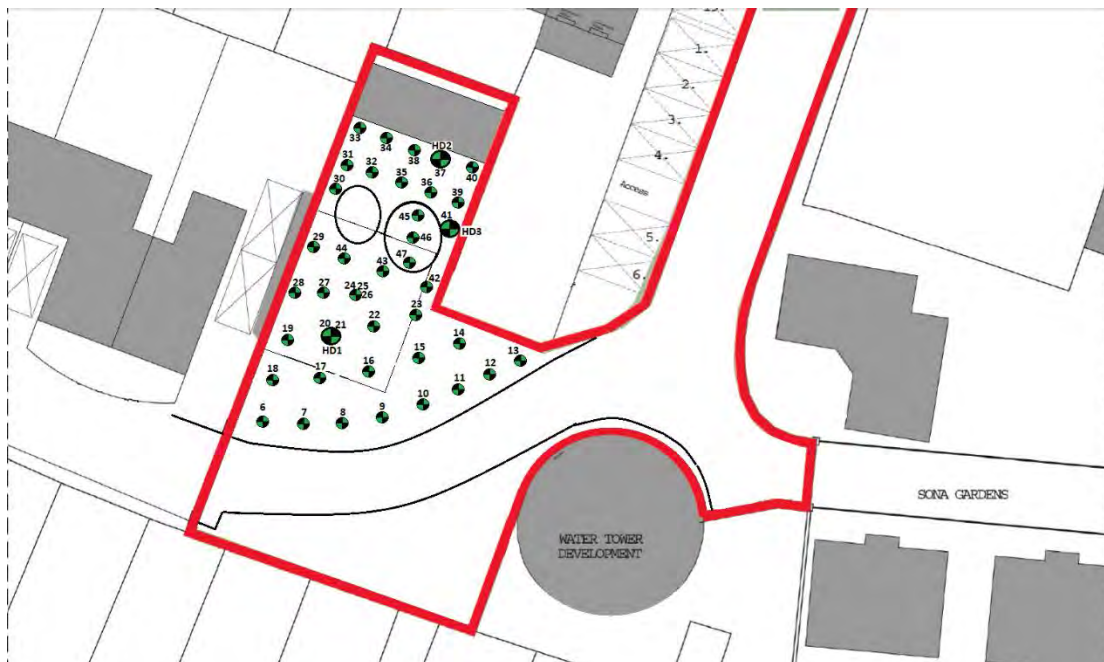
4.3 Our objectives were firstly to check for a deep layer of infilled soil on this part of the site given that 1.4m of made ground was found on the land to the east of the water tower. Secondly, to check the nature and make up of the soils present and thirdly to check for elevated Lead concentrations.

4.4 We have excavated three small pits on the area by hand (HD1, HD2 and HD3). Each pit was excavated through the topsoil and made ground and halted on the natural gravelly slightly clayey sand below.

4.5 This established that the gravelly slightly clayey sand was present at all three locations at a depth of no more than 0.4m and that a large deep-seated mass of imported soil was not present.

4.6 The material encountered was a very dark brown clayey sand with flint gravels and some ash, as well as brick and concrete debris. This was entirely consistent with the material seen on the eastern side of the water tower.

- 4.7 A sample was taken from each of these three pits for laboratory analysis. The XRF analyser was used to test the soils at the top of each sample container for comparison.
- 4.8 The samples were recovered for contamination analysis in accordance with BS10175 (2011). The samples were placed in laboratory supplied containers including amber glass jars with hydrocarbon resistant seals and plastic waterproof pots.
- 4.9 The samples were then placed in plastic cool boxes with frozen ice packs to be transported to a fridge at our laboratory for storage overnight before being and couriered to an MCERTS accredited laboratory for analysis.
- 4.10 Two heaps of fly tipped material were also found on site. The western most pile comprised solely brick and concrete rubble. The pile on the eastern side was seen to comprise clayey natural soils with some flint gravel and a lot of brick and concrete rubble. No evidence for any asbestos containing materials was found. The locations of these piles are indicated by the ovals on the plan below.



- 4.11 We have then excavated 41 smaller pits, all terminating within the made ground, in a rough grid layout over the whole accessible site area, as shown above. This showed that the thin mantle of made ground present, was consistent over the site area.
- 4.12 We have then used an insitu x-ray metals analyser (X-Ray Fluorescence or XRF) to check the concentrations of a number of metals in the made ground at each location. This included locations on the eastern most pile of fly tipped material.

5 ASSESSMENT OF SOIL ANALYSIS RESULTS

Soils Assessment Criteria

- 5.1 Soil Guideline Values (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).
- 5.2 Further numbers of contaminants were assessed on this basis using the same CLEA Model by CIEH/LQM (The Chartered Institute of Environmental Health and Land Quality Management Ltd). Soil guideline values were published in their report on Generic Assessment Criteria for Human Health Assessments (2009). This 2009 guidance was replaced in 2015 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.

- 5.3 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.
- 5.4 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.

DEFRA SP1010 & C4SL

- 5.5 We have also considered C4SL values derived for 6 contaminants in the Department of the Environment Farming and Rural Affairs (DEFRA) SP1010 report. The report describes how levels of contamination at a site are placed in one of four categories. Category 4 is where the level of risk posed is acceptably low, to Category 1, where the level of risk is clearly unacceptable. The Category 4 values presented in the report were primarily intended for use under the Part 2A of the Environmental Protection Act 1990 to screen out low risk sites.
- 5.6 The Category 4 values are however, determined using a Lower Level of Toxicological Concern (LLTC) assessment methodology which differs from the Health Condition Values (HCVs) discussed in Environment Agency SR2 report, these consider minimal or tolerable levels of risk.
- 5.7 A direction was given by the Department for Communities and Local Government (DCLG) and DEFRA for the C4SL system to be used for assessments for Planning as well as assessments under Part 2A of the Environmental Protection Act (SP1010 Companion Document December 2014).

- 5.8 In order to maintain consistency in our approach to all contaminants (i.e. minimal or tolerable levels of risk), we have continued to use the slightly more conservative Environment Agency SR2 – SR3 based values for the 43 contaminants considered in the Environment Agency SGV reports and partner S4UL publication from CIEH/LQM.
- 5.9 Unfortunately, the Environment Agency and CIEH/LQM documents do not give any guidelines for Lead concentrations. The SP1010 publication (March 2014 - Appendix H - Table 4.1) does give a provisional Category 4 value for Lead determined using the original HCV CLEA methodology. We consider this value is to be consistent with the minimal or tolerable levels of risk methodology used for the other 43 contaminants by the Environment Agency and CIEH/LQM.
- 5.10 On this basis we have adopted the values for Lead calculated to be protective of children as the critical receptors. For a residential garden, where plants are grown for consumption by the residents, the guideline value is 200mg/kg. No guideline concentrations are given by DEFRA in the SP1010 document for adults under that assessment methodology. Values for the other land use scenarios are presented in the appended tables.

Asbestos

- 5.11 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 minimal or tolerable levels risk level of 1 in 100,000 used to derive HCVs for other contaminants.

5.12 We have used the most conservative values for the exposure estimates 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.

Exposure Scenario

5.13 The generic exposure scenario for residential land use, where occupants are not expected to grow and consume fruits and vegetables on the site, has been selected for the assessment of soil contamination concentrations.

Assessment of the Measured Concentrations in Soil

5.14 The measured concentrations of contaminants, insitu in the soil and in the samples recovered from this site, were compared with the assessment criteria described above as follows. The XRF and the laboratory result sheets are appended.

Hydrocarbon Totals

5.15 The samples were analysed using a basic total hydrocarbons test which gives the concentrations in the C10 to C40 range over a range of carbon chain length bands (Texas Bands). This test does not differentiate between Aliphatic Hydrocarbons (open chain molecules $\text{H}-\text{C}-\text{C}-\text{C}-\text{C}-\text{C}-\text{C}-\text{C}-\text{C}-\text{C}-\text{H}$) and Aromatic Hydrocarbons (ringed molecules ).

5.16 The analysis showed that there were elevated concentrations found in the C16 to C35 range in all 3 samples. The highest concentrations were 368mg/kg. The bulk of the total concentration was however, in the heavier C21 to C35 band with a smaller proportion in the C16 to C21 band.

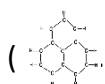
5.17 The concentrations detected in each band were below the guideline values for both Aliphatic and Aromatics. We can see that if the concentrations were to be differentiated into Aliphatic and Aromatics, they could not exceed either limit.

- 5.18 Had the un-differentiated concentrations exceed the guideline values for either Aliphatic or Aromatic Hydrocarbons then the results could not be compared with the CIEH/LQM derived values and it would be necessary to carry out more detailed analysis.

Poly-cyclic Aromatic Hydrocarbons

- 5.19 Poly-cyclic Aromatic Hydrocarbons (PAH) are present in coal tars, combustion by-products and fuels and they are one of the most common forms of soil contamination, often as a legacy of the UK's industrial past.

- 5.20 These tarry hydrocarbons are made up of long chains of hydrogen and carbon atoms, which unlike the open ended chains seen in the Aliphatic group, have linked to form rings



- (There are many different configurations of these rings resulting in a vast number of different compounds. We have focused our attention on a group of sixteen of these hydrocarbon compounds which were identified by the United States Environmental Protection Agency as being the most common and/or the most toxic.

- 5.21 This showed that although present, none of the sixteen were present at concentrations exceeding their respective individual guideline values.

- 5.22 In order to identify the source of these hydrocarbons (i.e. petroleum products combustion by-products, plant derived or coal derived) we have looked at the proportions of particular individuals by plotting concentration ratios (Double Ratio Plots). The ratios suggest that these compounds are coal or coal ash derived as with the PAH detected on the eastern side of the water tower.

- 5.23 Traces of total Cyanides were detected in one of the three samples. This sample was seen to contain the highest concentrations of PAH and we suspect that the Cyanide is a complex compound, and not free Cyanide, and does not pose a risk to human health at this trace concentration.

Hydrocarbons (Phenols)

5.24 Phenols (total Monohydric Phenols includes Cresols or Methylphenol and Chlorinated Phenols) were below detection limits in all samples and therefore the concentrations did not exceed the guideline value for Phenol published in the new Soil Guideline Value (SGV) report.

Metals

5.25 Comparison of the XRF results on the tops of the laboratory samples, vs the actual laboratory results has shown that the average XRF values were very close to, perhaps overestimating the laboratory measured concentrations for all three samples. The Cadmium results however, show a great over estimation by the XRF device.

Sample	Laboratory Arsenic mg/kg	XRF * Arsenic mg/kg
HD1	13.7	19.4
HD2	20.7	17.6
HD3	14.3	8.1
* average of 5 XRF exposures on top side of sample while in sample jar		

Sample	Laboratory Lead mg/kg	XRF * Lead mg/kg
HD1	199	206.5
HD2	122	175.3
HD3	109	173.6
* average of 5 XRF exposures on top side of sample while in sample jar		

Sample	Laboratory Cadmium mg/kg	XRF * Cadmium mg/kg
HD1	1.8	14.2
HD2	0.5	13.9
HD3	0.4	29.18
* average of 5 XRF exposures on top side of sample while in sample jar		

XRF Average Values (61 determinations) mg/kg		Max XRF mg/kg	Assessment Criteria mg/kg	
Arsenic	33.02	136.8	37	C4SL SP1010
Cadmium	20.90	192	22	C4SL SP1010
Chromium	71.69	583.2	910	CIEH/LQM 2015
Copper	1176.77	69789.6	2400	CIEH/LQM 2015
Lead	162.70	376.8	200	C4SL SP1010
Nickel	20.07	349.2	180	CIEH/LQM 2015
Selenium	0.56	15.6	250	CIEH/LQM 2015
Zinc	478.39	7047.6	3700	CIEH/LQM 2015

5.26 When averages are calculated for the XRF results we can see that although there were some individual exceedances at ‘hotspot locations’, the average values were well below the guideline values shown.

5.27 The Lead concentrations were seen to be fairly consistent over the whole site suggesting a fine or water-soluble form of Lead, perhaps the urban accumulation of airborne Lead from old fuel additives or perhaps from the many former brick and tile works in the area which may have been using Lead glazes.

5.28 The Cadmium values were very sporadic with some exposures showing a zero value. This suggests the Cadmium is present as tiny solid flakes or grains of an insoluble Cadmium compound. Given the overestimation seen in the comparison between laboratory and XRF results we do not consider these results to suggest a potential risk to human health.

Asbestos

5.29 All three samples showed traces of Chrysotile Asbestos as tiny fibre bundles. The most common use of Chrysotile Asbestos was for cementitious corrugated roof boards. During our investigations of the eastern and western sides of the water town ‘yard’ we did not find any evidence for broken up boards amongst the other building rubble in the made ground.

- 5.30 We suspect that these erroneous fibres have entered the soil as weathered dust from the many Asbestos cement roofed buildings on the water tower 'yard', on the water tower itself, as well as on sheds and garages in the surrounding area.
- 5.31 We have not accurately quantified the concentrations present however, the laboratory results indicate that the concentrations were below 0.1% in each of the three samples.
- 5.32 Chrysotile Asbestos is generally accepted as posing lower, but not negligible, risks than Amphibole fibres (i.e. Crocidolite and Amosite) (CIRIA C733 – 5.4 - Fibre Potency). Chrysotile Asbestos in soils has also been seen in research to be less liable to liberate fibres than Amphibole fibres (CIRIA C733 – 9.2 – Release of Fibres by Physical Disturbance)
- 5.33 In accordance with CIRIA 733 (Asbestos in Soil and Made Ground - Sect 13 Respirable fibre exposure estimation using published air-to-air relationships after Addison et al - 1988), we have produced estimated the fibre release potential for these soils and we can see that the cumulative exposure levels are at the 'probably insignificant' level, as set out in tables 14.1 and 14.3 of CIRIA 733.

6 RECOMMENDATIONS

- 6.1 The laboratory analysis and the insitu XRF testing has shown that the concentrations of the contaminants considered within our assessment were at acceptable concentrations overall and there for posed a minimal or tolerable level of risk as discussed in the Environment Agency CLEA supporting documents.
- 6.2 On this basis we do not recommend any remedial works or other mitigation measures for this site, at this point.

Former Shed.

- 6.3 Due to the presence of a shed on the site we were not able to investigate the whole proposed new garden area. We understand that the building is to be removed to facilitate this development.
- 6.4 Given that this is one of the old original buildings that appeared on the 1899 map, we suspect that natural soils have been preserved below the building and the potential for contamination is far lower than for the open areas that were used as the water tower yard and as the builder's yard. This will however need to be demonstrated by inspection of the soils that are exposed when the building is taken down.

Imported Soil

- 6.5 Materials imported to the site to form piling mats, sub-bases to roadways or topsoils for gardens should be certified free of any contamination, in particular the topsoils. In some cases, Local Authorities insist on imported soils being tested insitu rather than trusting analysis carried out by the soil supplier.
- 6.6 The soil for the layers described above should be uncontaminated however, the topsoil layer should also comply with BS3882, Multipurpose Soil, with regard to its grain size and organic material content.
- 6.7 We would strongly advise that imported soil should remain in a stockpile on site while validation tests are carried out. This will reduce the number of samples that need to be tested and will allow the stockpile to easily be removed by the supplier if the results show the material to be contaminated.

7 NOTES

- 7.1 The comments given in the report and the opinion expressed herein are based on the information sourced by the desk study and other published information. Third party information was therefore used in the preparation of this report and Terramech Investigations Ltd. cannot guarantee the accuracy or completeness of this information.
- 7.2 There may be other sources of information not included in those listed that hold data relevant to the Desk Study undertaken at the site that could materially affect the conclusions made in this report. The interpretation of the maps and/or other data commented on in this report is subjective.
- 7.3 The investigation report and the opinion expressed therein are also based on the ground conditions encountered during the site work and on the results of tests made in the field and laboratory. However, there may be special conditions prevailing at the site which have not been disclosed by the investigations and which have not been taken into account in this report.
- 7.4 No geotechnical information has been provided in this report. Design parameters for foundations and other buried infrastructure will depend on the soil properties at greater depth than achieved by this investigation. Soil properties will need to be determined by physical investigations to a suitable depth using an excavator or drilling rig.

7.5 The conclusions in this report represent our professional opinion, these conclusions have been drawn up with the greatest care to ensure that all apparent issues were addressed properly in accordance with applicable UK guidance and accepted practice.

Written



J.R. Puzyna BEng (Hons) MCIEH
For and on Behalf of
Terramech Investigations Ltd

Checked



M. R. Green BSc (Hons) FGS

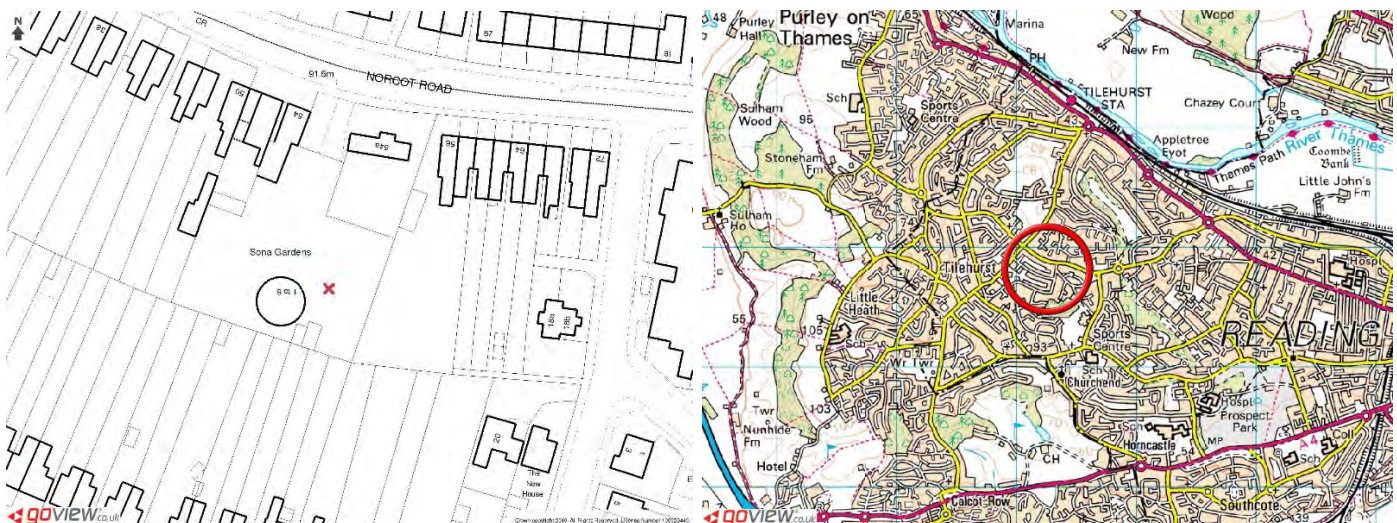
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JRP/MRG

12 June, 2018

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FIGURES



DATE: 12.06.18



Above, the site area being tested using an XRF analyser

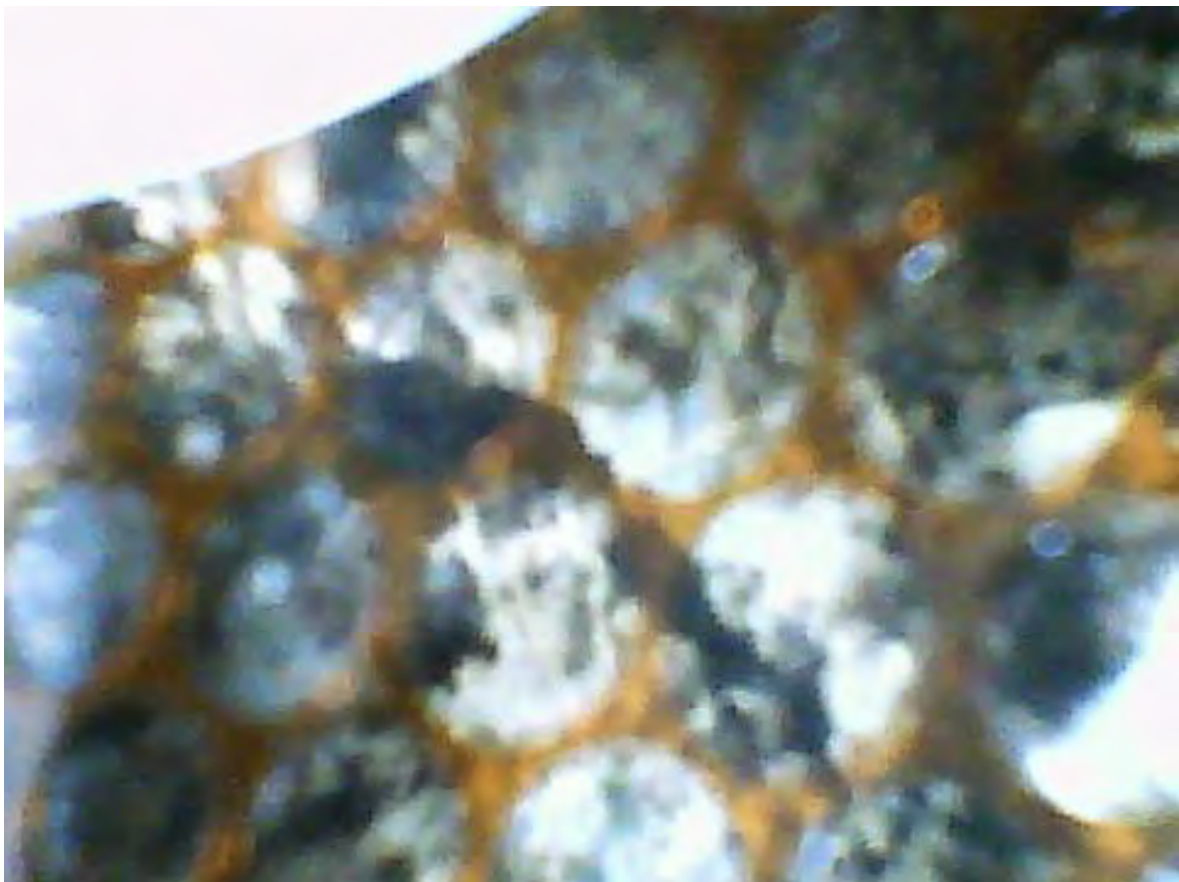


Above, a view of hand pit HD1 being excavated

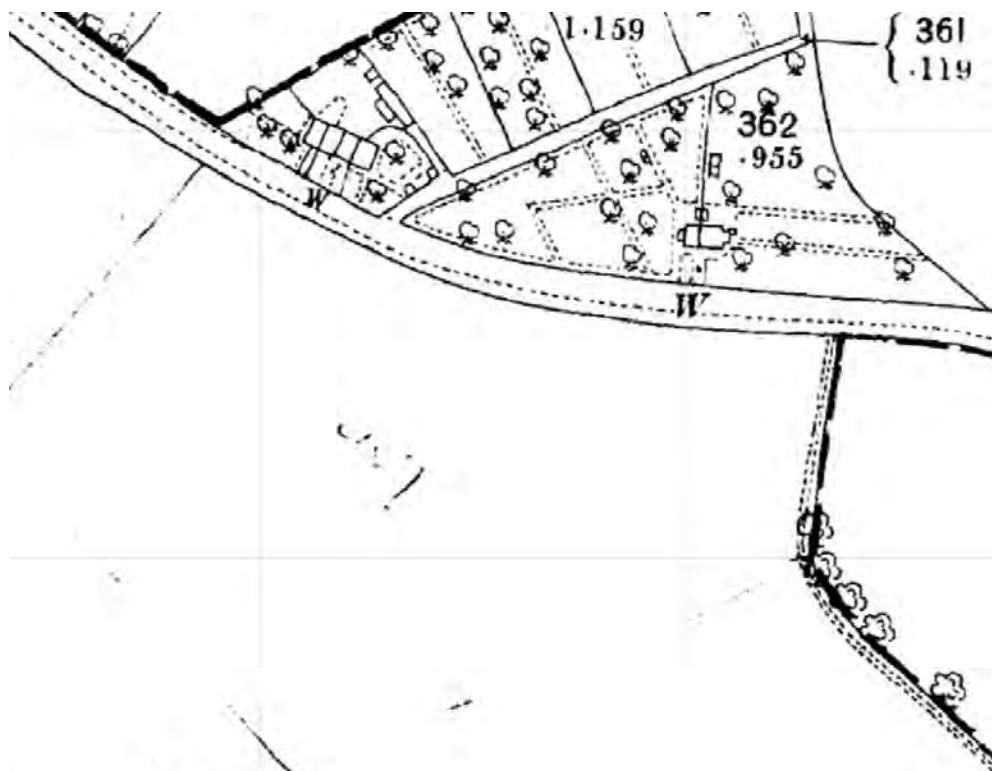
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Above, a view inside HD1 showing the pale brown clayey sand below the topsoil/made ground



Above, a view of the soil at from inside the XRF Analyser at location 10

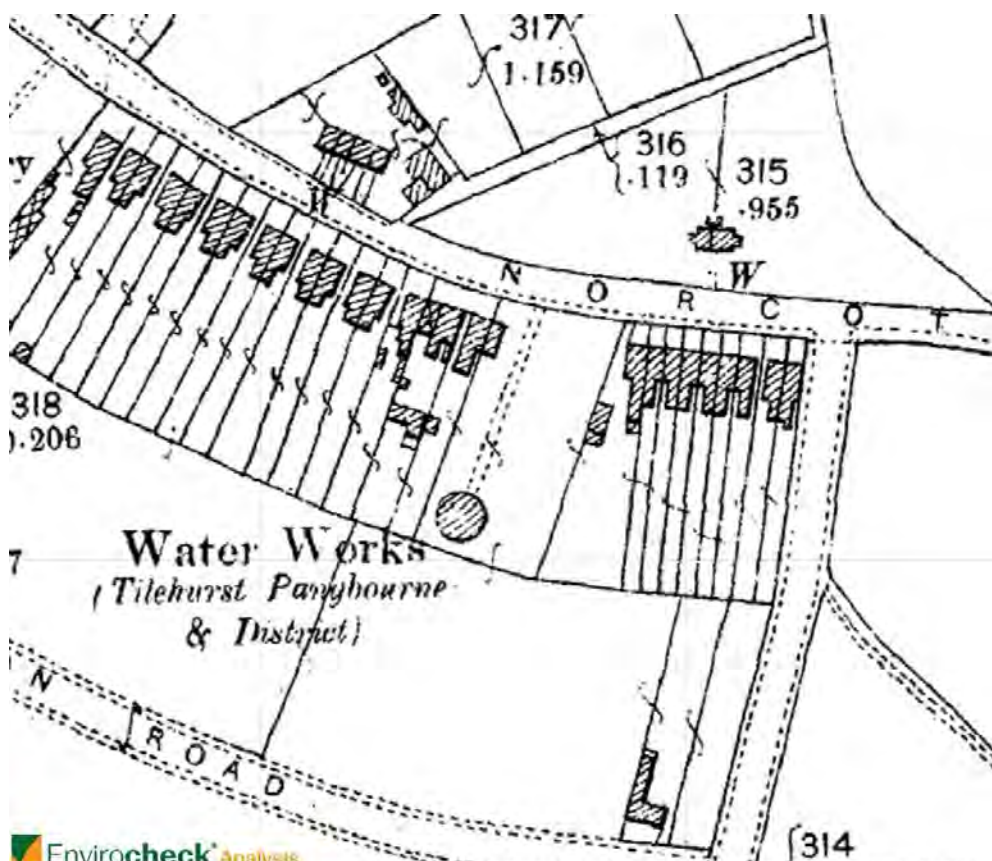


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Envirocheck Analysis

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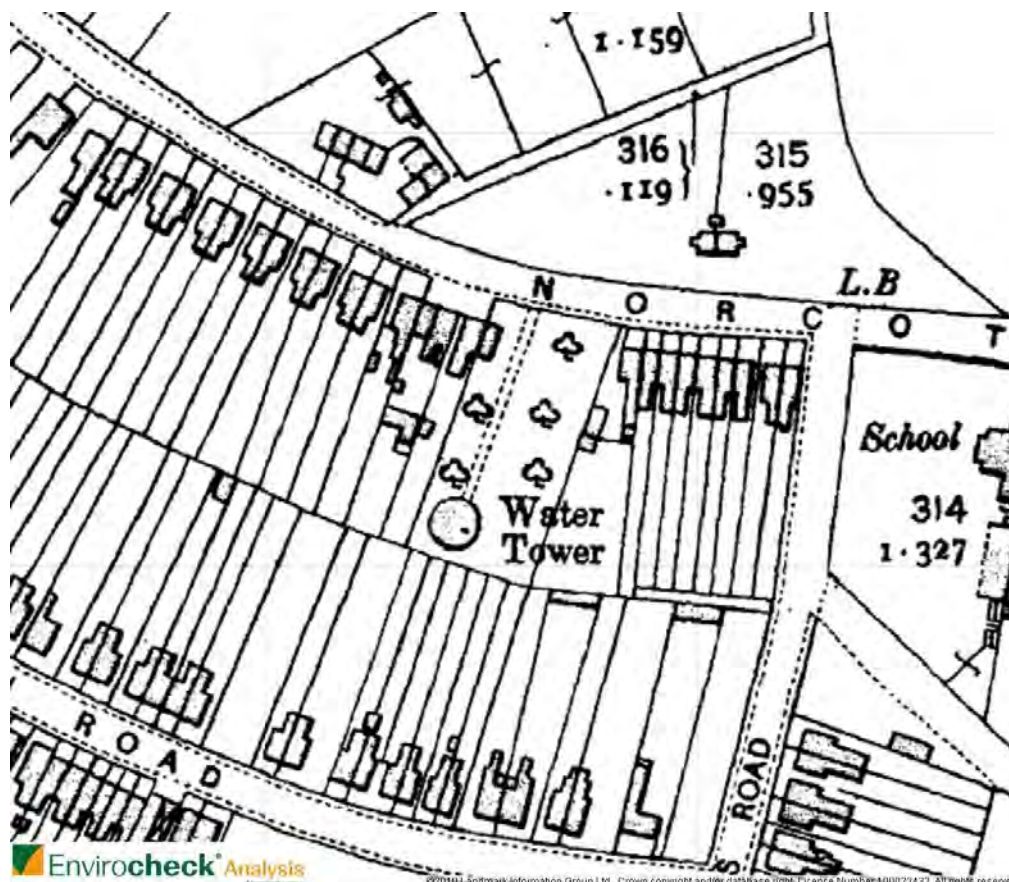
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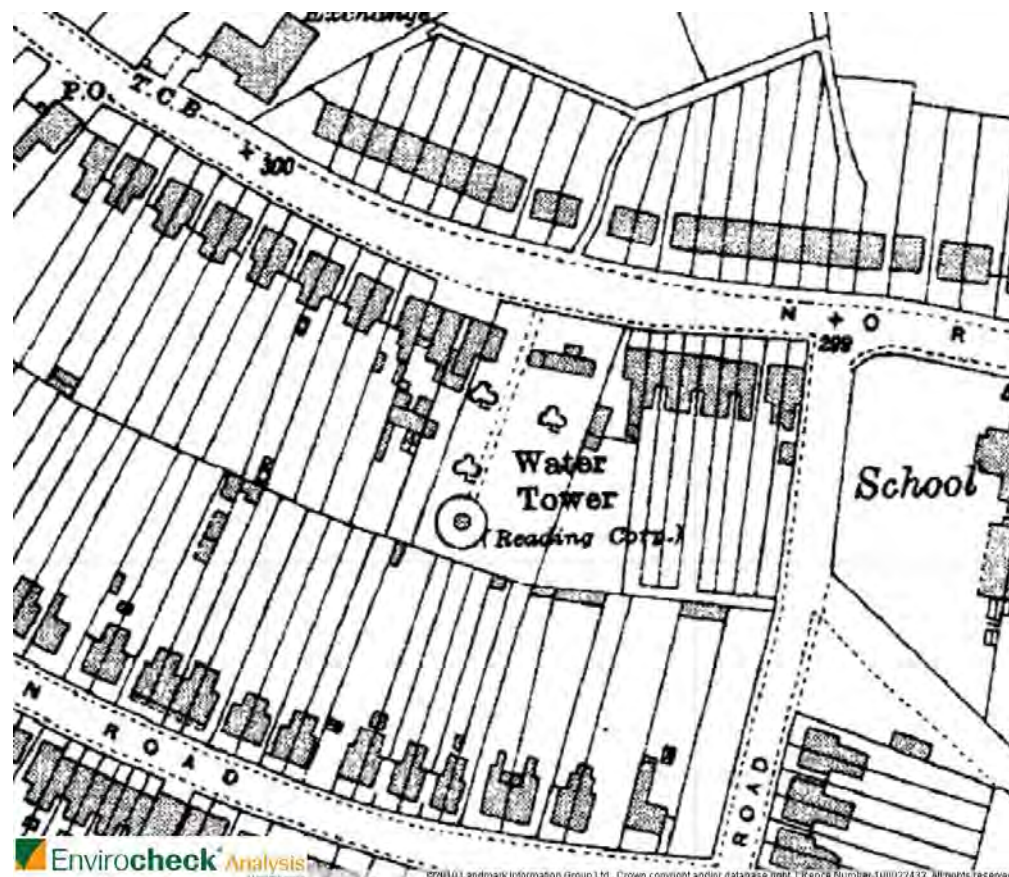
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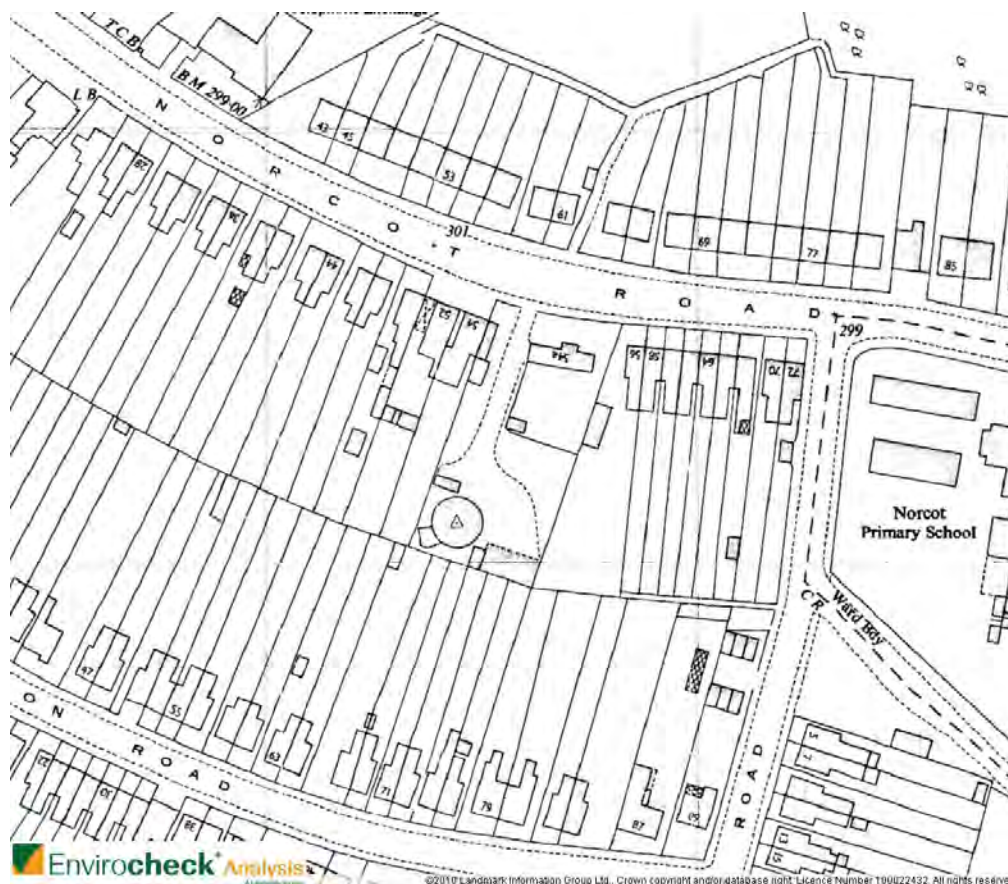
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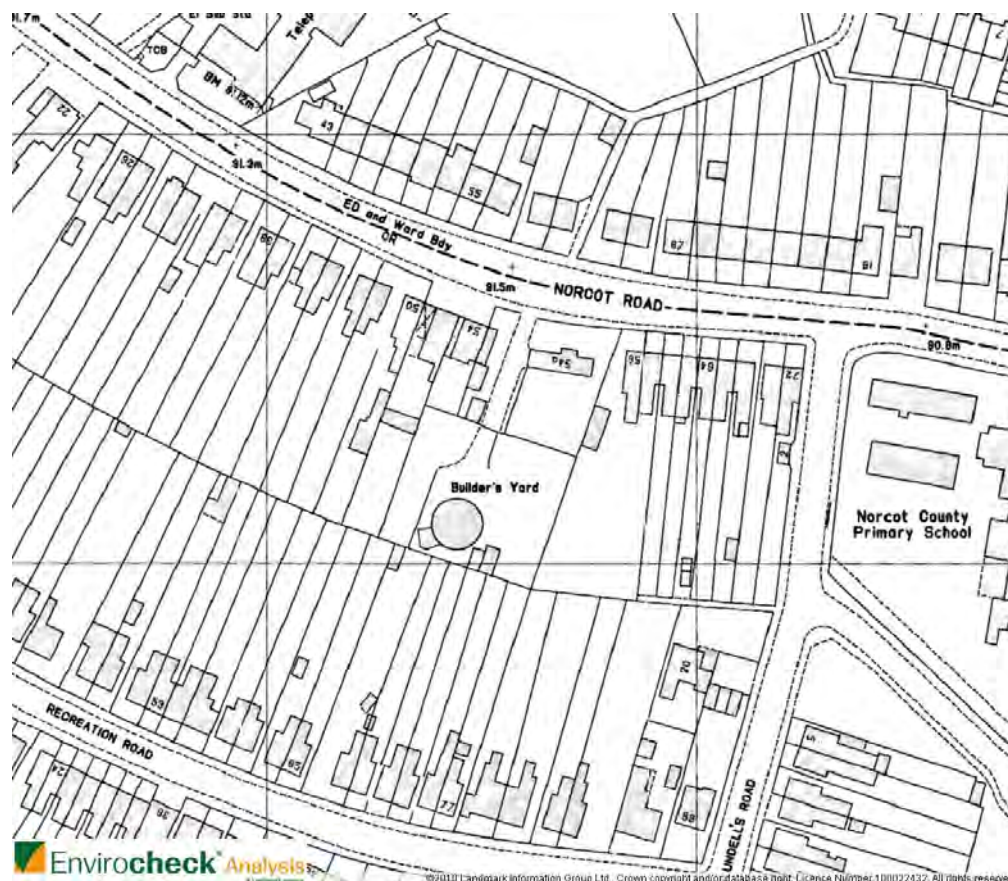
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1934



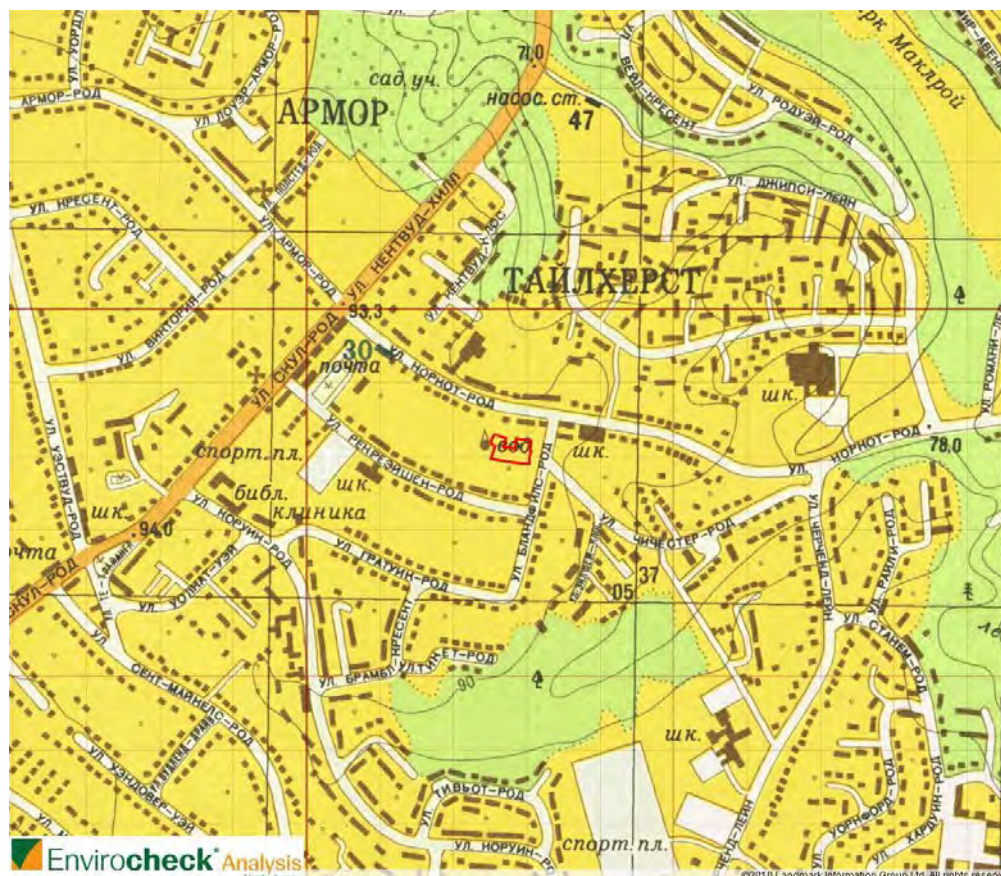
1961



1976



1993



1985-1990



2010



2018

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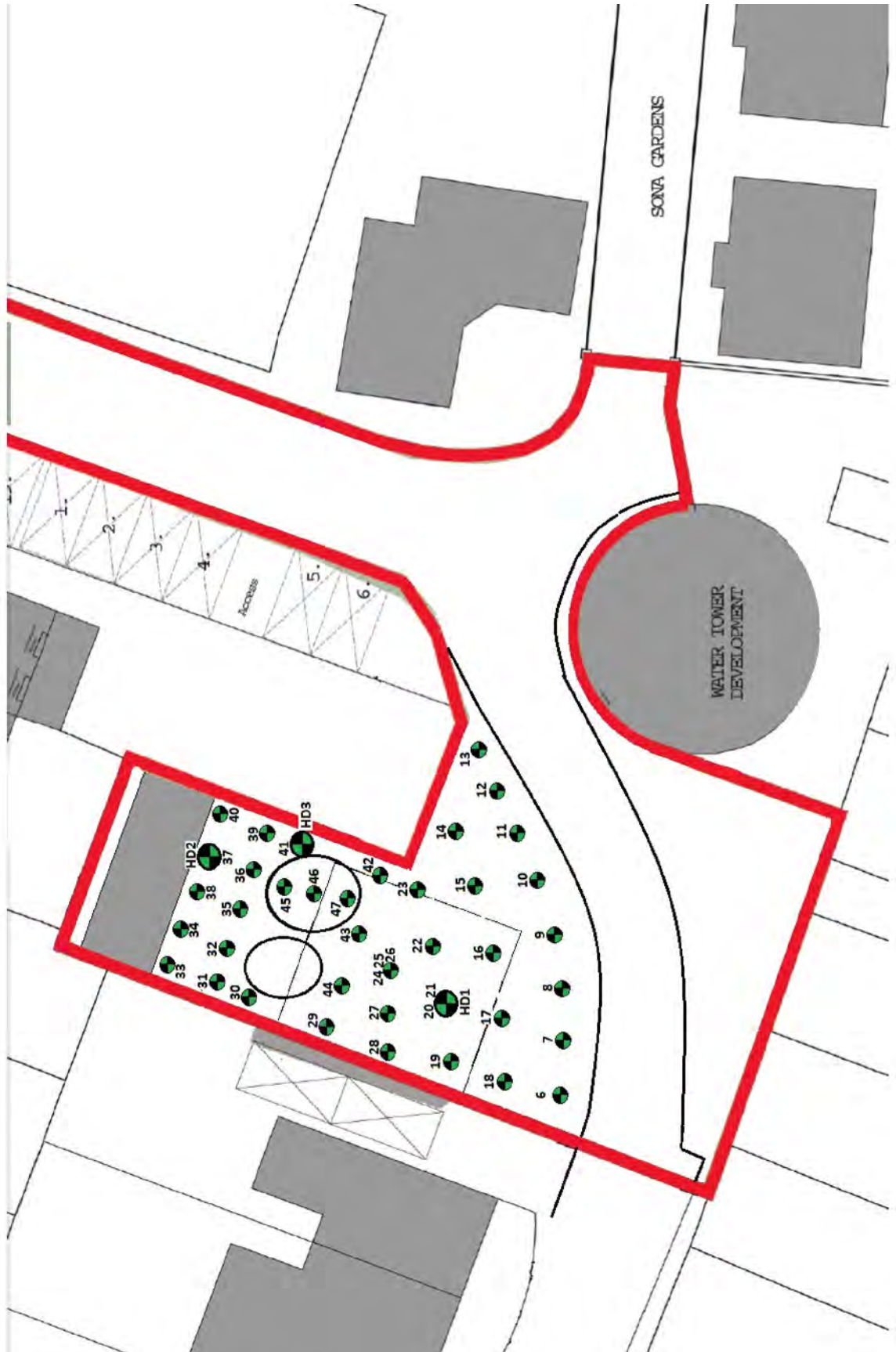
TRIAL PIT LOCATION AND RECORDS

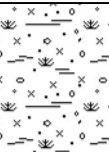
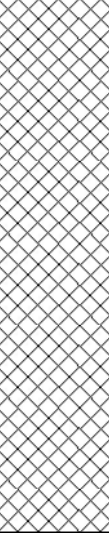
PAGE:

DATE:23.05.18

JOB 3102A
52, NORCOT ROAD, READING

TRIAL HOLE LAYOUT



PAGE:		JOB 3102A					TRIALPIT HD1		
DATE:23.05.18		52, NORCOT ROAD, READING							
DESCRIPTION	REDUCED	DEPTH	LEGEND	SAMPLE		THICKNESS	SPT	REMARKS	
	LEVEL m	m		TYPE	DEPTH	m	N		
Grass and weeds over TOPSOIL		0.00		J	0.45	0.10			
MADE GROUND: Dark brown very sandy occasionally gravelly CLAY. Gravel is fine to medium flint, brick and concrete		0.10							0.35
Orange brown clayey gravelly fine to medium rounded quartz SAND. Gravel is fine to medium angular flint		0.45							0.05
		0.50							
 TERRAMECH INVESTIGATIONS LIMITED 183 LONG LANE TILEHURST READING REMARKS: Hand Excavated Pit									
U100=100mm dia. UNDISTURBED SAMPLE B=BULK SAMPLE W=WATER SAMPLE			U38=38mm dia. UNDISTURBED SAMPLE SPT=STANDARD PENETRATION TEST			D=SMALL DISTURBED SAMPLE CPT=CONE PENETRATION TEST			

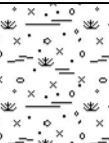
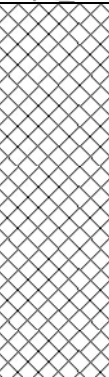
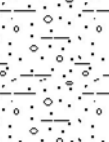
PAGE:

DATE:23.05.18

JOB 3102A

52, NORCOT ROAD, READING

TRIALPIT
HD2

DESCRIPTION	REDUCED	DEPTH	LEGEND	SAMPLE		THICKNESS	SPT	REMARKS
	LEVEL m			TYPE	DEPTH	m		
Grass over brown fibrous TOPSOIL		0.00		J	0.30	0.10		
MADE GROUND: Dark brown very sandy occasionally gravelly CLAY. Gravel is fine to medium flint, brick, corroded metal and concrete		0.10				0.25		
Orange brown clayey gravelly fine to medium rounded quartz SAND. Gravel is fine to medium angular flint		0.35				0.10		
		0.45						



TERRAMECH INVESTIGATIONS LIMITED
183 LONG LANE TILEHURST READING

REMARKS: Hand Excavated Pit

U100=100mm dia. UNDISTURBED SAMPLE

B=BULK SAMPLE

W=WATER SAMPLE

U38=38mm dia. UNDISTURBED SAMPLE

SPT=STANDARD PENETRATION TEST

D=SMALL DISTURBED SAMPLE

CPT=CONE PENETRATION TEST

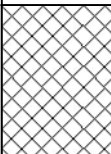
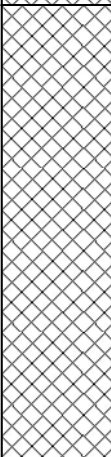
PAGE:

DATE:23.05.18

JOB 3102A

52, NORCOT ROAD, READING

TRIALPIT
HD3

DESCRIPTION	REDUCED	DEPTH		LEGEND	SAMPLE		THICKNESS	SPT	REMARKS
	LEVEL m	m			TYPE	DEPTH	m	N	
			0.00		J	0.30	0.10		
Grass and weeds over brick and concrete rubble									
			0.10						
MADE GROUND: Dark brown very sandy occasionally gravelly CLAY. Gravel is fine to medium flint, brick and concrete									
			0.30						
			0.40				0.05		
Orange brown clayey gravelly fine to medium rounded quartz SAND. Gravel is fine to medium angular flin			0.45						



TERRAMECH INVESTIGATIONS LIMITED
183 LONG LANE TILEHURST READING

REMARKS: Hand Excavated Pit

U100=100mm dia. UNDISTURBED SAMPLE

B=BULK SAMPLE

W=WATER SAMPLE

U38=38mm dia. UNDISTURBED SAMPLE

SPT=STANDARD PENETRATION TEST

D=SMALL DISTURBED SAMPLE

CPT=CONE PENETRATION TEST

**PHASE 2 ENVIRONMENTAL INVESTIGATION
NO 3102A/18
AT
LAND TO THE REAR OF
52, NORCOT ROAD, TILEHURST
FOR
PROPOSED HOUSING DEVELOPMENT**

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 :	Julian Puzyna
Date :	28th April, 2018
Your reference :	
Our reference :	Test Report 18/5449 Batch 1
Location :	Norcott
Date samples received :	13th April, 2018
Status :	Final report
Issue :	1

Three samples were received for analysis on 13th April, 2018 of which three were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.

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

Compiled By:

Phil Sommerton BSc

Project Manager

Client Name: Terramech Investigations Ltd
Reference:
Location: Norcott
Contact: Julian Puzyna
JE Job No.: 18/5449

Report : Solid

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

J E Sample No.	1	2	3							Please see attached notes for all abbreviations and acronyms		
Sample ID	HD1	HD2	HD3									
Depth	0.45	0.30	0.30									
COC No / misc												
Containers	J	J	J									
Sample Date	<>	<>	<>									
Sample Type	Soil	Soil	Soil									
Batch Number	1	1	1									
Date of Receipt	13/04/2018	13/04/2018	13/04/2018							LOD/LOR	Units	Method No.
Arsenic	13.7	20.7	14.3							<0.5	mg/kg	TM30/PM62
Cadmium	1.8	0.5	0.4							<0.1	mg/kg	TM30/PM62
Chromium	17.8	23.0	19.7							<0.5	mg/kg	TM30/PM62
Copper	35	43	31							<1	mg/kg	TM30/PM62
Lead	199	122	109							<5	mg/kg	TM30/PM62
Mercury	<0.1	<0.1	<0.1							<0.1	mg/kg	TM30/PM62
Nickel	14.4	14.5	15.2							<0.7	mg/kg	TM30/PM62
Selenium	<1	<1	<1							<1	mg/kg	TM30/PM62
Total Sulphate as SO4	621	1050	708							<50	mg/kg	TM50/PM29
PAH MS												
Naphthalene ^{#M}	<0.04	<0.04	<0.04							<0.04	mg/kg	TM4/PM8
Acenaphthylene	0.15	0.14	0.10							<0.03	mg/kg	TM4/PM8
Acenaphthene ^{#M}	<0.05	<0.05	<0.05							<0.05	mg/kg	TM4/PM8
Fluorene ^{#M}	<0.04	<0.04	<0.04							<0.04	mg/kg	TM4/PM8
Phenanthrene ^{#M}	0.81	0.43	0.46							<0.03	mg/kg	TM4/PM8
Anthracene [#]	0.22	0.20	0.21							<0.04	mg/kg	TM4/PM8
Fluoranthene ^{#M}	1.64	1.31	1.32							<0.03	mg/kg	TM4/PM8
Pyrene [#]	1.39	1.16	1.16							<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene [#]	0.63	0.63	0.63							<0.06	mg/kg	TM4/PM8
Chrysene ^{#M}	0.69	0.65	0.64							<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene ^{#M}	1.45	1.44	1.36							<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene [#]	0.72	0.79	0.73							<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene ^{#M}	0.54	0.59	0.53							<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene [#]	0.09	0.11	0.13							<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene [#]	0.57	0.62	0.57							<0.04	mg/kg	TM4/PM8
PAH 16 Total	8.9	8.1	7.8							<0.6	mg/kg	TM4/PM8
Benzo(b)fluoranthene	1.04	1.04	0.98							<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	0.41	0.40	0.38							<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	95	95	93							<0	%	TM4/PM8
EPH >C8-C10 ^{#M}	<5	<5	<5							<5	mg/kg	TM5/PM8
EPH >C10-C12 ^{#M}	<10	<10	<10							<10	mg/kg	TM5/PM8
EPH >C12-C16 ^{#M}	<10	<10	<10							<10	mg/kg	TM5/PM8
EPH >C16-C21 ^{#M}	19	28	34							<10	mg/kg	TM5/PM8
EPH >C21-C35 ^{#M}	180	340	253							<10	mg/kg	TM5/PM8
EPH >C8-C35 ^{#M}	199	368	287							<30	mg/kg	TM5/PM8
Phenol ^{#M}	<0.01	<0.01	<0.01							<0.01	mg/kg	TM26/PM21
Natural Moisture Content	16.8	54.6	30.3							<0.1	%	PM4/PM0
Total Cyanide ^{#M}	0.8	<0.5	<0.5							<0.5	mg/kg	TM89/PM45

Please see attached notes for all abbreviations and acronyms

Client Name: Terramech Investigations Ltd
Reference:
Location: Norcott
Contact: Julian Puzyna

Note:

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

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

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

Signed on behalf of Jones Environmental Laboratory:

Ryan Butterworth
Asbestos Team Leader

[illegible]

Matrix : Solid

Location: Norcott

Contact: Julian Puzyna

5 of 10

Client Name: Terramech Investigations Ltd **Matrix : Solid**

Reference:

Location: Norcott

Contact: Julian Puzyna

[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.: 18/5449

SOILS

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

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

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

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

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

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

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

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

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

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

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

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

WATERS

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

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

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

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

DEVIATING SAMPLES

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

SURROGATES

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

DILUTIONS

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

BLANKS

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

NOTE

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

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

REPORTS FROM THE SOUTH AFRICA LABORATORY

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

Please include all sections of this report if it is reproduced

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa.
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
++	Result outside calibration range, results should be considered as indicative only and are not accredited.
*	Analysis subcontracted to an Exova 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: 18/5449

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/ANAS)	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.			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.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes	Yes	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	
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM21	As received solid or water samples are extracted in Methanol: Sodium Hydroxide (0.1M NaOH) (60:40) by orbital shaker.	Yes	Yes	AR	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM62	Acid digestion of as received solid samples using Aqua Regia refluxed at 112.5 °C.			AR	Yes
TM50	Acid soluble sulphate (Total Sulphate) analysed by ICP-OES	PM29	Dried and ground solid sample is boiled with dilute hydrochloric acid, the resulting liquor is then analysed.			AR	Yes
TM65	Asbestos Bulk Identification method based on HSG 248.	PM42	Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.	Yes		AR	

JE Job No: 18/5449

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM73	Modified US EPA methods 150.1 and 9045D and BS1377:1990. Determination of pH by Metrohm automated probe analyser.	PM11	Extraction of as received solid samples using one part solid to 2.5 parts deionised water.	Yes	Yes	AR	No
TM89	Modified USEPA method OIA-1667. Determination of cyanide by Flow Injection Analyser. Where WAD cyanides are required a Ligand displacement step is carried out before analysis.	PM45	As received solid samples are extracted with 1M NaOH by orbital shaker for Cyanide and Thiocyanate analysis.	Yes	Yes	AR	Yes



Results of X-Ray Fluorescence Analysis (XRF)

Sackedgate Ltd Reg 09712671 at 26 Reading Road, Burghfield Common, Berkshire RG7 3QA - T- 01189 832 570 M-07555 106 620

Instrument Type	Olympus Vanta C	Site Ref	3102A
Instrument Serial No.	800722	Location	Rear of 52 Norcott Road, Reading
Units	ppm	Client	Terramech

Exposure No.	3	4	5	6	7	8	9	10	11	12
Locn	HD1	HD1	HD1	6	7	8	9	10	11	12

Lat	0	0	0	0	0	0	0	0	0	0
Long	0	0	0	0	0	0	0	0	0	0
date	04/04/2018	04/04/2018	04/04/2018	04/04/2018	04/04/2018	04/04/2018	04/04/2018	04/04/2018	04/04/2018	04/04/2018

m/c (%)	16.80%	16.80%	16.80%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%
Measured/Assumed	m	A	A	A	A	A	A	A	A	A

Antimony	66.576	0	0	0	0	127.2	0	0	0	285.6
LOD	607	735	606	2414	2039	1560	2610	29	22	1427
Arsenic	0	18.688	19.856	0	30	0	0	0	33.6	0
LOD	27	3	3	80	4	42	52	40	4	39
Cadmium	0	0	0	0	0	0	0	0	0	0
LOD	285	348	286	1139	926	709	1234	779	571	670
Chromium	0	0	0	0	0	279.6	0	0	0	0
LOD	32	43	37	147	138	32	124	88	74	90
Cobalt	0	0	0	0	0	0	0	0	0	0
LOD	86	102	94	312	260	186	323	174	224	262
Copper	68.912	46.72	88.768	52.8	0	30	0	152.4	25.2	69.6
LOD	3	3	3	11	56	6	70	10	5	7
Iron	16884.608	17120.544	21289.136	21736.8	17977.2	16455.6	18356.4	14966.4	27933.6	34365.6
LOD	72	84	85	550	229	231	293	163	210	271
Lead	244.112	185.712	323.536	205.2	45.6	108	56.4	73.2	116.4	93.6
LOD	3	3	3	10	5	5	6	4	4	5
Mercury	0	0	10.512	0	0	0	0	0	0	28.8
LOD	49	60	2	170	153	102	200	94	72	4
Molybdenum	0	18.688	0	36	15.6	0	63.6	28.8	0	42
LOD	41	1	41	5	4	90	6	3	86	3
Nickel	0	19.856	0	0	144	0	0	34.8	0	0
LOD	16	4	14	64	14	32	46	8	30	31
Selenium	0	0	0	0	0	0	0	0	0	0
LOD	5	7	6	20	17	11	20	14	11	14
Titanium	2358.192	2684.064	3236.528	1867.2	1983.6	3018	2092.8	1454.4	2160	4474.8
LOD	74	91	80	244	214	179	274	164	142	194
Tin	66.576	0	0	0	0	127.2	0	0	0	285.6
LOD	8	589	475	1927	1554	21	2079	1286	969	20
Vanadium	61.904	0	0	0	0	0	439.2	0	105.6	0
LOD	10	26	26	108	88	62	51	53	20	63
Zinc	1248.592	1282.464	1704.112	402	127.2	129.6	55.2	130.8	238.8	175.2
LOD	9	10	10	18	9	6	8	7	8	7

Sulphur	0	0	575.824	0	0	0	0	0	0	381.6
LOD	170	201	30	904	534	576	628	582	331	61
Light El	926308.096	900872.56	926458.768	922500	1010528.4	1017302.4	1018057.2	1034048.4	983328	945908.4
LOD	894	1095	896	20173	2288	10573	2262	1425	1590	1940

X-Ray Fluorescence analysis carried out in situ or from sample containers. Soil is not homogeneous and the concentrations of contaminants vary throughout the soil mass. Large variations are sometimes found at locations just millimetres from each other. This analysis considers a small scan area which may not represent the variability that is more widely present. Where possible a number of tests are carried out to assess the variability of each sample or at each point location tested.

The analyser measures concentrations as it sees them in the soil, in its wet state. The results above are corrected for moisture content and are presented on a 'dry weight' basis depending on a measured or an assumed moisture content. Most elements give a fairly constant fluorescent response for different compounds of that element. Some compounds of elements, such as Cadmium, Mercury, Nickel, Thorium and Uranium, give different responses depending on the actual compound that is present. The analyser always shows the worst case concentration and sometimes greatly overestimates the concentrations present.



Results of X-Ray Fluorescence Analysis (XRF)

Sackedgate Ltd Reg 09712671 at 26 Reading Road, Burghfield Common, Berkshire RG7 3QA - T- 01189 832 570 M-07555 106 620

Instrument Type	Olympus Vanta C	Site Ref	3102A
Instrument Serial No.	800722	Location	Rear of 52 Norcott Road, Reading
Units	ppm	Client	Terramech

Exposure No.	13	14	15	16	17	18	19	20	21	22
Locn	13	14	15	16	17	18	19	20	21	22

Lat	51.4594002	51.4594002	51.4592018	51.459301	51.4594002	51.4594002	51.4594002	51.4594002	51.4594994	51.4594002
Long	-1.0335701	-1.0336	-1.03342	-1.03333	-1.03361	-1.03356	-1.03356	-1.0337	-1.03382	-1.03376
date	04/04/2018	04/04/2018	04/04/2018	04/04/2018	04/04/2018	04/04/2018	04/04/2018	04/04/2018	04/04/2018	04/04/2018

m/c (%)	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%
Measured/Assumed	A	A	A	A	A	A	A	A	A	A

Antimony	0	144	0	0	0	0	0	88.8	0	87.6
LOD	1992	25	1535	1400	13	19	1722	975	937	826
Arsenic	0	86.4	0	39.6	28.8	0	28.8	0	0	54
LOD	60	6	41	4	2	38	7	52	50	3
Cadmium	0	0	96	0	0	0	0	43.2	45.6	62.4
LOD	936	643	14	640	375	539	808	9	9	8
Chromium	171.6	468	279.6	0	0	0	0	122.4	0	151.2
LOD	38	33	34	84	47	72	113	20	61	19
Cobalt	0	0	0	0	0	0	0	0	0	0
LOD	253	223	209	184	119	171	255	152	157	161
Copper	0	176.4	33.6	192	69.6	16.8	80.4	64.8	50.4	81.6
LOD	43	9	6	9	4	4	9	5	5	5
Iron	14562	22107.6	19686	18098.4	18398.4	20592	18302.4	21434.4	23539.2	27376.8
LOD	196	196	188	163	104	201	211	132	146	151
Lead	140.4	212.4	108	103.2	103.2	133.2	308.4	376.8	322.8	136.8
LOD	7	6	5	4	3	4	9	6	6	4
Mercury	0	0	0	0	0	0	0	0	0	0
LOD	180	89	109	81	59	84	106	69	83	60
Molybdenum	34.8	24	14.4	0	0	0	20.4	0	0	10.8
LOD	4	3	3	87	54	75	4	64	68	2
Nickel	0	0	48	0	0	0	0	0	0	0
LOD	57	24	8	19	18	24	34	24	27	20
Selenium	0	0	0	0	0	0	0	0	0	0
LOD	6	11	8	11	7	9	11	10	10	8
Titanium	0	3928.8	1807.2	2295.6	1339.2	2444.4	1935.6	1705.2	2366.4	3232.8
LOD	1288	177	153	151	86	138	182	109	118	117
Tin	0	144	0	0	0	0	0	88.8	0	87.6
LOD	1582	19	1198	1104	609	879	1362	13	743	11
Vanadium	0	0	463.2	0	0	142.8	303.6	0	151.2	121.2
LOD	64	52	29	58	32	19	31	42	17	15
Zinc	172.8	231.6	205.2	199.2	277.2	165.6	217.2	1167.6	1714.8	344.4
LOD	9	8	8	7	5	6	9	13	17	7

Sulphur	0	0	0	0	0	0	0	192	301.2	486
LOD	1208	693	644	737	222	251	1268	41	43	34
Light El	1102270.8	1079126.4	1054182	1073283.6	1019184	892648.8	1086435.6	919856.4	943782	960162
LOD	1224	1035	1602	1413	987	6252	1912	1435	1412	1246

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Results of X-Ray Fluorescence Analysis (XRF)

Sackedgate Ltd Reg 09712671 at 26 Reading Road, Burghfield Common, Berkshire RG7 3QA - T- 01189 832 570 M-07555 106 620

Instrument Type	Olympus Vanta C	Site Ref	3102A
Instrument Serial No.	800722	Location	Rear of 52 Norcott Road, Reading
Units	ppm	Client	Terramech

Exposure No.	23	24	25	26	27	28	29	30	31	32
Locn	23	24	25	26	27	28	29	30	31	32

Lat	51.4594002	51.4594002	51.4594002	51.4594002	51.4594002	51.4594002	51.4594002	51.4594002	51.4594994	51.4594994
Long	-1.0336	-1.0336	-1.0335701	-1.0335	-1.03374	-1.03365	-1.0336699	-1.03371	-1.03374	-1.0336699
date	04/04/2018	04/04/2018	04/04/2018	04/04/2018	04/04/2018	04/04/2018	04/04/2018	04/04/2018	04/04/2018	04/04/2018

m/c (%)	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%
Measured/Assumed	A	A	A	A	A	A	A	A	A	A

Antimony	0	0	499.2	0	0	0	183.6	0	0	0
LOD	1218	5402	2699	2445	1173	1503	1477	1051	2084	1348
Arsenic	28.8	0	45.6	56.4	0	26.4	0	0	0	0
LOD	3	137	7	7	39	4	53	33	64	48
Cadmium	55.2	0	0	0	0	0	0	62.4	0	73.2
LOD	11	2392	1288	1181	531	676	696	9	924	13
Chromium	0	0	0	0	85.2	0	0	0	182.4	0
LOD	56	247	121	136	23	84	77	59	41	62
Cobalt	0	0	0	0	0	0	0	0	0	0
LOD	142	604	387	298	174	183	205	116	325	195
Copper	51.6	0	66	0	22.8	31.2	72	0	0	75.6
LOD	5	169	13	55	5	6	7	22	34	7
Iron	13093.2	16844.4	23101.2	18858	20098.8	18415.2	19234.8	9193.2	29155.2	17029.2
LOD	118	551	372	289	144	168	173	109	316	159
Lead	50.4	194.4	118.8	127.2	142.8	124.8	212.4	93.6	159.6	146.4
LOD	3	18	9	8	4	5	6	4	7	5
Mercury	18	0	0	0	0	0	0	36	0	0
LOD	3	137	93	163	61	117	92	4	162	70
Molybdenum	0	48	87.6	19.2	0	0	0	0	0	13.2
LOD	80	11	6	5	75	96	94	75	127	3
Nickel	0	0	62.4	0	0	0	44.4	74.4	0	0
LOD	25	9	16	63	27	39	8	7	53	37
Selenium	7.2	0	0	0	0	0	0	0	0	0
LOD	1	42	20	19	9	11	9	9	13	11
Titanium	1124.4	3757.2	3955.2	3450	2724	3033.6	1783.2	0	4010.4	2683.2
LOD	118	557	323	310	139	175	154	407	248	168
Tin	0	0	499.2	0	0	0	183.6	0	0	0
LOD	961	4440	41	1985	877	1170	19	819	1585	1075
Vanadium	93.6	0	0	0	152.4	0	0	0	223.2	0
LOD	18	183	99	69	19	54	45	42	34	50
Zinc	168	92.4	226.8	241.2	249.6	228	346.8	320.4	148.8	194.4
LOD	6	19	14	13	7	8	10	8	9	7

Sulphur	0	0	0	0	448.8	0	0	1654.8	0	0
LOD	637	0	5430	773	50	450	414	58	613	477
Light El	1103748	1178308.8	1064047.2	953508	947084.4	979316.4	956857.2	986144.4	951626.4	1001170.8
LOD	754	857	3558	3444	1568	1844	1969	7339	2770	1825

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Results of X-Ray Fluorescence Analysis (XRF)

Sackedgate Ltd Reg 09712671 at 26 Reading Road, Burghfield Common, Berkshire RG7 3QA - T- 01189 832 570 M-07555 106 620

Instrument Type	Olympus Vanta C	Site Ref	3102A
Instrument Serial No.	800722	Location	Rear of 52 Norcott Road, Reading
Units	ppm	Client	Terramech

Exposure No.	33	34	35	36	37	38	39	40	41	42
Locn	33	34	35	36	37	38	39	40	41	42

Lat	51.4594002	51.4594994	51.4594002	51.4594994	51.4594994	51.4594994	51.4594002	51.4594994	51.4594002	0
Long	-1.03368	-1.03379	-1.03368	-1.03364	-1.0335701	-1.03364	-1.03364	-1.0335701	-1.0335	0
date	04/04/2018	04/04/2018	04/04/2018	04/04/2018	04/04/2018	04/04/2018	04/04/2018	04/04/2018	04/04/2018	04/04/2018

m/c (%)	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%
Measured/Assumed	A	A	A	A	A	A	A	A	A	A

Antimony	0	0	110.4	0	0	153.6	0	0	0	90
LOD	36	28	1064	2058	1340	2689	1755	998	1040	1119
Arsenic	28.8	19.2	0	33.6	0	0	0	16.8	0	27.6
LOD	6	4	33	6	31	92	47	3	56	4
Cadmium	0	0	0	192	0	140.4	0	75.6	55.2	112.8
LOD	907	768	526	19	605	25	842	9	10	10
Chromium	442.8	159.6	0	201.6	96	0	0	0	0	140.4
LOD	48	30	54	43	22	166	110	56	69	24
Cobalt	0	0	0	0	0	0	0	0	0	0
LOD	271	213	120	251	116	318	192	133	157	175
Copper	87.6	34.8	25.2	0	0	52.8	49.2	91.2	102	80.4
LOD	10	6	5	37	23	13	9	5	6	6
Iron	20823.6	16888.8	8736	20097.6	8298	20924.4	10018.8	15134.4	17248.8	22498.8
LOD	242	167	92	250	92	1118	212	108	131	162
Lead	122.4	130.8	98.4	112.8	82.8	210	92.4	115.2	357.6	153.6
LOD	6	5	4	7	4	15	6	4	6	5
Mercury	0	0	0	0	0	0	0	0	0	22.8
LOD	128	90	95	112	52	129	109	73	84	3
Molybdenum	0	39.6	27.6	63.6	0	50.4	51.6	0	12	0
LOD	120	3	2	4	84	6	4	67	2	77
Nickel	0	0	0	0	63.6	0	0	24	26.4	0
LOD	57	39	23	57	7	33	20	5	6	26
Selenium	0	0	0	15.6	0	0	0	3.6	0	0
LOD	12	8	7	2	7	15	14	1	7	10
Titanium	1731.6	2319.6	0	4150.8	1326	1370.4	1471.2	1038	1855.2	2798.4
LOD	206	174	702	265	133	283	201	104	124	140
Tin	0	0	110.4	0	0	153.6	0	0	0	90
LOD	1545	1263	15	1511	1042	35	1381	795	812	15
Vanadium	0	0	0	0	0	295.2	0	0	230.4	153.6
LOD	75	63	45	92	43	51	57	36	20	19
Zinc	153.6	180	171.6	187.2	68.4	195.6	106.8	207.6	243.6	271.2
LOD	9	7	6	10	4	16	8	6	7	7

Sulphur	0	0	0	0	0	0	0	0	0	0
LOD	497	566	571	947	1174	1446	750	241	343	329
Light El	948729.6	982171.2	1039014	984468	1019570.4	591654	892366.8	941510.4	979724.4	984844.8
LOD	2625	2026	1589	2794	2817	30976	14223	1450	1502	1503

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Results of X-Ray Fluorescence Analysis (XRF)

Sackedgate Ltd Reg 09712671 at 26 Reading Road, Burghfield Common, Berkshire RG7 3QA - T- 01189 832 570 M-07555 106 620

Instrument Type	Olympus Vanta C	Site Ref	3102A
Instrument Serial No.	800722	Location	Rear of 52 Norcott Road, Reading
Units	ppm	Client	Terramech

Exposure No.	43	44	45	46	47	48				
Locn	43	44	45	46	47	48				

Lat	0	0	0	0	0	0				
Long	0	0	0	0	0	0				
date	04/04/2018	04/04/2018	04/04/2018	04/04/2018	04/04/2018	04/04/2018				

m/c (%)	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%				
Measured/Assumed	A	A	A	A	A	A				

Antimony	40.8	91.2	0	181.2	0	0				
LOD	840	28	1537	1799	1797	1490				
Arsenic	0	0	0	19.2	136.8	19.2				
LOD	35	58	42	4	11	4				
Cadmium	0	0	0	0	0	0				
LOD	386	805	699	822	813	686				
Chromium	0	583.2	403.2	0	418.8	0				
LOD	48	49	37	74	50	84				
Cobalt	0	0	0	0	0	0				
LOD	119	238	329	176	633	186				
Copper	58.8	0	93.6	37.2	0	55.2				
LOD	4	40	9	7	48	7				
Iron	17498.4	19339.2	46730.4	14991.6	122281.2	15697.2				
LOD	99	209	353	184	1061	147				
Lead	231.6	159.6	103.2	93.6	253.2	92.4				
LOD	4	7	5	5	12	4				
Mercury	8.4	0	0	0	0	0				
LOD	2	107	100	103	125	97				
Molybdenum	0	13.2	0	0	0	0				
LOD	54	3	97	110	113	97				
Nickel	0	0	128.4	0	0	60				
LOD	20	39	11	32	56	8				
Selenium	0	0	0	0	0	0				
LOD	8	13	11	14	16	3				
Titanium	2464.8	1916.4	4326	3190.8	5232	2200.8				
LOD	102	193	204	216	298	170				
Tin	40.8	91.2	0	181.2	0	0				
LOD	11	22	1167	22	1457	1138				
Vanadium	0	0	0	0	0	0				
LOD	35	60	63	76	88	62				
Zinc	294	202.8	114	60	226.8	145.2				
LOD	5	9	7	6	14	7				

Sulphur	1342.8	0	0	1478.4	978	277.2				
LOD	34	517	275	68	118	69				
Light El	945945.6	920336.4	850797.6	682537.2	657270	827553.6				
LOD	1177	2570	2442	5318	4431	2284				

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Instrument Type	Olympus Vanta C	Site Ref	3102A
Instrument Serial No.	800722	Location	Rear of 52 Norcott Road, Reading
Units	ppm	Client	Terramech

Exposure No.	2	3	4	5	6	7	8	9	10	11
Locn	HD1	HD1	HD1	HD1	HD1	HD2	HD2	HD2	HD2	HD2

Lat	0	0	51.4693985	51.4693985	51.4695015	51.4692993	51.469101	51.4690018	51.4692001	51.4692001
Long	0	0	-1.05261	-1.05268	-1.05284	-1.05265	-1.05246	-1.05246	-1.05257	-1.05265
date	06/04/2018	06/04/2018	06/04/2018	06/04/2018	06/04/2018	06/04/2018	06/04/2018	06/04/2018	06/04/2018	06/04/2018

m/c (%)	16.80%	16.80%	16.80%	16.80%	16.80%	54.60%	54.60%	54.60%	54.60%	54.60%
Measured/Assumed	m	m	m	m	m	m	m	m	m	m

Antimony	0	0	0	130.816	106.288	0	0	0	0	0
LOD	21	1104	1334	1268	1375	924	1021	944	1005	935
Arsenic	45.552	26.864	0	0	24.528	0	37.104	29.374	0	21.644
LOD	5	5	55	39	4	33	3	3	31	3
Cadmium	0	0	0	71.248	0	69.57	0	0	0	0
LOD	580	498	626	11	658	8	473	445	456	445
Chromium	0	0	0	0	0	0	0	0	0	160.784
LOD	74	69	94	60	70	52	51	49	58	20
Cobalt	0	0	0	0	0	0	0	0	0	0
LOD	174	154	183	145	154	118	131	134	123	139
Copper	60.736	87.6	25.696	45.552	0	34.012	71.116	0	49.472	115.95
LOD	6	6	5	5	32	4	5	22	4	5
Iron	22054.176	20657.248	21710.784	13823.28	14450.496	21681.104	21427.56	20748.866	17418.782	22129.444
LOD	162	141	166	117	130	124	111	105	96	132
Lead	196.224	315.36	265.136	131.984	123.808	222.624	173.152	137.594	159.238	183.974
LOD	5	6	6	4	5	4	4	3	3	4
Mercury	0	0	0	0	0	0	0	13.914	0	12.368
LOD	92	74	89	82	100	62	69	2	42	3
Molybdenum	28.032	0	28.032	15.184	33.872	0	0	0	0	0
LOD	3	72	3	2	3	60	66	64	66	62
Nickel	0	0	0	36.208	0	27.828	40.196	0	0	58.748
LOD	29	25	32	6	30	4	5	24	25	5
Selenium	0	0	0	0	0	0	0	0	4.638	0
LOD	9	10	13	10	7	7	9	6	1	9
Titanium	2420.096	3216.672	2359.36	2602.304	831.616	2540.078	3292.98	1671.226	3401.2	3246.6
LOD	147	144	151	152	131	104	123	100	121	118
Tin	0	0	0	130.816	106.288	0	0	0	0	0
LOD	964	835	1038	16	17	715	790	745	777	740
Vanadium	0	0	378.432	0	255.792	0	0	108.22	0	219.532
LOD	46	47	26	46	24	35	42	15	42	17
Zinc	883.008	1226.4	1123.616	496.4	707.808	298.378	391.138	262.82	258.182	372.586
LOD	14	15	16	10	13	5	6	5	5	6

Sulphur	652.912	1016.16	933.232	707.808	0	650.866	757.54	684.878	884.312	841.024
LOD	58	51	63	58	208	36	42	39	42	40
Light El	824597.488	844238.576	832370.528	815301.376	812393.056	1189608.35	1190885.35	1214098.54	1252501.18	1154084.36
LOD	1938	1691	1981	1895	2077	4185	1458	1353	1321	4130

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Instrument Type	Olympus Vanta C	Site Ref	3102A
Instrument Serial No.	800722	Location	Rear of 52 Norcott Road, Reading
Units	ppm	Client	Terramech

Exposure No.	12	13	14	15	16					
Locn	HD3	HD3	HD3	HD3	HD3					

Lat	51.4692001	51.469101	51.4692001	51.469101	51.4692993					
Long	-1.05279	-1.05277	-1.0526299	-1.05269	-1.05285					
date	06/04/2018	06/04/2018	06/04/2018	06/04/2018	06/04/2018					

m/c (%)	30.30%	30.30%	30.30%	30.30%	30.30%					
Measured/Assumed	m	m	m	m	m					

Antimony	0	0	144.633	52.12	0					
LOD	17	907	1052	1032	958					
Arsenic	0	0	26.06	14.333	0					
LOD	34	33	4	3	33					
Cadmium	91.21	76.877	0	0	0					
LOD	9	8	484	479	455					
Chromium	0	145.936	0	0	0					
LOD	44	19	61	60	64					
Cobalt	0	0	0	0	0					
LOD	149	130	153	157	154					
Copper	97.725	53.423	99.028	75.574	45.605					
LOD	5	4	5	5	4					
Iron	21287.111	19848.599	20554.825	22386.843	24508.127					
LOD	127	113	124	132	134					
Lead	155.057	182.42	199.359	181.117	149.845					
LOD	4	4	4	4	4					
Mercury	0	18.242	0	0	0					
LOD	68	3	77	56	56					
Molybdenum	0	0	0	0	0					
LOD	67	62	68	68	63					
Nickel	0	0	0	0	31.272					
LOD	25	22	17	28	5					
Selenium	0	5.212	0	0	0					
LOD	7	1	10	9	9					
Titanium	2354.521	1525.813	2699.816	2639.878	2906.993					
LOD	119	100	127	124	122					
Tin	0	0	144.633	52.12	0					
LOD	780	719	13	13	742					
Vanadium	267.115	0	0	0	135.512					
LOD	19	36	43	41	16					
Zinc	205.874	256.691	667.136	233.237	238.449					
LOD	5	6	10	6	6					

Sulphur	929.039	1145.337	1140.125	908.191	555.078					
LOD	44	40	46	44	40					
Light El	987552.821	1003964.11	954829.279	990956.257	959870.586					
LOD	1512	1366	1600	1527	1520					

X-Ray Fluorescence analysis carried out in situ or from sample containers. Soil is not homogeneous and the concentrations of contaminants vary throughout the soil mass. Large variations are sometimes found at locations just millimetres from each other. This analysis considers a small scan area which may not represent the variability that is more widely present. Where possible a number of tests are carried out to assess the variability of each sample or at each point location tested.

The analyser measures concentrations as it sees them in the soil, in its wet state. The results above are corrected for moisture content and are presented on a 'dry weight' basis depending on a measured or an assumed moisture content. Most elements give a fairly constant fluorescent response for different compounds of that element. Some compounds of elements, such as Cadmium, Mercury, Nickel, Thorium and Uranium, give different responses depending on the actual compound that is present. The analyser always shows the worst case concentration and sometimes greatly overestimates the concentrations present.

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APPENDIX C

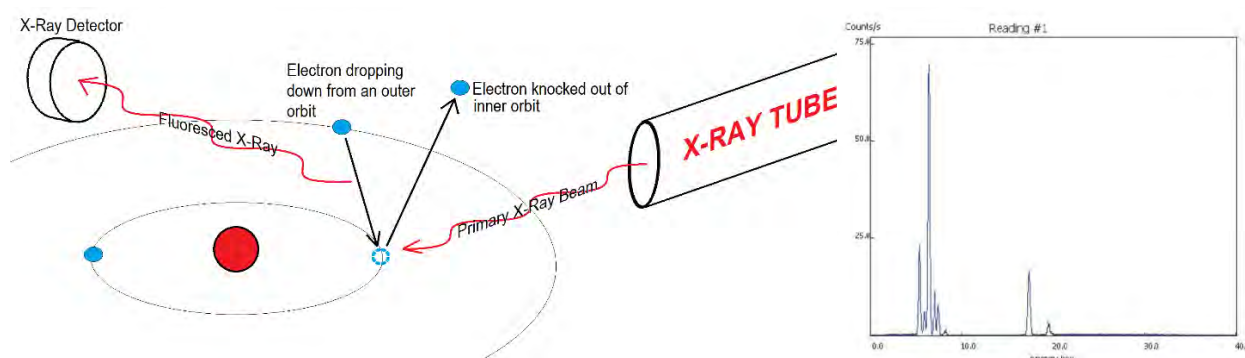
NOTES ON X-RAY FLUORESCENCE ANALYSIS

Introduction to X-Ray Fluorescence Analysers



Initially XRF analysers have found uses in many places from laboratories to mineral prospecting as well as grading metals in scrap yards or checking the purity of precious metals in jewellery. The use of these analysers in contaminated land investigations is fairly new.

XRF analysers expose elements in a mineral or soil to a primary X-ray beam. These X-rays have enough energy to ionise these elements by knocking an electron out of the innermost orbit of the atoms in the firing line. The vacant slot is then taken up by an electron from an outer orbit. The energy imparted to the electron that tumbles down is dissipated as a secondary X-Ray photon. The energy of the fluoresced X-ray is particular to the element that was ionised.



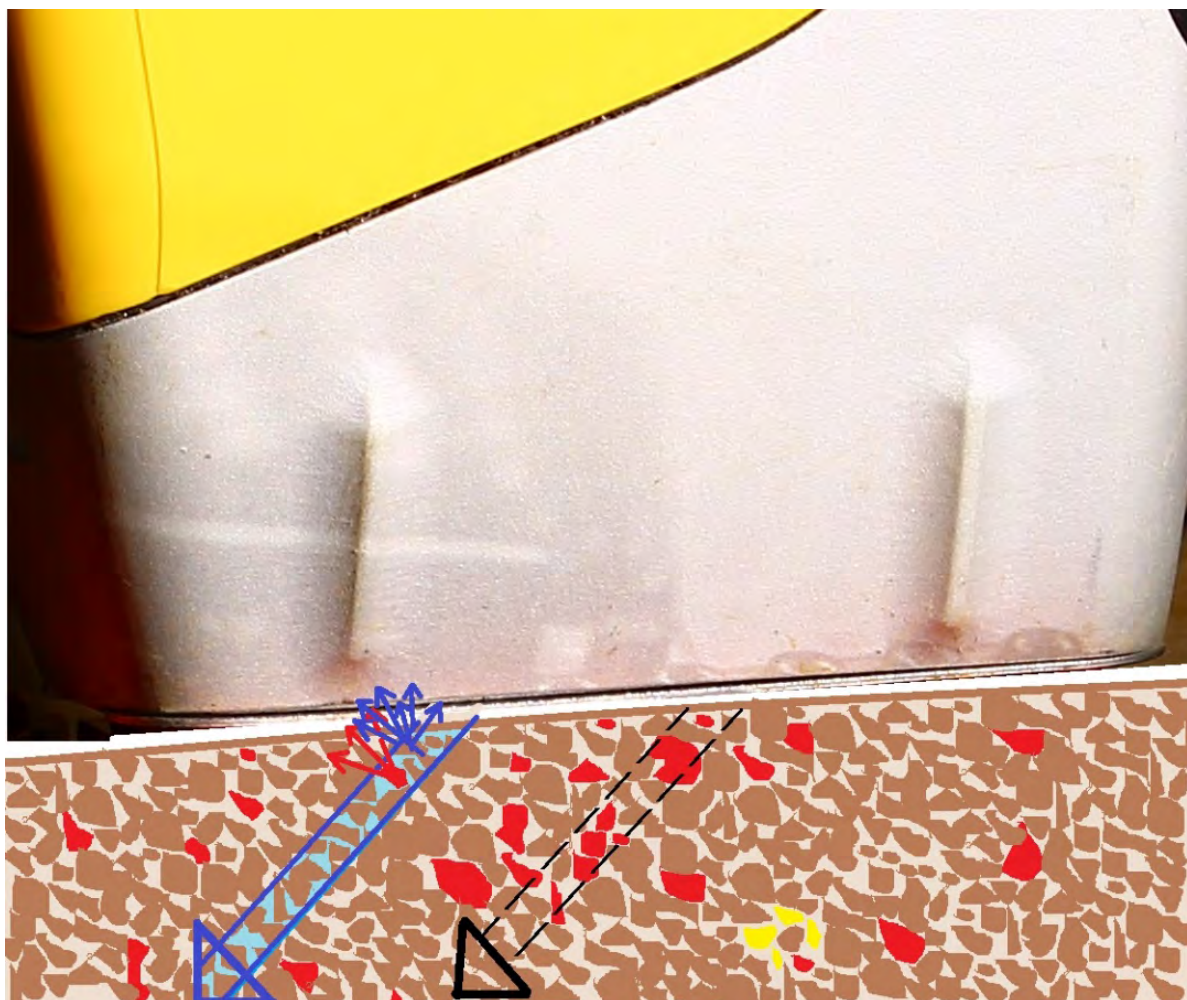
The analyser detects these returning X-Rays and differentiates the peaks in the plotted spectra into particular elements.

The analyser shows values as it sees them, in a wet weight condition. The results are then presented on a dry weight basis using assumed or measured moisture content values.

These types of analyser cannot detect light elements such as Oxygen, Hydrogen or Carbon etc so plastics (with no metal pigments), fuels, oils, lubricants and other hydrocarbons are invisible to the analyser. The periodic table below shows the elements that can be detected.

Periodic Table of the Elements

1 IA 1A 2 IIA 2A 13 IIIA 3A 14 IVA 4A 15 VA 5A 16 VIA 6A 17 VIIA 7A 18 VIIIA 8A																	
3 Li Lithium 6.941 11 Na Sodium 22.990 19 K Potassium 39.098 37 Rb Rubidium 85.468 55 Cs Cesium 132.905 87 Fr Francium 223.018 4 Be Beryllium 9.012 12 Mg Magnesium 24.305 20 Ca Calcium 40.078 38 Sr Strontium 87.62 56 Ba Barium 137.327 88 Ra Radium 226.025 5 B Boron 10.811 13 Al Aluminum 26.982 21 Sc Scandium 44.956 39 Y Yttrium 88.906 57-71 Lanthanide Series 89-103 Actinide Series 6 C Carbon 12.011 14 Si Silicon 28.086 22 Ti Titanium 47.88 40 Zr Zirconium 91.224 58-72 Lanthanide Series 90-104 Actinide Series 7 N Nitrogen 14.007 15 P Phosphorus 30.974 23 V Vanadium 50.942 41 Nb Niobium 92.906 59-73 Lanthanide Series 91-105 Actinide Series 8 O Oxygen 15.999 16 S Sulfur 32.06 24 Cr Chromium 51.996 42 Mo Molybdenum 95.94 60-74 Lanthanide Series 92-106 Actinide Series 9 F Fluorine 18.998 17 Cl Chlorine 35.45 25 Mn Manganese 54.938 43 Tc Technetium 98.906 61-75 Lanthanide Series 93-107 Actinide Series 10 Ne Neon 20.180 18 Ar Argon 39.948 26 Fe Iron 55.845 44 Ru Ruthenium 101.07 62-76 Lanthanide Series 94-108 Actinide Series 11 Cu Copper 63.546 27 Co Cobalt 58.933 35 Br Bromine 79.904 53 I Iodine 126.905 71 Lu Lutetium 174.967 12 Zn Zinc 65.38 28 Ni Nickel 58.69 36 Kr Krypton 83.798 54 Xe Xenon 131.29 72 Hf Hafnium 178.49 19 Au Gold 196.967 31 Ga Gallium 69.723 47 Ag Silver 107.868 63 Eu Europium 151.964 79 Au Gold 196.967 20 Hg Mercury 200.59 32 Ge Germanium 72.63 48 In Indium 114.818 64 Gd Gadolinium 157.25 80 Hg Mercury 200.59 81 Tl Thallium 204.38 33 As Arsenic 74.922 49 Sn Tin 118.710 65 Tb Terbium 158.925 81 Tl Thallium 204.38 82 Pb Lead 207.2 34 Se Selenium 78.96 50 Sb Antimony 121.757 66 Dy Dysprosium 162.50 82 Pb Lead 207.2 83 Bi Bismuth 208.980 35 Br Bromine 79.904 51 Te Tellurium 127.6 67 Ho Holmium 164.930 83 Bi Bismuth 208.980 84 Po Polonium [209] 36 Kr Krypton 83.798 52 Ba Barium 137.327 68 Er Erbium 167.259 84 Po Polonium [209] 85 At Astatine [210] 37 Rb Rubidium 85.468 53 I Iodine 126.905 69 Tm Thulium 168.934 85 At Astatine [210] 86 Rn Radon [222] 38 Sr Strontium 87.62 54 Xe Xenon 131.29 70 Yb Ytterbium 173.054 86 Rn Radon [222] 87 Fr Francium [223] 39 Y Yttrium 88.906 55 Cs Cesium 132.905 71 Lu Lutetium 174.967 87 Fr Francium [223] 88 Ra Radium [226] 40 Zr Zirconium 91.224 56 Ba Barium 137.327 72 Hf Hafnium 178.49 88 Ra Radium [226] 89 Ac Actinium [227] 41 Nb Niobium 92.906 57-71 Lanthanide Series 73 Ta Tantalum 180.948 89 Ac Actinium [227] 90 Th Thorium 232.038 42 Mo Molybdenum 95.94 72 Hf Hafnium 178.49 90 Th Thorium 232.038 91 Pa Protactinium 231.036 43 Tc Technetium [98] 73 Ta Tantalum 180.948 91 Pa Protactinium 231.036 92 U Uranium 238.029 44 Ru Ruthenium 101.07 74 W Tungsten 183.84 92 U Uranium 238.029 93 Np Neptunium 237.048 45 Rh Rhodium 101.07 75 Re Rhenium 186.207 93 Np Neptunium 237.048 94 Pu Plutonium 244.064 46 Pd Palladium 106.36 76 Os Osmium 190.23 94 Pu Plutonium 244.064 95 Am Americium [243] 47 Ag Silver 107.868 77 Ir Iridium 192.22 95 Am Americium [243] 96 Cm Curium [247] 48 Cd Cadmium 112.411 78 Pt Platinum 195.084 96 Cm Curium [247] 97 Bk Berkelium [247] 49 In Indium 114.818 79 Au Gold 196.967 97 Bk Berkelium [247] 98 Cf Californium [251] 50 Sn Tin 118.710 80 Hg Mercury 200.59 98 Cf Californium [251] 99 Es Einsteinium [252] 51 Sb Antimony 121.757 81 Tl Thallium 204.38 99 Es Einsteinium [252] 100 Fm Fermium [257] 52 Te Tellurium 127.6 82 Pb Lead 207.2 100 Fm Fermium [257] 101 Md Mendelevium [258] 53 I Iodine 126.905 83 Bi Bismuth 208.980 101 Md Mendelevium [258] 102 No Nobelium [259] 54 Xe Xenon 131.29 84 Po Polonium [209] 102 No Nobelium [259] 103 Lr Lawrencium [260] 55 Cs Cesium 132.905 85 At Astatine [210] 103 Lr Lawrencium [260] 104 Rf Rutherfordium [261] 56 Ba Barium 137.327 86 Rn Radon [222] 104 Rf Rutherfordium [261] 105 Db Dubnium [262] 57-71 Lanthanide Series 87 Fr Francium [223] 105 Db Dubnium [262] 106 Sg Seaborgium [266] 72 Hf Hafnium 178.49 88 Ra Radium [226] 106 Sg Seaborgium [266] 107 Bh Bohrium [264] 73 Ta Tantalum 180.948 89 Ac Actinium [227] 107 Bh Bohrium [264] 108 Hs Hassium [277] 74 W Tungsten 183.84 90 Th Thorium 232.038 108 Hs Hassium [277] 109 Mt Meitnerium [268] 75 Re Rhenium 186.207 91 Pa Protactinium 231.036 109 Mt Meitnerium [268] 110 Ds Darmstadtium [271] 76 Os Osmium 190.23 92 U Uranium 238.029 110 Ds Darmstadtium [271] 111 Rg Roentgenium [272] 77 Ir Iridium 192.22 93 Np Neptunium 237.048 111 Rg Roentgenium [272] 112 Cn Copernicium [285] 78 Pt Platinum 195.084 94 Pu Plutonium 244.064 112 Cn Copernicium [285] 113 Uut Ununtrium [284] 79 Au Gold 196.967 95 Am Americium [243] 113 Uut Ununtrium [284] 114 Fl Flerovium [289] 80 Hg Mercury 200.59 96 Cm Curium [247] 114 Fl Flerovium [289] 115 Uup Ununpentium [288] 81 Tl Thallium 204.38 97 Bk Berkelium [247] 115 Uup Ununpentium [288] 116 Lv Livermorium [293] 82 Pb Lead 207.2 98 Cf Californium [251] 116 Lv Livermorium [293] 117 Uus Ununseptium [294] 83 Bi Bismuth 208.980 99 Es Einsteinium [252] 117 Uus Ununseptium [294] 118 Uuo Ununoctium [294] 84 Po Polonium [209] 100 Fm Fermium [257] 118 Uuo Ununoctium [294] 119 Uue Ununennium [295] 85 At Astatine [210] 101 Md Mendelevium [258] 119 Uue Ununennium [295] 120 Uuh Unbihrium [296] 86 Rn Radon [222] 102 No Nobelium [259] 120 Uuh Unbihrium [296] 121 Ubu Unbium [297] 87 Fr Francium [223] 103 Lr Lawrencium [260] 121 Ubu Unbium [297] 122 Ubb Untrium [298] 88 Ra Radium [226] 104 Rf Rutherfordium [261] 122 Ubb Untrium [298] 123 Ubs Untrium [299] 89 Ac Actinium [227] 105 Db Dubnium [262] 123 Ubs Untrium [299] 124 Ubd Unquadrium [300] 90 Th Thorium 232.038 106 Sg Seaborgium [266] 124 Ubd Unquadrium [300] 125 Ube Unquadium [301] 91 Pa Protactinium 231.036 107 Bh Bohrium [264] 125 Ube Unquadium [301] 126 Ubf Unquadium [302] 92 U Uranium 238.029 108 Hs Hassium [277] 126 Ubf Unquadium [302] 127 Ubg Unquadium [303] 93 Np Neptunium 237.048 109 Mt Meitnerium [268] 127 Ubg Unquadium [303] 128 Ubh Unquadium [304] 94 Pu Plutonium 244.064 110 Ds Darmstadtium [271] 128 Ubh Unquadium [304] 129 Ubi Unquadium [305] 95 Am Americium [243] 111 Rg Roentgenium [272] 129 Ubi Unquadium [305] 130 Ubl Unquadium [306] 96 Cm Curium [247] 112 Cn Copernicium [285] 130 Ubl Unquadium [306] 131 Ubm Unquadium [307] 97 Bk Berkelium [247] 113 Uut Ununtrium [284] 131 Ubm Unquadium [307] 132 Ubn Unquadium [308] 98 Cf Californium [251] 114 Fl Flerovium [289] 132 Ubn Unquadium [308] 133 Ubo Unquadium [309] 99 Es Einsteinium [252] 115 Uup Ununpentium [288] 133 Ubo Unquadium [309] 134 Ubp Unquadium [310] 100 Fm Fermium [257] 116 Lv Livermorium [293] 134 Ubp Unquadium [310] 135 Ubu Unquadium [311] 101 Md Mendelevium [258] 117 Uus Ununseptium [294] 135 Ubu Unquadium [311] 136 Ubv Unquadium [312] 102 No Nobelium [259] 118 Uuo Ununoctium [294] 136 Ubv Unquadium [312] 137 Ubw Unquadium [313] 103 Lr Lawrencium [260] 119 Uue Ununennium [295] 137 Ubw Unquadium [313] 138 Ubx Unquadium [314] 104 Rf Rutherfordium [261] 120 Uuh Unbihrium [296] 138 Ubx Unquadium [314] 139 Uby Unquadium [315] 105 Db Dubnium [262] 121 Ubu Unbium [297] 139 Uby Unquadium [315] 140 Ubz Unquadium [316] 106 Sg Seaborgium [266] 122 Ubb Untrium [298] 140 Ubz Unquadium [316] 141 Uby Unquadium [317] 107 Bh Bohrium [264] 123 Ubs Untrium [299] 141 Uby Unquadium [317] 142 Ubb Unquadium [318] 108 Hs Hassium [277] 124 Ubd Unquadrium [300] 142 Ubb Unquadium [318] 143 Ubc Unquadium [319] 109 Mt Meitnerium [268] 125 Ube Unquadium [301] 143 Ubc Unquadium [319] 144 Ubd Unquadium [320] 110 Ds Darmstadtium [271] 126 Ubf Unquadium [302] 144 Ubd Unquadium [320] 145 Ube Unquadium [321] 111 Rg Roentgenium [272] 127 Ubg Unquadium [303] 145 Ube Unquadium [321] 146 Ubf Unquadium [322] 112 Cn Copernicium [285] 128 Ubh Unquadium [304] 146 Ubf Unquadium [322] 147 Ubg Unquadium [323] 113 Uut Ununtrium [284] 129 Ubi Unquadium [305] 147 Ubg Unquadium [323] 148 Ubh Unquadium [324] 114 Fl Flerovium [289] 130 Ubl Unquadium [306] 148 Ubh Unquadium [324] 149 Ubi Unquadium [325] 115 Uup Ununpentium [288] 131 Ubm Unquadium [307] 149 Ubi Unquadium [325] 150 Ubl Unquadium [326] 116 Lv Livermorium [293] 132 Ubn Unquadium [308] 150 Ubl Unquadium [326] 151 Ubm Unquadium [327] 117 Uus Ununseptium [294] 133 Ubo Unquadium [309] 151 Ubm Unquadium [327] 152 Ubn Unquadium [328] 118 Uuo Ununoctium [294] 134 Ubp Unquadium [310] 152 Ubn Unquadium [328] 153 Ubo Unquadium [329] 119 Uue Ununennium [295] 135 Ubu Unbium [297] 153 Ubo Unquadium [329] 154 Ubp Unquadium [330] 120 Uuh Unbihrium [296] 136 Ubv Unquadium [312] 154 Ubp Unquadium [330] 155 Ubu Unquadium [331] 121 Ubu Unbium [297] 137 Ubw Unquadium [313] 155 Ubu Unquadium [331] 156 Ubv Unquadium [332] 122 Ubb Untrium [298] 138 Ubx Unquadium [314] 156 Ubv Unquadium [332] 157 Ubw Unquadium [333] 123 Ubs Untrium [299] 139 Uby Unquadium [315] 157 Ubw Unquadium [333] 158 Ubx Unquadium [334] 124 Ubd Unquadrium [300] 140 Ubz Unquadium [316] 158 Ubx Unquadium [334] 159 Uby Unquadium [335] 125 Ube Unquadium [301] 141 Uby Unquadium [317] 159 Uby Unquadium [335] 160 Ubz Unquadium [336] 126 Ubf Unquadium [302] 142 Ubb Untrium [298] 160 Ubz Unquadium [336] 161 Uby Unquadium [337] 127 Ubg Unquadium [303] 143 Ubc Unquadium [319] 161 Uby Unquadium [337] 162 Ubb Unquadium [338] 128 Ubh Unquadium [304] 144 Ubd Unquadrium [320] 162 Ubb Unquadium [338] 163 Ubc Unquadium [339] 129 Ubi Unquadium [305] 145 Ube Unquadium [321] 163 Ubc Unquadium [339] 164 Ubd Unquadium [340] 130 Ubl Unquadium [306] 146 Ubf Unquadium [322] 164 Ubd Unquadium [340] 165 Ube Unquadium [341] 131 Ubm Unquadium [307] 147 Ubg Unquadium [323] 165 Ube Unquadium [341] 166 Ubf Unquadium [342] 132 Ubn Unquadium [308] 148 Ubh Unquadium [324] 166 Ubf Unquadium [342] 167 Ubg Unquadium [343] 133 Ubo Unquadium [309] 149 Ubi Unquadium [325] 167 Ubg Unquadium [343] 168 Ubh Unquadium [344] 134 Ubp Unquadium [310] 150 Ubl Unquadium [326] 168 Ubh Unquadium [344] 169 Ubi Unquadium [345] 135 Ubu Unquadium [311] 151 Ubm Unquadium [327] 169 Ubi Unquadium [345] 170 Ubl Unquadium [346] 136 Ubv Unquadium [312] 152 Ubn Unquadium [328] 170 Ubl Unquadium [346] 171 Ubm Unquadium [347] 137 Ubw Unquadium [313] 153 Ubo Unquadium [329] 171 Ubm Unquadium [347] 172 Ubn Unquadium [348] 138 Ubx Unquadium [314] 154 Ubp Unquadium [330] 172 Ubn Unquadium [348] 173 Ubo Unquadium [349] 139 Uby Unquadium [315] 155 Ubu Unquadium [331] 173 Ubo Unquadium [349] 174 Ubp Unquadium [350] 140 Ubz Unquadium [316]																	



Soils which have been contaminated by industrial activities are seldom homogenous and solid contaminants are usually found in flakes, flecks or crumbs mixed into the soil mass.

Homogeneity of the soil and its contaminants presents the XRF user with a problem however, we largely and sometimes wrongly assume that laboratory results are not subject to the same issue.

During laboratory analysis an amount of a sample is taken and dissolved in aqua regia. The resulting liquid is passed through a mass spectrometer to detect the metals present. This gives an average for the scoop of the main sample that was prepared for analysis.

The XRF analyser has a narrow primary beam and the amount of any one contaminants that is in view of the X-Ray tube can vary significantly over very small distances. Normally several tests will be carried out on any one exposure of soil to see what sort of variation occurs. This often helps identify the source and nature of the contaminant in question.

If a metal has arrived in a soil mass as a dissolved salt, then the results will vary little. Large variations over distances as small as 10mm may indicate fragments of metal in an elemental form.

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APPENDIX D

CONTAMINATION ASSESSMENT CRITERIA

Generic 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

This is a tabulated list of generic soil guideline values for the concentrations of contaminants in soils provided by various authorities to protect human health. These are generic values which make the worst case assumption for every exposure and absorption scenario governing the human uptake of the contaminants considered.

At this time Soil Guideline Values (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 same CLEA Model by CIEH/LQM (The Chartered Institute of Environmental Health and Land Quality Management Ltd). Soil guideline values were published in their report on Generic Assessment Criteria for Human Health Assessments (2009). This 2009 guidance was replaced in 2015 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.

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.

DEFRA SP1010 & C4SL

We have also considered C4SL values derived for 6 contaminants in the Department of the Environment Farming and Rural Affairs (DEFRA) SP1010 report. The report describes how levels of contamination at a site are placed in one of four categories. Category 4 is where the level of risk posed is acceptably low, to Category 1, where the level of risk is clearly unacceptable. The Category 4 values presented in the report were primarily intended for use under the Part 2A of the Environmental Protection Act 1990 to screen out low risk sites.

The Category 4 values are however, determined using a Lower Level of Toxicological Concern (LLTC) assessment methodology which differs from the Health Condition Values (HCVs) discussed in Environment Agency SR2 report, these consider minimal or tolerable levels of risk.

A direction was given by the Department for Communities and Local Government (DCLG) and DEFRA for the C4SL system to be used for assessments for Planning as well as assessments under Part 2A of the Environmental Protection Act (SP1010 Companion Document December 2014).

In order to maintain consistency in our approach to all contaminants (i.e. minimal or tolerable levels of risk), we have continued to use the slightly more conservative Environment Agency SR2 – SR3 based values for the 43 contaminants considered in the Environment Agency SGV reports and partner S4UL publication from CIEH/LQM.

Unfortunately, the Environment Agency and CIEH/LQM documents do not give any guidelines for Lead concentrations. The SP1010 publication (March 2014 - Appendix H - Table 4.1) does give a provisional Category 4 value for Lead determined using the original HCV CLEA methodology. We consider this value is to be consistent with the minimal or tolerable levels of risk methodology used for the other 43 contaminants by the Environment Agency and CIEH/LQM. On this basis we have adopted the values for Lead calculated to be protective of children as the critical receptors. For a residential garden, where plants are grown for consumption by the residents, the guideline value is 190mg/kg. No guideline concentrations are given by DEFRA in the SP1010 document for adults under that assessment methodology. Values for the other land use scenarios are presented in the following tables.

Asbestos

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 minimal or tolerable levels risk level of 1 in 100,000 used to derive HCVs for other contaminants.

We have used the most conservative values for the exposure estimates 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)

Water pipes laid in contaminated ground can absorb some contaminants and allow them to contaminate the water running in the pipes. Our assessments are based on the *UKWIR Report Ref No 10/WM/03/21* which gives a mandatory list of contaminants and threshold concentrations for those contaminants in relation to different types of water pipe materials.

However, we would note that some water utility companies assess contaminants on the basis of their own guidances and we have not reproduced lists of contaminants and their thresholds for all of these individual guidances.

List 3 (Assessment Criteria For Soil Disposal)

Assessment of soils destined for landfills takes two stages. The first is site characterisation to determine if the source site is contaminated, the second stage is compliance testing to assess the leachability or solubility of any contaminants that are present at elevated concentrations, as well as the potential for the material to decay and create gases.

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 list 4 for groundwater protection. If the soils are seen to contain unacceptable concentrations of contaminants, then leachate tests will be required to fully classify the risk to groundwater and organic matter tests are required to assess the gas generation potential. The leachate results and total concentrations for a variety of petrochemical products 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 'Final' C4SL December 2014
Arsenic	Residential with plant uptake	32	32	37	37
	Residential without plant uptake	35	Not Assessed	40	40
	Allotment		43	43	49
	Commercial	635	640	640	640
	Public Open Space (Residential)	Not Assessed	Not Assessed	79	79
	Public Open Space (Park)	Not Assessed	Not Assessed	170	170
Beryllium	Residential with plant uptake	Not Assessed	Not Assessed	1.7	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	1.7	Not Assessed
	Allotment	Not Assessed	Not Assessed	35	Not Assessed
	Commercial	Not Assessed	Not Assessed	12	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	2.2	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	63	Not Assessed
Boron	Residential with plant uptake	Not Assessed	Not Assessed	Not Assessed	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	Not Assessed	Not Assessed
	Allotment	Not Assessed	Not Assessed	Not Assessed	Not Assessed
	Commercial	Not Assessed	Not Assessed	Not Assessed	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	Not Assessed	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	Not Assessed	Not Assessed
Cadmium	Residential with plant uptake	Not Assessed	10	11	22
	Residential without plant uptake	Not Assessed	Not Assessed	85	150
	Allotment	Not Assessed	1.8	1.9	3.9
	Commercial	Not Assessed	230	190	410
	Public Open Space (Residential)	Not Assessed	Not Assessed	120	220
	Public Open Space (Park)	Not Assessed	Not Assessed	532	880
Chromium III	Residential with plant uptake	Not Assessed	Not Assessed	910	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	910	Not Assessed
	Allotment	Not Assessed	Not Assessed	18000	Not Assessed
	Commercial	Not Assessed	Not Assessed	8600	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	1500	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	3300	Not Assessed
Chromium VI	Residential with plant uptake	Not Assessed	Not Assessed	6	21
	Residential without plant uptake	Not Assessed	Not Assessed	6	21
	Allotment	Not Assessed	Not Assessed	1.8	170
	Commercial	Not Assessed	Not Assessed	33	49
	Public Open Space (Residential)	Not Assessed	Not Assessed	7.7	23
	Public Open Space (Park)	Not Assessed	Not Assessed	220	250
Copper	Residential with plant uptake	Not Assessed	Not Assessed	2400	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	7100	Not Assessed
	Allotment	Not Assessed	Not Assessed	520	Not Assessed
	Commercial	Not Assessed	Not Assessed	68000	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	12000	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	44000	Not Assessed
Lead	Residential with plant uptake	190 ₍₄₎	450 (old SGV) ₍₅₎	Not Assessed	200
	Residential without plant uptake	310 ₍₄₎	450 (old SGV) ₍₅₎	Not Assessed	310
	Allotment	70 ₍₄₎	Not Assessed	Not Assessed	80
	Commercial	1100 ₍₄₎	750 (old SGV) ₍₅₎	Not Assessed	2300
	Public Open Space (Residential)	Not Assessed	Not Assessed	Not Assessed	630
	Public Open Space (Park)	Not Assessed	Not Assessed	Not Assessed	1300
Inorganic Mercury	Residential with plant uptake	Not Assessed	170	40	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	56	Not Assessed
	Allotment	Not Assessed	80	19	Not Assessed
	Commercial	Not Assessed	3600	1100	Not Assessed
	Public Open Space (Residential)	Not Assessed		120	Not Assessed
	Public Open Space (Park)	Not Assessed		240	Not Assessed
Elemental Mercury	Residential with plant uptake	Not Assessed	1	1.2	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	1.2	Not Assessed
	Allotment	Not Assessed	26	21	Not Assessed
	Commercial	Not Assessed	26	25.8	Not Assessed
	Public Open Space (Residential)	Not Assessed		16	Not Assessed
	Public Open Space (Park)	Not Assessed		25.8	Not Assessed
Methyl Mercury	Residential with plant uptake	Not Assessed	11	11	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	15	Not Assessed
	Allotment	Not Assessed	8	6	Not Assessed
	Commercial	Not Assessed	410	320	Not Assessed
	Public Open Space (Residential)	Not Assessed		40	Not Assessed
	Public Open Space (Park)	Not Assessed		68	Not Assessed
Nickel	Residential with plant uptake	Not Assessed	130	180	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	180	Not Assessed
	Allotment	Not Assessed	230	230	Not Assessed
	Commercial	Not Assessed	1800	980	Not Assessed
	Public Open Space (Residential)	Not Assessed		230	Not Assessed
	Public Open Space (Park)	Not Assessed		3400	Not Assessed

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	DEFRA SP1010 'Final' C4SL December 2014
Selenium	Residential with plant uptake	Not Assessed	350	250	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	430	Not Assessed
	Allotment	Not Assessed	120	88	Not Assessed
	Commercial	Not Assessed	13000	12000	Not Assessed
	Public Open Space (Residential)	Not Assessed		1100	Not Assessed
	Public Open Space (Park)	Not Assessed		1800	Not Assessed
Vanadium	Residential with plant uptake	Not Assessed	Not Assessed	410	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	1200	Not Assessed
	Allotment	Not Assessed	Not Assessed	91	Not Assessed
	Commercial	Not Assessed	Not Assessed	9000	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	2000	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	5000	Not Assessed
Zinc	Residential with plant uptake	Not Assessed	Not Assessed	3700	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	40000	Not Assessed
	Allotment	Not Assessed	Not Assessed	620	Not Assessed
	Commercial	Not Assessed	Not Assessed	730000	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	8100	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	17000	Not Assessed
Free Cyanide	Residential with plant uptake	Not Assessed	Not Assessed	Not Assessed	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	Not Assessed	Not Assessed
	Allotment	Not Assessed	Not Assessed	Not Assessed	Not Assessed
	Commercial	Not Assessed	Not Assessed	Not Assessed	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	Not Assessed	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	Not Assessed	Not Assessed
Complex Cyanide	Residential with plant uptake	Not Assessed	Not Assessed	Not Assessed	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	Not Assessed	Not Assessed
	Allotment	Not Assessed	Not Assessed	Not Assessed	Not Assessed
	Commercial	Not Assessed	Not Assessed	Not Assessed	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	Not Assessed	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	Not Assessed	Not Assessed
Thiocyanate	Residential with plant uptake	Not Assessed	Not Assessed	Not Assessed	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	Not Assessed	Not Assessed
	Allotment	Not Assessed	Not Assessed	Not Assessed	Not Assessed
	Commercial	Not Assessed	Not Assessed	Not Assessed	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	Not Assessed	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	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	DEFRA SP1010 'Final' C4SL December 2014
Aliphatic C5-C6	Residential with plant uptake	Not Assessed	Not Assessed	42/78/160 ₍₁₎	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	42/76/160 ₍₁₎	Not Assessed
	Allotment	Not Assessed	Not Assessed	730/1700/3900 ₍₁₎	Not Assessed
	Commercial	Not Assessed	Not Assessed	3200(304 ^{sol})/5900(558 ^{sol})/12000(1150 ^{sol}) _(1&3)	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	570000/590000/60000 ₍₁₎	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	95000(304 ^{sol})/130000(558 ^{sol})/180000(1150 ^{sol}) _(1&3)	Not Assessed
Aliphatic C6-C8	Residential with plant uptake	Not Assessed	Not Assessed	100/230/530 ₍₁₎	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	100/230/530 ₍₁₎	Not Assessed
	Allotment	Not Assessed	Not Assessed	2300/5600/13000 ₍₁₎	Not Assessed
	Commercial	Not Assessed	Not Assessed	7800(144 ^{sol})/17000(322 ^{sol})/40000(736 ^{sol}) _(1&3)	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	600000/610000/620000 ₍₁₎	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	150000(144 ^{sol})/220000(322 ^{sol})/320000(736 ^{sol}) _(1&3)	Not Assessed
Aliphatic C8-C10	Residential with plant uptake	Not Assessed	Not Assessed	27/65/150 ₍₁₎	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	27/65/150 ₍₁₎	Not Assessed
	Allotment	Not Assessed	Not Assessed	320/77/1700 ₍₁₎	Not Assessed
	Commercial	Not Assessed	Not Assessed	2000(78 ^{sol})/4800(190 ^{vap})/11000(451 ^{vap}) _(1&3)	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	13000/13000/13000 ₍₁₎	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	14000(78 ^{sol})/18000(190 ^{vap})/21000(451 ^{vap}) _(1&3)	Not Assessed
Aliphatic C10-C12	Residential with plant uptake	Not Assessed	Not Assessed	130(48 ^{vap})/330(118 ^{vap})/760(283 ^{vap}) _(1&3)	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	130(48 ^{vap})/330(118 ^{vap})/760(283 ^{vap}) _(1&3)	Not Assessed
	Allotment	Not Assessed	Not Assessed	2200/4400/7300 ₍₁₎	Not Assessed
	Commercial	Not Assessed	Not Assessed	9700(48 ^{sol})/23000(118 ^{vap})/47000(283 ^{vap}) _(1&3)	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	13000/13000/13000 ₍₁₎	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	21000(48 ^{sol})/230000(118 ^{vap})/24000(283 ^{vap}) _(1&3)	Not Assessed
Aliphatic C12-C16	Residential with plant uptake	Not Assessed	Not Assessed	1100(24 ^{sol})/2400(59 ^{sol})/4300(142 ^{sol}) _(1&3)	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	1100(24 ^{sol})/2400(59 ^{sol})/4300(142 ^{sol}) _(1&3)	Not Assessed
	Allotment	Not Assessed	Not Assessed	11000/13000/13000 ₍₁₎	Not Assessed
	Commercial	Not Assessed	Not Assessed	59000(24 ^{sol})/82000(59 ^{sol})/90000(142 ^{sol}) _(1&3)	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	13000/13000/13000 ₍₁₎	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	25000(24 ^{sol})/25000(59 ^{sol})/26000(142 ^{sol}) _(1&3)	Not Assessed
Aliphatic C16-C35	Residential with plant uptake	Not Assessed	Not Assessed	65000(8.48 ^{sol})/92000(21 ^{sol})/110000 _(1&3)	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	65000(8.48 ^{sol})/92000(21 ^{sol})/110000 _(1&3)	Not Assessed
	Allotment	Not Assessed	Not Assessed	260000/270000/270000 ₍₁₎	Not Assessed
	Commercial	Not Assessed	Not Assessed	1600000/1700000/1800000 ₍₁₎	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	3800/3800/3800 ₍₁₎	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	3800/3800/3800 ₍₁₎	Not Assessed
Aliphatic C35-C44	Residential with plant uptake	Not Assessed	Not Assessed	65000(8.48 ^{sol})/92000(21 ^{sol})/110000 _(1&3)	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	65000(8.48 ^{sol})/92000(21 ^{sol})/110000 _(1&3)	Not Assessed
	Allotment	Not Assessed	Not Assessed	260000/270000/270000 ₍₁₎	Not Assessed
	Commercial	Not Assessed	Not Assessed	1600000/1700000/1800000 ₍₁₎	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	3800/3800/3800 ₍₁₎	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	3800/3800/3800 ₍₁₎	Not Assessed
Aliphatic C44-C70	Residential with plant uptake	Not Assessed	Not Assessed	1600/1800/1900	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	1600/1800/1900	Not Assessed
	Allotment	Not Assessed	Not Assessed	1200/2100/3000	Not Assessed
	Commercial	Not Assessed	Not Assessed	28000/28000/28000	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	3800/3800/3800	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	7800/7800/7800	Not Assessed
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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	DEFRA SP1010 'Final' C4SL December 2014
Aromatic C5-C7	Residential with plant uptake	Not Assessed	Not Assessed	70/140/300 ₍₁₎	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	370/690/1400 ₍₁₎	Not Assessed
	Allotment	Not Assessed	Not Assessed	13/27/57 ₍₁₎	Not Assessed
	Commercial	Not Assessed	Not Assessed	26000(1220 ^{sol})/46000(2260 ^{sol})/86000(4710 ^{sol}) _(1&3)	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	56000/56000/56000 ₍₁₎	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	76000(1220 ^{sol})/84000(2260 ^{sol})/92000(4710 ^{sol}) _(1&3)	Not Assessed
Aromatic C7-C8	Residential with plant uptake	Not Assessed	Not Assessed	130/290/660 ₍₁₎	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	860/1800/3900 ₍₁₎	Not Assessed
	Allotment	Not Assessed	Not Assessed	22/51/120 ₍₁₎	Not Assessed
	Commercial	Not Assessed	Not Assessed	56000(869 ^{vap})/110000(1920 ^{sol})/180000(4360 ^{vap}) _(1&3)	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	56000/56000/56000 ₍₁₎	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	87000(869 ^{vap})/95000(1920 ^{sol})/100000(4360 ^{vap}) _(1&3)	Not Assessed
Aromatic C8-C10	Residential with plant uptake	Not Assessed	Not Assessed	34/83/190 ₍₁₎	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	47/110/270 ₍₁₎	Not Assessed
	Allotment	Not Assessed	Not Assessed	8.6/21/51 ₍₁₎	Not Assessed
	Commercial	Not Assessed	Not Assessed	3500(613 ^{vap})/8100(1500 ^{vap})/17000(3580 ^{vap}) _(1&3)	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	5000/5000/5000 ₍₁₎	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	7200(613 ^{vap})/8500(1500 ^{vap})/9300(3580 ^{vap}) _(1&3)	Not Assessed
Aromatic C10-C12	Residential with plant uptake	Not Assessed	Not Assessed	74/180/380 ₍₁₎	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	250/590/1200 ₍₁₎	Not Assessed
	Allotment	Not Assessed	Not Assessed	13/31/74 ₍₁₎	Not Assessed
	Commercial	Not Assessed	Not Assessed	16000(364 ^{sol})/28000(899 ^{sol})/34000(2150 ^{sol}) _(1&3)	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	5000/5000/5000 ₍₁₎	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	9200(364 ^{sol})/9700(899 ^{sol})/10000 _(1&3)	Not Assessed
Aromatic C12-C16	Residential with plant uptake	Not Assessed	Not Assessed	140/330/660 ₍₁₎	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	1800/2300(419 ^{sol})/2500 _(1&3)	Not Assessed
	Allotment	Not Assessed	Not Assessed	23/57/130 ₍₁₎	Not Assessed
	Commercial	Not Assessed	Not Assessed	36000/(169 ^{sol})/37000/38000 _(1&3)	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	5100/5100/5000 ₍₁₎	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	10000/10000/10000 ₍₁₎	Not Assessed
Aromatic C16-C21	Residential with plant uptake	Not Assessed	Not Assessed	260/540/930 ₍₁₎	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	1900/1900/1900 ₍₁₎	Not Assessed
	Allotment	Not Assessed	Not Assessed	46/110/260 ₍₁₎	Not Assessed
	Commercial	Not Assessed	Not Assessed	28000/28000/28000 ₍₁₎	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	3800/3800/3800 ₍₁₎	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	7600/7700/7800 ₍₁₎	Not Assessed
Aromatic C21-C35	Residential with plant uptake	Not Assessed	Not Assessed	1100/1500/1700 ₍₁₎	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	1900/1900/1900 ₍₁₎	Not Assessed
	Allotment	Not Assessed	Not Assessed	370/820/1600 ₍₁₎	Not Assessed
	Commercial	Not Assessed	Not Assessed	28000/28000/28000 ₍₁₎	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	3800/3800/3800 ₍₁₎	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	7800/7800/7900 ₍₁₎	Not Assessed
Aromatic C35-C44	Residential with plant uptake	Not Assessed	Not Assessed	1100/1500/1700 ₍₁₎	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	1900/1900/1900 ₍₁₎	Not Assessed
	Allotment	Not Assessed	Not Assessed	370/820/1600 ₍₁₎	Not Assessed
	Commercial	Not Assessed	Not Assessed	28000/28000/28000 ₍₁₎	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	3800/3800/3800 ₍₁₎	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	7800/7800/7900 ₍₁₎	Not Assessed
Aromatic C44-C70	Residential with plant uptake	Not Assessed	Not Assessed	1600/1800/1900 ₍₁₎	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	1900/1900/1900 ₍₁₎	Not Assessed
	Allotment	Not Assessed	Not Assessed	1200/2100/3000 ₍₁₎	Not Assessed
	Commercial	Not Assessed	Not Assessed	28000/28000/28000 ₍₁₎	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	3800/3800/3800 ₍₁₎	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	7800/7800/7900 ₍₁₎	Not Assessed
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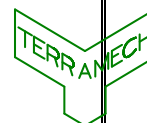
List 1D (BTEX Mono-cyclic Aromatic Hydrocarbons mg/kg)					
Contaminant	Generic Exposure Scenario	Terramech (CLEA v1.06 & S4UL methodology)	Environment Agency SGV (CLEA v1.04)	CIEH/LQM S4UL 2015 Part 3	DEFRA SP1010 'Final' C4SL December 2014
Benzene	Residential with plant uptake	Not Assessed	0.33	0.87/0.17/0.37 ⁽¹⁾	0.87
	Residential without plant uptake	Not Assessed	Not Assessed	0.38/0.70/1.4 ⁽¹⁾	3.3
	Allotment	Not Assessed	0.07	0.017/0.034/0.075 ⁽¹⁾	0.18
	Commercial	Not Assessed	95	27/47/90 ⁽¹⁾	98
	Public Open Space (Residential)	Not Assessed	Not Assessed	72/72/73 ⁽¹⁾	79
	Public Open Space (Park)	Not Assessed	Not Assessed	90/11/110 ⁽¹⁾	170
Toluene	Residential with plant uptake	Not Assessed	610	130/290/660	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	880(869 ^{vap})/1900/3900 ^(1&3)	Not Assessed
	Allotment	Not Assessed	120	22/51/120 ⁽¹⁾	Not Assessed
	Commercial	Not Assessed	4400	56000(869 ^{vap})/56000(1920 ^{vap})/56000(4360 ^{vap}) ^(1&3)	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	5600/5600/5600 ⁽¹⁾	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	87000(869 ^{vap})/95000(1920 ^{vap})/100000(4360 ^{vap}) ^(1&3)	Not Assessed
Ethylbenzene	Residential with plant uptake	Not Assessed	350	47/110/260 ⁽¹⁾	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	83/190/440 ⁽¹⁾	Not Assessed
	Allotment	Not Assessed	90	16/39/91 ⁽¹⁾	Not Assessed
	Commercial	Not Assessed	2800	5700(518 ^{vap})/13000(1220 ^{vap})/27000(2840 ^{vap}) ^(1&3)	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	24000/24000/25000 ⁽¹⁾	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	17000(518 ^{vap})/22000(1220 ^{vap})/27000(2840 ^{vap}) ^(1&3)	Not Assessed
o-Xylene	Residential with plant uptake	Not Assessed	250	60/140/330 ⁽¹⁾	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	88/210/480 ⁽¹⁾	Not Assessed
	Allotment	Not Assessed	160	28/67/160 ⁽¹⁾	Not Assessed
	Commercial	Not Assessed	2600	6600(478 ^{sol})/15000(1120 ^{sol})/33000(2620 ^{sol}) ^(1&3)	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	41000/42000/43000 ⁽¹⁾	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	17000(478 ^{sol})/24000(1120 ^{sol})/33000(2620 ^{sol}) ^(1&3)	Not Assessed
m-Xylene	Residential with plant uptake	Not Assessed	240	59/140/320 ⁽¹⁾	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	52/190/450 ⁽¹⁾	Not Assessed
	Allotment	Not Assessed	180	31/74/170 ⁽¹⁾	Not Assessed
	Commercial	Not Assessed	3500	6200(625 ^{vap})/14000(1470 ^{vap})/31000(3460 ^{vap}) ^(1&3)	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	41000/42000/43000 ⁽¹⁾	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	17000(625 ^{vap})/24000(1470 ^{vap})/32000(3460 ^{vap}) ^(1&3)	Not Assessed
p-Xylene	Residential with plant uptake	Not Assessed	230	56/130/310 ⁽¹⁾	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	79/180/430 ⁽¹⁾	Not Assessed
	Allotment	Not Assessed	160	29/69/160 ⁽¹⁾	Not Assessed
	Commercial	Not Assessed	3200	59000(576 ^{sol})/14000(1350 ^{sol})/30000(3170 ^{sol}) ^(1&3)	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	41000/42000/43000 ⁽¹⁾	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	17000(576 ^{sol})/23000(1350 ^{sol})/31000(3170 ^{sol}) ^(1&3)	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. 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 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	DEFRA SP1010 'Final' C4SL December 2014
Acenaphthene	Residential with plant uptake	Not Assessed	Not Assessed	210/610/1100 ₍₁₎	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	3000/(57 ^{soil})/4700(141 ^{soil})/6000(336 ^{soil}) _(1&3)	Not Assessed
	Allotment	Not Assessed	Not Assessed	34/85/200 ₍₁₎	Not Assessed
	Commercial	Not Assessed	Not Assessed	8400(57 ^{soil})/97000(141 ^{soil})/100000 _(1&3)	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	15000/15000/15000 ₍₁₎	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	29000/30000/30000 ₍₁₎	Not Assessed
Acenaphthylene	Residential with plant uptake	Not Assessed	Not Assessed	170/420/920 ₍₁₎	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	2900(86.1 ^{soil})/4600(212 ^{soil})/6000(506 ^{soil}) _(1&3)	Not Assessed
	Allotment	Not Assessed	Not Assessed	28/69/160 ₍₁₎	Not Assessed
	Commercial	Not Assessed	Not Assessed	83000(86.1 ^{soil})/97000(212 ^{soil})/100000 _(1&3)	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	15000/15000/15000 ₍₁₎	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	29000/30000/30000 ₍₁₎	Not Assessed
Anthracene	Residential with plant uptake	Not Assessed	Not Assessed	2400/5400/11000 ₍₁₎	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	31000(1.17 ^{vap})/35000/37000 _(1&3)	Not Assessed
	Allotment	Not Assessed	Not Assessed	380/950/2200 ₍₁₎	Not Assessed
	Commercial	Not Assessed	Not Assessed	520000/540000/540000 ₍₁₎	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	74000/74000/74000 ₍₁₎	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	150000/150000/150000 ₍₁₎	Not Assessed
Benzo (a) Anthracene	Residential with plant uptake	Not Assessed	Not Assessed	7.2/11/13 ₍₁₎	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	11/14/15 ₍₁₎	Not Assessed
	Allotment	Not Assessed	Not Assessed	2.9/6.5/13 ₍₁₎	Not Assessed
	Commercial	Not Assessed	Not Assessed	170/170/180 ₍₁₎	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	29/29/29 ₍₁₎	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	49/56/62 ₍₁₎	Not Assessed
Benzo (a) Pyrene	Residential with plant uptake	Not Assessed	Not Assessed	2.2/2.7/3.0 ₍₁₎	5.0
	Residential without plant uptake	Not Assessed	Not Assessed	3.2/3.2/3.2 ₍₁₎	5.3
	Allotment	Not Assessed	Not Assessed	0.97/2.0/3.5 ₍₁₎	5.7
	Commercial	Not Assessed	Not Assessed	35/35/36 ₍₁₎	77
	Public Open Space (Residential)	Not Assessed	Not Assessed	5.7/5.7/5.7 ₍₁₎	10
	Public Open Space (Park)	Not Assessed	Not Assessed	11/12/13 ₍₁₎	21
Benzo (b) Fluoranthene	Residential with plant uptake	Not Assessed	Not Assessed	2.6/3.3/3.7 ₍₁₎	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	3.9/4.0/4.0 ₍₁₎	Not Assessed
	Allotment	Not Assessed	Not Assessed	0.99/2.1/3.9 ₍₁₎	Not Assessed
	Commercial	Not Assessed	Not Assessed	44/44/45 ₍₁₎	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	7.1/7.2/7.2 ₍₁₎	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	13/15/16 ₍₁₎	Not Assessed
Benzo (ghi) Perylene	Residential with plant uptake	Not Assessed	Not Assessed	320/340/350 ₍₁₎	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	360/360/360 ₍₁₎	Not Assessed
	Allotment	Not Assessed	Not Assessed	290/470/640 ₍₁₎	Not Assessed
	Commercial	Not Assessed	Not Assessed	3900/4000/4000 ₍₁₎	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	640/640/640 ₍₁₎	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	1400/1500/1600 ₍₁₎	Not Assessed
Benzo (k) Fluoranthene	Residential with plant uptake	Not Assessed	Not Assessed	77/93/100 ₍₁₎	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	110/110/110 ₍₁₎	Not Assessed
	Allotment	Not Assessed	Not Assessed	37/75/130 ₍₁₎	Not Assessed
	Commercial	Not Assessed	Not Assessed	1200/1200/1200 ₍₁₎	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	190/190/190 ₍₁₎	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	370/410/440 ₍₁₎	Not Assessed
Chrysene	Residential with plant uptake	Not Assessed	Not Assessed	15/22/27 ₍₁₎	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	30/31/32 ₍₁₎	Not Assessed
	Allotment	Not Assessed	Not Assessed	4.1/9.4/19 ₍₁₎	Not Assessed
	Commercial	Not Assessed	Not Assessed	350/350/350 ₍₁₎	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	57/57/57 ₍₁₎	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	93/110/120 ₍₁₎	Not Assessed
Dibenzo (ah) Anthracene	Residential with plant uptake	Not Assessed	Not Assessed	0.24/0.28/0.3 ₍₁₎	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	0.31/0.32/0.32 ₍₁₎	Not Assessed
	Allotment	Not Assessed	Not Assessed	0.14/0.27/0.43 ₍₁₎	Not Assessed
	Commercial	Not Assessed	Not Assessed	3.5/3.6/3.6 ₍₁₎	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	0.57/0.57/0.58 ₍₁₎	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	1.1/1.3/1.4 ₍₁₎	Not Assessed
Fluoranthene	Residential with plant uptake	Not Assessed	Not Assessed	280/560/890 ₍₁₎	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	1500/1600/1600 ₍₁₎	Not Assessed
	Allotment	Not Assessed	Not Assessed	52/130/290 ₍₁₎	Not Assessed
	Commercial	Not Assessed	Not Assessed	23000/23000/23000 ₍₁₎	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	3100/3100/3100 ₍₁₎	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	6300/6300/6400 ₍₁₎	Not Assessed
Fluorene	Residential with plant uptake	Not Assessed	Not Assessed	170/400/860 ₍₁₎	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	2800(30.9 ^{soil})/3800(76.5 ^{soil})/4500(183 ^{soil}) _(1&3)	Not Assessed
	Allotment	Not Assessed	Not Assessed	27/67/160 ₍₁₎	Not Assessed
	Commercial	Not Assessed	Not Assessed	63000(30.9 ^{soil})/68000/71000 _(1&3)	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	9900/9900/9900 ₍₁₎	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	20000/20000/20000 ₍₁₎	Not Assessed

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	DEFRA SP1010 'Final' C4SL December 2014
Indeno (cd) Pyrene	Residential with plant uptake	Not Assessed	Not Assessed	27/36/41 ₍₁₎	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	45/46/46 ₍₁₎	Not Assessed
	Allotment	Not Assessed	Not Assessed	9.5/21/39 ₍₁₎	Not Assessed
	Commercial	Not Assessed	Not Assessed	500/510/510 ₍₁₎	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	82/82/82 ₍₁₎	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	150/170/180 ₍₁₎	Not Assessed
Naphthalene	Residential with plant uptake	Not Assessed	Not Assessed	2.3/5.6/13 ₍₁₎	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	2.3/5.6/13 ₍₁₎	Not Assessed
	Allotment	Not Assessed	Not Assessed	4.1/10/24 ₍₁₎	Not Assessed
	Commercial	Not Assessed	Not Assessed	190(76.4 ^{sol})/460(183 ^{sol})/1100(432 ^{sol}) _(1&3)	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	4900/4900/4900 ₍₁₎	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	1200(76.4 ^{sol})/1900(183 ^{sol})/3000 _(1&3)	Not Assessed
Phenanthrene	Residential with plant uptake	Not Assessed	Not Assessed	95/220/440 ₍₁₎	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	1300(36 ^{sol})/1500/1500 _(1&3)	Not Assessed
	Allotment	Not Assessed	Not Assessed	15/38/90 ₍₁₎	Not Assessed
	Commercial	Not Assessed	Not Assessed	22000/22000/23000 ₍₁₎	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	3100/3100/3100 ₍₁₎	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	6200/6200/6300 ₍₁₎	Not Assessed
Pyrene	Residential with plant uptake	Not Assessed	Not Assessed	620/1200/2000 ₍₁₎	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	3700/3800/3800 ₍₁₎	Not Assessed
	Allotment	Not Assessed	Not Assessed	110/270/620 ₍₁₎	Not Assessed
	Commercial	Not Assessed	Not Assessed	54000/54000/54000 ₍₁₎	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	7400/7400/7400 ₍₁₎	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	15000/15000/15000 ₍₁₎	Not Assessed
Coal Tar (Benzo (a) Pyrene as surrogate)	Residential with plant uptake	Not Assessed	Not Assessed	0.79/0.98/1.1 ₍₁₎	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	1.2/1.2/1.2 ₍₁₎	Not Assessed
	Allotment	Not Assessed	Not Assessed	0.32/0.67/1.2 ₍₁₎	Not Assessed
	Commercial	Not Assessed	Not Assessed	15/15/15 ₍₁₎	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	2.2/2.2/2.2 ₍₁₎	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	4.4/4.7/4.8 ₍₁₎	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. 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 1F (PCBs µg/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	DEFRA SP1010 'Final' C4SL December 2014
Sum of PCDDs, PCDFs and dioxin-like PCBs	Residential with plant uptake	Not Assessed	8	Not Assessed	Not Assessed
	Residential without plant uptake	Not Assessed	8	Not Assessed	Not Assessed
	Allotment	Not Assessed		Not Assessed	Not Assessed
	Commercial	Not Assessed	240	Not Assessed	Not Assessed
PCB-77	Residential with plant uptake	Not Assessed	0.0774	Not Assessed	Not Assessed
	Residential without plant uptake	Not Assessed	0.0783	Not Assessed	Not Assessed
	Allotment	Not Assessed	0.233	Not Assessed	Not Assessed
	Commercial	Not Assessed	2.33	Not Assessed	Not Assessed
PCB-81	Residential with plant uptake	Not Assessed	0.0774	Not Assessed	Not Assessed
	Residential without plant uptake	Not Assessed	0.0783	Not Assessed	Not Assessed
	Allotment	Not Assessed	0.233	Not Assessed	Not Assessed
	Commercial	Not Assessed	2.33	Not Assessed	Not Assessed
PCB-126	Residential with plant uptake	Not Assessed	0.0777	Not Assessed	Not Assessed
	Residential without plant uptake	Not Assessed	0.0783	Not Assessed	Not Assessed
	Allotment	Not Assessed	0.247	Not Assessed	Not Assessed
	Commercial	Not Assessed	2.33	Not Assessed	Not Assessed
PCB-169	Residential with plant uptake	Not Assessed	0.0777	Not Assessed	Not Assessed
	Residential without plant uptake	Not Assessed	0.0783	Not Assessed	Not Assessed
	Allotment	Not Assessed	0.251	Not Assessed	Not Assessed
	Commercial	Not Assessed	2.33	Not Assessed	Not Assessed
PCB-105	Residential with plant uptake	Not Assessed	0.0777	Not Assessed	Not Assessed
	Residential without plant uptake	Not Assessed	0.0783	Not Assessed	Not Assessed
	Allotment	Not Assessed	0.247	Not Assessed	Not Assessed
	Commercial	Not Assessed	2.33	Not Assessed	Not Assessed
PCB-114	Residential with plant uptake	Not Assessed	0.0777	Not Assessed	Not Assessed
	Residential without plant uptake	Not Assessed	0.0783	Not Assessed	Not Assessed
	Allotment	Not Assessed	0.247	Not Assessed	Not Assessed
	Commercial	Not Assessed	2.33	Not Assessed	Not Assessed
PCB-118	Residential with plant uptake	Not Assessed	0.0777	Not Assessed	Not Assessed
	Residential without plant uptake	Not Assessed	0.0783	Not Assessed	Not Assessed
	Allotment	Not Assessed	0.247	Not Assessed	Not Assessed
	Commercial	Not Assessed	2.33	Not Assessed	Not Assessed
PCB-123	Residential with plant uptake	Not Assessed	0.0777	Not Assessed	Not Assessed
	Residential without plant uptake	Not Assessed	0.0783	Not Assessed	Not Assessed
	Allotment	Not Assessed	0.247	Not Assessed	Not Assessed
	Commercial	Not Assessed	2.33	Not Assessed	Not Assessed
PCB-156	Residential with plant uptake	Not Assessed	0.0777	Not Assessed	Not Assessed
	Residential without plant uptake	Not Assessed	0.0783	Not Assessed	Not Assessed
	Allotment	Not Assessed	0.251	Not Assessed	Not Assessed
	Commercial	Not Assessed	2.33	Not Assessed	Not Assessed
PCB-157	Residential with plant uptake	Not Assessed	0.0777	Not Assessed	Not Assessed
	Residential without plant uptake	Not Assessed	0.0783	Not Assessed	Not Assessed
	Allotment	Not Assessed	0.251	Not Assessed	Not Assessed
	Commercial	Not Assessed	2.33	Not Assessed	Not Assessed
PCB-156	Residential with plant uptake	Not Assessed	0.0777	Not Assessed	Not Assessed
	Residential without plant uptake	Not Assessed	0.0783	Not Assessed	Not Assessed
	Allotment	Not Assessed	0.251	Not Assessed	Not Assessed
	Commercial	Not Assessed	2.33	Not Assessed	Not Assessed
PCB-157	Residential with plant uptake	Not Assessed	0.0777	Not Assessed	Not Assessed
	Residential without plant uptake	Not Assessed	0.0783	Not Assessed	Not Assessed
	Allotment	Not Assessed	0.251	Not Assessed	Not Assessed
	Commercial	Not Assessed	2.33	Not Assessed	Not Assessed
PCB-167	Residential with plant uptake	Not Assessed	0.0777	Not Assessed	Not Assessed
	Residential without plant uptake	Not Assessed	0.0783	Not Assessed	Not Assessed
	Allotment	Not Assessed	0.251	Not Assessed	Not Assessed
	Commercial	Not Assessed		Not Assessed	Not Assessed
PCB-189	Residential with plant uptake	Not Assessed	0.0778	Not Assessed	Not Assessed
	Residential without plant uptake	Not Assessed	0.0783	Not Assessed	Not Assessed
	Allotment	Not Assessed	0.252	Not Assessed	Not Assessed
	Commercial	Not Assessed	2.33	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%/5% (2) xx/yy/zz pH - pH dependant at pH6/pH7/pH8 (3) Internal limits exceeded during calculations (4) under review by Terramech		Terramech Investigations Limited 183 Long Lane Tilehurst Reading RG31 6YW Email - info@terramech.co.uk Tel 01189 439 910 Fax 01189 439 920			



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	DEFRA SP1010 'Final' C4SL December 2014
1,2 Dichloroethane (1,2 -DCA)	Residential with plant uptake	Not Assessed	Not Assessed	0.0071/0.011/0.019	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	0.0092/0.013/0.023	Not Assessed
	Allotment	Not Assessed	Not Assessed	0.0046/0.0083/0.016	Not Assessed
	Commercial	Not Assessed	Not Assessed	0.67/0.97/1.7	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	29/29/29	Not Assessed
1,1,1 Trichloroethane	Public Open Space (Park)	Not Assessed	Not Assessed	21/24/28	Not Assessed
	Residential with plant uptake	Not Assessed	Not Assessed	8.8/18/39	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	9.0/18/40	Not Assessed
	Allotment	Not Assessed	Not Assessed	48/110/240	Not Assessed
	Commercial	Not Assessed	Not Assessed	660/1300/3000	Not Assessed
1,1,2,2 Tetrachloroethanes	Public Open Space (Residential)	Not Assessed	Not Assessed	14000/14000/14000	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	57000(1425 ^{vap})/76000(2915 ^{vap})/100000(6392 ^{vap})	Not Assessed
	Residential with plant uptake	Not Assessed	Not Assessed	1.6/3.4/7.5	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	3.9/8.0/17	Not Assessed
	Allotment	Not Assessed	Not Assessed	0.41/0.89/2.0	Not Assessed
1,1,1,2 Tetrachloroethanes	Commercial	Not Assessed	Not Assessed	270/550/1100	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	1400/1400/1400	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	1800/2100/2300	Not Assessed
	Residential with plant uptake	Not Assessed	Not Assessed	1.2/2.8/6.4	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	1.5/3.5/8.2	Not Assessed
Tetrachloroethene	Allotment	Not Assessed	Not Assessed	0.79/1.9/4.4	Not Assessed
	Commercial	Not Assessed	Not Assessed	110/250/560	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	1400/1400/1400	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	1500/1800/2100	Not Assessed
	Residential with plant uptake	Not Assessed	Not Assessed	0.18/0.39/0.9	Not Assessed
Tetrachloromethane Aka Carbon Terachloride	Residential without plant uptake	Not Assessed	Not Assessed	0.18/0.4/0.92	Not Assessed
	Allotment	Not Assessed	Not Assessed	0.65/1.5/3.6	Not Assessed
	Commercial	Not Assessed	Not Assessed	19/42/95	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	1400/1400/1400	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	820(424 ^{soil})/1100(951 ^{soil})/1500	Not Assessed
Trichloroethene	Residential with plant uptake	Not Assessed	Not Assessed	0.026/0.058/0.13	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	0.026/0.058/0.13	Not Assessed
	Allotment	Not Assessed	Not Assessed	0.45/1.0/2.4	Not Assessed
	Commercial	Not Assessed	Not Assessed	2.9/6.3/14	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	890/920/950	Not Assessed
Trichloromethane Aka Chloroform	Public Open Space (Park)	Not Assessed	Not Assessed	190/270/400	Not Assessed
	Residential with plant uptake	Not Assessed	Not Assessed	0.016/0.034/0.075	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	0.017/0.036/0.08	Not Assessed
	Allotment	Not Assessed	Not Assessed	0.041/0.091/0.21	Not Assessed
	Commercial	Not Assessed	Not Assessed	1.2/2.6/6.7	Not Assessed
Chloroethene Aka Vinyl Chloride	Public Open Space (Residential)	Not Assessed	Not Assessed	120/120/120	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	70/91/120	Not Assessed
	Residential with plant uptake	Not Assessed	Not Assessed	0.91/1.7/3.4	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	1.2/2.1/4.2	Not Assessed
	Allotment	Not Assessed	Not Assessed	0.42/0.83/1.7	Not Assessed
	Commercial	Not Assessed	Not Assessed	99/170/350	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	2500/2500/2500	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	2600/2800/3100	Not Assessed
	Residential with plant uptake	Not Assessed	Not Assessed	0.00064/0.00087/0.0014	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	0.00077/0.0010/0.0015	Not Assessed
	Allotment	Not Assessed	Not Assessed	0.000550.0010/0.0018	Not Assessed
	Commercial	Not Assessed	Not Assessed	0.059/0.077/0.12	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	3.5/3.5/3.5	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	4.8/5.0/5.4	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. 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 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	DEFRA SP1010 'Final' C4SL December 2014
2,4,6 Trinitrotoluene Aka TNT	Residential with plant uptake	Not Assessed	Not Assessed	1.6/3.7/8.1	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	65/66/66	Not Assessed
	Allotment	Not Assessed	Not Assessed	0.24/0.58/1.4	Not Assessed
	Commercial	Not Assessed	Not Assessed	1000/1000/1000	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	130/130/130	Not Assessed
RDX	Public Open Space (Park)	Not Assessed	Not Assessed	260/270/270	Not Assessed
	Residential with plant uptake	Not Assessed	Not Assessed	120/250/540	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	13000/13000/13000	Not Assessed
	Allotment	Not Assessed	Not Assessed	17/38/85	Not Assessed
	Commercial	Not Assessed	Not Assessed	21000/21000/21000	Not Assessed
HMX	Public Open Space (Residential)	Not Assessed	Not Assessed	26000/26000/27000	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	49000(18.7sol)/51000/53000	Not Assessed
	Residential with plant uptake	Not Assessed	Not Assessed	5.7/13/26	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	6700/6700/6700	Not Assessed
	Allotment	Not Assessed	Not Assessed	0.86/1.9/3.9	Not Assessed
	Commercial	Not Assessed	Not Assessed	11000/11000/11000	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	13000/13000/13000	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	23000(0.36 ^{vap})/23000(0.39 ^{vap})/24000(0.48 ^{vap})	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. 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 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	DEFRA SP1010 'Final' C4SL December 2014
Aldrin	Residential with plant uptake	Not Assessed	Not Assessed	5.7/6.6/7.1 ₍₁₎	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	7.3/7.4/7.5 ₍₁₎	Not Assessed
	Allotment	Not Assessed	Not Assessed	3.2/6.1/9.6 ₍₁₎	Not Assessed
	Commercial	Not Assessed	Not Assessed	170/170/170 ₍₁₎	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	18/18/18 ₍₁₎	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	30/30/31 ₍₁₎	Not Assessed
Dieldrin	Residential with plant uptake	Not Assessed	Not Assessed	0.97/2/3.5 ₍₁₎	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	7/7.3/7.4 ₍₁₎	Not Assessed
	Allotment	Not Assessed	Not Assessed	0.17/0.41/0.96 ₍₁₎	Not Assessed
	Commercial	Not Assessed	Not Assessed	170/170/170 ₍₁₎	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	18/18/18 ₍₁₎	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	30/30/30 ₍₁₎	Not Assessed
Atrazine	Residential with plant uptake	Not Assessed	Not Assessed	3.3/7.6/17.4 ₍₁₎	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	610/620/620 ₍₁₎	Not Assessed
	Allotment	Not Assessed	Not Assessed	0.5/1.2/2.7 ₍₁₎	Not Assessed
	Commercial	Not Assessed	Not Assessed	9300/9300/9400 ₍₁₎	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	1200/1200/1200 ₍₁₎	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	2300/2400/2400 ₍₁₎	Not Assessed
Dichlorvos	Residential with plant uptake	Not Assessed	Not Assessed	0.032/0.066/0.14 ₍₁₎	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	6.4/6.5/6.6 ₍₁₎	Not Assessed
	Allotment	Not Assessed	Not Assessed	0.0049/0.010/0.022 ₍₁₎	Not Assessed
	Commercial	Not Assessed	Not Assessed	140/140/140 ₍₁₎	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	16/16/16 ₍₁₎	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	26/26/27 ₍₁₎	Not Assessed
Alpha Endosulfan	Residential with plant uptake	Not Assessed	Not Assessed	7.4/18/41 ₍₁₎	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	160(0.003 ^{vap})/280(0.007 ^{vap})/410(0.016 ^{vap}) _(1 & 3)	Not Assessed
	Allotment	Not Assessed	Not Assessed	1.2/2.9/6.6 ₍₁₎	Not Assessed
	Commercial	Not Assessed	Not Assessed	5600(0.016 ^{vap})/7400(0.016 ^{vap})/8400(0.016 ^{vap}) _(1 & 3)	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	1200/1200/1200 ₍₁₎	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	2400/2400/2500 ₍₁₎	Not Assessed
Beta Endosulfan	Residential with plant uptake	Not Assessed	Not Assessed	7.0/17/39 ₍₁₎	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	150(0.00007 ^{vap})/320(0.0002 ^{vap})/440(0.0004 ^{vap}) _(1 & 3)	Not Assessed
	Allotment	Not Assessed	Not Assessed	1.1/2.7/6.4 ₍₁₎	Not Assessed
	Commercial	Not Assessed	Not Assessed	6300(0.00007 ^{vap})/7800(0.0002 ^{vap})/8700(0.0004 ^{vap}) _(1 & 3)	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	1200/1200/1200 ₍₁₎	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	2400/2400/2500 ₍₁₎	Not Assessed
Alpha BHC (Hexachlorocyclohexane) Inc Lindane	Residential with plant uptake	Not Assessed	Not Assessed	0.23/0.66/1.2 ₍₁₎	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	6.9/9.2/11 ₍₁₎	Not Assessed
	Allotment	Not Assessed	Not Assessed	0.035/0.087/0.21 ₍₁₎	Not Assessed
	Commercial	Not Assessed	Not Assessed	170/180/180 ₍₁₎	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	24/24/24 ₍₁₎	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	47/48/48 ₍₁₎	Not Assessed
Beta BHC (Hexachlorocyclohexane) Inc Lindane	Residential with plant uptake	Not Assessed	Not Assessed	0.085/0.2/0.46 ₍₁₎	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	3.7/3.8/3.8 ₍₁₎	Not Assessed
	Allotment	Not Assessed	Not Assessed	0.013/0.032/0.077 ₍₁₎	Not Assessed
	Commercial	Not Assessed	Not Assessed	65/65/65 ₍₁₎	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	8.1/8.1/8.1 ₍₁₎	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	15/15/16 ₍₁₎	Not Assessed
Gamma BHC (Hexachlorocyclohexane) Inc Lindane	Residential with plant uptake	Not Assessed	Not Assessed	0.06/0.14/0.33 ₍₁₎	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	2.9/3.3/3.5 ₍₁₎	Not Assessed
	Allotment	Not Assessed	Not Assessed	0.0092/0.023/0.054 ₍₁₎	Not Assessed
	Commercial	Not Assessed	Not Assessed	67/69/70 ₍₁₎	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	8.2/8.2/8.2 ₍₁₎	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	14/15/15 ₍₁₎	Not Assessed
DDT _{TOT} (Sum of DDD, DDE,TDE and DDT)	Residential with plant uptake	Not Assessed	Not Assessed	Not Assessed	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	Not Assessed	Not Assessed
	Allotment	Not Assessed	Not Assessed	Not Assessed	Not Assessed
	Commercial	Not Assessed	Not Assessed	Not Assessed	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	Not Assessed	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	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. 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 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	DEFRA SP1010 'Final' C4SL December 2014
Chlorobenzene	Residential with plant uptake	Not Assessed	Not Assessed	0.46/1.0/2.4 ₍₁₎	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	0.46/1.0/2.4 ₍₁₎	Not Assessed
	Allotment	Not Assessed	Not Assessed	5.9/14/32 ₍₁₎	Not Assessed
	Commercial	Not Assessed	Not Assessed	56/130/290 ₍₁₎	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	11000/13000/14000 ₍₁₎	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	1300(675 ^{sol})/2000(1520 ^{sol})/2900 ₍₁₎	Not Assessed
1,2 Dichlorobenzene	Residential with plant uptake	Not Assessed	Not Assessed	23/56/130 ₍₁₎	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	24/57/130 ₍₁₎	Not Assessed
	Allotment	Not Assessed	Not Assessed	94/230/540 ₍₁₎	Not Assessed
	Commercial	Not Assessed	Not Assessed	2000(571 ^{sol})/4800(1370 ^{sol})/11000(3240 ^{sol}) ₍₁₎	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	90000/95000/98000	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	24000(571 ^{sol})/36000(1370 ^{sol})/51000(3240 ^{sol}) ₍₁₎	Not Assessed
1,3 Dichlorobenzene	Residential with plant uptake	Not Assessed	Not Assessed	0.4/0.1/2.3 ₍₁₎	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	0.44/1.1/2.5 ₍₁₎	Not Assessed
	Allotment	Not Assessed	Not Assessed	0.25/0.6/1.5 ₍₁₎	Not Assessed
	Commercial	Not Assessed	Not Assessed	30/73/170 ₍₁₎	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	300/300/300 ₍₁₎	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	390/440/470 ₍₁₎	Not Assessed
1,4 Dichlorobenzene	Residential with plant uptake	Not Assessed	Not Assessed	61/150/350 ₍₁₎	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	61/150/350 ₍₁₎	Not Assessed
	Allotment	Not Assessed	Not Assessed	19/37/88 ₍₁₎	Not Assessed
	Commercial	Not Assessed	Not Assessed	4400(224 ^{vap})/10000(540 ^{vap})/25000(1280 ^{vap}) ₍₁₎	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	17000/17000/17000 ₍₁₎	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	36000(224 ^{vap})/36000(540 ^{vap})/36000(1280 ^{vap}) ₍₁₎	Not Assessed
1,2,3 Trichlorobenzene	Residential with plant uptake	Not Assessed	Not Assessed	1.5/3.6/8.6 ₍₁₎	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	1.5/3.7/8.8 ₍₁₎	Not Assessed
	Allotment	Not Assessed	Not Assessed	4.7/12/28 ₍₁₎	Not Assessed
	Commercial	Not Assessed	Not Assessed	102/250/590 ₍₁₎	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	1800/1800/1800 ₍₁₎	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	770(134 ^{vap})/1100(330 ^{vap})/1600(789 ^{vap}) ₍₁₎	Not Assessed
1,2,4 Trichlorobenzene	Residential with plant uptake	Not Assessed	Not Assessed	2.6/6.4/15 ₍₁₎	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	2.6/6.4/15 ₍₁₎	Not Assessed
	Allotment	Not Assessed	Not Assessed	55/140/320 ₍₁₎	Not Assessed
	Commercial	Not Assessed	Not Assessed	220/530/1300 ₍₁₎	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	15000/17000/19000 ₍₁₎	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	1700(318 ^{vap})/2600(786 ^{vap})/4000(1880 ^{vap}) ₍₁₎	Not Assessed
1,3,5 Trichlorobenzene	Residential with plant uptake	Not Assessed	Not Assessed	0.33/0.81/1.9 ₍₁₎	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	0.33/0.81/1.9 ₍₁₎	Not Assessed
	Allotment	Not Assessed	Not Assessed	4.7/12/28 ₍₁₎	Not Assessed
	Commercial	Not Assessed	Not Assessed	23/55/130 ₍₁₎	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	1700/1700/1800 ₍₁₎	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	380(36.7 ^{vap})/580(90.8 ^{vap})/860(217 ^{vap}) ₍₁₎	Not Assessed
1,2,3,4 Tetrachlorobenzenes	Residential with plant uptake	Not Assessed	Not Assessed	15/36/78 ₍₁₎	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	24/56/120 ₍₁₎	Not Assessed
	Allotment	Not Assessed	Not Assessed	4.4/11/26 ₍₁₎	Not Assessed
	Commercial	Not Assessed	Not Assessed	1700(122 ^{vap})/3080(304 ^{vap})/4400(728 ^{vap}) ₍₁₎	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	830/830/830 ₍₁₎	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	1500(122 ^{vap})/1600/1600 ₍₁₎	Not Assessed
1,2,3,5 Tetrachlorobenzenes	Residential with plant uptake	Not Assessed	Not Assessed	0.66/1.6/3.7 ₍₁₎	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	0.75/1.9/4.3 ₍₁₎	Not Assessed
	Allotment	Not Assessed	Not Assessed	0.38/0.9/2.2 ₍₁₎	Not Assessed
	Commercial	Not Assessed	Not Assessed	49(39.4 ^{vap})/120(98.1 ^{vap})/240235 ^{vap}) ₍₁₎	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	78/79/79 ₍₁₎	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	110(39 ^{vap})/120/130 ₍₁₎	Not Assessed
1,2,4,5 Tetrachlorobenzenes	Residential with plant uptake	Not Assessed	Not Assessed	0.33/0.77/1.6 ₍₁₎	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	0.73/1.7/3.5 ₍₁₎	Not Assessed
	Allotment	Not Assessed	Not Assessed	0.06/0.16/0.37 ₍₁₎	Not Assessed
	Commercial	Not Assessed	Not Assessed	42(19.7 ^{sol})/72(49.1 ^{sol})/96 ₍₁₎	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	13/13/13 ₍₁₎	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	25/26/26 ₍₁₎	Not Assessed
Pentachlorobenzene	Residential with plant uptake	Not Assessed	Not Assessed	5.8/12/22 ₍₁₎	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	19/30/38 ₍₁₎	Not Assessed
	Allotment	Not Assessed	Not Assessed	1.2/3.1/7.0 ₍₁₎	Not Assessed
	Commercial	Not Assessed	Not Assessed	640(43.0 ^{sol})/770(107 ^{sol})/830 ₍₁₎	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	100/100/100 ₍₁₎	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	190/190/190 ₍₁₎	Not Assessed

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	DEFRA SP1010 'Final' C4SL December 2014
Hexachlorobenzene	Residential with plant uptake	Not Assessed	Not Assessed	1.3(0.2 ^{vap})/3.3(0.5 ^{vap})/4.9 ₍₁₎	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	4.1(0.2 ^{vap})/5.7(0.5 ^{vap})/6.7(1.2 ^{vap}) ₍₁₎	Not Assessed
	Allotment	Not Assessed	Not Assessed	0.47/1.1/2.5 ₍₁₎	Not Assessed
	Commercial	Not Assessed	Not Assessed	110(0.2 ^{vap})/120/120 ₍₁₎	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	16/16/16 ₍₁₎	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	30/30/30 ₍₁₎	Not Assessed
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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	DEFRA SP1010 'Final' C4SL December 2014
Phenol	Residential with plant uptake	Not Assessed	Not Assessed	280/550/1100 ₍₁₎	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	750/1300/2300 ₍₁₎	Not Assessed
	Allotment	Not Assessed	Not Assessed	66/140/280 ₍₁₎	Not Assessed
	Commercial	Not Assessed	Not Assessed	760/1500/3200 ₍₁₎	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	760/1500/3200 ₍₁₎	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	760/1500/3200 ₍₁₎	Not Assessed
Chlorophenol	Residential with plant uptake	Not Assessed	Not Assessed	0.87/2.0/4.5 ₍₁₎	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	94/150/210 ₍₁₎	Not Assessed
	Allotment	Not Assessed	Not Assessed	0.13/0.30/0.7 ₍₁₎	Not Assessed
	Commercial	Not Assessed	Not Assessed	3500/4000/4300 ₍₁₎	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	620/620/620 ₍₁₎	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	1100/1100/1100 ₍₁₎	Not Assessed
Pentachlorophenol	Residential with plant uptake	Not Assessed	Not Assessed	0.22/0.52/1.2 ₍₁₎	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	27(16.4 ^{vap})/29/31 ₍₁₎	Not Assessed
	Allotment	Not Assessed	Not Assessed	0.03/0.08/0.19 ₍₁₎	Not Assessed
	Commercial	Not Assessed	Not Assessed	400/400/400 ₍₁₎	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	60/60/60 ₍₁₎	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	110/120/120 ₍₁₎	Not Assessed
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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	DEFRA SP1010
Carbon Disulphide	Residential with plant uptake	Not Assessed	Not Assessed	0.14/0.29/0.62 ₍₁₎	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	0.14/0.29/0.62 ₍₁₎	Not Assessed
	Allotment	Not Assessed	Not Assessed	4.8/10/23 ₍₁₎	Not Assessed
	Commercial	Not Assessed	Not Assessed	11/22/47 ₍₁₎	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	11000/11000/12000 ₍₁₎	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	1300/1900/2700 ₍₁₎	Not Assessed
Hexachlorobutadiene	Residential with plant uptake	Not Assessed	Not Assessed	0.29/0.7/1.6 ₍₁₎	Not Assessed
	Residential without plant uptake	Not Assessed	Not Assessed	0.32/0.78/1.8 ₍₁₎	Not Assessed
	Allotment	Not Assessed	Not Assessed	0.25/0.61/1.4 ₍₁₎	Not Assessed
	Commercial	Not Assessed	Not Assessed	31/66/120 ₍₁₎	Not Assessed
	Public Open Space (Residential)	Not Assessed	Not Assessed	25/25/25 ₍₁₎	Not Assessed
	Public Open Space (Park)	Not Assessed	Not Assessed	48/50/51 ₍₁₎	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% (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	CIEH/LQM	DEFRA
Chrysotile Asbestos	Residential with active gardening Sandy Soil	0.01%	Not assessed	Not assessed	Not assessed
	Residential with active gardening Int Soil	0.05%	Not assessed	Not assessed	Not assessed
	Residential with active gardening Clay Soil	0.1%	Not assessed	Not assessed	Not assessed
	Allotment Sandy Soil	0.002%	Not assessed	Not assessed	Not assessed
	Allotment Intermediate Soil	0.005%	Not assessed	Not assessed	Not assessed
	Allotment Clay Soil	0.01%	Not assessed	Not assessed	Not assessed
	Commercial Sandy Soil	0.05%	Not assessed	Not assessed	Not assessed
	Commercial Intermediate Soil	0.2%	Not assessed	Not assessed	Not assessed
	Commercial Clay Soil	0.25%	Not assessed	Not assessed	Not assessed
	Public Open Space Sandy Soil (Residential)	0.0015%	Not assessed	Not assessed	Not assessed
	Public Open Space Int Soil (Residential)	0.0025%	Not assessed	Not assessed	Not assessed
	Public Open Space Clay Soil (Residential)	0.001% (clay overtakes sand)	Not assessed	Not assessed	Not assessed
Amosite Asbestos	Residential with active gardening Sandy Soil	Any detectable concentration	Not assessed	Not assessed	Not assessed
	Residential with active gardening Int Soil	Any detectable concentration	Not assessed	Not assessed	Not assessed
	Residential with active gardening Clay Soil	Any detectable concentration	Not assessed	Not assessed	Not assessed
	Allotment Sandy Soil	Any detectable concentration	Not assessed	Not assessed	Not assessed
	Allotment Intermediate Soil	Any detectable concentration	Not assessed	Not assessed	Not assessed
	Allotment Clay Soil	Any detectable concentration	Not assessed	Not assessed	Not assessed
	Commercial Sandy Soil	0.001%	Not assessed	Not assessed	Not assessed
	Commercial Intermediate Soil	0.001%	Not assessed	Not assessed	Not assessed
	Commercial Clay Soil	0.009%	Not assessed	Not assessed	Not assessed
	Public Open Space Sandy Soil (Residential)	Any detectable concentration	Not assessed	Not assessed	Not assessed
	Public Open Space Int Soil (Residential)	Any detectable concentration	Not assessed	Not assessed	Not assessed
	Public Open Space Clay Soil (Residential)	Any detectable concentration	Not assessed	Not assessed	Not assessed
Crocidolite Asbestos	Residential with active gardening Sandy Soil	Any detectable concentration	Not assessed	Not assessed	Not assessed
	Residential with active gardening Int Soil	Any detectable concentration	Not assessed	Not assessed	Not assessed
	Residential with active gardening Clay Soil	Any detectable concentration	Not assessed	Not assessed	Not assessed
	Allotment Sandy Soil	Any detectable concentration	Not assessed	Not assessed	Not assessed
	Allotment Intermediate Soil	Any detectable concentration	Not assessed	Not assessed	Not assessed
	Allotment Clay Soil	Any detectable concentration	Not assessed	Not assessed	Not assessed
	Commercial Sandy Soil	Any detectable concentration	Not assessed	Not assessed	Not assessed
	Commercial Intermediate Soil	Any detectable concentration	Not assessed	Not assessed	Not assessed
	Commercial Clay Soil	Any detectable concentration	Not assessed	Not assessed	Not assessed
	Public Open Space Sandy Soil (Residential)	Any detectable concentration	Not assessed	Not assessed	Not assessed
	Public Open Space Int Soil (Residential)	Any detectable concentration	Not assessed	Not assessed	Not assessed
	Public Open Space Clay Soil (Residential)	Any detectable concentration	Not assessed	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) C733 – CIRIA - Construction Industry Research & Information Association – Asbestos in Made Ground Sect 13 Respirable fibre exposure estimation using published air-to-air relationships after Addison <i>et al</i> (1988). <i>Details</i> Dilution of airborne fibre concentrations from the point of origin has not been considered. Residential assume 90 hours per year gardening activities that result 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)							
		Pipe Material					
		All threshold concentrations in mg/kg					
	Parameter Group	PE	PVC	Barrier pipe (PE-Al-PE)	Wrapped Steel	Wrapped Ductile Iron	Copper
1	Extended VOC suite by purge and trap or headspace and GCMS with TICs	0.5	0.125	Pass	Pass	Pass	Pass
1A	+BTEX +MTBE	0.1	0.03	Pass	Pass	Pass	Pass
2	SVOCs by purge and trap or headspace and GCMS with TICs(aliphatic and aromatic C5 – C10	2	1.4	Pass	Pass	Pass	Pass
2E	+Phenols	2	0.4	Pass	Pass	Pass	Pass
2F	+Cresols and chlorinated phenols	2	0.04	Pass	Pass	Pass	Pass
3	Mineral Oil C11 – C20	10	Pass	Pass	Pass	Pass	Pass
4	Mineral Oil C21 – C40	500	Pass	Pass	Pass	Pass	Pass
5	Corrosive (Conductivity, Redox and pH)	Pass	Pass	Pass	Corrosive if pH <7 and conductivity >400µS/cm	Corrosive if pH <5 Eh not neutral and conductivity > 400mS/cm	Corrosive if pH <5 or >8 and Eh positive
Specific suites identified as relevant following site investigation							
2A	Ethers	0.5	1	Pass	Pass	Pass	Pass
2B	Nitrobenzene	0.5	0.4	Pass	Pass	Pass	Pass
2C	Ketones	0.5	0.02	Pass	Pass	Pass	Pass
2D	Aldehydes	0.5	0.02	Pass	Pass	Pass	Pass
6	Amines	Fail	Pass	Pass	Pass	Pass	Pass
This table is not a list of potential contaminants at any one site All values are subject to ongoing review. Table reproduced from <i>UKWIR Report Ref No 10/WM/03/21 (Table 3.1)</i> VOC = Volatile Organic Compounds (solvents) SVOC = Semi Volatile Organic Compounds GCMS = Gas Chromatography Mass Spectrometer TIC = Tentatively Identifiable compound BTEX = Benzene, Toluene, Ethyl Benzene & Xylene (VOCs) MTBE = Methyl tertiary butyl ether (petrol additive)				Terramech Investigations Limited 183 Long Lane Tilehurst Reading RG31 6YW Email - info@terramech.co.uk Tel 01189 439 910 Fax 01189 439 920			



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			
Dichlorprop (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
Flucofuron	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)
Isoxynil	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 (MCP)	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
Pryridate	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