GRM Development Solutions Ltd
Laurus House
First Avenue
Centrum 100
Burton upon Trent
Staffordshire
DE14 2WH

Tel: 01283 551 249
Web: www.grm-uk.com

Our Ref: GRM/P9119/Val.Let.03

Date: 6th June 2022

Kalel Broady
Bellway Homes Limited (West Midlands)
1 Centurion Court
Centurion Way
Wilnecote
Tamworth
Staffordshire
B77 5PN

By Email Only

Dear Kalel,

RE: Oakamoor Road, Cheadle – Garden Capping Validation Letter Plot 9

Further to your instructions, GRM Development Solutions Ltd (GRM) attended site on the 6th June 2022 to validate the garden capping placed in the rear gardens of Plot 9, and to undertake testing of both site-won topsoil and subsoil to confirm its suitability for use within the garden capping layer.

The remedial requirements, as set out in GRM's Remediation Method Statement (ref: GRM/P9119/RMS/F.4Rev B, dated April 2020) are to comprise:

- **Rear gardens within the Southern Area of the site:** a 600mm of clean soil capping layer comprising topsoil and subsoil.
- **Soft landscaping within the Southern Area of the site:** a 600mm clean soil capping layer comprising topsoil, subsoil, and a geotextile marker membrane at the base.
- **Northern Area of the site:** no remediation is necessary.

The Remediation Plan is presented in Appendix A.

The remediation strategy stated that whilst the topsoil and subsoil would be derived from site, both soil types would still need to be chemically tested to confirm suitability for use.

Validation

GRM excavated validation pits in the rear gardens of Plot 9 to confirm the depth of the capping layer and can confirm that 600mm of clean capping was recorded. The Validation Pit Location Plan and Validation Photographs are shown in Appendix B.

Soil samples were previously taken of both the site-won topsoil and subsoil from Plots 1, 2 and 4 of the same sources as for Plot 9 and sent for compliance chemical analysis. The results, when compared against GRM Tier 1 Assessment Criteria (TAC) for residential end-use with plant-uptake, show that all contaminants were below their respective threshold values. Copies of the chemical results (L21/03821/GRM - 21-21609) and GRM TACs are enclosed for reference in Appendix C and D, respectively.

Therefore, it is considered that the site won soils are suitable for use as a capping layer in gardens and soft landscaping areas.

Conclusion

According to the above information the remedial measures are considered to comply with the agreed Remediation Strategy, and no further work is required.

I trust that the above is sufficient for your current purposes; however, should you require any further information please do not hesitate to contact us.

Yours sincerely,
for GRM Development Solutions Ltd





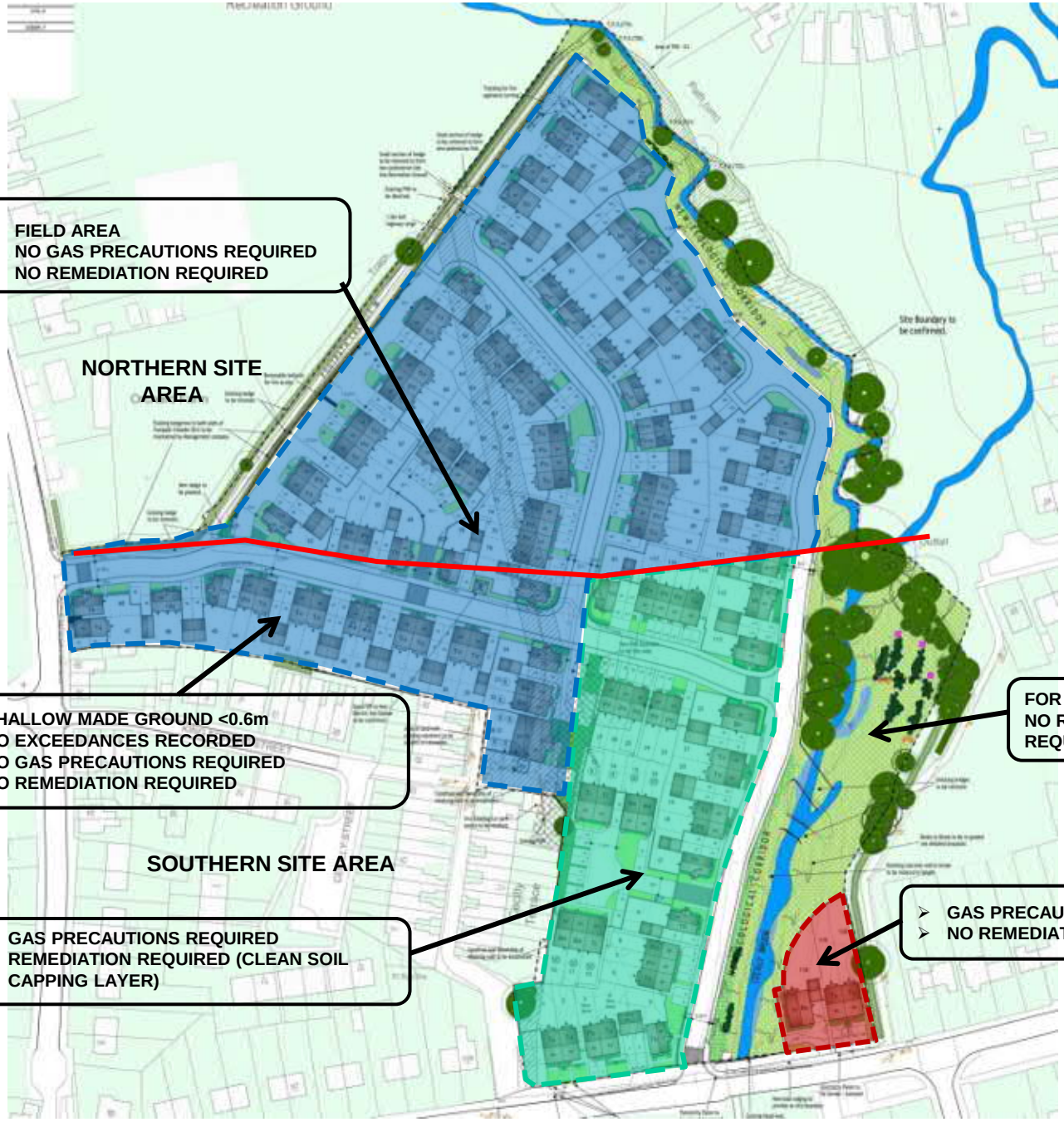
Gill Pittam
BSc (Hons) FGS
Engineering Geologist

George Salloway
BSc (Hons) MSc MIEnvSc
Senior Geo-environmental Scientist

Enclosed:

Appendix A Remediation Plan
Appendix B Validation Pit Location Plan and Validation Photographs
Appendix C Chemical Testing Results (L21/03821/GRM - 21-21609)
Appendix D GRM Tier 1 Assessment Criteria

APPENDIX A



DO NOT SCALE

NOTES:

GRM Development Solutions Ltd
Laurus House, First Ave, Centrum 100,
Burton-on-Trent, Staffordshire
Tel: 01283 551 249 Fax: 01283 211 968
mail@grm-uk.com www.grm-uk.com

CLIENT:
Bellway Homes West Midlands

PROJECT:
Land off Oakamoor Road, Cheadle

TITLE:
Remediation Plan

SCALE@SIZE :	ISSUE:
NTS	FINAL
DESIGN/DRAWN : SJ	DATE: June 2020
PROJECT No: P9119 01	DRAWING No:

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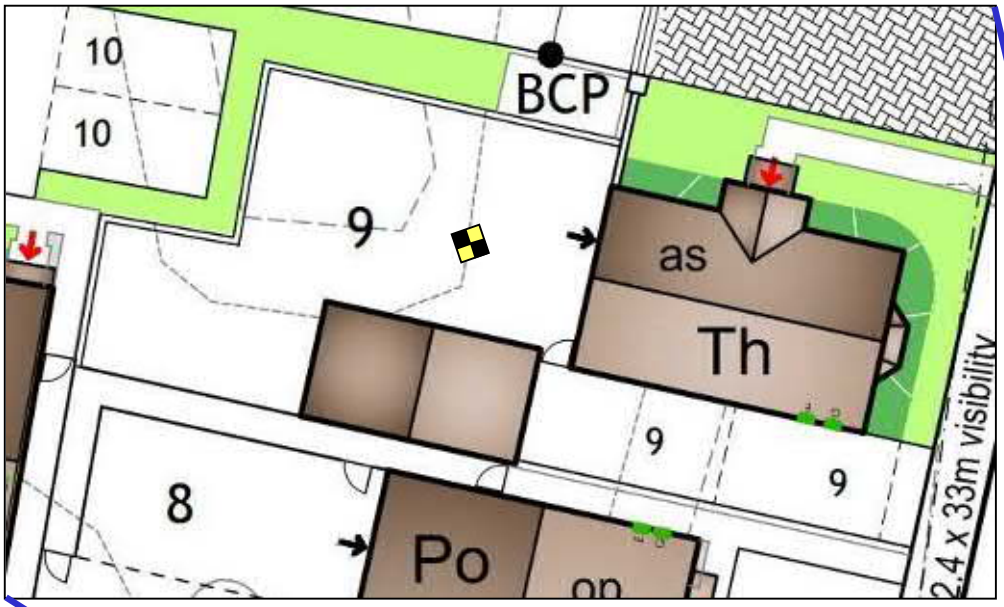
APPENDIX B





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NOTES:

Approx. location of capping validation pit.

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Tel: 01283 551 249
info@grm-uk.com www.grm-uk.com

CLIENT:

Bellway Homes West Midlands

PROJECT:

Oakamoor Road, Cheadle

TITLE:

Validation Pit Location Plan
Plot 9

SCALE@SIZE :	ISSUE:
NTS	FINAL
DESIGN/DRAWN :	DATE:
GP	June 2022
PROJECT No:	DRAWING No:
P9119	01

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Validation undertaken on 6th June 2022

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Tel: 01283 551 249
info@grm-uk.com www.grm-uk.com

CLIENT:

Bellway Homes West Midlands

PROJECT:

Oakamoor Road, Cheadle

TITLE:

Capping Validation Photos
Plot 9

SCALE@SIZE :	ISSUE:
NTS	FINAL
DESIGN/DRAWN :	DATE:
GP	June 2022
PROJECT No:	DRAWING No:
P9119	02

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APPENDIX C

Nicholls Colton Group
7 - 11 Harding Street
Leicester
LE1 4DH

GRM Development Solutions
Laurus House
First Avenue
Centrum 100
Burton Upon Trent
DE14 2WH

Analytical Test Report: L21/03821/GRM - 21-21609

Your Project Reference:	**P9119 Cecilly Mills Cheadle**		
Your Order Number:	P9119	Samples Received / Instructed:	22/10/2021 / 22/10/2021
Report Issue Number:	1	Sample Tested:	22/10 to 29/10/2021
Samples Analysed:	6 soil samples	Report issued:	29/10/2021

Signed



James Gane
Group Data Manager
Nicholls Colton Group

Notes:

General

Please refer to Methodologies page for details pertaining to the analytical methods undertaken.

Samples will be retained for 14 days after issue of this report with the exception of the asbestos test portion which is held for 6 months unless otherwise requested.

Moisture Content was determined in accordance with NC method statement MS - CL - Sample Prep, oven dried at <30˚C.

Moisture Content is reported as a percentage of the dry mass of soil, this calculation is in accordance with BS1377, Part 2, 1990, Clause 3.2

Stone Content was determined in accordance with NC method statement MS - CL - Sample Prep and refers to the percentage of stones retained on a 10mm BS test sieve.

Where specification limits are included these are for guidance only. Where a measured value has been highlighted this is not implying acceptance or failure and certainty of measurement values have not been taken into account.

Uncertainty of measurement values are available on request.

Samples were supplied by customer, results apply to the samples as received.

Asbestos

Please note: Where futher analaysis is required samples identified as containing asbestos are screened and tested on an as recevied basis. No correction is made for moisture content and these results are not covered by our accrediation

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

Deviating Samples

On receipt samples are compared against our sample holding and handling protocols, where any deviations have been noted these are reported on our deviating sample page (if present)

Accreditation Key

UKAS = UKAS Accreditation, MCERTS = MCERTS Accreditation, u = Unaccredited

MCERTS Accreditation only covers the SAND, CLAY and LOAM matrices

Date of Issue 10/12/2020
Owned by Emily Blissett - Customer Services Supervisor
Authorised by James Gane - Commercial Manager
L:\DATA\REPORTS\GRM495\[L21-03821-GRM - 21-21609.XLSX]TPH Codes

Nicholls Colton Group
7 - 11 Harding Street
Leicester
LE1 4DH

L21/03821/GRM - 21-21609

Project Reference - P9119 Cecilly Mills Cheadle

Analytical Test Results - Soil

NC Reference			196013	196014	196015	196016	196017	196018
Client Sample ID			Plot 1 ss	Plot 2 ss	Plot 4 ss	Plot 1 ts	Plot 2 ts	Plot 4 ts
Client Sample Location			-	-	-	-	-	-
Client Sample Type			-	-	-	-	-	-
Client Sample Number			-	-	-	-	-	-
Depth - Top (m)			0.50	0.50	0.50	0.15	0.15	0.15
Depth - Bottom (m)			0.50	0.50	0.50	0.15	0.15	0.15
Date of Sampling			21/10/2021	21/10/2021	21/10/2021	21/10/2021	21/10/2021	21/10/2021
Time of Sampling			-	-	-	-	-	-
Sample Matrix			Clay	Clay	Clay	Clay	Clay	Clay
Determinant	**Units**	**Accreditation**						
Arsenic	(mg/kg)	MCERTS	< 10	< 10	< 10	< 10	< 10	< 10
Cadmium	(mg/kg)	MCERTS	1.4	1.4	1.3	1.3	1.2	1.2
Chromium (Total)	(mg/kg)	UKAS	16	17	16	17	16	18
Copper	(mg/kg)	MCERTS	36	36	34	39	36	38
Lead	(mg/kg)	MCERTS	89	89	90	96	92	96
Mercury	(mg/kg)	UKAS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Nickel	(mg/kg)	MCERTS	16	17	18	15	14	15
Selenium	(mg/kg)	u	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
Zinc	(mg/kg)	MCERTS	140	140	140	150	140	150
Total Phenols	(mg/kg)	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cyanide (Total)	(mg/kg)	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chromium (Hexavalent)	(mg/kg)	u	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
pH	pH Units	MCERTS	7.6	7.9	8.9	6.4	6.6	6.6
Sulphate (Water soluble)	(mg/l)	u	290	270	130	77	78	81
Acenaphthene	(mg/kg)	MCERTS	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Acenaphthylene	(mg/kg)	UKAS	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Anthracene	(mg/kg)	UKAS	0.03	0.07	0.07	< 0.02	< 0.02	< 0.02
Benzo (a) anthracene	(mg/kg)	MCERTS	0.15	0.21	0.23	0.09	0.06	0.09
Benzo (a) pyrene	(mg/kg)	MCERTS	0.16	0.22	0.25	0.13	0.07	0.10
Benzo (b) fluoranthene	(mg/kg)	MCERTS	0.20	0.27	0.30	0.16	0.09	0.14
Benzo (g, h, i) perylene	(mg/kg)	MCERTS	0.11	0.14	0.17	0.11	0.05	0.07
Benzo (k) fluoranthene	(mg/kg)	MCERTS	0.07	0.10	0.12	0.06	0.03	0.05
Chrysene	(mg/kg)	MCERTS	0.17	0.22	0.24	0.11	0.07	0.11
Dibenzo (a,h) anthracene	(mg/kg)	MCERTS	< 0.02	0.03	0.03	< 0.02	< 0.02	< 0.02
Fluoranthene	(mg/kg)	MCERTS	0.34	0.50	0.56	0.18	0.13	0.20
Fluorene	(mg/kg)	MCERTS	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Indeno (1, 2, 3,-cd) pyrene	(mg/kg)	MCERTS	0.12	0.17	0.17	0.14	0.05	0.08
Naphthalene	(mg/kg)	MCERTS	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Phenanthrene	(mg/kg)	MCERTS	0.12	0.23	0.20	0.07	0.05	0.07
Pyrene	(mg/kg)	MCERTS	0.31	0.44	0.49	0.17	0.12	0.17
Total PAH (Sum of USEPA 16)	(mg/kg)	UKAS	1.9	2.7	2.9	1.4	0.89	1.2
SOM (via TOC)	(%)	UKAS	4.4	3.6	3.7	6.3	5.7	5.9
Asbestos	-	UKAS	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected

Nicholls Colton Group
7 - 11 Harding Street
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L21/03821/GRM - 21-21609

Project Reference - P9119 Cecilly Mills Cheadle

Analytical Test Results - TPH CWG

NC Reference			196013	196014	196015	196016	196017	196018
Client Sample ID			Plot 1 ss	Plot 2 ss	Plot 4 ss	Plot 1 ts	Plot 2 ts	Plot 4 ts
Client Sample Location			-	-	-	-	-	-
Client Sample Type			-	-	-	-	-	-
Client Sample Number			-	-	-	-	-	-
Depth - Top (m)			0.50	0.50	0.50	0.15	0.15	0.15
Depth - Bottom (m)			0.50	0.50	0.50	0.15	0.15	0.15
Date of Sampling			21/10/2021	21/10/2021	21/10/2021	21/10/2021	21/10/2021	21/10/2021
Time of Sampling			-	-	-	-	-	-
Sample Matrix			Clay	Clay	Clay	Clay	Clay	Clay
Determinant	**Units**	**Accreditation**						
Aliphatics								
$>C_5$ to C_6 [HS_MS_1D_AL]	(mg/kg)	u	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04
$>C_6$ to C_8 [HS_MS_1D_AL]	(mg/kg)	u	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04
$>C_8$ to C_{10} [HS_MS_1D_AL]	(mg/kg)	u	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04
$>C_{10}$ to C_{12} [EH_CU_1D_AL]	(mg/kg)	u	< 10	< 10	< 10	< 10	< 10	< 10
$>C_{12}$ to C_{16} [EH_CU_1D_AL]	(mg/kg)	u	< 10	< 10	< 10	< 10	< 10	< 10
$>C_{16}$ to C_{21} [EH_CU_1D_AL]	(mg/kg)	u	< 10	< 10	< 10	< 10	< 10	< 10
$>C_{21}$ to C_{35} [EH_CU_1D_AL]	(mg/kg)	u	22	20	39	18	< 10	19
Aromatics								
$>C_5$ to C_7 [HS_MS_1D_AR]	(mg/kg)	u	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04
$>C_7$ to C_8 [HS_MS_1D_AR]	(mg/kg)	u	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04
$>C_8$ to C_{10} [HS_MS_1D_AR]	(mg/kg)	u	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04
$>C_{10}$ to C_{12} [EH_CU_1D_AR]	(mg/kg)	u	< 10	< 10	< 10	< 10	< 10	< 10
$>C_{12}$ to C_{16} [EH_CU_1D_AR]	(mg/kg)	u	< 10	< 10	< 10	< 10	< 10	< 10
$>C_{16}$ to C_{21} [EH_CU_1D_AR]	(mg/kg)	u	< 10	< 10	< 10	< 10	< 10	< 10
$>C_{21}$ to C_{35} [EH_CU_1D_AR]	(mg/kg)	u	37	22	53	22	16	18
Total								
$>C_5$ to C_{40} [EH_CU+HS_1D_Total]	(mg/kg)	u	58	< 50	130	< 50	< 50	< 50

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L21/03821/GRM - 21-21609

Project Reference - P9119 Cecilly Mills Cheadle

Sample Descriptions

NC Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Description	Moisture Content (%)	Stone Content (%)	Passing 2mm test sieve (%)
196013	Plot 1 ss	-	-	-	Dark brown slightly silty slightly gravelly sandy clay with rare rootlets	17	29	45
196014	Plot 2 ss	-	-	-	Dark brown slightly silty slightly gravelly sandy clay	16	21	36
196015	Plot 4 ss	-	-	-	Dark brown slightly silty slightly gravelly sandy clay	14	31	54
196016	Plot 1 ts	-	-	-	Dark greyish brown slightly gravelly sandy silty clay with rare rootlets	22	28	62
196017	Plot 2 ts	-	-	-	Dark greyish brown slightly gravelly sandy silty clay with rare rootlets	29	3.3	60
196018	Plot 4 ts	-	-	-	Dark greyish brown slightly gravelly sandy silty clay with rare rootlets	22	32	59

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Leicester
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L21/03821/GRM - 21-21609

Project Reference - P9119 Cecilly Mills Cheadle

Sample Comments

NC Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Comments
196013	Plot 1 ss	-	-	-	
196014	Plot 2 ss	-	-	-	
196015	Plot 4 ss	-	-	-	
196016	Plot 1 ts	-	-	-	
196017	Plot 2 ts	-	-	-	
196018	Plot 4 ts	-	-	-	

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L21/03821/GRM - 21-21609

Project Reference - P9119 Cecilly Mills Cheadle

Analysis Methodologies

Test Code	Test Name / Reference	Sample condition for analysis	Sample Preperation	Test Details
ANIONSS	MS - CL - Anions by Aquakem (2:1Extract)	Oven dried	Passing 2mm test sieve	Determination of Anions (inc Sulphate, chloride etc.) in soils by Aquakem. Analysis is based on a 2:1 water to soil extraction ratio
EPHS	MS - CL - EPH in Soil	As received	Passing 10mm test sieve	Determination of Extractable Petroleum Hydrocarbons in soils via GC-MS
PAHASRDS	MS - CL - PAH (As Received)	As received	Passing 10mm test sieve	Determination of Polyaromatic hydrocarbons in soil via GC-MS
CWGS	MS - CL - VPH & MS - CL - EPH	As received	Passing 10mm test sieve	Determination of TPH CWG (Volatile Petroleum Hydrocarbons and Extractable Petroleum Hydrocarbons) in soils via Headspace-GC-MS and GC-MS respectivley
TOCS	MS - CL - TOC Eltra	Air Dried	Passing 10mm test sieve	Determination of Total Organic Carbon in soils
VPHS	MS - CL - VPH	As received	Passing 10mm test sieve	Determination of VPH in soils via Headspace-GC-MS
SKALARCNS	MS - CL - Cyanide by Skalar	As received	Passing 10mm test sieve	Determination of cyanide (total / free / complex) in soil using a Skalar segmented flow analyser
SKALARHCS	MS - CL - Hexavalent Chromium by Skalar	As received	Passing 10mm test sieve	Determination of hexavalent chromium in soil using Skalar segmented flow analyser
ICPMETS	MS - CL - ICP Metals	Air dried	Passing 10mm test sieve	Determination of metals in soils via ICP
PHS	MS - CL - pH in Soils	As received	Passing 10mm test sieve	Determination of pH in soils using a pH probe (using a 1:3 soil to water extraction)
SKALARPHS	MS - CL - Phenols by Skalar	As received	Passing 10mm test sieve	Determination of total phenols in soil using Skalar segmented flow analyser
ASB	MS - AS - Asbestos	-	-	Fibre identification is in accordance with in house documented methods which are based on the procedure documented in the HSE Document HSG 248 "Asbestos: The analysts guide for sampling, analysis and clearance procedures"
SAMPLEPREP	MS - CL - Sample Preparation	-	-	Preparation of samples (including determination of moisture content) to allow for subsequent analysis

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L21/03821/GRM - 21-21609

Project Reference - P9119 Cecilly Mills Cheadle

HWOL TPH Acronym Index

Acronym	Description
HS	Headspace Analysis
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent
CU	Clean-up e.g. by florisil, silica gel
1D	GC - Single coil gas chromatography
Total	Aliphatics and Aromatics
AL	Aliphatics Only
AR	Aromatics Only
2D	GC-GC - Double Coil Gas Chromatography
#1	EH_Total but with humics mathmatically subtracted
#2	EH_Total but with fatty acids mathmatically subtracted
_	Operator - underscore to separate acronyms (except for +)
+	Operator to indicate cumlative e.g. EH+HS_Total or EH_CU+HS_Total
MS	Mass Spectrometry

APPENDIX D

	GRM TIER 1 ASSESSMENT CRITERIA		
LAND USE	Residential with Plant Uptake		
CONTAMINANT	**1%**	**2.50%**	**6%**
[a] Arsenic	37	37	37
[a] Cadmium	22	22	22
[b] Chromium III	910	910	910
[a] Chromium VI	21	21	21
[a] Lead	200	200	200
[b/c] Mercury	40	40	40
[b] Selenium	250	250	250
[b] Nickel	180	180	180
[b] Phenols	280	550	1100
[b] Copper	2400	2400	2400
[b] Zinc	3700	3700	3700
[d] Cyanide	34	34	34
[a] Benzene	0.20	0.33	0.87
[b] Toluene	130	290	660
[b] Ethylbenzene	47	110	260
[b] *o* - xylene	60	140	330
[b] *m* - xylene	59	140	320
[b] *p* - xylene	56	130	310
Non Genotoxic PAHs			
[b] Acenaphthene	210	510	1100
[b] Acenaphthylene	170	420	920
[b] Anthracene	2400	5400	11000
[b] Fluoranthene	280	560	890
[b] Fluorene	170	400	860
[b] Naphthalene	2.3	5.6	13
[b] Phenanthrene	95	220	440
[b] Pyrene	620	1200	2000
Genotoxic PAHs			
[a/e] Benzo(a)pyrene	5	5	5
ALIPHATIC HYDROCARBONS			
[b] C5-C6	42	78	160
[b] C6-C8	100	230	530
[b] C8-C10	27	65	150
[b] C10-C12	130	330	760
[b] C12-C16	1100	2400	4300
[b] C16-35	65000	92000	110000
AROMATIC HYDROCARBONS			
[b] C5-7 (benzene)	70	140	300
[b] C7-8 (toluene)	130	290	660
[b] C8-C10	34	83	190
[b] C10-C12	74	180	380
[b] C12-C16	140	330	660
[b] C16-C21	260	540	930
[b] C21-C35	1100	1500	1700

Notes

a C4SL - SP1010 (2014) - Benzene and Benzo(a)pyrene values for 1% and 2.5% SOM have been calculated using default C4SL parameters in CLEA v1.07

b LQM/CIEH S4UL values (2015).

c S4UL for inorganic Hg used.

d Atkins ATRISKsoil Value

e Benzo(a)pyrene is a surrogate marker for the 8 genotoxic PAHs (Benzo(a)pyrene, Benzo(a)anthracene, Benzo(b)fluoranthene, Benzo(ghi)perylene, Benzo(k)fluoranthene, Chrysene, Dibenzo(ah)anthracene, Ideno(1,2,3-cd)pyrene)

GRM TAC 11-2016



GRM

We understand land

GRM provide specialist ground, environmental, structural and design services for landowners and developers across the UK.

Our experience spans a wide range of sectors including private residential, social housing, healthcare, education, commercial, and industrial.Our sole aim is to maximise the potential of the site and thereby the commercial return for our clients.

Land Appraisal

Phase I Desk Studies | Phase II Site Investigations
Soakaway Testing | Specialist Land Surveys

Environmental

Preliminary Risk Assessments | Detailed Quantitative Risk Assessments
Ground Gas Assessments | Material Management Plans
Environmental Impact Assessments & Reports
Remediation Strategies & Validation | Due Diligence Audits

Geotechnical

Geotechnical Investigations | Earthworks | Slope Stability
Retaining Wall Design | Ground Stability | Vibration Assessments
Value Engineering

Design

Budget Foundation Schedules | Detailed Foundation Design
Structural Design | Structural Surveys

Mining

Coal Mining Risk Assessments | Coal Mining Investigations | Treatment of Mine Workings | Mine Shafts | Subsidence | Mineral Resource Assessments

Site Services

Foundation Inspections | Gas Membrane Verification
Remediation Validation | Structural Inspections

We also work with key partners to deliver a range of other support services and surveys including topographical, ecology, tree, archaeological, flood risk, and utilities.

Please contact us for an informal discussion on how we can save both time and money on your development project:

www.grm-uk.com | 01283 551249 | info@grm-uk.com