T J BOOTH ASSOCIATES

CONSULTING CIVIL & GEOTECHNICAL ENGINEERS

20A Eastgate St
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Lancashire
OL16 1DH

H Bell & Sons Ltd
33 Princess St,
Rochdale
OL12 0HA.

Friday, 12 February 2021
Ref: rep-tjba-HB&S-237 Edenfield rd-Validation letter report-120221

Subject**:** **HB&S- 237 Edenfield Rd, Passmonds, Rochdale**
Rear Garden Soil analysis and validation
ENGPROJ/256614

Dear *Sirs*,

Further to the NHBC letter dated 16th December 2020, requesting further information regarding the project ENGPROJ/256614.

Item one titled Land Quality Conditions (contamination) shown below states the requirement for a report to verify contamination remediation works.

Land Quality Conditions (Contamination)

1	Verification report required for contamination remediation works. The report is to accord with NHBC Standards Chapter 4.1 and is to include depth & chemical verification of theclean cover to garden areas. Note: As recommended by TJ Booth Associates letter ref: rep-tjba-HB&S-237 edenfield rd-phs II letter-020517, dated 25th May 2017	Y	1 - 2

Soil sampling was originally undertaken as part of a phase II letter report by T J Booth Associates, (ref: *rep-tjba-HB&S-237 edenfield rd-phs II letter-020517*) 25th May 2017. Soil samples taken from upper soils making up the dwelling footprint and rear garden areas showed elevated levels of lead, and as such was not suitable for use in residential soft landscaping areas.

It was advised that existing upper made ground should be removed to depth of 600mm below final finish levels and replaced with nominally 500mm subsoil and 100mm of topsoil, or if final finish levels are within 600mm of the virgin CLAY; made ground should be removed to CLAY and required cover soil depth placed to suit finishes.

It was also advised that imported topsoil should undergo analysis for metals, speciated PAH, inorganics, sulphates, SOM, & asbestos screening.

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Proprietor.
Timothy John Booth
BSc (Hons) C.Eng.C.Env. MICE
t/a T J Booth Associates

VAT Reg. No 748 6510 09

On 5th February 2021, 3No. samples (S5-7) of imported topsoil were obtained and sealed in 1kg white snap top containers and amber jars and sent to Eurofins/Chem Test Company for geochemical testing.

Photos taken on site show (see appendix) placement of the topsoil to the required depth, note that at the Patio end of the garden 300mm of grit sand/ clean inert stone was laid upon the Virgin CLAY before the topsoil was laid, and this was graded to keep a consistent cover of 600mm above ground.

Import cover soil was 600mm in areas where made ground was present, and closer to the properties/patios where made ground had been removed; 300mm of grit sand/ clean inert stone was laid upon the virgin CLAY before the topsoil was laid, and this was graded to keep a consistent cover of 600mm above ground. Refer to photos in Appendix.

The results of chemical testing were analysed by T J Booth Associates to common threshold comparison data specifically the Defra Category 4 Screening Levels (C4SL), then to EA/DEFRA SGV (2009) data, and LQM/CIEH GAC 2nd edition (2009) & erratum (2011) where available. All contaminant results were found to be below threshold levels when compared to a residential end use setting.

All remediation works were undertaken in accordance with the TJBA Phase II Report recommendations.

Sincerely yours,

Sam Booth

T J Booth Associates.

Approved

Tim Booth BSc (Hons) C Eng, C Env, MICE

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Appendix.

TJBA Soil Chemical Analysis.

Client / Site								
Sampling Date								
Comparison of Contamination Test Results with Thresholds (mg/kg)								
Contaminant		**No**	**Max**	**Mean**	**t 95**	**RESIDENTIAL (with or without plant uptake)**		
							Pass/Fail	**Comment**
METALS	Arsenic as As, dry weight	3	8.4	7.83333	8.33	37	PASS	
	Boron as B, hot water sol dw	3	0.78	0.75333	0.777	290	PASS	
	Cadmium as Cd, dry weight	3	0.13	0.12	0.129	22	PASS	
	chromium as Cr(III) dry weight	3	13	11.67	12.80	910	PASS	
	Chromium as Cr(VI), dry weight	3	0.5	0.5	0.5	21	PASS	
	Copper, as Dry Weight	3	17	16.3333	16.9	2400	PASS	
	Lead, as Dry Weight	3	63	44.6667	60.4	200	PASS	
	Mercury as Hg, dry weight	3	0.18	0.16333	0.178	1.2	PASS	
	Nickel as Ni, dry weight	3	12	10.6667	11.8	130	PASS	
	Selenium as Se, dry weight	3	0.34	0.27667	0.333	250	PASS	
	Zinc as Zn, dry weight	3	40	37	39.6	3700	PASS	
INORGANIC	Cyanide (Total)	3	0.5	0.5	0.5	2.5	PASS	
	Sulphate (Total) as SO4	3	0.16	0.14667	0.158	0.24	PASS	
	Sulphide	3	32	14.0667	29.34	250	PASS	
	pH	3	8.2	8.2	8.2	6 to 8	ALKALINE	
	Sulphur (Elemental)	3	3.9	3.2	3.89	100	PASS	
	Asbestos Identification	3	0	0	0	0	PASS	
ORGANIC	SOM	3	6	3.66667	5.65			
PAH	acenaphthene	3	0.1	0.1	0.1	1100	PASS	
PAH	acenaphthylene	3	0.1	0.1	0.1	920	PASS	
PAH	anthracene	3	0.1	0.1	0.1	11000	PASS	
PAH	benzo[a]anthracene	3	0.1	0.1	0.1	13	PASS	
PAH	benzo[a]pyrene	3	0.1	0.1	0.1	5	PASS	
PAH	benzo[b]fluoranthene	3	0.1	0.1	0.1	3.7	PASS	
PAH	benzo[g,h,i]perylene	3	0.1	0.1	0.1	350	PASS	
PAH	benzo[k]fluoranthene	3	0.1	0.1	0.1	100	PASS	
PAH	chrysene	3	0.1	0.1	0.1	27	PASS	
PAH	dibenz[ah]anthracene	3	0.1	0.1	0.1	0.3	PASS	
PAH	fluoranthene	3	0.1	0.1	0.1	890	PASS	
PAH	fluorene	3	0.1	0.1	0.1	860	PASS	
PAH	indeno[123-cd]pyrene	3	0.1	0.1	0.1	41	PASS	
PAH	napthalene	3	0.1	0.1	0.1	13	PASS	
PAH	phenanthrene	3	0.1	0.1	0.1	440	PASS	
PAH	pyrene	3	0.1	0.1	0.1	2000	PASS	
PAH	PAH (Total - SUM EPA16)	3	2	2	2	1	comment	
SVOC	phenol	3	0.3	0.3	0.3	380	PASS	

GAC =LQM residential plant uptake & commercial 2009, BRE = Building Research Establishment, S = typ SNIFFER values, SOM=soil organic material, IC-ICRCL 87(withdrawn), LOD = limit of detection

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Eurofins Chemtest Ltd – Sample Certification.

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

UKAS TESTING
2183

Final Report

Report No.:	21-03778-1		
Initial Date of Issue:	11-Feb-2021		
Client	TJ Booth Associates		
Client Address:	20a Eastgate Street Rochdale Lancs OL16 1DH		
Contact(s):	Daniel Slattery		
Project	237 Edenfield Rd, Passmonds, Rochdale		
Quotation No.:	Q19-18321	**Date Received:**	09-Feb-2021
Order No.:		**Date Instructed:**	09-Feb-2021
No. of Samples:	3		
Turnaround (Wkdays):	3	**Results Due:**	11-Feb-2021
Date Approved:	11-Feb-2021		
Approved By:			
Details:	Glynn Harvey, Technical Manager		

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Project: 237 Edenfield Rd, Passmonds, Rochdale

Client: TJ Booth Associates	Chemtest Job No.:				21-03778	21-03778	21-03778
Quotation No.: Q19-18321	Chemtest Sample ID.:				1138493	1138494	1138495
	Client Sample ID.:				S5	S6	S7
	Sample Location:				237 Edenfields Rd	237 Edenfields Rd	237 Edenfields Rd
	Sample Type:				SOIL	SOIL	SOIL
	Date Sampled:				05-Feb-2021	05-Feb-2021	05-Feb-2021
	Asbestos Lab:				DURHAM	DURHAM	DURHAM
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
ACM Detection Stage	U	2192		N/A	-	-	-
Moisture	N	2030	%	0.020	19	20	17
pH	U	2010		4.0	8.2	8.2	8.2
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	0.75	0.78	0.73
Sulphur (Elemental)	U	2180	mg/kg	1.0	3.9	3.8	1.9
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Thiocyanate	U	2300	mg/kg	5.0	< 5.0	< 5.0	< 5.0
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	4.8	5.4	32
Sulphate (Total)	U	2430	mg/kg	100	1600	1400	1400
Arsenic	U	2450	mg/kg	1.0	8.4	7.4	7.7
Cadmium	U	2450	mg/kg	0.10	0.13	0.11	0.12
Chromium	U	2450	mg/kg	1.0	13	11	11
Copper	U	2450	mg/kg	0.50	17	16	16
Mercury	U	2450	mg/kg	0.10	0.18	0.15	0.16
Nickel	U	2450	mg/kg	0.50	12	10	10
Lead	U	2450	mg/kg	0.50	34	37	63
Selenium	U	2450	mg/kg	0.20	0.27	0.34	0.22
Zinc	U	2450	mg/kg	0.50	40	35	36
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Organic Matter	U	2625	%	0.40	3.3	1.9	4.3
Naphthalene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[a]anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Chrysene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10

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	Asbestos Lab:				DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0	< 2.0	< 2.0	< 2.0
Total Phenols	U	2920	mg/kg	0.30	< 0.30	< 0.30	< 0.30

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Photos.



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