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SUB SURFACE CONSULTANTS

**SITE INVESTIGATION SPECIALISTS
GEOTECHNICAL & ENVIRONMENTAL
CONSULTANTS**

Our ref: 7848 / SS



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28th November 2023

Beech House,
23 Ladies Lane,
Hindley,
Wigan
WN2 2QA

For the attention of Patrick Malone,

**RE: CONTAMINATION ANALYSES FOR 20A CHORLTON VILLAS, HARDY LANE,
MANCHESTER, M21 8DN**

Dear Patrick,

This report has been prepared in accordance with an email, dated 9th November 2023, from PM Sampling Limited.

The brief was set out in our estimate, ref. E6788 and dated 9th November 2023 and includes:

- 2 No. chemical contamination analysis
- Provision of an interpretative letter report on the above.

Introduction

The site is located at 20A Chorlton Villas, Hardy Lane, Manchester, M21 8DN, as indicated on Figure 1. The approximate National Grid Reference of the centre of the site is 381600E, 392610N.

As shown on Figure 1, the rectangular shaped about 0.20 hectare site is bounded to the north by Chorlton Villas access, to the east by 18 Chorlton Villas, to the south by Chorlton-Cum-Hardy Golf Course, and to the west by a building.

The site is currently occupied by a residential building with an associated driveway and rear garden.

Investigation

The purpose of this investigation was to undertake contamination analyses to determine whether the imported topsoil provided by the Client is suitable for residential land use.

It should be noted that the Client brought in two samples of the soil only and we have assumed that this is a fair representation of the soil. The descriptions of the soil samples are as follows:

Location	Description
SS1	MADE GROUND: dark brown gravelly silty fine sand with many roots and rootlets. Gravel sized fragments are fine to coarse stone (topsoil).
SS2	MADE GROUND: dark brown gravelly silty fine sand with many roots and rootlets. Gravel sized fragments are fine to coarse stone (topsoil).

The samples each comprised one 1kg plastic tub, one 250ml amber glass jar, and one 60ml amber glass vial and were transported to the testing laboratory in an insulated container.

Contamination Analysis and Assessment

Contamination analyses have been performed on two soil samples to determine: pH and concentrations of sulphate, sulphide, cyanide, arsenic, boron (soluble), cadmium, chromium, hexavalent chromium, copper, lead, mercury, molybdenum, nickel, selenium, zinc, speciated total petroleum hydrocarbons (TPHs), the speciated polynuclear aromatic hydrocarbons (PAHs) suite, the benzene/ ethylbenzene/ toluene/ xylene (BTEX) suite and phenols. In addition, the soil samples were subjected to an asbestos screen.

At the outset it should be noted that this contamination investigation is a baseline survey in order to provide a contamination risk assessment based on analyses of a suite determinants specified by the Client. However, the absence of other specific contaminants cannot be guaranteed.

Levels of the determinants have been compared against the most recently published guideline values. Contaminated Land: Applications in Real Environments (CL:AIRE) published guideline values in December 2009 to supplement previous guideline values. The Department for Environment, Food and Rural Affairs (DEFRA) published in March 2014 Category 4 Screening Levels (C4SLs) for arsenic, cadmium, lead, hexavalent chromium, benzo(a)pyrene and benzene. Land Quality Management Limited (LQM)/ Chartered Institute of Environmental Health (CIEH) then published Suitable for Use Levels (S4ULs) in November 2014, which largely superseded the previous guideline values. Updated S4ULs values for cadmium and phenols were published in July 2015 and for nickel in August 2015. The guideline values (S4ULs and occasionally C4SLs and CL:AIRE) these are derived using the Environment Agency's CLEA Model and vary dependent upon the land use; allotment and residential use being the most sensitive and commercial/ industrial use being the least sensitive.

For the purposes of assessment, as the current site is residential housing with a garden, contamination analyses have been compared with the guideline values for a standard land use of residential with plant uptake (homegrown produce).

The contamination analysis determined no elevated levels of the determinants analysed for when compared with the guideline values for a standard land use of residential with plant uptake (homegrown produce). Guideline values for the assessment can be supplied directly to the Regulator, if requested.

An asbestos screen was undertaken on both soil samples and no asbestos was detected.

Conclusions and Recommendations

The contamination analysis found no elevated levels when compared with the guideline values for a standard land use of residential with plant uptake (homegrown produce) and no asbestos was detected.

We conclude that the material is suitable for the land use of residential with plant uptake (homegrown produce) based on the determinants tested for.

General

We trust that this letter report fulfils your present requirements but if you have any queries or we can be of further assistance please contact the undersigned or Miss Anna Marsden at our Preston office.

Yours faithfully,

A handwritten signature in black ink, appearing to read 'S Solanki'.

S. Solanki. B.Sc.(Hons.)
Geotechnical Engineer
For and on behalf of
Sub Surface Consultants Limited



Certificate of Analysis

Certificate Number 23-26854

Issued: 22-Nov-23

Client Sub Surface Laboratories Ltd
3 Peel Street
Preston
Lancashire
PR2 2QS

Our Reference 23-26854

Client Reference 7848

Order No (not supplied)

Contract Title Chorlton Villas, Hardy Lane, Chorlton

Description 2 Soil samples.

Date Received 15-Nov-23

Date Started 15-Nov-23

Date Completed 22-Nov-23

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

A handwritten signature in black ink, appearing to read "K. Bridgewood".

Kirk Bridgewood
General Manager



2139

Summary of Chemical Analysis

Soil Samples

Our Ref 23-26854

Client Ref 7848

Contract Title Chorlton Villas, Hardy Lane, Chorlton

Lab No	2262584	2262585
Sample ID	SS1	SS2
Depth		
Other ID	1	2
Sample Type	SOIL	SOIL
Sampling Date	08/11/2023	08/11/2023
Sampling Time	n/s	n/s

Test	Method	LOD	Units		
Preparation					
Moisture Content	DETSC 1004	0.1	%	18	20
Metals					
Arsenic	DETSC 2301#	0.2	mg/kg	18	20
Boron, Water Soluble (2.5:1)	DETSC 2311#	0.2	mg/kg	0.2	0.2
Cadmium	DETSC 2301#	0.1	mg/kg	0.2	0.2
Chromium	DETSC 2301#	0.15	mg/kg	13	15
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	37	42
Lead	DETSC 2301#	0.3	mg/kg	100	110
Mercury	DETSC 2325#	0.05	mg/kg	0.19	0.23
Molybdenum	DETSC 2301#	0.4	mg/kg	2.1	2.3
Nickel	DETSC 2301#	1	mg/kg	9.5	10
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	< 0.5
Zinc	DETSC 2301#	1	mg/kg	53	53
Inorganics					
pH	DETSC 2008#		pH	6.1	6.3
Cyanide, Total	DETSC 2130#	0.1	mg/kg	0.7	0.7
Sulphide	DETSC 2024*	10	mg/kg	< 10	11
Sulphate as SO ₄ , Total	DETSC 2321#	0.01	%	0.09	0.09
Petroleum Hydrocarbons					
C5-C10 Gasoline Range Organics (GRO): HS_1D_Total	DETSC 3321*	0.1	mg/kg	< 0.1	< 0.1
C10-C24 Diesel Range Organics (DRO): EH_1D_Total	DETSC 3311#	10	mg/kg	13	37
EPH (C10-C40): EH_1D_Total	DETSC 3311#	10	mg/kg	27	50
Benzene	DETSC 3321#	0.01	mg/kg	< 0.01	< 0.01
Ethylbenzene	DETSC 3321#	0.01	mg/kg	< 0.01	< 0.01
Toluene	DETSC 3321#	0.01	mg/kg	< 0.01	< 0.01
m+p Xylene	DETSC 3321#	0.01	mg/kg	< 0.01	< 0.01
o Xylene	DETSC 3321#	0.01	mg/kg	< 0.01	< 0.01
MTBE	DETSC 3321	0.01	mg/kg	< 0.01	< 0.01
C24-C40 Lube Oil Range Organics (LORO): EH_1D_Total	DETSC 3311#	10	mg/kg	14	13
PAHs					
Naphthalene	DETSC 3301	0.1	mg/kg	0.1	0.7
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Acenaphthene	DETSC 3301	0.1	mg/kg	0.4	1.8
Fluorene	DETSC 3301	0.1	mg/kg	0.4	1.6
Phenanthrene	DETSC 3301	0.1	mg/kg	2.3	8.1
Anthracene	DETSC 3301	0.1	mg/kg	0.6	2.0
Fluoranthene	DETSC 3301	0.1	mg/kg	3.3	7.8
Pyrene	DETSC 3301	0.1	mg/kg	3.3	7.1
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	1.5	3.0

Summary of Chemical Analysis Soil Samples

Our Ref 23-26854

Client Ref 7848

Contract Title Chorlton Villas, Hardy Lane, Chorlton

Lab No	2262584	2262585
Sample ID	SS1	SS2
Depth		
Other ID	1	2
Sample Type	SOIL	SOIL
Sampling Date	08/11/2023	08/11/2023
Sampling Time	n/s	n/s

Test	Method	LOD	Units		
Chrysene	DETSC 3301	0.1	mg/kg	1.5	3.2
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	0.9	1.8
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	0.6	1.2
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	1.7	2.9
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	1.0	1.6
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	0.2	0.4
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	1.0	1.7
PAH 16 Total	DETSC 3301	1.6	mg/kg	19	45
Phenols					
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	0.5	0.5

Summary of Asbestos Analysis Soil Samples

Our Ref 23-26854

Client Ref 7848

Contract Title Chorlton Villas, Hardy Lane, Chorlton

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
2262584	SS1 1	SOIL	NAD	none	Josh Best
2262585	SS2 2	SOIL	NAD	none	Josh Best

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * - not included in laboratory scope of accreditation.

Information in Support of the Analytical Results

Our Ref 23-26854
 Client Ref 7848
 Contract Chorlton Villas, Hardy Lane, Chorlton

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
2262584	SS1 SOIL	08/11/23	GJ 250ml, GJ 60ml, PT 1L		
2262585	SS2 SOIL	08/11/23	GJ 250ml, GJ 60ml, PT 1L		

Key: G-Glass P-Plastic J-Jar T-Tub

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Information in Support of the Analytical Results

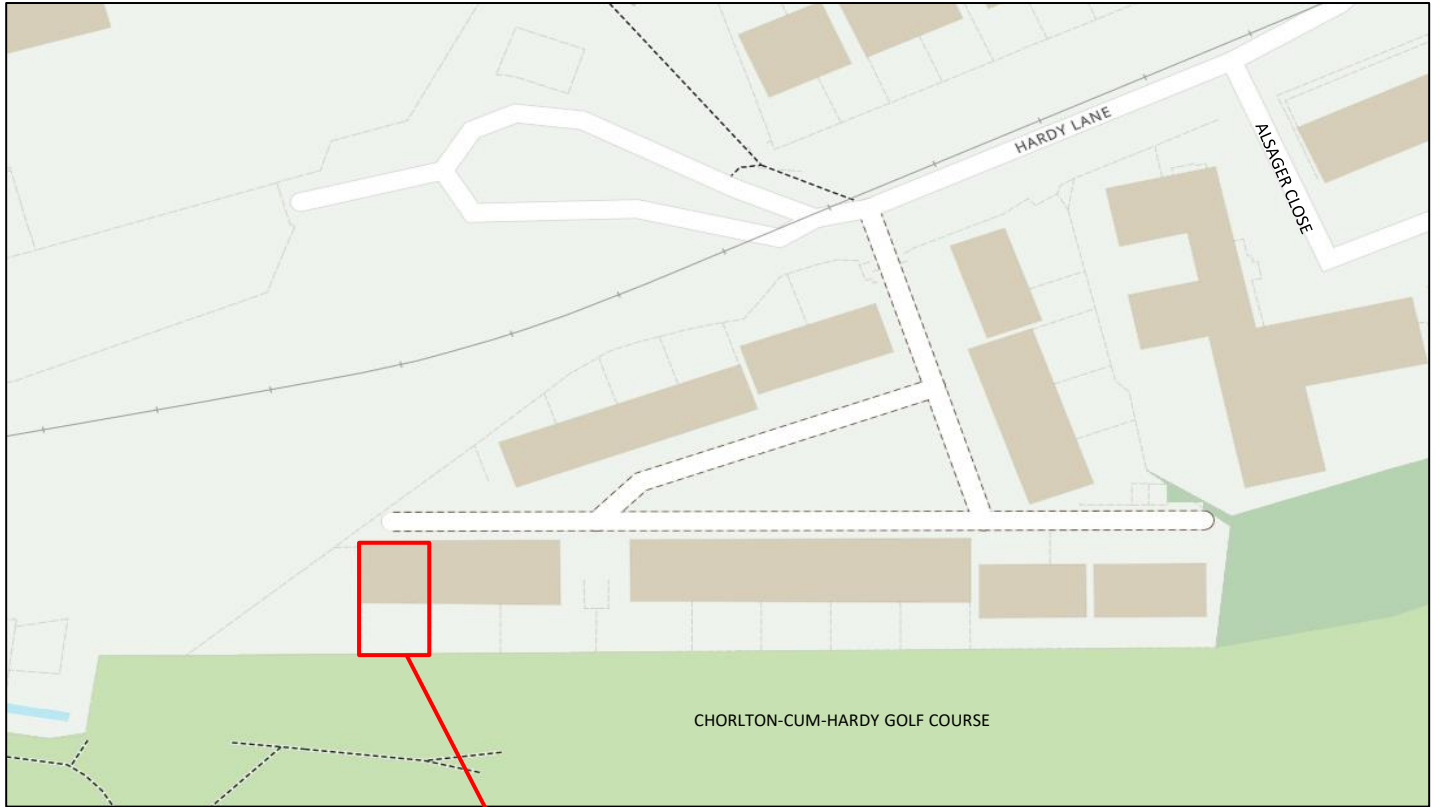
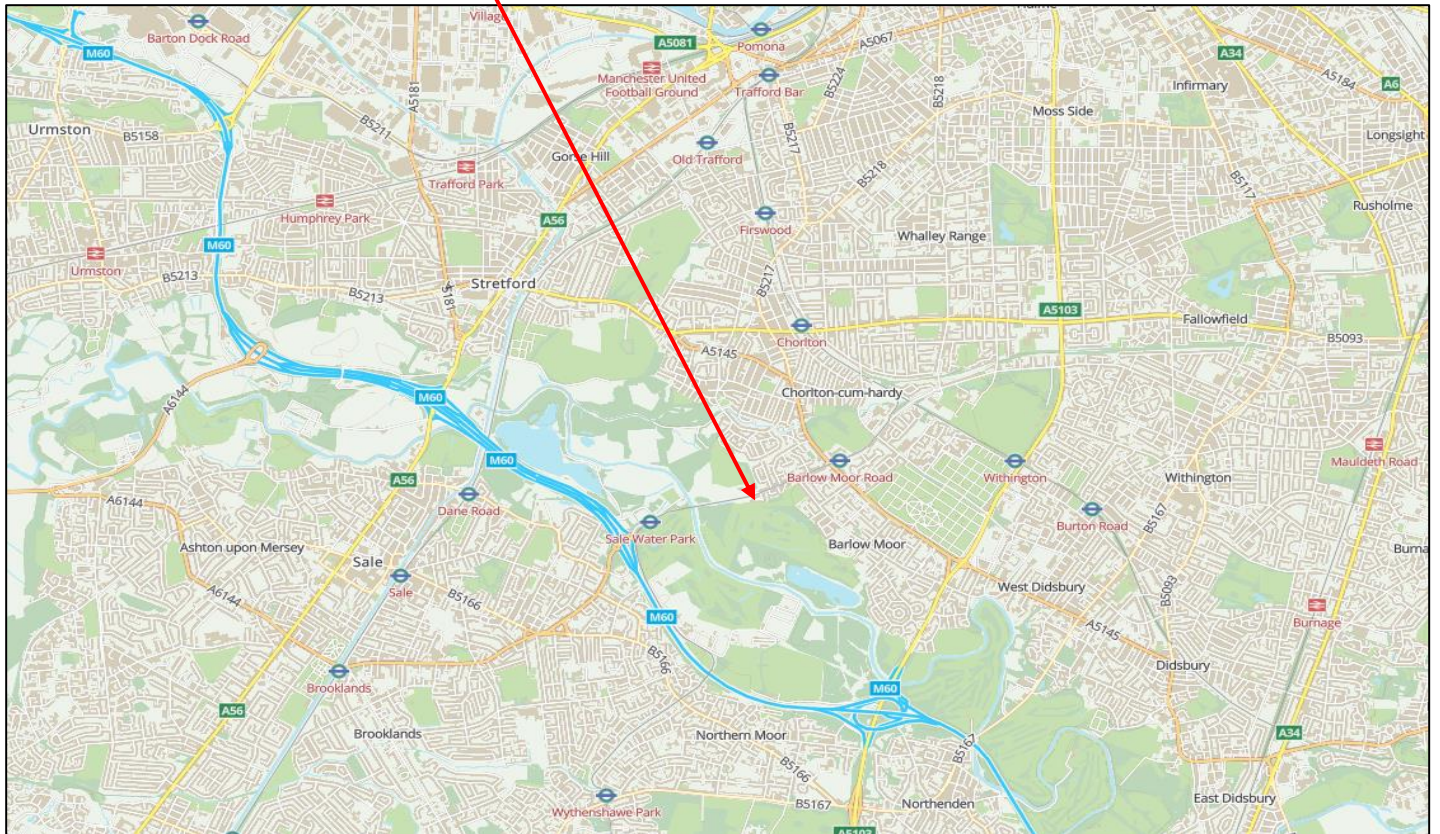
List of HWOL Acronyms and Operators

Acronym	Description
HS	Headspace analysis
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent
CU	Clean-up - e.g. by florisil, silica gel
1D	GC - Single coil gas chromatography
2D	GC-GC - Double coil gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics only
AR	Aromatics only
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative eg. EH+HS_Total or EH_CU+HS_Total

Det	Acronym
C5-C10 Gasoline Range Organics (GRO)	HS_1D_Total
C10-C24 Diesel Range Organics (DRO)	EH_1D_Total
EPH (C10-C40)	EH_1D_Total
C24-C40 Lube Oil Range Organics (LO)	EH_1D_Total

End of Report

FIGURES



SUB SURFACE

SITE INVESTIGATION AND SPECIALIST GEOTECHNICAL CONSULTANTS
3 Peel Street, Preston, PR2 2QS. Tel. (01772) 561135 Fax (01772) 204907

Site
20A CHORLTON VILLAS, HARDY LANE, MANCHESTER,
M21 8DN

Client
PM SAMPLING LIMITED

Site Location

Date Drawn
24/11/2023

Drawn By
SS

Date Checked
-

Checked By
-

Orientation

Scale
-

Job No.
7848

Figure No.
1