

Our Ref: D8091

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

Date: 20th February 2017

Dear Lee,

**SITE AT BLACK ROCK MILLS, HUDDERSFIELD
TOPSOIL TESTING & VALIDATION
SOIL CAP VALIDATION FOR PLOTS 27 AND 28 (FOR PLOTS 27, 28, 29, 30, 31 AND 32)**

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 27 and 28 which confirmed the sufficient thickness of as-placed soil.

Samples from plots 27 and 28 (for plots 27, 28, 29, 30, 31 and 32) were taken for chemical analysis from the approximate mid-point of the topsoil horizon and analysed in the laboratory of Derwentside Environmental Testing 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.

Yours sincerely,



Martin Davidson
On behalf of Dunelm Geotechnical and Environmental Ltd.

Enc. – Laboratory Certificates



DETS

Certificate of Analysis

Certificate Number 18-03325

16-Feb-18

Client Dunelm Geotechnical & Environmental Ltd
Foundation House
St. John's Road
Meadowfield
Durham
DH7 8TZ

Our Reference 18-03325

Client Reference D8091

Order No 13201

Contract Title Black Rock Mills, Plots 27 and 28

Description 2 Soil samples.

Date Received 10-Feb-18

Date Started 10-Feb-18

Date Completed 16-Feb-18

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



Adam Fenwick
Contracts Manager



Summary of Chemical Analysis

Soil Samples

Our Ref 18-03325

Client Ref D8091

Contract Title Black Rock Mills, Plots 27 and 28

| | | |
|---------------|---------|---------|
| Lab No | 1296521 | 1296522 |
| | Plot 27 | Plot 28 |
| Sample ID | Topsoil | Topsoil |
| Depth | | |
| Other ID | | |
| Sample Type | SOIL | SOIL |
| Sampling Date | n/s | n/s |
| Sampling Time | n/s | n/s |

| Test | Method | LOD | Units | | |
|---------------------------------|-------------|------|-------|--------|--------|
| Metals | | | | | |
| Arsenic | DETSC 2301# | 0.2 | mg/kg | 23 | 19 |
| Cadmium | DETSC 2301# | 0.1 | mg/kg | 0.4 | 0.3 |
| Chromium | DETSC 2301# | 0.15 | mg/kg | 42 | 36 |
| Chromium, Hexavalent | DETSC 2204* | 1 | mg/kg | < 1.0 | < 1.0 |
| Copper | DETSC 2301# | 0.2 | mg/kg | 51 | 48 |
| Lead | DETSC 2301# | 0.3 | mg/kg | 92 | 76 |
| Mercury | DETSC 2325# | 0.05 | mg/kg | 1.7 | 1.4 |
| Nickel | DETSC 2301# | 1 | mg/kg | 19 | 18 |
| Selenium | DETSC 2301# | 0.5 | mg/kg | < 0.5 | < 0.5 |
| Zinc | DETSC 2301# | 1 | mg/kg | 100 | 93 |
| Inorganics | | | | | |
| pH | DETSC 2008# | | | 6.2 | 6.7 |
| Organic matter | DETSC 2002# | 0.1 | % | 7.1 | 6.9 |
| Sulphate Aqueous Extract as SO4 | DETSC 2076# | 10 | mg/l | 48 | 60 |
| Petroleum Hydrocarbons | | | | | |
| Aliphatic C5-C6 | DETSC 3321* | 0.01 | mg/kg | < 0.01 | < 0.01 |
| Aliphatic C6-C8 | DETSC 3321* | 0.01 | mg/kg | < 0.01 | < 0.01 |
| Aliphatic C8-C10 | DETSC 3321* | 0.01 | mg/kg | < 0.01 | < 0.01 |
| Aliphatic C10-C12 | DETSC 3072# | 1.5 | mg/kg | < 1.5 | < 1.5 |
| Aliphatic C12-C16 | DETSC 3072# | 1.2 | mg/kg | < 1.2 | < 1.2 |
| Aliphatic C16-C21 | DETSC 3072# | 1.5 | mg/kg | < 1.5 | < 1.5 |
| Aliphatic C21-C35 | DETSC 3072# | 3.4 | mg/kg | < 3.4 | < 3.4 |
| Aliphatic C5-C35 | DETSC 3072* | 10 | mg/kg | < 10 | < 10 |
| Aromatic C5-C7 | DETSC 3321* | 0.01 | mg/kg | < 0.01 | < 0.01 |
| Aromatic C7-C8 | DETSC 3321* | 0.01 | mg/kg | < 0.01 | < 0.01 |
| Aromatic C8-C10 | DETSC 3321* | 0.01 | mg/kg | < 0.01 | < 0.01 |
| Aromatic C10-C12 | DETSC 3072# | 0.9 | mg/kg | < 0.9 | < 0.9 |
| Aromatic C12-C16 | DETSC 3072# | 0.5 | mg/kg | < 0.5 | < 0.5 |
| Aromatic C16-C21 | DETSC 3072# | 0.6 | mg/kg | < 0.6 | < 0.6 |
| Aromatic C21-C35 | DETSC 3072# | 1.4 | mg/kg | < 1.4 | < 1.4 |
| Aromatic C5-C35 | DETSC 3072* | 10 | mg/kg | < 10 | < 10 |
| TPH Ali/Aro Total | DETSC 3072* | 10 | mg/kg | < 10 | < 10 |
| PAHs | | | | | |
| Naphthalene | DETSC 3301 | 0.1 | mg/kg | < 0.1 | < 0.1 |
| Acenaphthylene | DETSC 3301 | 0.1 | mg/kg | < 0.1 | < 0.1 |
| Acenaphthene | DETSC 3301 | 0.1 | mg/kg | < 0.1 | < 0.1 |
| Fluorene | DETSC 3301 | 0.1 | mg/kg | < 0.1 | < 0.1 |
| Phenanthrene | DETSC 3301 | 0.1 | mg/kg | 0.2 | 0.1 |
| Anthracene | DETSC 3301 | 0.1 | mg/kg | < 0.1 | < 0.1 |
| Fluoranthene | DETSC 3301 | 0.1 | mg/kg | 0.5 | 0.4 |

Summary of Chemical Analysis

Soil Samples

Our Ref 18-03325

Client Ref D8091

Contract Title Black Rock Mills, Plots 27 and 28

| | | |
|----------------------|---------|---------|
| Lab No | 1296521 | 1296522 |
| | Plot 27 | Plot 28 |
| Sample ID | Topsoil | Topsoil |
| Depth | | |
| Other ID | | |
| Sample Type | SOIL | SOIL |
| Sampling Date | n/s | n/s |
| Sampling Time | n/s | n/s |

| Test | Method | LOD | Units | | |
|-------------------------|------------|-----|-------|-------|-------|
| Pyrene | DETSC 3301 | 0.1 | mg/kg | 0.4 | 0.3 |
| Benzo(a)anthracene | DETSC 3301 | 0.1 | mg/kg | 0.2 | 0.1 |
| Chrysene | DETSC 3301 | 0.1 | mg/kg | 0.2 | 0.3 |
| Benzo(b)fluoranthene | DETSC 3301 | 0.1 | mg/kg | 0.2 | 0.2 |
| Benzo(k)fluoranthene | DETSC 3301 | 0.1 | mg/kg | 0.1 | 0.1 |
| Benzo(a)pyrene | DETSC 3301 | 0.1 | mg/kg | 0.1 | 0.2 |
| Indeno(1,2,3-c,d)pyrene | DETSC 3301 | 0.1 | mg/kg | 0.1 | 0.2 |
| Dibenzo(a,h)anthracene | DETSC 3301 | 0.1 | mg/kg | < 0.1 | < 0.1 |
| Benzo(g,h,i)perylene | DETSC 3301 | 0.1 | mg/kg | 0.2 | < 0.1 |
| PAH Total | DETSC 3301 | 1.6 | mg/kg | 2.4 | 1.9 |

Summary of Asbestos Analysis

Soil Samples

Our Ref 18-03325

Client Ref D8091

Contract Title Black Rock Mills, Plots 27 and 28

| Lab No | Sample ID | Material Type | Result | Comment* | Analyst |
|---------|-----------------|---------------|--------|----------|-----------------|
| 1296521 | Plot 27 Topsoil | SOIL | NAD | none | Rebecca Burgess |
| 1296522 | Plot 28 Topsoil | SOIL | NAD | none | Rebecca Burgess |

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * - not included in laboratory scope of accreditation.

Information in Support of the Analytical Results

Our Ref 18-03325
 Client Ref D8091
 Contract Black Rock Mills, Plots 27 and 28

Containers Received & Deviating Samples

| Lab No | Sample ID | Date Sampled | Containers Received | Holding time exceeded for tests | Inappropriate container for tests |
|---------|----------------------|--------------|--------------------------|--|-----------------------------------|
| 1296521 | Plot 27 Topsoil SOIL | | GJ 250ml, GJ 60ml, PT 1L | Sample date not supplied, Anions 2:1 (365 days), Aliphatics/Aromatics (14 days), BTEX (14 days), Chromium, Hexavalent (365 days), Mercury (365 days), Metals ICP (365 days), Metals ICP Prep (365 days), Kone Cr6 (1095 days), Naphthalene (14 days), Organic Matter (Manual) (28 days), PAH FID (14 days), pH + Conductivity (7 days) | |
| 1296522 | Plot 28 Topsoil SOIL | | GJ 250ml, GJ 60ml, PT 1L | Sample date not supplied, Anions 2:1 (365 days), Aliphatics/Aromatics (14 days), BTEX (14 days), Chromium, Hexavalent (365 days), Mercury (365 days), Metals ICP (365 days), Metals ICP Prep (365 days), Kone Cr6 (1095 days), Naphthalene (14 days), Organic Matter (Manual) (28 days), PAH FID (14 days), pH + Conductivity (7 days) | |

Key: G-Glass P-Plastic J-Jar T-Tub

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