

Report No	Date
22047/R1	April 2022
Project	CAE NANT, SKEWEN – REMEDIATION VERIFICATION REPORT
Client	Castell Construction Ltd.

**Spectrum Geo Services
Foxglove Cottage,
Cwm Risca Lane,
Tondu,
BRIDGEND
CF32 0EH**

Report No:	Date:
22047/R1	April 2022

Project:
CAE NANT, SKEWEN – REMEDIATION VERIFICATION REPORT

Issue Number	Status	Description of Amendments
1	Draft	
2	Final	Text changes. Final Logs post Topsoil.
3	Final	Import data and text changes

Report prepared by:	
Signed 	April 2022

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FOREWORD

General Conditions Relating to a Verification Report

This investigation has been devised to generally comply with the relevant principles and requirements of B.S.10175:2011+A2:2017 'Investigation of potentially contaminated sites - Code of practice', science report SC050021/SR3 'Updated Technical Background to the CLEA Model' (Environment Agency, 2008), and DEFRA/Environment Agency (EA), 2019 'land contamination: risk management'. The recommendations made and opinions expressed in this report are based on the information obtained from the sources described using a methodology intended to provide reasonable consistency and robustness.

The opinions expressed in this report are based on the ground conditions revealed by the site works, together with an assessment of the site and of laboratory test results. Whilst opinions may be expressed relating to sub-soil conditions in parts of the site not investigated, for example between exploratory positions, these are only for guidance and no liability can be accepted for their accuracy.

Boring and sampling procedures are undertaken in accordance with B.S.5930:2015 +A1:2020 'Code of Practice for Ground Investigations'. Likewise, in-situ and laboratory testing complies with B.S.1377:1990 'Methods of Tests for Soils for Civil Engineering Purposes' and B.S.22475:2011, unless stated otherwise in the text. Chemical testing has been undertaken by a UKAS accredited laboratory.

Some items of the investigation have been provided by third parties and whilst Spectrum Geo Services Ltd (SGS) have no reason to doubt the accuracy, the items relied on have not been verified. No responsibility can be accepted for errors within third party items presented in this report.

This report is produced in accordance with the scope of SGS's appointment and is subject to the terms of appointment. SGS accepts no liability for any use of this document other than by its client and only for the purposes, for which it was designed and produced. No responsibility can be accepted for any consequences of this information being passed to a third party who may act upon its contents/recommendations.

Any advice, opinions, or recommendations within this document should be read and relied upon only in the context of the document as a whole. The contents of this document are not to be construed as providing legal, business or tax advice or opinion.

1.0 TERMS OF REFERENCE AND INTRODUCTION

The work covered by this document was undertaken on behalf of Castell Construction Ltd., in accordance with the following document:

- *Cae Nant Terrace – Cover Thickness Report, 2094/R2 - October 2020*

The work described in this report represents validation and verification of Cover System Remediation designed and undertaken by Spectrum Geo Services Ltd. (SGS), comprising a suitable soil cover system (300mm and 325mm of combined subsoil and topsoil)..

Block A required a 350mm thickness and Block B a 325mm thickness. Trial holes were dug to prove the thicknesses and testing undertaken to ensure compliance of the imported materials.

1.2 Scope of Works

The objectives of this assessment are:

- To undertake a ground investigation and to obtain soil samples at site;
- To undertake chemical testing to develop an assessment of contamination levels,

SGS had previously undertaken the following reports, which should be read in conjunction with this verification report:

- *Cae Nant Terrace, Skewen – Site Investigation Report, 2004/R1 – February 2020*
- *Cae Nant Terrace, Skewen – Additional Site Investigation Report, 2094/R1 – September 2020.*
- *Cae Nant Terrace, Skewen – Cover Thickness Report, 2094/R2 – October 2020.*

1.3 Development Proposals

It is understood that the intention is to develop the site for the purposes of Residential Development.

1.4 Limitations

Subsoils are inherently variable and by their very nature are hidden from view such that no investigation can be exhaustive to the extent that all soil conditions are revealed. Conditions may therefore be present beneath the site that was not apparent from the data available for review.

Unless specifically noted to the contrary, it should be assumed that this report has not been submitted to any regulatory authorities for approval. Redevelopment sites in particular may have planning conditions attached in respect of contaminated land assessment. Where we are made aware of such conditions in advance of scoping the works, we can tailor the report to the regulatory authority requirements. Where we are not made aware of any such requirements there can be no certainty that our investigation will meet any or all of the regulatory authority requirements.

2.0 BACKGROUND INFORMATION

2.1 Verification Report Structure

This document has been set out as follows:

- A brief background of the site, the findings of previous investigations and nature of the remediation planned.
- A description of the activities undertaken.
- Details of soil sampling undertaken.
- Concluding with an assessment of the compliance with the Remediation Strategy.

Appended to this document is supporting evidence as follows:

- Engineers logs and photographs taken during the verification of the suitability of the cover system material.
- Chemical analysis of the material used within the cover system (topsoil and subsoil).

2.2 Site Location

The development site is situated on Cae Nant Terrace, Skewen, Swansea, SA10 6UP. The site location plan is included in Figure 1.

The existing site is roughly rectangular and has previously been developed, with former buildings and rough unmetalled areas.

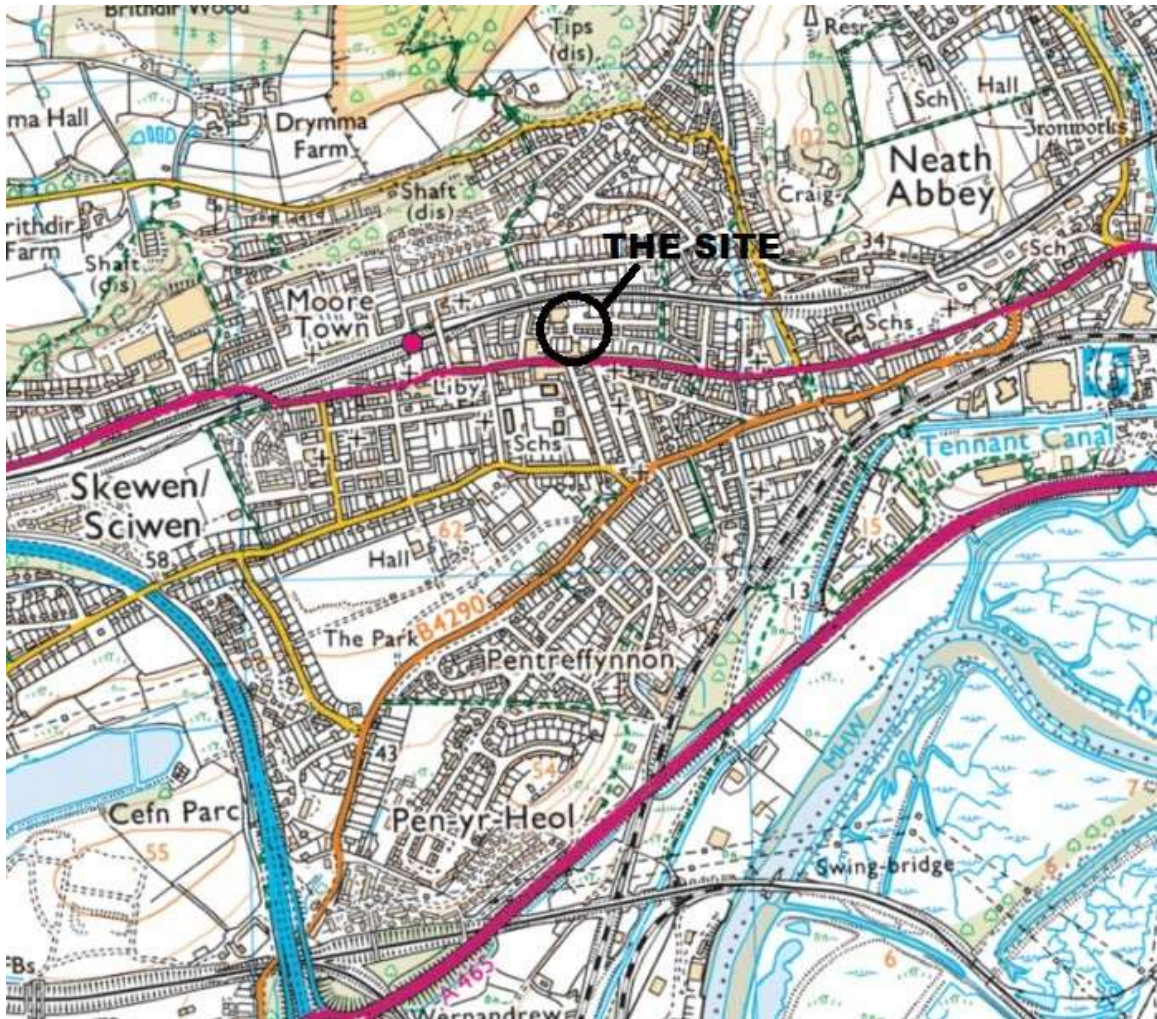


Figure 1. Site Location Plan

2.3 Published Geology

Based on data available from the BGS webviewer, the following geological setting is anticipated;

Based on data available from the BGS webviewer, the following geological setting is anticipated;

- **Superficial deposits:**
- 1:50,000 scale superficial deposits description: Till, Devensian - Diamicton. Superficial Deposits formed up to 2 million years ago in the Quaternary Period. Local environment previously dominated by ice age conditions (U).
- Setting: ice age conditions (U). These sedimentary deposits are glacial in origin. They are detrital, created by the action of ice and meltwater, they can form a wide range of deposits and geomorphologies associated with glacial and inter-glacial periods during the Quaternary.
- **Solid Geology:**
- 1:50,000 scale bedrock geology description: Hughes Member - Sandstone. Sedimentary Bedrock formed approximately 308 to 310 million years ago in the Carboniferous Period. Local environment previously dominated by rivers.
- Setting: rivers. These sedimentary rocks are fluvial in origin. They are detrital, ranging from coarse- to fine-grained and form beds and lenses of deposits reflecting the channels, floodplains and levees of a river or estuary (if in a coastal setting).

2.4 Hydrology

The site has a channel running west/east at its northern boundary, a previous Knotweed infestation had been eradicated.

3.0 SOIL REMEDIATION

The verification process developed was to ensure a capping of suitable cover soils as per Report 2094/R2. This required a cover system at Block A (TP03V and 04V) of 379mm, and Block B (TP01V and 02V) of 415mm.

Materials were imported by the client from Gilfach, Neath. Chemical test results of that have been compared with Guidelines for Residential with Plant Uptake and are appended. Results were compliant.

An Engineer from SGS attended the site over several visits. The remediated soils at each Block were investigated by hand digging to prove the cover thickness and to collect samples for testing in accordance with the WYG suite of contaminants.

The fieldwork locations are shown on drawing SGS/22047/01 included within the appendices. The trial pits were undertaken to record the thickness and physical descriptions of the materials present and to confirm material suitability.

3.1 Cover System Material

The material used for the cover system included site won subsoil and imported topsoil from a site at Gilfach, Neath. This material had been tested and proven to be inert for use in a Residential Setting with Plant Uptake as shown in Appendix E.

The asbestos hotspot had been previously remediated by others.

3.2 Chemical Testing

The results were compared to GAC, Land Quality Management Limited and the Chartered Institute for Environmental Health published 'Suitable 4 Use Levels' (S4UL) as GAC for a range of substances, for a range of generic land uses. DEFRA published category four screening levels (C4SL) for six contaminants in March 2014 to assist practitioners in assessing land contamination under part IIA of the environmental protection act 1990. These have also been identified as suitable for use within the planning system, although it should be noted that they assume a higher level of acceptable risk than S4UL and earlier published GAC.

The end use for the plots in question is residential, this is covered by the 'residential with home-grown produce' generic land uses for which S4ULs are available.

The GAC (S4UL and C4SL) for the moderate classification of SOM (2.5%) has been used for the assessment due to the TOC results gathered from chemical laboratory testing.

The results, compared with current guideline limits are shown in Table SGS/22047/SGV1.

ID		TP01	TP02	TP03	TP04	Residential With Plant Uptake 6% SOM
Depth to Top (m)		0	0	0	0	
% Stones >10mm	% w/w	<0.1	<0.1	8.8	6.5	
pH	pH	8.22	8.24	7.84	7.99	
Sulphate (acid soluble)	mg/kg	<1	<1	<1	<1	
Organic matter	% w/w	<0.2	<0.2	<0.2	<0.2	
Arsenic	mg/kg	7	7	6	7	37
Beryllium	mg/kg	0.5	<0.5	1.1	1	1.7
Boron (Water soluble)	mg/kg	1.4	1.4	<1.0	<1.0	290
Cadmium	mg/kg	1.8	1.7	2	2.1	11
Copper	mg/kg	29	26	21	22	2400
Chromium	mg/kg	17	16	27	26	910
Lead	mg/kg	29	29	40	65	200
Mercury	mg/kg	<0.17	<0.17	<0.17	<0.17	40
Nickel	mg/kg	33	35	28	29	180
Selenium	mg/kg	<1	<1	<1	<1	250
Vanadium	mg/kg	14	13	31	31	410
Zinc	mg/kg	103	96	139	130	3700
TPH Total (>C6-C40)	mg/kg	146	150	16	13	25394
PAH-16MS						
Acenaphthene	mg/kg	<0.01	<0.01	<0.01	<0.01	1100
Acenaphthylene	mg/kg	<0.01	<0.01	<0.01	<0.01	920
Anthracene	mg/kg	<0.02	<0.02	<0.02	<0.02	11000
Benzo(a)anthracene	mg/kg	<0.04	<0.04	<0.04	<0.04	13
Benzo(a)pyrene	mg/kg	<0.04	<0.04	<0.04	<0.04	3
Benzo(b)fluoranthene	mg/kg	<0.05	0.06	<0.05	<0.05	3.7
Benzo(ghi)perylene	mg/kg	<0.05	<0.05	<0.05	<0.05	350
Benzo(k)fluoranthene	mg/kg	<0.07	<0.07	<0.07	<0.07	100
Chrysene	mg/kg	<0.06	0.07	<0.06	<0.06	27
Dibenzo(ah)anthracene	mg/kg	<0.04	<0.04	<0.04	<0.04	0.3
Fluoranthene	mg/kg	<0.08	<0.08	<0.08	<0.08	890
Fluorene	mg/kg	<0.01	<0.01	<0.01	<0.01	860
Indeno(123-cd)pyrene	mg/kg	<0.03	<0.03	<0.03	<0.03	41
Naphthalene	mg/kg	<0.03	<0.03	<0.03	<0.03	13
Phenanthrene	mg/kg	0.05	0.06	<0.03	<0.03	440
Pyrene	mg/kg	<0.07	<0.07	<0.07	<0.07	2000
Total PAH-16MS	mg/kg	<0.08	0.19	<0.08	<0.08	17761

Table SGS/22047/SGV

3.3 Trial Pitting

Four trial pits were hand dug to determine the thickness of the imported Cover System.

The logs are included in Appendix B, together with photographic plates which are also appended.

It was found that the depths complied with the Remediation Strategy, and were still to have turf added, the consequence of which would be a thicker capping system.

4.0 CONCLUSIONS

Spectrum Geo Services Limited considers that a suitable cover system of no-dig layers, suitable thickness, comprising chemically and physically suitable material, has been implemented.

This report should be submitted to the regulators together with details of the Asbestos Hot Spot removal, in order to conclude the remediation process.

APPENDIX A

Drawings

Exploratory Hole Location Plans

SGS/22047/01

APPENDIX B

Trial Pit Logs

APPENDIX C

Laboratory Test Results

Chemical Testing

APPENDIX D

Photographs

APPENDIX E

Imported Soil Compliance Testing

TP01

TP02

TP03

TP04

Block A

Block B

Eaves 44.89

Bathroom window

Ridge 47.65

Bedroom window

Stone Wall

Garage

Eaves 44.97

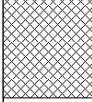
22047: Cae Nant
Verification Positions

Ridge 46.50



Trial Pit Log

Project Name: Cae Nant Verification		Client: Castell Housing		Date: 31/03/2022	
Location: Skewen		Contractor:			
Project No. : 22047		Crew Name: PL		Equipment: Hand Dug	
Location Number TP01V	Location Type TP	Level	Logged By PL	Scale 1:25	Page Number Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.10 - 0.30	ES		0.10			TOPSOIL.	
					0.43			MADE GROUND. Black silty gravelly fine to coarse SAND. Gravel is subrounded to rounded fine to medium of various lithologies.	
								End of Borehole at 0.430m	
									1
									2
									3
									4
									5

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length 0.30	Pit Width 0.30	Pit Stability Stable	Shoring Used None	Remarks	Date	Rate	Remarks

Remarks Hand Dug verification pit.							
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Trial Pit Log

Project Name: Cae Nant Verification		Client: Castell Housing		Date: 31/03/2022	
Location: Skewen		Contractor:			
Project No. : 22047		Crew Name: PL		Equipment: Hand Dug	
Location Number TP02V	Location Type TP	Level	Logged By PL	Scale 1:25	Page Number Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.10 - 0.30	ES		0.10			TOPSOIL..	
					0.42			MADE GROUND. Black silty gravelly fine to coarse SAND. Gravel is subrounded to rounded fine to medium of various lithologies.	
								End of Borehole at 0.420m	
									1
									2
									3
									4
									5

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks
0.30	0.30	Stable	None				

Remarks Hand Dug verification pit.							
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[illegible]

Remarks	
Hand Dug verification pit.	



FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 22/03459
Issue Number: 1

Date: 19 April, 2022

Client: Spectrum Geo Services
Foxglove Cottage
Cwm Risca Lane
Tondu
Wales
CF32 0EH

Project Manager: Rob Griffiths
Project Name: Cae Nant Skewen
Project Ref: 22047
Order No: 22047/01
Date Samples Received: 08/04/22
Date Instructions Received: 08/04/22
Date Analysis Completed: 19/04/22

Approved by:



Richard Wong
Client Manager

Envirolab Job Number: 22/03459

Client Project Name: Cae Nant Skewen

Client Project Ref: 22047

Lab Sample ID	22/03459/1	22/03459/2	22/03459/3	22/03459/4				Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	TP01	TP02	TP03	TP04						
Depth to Top										
Depth To Bottom										
Date Sampled	06-Apr-22	06-Apr-22	06-Apr-22	06-Apr-22						
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES						
Sample Matrix Code	4A	4A	6A	6A						
% Stones >10mm _A	<0.1	<0.1	8.8	6.5				% w/w	0.1	A-T-044
pH _D ^{M#}	8.22	8.24	7.84	7.99				pH	0.01	A-T-031s
Cyanide (total) _A ^{M#}	<1	<1	<1	<1				mg/kg	1	A-T-042sTCN
Phenols - Total by HPLC _A	<0.2	<0.2	<0.2	<0.2				mg/kg	0.2	A-T-050s
Arsenic _D ^{M#}	7	7	6	7				mg/kg	1	A-T-024s
Beryllium _D	0.5	<0.5	1.1	1.0				mg/kg	0.5	A-T-024s
Boron (water soluble) _D	1.4	1.4	<1.0	<1.0				mg/kg	1	A-T-027s
Cadmium _D ^{M#}	1.8	1.7	2.0	2.1				mg/kg	0.5	A-T-024s
Copper _D ^{M#}	29	26	21	22				mg/kg	1	A-T-024s
Chromium _D ^{M#}	17	16	27	26				mg/kg	1	A-T-024s
Lead _D ^{M#}	29	29	40	65				mg/kg	1	A-T-024s
Mercury _D	<0.17	<0.17	<0.17	<0.17				mg/kg	0.17	A-T-024s
Nickel _D ^{M#}	33	35	28	29				mg/kg	1	A-T-024s
Selenium _D ^{M#}	<1	<1	<1	<1				mg/kg	1	A-T-024s
Vanadium _D ^{M#}	14	13	31	31				mg/kg	1	A-T-024s
Zinc _D ^{M#}	103	96	139	130				mg/kg	5	A-T-024s
TPH total (>C6-C40) _A ^{M#}	146	150	16	13				mg/kg	10	A-T-007s

Envirolab Job Number: 22/03459

Client Project Name: Cae Nant Skewen

Client Project Ref: 22047

Lab Sample ID	22/03459/1	22/03459/2	22/03459/3	22/03459/4				Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	TP01	TP02	TP03	TP04						
Depth to Top										
Depth To Bottom										
Date Sampled	06-Apr-22	06-Apr-22	06-Apr-22	06-Apr-22						
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES						
Sample Matrix Code	4A	4A	6A	6A						
PAH-16MS										
Acenaphthene _A ^{M#}	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-019s
Acenaphthylene _A ^{M#}	<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				mg/kg	0.02	A-T-019s
Benzo(a)anthracene _A ^{M#}	<0.04	<0.04	<0.04	<0.04				mg/kg	0.04	A-T-019s
Benzo(a)pyrene _A ^{M#}	<0.04	<0.04	<0.04	<0.04				mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene _A ^{M#}	<0.05	0.06	<0.05	<0.05				mg/kg	0.05	A-T-019s
Benzo(ghi)perylene _A ^{M#}	<0.05	<0.05	<0.05	<0.05				mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene _A ^{M#}	<0.07	<0.07	<0.07	<0.07				mg/kg	0.07	A-T-019s
Chrysene _A ^{M#}	<0.06	0.07	<0.06	<0.06				mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene _A ^{M#}	<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				mg/kg	0.08	A-T-019s
Fluorene _A ^{M#}	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene _A ^{M#}	<0.03	<0.03	<0.03	<0.03				mg/kg	0.03	A-T-019s
Naphthalene _A ^{M#}	<0.03	<0.03	<0.03	<0.03				mg/kg	0.03	A-T-019s
Phenanthrene _A ^{M#}	0.05	0.06	<0.03	<0.03				mg/kg	0.03	A-T-019s
Pyrene _A ^{M#}	<0.07	<0.07	<0.07	<0.07				mg/kg	0.07	A-T-019s
Total PAH-16MS _A ^{M#}	<0.08	0.19	<0.08	<0.08				mg/kg	0.01	A-T-019s

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

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

Client: Spectrum Geo Services, Foxglove Cottage, Cwm Risca Lane, Tondy, Wales,
CF32 0EH

Project: Cae Nant Skewen

Clients Project No: 22047

Project No: 22/03459

Date Received: 08/04/2022 (am)

Cool Box Temperatures (°C): 6.7

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	22/03459/1	22/03459/2	22/03459/3	22/03459/4
Client Sample No				
Client Sample ID/Depth	TP01	TP02	TP03	TP04
Date Sampled	06/04/22	06/04/22	06/04/22	06/04/22
A-T-007s	19/04/2022	19/04/2022	19/04/2022	19/04/2022
A-T-019s	13/04/2022	13/04/2022	13/04/2022	13/04/2022
A-T-024s	19/04/2022	19/04/2022	19/04/2022	19/04/2022
A-T-027s	14/04/2022	14/04/2022	14/04/2022	14/04/2022
A-T-031s	14/04/2022	14/04/2022	14/04/2022	14/04/2022
A-T-042sTCN	14/04/2022	14/04/2022	14/04/2022	14/04/2022
A-T-044	13/04/2022	13/04/2022	13/04/2022	13/04/2022
A-T-050s	13/04/2022	13/04/2022	13/04/2022	13/04/2022

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

3113/122

PROJECT
PROJECT NO

SKEWEN

TP

TP01

DEPTH (M)

GL 0.30

FACE



3113122

PROJECT
PROJECT NO
TP
DEPTH (M)
FACE

SKEWEN

TP02

GL 00.30



3113122

PROJECT

SKEWEN

PROJECT NO

TP

TP03

DEPTH (M)

GL 0.30

FACE



3113122

PROJECT

SKEWEN

PROJECT NO

TP

TP04

DEPTH (M)

GL 0.30

FACE

100

200

300

400

500

600

Sample ID
Depth to Top



Date Sampled

Units

Residential
With Plant
Uptake 6%
SOM

% Stones >10mm	% w/w	7.2	
pH	pH	8.3	
Cyanide Total	mg/kg	<1	34
Phenols HPLC	mg/kg	<1	1100
Arsenic	mg/kg	9.2	37
Beryllium	mg/kg	<1	1.7
Boron (Water soluble)	mg/kg	1.5	290
Cadmium	mg/kg	0.33	11
Copper	mg/kg	17.6	2400
Chromium	mg/kg	19.6	910
Lead	mg/kg	24.2	200
Mercury	mg/kg	<0.2	40
Nickel	mg/kg	30.8	180
Vanadium	mg/kg	10.8	410
Selenium	mg/kg	0.19	250
Zinc	mg/kg	92.2	3700
TPH Total (>C6-C40)	mg/kg	41	25394
PAH-16MS			
Acenaphthene	mg/kg	<0.1	1100
Acenaphthylene	mg/kg	<0.1	920
Anthracene	mg/kg	<0.1	11000
Benzo(a)anthracene	mg/kg	<0.1	13
Benzo(a)pyrene	mg/kg	<0.1	3
Benzo(b)fluoranthene	mg/kg	<0.1	3.7
Benzo(ghi)perylene	mg/kg	<0.1	350
Benzo(k)fluoranthene	mg/kg	<0.1	100
Chrysene	mg/kg	<0.1	27
Dibenzo(ah)anthracene	mg/kg	<0.1	0.3
Fluoranthene	mg/kg	<0.1	890
Fluorene	mg/kg	<0.1	860
Indeno(123-cd)pyrene	mg/kg	<0.1	41
Naphthalene	mg/kg	<0.1	13
Phenanthrene	mg/kg	<0.1	440
Pyrene	mg/kg	<0.1	2000
Total PAH-16MS	mg/kg	<1	17761

TEST CERTIFICATE

Specification for Subsoil

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



Tested in Accordance with: BS 8601: 2013

Client: Merebrook
Client Address: Cromford Mills, Mill Lane,
Cromford, Derbyshire,
DE4 3RQ
Contact: Tim Crowe
Site Address: CF5 Cardiff

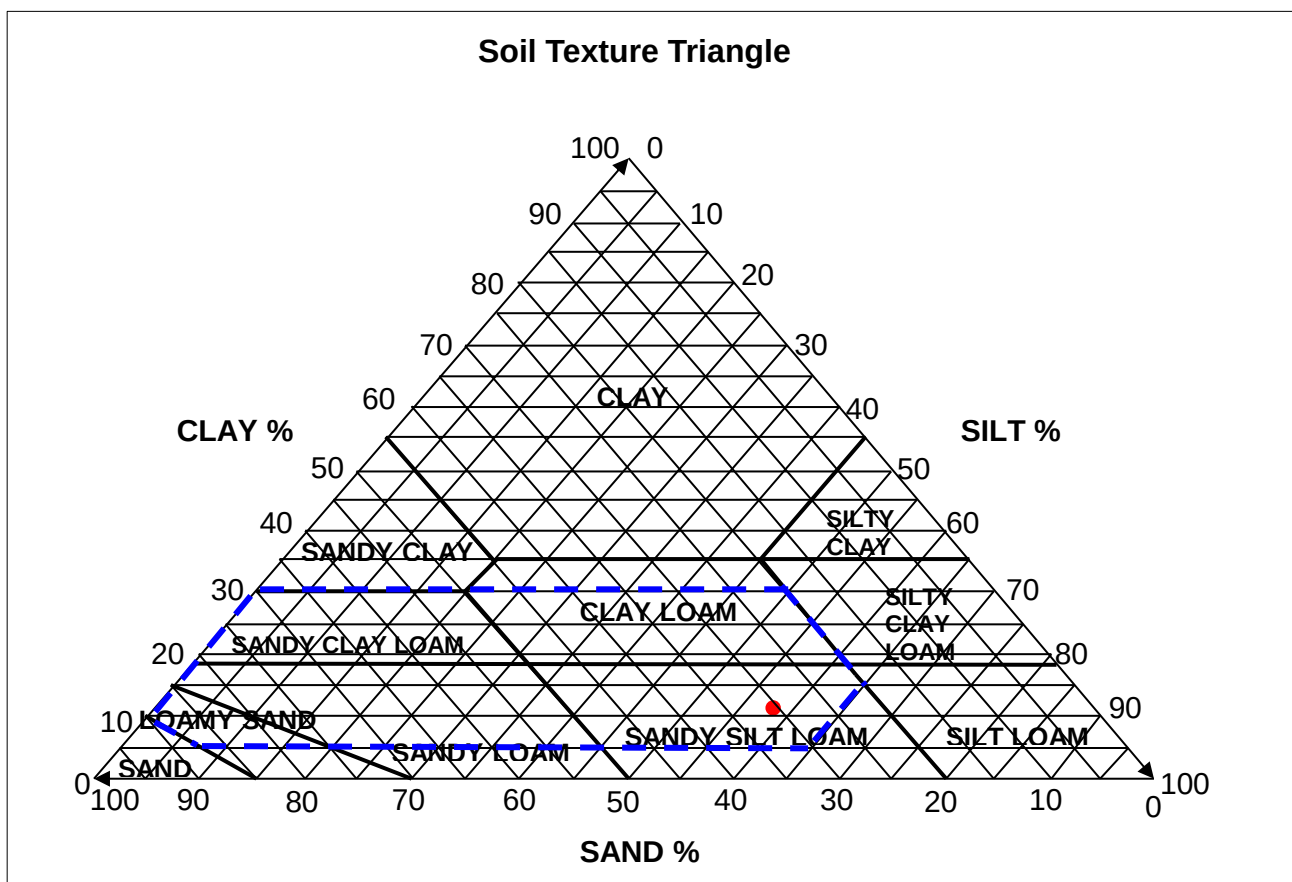
Client Reference: 20787
Job Number: 21-10740
Date Sampled: 17/09/2021
Date Received: 20/09/2021
Date Tested: 21/09/2021
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference: 2015494
Hole No.: Subsoil Sample A
Sample Reference: Not Given
Sample Description: SANDY SILT LOAM

Depth Top [m]: 0.00
Depth Base [m]: Not Given
Sample Type: D



Sample Proportion	% dry mass
Sand	30.8
Silt	56.8
Clay	12.4

Remarks:

Opinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation. This report may not be reproduced other than in full without the prior written approval of the issuing laboratory. The results included within the report relate only to the sample(s) submitted for testing.

Signed:

Anna Wiczorek
Deputy Head of Geo Office Section
for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Specification for Subsoil

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



Tested in Accordance with: BS 8601: 2013

Client: Merebrook
Client Address: Cromford Mills, Mill Lane,
Cromford, Derbyshire,
DE4 3RQ
Contact: Tim Crowe
Site Address: CF5 Cardiff

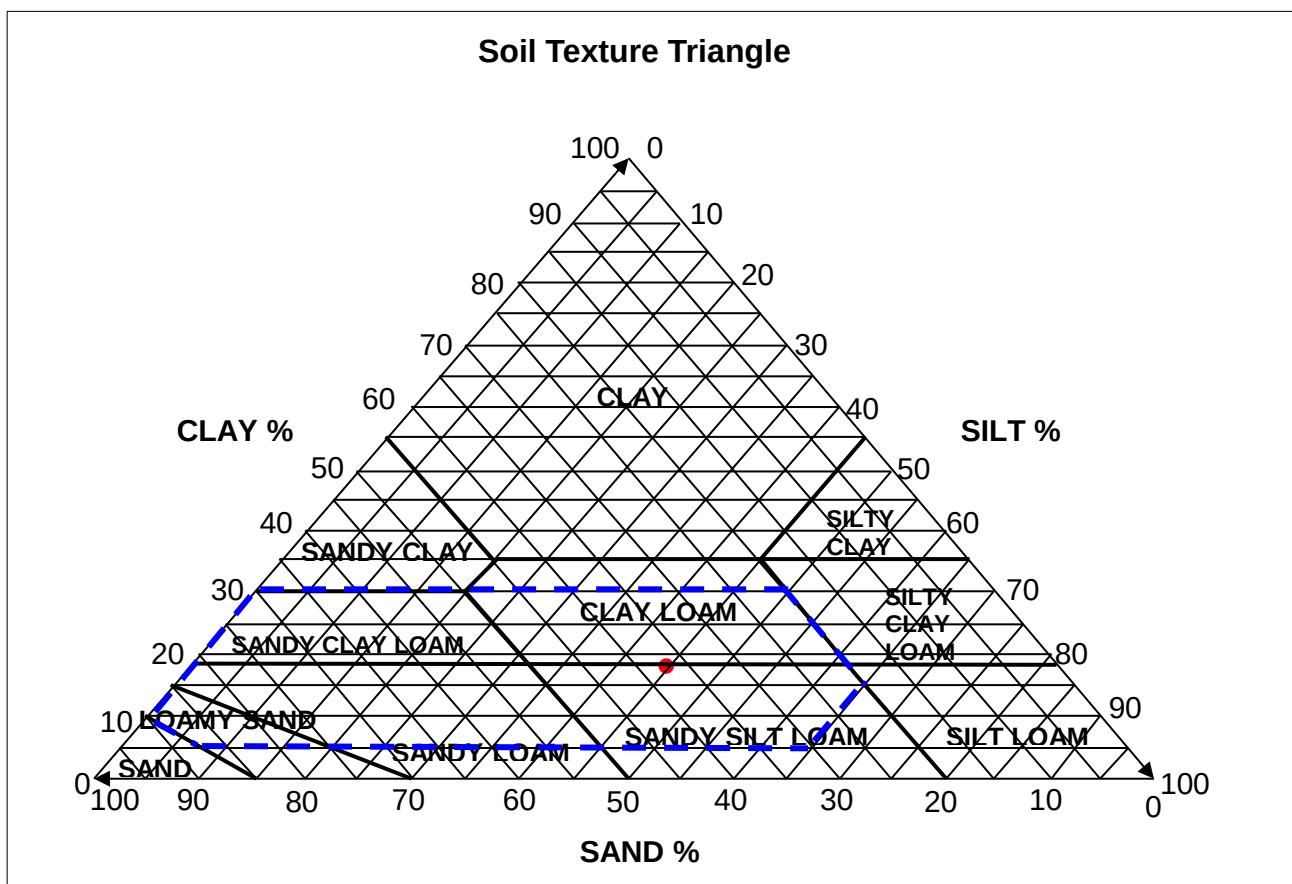
Client Reference: 20787
Job Number: 21-10740
Date Sampled: 17/09/2021
Date Received: 20/09/2021
Date Tested: 21/09/2021
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference: 2015495
Hole No.: Subsoil Sample B
Sample Reference: Not Given
Sample Description: CLAY LOAM

Depth Top [m]: 0.00
Depth Base [m]: Not Given
Sample Type: D



Sample Proportion	% dry mass
Sand	37.5
Silt	43.3
Clay	19.2

Remarks:

Opinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation. This report may not be reproduced other than in full without the prior written approval of the issuing laboratory. The results included within the report relate only to the sample(s) submitted for testing.

Signed:

Anna Wiczorek
Deputy Head of Geo Office Section
for and on behalf of i2 Analytical Ltd



Tim Crowe
Merebrook
Cromford Mills
Mill Lane
Cromford
Derbyshire
DE4 3RQ

e: tcrowe@idom.com

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

t: 01923 225404

f: 01923 237404

e: reception@i2analytical.com

Analytical Report Number : 21-10740

Project / Site name:	CF5 Cardiff	Samples received on:	20/09/2021
Your job number:	20787	Samples instructed on/ Analysis started on:	20/09/2021
Your order number:	21-2-FDO-LABS	Analysis completed by:	28/09/2021
Report Issue Number:	1	Report issued on:	28/09/2021
Samples Analysed:	2 soil samples		

Signed:

Joanna Wawrzeczko
Technical Reviewer (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.

i2 Analytical

7 Woodshots Meadow
Croxley Green Business Park
Watford, WD18 8YS

Telephone: 01923 225404

Fax: 01923 237404

email:reception@i2analytical.com

Certificate of Analysis						
BS 8601:2013 Specification For Subsoil						
Report No:	21-10740			Merebrook Cromford Mills Mill Lane Cromford Derbyshire DE4 3RQ		
Location	CF5 Cardiff					
Lab Reference (Sample Number)	2015494					
Sampling Date	17/09/2021					
Sample ID	Subsoil Sample A					
Depth (m)						
		unit	Result	Compliant with range (Y/N)		
Texture	Clay	%w/w	12.40	Multipurpose subsoil	Specific purpose subsoil	
	Silt	%w/w	56.80		Acidic	Calcareous
	Sand	%w/w	30.8			
	Texture Class		SANDY SILT LOAM		Y	Y
Mass Loss on Ignition		%	3.12	N	N	N
Coarse fragment content	>2mm	%w/w	15.00	Y	Y	Y
	>20mm	%w/w	0.00	Y	Y	Y
	>75mm	%w/w	0.00	Y	Y	Y
Soil pH		pH	8.30	Y	N	Y
Carbonate		%	5.90	-	-	Y
Exchangable Sodium Percentage		%	0.90	Y	Y	Y
Phytotoxic contaminants	Total Zinc	mg/kg	100.00	Y	Y	Y
	Total Copper	mg/kg	24.00	Y	Y	Y
	Total Nickel	mg/kg	30.00	Y	Y	Y
Visible contaminants	>2mm	%w/w	0.00	Y	Y	Y
	Plastics	%w/w	0.00	Y	Y	Y
	Sharps	%w/w	0.00	Y	Y	Y
Available plant nutrients	Phosphorus	mg/l	4.70			
	Potassium	mg/l	112.00			
	Magnesium	mg/l	260.00			
Additional analysis	Available Sodium	mg/l	40.00			
	Available Calcium	mg/l	3100.00			
	Conductivity	uS/cm	1900.00			
	Conductivity CaSO4 Adj.	uS/cm	< 10			
Compliance				Fail	Fail	Fail
Fail BS 8601						
Results are expressed on a dry weight basis, after correction for moisture content where applicable Stated limits are for guidance only and i2 cannot be held responsible for any discrepancies with current legislation						

*= UKAS accredited

** = MCERTS accredited

i2 Analytical

7 Woodshots Meadow
Croxley Green Business Park
Watford, WD18 8YS

Telephone: 01923 225404

Fax: 01923 237404

email:reception@i2analytical.com

Certificate of Analysis						
BS 8601:2013 Specification For Subsoil						
Report No:	21-10740			Merebrook Cromford Mills Mill Lane Cromford Derbyshire DE4 3RQ		
Location	CF5 Cardiff					
Lab Reference (Sample Number)	2015495					
Sampling Date	2021-09-17					
Sample ID	Subsoil Sample B					
Depth (m)						
Texture		unit	Result	Compliant with range (Y/N)		
	Clay	%w/w	19.20	Multipurpose subsoil	Specific purpose subsoil	
	Silt	%w/w	43.30		Acidic	Calcareous
	Sand	%w/w	37.5			
	Texture Class		CLAY LOAM	Y	Y	Y
Mass Loss on Ignition		%	2.53	N	N	N
Coarse fragment content	>2mm	%w/w	22.00	Y	Y	Y
	>20mm	%w/w	0.00	Y	Y	Y
	>75mm	%w/w	0.00	Y	Y	Y
Soil pH		pH	8.10	Y	N	Y
Carbonate		%	4.70	-	-	Y
Exchangable Sodium Percentage		%	0.80	Y	Y	Y
Phytotoxic contaminants	Total Zinc	mg/kg	120.00	Y	Y	Y
	Total Copper	mg/kg	26.00	Y	Y	Y
	Total Nickel	mg/kg	30.00	Y	Y	Y
Visible contaminants	>2mm	%w/w	0.00	Y	Y	Y
	Plastics	%w/w	0.00	Y	Y	Y
	Sharps	%w/w	0.00	Y	Y	Y
Available plant nutrients	Phosphorus	mg/l	4.90			
	Potassium	mg/l	111.00			
	Magnesium	mg/l	260.00			
Additional analysis	Available Sodium	mg/l	33.00			
	Available Calcium	mg/l	3000.00			
	Conductivity	uS/cm	1900.00			
	Conductivity CaSO4 Adj.	uS/cm	< 10			
Compliance				Fail	Fail	Fail
Fail BS 8601						
Results are expressed on a dry weight basis, after correction for moisture content where applicable						

Results are expressed on a dry weight basis, after correction for moisture content where applicable

* = UKAS accredited

** = MCERTS accredited



Analytical Report Number : 21-10740
Project / Site name: CF5 Cardiff

* 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 *
2015494	Subsoil Sample A	None Supplied	None Supplied	Brown clay and loam with vegetation.
2015495	Subsoil Sample B	None Supplied	None Supplied	Brown clay and loam with gravel.

Analytical Report Number : 21-10740

Project / Site name: CF5 Cardiff

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Geotechnical Testing in Soil	See attached geotechnical report	See attached geotechnical report		W	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.	L038-PL	D	MCERTS
75 mm Coarse Fraction - BS8601 Subsoil	Determination of > 75 mm fraction by gravimetry.	BS8601:2013		D	NONE
Carbonate - BS8601 Subsoil	Determination of soil carbonate content	BS8601:2013	L034-PL	D	NONE
Loss on Ignition - BS8601	Determination of Loss on Ignition as defined in BS8601	BS8601:2013		D	NONE
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	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.	L019-UK/PL	D	NONE
Subsoil	See attached report.	BS 8601: 2013	PL	W	NONE
Textural Classification Diagram	-	BS8601:2013		D	NONE
Conductivity (BS3882/BS8601)	Determination of the conductivity of soil in accordance with BS 3882:2007 methodology	BS3882:2007 & BS8601:2013	L099-PL	D	NONE
pH (BS3882/BS8601)	Determination of the pH of soil in accordance with BS 3882:2007 methodology	BS3882:2007 & BS8601:2013	L099-PL	D	NONE
Phosphorus (BS3882/BS8601)	Determination of the extractable phosphorus in soil, in accordance with BS3882:2007 methodology.	BS3882:2007 & BS8601:2013	L038-PL	D	NONE
Extractable/Available Metals (BS3882/BS8601)	Determination of the extractable metals in soil, in accordance with BS3882:2007 methodology.	BS3882:2007 & BS8601:2013	L038-PL	D	NONE
Sodium (exchangeable %)	Determination of exchangeable sodium (%) by calculation, in accordance with BS3882:2007 methodology.	BS3882:2007	L028-PL	D	NONE
Textural Classification (BS3882/BS8601)	Determination of the textural classification of soil following BS3882:2007 methodology.	BS3882:2007 & BS8601:2013	L01TS	D	NONE
Coarse Fragment and Contaminant Analysis	Determination of >2mm contaminants	BS3882:2007 & BS8601:2013 & PAS 100:2005	L01TS	D	NONE

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.

For method numbers ending in 'PL' 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 30oC.



Analytical Report Number : 21-10740
Project / Site name: CF5 Cardiff

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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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.



Freeland Horticulture Ltd
Rosedale Nursery
College Road
Hextable
Kent BR8 7LT

Attention: Philippa Lambourne

Our Ref: SLC-1001-SA

4 January 2022

Dear Philippa

Topsoil Analysis Report: Gilfach Topsoil – January 2022

We have completed the analysis of the topsoil sample recently taken from the above site and it has been forwarded to an approved laboratory for analysis and have the pleasure of reporting our findings. The purpose of the analysis was to determine the suitability of the topsoil for general landscaping purposes and its compliance with the current British Standard for topsoil (BS3882).

SOIL SAMPLING & EXAMINATION

At the time of our sampling visit the topsoil was stored in a stockpile. A series of 10 hand augered trial holes were constructed across the stockpile for the purpose of soil examination and sample collection. As the soil examination confirmed a consistent topsoil composition, the ten samples were combined together to form one composite sample for analysis purposes. The soil was described as dark brown, slightly moist and friable with a well-developed, fine to medium granular structure. The soil contained a low fraction of small stones and no deleterious materials (eg. building waste materials, glass, roots or rhizomes of pernicious weeds) or unusual odours (eg. hydrocarbons) were recorded.

LABORATORY ANALYSIS

The topsoil sample was submitted to a UKAS and MCERTS accredited laboratory for routine physical and chemical parameters to confirm the composition and fertility of the soil. The following parameters were determined:

- ⊕ pH & electrical conductivity values;
- ⊕ major plant nutrients (N, P, K, Mg) & organic matter content;
- ⊕ particle size distribution and stone content;
- ⊕ heavy metals & potentially toxic elements (As, Cd, Cr, Cu, Pb, Hg, Ni, Se, Zn, B);
- ⊕ sulphate, sulphur, sulphide;
- ⊕ total cyanide and total (mono) phenols;
- ⊕ speciated PAHs (US EPA16)
- ⊕ banded aromatic and aliphatic petroleum hydrocarbons (C₅-C₃₅).
- ⊕ Asbestos

The results are presented on the attached Certificate of Analysis and an interpretation of the results is given below.

Phone: 01322 619161;

*Freeland horticulture Ltd, Registered in England: Rosedale Nursery, College Road, Hextable, Kent BR8 7LT
Company Registration No: 04015968*

COMMENTS***pH & Electrical Conductivity (salinity) Values***

The sample was alkaline in nature (pH 8.3) with a pH value that would be considered suitable for general landscaping purposes.

The electrical conductivity (salinity) value using the soil:water extract was (858 μ S/cm) indicating that soluble salts are not present at levels that would be harmful to plants.

The electrical conductivity values by CaSO₄ extract (BS3882 requirement) fell below the maximum specified value (3300 μ S/cm) given in BS3882:2015.

Organic Matter & Nutrient Status

The sample was rich in organic matter and all major plant nutrients. No further additions of compost or fertiliser are required, or indeed recommended, for at least the first growing season.

The C:N ratio of the sample was acceptable for general landscape purposes

Particle Size Distribution & Stone Content

The sample contained 79% sand and fell into the loamy sand texture class. This particle size distribution is considered suitable for a broad range of landscape applications, including tree and shrub planting, turfing and seeding.

The sample was Virtually free from stones of 50 mm and upwards in diameter and only contained a slight fraction of smaller stones (7.2%). As such, stones will not restrict the use of the soil for landscaping purposes.

Potential Contaminants

We are not aware of any specified contaminant levels set for the proposed end-use of this topsoil. This includes human health, environmental protection and metals considered toxic to plants. In the absence of any site-specific assessment criteria, the concentrations that affect human health have been compared with the 'residential with homegrown produce' land use in the Suitable For Use Levels presented in 'The LQM/CIEH S4UIs' for Human Health Risk Assessment (2015) and DEFRA SP1010: 'Development of Category 4 Screening Levels' for Assessment of Land Affected by Contamination – Policy Companion Document (2014).

Of the potential contaminants determined, none was found at levels that would exceed their respective guideline values.

CONCLUSION

The purpose of the analysis was to determine the suitability of the topsoil for general landscaping purposes. From the soil examination and laboratory analysis, the soil is described as an alkaline, non-saline, loamy sand. The organic matter and nutrient levels are acceptable, and no significant contamination was found with respect to the parameters determined. This soil would adhere to the current BS3882 specification for 'multipurpose grade'.

To conclude, based on our findings, the topsoil would be considered well-suited to general landscaping purposes provided the physical condition of the soil is maintained.

We hope this report meets with your approval and provides the necessary information. Please do not hesitate to contact the undersigned if you have any queries or comments.

George Longmuir MSc Soil Sci. M.I Soil Sci.

Client	Freeland Horticulture Ltd
Job Name	Topsoil Analysis
Site	Gilfach, Neath
Month/Year	January 22
Our Ref	1001-SA
Date	04 January 2022

Composite sample

pH Value & Salinity

pH value (1:2.5 soil/water ext)	units	8.3
Electrical Conductivity (1:2.5 soil/water ext)	µS/cm	858
Electrical Conductivity (1:2.5 soil/CaSO ₄ ext)	µS/cm	2918
Neutralising Value (CaCO ₃ equivalent)	%	2.3

Organic Matter & Nutrient Status

Organic Matter (LOI)	%	6.7
Organic Carbon (Derived)	%	3.9
Total Nitrogen	%	0.313
Carbon:Nitrogen Ratio	:1	12.4
Available Phosphorus	mg/l	41.2
Available Potassium	mg/l	1216
Available Magnesium	mg/l	218

Particle Size Analysis & Stones

Clay (<0.002mm)	%	0
Silt (0.063-0.002mm)	%	13
Sand (2.0-0.063mm)	%	89
Texture Class	UK Class	Sandy Sand

Stones 2-20mm	% by DW	7.2
Stones 20-50mm	% by DW	0.0
Stones >50mm	% by DW	0.0

Potential Contaminants

Total Arsenic (As)	mg/kg	9.2
Total Cadmium (Cd)	mg/kg	0.33
Total Chromium (Cr)	mg/kg	19.6
Hexavalent Chromium (Cr ^{VI})	mg/kg	<0.2
Total Copper (Cu)	mg/kg	17.6
Total Lead (Pb)	mg/kg	24.2
Total Mercury (Hg)	mg/kg	<0.2
Total Nickel (Ni)	mg/kg	30.8
Total Selenium (Se)	mg/kg	0.19
Total Zinc (Zn)	mg/kg	92.2
Total Beryllium (Be)	mg/kg	<1
Total Barium (Ba)	mg/kg	63.7
Total Vanadium (V)	mg/kg	10.8
Hot Water Soluble Boron (B)	mg/kg	1.5
Total Cyanide (CN)	mg/kg	<1
Elemental Sulphur (S)	mg/kg	<5
Easily Liberated Sulphide (S ²⁻)	mg/kg	<1
Water Soluble Sulphate (SO ₄ ²⁻)	mg/l	57.2
Total Phenols Index	mg/kg	<1
Asbestos Screen	-	N.D.

Client	Freeland Horticulture Ltd
Job Name	Topsoil Analysis
Site	Gilfach, Neath
Month/Year	January 22
Our Ref	1001-SA
Date	04 January 2022

Polyaromatic Hydrocarbons

Naphthalene	mg/kg	<0.05
Acenaphthylene	mg/kg	<0.05
Acenaphthene	mg/kg	<0.05
Fluorene	mg/kg	<0.05
Phenanthrene	mg/kg	<0.1
Anthracene	mg/kg	<0.05
Fluoranthene	mg/kg	<0.1
Pyrene	mg/kg	<0.1
Benzo[a]anthracene	mg/kg	<0.1
Chrysene	mg/kg	<0.1
Benzo[b]fluoranthene	mg/kg	<0.1
Benzo[k]fluoranthene	mg/kg	<0.1
Benzo[a]pyrene	mg/kg	<0.1
Indeno[1,2,3-cd]pyrene	mg/kg	<0.1
Dibenzo[a,h]anthracene	mg/kg	<0.1
Benzo[g,h,i]perylene	mg/kg	<0.1
Total PAHs sum US EPA 16	mg/kg	<1

Banded Petroleum Hydrocarbons

Aliphatic TPH >C ₅ -C ₆	mg/kg	<0.05
Aliphatic TPH >C ₆ -C ₈	mg/kg	<0.05
Aliphatic TPH >C ₈ -C ₁₀	mg/kg	<0.05
Aliphatic TPH >C ₁₀ -C ₁₂	mg/kg	<10
Aliphatic TPH >C ₁₂ -C ₁₆	mg/kg	<10
Aliphatic TPH >C ₁₆ -C ₂₁	mg/kg	<10
Aliphatic TPH >C ₂₁ -C ₃₅	mg/kg	21.0
Aliphatic TPH >C ₃₅ -C ₄₄	mg/kg	<12

Aromatic TPH >C ₅ -C ₇	mg/kg	<0.05
Aromatic TPH >C ₇ -C ₈	mg/kg	<0.05
Aromatic TPH >C ₈ -C ₁₀	mg/kg	<0.05
Aromatic TPH >C ₁₀ -C ₁₂	mg/kg	<10
Aromatic TPH >C ₁₂ -C ₁₆	mg/kg	<10
Aromatic TPH >C ₁₆ -C ₂₁	mg/kg	<10
Aromatic TPH >C ₂₁ -C ₃₅	mg/kg	20.0
Aromatic TPH >C ₃₅ -C ₄₄	mg/kg	<12

Total Petroleum Hydrocarbons (C ₅ -C ₄₄)	mg/kg	41.0
---	-------	------

BTEX

Benzene	mg/kg	<0.02
Toluene	mg/kg	<0.2
Ethyl Benzene	mg/kg	<0.04
m- & p- Xylene	mg/kg	<0.2
o-Xylene	mg/kg	<0.1