



Our Ref: CON219-DUNM-001

16 April 2024

Owen Gray  
Land to the rear of Canada Cottages  
Stortford Road  
Great Dunmow  
CM6 1SH

By Email

Dear Mr Gray

**Land to the rear of Canada Cottages, Stortford Road, Great Dunmow, CM6 1SH  
Validation of Imported Soil**

Stansted Environmental Services Limited attended site on 19<sup>th</sup> March 2024 and on the 5<sup>th</sup> April 2024 to validate the depth of cover of the imported topsoil in the landscaped area.

The Phase II Ground Investigation & Generic Risk Assessment Report (dated 8<sup>th</sup> September 2022) carried out for the site identified the presence of individual speciated PAHs (Benzo(b)fluoranthene, Dibenzo(ah)anthracene, Benzo(a)pyrene) within the Made Ground in excess of the adopted GAC, protective of human health.

It was recommended that all the Made Ground was removed to a minimum depth of 491mm from proposed landscaped areas and the resultant void backfilled with clean imported material, comprising at least 150mm of organic topsoil.

A Validation Sample Plan is attached within Appendix A. Photographs of the excavations are provided within Appendix B

The clean soil was supplied by SRC Aggregates Group and the certificates confirming the suitability for use of the subsoil and the topsoil are given in Appendix C. The delivery notes of the soil provided are given in Appendix D.

The imported clean soil was laid on the existing made ground and the final ground level raised by about 500mm.

The imported material consisted of topsoil described as dark brown organic clayey silty fine to coarse sand to a verified depth between 0.18m bgl to 0.25m bgl.

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Beneath this layer was subsoil described as yellowish brown clayey silty fine to coarse sand, to a depth of 0.50m bgl.

Four samples were taken at the locations shown in the validation sample plan (Appendix A) at a depth between 0.10m bgl and 0.40m bgl and submitted to an UKAS/MCerts accredited laboratory on the day of collection in cool boxes and was scheduled for the following general suite of contaminants:

- A suite of metals comprising As, Cu, Cd, Cr, Cr VI, Hg, Pb, Ni, Se and Zn;
- Speciated Poly Aromatic Hydrocarbons (PAHs);
- Banded petroleum hydrocarbons (TPH CWG);
- Asbestos identification;
- Total monohydric phenols;
- Total cyanide;
- pH; and
- Total Organic Carbon (TOC).

The results of the analysis are attached in Appendix E.

In order to provide an initial indication of whether the tested soils could pose a risk to human health, SES subjected the aforementioned chemical data to a Generic Risk Assessment (GRA). The initial screen of the chemical data was made against available Suitable 4 Use Levels (S4ULs) and Category 4 Screening Levels (C4SLs) that reflect the most sensitive potential end use of 'Residential with Homegrown Produce (RwHP)'. In this instance the most sensitive potential receptor is judged to be a female child between the age of 0 and 6 years. The consumption of contaminants via home grown fruit and vegetables has been considered as an applicable pathway. Exceedances of assessment criteria may require further detailed/semi detailed quantitative risk assessment.

None of the determinands exceeded the Acceptance Criteria adopted for the site. Asbestos was not detected in the sample tested.

As all the tested determinands were less than their respective S4ULs/C4SLs they are, therefore, not considered to have the potential to pose a significant risk to human health.

In summary;

- Site reconnaissance by SES indicates that superficial Made Ground soils were generally excavated from the garden and/or landscaped areas of the development;
- Laboratory analysis of topsoil and subsoil imported to the site did not record significantly elevated concentrations of any of the potential contaminants tested.

Yours sincerely

For and on behalf of Stansted Environmental Services Limited

A handwritten signature in black ink, appearing to read 'M. Cefala', written in a cursive style.

**Massimo Cefala**  
**Senior Geoenvironmental Consultant**

Encs:

Appendix A – Validation Sample Plan

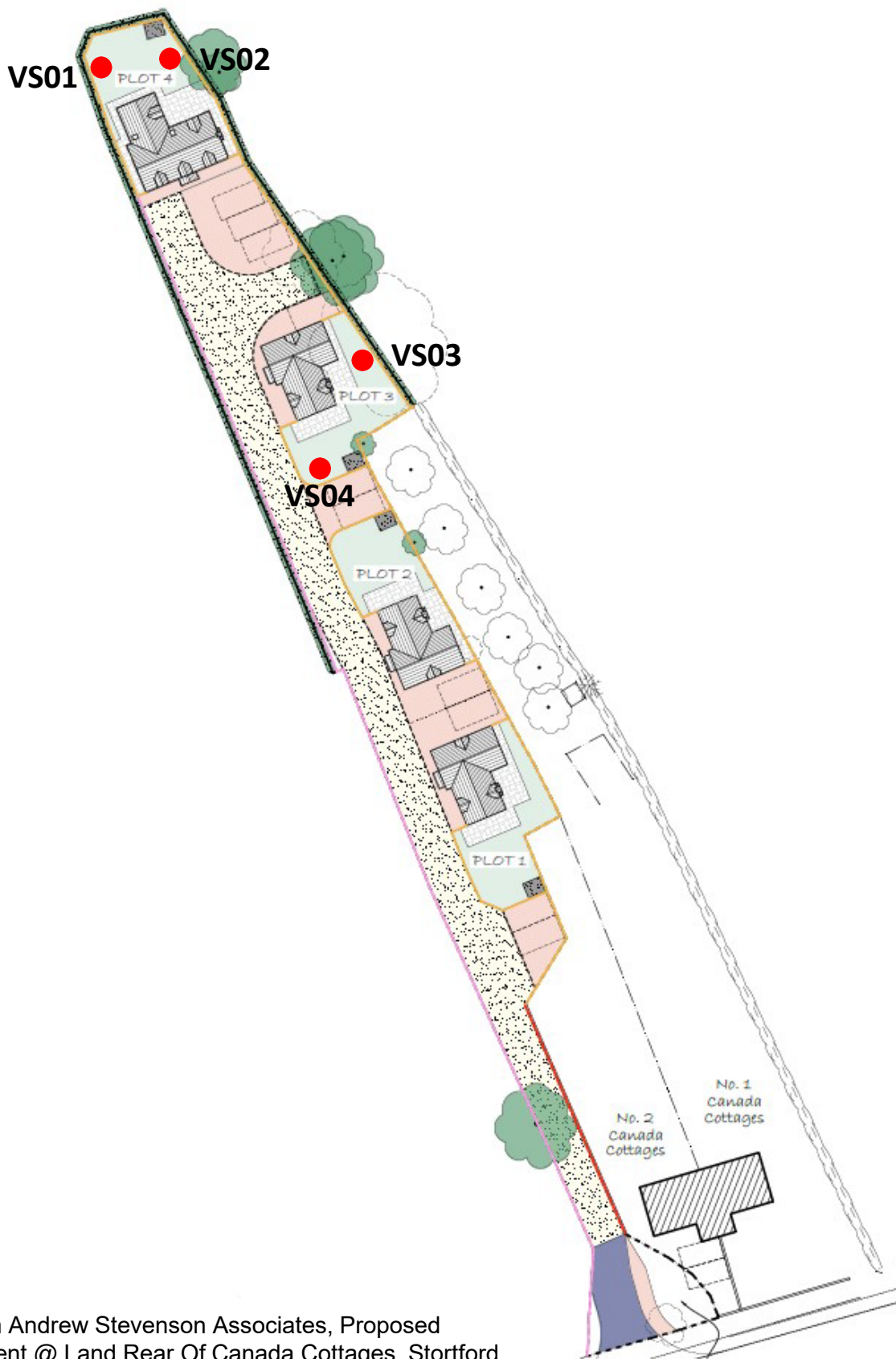
Appendix B – Validation Sample Photographs

Appendix C – Topsoil and Subsoil Certificates of Conformity

Appendix D – Delivery Notes

Appendix E – Laboratory Test Results

**APPENDIX A  
VALIDATION SAMPLE PLAN**



Mod. From Andrew Stevenson Associates, Proposed Development @ Land Rear Of Canada Cottages, Stortford Rd, Dunmow, Essex, Cm61sh. Drawing LP01

### LEGEND

● Sample location


□ Site boundary

Originator	MC	<b>LAND TO THE REAR OF CANADA COTTAGES, DUNMOW CON219-DUNM-001</b>	
Checked & Approved	WGG		

**APPENDIX C**  
**VALIDATION SAMPLE PHOTOGRAPHS**



VS01

Originator	GS	<p style="text-align: center;"><b>LAND TO THE REAR OF CANADA COTTAGES CON219-DUNM-001</b></p>	
Checked & Approved	WGG		





VS02

**LAND TO THE REAR OF CANADA COTTAGES  
CON219-DUNM-001**

**SITE PHOTOGRAPHS**

Originator

GS

Checked & Approved

WGG







VS04

**LAND TO THE REAR OF CANADA COTTAGES  
CON219-DUNM-001**

**SITE PHOTOGRAPHS**

Originator

GS


Checked  
&  
Approved

WGG





VS04

Originator	GS	<p style="text-align: center;"><b>LAND TO THE REAR OF CANADA COTTAGES CON219-DUNM-001</b></p>	
Checked & Approved	WGG		

19/03/2024

**APPENDIX C**  
**TOPSOIL AND SUBSOIL CERTIFICATES OF CONFORMITY**



# Final Report

Report No.: 24-03828-1

Initial Date of Issue: 21-Feb-2024

## Re-Issue Details:

Client SRC Aggregates

Client Address: B Lodge  
Highwood Quarry  
Takeley  
CM6 1SL

Contact(s): Matthew Yeates

Project Crown Quarry Topsoil

Quotation No.: Date Received: 08-Feb-2024

Order No.: M Yeates Date Instructed: 08-Feb-2024

No. of Samples: 1

Turnaround (Wkdays): 10 Results Due: 21-Feb-2024

Date Approved: 21-Feb-2024 Subcon Results Due: 29-Feb-2024

Approved By:

Details: Stuart Henderson, Technical Manager

For details about application of accreditation to specific matrix types, please refer to the Table at the back of this report

## Results - Soil

**Project: Crown Quarry Topsoil**

<b>Client: SRC Aggregates</b>		<b>Chemtest Job No.:</b>		24-03828		
Quotation No.:		<b>Chemtest Sample ID.:</b>		1764301		
		Sample Location:		Stockpile		
		Sample Type:		SOIL		
		Date Sampled:		06-Feb-2024		
		Asbestos Lab:		COVENTRY		
Determinand	HWOL Code	Accred.	SOP	Units	LOD	
ACM Type		U	2192		N/A	-
Asbestos Identification		U	2192		N/A	No Asbestos Detected
Moisture		N	2030	%	0.020	8.1
Soil Colour		N	2040		N/A	Brown
Other Material		N	2040		N/A	Stones
Soil Texture		N	2040		N/A	Sand
pH at 20C		M	2010		4.0	8.1
Boron (Hot Water Soluble)		M	2120	mg/kg	0.40	0.64
Sulphate (2:1 Water Soluble) as SO4		M	2120	g/l	0.010	0.075
Cyanide (Free)		M	2300	mg/kg	0.50	< 0.50
Cyanide (Total)		M	2300	mg/kg	0.50	< 0.50
Sulphide (Easily Liberatable)		N	2325	mg/kg	0.50	4.8
Sulphate (Acid Soluble)		U	2430	%	0.010	0.12
Arsenic		M	2455	mg/kg	0.5	7.4
Beryllium		U	2455	mg/kg	0.5	0.6
Cadmium		M	2455	mg/kg	0.10	0.16
Chromium		M	2455	mg/kg	0.5	18
Copper		M	2455	mg/kg	0.50	18
Mercury		M	2455	mg/kg	0.05	0.14
Nickel		M	2455	mg/kg	0.50	3.7
Lead		M	2455	mg/kg	0.50	47
Selenium		M	2455	mg/kg	0.25	0.50
Vanadium		U	2455	mg/kg	0.5	30
Zinc		M	2455	mg/kg	0.50	55
Chromium (Trivalent)		N	2490	mg/kg	1.0	18
Chromium (Hexavalent)		N	2490	mg/kg	0.50	< 0.50
Aliphatic VPH >C5-C6	HS_2D_AL	U	2780	mg/kg	0.05	< 0.05
Aliphatic VPH >C6-C7	HS_2D_AL	U	2780	mg/kg	0.05	< 0.05
Aliphatic VPH >C7-C8	HS_2D_AL	U	2780	mg/kg	0.05	< 0.05
Aliphatic VPH >C6-C8 (Sum)	HS_2D_AL	N	2780	mg/kg	0.10	< 0.10
Aliphatic VPH >C8-C10	HS_2D_AL	U	2780	mg/kg	0.05	< 0.05
Total Aliphatic VPH >C5-C10	HS_2D_AL	U	2780	mg/kg	0.25	< 0.25
Aliphatic EPH >C10-C12 MC	EH_2D_AL_#1	M	2690	mg/kg	2.00	< 2.0
Aliphatic EPH >C12-C16 MC	EH_2D_AL_#1	M	2690	mg/kg	1.00	< 1.0
Aliphatic EPH >C16-C21 MC	EH_2D_AL_#1	M	2690	mg/kg	2.00	< 2.0
Aliphatic EPH >C21-C35 MC	EH_2D_AL_#1	M	2690	mg/kg	3.00	< 3.0
Aliphatic EPH >C35-C40 MC	EH_2D_AL_#1	N	2690	mg/kg	10.00	< 10
Total Aliphatic EPH >C10-C35 MC	EH_2D_AL_#1	M	2690	mg/kg	5.00	< 5.0
Total Aliphatic EPH >C10-C40 MC	EH_2D_AL_#1	N	2690	mg/kg	10.00	< 10

## Results - Soil

**Project: Crown Quarry Topsoil**

<b>Client: SRC Aggregates</b>		<b>Chemtest Job No.:</b>		24-03828		
Quotation No.:		<b>Chemtest Sample ID.:</b>		1764301		
		Sample Location:		Stockpile		
		Sample Type:		SOIL		
		Date Sampled:		06-Feb-2024		
		Asbestos Lab:		COVENTRY		
Determinand	HWOL Code	Accred.	SOP	Units	LOD	
Aromatic VPH >C5-C7	HS_2D_AR	U	2780	mg/kg	0.05	< 0.05
Aromatic VPH >C7-C8	HS_2D_AR	U	2780	mg/kg	0.05	< 0.05
Aromatic VPH >C8-C10	HS_2D_AR	U	2780	mg/kg	0.05	< 0.05
Total Aromatic VPH >C5-C10	HS_2D_AR	U	2780	mg/kg	0.25	< 0.25
Aromatic EPH >C10-C12 MC	EH_2D_AR_#1	U	2690	mg/kg	1.00	< 1.0
Aromatic EPH >C12-C16 MC	EH_2D_AR_#1	U	2690	mg/kg	1.00	< 1.0
Aromatic EPH >C16-C21 MC	EH_2D_AR_#1	U	2690	mg/kg	2.00	5.7
Aromatic EPH >C21-C35 MC	EH_2D_AR_#1	U	2690	mg/kg	2.00	2.6
Aromatic EPH >C35-C40 MC	EH_2D_AR_#1	N	2690	mg/kg	1.00	< 1.0
Total Aromatic EPH >C10-C35 MC	EH_2D_AR_#1	U	2690	mg/kg	5.00	8.3
Total Aromatic EPH >C10-C40 MC	EH_2D_AR_#1	N	2690	mg/kg	10.00	< 10
Total VPH >C5-C10	HS_2D_Total	U	2780	mg/kg	0.50	< 0.50
Total EPH >C10-C35 MC	EH_2D_Total_#1	U	2690	mg/kg	10.00	< 10
Total EPH >C10-C40 MC	EH_2D_Total_#1	N	2690	mg/kg	10.00	< 10
Toluene Extractable Material		N	2660	mg/kg	50	420
Total TPH >C10-C40 NC	EH_1D_Total	M	2670	mg/kg	10	< 10
Naphthalene		M	2700	mg/kg	0.10	< 0.10
Acenaphthylene		M	2700	mg/kg	0.10	< 0.10
Acenaphthene		M	2700	mg/kg	0.10	< 0.10
Fluorene		M	2700	mg/kg	0.10	< 0.10
Phenanthrene		M	2700	mg/kg	0.10	< 0.10
Anthracene		M	2700	mg/kg	0.10	< 0.10
Fluoranthene		M	2700	mg/kg	0.10	< 0.10
Pyrene		M	2700	mg/kg	0.10	< 0.10
Benzo[a]anthracene		M	2700	mg/kg	0.10	< 0.10
Chrysene		M	2700	mg/kg	0.10	< 0.10
Benzo[b]fluoranthene		M	2700	mg/kg	0.10	< 0.10
Benzo[k]fluoranthene		M	2700	mg/kg	0.10	< 0.10
Benzo[a]pyrene		M	2700	mg/kg	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene		M	2700	mg/kg	0.10	< 0.10
Dibenz(a,h)Anthracene		M	2700	mg/kg	0.10	< 0.10
Benzo[g,h,i]perylene		M	2700	mg/kg	0.10	< 0.10
Total Of 16 PAH's		M	2700	mg/kg	2.0	< 2.0
Benzene		M	2760	µg/kg	1.0	< 1.0
Toluene		M	2760	µg/kg	1.0	< 1.0
Ethylbenzene		M	2760	µg/kg	1.0	< 1.0
m & p-Xylene		M	2760	µg/kg	1.0	< 1.0
o-Xylene		M	2760	µg/kg	1.0	< 1.0
Total Phenols		M	2920	mg/kg	0.10	< 0.10

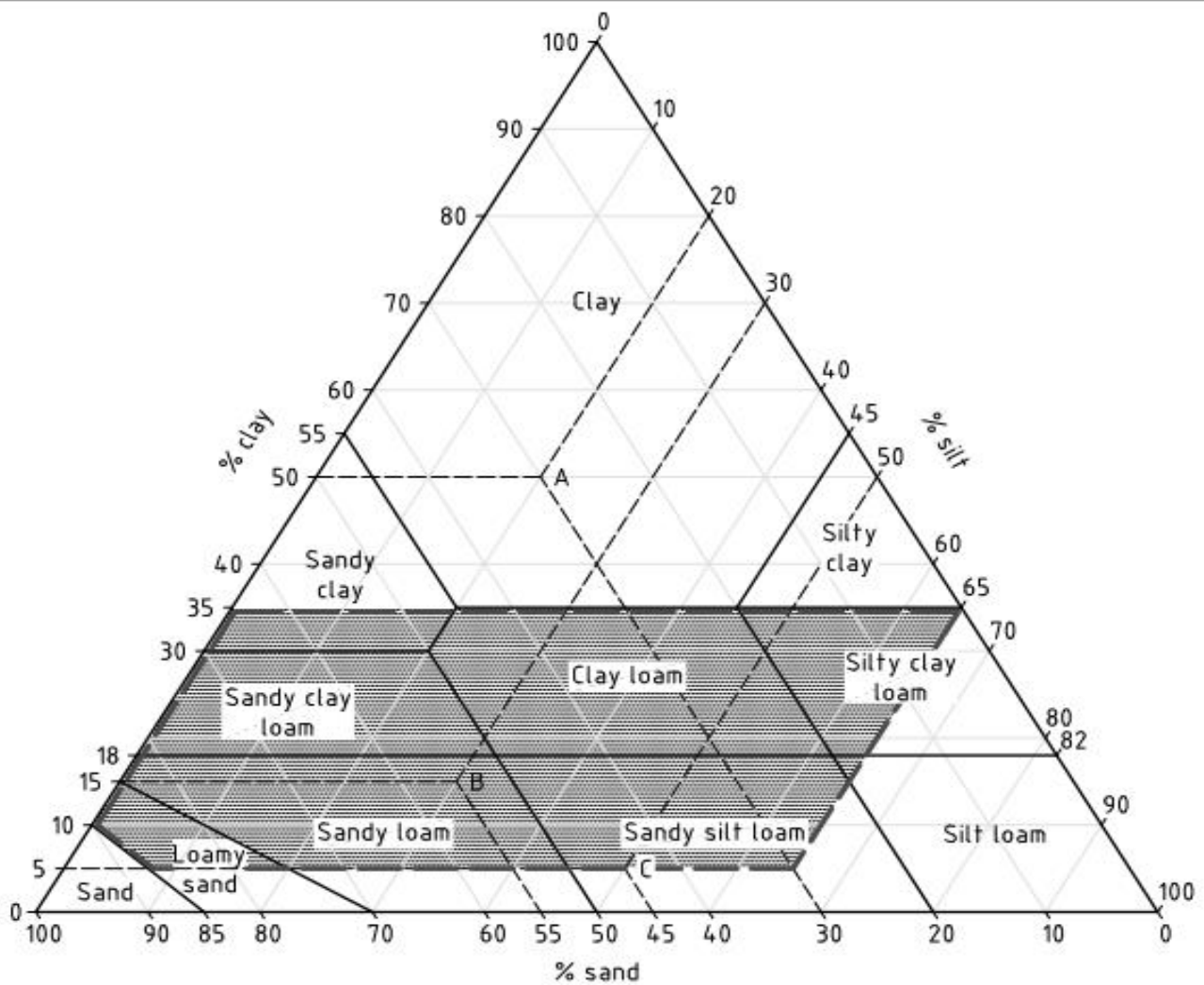
## Results - Topsoil Report

BS3882:2015

**Chemtest Job No.:** 24-03828  
**Chemtest Sample ID.:** 1764301  
 Client Sample Ref.:  
 Sample Location: Stockpile  
**Client Sample ID.:**  
 Top Depth (m):  
 Bottom Depth (m):  
 Date Sampled: 06-Feb-2024  
 Time Sampled:

Parameter	Units	Multipurpose Range	Result	Compliant with Multipurpose Range? (Y/N)	Compliant with Specific Purpose Range? (Y/N)		
					Acid	Low F	Calc.
<b>Texture</b>							
Clay content (Sub Contracted)	%		13				
Silt content (Sub Contracted)	%		37				
Sand content (Sub Contracted)	%		50				
Soil texture class		See Attached Chart	Sandy Silt Loam	YES			
<b>Mass Loss on Ignition</b>							
Clay 5-20%		3.0-20	3.3	YES	YES	YES	YES
Clay 20-35%		5.0-20					
<b>Stone Content</b>							
>2mm (Sub Contracted)	% m/m	0-30	20	YES			
>20mm (Sub Contracted)		0-10	< 0.10	YES			
>50mm (Sub Contracted)		0	< 0.10	YES			
Soil pH value		5.5-8.5	8.1	YES	NO	YES	YES
Carbonate (Calcareous only)	%		0.50				NO
Electrical Conductivity	µS/cm	If >3300 do ESP	2000	YES			
<b>Available Nutrient Content</b>							
Nitrogen %		>0.15	0.19	YES	YES		YES
Extractable phosphorus	mg/l	16-140	28	YES	YES	NO	YES
Extractable potassium	mg/l	121-1500	200	YES	YES		YES
Extractable magnesium	mg/l	51-600	75	YES	YES		YES
<b>Carbon : Nitrogen Ratio</b>		<20:1	6.9/1	YES	YES	YES	YES
<b>Exchangeable sodium</b>	%	<15	1.1				
Available Calcium	mg/l		430				
Available Sodium	mg/l		31				
<b>Phytotoxic Contaminants (by soil pH)</b>							
		< 6.0	6.0-7.0	> 7.0			
Zinc (Nitric Acid extract)	mg/kg	<200	<200	<300	79	YES	
Copper (Nitric Acid extract)	mg/kg	<100	<135	<200	31	YES	
Nickel (Nitric Acid extract)	mg/kg	<60	<75	<110	6.9	YES	
<b>Visible Contaminants</b>							
>2mm	% mm	<0.5	0.000	YES			
..... of which plastics		<0.25	0.000	YES			
..... man-made sharps		zero in 1kg	0.000	YES			

## Topsoil: Texture Classification Chart



### Key



Area within which the texture of topsoil is required to fall

*NOTE* Examples of textural classification are as follows.

- Soil A with 30% sand, 20% silt and 50% clay is in the "clay" textural class.
- Soil B with 55% sand, 30% silt and 15% clay is in the "sandy loam" textural class.
- Soil C with 45% sand, 50% silt and 5% clay is in the "sandy silt loam" textural class.

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## Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request. The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

<b>Sample:</b>	<b>Sample Ref:</b>	<b>Sample ID:</b>	<b>Sample Location:</b>	<b>Sampled Date:</b>	<b>Deviation Code(s):</b>	<b>Containers Received:</b>
1764301			Stockpile	06-Feb-2024	C	Plastic Bag

## Test Methods

SOP	Title	Parameters included	Method summary	Water Accred.
2010	pH Value of Soils	pH at 20°C	pH Meter	
2020	Electrical Conductivity	Electrical conductivity (EC) of aqueous extract or calcium sulphate solution for topsoil	Measurement of the electrical resistance of a 2:1 water/soil extract.	
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.	
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930	
2115	Total Nitrogen in Soils	Nitrogen	Determination by elemental analyser	
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES	
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry	
2260	Carbonate	Carbonate	Titration	
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.	
2325	Sulphide in Soils	Sulphide	Steam distillation with sulphuric acid / analysis by 'Aquakem 600' Discrete Analyser, using N,N-dimethyl-p-phenylenediamine.	
2400	Cations	Cations	ICP-MS	
2420	Phosphate	Phosphate	Spectrophotometry - Discrete analyser	
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.	
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.	
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.	
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazine.	
2620	LOI 440	LOI 440 Trommel Fines	Determination of the proportion by mass that is lost from a soil by ignition at 440°C.	
2660	Cyclohexane Extractable Materials	Cyclohexane Extractable Materials	Solvent extraction / Gravimetry	
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6-C40); optional carbon banding, e.g. 3-band - GRO, DRO & LRO*TPH C8-C40	Dichloromethane extraction / GC-FID	
2690	EPH A/A Split	Aliphatics: >C10-C12, >C12-C16, >C16-C21, >C21- C35, >C35- C40 Aromatics: >C10-C12, >C12-C16, >C16-C21, >C21- C35, >C35- C40	Acetone/Heptane extraction / GCxGC FID detection	
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)	
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.	

## Test Methods

SOP	Title	Parameters included	Method summary	Water Accred.
2780	VPH A/A Split	Aliphatics: >C5-C6, >C6-C7,>C7-C8,>C8-C10 Aromatics: >C5-C7,>C7-C8,>C8-C10	Water extraction / Headspace GCxGC FID detection	
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and Trimethylphenols Note: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.	

## **Report Information**

### **Key**

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U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

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A - Date of sampling not supplied

B - Sample age exceeds stability time (sampling to extraction)

C - Sample not received in appropriate containers

D - Broken Container

E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

### **Sample Retention and Disposal**

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All soil samples will be retained for a period of 30 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

### **Water Sample Category Key for Accreditation**

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DW - Drinking Water

GW - Ground Water

LE - Land Leachate

NA - Not Applicable

PL - Prepared Leachate

PW - Processed Water

## **Report Information**

RE - Recreational Water

SA - Saline Water

SW - Surface Water

TE - Treated Effluent

TS - Treated Sewage

UL - Unspecified Liquid

### **Clean Up Codes**

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NC - No Clean Up

MC - Mathematical Clean Up

FC - Florisil Clean Up

If you require extended retention of samples, please email your requirements to:  
[customerservices@chemtest.com](mailto:customerservices@chemtest.com)



# Final Report

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**Report No.:** 24-03826-1

**Initial Date of Issue:** 22-Feb-2024

**Re-Issue Details:**

**Client** SRC Aggregates

**Client Address:** B Lodge  
Highwood Quarry  
Takeley  
CM6 1SL

**Contact(s):** Matthew Yeates

**Project** Crown Quarry Subsoil

**Quotation No.:** **Date Received:** 08-Feb-2024

**Order No.:** M Yeates **Date Instructed:** 08-Feb-2024

**No. of Samples:** 1

**Turnaround (Wkdays):** 11 **Results Due:** 22-Feb-2024

**Date Approved:** 21-Feb-2024 **Subcon Results Due:** 29-Feb-2024

**Approved By:**

**Details:** Stuart Henderson, Technical Manager

**For details about application of accreditation to specific matrix types, please refer to the Table at the back of this report**

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# Results - Soil

**Project: Crown Quarry Subsoil**

<b>Client: SRC Aggregates</b>		<b>Chemtest Job No.:</b>		24-03826		
Quotation No.:		<b>Chemtest Sample ID.:</b>		1764299		
		Sample Location:		Stockpile		
		Sample Type:		SOIL		
		Date Sampled:		06-Feb-2024		
		Asbestos Lab:		DURHAM		
Determinand	HWOL Code	Accred.	SOP	Units	LOD	
ACM Type		U	2192		N/A	-
Asbestos Identification		U	2192		N/A	No Asbestos Detected
Moisture		N	2030	%	0.020	9.5
Soil Colour		N	2040		N/A	Brown
Other Material		N	2040		N/A	Stones
Soil Texture		N	2040		N/A	Sand
pH at 20C		M	2010		4.0	8.8
Boron (Hot Water Soluble)		M	2120	mg/kg	0.40	< 0.40
Sulphate (2:1 Water Soluble) as SO4		M	2120	g/l	0.010	0.031
Cyanide (Free)		M	2300	mg/kg	0.50	< 0.50
Cyanide (Total)		M	2300	mg/kg	0.50	< 0.50
Sulphide (Easily Liberatable)		N	2325	mg/kg	0.50	3.8
Sulphate (Acid Soluble)		U	2430	%	0.010	< 0.010
Arsenic		M	2455	mg/kg	0.5	3.8
Beryllium		U	2455	mg/kg	0.5	0.6
Cadmium		M	2455	mg/kg	0.10	< 0.10
Chromium		M	2455	mg/kg	0.5	16
Copper		M	2455	mg/kg	0.50	11
Mercury		M	2455	mg/kg	0.05	< 0.05
Nickel		M	2455	mg/kg	0.50	4.0
Lead		M	2455	mg/kg	0.50	10
Selenium		M	2455	mg/kg	0.25	0.54
Vanadium		U	2455	mg/kg	0.5	25
Zinc		M	2455	mg/kg	0.50	27
Chromium (Trivalent)		N	2490	mg/kg	1.0	16
Chromium (Hexavalent)		N	2490	mg/kg	0.50	< 0.50
Toluene Extractable Material		N	2660	mg/kg	50	350
Total TPH >C10-C40 NC	EH_1D_Total	M	2670	mg/kg	10	< 10
Naphthalene		M	2700	mg/kg	0.10	< 0.10
Acenaphthylene		M	2700	mg/kg	0.10	< 0.10
Acenaphthene		M	2700	mg/kg	0.10	< 0.10
Fluorene		M	2700	mg/kg	0.10	< 0.10
Phenanthrene		M	2700	mg/kg	0.10	< 0.10
Anthracene		M	2700	mg/kg	0.10	< 0.10
Fluoranthene		M	2700	mg/kg	0.10	< 0.10
Pyrene		M	2700	mg/kg	0.10	< 0.10
Benzo[a]anthracene		M	2700	mg/kg	0.10	< 0.10
Chrysene		M	2700	mg/kg	0.10	< 0.10
Benzo[b]fluoranthene		M	2700	mg/kg	0.10	< 0.10
Benzo[k]fluoranthene		M	2700	mg/kg	0.10	< 0.10
Benzo[a]pyrene		M	2700	mg/kg	0.10	< 0.10

## Results - Soil

**Project: Crown Quarry Subsoil**

<b>Client: SRC Aggregates</b>		<b>Chemtest Job No.:</b>		24-03826		
Quotation No.:		<b>Chemtest Sample ID.:</b>		1764299		
		Sample Location:		Stockpile		
		Sample Type:		SOIL		
		Date Sampled:		06-Feb-2024		
		Asbestos Lab:		DURHAM		
Determinand	HWOL Code	Accred.	SOP	Units	LOD	
Indeno(1,2,3-c,d)Pyrene		M	2700	mg/kg	0.10	< 0.10
Dibenz(a,h)Anthracene		M	2700	mg/kg	0.10	< 0.10
Benzo[g,h,i]perylene		M	2700	mg/kg	0.10	< 0.10
Total Of 16 PAH's		M	2700	mg/kg	2.0	< 2.0
Benzene		M	2760	µg/kg	1.0	< 1.0
Toluene		M	2760	µg/kg	1.0	< 1.0
Ethylbenzene		M	2760	µg/kg	1.0	< 1.0
m & p-Xylene		M	2760	µg/kg	1.0	< 1.0
o-Xylene		M	2760	µg/kg	1.0	< 1.0
Total Phenols		M	2920	mg/kg	0.10	< 0.10



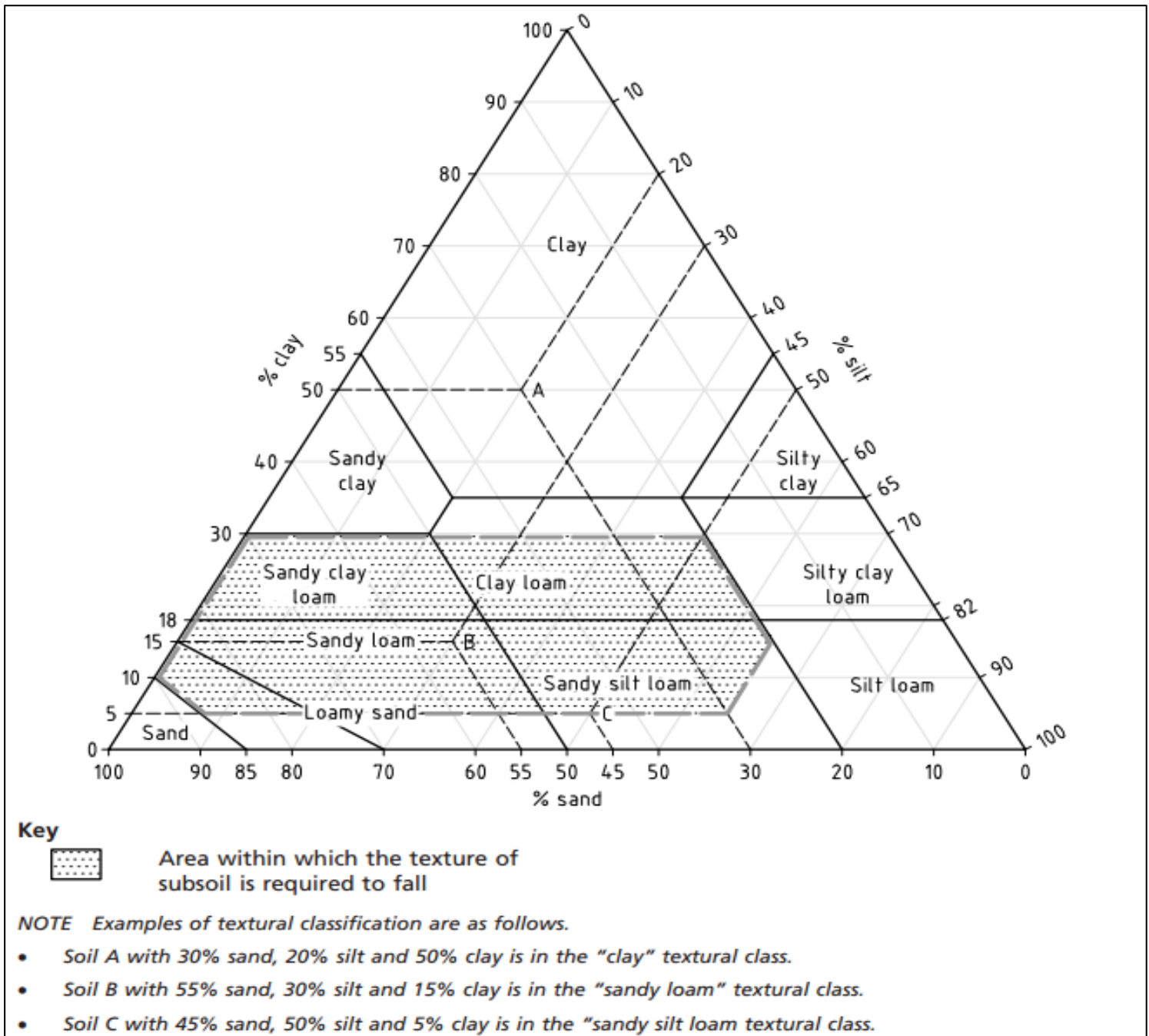
## Results - Subsoil Report

**BS8601:2013**

**Chemtest Job No.:** 24-03826  
**Chemtest Sample ID.:** 1764299  
 Client Sample Ref.:  
 Sample Location: Stockpile  
**Client Sample ID.:**  
 Top Depth (m):  
 Bottom Depth (m):  
 Date Sampled: 06-Feb-2024  
 Time Sampled:

Parameter	Units	Multipurpose Range			Result	Compliant with Multipurpose Range? (Y/N)	Compliant with Specific Purpose Range? (Y/N)	
							Acid	Calc.
<b>Texture</b>								
Clay content	%				14			
Silt content	%				8.5			
Sand content	%				78			
Soil texture class		See Attached Chart				YES		
<b>Mass Loss on Ignition</b>								
	%	<2			0.20	YES		
<b>Stone Content</b>	% m/m							
>2mm		0-40			15	YES		
>20mm		0-20			12	YES		
>50mm		0			< 0.10	YES		
Soil pH value		5.5-8.5			8.1	YES	NO	YES
Carbonate (Calcareous only)	%				7.3			YES
Electrical Conductivity	µS/cm	If >2800 do ESP			2000	YES		
<b>Exchangeable sodium</b>	%	<15			1.8	YES		
Available Calcium	mg/l				330			
Available Sodium	mg/l				38			
<b>Phytotoxic Contaminants (by soil pH)</b>		< 6.0	6.0-7.0	> 7.0				
Zinc (Nitric Acid extract)	mg/kg	<200	<200	<300	42	YES		
Copper (Nitric Acid extract)	mg/kg	<100	<135	<200	17	YES		
Nickel (Nitric Acid extract)	mg/kg	<60	<75	<110	9.3	YES		
<b>Visible Contaminants</b>	% mm							
>2mm		<0.5			0.000	YES		
..... of which plastics		<0.25			0.000	YES		
..... man-made sharps		zero in 1kg			0.000	YES		

## Subsoil: Texture Classification Chart



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## Test Methods

SOP	Title	Parameters included	Method summary	Water Accred.
2010	pH Value of Soils	pH at 20°C	pH Meter	
2020	Electrical Conductivity	Electrical conductivity (EC) of aqueous extract or calcium sulphate solution for topsoil	Measurement of the electrical resistance of a 2:1 water/soil extract.	
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.	
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930	
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES	
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry	
2260	Carbonate	Carbonate	Titration	
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.	
2325	Sulphide in Soils	Sulphide	Steam distillation with sulphuric acid / analysis by 'Aquakem 600' Discrete Analyser, using N,N-dimethyl-p-phenylenediamine.	
2400	Cations	Cations	ICP-MS	
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.	
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.	
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.	
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazine.	
2620	LOI 440	LOI 440 Trommel Fines	Determination of the proportion by mass that is lost from a soil by ignition at 440°C.	
2660	Cyclohexane Extractable Materials	Cyclohexane Extractable Materials	Solvent extraction / Gravimetry	
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID	
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)	
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.	
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and Trimethylphenols>Note: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.	

## **Report Information**

### **Key**

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U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

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A - Date of sampling not supplied

B - Sample age exceeds stability time (sampling to extraction)

C - Sample not received in appropriate containers

D - Broken Container

E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

### **Sample Retention and Disposal**

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All soil samples will be retained for a period of 30 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

### **Water Sample Category Key for Accreditation**

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DW - Drinking Water

GW - Ground Water

LE - Land Leachate

NA - Not Applicable

PL - Prepared Leachate

PW - Processed Water

## **Report Information**

RE - Recreational Water

SA - Saline Water

SW - Surface Water

TE - Treated Effluent

TS - Treated Sewage

UL - Unspecified Liquid

### **Clean Up Codes**

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NC - No Clean Up

MC - Mathematical Clean Up

FC - Florisil Clean Up

If you require extended retention of samples, please email your requirements to:  
[customerservices@chemtest.com](mailto:customerservices@chemtest.com)

**APPENDIX D  
DELIVERY NOTES**

## Delivery Note



# GROUP

**Vehicle Reg** EN68ZKR  
**Truck type** 8-Wheeler  
**Haulier** SRC  
**Driver name** Marian Nechi  
**Date** 29/02/2024  
**Ticket number** 1437540  
**W/C Number** CBDU202785  
**Customer name** Burnt Orange Construction L  
**SICCode** 42990  
**Customer Address**  
Stortford Road  
Gt Dunmow

**Post code** CM6 1SH

**Site contact**  
Chris

**Contact Number** 07976 896124

**Customer O/N**

**Collection Point** SRC Crown

**Material**

Subsoil BS8601

**Loads** 1

**Time on site** 13:52

**Time off site** 13:55

**Signature name** Chrys

By signing the above I confirm that i have fulfilled my duty to apply the waste hierarchy as required by regulation 12 of the waste (England & Wales) Regulations 2011

Any Recycled materials supplied are produced in compliance with the WRAP quality protocol for the production of aggregates from inert waste

## Delivery Note



# GROUP

**Vehicle Reg** EN68ZKP  
**Truck type** 8-Wheeler  
**Haulier** SRC  
**Driver name** Kevin Edge  
**Date** 29/02/2024  
**Ticket number** 1437569  
**W/C Number** CBDU202785  
**Customer name** Burnt Orange Construction L  
**SICCode** 42990  
**Customer Address**  
Stortford Road  
Gt Dunmow

**Post code** CM6 1SH

**Site contact**  
Chris

**Contact Number** 07976 896124

**Customer O/N**

**Collection Point** SRC Crown

**Material**

Subsoil BS8601

**Loads** 1

**Time on site** 14:43

**Time off site** 14:44

**Signature name** Kenny

By signing the above I confirm that i have fulfilled my duty to apply the waste hierarchy as required by regulation 12 of the waste (England & Wales) Regulations 2011

Any Recycled materials supplied are produced in compliance with the WRAP quality protocol for the production of aggregates from inert waste



## Delivery Note



# GROUP

**Vehicle Reg** OO23PTL  
**Truck type** 8-Wheeler  
**Haulier** SRC  
**Driver name** Alex Wales  
**Date** 04/03/2024  
**Ticket number** 1438697  
**W/C Number** CBDU202785  
**Customer name** Burnt Orange Construction L  
**SICCode** 42990  
**Customer Address**  
Stortford Road  
Gt Dunmow

**Post code** CM6 1SH  
**Site contact**  
Chris

**Contact Number** 07896916469  
**Customer O/N**  
**Collection Point** SRC Crown

**Material**  
Subsoil BS8601

**Loads** 1  
**Time on site** 8:02  
**Time off site** 8:03  
**Signature name** Chris

By signing the above I confirm that i have fulfilled my duty to apply the waste hierarchy as required by regulation 12 of the waste (England & Wales) Regulations 2011

Any Recycled materials supplied are produced in compliance with the WRAP quality protocol for the production of aggregates from inert waste

## Delivery Note



# GROUP

**Vehicle Reg** EJ68THG  
**Truck type** 8-Wheeler  
**Haulier** SRC  
**Driver name** Gary Tyler  
**Date** 01/03/2024  
**Ticket number** 1438704  
**W/C Number** CBDU202785  
**Customer name** Burnt Orange Construction L  
**SICCode** 42990  
**Customer Address**  
Stortford Road  
Gt Dunmow

**Post code** CM6 1SH

**Site contact**  
Chris

**Contact Number** 07896916469

**Customer O/N**

**Collection Point** SRC Crown

**Material**

Subsoil BS8601

**Loads** 1

**Time on site** 16:09

**Time off site** 16:09

**Signature name** Chris

By signing the above I confirm that i have fulfilled my duty to apply the waste hierarchy as required by regulation 12 of the waste (England & Wales) Regulations 2011

Any Recycled materials supplied are produced in compliance with the WRAP quality protocol for the production of aggregates from inert waste

**APPENDIX E**  
**LABORATORY TEST CERTIFICATES**

Stansted Environmental Services Ltd  
The Stansted Centre  
Parsonage Road  
Takeley  
Bishop's Stratford  
CM22 6PU

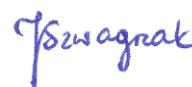
i2 Analytical Ltd.  
7 Woodshots Meadow,  
Croxley Green  
Business Park,  
Watford,  
Herts,  
WD18 8YS

e: enquiries@sestesting.com

t: 01923 225404  
f: 01923 237404  
e: reception@i2analytical.com

## **Analytical Report Number : 24-009736**

<b>Project / Site name:</b>	Canada Cottages	<b>Samples received on:</b>	19/03/2024
<b>Your job number:</b>	CON219-DUNM-001	<b>Samples instructed on/ Analysis started on:</b>	19/03/2024
<b>Your order number:</b>		<b>Analysis completed by:</b>	26/03/2024
<b>Report Issue Number:</b>	1	<b>Report issued on:</b>	26/03/2024
<b>Samples Analysed:</b>	2 soil samples		



**Signed:**

Joanna Szwagrak  
PL Head of Reporting Team  
**For & on behalf of i2 Analytical Ltd.**

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils - 4 weeks from reporting  
leachates - 2 weeks from reporting  
waters - 2 weeks from reporting  
asbestos - 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.  
Application of uncertainty of measurement would provide a range within which the true result lies.  
An estimate of measurement uncertainty can be provided on request.

Analytical Report Number: 24-009736  
Project / Site name: Canada Cottages

Lab Sample Number	148424	148425			
Sample Reference	VS03	VS04			
Sample Number	None Supplied	None Supplied			
Depth (m)	0.10	0.15			
Date Sampled	19/03/2024	19/03/2024			
Time Taken	None Supplied	None Supplied			
<b>Analytical Parameter (Soil Analysis)</b>	<b>Units</b>	<b>Limit of detection</b>	<b>Accreditation Status</b>		

Stone Content	%	0.1	NONE	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	19	22
Total mass of sample received	kg	0.1	NONE	0.9	0.8

#### Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	MLO	MLO

#### General Inorganics

pH (L099)	pH Units	N/A	MCERTS	8.3	8.4
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0
Water Soluble Sulphate as SO <sub>4</sub> 16hr extraction (2:1)	mg/kg	2.5	MCERTS	83	71
Water Soluble SO <sub>4</sub> 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	41.5	35.4
Organic Matter (automated)	%	0.1	MCERTS	5.4	4.8

#### Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0
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#### Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	0.15	0.08
Acenaphthene	mg/kg	0.05	MCERTS	0.16	0.08
Fluorene	mg/kg	0.05	MCERTS	0.13	0.06
Phenanthrene	mg/kg	0.05	MCERTS	1.6	0.7
Anthracene	mg/kg	0.05	MCERTS	0.38	0.16
Fluoranthene	mg/kg	0.05	MCERTS	3.4	1.9
Pyrene	mg/kg	0.05	MCERTS	2.9	1.7
Benzo(a)anthracene	mg/kg	0.05	MCERTS	1.7	1
Chrysene	mg/kg	0.05	MCERTS	1.6	1.1
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	2.2	1.6
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.83	0.53
Benzo(a)pyrene	mg/kg	0.05	MCERTS	1.8	1.3
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.94	0.65
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.26	0.18
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	1.1	0.91

#### Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	19	12
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Analytical Report Number: 24-009736  
Project / Site name: Canada Cottages

Lab Sample Number	148424	148425			
Sample Reference	VS03	VS04			
Sample Number	None Supplied	None Supplied			
Depth (m)	0.10	0.15			
Date Sampled	19/03/2024	19/03/2024			
Time Taken	None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		

#### Heavy Metals / Metalloids

Parameter	Units	Limit of detection	Accreditation Status	148424	148425
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	15	15
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.96	0.95
Boron (water soluble)	mg/kg	0.2	MCERTS	1.3	1
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	1.5	1.5
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	38	37
Copper (aqua regia extractable)	mg/kg	1	MCERTS	31	31
Lead (aqua regia extractable)	mg/kg	1	MCERTS	65	56
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	23	21
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	54	52
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	130	120

#### Petroleum Hydrocarbons

Parameter	Units	Limit of detection	Accreditation Status	148424	148425
TPHCWG - Aliphatic >C5 - C6 HS_1D_AL	mg/kg	0.02	NONE	< 0.020	< 0.020
TPHCWG - Aliphatic >C6 - C8 HS_1D_AL	mg/kg	0.02	NONE	< 0.020	< 0.020
TPHCWG - Aliphatic >C8 - C10 HS_1D_AL	mg/kg	0.05	NONE	< 0.050	< 0.050
TPHCWG - Aliphatic >C10 - C12 EH_CU_1D_AL	mg/kg	1	MCERTS	< 1.0	< 1.0
TPHCWG - Aliphatic >C12 - C16 EH_CU_1D_AL	mg/kg	2	MCERTS	< 2.0	< 2.0
TPHCWG - Aliphatic >C16 - C21 EH_CU_1D_AL	mg/kg	8	MCERTS	< 8.0	< 8.0
TPHCWG - Aliphatic >C21 - C35 EH_CU_1D_AL	mg/kg	8	MCERTS	17	17
TPHCWG - Aliphatic >C5 - C35 EH_CU+HS_1D_AL	mg/kg	10	NONE	17	17

Parameter	Units	Limit of detection	Accreditation Status	148424	148425
TPHCWG - Aromatic >EC5 - EC7 HS_1D_AR	mg/kg	0.01	NONE	< 0.010	< 0.010
TPHCWG - Aromatic >EC7 - EC8 HS_1D_AR	mg/kg	0.01	NONE	< 0.010	< 0.010
TPHCWG - Aromatic >EC8 - EC10 HS_1D_AR	mg/kg	0.05	NONE	< 0.050	< 0.050
TPHCWG - Aromatic >EC10 - EC12 EH_CU_1D_AR	mg/kg	1	MCERTS	< 1.0	< 1.0
TPHCWG - Aromatic >EC12 - EC16 EH_CU_1D_AR	mg/kg	2	MCERTS	< 2.0	< 2.0
TPHCWG - Aromatic >EC16 - EC21 EH_CU_1D_AR	mg/kg	10	MCERTS	16	< 10
TPHCWG - Aromatic >EC21 - EC35 EH_CU_1D_AR	mg/kg	10	MCERTS	57	43
TPHCWG - Aromatic >EC5 - EC35 EH_CU+HS_1D_AR	mg/kg	10	NONE	73	43

#### VOCs

Parameter	Units	Limit of detection	Accreditation Status	148424	148425
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0
Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0
p & m-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0
o-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected



**Analytical Report Number : 24-009736**  
**Project / Site name: Canada Cottages**

\* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
148422	VS03	None Supplied	0.1	Brown clay and loam with gravel and vegetation
148423	VS04	None Supplied	0.15	Brown clay and loam with gravel and vegetation

**Analytical Report Number : 24-009736**

**Project / Site name: Canada Cottages**

**Water matrix abbreviations:**

**Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)**

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in Soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques	In-house method based on HSG 248, 2021	A001B	D	ISO 17025
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate (Walkley Black Method)	In-house method	L009B	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically (up to 30°C)	In-house method	L019B	W	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight	In-house method based on British Standard Methods and MCERTS requirements.	L019B	D	NONE
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil	L038B	D	MCERTS
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES	In-house method based on Second Site Properties version 3	L038B	D	MCERTS
Sulphate, water soluble, in soil (16hr extraction)	Sulphate, water soluble, in soil (16hr extraction)	In-house method	L038B	D	MCERTS
Speciated EPA-16 PAHs and/or Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds (including PAH) in soil by extraction in dichloromethane and hexane followed by GC-MS	In-house method based on USEPA 8270	L064B	D	MCERTS
BTEX and/or Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS	In-house method based on USEPA 8260	L073B	W	MCERTS
Total petroleum hydrocarbons with carbon banding by GC-FID/GC-MS HS in soil	Determination of total petroleum hydrocarbons in soil by GC-FID/GC-MS HS with carbon banding aliphatic and aromatic	In-house method	L076B/L088	D/W	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry	In-house method	L080	W	MCERTS
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080	W	MCERTS
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080	W	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement	In-house method	L099	D	MCERTS

**For method numbers ending in 'UK' or 'A' analysis have been carried out in our laboratory in the United Kingdom (Watford).**

**For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).**

**For method numbers ending in 'PL' or 'B' analysis have been carried out in our laboratory in Poland.**

**Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30°C.**

**Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.**



Analytical Report Number : 24-009736

Project / Site name: Canada Cottages

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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### Information in Support of Analytical Results

#### List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total



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## **Analytical Report Number : 24-012849**

<b>Project / Site name:</b>	Canada Cottages	<b>Samples received on:</b>	05/04/2024
<b>Your job number:</b>	CON219-DONA-001	<b>Samples instructed on/ Analysis started on:</b>	08/04/2024
<b>Your order number:</b>		<b>Analysis completed by:</b>	12/04/2024
<b>Report Issue Number:</b>	1	<b>Report issued on:</b>	15/04/2024
<b>Samples Analysed:</b>	2 soil samples		

**Signed:** 

Joanna Szwagrak  
Reporting Specialist  
**For & on behalf of i2 Analytical Ltd.**

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils - 4 weeks from reporting  
leachates - 2 weeks from reporting  
waters - 2 weeks from reporting  
asbestos - 6 months from reporting

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.  
Application of uncertainty of measurement would provide a range within which the true result lies.  
An estimate of measurement uncertainty can be provided on request.

Analytical Report Number: 24-012849  
Project / Site name: Canada Cottages

Lab Sample Number	164362	164363			
Sample Reference	US01	US02			
Sample Number	None Supplied	None Supplied			
Depth (m)	0.30	0.40			
Date Sampled	05/04/2024	05/04/2024			
Time Taken	None Supplied	None Supplied			
<b>Analytical Parameter (Soil Analysis)</b>	<b>Units</b>	<b>Limit of detection</b>	<b>Accreditation Status</b>		

Stone Content	%	0.1	NONE	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	12	12
Total mass of sample received	kg	0.1	NONE	0.7	0.7

#### Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	SCA	SCA

#### General Inorganics

pH (L099)	pH Units	N/A	MCERTS	8.1	8.1
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0
Water Soluble Sulphate as SO <sub>4</sub> 16hr extraction (2:1)	mg/kg	2.5	MCERTS	740	880
Water Soluble SO <sub>4</sub> 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	368	440
Organic Matter (automated)	%	0.1	MCERTS	2.6	2.5

#### Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0
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#### Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.15	0.1
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.42	0.27
Pyrene	mg/kg	0.05	MCERTS	0.4	0.24
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.28	0.17
Chrysene	mg/kg	0.05	MCERTS	0.25	0.17
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.37	0.24
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.11	0.11
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.31	0.21
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.13	0.11
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.18	0.12

#### Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	2.65	1.74
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Analytical Report Number: 24-012849  
Project / Site name: Canada Cottages

Lab Sample Number	164362	164363			
Sample Reference	US01	US02			
Sample Number	None Supplied	None Supplied			
Depth (m)	0.30	0.40			
Date Sampled	05/04/2024	05/04/2024			
Time Taken	None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		

#### Heavy Metals / Metalloids

Element	Units	Limit of detection	Accreditation Status	164362	164363
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	10	11
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.54	0.57
Boron (water soluble)	mg/kg	0.2	MCERTS	1	0.9
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	16	17
Copper (aqua regia extractable)	mg/kg	1	MCERTS	21	24
Lead (aqua regia extractable)	mg/kg	1	MCERTS	53	56
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	9.9	10
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	29	30
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	62	63

#### Petroleum Hydrocarbons

Parameter	Units	Limit of detection	Accreditation Status	164362	164363
TPHCWG - Aliphatic >C5 - C6 HS_1D_AL	mg/kg	0.02	NONE	< 0.020	< 0.020
TPHCWG - Aliphatic >C6 - C8 HS_1D_AL	mg/kg	0.02	NONE	< 0.020	< 0.020
TPHCWG - Aliphatic >C8 - C10 HS_1D_AL	mg/kg	0.05	NONE	< 0.050	< 0.050
TPHCWG - Aliphatic >C10 - C12 EH_CU_1D_AL	mg/kg	1	MCERTS	< 1.0	< 1.0
TPHCWG - Aliphatic >C12 - C16 EH_CU_1D_AL	mg/kg	2	MCERTS	< 2.0	< 2.0
TPHCWG - Aliphatic >C16 - C21 EH_CU_1D_AL	mg/kg	8	MCERTS	< 8.0	< 8.0
TPHCWG - Aliphatic >C21 - C35 EH_CU_1D_AL	mg/kg	8	MCERTS	< 8.0	< 8.0
TPHCWG - Aliphatic >C5 - C35 EH_CU+HS_1D_AL	mg/kg	10	NONE	< 10	< 10

Parameter	Units	Limit of detection	Accreditation Status	164362	164363
TPHCWG - Aromatic >EC5 - EC7 HS_1D_AR	mg/kg	0.01	NONE	< 0.010	< 0.010
TPHCWG - Aromatic >EC7 - EC8 HS_1D_AR	mg/kg	0.01	NONE	< 0.010	< 0.010
TPHCWG - Aromatic >EC8 - EC10 HS_1D_AR	mg/kg	0.05	NONE	< 0.050	< 0.050
TPHCWG - Aromatic >EC10 - EC12 EH_CU_1D_AR	mg/kg	1	MCERTS	< 1.0	< 1.0
TPHCWG - Aromatic >EC12 - EC16 EH_CU_1D_AR	mg/kg	2	MCERTS	< 2.0	< 2.0
TPHCWG - Aromatic >EC16 - EC21 EH_CU_1D_AR	mg/kg	10	MCERTS	< 10	< 10
TPHCWG - Aromatic >EC21 - EC35 EH_CU_1D_AR	mg/kg	10	MCERTS	< 10	< 10
TPHCWG - Aromatic >EC5 - EC35 EH_CU+HS_1D_AR	mg/kg	10	NONE	< 10	< 10

#### VOCs

Parameter	Units	Limit of detection	Accreditation Status	164362	164363
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0
Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0
p & m-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0
o-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected



**Analytical Report Number : 24-012849**  
**Project / Site name: Canada Cottages**

\* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
164362	US01	None Supplied	0.3	Yellow brown loam with gravel
164363	US02	None Supplied	0.4	Yellow brown loam with gravel

**Analytical Report Number : 24-012849**

**Project / Site name: Canada Cottages**

**Water matrix abbreviations:**

**Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)**

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in Soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques	In-house method based on HSG 248, 2021	A001B	D	ISO 17025
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate (Walkley Black Method)	In-house method	L009B	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically (up to 30°C)	In-house method	L019B	W	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight	In-house method based on British Standard Methods and MCERTS requirements.	L019B	D	NONE
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil	L038B	D	MCERTS
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES	In-house method based on Second Site Properties version 3	L038B	D	MCERTS
Sulphate, water soluble, in soil (16hr extraction)	Sulphate, water soluble, in soil (16hr extraction)	In-house method	L038B	D	MCERTS
Speciated EPA-16 PAHs and/or Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds (including PAH) in soil by extraction in dichloromethane and hexane followed by GC-MS	In-house method based on USEPA 8270	L064B	D	MCERTS
BTEX and/or Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS	In-house method based on USEPA 8260	L073B	W	MCERTS
Total petroleum hydrocarbons with carbon banding by GC-FID/GC-MS HS in soil	Determination of total petroleum hydrocarbons in soil by GC-FID/GC-MS HS with carbon banding aliphatic and aromatic	In-house method	L076B/L088	D/W	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry	In-house method	L080	W	MCERTS
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080	W	MCERTS
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080	W	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement	In-house method	L099	D	MCERTS

**For method numbers ending in 'UK' or 'A' analysis have been carried out in our laboratory in the United Kingdom (Watford).**

**For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).**

**For method numbers ending in 'PL' or 'B' analysis have been carried out in our laboratory in Poland.**

**Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30°C.**

**Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.**

Analytical Report Number : 24-012849

Project / Site name: Canada Cottages

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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### Information in Support of Analytical Results

#### List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total