



**GEO-ENVIRONMENTAL CONSULTING**

BEK Geo-Environmental Consulting  
No.2 Landwick Court, Metcalf Drive, Altham Business Park,  
Lancashire BB5 5TU

---

mbuckley@bekenviro.co.uk  
bekenviro.co.uk  
01254 377622

Our Ref: BEK/17350/231016/MDC

16<sup>th</sup> October 2023

MITCHELL & DAVIS CONSTRUCTION LIMITED  
351 Moss Bank Way  
Bolton  
BL1 3LR

Residential Development at Dawson House, Chapletown Road, Bolton - Topsoil Assessment

BEK Enviro (BEK) has been commissioned by Mitchell & Davis Construction Limited to assess the test results available for the topsoil imported into the above site to comment of suitability for reuse in the garden areas of the residential development.

The analysis provided is for a sample of the topsoil that was recorded from the source soils on 5<sup>th</sup> October 2022. The analysis was requested by S.E.D. Services Ltd and the sample nomenclature is 'BGB Sed Services'. The actual source of the topsoil is not known.

Sample was analysed at UKAS/MCERTS accredited laboratory of Envirolab for a wide range of potential contaminants of concern including heavy metals, cyanide, pH, 16 EPA poly-aromatic hydrocarbons (PAH), banded petroleum hydrocarbons (TPH), total phenols, sulphate (acid soluble), sulphate 2:1 extract, soil organic matter and asbestos. The chemical test results are presented in Annex A.

The chemical test results have been compared to generic assessment criteria derived for the protection of human health at a residential site (with plant uptake). These include the use of the Land Quality Management and Chartered Institute of Environmental Health assessment criteria (S4ULs), the Category 4 Screening Levels (C4SLs).

These assessment criteria have been derived using the CLEA model and fully justified input parameters. The derivation of the assessment criteria assumes a residential end use with plant uptake. The initial assessment assumes a soil organic matter (SOM) of 1% for the soils recovered at the site, as a conservative approach.

It should be noted that the TPH analysis is for banded TPH only (C6-C10, C10-C25 and C25-C40). There are no assessment criteria available for these bands. However, the total TPH concentration is generally very low and only marginally above the inert limit for disposal at inert landfill sites (500 mg/kg).

The contamination assessment of the chemical test results is summarised in the following table, please note that concentrations measured below the laboratory limit of detection are not listed below:



**GEO-ENVIRONMENTAL CONSULTING**

**BEK Geo-Environmental Consulting**

No.2 Landwick Court, Metcalf Drive, Altham Business Park,  
Lancashire BB5 5TU

mbuckley@bekenviro.co.uk

bekenviro.co.uk

**01254 377622**

Determinand	Range of Concentrations (mg/kg)	Assessment Criteria (mg/kg)	Samples Fail
Arsenic	5	37 <sup>1</sup>	---
Cadmium	0.7	11 <sup>1</sup>	---
Copper	33	2400 <sup>1</sup>	---
Chromium	13	910 <sup>1</sup>	---
Lead	44	210 <sup>2</sup>	---
Nickel	13	180 <sup>1</sup>	---
Zinc	80	3700 <sup>1</sup>	---
Acenaphthene	0.05	210 <sup>1</sup>	---
Anthracene	0.06	2400 <sup>1</sup>	---
Benzo(a)anthracene	0.07	7.2 <sup>1</sup>	---
Benzo(a)pyrene	0.06	2.2 <sup>1</sup>	---
Chrysene	0.12	15 <sup>1</sup>	---
Fluoranthene	0.27	280 <sup>1</sup>	---
Fluorene	0.02	170 <sup>1</sup>	---
Indeno(123-cd)pyrene	0.04	27 <sup>1</sup>	---
Napthalene	0.07		
Phenanthrene	0.25	95 <sup>1</sup>	---
Pyrene	0.26	620 <sup>1</sup>	---
Asbestos ID	Not detected in any sample		

**Table 1:** Summary of Topsoil Contamination Assessment – Residential with Home Grown

1 CIEH/LQM Derived Assessment Criteria (S4ULs based on 1% SOM) 2 Category 4 Screening Levels

2 Inert waste acceptance criteria (WAC)

It can be seen from the above table that there are no concentrations above the assessment criteria.

#### Phytotoxic Assessment

There are no elevations of phytotoxic contaminations of zinc copper or nickel within the topsoil tested at the site.

#### Conclusions

On the basis of the chemical test data provided and the above assessment, the topsoil analysed is suitable for reuse in garden/landscaping at the site.

I trust that this is satisfactory, however if you require anything further at this stage please contact the undersigned.

Yours sincerely,

**MICHAEL BUCKLEY** BSc (Hons) MSc MEnvSci CEnv



BEK Geo-Environmental Consulting  
No.2 Landwick Court, Metcalf Drive, Altham Business Park,  
Lancashire BB5 5TU

---

[mbuckley@bekenviro.co.uk](mailto:mbuckley@bekenviro.co.uk)  
[bekenviro.co.uk](http://bekenviro.co.uk)  
01254 377622

## ANNEX A

### Chemical Test Results

## FINAL ANALYTICAL TEST REPORT SUPPLEMENT TO TEST REPORT 22/09015/1

**Amendments:** Request for split report

**Envirolab Job Number:** 22/09015  
**Issue Number:** 2-S4

**Date:** 05 October, 2022

**Client:** S.E.D. Services Ltd  
Landgate Farm  
Landgate Lane  
Bryn  
Wigan  
UK  
WN4 0EJ

**Project Manager:** James Wright  
**Project Name:** Hightown  
**Project Ref:** Not specified  
**Order No:** N/A  
**Date Samples Received:** 31/08/22  
**Date Instructions Received:** 14/09/22  
**Date Analysis Completed:** 26/09/22

**Approved by:**



Danielle Brierley  
Deputy Client Services Supervisor

Envirolab Job Number: 22/09015/4

Client Project Name: Hightown

Client Project Ref: Not specified

Lab Sample ID	22/09015/4							Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	BGB Sed Services									
Depth to Top										
Depth To Bottom										
Date Sampled	26-Aug-22									
Sample Type	Soil									
Sample Matrix Code	4A									
% Stones >10mm <sub>A</sub>	<0.1							% w/w	0.1	A-T-044
pH <sub>D</sub> <sup>M#</sup>	8.30							pH	0.01	A-T-031s
Arsenic <sub>D</sub> <sup>M#</sup>	5							mg/kg	1	A-T-024s
Cadmium <sub>D</sub> <sup>M#</sup>	0.7							mg/kg	0.5	A-T-024s
Copper <sub>D</sub> <sup>M#</sup>	33							mg/kg	1	A-T-024s
Chromium <sub>D</sub> <sup>M#</sup>	13							mg/kg	1	A-T-024s
Lead <sub>D</sub> <sup>M#</sup>	44							mg/kg	1	A-T-024s
Mercury <sub>D</sub>	<0.17							mg/kg	0.17	A-T-024s
Nickel <sub>D</sub> <sup>M#</sup>	13							mg/kg	1	A-T-024s
Selenium <sub>D</sub> <sup>M#</sup>	<1							mg/kg	1	A-T-024s
Sodium <sub>D</sub>	510							mg/kg	50	A-T-024s
Zinc <sub>D</sub> <sup>M#</sup>	80							mg/kg	5	A-T-024s

Envirolab Job Number: 22/09015/4

Client Project Name: Hightown

Client Project Ref: Not specified

Lab Sample ID	22/09015/4							Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	BGB Sed Services									
Depth to Top										
Depth To Bottom										
Date Sampled	26-Aug-22									
Sample Type	Soil									
Sample Matrix Code	4A									
Asbestos in Soil (inc. matrix) ^										
Asbestos in soil <sup>†</sup>	NAD									A-T-045
Asbestos Matrix (visual) <sub>D</sub>	-									A-T-045
Asbestos Matrix (microscope) <sub>D</sub>	-									A-T-045
Asbestos ACM - Suitable for Water Absorption Test? <sub>D</sub>	N/A									A-T-045

Envirolab Job Number: 22/09015/4

Client Project Name: Hightown

Client Project Ref: Not specified

Lab Sample ID	22/09015/4							Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	BGB Sed Services									
Depth to Top										
Depth To Bottom										
Date Sampled	26-Aug-22									
Sample Type	Soil									
Sample Matrix Code	4A									
PAH-16MS										
Acenaphthene <sub>A</sub> <sup>M#</sup>	0.05						mg/kg	0.01	A-T-019s	
Acenaphthylene <sub>A</sub> <sup>M#</sup>	<0.01						mg/kg	0.01	A-T-019s	
Anthracene <sub>A</sub> <sup>M#</sup>	0.06						mg/kg	0.02	A-T-019s	
Benzo(a)anthracene <sub>A</sub> <sup>M#</sup>	0.07						mg/kg	0.04	A-T-019s	
Benzo(a)pyrene <sub>A</sub> <sup>M#</sup>	0.06						mg/kg	0.04	A-T-019s	
Benzo(b)fluoranthene <sub>A</sub> <sup>M#</sup>	<0.05						mg/kg	0.05	A-T-019s	
Benzo(ghi)perylene <sub>A</sub> <sup>M#</sup>	<0.05						mg/kg	0.05	A-T-019s	
Benzo(k)fluoranthene <sub>A</sub> <sup>M#</sup>	<0.07						mg/kg	0.07	A-T-019s	
Chrysene <sub>A</sub> <sup>M#</sup>	0.12						mg/kg	0.06	A-T-019s	
Dibenzo(ah)anthracene <sub>A</sub> <sup>M#</sup>	<0.04						mg/kg	0.04	A-T-019s	
Fluoranthene <sub>A</sub> <sup>M#</sup>	0.27						mg/kg	0.08	A-T-019s	
Fluorene <sub>A</sub> <sup>M#</sup>	0.02						mg/kg	0.01	A-T-019s	
Indeno(123-cd)pyrene <sub>A</sub> <sup>M#</sup>	0.04						mg/kg	0.03	A-T-019s	
Naphthalene <sub>A</sub> <sup>M#</sup>	0.07						mg/kg	0.03	A-T-019s	
Phenanthrene <sub>A</sub> <sup>M#</sup>	0.25						mg/kg	0.03	A-T-019s	
Pyrene <sub>A</sub> <sup>M#</sup>	0.26						mg/kg	0.07	A-T-019s	
Total PAH-16MS <sub>A</sub> <sup>M#</sup>	1.27						mg/kg	0.01	A-T-019s	
TPH Banded 2										
>C6-C10 <sub>A</sub> <sup>M#</sup>	<5						mg/kg	5	A-T-007s	
>C10-C25 <sub>A</sub> <sup>M#</sup>	136						mg/kg	5	A-T-007s	
>C25-C40 <sub>A</sub> <sup>M#</sup>	403						mg/kg	5	A-T-007s	
Total TPH Banded 2 <sub>A</sub> <sup>M#</sup>	539						mg/kg	5	A-T-007s	

## **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 with the same delivery, will be disposed of six weeks after 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 the scope of our accreditation.

If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.

A deviating samples 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.

The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

### **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 analysis of water by method A-T-007:**

Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

### **Electrical Conductivity of water by Method A-T-037:**

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

### **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.

### **Predominant Matrix Codes:**

1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample, 9 = INCINERATOR ASH.

Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.

### **Secondary Matrix Codes:**

A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal,

E = contains roots/twigs.

### **Key:**

IS indicates Insufficient Sample for analysis.

US indicates Unsuitable Sample for analysis.

NDP indicates No Determination Possible.

NAD indicates No Asbestos Detected.

N/A indicates Not Applicable.

Superscript # indicates method accredited to ISO 17025.

Superscript "M" indicates method accredited to MCERTS.

Subscript "A" indicates analysis performed on the sample as received.

Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

Subscript "A" indicates analysis has dependant options against results. Testing dependant on results appear in the comments area of your sample receipt.

EPH CWG results have humics mathematically subtracted through instrument calculation

TPH results "with Cleanup" indicates results cleaned up with Silica during extraction

### **EPH CWG GCxGC ID from TPH CWG**

Where we have identified humic substances in any ID's from TPH CWG with Clean Up please note that the concentration of these humic substances is not included in the quantified results and are included in the ID for information.

Please contact us if you need any further information.



## Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR  
Tel. 0161 368 4921 email. ask@envlab.co.uk

<b>Client:</b>	S.E.D. Services Ltd, Landgate Farm, Landgate Lane, Bryn, Wigan, UK, WN4 0EJ	<b>Project No:</b>	22/09015
<b>Project:</b>	Hightown	<b>Date Received:</b>	14/09/2022 (am)
<b>Clients Project No:</b>		<b>Cool Box Temperatures (°C):</b>	17.6

<b>Lab Sample ID</b>	22/09015/4
<b>Client Sample No</b>	
<b>Client Sample ID/Depth</b>	BGB Sed Services
<b>Date Sampled</b>	26/08/22
<b>Deviation Code</b>	
F	

Key

F *Maximum holding time exceeded between sampling date and analysis for analytes listed below*

### HOLDING TIME EXCEEDANCES

<b>Lab Sample ID</b>	22/09015/4
<b>Client Sample No</b>	
<b>Client Sample ID/Depth</b>	BGB Sed Services
<b>Date Sampled</b>	26/08/22
PAH-16MS	
TPH Banded 2	

Note: 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 (for water samples  $5 \pm 3^\circ\text{C}$ ), ISO 18400-105:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

## Envirolab Analysis Dates

Lab Sample ID	22/09015/1	22/09015/2	22/09015/3	22/09015/4
Client Sample No				
Client Sample ID/Depth	Hightown	Subsoil (Sed Services)	Sed Services	BGB Sed Services
Date Sampled	26/08/22	26/08/22	26/08/22	26/08/22
A-T-007s	20/09/2022	20/09/2022	20/09/2022	20/09/2022
A-T-019s	21/09/2022	21/09/2022	21/09/2022	21/09/2022
A-T-024s	26/09/2022	26/09/2022	26/09/2022	26/09/2022
A-T-031s	23/09/2022	23/09/2022	23/09/2022	23/09/2022
A-T-044	20/09/2022	20/09/2022	20/09/2022	20/09/2022
A-T-045	15/09/2022	15/09/2022	15/09/2022	15/09/2022

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**