

18LPL068/SV/GC/37

23rd May 2024

FAO Richard Sedden @ Lovell
(Via Email: richard.sedden@Lovell.co.uk)



Dear Richard,

Pendleton Phase 3, Salford – Soil Cover System Assessment – Allotment Area

Please find below our clean-cover system validation data at the above-mentioned area.

Overview

Betts Geo Ltd were instructed to validate the clean cover system applied to the allotment area at the above site as per the recommendations within the Remediation Statement undertaken by Betts Geo Ltd in March 2021 (Ref; 18LPL068/RS) and Desk Study & Ground Investigation Report undertaken by Betts Geo in March 2020 (Ref; 18LPL068/GI).

The reports recommend:

7.2 Soil Contamination – Allotment Site

For risk to human health via plant uptake, we would advise 600mm clean cover system, however, a specification for allotments is required as it may not provide sufficient root growth and a thicker layer may be requested. We advise a basal no-dig membrane should be installed in addition to the clean cover to comply with Salford City standard advice documents.

Physical Suitability of the Topsoil and Subsoil

The composition of the imported topsoil and subsoil materials on site were visually inspected in stockpiles SP07 topsoil and SP08 subsoil located in the allotment area on 17th April 2024. Inspection confirms that the topsoil is debris free dark brown slightly clayey SAND and subsoil material is a brown, slightly sandy CLAY, both topsoil and subsoil are physically suitable for their proposed end use.

Topsoil Source – Roman Road (Lovell site)

Subsoil Source – Roman Road (Lovell site)

Cover System Depth Validation

4 x trial holes undertaken across the allotment area on 17th April 2024 confirmed that the topsoil thickness was greater than 300mm, the subsoil was a typical thickness greater than 300mm and a geotextile no-dig membrane was in place below the cover system thus completing the capping requirements.



Old Marsh Farm Barns
Welsh Road, Sealand
Flintshire CH5 2LY
Telephone: 01244 288179
www.betts-associates.co.uk

Chemical Validation of Topsoil and Subsoil

The topsoil and subsoil were chemically tested in stockpiles located in the allotment area on 17th April 2024

Topsoil was sampled in accordance with NHBC guideline ratio of 1:150m³. The stockpile SP07 was approximately 450m³ with 3 x samples being taken.

Subsoil was sampled in accordance with NHBC guideline ratio of 1:250m³. The stockpile SP08 was approximately 580m³ with 3 x samples being taken.

Analysis has been scheduled for the standard 'CLEA' Metals (including Chromium VI), speciated TPH to CWG and Speciated PAH's.

No visual or olfactory evidence of contamination was noted within any of the samples.

These results were screened against the same criteria i.e., EA/CIEH/LQM residential guidance for suitability.

All results fall below relevant standard guidance levels.

Summary

Betts Geo Environmental confirms that the soil is acceptable for use within the allotment and as such the capping requirement is complete.

We trust that this information is satisfactory for your further assessment to release the conditions.

Should you require any further clarification please do not hesitate in giving us a call.

Yours Sincerely,



Graham Clark
BETTS GEO ENVIRONMENTAL LIMITED

Encl –
Evidentiary Photographs
Topsoil Stockpile SP07 Letter
Subsoil Stockpile SP08 Letter





Allotment Area Photos



Allotment Area Photos



Our Ref: 18LPL068/GC/SV/SP07

23rd May 2024

FAO Richard Seddon @ Lovell
(Via Email: richard.seddon@Lovell.co.uk)



Dear Richard,

Pendleton Phase 3 – Topsoil Stockpile Testing

Please find below our validation data at the above-mentioned site / stockpile.

Overview

Betts Geo-Environmental Ltd were instructed to assess a stockpile of imported topsoil for reuse, which is required to form the clean capping within the allotment area, as per the recommendations within the Remediation Strategy Report undertaken by Betts Geo-Environmental in March 2021 (Ref. 18LPL068/RS).

Physical Suitability of the Topsoil Stockpile

The composition of this material on site was visually inspected on 17th April 2024, inspection found that the topsoil is physically acceptable for the proposed end use.

Topsoil – dark brown clayey SAND

Source – Roman Road (Lovell site)

Chemical Validation of Topsoil Stockpile

The stockpile was approximately 450m³. Samples were taken at a rate of 1:150m³ or a minimum of 3 samples i.e. 3 samples were taken from the stockpile.

Analysis has been scheduled for the standard 'CLEA' Metals (including Chromium VI), speciated TPH to CWG and Speciated PAH's.

No visual or olfactory evidence of contamination was noted within any of the samples.

These results were screened against the same criteria i.e. EA/CIEH/LQM residential guidance for suitability.

All results fall below relevant standard guidance levels.

Summary

Betts Geo Environmental confirms that the soil is acceptable for use within allotments as part of the capping requirements.



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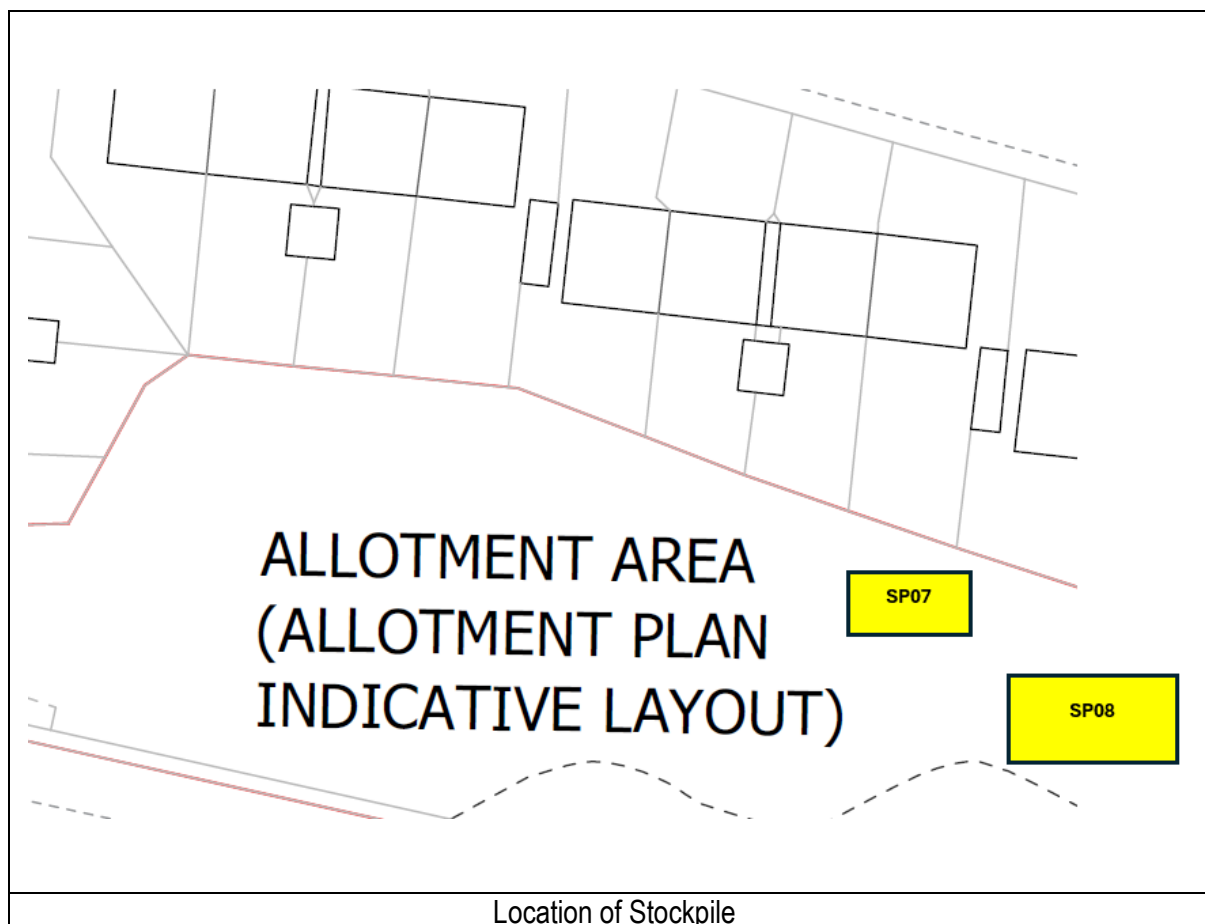
Should you require any further clarification, please do not hesitate to give us a call.

Yours Sincerely,



Graham Clark
BETTS GEO ENVIRONMENTAL LIMITED

Encl –
Stockpile Location
Stockpile Photographs
Chemical Validation Test Results





Photographs of Stockpile

SUMMARY OF CONTAMINATION ANALYSIS: SOIL

SUMMARY OF CONTAMINATION ANALYSIS: METALS

Project Name Pendleton Phase 3 Allotments
Project No 18LPL068
Date 17/04/2024

SOIL TYPE	TS	TS	TS	SS	SS	SS
SAMPLE LOCATION	SP07A	SP07B	SP07C	SP08A	SP08B	SP08C
DEPTH (m)	-	-	-	-	-	-
pH	7.79	7.64	7.77	8.08	8.12	8.16
Sulphate (water sol 2:1)	0.02	<0.01	0.02	0.09	0.09	0.05
Organic matter	3.6	2.1	2.2	2.4	2	16.9
Arsenic	6	6	6	6	4	5
Cadmium	<0.5	<0.5	0.5	<0.5	<0.5	<0.5
Copper	29	29	32	34	23	27
Chromium (hexavalent)	<1	<1	<1	<1	<1	<1
Lead	34	34	35	37	27	39
Mercury	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Nickel	13	13	14	25	30	23
Selenium	<1	<1	<1	<1	<1	<1
Zinc	53	53	57	53	46	54
Asbestos in Soil	NAD	NAD	NAD	NAD	NAD	NAD
Asbestos Matrix	-	-	-	-	-	-
Quantification	-	-	-	-	-	-
Organic matter	3.6	2.1	2.2	2.4	2	16.9

Metals	Mean Value Test *	Range		AtRisk 2017 (mg/kg)	AtRisk 2017 (mg/kg)	DEFRA C4SL 2017
	US ₉₅	Largest Value (mg/kg)	Smallest Value (mg/kg)	With Homegrown Produce (1% SOM)	With Homegrown Produce (6% SOM)	
pH	8.11	8.16	7.64			-
Sulphate (water sol 2:1)	0.08	0.09	<0.01			-
Organic matter	9.74	16.90	2.00			
Arsenic	6.19	6.00	4.00	32	32	37
Cadmium	0.50	0.50	<0.5	10	10	22.1
Copper	32.16	34.00	23.00	4730	4790	-
Chromium (hexavalent)	1.00	<1	<1	3.62	3.63	20.5
Lead	37.69	39.00	27.00			200
Mercury	0.17	<0.17	<0.17	8.81	15.8	-
Nickel	25.68	30.00	13.00	EA/AtRisk withdrawn Aug 2015		
Selenium	1.00	<1	<1	375	375	-
Zinc	55.64	57.00	46.00	20000	20300	-

NOTE:

Any individual results and mean value tests above SGVs are shown RED highlighted.

Any outlier values which exceed relevant SGVs are shown in red

* - The calculations for the mean value test include outliers

** - Results for this determinand are assessed with no background levels taken into account

Results are expressed as mg/kg unless otherwise stated

ALL RESULTS PRESENTED ARE ASSESSED UNDER THE COMBINED CLEA ASSESSMENT CRITERION AS OUTLINED WITHIN SR4 ASSUMING NO FREE PRODUCT WAS OBSERVED DURING FIELDWORK- SEE 'GUIDANCE NOTES ON CONTAMINATION'.

SGVs are derived from the EA 2009 SGV's which are taken from AtRisk 2015. Category 4 screening levels have been adopted by the EA and have been included as new guidance.

Note: The SGV for elemental mercury has been used to assess total mercury concentrations at the site. The Environment Agency's Science Report SC050021 /Mercury SGV states that 'for general surface contamination and to simplify the assessment the SGV's for inorganic mercury can normally be compared with chemical analysis for total mercury content...'. Based on the latter, SGV for elemental mercury (170mg/kg) in the soil assessment is used

NAD - NO ASBESTOS DETECTED

TS - Topsoil, MG - Made Ground and N - Natural Ground

SUMMARY OF CONTAMINATION ANALYSIS: SOIL

SUMMARY OF CONTAMINATION ANALYSIS: TPH

Project Name Pendleton Phase 3 Allotments
Project No 18LPL068
Date 17/04/2024

SOIL TYPE	TS	TS	TS	SS	SS	SS
SAMPLE LOCATION	SP07A	SP07B	SP07C	SP08A	SP08B	SP08C
DEPTH (m)	-	-	-	-	-	-
Ali >C5-C6	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Ali >C6-C8	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Ali >C8-C10	<1	<1	<1	<1	<1	<1
Ali >C10-C12	<1	<1	<1	<1	<1	<1
Ali >C12-C16	<1	<1	<1	<1	<1	<1
Ali >C16-C21	<1	<1	<1	<1	<1	1
Ali >C21-C35	4	1	1	<1	<1	9
Total Aliphatics	4	1	1	<1	<1	10
Aro >C5-C7	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aro >C7-C8	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aro >C8-C10	<1	<1	<1	<1	<1	<1
Aro >C10-C12	<1	<1	<1	<1	<1	<1
Aro >C12-C16	<1	<1	<1	<1	<1	2
Aro >C16-C21	<1	<1	<1	<1	<1	9
Aro >C21-C35	2	<1	<1	<1	<1	37
Total Aromatics	2	<1	<1	<1	<1	49
TPH (Ali & Aro)	6	1	1	<1	<1	59
BTEX - Benzene	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
BTEX - Toluene	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
BTEX - Ethyl Benzene	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
BTEX - m & p Xylene	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
BTEX - o Xylene	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
MTBE	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Organic Matter	3.6	2.1	2.2	2.4	2	16.9

TPH	Mean Value Test *	Range		AtRisk 2017 (mg/kg) Residential with Home Grown Produce	AtRisk 2017 (mg/kg) Residential with Home Grown Produce	DEFRA C4SL 2017
	US ₉₅	Largest Value (mg/kg)	Smallest Value (mg/kg)	1% SOM WITHOUT Free Product***	6% SOM WITHOUT Free Product***	6% SOM WITHOUT Free Product***
Ali >C5-C6	0.01	<0.01	<0.01	42.7	369	-
Ali >C6-C8	0.01	<0.01	<0.01	99.3	1240	-
Ali >C8-C10	1.00	<1	<1	13.9	204	-
Ali >C10-C12	1.00	<1	<1	81.7	1180	-
Ali >C12-C16	1.00	<1	<1	385	4130	-
Ali >C16-C21	1.00	1.00	<1	210000	210100	-
Ali >C21-C35	5.51	9.00	<1			
Total Aliphatics	5.99	10.00	<1			
Aro >C5-C7	0.01	<0.01	<0.01	0.137	0.871	-
Aro >C7-C8	0.01	<0.01	<0.01	113	780	-
Aro >C8-C10	1.00	<1	<1	20.5	232	-
Aro >C10-C12	1.00	<1	<1	70	468	-
Aro >C12-C16	1.50	2.00	<1	165	830	-
Aro >C16-C21	5.02	9.00	<1	319	1040	-
Aro >C21-C35	19.19	37.00	<1	1120	1710	-
Total Aromatics	25.22	49.00	<1			
TPH (Ali & Aro)	30.71	59.00	<1			
BTEX - Benzene	0.01	<0.01	<0.01	0.0493	0.33	0.871
BTEX - Toluene	0.01	<0.01	<0.01	113	780	-
BTEX - Ethyl Benzene	0.01	<0.01	<0.01	50.7	453	-
BTEX - m & p Xylene	0.01	<0.01	<0.01	24	312	-
BTEX - o Xylene	0.01	<0.01	<0.01	26.4	336	-
MTBE	0.01	<0.01	<0.01	27.6	220	

Results expressed as mg/kg air dried unless otherwise stated.

* - The calculations for the mean value test include outliers

*** THESE RESULTS PRESENTED ARE ASSESSED UNDER THE COMBINED CLEA ASSESSMENT CRITERION AS OUTLINED WITHIN SR4 ASSUMING NO FREE PRODUCT WAS OBSERVED DURING FIELDWORK- SEE 'GUIDANCE NOTES ON CONTAMINATION'.

NOTES:

For the Purpose of this investigation- results will be assessed against RESIDENTIAL GUIDELINES WITH HOMEGROWN PRODUCE WITH NO FREE PRODUCT.

UU Drinking Water Guidelines	
PE Threshold	
Total BTEX & MTBE	0.1
EC5-EC10 Ali-Aro	2
EC10-EC16 Ali-Aro	10
EC16-EC40 Ali-Aro	500

SUMMARY OF CONTAMINATION ANALYSIS: SOIL

SUMMARY OF CONTAMINATION ANALYSIS: PAH

Project Name Pendleton Phase 3 Allotments
Project No 18LPL068
Date 17/04/24

SOIL TYPE	TS	TS	TS	SS	SS	SS
SAMPLE LOCATION	SP07A	SP07B	SP07C	SP08A	SP08B	SP08C
DEPTH (m)	-	-	-	-	-	-
Acenaphthene	<0.01	<0.01	<0.01	<0.01	<0.01	0.04
Acenaphthylene	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Anthracene	<0.02	<0.02	<0.02	<0.02	<0.02	0.05
Benzo(a)anthracene	<0.04	<0.04	<0.04	<0.04	<0.04	0.19
Benzo(a)pyrene	<0.04	<0.04	<0.04	<0.04	<0.04	0.17
Benzo(b)fluoranthene	<0.05	<0.05	<0.05	<0.05	<0.05	0.24
Benzo(ghi)perylene	<0.05	<0.05	<0.05	<0.05	<0.05	0.07
Benzo(k)fluoranthene	<0.07	<0.07	<0.07	<0.07	<0.07	0.09
Chrysene	<0.06	<0.06	<0.06	<0.06	<0.06	0.24
Dibenzo(ah)anthracene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Fluoranthene	<0.08	<0.08	<0.08	<0.08	<0.08	0.39
Fluorene	<0.01	<0.01	<0.01	<0.01	<0.01	0.04
Indeno(123-cd)pyrene	<0.03	<0.03	<0.03	<0.03	<0.03	0.07
Naphthalene	<0.03	<0.03	<0.03	<0.03	<0.03	0.04
Phenanthrene	<0.03	<0.03	<0.03	<0.03	<0.03	0.24
Pyrene	<0.07	<0.07	<0.07	<0.07	<0.07	0.34
Organic Matter	3.6	2.1	2.2	2.4	2	16.9

PAH	Mean Value Test *	Range		AtRisk 2017 (mg/kg) Residential with Home Grown Produce	AtRisk 2017 (mg/kg) Residential with Home Grown Produce	DEFRA's C4SL 2017
	US ₉₅	Largest Value (mg/kg)	Smallest Value (mg/kg)	1% SOM WITHOUT Free Product***	6% SOM WITHOUT Free Product***	6% SOM WITHOUT Free Product***
Acenaphthene	0.03	0.04	<0.01	608	2760	-
Acenaphthylene	0.01	<0.01	<0.01			-
Anthracene	0.04	0.05	<0.02	10200	26200	-
Benzo(a)anthracene	0.12	0.19	<0.04	4.52	8.54	-
Benzo(a)pyrene	0.11	0.17	<0.04	1.51	2.05	4.95
Benzo(b)fluoranthene	0.15	0.24	<0.05	7.72	9.86	-
Benzo(ghi)perylene	0.06	0.07	<0.05	96.2	103	-
Benzo(k)fluoranthene	0.08	0.09	<0.07	84.4	100	-
Chrysene	0.15	0.24	<0.06	585	927	-
Dibenzo(ah)anthracene	0.04	<0.04	<0.04	0.838	1	-
Fluoranthene	0.24	0.39	<0.08	983	2980	-
Fluorene	0.03	0.04	<0.01	735	2610	-
Indeno(123-cd)pyrene	0.05	0.07	<0.03	7.31	9.75	-
Naphthalene	0.04	0.04	<0.03	0.829	12.2	-
Phenanthrene	0.14	0.24	<0.03			-
Pyrene	0.21	0.34	<0.07	668	2120	-

Results expressed as mg/kg air dried unless otherwise stated.

* - The calculations for the mean value test include outliers

*** THESE RESULTS PRESENTED ARE ASSESSED UNDER THE COMBINED CLEA ASSESSMENT CRITERION AS OUTLINED WITHIN SR4 ASSUMING NO FREE PRODUCT WAS OBSERVED DURING FIELDWORK- SEE 'GUIDANCE NOTES ON CONTAMINATION'.

NOTES:

For the Purpose of this investigation- results will be assessed against **RESIDENTIAL GUIDELINES WITH HOMEGROWN PRODUCE WITH NO FREE PRODUCT.**

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 24/03884
Issue Number: 1

Date: 25 April, 2024

Client: Betts Geo Environmental
Old Marsh Farm Barns
Welsh Road
Sealand
Flintshire
UK
CH5 2LY

Project Manager: Betts Geolab/Graham Clark
Project Name: Pendleton Allotments
Project Ref: 18LPL068
Order No: BG5364
Date Samples Received: 18/04/24
Date Instructions Received: 19/04/24
Date Analysis Completed: 25/04/24

Approved by:



Richard Wong
Client Manager

Envirolab Job Number: 24/03884

Client Project Name: Pendleton Allotments

Client Project Ref: 18LPL068

Lab Sample ID	24/03884/1	24/03884/2	24/03884/3	24/03884/4	24/03884/5	24/03884/6		Units	Limit of Detection	Method ref
Client Sample No	TS	TS	TS	SS	SS	SS				
Client Sample ID	SP07 A	SP07 B	SP07 C	SP08 A	SP08 B	SP08 C				
Depth to Top										
Depth To Bottom										
Date Sampled	17-Apr-24	17-Apr-24	17-Apr-24	17-Apr-24	17-Apr-24	17-Apr-24				
Sample Type	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES				
Sample Matrix Code	6AE	6AE	6AE	6AE	6AE	6AE				
% Stones >10mm _A	1.8	3.8	<0.1	2.9	<0.1	<0.1		% w/w	0.1	A-T-044
pH _D ^{M#}	7.79	7.64	7.77	8.08	8.12	8.16		pH	0.01	A-T-031s
Sulphate (water sol 2:1) _D ^{M#}	0.02	<0.01	0.02	0.09	0.09	0.05		g/l	0.01	A-T-026s
Organic Matter _D ^{M#}	3.6	2.1	2.2	2.4	2.0	16.9		% w/w	0.1	A-T-032s
Arsenic _D ^{M#}	6	6	6	6	4	5		mg/kg	1	A-T-024s
Cadmium _D ^{M#}	<0.5	<0.5	0.5	<0.5	<0.5	<0.5		mg/kg	0.5	A-T-024s
Copper _D ^{M#}	29	29	32	34	23	27		mg/kg	1	A-T-024s
Chromium (hexavalent) _D	<1	<1	<1	<1	<1	<1		mg/kg	1	A-T-040s
Lead _D ^{M#}	34	34	35	37	27	39		mg/kg	1	A-T-024s
Mercury _D	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17		mg/kg	0.17	A-T-024s
Nickel _D ^{M#}	13	13	14	25	30	23		mg/kg	1	A-T-024s
Selenium _D ^{M#}	<1	<1	<1	<1	<1	<1		mg/kg	1	A-T-024s
Zinc _D ^{M#}	53	53	57	53	46	54		mg/kg	5	A-T-024s
VPH total (>C5-C10)	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00		mg/kg	1	Calc-stone+mols

Envirolab Job Number: 24/03884

Client Project Name: Pendleton Allotments

Client Project Ref: 18LPL068

Lab Sample ID	24/03884/1	24/03884/2	24/03884/3	24/03884/4	24/03884/5	24/03884/6		Units	Limit of Detection	Method ref
Client Sample No	TS	TS	TS	SS	SS	SS				
Client Sample ID	SP07 A	SP07 B	SP07 C	SP08 A	SP08 B	SP08 C				
Depth to Top										
Depth To Bottom										
Date Sampled	17-Apr-24	17-Apr-24	17-Apr-24	17-Apr-24	17-Apr-24	17-Apr-24				
Sample Type	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES				
Sample Matrix Code	6AE	6AE	6AE	6AE	6AE	6AE				
Asbestos in Soil (inc. matrix)										
Asbestos in soil _D [#]	NAD	NAD	NAD	NAD	NAD	NAD				A-T-045
Asbestos Matrix (visual) _D	-	-	-	-	-	-				A-T-045
Asbestos Matrix (microscope) _D	-	-	-	-	-	-				A-T-045
Asbestos ACM - Suitable for Water Absorption Test? _D	N/A	N/A	N/A	N/A	N/A	N/A				A-T-045

Envirolab Job Number: 24/03884

Client Project Name: Pendleton Allotments

Client Project Ref: 18LPL068

Lab Sample ID	24/03884/1	24/03884/2	24/03884/3	24/03884/4	24/03884/5	24/03884/6		Units	Limit of Detection	Method ref
Client Sample No	TS	TS	TS	SS	SS	SS				
Client Sample ID	SP07 A	SP07 B	SP07 C	SP08 A	SP08 B	SP08 C				
Depth to Top										
Depth To Bottom										
Date Sampled	17-Apr-24	17-Apr-24	17-Apr-24	17-Apr-24	17-Apr-24	17-Apr-24				
Sample Type	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES				
Sample Matrix Code	6AE	6AE	6AE	6AE	6AE	6AE				
PAH-16MS										
Acenaphthene _A ^{M#}	<0.01	<0.01	<0.01	<0.01	<0.01	0.04		mg/kg	0.01	A-T-019s
Acenaphthylene _A ^{M#}	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-019s
Anthracene _A ^{M#}	<0.02	<0.02	<0.02	<0.02	<0.02	0.05		mg/kg	0.02	A-T-019s
Benzo(a)anthracene _A ^{M#}	<0.04 ^U	<0.04 ^U	<0.04 ^U	<0.04 ^U	<0.04 ^U	0.19 ^U		mg/kg	0.04	A-T-019s
Benzo(a)pyrene _A ^{M#}	<0.04	<0.04	<0.04	<0.04	<0.04	0.17		mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene _A ^{M#}	<0.05	<0.05	<0.05	<0.05	<0.05	0.24		mg/kg	0.05	A-T-019s
Benzo(ghi)perylene _A ^{M#}	<0.05	<0.05	<0.05	<0.05	<0.05	0.07		mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene _A ^{M#}	<0.07	<0.07	<0.07	<0.07	<0.07	0.09		mg/kg	0.07	A-T-019s
Chrysene _A ^{M#}	<0.06	<0.06	<0.06	<0.06	<0.06	0.24		mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene _A	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04		mg/kg	0.04	A-T-019s
Fluoranthene _A ^{M#}	<0.08	<0.08	<0.08	<0.08	<0.08	0.39		mg/kg	0.08	A-T-019s
Fluorene _A ^{M#}	<0.01	<0.01	<0.01	<0.01	<0.01	0.04		mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene _A ^{M#}	<0.03	<0.03	<0.03	<0.03	<0.03	0.07		mg/kg	0.03	A-T-019s
Naphthalene _A ^{M#}	<0.03	<0.03	<0.03	<0.03	<0.03	0.04		mg/kg	0.03	A-T-019s
Phenanthrene _A ^{M#}	<0.03	<0.03	<0.03	<0.03	<0.03	0.24		mg/kg	0.03	A-T-019s
Pyrene _A ^{M#}	<0.07	<0.07	<0.07	<0.07	<0.07	0.34		mg/kg	0.07	A-T-019s
Total PAH-16MS _A	<0.08	<0.08	<0.08	<0.08	<0.08	2.21		mg/kg	0.01	A-T-019s

Envirolab Job Number: 24/03884

Client Project Name: Pendleton Allotments

Client Project Ref: 18LPL068

Lab Sample ID	24/03884/1	24/03884/2	24/03884/3	24/03884/4	24/03884/5	24/03884/6		Units	Limit of Detection	Method ref
Client Sample No	TS	TS	TS	SS	SS	SS				
Client Sample ID	SP07 A	SP07 B	SP07 C	SP08 A	SP08 B	SP08 C				
Depth to Top										
Depth To Bottom										
Date Sampled	17-Apr-24	17-Apr-24	17-Apr-24	17-Apr-24	17-Apr-24	17-Apr-24				
Sample Type	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES				
Sample Matrix Code	6AE	6AE	6AE	6AE	6AE	6AE				
TPH CWG with Clean Up										
Ali >C5-C6 _A	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-022s
Ali >C6-C8 _A	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-022s
Ali >C8-C10 _A	<1	<1	<1	<1	<1	<1		mg/kg	1	A-T-055s
Ali >C10-C12 _A ^{M#}	<1	<1	<1	<1	<1	<1		mg/kg	1	A-T-055s
Ali >C12-C16 _A ^{M#}	<1	<1	<1	<1	<1	<1		mg/kg	1	A-T-055s
Ali >C16-C21 _A ^{M#}	<1	<1	<1	<1	<1	1		mg/kg	1	A-T-055s
Ali >C21-C35 _A ^{M#}	4	1	1	<1	<1	9		mg/kg	1	A-T-055s
Total Aliphatics _A	4	1	1	<1	<1	10		mg/kg	1	Calc-As Recd
Aro >C5-C7 _A [#]	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-022s
Aro >C7-C8 _A [#]	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-022s
Aro >C8-C10 _A	<1	<1	<1	<1	<1	<1		mg/kg	1	A-T-055s
Aro >C10-C12 _A	<1	<1	<1	<1	<1	<1		mg/kg	1	A-T-055s
Aro >C12-C16 _A	<1	<1	<1	<1	<1	2		mg/kg	1	A-T-055s
Aro >C16-C21 _A ^{M#}	<1	<1	<1	<1	<1	9		mg/kg	1	A-T-055s
Aro >C21-C35 _A ^{M#}	2	<1	<1	<1	<1	37		mg/kg	1	A-T-055s
Total Aromatics _A	2	<1	<1	<1	<1	49		mg/kg	1	Calc-As Recd
TPH (Ali & Aro >C5-C35) _A	6	1	1	<1	<1	59		mg/kg	1	Calc-As Recd
BTEX - Benzene _A [#]	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-022s
BTEX - Toluene _A [#]	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene _A [#]	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-022s
BTEX - m & p Xylene _A [#]	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-022s
BTEX - o Xylene _A [#]	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-022s
MTBE _A [#]	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-022s

Report Notes

General

This report shall not be reproduced, except in full, without written approval from Envirolab.
 The results reported herein relate only to the material supplied to the laboratory.
 The residue of any samples contained within this report, and any received within the same delivery, will be disposed of **four weeks** after the initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of **six months** after the initial Asbestos testing is completed.
 Analytical results reflect the quality of the sample at the time of analysis only.
 Opinions and Interpretations expressed are outside our scope of accreditation.
 The client Sample No, Client Sample ID, Depth to top, Depth to Bottom and Date Sampled are all provided by the client.
 A deviating sample report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.

Key

Superscript "#"	Accredited to ISO 17025
Superscript "M"	Accredited to MCertS
Superscript "U"	Individual result not accredited
None of the above symbols	Analysis unaccredited
Subscript "A"	Analysis performed on as-received Sample
Subscript "D"	Analysis performed on the dried sample, crushed to pass 2mm sieve.
Subscript "A"	Analysis has dependant options against results. Details appear in the comments of your Sample receipt
IS	Insufficient Sample for analysis
US	Unsuitable Sample for analysis
NDP	No Determination Possible
NAD	No Asbestos Detected
N/A	Not applicable

Asbestos

Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
 Stones etc. are not removed from the sample prior to analysis
 Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing, and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Assigned Matrix Codes

1	SAND	6	CLAY/LOAM	A	Contains Stones
2	LOAM	7	OTHER	B	Contains Construction Rubble
3	CLAY	8	Asbestos Bulk (Only Asbestos ID accredited)	C	Contains visible hydrocarbons
4	LOAM/SAND	9	Incinerator Ash (some Metals accredited)	D	Contains glass / metal
5	SAND/CLAY			E	Contains roots / twigs

Note: 7,8,9 matrices are not covered by our ISO 17025 or MCertS accreditation, unless stated above.

Soil Chemical Analysis:

All results are reported as dry weight (<40°C).
 For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
 For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any "A" subscripts
 All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH by method A-T-007:

For waters, free and visible oils are excluded from the sample used for analysis, so the reported result represents the dissolved phase only.
 Results "with Clean up" indicates samples cleaned up with Silica during extraction.

EPH CWG (method A-T-055) from TPH CWG:

EPH CWG results have humics mathematically subtracted through instrument calculation.
 Where these humic substances have been identified in any IDs from "TPH CWG with clean up" please note that the concentration is **NOT** included in the quantified results but present in the ID for information.

Electrical Conductivity of water by method A-T-037:

Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the accreditation range and as such are unaccredited.

Please contact your client manager if you require any further information.

Envirolab Deviating Samples Report

Hattersley Science & Technology Park, Stockport Road, Hattersley, SK14 3QU
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client: Betts Geo Environmental, Old Marsh Farm Barns, Welsh Road, Sealand,
Flintshire, UK, CH5 2LY

Project: Pendleton Allotments

Clients Project No: 18LPL068

Project No: 24/03884

Date Received: 19/04/2024 (am)

Cool Box Temperatures (°C): 14.4

NO DEVIATIONS IDENTIFIED

If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3, ISO 18400-102:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

Envirolab Analysis Dates

Lab Sample ID	24/03884/1	24/03884/2	24/03884/3	24/03884/4	24/03884/5	24/03884/6
Client Sample No	TS	TS	TS	SS	SS	SS
Client Sample ID/Depth	SP07 A	SP07 B	SP07 C	SP08 A	SP08 B	SP08 C
Date Sampled	17/04/24	17/04/24	17/04/24	17/04/24	17/04/24	17/04/24
A-T-019s	23/04/2024	23/04/2024	23/04/2024	23/04/2024	23/04/2024	23/04/2024
A-T-022s	25/04/2024	25/04/2024	25/04/2024	25/04/2024	25/04/2024	25/04/2024
A-T-024s	25/04/2024	25/04/2024	25/04/2024	25/04/2024	25/04/2024	25/04/2024
A-T-026s	25/04/2024	25/04/2024	25/04/2024	25/04/2024	25/04/2024	25/04/2024
A-T-031s	25/04/2024	25/04/2024	25/04/2024	25/04/2024	25/04/2024	25/04/2024
A-T-032s	25/04/2024	25/04/2024	25/04/2024	25/04/2024	25/04/2024	25/04/2024
A-T-040s	25/04/2024	25/04/2024	25/04/2024	25/04/2024	25/04/2024	25/04/2024
A-T-044	23/04/2024	23/04/2024	23/04/2024	23/04/2024	23/04/2024	23/04/2024
A-T-045	22/04/2024	22/04/2024	22/04/2024	22/04/2024	22/04/2024	22/04/2024
A-T-055s	23/04/2024	23/04/2024	23/04/2024	23/04/2024	23/04/2024	23/04/2024
Calc-As Recd	25/04/2024	25/04/2024	25/04/2024	25/04/2024	25/04/2024	25/04/2024
Calc-stone+mois	25/04/2024	25/04/2024	25/04/2024	25/04/2024	25/04/2024	25/04/2024

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

End of Report

Our Ref: 18LPL068/GC/SV/SP08

23rd May 2024

FAO Richard Seddon @ Lovell
(Via Email: richard.seddon@Lovell.co.uk)



Dear Richard,

Pendleton Phase 3 – Subsoil Stockpile Testing

Please find below our validation data at the above-mentioned site / stockpile.

Overview

Betts Geo-Environmental Ltd were instructed to assess a stockpile of imported subsoil for reuse, which is required to form the clean capping within the allotment areas, as per the recommendations within the Remediation Strategy Report undertaken by Betts Geo-Environmental in March 2021 (Ref. 18LPL068/RS).

Physical Suitability of the subsoil Stockpile

The composition of this material on site was visually inspected on 17th April 2024, inspection found that the subsoil is physically acceptable for the proposed end use.

Subsoil – brown slightly sandy CLAY

Source – Roman Road (Lovell site)

Chemical Validation of Subsoil Stockpile

The stockpile was approximately 580m³. Samples were taken at a rate of 1:250m³ or a minimum of 3 samples i.e. 3 samples were taken from the stockpile.

Analysis has been scheduled for the standard 'CLEA' Metals (including Chromium VI), speciated TPH to CWG and Speciated PAH's.

No visual or olfactory evidence of contamination was noted within any of the samples.

These results were screened against the same criteria i.e. EA/CIEH/LQM residential guidance for suitability.

All results fall below relevant standard guidance levels.

Summary

Betts Geo Environmental confirms that the soil is acceptable for use within gardens as part of the capping requirements.

Should you require any further clarification, please do not hesitate to give us a call.



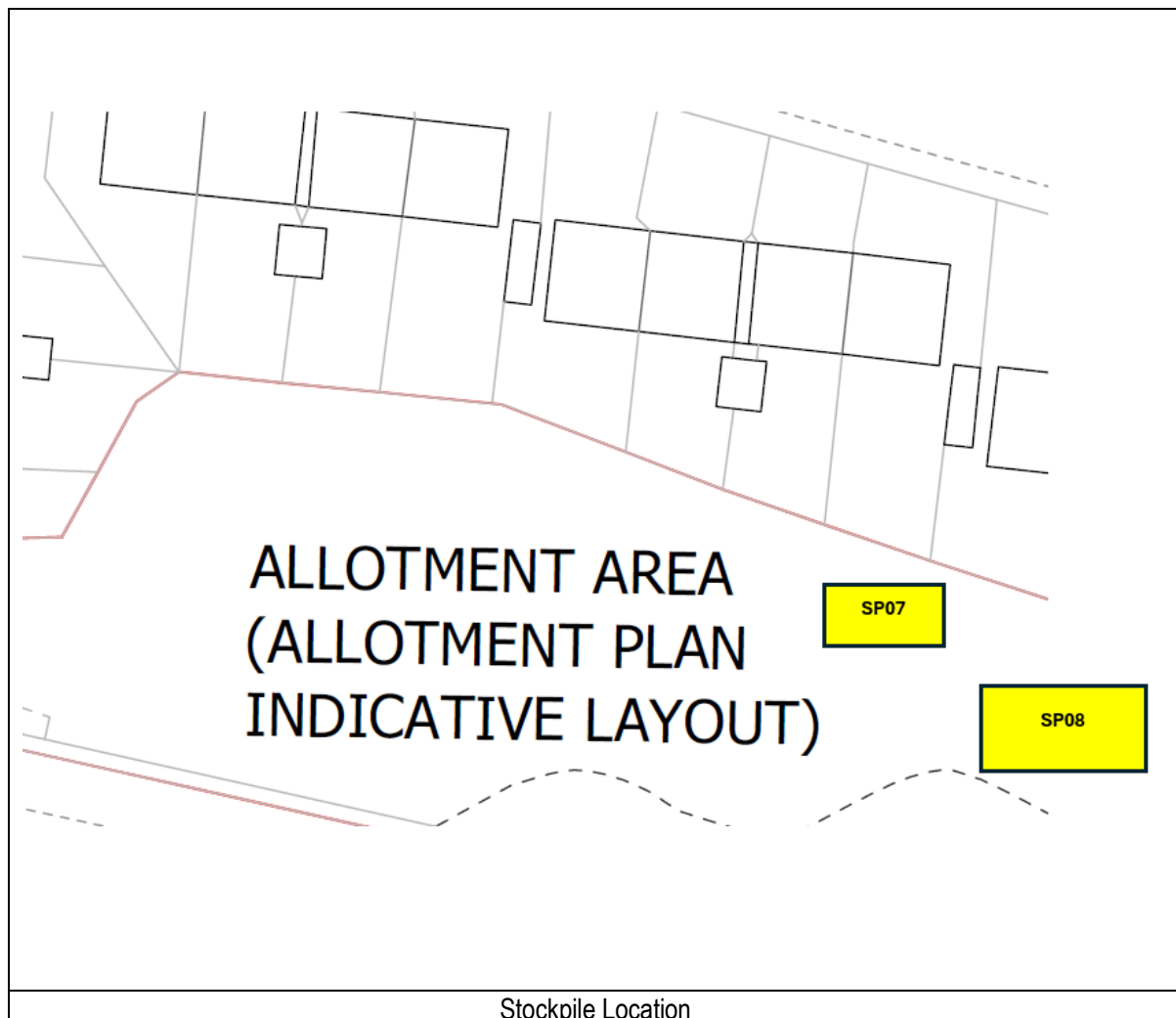
Old Marsh Farm Barns
Welsh Road, Sealand
Flintshire CH5 2LY
Telephone: 01244 288179
www.betts-associates.co.uk

Yours Sincerely,



Graham Clark
BETTS GEO ENVIRONMENTAL LIMITED

Encl –
Stockpile Location
Stockpile Photographs
Chemical Validation Test Results





Photographs of Stockpile

SUMMARY OF CONTAMINATION ANALYSIS: SOIL

SUMMARY OF CONTAMINATION ANALYSIS: METALS

Project Name Pendleton Phase 3 Allotments
Project No 18LPL068
Date 17/04/2024

SOIL TYPE	TS	TS	TS	SS	SS	SS
SAMPLE LOCATION	SP07A	SP07B	SP07C	SP08A	SP08B	SP08C
DEPTH (m)	-	-	-	-	-	-
pH	7.79	7.64	7.77	8.08	8.12	8.16
Sulphate (water sol 2:1)	0.02	<0.01	0.02	0.09	0.09	0.05
Organic matter	3.6	2.1	2.2	2.4	2	16.9
Arsenic	6	6	6	6	4	5
Cadmium	<0.5	<0.5	0.5	<0.5	<0.5	<0.5
Copper	29	29	32	34	23	27
Chromium (hexavalent)	<1	<1	<1	<1	<1	<1
Lead	34	34	35	37	27	39
Mercury	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Nickel	13	13	14	25	30	23
Selenium	<1	<1	<1	<1	<1	<1
Zinc	53	53	57	53	46	54
Asbestos in Soil	NAD	NAD	NAD	NAD	NAD	NAD
Asbestos Matrix	-	-	-	-	-	-
Quantification	-	-	-	-	-	-
Organic matter	3.6	2.1	2.2	2.4	2	16.9

Metals	Mean Value Test *	Range		AtRisk 2017 (mg/kg)	AtRisk 2017 (mg/kg)	DEFRA C4SL 2017
	US ₉₅	Largest Value (mg/kg)	Smallest Value (mg/kg)	With Homegrown Produce (1% SOM)	With Homegrown Produce (6% SOM)	
pH	8.11	8.16	7.64			-
Sulphate (water sol 2:1)	0.08	0.09	<0.01			-
Organic matter	9.74	16.90	2.00			
Arsenic	6.19	6.00	4.00	32	32	37
Cadmium	0.50	0.50	<0.5	10	10	22.1
Copper	32.16	34.00	23.00	4730	4790	-
Chromium (hexavalent)	1.00	<1	<1	3.62	3.63	20.5
Lead	37.69	39.00	27.00			200
Mercury	0.17	<0.17	<0.17	8.81	15.8	-
Nickel	25.68	30.00	13.00	EA/AtRisk withdrawn Aug 2015		
Selenium	1.00	<1	<1	375	375	-
Zinc	55.64	57.00	46.00	20000	20300	-

NOTE:

Any individual results and mean value tests above SGVs are shown RED highlighted.

Any outlier values which exceed relevant SGVs are shown in red

* - The calculations for the mean value test include outliers

** - Results for this determinand are assessed with no background levels taken into account

Results are expressed as mg/kg unless otherwise stated

ALL RESULTS PRESENTED ARE ASSESSED UNDER THE COMBINED CLEA ASSESSMENT CRITERION AS OUTLINED WITHIN SR4 ASSUMING NO FREE PRODUCT WAS OBSERVED DURING FIELDWORK- SEE 'GUIDANCE NOTES ON CONTAMINATION'.

SGVs are derived from the EA 2009 SGV's which are taken from AtRisk 2015. Category 4 screening levels have been adopted by the EA and have been included as new guidance.

Note: The SGV for elemental mercury has been used to assess total mercury concentrations at the site. The Environment Agency's Science Report SC050021 /Mercury SGV states that 'for general surface contamination and to simplify the assessment the SGV's for inorganic mercury can normally be compared with chemical analysis for total mercury content...'. Based on the latter, SGV for elemental mercury (170mg/kg) in the soil assessment is used

NAD - NO ASBESTOS DETECTED

TS - Topsoil, MG - Made Ground and N - Natural Ground

SUMMARY OF CONTAMINATION ANALYSIS: SOIL

SUMMARY OF CONTAMINATION ANALYSIS: TPH

Project Name Pendleton Phase 3 Allotments
Project No 18LPL068
Date 17/04/2024

SOIL TYPE	TS	TS	TS	SS	SS	SS
SAMPLE LOCATION	SP07A	SP07B	SP07C	SP08A	SP08B	SP08C
DEPTH (m)	-	-	-	-	-	-
Ali >C5-C6	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Ali >C6-C8	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Ali >C8-C10	<1	<1	<1	<1	<1	<1
Ali >C10-C12	<1	<1	<1	<1	<1	<1
Ali >C12-C16	<1	<1	<1	<1	<1	<1
Ali >C16-C21	<1	<1	<1	<1	<1	1
Ali >C21-C35	4	1	1	<1	<1	9
Total Aliphatics	4	1	1	<1	<1	10
Aro >C5-C7	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aro >C7-C8	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aro >C8-C10	<1	<1	<1	<1	<1	<1
Aro >C10-C12	<1	<1	<1	<1	<1	<1
Aro >C12-C16	<1	<1	<1	<1	<1	2
Aro >C16-C21	<1	<1	<1	<1	<1	9
Aro >C21-C35	2	<1	<1	<1	<1	37
Total Aromatics	2	<1	<1	<1	<1	49
TPH (Ali & Aro)	6	1	1	<1	<1	59
BTEX - Benzene	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
BTEX - Toluene	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
BTEX - Ethyl Benzene	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
BTEX - m & p Xylene	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
BTEX - o Xylene	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
MTBE	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Organic Matter	3.6	2.1	2.2	2.4	2	16.9

TPH	Mean Value Test *	Range		AtRisk 2017 (mg/kg) Residential with Home Grown Produce	AtRisk 2017 (mg/kg) Residential with Home Grown Produce	DEFRA C4SL 2017
	US ₉₅	Largest Value (mg/kg)	Smallest Value (mg/kg)	1% SOM WITHOUT Free Product***	6% SOM WITHOUT Free Product***	6% SOM WITHOUT Free Product***
Ali >C5-C6	0.01	<0.01	<0.01	42.7	369	-
Ali >C6-C8	0.01	<0.01	<0.01	99.3	1240	-
Ali >C8-C10	1.00	<1	<1	13.9	204	-
Ali >C10-C12	1.00	<1	<1	81.7	1180	-
Ali >C12-C16	1.00	<1	<1	385	4130	-
Ali >C16-C21	1.00	1.00	<1	210000	210100	-
Ali >C21-C35	5.51	9.00	<1			
Total Aliphatics	5.99	10.00	<1			
Aro >C5-C7	0.01	<0.01	<0.01	0.137	0.871	-
Aro >C7-C8	0.01	<0.01	<0.01	113	780	-
Aro >C8-C10	1.00	<1	<1	20.5	232	-
Aro >C10-C12	1.00	<1	<1	70	468	-
Aro >C12-C16	1.50	2.00	<1	165	830	-
Aro >C16-C21	5.02	9.00	<1	319	1040	-
Aro >C21-C35	19.19	37.00	<1	1120	1710	-
Total Aromatics	25.22	49.00	<1			
TPH (Ali & Aro)	30.71	59.00	<1			
BTEX - Benzene	0.01	<0.01	<0.01	0.0493	0.33	0.871
BTEX - Toluene	0.01	<0.01	<0.01	113	780	-
BTEX - Ethyl Benzene	0.01	<0.01	<0.01	50.7	453	-
BTEX - m & p Xylene	0.01	<0.01	<0.01	24	312	-
BTEX - o Xylene	0.01	<0.01	<0.01	26.4	336	-
MTBE	0.01	<0.01	<0.01	27.6	220	

Results expressed as mg/kg air dried unless otherwise stated.

* - The calculations for the mean value test include outliers

*** THESE RESULTS PRESENTED ARE ASSESSED UNDER THE COMBINED CLEA ASSESSMENT CRITERION AS OUTLINED WITHIN SR4 ASSUMING NO FREE PRODUCT WAS OBSERVED DURING FIELDWORK- SEE 'GUIDANCE NOTES ON CONTAMINATION'.

NOTES:

For the Purpose of this investigation- results will be assessed against RESIDENTIAL GUIDELINES WITH HOMEGROWN PRODUCE WITH NO FREE PRODUCT.

UU Drinking Water Guidelines	
PE Threshold	
Total BTEX & MTBE	0.1
EC5-EC10 Ali-Aro	2
EC10-EC16 Ali-Aro	10
EC16-EC40 Ali-Aro	500

SUMMARY OF CONTAMINATION ANALYSIS: SOIL

SUMMARY OF CONTAMINATION ANALYSIS: PAH

Project Name Pendleton Phase 3 Allotments
Project No 18LPL068
Date 17/04/24

SOIL TYPE	TS	TS	TS	SS	SS	SS
SAMPLE LOCATION	SP07A	SP07B	SP07C	SP08A	SP08B	SP08C
DEPTH (m)	-	-	-	-	-	-
Acenaphthene	<0.01	<0.01	<0.01	<0.01	<0.01	0.04
Acenaphthylene	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Anthracene	<0.02	<0.02	<0.02	<0.02	<0.02	0.05
Benzo(a)anthracene	<0.04	<0.04	<0.04	<0.04	<0.04	0.19
Benzo(a)pyrene	<0.04	<0.04	<0.04	<0.04	<0.04	0.17
Benzo(b)fluoranthene	<0.05	<0.05	<0.05	<0.05	<0.05	0.24
Benzo(ghi)perylene	<0.05	<0.05	<0.05	<0.05	<0.05	0.07
Benzo(k)fluoranthene	<0.07	<0.07	<0.07	<0.07	<0.07	0.09
Chrysene	<0.06	<0.06	<0.06	<0.06	<0.06	0.24
Dibenzo(ah)anthracene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Fluoranthene	<0.08	<0.08	<0.08	<0.08	<0.08	0.39
Fluorene	<0.01	<0.01	<0.01	<0.01	<0.01	0.04
Indeno(123-cd)pyrene	<0.03	<0.03	<0.03	<0.03	<0.03	0.07
Naphthalene	<0.03	<0.03	<0.03	<0.03	<0.03	0.04
Phenanthrene	<0.03	<0.03	<0.03	<0.03	<0.03	0.24
Pyrene	<0.07	<0.07	<0.07	<0.07	<0.07	0.34
Organic Matter	3.6	2.1	2.2	2.4	2	16.9

PAH	Mean Value Test *	Range		AtRisk 2017 (mg/kg) Residential with Home Grown Produce	AtRisk 2017 (mg/kg) Residential with Home Grown Produce	DEFRA's C4SL 2017
	US ₉₅	Largest Value (mg/kg)	Smallest Value (mg/kg)	1% SOM WITHOUT Free Product***	6% SOM WITHOUT Free Product***	6% SOM WITHOUT Free Product***
Acenaphthene	0.03	0.04	<0.01	608	2760	-
Acenaphthylene	0.01	<0.01	<0.01			-
Anthracene	0.04	0.05	<0.02	10200	26200	-
Benzo(a)anthracene	0.12	0.19	<0.04	4.52	8.54	-
Benzo(a)pyrene	0.11	0.17	<0.04	1.51	2.05	4.95
Benzo(b)fluoranthene	0.15	0.24	<0.05	7.72	9.86	-
Benzo(ghi)perylene	0.06	0.07	<0.05	96.2	103	-
Benzo(k)fluoranthene	0.08	0.09	<0.07	84.4	100	-
Chrysene	0.15	0.24	<0.06	585	927	-
Dibenzo(ah)anthracene	0.04	<0.04	<0.04	0.838	1	-
Fluoranthene	0.24	0.39	<0.08	983	2980	-
Fluorene	0.03	0.04	<0.01	735	2610	-
Indeno(123-cd)pyrene	0.05	0.07	<0.03	7.31	9.75	-
Naphthalene	0.04	0.04	<0.03	0.829	12.2	-
Phenanthrene	0.14	0.24	<0.03			-
Pyrene	0.21	0.34	<0.07	668	2120	-

Results expressed as mg/kg air dried unless otherwise stated.

* - The calculations for the mean value test include outliers

*** THESE RESULTS PRESENTED ARE ASSESSED UNDER THE COMBINED CLEA ASSESSMENT CRITERION AS OUTLINED WITHIN SR4 ASSUMING NO FREE PRODUCT WAS OBSERVED DURING FIELDWORK- SEE 'GUIDANCE NOTES ON CONTAMINATION'.

NOTES:

For the Purpose of this investigation- results will be assessed against **RESIDENTIAL GUIDELINES WITH HOMEGROWN PRODUCE WITH NO FREE PRODUCT.**

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 24/03884
Issue Number: 1

Date: 25 April, 2024

Client: Betts Geo Environmental
Old Marsh Farm Barns
Welsh Road
Sealand
Flintshire
UK
CH5 2LY

Project Manager: Betts Geolab/Graham Clark
Project Name: Pendleton Allotments
Project Ref: 18LPL068
Order No: BG5364
Date Samples Received: 18/04/24
Date Instructions Received: 19/04/24
Date Analysis Completed: 25/04/24

Approved by:



Richard Wong
Client Manager

Envirolab Job Number: 24/03884

Client Project Name: Pendleton Allotments

Client Project Ref: 18LPL068

Lab Sample ID	24/03884/1	24/03884/2	24/03884/3	24/03884/4	24/03884/5	24/03884/6		Units	Limit of Detection	Method ref
Client Sample No	TS	TS	TS	SS	SS	SS				
Client Sample ID	SP07 A	SP07 B	SP07 C	SP08 A	SP08 B	SP08 C				
Depth to Top										
Depth To Bottom										
Date Sampled	17-Apr-24	17-Apr-24	17-Apr-24	17-Apr-24	17-Apr-24	17-Apr-24				
Sample Type	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES				
Sample Matrix Code	6AE	6AE	6AE	6AE	6AE	6AE				
% Stones >10mm _A	1.8	3.8	<0.1	2.9	<0.1	<0.1		% w/w	0.1	A-T-044
pH _D ^{M#}	7.79	7.64	7.77	8.08	8.12	8.16		pH	0.01	A-T-031s
Sulphate (water sol 2:1) _D ^{M#}	0.02	<0.01	0.02	0.09	0.09	0.05		g/l	0.01	A-T-026s
Organic Matter _D ^{M#}	3.6	2.1	2.2	2.4	2.0	16.9		% w/w	0.1	A-T-032s
Arsenic _D ^{M#}	6	6	6	6	4	5		mg/kg	1	A-T-024s
Cadmium _D ^{M#}	<0.5	<0.5	0.5	<0.5	<0.5	<0.5		mg/kg	0.5	A-T-024s
Copper _D ^{M#}	29	29	32	34	23	27		mg/kg	1	A-T-024s
Chromium (hexavalent) _D	<1	<1	<1	<1	<1	<1		mg/kg	1	A-T-040s
Lead _D ^{M#}	34	34	35	37	27	39		mg/kg	1	A-T-024s
Mercury _D	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17		mg/kg	0.17	A-T-024s
Nickel _D ^{M#}	13	13	14	25	30	23		mg/kg	1	A-T-024s
Selenium _D ^{M#}	<1	<1	<1	<1	<1	<1		mg/kg	1	A-T-024s
Zinc _D ^{M#}	53	53	57	53	46	54		mg/kg	5	A-T-024s
VPH total (>C5-C10)	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00		mg/kg	1	Calc-stone+mols

Envirolab Job Number: 24/03884

Client Project Name: Pendleton Allotments

Client Project Ref: 18LPL068

Lab Sample ID	24/03884/1	24/03884/2	24/03884/3	24/03884/4	24/03884/5	24/03884/6		Units	Limit of Detection	Method ref
Client Sample No	TS	TS	TS	SS	SS	SS				
Client Sample ID	SP07 A	SP07 B	SP07 C	SP08 A	SP08 B	SP08 C				
Depth to Top										
Depth To Bottom										
Date Sampled	17-Apr-24	17-Apr-24	17-Apr-24	17-Apr-24	17-Apr-24	17-Apr-24				
Sample Type	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES				
Sample Matrix Code	6AE	6AE	6AE	6AE	6AE	6AE				
Asbestos in Soil (inc. matrix)										
Asbestos in soil _D [#]	NAD	NAD	NAD	NAD	NAD	NAD				A-T-045
Asbestos Matrix (visual) _D	-	-	-	-	-	-				A-T-045
Asbestos Matrix (microscope) _D	-	-	-	-	-	-				A-T-045
Asbestos ACM - Suitable for Water Absorption Test? _D	N/A	N/A	N/A	N/A	N/A	N/A				A-T-045

Envirolab Job Number: 24/03884

Client Project Name: Pendleton Allotments

Client Project Ref: 18LPL068

Lab Sample ID	24/03884/1	24/03884/2	24/03884/3	24/03884/4	24/03884/5	24/03884/6		Units	Limit of Detection	Method ref
Client Sample No	TS	TS	TS	SS	SS	SS				
Client Sample ID	SP07 A	SP07 B	SP07 C	SP08 A	SP08 B	SP08 C				
Depth to Top										
Depth To Bottom										
Date Sampled	17-Apr-24	17-Apr-24	17-Apr-24	17-Apr-24	17-Apr-24	17-Apr-24				
Sample Type	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES				
Sample Matrix Code	6AE	6AE	6AE	6AE	6AE	6AE				
PAH-16MS										
Acenaphthene _A ^{M#}	<0.01	<0.01	<0.01	<0.01	<0.01	0.04		mg/kg	0.01	A-T-019s
Acenaphthylene _A ^{M#}	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-019s
Anthracene _A ^{M#}	<0.02	<0.02	<0.02	<0.02	<0.02	0.05		mg/kg	0.02	A-T-019s
Benzo(a)anthracene _A ^{M#}	<0.04 ^U	<0.04 ^U	<0.04 ^U	<0.04 ^U	<0.04 ^U	0.19 ^U		mg/kg	0.04	A-T-019s
Benzo(a)pyrene _A ^{M#}	<0.04	<0.04	<0.04	<0.04	<0.04	0.17		mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene _A ^{M#}	<0.05	<0.05	<0.05	<0.05	<0.05	0.24		mg/kg	0.05	A-T-019s
Benzo(ghi)perylene _A ^{M#}	<0.05	<0.05	<0.05	<0.05	<0.05	0.07		mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene _A ^{M#}	<0.07	<0.07	<0.07	<0.07	<0.07	0.09		mg/kg	0.07	A-T-019s
Chrysene _A ^{M#}	<0.06	<0.06	<0.06	<0.06	<0.06	0.24		mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene _A	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04		mg/kg	0.04	A-T-019s
Fluoranthene _A ^{M#}	<0.08	<0.08	<0.08	<0.08	<0.08	0.39		mg/kg	0.08	A-T-019s
Fluorene _A ^{M#}	<0.01	<0.01	<0.01	<0.01	<0.01	0.04		mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene _A ^{M#}	<0.03	<0.03	<0.03	<0.03	<0.03	0.07		mg/kg	0.03	A-T-019s
Naphthalene _A ^{M#}	<0.03	<0.03	<0.03	<0.03	<0.03	0.04		mg/kg	0.03	A-T-019s
Phenanthrene _A ^{M#}	<0.03	<0.03	<0.03	<0.03	<0.03	0.24		mg/kg	0.03	A-T-019s
Pyrene _A ^{M#}	<0.07	<0.07	<0.07	<0.07	<0.07	0.34		mg/kg	0.07	A-T-019s
Total PAH-16MS _A	<0.08	<0.08	<0.08	<0.08	<0.08	2.21		mg/kg	0.01	A-T-019s

Envirolab Job Number: 24/03884

Client Project Name: Pendleton Allotments

Client Project Ref: 18LPL068

Lab Sample ID	24/03884/1	24/03884/2	24/03884/3	24/03884/4	24/03884/5	24/03884/6		Units	Limit of Detection	Method ref
Client Sample No	TS	TS	TS	SS	SS	SS				
Client Sample ID	SP07 A	SP07 B	SP07 C	SP08 A	SP08 B	SP08 C				
Depth to Top										
Depth To Bottom										
Date Sampled	17-Apr-24	17-Apr-24	17-Apr-24	17-Apr-24	17-Apr-24	17-Apr-24				
Sample Type	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES	SOIL - ES				
Sample Matrix Code	6AE	6AE	6AE	6AE	6AE	6AE				
TPH CWG with Clean Up										
Ali >C5-C6 _A	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-022s
Ali >C6-C8 _A	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-022s
Ali >C8-C10 _A	<1	<1	<1	<1	<1	<1		mg/kg	1	A-T-055s
Ali >C10-C12 _A ^{M#}	<1	<1	<1	<1	<1	<1		mg/kg	1	A-T-055s
Ali >C12-C16 _A ^{M#}	<1	<1	<1	<1	<1	<1		mg/kg	1	A-T-055s
Ali >C16-C21 _A ^{M#}	<1	<1	<1	<1	<1	1		mg/kg	1	A-T-055s
Ali >C21-C35 _A ^{M#}	4	1	1	<1	<1	9		mg/kg	1	A-T-055s
Total Aliphatics _A	4	1	1	<1	<1	10		mg/kg	1	Calc-As Recd
Aro >C5-C7 _A [#]	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-022s
Aro >C7-C8 _A [#]	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-022s
Aro >C8-C10 _A	<1	<1	<1	<1	<1	<1		mg/kg	1	A-T-055s
Aro >C10-C12 _A	<1	<1	<1	<1	<1	<1		mg/kg	1	A-T-055s
Aro >C12-C16 _A	<1	<1	<1	<1	<1	2		mg/kg	1	A-T-055s
Aro >C16-C21 _A ^{M#}	<1	<1	<1	<1	<1	9		mg/kg	1	A-T-055s
Aro >C21-C35 _A ^{M#}	2	<1	<1	<1	<1	37		mg/kg	1	A-T-055s
Total Aromatics _A	2	<1	<1	<1	<1	49		mg/kg	1	Calc-As Recd
TPH (Ali & Aro >C5-C35) _A	6	1	1	<1	<1	59		mg/kg	1	Calc-As Recd
BTEX - Benzene _A [#]	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-022s
BTEX - Toluene _A [#]	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene _A [#]	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-022s
BTEX - m & p Xylene _A [#]	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-022s
BTEX - o Xylene _A [#]	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-022s
MTBE _A [#]	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-022s

Report Notes

General

This report shall not be reproduced, except in full, without written approval from Envirolab.
 The results reported herein relate only to the material supplied to the laboratory.
 The residue of any samples contained within this report, and any received within the same delivery, will be disposed of **four weeks** after the initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of **six months** after the initial Asbestos testing is completed.
 Analytical results reflect the quality of the sample at the time of analysis only.
 Opinions and Interpretations expressed are outside our scope of accreditation.
 The client Sample No, Client Sample ID, Depth to top, Depth to Bottom and Date Sampled are all provided by the client.
 A deviating sample report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.

Key

Superscript "#"	Accredited to ISO 17025
Superscript "M"	Accredited to MCertS
Superscript "U"	Individual result not accredited
None of the above symbols	Analysis unaccredited
Subscript "A"	Analysis performed on as-received Sample
Subscript "D"	Analysis performed on the dried sample, crushed to pass 2mm sieve.
Subscript "A"	Analysis has dependant options against results. Details appear in the comments of your Sample receipt
IS	Insufficient Sample for analysis
US	Unsuitable Sample for analysis
NDP	No Determination Possible
NAD	No Asbestos Detected
N/A	Not applicable

Asbestos

Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
 Stones etc. are not removed from the sample prior to analysis
 Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing, and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Assigned Matrix Codes

1	SAND	6	CLAY/LOAM	A	Contains Stones
2	LOAM	7	OTHER	B	Contains Construction Rubble
3	CLAY	8	Asbestos Bulk (Only Asbestos ID accredited)	C	Contains visible hydrocarbons
4	LOAM/SAND	9	Incinerator Ash (some Metals accredited)	D	Contains glass / metal
5	SAND/CLAY			E	Contains roots / twigs

Note: 7,8,9 matrices are not covered by our ISO 17025 or MCertS accreditation, unless stated above.

Soil Chemical Analysis:

All results are reported as dry weight (<40°C).
 For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
 For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any "A" subscripts
 All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH by method A-T-007:

For waters, free and visible oils are excluded from the sample used for analysis, so the reported result represents the dissolved phase only.
 Results "with Clean up" indicates samples cleaned up with Silica during extraction.

EPH CWG (method A-T-055) from TPH CWG:

EPH CWG results have humics mathematically subtracted through instrument calculation.
 Where these humic substances have been identified in any IDs from "TPH CWG with clean up" please note that the concentration is **NOT** included in the quantified results but present in the ID for information.

Electrical Conductivity of water by method A-T-037:

Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the accreditation range and as such are unaccredited.

Please contact your client manager if you require any further information.

Envirolab Deviating Samples Report

Hattersley Science & Technology Park, Stockport Road, Hattersley, SK14 3QU
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client: Betts Geo Environmental, Old Marsh Farm Barns, Welsh Road, Sealand,
Flintshire, UK, CH5 2LY

Project: Pendleton Allotments

Clients Project No: 18LPL068

Project No: 24/03884

Date Received: 19/04/2024 (am)

Cool Box Temperatures (°C): 14.4

NO DEVIATIONS IDENTIFIED

If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3, ISO 18400-102:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

Envirolab Analysis Dates

Lab Sample ID	24/03884/1	24/03884/2	24/03884/3	24/03884/4	24/03884/5	24/03884/6
Client Sample No	TS	TS	TS	SS	SS	SS
Client Sample ID/Depth	SP07 A	SP07 B	SP07 C	SP08 A	SP08 B	SP08 C
Date Sampled	17/04/24	17/04/24	17/04/24	17/04/24	17/04/24	17/04/24
A-T-019s	23/04/2024	23/04/2024	23/04/2024	23/04/2024	23/04/2024	23/04/2024
A-T-022s	25/04/2024	25/04/2024	25/04/2024	25/04/2024	25/04/2024	25/04/2024
A-T-024s	25/04/2024	25/04/2024	25/04/2024	25/04/2024	25/04/2024	25/04/2024
A-T-026s	25/04/2024	25/04/2024	25/04/2024	25/04/2024	25/04/2024	25/04/2024
A-T-031s	25/04/2024	25/04/2024	25/04/2024	25/04/2024	25/04/2024	25/04/2024
A-T-032s	25/04/2024	25/04/2024	25/04/2024	25/04/2024	25/04/2024	25/04/2024
A-T-040s	25/04/2024	25/04/2024	25/04/2024	25/04/2024	25/04/2024	25/04/2024
A-T-044	23/04/2024	23/04/2024	23/04/2024	23/04/2024	23/04/2024	23/04/2024
A-T-045	22/04/2024	22/04/2024	22/04/2024	22/04/2024	22/04/2024	22/04/2024
A-T-055s	23/04/2024	23/04/2024	23/04/2024	23/04/2024	23/04/2024	23/04/2024
Calc-As Recd	25/04/2024	25/04/2024	25/04/2024	25/04/2024	25/04/2024	25/04/2024
Calc-stone+mois	25/04/2024	25/04/2024	25/04/2024	25/04/2024	25/04/2024	25/04/2024

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

End of Report