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OUR REF: A4363/23/V2 3rd May 2023
YOUR REF:

3rd May 2023

Mr. Jason Taft
Joe Taft Groundworks Ltd
Greenfields Farm
Bagnall
ST9 9LA
07900 670314

By Email (jasontaft1972@outlook.co.uk)

Dear Jason,

130 Ashbourne Road
Source Material Validation Letter Report

Background and Terms of Reference

This report provides a summary of the validation of the topsoil material at source to be imported to the new development at Ashbourne Road, Leek.

It is understood that following the validation of the material, the material is to be placed in the rear garden areas of the new development.

Scope of Work

A sample of the topsoil material was obtained on the 5th of April 2023, from a sealed bulk bag purchased from Acres Green, Stoke on Trent, for laboratory chemical analysis.

Chemical testing has been performed by DETS a UKAS and MCERTS accredited laboratory. Appendix A provides a copy of the testing results.

The results have been compared to a residential end use (with plant uptake) criteria for the long-term protection of human health.

Soil Horizons

The source material that was sampled has been described generally as a brown silty, slightly gravelly SAND, with gravel of mudstone and organic matter. Abundant rootlets were also identified in the material.

No notable visual and olfactory evidence of contamination was observed during the soil sampling process.

Chemical Testing

1no. sample was obtained from the sealed bag of topsoil material obtained from the source site.

Chemical testing has been performed for a wide range of analytes including asbestos screen, pH, total organic carbon, total sulphate, sulphide, total cyanide, arsenic, chromium, hexavalent chromium, copper, lead, selenium, zinc, cadmium, mercury, nickel, vanadium, barium, beryllium, water soluble boron, mono phenol, speciated TPH and speciated PAH's.

At a Tier I stage the long term (chronic) human health toxicity of the soil has been assessed with reference to DEFRA/Environment Agency Contaminated Land Exposure Assessment (CLEA) Soil Guideline Values (SGV) for generic site land uses, soils, and exposure.

Where Environment Agency generic guidance is absent, reference has been made to the Chartered Institute of Environmental Health (CIEH) S4ULs for human health risk assessment.

In the case of arsenic, cadmium, hexavalent chromium, lead, benzene, naphthalene, and benzo(a)pyrene DEFRA Category 4 Screening Levels have been adopted.

Table 1
Assessment of Soil Chemical Data

Determinand	C4SL/S4UL Levels Resi w/ HP SOM 6% (mg/kg)	Soil Sample 1	No of Exceedances
Metals			
Arsenic	37	6	0
Beryllium	1.7	0.5	0
Boron	290	2	0
Cadmium	22	0.4	0
Chromium	910	14	0
Chromium VI	21	< 2	0
Copper	2400	28	0
Lead	200	46	0
Mercury	40	< 1	0
Nickel	130	11	0
Selenium	250	< 2	0
Vanadium	410	19	0
Zinc	3700	103	0
Petroleum Hydrocarbons			
Benzene	0.87	<0.002	0
Toluene	660	<0.005	0
Ethylbenzene	260	<0.002	0
o-xylenes	330	<0.002	0
m-xylenes	320	<0.002	0
p-xylenes	310	<0.002	0
Aliphatic EC >5-6	160	< 0.01	0
Aliphatic EC >6-8	530	< 0.05	0
Aliphatic EC >8-10	150	< 2	0
Aliphatic EC >10-12	760	< 2	0
Aliphatic EC >12-16	4300	< 3	0
Aliphatic EC >16-21	110000	< 3	0
Aliphatic EC >21-35	110000	< 10	0
Aromatic EC >5-7	300	< 0.01	0
Aromatic EC >7-8	660	< 0.05	0
Aromatic EC >8-10	190	< 2	0
Aromatic EC >10-12	380	< 2	0
Aromatic EC >12-16	660	< 2	0
Aromatic EC >16-21	930	< 3	0
Aromatic EC >21-35	1700	< 10	0

Polycyclic Aromatic Hydrocarbons			
Naphthalene	13	< 0.1	0
Acenaphthylene	920	< 0.1	0
Acenaphthene	1100	< 0.1	0
Fluorene	860	< 0.1	0
Phenanthrene	440	< 0.1	0
Anthracene	11000	< 0.1	0
Fluoranthene	890	0.18	0
Pyrene	2000	0.16	0
Benzo(a)anthracene	13	< 0.1	0
Chrysene	27	< 0.1	0
Benzo(a)pyrene	5	< 0.1	0
Benzo(b)fluoranthene	3.7	< 0.1	0
Benzo(k)fluoranthene	100	< 0.1	0
Indeno(1,2,3-cd)pyrene	41	< 0.1	0
Dibenz(a,h)anthracene	0.3	< 0.1	0
Benzo(ghi)perylene	350	< 0.1	0
Phenols			
Phenol	1100	< 2	0

Notes for Table 1
All units in mg/kg.
Concentrations in **red** above assessment criteria for residential.

Based on the above table, no exceedances of the screening criteria relevant to a residential end use have been identified in the tested sample.

No asbestos fibres or fragments were identified in the source soil sample.

Conclusions & Recommendations

The sampled topsoil material from Acres Green has been validated by Earth Environmental & Geotechnical Ltd.

No exceedances of the soil assessment criteria for the long-term protection of human health for a residential end use were identified in the tested sample.

The topsoil source is therefore considered suitable for use and can be imported to the new development at Ashbourne Road.

Yours Sincerely,

A Czarnecki

Adam Czarnecki
Company Owner
For and on behalf of Earth Environmental & Geotechnical Ltd

Appendix A Soil Chemical Testing Results
Appendix B Soil Assessment Criteria

APPENDIX A

Soil Chemical Testing Results

APPENDIX B

Soil Assessment Criteria

Appendix B
Soil Assessment Criteria for Residential Land Use (with plant uptake)

Inorganic Compounds	Assessment Criteria - Residential with Homegrown Produce (mg/kg)		
Arsenic	37		
Cadmium	11		
Chromium (III)	910		
Chromium (VI)	6		
Lead	200		
Mercury	1.2		
Nickel	180		
Selenium	250		
Copper	2400		
Zinc	3700		
Organic Compounds	**1% SOM**	**2.5% SOM**	**6% SOM**
Naphthalene	2.3	5.6	13
Acenaphthene	210	510	1100
Acenaphthylene	170	420	920
Fluorene	170	400	860
Phenanthrene	95	220	440
Anthracene	2400	5400	11000
Fluoranthene	280	560	890
Pyrene	620	1200	2000
Benzo(a)anthracene	7.2	11	13
Chrysene	15	22	27
Benzo(b)fluoranthene	2.6	3.3	3.7
Benzo(k)fluoranthene	77	93	100
Benzo(a)pyrene	2.2	2.7	3.0
Dibenz(a,h)anthracene	0.24	0.28	0.3
Indeno(1,2,3-cd)pyrene	27	36	41
Benzo(g,h,i)perylene	320	340	350
Benzene	0.087	0.17	0.37
Toluene	130	290	660
Ethylbenzene	47	110	260
o-Xylene	60	140	330
m-Xylene	59	140	320
p-Xylene	56	130	310
TPH Fractions	**1% SOM**	**2.5% SOM**	**6% SOM**
Aliphatic EC 5-6	42	78	160
Aliphatic EC >6-8	100	230	530
Aliphatic EC >8-10	27	65	150
Aliphatic EC >10-12	130 (48)[vap]	330 (118)[vap]	760 (283)[vap]
Aliphatic EC >12-16	1100 (24)[sol]	2400 (59)[sol]	4,300 (142)[sol]
Aliphatic EC >16-35	65,000 (8.48)[f,sol]	92,000 (21)[f,sol]	110,000[f]
Aliphatic EC >35-44	65,000 (8.48)[f, sol]	92,000 (21)[f,sol]	110,000[f]
Aromatic EC 5-7	70	140	300
Aromatic EC >7-8	130	290	660

	Assessment Criterial - Residential with Homegrown Produce (mg/kg)		
TPH Fractions	**1% SOM**	**2.5% SOM**	**6% SOM**
Aromatic EC>8-10	34	83	190
Aromatic EC >10-12	74	180	380
Aromatic EC >12-16	140	330	660
Aromatic EC >16-21	260[f]	540[f]	930[f]
Aromatic EC >21-35	1,100[f]	1,500[f]	1,700[f]
Aromatic EC >35-44	1,100[f]	1,500[f]	1,700[f]
Asbestos Fibres	< 0.001%		

The site-specific risk-based criteria are based upon DEFRA/EA CLEA 1.07 modelling assuming a sandy loam with 1% Soil Organic Matter and pH of 7.