



Crayfern Homes Ltd

Via email only: Pauls@crayfernhomes.co.uk

13th February 2020

Our Ref.: 16710/LR/TP/JSH

Dear Paul

Re: Orchard Business Park Imported Topsoil

Following your instruction, we are writing to report the findings of the chemical analysis undertaken on the topsoil imported to the above site.

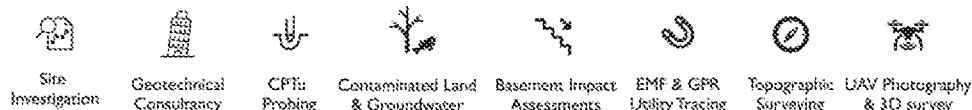
This letter report should be read in conjunction with letter report referenced 16671/LR/JSH dated 10th July 2019; Soils Limited Main Investigation Report, referenced 16671/GIR dated February 2018 and Soils Limited Remediation Statement referenced 16671/LR/RD dated 18th April 2019.

Introduction

Crayfern Homes instructed Soils Limited to undertake sampling of topsoil imported onto site for use in the rear gardens of the development at the above site. It was understood that the topsoil was imported from another site being developed at Burndell Road Yapton, by Crayfern Homes. It should be noted that the site of origin (Burndell Road) was a greenfield site and was not subject to any contamination conditions prior to its development. It was understood that approximately 175m³ of topsoil was imported onto site.

Site Works

Soils Limited visited site on the 13th December 2019 to sample a stockpile of imported topsoil, that was proposed to be used in the garden areas of the residential properties at the above site. A total of three representative samples were taken from the stockpile. The samples of topsoil were placed in containers provided by the UKAS accredited laboratory of i2 Analytical and placed a suitability chilled cool box for transportation, in line with good practice. The topsoil samples were submitted for a suite of determinants that included



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general industrial heavy metals, metalloids and non-metals, Polyaromatic Hydrocarbons and banded hydrocarbons.

Based on the proposed use of the imported soils, the results of the chemical analysis were compared against generic Tier 1 screening values based on a Residential With Home Grown Produce end use. The generic screening values were adopted from SP1010: Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination December 2014 (C4SL), derived for the protection of human health. Where this document has not published screening values for determinants, screening values derived for the same end use have been adopted from the following published guidance; LQM/CIEH/Suitable 4 Use Level (S4UL).

The results of the analysis did not record any chemical determinants at concentrations that exceeded the adopted generic Tier 1 screening values. The physical screening of the material did not record the presence of asbestos.

Copies of the chemical certification is appended to this letter report.

It was therefore considered that the soil imported to site was suitable for use in the rear garden areas.

Developer and groundworker declaration

Crayfern Homes and their groundworker, Parchow Groundworks Ltd have signed a declaration that, following the removal of the asbestos containing material as detailed in Soils Limited Letter report 16671/LR/JSH dated 10th July 2019, no unexpected ground conditions were encountered during the development.

A copy of the declaration is appended to this letter report.

Conclusions

The chemical analysis undertaken on imported topsoil from the greenfield site at Burndell Road Yapton recorded no chemical determinants in excess of the adopted Tier 1 assessment. Asbestos was not recorded within any of the samples tested.

Crayfern Homes and Parchow Groundworks Ltd have signed a declaration stating that no unexpected ground conditions were encountered during the development of the site.

If you have any questions regarding the above, please contact the undersigned

Yours sincerely



J S Hucklesby
Senior Geo environmental Engineer
For Soils Limited



James Hucklesby
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SO23 0LB

i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

Analytical Report Number : 19-78108

Project / Site name:	Orchard Business Park, North End Road, Yapton	Samples received on:	16/12/2019
Your job number:	16710	Samples instructed on:	17/12/2019
Your order number:		Analysis completed by:	30/12/2019
Report Issue Number:	1	Report issued on:	30/12/2019
Samples Analysed:	3 soil samples		

Signed:

Will Fardon

Technical Reviewer (CS Team)
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement. Application of uncertainty of measurement would provide a range within which the true result lies. An estimate of measurement uncertainty can be provided on request.

Analytical Report Number: 19-78108

Project / Site name: Orchard Business Park, North End Road, Yapton

Lab Sample Number				1395668	1395669	1395670		
Sample Reference				Sample 1	Sample 2	Sample 3		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				None Supplied	None Supplied	None Supplied		
Date Sampled				13/12/2019	13/12/2019	13/12/2019		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1		
Moisture Content	%	N/A	NONE	22	21	20		
Total mass of sample received	kg	0.001	NONE	1.2	1.2	1.2		
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected		
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	7.0	7.6	7.6		
Organic Matter	%	0.1	MCERTS	2.1	2.0	2.1		
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.22		
Pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.22		
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80	< 0.80	< 0.80		

Analytical Report Number: 19-78108

Project / Site name: Orchard Business Park, North End Road, Yapton

Lab Sample Number				1395668	1395669	1395670		
Sample Reference				Sample 1	Sample 2	Sample 3		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				None Supplied	None Supplied	None Supplied		
Date Sampled				13/12/2019	13/12/2019	13/12/2019		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Soil Analysis)	Units	Limit of Detection	Accreditation Status					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	8.5	7.9	7.1		
Boron (water soluble)	mg/kg	0.2	MCERTS	0.5	0.3	0.3		
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2		
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0		
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	25	23	20		
Copper (aqua regia extractable)	mg/kg	1	MCERTS	13	14	12		
Lead (aqua regia extractable)	mg/kg	1	MCERTS	24	21	23		
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3		
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	13	13	11		
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	36	35	31		
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	50	47	47		

Petroleum Hydrocarbons

TPH Texas (C6 - C8)	mg/kg	0.1	ISO 17025	< 0.1	< 0.1	< 0.1		
TPH Texas (C8 - C10)	mg/kg	10	MCERTS	< 10	< 10	< 10		
TPH Texas (C10 - C12)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
TPH Texas (C12 - C16)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0		
TPH Texas (C16 - C21)	mg/kg	10	MCERTS	< 10	< 10	< 10		
TPH Texas (C21 - C40)	mg/kg	10	MCERTS	< 10	< 10	35		
TPH Texas (C6 - C40)	mg/kg	10	NONE	< 10	< 10	35		



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* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
1395668	Sample 1	None Supplied	None Supplied	Brown loam and clay with gravel and vegetation.
1395669	Sample 2	None Supplied	None Supplied	Brown loam and clay with gravel and vegetation.
1395670	Sample 3	None Supplied	None Supplied	Brown loam and clay with gravel and vegetation.

Analytical Report Number : 19-78108

Project / Site name: Orchard Business Park, North End Road, Yapton

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazine followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In-house method based on BS1377 Part 2, 1990, Classification tests	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	BS1377 Part 3, 1990, Chemical and Electrochemical Tests""	L009-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
TPH Texas (Soil)	Determination of dichloromethane/hexane extractable hydrocarbons in soil by GC-MS.	In-house method	L064-PL	D	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.

For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.

Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

Y/49/18/PL -- Land at Orchard Business Park
North End Road, Yapton

Date: 31.01.2020



**CONTRACTORS STATEMENT IN REFERENCE TO COMPLIANCE WITH THE
DISCOVERY STRATEGY**

PLOTS 1-10 - CONDITION 7

Contractor

Crayfern Homes Ltd can confirm that during the construction of plots 1-10 at the above site, no unexpected materials, groundwater and materials of concern were encountered during the work other than some asbestos which is detailed in Soils Ltd's report (ref: 16671/LR/JSH).

Signed

John Curry (Construction Director -- Crayfern Homes Ltd)

Groundworker

Parchow Groundworks Ltd can confirm that during the construction of plots 1-10 at the above site, no unexpected materials, groundwater and materials of concern were encountered during the work other than some asbestos which is detailed in Soils Ltd's report (ref: 16671/LR/JSH).

Signed

Andy Howe (Managing Director -- Parchow Groundworks Ltd)