

Appendix D

Photographic Log





Photo 1: HP01 arisings recovered from 0 to 0.55mbgl. Depth below ground increases from right to left of image.

WSP



Photo 2: HP02 arisings recovered from 0 to 0.65mbgl. Depth below ground increases from left to right of image.

WSP



Photo 3: HP02 topsoil to 0.1mbgl containing roots.

WSP



Photo 4: HP03 recovered arisings from 0 to 0.8m bgl. Depth below ground increases from left to right of image.

WSP



Photo 5: HP03 features of interest: Top left- reinforced glass found from 0.05 to 0.1mbgl. Top right- rare cobbles of concrete found in made ground (0.05 to 0.7mbgl). Bottom- Plastic sheeting seen in hand pit walls 0.1 to 0.25mbgl.

wsp



Photo 6: HP04 arisings recovered from 0 to 1.02mbgl. Depth below ground increases from right to left of image.

wsp



Photo 7: HP04 hand pit wall shows occasional concrete or sandstone cobbles seen in made ground between 0.09 and 0.6mbgl.

WSP



Photo 8: HP05 arisings recovered from 0 to 0.75mbgl. Depth below ground increases from right to left of image.

WSP



Photo 9: HP05 features of interest recovered in made ground (0.05 to 0.6mbgl): left-roof tile fragments. Right-metal bar 0.13m long.

WSP



Photo 10: HP06 arisings recovered from 0 to 0.6mbgl. Depth below ground increases from left to right of the image.

WSP



Photo 11: HP06 features of interest in made ground (0.05 to 0.55mgb): top left- plastic wrapping, top right-brittle plastic plant pot, bottom left-black combustible material, bottom right-glass fragments.

The logo for WSP, consisting of the letters 'wsp' in a stylized, lowercase, red font.



Photo 12: HP07 arisings recovered from 0 to 0.4mgb-l-shallow made ground (0.1 to 0.3mgb). Depth below ground increases from left to right of image.

The logo for WSP, consisting of the letters 'wsp' in a stylized, lowercase, red font.



Photo 13: HP07 shallow made ground, natural material clearly visible at base of hand pit.

WSP



Photo 14: HP08 arisings recovered from 0 to 0.63mbgl. Depth below ground increases from right to left of image.

WSP



Photo 15: HP08 features of interest: left- 5mm diameter plastic tubing found near surface (0.05mbgl). In the made ground (0.07 to 0.4mbgl): top right- fabric, bottom right-metal bar.

WSP



Photo 16: HP09 arisings recovered from 0 to 0.53mbgl. Depth below ground increases from top to bottom of image.

WSP



Photo 17: Shallow made ground (0.09 to 0.2mbgl) in HP09, natural material clearly visible in hand pit.

WSP



Photo 18: HP10 arisings recovered from 0 to 0.5mbgl. Depth below ground increases from left to right of image.

WSP



Photo 19: HP10 rare cobbles of brick in made ground (0.08 to 0.25mbgl).

WSP



Photo 20: HP11 arisings recovered from 0 to 0.5mbgl. Depth below ground increases from left to right of image.

WSP



Photo 21: HP11 shallow made ground (0.05 to 0.25mbgl) so natural material is visible in hand pit.

WSP



Photo 22: HP12 arisings recovered from 0 to 0.4mbgl. Depth below ground increases from left to right of image.

WSP



Photo 23: HP13 arisings recovered from 0 to 0.45mblg. Depth below ground increases from left to right of image.

WSP



Photo 24: HP13 orangish brown natural material visible below shallow (0.08 to 0.2mblg) made ground.

WSP



Photo 25: HP14 arisings recovered from 0 to 0.4mbgl. Depth below ground increases from left to right of image.



Photo 26: HP15 arisings recovered from 0 to 0.6mbgl. Depth below ground increases from left to right of image.





Photo 27: HP15 greyish black ashy horizon visible at 0.2 to 0.25mbgl within made ground (0.09 to 0.3mbgl). Orangish brown natural material visible below made ground (0.3 to 0.6mbgl).



Photo 28: HP16 arisings recovered from 0 to 0.47mbgl. Depth below ground increases from left to right of image.





Photo 29: HP17 arisings recovered from 0 to 0.6mbgl. Depth below ground increases from right to left of image.

WSP



Photo 30: HP18 arisings recovered from 0 to 0.6mbgl. Depth below ground increases from left to right of image.

WSP



Photo 31: HP19 arisings recovered from 0 to 0.55mbgl. Depth below ground increases from left to right of image.

WSP



Photo 32: HP19 features of interest: rare cobbles of concrete (left) and brick (right) found in made ground (0.06 to 0.35mbgl).

WSP



Photo 33: HP20 arisings recovered from 0 to 0.7mbgl. Depth below ground increases from right to left of image.

WSP



Photo 34: Spread of hand pit locations across site (soil samples taken at all locations).

WSP

Appendix E

Laboratory Analytical Data





WSP UK Limited
8 First Street
Manchester
Lancashire
M15 4RP

Attention: Emily Morgan

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

CERTIFICATE OF ANALYSIS

Date of report Generation: 04 February 2021
Customer: WSP UK Limited
Sample Delivery Group (SDG): 210114-53
Your Reference: Heol Offa
Location: Heol Offa
Report No: 585634

This report has been revised and directly supersedes 585021 in its entirety.

We received 14 samples on Thursday January 14, 2021 and 13 of these samples were scheduled for analysis which was completed on Thursday February 04, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

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

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

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

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

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

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG:	210114-53	Client Reference:	Heol Offa	Report Number:	585634
Location:	Heol Offa	Order Number:	70079705	Superseded Report:	585021

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
23575753	WS101		0.15 - 0.17	
23540918	WS101	ES	0.17 - 0.30	08/01/2021
23562981	WS101		1.40 - 1.60	08/01/2021
23562982	WS101		1.80 - 2.00	08/01/2021
23575754	WS101		2.80 - 3.00	
23540927	WS102	ES	1.00 - 1.30	08/01/2021
23562984	WS102		1.25 - 1.40	08/01/2021
23562980	WS102		2.50 - 2.60	08/01/2021
23562983	WS102		3.50 - 4.00	08/01/2021
23540905	WS103	ES	0.30 - 0.55	08/01/2021
23540911	WS103	ES	1.00 - 1.30	08/01/2021
23540880	WS104	ES	0.30 - 0.40	08/01/2021
23540888	WS104	ES	0.70 - 1.00	08/01/2021
23540900	WS104	ES	1.30 - 1.50	08/01/2021

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



CERTIFICATE OF ANALYSIS

Validated

SDG:	210114-53	Client Reference:	Heol Offa	Report Number:	585634
Location:	Heol Offa	Order Number:	70079705	Superseded Report:	585021

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	
	23540880		WS104		ES		0.30 - 0.40		1kg TUB with Handle (ALE260)		S	
	23540911		WS103		ES		1.00 - 1.30		250g Amber Jar (ALE210)		S	
	23540905		WS103		ES		0.30 - 0.55		1kg TUB with Handle (ALE260)		S	
	23562983		WS102				3.50 - 4.00		1kg TUB with Handle (ALE260)		S	
	23562980		WS102				2.50 - 2.60		250g Amber Jar (ALE210)		S	
	23562984		WS102				1.25 - 1.40		1kg TUB with Handle (ALE260)		S	
23540927		WS102		ES		1.00 - 1.30		250g Amber Jar (ALE210)		S		
23562982		WS101				1.80 - 2.00		1kg TUB with Handle (ALE260)		S		
23562981		WS101				1.40 - 1.60		250g Amber Jar (ALE210)		S		
23540918		WS101		ES		0.17 - 0.30		1kg TUB with Handle (ALE260)		S		
23575753		WS101				0.15 - 0.17		60g VOC (ALE215)		S		
								250g Amber Jar (ALE210)		S		
								1kg TUB with Handle (ALE260)		S		
								250g Amber Jar (ALE210)		S		
								1kg TUB with Handle (ALE260)		S		
								60g VOC (ALE215)		S		
								250g Amber Jar (ALE210)		S		
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23540900	WS 104	ES	1.30 - 1.50	250g Amber Jar (ALE210)	S		
23540888	WS 104	ES	0.70 - 1.00	250g Amber Jar (ALE210)	S		
23540880	WS 104	ES	0.30 - 0.40	250g Amber Jar (ALE210)	S		



CERTIFICATE OF ANALYSIS

Validated

SDG: 210114-53
Location: Heol Offa

Client Reference: Heol Offa
Order Number: 70079705

Report Number: 585634
Superseded Report: 585021

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm
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Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
23540918	WS101	0.17 - 0.30	Dark Brown	Sandy Loam	Stones	Vegetation
23562981	WS101	1.40 - 1.60	Light Brown	Silt Loam	Stones	Vegetation
23575753	WS101	0.15 - 0.17	Dark Brown	Sandy Loam	Stones	Vegetation
23540927	WS102	1.00 - 1.30	Dark Brown	Loamy Sand	Stones	None
23562980	WS102	2.50 - 2.60	Light Brown	Silt Loam	Stones	None
23562983	WS102	3.50 - 4.00	Light Brown	Loamy Sand	Stones	Vegetation
23540905	WS103	0.30 - 0.55	Dark Brown	Loamy Sand	Stones	Vegetation
23540911	WS103	1.00 - 1.30	Dark Brown	Sandy Silt Loam	Stones	Vegetation
23540880	WS104	0.30 - 0.40	Dark Brown	Loamy Sand	Stones	Vegetation
23540888	WS104	0.70 - 1.00	Dark Brown	Loamy Sand	Stones	Vegetation
23540900	WS104	1.30 - 1.50	Light Brown	Loamy Sand	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

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 materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.



CERTIFICATE OF ANALYSIS

Validated

SDG:	210114-53	Client Reference:	Heol Offa	Report Number:	585634
Location:	Heol Offa	Order Number:	70079705	Superseded Report:	585021

TPH CWG (S)

Results Legend		Customer Sample Ref.	WS101	WS101			
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.15 - 0.17	0.17 - 0.30			
M	mCERTS accredited.		Soil/Solid (S)	Soil/Solid (S)			
aq	Aqueous / settled sample.		-	08/01/2021			
diss.filt	Dissolved / filtered sample.		-	-			
tot.unfilt	Total / unfiltered sample.		14/01/2021	14/01/2021			
*	Subcontracted - refer to subcontractor report for accreditation status.		210114-53	210114-53			
**	% 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		23575753	23540918			
(F)	Trigger breach confirmed			ES			
1-4*\$@	Sample deviation (see appendix)						
Component	LOD/Units	Method					
GRO Surrogate % recovery**	%	TM089	87.6	112			
			\$				
Aliphatics >C5-C6	<0.01	TM089	0.0203	<0.01			
	mg/kg		\$				
Aliphatics >C6-C8	<0.01	TM089	0.0318	0.0219			
	mg/kg		\$				
Aliphatics >C8-C10	<0.01	TM089	0.116	0.0909			
	mg/kg		\$				
Aliphatics >C10-C12	<1	TM414	<1	<1			
	mg/kg		\$				
Aliphatics >C12-C16	<1	TM414	<1	<1			
	mg/kg		\$				
Aliphatics >C16-C21	<1	TM414	1.46	<1			
	mg/kg		\$				
Aliphatics >C16-C35	<1	TM414	8.66	3.48			
	mg/kg		\$				
Aliphatics >C21-C35	<1	TM414	7.2	3.07			
	mg/kg		\$				
Aliphatics >C35-C44	<1	TM414	<1	<1			
	mg/kg		\$				
Total Aliphatics >C10-C44	<5	TM414	9.55	<5			
	mg/kg		\$				
Total Aliphatics & Aromatics >C10-C44	<10	TM414	208	69			
	mg/kg		\$				
Aromatics >EC5-EC7	<0.01	TM089	<0.01	<0.01			
	mg/kg		\$				
Aromatics >EC7-EC8	<0.01	TM089	<0.01	<0.01			
	mg/kg		\$				
Aromatics >EC8-EC10	<0.01	TM089	0.0775	0.061			
	mg/kg		\$				
Aromatics > EC10-EC12	<1	TM414	<1	<1			
	mg/kg		\$				
Aromatics > EC12-EC16	<1	TM414	1.66	<1			
	mg/kg		\$				
Aromatics > EC16-EC21	<1	TM414	30.7	6.2			
	mg/kg		\$				
Aromatics > EC16-EC35	<1	TM414	173	56.1			
	mg/kg		\$				
Aromatics > EC21-EC35	<1	TM414	142	49.9			
	mg/kg		\$				
Aromatics >EC35-EC44	<1	TM414	23.9	8.61			
	mg/kg		\$				
Aromatics > EC40-EC44	<1	TM414	2.74	1.3			
	mg/kg		\$				
Total Aromatics > EC10-EC44	<5	TM414	199	64.8			
	mg/kg		\$				
Total Aliphatics & Aromatics >C5-C44	<10	TM414	208	64.9			
	mg/kg		\$				
Total Aliphatics >C5-C10	<0.05	TM089	0.168	0.113			
	mg/kg		\$				
Total Aromatics >EC5-EC10	<0.05	TM089	0.0775	0.061			
	mg/kg		\$				
GRO >C5-C10	<0.02	TM089	0.245	0.174			
	mg/kg		\$				



CERTIFICATE OF ANALYSIS

Validated

SDG: 210114-53 Client Reference: Heol Offa Report Number: 585634
Location: Heol Offa Order Number: 70079705 Superseded Report: 585021

Asbestos Identification - Solid Samples

Results Legend

ISO17025 accredited.
M mCERTS accredited.
* Subcontracted test.
(F) Trigger breach confirmed
1-5&*S@ Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	WS101 0.15 - 0.17 SOLID 14/01/2021 05:00:00 210114-53 23575753 TM048	28/01/2021	Agnieszka Chelmowska	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	WS101ES 0.17 - 0.30 SOLID 08/01/2021 00:00:00 14/01/2021 05:00:00 210114-53 23540918 TM048	19/01/2021	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	WS102ES 1.00 - 1.30 SOLID 08/01/2021 00:00:00 14/01/2021 05:00:00 210114-53 23540927 TM048	19/01/2021	Paul Poynton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	WS103ES 0.30 - 0.55 SOLID 08/01/2021 00:00:00 14/01/2021 05:00:00 210114-53 23540905 TM048	19/01/2021	James Richards	Soil containing ACM debris	Not Detected (#)	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	WS104ES 0.30 - 0.40 SOLID 08/01/2021 00:00:00 14/01/2021 05:00:00 210114-53 23540880 TM048	19/01/2021	Paul Poynton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected



CERTIFICATE OF ANALYSIS

Validated

SDG:	210114-53	Client Reference:	Heol Offa	Report Number:	585634
Location:	Heol Offa	Order Number:	70079705	Superseded Report:	585021

Asbestos Quantification - Full

Results Legend

ISO17025 accredited.
M mCERTS accredited.
* Subcontracted test.
(F) Trigger breach confirmed
1-5&*\$\$@ Sample deviation (see appendix)

		Additional Asbestos Components	Analysts Comments	Asbestos Quantification - Gravimetric - %	Asbestos Quantification - PCOM Evaluation	Asbestos Quantification - Total - %
Cust. Sample Ref.	WS103ES	None (#)	N/A	<0.001 (#)	<0.001 (#)	<0.001 (#)
Depth (m)	0.30 - 0.55					
Sample Type	SOLID					
Date Sampled	08/01/2021 00:00:00					
Date Received	14/01/2021 05:00:00					
SDG	210114-53					
Original Sample	23540905					
Method Number	TM304					



CERTIFICATE OF ANALYSIS

Validated

SDG:	210114-53	Client Reference:	Heol Offa	Report Number:	585634
Location:	Heol Offa	Order Number:	70079705	Superseded Report:	585021

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		Site Location	Heol Offa
Mass Sample taken (kg)	0.105	Natural Moisture Content (%)	16.9
Mass of dry sample (kg)	0.090	Dry Matter Content (%)	85.5
Particle Size <4mm	>95%		

Case

SDG	210114-53
Lab Sample Number(s)	23540911
Sampled Date	08-Jan-2021
Customer Sample Ref.	WS103 ESZ
Depth (m)	1.00 - 1.30

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Mercury Dissolved (CVAf)	0.0000114	<0.00001	0.000114	<0.0001	-	-	-
Arsenic	0.000724	<0.0005	0.00724	<0.005	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	0.000829	<0.0003	0.00829	<0.003	-	-	-
Lead	0.00172	<0.0002	0.0172	<0.002	-	-	-
Nickel	0.000615	<0.0004	0.00615	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.0221	<0.001	0.221	<0.01	-	-	-
PAH Spec MS - Aqueous (W)							
Acenaphthene by GCMS	<0.000005	<0.000005	<0.00005	<0.00005	-	-	-
Acenaphthylene by GCMS	<0.000005	<0.000005	<0.00005	<0.00005	-	-	-
Anthracene by GCMS	<0.000005	<0.000005	<0.00005	<0.00005	-	-	-
Benz(a)anthracene by GCMS	<0.000005	<0.000005	<0.00005	<0.00005	-	-	-
Benzo(a)pyrene by GCMS	<0.000002	<0.000002	<0.00002	<0.00002	-	-	-
Benzo(b)fluoranthene by GCMS	<0.000005	<0.000005	<0.00005	<0.00005	-	-	-
Benzo(ghi)perylene by GCMS	<0.000005	<0.000005	<0.00005	<0.00005	-	-	-
Benzo(k)fluoranthene by GCMS	<0.000005	<0.000005	<0.00005	<0.00005	-	-	-
Chrysene by GCMS	<0.000005	<0.000005	<0.00005	<0.00005	-	-	-
Dibenzo(ah)anthracene by GCMS	<0.000005	<0.000005	<0.00005	<0.00005	-	-	-
Fluoranthene by GCMS	<0.000005	<0.000005	<0.00005	<0.00005	-	-	-
Fluorene by GCMS	<0.000005	<0.000005	<0.00005	<0.00005	-	-	-
Indeno(123cd)pyrene by GCMS	<0.000005	<0.000005	<0.00005	<0.00005	-	-	-
Naphthalene by GCMS	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
PAH 16 EPA Total by GCMS	<0.000082	<0.000082	<0.00082	<0.00082	-	-	-
Phenanthrene by GCMS	<0.000005	<0.000005	<0.00005	<0.00005	-	-	-
Pyrene by GCMS	<0.000005	<0.000005	<0.00005	<0.00005	-	-	-

Leach Test Information

Date Prepared	19-Jan-2021
pH (pH Units)	9.38
Conductivity (µS/cm)	31.60
Temperature (°C)	12.80
Volume Leachant (Litres)	0.885

Mcerts Certification does not apply to leachates

04/02/2021 09:56:53

09:56:26 04/02/2021



CERTIFICATE OF ANALYSIS

Validated

SDG: 210114-53
Location: Heol Offa

Client Reference: Heol Offa
Order Number: 70079705

Report Number: 585634
Superseded Report: 585021

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		Site Location	Heol Offa
Mass Sample taken (kg)	0.105	Natural Moisture Content (%)	16.2
Mass of dry sample (kg)	0.090	Dry Matter Content (%)	86.1
Particle Size <4mm	>95%		

Case

SDG	210114-53
Lab Sample Number(s)	23540918
Sampled Date	08-Jan-2021
Customer Sample Ref.	WS101 ESZ
Depth (m)	0.17 - 0.30

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Arsenic	0.0013	<0.0005	0.013	<0.005	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	0.0014	<0.001	0.014	<0.01	-	-	-
Copper	0.00272	<0.0003	0.0272	<0.003	-	-	-
Lead	0.000439	<0.0002	0.00439	<0.002	-	-	-
Nickel	<0.0004	<0.0004	<0.004	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.00108	<0.001	0.0108	<0.01	-	-	-
PAH Spec MS - Aqueous (W)							
Acenaphthene by GCMS	<0.000005	<0.000005	<0.00005	<0.00005	-	-	-
Acenaphthylene by GCMS	<0.000005	<0.000005	<0.00005	<0.00005	-	-	-
Anthracene by GCMS	<0.000005	<0.000005	<0.00005	<0.00005	-	-	-
Benz(a)anthracene by GCMS	0.0000191	<0.000005	0.000191	<0.00005	-	-	-
Benzo(a)pyrene by GCMS	0.0000138	<0.000002	0.000138	<0.00002	-	-	-
Benzo(b)fluoranthene by GCMS	0.0000235	<0.000005	0.000235	<0.00005	-	-	-
Benzo(ghi)perylene by GCMS	0.0000183	<0.000005	0.000183	<0.00005	-	-	-
Benzo(k)fluoranthene by GCMS	0.0000112	<0.000005	0.000112	<0.00005	-	-	-
Chrysene by GCMS	0.0000144	<0.000005	0.000144	<0.00005	-	-	-
Dibenzo(ah)anthracene by GCMS	<0.000005	<0.000005	<0.00005	<0.00005	-	-	-
Fluoranthene by GCMS	0.0000365	<0.000005	0.000365	<0.00005	-	-	-
Fluorene by GCMS	<0.000005	<0.000005	<0.00005	<0.00005	-	-	-
Indeno(123cd)pyrene by GCMS	0.0000192	<0.000005	0.000192	<0.00005	-	-	-
Naphthalene by GCMS	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
PAH 16 EPA Total by GCMS	0.0002	<0.000082	0.002	<0.00082	-	-	-
Phenanthrene by GCMS	0.0000137	<0.000005	0.000137	<0.00005	-	-	-
Pyrene by GCMS	0.0000304	<0.000005	0.000304	<0.00005	-	-	-

Leach Test Information

Date Prepared	19-Jan-2021
pH (pH Units)	8.79
Conductivity (µS/cm)	107.00
Temperature (°C)	12.20
Volume Leachant (Litres)	0.885

Mcerts Certification does not apply to leachates

04/02/2021 09:56:53

09:56:26 04/02/2021



CERTIFICATE OF ANALYSIS

Validated

SDG:	210114-53	Client Reference:	Heol Offa	Report Number:	585634
Location:	Heol Offa	Order Number:	70079705	Superseded Report:	585021

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
SUB		Subcontracted Test
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM178	Modified: US EPA Method 8100	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS in Waters
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM243		Mixed Anions In Soils By Kone
TM304	HSE Contract research Report no 83/1996	Asbestos Quantification in Soil: Fibres identified by morphology only
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

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



CERTIFICATE OF ANALYSIS

Validated

SDG: 210114-53
Location: Heol Offa

Client Reference: Heol Offa
Order Number: 70079705

Report Number: 585634
Superseded Report: 585021

Test Completion Dates

Lab Sample No(s)	23540918	23562981	23562982	23575753	23540927	23562980	23562983	23562984	23540905	23540911
Customer Sample Ref.	WS101	WS101	WS101	WS101	WS102	WS102	WS102	WS102	WS103	WS103
AGS Ref.	ES				ES				ES	ES
Depth	0.17 - 0.30	1.40 - 1.60	1.80 - 2.00	0.15 - 0.17	1.00 - 1.30	2.50 - 2.60	3.50 - 4.00	1.25 - 1.40	0.30 - 0.55	1.00 - 1.30
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Anions by Kone (soil)	20-Jan-2021	20-Jan-2021			20-Jan-2021	20-Jan-2021	20-Jan-2021		20-Jan-2021	20-Jan-2021
Asbestos ID in Solid Samples	19-Jan-2021			28-Jan-2021	19-Jan-2021				19-Jan-2021	
Asbestos Quantification - Full									26-Jan-2021	
CEN 10:1 Leachate (1 Stage)	19-Jan-2021									19-Jan-2021
CEN Readings	20-Jan-2021									20-Jan-2021
Dissolved Metals by ICP-MS	21-Jan-2021									22-Jan-2021
EPH CWG GC (S)	18-Jan-2021			01-Feb-2021						
Geotechnical Testing*		04-Feb-2021	04-Feb-2021			04-Feb-2021	04-Feb-2021	04-Feb-2021		
GRO by GC-FID (S)	19-Jan-2021			30-Jan-2021						
Mercury Dissolved	21-Jan-2021									22-Jan-2021
Metals in solid samples by OES	20-Jan-2021			30-Jan-2021	20-Jan-2021				20-Jan-2021	
Moisture at 105C	19-Jan-2021									19-Jan-2021
PAH by GCMS	18-Jan-2021			26-Jan-2021	18-Jan-2021				18-Jan-2021	
PAH Spec MS - Aqueous (W)	22-Jan-2021									22-Jan-2021
pH	15-Jan-2021	18-Jan-2021			15-Jan-2021	18-Jan-2021	18-Jan-2021		15-Jan-2021	14-Jan-2021
Sample description	14-Jan-2021	18-Jan-2021		23-Jan-2021	14-Jan-2021	18-Jan-2021	18-Jan-2021		14-Jan-2021	14-Jan-2021
TPH CWG GC (S)	20-Jan-2021			01-Feb-2021						
VOC MS (S)	19-Jan-2021			29-Jan-2021						

Lab Sample No(s)	23540880	23540888	23540900
Customer Sample Ref.	WS104	WS104	WS104
AGS Ref.	ES	ES	ES
Depth	0.30 - 0.40	0.70 - 1.00	1.30 - 1.50
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Anions by Kone (soil)			20-Jan-2021
Asbestos ID in Solid Samples	19-Jan-2021		
Metals in solid samples by OES	20-Jan-2021	20-Jan-2021	
PAH by GCMS	20-Jan-2021	15-Jan-2021	
pH			14-Jan-2021
Sample description	14-Jan-2021	14-Jan-2021	14-Jan-2021



CERTIFICATE OF ANALYSIS

Validated

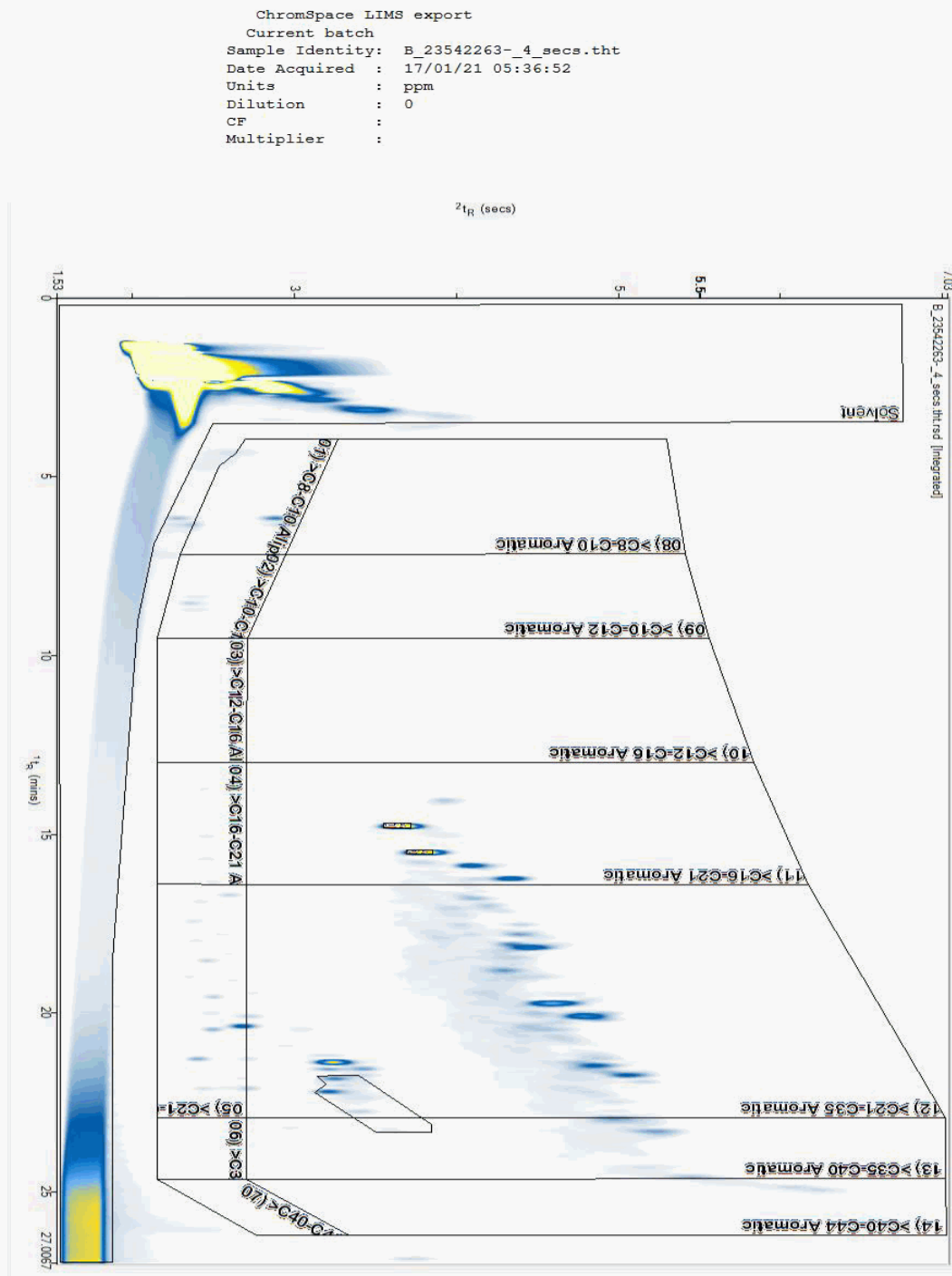
SDG:	210114-53	Client Reference:	Heol Offa	Report Number:	585634
Location:	Heol Offa	Order Number:	70079705	Superseded Report:	585021

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23542263
Sample ID : WS101

Depth : 0.17 - 0.30





CERTIFICATE OF ANALYSIS

Validated

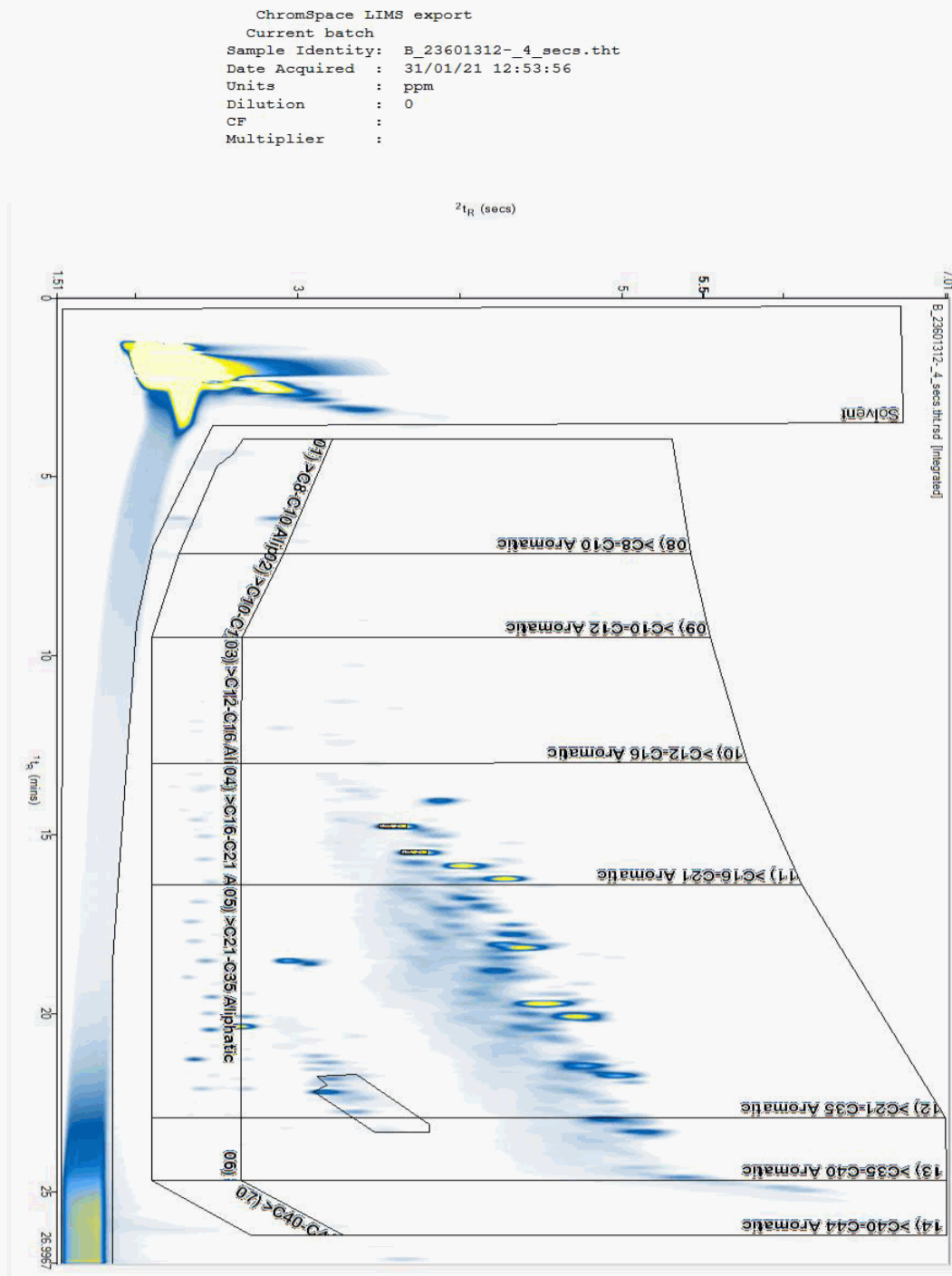
SDG:	210114-53	Client Reference:	Heol Offa	Report Number:	585634
Location:	Heol Offa	Order Number:	70079705	Superseded Report:	585021

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23601312
Sample ID : WS101

Depth : 0.15 - 0.17





CERTIFICATE OF ANALYSIS

Validated

SDG: 210114-53
Location: Heol Offa

Client Reference: Heol Offa
Order Number: 70079705

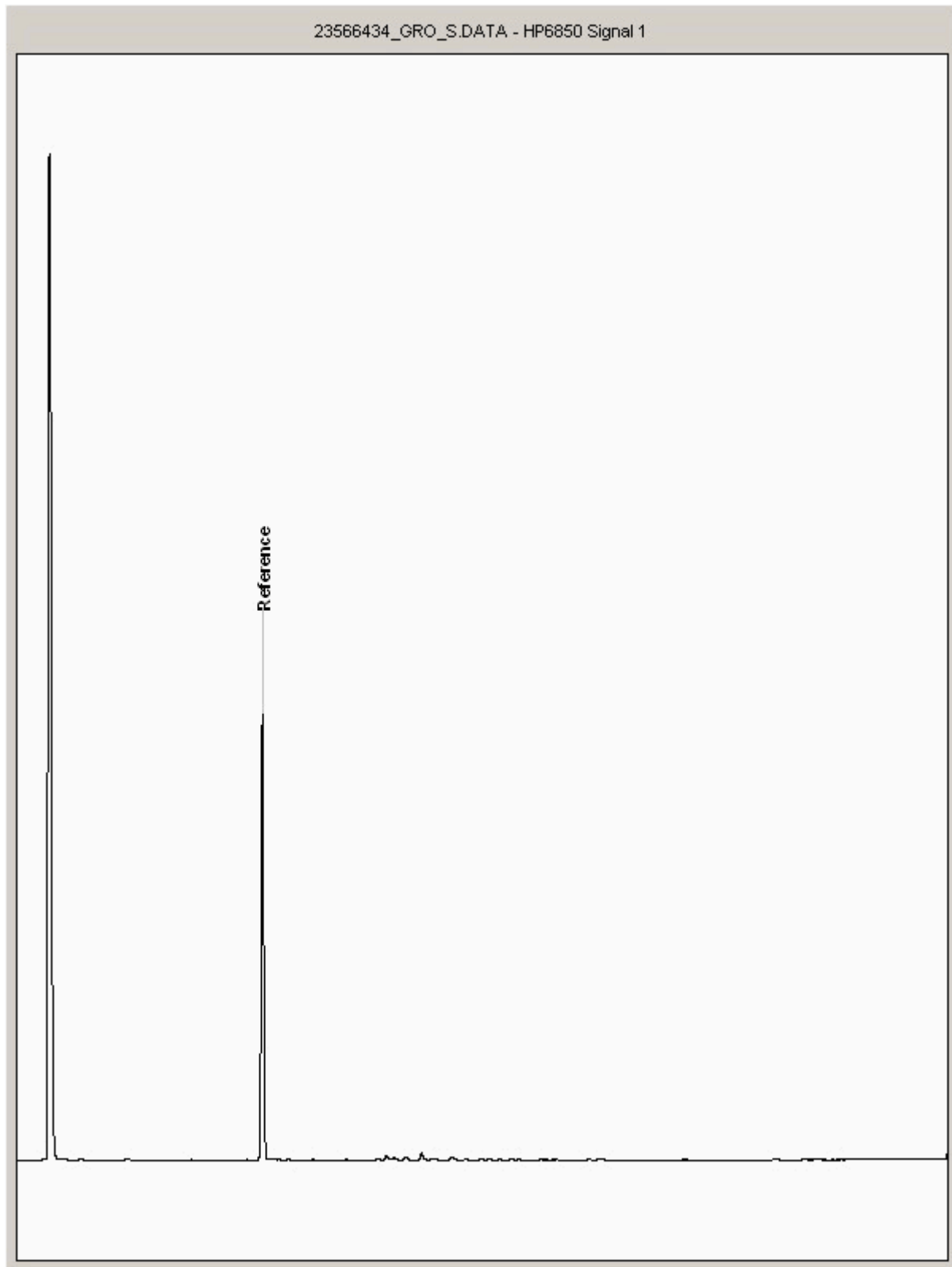
Report Number: 585634
Superseded Report: 585021

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23566434
Sample ID : WS101

Depth : 0.17 - 0.30





CERTIFICATE OF ANALYSIS

Validated

SDG: 210114-53
Location: Heol Offa

Client Reference: Heol Offa
Order Number: 70079705

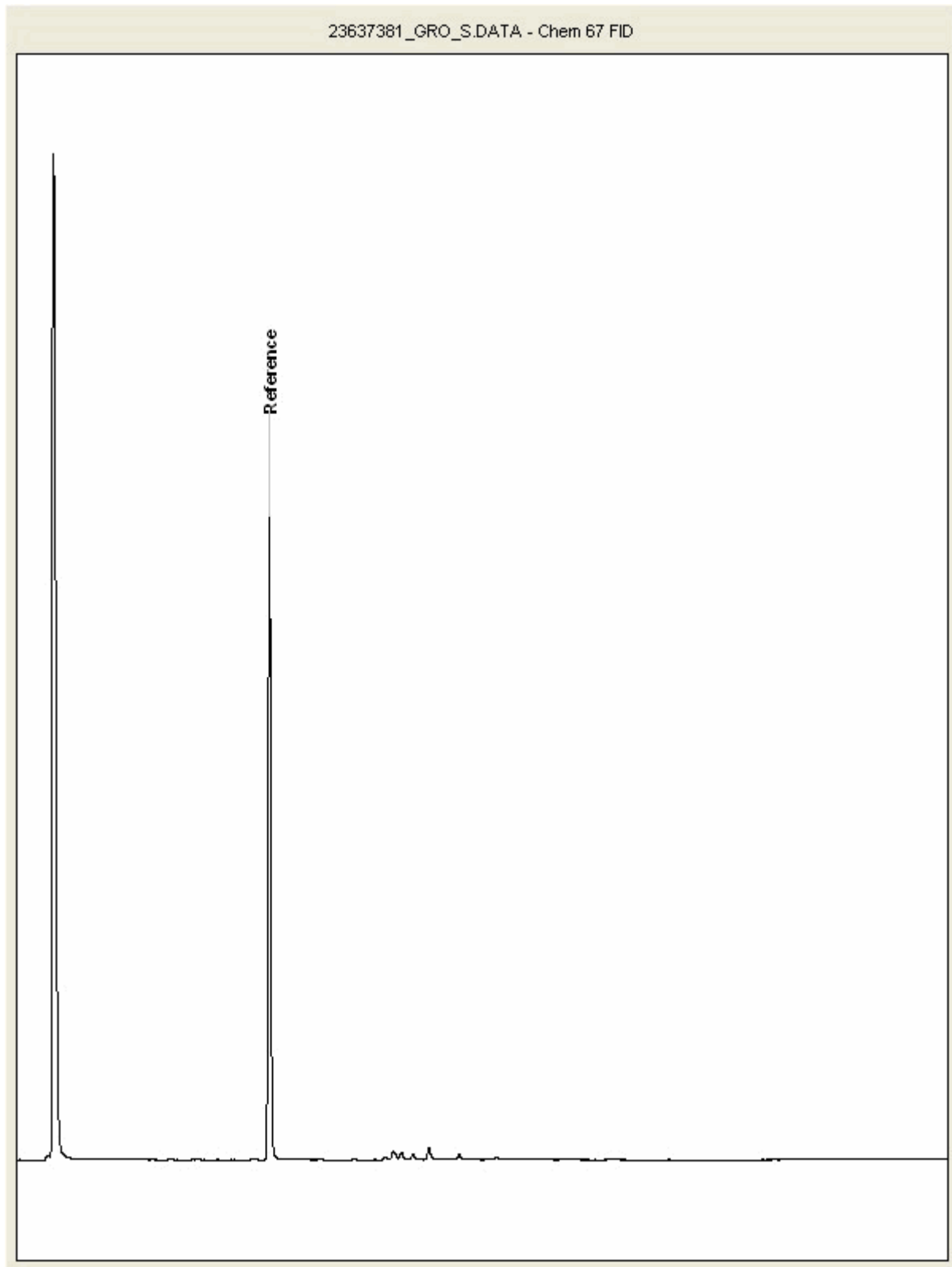
Report Number: 585634
Superseded Report: 585021

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23637381
Sample ID : WS101

Depth : 0.15 - 0.17





ALS Environmental
Units 7-8 Hawarden Business Park
Manor Lane
Hawarden
Deeside
CH5 3US

For the attention of Annabella Szelyes

TEST REPORT

PROJECT/SITE	Heol Offa	Version No.	1
REPORT NUMBER	21/3529	Page No.	1 to 6
Your ref/PO:	210114-53 / 32999	Date of Issue	04/02/2021
		Status	Final
SUMMARY OF RESULTS ATTACHED			
TEST METHOD & DESCRIPTION			QUANTITY
BS 1377: Part 2: Clause 4.2-4.4 & 5.2-5.4: 1990 Liquid & Plastic Limits			2
BS 1377: Part 2: Clause 9.2 & 9.3: 1990 Determination of particle size distribution – wet & dry sieving method			3
Remarks This report may not be partially reproduced without written permission from this laboratory. Any descriptions, opinions and interpretations are outside the scope of UKAS accreditation. The results reported herein relate only to the items tested or sampled. * Tests have been sub-contracted out. # Tests are not UKAS accredited.		Approved Signatories: L Griffin LG (QA Technical & Laboratory Manager) K Mazerant KM (Laboratory Manager) 	

London Laboratory
47-49 Brunel Road
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W3 7XR
lab@conceptconsultants.co.uk
020 8740 1553

Coventry Laboratory
Unit D, Herald Way
Binley Industrial Estate
Coventry
CV3 2RQ
coventrylab@conceptconsultants.co.uk
024 7708 7673

CONCEPT SITE INVESTIGATIONS			
Site Name:	Heol Offa	Job No.:	21/3529
Client:	ALS	Date Reported:	04/02/2021

Summary Test Report

Determination of Moisture Content and Liquid and Plastic Limits by 4 Point Cone Method

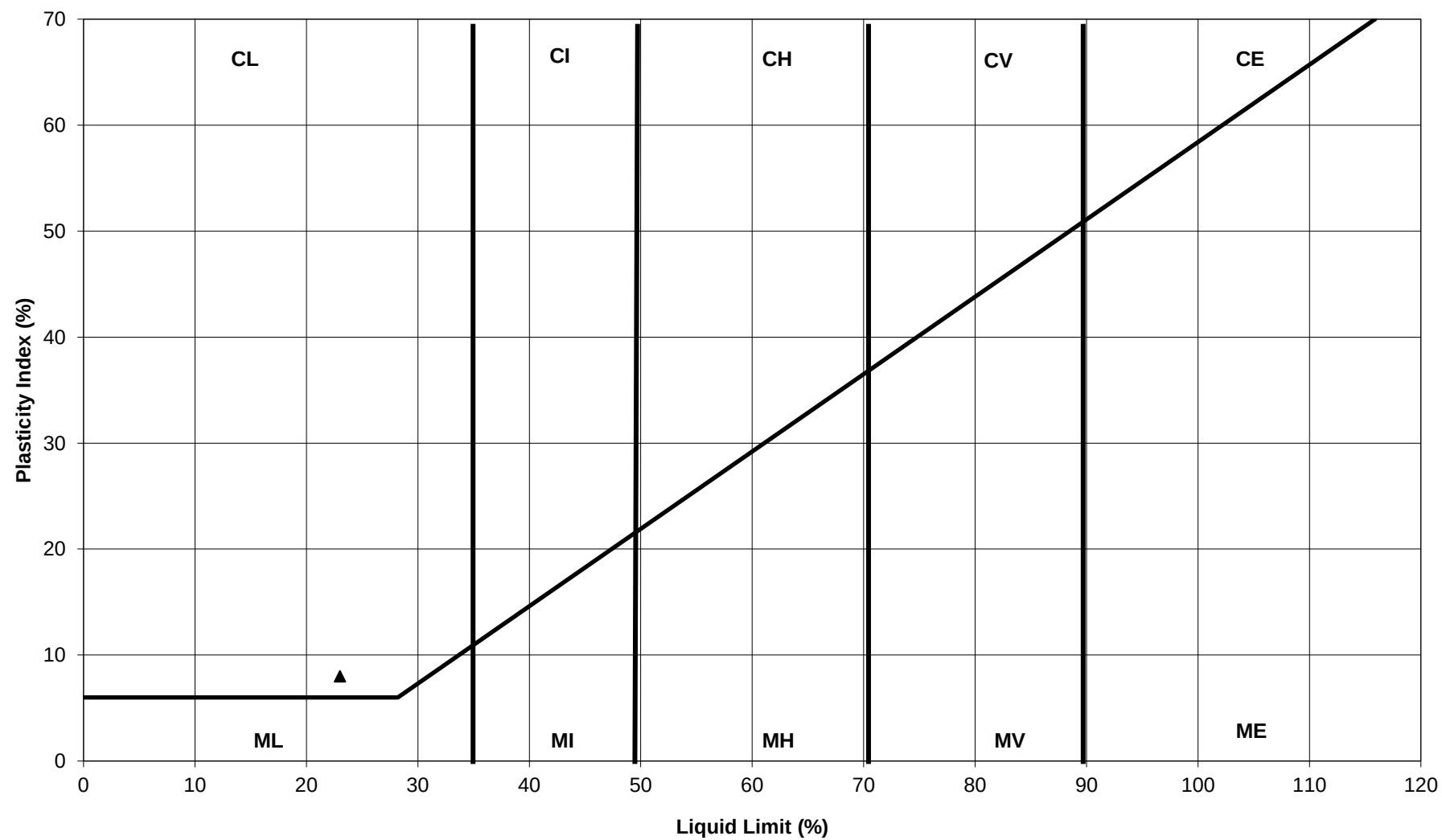
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Date - samples received:	20/01/2021		
Date - sample testing commenced :	03/02/2021	Checked / Approved by:	LG
Date - sample testing completed :	04/02/2021	Date Approved:	04/02/2021
Approved Signatories:	L Griffin LG (QA Technical & Lab Mngnr) – K Mazerant KM (Lab Mngnr)		



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PLASTICITY CHART



CONCEPT SITE INVESTIGATIONS

PARTICLE SIZE DISTRIBUTION

TEST REPORT

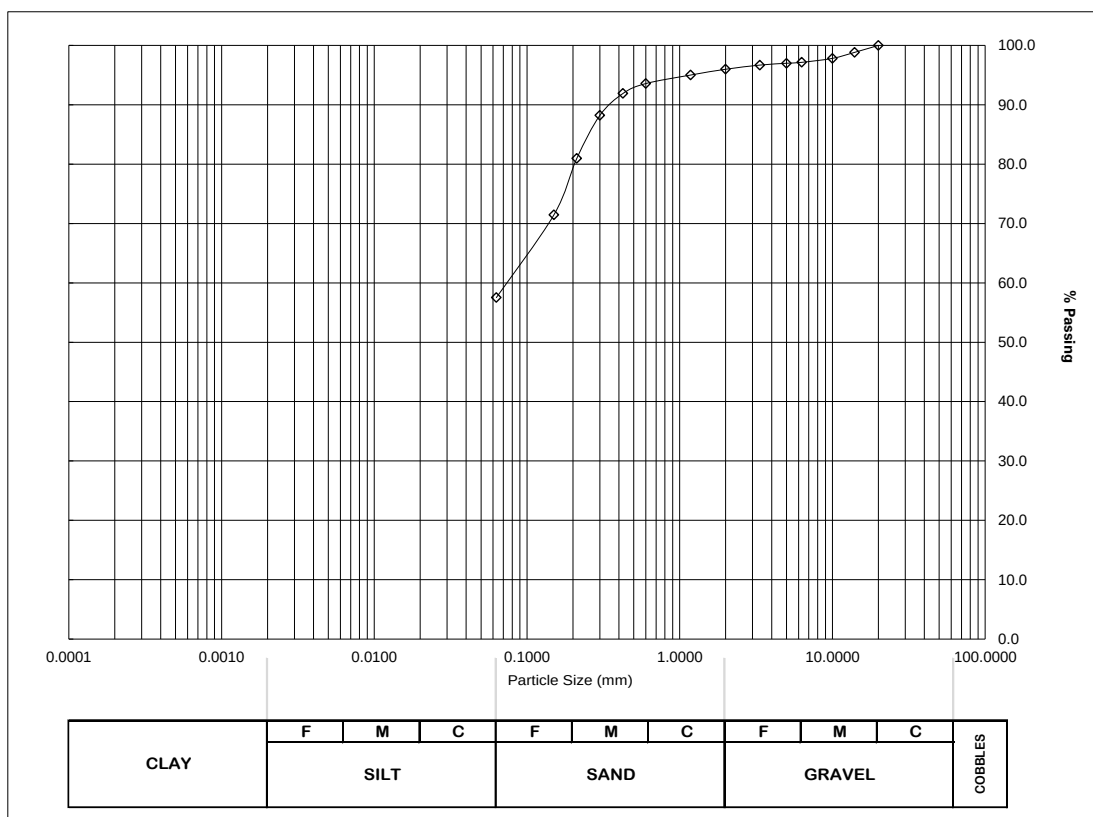
Site Name:	Heol Offa	Job Number:	21/3529
Client:	ALS	Date Reported:	04/02/2021
Borehole No:	WS101	Sample Type/No.	D 8
		Top Depth:	1.40 m
		Bottom Depth:	1.60 m

Soil Description:

Light brown sandy slightly gravelly silty CLAY. Gravel comprises fine to medium flint, and siltstone, sandstone, and coal fragments

BS Test Sieves	
Size (mm)	% Passing
75.000	100
63.000	100
50.000	100
37.500	100
28.000	100
20.000	100
14.000	99
10.000	98
6.300	97
5.000	97
3.350	97
2.000	96
1.180	95
0.600	94
0.425	92
0.300	88
0.212	81
0.150	71
0.063	58

Sedimentation (*if applicable)	
Size (mm)	% Passing
0.020	
0.006	
0.002	



Method/type:	Wet Sieving
--------------	-------------

BS 1377: Part 2: Clause 9.2: 1990 Determination of particle size distribution - wet sieving method.

Particle Proportions %	
Cobbles	
Gravel	4.0
Sand	38.5
Silt and Clay	57.5



4503

Remarks:

The results reported relate only to the items tested or sampled.

Date - samples received:	20/01/2021	CONCEPT 47-49 Brunel Road, London W3 7XR Tel: 02087401553 Email: lab@conceptconsultants.co.uk
Date - sample testing commenced :	27/01/2021	
Date - sample testing completed :	29/01/2021	
Checked / Approved by: LG Date Approved: 04/02/2021		
Approved Signatories: L Griffin LG (QA Technical & Lab Mngr) – K Mazerant KM (Lab Mngr)		

CONCEPT SITE INVESTIGATIONS

PARTICLE SIZE DISTRIBUTION

TEST REPORT

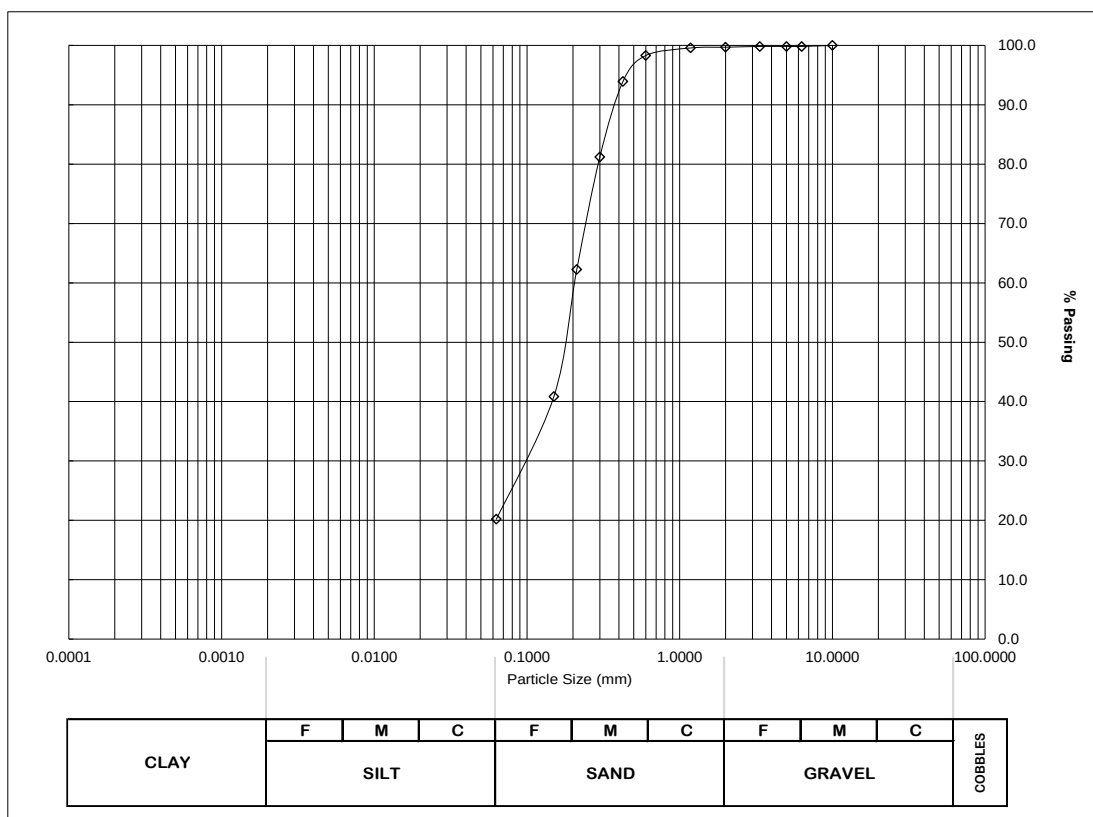
Site Name:	Heol Offa	Job Number:	21/3529
Client:	ALS	Date Reported:	04/02/2021
Borehole No:	WS101	Sample Type/No.	D 9
		Top Depth:	1.80 m
		Bottom Depth:	2.00 m

Soil Description:

Light brown clayey silty SAND

BS Test Sieves	
Size (mm)	% Passing
75.000	100
63.000	100
50.000	100
37.500	100
28.000	100
20.000	100
14.000	100
10.000	100
6.300	100
5.000	100
3.350	100
2.000	100
1.180	100
0.600	98
0.425	94
0.300	81
0.212	62
0.150	41
0.063	20

Sedimentation (*if applicable)	
Size (mm)	% Passing
0.020	
0.006	
0.002	



Method/type:	Wet Sieving
--------------	-------------

BS 1377: Part 2: Clause 9.2: 1990 Determination of particle size distribution - wet sieving method.

Particle Proportions %	
Cobbles	
Gravel	0.3
Sand	79.5
Silt and Clay	20.2



4503

Remarks:

The results reported relate only to the items tested or sampled.

Date - samples received:	20/01/2021	CONCEPT 47-49 Brunel Road, London W3 7XR Tel: 02087401553 Email: lab@conceptconsultants.co.uk
Date - sample testing commenced :	27/01/2021	
Date - sample testing completed :	29/01/2021	
Checked / Approved by: LG Date Approved: 04/02/2021		
Approved Signatories: L Griffin LG (QA Technical & Lab Mng'r) – K Mazerant KM (Lab Mng'r)		

CONCEPT SITE INVESTIGATIONS

PARTICLE SIZE DISTRIBUTION

TEST REPORT

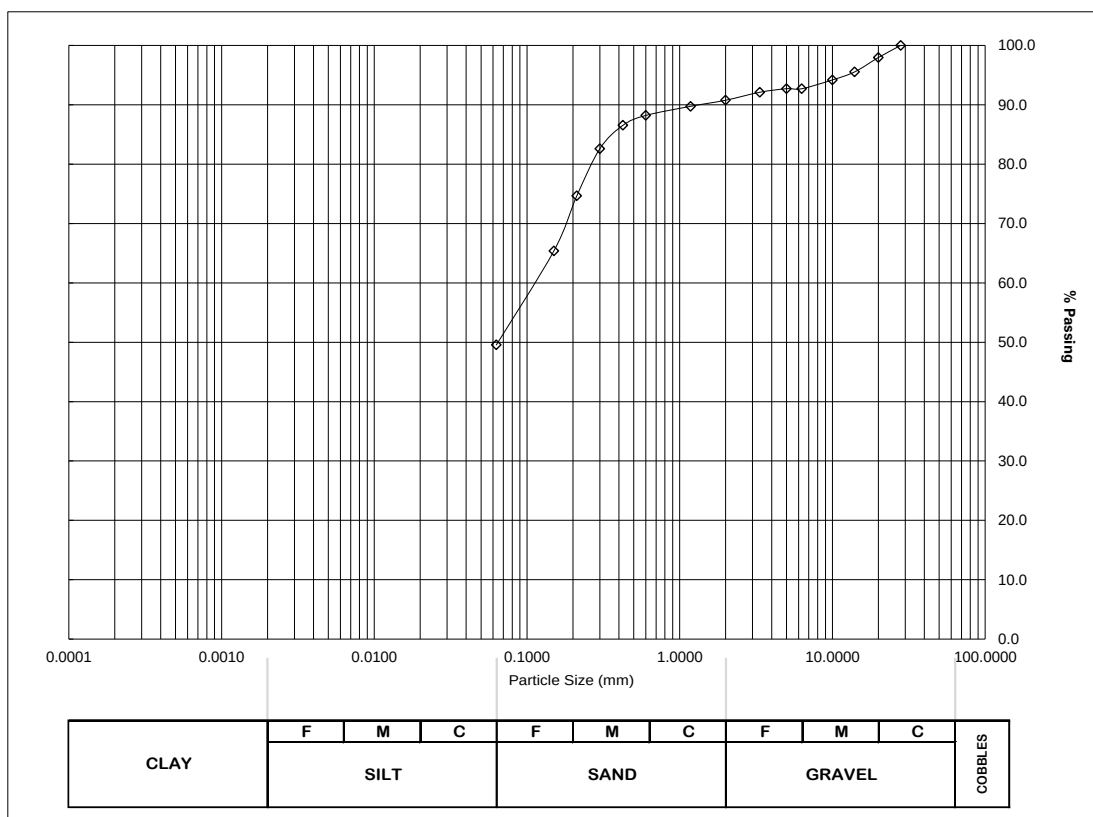
Site Name:	Heol Offa	Job Number:	21/3529
Client:	ALS	Date Reported:	04/02/2021
Borehole No:	WS102	Sample Type/No.	D 10
		Top Depth:	1.25 m
		Bottom Depth:	1.40 m

Soil Description:

Light brown sandy slightly gravelly silty CLAY with rare rootlets. Gravel comprises fine to coarse flint and coal fragments

BS Test Sieves	
Size (mm)	% Passing
75.000	100
63.000	100
50.000	100
37.500	100
28.000	100
20.000	98
14.000	96
10.000	94
6.300	93
5.000	93
3.350	92
2.000	91
1.180	90
0.600	88
0.425	87
0.300	83
0.212	75
0.150	65
0.063	50

Sedimentation (*if applicable)	
Size (mm)	% Passing
0.020	
0.006	
0.002	



Method/type:	Wet Sieving
--------------	-------------

BS 1377: Part 2: Clause 9.2: 1990 Determination of particle size distribution - wet sieving method.

Particle Proportions %	
Cobbles	
Gravel	9.2
Sand	41.2
Silt and Clay	49.6



4503

Remarks:

The results reported relate only to the items tested or sampled.

Date - samples received:	20/01/2021	CONCEPT 47-49 Brunel Road, London W3 7XR Tel: 02087401553 Email: lab@conceptconsultants.co.uk
Date - sample testing commenced :	27/01/2021	
Date - sample testing completed :	29/01/2021	
Checked / Approved by: LG Date Approved: 04/02/2021		
Approved Signatories: L Griffin LG (QA Technical & Lab Mngr) – K Mazerant KM (Lab Mngr)		



CERTIFICATE OF ANALYSIS

SDG:	210114-53	Client Reference:	Heol Offa	Report Number:	585634
Location:	Heol Offa	Order Number:	70079705	Superseded Report:	585021

Appendix

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

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

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

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

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

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

7. Results relate only to the items tested.

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

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

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

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

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

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

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

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

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

General

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

18. Sample Deviations

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

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
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

19. Asbestos

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

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

Visual Estimation Of Fibre Content

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

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung. Standing Committee of Analysts, *The Quantification of Asbestos in Soil* (2017).

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.



Unit 7-8 Hawarden Business Park

Manor Road (off Manor Lane)

Hawarden

Deeside

CH5 3US

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Fax: (01244) 528701

email: hawardencustomerservices@alsglobal.com

Website: www.alsenvironmental.co.uk

WSP UK Limited

8 First Street

Manchester

Lancashire

M15 4RP

Attention: Emily Lyons

CERTIFICATE OF ANALYSIS

Date of report Generation: 24 November 2021
Customer: WSP UK Limited
Sample Delivery Group (SDG): 211111-88
Your Reference: 70079705-Heol Offa_P1 & P2
Location: Heol Offa Wrexham
Report No: 622545
Order Number: 70079705-S11

This report has been revised and directly supersedes 621556 in its entirety.

We received 30 samples on Thursday November 11, 2021 and 30 of these samples were scheduled for analysis which was completed on Wednesday November 24, 2021. 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:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 211111-88 Report Number: 622545 Superseded Report: 621556
Client Ref.: 70079705-Heol Offa P1 & P2 Location: Heol Offa Wrexham

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
25314774	HP01	ES	0.15 - 0.25	09/11/2021
25314805	HP01	ES	0.40 - 0.50	09/11/2021
25314835	HP02	ES	0.20 - 0.30	09/11/2021
25314840	HP02	ES	0.40 - 0.50	09/11/2021
25314845	HP03	ES	0.05 - 0.10	09/11/2021
25314850	HP03	ES	0.20 - 0.30	09/11/2021
25314854	HP04	ES	0.10 - 0.20	09/11/2021
25314859	HP04	ES	0.30 - 0.40	09/11/2021
25314865	HP05	ES	0.10 - 0.20	09/11/2021
25314776	HP05	ES	0.30 - 0.50	09/11/2021
25314780	HP06	ES	0.10 - 0.20	09/11/2021
25314783	HP06	ES	0.30 - 0.40	09/11/2021
25314786	HP07	ES	0.20 - 0.30	09/11/2021
25314788	HP08	ES	0.10 - 0.20	09/11/2021
25314791	HP08	ES	0.30 - 0.40	09/11/2021
25314793	HP09	ES	0.10 - 0.20	09/11/2021
25314796	HP10	ES	0.10 - 0.25	09/11/2021
25314798	HP11	ES	0.10 - 0.25	09/11/2021
25314801	HP12	ES	0.10 - 0.20	09/11/2021
25314811	HP13	ES	0.10 - 0.20	09/11/2021
25314814	HP14	ES	0.10 - 0.20	09/11/2021
25314816	HP15	ES	0.20 - 0.30	09/11/2021
25314819	HP16	ES	0.10 - 0.25	09/11/2021
25314821	HP17	ES	0.10 - 0.20	09/11/2021
25314824	HP18	ES	0.10 - 0.20	09/11/2021
25314826	HP18	ES	0.20 - 0.30	09/11/2021
25314828	HP19	ES	0.10 - 0.20	09/11/2021
25314830	HP19	ES	0.30 - 0.35	09/11/2021
25314833	HP20	ES	0.10 - 0.20	09/11/2021
25314837	HP20	ES	0.40 - 0.50	09/11/2021

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



CERTIFICATE OF ANALYSIS

Validated

SDG: 211111-88

Report Number: 622545

Superseded Report: 621556

Client Ref.: 70079705-Heol Offa P1 & P2

Location: Heol Offa Wrexham

Results Legend



Test



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

Asbestos ID in Solid Samples

All

NDPs: 0
Tests: 30

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

Asbestos Quantification - Full

All

NDPs: 0
Tests: 1

X

25314837	HP20	ES	0.40 - 0.50	1kg TUB with Handle (ALE260)	S	X		
25314833	HP20	ES	0.10 - 0.20	1kg TUB with Handle (ALE260)	S	X		
25314830	HP19	ES	0.30 - 0.35	1kg TUB with Handle (ALE260)	S	X		
25314828	HP19	ES	0.10 - 0.20	1kg TUB with Handle (ALE260)	S	X		
25314826	HP18	ES	0.20 - 0.30	1kg TUB with Handle (ALE260)	S	X		
25314824	HP18	ES	0.10 - 0.20	1kg TUB with Handle (ALE260)	S	X		
25314821	HP17	ES	0.10 - 0.20	1kg TUB with Handle (ALE260)	S	X		
25314819	HP16	ES	0.10 - 0.25	1kg TUB with Handle (ALE260)	S	X		
25314816	HP15	ES	0.20 - 0.30	1kg TUB with Handle (ALE260)	S	X		
25314814	HP14	ES	0.10 - 0.20	1kg TUB with Handle (ALE260)	S	X		
25314811	HP13	ES	0.10 - 0.20	1kg TUB with Handle (ALE260)	S	X		



CERTIFICATE OF ANALYSIS

Validated

SDG: 211111-88 Report Number: 622545 Superseded Report: 621556
Client Ref.: 70079705-Heol Offa P1 & P2 Location: Heol Offa Wrexham

Asbestos Identification - Solid Samples

Results Legend

ISO17025 accredited.
M mCERIS accredited.
* Subcontracted test.
(F) Trigger breach confirmed
1-5&*&@ Sample deviation (see appendix)

Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	HP01ES 0.15 - 0.25 SOLID 09/11/2021 00:00:00 11/11/2021 05:00:00 211111-88 25314774 TM048	17/11/2021 Emily Anderton -	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	HP01ES 0.40 - 0.50 SOLID 09/11/2021 00:00:00 11/11/2021 05:00:00 211111-88 25314805 TM048	17/11/2021 Emily Anderton ACM fragment in soil	Not Detected (#)	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	HP02ES 0.20 - 0.30 SOLID 09/11/2021 00:00:00 11/11/2021 05:00:00 211111-88 25314835 TM048	16/11/2021 James Richards -	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	HP02ES 0.40 - 0.50 SOLID 09/11/2021 00:00:00 11/11/2021 05:00:00 211111-88 25314840 TM048	16/11/2021 James Richards -	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	HP03ES 0.05 - 0.10 SOLID 09/11/2021 00:00:00 11/11/2021 05:00:00 211111-88 25314845 TM048	17/11/2021 James Richards -	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	HP03ES 0.20 - 0.30 SOLID 09/11/2021 00:00:00 11/11/2021 05:00:00 211111-88 25314850 TM048	17/11/2021 Emily Anderton -	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	HP04ES 0.10 - 0.20 SOLID 09/11/2021 00:00:00 11/11/2021 05:00:00 211111-88 25314854 TM048	16/11/2021 James Richards -	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	HP04ES 0.30 - 0.40 SOLID 09/11/2021 00:00:00 11/11/2021 05:00:00 211111-88 25314859 TM048	17/11/2021 James Richards -	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected



CERTIFICATE OF ANALYSIS

Validated

SDG: 211111-88

Report Number: 622545

Superseded Report: 621556

Client Ref.: 70079705-Heol Offa P1 & P2

Location: Heol Offa Wrexham

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	HP05ES 0.10 - 0.20 SOLID 09/11/2021 00:00:00 11/11/2021 05:00:00 211111-88 25314865 TM048	16/11/2021	Agnieszka Chelmowska	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	HP05ES 0.30 - 0.50 SOLID 09/11/2021 00:00:00 11/11/2021 05:00:00 211111-88 25314776 TM048	17/11/2021	Emily Anderton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	HP06ES 0.10 - 0.20 SOLID 09/11/2021 00:00:00 11/11/2021 05:00:00 211111-88 25314780 TM048	16/11/2021	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	HP06ES 0.30 - 0.40 SOLID 09/11/2021 00:00:00 11/11/2021 05:00:00 211111-88 25314783 TM048	17/11/2021	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	HP07ES 0.20 - 0.30 SOLID 09/11/2021 00:00:00 11/11/2021 05:00:00 211111-88 25314786 TM048	16/11/2021	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	HP08ES 0.10 - 0.20 SOLID 09/11/2021 00:00:00 11/11/2021 05:00:00 211111-88 25314788 TM048	17/11/2021	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	HP08ES 0.30 - 0.40 SOLID 09/11/2021 00:00:00 11/11/2021 05:00:00 211111-88 25314791 TM048	17/11/2021	Emily Anderton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	HP09ES 0.10 - 0.20 SOLID 09/11/2021 00:00:00 11/11/2021 05:00:00 211111-88 25314793 TM048	17/11/2021	Agnieszka Chelmowska	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	HP10ES 0.10 - 0.25 SOLID 09/11/2021 00:00:00 11/11/2021 05:00:00 211111-88 25314796 TM048	17/11/2021	Agnieszka Chelmowska	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected



CERTIFICATE OF ANALYSIS

Validated

SDG: 211111-88

Report Number: 622545

Superseded Report: 621556

Client Ref.: 70079705-Heol Offa P1 & P2

Location: Heol Offa Wrexham

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	HP11ES 0.10 - 0.25 SOLID 09/11/2021 00:00:00 11/11/2021 05:00:00 211111-88 25314798 TM048	17/11/2021	Emily Anderton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	HP12ES 0.10 - 0.20 SOLID 09/11/2021 00:00:00 11/11/2021 05:00:00 211111-88 25314801 TM048	17/11/2021	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	HP13ES 0.10 - 0.20 SOLID 09/11/2021 00:00:00 11/11/2021 05:00:00 211111-88 25314811 TM048	17/11/2021	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	HP14ES 0.10 - 0.20 SOLID 09/11/2021 00:00:00 11/11/2021 05:00:00 211111-88 25314814 TM048	17/11/2021	Emily Anderton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	HP15ES 0.20 - 0.30 SOLID 09/11/2021 00:00:00 11/11/2021 05:00:00 211111-88 25314816 TM048	17/11/2021	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	HP16ES 0.10 - 0.25 SOLID 09/11/2021 00:00:00 11/11/2021 05:00:00 211111-88 25314819 TM048	17/11/2021	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	HP17ES 0.10 - 0.20 SOLID 09/11/2021 00:00:00 11/11/2021 05:00:00 211111-88 25314821 TM048	17/11/2021	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	HP18ES 0.10 - 0.20 SOLID 09/11/2021 00:00:00 11/11/2021 05:00:00 211111-88 25314824 TM048	16/11/2021	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	HP18ES 0.20 - 0.30 SOLID 09/11/2021 00:00:00 11/11/2021 05:00:00 211111-88 25314826 TM048	17/11/2021	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected



CERTIFICATE OF ANALYSIS

SDG: 211111-88 Report Number: 622545 Superseded Report: 621556
Client Ref.: 70079705-Heol Offa P1 & P2 Location: Heol Offa Wrexham

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	HP19ES 0.10 - 0.20 SOLID 09/11/2021 00:00:00 11/11/2021 05:00:00 211111-88 25314828 TM048	17/11/2021	Emily Anderton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	HP19ES 0.30 - 0.35 SOLID 09/11/2021 00:00:00 11/11/2021 05:00:00 211111-88 25314830 TM048	17/11/2021	Emily Anderton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	HP20ES 0.10 - 0.20 SOLID 09/11/2021 00:00:00 11/11/2021 05:00:00 211111-88 25314833 TM048	16/11/2021	Agnieszka Chelmowska	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	HP20ES 0.40 - 0.50 SOLID 09/11/2021 00:00:00 11/11/2021 05:00:00 211111-88 25314837 TM048	16/11/2021	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected



CERTIFICATE OF ANALYSIS

Validated

SDG: 211111-88	Report Number: 622545	Superseded Report: 621556
Client Ref.: 70079705-Heol Offa P1 & P2	Location: Heol Offa Wrexham	

Asbestos Quantification - Full

Results Legend

ISO17025 accredited.
M mCERIS accredited.
* Subcontracted test.
(F) Trigger breach confirmed
1-5&*\$\$@ Sample deviation (see appendix)

		Additional Asbestos Components	Analysts Comments	Asbestos Quantification - Gravimetric - %	Asbestos Quantification - PCOM	Asbestos Quantification - Total - %
Cust. Sample Ref.	HP01ES	None (#)	N/A	0.0048 (#)	<0.001 (#)	0.0048 (#)
Depth (m)	0.40 - 0.50					
Sample Type	SOLID					
Date Sampled	09/11/2021 00:00:00					
Date Received	11/11/2021 05:00:00					
SDG	211111-88					
Original Sample	25314805					
Method Number	TM304					



CERTIFICATE OF ANALYSIS

Validated

SDG: 211111-88 **Report Number:** 622545 **Superseded Report:** 621556
Client Ref.: 70079705-Heol Offa P1 & P2 **Location:** Heol Offa Wrexham

Table of Results - Appendix

Method No	Reference	Description
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM304	HSE Contract research Report no 83/1996	Asbestos Quantification in Soil: Fibres identified by morphology only

NA = not applicable.

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



CERTIFICATE OF ANALYSIS

Validated

SDG: 211111-88

Report Number: 622545

Superseded Report: 621556

Client Ref.: 70079705-Heol Offa P1 & P2

Location: Heol Offa Wrexham

Test Completion Dates

Lab Sample No(s)	25314774	25314805	25314835	25314840	25314845	25314850	25314854	25314859	25314776	25314865
Customer Sample Ref.	HP01	HP01	HP02	HP02	HP03	HP03	HP04	HP04	HP05	HP05
AGS Ref.	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES
Depth	0.15 - 0.25	0.40 - 0.50	0.20 - 0.30	0.40 - 0.50	0.05 - 0.10	0.20 - 0.30	0.10 - 0.20	0.30 - 0.40	0.30 - 0.50	0.10 - 0.20
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Asbestos ID in Solid Samples	17-Nov-2021	17-Nov-2021	16-Nov-2021	16-Nov-2021	17-Nov-2021	17-Nov-2021	16-Nov-2021	17-Nov-2021	17-Nov-2021	16-Nov-2021
Asbestos Quantification - Full		24-Nov-2021								

Lab Sample No(s)	25314780	25314783	25314786	25314788	25314791	25314793	25314796	25314798	25314801	25314811
Customer Sample Ref.	HP06	HP06	HP07	HP08	HP08	HP09	HP10	HP11	HP12	HP13
AGS Ref.	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES
Depth	0.10 - 0.20	0.30 - 0.40	0.20 - 0.30	0.10 - 0.20	0.30 - 0.40	0.10 - 0.20	0.10 - 0.25	0.10 - 0.25	0.10 - 0.20	0.10 - 0.20
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Asbestos ID in Solid Samples	16-Nov-2021	17-Nov-2021	16-Nov-2021	17-Nov-2021	17-Nov-2021	17-Nov-2021	17-Nov-2021	17-Nov-2021	17-Nov-2021	17-Nov-2021

Lab Sample No(s)	25314814	25314816	25314819	25314821	25314824	25314826	25314828	25314830	25314833	25314837
Customer Sample Ref.	HP14	HP15	HP16	HP17	HP18	HP18	HP19	HP19	HP20	HP20
AGS Ref.	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES
Depth	0.10 - 0.20	0.20 - 0.30	0.10 - 0.25	0.10 - 0.20	0.10 - 0.20	0.20 - 0.30	0.10 - 0.20	0.30 - 0.35	0.10 - 0.20	0.40 - 0.50
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Asbestos ID in Solid Samples	17-Nov-2021	17-Nov-2021	17-Nov-2021	17-Nov-2021	16-Nov-2021	17-Nov-2021	17-Nov-2021	17-Nov-2021	16-Nov-2021	16-Nov-2021



CERTIFICATE OF ANALYSIS

SDG:	211111-88	Client Reference:	70079705-Heol Offa_P1	Report Number:	622545
Location:	Heol Offa Wrexham	Order Number:	70079705-S11	Superseded Report:	621556

Appendix

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

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

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

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

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

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

7. Results relate only to the items tested.

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

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

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

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

12. 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.

General

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.

Appendix F

Soil Suitability Criteria



Suitability for Re-Use Criteria	GAC Residential with Plant Uptake (1% SOM)
Analysis	
Asbestos	
Asbestos Quantification - Gravimetric - %	None Detect
Metals - (Solids)	
Arsenic	32
Cadmium	12
Chromium	1590
Copper	2490
Lead	134
Mercury	39
Nickel	126
Selenium	258
Zinc	3860
TPH Criteria Working Group (TPH CWG)	
GRO Surrogate % recovery**	-
Aliphatics >C5-C6	42
Aliphatics >C6-C8	103
Aliphatics >C8-C10	27
Aliphatics >C10-C12	132
Aliphatics >C12-C16	1030
Aliphatics >C16-C21	52800
Aliphatics >C16-C35	52800
Aliphatics >C21-C35	52800
Aliphatics >C35-C44	-
Total Aliphatics >C10-C44	-
Total Aliphatics & Aromatics >C10-C44	-
Aromatics >EC5-EC7	72
Aromatics >EC7-EC8	130
Aromatics >EC8-EC10	34
Aromatics > EC10-EC12	74
Aromatics > EC12-EC16	141
Aromatics > EC16-EC21	248
Aromatics > EC16-EC35	248
Aromatics > EC21-EC35	872
Aromatics >EC35-EC44	-
Aromatics > EC40-EC44	-
Total Aromatics > EC10-EC44	-
Total Aliphatics & Aromatics >C5-C44	-
Polyaromatic Hydrocarbons (PAHs)	
Naphthalene-d8 % recovery**	-
Acenaphthene-d10 % recovery**	-
Phenanthrene-d10 % recovery**	-
Chrysene-d12 % recovery**	-
Perylene-d12 % recovery**	-
Naphthalene	2.3
Acenaphthylene	-
Acenaphthene	-
Fluorene	-
Phenanthrene	-
Anthracene	-
Fluoranthene	-
Pyrene	-
Benz(a)anthracene	-
Chrysene	-
Benzo(b)fluoranthene	-
Benzo(k)fluoranthene	-
Benzo(a)pyrene	1.6
Indeno(1,2,3-cd)pyrene	-
Dibenzo(a,h)anthracene	-
Benzo(g,h,i)perylene	-
PAH, Total Detected USEPA 16	-
Volatile Organic Compounds (VOCs)	
Methyl Tertiary Butyl Ether	62
Benzene	0.089
Toluene	131
Ethylbenzene	47
p/m-Xylene	57
o-Xylene	57
Tert-amyl methyl ether	-

*Soil Re-Use Criteria in mg/kg