DUNELM GEOTECHNICAL & ENVIRONMENTAL LTD

Foundation House
St. John's Road
Meadowfield
Durham
DH7 8TZ

Our Ref: D8091

Lee Foxon
Kier Living
Unit 2180 Ground Floor,
Thorpe Park,
Century Way,
Leeds,
LS15 8ZB

Date: 7th September 2017

Dear Lee,

SITE AT BLACK ROCK MILLS, HUDDERSFIELD
TOPSOIL TESTING & VALIDATION
SOIL CAP VALIDATION FOR PLOTS 6 AND 7 (FOR PLOTS 6 AND 7)

Please find attached the chemical test results for the above mentioned plots at Black Rock Mills.

The soil cap comprised exclusively topsoil. Photographs were provided by Kier Living of trial holes in the rear gardens of plots 6 and 7 which confirmed the sufficient thickness of as-placed soil.

Samples from plots 6 and 7 (for plots 6 and 7) were taken for chemical analysis from the approximate mid-point of the topsoil horizon and analysed in the laboratory of Chemtech Environmental in Consett. We enclose for your information the chemical test results.

On the basis of these results, the topsoil is considered suitable for re-use in domestic gardens.

In addition samples were taken from plots 4, 5 and 8 and tested for the same suite, however these plots will be reported separately at a later date. The results are included on the laboratory certificates.

Yours sincerely,

Martin Davidson
On behalf of Dunelm Geotechnical and Environmental Ltd.

Enc. – Laboratory Certificates

2531

ANALYTICAL TEST REPORT

Contract no: 66897

Contract name: Black Rock Mills, Plots 4,5,6,7,8

Client reference: D8091

Clients name: Dunelm Geotechnical & Environmental

Clients address: Foundation House
St Johns Road, Meadowfield
Durham
DH7 8TZ

Samples received: 30 August 2017

Analysis started: 30 August 2017

Analysis completed 06 September 2017

Report issued: 06 September 2017

Notes:
Opinions and interpretations expressed herein are outside the UKAS accreditation scope.
Unless otherwise stated, Chemtech Environmental Ltd was not responsible for sampling.
Methods, procedures and performance data are available on request.
Results reported herein relate only to the material supplied to the laboratory.
This report shall not be reproduced except in full, without prior written approval.
Samples will be disposed of 6 weeks from initial receipt unless otherwise instructed.

Key:
U UKAS accredited test
M MCERTS & UKAS accredited test
$ Test carried out by an approved subcontractor
I/S Insufficient sample to carry out test
N/S Sample not suitable for testing
NAD No Asbestos Detected

Approved by:

Dave Bowerbank
Customer Services Co-ordinator

Chemtech Environmental Limited

SAMPLE INFORMATION

MCERTS (Soils):

Soil descriptions are only intended to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions. MCERTS accreditation applies for sand, clay and loam/topsoil, or combinations of these whether these are derived from naturally occurring soils or from made ground, as long as these materials constitute the major part of the sample. Other materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

All results are reported on a dry basis. Samples dried at no more than 30°C in a drying cabinet.
Analytical results are inclusive of stones.

Lab ref	Sample id	Depth (m)	Sample description	Material removed	% Removed	% Moisture
66897-1	Plot 4	-	Loam with Gravel and Roots	-	-	19.6
66897-2	Plot 5	-	Loam with Gravel and Roots	-	-	15.7
66897-3	Plot 6	-	Loam with Gravel and Roots	-	-	15.3
66897-4	Plot 7	-	Loam with Gravel and Roots	-	-	22.5
66897-5	Plot 8	-	Loam with Gravel and Roots	-	-	17.0

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SOILS

Lab number			66897-1	66897-2	66897-3	66897-4	66897-5
Sample id			Plot 4	Plot 5	Plot 6	Plot 7	Plot 8
Depth (m)			-	-	-	-	-
Date sampled			-	-	-	-	-
Test	**Method**	**Units**					
Arsenic (total)	CE127 M	mg/kg As	24	25	21	26	31
Cadmium (total)	CE127 M	mg/kg Cd	0.4	0.4	0.4	0.4	0.4
Chromium (total)	CE127 M	mg/kg Cr	107	126	128	148	134
Chromium (VI)	CE146	mg/kg CrVI	<1	<1	<1	<1	<1
Copper (total)	CE127 M	mg/kg Cu	48	52	49	52	53
Lead (total)	CE127 M	mg/kg Pb	103	104	95	111	1184
Mercury (total)	CE127 M	mg/kg Hg	1.8	1.6	1.4	1.7	1.6
Nickel (total)	CE127 M	mg/kg Ni	24	26	24	27	25
Selenium (total)	CE127 M	mg/kg Se	1.6	1.4	1.5	1.6	1.7
Zinc (total)	CE127 M	mg/kg Zn	111	114	108	115	116
pH	CE004 M	units	6.0	5.8	5.6	5.7	5.3
Sulphate (2:1 water soluble)	CE061 M	mg/l SO_4	90	70	115	70	56
Total Organic Carbon (TOC)	CE072 M	% w/w C	5.22	5.65	4.73	5.57	5.63
Estimate of OMC (calculated from TOC)	CE072 M	% w/w	9.00	9.74	8.16	9.60	9.71
PAH							
Naphthalene	CE087 M	mg/kg	0.04	0.05	0.05	0.09	0.05
Acenaphthylene	CE087 M	mg/kg	0.01	0.02	0.01	0.03	0.02
Acenaphthene	CE087 M	mg/kg	<0.01	0.01	0.03	0.03	0.02
Fluorene	CE087 U	mg/kg	0.01	0.02	0.03	0.03	0.01
Phenanthrene	CE087 M	mg/kg	0.32	0.44	0.51	0.63	0.42
Anthracene	CE087 U	mg/kg	0.06	0.10	0.12	0.18	0.11
Fluoranthene	CE087 M	mg/kg	0.69	0.88	0.99	1.22	0.94
Pyrene	CE087 M	mg/kg	0.66	0.86	0.96	1.13	0.92
Benzo(a)anthracene	CE087 U	mg/kg	0.38	0.47	0.32	0.59	0.36
Chrysene	CE087 M	mg/kg	0.34	0.41	0.43	0.58	0.44
Benzo(b)fluoranthene	CE087 M	mg/kg	0.44	0.63	0.61	0.84	0.57
Benzo(k)fluoranthene	CE087 M	mg/kg	0.20	0.19	0.24	0.28	0.16
Benzo(a)pyrene	CE087 U	mg/kg	0.37	0.47	0.53	0.67	0.50
Indeno(123cd)pyrene	CE087 M	mg/kg	0.22	0.27	0.28	0.37	0.29
Dibenz(ah)anthracene	CE087 M	mg/kg	0.04	0.06	0.06	0.09	0.07
Benzo(ghi)perylene	CE087 M	mg/kg	0.22	0.28	0.29	0.37	0.28
PAH (total of USEPA 16)	CE087	mg/kg	4.02	5.16	5.47	7.12	5.15
TPH							
VPH Aromatic (>EC5-EC7)	CE067	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
VPH Aromatic (>EC7-EC8)	CE067	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
VPH Aromatic (>EC8-EC10)	CE067	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
EPH Aromatic (>EC10-EC12)	CE068	mg/kg	<1	<1	<1	<1	<1
EPH Aromatic (>EC12-EC16)	CE068	mg/kg	<1	<1	<1	<1	<1
EPH Aromatic (>EC16-EC21)	CE068	mg/kg	2	3	3	4	3
EPH Aromatic (>EC21-EC35)	CE068	mg/kg	4	6	5	6	5
EPH Aromatic (>EC35-EC44)	CE068	mg/kg	<1	<1	<1	<1	<1

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SOILS

Lab number			66897-1	66897-2	66897-3	66897-4	66897-5
Sample id			Plot 4	Plot 5	Plot 6	Plot 7	Plot 8
Depth (m)			-	-	-	-	-
Date sampled			-	-	-	-	-
Test	**Method**	**Units**					
VPH Aliphatic (>C5-C6)	CE067	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
VPH Aliphatic (>C6-C8)	CE067	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
VPH Aliphatic (>C8-C10)	CE067	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EPH Aliphatic (>C10-C12)	CE068	mg/kg	<4	<4	<4	<4	<4
EPH Aliphatic (>C12-C16)	CE068	mg/kg	<4	<4	6	5	<4
EPH Aliphatic (>C16-C35)	CE068	mg/kg	105	55	123	120	65
EPH Aliphatic (>C35-C44)	CE068	mg/kg	45	20	48	24	20
Subcontracted analysis							
Asbestos (qualitative)	$	-	NAD	NAD	NAD	NAD	NAD

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METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE127	Arsenic (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg As
CE127	Cadmium (total)	Aqua regia digest, ICP-MS	Dry	M	0.2	mg/kg Cd
CE127	Chromium (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Cr
CE146	Chromium (VI)	Acid extraction, Colorimetry	Dry		1	mg/kg CrVI
CE127	Copper (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Cu
CE127	Lead (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Pb
CE127	Mercury (total)	Aqua regia digest, ICP-MS	Dry	M	0.5	mg/kg Hg
CE127	Nickel (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Ni
CE127	Selenium (total)	Aqua regia digest, ICP-MS	Dry	M	0.3	mg/kg Se
CE127	Zinc (total)	Aqua regia digest, ICP-MS	Dry	M	5	mg/kg Zn
CE004	pH	Based on BS 1377, pH Meter	Wet	M	-	units
CE061	Sulphate (2:1 water soluble)	Aqueous extraction, ICP-OES	Dry	M	10	mg/l SO_4
CE072	Total Organic Carbon (TOC)	Removal of IC by acidification, Carbon Analyser	Dry	M	0.1	% w/w C
CE072	Estimate of OMC (calculated from TOC)	Calculation from Total Organic Carbon	Dry	M	0.1	% w/w
CE087	Naphthalene	Solvent extraction, GC-MS	Wet	M	0.01	mg/kg
CE087	Acenaphthylene	Solvent extraction, GC-MS	Wet	M	0.01	mg/kg
CE087	Acenaphthene	Solvent extraction, GC-MS	Wet	M	0.01	mg/kg
CE087	Fluorene	Solvent extraction, GC-MS	Wet	U	0.01	mg/kg
CE087	Phenanthrene	Solvent extraction, GC-MS	Wet	M	0.02	mg/kg
CE087	Anthracene	Solvent extraction, GC-MS	Wet	U	0.02	mg/kg
CE087	Fluoranthene	Solvent extraction, GC-MS	Wet	M	0.02	mg/kg
CE087	Pyrene	Solvent extraction, GC-MS	Wet	M	0.02	mg/kg
CE087	Benzo(a)anthracene	Solvent extraction, GC-MS	Wet	U	0.02	mg/kg
CE087	Chrysene	Solvent extraction, GC-MS	Wet	M	0.01	mg/kg
CE087	Benzo(b)fluoranthene	Solvent extraction, GC-MS	Wet	M	0.02	mg/kg
CE087	Benzo(k)fluoranthene	Solvent extraction, GC-MS	Wet	M	0.02	mg/kg
CE087	Benzo(a)pyrene	Solvent extraction, GC-MS	Wet	U	0.02	mg/kg
CE087	Indeno(123cd)pyrene	Solvent extraction, GC-MS	Wet	M	0.02	mg/kg
CE087	Dibenz(ah)anthracene	Solvent extraction, GC-MS	Wet	M	0.02	mg/kg
CE087	Benzo(ghi)perylene	Solvent extraction, GC-MS	Wet	M	0.02	mg/kg
CE087	PAH (total of USEPA 16)	Solvent extraction, GC-MS	Wet		0.27	mg/kg
CE067	VPH Aromatic (>EC5-EC7)	Headspace GC-FID	Wet		0.01	mg/kg
CE067	VPH Aromatic (>EC7-EC8)	Headspace GC-FID	Wet		0.01	mg/kg
CE067	VPH Aromatic (>EC8-EC10)	Headspace GC-FID	Wet		0.01	mg/kg
CE068	EPH Aromatic (>EC10-EC12)	Solvent extraction, GC-FID	Wet		1	mg/kg
CE068	EPH Aromatic (>EC12-EC16)	Solvent extraction, GC-FID	Wet		1	mg/kg
CE068	EPH Aromatic (>EC16-EC21)	Solvent extraction, GC-FID	Wet		1	mg/kg
CE068	EPH Aromatic (>EC21-EC35)	Solvent extraction, GC-FID	Wet		1	mg/kg
CE068	EPH Aromatic (>EC35-EC44)	Solvent extraction, GC-FID	Wet		1	mg/kg
CE067	VPH Aliphatic (>C5-C6)	Headspace GC-FID	Wet		0.1	mg/kg
CE067	VPH Aliphatic (>C6-C8)	Headspace GC-FID	Wet		0.1	mg/kg
CE067	VPH Aliphatic (>C8-C10)	Headspace GC-FID	Wet		0.1	mg/kg
CE068	EPH Aliphatic (>C10-C12)	Solvent extraction, GC-FID	Wet		4	mg/kg

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METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE068	EPH Aliphatic (>C12-C16)	Solvent extraction, GC-FID	Wet		4	mg/kg
CE068	EPH Aliphatic (>C16-C35)	Solvent extraction, GC-FID	Wet		4	mg/kg
CE068	EPH Aliphatic (>C35-C44)	Solvent extraction, GC-FID	Wet		10	mg/kg
$	Asbestos (qualitative)	HSG 248, Microscopy	Dry	U	-	-

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DEVIATING SAMPLE INFORMATION

Comments
Sample deviation is determined in accordance with the UKAS note "Guidance on Deviating Samples" and based on reference standards and laboratory trials.
For samples identified as deviating, test result(s) may be compromised and may not be representative of the sample at the time of sampling.
Chemtech Environmental Ltd cannot be held responsible for the integrity of sample(s) received if Chemtech Environmental Ltd did not undertake the sampling. Such samples may be deviating.

Key

N	No (not deviating sample)
Y	Yes (deviating sample)
NSD	Sampling date not provided
NST	Sampling time not provided (waters only)
EHT	Sample exceeded holding time(s)
IC	Sample not received in appropriate containers
HP	Headspace present in sample container
NCF	Sample not chemically fixed (where appropriate)
IT	Sample not cooled
OR	Other (specify)

Lab ref	Sample id	Depth (m)	Deviating	Tests (Reason for deviation)
66897-1	Plot 4	-	Y	All (NSD)
66897-2	Plot 5	-	Y	All (NSD)
66897-3	Plot 6	-	Y	All (NSD)
66897-4	Plot 7	-	Y	All (NSD)
66897-5	Plot 8	-	Y	All (NSD)