Haigh Huddleston & Associates
Civil & Structural Engineering Consultants
Unit 4, Midgley Business Park, Bar Lane, Midgley WF4 4JJ
t 01924 574074 e info@haighhuddleston.co.uk

Our Ref: E19/7512/JF/006

23rd April 2024

FAO: Channy Basi
Leeds & Bradford Properties
94 Town Gate
Wyke
BD12 9JB

Dear Channy,

Re: DEVELOPMENT OFF PEEP GREEN ROAD, HARTSHEAD

Further to your request we have attended site to undertake a validation investigation to confirm that the depth and quality of the topsoil is satisfactory to plots 1 - 13 at the above project.

Hand dug trial holes have been excavated to the rear gardens of plots 2, 5, 7, 8, & 10 to prove the depth of topsoil. We can confirm that the depth of the clean topsoil and sub-soil is in accordance with the agreed remediation strategy, providing a minimum of 300mm Topsoil.

In-situ testing has previously been undertaken on the topsoil on site by third party engineers. The chemical analysis results, along with the tier 1 trigger results used for comparison, are attached and indicate that material is suitable for residential purposes.

I trust that the above is satisfactory, should you have any queries please do not hesitate to contact me direct.

Enclosures

Yours faithfully,

James Farrar
j.farrar@haighhuddleston.co.uk

APPENDIX

SITE PLAN

PHOTOGRAPHS

CHEMICAL ANALYSIS RESULTS

TIER 1 TRIGGER RESULTS

TOPSOIL VALIDATION LOCATIONS

Haigh Huddleston & Associates
Civil Structural Engineering Consultants
Firth Buildings, 99 - 101 Leeds Rd, Dewsbury, WF12 7BU t 01924 464342 f 01924 450662
e martin@haighhuddleston.co.uk

Client	CHANNY BASI
Project	PEEP GREEN ROAD, HARTSHEAD
Detail	TOPSOIL VALIDATION LOCATIONS

Dwn	Chkd	Date	Scale	Dwg No.
JF		APR'24	1/200 @A1	E19/7512/040

PRELIMINARY

PLOT 2

PLOT 5

PLOT 7

PLOT 8

PLOT 10

Leeds and Bradford Properties Ltd,
94 Towngate,
Wyke,
Bradford,
BD12 9JB,

April 12th 2024

For the attention of Mr Chani

Dear Sirs,

Re Soil Tests from Hartshead

Further to the collection of three soil samples from the above named site on March 27th, the soil samples were delivered to Chemtech Environmental Laboratories for testing for the presence of any contamination.

The three samples were tested for heavy metals including arsenic, boron, cadmium, chromium VI, copper, lead mercury, nickel, selenium and zinc.

The soil samples were also tested for pH and sulphate, speciated PAHs, speciated TPHs and asbestos fibres.

There are no definitive legal standards for contaminated land in the United Kingdom, although the Government Department of the Environment in the late 1970's published guidance on a restricted number of contaminants. Further guidance was published in March 2002 as the Contaminated Land Exposure Assessment (CLEA) by the Department of Environment, Food and Rural Affairs (DEFRA). These were withdrawn in August 2008 and new guidelines for some compounds were released in 2009. The UK Risk Assessment Framework is based on a tiered approach, Tier 1 being a risk screening or qualitative risk assessment, Tier 2 is a generic quantitative risk assessment and Tier 3 is a detailed quantitative risk assessment. Where the Tier 2 identifies a potentially unacceptable risk to human health either a Tier 3 Detailed Quantitative Risk Assessment (DQRA) is undertaken or risk management action recommended to remove the pathway and the risk.

For this site both a Tier 1 and Tier 2 assessment have been undertaken using generic assessment criteria and site specific assessment criteria based on CLEA 2009 and ATRISK 2017 which are based on the new CLEA guidance 2008 and 2009 (SC050021/SR3 (the CLEA Report) and SC050021/SR2 (the TOX report), SC050021/SR4, CLEA Software version 1.071 (2015) and toxicological reports and SGV technical notes (2009)). The figures used for assessment of lead are from DEFRA(2014b), Category 4 Screening Levels, which are based on the 'low level of toxicological concern (LLTC)'. C4SLs are 'estimates of contamination concentration in soil that present acceptable risk within the context of Part 2A'.

In addition, assessment has used the LQM/CIEH S4ULs (2015) for Human Health Risk Assessment. The S4ULs are based on the principles of 'minimal' or 'tolerable' risk enshrined in

SR2 (EA2009A), which has not been withdrawn and are based on the EA software. The guidance set out in these documents has been used to establish a conceptual model of the risks on the site.

The site will be used for the high risk residential use with landscaped gardens and hard covered parking. The risk assessment has used a scenario of residential use as the model for assessment. In deriving the assessment a child has been chosen as the critical receptor with exposure over a lifetime being the most appropriate and conservative scenario.

The assessment of the risks to users on the site has been undertaken within the framework set out in guidance published by DEFRA and the Environment Agency for the assessment of risks to human health associated with chronic long term exposure to contaminated soils. The guidance set out in this documentation has been used to establish a conceptual model of the risks on the site following redevelopment. The Contaminated Land Exposure Assessment (CLEA) model provides a means of establishing concentrations of contamination in soils at a site. If results exceed these concentrations, then further assessment or intervention by mitigation or remediation may be required to reduce risks to human health.

The test results all fall within the standards derived in the LQM / CIEH Human Health Risk Assessment. This includes the heavy metals, individual 16 PAHs, the speciated aromatic and aliphatic total hydrocarbons. The ph was near normal and the sulphate levels which are not harmful to health, indicate no special precautions are required for design of underground concrete. No asbestos fibres were observed.

The soil samples are uncontaminated according to LQM / CIEH guidelines for the compounds tested. The test results were undertaken at a MCERTS laboratory and results are attached.

Please do not hesitate to call if you have any queries.

Your faithfully,

Frances A Bennett
BSc, CGeol, FGS, FIMMM, C.WEM, MCIWEM, CEnv, MIEnvSci

ANALYTICAL TEST REPORT

Contract no:	131845
Contract name:	Tristan Bennett
Client reference:	3541 Hartshead
Clients name:	Ashton Bennett
Clients address:	131 Huddersfield Road Holmfirth West Yorkshire HD9 3TW
Samples received:	28 March 2024
Analysis started:	28 March 2024
Analysis completed:	08 April 2024
Report issued:	08 April 2024

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:

Abbie Neasham-Bourn
Senior Reporting Administrator

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.

Lab ref	Sample id	Depth (m)	Sample description	Material removed	% Removed	% Moisture
131845-1	1	-	Sandy Clayey Loam with Gravel & Roots	-	-	20.8
131845-2	2	-	Sandy Clayey Loam with Gravel & Roots	-	-	17.6
131845-3	3	-	Sandy Clayey Loam with Gravel & Roots	-	-	19.6

Chemtech Environmental Limited

SOILS

Lab number			131845-1	131845-2	131845-3	131845-3	131845-3	131845-3
Sample id			1	2	3	3	3	3
Depth (m)			GL	GL	GL	GL	GL	GL
Date sampled			28/03/2024	28/03/2024	28/03/2024	28/03/2024	28/03/2024	28/03/2024
Test	**Method**	**Units**						
Arsenic (total)	CE264 M	mg/kg As	15.2	14.4	14.1	-	-	-
Boron (water soluble)	CE063 U	mg/kg B	<0.5	<0.5	<0.5	-	-	-
Cadmium (total)	CE264 M	mg/kg Cd	<1.6	<1.6	<1.6	-	-	-
Chromium (VI)	CE263	mg/kg CrVI	<0.04	<0.04	<0.04	-	-	-
Copper (total)	CE264 M	mg/kg Cu	33.3	32.2	30.2	-	-	-
Lead (total)	CE264 U	mg/kg Pb	73.9	72.4	64.5	-	-	-
Mercury (total)	CE264 U	mg/kg Hg	<0.7	<0.7	<0.7	-	-	-
Nickel (total)	CE264 M	mg/kg Ni	8.9	7.1	8.6	-	-	-
Selenium (total)	CE264	mg/kg Se	<3	<3	<3	-	-	-
Zinc (total)	CE264 M	mg/kg Zn	50.4	43.1	40.2	-	-	-
pH	CE004 M	units	5.4	4.8	4.9	-	-	-
Sulphate (2:1 water soluble)	CE061 U	mg/l SO_4	116	32	30	-	-	-
PAH								
Naphthalene	CE087 M	mg/kg	0.04	1.13	0.04	-	-	-
Acenaphthylene	CE087 M	mg/kg	0.04	0.58	0.04	-	-	-
Acenaphthene	CE087 M	mg/kg	0.07	0.70	0.09	-	-	-
Fluorene	CE087 U	mg/kg	0.07	1.23	0.08	-	-	-
Phenanthrene	CE087 M	mg/kg	0.80	7.40	1.04	-	-	-
Anthracene	CE087 U	mg/kg	0.22	1.77	0.22	-	-	-
Fluoranthene	CE087 M	mg/kg	1.35	6.06	1.74	-	-	-
Pyrene	CE087 M	mg/kg	1.19	4.94	1.48	-	-	-
Benzo(a)anthracene	CE087 U	mg/kg	0.66	2.60	0.76	-	-	-
Chrysene	CE087 M	mg/kg	0.75	2.76	0.84	-	-	-
Benzo(b)fluoranthene	CE087 M	mg/kg	0.80	2.49	0.89	-	-	-
Benzo(k)fluoranthene	CE087 M	mg/kg	0.37	1.16	0.38	-	-	-
Benzo(a)pyrene	CE087 U	mg/kg	0.64	2.17	0.79	-	-	-
Indeno(123cd)pyrene	CE087 M	mg/kg	0.59	1.37	0.61	-	-	-
Dibenz(ah)anthracene	CE087 M	mg/kg	0.12	0.33	0.12	-	-	-
Benzo(ghi)perylene	CE087 M	mg/kg	0.42	1.11	0.46	-	-	-
PAH (total of USEPA 16)	CE087	mg/kg	8.12	37.8	9.59	-	-	-
TPH								
VPH Aromatic (>EC5-EC7)	CE067	mg/kg	<0.01	<0.01	<0.01	-	-	-
VPH Aromatic (>EC7-EC8)	CE067	mg/kg	<0.01	<0.01	<0.01	-	-	-
VPH Aromatic (>EC8-EC10)	CE067	mg/kg	<0.01	<0.01	<0.01	-	-	-
EPH Aromatic (>EC10-EC12)	CE250	mg/kg	<0.6	<0.6	<0.6	-	-	-
EPH Aromatic (>EC12-EC16)	CE250	mg/kg	<1	<1	<1	-	-	-
EPH Aromatic (>EC16-EC21)	CE250	mg/kg	<1.5	2	<1.5	-	-	-
EPH Aromatic (>EC21-EC35)	CE250	mg/kg	<4.5	<4.5	<4.5	-	-	-
EPH Aromatic (>EC35-EC44)	CE250	mg/kg	<2	<2	<2	-	-	-
VPH Aliphatic (>C5-C6)	CE067	mg/kg	<0.1	<0.1	<0.1	-	-	-
VPH Aliphatic (>C6-C8)	CE067	mg/kg	<0.1	<0.1	<0.1	-	-	-

Chemtech Environmental Limited

SOILS

Lab number			131845-1	131845-2	131845-3	131845-3	131845-3	131845-3
Sample id			1	2	3	3	3	3
Depth (m)			GL	GL	GL	GL	GL	GL
Date sampled			28/03/2024	28/03/2024	28/03/2024	28/03/2024	28/03/2024	28/03/2024
Test	**Method**	**Units**						
VPH Aliphatic (>C8-C10)	CE067	mg/kg	<0.1	<0.1	<0.1	-	-	-
EPH Aliphatic (>C10-C12)	CE250	mg/kg	<1	<1	<1	-	-	-
EPH Aliphatic (>C12-C16)	CE250	mg/kg	<0.5	<0.5	<0.5	-	-	-
EPH Aliphatic (>C16-C35)	CE250	mg/kg	<3	<3	<3	-	-	-
EPH Aliphatic (>C35-C44)	CE250	mg/kg	<0.5	<0.5	<0.5	-	-	-
Subcontracted Analysis								
Asbestos (qualitative)	$	-	-	-	-	NAD	NAD	NAD

Chemtech Environmental Limited

METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE001	Moisture Content	Gravimetry, reported on Wet Weight basis	As received		0.1	% w/w
CE264	Arsenic (total)	Aqua Regia Extraction, ICPOES	Dry	M	1.8	mg/kg As
CE063	Boron (water soluble)	Hot water extract, ICP-OES	Dry	U	1	mg/kg B
CE264	Cadmium (total)	Aqua Regia Extraction, ICPOES	Dry	M	1.6	mg/kg Cd
CE263	Chromium (VI)	Discrete Analyser	Dry			mg/kg CrVI
CE264	Copper (total)	Aqua Regia Extraction, ICPOES	Dry	M	1.6	mg/kg Cu
CE264	Lead (total)	Aqua Regia Extraction, ICPOES	Dry	U	2.3	mg/kg Pb
CE264	Mercury (total)	Aqua Regia Extraction, ICPOES	Dry	U	0.7	mg/kg Hg
CE264	Nickel (total)	Aqua Regia Extraction, ICPOES	Dry	M	2.1	mg/kg Ni
CE264	Selenium (total)	Aqua Regia Extraction, ICPOES	Dry	U	3	mg/kg Se
CE264	Zinc (total)	Aqua Regia Extraction, ICPOES	Dry	M	4	mg/kg Zn

Chemtech Environmental Limited

METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE004	pH	Based on BS 1377, pH Meter	As received	M	-	units
CE061	Sulphate (2:1 water soluble)	Aqueous extraction, ICP-OES	Dry	U	10	mg/l SO_4

Chemtech Environmental Limited

METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE087	Naphthalene	Solvent extraction, GC-MS	As received	M	0.016	mg/kg
CE087	Acenaphthylene	Solvent extraction, GC-MS	As received	M	0.015	mg/kg
CE087	Acenaphthene	Solvent extraction, GC-MS	As received	M	0.013	mg/kg
CE087	Fluorene	Solvent extraction, GC-MS	As received	U	0.013	mg/kg
CE087	Phenanthrene	Solvent extraction, GC-MS	As received	M	0.014	mg/kg
CE087	Anthracene	Solvent extraction, GC-MS	As received	U	0.017	mg/kg
CE087	Fluoranthene	Solvent extraction, GC-MS	As received	M	0.017	mg/kg
CE087	Pyrene	Solvent extraction, GC-MS	As received	M	0.016	mg/kg
CE087	Benzo(a)anthracene	Solvent extraction, GC-MS	As received	U	0.012	mg/kg
CE087	Chrysene	Solvent extraction, GC-MS	As received	M	0.028	mg/kg
CE087	Benzo(b)fluoranthene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Benzo(k)fluoranthene	Solvent extraction, GC-MS	As received	M	0.025	mg/kg
CE087	Benzo(a)pyrene	Solvent extraction, GC-MS	As received	U	0.019	mg/kg
CE087	Indeno(123cd)pyrene	Solvent extraction, GC-MS	As received	M	0.019	mg/kg
CE087	Dibenz(ah)anthracene	Solvent extraction, GC-MS	As received	M	0.017	mg/kg
CE087	Benzo(ghi)perylene	Solvent extraction, GC-MS	As received	M	0.019	mg/kg
CE087	PAH (total of USEPA 16)	Solvent extraction, GC-MS	As received		0.028	mg/kg
CE067	VPH Aromatic (>EC5-EC7)	Headspace GC-FID	As received		0.01	mg/kg
CE067	VPH Aromatic (>EC7-EC8)	Headspace GC-FID	As received		0.01	mg/kg
CE067	VPH Aromatic (>EC8-EC10)	Headspace GC-FID	As received		0.01	mg/kg
CE250	EPH Aromatic (>EC10-EC12)	Solvent extraction, GCxGC-FID	As received		0.5	mg/kg
CE250	EPH Aromatic (>EC12-EC16)	Solvent extraction, GCxGC-FID	As received		1	mg/kg
CE250	EPH Aromatic (>EC16-EC21)	Solvent extraction, GCxGC-FID	As received		2	mg/kg
CE250	EPH Aromatic (>EC21-EC35)	Solvent extraction, GCxGC-FID	As received		5	mg/kg
CE250	EPH Aromatic (>EC35-EC44)	Solvent extraction, GCxGC-FID	As received		1.5	mg/kg
CE067	VPH Aliphatic (>C5-C6)	Headspace GC-FID	As received		0.1	mg/kg
CE067	VPH Aliphatic (>C6-C8)	Headspace GC-FID	As received		0.1	mg/kg
CE067	VPH Aliphatic (>C8-C10)	Headspace GC-FID	As received		0.1	mg/kg
CE250	EPH Aliphatic (>C10-C12)	Solvent extraction, GCxGC-FID	As received		0.5	mg/kg
CE250	EPH Aliphatic (>C12-C16)	Solvent extraction, GCxGC-FID	As received		0.5	mg/kg
CE250	EPH Aliphatic (>C16-C35)	Solvent extraction, GCxGC-FID	As received		4.5	mg/kg
CE250	EPH Aliphatic (>C35-C44)	Solvent extraction, GCxGC-FID	As received		1	mg/kg
$	Asbestos (qualitative)	HSG 248, Microscopy	Dry	U	-	-
$	Asbestos (quantitative)	HSG 248, Microscopy & Gravimetry	Dry	U	0.001	% w/w

Chemtech Environmental Limited

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)
OR	Other (specify)

Lab ref	Sample id	Depth (m)	Deviating	Tests (Reason for deviation)
131845-1	1	-	N	
131845-2	2	-	N	
131845-3	3	-	N	

Chemtech Environmental Limited

ADDITIONAL INFORMATION

Notes

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

Unless otherwise stated, Chemtech Environmental Ltd was not responsible for sampling.

All testing carried out at Unit 6 Parkhead, Stanley, DH9 7YB, except for subcontracted testing.

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.

Soil/Solid samples will be disposed of 4 weeks from initial receipt unless otherwise agreed.

Waters and leachate samples will be disposed of 2 weeks from report issue unless otherwise agreed.

DEFRA Licence for the introduction and movement within England of prohibited soil for chemical and physical analysis Licence No: 132693/469907-0

For soils and solids, all results are reported on a dry basis. Samples dried at no more than 30°C in a drying cabinet.

For soils and solids, analytical results are inclusive of stones, where applicable.

Moisture Content Calculated on a Wet Weight basis

TIER 1 SOIL GUIDANCE VALUES FOR USE IN DOMESTIC GARDENS (WITH PLANT UPTAKE)

CONTAMINANT	ICRCL – TTV / DEFRA – SGV MG/KG
Arsenic	37 (4)
Cadmium	22 (4)
Chromium	130 (2)
Lead	200 (4)
Mercury	1.2 (1)
Selenium	250 (1)
Copper	2400 (1)
Nickel	180 (1)
Zinc	3700 (1)
Cyanide (total)	25
Sulphate	0.24% (3)
Sulphide	250
Thiocyanate	50
PAH (Total)	40
TPH (Total)	250
Phenols	280 (1)
PH	6-8
Asbestos	No fibres present

(1) Copyright Land Quality Management Ltd reproduced with permission; Publication Number S4UL3499. All rights reserved.

(2) DEFRA CLR SGV's withdrawn used for initial comparison

(3) BS 8110 1985 Table 6.1

(4) Category 4 Screening Level

TIER 1 SOIL GUIDANCE VALUES FOR USE IN DOMESTIC GARDENS WITH PLANT UPTAKE (SPECIATED PAH)

CONTAMINANT	SCREENING CRITERIA FOR PAH (mg/kg)
Acenaphthlene	210 (1)
Acenaphthylene	170 (1)
Anthracene	2400 (1)
Benz[a]anthracene	7.2 (1)
Benzo(a)pyrene	5 (2)
Benzo[b]fluoroanthene	2.6 (1)
Benzo[ghi]perylene	320 (1)
Benzo[k]fluoranthene	77 (1)
Chrysene	15 (1)
Dibenzo[ah]anthracene	0.24 (1)
Fluoranthene	280 (1)
Fluorene	170 (1)
Indeno[123-cd]pyrene	27 (1)
Naphthalene	2.3 (1)
Phenanthrene	95 (1)
Pyrene	620 (1)

(2) Category 4 Screening Level

LQM S4UL SCREENING VALUES FOR SPECIATED TOTAL TPH (RESIDENTIAL WITH PLANT UPTAKE 1% SOM)

Petroleum Hydrocarbons	LQM S4UL Screening Values (mg/kg)
Aliphatics	
C5-C6	42
C6-C8	100
C8-C10	27
C10-C12	130 (38)
C12-C16	1100 (24)
C16-C35	65000 (8.48)
Aromatics	
C5-C7	70
C7-C8	130
C8-C10	34
C10-C12	74
C12-C16	140
C16-C21	260
C21-C35	1100