

Document Verification

Project Title	"Maes y Rhedyn", Gresford Road, Llay
Project Number	6697
Document Title	Validation Report For Placement of Inert Cover For POS
Document Number	6697val_POS
This document is not to be used for contractual or engineering purposes unless the document verification sheet is signed where indicated by the approver of the document.	

Prepared by,

Checked and Approved by



S L Dodd

BSc (Hons), MSc, MEnvSc, FGS



M A Wall

BSc (Hons), MEnvSc, FGS

Document Revision

Report Reference	Rev	Date	Description	Prepared	Checked and Approved
6697val_POS	-	27/11/2023	Inert Cover Validation Report	S L Dodd	M A Wall

This report has been prepared for and on behalf of our client, in accordance with the terms and conditions of the appointment agreement with Coopers. Other than where specifically allowed for in the said appointment agreement, any other party using this report for any purpose whatsoever does so at their own risk and any duty of care to that party is specifically excluded.

INERT COVER VALIDATION REPORT FOR POS

Developer:	Anwyl Homes
Site Name:	“Maes y Rhedyn”, Gresford Road, Llay
NHBC Site Reference:	Land Quality Ref: 214996
Planning Reference:	APP/H6955/A/16/3147116 (P/2014/0905)
Date of Certificate:	27 th November 2023

Documents to be read in conjunction:

- REFA Consulting Engineers “Geo-environmental investigation report. Proposed residential development, Gresford Road, Llay, Wrexham”, Report Reference No. 17040/GEIR/A, dated November 2018.
- REFA Consulting Engineers “Remediation strategy policy for Gresford Road, Llay, Wrexham”, Report Reference No. 17040/REM/001/A, dated December 2019.

Remediation Requirements in Gardens:

Gardens: Inert cover to be provided within front and rear gardens for Plots 349 to 352, rear gardens only in plots 231 to 237, 246 to 250 and 348 and adjacent public open spaces in the far west of the site as illustrated on REFA Consulting Engineers’ appended Drawing No. 17040/25RevA. Since the use of REFA’s Drawing No. 17040/25 Rev A, Coopers noted on site that part of the public open space fronting plots 231-134 is now designated as front gardens, which have been validated accordingly. While plots 235-237 have front gardens they lie outside of the remediation area. A growing medium will be required as follows in these locations:

a minimum of 600mm of inert cover, comprising at least 150mm topsoil over 450mm subsoil in the rear gardens;

a minimum of 450mm of inert cover, comprising at least 150mm topsoil over 300mm subsoil in the front gardens;

a minimum of 450mm of inert cover, comprising at least 150mm topsoil over 300mm subsoil in the identified public open space areas, in accordance with the REFA Consulting Engineers “Remediation strategy policy”.

Validation Strategy:

Site won topsoil and natural drift strata were identified by the REFA Geo-environmental Investigation Report, as suitable for use and were identified as not requiring additional chemical analysis. Where soils are imported for use within the inert cover, sampling and chemical analysis of the imported soils will be required in accordance with the REFA Remediation Strategy Policy, as follows:

Sampling of imported soils delivered to site to be undertaken on site at the following frequency:

Topsoil – 1:50 m³;

Subsoil – 1:150m³.

Chemical analysis of imported soils delivered to site to include:

- a minimum of arsenic, cadmium, total chromium, copper, mercury, nickel, selenium, zinc, total cyanide, phenol, pH, soil organic matter and speciated (16) PAH compounds. Should materials be imported from a site not proven to be a greenfield site, additional analysis would be scheduled for TPHCWG including BTEX and MTBE compounds.

The results are to be screened against the Assessment Criteria Screening Values presented in the REFA Remediation Strategy Policy, the extracts of which have been appended to this report.

Validation of inert cover depths over the following coverage:

Coopers to inspect each rear garden and one front garden per four plots, following completion of the inert cover placement, through validation holes undertaken by Coopers or open excavation, in accordance with REFA Remediation Strategy Policy.

DEVELOPMENT NAME:	“Maes y Rhedyn”, Gresford Road, Llay	Validation Certificate Approved By	MAW
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Garden Validation

Coopers are satisfied that the inert cover depth has been successfully completed (details provided below). The material types are within the textural parameters expected for gardens and are fit for purpose and have been verified as greenfield/quarried sources of materials

Plot Number of validation hole	Plot Range Covered by Validation Hole	Front / Rear / POS	Base of Topsoil	Base of Subsoil	Total Depth of Inert Cover	Description of Topsoil (see photographs)	Description of Subsoil (see photographs)	Source of Topsoil	Source of Subsoil
VH1	POS		200mm	500mm	500mm	Dark brown, slightly silty, sandy, clayey TOPSOIL	Light brown, silty SAND	Site Won	Verified greenfield source from Mescar Fisheries, Lydiate L31 4HS
VH2	POS		200mm	600mm	600mm	Dark brown, slightly silty, sandy, clayey TOPSOIL	Light brown, silty SAND	Site Won	Verified greenfield source from Mescar Fisheries, Lydiate L31 4HS
VH3	POS		150mm	500mm	500mm	Dark brown, slightly silty, sandy, clayey TOPSOIL	Light brown, silty SAND	Site Won	Verified greenfield source from Mescar Fisheries, Lydiate L31 4HS
VH4	POS		150mm	500mm	500mm	Dark brown, slightly silty, sandy, clayey TOPSOIL	Light brown, silty SAND	Site Won	Verified greenfield source from Mescar Fisheries, Lydiate L31 4HS
VH5	POS		150mm	500mm	500mm	Dark brown, slightly silty, sandy, clayey TOPSOIL	Light brown, silty SAND	Site Won	Verified greenfield source from Mescar Fisheries, Lydiate L31 4HS

Chemical Testing

Coopers have verified that the greenfield/quarried sources of materials utilised have passed the chemical testing criteria for gardens/public scope space and are suitable for use.

Strata	Volume Imported	No. of Samples	Sample/Laboratory Reference (Appended)	Results Passed?
Topsoil (POS areas)	400m ³	7	Topsoil samples referenced in DETS Report Ref. 23-10549, dated 12 th May 2023.	Yes
Subsoil (POS areas)	624m ³	5	Subsoil samples referenced in appended Coopers' Certificate for Subsoil reference 230831 Rev. D, dated 2 nd November 2023 (DETS Test Report Referenced 23-20212, dated 31 st August 2023).	Yes

DEVELOPMENT NAME:	<i>“Maes y Rhedyn”, Gresford Road, Llay</i>	Validation Certificate Approved By	MAW
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PHOTOGRAPHIC RECORDS

All validation locations completed within the POS Area have been included on attached POS plan.

POS VH1



Photographs 1 & 2: Showing the location of the validation hole within the POS Area and the depth of inert cover achieved. Photographs taken 23rd November 2023.



Photograph 3: Shows the composition of the inert cover within the validation hole in the POS Area. Photograph taken 23rd November 2023.

DEVELOPMENT NAME:	<i>“Maes y Rhedyn”, Gresford Road, Llay</i>	Validation Certificate Approved By	MAW
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POS VH2



Photographs 4 & 5: Showing the location of the validation hole within the POS Area and the depth of inert cover achieved. Photographs taken 23rd November 2023.



Photograph 6: Shows the composition of the inert cover within the validation hole in the POS Area. Photograph taken 23rd November 2023.

DEVELOPMENT NAME:	<i>“Maes y Rhedyn”, Gresford Road, Llay</i>	Validation Certificate Approved By	MAW
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POS VH3



Photographs 7 & 8: Showing the location of the validation hole within the POS Area and the depth of inert cover achieved. Photographs taken 24th November 2023.



Photograph 9: Shows the composition of the inert cover within the validation hole in the POS Area. Photograph taken 24th November 2023.

DEVELOPMENT NAME:	<i>“Maes y Rhedyn”, Gresford Road, Llay</i>	Validation Certificate Approved By	MAW
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POS VH4



Photographs 10 & 11: Showing the location of the validation hole within the POS Area and the depth of inert cover achieved. Photographs taken 24th November 2023.



Photograph 12: Shows the composition of the inert cover within the validation hole in the POS Area. Photograph taken 24th November 2023.

DEVELOPMENT NAME:	<i>“Maes y Rhedyn”, Gresford Road, Llay</i>	Validation Certificate Approved By	MAW
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POS VH5



Photographs 13 & 14: Showing the location of the validation hole within the POS Area and the depth of inert cover achieved. Photographs taken 24th November 2023.



Photograph 15: Shows the composition of the inert cover within the validation hole in the POS Area. Photograph taken 24th November 2023.

DEVELOPMENT NAME:	<i>“Maes y Rhedyn”, Gresford Road, Llay</i>	Validation Certificate Approved By	MAW
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Coopers confirm all remediation requirements for these plots are completed in accordance with the referenced report/strategy and anticipate no further remediation or validation is required to complete these plots.

Documents appended:

1. DETS Report Referenced 23-10549, dated 12th May 2023
2. Coopers' Certificate for Subsoil Reference 230831 Rev D, dated 2nd November 2023
3. REFA Consulting Engineers Assessment Criteria Screening Values
4. REFA Consulting Engineers Drawing No. 17040/25RevA
5. Validation Completion Extraction Plane, referenced 6697_100, dated 24th November 2023.

Footnote: -

This Certificate is a record of Coopers' validation of gardens on the dates given within the aforementioned text. Coopers undertake validation when requested by the developer. Compliance or non-compliance of the remediation objectives or criteria is ascertained on those dates only. Coopers cannot be held responsible for any subsequent actions by third parties not under Coopers direct supervision, which may compromise the integrity or quality of the inert cover after the date of validation. In such cases it is deemed that it will be the responsibility of the developer, in liaison with the NHBC, to make good any damage or loss of quality of the inert cover layer or topsoil. It will then be at the discretion of the NHBC to decide whether any additional validation is warranted or required.

DEVELOPMENT NAME:	<i>“Maes y Rhedyn”, Gresford Road, Llay</i>	Validation Certificate Approved By	MAW
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Certificate of Analysis

Certificate Number 23-10549

Issued: 12-May-23

Client Coopers (Chester) Ltd
Park House
Sandpiper Court
Chester Business Park
Chester
CH4 9QU

Our Reference 23-10549

Client Reference 6697

Order No 9700-SD

Contract Title Phases Gresford Road, Llay

Description 7 Soil samples.

Date Received 03-May-23

Date Started 03-May-23

Date Completed 12-May-23

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

A handwritten signature in black ink, appearing to read "K. Bridgewood".

Kirk Bridgewood
General Manager



Summary of Chemical Analysis

Matrix Descriptions

Our Ref 23-10549

Client Ref 6697

Contract Title Phases Gresford Road, Llay

Sample ID	Lab No	Completed	Matrix Description
SP1-S1	2165763	12/05/2023	Brown slightly gravelly, sandy CLAY including odd rootlets
SP1-S2	2165764	12/05/2023	Brown slightly gravelly, sandy CLAY including odd rootlets
SP1-S3	2165765	12/05/2023	Brown slightly gravelly, sandy CLAY including odd rootlets
SP1-S4	2165766	12/05/2023	Brown slightly gravelly, sandy CLAY including odd rootlets
SP2-S1	2165767	12/05/2023	Brown slightly gravelly, sandy CLAY including odd rootlets
SP2-S2	2165768	12/05/2023	Brown slightly gravelly, sandy CLAY including odd rootlets
SP2-S3	2165769	12/05/2023	Brown slightly gravelly, sandy CLAY including odd rootlets

Summary of Chemical Analysis

Soil Samples

Our Ref 23-10549

Client Ref 6697

Contract Title Phases Gresford Road, Llay

Lab No	2165763	2165764	2165765	2165766	2165767	2165768	2165769
Sample ID	SP1-S1	SP1-S2	SP1-S3	SP1-S4	SP2-S1	SP2-S2	SP2-S3
Depth							
Other ID							
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sampling Date	27/04/2023	27/04/2023	27/04/2023	27/04/2023	27/04/2023	27/04/2023	27/04/2023
Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units							
Metals										
Arsenic	DETSC 2301#	0.2	mg/kg	7.5	7.2	9.0	9.3	8.3	9.2	8.7
Beryllium	DETSC 2301#	0.2	mg/kg	0.5	0.6	0.4	0.4	0.4	0.4	0.4
Boron, Water Soluble (2.5:1)	DETSC 2311#	0.2	mg/kg	0.5	0.3	0.7	0.9	0.9	1.0	0.9
Cadmium	DETSC 2301#	0.1	mg/kg	0.2	0.1	0.3	0.2	0.3	0.3	0.3
Chromium	DETSC 2301#	0.15	mg/kg	18	18	19	23	17	19	17
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	21	20	25	21	25	27	28
Lead	DETSC 2301#	0.3	mg/kg	27	23	45	33	43	48	44
Mercury	DETSC 2325#	0.05	mg/kg	0.05	< 0.05	0.07	0.07	0.05	0.08	0.06
Nickel	DETSC 2301#	1	mg/kg	15	20	12	16	11	13	11
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Vanadium	DETSC 2301#	0.8	mg/kg	24	23	28	33	25	28	26
Zinc	DETSC 2301#	1	mg/kg	61	50	93	79	87	92	97
Inorganics										
pH	DETSC 2008#		pH	7.2	7.8	7.0	7.0	7.0	7.2	7.3
Cyanide, Total	DETSC 2130#	0.1	mg/kg	0.3	< 0.1	0.4	0.4	0.4	0.5	0.4
FOC	DETSC 2002	0.001		0.019	0.010	0.028	0.028	0.020	0.020	0.031
Total Organic Carbon	DETSC 2002	0.1	%	1.9	1.0	2.8	2.8	2.0	2.0	3.1
Sulphate Aqueous Extract as SO4 (2:1)	DETSC 2076#	10	mg/l	51	59	51	54	50	48	48
Sulphate as SO4, Total	DETSC 2321#	0.01	%	0.06	0.04	0.08	0.07	0.09	0.09	0.08
PAHs										
Naphthalene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Acenaphthylene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Acenaphthene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Fluorene	DETSC 3303	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Phenanthrene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	0.04	0.08	0.12	0.04	0.04
Anthracene	DETSC 3303	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Fluoranthene	DETSC 3303#	0.03	mg/kg	0.06	0.04	0.09	0.13	0.57	0.09	0.11
Pyrene	DETSC 3303#	0.03	mg/kg	0.05	0.04	0.08	0.11	0.57	0.08	0.09
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	0.04	0.05	0.25	0.05	0.05
Chrysene	DETSC 3303	0.03	mg/kg	0.05	0.04	0.07	0.08	0.31	0.07	0.08
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	0.04	0.04	0.06	0.07	0.53	0.07	0.07
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	0.21	< 0.03	0.03
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	0.03	0.05	0.05	0.06	0.62	0.05	0.07
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	0.21	< 0.03	< 0.03
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	0.05	< 0.03	< 0.03
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	0.25	< 0.03	< 0.03
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	0.20	0.21	0.44	0.59	3.7	0.41	0.52
Phenols										
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	< 0.3	0.3	0.5	0.5	0.3	0.4

Information in Support of the Analytical Results

Our Ref 23-10549
 Client Ref 6697
 Contract Phases Gresford Road, Llay

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
2165763	SP1-S1 SOIL	27/04/23	PG		
2165764	SP1-S2 SOIL	27/04/23	PG		
2165765	SP1-S3 SOIL	27/04/23	PG		
2165766	SP1-S4 SOIL	27/04/23	PG		
2165767	SP2-S1 SOIL	27/04/23	PG		
2165768	SP2-S2 SOIL	27/04/23	PG		
2165769	SP2-S3 SOIL	27/04/23	PG		

Key: P-Plastic G-Bag

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Appendix A - Details of Analysis

Method	Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETSC 2002	Organic matter	%	0.1	Air Dried	No	Yes	Yes
DETSC 2003	Loss on ignition	%	0.01	Air Dried	No	Yes	Yes
DETSC 2008	pH	pH Units	1	Air Dried	No	Yes	Yes
DETSC 2076	Sulphate Aqueous Extract as SO ₄	mg/l	10	Air Dried	No	Yes	Yes
DETSC 2084	Total Organic Carbon	%	0.5	Air Dried	No	Yes	Yes
DETSC 2119	Ammoniacal Nitrogen as N	mg/kg	0.5	Air Dried	No	Yes	Yes
DETSC 2130	Cyanide free	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2130	Cyanide total	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2130	Phenol - Monohydric	mg/kg	0.3	Air Dried	No	Yes	Yes
DETSC 2130	Thiocyanate	mg/kg	0.6	Air Dried	No	Yes	Yes
DETSC 2301	Arsenic	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC 2301	Barium	mg/kg	1.5	Air Dried	No	Yes	Yes
DETSC 2301	Beryllium	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC 2301	Cadmium Available	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2301	Cadmium	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2301	Cobalt	mg/kg	0.7	Air Dried	No	Yes	Yes
DETSC 2301	Chromium	mg/kg	0.15	Air Dried	No	Yes	Yes
DETSC 2301	Copper	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC 2301	Manganese	mg/kg	20	Air Dried	No	Yes	Yes
DETSC 2301	Molybdenum	mg/kg	0.4	Air Dried	No	Yes	Yes
DETSC 2301	Nickel	mg/kg	1	Air Dried	No	Yes	Yes
DETSC 2301	Lead	mg/kg	0.3	Air Dried	No	Yes	Yes
DETSC 2301	Selenium	mg/kg	0.5	Air Dried	No	Yes	Yes
DETSC 2301	Zinc	mg/kg	1	Air Dried	No	Yes	Yes
DETSC 2311	Boron (water soluble)	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC 2321	Total Sulphate as SO ₄	%	0.01	Air Dried	No	Yes	Yes
DETSC 2325	Mercury	mg/kg	0.05	Air Dried	No	Yes	Yes
DETSC 3049	Sulphur (free)	mg/kg	0.75	As Received	No	Yes	Yes
DETSC 3072	Ali/Aro C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C12	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C12-C16	mg/kg	1.2	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C16-C21	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C21-C35	mg/kg	3.4	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C12	mg/kg	0.9	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C12-C16	mg/kg	0.5	As Received	No	Yes	Yes
DETSC 3072	Aromatic C16-C21	mg/kg	0.6	As Received	No	Yes	Yes
DETSC 3072	Aromatic C21-C35	mg/kg	1.4	As Received	No	Yes	Yes
DETSC 3303	Acenaphthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Acenaphthylene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(a)pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(a)anthracene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(b)fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(k)fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(g,h,i)perylene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Dibenzo(a,h)anthracene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes

Appendix A - Details of Analysis

Method	Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETSC 3303	Indeno(1,2,3-c,d)pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Naphthalene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Phenanthrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3311	C10-C24 Diesel Range Organics (DRO)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3311	C24-C40 Lube Oil Range Organics (LORO)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3311	EPH (C10-C40)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3321	Benzene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3321	Ethylbenzene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3321	Toluene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3321	Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3321	m+p Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3321	o Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 28 + PCB 31	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 52	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 101	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 118	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 153	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 138	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 180	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB Total	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3521	Ali/Aro C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3521	Aliphatic C10-C12	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3521	Aliphatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3521	Aliphatic C12-C16	mg/kg	1.2	As Received	No	Yes	Yes
DETSC 3521	Aliphatic C16-C21	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3521	Aliphatic C21-C35	mg/kg	3.4	As Received	No	Yes	Yes
DETSC 3521	Aromatic C10-C12	mg/kg	0.9	As Received	No	Yes	Yes
DETSC 3521	Aromatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3521	Aromatic C12-C16	mg/kg	0.5	As Received	No	Yes	Yes
DETSC 3521	Aromatic C16-C21	mg/kg	0.6	As Received	No	Yes	Yes
DETSC 3521	Aromatic C21-C35	mg/kg	1.4	As Received	No	Yes	Yes

Method details are shown only for those determinands listed in Annex A of the MCERTS standard. Anything not included on this list falls outside the scope of MCERTS. No Recovery Factors are used in the determination of results. Results reported assume 100% recovery. Full method statements are available on request.

End of Report

CERTIFICATE FOR THE SAND SUBSOIL

REFERENCE – 230831 – Rev D

Developer:	Anwyl Homes	
Source Location:	Mescar Fisheries, Lydiate	
Volume:	624m ³ (approx.)	
Supplied By:	R. Draper Ltd	
Sampled at:	Drapers Yard, Bickerstaffe	
Date of First Inspection and Soil Sampling:	21 st August 2023	
Dates of Follow Up Inspections	6 th , 22 nd September 2023 6 th , 19 th October 2023 2 nd November 2023	
Previous Revisions:	230831 (Dated 13 th September 2023) 220831 – Rev A (Dated 26 th September 2023) 220831 – Rev B (Dated 6 th October 2023) 220831 – Rev C (Dated 19 th October 2023)	
Report Date:	2 nd November 2023	
Report Prepared By:	L Phillips	
	<i>MEng (Hons)</i>	
Report Checked and Approved By:	M A Wall	
	<i>BSc (Hons), MEnvSc, FGS</i>	
Revision Completed By and Dated 2 nd November 2023:	L Phillips	
	<i>MEng (Hons)</i>	

This is to certify that the imported subsoil is within the Coopers generic criteria as suitable for use in private residential gardens with plant uptake.

Source Locations and Stockpile Control:

The sampled stockpile originated from the location discussed below:

Mescar Fisheries, Lydiate - SD 37156 05735

This source site was a scraping of subsoil from a greenfield site, the centre of which is approximately at National Grid Reference (SD 37156 05735) and 5.1 miles northeast from R. Draper Ltd's facility. The nature of the source was verified by inspection of the first edition historical maps produced in 1888-1913 (refer to Figure 1) and the 1937-1961 edition map (refer to Figure 2) as well as recent satellite imagery (Figure 3) confirming the site has remained undeveloped for over 133 years. The subsoil was stripped from the source location and transported to R. Draper Ltd.'s storage yard off Stopgate Lane, Bickerstaffe for grading. The material was stockpiled specifically for Anwyl Homes and verified as suitable for use by Coopers (refer to chemical analysis section for details).

- 2 -

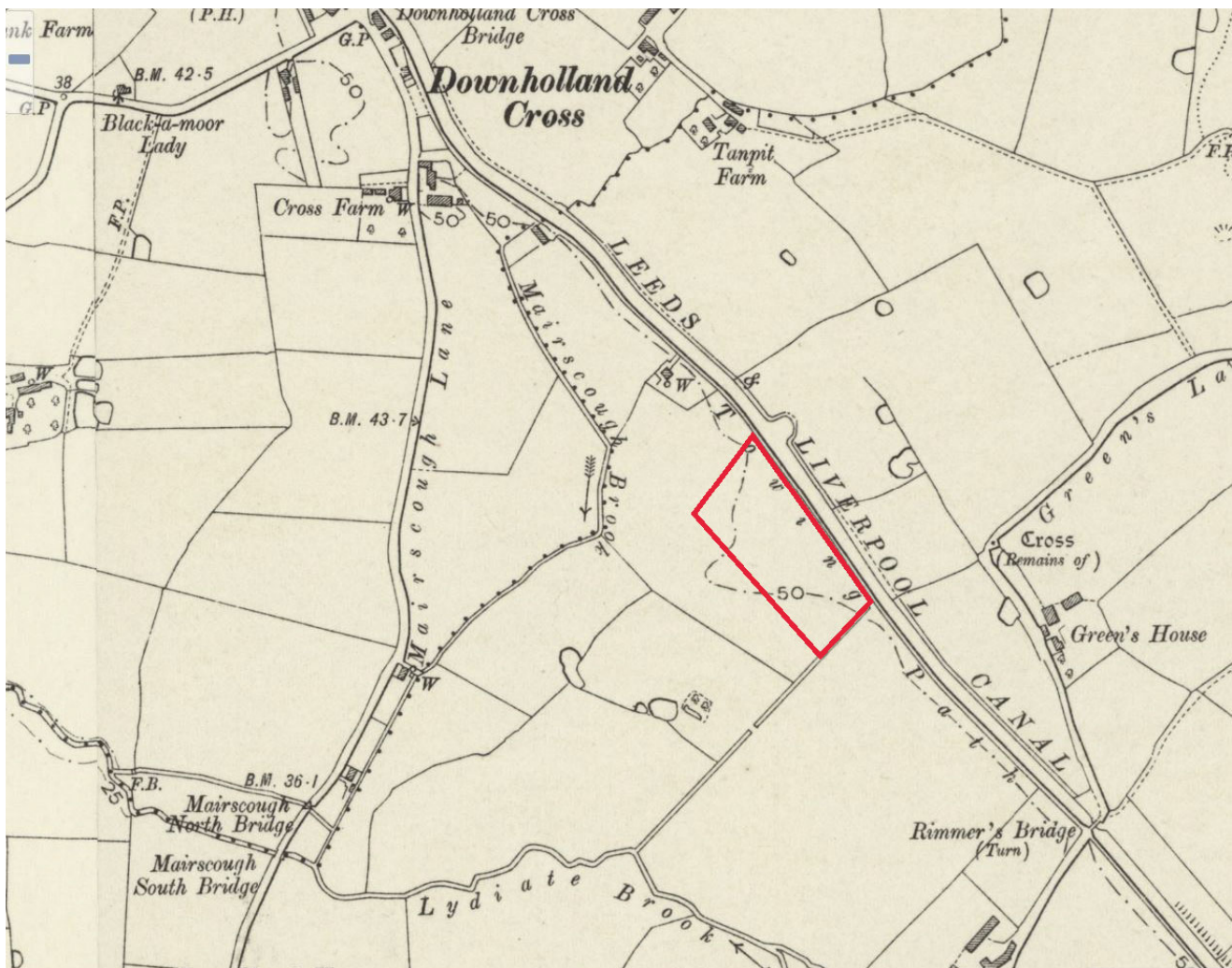


Figure 1: First Edition Historical Ordnance Survey Six Inch Map 1888-1913 showing that the site comprised of agricultural land. There was no development on the site at that time.

- 3 -

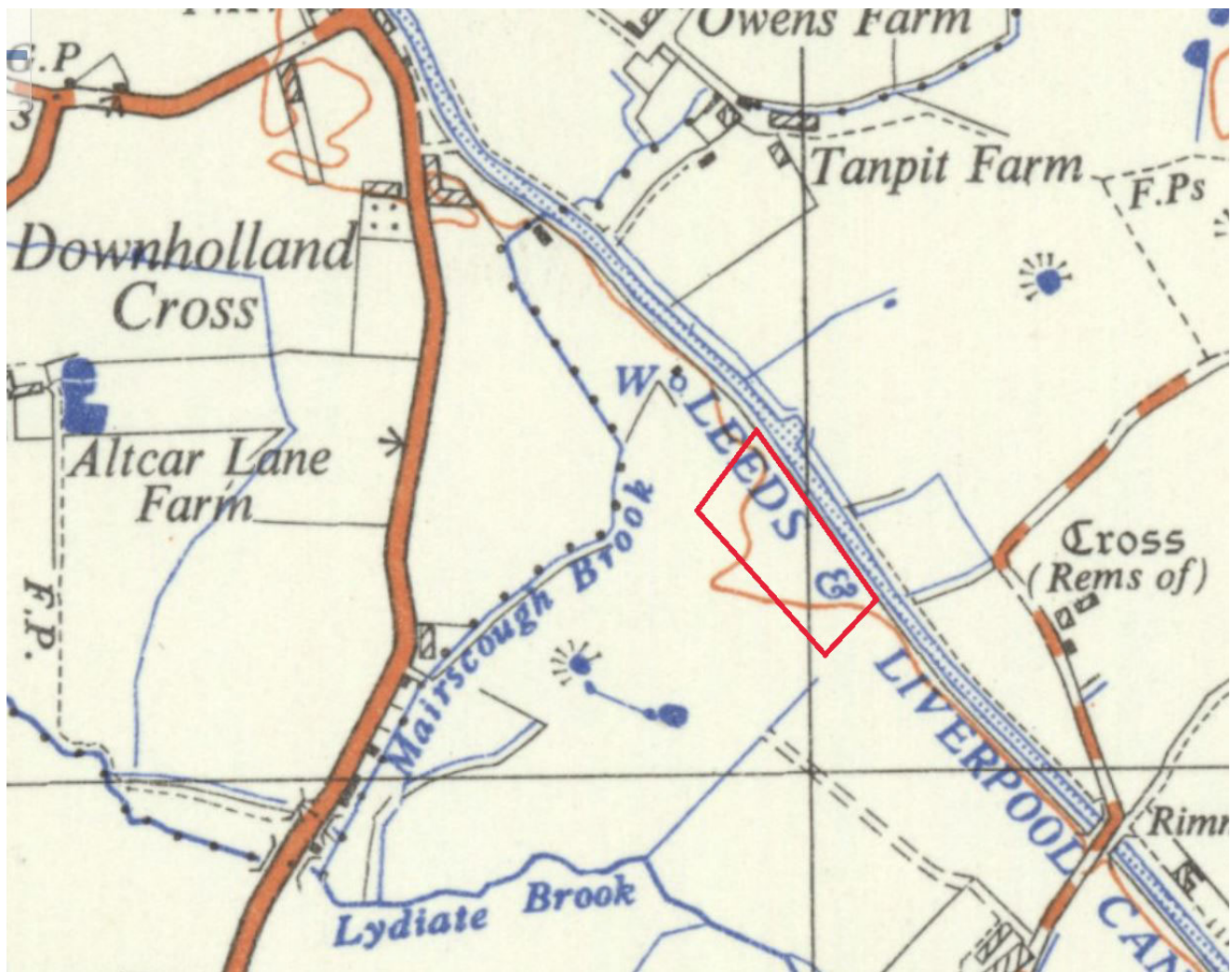


Figure 2: Historical Ordnance Survey Map from 1937-1961 that the site still comprised of agricultural land. No development was noted.

- 4 -



Figure 3: Satellite image taken from google maps 2022 showing no development on this site at this time.

- 5 -

Extract of REFA's Assessment Criteria Screening Values

Table 3: Assessment Criteria Screening Values site generated and imported soils			
Determinand	Assessment Criteria for capping soils in gardens (mg/kg)	Assessment Criteria for capping soils utilised in landscaped areas (mg/kg)	Assessment Criteria for capping soils utilised in POS (mg/kg)
Suite A			
Arsenic	37 ³	40 ³	79 ³
Cadmium	11.0 ³	85.0 ³	120 ³
Chromium (total)	910 ³	910 ³	1500 ³
Copper	2400 ³	7100 ³	12000 ³
Lead	200 ³	310 ³	630 ³
Mercury	40 ³	40 ³	120 ³
Nickel	180 ³	180 ³	230 ³
Selenium	250 ³	430 ³	1100 ⁴
Zinc	3700 ³	40000 ³	81,000 ³
Total Cyanide	34.0 ²	34.0 ²	34.0 ²
Phenol	380 ³	440 ³	440 ³
Suite B			
Acenaphthene	1100 ³	6000 ³	15000 ³
Acenaphthylene	920 ³	6000 ³	15000 ³
Anthracene	11000 ³	37000 ³	74000 ³
Benzo(a)anthracene	13.0 ³	15.0 ³	29.0 ³
Benzo(a)pyrene	5.0 ¹	5.3 ¹	10.0 ²
Benzo(b)fluoranthene	3.7 ³	4.0 ³	7.2 ³
Benzo(ghi)perylene	350 ³	360 ³	640 ³
Benzo(k)fluoranthene	100 ³	110 ³	190 ³
Chrysene	27.0 ³	32.0 ³	57.0 ³
Dibenz(ah)anthracene	0.30 ³	0.32 ³	0.58 ³
Fluoranthene	890 ³	1600 ³	3100 ³
Fluorene	860 ³	4500 ³	9900 ³
Indeno(123-cd) pyrene	41.0 ³	46.0 ³	82.0 ³
Naphthalene	13.0 ³	13.0 ³	4900 ³
Phenanthrene	440 ³	1500 ³	1300 ³
Pyrene	2000 ³	3800 ³	7400 ³
Suite C			
Asbestos Screen	ND	ND	ND
Suite D			
Aliphatic EC 5-6	160 ³	160 ³	600000 ³
Aliphatic EC >6-8	530 ³	530 ³	620000 ³
Aliphatic EC >8-10	150 ³	150 ³	13000 ³
Aliphatic EC >10-12	760 ³	770 ³	13000 ³
Aliphatic EC >12-16	4300 ³	4400 ³	13000 ³
Aliphatic EC >16-35	11000 ³	11000 ³	250000 ³
Aliphatic EC >35-44	11000 ³	11000 ³	250000 ³
Aromatic EC 5-7	300 ³	1400 ³	56000 ³
Aliphatic EC >7-8	660 ³	3900 ³	56000 ³
Aromatic EC >8-10	190 ³	270 ³	5000 ³
Aromatic EC >10-12	380 ³	1200 ³	5000 ³
Aromatic EC >12-16	660 ³	2500 ³	5000 ³
Aromatic EC >16-21	930 ³	1900 ³	3800 ³
Aromatic EC >21-35	1700 ³	1900 ³	3800 ³
Aromatic EC >35-44	1700 ³	1900 ³	3800 ³
Benzene	0.37 ³	1.4 ³	73.0 ³
Toluene	660 ³	3900 ³	56000 ³
Ethylbenzene	260 ³	440 ³	25000 ³
m,p Xylenes	320 ³	430 ³	43000 ³
O Xylene	330 ³	480 ³	43000 ³
Methyl tert-Butyl Ether	20 ²	20 ²	85500 ²
¹ DEFRA : SP1010 : Category 4 Screening Levels ² Atkins Atrisk SSV values ³ LQM and CIEH S4UL's for Human Health Risk Assessment (Registration No. S4UL 3265) ND – None Detected			

- 6 -

Chemical Analysis and Assessment

The subsoil was stripped from the source location, by R. Draper Ltd and put into 1 No. stockpile dedicated for use solely on Anwyl Homes residential development off Gresford Road, Llay. Coopers attended Drapers' compound on 21st August 2023 and paced out the stockpile, estimating the volume to be approximately 624m³. 5 No. samples were collected from within the stockpile, of which all were submitted to Derwentside Environmental Testing Services Ltd (DETS) for chemical analysis ensuring a quota of at least 1 sample per 150m³ was achieved in testing. All samples are referenced in the DETS Certificate of Analysis Reference No. 23-20212, dated 31st August 2023. The results indicate that the subsoil is suitable for use within residential gardens. However, the sulphate concentrations are slightly elevated, therefore any material to be placed in direct contact with concrete, its BRE designation would need to change to DS-2.

Photographic records

Below are photographs documenting Coopers' stockpile inspection and sampling and any periodic inspection of the stockpile ensuring the material remains free from cross mixing. Coopers are satisfied that the quality of this stockpile has been maintained and prevented from any cross mixing.

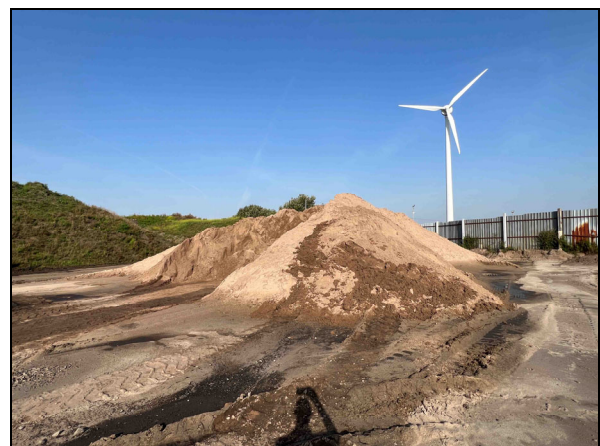
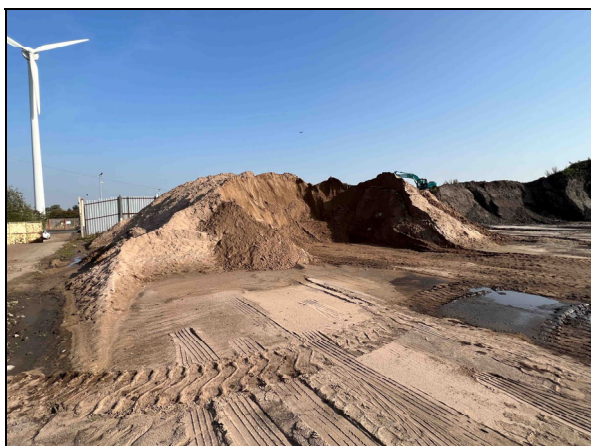
This report should be updated every two weeks with a selection of photographs to demonstrate the periodic inspections confirming the stockpile management practices.

Stockpile Sampling and Inspection – 21st August 2023



Photographs 1 & 2: Showing the status and nature of the Anwyl Homes subsoil stockpile during sampling and inspection on 21st August 2023.

Stockpile Inspection – 6th September 2023



Photographs 3 & 4: Showing the status and nature of the Anwyl Homes subsoil stockpile during an inspection on 6th September 2023.

- 7 -

Stockpile Inspection – 22nd September 2023



Photographs 5 & 6: Showing the status and nature of the Anwyl Homes subsoil stockpile during an inspection on 22nd September 2023.

Stockpile Inspection – 6th October 2023



Photographs 7 & 8: Showing the status and nature of the Anwyl Homes subsoil stockpile during an inspection on 6th October 2023.

Stockpile Inspection – 19th October 2023



Photographs 9 & 10: Showing the status and nature of the Anwyl Homes subsoil stockpile during an inspection on 19th October 2023.

- 8 -

Stockpile Inspection – 2nd November 2023



Photographs 11 & 12: Showing the status and nature of the Anwyl Homes subsoil stockpile during an inspection on 2nd November 2023.

Documents appended:

1. DETS Certificate of Analysis, Report reference no. 23-20212, dated 31st August 2023.



Certificate of Analysis

Certificate Number 23-20212

Issued: 31-Aug-23

Client Coopers (Chester) Ltd
Park House
Sandpiper Court
Chester Business Park
Chester
CH4 9QU

Our Reference 23-20212

Client Reference 6697

Order No 9787

Contract Title Greford Road, Llay

Description 5 Soil samples.

Date Received 24-Aug-23

Date Started 24-Aug-23

Date Completed 31-Aug-23

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Kirk Bridgewood
General Manager



Summary of Chemical Analysis

Matrix Descriptions

Our Ref 23-20212

Client Ref 6697

Contract Title Greford Road, Llay

Sample ID	Lab No	Completed	Matrix Description
SP1-SS1	2223076	31/08/2023	Brown slightly gravelly, sandy CLAY including odd rootlets
SP1-SS2	2223077	31/08/2023	Brown slightly gravelly, sandy CLAY including odd rootlets
SP1-SS3	2223078	31/08/2023	Brown slightly gravelly, sandy CLAY including odd rootlets
SP1-SS4	2223079	31/08/2023	Brown slightly gravelly, sandy CLAY including odd rootlets
SP1-SS5	2223080	31/08/2023	Brown slightly gravelly, sandy CLAY including odd rootlets

Summary of Chemical Analysis

Soil Samples

Our Ref 23-20212

Client Ref 6697

Contract Title Greford Road, Llay

Lab No	2223076	2223077	2223078	2223079	2223080
Sample ID	SP1-SS1	SP1-SS2	SP1-SS3	SP1-SS4	SP1-SS5
Depth					
Other ID					
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL
Sampling Date	21/08/2023	21/08/2023	21/08/2023	21/08/2023	21/08/2023
Sampling Time	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units					
Metals								
Arsenic	DETSC 2301#	0.2	mg/kg	7.2	5.8	6.6	7.3	8.3
Beryllium	DETSC 2301#	0.2	mg/kg	0.3	0.3	0.3	0.3	0.3
Boron, Water Soluble (2.5:1)	DETSC 2311#	0.2	mg/kg	2.0	1.5	1.6	1.8	1.5
Cadmium	DETSC 2301#	0.1	mg/kg	0.3	0.2	0.2	0.3	0.2
Chromium	DETSC 2301#	0.15	mg/kg	18	8.0	11	14	9.4
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	38	29	28	34	30
Lead	DETSC 2301#	0.3	mg/kg	160	72	130	92	62
Mercury	DETSC 2325#	0.05	mg/kg	0.11	0.05	< 0.05	0.06	0.06
Nickel	DETSC 2301#	1	mg/kg	11	8.0	9.8	11	9.5
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Vanadium	DETSC 2301#	0.8	mg/kg	17	12	14	15	15
Zinc	DETSC 2301#	1	mg/kg	120	100	110	180	89
Inorganics								
pH	DETSC 2008#		pH	9.7	9.3	9.2	9.3	9.5
Cyanide, Total	DETSC 2130#	0.1	mg/kg	0.2	0.2	0.2	0.1	0.2
FOC	DETSC 2002	0.001		0.004	0.005	0.005	0.005	0.005
Total Organic Carbon	DETSC 2002	0.1	%	0.4	0.5	0.5	0.5	0.5
Sulphate Aqueous Extract as SO4 (2:1)	DETSC 2076#	10	mg/l	1200	950	1100	940	270
Sulphate as SO4, Total	DETSC 2321#	0.01	%	0.41	0.26	0.31	0.20	0.29
PAHs								
Naphthalene	DETSC 3303#	0.03	mg/kg	0.03	0.14	< 0.03	0.10	0.05
Acenaphthylene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Acenaphthene	DETSC 3303#	0.03	mg/kg	0.07	0.10	0.08	0.13	0.13
Fluorene	DETSC 3303	0.03	mg/kg	0.06	0.09	0.07	0.13	0.12
Phenanthrene	DETSC 3303#	0.03	mg/kg	0.60	0.66	0.91	1.0	0.93
Anthracene	DETSC 3303	0.03	mg/kg	0.14	0.16	0.18	0.23	0.23
Fluoranthene	DETSC 3303#	0.03	mg/kg	1.0	0.80	1.4	1.7	1.4
Pyrene	DETSC 3303#	0.03	mg/kg	0.97	0.76	1.3	1.6	1.4
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	0.39	0.28	0.49	0.63	0.51
Chrysene	DETSC 3303	0.03	mg/kg	0.47	0.37	0.60	0.73	0.60
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	0.44	0.36	0.54	0.62	0.49
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	0.15	0.13	0.16	0.20	0.15
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	0.38	0.30	0.45	0.66	0.41
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	0.17	0.12	0.23	0.26	0.20
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg	0.05	0.04	0.06	0.05	0.04
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg	0.21	0.19	0.28	0.31	0.25
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	5.1	4.5	6.7	8.4	6.9
Phenols								
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3

Information in Support of the Analytical Results

Our Ref 23-20212
 Client Ref 6697
 Contract Greford Road, Llay

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
2223076	SP1-SS1 SOIL	21/08/23	PG		
2223077	SP1-SS2 SOIL	21/08/23	PG		
2223078	SP1-SS3 SOIL	21/08/23	PG		
2223079	SP1-SS4 SOIL	21/08/23	PG		
2223080	SP1-SS5 SOIL	21/08/23	PG		

Key: P-Plastic G-Bag

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Appendix A - Details of Analysis

Method	Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETSC 2002	Organic matter	%	0.1	Air Dried	No	Yes	Yes
DETSC 2003	Loss on ignition	%	0.01	Air Dried	No	Yes	Yes
DETSC 2008	pH	pH Units	1	Air Dried	No	Yes	Yes
DETSC 2076	Sulphate Aqueous Extract as SO ₄	mg/l	10	Air Dried	No	Yes	Yes
DETSC 2084	Total Organic Carbon	%	0.5	Air Dried	No	Yes	Yes
DETSC 2119	Ammoniacal Nitrogen as N	mg/kg	0.5	Air Dried	No	Yes	Yes
DETSC 2130	Cyanide free	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2130	Cyanide total	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2130	Phenol - Monohydric	mg/kg	0.3	Air Dried	No	Yes	Yes
DETSC 2130	Thiocyanate	mg/kg	0.6	Air Dried	No	Yes	Yes
DETSC 2301	Arsenic	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC 2301	Barium	mg/kg	1.5	Air Dried	No	Yes	Yes
DETSC 2301	Beryllium	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC 2301	Cadmium Available	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2301	Cadmium	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2301	Cobalt	mg/kg	0.7	Air Dried	No	Yes	Yes
DETSC 2301	Chromium	mg/kg	0.15	Air Dried	No	Yes	Yes
DETSC 2301	Copper	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC 2301	Manganese	mg/kg	20	Air Dried	No	Yes	Yes
DETSC 2301	Molybdenum	mg/kg	0.4	Air Dried	No	Yes	Yes
DETSC 2301	Nickel	mg/kg	1	Air Dried	No	Yes	Yes
DETSC 2301	Lead	mg/kg	0.3	Air Dried	No	Yes	Yes
DETSC 2301	Selenium	mg/kg	0.5	Air Dried	No	Yes	Yes
DETSC 2301	Zinc	mg/kg	1	Air Dried	No	Yes	Yes
DETSC 2311	Boron (water soluble)	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC 2321	Total Sulphate as SO ₄	%	0.01	Air Dried	No	Yes	Yes
DETSC 2325	Mercury	mg/kg	0.05	Air Dried	No	Yes	Yes
DETSC 3049	Sulphur (free)	mg/kg	0.75	As Received	No	Yes	Yes
DETSC 3072	Ali/Aro C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C12	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C12-C16	mg/kg	1.2	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C16-C21	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C21-C35	mg/kg	3.4	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C12	mg/kg	0.9	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C12-C16	mg/kg	0.5	As Received	No	Yes	Yes
DETSC 3072	Aromatic C16-C21	mg/kg	0.6	As Received	No	Yes	Yes
DETSC 3072	Aromatic C21-C35	mg/kg	1.4	As Received	No	Yes	Yes
DETSC 3303	Acenaphthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Acenaphthylene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(a)pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(a)anthracene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(b)fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(k)fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(g,h,i)perylene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Dibenzo(a,h)anthracene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes

Appendix A - Details of Analysis

Method	Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETSC 3303	Indeno(1,2,3-c,d)pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Naphthalene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Phenanthrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3311	C10-C24 Diesel Range Organics (DRO)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3311	C24-C40 Lube Oil Range Organics (LORO)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3311	EPH (C10-C40)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3321	Benzene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3321	Ethylbenzene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3321	Toluene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3321	Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3321	m+p Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3321	o Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 28 + PCB 31	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 52	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 101	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 118	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 153	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 138	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 180	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB Total	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3521	Ali/Aro C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3521	Aliphatic C10-C12	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3521	Aliphatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3521	Aliphatic C12-C16	mg/kg	1.2	As Received	No	Yes	Yes
DETSC 3521	Aliphatic C16-C21	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3521	Aliphatic C21-C35	mg/kg	3.4	As Received	No	Yes	Yes
DETSC 3521	Aromatic C10-C12	mg/kg	0.9	As Received	No	Yes	Yes
DETSC 3521	Aromatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3521	Aromatic C12-C16	mg/kg	0.5	As Received	No	Yes	Yes
DETSC 3521	Aromatic C16-C21	mg/kg	0.6	As Received	No	Yes	Yes
DETSC 3521	Aromatic C21-C35	mg/kg	1.4	As Received	No	Yes	Yes

Method details are shown only for those determinands listed in Annex A of the MCERTS standard. Anything not included on this list falls outside the scope of MCERTS. No Recovery Factors are used in the determination of results. Results reported assume 100% recovery. Full method statements are available on request.

End of Report

Assessment Criteria Screening Values taken from REFA Consulting Engineers' "Remediation strategy policy"

Table 2: Assessment Criteria Screening Value	
	Assessment Criteria (mg/kg)
Arsenic	37 ³
Cadmium	11.0 ³
Chromium (total)	910 ³
Copper	2400 ³
Lead	200 ¹
Mercury	40 ³
Nickel	180 ³
Selenium	250 ³
Zinc	3700 ³
Total Cyanide	34.0 ²
Phenol	380 ³
pH	-
SOM	-
¹ DEFRA : SP1010 : Category 4 Screening Levels	
² Atkins Atrisk SSV residential with home grown produce (6% SOM)	
³ LQM and CIEH S4UL's for Human Health Risk Assessment (Registration No. S4UL 3265) residential with home grown produce (6.0% SOM)	
ND – None Detected	

Table 3: Assessment Criteria Screening Values Speciated PAH	
	Assessment Criteria¹ (mg/kg)
Acenaphthene	1100
Acenaphthylene	920
Anthracene	11000
Benzo[a]anthracene	13.0
Benzo[a]pyrene	5.0 ²
Benzo[b]fluoranthene	3.7
Benzo[ghi]perylene	350
Benzo[k]fluoranthene	100
Chrysene	27.0
Dibenz[ah]anthracene	0.30
Fluoranthene	890
Fluorene	860
Indeno[123-cd]pyrene	41.0
Naphthalene	13.0
Phenanthrene	440
Pyrene	2000
¹ LQM & CIEH S4UL's for human health risk assessment (Registration No. S4UL 3265) – Residential with home grown produce (6.0% SOM)	
² DEFRA : SP1010 : Category 4 Screening Levels	

Table 4: Assessment Criteria Screening Values TPH (CWG)	
TPH	Assessment Criteria (mg/kg)
Aliphatic EC 5-6	160
Aliphatic EC >6-8	530
Aliphatic EC >8-10	150
Aliphatic EC >10-12	760
Aliphatic EC >12-16	4300
Aliphatic EC >16-35	11000
Aliphatic EC >35-44	11000
Aromatic EC 5-7	300
Aliphatic EC >7-8	660
Aromatic EC >8-10	190
Aromatic EC >10-12	380
Aromatic EC >12-16	660
Aromatic EC >16-21	930
Aromatic EC >21-35	1700
Aromatic EC >35-44	1700
¹ Criteria values based upon LQM & CIEH S4UL's for human health risk assessment (Registration No. S4UL 3265) – Residential with home grown produce (6.0% SOM)	

Table 5: Assessment Criteria Screening Values BTEX	
	Assessment Criteria (mg/kg)
Benzene	0.37
Toluene	660
EthylBenzene	260
M/P Xylenes	320
O Xylene	330
Methyl tert-Butyl Ether	20 ¹
Criteria values based upon LQM & CIEH S4UL's for human health risk assessment (Registration No. S4UL 3265) – Residential with home grown produce (6.0% SOM)	
¹ Atkins Atrisk SSV residential with home grown produce (6% SOM)	



NOTES:
Basic radon gas precautions
required in all properties. If
any animal remains are identified
during groundworks then works
should cease and the APHA and
Duty Vet should be consulted.

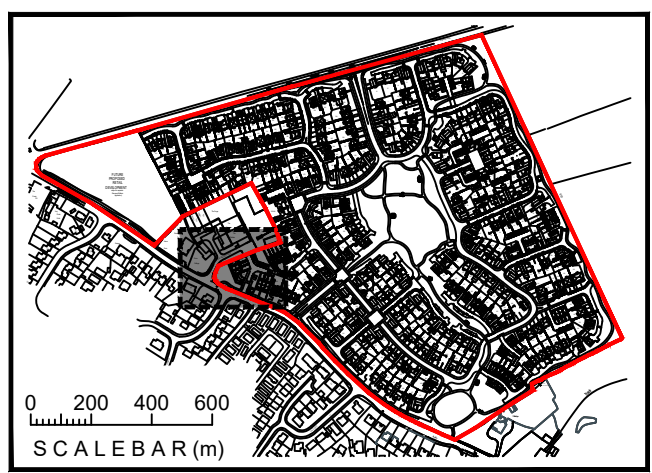
- KEY
- Approximate site boundary
 - Front garden landscaped areas where ground levels should be reduced or raised to accommodate 450mm of clean inert capping. Capping should consist of at least 150mm of topsoil.
 - Rear garden areas where ground levels should be raised or reduced to allow for at least 600mm of clean inert capping. Capping should consist of at least 150mm of topsoil.
 - Approximate location where animal remains have been identified and will require appropriate disposal in accordance with APHA and Duty Vet guidance.
 - Approximate areas where landowner has indicated where animal remains may be present but not identified during the site investigation.

revision suffix	A	REMOVED REQUIREMENTS FOR CAPPING SYSTEM IN PLOTS 271-273	20.12.19
revision	Revision details		Date
Drawing Stage	Drawing Status		
Draft	Comments	Tender	
Issued	Information	Construction	
Preliminary	Approval	As Built	
This drawing is not authorised unless signed as checked & approved			
Client			
Anwyl Homes/Bellway Homes			
Job title			
Gresford Road Llay			
Drawing title			
Remediation Plan			
45 Bridgeman Terrace Wigan, Lancs WN1 1TT Tel: (01942) 826020 Fax: (01942) 230816			
CONSULTING ENGINEERS			
CIVIL • STRUCTURAL			
GEOTECHNICAL • ENVIRONMENTAL			
Chkd	Appvd	date	scale
		20.12.19	1:1000@A1
DRAWING No		17040/25	drawn AP
			rev A
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KEY TO VALIDATION HOLES
(All positions are approximate unless otherwise stated)

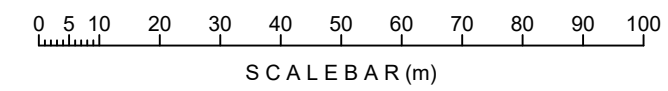
 Validation holes VH1 - VH5 completed by Coopers between 23 - 24 November 2023



**THIS DRAWING SHOULD ONLY
BE PRINTED IN COLOUR**

EXTRACT OF SITE PLAN
(Scale 1:250)

OVERALL SITE PLAN
(Scale 1:25000)



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DO NOT SCALE

SCALE	1:1250 1:25000 @ A3						
DATE	24.11.23						
DRAWN	OS						
CHEK'D	SD	Rev	Drwn	Date	App'd	Comments	

Gresford Road, Llay,
Wrexham.

**VALIDATION COMPLETION
EXTRACT PLAN**



chartered consulting engineers

Tel: 01244 684910
Email: admin@coopers.co.uk
Web: <http://coopers.co.uk>

Park House
Sandpiper Court
Chester Business Park
Chester
CH4 9QU

Drawing No. **6697 / 100**

Rev. **-**