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VERIFICATION REPORT

ASHTON COURT
CAMDEN MEWS
LONDON NW1

Report Reference C14038C

On behalf of:-

Rydon Maintenance Limited
Rydon House
Station Road
Forest Row
East Sussex
RH18 5DW

December 2020

GROUND ENGINEERING LIMITED
Newark Road Peterborough PE1 5UA
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Company Registration Number 6929574

Our Ref: SW/C14038C

15th December 2020

Rydon Maintenance Limited
Rydon House
Station Road
Forest Row
East Sussex RH18 5DW

Verification Report - Remediation Works at Ashton Court, Camden Mews, London NW1

Introduction

Ground Engineering Limited was instructed by Rydon Maintenance Limited to check that imported topsoil and subsoil was suitable for use in the landscaped areas of the new residential development, following their remediation works at Ashton Court, Camden Mews, London NW1.

Validation was to comprise a site inspection and testing of the imported soils following placement in the landscaped areas of the development.

Remediation Work carried out by the client

It was understood that the contractor Rydon Maintenance Limited undertook the redevelopment of the site, which included the placement of imported soil in the landscaped areas fronting Camden Road to the north-west and central southern courtyard part of the site.

The north-western landscaped area was excavated to 1m depth, and replaced with imported soils. The courtyard area was excavated to 1m depth, and clean stone was imported and compacted for use as a piling mat during the construction phase. The majority of the stone was subsequently excavated from the courtyard area and an attenuation tank was installed, which is understood to now occupy most of the below ground space in the courtyard area, with an approximately 0.30m wide strip around the edges which was to be landscaped. The soil placement in the north-western landscaped area fronting Camden Road and courtyard area was undertaken in November 2020. No unexpected contamination was reported during the remediation by the clientôs site work contractor.

Source of Imported Topsoil

The imported topsoil and subsoil was sourced by the contractor and they have the original supplier certificates of testing and delivery notes. The supplier certificates, a copy of which is presented in Appendix 1, were reviewed by Ground Engineering Limited prior to importation of soils onto the site, and the results indicated the soils would be suitable for the proposed residential development.

Validation Works by Ground Engineering Limited

A site visit to record the remediation works and undertake hand auger boreholes in the north-western landscaped and courtyard areas at Ashton Court, Camden Mews, London NW1 was undertaken by an engineer from Ground Engineering Limited on 19th November 2020. Imported topsoil (HA1, HA2, HA3 and HA4) sampling positions were selected by Ground Engineering Limited to provide coverage. The holes were excavated using hand tools to 1.00m depth within the backfilled landscaped and courtyard areas to inspect the soils present. The exposed strata were sampled and recorded by a Geoenvironmental Engineer. Representative small disturbed samples of the imported topsoil and subsoil present were taken from each of the holes. Samples were tested to determine whether the topsoil and subsoil imported onto the site was suitable for use, following its placement in the landscaped areas within the development. The positions are shown on the exploratory hole location plan following this report text.

Photographs of the sample locations within the landscaped areas are presented following the records.

The borehole records, presented following the plans, give the descriptions and depths of the various strata encountered, details of all samples taken, and the groundwater conditions observed during and on completion of excavation.

Laboratory Work

The samples were inspected in the laboratory and assessments of the soil characteristics have been taken into account during preparation of the borehole records. The soil descriptions have been made in accordance with BS5930:2015+A1:2020. The chemical test results are presented following the borehole records.

Chemical analysis of four imported topsoil samples recovered from the exploratory holes was undertaken, by an independent laboratory, primarily for characterisation purposes. The samples were tested for a suite encompassing a wide range of potential contaminants outlined by the Environment Agency (EA) and National House Building Council (NHBC) document R&D 66; 2008 ‘Guidance for the Safe Development of Housing on Land Affected by Contamination’.

Strata Encountered

The imported topsoil comprised dark brown, silty, gravelly, organic sand, with locally (HA2) light brown, slightly gravelly, silty clay lumps. The gravel fraction comprised angular to rounded flint, quartz, sandstone and occasional brick and mortar fragments. Imported topsoil was encountered from the surface at each of the sampling locations, and was 0.30m (HA3 & HA4), 0.40m (HA1) and 0.55m (HA2) thick.

The imported subsoil comprised brown and dark brown, clayey, silty, gravelly to very gravelly sand. The gravel fraction comprised angular to rounded flint, quartz and occasional brick, mortar, concrete, glazed tile, glass and ash. The imported subsoil was encountered to between 0.60m (HA3) and at least 1.00m (HA1 & HA4) depth.

Made ground was encountered below the imported soils in HA2 at 0.55m depth, and in HA3 at 0.60m depth, which comprised soft or firm, light brown to dark brown, sandy, gravelly clay fill,

with a gravel fraction of angular to rounded flint with occasional brick, mortar, ash, glass and metal nails.

A 0.55m to 1.00m thickness of imported topsoil and subsoil was proved at each of the test locations.

COMMENTS ON THE CHEMICAL TEST RESULTS OF IMPORTED SOIL

The results of the laboratory chemical testing on near surface soil samples have primarily been compared to soil screening values (SSVs) produced by Land Quality Management Limited (LQM) and the Chartered Institute for Environmental Health (CIEH) presented in their document ôThe LQM/CIEH S4ULs for Human Health Risk Assessment: 2015 (Publication Number S4UL3608)ô. The LQM/CIEH S4ULs are intended for use in assessing the potential risks posed to human health by contaminants in soil and are transparently-derived and cautious ótrigger valuesô above which further assessment of the risks or remedial action may be needed. The S4ULs (Suitable for Use Levels) have been derived, in accordance with UK legislation and Environment Agency policy, using a modified version of the Environment Agency CLEA 1.06 software.

Reference has also been given to ATRISKsoil soil screening values produced by Atkins Limited and provided under licence to Ground Engineering Limited. Atkins SSVs have been derived in line with the Environment Agency 2009 guidance using the CLEA 1.071 software. With the absence of a S4UL for cyanide the ATRISKsoil SSV has been used as the soil screening criteria within this report.

In 2014 the Department for Environment Food and Rural Affairs (DEFRA) published, in their document SP1010, Category 4 Screening Levels (C4SL) for several contaminants including lead. The C4SL represent screening levels below which the land could be considered suitable for a specified use and definitely not contaminated land in respect of those determinands. With the absence of S4UL for lead the C4SL has been used as the soil screening criteria within this report.

For each contaminant the adopted soil screening criteria have been calculated for the following land uses:

- Residential use with home grown produce
- Residential use without home grown produce
- Commercial and industrial usage

The intended purpose of the SSVs are as ñintervention valuesò in the regulatory framework for assessment of human health risks in relation to land use. These values are not binding standards, but are intended to inform judgements about the need for action to ensure that a new use of land does not pose any unacceptable risks to the health of the intended users.

Table 1 presented to the rear of this report text compares the test results for the imported topsoil with the SSVs in relation to the specified uses. The number of test results, which exceed these values, are also provided.

Discussion of Results of Imported Soil Analysis

The results of the laboratory analysis indicate that the imported soil did not contain any elevated concentrations of contaminants, with all results within the soil screening values for a residential with home grown produce end use; for a residential without home grown produce end use; and for a commercial or industrial usage.

The sample from HA4 at 0.10m depth was found to contain loose fibres of Chrysotile asbestos. The amount of asbestos in the sample was subsequently quantified and found to be less than 0.001% (laboratory detection limit).

The imported topsoil had 4.4% and 5.0% organic matter.

Conclusions

Imported topsoil and subsoil 0.55m to 1.00m thick was placed into the landscaped areas of the redevelopment. The results of analysis indicate that the imported soil is generally considered suitable for use within a residential setting.

An asbestos risk assessment should be undertaken by a specialist, in accordance with 'Control of Asbestos Regulations 2012: Interpretation for Managing and Working with Asbestos in Soil and Construction & Demolition materials: Industry Guidance'.

If there are any queries regarding the contents of this letter do not hesitate to contact the undersigned.

For and On Behalf of Ground Engineering Limited

Yours faithfully,

S. WEATHERLEY
B.Eng. (Hons.),
C.Geol., F.G.S.,
Senior Geo-environmental Engineer

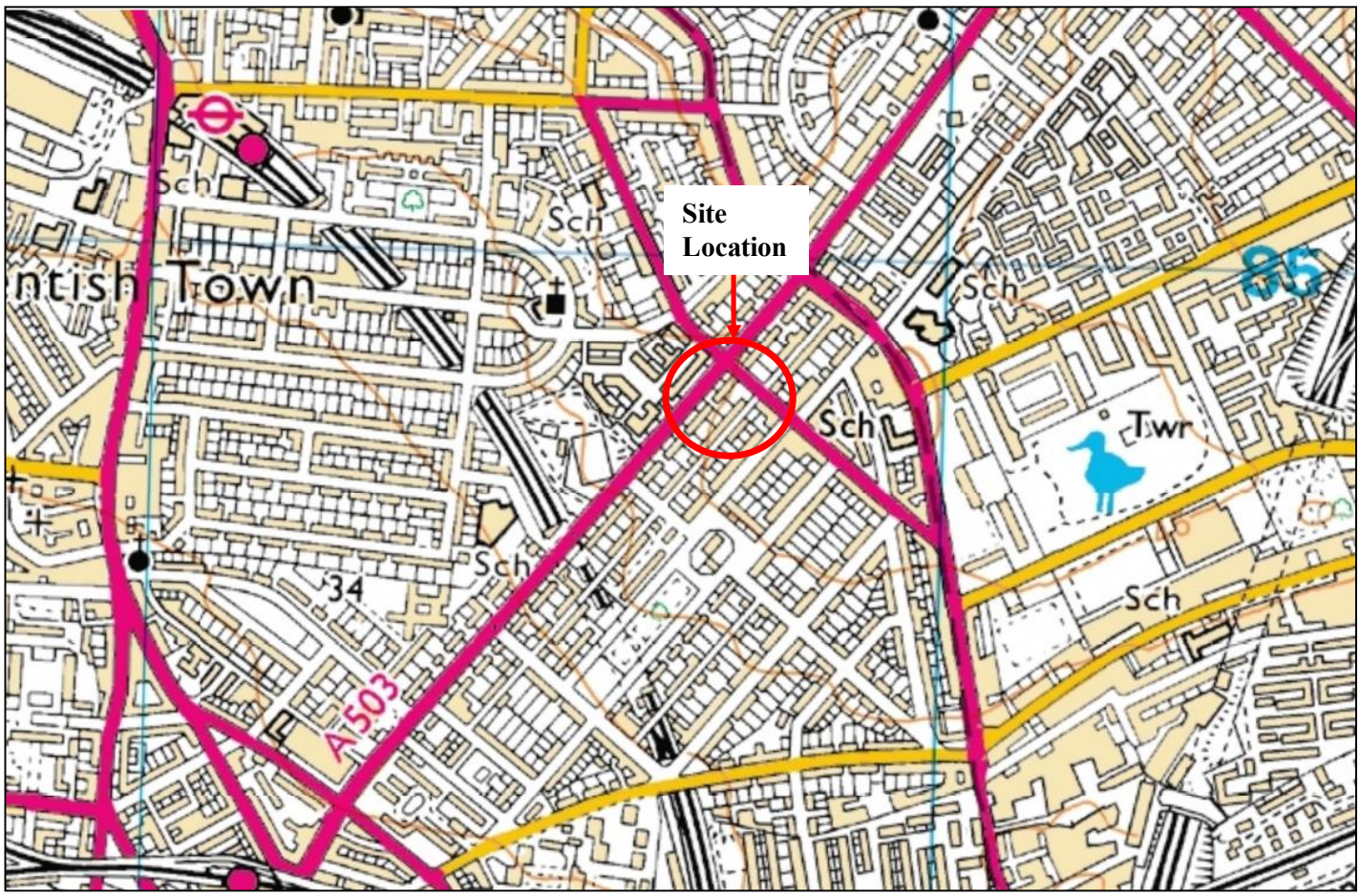
C. M. J. EBELING
M.Sc.(Eng.) M.A.E.G.,
C.Geol., F.G.S.
Director

Table 1: Comparison of Chemical Test Results for Imported Soil with Soil Screening Values (SSVs)

Determinand	Number of Samples	Min Value mg/kg	Max Value mg/kg	Number of Samples Exceeding SSV for			Assessment Method	Soil Screening Criteria 2.5% SOM[#]		
				Residential with home grown produce	Residential without home grown produce	Commercial/ Industrial		Residential with home grown produce mg/kg	Residential without home grown produce mg/kg	Commercial/ Industrial mg/kg
Organic Matter	4	4.4%	5.0%	-	-	-	-	-	-	-
Arsenic	4	13	21	0	0	0	S4UL	37	40	640
Cadmium	4	<0.2	<0.2	0	0	0	S4UL	11	85	190
Chromium (III)	4	19	64	0	0	0	S4UL	910	910	8600
Chromium (VI)	4	<4.0	<4.0	0	0	0	S4UL	6	6	33
Lead	4	22	33	0	0	0	C4SL	200	310	2330
Mercury	4	<0.3	<0.3	0	0	0	S4UL	11	15	320
Selenium	4	<1.0	<1.0	0	0	0	S4UL	250	430	12,000
Nickel	4	17	33	0	0	0	S4UL	130	180	980
Phenols	4	<1.0	<1.0	0	0	0	S4UL	200	690	690
Benzo[a]pyrene	4	<0.05	<0.05	0	0	0	C4SL	5.0	5.3	76
Copper	4	14	23	0	0	0	S4UL	2400	7100	68,000
Zinc	4	65	97	0	0	0	S4UL	3700	40,000	730,000
Free Cyanide	4	<1	<1	0	0	0	ATRISK	34	34	34

Notes
S4UL and C4SL for metals were derived using 6% SOM. # benzo[a]pyrene SSV based on 6% SOM. These values are not sensitive to SOM and would also be applicable for 1% SOM and 2.5% SOM

Site Location Plan



Not To Scale

Project : Ashton Court, Camden Road, London NW1 **Client : Rydon Maintenance Limited**	**GROUND ENGINEERING LIMITED** Peterborough Tel : 01733 566566	**Project No.** **C14038C**

Exploratory Hole Location Plan

Based on plan provided by client

Not To Scale

Project : Ashton Court, Camden Road, London NW1 **Client : Rydon Maintenance Limited**	**GROUND ENGINEERING LIMITED** Peterborough Tel : 01733 566566	**Project No.** **C14038C**

GROUND ENGINEERING LIMITED

Tel: 01733-566566
www.groundengineering.co.uk

Site: ASHTON COURT, CAMDEN MEWS, LONDON NW1

HAND AUGER
HA1

Date: 19/11/20

Hole Size: 70mm dia to 1.00m

Ground Level:

Samples and in-situ Tests			(Date) Water	Description of Strata	Legend	Depth m	O.D. Level m
Depth m	Type	Result					
0.10	D1			IMPORTED TOPSOIL - Dark brown, silty, gravelly, organic SAND. Gravel is angular to rounded flint and sandstone.			
0.10	ES1						
0.35	D2						
0.35	ES2					0.40	
				IMPORTED SUBSOIL - Brown and dark brown, slightly clayey, silty, gravelly, organic SAND. Gravel is angular to rounded flint, quartzite and occasional brick fragments, mortar and concrete.			
0.55	D3						
0.55	ES3						
0.80	D4						
0.80	ES4						
1.00	D5					1.00	
1.00	ES5			Hole completed at 1.00m depth			

REMARKS 1. Live roots observed to 0.25m depth

Project No 14038c

Scale 1:10

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KEY

D - Disturbed Sample
B - Bulk Sample
U - Undisturbed Sample
W - Water Sample
R - Root Sample
▽ Water Strike
▼c Level on completion
MP - Mackintosh Probe
V - Vane Shear Test Cohesion ( ) kPa
ES - Environmental Sample
▼ Water Rise
▼s Standpipe Level

Groundwater Strikes						Groundwater Observations			
	Depth m						Depth m		
No	Struck	Rose to	Rate	Cased	Sealed	Date	Hole	Casing	Water
						19/11/20	1.00		dry

GROUND ENGINEERING LIMITED

Tel: 01733-566566
www.groundengineering.co.uk

Site: ASHTON COURT, CAMDEN MEWS, LONDON NW1

HAND AUGER
HA2

Date: 19/11/20

Hole Size: 70mm dia to 1.00m

Ground Level:

Samples and in-situ Tests			(Date) Water	Description of Strata	Legend	Depth m	O.D. Level m
Depth m	Type	Result					
0.00 0.00	D1 ES1			IMPORTED TOPSOIL - Dark brown, silty, gravelly, organic SAND with occasional lumps of soft, light brown, slightly gravelly, silty clay below 0.30m depth. Gravel is angular to rounded flint, sandstone, mortar and occasional brick fragments.			
0.35 0.35	D2 ES2						
						0.55	
0.65 0.65	D3 ES3			MADE GROUND - Soft, brown, slightly gravelly, sandy CLAY. Gravel is angular to rounded flint, brick and occasional concrete, clinker and ash.			
0.80 0.80	D4 ES4						
						0.90	
1.00 1.00	D5 ES5			MADE GROUND - Firm, light brown, slightly gravelly, silty CLAY. Gravel is angular and sub-angular flint with occasional brick, ash and glass.		1.00	
				Hole completed at 1.00m depth			

REMARKS 1. Live roots observed to 0.30m depth

Project No 14038C

Scale 1:10

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ES - Environmental Sample
▼ Water Rise
▼s Standpipe Level

Groundwater Strikes						Groundwater Observations			
Depth m							Depth m		
No	Struck	Rose to	Rate	Cased	Sealed	Date	Hole	Casing	Water
						19/11/20	1.00		dry

GROUND ENGINEERING LIMITED

Tel: 01733-566566
www.groundengineering.co.uk

Site: ASHTON COURT, CAMDEN MEWS, LONDON NW1

HAND AUGER
HA3

Date: 19/11/20

Hole Size: 70mm dia to 1.00m

Ground Level:

Samples and in-situ Tests			(Date) Water	Description of Strata	Legend	Depth m	O.D. Level m
Depth m	Type	Result					
0.05 0.05	D1 ES1			IMPORTED TOPSOIL - Dark brown, silty, gravelly, organic SAND. Gravel is angular to rounded flint, quartz and occasional brick fragments.		0.30	
0.35 0.35	D2 ES2			IMPORTED SUBSOIL - Brown and dark brown, clayey, very gravelly SAND. Gravel is angular to rounded flint, brick, mortar, glazed tile, glass and ash.		0.60	
0.65 0.65	D3 ES3			MADE GROUND - Soft, dark brown, sandy, gravelly CLAY. Gravel is angular to rounded flint, brick, mortar, ash and metal nails.			
0.80 0.80	D4 ES4						
1.00 1.00	D5 ES5			Hole completed at 1.00m depth		1.00	

REMARKS 1. Live roots observed to 0.30m depth

Project No
14038c

Scale 1:10

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KEY

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V - Vane Shear Test Cohesion ( ) kPa
ES - Environmental Sample
▼ Water Rise
▼s Standpipe Level

Groundwater Strikes						Groundwater Observations			
	Depth m						Depth m		
No	Struck	Rose to	Rate	Cased	Sealed	Date	Hole	Casing	Water
						19/11/20	1.00		dry

GROUND ENGINEERING LIMITED

Tel: 01733-566566
www.groundengineering.co.uk

Site: ASHTON COURT, CAMDEN MEWS, LONDON NW1

HAND AUGER
HA4

Date: 19/11/20

Hole Size: 70mm dia to 1.00m

Ground Level:

Samples and in-situ Tests			(Date) Water	Description of Strata	Legend	Depth m	O.D. Level m
Depth m	Type	Result					
0.10	D1			IMPORTED TOPSOIL - Dark brown, silty, gravelly, organic SAND. Gravel is angular to rounded flint, quartz and occasional brick fragments.			
0.10	ES1						
						0.30	
0.35	D2			IMPORTED SUBSOIL - Dark brown, clayey, silty, gravelly SAND. Gravel is angular to rounded flint and occasional brick and mortar.			
0.35	ES2						
0.65	D3						
0.65	ES3						
0.80	D4						
0.80	ES4						
1.00	D5					1.00	
1.00	ES5			Hole completed at 1.00m depth			

REMARKS 1. Live roots observed to 0.20m depth

Project No 14038c

Scale 1:10

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KEY

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W - Water Sample
R - Root Sample
▽ Water Strike
▼c Level on completion
MP - Mackintosh Probe
V - Vane Shear Test Cohesion ( ) kPa
ES - Environmental Sample
▼ Water Rise
▼s Standpipe Level

Groundwater Strikes						Groundwater Observations			
	Depth m						Depth m		
No	Struck	Rose to	Rate	Cased	Sealed	Date	Hole	Casing	Water
						19/11/20	1.00		dry

Sample Locations in Landscaped Areas

HA1

HA2

HA3

HA4

Project : Ashton Court, Camden Mews, London NW1 **Client : Rydon Maintenance Limited**	**GROUND ENGINEERING LIMITED** Peterborough Tel : 01733 566566	**Project No. C14038C**

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

t: 01923 225404
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Analytical Report Number : 20-42782

Replaces Analytical Report Number: 20-42782, issue no. 1
Additional analysis undertaken.

Project / Site name:	Ashton Court, Camden Mews, London NW1	**Samples received on:**	20/11/2020
Your job number:	SW-C14038C	**Samples instructed on/ Analysis started on:**	20/11/2020
Your order number:		**Analysis completed by:**	07/12/2020
Report Issue Number:	2	**Report issued on:**	07/12/2020
Samples Analysed:	4 soil samples		

Signed: A. Czerwińska

Agnieszka Czerwińska
Technical Reviewer (Reporting 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: 20-42782
Project / Site name: Ashton Court, Camden Mews, London NW1

Lab Sample Number				1692012	1692013	1692014	1692015
Sample Reference				HA1	HA2	HA3	HA4
Sample Number				1	1	1	1
Depth (m)				0.10	0.00	0.05	0.10
Date Sampled				19/11/2020	19/11/2020	19/11/2020	19/11/2020
Time Taken				None Supplied	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	< 0.1
Moisture Content	%	0.01	NONE	13	15	19	18
Total mass of sample received	kg	0.001	NONE	1.2	1.2	1.2	1.2
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	-	Chrysotile
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	-	< 0.001
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	-	< 0.001
General Inorganics							
pH - Automated	pH Units	N/A	MCERTS	7.6	7.8	7.8	8.1
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1
Water Soluble Sulphate as SO4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	630	520	49	58
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.31	0.26	0.024	0.029
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	313	259	24.3	29.1
Organic Matter	%	0.1	MCERTS	4.4	5	5	4.7
Total Phenols							
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
Speciated PAHs							
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Total PAH							
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80	< 0.80	< 0.80	< 0.80

Analytical Report Number: 20-42782
Project / Site name: Ashton Court, Camden Mews, London NW1

Lab Sample Number				1692012	1692013	1692014	1692015
Sample Reference				HA1	HA2	HA3	HA4
Sample Number				1	1	1	1
Depth (m)				0.10	0.00	0.05	0.10
Date Sampled				19/11/2020	19/11/2020	19/11/2020	19/11/2020
Time Taken				None Supplied	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	21	19	13	13
Boron (water soluble)	mg/kg	0.2	MCERTS	1.8	1.9	1	1
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0
Chromium (III)	mg/kg	1	NONE	64	54	19	21
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	64	54	20	21
Copper (aqua regia extractable)	mg/kg	1	MCERTS	14	16	19	23
Lead (aqua regia extractable)	mg/kg	1	MCERTS	25	22	27	33
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	33	29	17	18
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	74	65	91	97
Monoaromatics & Oxygenates							
Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
Petroleum Hydrocarbons							
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	52	< 8.0	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	58	< 10	< 10
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10

U/S = Unsuitable Sample I/S = Insufficient Sample

Analytical Report Number: 20-42782
Project / Site name: Ashton Court, Camden Mews, London NW1
Your Order No:

Certificate of Analysis - Asbestos Quantification

Methods:

Qualitative Analysis

The samples were analysed qualitatively for asbestos by polarising light and dispersion staining as described by the Health and Safety Executive in HSG 248.

Quantitative Analysis

The analysis was carried out using our documented in-house method A006-PL based on HSE Contract Research Report No: 83/1996: Development and Validation of an analytical method to determine the amount of asbestos in soils and loose aggregates (Davies et al, 1996) and HSG 248. Our method includes initial examination of the entire representative sample, then fractionation and detailed analysis of each fraction, with quantification by hand picking and weighing.

The limit of detection (reporting limit) of this method is 0.001 %.

The method has been validated using samples of at least 100 g, results for samples smaller than this should be interpreted with caution.

Both Qualitative and Quantitative Analyses are UKAS accredited.

Sample Number	Sample ID	Sample Depth (m)	Sample Weight (g)	Asbestos Containing Material Types Detected (ACM)	PLM Results	Asbestos by hand picking/weighing (%)	Total % Asbestos in Sample
1692015	HA4	0.10	138	Loose Fibres	**Chrysotile**	< 0.001	**< 0.001**

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

Analytical Report Number : 20-42782
Project / Site name: Ashton Court, Camden Mews, London NW1

* 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 *
1692012	HA1	1	0.1	Brown sandy loam with gravel and vegetation.
1692013	HA2	1	0	Brown sandy loam with gravel and vegetation.
1692014	HA3	1	0.05	Brown sandy loam with gravel and vegetation.
1692015	HA4	1	0.1	Brown sandy loam with gravel and vegetation.

Analytical Report Number : 20-42782
Project / Site name: Ashton Court, Camden Mews, London NW1

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	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
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 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Free cyanide in soil	Determination of free cyanide 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
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	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.	In house method.	L009-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
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-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
Total cyanide in soil	Determination of total cyanide 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
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS
Asbestos Quantification - Gravimetric	Asbestos quantification by gravimetric method - in house method based on references.	HSE Report No: 83/1996, HSG 248, HSG 264 & SCA Blue Book (draft).	A006-PL	D	ISO 17025

Analytical Report Number : 20-42782
Project / Site name: Ashton Court, Camden Mews, London NW1

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Sulphate, water soluble, in soil	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-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.

APPENDIX 1

TOPSOIL SUPPLIER RESULTS

Freeland
HORTICULTURE LIMITED

Freeland Horticulture Ltd
Rosedale Nursery
College Road
Hextable
Kent
BR8 7LT

Attention : Philippa Lambourne

Our Ref: 0858-SA

26 August 2020

Dear Philippa

Topsoil Analysis Report : Bat & Ball Topsoil August 2020

We have completed the analysis of the topsoil sample recently taken from the above site and have the pleasure of reporting our findings. The purpose of the analysis was to determine the suitability of the topsoil for general landscaping purposes.

SOIL SAMPLING & EXAMINATION

At the time of our sampling visit the topsoil was stored in a stockpile. A series of 10 hand augered trial holes were constructed across the stockpile for the purpose of soil examination and sample collection. As the soil examination confirmed a consistent topsoil composition, the ten samples were combined together to form one composite sample for analysis purposes. The soil was described as a dark brown, very moist, friable *sandy loam* with a moderately developed, medium to coarse granular structure. The soil contained a low fraction of small stones and no deleterious materials (eg. building waste materials, glass, etc) or unusual odours (eg. hydrocarbons) were recorded.

LABORATORY ANALYSIS

The topsoil sample was submitted to a UKAS accredited laboratory for routine physical and chemical parameters to confirm the composition and fertility of the soil. The following parameters were determined:

- pH & electrical conductivity values;
- major plant nutrients (N, P, K, Mg) & organic matter content;
- particle size distribution and stone content;
- heavy metals & potentially toxic elements (As, Cd, Cr, Cu, Pb, Hg, Ni, Se, Zn, B);
- sulphate, sulphur, sulphide;
- total cyanide and total (mono) phenols;
- speciated PAHs (US EPA16);
- banded aromatic and aliphatic petroleum hydrocarbons (C_5-C_{35}).
- Asbestos.

The results are presented on the attached Certificate of Analysis and an interpretation of the results is given below.

COMMENTSpH & Electrical Conductivity (salinity) Values

The sample was alkaline in nature (pH 8.0) with a pH value that would be considered suitable for general landscaping purposes.

The electrical conductivity value using the soil:water extract was low (843µS/cm) indicating that soluble salts are not present at levels that would be harmful to plants.

Organic Matter & Nutrient Status

The sample contained adequate levels of organic matter and all major plant nutrients. No further additions of compost or fertiliser are required, or indeed recommended, for at least the first growing season.

Particle Size Distribution & Stone Content

The sample contained 82% sand and fell into the loamy *sand* texture class. This particle size distribution is considered suitable for a broad range of landscape applications, including tree and shrub planting, turfing and seeding.

The sample was free from stones of 50 mm and upwards in diameter and only contained a slight fraction of smaller stones (7.1%). As such, stones will not restrict the use of the soil for landscaping purposes.

Potential Contaminants

We are not aware of any specified contaminant levels set for the proposed end-use of this topsoil so the following comments are based on the Soil Guideline Values (SGVs) for residential end-use presented in the Contaminated Land Exposure Assessment (CLEA) Model (EA/DEFRA:2002). The SGVs currently only consider a limited range of parameters so where a potential contaminant is not covered by the CLEA Model other relevant schedules for contamination assessment, such as the Dutch Guidelines, and professional judgement have been used.

Of the potential contaminants determined, none was found at levels that would indicate significant contamination.

CONCLUSION

The purpose of the analysis was to determine the suitability of the topsoil for general landscaping purposes. From the soil examination and laboratory analysis, the soil is described as an alkaline, non-saline, loamy sand. The organic matter and nutrient levels are acceptable and no significant contamination was found with respect to the parameters determined. This soil would adhere to the BS3882 specification for 'multipurpose grade'.

To conclude, based on our findings, the topsoil would be considered well-suited to general landscaping purposes provided the physical condition of the soil is maintained.

We hope this report meets with your approval and provides the necessary information. Please do not hesitate to contact the undersigned if you have any queries or comments.

George Longmuir MSc Soil Sci. M.I Soil Sci.

Freeland
HORTICULTURE LIMITED

Client	Freeland Horticulture Ltd
Job Name	Topsoil Analysis
Site	Bat & Ball, Sevenoaks
Month/Year	August 20
Our Ref	0858-SA
Date	26 August 2020

		Composite sample
pH Value & Salinity		
pH value (1:2.5 soil/water ext)	units	8.0
Electrical Conductivity (1:2.5 soil/water ext)	µS/cm	843
Neutralising Value ($CaCO_3$ equivalent)	%	1.1
Neutralising Value (CaO equivalent)	%	<1
Organic Matter & Nutrient Status		
Organic Matter (LOI)	%	6.1
Organic Carbon (Derived)	%	3.5
Total Nitrogen	%	0.267
Carbon:Nitrogen Ratio	:1	13
Available Phosphorus	mg/l	62.2
Available Potassium	mg/l	1035
Available Magnesium	mg/l	180
Particle Size Analysis & Stones		
Clay (<0.002mm)	%	9
Silt (0.063-0.002mm)	%	9
Sand (2.0-0.063mm)	%	82
Texture Class	UK Class	LoamySand
Stones 2-20mm	% by DW	7.1
Stones 20-50mm	% by DW	0.0
Stones >50mm	% by DW	0.0
Potential Contaminants		
Total Arsenic (As)	mg/kg	13.0
Total Cadmium (Cd)	mg/kg	0.14
Total Chromium (Cr)	mg/kg	31.6
Hexavalent Chromium (CR^{VI})	mg/kg	0.4
Total Copper (Cu)	mg/kg	13.1
Total Lead (Pb)	mg/kg	18.5
Total Mercury (Hg)	mg/kg	<0.2
Total Nickel (Ni)	mg/kg	20.0
Total Selenium (Se)	mg/kg	0.14
Total Zinc (Zn)	mg/kg	60.3
Total Beryllium (Be)	mg/kg	<1
Total Barium (Ba)	mg/kg	26.5
Total Vanadium (V)	mg/kg	53.6
Hot Water Soluble Boron (B)	mg/kg	1.8
Total Cyanide (CN)	mg/kg	<1
Elemental Sulphur (S)	mg/kg	<5
Easily Liberated Sulphide (S^{2-})	mg/kg	<1
Water Soluble Sulphate (SO_4^{2-})	mg/l	152
Total Phenols Index	mg/kg	<1
Asbestos Screen	-	N.D.

Chain of Custody requires a Freeland Horticulture Delivery Ticket-01322 619161

Client	Freeland Horticulture Ltd
Job Name	Topsoil Analysis
Site	Bat & Ball, Sevenoaks
Month/Year	August 20
Our Ref	0858-SA
Date	26 August 2020

Polyaromatic Hydrocarbons

Naphthalene	mg/kg	<0.05
Acenaphthylene	mg/kg	<0.05
Acenaphthene	mg/kg	<0.05
Fluorene	mg/kg	<0.05
Phenanthrene	mg/kg	<0.1
Anthracene	mg/kg	<0.05
Fluoranthene	mg/kg	0.1
Pyrene	mg/kg	<0.1
Benzo[a]anthracene	mg/kg	<0.1
Chrysene	mg/kg	0.1
Benzo[b]fluoranthene	mg/kg	0.1
Benzo[k]fluoranthene	mg/kg	<0.1
Benzo[a]pyrene	mg/kg	<0.1
Indeno[1,2,3-cd]pyrene	mg/kg	<0.1
Dibenzo[a,h]anthracene	mg/kg	<0.1
Benzo[g,h,i]perylene	mg/kg	<0.1
Total PAHs sum US EPA 16	mg/kg	<1

Banded Petroleum Hydrocarbons

Aliphatic TPH >C_5-C_6	mg/kg	<0.2
Aliphatic TPH >C_6-C_8	mg/kg	<0.4
Aliphatic TPH >C_8-C_{10}	mg/kg	<4
Aliphatic TPH >C_{10}-C_{12}	mg/kg	<4
Aliphatic TPH >C_{12}-C_{16}	mg/kg	<4
Aliphatic TPH >C_{16}-C_{21}	mg/kg	<4
Aliphatic TPH >C_{21}-C_{35}	mg/kg	19.5
Aliphatic TPH >C_{35}-C_{44}	mg/kg	<12

Aromatic TPH >C_5-C_7	mg/kg	<0.02
Aromatic TPH >C_7-C_8	mg/kg	<0.02
Aromatic TPH >C_8-C_{10}	mg/kg	<0.02
Aromatic TPH >C_{10}-C_{12}	mg/kg	<4
Aromatic TPH >C_{12}-C_{16}	mg/kg	<4
Aromatic TPH >C_{16}-C_{21}	mg/kg	<4
Aromatic TPH >C_{21}-C_{35}	mg/kg	<9
Aromatic TPH >C_{35}-C_{44}	mg/kg	<0.2

Total Petroleum Hydrocarbons (C_5-C_{44})	mg/kg	<20

BTEX

Benzene	mg/kg	<0.02
Toluene	mg/kg	<0.2
Ethyl Benzene	mg/kg	<0.04
m- & p-Xylene	mg/kg	<0.2
o-Xylene	mg/kg	<0.1