

Our Ref: R3213-L20231006
Planning ref: P/2023/0138 (previously P/2021/0519)

6th October 2023

John Williams

By e-mail: moorbridge@btconnect.com

Dear John,

Land South of Nant Cottage, Lower Road, Coedpoeth, Wrexham

Smith Grant LLP (SG) produced a Phase 1 Contamination Assessment (ref. R2259-R01-v1) for the neighbouring site, and this was submitted to support the planning application for this site. The report determined that the main risks to future site users with respect to contaminated land was the potential presence of elevated lead in the site soils due to historic mining activities in the general area. As a result of the potential contamination identified on site, further site investigation was recommended in the areas of proposed soft landscaping to determine the levels of heavy metals (specifically lead) in the shallow soils. This was duly excepted by Wrexham County Borough Council (WCBC).

Subsequently, SGP produced a Stage 2 Contamination Assessment (ref: R3213-R02-v1 Final) solely for the site and reported a minor lead exceedance within the shallow soils, the findings were consistent to those of the neighbouring site. Following this, a Remediation Strategy was produced (ref: R3213-L01) which determined that a 600mm clean cover system will be required in all areas of soft landscaping due to the lead contamination identified on site. It is assumed that a copy of these reports has been submitted for regulatory approval.

Scope of Validation

The Strategy required that testing of imported soil (topsoil) is undertaken at a sampling frequency of 3 samples per single source. Results are to be compared to the LQM/CIEH suitable for use levels (S4ULs) but also the Defra Category 4 Screening Level (C4SL) for lead.

Following placement within the garden area, depth validation through the excavation of two hand-dug pits were required to verify the placement of the prescribed 600mm soil cover.

Validation

SGP Graduate Consultant, Caitlin McHugh, attended the site on 21st September 2023 to carry out the validation works as discussed in the section above in accordance with the Remediation Strategy. Depth validation and sampling of the garden cover soils were carried out concurrently.

The trial holes were excavated to maximum depth of 0.6m bgl. Topsoil consisted of dark brown loamy, sandy topsoil with frequent organic matter (rootlets). Source of the topsoil is Dandy's Landscape Supplies Centre; proof of import has been provided to SGP.

Samples were collected from each trial pit of both the topsoil (0.0-0.6m) arisings which were submitted for the suite of analysis detailed in the Remediation Strategy (Lab ref. 23-58405-1). The third sample was collected as a composite sample from across the two trial pits.

A verification certificate detailing a photographic record, confirmation of the placed soil cover depth and summary of laboratory results is presented in Appendix A. A copy of the laboratory test certificate is provided in Appendix B.

As shown within the validation certificate, both test pits demonstrate that the prescribed 600mm of imported soil has been placed within the rear garden area and chemical testing has confirmed that no exceedances were reported and therefore the soil is considered suitable for use.

Conclusions

It is therefore concluded that the application of a 600mm clean soil cover system as stipulated within the Remediation Strategy has been implemented and that chemical testing has demonstrated that the soil is suitable for use.

No further remedial works or assessment are therefore required.

Yours sincerely
for: Smith Grant LLP



Caitlin McHugh
BSc GradIEMA

Appendix A

Soil Depth Validation Certificate

Soil Cover Validation Record



Job number	R3213	Depth ref:	R3213-L01 Remediation Strategy	Quality ref:		R3213-L01 Remediation Strategy	Other documents attached	✓					
Date	04.10.23	Area use:	Garden	Landscaped		Stockpile	Other						
Site name / location	Lower Road, Coedpoeth	Size area (m):	Garden	Approx. Area (m²):	41m ²	Approx. Depth Top (m):	0.6	Approx. Volume Top (m³):	24.6m ³	Approx. Depth Sub (m):	n/a	Approx. Volume Sub (m³):	n/a
Plot / location:	Lower Road, Coedpoeth												
Compiled by:	CM	Number depth entries required:	2 hand dug trial pits in the rear garden; 2 provided.			Number samples required:	(3 samples per source). 3 TS						

Quality Validation		inspection date/time:	21.09.23	inspected by:	CM	photographed:	✓
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notes (see		✓ / ✗	
Source Topsoil	1.	✓	Dandys, Yew Tree Farm Sealand Road, Chester, CH1 6BS
Description Topsoil	2.	✓	Dark brown loamy, sandy topsoil with frequent organic matter (rootlets).
Sample Topsoil	3.	✓	3 topsoil samples collected in situ from the rear of the property (Lab ref: 23-58405-1).
Source Subsoil	4.	✗	n/a
Description Subsoil	5.	✗	n/a
Sample Subsoil	6.	✗	n/a

Soil Cover Validation Record



Topsoil Analysis Summary (Dandys Import) (Lab ref: 23-58405-1)

contaminant	soil standard adopted (mg/kg)	concentrations (mg/kg)	compliant?
asbestos Fibres	NAD	NAD	Yes
pH	-	7.5-7.8	Yes
soil organic matter	-	2.3-4.5	-
arsenic	37	7.3-10	Yes
cadmium	11	0.4-0.5	Yes
chromium III	910	15-19	Yes
chromium VI	6	<1.2	Yes
copper	2400	21-23	Yes
lead	200	54-89	Yes
mercury	1.2	<0.3	Yes
nickel	130	13-15	Yes
zinc	3700	82-120	Yes
naphthalene	2.3	0.05-<0.05	Yes*
acenaphthene	210	<0.05	Yes
acenaphthylene	170	<0.05	Yes
fluorene	170	<0.05	Yes
phenanthrene	95	0.1-0.34	Yes
anthracene	2400	<0.05-0.06	Yes
Fluoranthene	280	0.2-0.67	Yes
pyrene	620	0.17-0.52	Yes
benzo(a)anthracene	7.2	0.12-0.41	Yes
chrysene	15	0.16-0.41	Yes
benzo(b)fluoranthene	2.6	0.2-0.54	Yes
benzo(k)fluoranthene	77	0.06-0.18	Yes
benzo(a)pyrene	2.2	0.3-0.31	Yes
indeno(123cd)pyrene	27	0.07-0.21	Yes

Contaminant	Soil standard adopted (mg/kg)	Concentrations (mg/kg)	Compliant?
dibenzo(ah)anthracene	0.24	<0.05-0.7	Yes
benzo(ghi)perylene	320	0.1-0.22	Yes
Aliphatic C5-C6	42	<1	Yes
Aliphatic C6-C8	100	<1	Yes
Aliphatic C8-C10	27	<1	Yes
Aliphatic C10-C12	130	<1-1.5	Yes
Aliphatic C12-C16	1100	<1-6.2	Yes
Aliphatic C16-C21	65000	<1	Yes
Aliphatic C21-C35	-	<1-10	Yes
Aromatic C6-C7	70	<1	Yes
Aromatic C7-C8	130	<1	Yes
Aromatic C8-C10	34	<1	Yes
Aromatic C10-C12	74	<1	Yes
Aromatic C12-C16	140	<1	Yes
Aromatic C16-C21	260	<1	Yes
Aromatic C21-C35	1100	<1	Yes

LQM/CIEH suitable for use levels (S4ULs) but also the Defra Category 4 Screening Level (C4SL) for lead.

Soil Cover Validation Record

Depth Validation	Inspection date:	21.09.23	Inspected by:	CM	Photographed:	✓
Lower Road, Rear Garden	Required Depth (mm)	600mm	Measured Depth (mm)	600mm	PASS	
Source Topsoil	Dandys, Yew Tree Farm Sealand Road, Chester, CH1 6BS					
Source Subsoil	n/a					
Soil profile/description	0.0-0.6m	Dark brown loamy, sandy topsoil with frequent organic matter (rootlets).				
Photograph (depth profile)		Photograph (soil type)		Photograph (location)		
						

Soil Cover Validation Record

Depth Validation	Inspection date:	21.09.23	Inspected by:	CM	Photographed:	✓
Lower Road, Rear Garden	Required Depth (mm)	600mm	Measured Depth (mm)	600mm	PASS	
Source Topsoil	Dandys, Yew Tree Farm Sealand Road, Chester, CH1 6BS					
Source Subsoil	n/a					
Soil profile/description	0.0-0.6m	Dark brown loamy, sandy topsoil with frequent organic matter (rootlets).				
Photograph (depth profile) 		Photograph (soil type) 		Photograph (location) 		

Soil Cover Validation Record



These plots have PASSED testing for quality and depth.

An additional inspection visit IS NOT required.

SGP Staff: C McHugh BSc GradIEMA

Signed:

A handwritten signature in black ink, appearing to read 'C. McHugh'.

04.10.23

SGP Member: D Wayland BSc MSc AssocMCIWM MCIWEM C.WEM

Signed:

A handwritten signature in black ink, appearing to read 'D. Wayland'.

04.10.23

Guide notes:

1.	Source Topsoil	As much information as possible: Date Delivered, volume/weight delivery, supplier, certification, source address (yard), original source address (site).
2.	Description Topsoil	Full Description: Grading (Particle Size: clay, silt, sand, gravel), organic content, colour, odour, minerals, stone, glass, slate, ash, clinker, coal, coke, tarmac, plastic, other?
3.	Sample Topsoil	Date sampled, date submitted, sample reference, laboratory, laboratory job number
4.	Source Subsoil	As much information as possible: Date Delivered, volume/weight delivery, supplier, certification, source address (yard), original source address (site).
5.	Description Subsoil	Full Description: Grading (Particle Size: clay, silt, sand, gravel), organic content, colour, odour, minerals, stone, glass, slate, ash, clinker, coal, coke, tarmac, plastic, other?
6.	Sample Subsoil	Date sampled, date submitted, sample reference, laboratory, laboratory job number
7.	Material Acceptability	Presence and amount of visible deleterious or otherwise unacceptable materials, e.g. glass, metal, plastic, Knotweed shoots etc.

Appendix B

Laboratory Results

Caitlin McHugh
Smith Grant LLP
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Wrexham
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Analytical Report Number : 23-58405

Project / Site name:	Coecipoetrn	Samples received on:	25/09/2023
Your job number:	R3213	Samples instructed on/ Analysis started on:	25/09/2023
Your order number:		Analysis completed by:	04/10/2023
Report Issue Number:	1	Report issued on:	04/10/2023
Samples Analysed:	3 soil samples		



Signed:

Joanna Szwarzak
Junior 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

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: 23-58405
Project / Site name: Coeclpoetn

Lab Sample Number				2822496	2822497	2822498
Sample Reference				TS-S1	TS-S2	TS-S3
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				0.00-0.60	0.00-0.60	0.00-0.60
Date Sampled				21/09/2023	21/09/2023	21/09/2023
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status			
Stone Content	%	0.1	NONE	< 0.1	< 0.1	40
Moisture Content	%	0.01	NONE	20	17	13
Total mass of sample received	kg	0.001	NONE	0.8	0.8	0.8

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

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	7.8	7.5	7.8
Organic Matter (automated)	%	0.1	MCERTS	4.5	3.6	2.3

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.34	0.19	0.1
Anthracene	mg/kg	0.05	MCERTS	0.06	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.67	0.47	0.2
Pyrene	mg/kg	0.05	MCERTS	0.52	0.43	0.17
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.41	0.26	0.12
Chrysene	mg/kg	0.05	MCERTS	0.41	0.32	0.16
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.54	0.37	0.2
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.18	0.16	0.06
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.31	0.3	0.14
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.21	0.16	0.07
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.07	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.22	0.19	0.1

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	3.94	2.9	1.32
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	10	9.8	7.3
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.5	0.5	0.4
Chromium (hexavalent)	mg/kg	1.2	NONE	< 1.2	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	19	19	15
Copper (aqua regia extractable)	mg/kg	1	MCERTS	22	23	21
Lead (aqua regia extractable)	mg/kg	1	MCERTS	89	73	54
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	15	15	13
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	120	110	82

Monoaromatics & Oxygenates

Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
p & m-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
o-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0

Analytical Report Number: 23-58405

Project / Site name: Coeclpoetn

Lab Sample Number				2822496	2822497	2822498
Sample Reference				TS-S1	TS-S2	TS-S3
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				0.00-0.60	0.00-0.60	0.00-0.60
Date Sampled				21/09/2023	21/09/2023	21/09/2023
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status			

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6 _{HS_1D_AL}	mg/kg	0.1	NONE	< 0.10	< 0.10	< 0.10
TPH-CWG - Aliphatic >EC6 - EC8 _{HS_1D_AL}	mg/kg	0.1	NONE	< 0.10	< 0.10	< 0.10
TPH-CWG - Aliphatic >EC8 - EC10 _{HS_1D_AL}	mg/kg	0.1	NONE	< 0.10	< 0.10	< 0.10
TPH-CWG - Aliphatic >EC10 - EC12 _{EH_CU_1D_AL}	mg/kg	1	MCERTS	< 1.0	1.7	1.5
TPH-CWG - Aliphatic >EC12 - EC16 _{EH_CU_1D_AL}	mg/kg	2	MCERTS	< 2.0	4.8	6.2
TPH-CWG - Aliphatic >EC16 - EC21 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	< 8.0	< 8.0	10
TPH-CWG - Aliphatic (EC5 - EC35) _{EH_CU+HS_1D_AL}	mg/kg	10	NONE	< 10	14	22

TPH-CWG - Aromatic >EC5 - EC7 _{HS_1D_AR}	mg/kg	0.1	NONE	< 0.10	< 0.10	< 0.10
TPH-CWG - Aromatic >EC7 - EC8 _{HS_1D_AR}	mg/kg	0.1	NONE	< 0.10	< 0.10	< 0.10
TPH-CWG - Aromatic >EC8 - EC10 _{HS_1D_AR}	mg/kg	0.1	NONE	< 0.10	< 0.10	< 0.10
TPH-CWG - Aromatic >EC10 - EC12 _{EH_CU_1D_AR}	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16 _{EH_CU_1D_AR}	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	< 10	13	< 10
TPH-CWG - Aromatic (EC5 - EC35) _{EH_CU+HS_1D_AR}	mg/kg	10	NONE	12	17	< 10

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

Analytical Report Number : 23-58405

Project / Site name: Coeclpoetn

* 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 *
2822496	TS-S1	None Supplied	0.00-0.60	Brown clay and sand with gravel and vegetation.
2822497	TS-S2	None Supplied	0.00-0.60	Brown clay and sand with gravel and vegetation.
2822498	TS-S3	None Supplied	0.00-0.60	Brown clay and sand with vegetation and stones.

Analytical Report Number : 23-58405

Project / Site name: Coecipoetn

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
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
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	A001-PL	D	ISO 17025
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards. Refer to CoA for analyte specific accreditation.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
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
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260. Refer to CoA for analyte specific accreditation	L073B-PL	W	MCERTS
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID. Refer to CoA for band specific accreditation.	In-house method with silica gel split/clean up.	L088/76-PL	D	MCERTS
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS

Analytical Report Number : 23-58405

Project / Site name: Coecipoetn

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
Hexavalent chromium in soil (Lower Level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	NONE

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 30oC.

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.

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 - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total