Chartered Consulting Engineers

ARP Geotechnical Ltd 5 & 6 Northwest Business Park, Servia Hill, Leeds, LS6 2QH
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Mr D Wroe
Hoober Urban Partnerships Ltd
Unit 1
Fields End Business Park
Thurnscoe
S63 0JF

BY E-MAIL

Our Ref: HUP/02/JPl7le

20th October 2023

Dear David

Broad Lane Business Centre, Westfield Lane, South Elmsall
Garden Soils Validation – Apartment Block and front gardens of plots 14 and 26.

In accordance with your instruction, we visited the above site on the 6th October and 7th November 2023 to confirm the adequate placement of garden cover soils for the POS around the apartment block and for the front gardens of plots 14 and 26.

Background

The Method Statement for Imported Soils (HUP/02imp), prepared by ARP, dated April 2021, outlines that, once all the intact and fragmented bitmac covering the site has been removed, the underlying natural surface will only require the contamination status of any imported topsoil and subsoil to be verified. The Method Statement requires one in four plots to be validated.

Import of Clean Topsoil and Testing Requirements

Guidance supplied in the document produced by the Yorkshire and Lincolnshire Pollution Advisory Group (YALPAG): "Guidance on the Verification Requirements for Cover Systems" requires that, for each source of topsoil or subsoil from a greenfield site, a minimum number of three samples or one per 250m^3 (whichever is greater) should be tested, and for each source of topsoil or subsoil from a brownfield site, a minimum number of six samples or one per 100m^3 (whichever is greater) should be tested.

Information provided by the client indicates that the topsoil to be used on the site is from a greenfield site off Common Side Lanne, Featherstone, in Wakefield, and supplied by Bromley RDG Ltd.

Validation Site Work

An Engineer from ARP visited the site on the 6th October and 7th November 2023. At the locations validated, hand dug trial pits were excavated to the base of the topsoil, exposing the natural subsoil. The depth of the pit was measured and the materials encountered were logged by the ARP engineer before being backfilled. Photographs of the validation pits and the Engineer's summary logs are enclosed.

The thickness of the topsoil was confirmed to be at least 0.25m, comprising brown, slightly gravelly slightly sandy clayey topsoil. The underlying subsoil consisted of natural slightly gravelly slightly sandy clay. Six samples were taken of the imported topsoil, for laboratory testing to confirm ongoing compliance.

Laboratory Test Results

Six samples of the topsoil were issued to the UKAS accredited Chemtest Laboratory for the suite of testing given in the Method Statement. The results showed exceedances to the concentrations of two PAH determinands (benzo[b]fluoranthene and dibenz(a,h)anthracene) but the results support the use of benzo(a)pyrene as a surrogate marker, concentrations of which are all well below the Category 4 screening value in all samples. In the light of this, the soils used on these plots are considered to be suitable for use in terms of human health.

Conclusion

In the light of the above, it is concluded that, around the apartment block and in the front gardens of plots 14 and 26, at least 0.25m thickness of clean topsoil has been placed, and laboratory testing indicates this is suitable for use on the plots, in terms of human health.

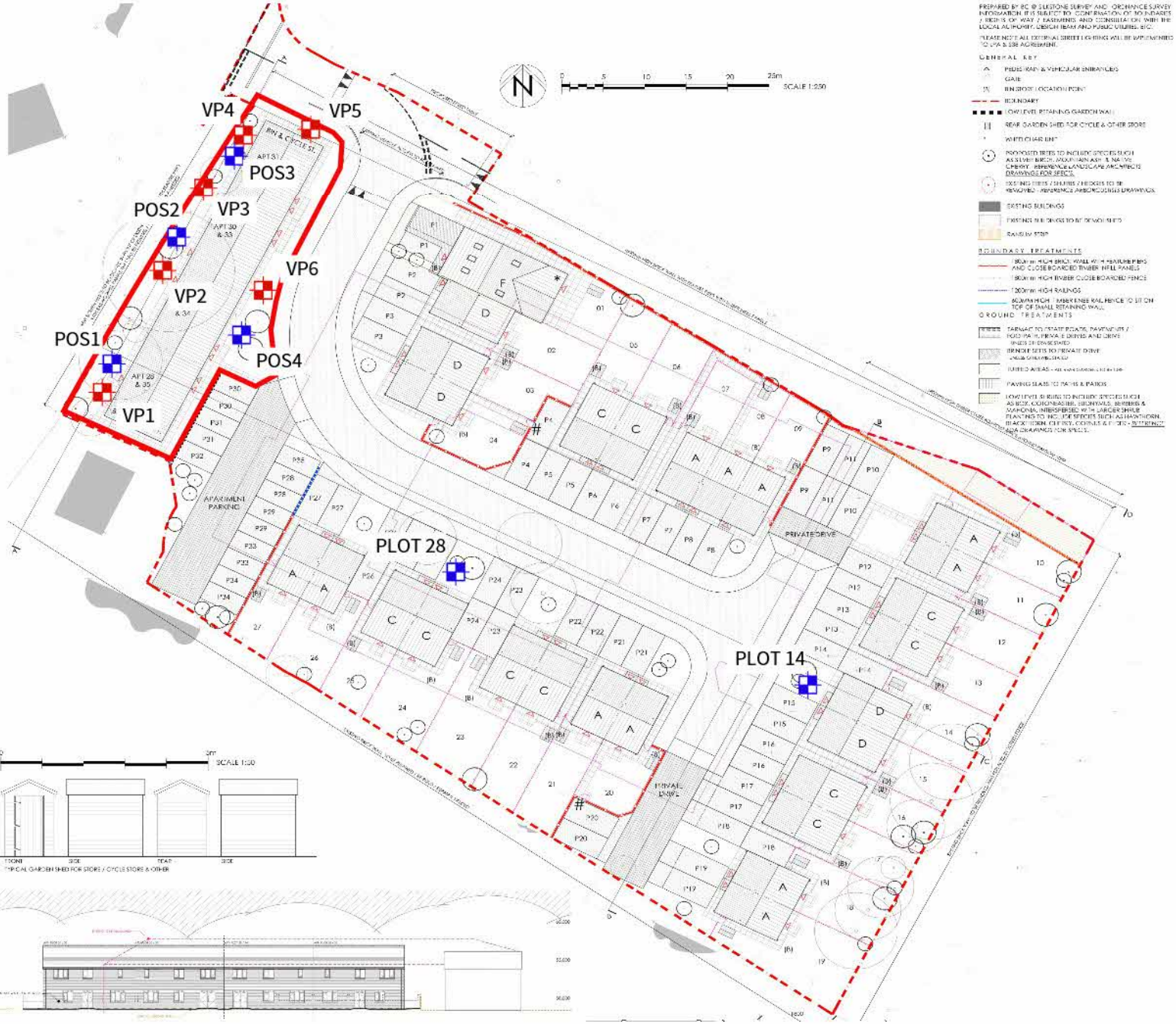
We trust the above and attachments are satisfactory, but should you have any queries, please do not hesitate to contact us at your convenience.

Yours sincerely
for ARP GEOTECHNICAL LTD

[redacted]

J Pemberton

Encs.



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Project
BROAD LANE BUSINESS CENTRE, WESTFIELD LANE, SOUTH ELMSALL

Client
HOOBER URBAN PARTNERSHIPS LTD

Title
SOILS VALIDATION PLAN (APARTMENT BLOCK AND FRONT GARDENS)

Date
SITE VISITS OF 6th OCTOBER & 7th NOVEMBER 2023

Drawn	Scale
JP	AS SHOWN

Job No.
HUP/02

ARP GEOTECHNICAL LTD

HUP/02

HOOBER URBAN PARTNERSHIPS LTD

BROAD LANE BUSINESS CENTRE
WESTFIELD LANE, SOUTH ELMSALL

SUMMARY EXCAVATION LOGS

6th OCTOBER & 7th NOVEMBER 2023

POS1 (6th October)

GL –0.3	Brown slightly gravelly slightly sandy clayey TOPSOIL. Sand is fine to coarse. Gravel is subangular to subrounded, fine to coarse of mixed lithology including sandstone and mudstone.
0.3	Firm light yellowish brown mottled orangish brown slightly sandy gravelly CLAY. Gravel is subangular to subrounded, fine to coarse, of sandstone and siltstone.

POS2 (6th October)

GL –0.35	Brown slightly gravelly slightly sandy clayey TOPSOIL. Sand is fine to coarse. Gravel is subangular to subrounded, fine to coarse of mixed lithology including sandstone and mudstone.
0.35	Firm light yellowish brown mottled orangish brown slightly sandy gravelly CLAY. Gravel is subangular to subrounded, fine to coarse, of sandstone and siltstone.

POS3 (6th October)

GL –0.6	Brown slightly gravelly slightly sandy clayey TOPSOIL. Sand is fine to coarse. Gravel is subangular to subrounded, fine to coarse of mixed lithology including sandstone and mudstone.
0.6	Firm light yellowish brown mottled orangish brown slightly sandy gravelly CLAY. Gravel is subangular to subrounded, fine to coarse, of sandstone and siltstone.

POS4 (6th October)

GL –0.25	Brown slightly gravelly slightly sandy clayey TOPSOIL. Sand is fine to coarse. Gravel is subangular to subrounded, fine to coarse of mixed lithology including sandstone and mudstone.
0.25	Firm light yellowish brown mottled orangish brown slightly sandy gravelly CLAY. Gravel is subangular to subrounded, fine to coarse, of sandstone and siltstone.

Plot 14 and 26 Front Gardens (6th October)

GL –0.3	Brown slightly gravelly slightly sandy clayey TOPSOIL. Sand is fine to coarse. Gravel is subangular to subrounded, fine to coarse of mixed lithology including sandstone and mudstone.
0.3	Firm light yellowish brown mottled orangish brown slightly sandy gravelly CLAY. Gravel is subangular to subrounded, fine to coarse, of sandstone and siltstone.

VP1 to VP6 (7th November)

GL –0.3	Brown slightly gravelly slightly sandy clayey TOPSOIL. Sand is fine to coarse. Gravel is subangular to subrounded, fine to coarse of mixed lithology including sandstone and mudstone.

All the above depths are in metres below existing ground level at the time of the sampling.

Logging Engineer: JP

Photo 1: View of the pit dug for POS1.

Photo 2: View of the pit dug for POS3.

[redacted]

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[redacted]

[redacted]

[redacted]

[redacted]

[redacted]


HVP/62
South Elmsall
7/11/23
VP4

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-37357-1
Initial Date of Issue:	16-Nov-2023
Re-Issue Details:	
Client	ARP Geotechnical Ltd
Client Address:	5/6 Northwest Business Park Servia Hill Leeds Yorkshire LS6 2QH
Contact(s):	Jake Pemberton
Project	HUP/02 Westfield Lane, South Elmsall

Quotation No.:	Q20-21438	**Date Received:**	09-Nov-2023
Order No.:	HUP/02	**Date Instructed:**	09-Nov-2023
No. of Samples:	6		
Turnaround (Wkdays):	5	**Results Due:**	15-Nov-2023
Date Approved:	16-Nov-2023		

Approved By:

[redacted]

Details: Stuart Henderson, Technical Manager

Results - Soil

Project: HUP/02 Westfield Lane, South Elmsall

Client: ARP Geotechnical Ltd			**Chemtest Job No.:**		23-37357	23-37357	23-37357	23-37357	23-37357	23-37357
Quotation No.: Q20-21438			**Chemtest Sample ID.:**		1728716	1728717	1728718	1728719	1728720	1728721
Order No.: HUP/02			Client Sample Ref.:		1	1	1	1	1	1
			Sample Location:		VP1	VP2	VP3	VP4	VP5	VP6
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.1	0	0.2	0	0.1	0
			Bottom Depth (m):		0.3	0.2	0.3	0.2	0.3	0.2
			Date Sampled:		07-Nov-2023	07-Nov-2023	07-Nov-2023	07-Nov-2023	07-Nov-2023	07-Nov-2023
			Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
ACM Type	U	2192		N/A	-	-	-	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	17	16	18	18	15	16
Soil Colour	N	2040		N/A	Brown	Brown	Brown	Brown	Brown	Brown
Other Material	N	2040		N/A	Stones and Roots	Stones	Roots and Stones	Stones	Stones and Roots	Stones
Soil Texture	N	2040		N/A	Sand	Sand	Sand	Sand	Sand	Sand
pH at 20C	M	2010		4.0	8.9	9.0	9.0	8.9	9.2	9.4
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	0.042	0.055	0.013	0.21	0.36	0.43
Sulphate (Total)	U	2430	mg/kg	100	2200	1600	1300	2800	3300	3300
Arsenic	M	2455	mg/kg	0.5	13	8.6	8.0	13	13	16
Cadmium	M	2455	mg/kg	0.10	0.50	0.27	0.28	0.54	0.37	0.39
Chromium	M	2455	mg/kg	0.5	29	20	15	21	27	29
Copper	M	2455	mg/kg	0.50	38	28	22	56	72	92
Mercury	M	2455	mg/kg	0.05	0.13	0.08	0.08	0.09	0.06	0.10
Nickel	M	2455	mg/kg	0.50	21	15	14	15	14	15
Lead	M	2455	mg/kg	0.50	64	250	48	58	55	58
Selenium	M	2455	mg/kg	0.25	0.89	0.56	0.52	0.72	0.52	0.55
Zinc	M	2455	mg/kg	0.50	120	81	74	110	130	120
Chromium (Trivalent)	N	2490	mg/kg	1.0	29	20	15	21	27	29
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Organic Matter	M	2625	%	0.40	5.6	5.9	4.6	4.2	4.8	5.9
Total TPH >C6-C40	M	2670	mg/kg	10	160	250	170	400	150	230
Naphthalene	M	2700	mg/kg	0.10	0.48	0.35	0.59	0.59	0.56	0.23
Acenaphthylene	M	2700	mg/kg	0.10	0.62	0.57	0.77	0.77	0.26	0.33
Acenaphthene	M	2700	mg/kg	0.10	0.67	0.21	0.39	0.47	0.27	0.45
Fluorene	M	2700	mg/kg	0.10	0.87	0.57	0.95	0.95	0.50	0.65
Phenanthrene	M	2700	mg/kg	0.10	5.0	1.9	2.9	2.6	3.1	4.1
Anthracene	M	2700	mg/kg	0.10	1.4	0.62	0.79	0.81	0.83	1.1
Fluoranthene	M	2700	mg/kg	0.10	7.5	5.0	5.9	5.4	5.1	5.6
Pyrene	M	2700	mg/kg	0.10	7.6	5.0	5.9	5.1	4.8	5.3
Benzo[a]anthracene	M	2700	mg/kg	0.10	3.7	3.0	3.2	2.5	2.3	2.7
Chrysene	M	2700	mg/kg	0.10	3.3	2.4	2.6	2.2	1.9	2.3
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	4.7	3.9	4.1	3.4	3.4	3.3
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	1.8	1.5	1.6	1.3	1.1	1.2
Benzo[a]pyrene	M	2700	mg/kg	0.10	3.6	2.8	3.0	2.4	1.9	2.2

Results - Soil

Project: HUP/02 Westfield Lane, South Elmsall

Client: ARP Geotechnical Ltd			**Chemtest Job No.:**		23-37357	23-37357	23-37357	23-37357	23-37357	23-37357
Quotation No.: Q20-21438			**Chemtest Sample ID.:**		1728716	1728717	1728718	1728719	1728720	1728721
Order No.: HUP/02			Client Sample Ref.:		1	1	1	1	1	1
			Sample Location:		VP1	VP2	VP3	VP4	VP5	VP6
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.1	0	0.2	0	0.1	0
			Bottom Depth (m):		0.3	0.2	0.3	0.2	0.3	0.2
			Date Sampled:		07-Nov-2023	07-Nov-2023	07-Nov-2023	07-Nov-2023	07-Nov-2023	07-Nov-2023
			Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	2.1	1.6	1.7	1.5	1.6	1.5
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	1.1	0.91	0.86	0.74	0.96	0.88
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	2.1	2.1	2.1	2.3	1.9	1.9
Total Of 16 PAH's	M	2700	mg/kg	2.0	47	32	37	33	31	34
Total Phenols	M	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH at 20°C	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

A R P G E O T E C H N I C A L L I M I T E D
SOIL CONTAMINANT SCREENING VALUES
RESIDENTIAL WITH HOME-GROWN PRODUCE

Determinand	S4UL (mg/kg)			C4SL (mg/kg)		
Arsenic	37			37		
Cadmium	11			22		
Chromium (trivalent)	910					
Chromium (hexavalent)	6			21		
Copper	2400					
Lead				200		
Inorganic Mercury	40					
Nickel	180					
Selenium	250					
Zinc	3700					
Acidity (pH)	*Should be Greater Than 5			*Should be Greater Than 5		
	1% SOM	2.5% SOM	6% SOM	1% SOM	2.5% SOM	6% SOM
Naphthalene	2.3	5.6	13			
Acenaphthylene	170	420	920			
Acenaphthene	210	510	1,100			
Fluorene	170	400	860			
Phenanthrene	95	220	440			
Anthracene	2,400	5,400	11,000			
Fluoranthene	280	560	890			
Pyrene	620	1,200	2,000			
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			5
Indeno(1,2,3-cd)pyrene	27	36	41			
Dibenzo(a,h)anthracene	0.24	0.28	0.30			
Benzo(g,h,I)perylene	320	340	350			
Phenols	120	200	380			
Total TPH	*Above 500, speciate and compare with values below:					
C5 to C6 Aliphatic	42	78	160			
C6 to C8 Aliphatic	100	230	530			
C8 to C10 Aliphatic	27	65	150			
C10 to C12 Aliphatic	130	330	760			
C12 to C16 Aliphatic	1100	2,400	4,300			
C16 to C35 Aliphatic	65,000	92,000	110,000			
C35 TO C44 Aliphatic	65,000	92,000	110,000			
C5 to C7 Aromatic (Benzene)	70	140	300			
C7 to C8 Aromatic (Toluene)	130	290	660			
C8 to C10 Aromatic	34	83	190			
C10 to C12 Aromatic	74	180	380			
C12 to C16 Aromatic	140	330	660			
C16 to C21 Aromatic	260	540	930			
C21 TO C35 Aromatic	1100	1,500	1,700			
C35 TO C44 Aromatic	1100	1,500	1,700			
Asbestos	*Should be None Detected			*Should be None Detected		

* In House Value/Approach S4UL = Suitable 4 Use Level, CIEH/LQM 2014 C4SL = Cat 4 Screening Level, DEFRA, 2014

Blank cell indicates no published value or in-house value. Some values presented are above saturation limits.