

Document Verification

Project Title	"Maes y Rhedyn", Gresford Road, Llay
Project Number	6697
Document Title	Validation Report For Placement of Inert Cover For Plots 349-350
Document Number	6697val_Plots 349-350
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,

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Document Revision

Report Reference	Rev	Date	Description	Prepared	Checked and Approved
6697val_Plots 349-350	-	26/04/2022	Inert Cover Validation Report	S Thomas	J A Lewis

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INERT COVER VALIDATION REPORT FOR PLOTS 349-350

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:	26 th April 2022

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. 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.

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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 holes	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
349	349-350	Front	500mm	N/A	500mm	Dark brown, slightly silty, slightly sandy, clayey TOPSOIL	N/A	Site won	N/A
349 & 350	349 & 350	Rear	600mm	N/A	600mm	Dark brown, slightly silty, slightly sandy, clayey TOPSOIL	N/A	Site won	N/A

Source and chemical analysis of soils

The topsoil used was observed to be site won topsoil, considered as suitable for use within inert covers in gardens, with no requirement for further chemical analysis, as discussed in the REFA Geo-environmental Investigation Report. The REFA report included chemical analysis of the topsoils in the Exova Test Certificate No. 17/1723/RG/S/C1, dated 27th March 2017, the laboratory being an MCERTS accredited laboratory.

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PHOTOGRAPHIC RECORDS

One validation hole was undertaken in each of the rear gardens of Plots 349 and 350, and one validation hole in the front garden of Plot 349 to achieve the stipulated coverage for Plots 349-350 front gardens.

PLOT 349 REAR



Photographs 1 & 2: Showing the depth of the inert cover and location of the validation hole within the rear garden of Plot 349 and the depth of inert cover achieved. Photographs taken 25th April 2022.



Photograph 3: Photograph shows the nature of the inert cover within the validation hole in the rear garden of Plot 349. Photograph taken 25th April 2022.

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PLOT 350 REAR



Photographs 4 & 5: Showing the depth of the inert cover and location of the validation hole within the rear garden of Plot 350 and the depth of inert cover achieved. Photographs taken 25th April 2022.



Photograph 6: Photograph shows the nature of the inert cover within the validation hole in the rear garden of Plot 350. Photograph taken 25th April 2022.

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PLOT 349 FRONT



Photographs 7 & 8: Showing the depth of the inert cover and location of the validation hole within the front garden of Plot 349 and the depth of inert cover achieved. Photographs taken 26th April 2022.



Photograph 9: Photograph shows the nature of the inert cover within the validation hole in the front garden of Plot 349. Photograph taken 26th April 2022.

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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. REFA Consulting Engineers Assessment Criteria Screening Values
2. REFA Consulting Engineers Drawing No. 17040/25RevA

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.

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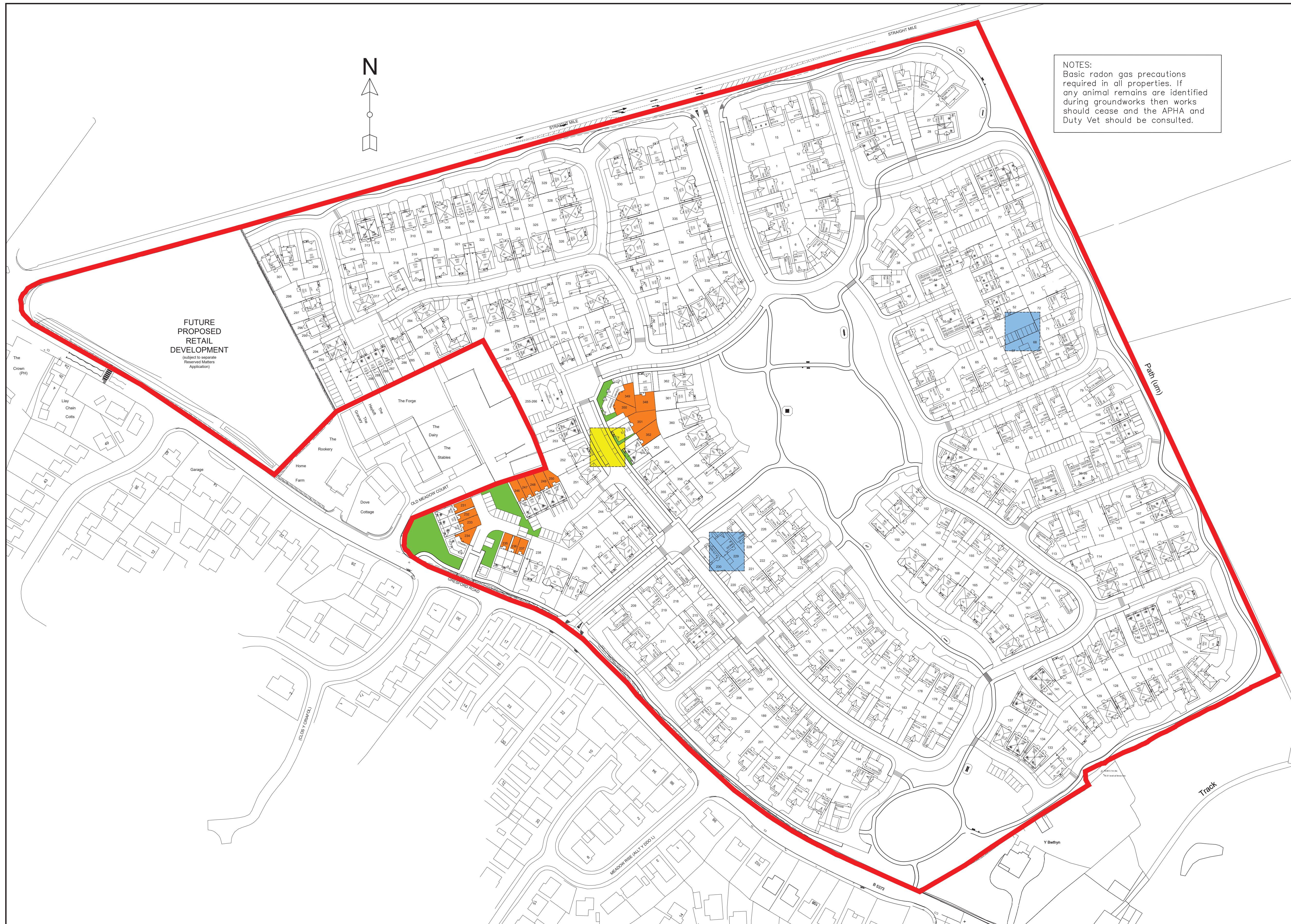
Assessment Criteria Screening Values taken from REFA Consulting Engineers' "Remediation strategy policy"

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 |
|  | 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. |

A	REMOVED REQUIREMENTS FOR CAPPING SYSTEM IN PLOTS 271-273	20.12.15

revision suffix	Revision details	Date
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Drawing Stage		Drawing Status	
	Draft		● 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



Chkd	Appvd	date	scale	drawn
		20.12.19	1:1000@A1	AP

DRAWING No	17040/25	rev A
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Any discrepancies to this drawing discovered on site should be reported to REFA immediately. IF IN DOUBT ASK!