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[redacted]

CERTIFICATE OF ANALYSIS

Date of report Generation:	19 January 2022
Customer:	[redacted]
Sample Delivery Group (SDG):	220112-31
Your Reference:	CJB/28367
Location:	Stoney Hill
Report No:	630080
Order Number:	

We received 1 sample on Wednesday January 12, 2022 and 1 of these samples were scheduled for analysis which was completed on Wednesday January 19, 2022. 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 Life Sciences Ltd Hawarden.

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:

[redacted]

Operations Manager

CERTIFICATE OF ANALYSIS

SDG: 220112-31 **Report Number:** 630080 **Superseded Report:**
Client Ref.: CJB/28367 **Location:** Stoney Hill

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
25630016	NO ID			

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

Validated

CERTIFICATE OF ANALYSIS

SDG: 220112-31 **Report Number:** 630080 **Superseded Report:**
Client Ref.: CJB/28367 **Location:** Stoney Hill

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

			Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type
			25630016	NO ID			250ml Amber Gl. PTFE/PE (ALE219)	LE
							500ml Plastic (ALE208)	LE
							H2SO4 (ALE244)	LE
							HNO3 Unfiltered (ALE204)	LE
							Vial (ALE297)	LE
							ZnAc (ALE246)	LE
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 1					X	
Anions by Kone (w)	All	NDPs: 0 Tests: 1					X	
COD Unfiltered	All	NDPs: 0 Tests: 1					X	
Determination of Dissolved Gases	All	NDPs: 0 Tests: 1						X
Oil, Grease or Solids Visible	All	NDPs: 0 Tests: 1					X	
pH Value	All	NDPs: 0 Tests: 1					X	
Sulphide	All	NDPs: 0 Tests: 1						X
Suspended Solids	All	NDPs: 0 Tests: 1					X	
Total Metals by ICP-MS	All	NDPs: 0 Tests: 1						X

Validated

CERTIFICATE OF ANALYSIS

SDG: 220112-31 **Report Number:** 630080 **Superseded Report:**
Client Ref.: CJB/28367 **Location:** Stoney Hill

Results Legend

#	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
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m)	Sample Type	Date Sampled	Sample Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
			NO ID	.	Land Leachate (LE)	-	.	12/01/2022	220112-31	25630016	
Oil or Grease, Visible		PM095	Absent §								
Visible Solids		PM095	Absent §								
Suspended solids, Total	<2 mg/l	TM022	8.2 §								
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099	207 §								
Sulphide	<0.01 mg/l	TM101	<0.01 §								
COD, unfiltered	<7 mg/l	TM107	274 § #								
Aluminium (tot.unfilt)	<10 µg/l	TM152	<10 § #								
Copper (tot.unfilt)	<1 µg/l	TM152	3.82 § #								
Zinc (tot.unfilt)	<5 µg/l	TM152	79.6 § #								
Sulphate	<2 mg/l	TM184	50.8 §								
Methane, dissolved	<1 µg/l	TM223	34.7 §								
pH	<1 pH Units	TM256	7.83 § #								

Table of Results - Appendix

Method No	Reference	Description
PM095	Standard Methods for the examination of waters and wastewaters 16th Edition, APHA, Washington DC, USA. ISBN 0-87553-131-8.	Preparation of Water Samples for Analysis
TM022	Method 2540D, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part120 1981;BS EN 872	Determination of total suspended solids in waters
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
TM152	ISO 17294-2:2016 Water quality - Application of inductively coupled plasma mass spectrometry (ICP-MS)	Analysis of Aqueous Samples by ICP-MS
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM223	ASTM D-1945-91	Determination of Dissolved C1-7 Hydrocarbon gases in waters
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4, Standard Methods for the examination of waters and wastewaters 20th Edition, PHA, Washington DC, USA. ISBN 0-87553-235-7 and The Determination of Alkalinity and Acidity in water HMSO, 1981, ISBN 0 11 751601 5.	Determination of pH, EC, TDS and Alkalinity in Aqueous samples

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.

CERTIFICATE OF ANALYSIS

SDG: 220112-31 **Report Number:** 630080 **Superseded Report:**
Client Ref.: CJB/28367 **Location:** Stoney Hill

Test Completion Dates

Lab Sample No(s)	25630016
Customer Sample Ref.	NO ID
AGS Ref.	
Depth	
Type	Land Leachate
Ammoniacal Nitrogen	14-Jan-2022
Anions by Kone (w)	14-Jan-2022
COD Unfiltered	14-Jan-2022
Determination of Dissolved Gases	19-Jan-2022
Oil, Grease or Solids Visible	13-Jan-2022
pH Value	14-Jan-2022
Sulphide	13-Jan-2022
Suspended Solids	14-Jan-2022
Total Metals by ICP-MS	14-Jan-2022

Appendix General

1. Results are expressed on a dry weight basis (dried at 35ºC) 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. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

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 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

18. **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.

19. **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**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

20. **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 asbestos present is not determined unless specifically requested.

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.

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.

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.

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Website: www.alsenvironmental.co.uk

[redacted]

CERTIFICATE OF ANALYSIS

Date of report Generation:	26 January 2022
Customer:	[redacted]
Sample Delivery Group (SDG):	220119-98
Your Reference:	CJB/28367
Location:	Stoney Hill
Report No:	630921
Order Number:	

We received 1 sample on Wednesday January 19, 2022 and 1 of these samples were scheduled for analysis which was completed on Wednesday January 26, 2022. 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 Life Sciences Ltd Hawarden.

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:

[redacted]

Operations Manager

CERTIFICATE OF ANALYSIS

SDG: 220119-98 **Report Number:** 630921 **Superseded Report:**
Client Ref.: CJB/28367 **Location:** Stoney Hill

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
25670021	NO ID			

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

Validated

CERTIFICATE OF ANALYSIS

SDG: 220119-98 **Report Number:** 630921 **Superseded Report:**
Client Ref.: CJB/28367 **Location:** Stoney Hill

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

Lab Sample No(s)			25670021						
Customer Sample Reference			NO ID						
AGS Reference									
Depth (m)									
Container			250ml Amber Gl. PTFE/PE (ALE219)	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Unfiltered (ALE204)	Vial (ALE297)	ZnAc (ALE246)
Sample Type			LE	LE	LE	LE	LE	LE
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 1			X			
Anions by Kone (w)	All	NDPs: 0 Tests: 1		X				
COD Unfiltered	All	NDPs: 0 Tests: 1		X				
Determination of Dissolved Gases	All	NDPs: 0 Tests: 1					X	
Oil, Grease or Solids Visible	All	NDPs: 0 Tests: 1	X					
pH Value	All	NDPs: 0 Tests: 1		X				
Sulphide	All	NDPs: 0 Tests: 1						X
Suspended Solids	All	NDPs: 0 Tests: 1		X				
Total Metals by ICP-MS	All	NDPs: 0 Tests: 1				X		

Validated

CERTIFICATE OF ANALYSIS

SDG: 220119-98 **Report Number:** 630921 **Superseded Report:**
Client Ref.: CJB/28367 **Location:** Stoney Hill

Results Legend	
#	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
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m)	Sample Type	Date Sampled	Sample Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
			NO ID	.	Land Leachate (LE)	-	.	19/01/2022	220119-98	25670021	
Oil or Grease, Visible		PM095	Absent §								
Visible Solids		PM095	Present §								
Suspended solids, Total	<2 mg/l	TM022	25.5 §								
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099	307 §								
Sulphide	<0.01 mg/l	TM101	0.0128 §								
COD, unfiltered	<7 mg/l	TM107	327 § #								
Aluminium (tot.unfilt)	<10 µg/l	TM152	20.7 § #								
Copper (tot.unfilt)	<1 µg/l	TM152	1.83 § #								
Zinc (tot.unfilt)	<5 µg/l	TM152	140 § #								
Sulphate	<2 mg/l	TM184	87.9 §								
Methane, dissolved	<1 µg/l	TM223	76.2 §								
pH	<1 pH Units	TM256	8.04 § #								

Table of Results - Appendix

Method No	Reference	Description
PM095	Standard Methods for the examination of waters and wastewaters 16th Edition, APHA, Washington DC, USA. ISBN 0-87553-131-8.	Preparation of Water Samples for Analysis
TM022	Method 2540D, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part120 1981;BS EN 872	Determination of total suspended solids in waters
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
TM152	ISO 17294-2:2016 Water quality - Application of inductively coupled plasma mass spectrometry (ICP-MS)	Analysis of Aqueous Samples by ICP-MS
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM223	ASTM D-1945-91	Determination of Dissolved C1-7 Hydrocarbon gases in waters
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4, Standard Methods for the examination of waters and wastewaters 20th Edition, PHA, Washington DC, USA. ISBN 0-87553-235-7 and The Determination of Alkalinity and Acidity in water HMSO, 1981, ISBN 0 11 751601 5.	Determination of pH, EC, TDS and Alkalinity in Aqueous samples

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.

CERTIFICATE OF ANALYSIS

SDG: 220119-98 **Report Number:** 630921 **Superseded Report:**
Client Ref.: CJB/28367 **Location:** Stoney Hill

Test Completion Dates

Lab Sample No(s)	25670021
Customer Sample Ref.	NO ID
AGS Ref.	
Depth	
Type	Land Leachate
Ammoniacal Nitrogen	24-Jan-2022
Anions by Kone (w)	24-Jan-2022
COD Unfiltered	26-Jan-2022
Determination of Dissolved Gases	26-Jan-2022
Oil, Grease or Solids Visible	20-Jan-2022
pH Value	21-Jan-2022
Sulphide	25-Jan-2022
Suspended Solids	23-Jan-2022
Total Metals by ICP-MS	25-Jan-2022

Appendix General

1. Results are expressed on a dry weight basis (dried at 35ºC) 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.

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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. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

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 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

18. **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.

19. **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**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

20. **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 asbestos present is not determined unless specifically requested.

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.

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.

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.

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Tel: (01244) 528700
Fax: (01244) 528701
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

[redacted]

CERTIFICATE OF ANALYSIS

Date of report Generation:	02 February 2022
Customer:	[redacted]
Sample Delivery Group (SDG):	220126-52
Your Reference:	CJB/28367
Location:	Stoney Hill
Report No:	631920
Order Number:	

We received 1 sample on Wednesday January 26, 2022 and 1 of these samples were scheduled for analysis which was completed on Wednesday February 02, 2022. 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 Life Sciences Ltd Hawarden.

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:

[redacted]

Operations Manager

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
25704125	20210124			24/01/2022

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

Validated

CERTIFICATE OF ANALYSIS

SDG: 220126-52 **Report Number:** 631920 **Superseded Report:**
Client Ref.: CJB/28367 **Location:** Stoney Hill

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

Lab Sample No(s)			25704125					
Customer Sample Reference			20210124					
AGS Reference								
Depth (m)								
Container			250ml Amber Gl. PTFE/PE (ALE219)	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Unfiltered (ALE204)	Vial (ALE297)	ZnAc (ALE246)
Sample Type			LE	LE	LE	LE	LE	LE
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 1			X			
Anions by Kone (w)	All	NDPs: 0 Tests: 1		X				
COD Unfiltered	All	NDPs: 0 Tests: 1		X				
Determination of Dissolved Gases	All	NDPs: 0 Tests: 1					X	
Oil, Grease or Solids Visible	All	NDPs: 0 Tests: 1	X					
pH Value	All	NDPs: 0 Tests: 1		X				
Sulphide	All	NDPs: 0 Tests: 1						X
Suspended Solids	All	NDPs: 0 Tests: 1		X				
Total Metals by ICP-MS	All	NDPs: 0 Tests: 1				X		

Validated

CERTIFICATE OF ANALYSIS

SDG: 220126-52 **Report Number:** 631920 **Superseded Report:**
Client Ref.: CJB/28367 **Location:** Stoney Hill

Results Legend	
#	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
1-4+$@	Sample deviation (see appendix)

Customer Sample Ref.			20210124
Depth (m)			.
Sample Type			Land Leachate (LE)
Date Sampled			24/01/2022
Sample Time			.
Date Received			26/01/2022
SDG Ref			220126-52
Lab Sample No.(s)			25704125
AGS Reference			
Component	**LOD/Units**	**Method**	
Oil or Grease, Visible		PM095	Absent
Visible Solids		PM095	Absent
Suspended solids, Total	<2 mg/l	TM022	30.6
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099	339
Sulphide	<0.01 mg/l	TM101	<0.01
COD, unfiltered	<7 mg/l	TM107	345 #
Aluminium (tot.unfilt)	<10 µg/l	TM152	31.9 #
Copper (tot.unfilt)	<1 µg/l	TM152	1.37 #
Zinc (tot.unfilt)	<5 µg/l	TM152	135 #
Sulphate	<2 mg/l	TM184	75.9
Methane, dissolved	<1 µg/l	TM223	52.9
pH	<1 pH Units	TM256	8.02 #

Table of Results - Appendix

Method No	Reference	Description
PM095	Standard Methods for the examination of waters and wastewaters 16th Edition, APHA, Washington DC, USA. ISBN 0-87553-131-8.	Preparation of Water Samples for Analysis
TM022	Method 2540D, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part120 1981;BS EN 872	Determination of total suspended solids in waters
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
TM152	ISO 17294-2:2016 Water quality - Application of inductively coupled plasma mass spectrometry (ICP-MS)	Analysis of Aqueous Samples by ICP-MS
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM223	ASTM D-1945-91	Determination of Dissolved C1-7 Hydrocarbon gases in waters
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4, Standard Methods for the examination of waters and wastewaters 20th Edition, PHA, Washington DC, USA. ISBN 0-87553-235-7 and The Determination of Alkalinity and Acidity in water HMSO, 1981, ISBN 0 11 751601 5.	Determination of pH, EC, TDS and Alkalinity in Aqueous samples

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.

CERTIFICATE OF ANALYSIS

SDG: 220126-52 **Report Number:** 631920 **Superseded Report:**
Client Ref.: CJB/28367 **Location:** Stoney Hill

Test Completion Dates

Lab Sample No(s)	25704125
Customer Sample Ref.	20210124
AGS Ref.	
Depth	
Type	Land Leachate
Ammoniacal Nitrogen	28-Jan-2022
Anions by Kone (w)	29-Jan-2022
COD Unfiltered	02-Feb-2022
Determination of Dissolved Gases	02-Feb-2022
Oil, Grease or Solids Visible	27-Jan-2022
pH Value	28-Jan-2022
Sulphide	02-Feb-2022
Suspended Solids	29-Jan-2022
Total Metals by ICP-MS	29-Jan-2022

Appendix General

1. Results are expressed on a dry weight basis (dried at 35ºC) 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. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

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 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

18. **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.

19. **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**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

20. **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 (2021), 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 asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials andd soils 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 (2021).

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

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.

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.

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Website: www.alsenvironmental.co.uk

[redacted]

CERTIFICATE OF ANALYSIS

Date of report Generation:	10 February 2022
Customer:	[redacted]
Sample Delivery Group (SDG):	220202-43
Your Reference:	CJB/28367
Location:	Stoney Hill
Report No:	633117
Order Number:	

We received 1 sample on Wednesday February 02, 2022 and 1 of these samples were scheduled for analysis which was completed on Thursday February 10, 2022. 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 Life Sciences Ltd Hawarden.

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.

Approved By:

[redacted]

Operations Manager

CERTIFICATE OF ANALYSIS

SDG: 220202-43 **Report Number:** 633117 **Superseded Report:**
Client Ref.: CJB/28367 **Location:** Stoney Hill

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
25745323	20220131			31/01/2022

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

Validated

CERTIFICATE OF ANALYSIS

SDG: 220202-43 **Report Number:** 633117 **Superseded Report:**
Client Ref.: CJB/28367 **Location:** Stoney Hill

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

			Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type
			25745323	20220131			250ml Amber Gl. PTFE/PE (ALE219)	LE
							500ml Plastic (ALE208)	LE
							H2SO4 (ALE244)	LE
							HNO3 Unfiltered (ALE204)	LE
							Vial (ALE297)	LE
							ZnAc (ALE246)	LE
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 1					X	
Anions by Kone (w)	All	NDPs: 0 Tests: 1					X	
COD Unfiltered	All	NDPs: 0 Tests: 1					X	
Determination of Dissolved Gases	All	NDPs: 0 Tests: 1						X
Oil, Grease or Solids Visible	All	NDPs: 0 Tests: 1					X	
pH Value	All	NDPs: 0 Tests: 1					X	
Sulphide	All	NDPs: 0 Tests: 1						X
Suspended Solids	All	NDPs: 0 Tests: 1					X	
Total Metals by ICP-MS	All	NDPs: 0 Tests: 1						X

Validated

CERTIFICATE OF ANALYSIS

SDG: 220202-43 **Report Number:** 633117 **Superseded Report:**
Client Ref.: CJB/28367 **Location:** Stoney Hill

Results Legend

#	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
1-4+$@	Sample deviation (see appendix)

Customer Sample Ref.	20220131
Depth (m)	.
Sample Type	Land Leachate (LE)
Date Sampled	31/01/2022
Sample Time	.
Date Received	02/02/2022
SDG Ref	220202-43
Lab Sample No.(s)	25745323
AGS Reference	

Component	LOD/Units	Method	
Oil or Grease, Visible		PM095	Absent
Visible Solids		PM095	Absent
Suspended solids, Total	<2 mg/l	TM022	39.6
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099	320
Sulphide	<0.01 mg/l	TM101	0.0132
COD, unfiltered	<7 mg/l	TM107	351 #
Aluminium (tot.unfilt)	<10 µg/l	TM152	20.4 #
Copper (tot.unfilt)	<1 µg/l	TM152	1.28 #
Zinc (tot.unfilt)	<5 µg/l	TM152	129 #
Sulphate	<2 mg/l	TM184	60.7
Methane, dissolved	<1 µg/l	TM223	10.3
pH	<1 pH Units	TM256	8.01 #

Table of Results - Appendix

Method No	Reference	Description
PM095	Standard Methods for the examination of waters and wastewaters 16th Edition, APHA, Washington DC, USA. ISBN 0-87553-131-8.	Preparation of Water Samples for Analysis
TM022	Method 2540D, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part120 1981;BS EN 872	Determination of total suspended solids in waters
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
TM152	ISO 17294-2:2016 Water quality - Application of inductively coupled plasma mass spectrometry (ICP-MS)	Analysis of Aqueous Samples by ICP-MS
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM223	ASTM D-1945-91	Determination of Dissolved C1-7 Hydrocarbon gases in waters
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4, Standard Methods for the examination of waters and wastewaters 20th Edition, PHA, Washington DC, USA. ISBN 0-87553-235-7 and The Determination of Alkalinity and Acidity in water HMSO, 1981, ISBN 0 11 751601 5.	Determination of pH, EC, TDS and Alkalinity in Aqueous samples

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.

CERTIFICATE OF ANALYSIS

SDG: 220202-43 **Report Number:** 633117 **Superseded Report:**
Client Ref.: CJB/28367 **Location:** Stoney Hill

Test Completion Dates

Lab Sample No(s)	25745323
Customer Sample Ref.	20220131
AGS Ref.	
Depth	
Type	Land Leachate
Ammoniacal Nitrogen	09-Feb-2022
Anions by Kone (w)	03-Feb-2022
COD Unfiltered	09-Feb-2022
Determination of Dissolved Gases	10-Feb-2022
Oil, Grease or Solids Visible	02-Feb-2022
pH Value	03-Feb-2022
Sulphide	08-Feb-2022
Suspended Solids	03-Feb-2022
Total Metals by ICP-MS	07-Feb-2022

Appendix General

1. Results are expressed on a dry weight basis (dried at 35ºC) 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. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

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 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

18. **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.

19. **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**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

20. **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 (2021), 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 asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials andd soils 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 (2021).

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

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.

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.

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Website: www.alsenvironmental.co.uk

[redacted]

CERTIFICATE OF ANALYSIS

Date of report Generation:	16 February 2022
Customer:	[redacted]
Sample Delivery Group (SDG):	220209-53
Your Reference:	CJB/28367
Location:	Stoney Hill
Report No:	633868
Order Number:	

We received 1 sample on Wednesday February 09, 2022 and 1 of these samples were scheduled for analysis which was completed on Wednesday February 16, 2022. 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 Life Sciences Ltd Hawarden.

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:

[redacted]

Operations Manager

CERTIFICATE OF ANALYSIS

SDG: 220209-53 **Report Number:** 633868 **Superseded Report:**
Client Ref.: CJB/28367 **Location:** Stoney Hill

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
25786790	No Id			07/02/2022

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

Validated

CERTIFICATE OF ANALYSIS

SDG: 220209-53 **Report Number:** 633868 **Superseded Report:**
Client Ref.: CJB/28367 **Location:** Stoney Hill

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

			Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type
			25786790	No Id			250ml Amber Gl. PTFE/PE (ALE219)	LE
							500ml Plastic (ALE208)	LE
							H2SO4 (ALE244)	LE
							HNO3 Unfiltered (ALE204)	LE
							Vial (ALE297)	LE
							ZnAc (ALE246)	LE
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 1						
							X	
Anions by Kone (w)	All	NDPs: 0 Tests: 1						
							X	
COD Unfiltered	All	NDPs: 0 Tests: 1						
							X	
Determination of Dissolved Gases	All	NDPs: 0 Tests: 1						
								X
Oil, Grease or Solids Visible	All	NDPs: 0 Tests: 1						
			X					
pH Value	All	NDPs: 0 Tests: 1						
							X	
Sulphide	All	NDPs: 0 Tests: 1						
								X
Suspended Solids	All	NDPs: 0 Tests: 1						
							X	
Total Metals by ICP-MS	All	NDPs: 0 Tests: 1						
							X	

Validated

CERTIFICATE OF ANALYSIS

SDG: 220209-53 **Report Number:** 633868 **Superseded Report:**
Client Ref.: CJB/28367 **Location:** Stoney Hill

Results Legend	
#	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
1-4+$@	Sample deviation (see appendix)

Customer Sample Ref.	No Id
Depth (m)	.
Sample Type	Land Leachate (LE)
Date Sampled	07/02/2022
Sample Time	.
Date Received	09/02/2022
SDG Ref	220209-53
Lab Sample No.(s)	25786790
AGS Reference	

Component	LOD/Units	Method	
Oil or Grease, Visible		PM095	Absent
Visible Solids		PM095	Absent
Suspended solids, Total	<2 mg/l	TM022	31
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099	301
Sulphide	<0.01 mg/l	TM101	<0.01
COD, unfiltered	<7 mg/l	TM107	324 #
Aluminium (tot.unfilt)	<10 µg/l	TM152	21.3 #
Copper (tot.unfilt)	<1 µg/l	TM152	1.09 #
Zinc (tot.unfilt)	<5 µg/l	TM152	122 #
Sulphate	<2 mg/l	TM184	37.8
Methane, dissolved	<1 µg/l	TM223	36
pH	<1 pH Units	TM256	7.99 #

Table of Results - Appendix

Method No	Reference	Description
PM095	Standard Methods for the examination of waters and wastewaters 16th Edition, APHA, Washington DC, USA. ISBN 0-87553-131-8.	Preparation of Water Samples for Analysis
TM022	Method 2540D, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part120 1981;BS EN 872	Determination of total suspended solids in waters
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
TM152	ISO 17294-2:2016 Water quality - Application of inductively coupled plasma mass spectrometry (ICP-MS)	Analysis of Aqueous Samples by ICP-MS
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM223	ASTM D-1945-91	Determination of Dissolved C1-7 Hydrocarbon gases in waters
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4, Standard Methods for the examination of waters and wastewaters 20th Edition, PHA, Washington DC, USA. ISBN 0-87553-235-7 and The Determination of Alkalinity and Acidity in water HMSO, 1981, ISBN 0 11 751601 5.	Determination of pH, EC, TDS and Alkalinity in Aqueous samples

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.

CERTIFICATE OF ANALYSIS

SDG: 220209-53 **Report Number:** 633868 **Superseded Report:**
Client Ref.: CJB/28367 **Location:** Stoney Hill

Test Completion Dates

Lab Sample No(s)	25786790
Customer Sample Ref.	No Id
AGS Ref.	
Depth	
Type	Land Leachate
Ammoniacal Nitrogen	14-Feb-2022
Anions by Kone (w)	10-Feb-2022
COD Unfiltered	16-Feb-2022
Determination of Dissolved Gases	16-Feb-2022
Oil, Grease or Solids Visible	09-Feb-2022
pH Value	10-Feb-2022
Sulphide	16-Feb-2022
Suspended Solids	10-Feb-2022
Total Metals by ICP-MS	11-Feb-2022

Appendix General

1. Results are expressed on a dry weight basis (dried at 35ºC) 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. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

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 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

18. **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.

19. **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**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

20. **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 (2021), 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 asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials andd soils 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 (2021).

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

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.

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.

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Website: www.alsenvironmental.co.uk

[redacted]

CERTIFICATE OF ANALYSIS

Date of report Generation:	23 February 2022
Customer:	[redacted]
Sample Delivery Group (SDG):	220216-61
Your Reference:	CJB/28367
Location:	Stoney Hill
Report No:	634796
Order Number:	

We received 1 sample on Wednesday February 16, 2022 and 1 of these samples were scheduled for analysis which was completed on Wednesday February 23, 2022. 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 Life Sciences Ltd Hawarden.

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.

Approved By:

[redacted]

Operations Manager

CERTIFICATE OF ANALYSIS

SDG: 220216-61 **Report Number:** 634796 **Superseded Report:**
Client Ref.: CJB/28367 **Location:** Stoney Hill

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
25825838	20220215			15/02/2022

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

Validated

CERTIFICATE OF ANALYSIS

SDG: 220216-61 **Report Number:** 634796 **Superseded Report:**
Client Ref.: CJB/28367 **Location:** Stoney Hill

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

Lab Sample No(s)			25825838						
Customer Sample Reference			20220215						
AGS Reference									
Depth (m)									
Container			250ml Amber Gl. PTFE/PE (ALE219)	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Unfiltered (ALE204)	Vial (ALE297)	ZnAc (ALE246)
Sample Type			LE	LE	LE	LE	LE	LE
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 1			X			
Anions by Kone (w)	All	NDPs: 0 Tests: 1		X				
COD Unfiltered	All	NDPs: 0 Tests: 1		X				
Determination of Dissolved Gases	All	NDPs: 0 Tests: 1					X	
Oil, Grease or Solids Visible	All	NDPs: 0 Tests: 1	X					
pH Value	All	NDPs: 0 Tests: 1		X				
Sulphide	All	NDPs: 0 Tests: 1						X
Suspended Solids	All	NDPs: 0 Tests: 1		X				
Total Metals by ICP-MS	All	NDPs: 0 Tests: 1				X		

Validated

CERTIFICATE OF ANALYSIS

SDG: 220216-61 **Report Number:** 634796 **Superseded Report:**

Client Ref.: CJB/28367 **Location:** Stoney Hill

Results Legend

#	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
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref. 20220215				
			Depth (m) .				
			Sample Type Land Leachate (LE)				
			Date Sampled 15/02/2022				
			Sample Time .				
			Date Received 16/02/2022				
			SDG Ref 220216-61				
			Lab Sample No.(s) 25825838				
			AGS Reference				
Oil or Grease, Visible		PM095	Absent				
Visible Solids		PM095	Absent				
Suspended solids, Total	<2 mg/l	TM022	34.5				
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099	274				
Sulphide	<0.01 mg/l	TM101	0.0164				
COD, unfiltered	<7 mg/l	TM107	310 #				
Aluminium (tot.unfilt)	<10 µg/l	TM152	17.1 #				
Copper (tot.unfilt)	<1 µg/l	TM152	<1 #				
Zinc (tot.unfilt)	<5 µg/l	TM152	144 #				
Sulphate	<2 mg/l	TM184	21.4				
Methane, dissolved	<1 µg/l	TM223	515				
pH	<1 pH Units	TM256	7.86 #				

Table of Results - Appendix

Method No	Reference	Description
PM095	Standard Methods for the examination of waters and wastewaters 16th Edition, APHA, Washington DC, USA. ISBN 0-87553-131-8.	Preparation of Water Samples for Analysis
TM022	Method 2540D, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part120 1981;BS EN 872	Determination of total suspended solids in waters
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TM107	ISO 6060-1989	Determination of Chemical Oxygen Demand using COD Dr Lange Kit
TM152	ISO 17294-2:2016 Water quality - Application of inductively coupled plasma mass spectrometry (ICP-MS)	Analysis of Aqueous Samples by ICP-MS
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM223	ASTM D-1945-91	Determination of Dissolved C1-7 Hydrocarbon gases in waters
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4, Standard Methods for the examination of waters and wastewaters 20th Edition, PHA, Washington DC, USA. ISBN 0-87553-235-7 and The Determination of Alkalinity and Acidity in water HMSO, 1981, ISBN 0 11 751601 5.	Determination of pH, EC, TDS and Alkalinity in Aqueous samples

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.

CERTIFICATE OF ANALYSIS

SDG: 220216-61 **Report Number:** 634796 **Superseded Report:**
Client Ref.: CJB/28367 **Location:** Stoney Hill

Test Completion Dates

Lab Sample No(s)	25825838
Customer Sample Ref.	20220215
AGS Ref.	
Depth	
Type	Land Leachate
Ammoniacal Nitrogen	22-Feb-2022
Anions by Kone (w)	17-Feb-2022
COD Unfiltered	23-Feb-2022
Determination of Dissolved Gases	22-Feb-2022
Oil, Grease or Solids Visible	16-Feb-2022
pH Value	17-Feb-2022
Sulphide	23-Feb-2022
Suspended Solids	18-Feb-2022
Total Metals by ICP-MS	17-Feb-2022

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35ºC) 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. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

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 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

18. **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.

19. **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**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

20. **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 (2021), 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 asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials andd soils 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 (2021).

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

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.

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.

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[redacted]

CERTIFICATE OF ANALYSIS

Date of report Generation:	02 March 2022
Customer:	[redacted]
Sample Delivery Group (SDG):	220223-36
Your Reference:	CJB/28367
Location:	Stoney Hill
Report No:	635867
Order Number:	

We received 1 sample on Wednesday February 23, 2022 and 1 of these samples were scheduled for analysis which was completed on Wednesday March 02, 2022. 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 Life Sciences Ltd Hawarden.

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.

Approved By:

[redacted]

Operations Manager

CERTIFICATE OF ANALYSIS

SDG: 220223-36 **Report Number:** 635867 **Superseded Report:**
Client Ref.: CJB/28367 **Location:** Stoney Hill

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
25864439	202202 21			21/02/2022

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

Validated

CERTIFICATE OF ANALYSIS

SDG: 220223-36 **Report Number:** 635867 **Superseded Report:**
Client Ref.: CJB/28367 **Location:** Stoney Hill

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

			Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type
			25864439	202202 21			250ml Amber Gl. PTFE/PE (ALE219)	LE
							500ml Plastic (ALE208)	LE
							H2SO4 (ALE244)	LE
							HNO3 Unfiltered (ALE204)	LE
							Vial (ALE297)	LE
							ZnAc (ALE246)	LE
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 1						
							X	
Anions by Kone (w)	All	NDPs: 0 Tests: 1						
							X	
COD Unfiltered	All	NDPs: 0 Tests: 1						
							X	
Determination of Dissolved Gases	All	NDPs: 0 Tests: 1						
								X
Oil, Grease or Solids Visible	All	NDPs: 0 Tests: 1						
							X	
pH Value	All	NDPs: 0 Tests: 1						
							X	
Sulphide	All	NDPs: 0 Tests: 1						
								X
Suspended Solids	All	NDPs: 0 Tests: 1						
							X	
Total Metals by ICP-MS	All	NDPs: 0 Tests: 1						
							X	

Validated

CERTIFICATE OF ANALYSIS

SDG: 220223-36 **Report Number:** 635867 **Superseded Report:**
Client Ref.: CJB/28367 **Location:** Stoney Hill

Results Legend

#	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
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref. 202202 21				
			Depth (m) .				
			Sample Type Land Leachate (LE)				
			Date Sampled 21/02/2022				
			Sample Time .				
			Date Received 23/02/2022				
			SDG Ref 220223-36				
			Lab Sample No.(s) 25864439				
			AGS Reference				
Oil or Grease, Visible		PM095	Absent				
Visible Solids		PM095	Absent				
Suspended solids, Total	<2 mg/l	TM022	19.6				
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099	216				
Sulphide	<0.01 mg/l	TM101	<0.01				
COD, unfiltered	<7 mg/l	TM107	226 #				
Aluminium (tot.unfilt)	<10 µg/l	TM152	20.4 #				
Copper (tot.unfilt)	<1 µg/l	TM152	1.54 #				
Zinc (tot.unfilt)	<5 µg/l	TM152	127 #				
Sulphate	<2 mg/l	TM184	21.4				
Methane, dissolved	<1 µg/l	TM223	8.9				
pH	<1 pH Units	TM256	8.02 #				

Table of Results - Appendix

Method No	Reference	Description
PM095	Standard Methods for the examination of waters and wastewaters 16th Edition, APHA, Washington DC, USA. ISBN 0-87553-131-8.	Preparation of Water Samples for Analysis
TM022	Method 2540D, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part120 1981;BS EN 872	Determination of total suspended solids in waters
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
TM152	ISO 17294-2:2016 Water quality - Application of inductively coupled plasma mass spectrometry (ICP-MS)	Analysis of Aqueous Samples by ICP-MS
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM223	ASTM D-1945-91	Determination of Dissolved C1-7 Hydrocarbon gases in waters
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4, Standard Methods for the examination of waters and wastewaters 20th Edition, PHA, Washington DC, USA. ISBN 0-87553-235-7 and The Determination of Alkalinity and Acidity in water HMSO, 1981, ISBN 0 11 751601 5.	Determination of pH, EC, TDS and Alkalinity in Aqueous samples

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.

CERTIFICATE OF ANALYSIS

SDG: 220223-36 **Report Number:** 635867 **Superseded Report:**
Client Ref.: CJB/28367 **Location:** Stoney Hill

Test Completion Dates

Lab Sample No(s)	25864439
Customer Sample Ref.	202202 21
AGS Ref.	
Depth	
Type	Land Leachate
Ammoniacal Nitrogen	25-Feb-2022
Anions by Kone (w)	24-Feb-2022
COD Unfiltered	02-Mar-2022
Determination of Dissolved Gases	02-Mar-2022
Oil, Grease or Solids Visible	23-Feb-2022
pH Value	24-Feb-2022
Sulphide	02-Mar-2022
Suspended Solids	01-Mar-2022
Total Metals by ICP-MS	24-Feb-2022

SDG:	220223-36	**Client Reference:**	CJB/28367	**Report Number:**	635867
Location:	Stoney Hill	**Order Number:**		**Superseded Report:**	

Appendix General

1. Results are expressed on a dry weight basis (dried at 35ºC) 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. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

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 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

18. **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.

19. **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**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

20. **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 (2021), 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 asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials andd soils 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 (2021).

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

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.

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.

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[redacted]

CERTIFICATE OF ANALYSIS

Date of report Generation:	09 March 2022
Customer:	[redacted]
Sample Delivery Group (SDG):	220302-46
Your Reference:	CJB/28367
Location:	Stoney Hill
Report No:	636905
Order Number:	

We received 1 sample on Wednesday March 02, 2022 and 1 of these samples were scheduled for analysis which was completed on Wednesday March 09, 2022. 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 Life Sciences Ltd Hawarden.

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:

[redacted]

Operations Manager

CERTIFICATE OF ANALYSIS

SDG: 220302-46 **Report Number:** 636905 **Superseded Report:**
Client Ref.: CJB/28367 **Location:** Stoney Hill

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
25901142	202202 28			28/02/2022

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

Validated

CERTIFICATE OF ANALYSIS

SDG: 220302-46 **Report Number:** 636905 **Superseded Report:**
Client Ref.: CJB/28367 **Location:** Stoney Hill

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

			Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type
			25901142	202202 28			250ml Amber Gl. PTFE/PE (ALE219)	LE
							500ml Plastic (ALE208)	LE
							H2SO4 (ALE244)	LE
							HNO3 Unfiltered (ALE204)	LE
							Vial (ALE297)	LE
							ZnAc (ALE246)	LE
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 1						
							X	
Anions by Kone (w)	All	NDPs: 0 Tests: 1						
							X	
COD Unfiltered	All	NDPs: 0 Tests: 1						
							X	
Determination of Dissolved Gases	All	NDPs: 0 Tests: 1						
								X
Oil, Grease or Solids Visible	All	NDPs: 0 Tests: 1						
			X					
pH Value	All	NDPs: 0 Tests: 1						
							X	
Sulphide	All	NDPs: 0 Tests: 1						
								X
Suspended Solids	All	NDPs: 0 Tests: 1						
							X	
Total Metals by ICP-MS	All	NDPs: 0 Tests: 1						
							X	

Validated

CERTIFICATE OF ANALYSIS

SDG: 220302-46 **Report Number:** 636905 **Superseded Report:**
Client Ref.: CJB/28367 **Location:** Stoney Hill

Results Legend	
#	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
1-4+$@	Sample deviation (see appendix)

Customer Sample Ref.	202202 28
Depth (m)	.
Sample Type	Land Leachate (LE)
Date Sampled	28/02/2022
Sample Time	.
Date Received	02/03/2022
SDG Ref	220302-46
Lab Sample No.(s)	25901142
AGS Reference	

Component	LOD/Units	Method	
Oil or Grease, Visible		PM095	Absent
Visible Solids		PM095	Absent
Suspended solids, Total	<2 mg/l	TM022	17.4
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099	200
Sulphide	<0.01 mg/l	TM101	<0.01
COD, unfiltered	<7 mg/l	TM107	223 #
Aluminium (tot.unfilt)	<10 µg/l	TM152	14 #
Copper (tot.unfilt)	<1 µg/l	TM152	5.01 #
Zinc (tot.unfilt)	<5 µg/l	TM152	118 #
Sulphate	<2 mg/l	TM184	26.7
Methane, dissolved	<1 µg/l	TM223	14.7
pH	<1 pH Units	TM256	7.98 #

Table of Results - Appendix

Method No	Reference	Description
PM095	Standard Methods for the examination of waters and wastewaters 16th Edition, APHA, Washington DC, USA. ISBN 0-87553-131-8.	Preparation of Water Samples for Analysis
TM022	Method 2540D, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part120 1981;BS EN 872	Determination of total suspended solids in waters
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
TM152	ISO 17294-2:2016 Water quality - Application of inductively coupled plasma mass spectrometry (ICP-MS)	Analysis of Aqueous Samples by ICP-MS
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM223	ASTM D-1945-91	Determination of Dissolved C1-7 Hydrocarbon gases in waters
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4, Standard Methods for the examination of waters and wastewaters 20th Edition, PHA, Washington DC, USA. ISBN 0-87553-235-7 and The Determination of Alkalinity and Acidity in water HMSO, 1981, ISBN 0 11 751601 5.	Determination of pH, EC, TDS and Alkalinity in Aqueous samples

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.

CERTIFICATE OF ANALYSIS

SDG: 220302-46 **Report Number:** 636905 **Superseded Report:**
Client Ref.: CJB/28367 **Location:** Stoney Hill

Test Completion Dates

Lab Sample No(s)	25901142
Customer Sample Ref.	202202 28
AGS Ref.	
Depth	
Type	Land Leachate
Ammoniacal Nitrogen	03-Mar-2022
Anions by Kone (w)	03-Mar-2022
COD Unfiltered	09-Mar-2022
Determination of Dissolved Gases	09-Mar-2022
Oil, Grease or Solids Visible	02-Mar-2022
pH Value	03-Mar-2022
Sulphide	09-Mar-2022
Suspended Solids	09-Mar-2022
Total Metals by ICP-MS	05-Mar-2022

Appendix General

1. Results are expressed on a dry weight basis (dried at 35ºC) 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. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

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 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

18. **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.

19. **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**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

20. **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 (2021), 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 asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials andd soils 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 (2021).

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

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.

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.

REPORT TO BE SENT TO:

[redacted]
Telford & Wrekin Council (Stoney Hill)
Highways Transport & Engineer
Granville House
Telford Shropshire
TF2 7RA

ANALYSIS REPORT

SAMPLING POINT CODE 9977979

SAMPLE FROM: Telford & Wrekin Council (Stoney Hill)
Stoney Hill
Lightmoor
Telford Shropshire
TF4 3QQ

DESCRIPTION: leachate

SAMPLE NUMBER: 1330558
SAMPLE DATE: 07/03/2022 SAMPLE METHOD: Spot
SAMPLE TIME: 10:30:00 SAMPLE REASON: TE Control Sample
CHARGEABLE N TAKEN BY : 384

DETERMINAND	RESULT VALUE	UNITS	CONSENT LIMITS
Aluminium (total) as Al (mg/l)	0.010	mg/l	IM 0: 2
Chromium (total) as Cr (mg/l)	0.0073	mg/l	
Copper (total) as Cu (mg/l)	0.0035	mg/l	IM 0: 1
Lead (total) as Pb (mg/l)	0.0007	mg/l	
Nickel (total) as Ni (mg/l)	0.024	mg/l	
Zinc (total) as Zn (mg/l)	0.089	mg/l	IM 0: 2
Sampling Access (TE site test)	P		
PH	8.4	pH_unit	IM 6: 10

REPORT DATE: 17/03/22

ENQUIRIES REGARDING THIS REPORT SHOULD [redacted]

SIGNED:

DATE:

REPORT TO BE SENT TO:

[redacted]
Telford & Wrekin Council (Stoney Hill)
Highways Transport & Engineer
Granville House
Telford Shropshire
TF2 7RA

ANALYSIS REPORT

SAMPLING POINT CODE 9977979

SAMPLE FROM: Telford & Wrekin Council (Stoney Hill)
Stoney Hill
Lightmoor
Telford Shropshire
TF4 3QQ

DESCRIPTION: leachate

SAMPLE NUMBER: 1330559
SAMPLE DATE: 07/03/2022 SAMPLE METHOD: Spot
SAMPLE TIME: 10:30:00 SAMPLE REASON: Routine Program
CHARGEABLE Y TAKEN BY : 384

DETERMINAND	RESULT VALUE	UNITS	CONSENT LIMITS
SS	58.0	mg/l	IM 0: 1000
AMMONIACAL NITROGEN AS N	198	mg/l	IM 0: 500
COD 1h settled	209	mg/l	IM 0: 1500
Sampling Access (TE site test)	P		

REPORT DATE: 17/03/22

ENQUIRIES REGARDING THIS REPORT SHOULD BE MADE TO: [redacted]

SIGNED: DATE:

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

[redacted]

CERTIFICATE OF ANALYSIS

Date of report Generation:	16 March 2022
Customer:	[redacted]
Sample Delivery Group (SDG):	220309-16
Your Reference:	CJB/28367
Location:	Stoney Hill
Report No:	637825
Order Number:	

We received 1 sample on Wednesday March 09, 2022 and 1 of these samples were scheduled for analysis which was completed on Wednesday March 16, 2022. 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 Life Sciences Ltd Hawarden.

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:

[redacted]

Operations Manager

CERTIFICATE OF ANALYSIS

SDG: 220309-16 **Report Number:** 637825 **Superseded Report:**
Client Ref.: CJB/28367 **Location:** Stoney Hill

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
25936299	20220307			07/03/2022

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

Validated

CERTIFICATE OF ANALYSIS

SDG: 220309-16 **Report Number:** 637825 **Superseded Report:**
Client Ref.: CJB/28367 **Location:** Stoney Hill

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

Lab Sample No(s)			25936299						
Customer Sample Reference			20220307						
AGS Reference									
Depth (m)									
Container			250ml Amber Gl. PTFE/PE (ALE219)	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Unfiltered (ALE204)	Vial (ALE297)	ZnAc (ALE246)
Sample Type			LE	LE	LE	LE	LE	LE
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 1			X			
Anions by Kone (w)	All	NDPs: 0 Tests: 1		X				
COD Unfiltered	All	NDPs: 0 Tests: 1		X				
Determination of Dissolved Gases	All	NDPs: 0 Tests: 1					X	
Oil, Grease or Solids Visible	All	NDPs: 0 Tests: 1	X					
pH Value	All	NDPs: 0 Tests: 1		X				
Sulphide	All	NDPs: 0 Tests: 1						X
Suspended Solids	All	NDPs: 0 Tests: 1		X				
Total Metals by ICP-MS	All	NDPs: 0 Tests: 1				X		

Validated

CERTIFICATE OF ANALYSIS

SDG: 220309-16 **Report Number:** 637825 **Superseded Report:**
Client Ref.: CJB/28367 **Location:** Stoney Hill

Results Legend	
#	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
1-4+$@	Sample deviation (see appendix)

Customer Sample Ref.			20220307
Depth (m)			.
Sample Type			Land Leachate (LE)
Date Sampled			07/03/2022
Sample Time			.
Date Received			09/03/2022
SDG Ref			220309-16
Lab Sample No.(s)			25936299
AGS Reference			
Component	**LOD/Units**	**Method**	
Oil or Grease, Visible		PM095	Absent
Visible Solids		PM095	Present
Suspended solids, Total	<2 mg/l	TM022	16.7
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099	204
Sulphide	<0.01 mg/l	TM101	<0.01
COD, unfiltered	<7 mg/l	TM107	198 #
Aluminium (tot.unfilt)	<10 µg/l	TM152	12.4 #
Copper (tot.unfilt)	<1 µg/l	TM152	1.37 #
Zinc (tot.unfilt)	<5 µg/l	TM152	116 #
Sulphate	<2 mg/l	TM184	25.6
Methane, dissolved	<1 µg/l	TM223	13.8
pH	<1 pH Units	TM256	7.97 #

Table of Results - Appendix

Method No	Reference	Description
PM095	Standard Methods for the examination of waters and wastewaters 16th Edition, APHA, Washington DC, USA. ISBN 0-87553-131-8.	Preparation of Water Samples for Analysis
TM022	Method 2540D, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part120 1981;BS EN 872	Determination of total suspended solids in waters
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
TM152	ISO 17294-2:2016 Water quality - Application of inductively coupled plasma mass spectrometry (ICP-MS)	Analysis of Aqueous Samples by ICP-MS
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM223	ASTM D-1945-91	Determination of Dissolved C1-7 Hydrocarbon gases in waters
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4, Standard Methods for the examination of waters and wastewaters 20th Edition, PHA, Washington DC, USA. ISBN 0-87553-235-7 and The Determination of Alkalinity and Acidity in water HMSO, 1981, ISBN 0 11 751601 5.	Determination of pH, EC, TDS and Alkalinity in Aqueous samples

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.

CERTIFICATE OF ANALYSIS

SDG: 220309-16 **Report Number:** 637825 **Superseded Report:**
Client Ref.: CJB/28367 **Location:** Stoney Hill

Test Completion Dates

Lab Sample No(s)	25936299
Customer Sample Ref.	20220307
AGS Ref.	
Depth	
Type	Land Leachate
Ammoniacal Nitrogen	16-Mar-2022
Anions by Kone (w)	10-Mar-2022
COD Unfiltered	16-Mar-2022
Determination of Dissolved Gases	16-Mar-2022
Oil, Grease or Solids Visible	09-Mar-2022
pH Value	11-Mar-2022
Sulphide	16-Mar-2022
Suspended Solids	16-Mar-2022
Total Metals by ICP-MS	15-Mar-2022

Appendix General

1. Results are expressed on a dry weight basis (dried at 35ºC) 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. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

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 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

18. **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.

19. **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**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

20. **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 (2021), 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 asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials andd soils 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 (2021).

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

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.

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.

REPORT TO BE SENT TO:

[redacted]
Telford & Wrekin Council (Stoney Hill)
Highways Transport & Engineer
Granville House
Telford Shropshire
TF2 7RA

ANALYSIS REPORT

SAMPLING POINT CODE 9977979

SAMPLE FROM: Telford & Wrekin Council (Stoney Hill)
Stoney Hill
Lightmoor
Telford Shropshire
TF4 3QQ

DESCRIPTION: leachate

SAMPLE NUMBER: 1333051
SAMPLE DATE: 21/03/2022 SAMPLE METHOD: Spot
SAMPLE TIME: 09:45:00 SAMPLE REASON: TE Control Sample
CHARGEABLE N TAKEN BY : 384

DETERMINAND	RESULT VALUE	UNITS	CONSENT LIMITS
Aluminium (total) as Al (mg/l)	0.013	mg/l	IM 0: 2
Chromium (total) as Cr (mg/l)	0.0081	mg/l	
Copper (total) as Cu (mg/l)	<0.0018	mg/l	IM 0: 1
Lead (total) as Pb (mg/l)	0.0007	mg/l	
Nickel (total) as Ni (mg/l)	0.024	mg/l	
Zinc (total) as Zn (mg/l)	0.11	mg/l	IM 0: 2
Sulphide as S (mg/l)	<0.01	mg/l	IM 0: 1
Sampling Access (TE site test)	P		
PH	8.3	pH_unit	IM 6: 10

REPORT DATE: 31/03/22

ENQUIRIES REGARDING THIS REPORT SHOULD BE MADE TO: [redacted]

SIGNED: DATE:

REPORT TO BE SENT TO:

[redacted]
Telford & Wrekin Council (Stoney Hill)
Highways Transport & Engineer
Granville House
Telford Shropshire
TF2 7RA

ANALYSIS REPORT

SAMPLING POINT CODE 9977979

SAMPLE FROM: Telford & Wrekin Council (Stoney Hill)
Stoney Hill
Lightmoor
Telford Shropshire
TF4 3QQ

DESCRIPTION: leachate

SAMPLE NUMBER: 1333052
SAMPLE DATE: 21/03/2022 SAMPLE METHOD: Spot
SAMPLE TIME: 09:45:00 SAMPLE REASON: Routine Program
CHARGEABLE Y TAKEN BY : 384

DETERMINAND	RESULT VALUE	UNITS	CONSENT LIMITS
SS	34.0	mg/l	IM 0: 1000
AMMONIACAL NITROGEN AS N	208	mg/l	IM 0: 500
COD 1h settled	221	mg/l	IM 0: 1500
Sampling Access (TE site test)	P		

REPORT DATE: 29/03/22

ENQUIRIES REGARDING THIS REPORT SHOULD BE MADE TO: [redacted]

SIGNED: DATE:

REPORT TO BE SENT TO:

[redacted]
Telford & Wrekin Council (Stoney Hill)
Highways Transport & Engineer
Granville House
Telford Shropshire
TF2 7RA

ANALYSIS REPORT

SAMPLING POINT CODE 9977979

SAMPLE FROM: Telford & Wrekin Council (Stoney Hill)
Stoney Hill
Lightmoor
Telford Shropshire
TF4 3QQ

DESCRIPTION: leachate

SAMPLE NUMBER: 1342368
SAMPLE DATE: 16/05/2022 SAMPLE METHOD: Spot
SAMPLE TIME: 09:10:00 SAMPLE REASON: Routine Program
CHARGEABLE Y TAKEN BY : 384

DETERMINAND	RESULT VALUE	UNITS	CONSENT LIMITS
SS	28.0	mg/l	IM 0: 1000
AMMONIACAL NITROGEN AS N	182	mg/l	IM 0: 500
COD 1h settled	257	mg/l	IM 0: 1500
Sampling Access (TE site test)	P		

REPORT DATE: 24/05/22

ENQUIRIES REGARDING THIS REPORT SHOULD BE MADE TO: [redacted]

SIGNED: DATE:

REPORT TO BE SENT TO:

[redacted]
Telford & Wrekin Council (Stoney Hill)
Highways Transport & Engineer
Granville House
Telford Shropshire
TF2 7RA

ANALYSIS REPORT

SAMPLING POINT CODE 9977979

SAMPLE FROM: Telford & Wrekin Council (Stoney Hill)
Stoney Hill
Lightmoor
Telford Shropshire
TF4 3QQ

DESCRIPTION: leachate

SAMPLE NUMBER: 1342369
SAMPLE DATE: 16/05/2022 SAMPLE METHOD: Spot
SAMPLE TIME: 09:10:00 SAMPLE REASON: TE Control Sample
CHARGEABLE N TAKEN BY : 384

DETERMINAND	RESULT VALUE	UNITS	CONSENT LIMITS
Aluminium (total) as Al (mg/l)	<0.075	mg/l	IM 0: 2
Chromium (total) as Cr (mg/l)	0.0071	mg/l	
Copper (total) as Cu (mg/l)	<0.018	mg/l	IM 0: 1
Lead (total) as Pb (mg/l)	<0.0030	mg/l	
Nickel (total) as Ni (mg/l)	0.026	mg/l	
Zinc (total) as Zn (mg/l)	0.089	mg/l	IM 0: 2
Sulphide as S (mg/l)	<0.01	mg/l	IM 0: 1
Sampling Access (TE site test)	P		
PH	8.5	pH_unit	IM 6: 10
DISSOLVED METHANE	5.8	ug/l	

REPORT DATE: 30/05/22

ENQUIRIES REGARDING THIS REPORT SHOULD BE MADE TO: [redacted]

SIGNED: DATE:

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528777
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

[redacted]

CERTIFICATE OF ANALYSIS

Date of report Generation:	06 July 2022
Customer:	[redacted]
Sample Delivery Group (SDG):	220629-31
Your Reference:	CJB/28367
Location:	Stoney Hill
Report No:	653379
Order Number:	

We received 1 sample on Wednesday June 29, 2022 and 1 of these samples were scheduled for analysis which was completed on Wednesday July 06, 2022. 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 Life Sciences Ltd Hawarden.

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.

Approved By:

[redacted]

Operations Manager

1291

CERTIFICATE OF ANALYSIS

SDG: 220629-31 **Report Number:** 653379 **Superseded Report:**
Client Ref.: CJB/28367 **Location:** Stoney Hill

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
26506611	20220627			27/06/2022

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

Validated

CERTIFICATE OF ANALYSIS

SDG: 220629-31 **Report Number:** 653379 **Superseded Report:**
Client Ref.: CJB/28367 **Location:** Stoney Hill

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

			Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type
			2650611	20220627			250ml Amber Gl. PTFE/PE (ALE219)	LE
							500ml Plastic (ALE208)	LE
							H2SO4 (ALE244)	LE
							HNO3 Unfiltered (ALE204)	LE
							Vial (ALE297)	LE
							ZnAc (ALE246)	LE
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 1					X	
Anions by Kone (w)	All	NDPs: 0 Tests: 1						X
COD Unfiltered	All	NDPs: 0 Tests: 1						X
Determination of Dissolved Gases	All	NDPs: 0 Tests: 1						X
Oil, Grease or Solids Visible	All	NDPs: 0 Tests: 1					X	
pH Value	All	NDPs: 0 Tests: 1						X
Phenols by HPLC (W)	All	NDPs: 0 Tests: 1					X	
Phosphate by Kone (w)	All	NDPs: 0 Tests: 1						X
Sulphide	All	NDPs: 0 Tests: 1						X
Suspended Solids	All	NDPs: 0 Tests: 1						X
Total Metals by ICP-MS	All	NDPs: 0 Tests: 1					X	

Validated

CERTIFICATE OF ANALYSIS

SDG: 220629-31 **Report Number:** 653379 **Superseded Report:**
Client Ref.: CJB/28367 **Location:** Stoney Hill

Results Legend

#	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
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.	20220627
Depth (m)	.
Sample Type	Land Leachate (LE)
Date Sampled	27/06/2022
Sample Time	.
Date Received	29/06/2022
SDG Ref	220629-31
Lab Sample No.(s)	26506611
AGS Reference	

Component	LOD/Units	Method	
Oil or Grease, Visible		PM095	Absent
Visible Solids		PM095	Absent
Suspended solids, Total	<2 mg/l	TM022	21.6
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099	174
Sulphide	<0.01 mg/l	TM101	<0.01
COD, unfiltered	<7 mg/l	TM107	261 #
Aluminium (tot.unfilt)	<10 µg/l	TM152	15.1 #
Phosphorus (tot.unfilt)	<20 µg/l	TM152	497 #
Zinc (tot.unfilt)	<5 µg/l	TM152	62.8 #
Iron (Tot. Unfilt.)	<0.024 mg/l	TM152	1.82 #
Phosphate (Ortho as PO4)	<0.05 mg/l	TM184	0.122
Sulphate	<2 mg/l	TM184	<2
Methane, dissolved	<1 µg/l	TM223	19.4
pH	<1 pH Units	TM256	8.12 #
Phenol	<0.002 mg/l	TM259	0.01 #
Cresols	<0.006 mg/l	TM259	<0.006 #
Xylenols	<0.008 mg/l	TM259	<0.008 #
Phenols, Total Detected monohydric	<0.016 mg/l	TM259	<0.016 #

Table of Results - Appendix

Method No	Reference	Description
PM095	Standard Methods for the examination of waters and wastewaters 16th Edition, APHA, Washington DC, USA. ISBN 0-87553-131-8.	Preparation of Water Samples for Analysis
TM022	Method 2540D, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part120 1981;BS EN 872	Determination of total suspended solids in waters
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
TM152	ISO 17294-2:2016 Water quality - Application of inductively coupled plasma mass spectrometry (ICP-MS)	Analysis of Aqueous Samples by ICP-MS
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM223	ASTM D-1945-91	Determination of Dissolved C1-7 Hydrocarbon gases in waters
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4, Standard Methods for the examination of waters and wastewaters 20th Edition, PHA, Washington DC, USA. ISBN 0-87553-235-7 and The Determination of Alkalinity and Acidity in water HMSO, 1981, ISBN 0 11 751601 5.	Determination of pH, EC, TDS and Alkalinity in Aqueous samples
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM).

CERTIFICATE OF ANALYSIS

SDG: 220629-31 **Report Number:** 653379 **Superseded Report:**
Client Ref.: CJB/28367 **Location:** Stoney Hill

Test Completion Dates

Lab Sample No(s)	26506611
Customer Sample Ref.	20220627
AGS Ref.	
Depth	
Type	Land Leachate
Ammoniacal Nitrogen	04-Jul-2022
Anions by Kone (w)	01-Jul-2022
COD Unfiltered	04-Jul-2022
Determination of Dissolved Gases	06-Jul-2022
Oil, Grease or Solids Visible	01-Jul-2022
pH Value	04-Jul-2022
Phenols by HPLC (W)	06-Jul-2022
Phosphate by Kone (w)	02-Jul-2022
Sulphide	06-Jul-2022
Suspended Solids	05-Jul-2022
Total Metals by ICP-MS	06-Jul-2022

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35ºC) 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. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

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 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

18. **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.

19. **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**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

20. **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 (2021), 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 asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials andd soils 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 (2021).

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.

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.

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.