FACTUAL SITE INVESTIGATION REPORT

At

Land at Branch Hill

On behalf of

Jon Sheaff & Associates

PROJECT REFERENCE: 20.1011

July 2020

constructiveevaluation
site investigation • building pathology

Factual Site Investigation Report

By:

Constructive Evaluation Ltd

Units 15-16, Ford Lane Business Park, Ford, Arundel, BN18 0UZ

Tel: 01243 533499

Email: info@celtduk.com

Report Author(s)		
Michael Emery **MSc BSc FGS IAEG** **(Geo-Environmental Consultant)**	Signature: 	Date: 16/7/2020

Report Checked & Approved by		
David Meredith **BSc FGS** **(Senior Engineering Geologist)**	Signature: 	Date: 16/7/2020

	Version 1	Version 2	Version 3
History			
Issued to			
Date			

Foreword

This report has been prepared by Constructive Evaluation Limited (CE) with all reasonable skill, care and diligence within the terms of the contract with the Client and should not be used in a different context. Unless specifically assigned or transferred within the terms of the agreement, CE asserts and retains all Copyright, and other intellectual Property Rights in and over the Report and its contents.

CONTENTS

FIGURES

APPENDICES

1.0 Introduction

In January 2020 Constructive Evaluation (CE) Limited was commissioned by Jon Sheaff and Associates to carry out a Site Investigation at Land at Branch Hill, NW3 7LT hereafter referred to as the "site".

The purposes of this investigation and report are to investigate the underlying ground conditions on site and to give an indication of whether a historical pond was infilled with imported clay.

Attention is drawn to the fact that whilst every effort has been made to ensure the accuracy of the data supplied and any analysis derived from it, there is a potential for variations in ground and groundwater conditions between and beyond the specific locations investigated. No liability can be accepted for any such variations. Furthermore, any recommendations are specific to the client's requirements as detailed herein and no liability will be accepted should these be used by third parties without prior consultation with Constructive Evaluation Ltd.

A desk study as outlined in BS5930 "Code of practice for site investigations" was not requested and therefore has not been carried out.

1.1 Site Proposal

It is understood that the proposed development is to create a pond on the site, in approximately the location of a historical pond thought to have been located in the north western portion of site.

1.2 Summary of Site Investigation

An outline of the intrusive works instructed are summarised below:

- **Thirteen (13No) windowless sampler boreholes to a maximum depth of 3mbgl.**
- **One (1No) laboratory analytical test for geo environmental parameters.**
- **One (1No) laboratory analytical test for pH and sulphate analysis.**
- **Associated geotechnical testing.**

2.0 Site Background

2.1 Published Geology

Reference to the publications of the British Geological Survey (BGS), indicate the site is underlain by bedrock of the Bagshot Formation. No recorded superficial deposits are recorded on site.

Bagshot Formation: Most of the Bagshot Formation is composed of pale yellow-brown to pale grey or white, locally orange or crimson, fine to coarse grained sand that is frequently micaceous and locally clayey, with sparse glauconite and sparse seams of gravel. The sands are commonly cross-bedded but some are laminated. Thin beds and lenses of laminated pale grey to white sandy or silty clay or clay ('pipe-clay') occurs sporadically, becoming thicker towards the top of the formation. A thick clay bed, the Swinley Clay Member, is included at the top. In places, there is a basal bed of gravelly coarse grained sand. There is a sparse fossil fauna of mostly indeterminate marine molluscs, with some indistinct plant remains, but mostly organic material has been destroyed by oxidation or dissolution.

The bedrock was formed approximately 48 to 56 million years ago in the Palaeogene Period in a local environment dominated by shallow seas. These sedimentary rocks are shallow marine in origin, and are detrital, comprising coarse to fine grained (locally with some carbonate content) forming interbedded sequences.

2.2 Physical Site Setting

At the time of investigation, the site comprised a grassed park surrounded by mature, largely deciduous trees of up to 20m in height. The site slopes towards the north west by approximately 10-12m, forming a hollow where anecdotal evidence indicates that a pond was present on site in the 19th century.

To the north of the site is West Heath Road followed by wooded park land, with residential properties of Branch Hill and Windmill Hill to the west and south respectively. Whitestone Pond is approximately 100m to the east of site.

The historical pond was recorded to be present in the lowest area of the site, in the north west.

3.0 Field Work

The following intrusive works as located in **Figure 2** were carried out over one day on the 25th June 2020, supervised by an Engineering Geologist from CE:

- **5No windowless sampler boreholes to 3.0mbgl.** (BH1, BH2, BH3, BH4 and BH6)
- **1No lightweight window sampler borehole to 3.0mbgl.** (BH8)
- **1No lightweight window sampler borehole to 2.5mbgl.** (BH5)
- **6No lightweight window sampler boreholes to 2.0mbgl.** (BH7, BH9, BH10, BH11, BH12 and BH13)

The final exploratory positions are provided in **Figure 2** with photographs of the site investigation can be found in **Appendix A**.

The ground investigation was undertaken in accordance with the scope of works agreed with our Client and in relation to statutory guidance including BS5930: 1999 Code of Practice for Site Investigations (Amendment 3: 2015) and BS10175: 2011+A1: 2013 Investigation of Potentially Contaminated Sites: Code of Practice.

3.1 Soil Sample Collection

All intrusive locations were logged, visual and/or olfactory evidence of contamination noted, and representative soil sample removed in accordance with current protocol for geotechnical and geo-environmental parameters.

4.0 Ground Conditions

4.1 Observed Stratigraphic Units

The following materials were encountered during the intrusive works;

Topsoil: Comprising brown to dark brown clayey SAND with rootlets was observed within all intrusive locations to depths between 0.2m and 0.4mbgl. This material was noted to contain some gravel content at most locations.

Made Ground: Comprising brown sandy gravelly CLAY containing red brick fragments and flint gravels was observed within BH1, BH2, BH3 and BH4 in the area assumed to be the infilled area of the old pond. This material was observed between maximal depths of 0.3m to 2.7mbgl, underlying the topsoil and overlying the clayey SAND in these locations.

Sandy Clay: Grey brown sandy CLAY was observed in BH9 between 1.0m and 1.7mbgl, due to the location of this borehole in comparison with historical mapping of the pond, this material has been inferred to represent historic pond infill.

Clayey Gravelly Sand: Orange brown, brown and grey brown clayey gravelly SAND was observed in BH5 to BH13 between maximal depths of 0.3m and 2.5mbgl. This material is likely representative of the Bagshot Formation and was noted to generally reduce in gravel content with depth. Any gravels present tended to be rounded.

Clayey Sand: Orange brown clayey SAND was observed within all intrusive locations apart from BH8. This material was observed to be the base of all boreholes in which it was recorded and also likely to be representative of the Bagshot Formation.

Reference should be made to the engineer's logs contained within **Appendix B** for a more detailed description.

4.2 Groundwater

Groundwater was not encountered during the site works; however, it should be noted that any groundwater would not necessarily be readily observed due to the short timescale and relatively impermeable clays. Furthermore, groundwater levels may vary both seasonally and in the long term. Anecdotal evidence indicates that the site is prone to seasonal surface water flooding during the winter months.

4.3 Field Evidence of Contamination

No visual or olfactory evidence of any gross contamination was observed during the site works.

5.0 Geotechnical Laboratory Testing

5.1 Natural Moisture Content and Atterberg Limits

Two (2No) samples of material were submitted for determination of their natural moisture content (NMC) and plasticity index (PI). These were selected from the cohesive made ground materials located within the site of the historical infilled pond.

Results are summarised in the table below.

Sample Location	Depth (mbgl)	Natural Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Modified Plasticity Index (%)	Volume Change Potential
BH3	2.0 – 3.0	19	38	24	14	Low
BH4	1.0 – 2.0	23.6	34	19	15	Low

Geotechnical laboratory results can be found in full in **Appendix C**.

5.2 Particle Size Distribution (PSD) Testing

Two (2No) samples of material were submitted for Particle Size Distribution (PSD) testing using the wet sieve method. Results are summarised in the table below.

Sample Location	Depth (mbgl)	Cobbles (%)	Gravels (%)	Sand (%)	Fines (%)
BH1	1.0 – 2.0	0	17	41	42
BH6	1.0 – 2.0	0	0	66	34

Geotechnical laboratory results can be found in full in **Appendix C**.

5.3 Sulphate And pH Analysis

One (1No) sample was submitted for determination of pH and water-soluble sulphate concentration.

Water soluble sulphate concentrations within the made ground soils of BH3 were found to be 23mg/l, with pH values of 6.1.

Water soluble sulphate concentrations within the natural soils of BH6 were found to be <10mg/l, with pH values of 5.5.

Analytical laboratory test results can be found in full in **Appendix D.**

6.0 Geo-Environmental Testing

6.1 Soil Analysis

One (1No) soil sample obtained from a depth of within WS1 was submitted to QTS Environmental, a UKAS and MCERTS accredited laboratory testing facility, for a screen of contamination testing.

Testing included an asbestos screen, heavy metals and hydrocarbons including speciated total petrol hydrocarbons (TPH LQM aromatic/aliphatic split), BTEX, MTBE and speciated polycyclic aromatic hydrocarbons (PAH), as well as a background suite of pH, SOM, total cyanide, and total phenols.

6.2 Screening Criteria

The results of this laboratory testing have been compared to published guidance criteria, widely referred to by consultants and Regulatory Authorities within the industry, and include the following:

- Published Land Quality Management (LQM) Suitable for Use Levels (S4UL) (LQM, 2015);
- As there is no UK GAC for Cyanide, the Dutch Intervention Value (DIV) will be adopted;
- As there is no UK GAC for Lead, the Category 4 Screening Level (C4SL) will be adopted (CL:AIRE, 2014);
- In the case of Asbestos and MTBE, the Detection Limits have been adopted as the GAC.

Comparisons were made against guidance criteria for the **'public open space park'** land use setting, based on the suspected end use of the site.

8.3 Soil Results

A summary of soil results is presented in the following paragraphs and tables, including further discussion.

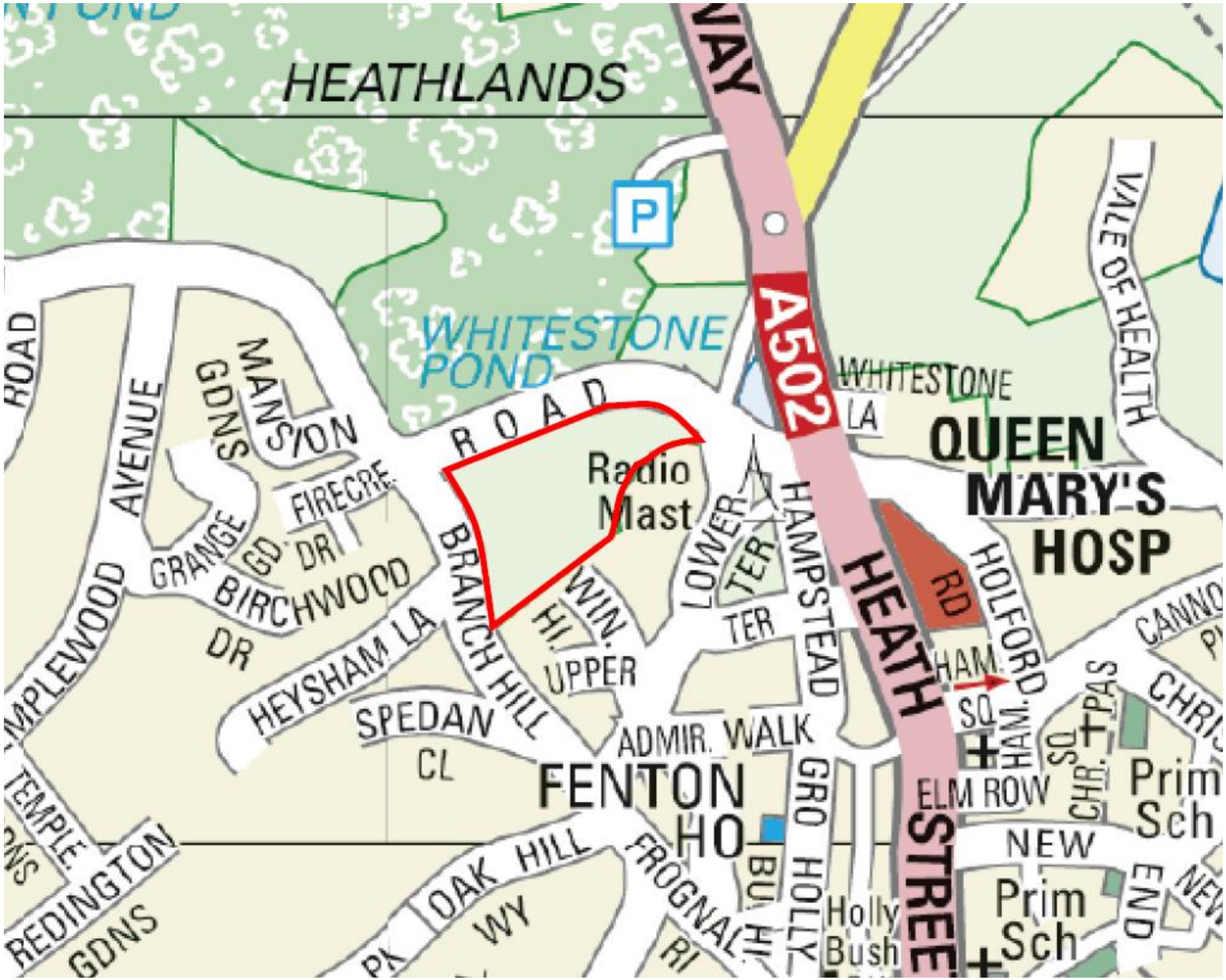
Determinand	GAC Public Open Space (Park)	Source	Results	Exceeded
Asbestos	*Present*	*CE*	*Absent*	-
Total Cyanide	*50*	*DIV*	*BDL*	-
Total Phenols	*760*	*LQM*	*BDL*	-
Arsenic	*170*	*LQM*	*8*	-
Cadmium	*532*	*LQM*	*BDL*	-
Chromium	*33000*	*LQM*	*35*	-
Copper	*44000*	*LQM*	*10*	-
Lead	*1400*	*C4SL*	*20*	-
Mercury	*240*	*LQM*	*BDL*	-
Nickel	*3400*	*LQM*	*5*	-
Selenium	*1800*	*LQM*	*BDL*	-
Zinc	*170000*	*LQM*	*28*	-
Naphthalene	*1200*	*LQM*	*BDL*	-
Acenaphthylene	*29000*	*LQM*	*BDL*	-
Acenaphthene	*29000*	*LQM*	*BDL*	-
Fluorene	*20000*	*LQM*	*BDL*	-
Phenanthrene	*6200*	*LQM*	*BDL*	-
Anthracene	*150000*	*LQM*	*BDL*	-
Fluoranthene	*6300*	*LQM*	*BDL*	-
Pyrene	*15000*	*LQM*	*BDL*	-
Benzo(a)anthracene	*49*	*LQM*	*BDL*	-
Chrysene	*93*	*LQM*	*BDL*	-
Benzo(b)fluoranthene	*13*	*LQM*	*BDL*	-
Benzo(k)fluoranthene	*370*	*LQM*	*BDL*	-
Benzo(a)pyrene	*11*	*LQM*	*BDL*	-
Indeno(1,2,3-cd)pyrene	*150*	*LQM*	*BDL*	-
Dibenz(a,h)anthracene	*1.1*	*LQM*	*BDL*	-
Benzo(ghi)perylene	*140*	*LQM*	*BDL*	-
Benzene	*90*	*LQM*	*BDL*	-
Toluene	*87000*	*LQM*	*BDL*	-
Ethylbenzene	*17000*	*LQM*	*BDL*	-
Total Xylenes	*17000*	*LQM*	*BDL*	-
MTBE	*DL*	*CE*	*BDL*	-
Aliphatic >C5-C6	*95000*	*LQM*	*BDL*	-
Aliphatic >C6-C8	*150000*	*LQM*	*BDL*	-
Aliphatic >C8-C10	*14000*	*LQM*	*BDL*	-

Aliphatic >C10-C12	*21000*	*LQM*	*BDL*	-
Aliphatic >C12-C16	*25000*	*LQM*	*BDL*	-
Aliphatic >C16-C35	*450000*	*LQM*	*BDL*	-
Aliphatic >C35-C44	*450000*	*LQM*	*BDL*	-
Aromatic >C5-C7	*76000*	*LQM*	*BDL*	-
Aromatic >C7-C8	*87000*	*LQM*	*BDL*	-
Aromatic >C8-C10	*7200*	*LQM*	*BDL*	-
Aromatic >C10-C12	*9200*	*LQM*	*BDL*	-
Aromatic >C12-C16	*10000*	*LQM*	*BDL*	-
Aromatic >C16-C21	*7600*	*LQM*	*BDL*	-
Aromatic >C21-C35	*7800*	*LQM*	*BDL*	-
Aromatic >C35-C44	*7800*	*LQM*	*BDL*	-

Full laboratory certificates can be viewed in **Appendix D.**

Figure 1 – Site Location Plan

Figure 2 – Site Investigation Plan



Notes:

1. Do not scale from this drawing.
2. All dimensions must be checked on site prior to commencement of work.
3. Where applicable this drawing is to be read in conjunction with other consultants drawings.
4. This drawing is the copyright of Constructive Evaluation Ltd.

Drawing Title:

Site Location Plan

Project Reference:

20.1011

Site Name:

Branch Hill

Revision: 0
Drawn by: ME
Scale: Not to Scale

constructiveevaluation
site investigation • building pathology

Notes:
1. Do not scale from this drawing.
2. All dimensions must be checked on site prior to commencement of work.
3. Where applicable this drawing is to be read in conjunction with other consultants drawings.
4. This drawing is the copyright of Constructive Evaluation Ltd.

WS

Drawing Title:

Site Investigation Plan

Project Reference:

20.1011

Site Name:

Branch Hill

Revision: 0
Drawn by: ME
Scale: Not to Scale

constructiveevaluation
site investigation • building pathology

APPENDICES

APPENDIX A

Site Investigation Photographs

Investigation Photographs

Project Ref: 20.1011

Site Name: Branch Hill

1.

2.

3.

4.

1) Area of Former Pond
2) Overview of Site
3) Window Sampling Rig at BH4
4) Hand Held Window Sampling at BH11

APPENDIX B

Stratigraphic Logs

constructiveevaluation
site investigation ● building pathology

Borehole Log

Borehole No.
BH1
Sheet 1 of 1

Project Name:	Branch Hill	Project No. 20.1011	Co-ords:	526065E - 186239N	Hole Type WS
Location:	Hampstead		Level:	118.00	Scale 1:50
Client:	Jon Sheaff & Associates		Dates:	25/06/2020	Logged By ME

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.30	117.70		Brown clayey SAND with rootlets. Sand is fine to medium. (TOPSOIL)
		1.00 - 2.00	C					Grey brown sandy gravelly CLAY with occasional dark brown mottling. Sand is fine to medium. Gravels are fine to coarse sub-angular and rounded flint and red brick fragments. (MADE GROUND)
					2.40	115.60		Orange brown clayey SAND. Sand is fine to medium. (POSSIBLE BAGSHOT FORMATION)
					3.00	115.00		End of Borehole at 3.000m

Remarks
No groundwater encountered.

AGS

constructiveevaluation
site investigation ● building pathology

Borehole Log

Borehole No.
BH2
Sheet 1 of 1

Project Name:	Branch Hill	Project No. 20.1011	Co-ords:	526061E - 186234N	Hole Type WS
Location:	Hampstead		Level:	118.00	Scale 1:50
Client:	Jon Sheaff & Associates		Dates:	25/06/2020	Logged By ME

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.40 - 0.50	ES		0.30	117.70		Brown clayey SAND with rootlets. Sand is fine to medium. (TOPSOIL)
								Dark grey sandy gravelly CLAY with occasional brown mottling. Sand is fine to medium. Gravels are medium to coarse sub-angular and rounded flint and red brick fragments. (MADE GROUND) ...red brick fragments no longer observed from 1.3mbgl.
					2.70	115.30		Orange brown clayey SAND. Sand is fine to medium. (POSSIBLE BAGSHOT FORMATION)
					3.00	115.00		End of Borehole at 3.000m

Remarks
No groundwater encountered.

AGS

constructiveevaluation
site investigation ● building pathology

Borehole Log

Borehole No.
BH3
Sheet 1 of 1

Project Name:	Branch Hill	Project No. 20.1011	Co-ords:	526065E - 186235N	Hole Type WS
Location:	Hampstead		Level:	118.00	Scale 1:50
Client:	Jon Sheaff & Associates		Dates:	25/06/2020	Logged By ME

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.60 - 0.70	ES		0.30	117.70		Brown clayey SAND with rootlets. Sand is fine to medium. (TOPSOIL)
								Grey brown sandy gravelly CLAY. Sand is fine to medium. Gravels are medium to coarse sub-angular and rounded flint and red brick fragments. (MADE GROUND)
					2.40	115.60		Orange brown clayey SAND. Sand is fine to medium. (POSSIBLE BAGSHOT FORMATION)
					3.00	115.00		End of Borehole at 3.000m

1 2 3 4 5 6 7 8 9 10

Remarks
No groundwater encountered.

AGS

constructiveevaluation
site investigation ● building pathology

Borehole Log

Borehole No.
BH4
Sheet 1 of 1

Project Name:	Branch Hill	Project No. 20.1011	Co-ords:	526072E - 186237N	Hole Type WS
Location:	Hampstead		Level:	118.00	Scale 1:50
Client:	Jon Sheaff & Associates		Dates:	25/06/2020	Logged By ME

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.30	117.70		Brown clayey SAND with rootlets. Sand is fine to medium. (TOPSOIL)
		1.00 - 2.00	C					Grey brown sandy gravelly CLAY. Sand is fine to medium. Gravels are medium to coarse sub-angular and rounded flint and red brick fragments. (MADE GROUND)
					2.50	115.50		Orange brown clayey SAND. Sand is fine to coarse. (POSSIBLE BAGSHOT FORMATION)
					3.00	115.00		End of Borehole at 3.000m

1 2 3 4 5 6 7 8 9 10

Remarks
No groundwater encountered.

AGS

constructiveevaluation
site investigation ● building pathology

Borehole Log

Borehole No.
BH5
Sheet 1 of 1

Project Name:	Branch Hill	Project No. 20.1011	Co-ords:	526066E - 186216N	Hole Type WS
Location:	Hampstead		Level:	119.00	Scale 1:50
Client:	Jon Sheaff & Associates		Dates:	25/06/2020	Logged By ME

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.20	118.80		Brown clayey SAND with rootlets. Sand is fine to medium. (TOPSOIL)
					0.80	118.20		Grey brown clayey slightly gravelly SAND with occasional orange mottling. Sand is fine to coarse. Gravels are medium, sub-angular to rounded flints. (POSSIBLE BAGSHOT FORMATION)
					1.40	117.60		Brown clayey SAND with occasional grey mottling. Sand is fine to coarse. (POSSIBLE BAGSHOT FORMATION)
		2.00 - 3.00	C					Orange brown clayey SAND. Sand is fine to coarse. (POSSIBLE BAGSHOT FORMATION)
					2.50	116.50		End of Borehole at 2.500m

Remarks

Lightweight window sampler refused at 2.5mbgl.
No groundwater encountered.

AGS

constructiveevaluation
site investigation ● building pathology

Borehole Log

Borehole No.
BH6
Sheet 1 of 1

Project Name:	Branch Hill	Project No. 20.1011	Co-ords:	526075E - 186226N	Hole Type WS
Location:	Hampstead		Level:	119.00	Scale 1:50
Client:	Jon Sheaff & Associates		Dates:	25/06/2020	Logged By ME

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.50 - 0.60	ES		0.30	118.70		Brown clayey SAND with rootlets. Sand is fine to medium. (TOPSOIL)
		1.00 - 2.00	C					Grey brown clayey slightly gravelly SAND with occasional orange mottling. Sand is fine to coarse. Gravels are medium, sub-angular to rounded flints. (POSSIBLE BAGSHOT FORMATION)
					2.50	116.50		Orange brown clayey SAND. Sand is fine to coarse. (POSSIBLE BAGSHOT FORMATION)
					3.00	116.00		End of Borehole at 3.000m

Remarks
No groundwater encountered.

AGS

constructiveevaluation
site investigation ● building pathology

Borehole Log

Borehole No.
BH7
Sheet 1 of 1

Project Name:	Branch Hill	Project No. 20.1011	Co-ords:	526089E - 186223N	Hole Type WS
Location:	Hampstead		Level:	120.00	Scale 1:50
Client:	Jon Sheaff & Associates		Dates:	25/06/2020	Logged By ME

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.40	119.60		Brown clayey SAND with rootlets. Sand is fine to medium. (TOPSOIL)
					1.00	119.00		Orange brown clayey slightly gravelly SAND. Sand is fine to coarse. Gravels are medium, sub-angular to rounded flints. (POSSIBLE BAGSHOT FORMATION)
					2.00	118.00		Orange brown clayey SAND. Sand is fine to medium. (POSSIBLE BAGSHOT FORMATION)
								End of Borehole at 2.000m

Remarks
No groundwater encountered.

AGS

constructiveevaluation
site investigation ● building pathology

Borehole Log

Borehole No.
BH8
Sheet 1 of 1

Project Name:	Branch Hill	Project No. 20.1011	Co-ords:	526089E - 186209N	Hole Type WS
Location:	Hampstead		Level:	122.00	Scale 1:50
Client:	Jon Sheaff & Associates		Dates:	25/06/2020	Logged By ME

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.30	121.70		Brown clayey SAND with rootlets. Sand is fine to medium. (TOPSOIL)
								Grey brown clayey gravelly SAND with occasional orange mottling. Sand is fine to coarse. Gravels are medium, sub-angular to rounded flints. (POSSIBLE BAGSHOT FORMATION)
					2.00	120.00		End of Borehole at 2.000m

Remarks
No groundwater encountered.

AGS

constructiveevaluation
site investigation ● building pathology

Borehole Log

Borehole No.
BH9
Sheet 1 of 1

Project Name:	Branch Hill	Project No. 20.1011	Co-ords:	526108E - 186249N	Hole Type WS
Location:	Hampstead		Level:	120.00	Scale 1:50
Client:	Jon Sheaff & Associates		Dates:	25/06/2020	Logged By ME

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.40	119.60		Brown clayey SAND with rootlets. Sand is fine to medium. (TOPSOIL)
					1.00	119.00		Orange brown clayey slightly gravelly SAND with rare grey mottling. Sand is fine to coarse. Gravels are fine to coarse, sub-angular to rounded flints. (POSSIBLE BAGSHOT FORMATION)
					1.70	118.30		Grey brown sandy CLAY. Sand is fine to medium. (POSSIBLE MADE GROUND / FILL)
					2.00	118.00		Orange brown clayey SAND. Sand is fine to medium. (POSSIBLE BAGSHOT FORMATION)
								End of Borehole at 2.000m

Remarks
No groundwater encountered.

AGS

constructiveevaluation
site investigation ● building pathology

Borehole Log

Borehole No.
BH10
Sheet 1 of 1

Project Name:	Branch Hill	Project No. 20.1011	Co-ords:	526158E - 186272N	Hole Type WS
Location:	Hampstead		Level:	123.00	Scale 1:50
Client:	Jon Sheaff & Associates		Dates:	25/06/2020	Logged By ME

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.40 - 0.50	ES		0.30	122.70		Brown clayey SAND with rootlets. Sand is fine to medium. (Topsoil)
					1.00	122.00		Orange brown clayey slightly gravelly SAND. Sand is fine to coarse. Gravels are medium, sub-angular to rounded flints. (POSSIBLE BAGSHOT FORMATION)
					2.00	121.00		Orange brown clayey SAND. Sand is fine to medium. (POSSIBLE BAGSHOT FORMATION)
								End of Borehole at 2.000m

Remarks
No groundwater encountered.

AGS

constructiveevaluation
site investigation ● building pathology

Borehole Log

Borehole No.
BH11
Sheet 1 of 1

Project Name:	Branch Hill	Project No. 20.1011	Co-ords:	526129E - 186244N	Hole Type WS
Location:	Hampstead		Level:	121.00	Scale 1:50
Client:	Jon Sheaff & Associates		Dates:	25/06/2020	Logged By ME

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.30	120.70		Brown clayey SAND with rootlets. Sand is fine to medium. (TOPSOIL)
					0.60	120.40		Brown clayey gravelly SAND. Sand is fine to medium. Gravels are fine to medium sub-angular to rounded flints. (POSSIBLE BAGSHOT FORMATION)
								Orange brown clayey SAND. Sand is fine to medium. (POSSIBLE BAGSHOT FORMATION)
					2.00	119.00		End of Borehole at 2.000m

Remarks
No groundwater encountered.

AGS

constructiveevaluation
site investigation ● building pathology

Borehole Log

Borehole No.
BH12
Sheet 1 of 1

Project Name:	Branch Hill	Project No. 20.1011	Co-ords:	526142E - 186226N	Hole Type WS
Location:	Hampstead		Level:	127.00	Scale 1:50
Client:	Jon Sheaff & Associates		Dates:	25/06/2020	Logged By ME

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.30	126.70		Dark brown clayey SAND with rootlets. Sand is fine to medium. (TOPSOIL)
					0.60	126.40		Brown clayey gravelly SAND. Sand is fine to medium. Gravels are fine to medium sub-angular to rounded flints. (POSSIBLE BAGSHOT FORMATION)
								Orange brown clayey SAND. Sand is fine to medium. (POSSIBLE BAGSHOT FORMATION)
					2.00	125.00		End of Borehole at 2.000m

1 2 3 4 5 6 7 8 9 10

Remarks
No groundwater encountered.

AGS

constructiveevaluation
site investigation ● building pathology

Borehole Log

Borehole No.
BH13
Sheet 1 of 1

Project Name:	Branch Hill	Project No. 20.1011	Co-ords:	526121E - 186209N	Hole Type WS
Location:	Hampstead		Level:	128.00	Scale 1:50
Client:	Jon Sheaff & Associates		Dates:	25/06/2020	Logged By ME

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.30	127.70		Brown clayey SAND with rootlets. Sand is fine to medium. (TOPSOIL)
					1.00	127.00		Grey brown clayey gravelly SAND. Sand is fine to medium. Gravels are fine to coarse sub-angular to rounded flints. (POSSIBLE BAGSHOT FORMATION)
					2.00	126.00		Orange brown clayey SAND. Sand is fine to medium. (POSSIBLE BAGSHOT FORMATION)
								End of Borehole at 2.000m

Remarks
No groundwater encountered.

AGS

APPENDIX C

Geotechnical Laboratory Testing

BS EN ISO 17892-12 : 2018

SUMMARY OF LIQUID AND PLASTIC LIMIT TESTS

Location	Depth m	Sample Ref	Sample Type	Description	Water Content BS EN ISO 17892-1 : 2014 %	Liquid Limit %	Plastic Limit %	Plasticity Index %	Percentage Passing 425µm %	Atterberg Classification	Test Type	Sample Condition
BH3	2.00	2	C	Brown and greyish brown fine sandy CLAY.	19.0	38	24	14	100	CI	1	1
BH4	1.00	3	C	Brown mottled grey fine sandy CLAY.	23.6	34	19	15	100	CL	1	1

Test Type:
1 - 1 point 80g / 30° fall cone method.
2 - 4 point 80g / 30° fall cone method.
3 - Non plastic determination.

Sample condition:
1 - As Received
2 - Air Dried
3 - Washed & Air Dried

Checked and Approved by:

S Burke

S Burke - Senior Technician
16/07/2020

Project Number:

GEO / 31335

Project Name:

BRANCH HILL
20.1011

GEOLABS

UKAS TESTING 1982

Client : Constructive Evaluation Limited, Unit15/16 Ford Lane Industrial Estate, Ford Lane, Ford, Arundel, West Sussex, BN18 0UZ (Ref 1594889285)

BS EN ISO 17892-4 : 2016

PARTICLE SIZE DISTRIBUTION

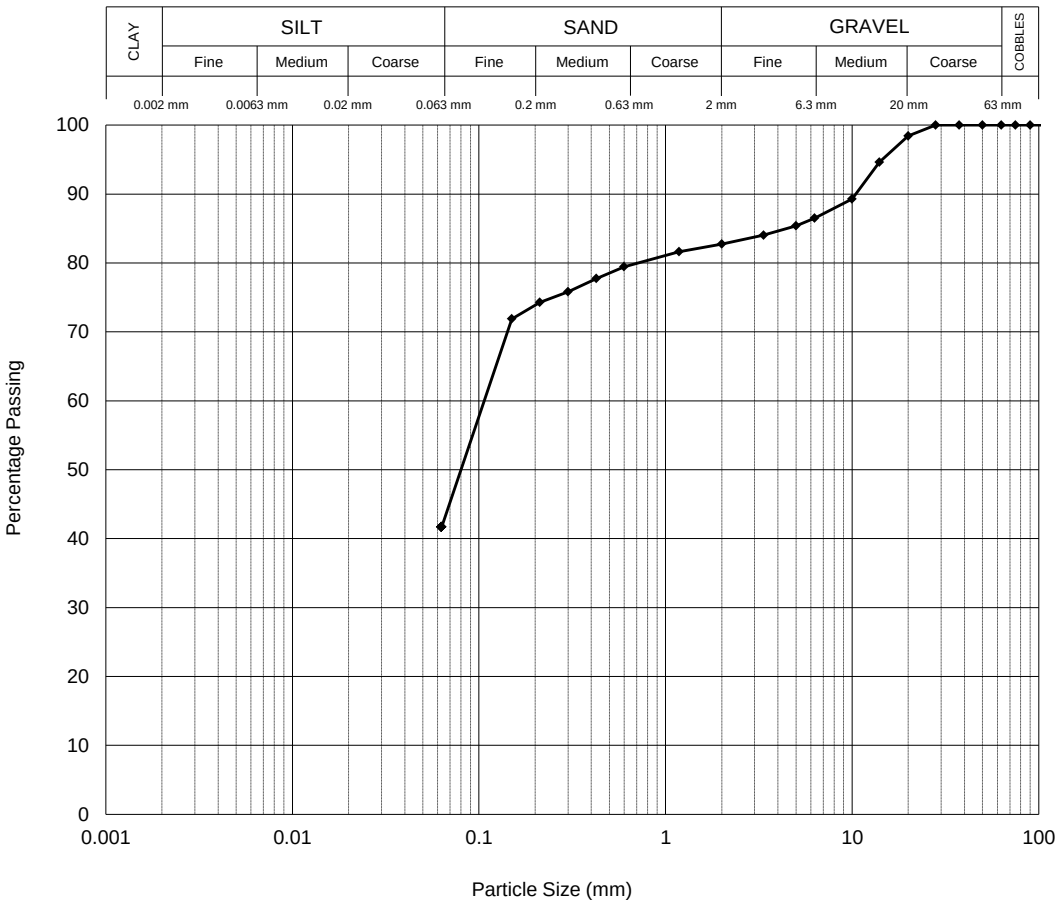
BH / TP No.	BH1
Sample Ref	1
Depth (m)	1.00
Sample Type	C

Description

Bluish grey mottled brownish grey slightly gravelly fine sandy SILT.

BS EN ISO 17892-4 : 2016 : Clause 5.2 - Wet Sieve

Sieve	
Size	% Pass
200.0 mm	100
125.0 mm	100
90.0 mm	100
75.0 mm	100
63.0 mm	100
50.0 mm	100
37.5 mm	100
28.0 mm	100
20.0 mm	98
14.0 mm	95
10.0 mm	89
6.30 mm	86
5.00 mm	85
3.35 mm	84
2.00 mm	83
1.18 mm	82
600 µm	79
425 µm	78
300 µm	76
212 µm	74
150 µm	72
63 µm	42



Particle Proportions	
Cobbles	0
Gravel	17
Sand	41
Silt & Clay	42

Processed by SB
Checked and Approved by

S Burke

S Burke - Senior Technician
16/07/2020

Project Number:

GEO / 31335

Project Name:

BRANCH HILL
20.1011

GEOLABS

UKAS TESTING 1982

BS EN ISO 17892-4 : 2016

PARTICLE SIZE DISTRIBUTION

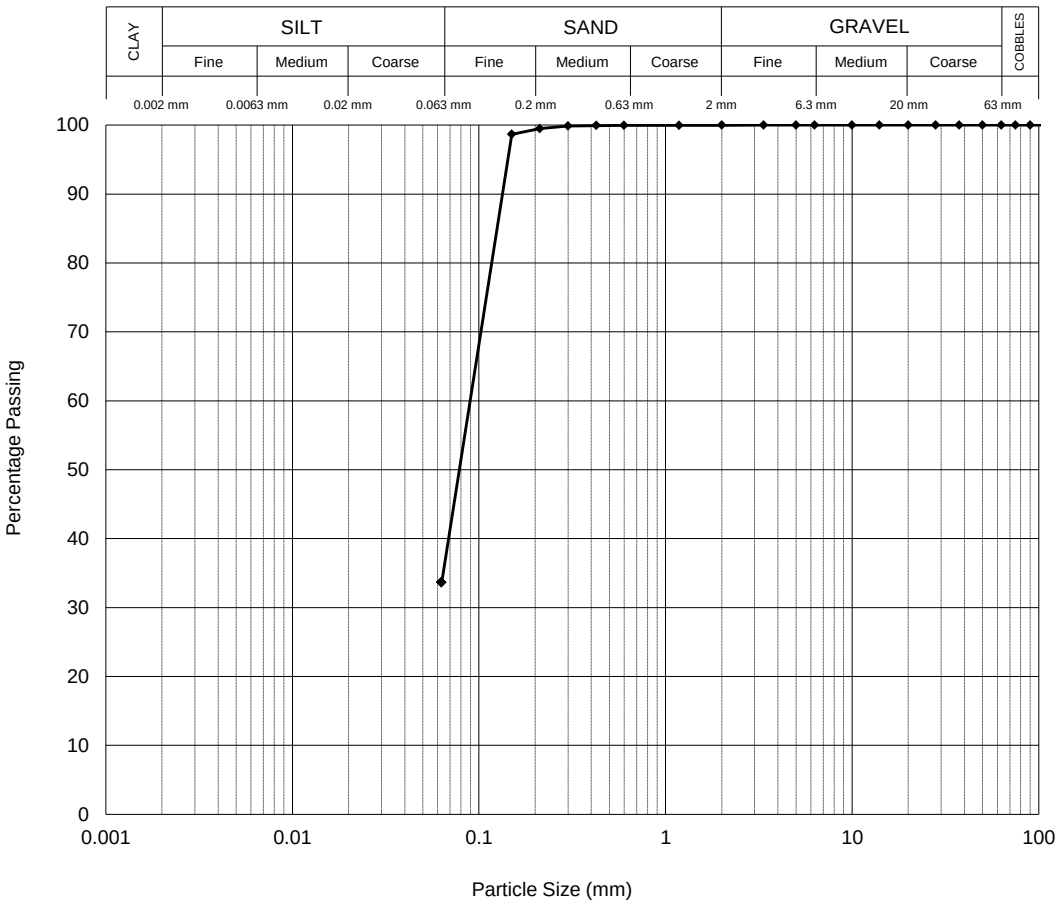
BH / TP No.	BH6
Sample Ref	4
Depth (m)	1.00
Sample Type	C

Description

Orange brown and grey clayey silty fine SAND.

BS EN ISO 17892-4 : 2016 : Clause 5.2 - Wet Sieve

Sieve	
Size	% Pass
200.0 mm	100
125.0 mm	100
90.0 mm	100
75.0 mm	100
63.0 mm	100
50.0 mm	100
37.5 mm	100
28.0 mm	100
20.0 mm	100
14.0 mm	100
10.0 mm	100
6.30 mm	100
5.00 mm	100
3.35 mm	100
2.00 mm	100
1.18 mm	100
600 µm	100
425 µm	100
300 µm	100
212 µm	100
150 µm	99
63 µm	34



Particle Proportions	
Cobbles	0
Gravel	0
Sand	66
Silt & Clay	34

Processed by SB
Checked and Approved by

S Burke

S Burke - Senior Technician
16/07/2020

Project Number:

GEO / 31335

Project Name:

BRANCH HILL
20.1011

GEOLABS

UKAS TESTING 1982

APPENDIX D

Analytical Laboratory Testing

Michael Emery
Constructive Evaluation Ltd
Unit 15 & 16
Ford Lane Business
Ford Lane
Ford
Arundel
BN18 0UZ

DETS Ltd
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: 01622 850410

DETS Report No: 20-07023

Site Reference:	Branch Hill
Project / Job Ref:	20.1011
Order No:	None Supplied
Sample Receipt Date:	30/06/2020
Sample Scheduled Date:	30/06/2020
Report Issue Number:	1
Reporting Date:	06/07/2020

Authorised by:

Kevin Old
General Manager

Dates of laboratory activities for each tested analyte are available upon request.

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

4480

Soil Analysis Certificate						
DETS Report No: 20-07023	**Date Sampled**	25/06/20	25/06/20			
Constructive Evaluation Ltd	**Time Sampled**	None Supplied	None Supplied			
Site Reference: Branch Hill	**TP / BH No**	BH3	BH6			
Project / Job Ref: 20.1011	**Additional Refs**	6	7			
Order No: None Supplied	**Depth (m)**	0.40	0.50			
Reporting Date: 06/07/2020	**DETS Sample No**	483757	483758			

Determinand	Unit	RL	Accreditation					
Asbestos Screen (S)	N/a	N/a	ISO17025	Not Detected				
pH	pH Units	N/a	MCERTS	6.1	5.5			
Total Cyanide	mg/kg	< 2	NONE	< 2				
W/S Sulphate as SO_4 (2:1)	mg/l	< 10	MCERTS	23	< 10			
W/S Sulphate as SO_4 (2:1)	g/l	< 0.01	MCERTS	0.02	< 0.01			
Organic Matter	%	< 0.1	MCERTS	2				
Arsenic (As)	mg/kg	< 2	MCERTS	8				
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2				
Chromium (Cr)	mg/kg	< 2	MCERTS	35				
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2				
Copper (Cu)	mg/kg	< 4	MCERTS	10				
Lead (Pb)	mg/kg	< 3	MCERTS	20				
Mercury (Hg)	mg/kg	< 1	MCERTS	< 1				
Nickel (Ni)	mg/kg	< 3	MCERTS	5				
Selenium (Se)	mg/kg	< 2	MCERTS	< 3				
Zinc (Zn)	mg/kg	< 3	MCERTS	28				
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2				
TPH - Aliphatic >C35 - C40	mg/kg	< 10	NONE	< 10				
TPH - Aromatic >C35 - C40	mg/kg	< 10	NONE	< 10				

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Samples Descriptions page describes if the test is performed on the dried or as-received portion
Subcontracted analysis (S)

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

4480

Soil Analysis Certificate - Speciated PAHs						
DETS Report No: 20-07023	**Date Sampled**	25/06/20				
Constructive Evaluation Ltd	**Time Sampled**	None Supplied				
Site Reference: Branch Hill	**TP / BH No**	BH3				
Project / Job Ref: 20.1011	**Additional Refs**	6				
Order No: None Supplied	**Depth (m)**	0.40				
Reporting Date: 06/07/2020	**DETS Sample No**	483757				

Determinand	Unit	RL	Accreditation					
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1				
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1				
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1				
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1				
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1				
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1				
Fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1				
Pyrene	mg/kg	< 0.1	MCERTS	< 0.1				
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	< 0.1				
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1				
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1				
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1				
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	< 0.1				
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1				
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1				
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1				
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	< 1.6				

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - TPH LQM Banded						
DETS Report No: 20-07023	**Date Sampled**	25/06/20				
Constructive Evaluation Ltd	**Time Sampled**	None Supplied				
Site Reference: Branch Hill	**TP / BH No**	BH3				
Project / Job Ref: 20.1011	**Additional Refs**	6				
Order No: None Supplied	**Depth (m)**	0.40				
Reporting Date: 06/07/2020	**DETS Sample No**	483757				

Determinand	Unit	RL	Accreditation					
Aliphatic >C5 - C6	mg/kg	< 0.01	NONE	< 0.01				
Aliphatic >C6 - C8	mg/kg	< 0.05	NONE	< 0.05				
Aliphatic >C8 - C10	mg/kg	< 2	MCERTS	< 2				
Aliphatic >C10 - C12	mg/kg	< 2	MCERTS	< 2				
Aliphatic >C12 - C16	mg/kg	< 3	MCERTS	< 3				
Aliphatic >C16 - C35	mg/kg	< 10	MCERTS	< 10				
Aliphatic >C35 - C44	mg/kg	< 10	NONE	< 10				
Aliphatic (C5 - C44)	mg/kg	< 30	NONE	< 30				
Aromatic >C5 - C7	mg/kg	< 0.01	NONE	< 0.01				
Aromatic >C7 - C8	mg/kg	< 0.05	NONE	< 0.05				
Aromatic >C8 - C10	mg/kg	< 2	MCERTS	< 2				
Aromatic >C10 - C12	mg/kg	< 2	MCERTS	< 2				
Aromatic >C12 - C16	mg/kg	< 2	MCERTS	< 2				
Aromatic >C16 - C21	mg/kg	< 3	MCERTS	< 3				
Aromatic >C21 - C35	mg/kg	< 10	MCERTS	< 10				
Aromatic >C35 - C44	mg/kg	< 10	NONE	< 10				
Aromatic (>C5 - C44)	mg/kg	< 30	NONE	< 30				
Total >C5 - C44	mg/kg	< 60	NONE	< 60				

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - BTEX / MTBE						
DETS Report No: 20-07023	**Date Sampled**	25/06/20				
Constructive Evaluation Ltd	**Time Sampled**	None Supplied				
Site Reference: Branch Hill	**TP / BH No**	BH3				
Project / Job Ref: 20.1011	**Additional Refs**	6				
Order No: None Supplied	**Depth (m)**	0.40				
Reporting Date: 06/07/2020	**DETS Sample No**	483757				

Determinand	Unit	RL	Accreditation					
Benzene	ug/kg	< 2	MCERTS	< 2				
Toluene	ug/kg	< 5	MCERTS	< 5				
Ethylbenzene	ug/kg	< 2	MCERTS	< 2				
p & m-xylene	ug/kg	< 2	MCERTS	< 2				
o-xylene	ug/kg	< 2	MCERTS	< 2				
MTBE	ug/kg	< 5	MCERTS	< 5				

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

4480

Soil Analysis Certificate - Sample Descriptions	
DETS Report No: 20-07023	
Constructive Evaluation Ltd	
Site Reference: Branch Hill	
Project / Job Ref: 20.1011	
Order No: None Supplied	
Reporting Date: 06/07/2020	

DETS Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
483757	BH3	6	0.40	12.3	Brown loamy sand
483758	BH6	7	0.50	10.7	Brown sandy clay

Moisture content is part of procedure E003 & is not an accredited test
Insufficient Sample I/S
Unsuitable Sample U/S

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

4480

Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 20-07023
Constructive Evaluation Ltd
Site Reference: Branch Hill
Project / Job Ref: 20.1011
Order No: None Supplied
Reporting Date: 06/07/2020

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 – C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried
AR As Received

APPENDIX E

Report Terms and Conditions

Trading Terms

Unless specifically stated within the tender/quotation or unless identified within the introduction to this report it is confirmed that this report has been compiled wholly in accord with Constructive Evaluation Limited's terms of engagement. This report is provided for sole use by the Client and is confidential to them. No responsibility whatsoever for the contents of the report will be accepted to anyone other than the Client.

Copyright

Copyright of this report subsists with the originator. Prior written permission must be obtained for any third party to reproduce, store in a retrieval system or transmit in any form of by any means whatsoever, all or part of this report. The copyright of written materials supplied shall remain the property of Constructive Evaluation Limited but with a royalty-free perpetual licence, granted to the Client on payment in full of any outstanding monies.

Context

This report is written in the context of an agreed scope of work between Constructive Evaluation Limited and the Client and should not be used in a different context. In light of additional information becoming available, improved practices and changes in legislation amendment or re-interpretation of the report in whole or part may be necessary after its original submission.

Professional Interpretation

The recommendations made and opinions expressed in the report are based on the conditions revealed by the site works together with an assessment of the data from the insitu and laboratory testing or in respect of the desktop reports. No responsibility can be accepted for conditions that have not been revealed by the research, site works and testing.

The Client is advised that the conditions observed on site by Constructive Evaluation Limited at the time of any site survey may be subject to change. Certain indicators of the presence of hazardous substances may have been latent at the time of the most recent site reconnaissance and they may subsequently have become evident. It is not possible to assess areas which are inaccessible or where access is not granted and CE accept no liability for risks subsequently identified therein.

The conceptual model, Risk assessment and sampling regime has been formulated in accordance with current UK guidance at time of production based upon the relevant information gained from Phase 1 and Phase 2 investigations. While the model and assessment offer opinions and interpretations of these guidelines, the comments made are for guidance only and no liability can be accepted for their accuracy. It is possible that aspects of desktop study may need to be altered to conform to the requirements of the statutory regulatory bodies.

Intrusive Field Operations

The data collected through direct operations in the production of this report has been so obtained, unless directly otherwise stated, in accordance with current UK guidance, law or accepted industry practice, including but not limited to: BS.5930: 1990 Code of Practice for Site Investigations (Amendment 2: 2010), BS 10175:2011+A1:2013 Investigations into Potentially Contaminated Sites, and BS.8576:2013 Guidance on Investigations for Ground Gas – Permanent Gases and Volatile Organic Compounds. Exact exploratory locations will depend upon access conditions, site use and plant capability, CE do not accept liability for issues arising from material identified between or outside of the area of exploratory locations.

Laboratory Testing

Unless stated otherwise within the text, all geotechnical and material laboratory tests have been performed in accordance with the relevant British Standard Documents. Laboratory testing for contaminated land assessment is completed under the UKAS / MCERTS accreditation schemes, unless identified as otherwise in the report.

Human Health Risk Assessment Criteria

The Environment Agency has recently undertaken revision of the Soil Guideline Values (SGVs) which are partially complete. Where standards are available using the "new" approach, these have been utilised for correlative purposes. Where standards have not yet been revised, guidance following the "old" approach has been utilised. Please note that upon release of the remaining guidelines, the standards contained within this report may be subject to change. In addition, the second edition of the LQM CIEH guidance has now been released and will be utilised in favour of previously published guideline values.

Third Parties

The findings and opinions conveyed in this report are based on information obtained from a variety of sources, including that from previous Site investigations and chemical testing laboratories. Constructive Evaluation Limited has assumed that such information is correct. Constructive Evaluation Limited cannot and does not guarantee the authenticity or reliability of the information it has relied upon and can accept no responsibility for inaccuracies with the data supplied by other parties.

The accuracy of the historical map extracts supplied cannot be guaranteed and it should be noted that different conditions may have existed between mapping sheet editions. Therefore, there can be no certainty that all areas of contamination have been identified during the Phase 1 investigation.

Definitions

Reference to the word "contamination" in this report does not relate to the statutory definition of contaminated land under 1990 Environmental Protection Act unless otherwise stated. The definition used in this report is: "Land that contains substances that, when present in sufficient quantities or concentrations, are likely to cause harm, directly or indirectly, to man, to the environment, or on occasion to other targets" (NATO CCMS, 1985).