

14197/RH

27 February 2025

Bellway Homes Limited (Wales)
Building One
Eastern Business Park
St. Mellons
Cardiff CF3 5EA

For the attention of Barrie Evans

Dear Sirs,

**Land Formally Part of, Llanwern Steelworks, Queensway Llanwern, NP19 4QZ (Alder Grove).
NHBC Outstanding Land Quality Conditions, Ref: 228471 LQ conditions LQ1 & LQ2.
Plot 184 to 188, Validation of Clean Cover to Garden Areas.**

Intégral Géotechnique were appointed by Bellway Homes Limited (Wales), to carry out the clean cover validation inspections to soft landscaped and garden areas within the above development as the site build program progresses. We can now report the clean cover soil validation works within the above development site as follows.

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This information is submitted in support of the discharge of conditions of the following consents and/or warranties.

Regulator	Reference
NHBC outstanding Land Quality Conditions Ref:	228471 LQ conditions LQ1 & LQ2

Requirements for remedial measures with regard to mitigate land contamination risks at the above site comprise the validation of an imported clean 600mm capping layer to be incorporated within the soft landscaped and garden areas of the new development

Remedial Measure Requirements (Clean Capping Layer)

1. The upper 600 mm of fill used in the clean capping layer in all garden and soft finished areas are to be chemically tested and a UKAS MCERTS accredited laboratory analysis certificates supplied. The capping system is to comprise of imported clean inert materials conforming to the 'Requirements for the Chemical Testing of Imported Materials for Various End Uses and Validation of Cover Systems prepared by Welsh Land Contamination Working Group' and to satisfy appropriate soil guideline values for residential developments with gardens. All capping soils laid within garden and landscape areas are to be placed on a hi-visibility geotextile membrane. Samples of the topsoil and subsoil will be taken for laboratory analysis, at a frequency of 1 in every 4 gardens.
2. Topsoil imported to the site for garden infill and landscaping will require a laboratory analysis certificate confirming its suitability for use within the site prior to importation and placement within garden and landscaped areas to confirm its chemical suitability.
3. Subsoil imported to the site for garden infill and landscaping will require a laboratory analysis certificate confirming its suitability for use within the site prior to importation and placement within garden and landscaped areas to confirm its chemical suitability.
4. Following placement of the imported topsoil and subsoil within garden areas, a validation trial pit excavation depth check will be undertaken at a frequency of 1 in 4 plots, so as to confirm the sufficient depth of the clean capping layer, (minimum 600mm). A sample of topsoil and subsoil will also be taken from each trial pit excavated to further confirm the ongoing chemical quality of the topsoil and subsoil.

Imported Soils (Clean Capping Layer)

Topsoil

We understand the imported topsoil and subsoil sourced for use in soft landscaped areas and gardens at, Land Formally Part of, Llanwern Steelworks, Queensway Llanwern, NP19 4QZ (Alder Grove), has been imported from a surplus of topsoil and subsoil material at a current residential development site, 'Enzos Homes', Malthouse Lane, Llantarnam, NP44 3GB,

We understand these soils were stripped and stockpiled at this source site initially for further re-use within the Llantarnam residential development.

A chemical analysis report Ref:22-26481-1 undertaken on the topsoil and subsoils at the Llantarnam site and concluded the topsoil and subsoils indicated that all analyzed chemical elements or compounds were present at concentrations below the appropriate thresholds for residential soils with plant uptake.

Import of this surplus soil material to Land Formally Part of, Llanwern Steelworks, Queensway Llanwern, NP19 4QZ (Alder Grove), is accompanied with copies of the testing certificate confirming its suitability for use in a proposed residential with homegrown produce end use scenario.

Imported Soils Declaration Forms and imported clean capping soil materials chemical analysis reports for the topsoil and subsoil are presented in Appendix A.

Validation of Clean Capping Layer to Plots 184 to 188

An engineer from Intégral Géotechnique attended site on 12th September 2024 and instructed hand/machine dug validation trial pits within the rear garden of plots 184 to 188 to confirm the depth of the as placed topsoil and subsoil.

The topsoil used at site was found to comprise light brown sandy clay with occasional sub angular to subrounded gravel and many organic rootlets throughout. The subsoil was observed to comprise orange-brown gravelly clay.

Various photographs of capping depths and infilled constructed gardens are shown in Figures.

Samples of the ‘as placed’ topsoil and subsoil soil materials in the above garden areas inspected have been further sampled and sent to the UKAS/MCERTS accredited laboratories of i2 Analytical for chemical analysis. The results of this in-situ soil analysis are presented in Appendix B.

The results of the topsoil and subsoils sampled from within garden and landscaped areas above have been summarised and compared to the appropriate screening criteria for a residential end use. Therefore, the results will have been compared to appropriate Suitable 4 Use Levels (S4ULs) derived by LQM, in the first instance. In their absence, the results will have been compared to the Category 4 Screening Levels (C4SL) and the Soil Guideline Values (SGVs) and Soil Screening Values (SSVs) derived by Atkins ATRISKsoil for residential with the consumption of home grown produce end use, to assess the potential risk to human health.

A summary of the as placed in-situ soil analysis reports is presented in Appendix C

Conclusion

This report based on the above information, therefore confirms that the remediation works regarding the clean capping layer depth requirements, hi-visibility geotextile membrane placement and in-situ soil laboratory analysis for plots 184 to 188 has been completed to satisfy the outstanding LQ conditions, LQ1 and LQ2.

Provision of clean cover validation to the remaining plots at site at the required inspection frequency will be provided in due course.

We trust that the above is to your satisfaction. However, if you have any queries or require any further information, please do not hesitate to contact us.

Yours faithfully,

A handwritten signature in black ink, appearing to read 'R.J. Hawkins', with a long horizontal flourish extending to the right.

Roger J Hawkins
For
Intégral Géotechnique (Wales) Limited

c.c. Barrie Evans

Appendix A Imported Soils Declaration Forms and Imported Capping Soil Analysis Reports

Appendix B Results of In-Situ Soil Analysis

Appendix C A Summary of the In-Situ Soil Analysis

Figures

APPENDIX A

IMPORTED SOILS DECLARATION FORMS, COPIES OF THE SOIL TESTING CERTIFICATES

IMPORTED MATERIALS DECLARATION FORM

1.	Planning Permission Number	2.	Development Address	
*	22/0224	*	ALDER GROVE, QUEENSWAY, LLANWERN 4H.	
3.	Proposed use(s) of ALL imported material(s)	4.	Description of material imported	British Standard Certification supplied
				Yes No
☐	Engineering use/works (e.g. backfill, sub formation, foundation)	☒	Topsoil	☐ ☒
☒	Domestic Garden use (inc. crop growing)	☐	Subsoil	☐ ☐
☒	Landscaping (play areas, communal areas, roadside)	☐	Aggregate	☐ ☐
☐	Other Please specify	☐	Quarry stone	☐ ☐
			Other (Please specify)	☐ ☐
5.	Origin of Imported Material(s)			
☒	Greenfield Site (Please specify) Enzo's Homes, Malthouse Lane, Llantarnam. NP23 3GB			
☐	Brownfield Site (Please specify)			
☐	Recycling / Process supplier (Please specify)			
	Other (Please specify)			
6.	Volume(s) of Material to be Imported	7.	No of samples taken (per source)	
☐	Less than 20m ³	☐	2-3	
☐	Between 20m ³ - 100m ³	☐	4-6	
☒	More than 100m ³	☐	More than 6 (please specify) (NB: All analyses (where applicable) must be subject to MCERTS accreditation ⁽¹⁾ at a certified laboratory)	
8.	Suitability of Use			
Confirmation that soil imported does not contain any evidence of Japanese Knotweed stems, leaves and rhizomes. YES ☒ NO ☐				
Confirmation the imported soil does not contain any unprocessed / unsorted demolition waste YES ☒ NO ☐				
Confirmation that the soil imported does not contain contaminated or potentially contaminated by chemical or radioactive substances YES ☒ NO ☐				
Confirmation that the soils imported is suitable for use for the intended purpose on site YES ☒ NO ☐				
Signed: <u>B. Evans</u> * Date: 15/7/24 *				
Name: <u>BARRI EVANS</u> * Position: <u>TECHNICAL</u> *				
Company Name and Address *				
BELLWAY HOMES, BUILDING 1, EASTERN BUSINESS PARK, WERN FAWR LANE, ST MELLONS, CARDIFF, CF3 5EA.				

IMPORTED MATERIALS DECLARATION FORM

1.	Planning Permission Number	2.	Development Address	
*	22/0224	*	ALDER GROVE, QUEENSWAY, LLANWERN 4H.	
3.	Proposed use(s) of ALL imported material(s)	4.	Description of material imported	British Standard Certification supplied
				Yes No
☐	Engineering use/works (e.g. backfill, sub formation, foundation)	☐	Topsoil	☐ ☐
☒	Domestic Garden use (inc. crop growing)	☒	Subsoil	☐ ☐
☒	Landscaping (play areas, communal areas, roadside)	☐	Aggregate	☐ ☐
☐	Other Please specify	☐	Quarry stone	☐ ☐
			Other (Please specify)	☐ ☐
5.	Origin of Imported Material(s)			
☒	Greenfield Site (Please specify) <u>Enzos Homes, Malthouse Lane, Llanbarnan NP44 3GB</u>			
☐	Brownfield Site (Please specify)			
☐	Recycling / Process supplier (Please specify)			
	Other (Please specify)			
6.	Volume(s) of Material to be Imported	7.	No of samples taken (per source)	
☐	Less than 20m ³	☐	2-3	
☐	Between 20m ³ - 100m ³	☐	4-6	
☒	More than 100m ³	☐	More than 6 (please specify) (NB: All analyses (where applicable) must be subject to MCERTS accreditation ⁽¹⁾ at a certified laboratory)	
8.	Suitability of Use			
Confirmation that soil imported does not contain any evidence of Japanese Knotweed stems, leaves and rhizomes. YES ☒ NO ☐				
Confirmation the imported soil does not contain any unprocessed / unsorted demolition waste YES ☒ NO ☐				
Confirmation that the soil imported does not contain contaminated or potentially contaminated by chemical or radioactive substances YES ☒ NO ☐				
Confirmation that the soils imported is suitable for use for the intended purpose on site YES ☒ NO ☐				
Signed: <u>B. Evans</u> * Date: <u>15/7/24</u> *				
Name: <u>BARRI EVANS</u> * Position: <u>TECHNICAL</u> *				
Company Name and Address *				
<u>BELLWAY HOMES, BUILDING 1, EASTERN BUSINESS PARK, WERN FAWR LANE, ST MELLONS, CARDIFF, CF3 5EA.</u>				



2183



Chemtest
Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	22-26481-1		
Initial Date of Issue:	18-Jul-2022		
Client	AA Environmental Ltd		
Client Address:	Units 4 to 8 Cholswell Court Shippon Abingdon Oxfordshire OX136HX		
Contact(s):	Reporting		
Project	223255 Enzo Home CWMBRAN		
Quotation No.:		Date Received:	13-Jul-2022
Order No.:	223255	Date Instructed:	13-Jul-2022
No. of Samples:	6		
Turnaround (Wkdays):	4	Results Due:	18-Jul-2022
Date Approved:	18-Jul-2022		
Approved By:			
Details:	Stuart Henderson, Technical Manager		

Results - Soil

Project: 223255 Enzo Home CWMBRAN

Client: AA Environmental Ltd	Chemtest Job No.:		22-26481	22-26481	22-26481	22-26481	22-26481	22-26481	22-26481
Quotation No.:	Chemtest Sample ID.:		1466993	1466994	1466995	1466996	1466997	1466998	1466998
Order No.: 223255	Client Sample Ref.:		S1	S2	S3	S1	S2	S3	S3
	Sample Location:		Topsoil	Topsoil	Topsoil	Subsoil	Subsoil	Subsoil	Subsoil
	Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Date Sampled:		11-Jul-2022	11-Jul-2022	11-Jul-2022	11-Jul-2022	11-Jul-2022	11-Jul-2022	11-Jul-2022
	Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	Accred	SOP	Units	LOD					
ACM Type	U	2192		N/A	-	-	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	22	21	22	11	14
pH	U	2010		4.0	8.5	7.2	7.3	9.2	8.3
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	0.97	0.62	0.60	0.66	< 0.40
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	0.032	0.071	0.11	0.16	0.062
Cyanide (Total)	U	2300	mg/kg	0.50	1.1	< 0.50	< 0.50	< 0.50	< 0.50
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	1.6	2.3	1.1	6.5	4.9
Arsenic	U	2455	mg/kg	0.5	4.0	3.8	7.2	3.4	3.3
Cadmium	U	2455	mg/kg	0.10	< 0.10	0.14	0.21	0.18	< 0.10
Chromium	U	2455	mg/kg	0.5	19	18	36	46	47
Copper	U	2455	mg/kg	0.50	7.8	7.9	15	23	14
Mercury	U	2455	mg/kg	0.05	< 0.05	< 0.05	0.06	0.05	< 0.05
Nickel	U	2455	mg/kg	0.50	16	17	35	53	55
Lead	U	2455	mg/kg	0.50	21	20	36	20	15
Selenium	U	2455	mg/kg	0.25	0.45	0.48	0.87	0.93	0.90
Vanadium	U	2455	mg/kg	0.5	25	25	48	38	35
Zinc	U	2455	mg/kg	0.50	40	43	80	84	71
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Total Organic Carbon	U	2625	%	0.20	2.8	1.7	1.4	< 0.20	< 0.20
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0

Results - Soil

Project: 223255 Enzo Home CWMBRAN

Client: AA Environmental Ltd	Chemtest Job No.:		22-26481	22-26481	22-26481	22-26481	22-26481	22-26481
Quotation No.:	Chemtest Sample ID.:		1466993	1466994	1466995	1466996	1466997	1466998
Order No.: 223255	Client Sample Ref.:		S1	S2	S3	S1	S2	S3
	Sample Location:		Topsoil	Topsoil	Topsoil	Subsoil	Subsoil	Subsoil
	Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Date Sampled:		11-Jul-2022	11-Jul-2022	11-Jul-2022	11-Jul-2022	11-Jul-2022	11-Jul-2022
	Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	Accred.	SOP	Units	LOD				
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10	< 10	< 10
Naphthalene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.19
Pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.13
Benzo[a]anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0
Total Phenols	U	2920	mg/kg	0.10	0.22	0.15	0.28	< 0.10

Results - Topsoil Report

BS3882:2015

Chemtest Job No.: 22-26481
 Chemtest Sample ID.: 1466993
 Client Sample Ref.: S1
 Sample Location: Topsoil
 Client Sample ID.:
 Top Depth (m):
 Bottom Depth (m):
 Date Sampled: 11-Jul-2022
 Time Sampled:

Parameter	Units	Multipurpose Range	Result	Compliant with Multipurpose Range? (Y/N)	Compliant with Specific Purpose Range? (Y/N)		
Texture					Acid	Low F	Calc.
Clay content	%		6.5				
Silt content	%		4.8				
Sand content	%		89				
Soil texture class		See Attached Chart	Sand	NO			
Mass Loss on Ignition							
Clay 5-20%		3.0-20	4.3	YES	YES	YES	YES
Clay 20-35%		5.0-20					
Stone Content	% m/m						
>2mm		0-30	35	NO			
>20mm		0-10	14	NO			
>50mm		0	< 0.020	YES			
Soil pH value		5.5-8.5	8.5	YES	NO	YES	YES
Carbonate (Calcareous only)	%		< 0.10				NO
Electrical Conductivity	µS/cm	If >3300 do ESP	2200	YES			
Available Nutrient Content							
Nitrogen %		>0.15	0.20	YES	YES		YES
Extractable phosphorus	mg/l	16-140	15	NO	NO	YES	NO
Extractable potassium	mg/l	121-1500	18	NO	NO		NO
Extractable magnesium	mg/l	51-600	31	NO	NO		NO
Carbon : Nitrogen Ratio		<20:1	12.6/1	YES	YES	YES	YES
Exchangeable sodium	%	<15	1.7				
Available Calcium	mg/l		28				
Available Sodium	mg/l		3.9				
Phytotoxic Contaminants (by soil pH)		< 6.0 6.0-7.0 > 7.0					
Zinc (Nitric Acid extract)	mg/kg	<200 <200 <300	170	YES			
Copper (Nitric Acid extract)	mg/kg	<100 <135 <200	27	YES			
Nickel (Nitric Acid extract)	mg/kg	<60 <75 <110	39	YES			
Visible Contaminants	% mm						
>2mm		<0.5	0.000	YES			
..... of which plastics		<0.25	0.000	YES			
..... man-made sharps		zero in 1kg	0.000	YES			

Results - Topsoil Report

BS3882:2015

Chemtest Job No.: 22-26481
 Chemtest Sample ID.: 1466994
 Client Sample Ref.: S2
 Sample Location: Topsoil
 Client Sample ID.:
 Top Depth (m):
 Bottom Depth (m):
 Date Sampled: 11-Jul-2022
 Time Sampled:

Parameter	Units	Multipurpose Range	Result	Compliant with Multipurpose Range? (Y/N)	Compliant with Specific Purpose Range? (Y/N)		
Texture					Acid	Low F	Calc.
Clay content	%		6.5				
Silt content	%		35				
Sand content	%		58				
Soil texture class		See Attached Chart	Sandy Loam	YES			
Mass Loss on Ignition							
Clay 5-20%		3.0-20	4.4	YES	YES	YES	YES
Clay 20-35%		5.0-20					
Stone Content	% m/m						
>2mm		0-30	45	NO			
>20mm		0-10	< 0.020	YES			
>50mm		0	< 0.020	YES			
Soil pH value		5.5-8.5	7.2	YES	NO	YES	NO
Carbonate (Calcareous only)	%		< 0.10				NO
Electrical Conductivity	µS/cm	If >3300 do ESP	2000	YES			
Available Nutrient Content							
Nitrogen %		>0.15	0.11	NO	NO		NO
Extractable phosphorus	mg/l	16-140	6.5	NO	NO	YES	NO
Extractable potassium	mg/l	121-1500	15	NO	NO		NO
Extractable magnesium	mg/l	51-600	21	NO	NO		NO
Carbon : Nitrogen Ratio		<20:1	23.5/1	NO	NO	YES	NO
Exchangeable sodium	%	<15	1.0				
Available Calcium	mg/l		77				
Available Sodium	mg/l		5.1				
Phytotoxic Contaminants (by soil pH)		< 6.0	6.0-7.0	> 7.0			
Zinc (Nitric Acid extract)	mg/kg	<200	<200	<300	120	YES	
Copper (Nitric Acid extract)	mg/kg	<100	<135	<200	22	YES	
Nickel (Nitric Acid extract)	mg/kg	<60	<75	<110	19	YES	
Visible Contaminants	% mm						
>2mm		<0.5	0.000	YES			
..... of which plastics		<0.25	0.000	YES			
..... man-made sharps		zero in 1kg	0.000	YES			

Results - Topsoil Report

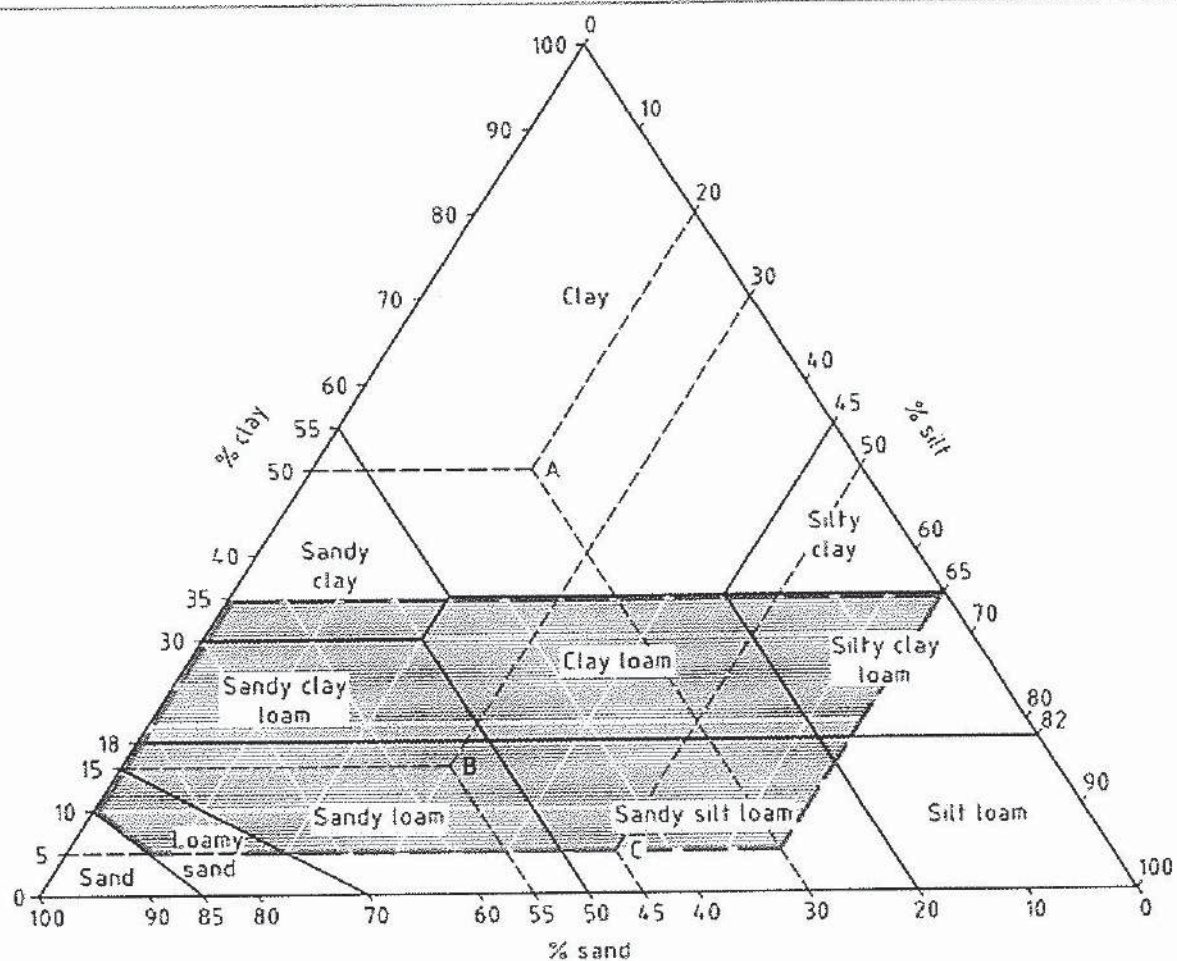
BS3882:2015

Chemtest Job No.: 22-26481
 Chemtest Sample ID.: 1466995
 Client Sample Ref.: S3
 Sample Location: Topsoil
 Client Sample ID.:
 Top Depth (m):
 Bottom Depth (m):
 Date Sampled: 11-Jul-2022
 Time Sampled:

Parameter	Units	Multipurpose Range	Result	Compliant with Multipurpose Range? (Y/N)	Compliant with Specific Purpose Range? (Y/N)		
Texture					Acid	Low F	Calc.
Clay content	%		21				
Silt content	%		42				
Sand content	%		37				
Soil texture class		See Attached Chart	Clay Loam	YES			
Mass Loss on Ignition							
Clay 5-20%		3.0-20	4.4	NO	NO	YES	NO
Clay 20-35%		5.0-20					
Stone Content	% m/m						
>2mm		0-30	43	NO			
>20mm		0-10	< 0.020	YES			
>50mm		0	< 0.020	YES			
Soil pH value		5.5-8.5	7.3	YES	NO	YES	NO
Carbonate (Calcareous only)	%		0.54				NO
Electrical Conductivity	µS/cm	If >3300 do ESP	1800	YES			
Available Nutrient Content							
Nitrogen %		>0.15	0.10	NO	NO		NO
Extractable phosphorus	mg/l	16-140	6.5	NO	NO	YES	NO
Extractable potassium	mg/l	121-1500	14	NO	NO		NO
Extractable magnesium	mg/l	51-600	24	NO	NO		NO
Carbon : Nitrogen Ratio		<20:1	25.9/1	NO	NO	YES	NO
Exchangeable sodium	%	<15	1.1				
Available Calcium	mg/l		21				
Available Sodium	mg/l		< 2.0				
Phytotoxic Contaminants (by soil pH)		< 6.0 6.0-7.0 > 7.0					
Zinc (Nitric Acid extract)	mg/kg	<200 <200 <300	93	YES			
Copper (Nitric Acid extract)	mg/kg	<100 <135 <200	15	YES			
Nickel (Nitric Acid extract)	mg/kg	<60 <75 <110	24	YES			
Visible Contaminants	% mm						
>2mm		<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**

BS3882:2015



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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Results - Subsoil Report

BS8601:2013

Chemtest Job No.: 22-26481
 Chemtest Sample ID.: 1466996
 Client Sample Ref.: S1
 Sample Location: Subsoil
 Client Sample ID.:
 Top Depth (m):
 Bottom Depth (m):
 Date Sampled: 11-Jul-2022
 Time Sampled:

Parameter	Units	Multipurpose Range	Result	Compliant with Multipurpose Range? (Y/N)	Compliant with Specific Purpose Range? (Y/N)	
Texture					Acid	Calc.
Clay content	%		23			
Silt content	%		50			
Sand content	%		27			
Soil texture class		See Attached Chart	Clay Loam	YES		
Mass Loss on Ignition						
	%	<2	0.60	YES		
Stone Content	% m/m					
>2mm		0-40	37	YES		
>20mm		0-20	8.6	YES		
>50mm		0	< 0.020	YES		
Soil pH value		5.5-8.5	9.2	NO	NO	NO
Carbonate (Calcareous only)	%		1.0			YES
Electrical Conductivity	µS/cm	If >2800 do ESP	2100	YES		
Exchangeable sodium	%	<15	1.0	YES		
Available Calcium	mg/l		57			
Available Sodium	mg/l		3.8			
Phytotoxic Contaminants (by soil pH)		< 6.0 6.0-7.0 > 7.0				
Zinc (Nitric Acid extract)	mg/kg	<200 <200 <300	73	YES		
Copper (Nitric Acid extract)	mg/kg	<100 <135 <200	11	YES		
Nickel (Nitric Acid extract)	mg/kg	<60 <75 <110	15	YES		
Visible Contaminants	% mm					
>2mm		<0.5	0.000	YES		
..... of which plastics		<0.25	0.000	YES		
..... man-made sharps		zero in 1kg	0.000	YES		

Results - Subsoil Report

BS8601:2013

Chemtest Job No.: 22-26481
 Chemtest Sample ID.: 1466997
 Client Sample Ref.: S2
 Sample Location: Subsoil
 Client Sample ID.:
 Top Depth (m):
 Bottom Depth (m):
 Date Sampled: 11-Jul-2022
 Time Sampled:

Parameter	Units	Multipurpose Range	Result	Compliant with Multipurpose Range? (Y/N)	Compliant with Specific Purpose Range? (Y/N)	
Texture					Acid	Calc.
Clay content	%		21			
Silt content	%		44			
Sand content	%		36			
Soil texture class		See Attached Chart	Clay Loam	YES		
Mass Loss on Ignition						
	%	<2	0.56	YES		
Stone Content	% m/m					
>2mm		0-40	61	NO		
>20mm		0-20	< 0.020	YES		
>50mm		0	< 0.020	YES		
Soil pH value		5.5-8.5	8.3	YES	NO	YES
Carbonate (Calcareous only)	%		< 0.10			NO
Electrical Conductivity	µS/cm	If >2800 do ESP	2000	YES		
Exchangeable sodium	%	<15	1.0	YES		
Available Calcium	mg/l		37			
Available Sodium	mg/l		2.9			
Phytotoxic Contaminants (by soil pH)		< 6.0 6.0-7.0 > 7.0				
Zinc (Nitric Acid extract)	mg/kg	<200 <200 <300	170	YES		
Copper (Nitric Acid extract)	mg/kg	<100 <135 <200	28	YES		
Nickel (Nitric Acid extract)	mg/kg	<60 <75 <110	13	YES		
Visible Contaminants	% mm					
>2mm		<0.5	0.000	YES		
..... of which plastics		<0.25	0.000	YES		
..... man-made sharps		zero in 1kg	0.000	YES		

Results - Subsoil Report

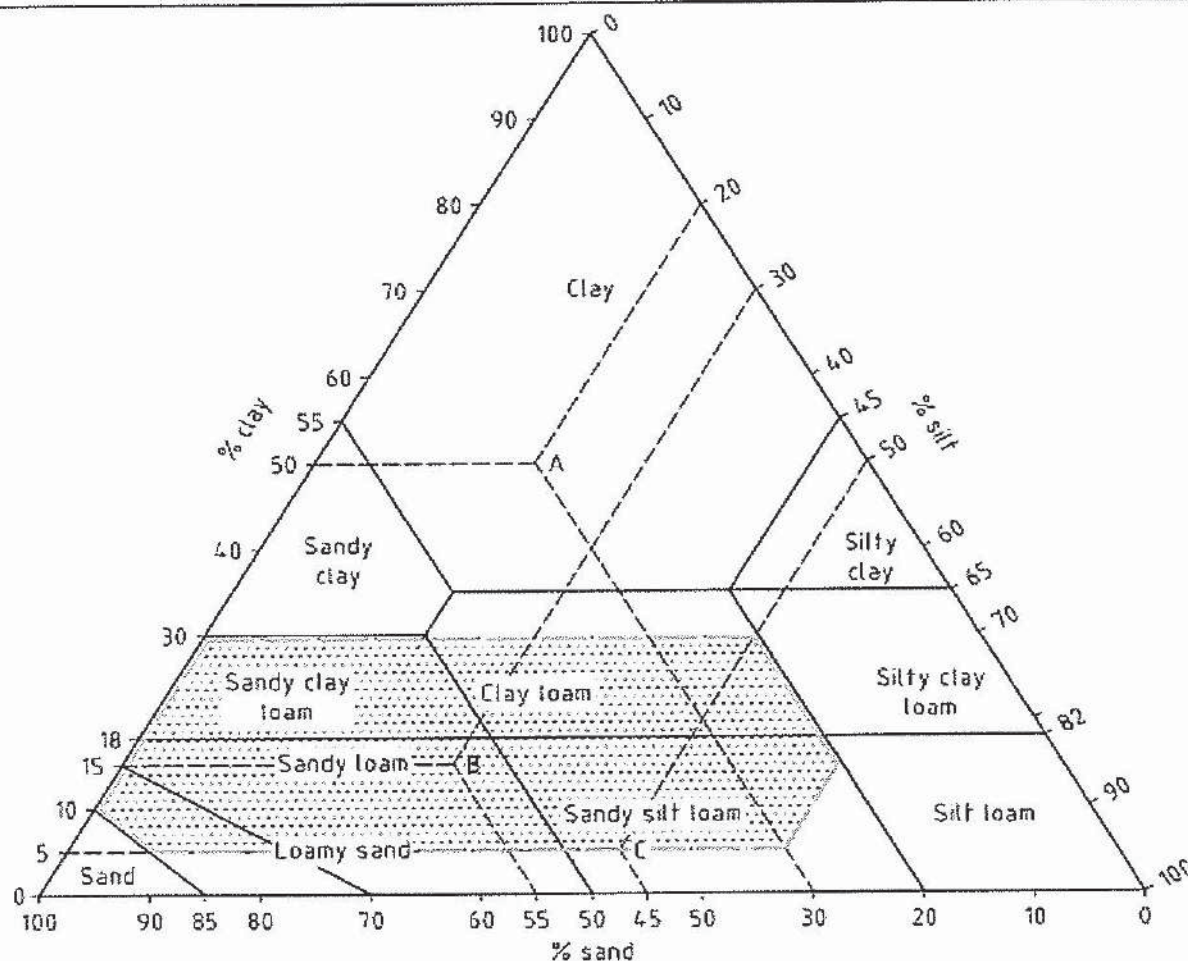
BS8601:2013

Chemtest Job No.: 22-26481
 Chemtest Sample ID.: 1466998
 Client Sample Ref.: S3
 Sample Location: Subsoil
 Client Sample ID.:
 Top Depth (m):
 Bottom Depth (m):
 Date Sampled: 11-Jul-2022
 Time Sampled:

Parameter	Units	Multipurpose Range	Result	Compliant with Multipurpose Range? (Y/N)	Compliant with Specific Purpose Range? (Y/N)	
Texture					Acid	Calc.
Clay content	%		16			
Silt content	%		39			
Sand content	%		45			
Soil texture class		See Attached Chart	Sandy Silt Loam	YES		
Mass Loss on Ignition						
	%	<2	0.64	YES		
Stone Content	% m/m					
>2mm		0-40	50	NO		
>20mm		0-20	< 0.020	YES		
>50mm		0	< 0.020	YES		
Soil pH value		5.5-8.5	8.8	NO	NO	NO
Carbonate (Calcareous only)	%		4.6			YES
Electrical Conductivity	µS/cm	If >2800 do ESP	2000	YES		
Exchangeable sodium	%	<15	1.0	YES		
Available Calcium	mg/l		64			
Available Sodium	mg/l		4.4			
Phytotoxic Contaminants (by soil pH)		< 6.0 6.0-7.0 > 7.0				
Zinc (Nitric Acid extract)	mg/kg	<200 <200 <300	140	YES		
Copper (Nitric Acid extract)	mg/kg	<100 <135 <200	47	YES		
Nickel (Nitric Acid extract)	mg/kg	<60 <75 <110	25	YES		
Visible Contaminants	% 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

BS3882:2015



Key



Area within which the texture of subsoil 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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Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	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
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.
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-diphenylcarbazide.
2620	LOI 440	LOI 440 Trommel Fines	Determination of the proportion by mass that is lost from a soil by ignition at 440°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2680	TPH A/A Split	Aliphatics: >C5-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44Aromatics: >C5-C7, >C7-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44	Dichloromethane 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; Dibenzo[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)
2920	Phenols In Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.