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Newport City Council
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Newport
NP20 4UR

Attention: Robert Hester

CERTIFICATE OF ANALYSIS

Date of report Generation: 05 July 2019
Customer: Newport City Council
Sample Delivery Group (SDG): 190628-62
Your Reference: June GW and Leachate
Location: Docks Way
Report No: 513223

This report has been revised and directly supersedes 512424 in its entirety.

We received 2 samples on Friday June 28, 2019 and 2 of these samples were scheduled for analysis which was completed on Friday July 05, 2019. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG:	190628-62	Client Reference:	June GW and Leachate	Report Number:	513223
Location:	Docks Way	Order Number:	700139401	Superseded Report:	512424

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
20241116	C3		0.00 - 0.00	28/06/2019
20241091	GW09_36		0.00 - 0.00	28/06/2019

Maximum Sample/Coolbox Temperature (°C) : 13.2

ISO5667-3 Water quality - Sampling - Part3 -

During Transportation samples shall be stored in a cooling device capable of maintaining a temperature of (5±3)°C.

ALS have data which show that a cool box with 4 frozen icepacks is capable of maintaining pre-chilled samples at a temperature of (5±3)°C for a period of up to 24hrs.

Only received samples which have had analysis scheduled will be shown on the following pages.



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Results Legend

- X Test
- N No Determination Possible

Sample Types -

- S - Soil/Solid
- UNS - Unspecified Solid
- GW - Ground Water
- SW - Surface Water
- LE - Land Leachate
- PL - Prepared Leachate
- PR - Process Water
- SA - Saline Water
- TE - Trade Effluent
- TS - Treated Sewage
- US - Untreated Sewage
- RE - Recreational Water
- DW - Drinking Water Non-regulatory
- UNL - Unspecified Liquid
- SL - Sludge
- G - Gas
- OTH - Other

Results Legend	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type
	20241116	C3		0.00 - 0.00	ZnAc (ALE246) Vial (ALE297) NaOH (ALE245) HNO3 Filtered (ALE204) H2SO4 (ALE244) 500ml Plastic (ALE208) 250ml BOD (ALE212) 0.5l glass bottle (ALE227)	GW
Alkalinity as CaCO3	All	NDPs: 0 Tests: 1				X
Alkalinity Filtered as CaCO3	All	NDPs: 0 Tests: 1	X			
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 2		X		X
Anions by Kone (w)	All	NDPs: 0 Tests: 2	X			X
BOD True Total	All	NDPs: 0 Tests: 2	X			X
COD Unfiltered	All	NDPs: 0 Tests: 2	X			X
Conductivity (at 20 deg.C)	All	NDPs: 0 Tests: 2	X			X
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 2			X	X
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 2		X		X
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 1				X
EPH (DRO) (C10-C40) Aqueous (W)	All	NDPs: 0 Tests: 2	X			X
Ionic Balance	All	NDPs: 0 Tests: 2		X		X
Nitrite by Kone (w)	All	NDPs: 0 Tests: 2			X	X
pH Value	All	NDPs: 0 Tests: 2		X		X
Phosphate by Kone (w)	All	NDPs: 0 Tests: 2		X		X



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- US - Untreated Sewage
- RE - Recreational Water
- DW - Drinking Water Non-regulatory
- UNL - Unspecified Liquid
- SL - Sludge
- G - Gas
- OTH - Other

	Lab Sample No(s)	20241116	20241091																
	Customer Sample Reference	C3	GW09_36																
AGS Reference																			
Depth (m)		0.00 - 0.00	0.00 - 0.00																
Container		0.5l glass bottle (ALE227)	ZnAc (ALE246)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml Plastic (ALE208)	250ml BOD (ALE212)	0.5l glass bottle (ALE227)	ZnAc (ALE246)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml Plastic (ALE208)	250ml BOD (ALE212)		
Sample Type		LE	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW		
Sulphide	All	NDPs: 0 Tests: 2									X							X	
Total Organic and Inorganic Carbon	All	NDPs: 0 Tests: 1					X												
VOC MS (W)	All	NDPs: 0 Tests: 2									X								X



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Results Legend		Customer Sample Ref.	C3	GW09_36			
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery. (F) Trigger breach confirmed 1.3x5@ Sample deviation (see appendix)	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	C3 0.00 - 0.00 Land Leachate (LE) 28/06/2019 28/06/2019 190628-62 20241116	GW09_36 0.00 - 0.00 Ground Water (GW) 28/06/2019 28/06/2019 190628-62 20241091				
Component	LOD/Units	Method					
Ionic balance	% Diff	Calulation	0.174	-7.63			
Alkalinity, Total as CaCO3	<2 mg/l	TM043		945	#		
Alkalinity, Total as CaCO3 (diss.filt)	<2 mg/l	TM043	4950				
Alkalinity, Bicarbonate as CaCO3 (diss.filt)	<2 mg/l	TM043	4950				
BOD, unfiltered	<1 mg/l	TM045	92.2	<1	#	#	
Carbon, Organic (diss.filt)	<3 mg/l	TM090		13.3			
Organic Carbon, Total	<3 mg/l	TM090	548				
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099	760	15.2	#		
Sulphide	<0.01 mg/l	TM101	0.129	0.0157	#	#	
COD, unfiltered	<7 mg/l	TM107	1850	237	#	#	
Conductivity @ 20 deg.C	<0.005 mS/cm	TM120	10.6	12.8	#	#	
Arsenic (diss.filt)	<0.5 µg/l	TM152	24.5	1.39	#	#	
Boron (diss.filt)	<10 µg/l	TM152	8020	1310	#	#	
Cadmium (diss.filt)	<0.08 µg/l	TM152	<0.8	<0.08	#	#	
Chromium (diss.filt)	<1 µg/l	TM152	365	<1	#	#	
Copper (diss.filt)	<0.3 µg/l	TM152	<3	<0.3	#	#	
Lead (diss.filt)	<0.2 µg/l	TM152	<2	<0.2	#	#	
Manganese (diss.filt)	<3 µg/l	TM152	730	305	#	#	
Nickel (diss.filt)	<0.4 µg/l	TM152	88.1	0.427	#	#	
Selenium (diss.filt)	<1 µg/l	TM152	<10	<1	#	#	
Zinc (diss.filt)	<1 µg/l	TM152	330	5.82	#	#	
Sodium (Dis.Filt)	<0.076 mg/l	TM152	1110	2090	#	#	
Magnesium (Dis.Filt)	<0.036 mg/l	TM152	202	296	#	#	
Potassium (Dis.Filt)	<0.2 mg/l	TM152	317	69.3	#	#	
Calcium (Dis.Filt)	<0.2 mg/l	TM152	188	231	#	#	
Iron (Dis.Filt)	<0.019 mg/l	TM152	1.88	3.5	#	#	
Hardness, Total as CaCO3	<0.65 mg/l	TM152	1300	1800			
EPH Range >C10 - C40 (aq)	<100 µg/l	TM172	1330	<100			
Nitrite as NO2	<0.05 mg/l	TM184	<0.05	<0.05	#		
Phosphate (Ortho as PO4)	<0.05 mg/l	TM184	18.1	10.7	#		
Sulphate	<2 mg/l	TM184	<20	123	#		
Chloride	<2 mg/l	TM184	1320	4600	#		



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Table of Results - Appendix

Method No	Reference	Description
Calculation		
TM043	Method 2320B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part109 1984	Determination of alkalinity in aqueous samples
TM045	MEWAM BOD5 2nd Ed.HMSO 1988 / Method 5210B, AWWA/APHA, 20th Ed., 1999; SCA Blue Book 130	Determination of BOD5 (ATU) Filtered by Oxygen Meter on liquids
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM101	Method 4500B & C, AWWA/APHA, 20th Ed., 1999	Determination of Sulphide in soil and water samples using the Kone Analyser
TM107	ISO 6060-1989	Determination of Chemical Oxygen Demand using COD Dr Lange Kit
TM120	Method 2510B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part 9:1970	Determination of Electrical Conductivity using a Conductivity Meter
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM172	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	EPH in Waters
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM208	Modified: US EPA Method 8260b & 624	Determination of Volatile Organic Compounds by Headspace / GC-MS in Waters
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter

NA = not applicable.

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Test Completion Dates

Lab Sample No(s)	20241116	20241091
Customer Sample Ref.	C3	GW09_36
AGS Ref.		
Depth	0.00 - 0.00	0.00 - 0.00
Type	Land Leachate	Ground Water

Alkalinity as CaCO3		02-Jul-2019
Alkalinity Filtered as CaCO3	01-Jul-2019	01-Jul-2019
Ammoniacal Nitrogen	03-Jul-2019	03-Jul-2019
Anions by Kone (w)	03-Jul-2019	03-Jul-2019
BOD True Total	05-Jul-2019	05-Jul-2019
COD Unfiltered	01-Jul-2019	01-Jul-2019
Conductivity (at 20 deg.C)	03-Jul-2019	03-Jul-2019
Cyanide Comp/Free/Total/Thiocyanate	01-Jul-2019	01-Jul-2019
Dissolved Metals by ICP-MS	05-Jul-2019	05-Jul-2019
Dissolved Organic/Inorganic Carbon		01-Jul-2019
EPH (DRO) (C10-C40) Aqueous (W)	05-Jul-2019	04-Jul-2019
Ionic Balance	05-Jul-2019	05-Jul-2019
Nitrite by Kone (w)	01-Jul-2019	01-Jul-2019
pH Value	28-Jun-2019	28-Jun-2019
Phosphate by Kone (w)	01-Jul-2019	01-Jul-2019
Sulphide	02-Jul-2019	02-Jul-2019
Total Organic and Inorganic Carbon	01-Jul-2019	
VOC MS (W)	03-Jul-2019	03-Jul-2019



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Chromatogram

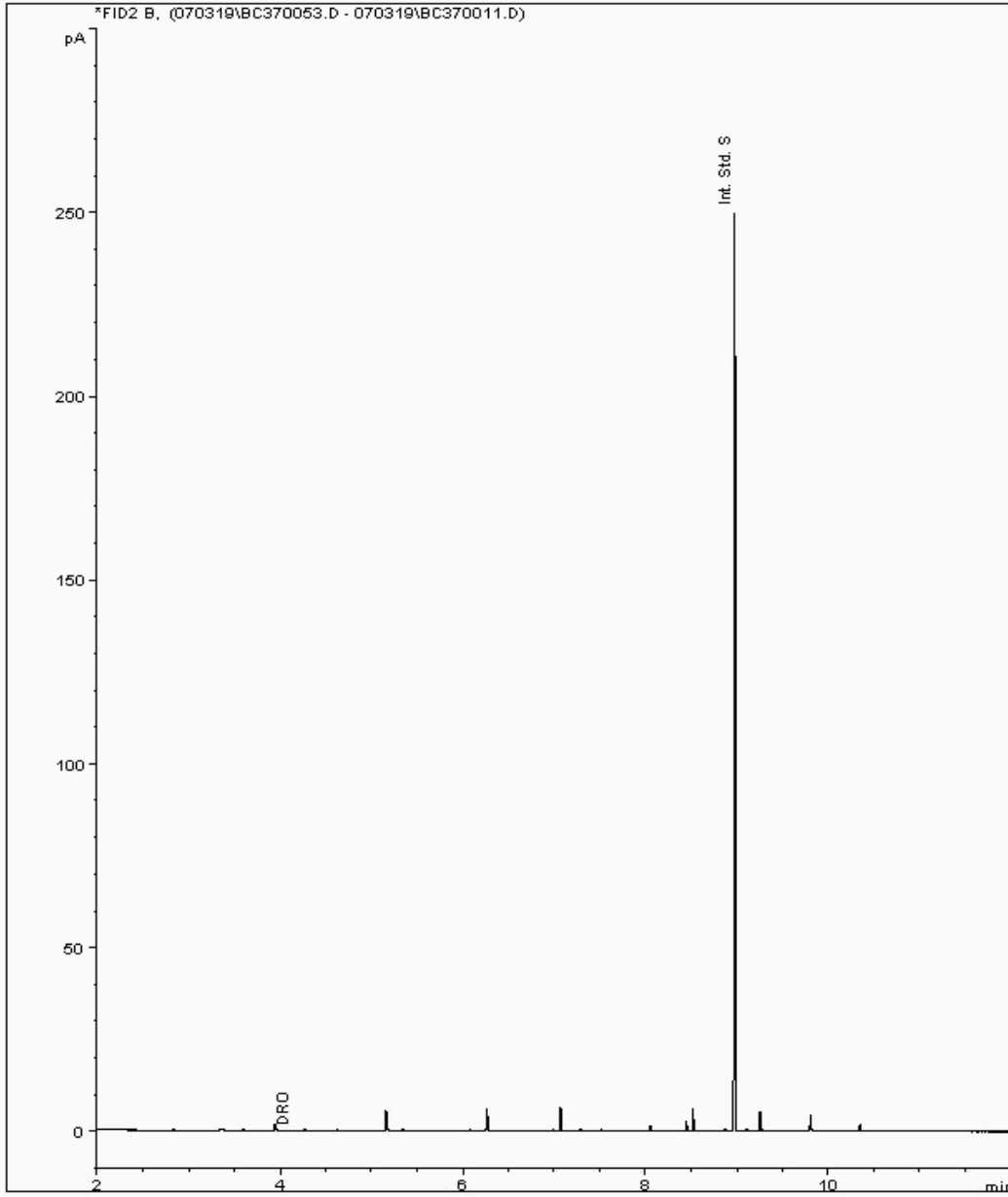
Analysis: EPH (DRO) (C10-C40) Aqueous (W)

Sample No : 20242138
Sample ID : GW09_36

Depth : 0.00 - 0.00

EPH Range Organics (C10 - C40)

Sample Identity: 19006094-
Date Acquired : 04/07/2019 09:01:57 PM
Units : mg/l





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Location: Docks Way

Client Reference: June GW and Leachate
Order Number: 700139401

Report Number: 513223
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Chromatogram

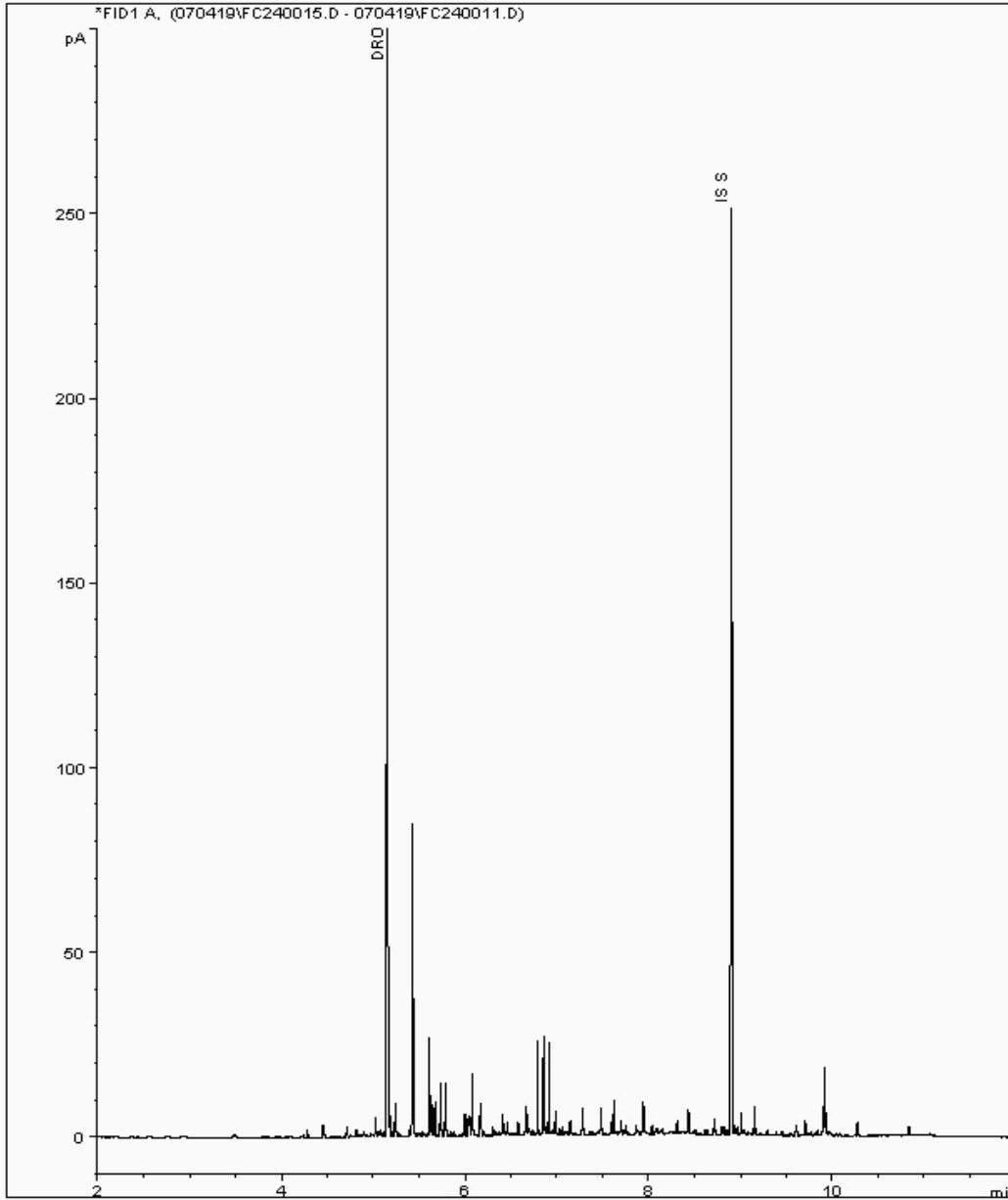
Analysis: EPH (DRO) (C10-C40) Aqueous (W)

Sample No : 20242139
Sample ID : C3

Depth : 0.00 - 0.00

EPH Range Organics (C10 - C40)

Sample Identity: 19006117-
Date Acquired : 04/07/2019 17:04:27 PM
Units : ppm





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Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
§	Sampled on date not provided
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples

19. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2107)*.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.