

Our ref: LTR/P21-319/AM

25th October 2022

Kings Meadow Homes

FAO: Ian Green

57 Baker Street, Reading - Clean Cover Validation Report

Hydrock 3E were commissioned by Kings Meadow Homes to verify the suitability and correct thickness of clean cover has been placed within areas of soft landscaping (i.e. gardens) for the above mentioned site, in general accordance with remedial recommendations outlined within the Geo-environmental Investigation report produced by Ground and Environmental Services Limited (GES) in 2019 and the subsequent report produced by 3e Consulting Engineers Limited (3e) in 2021 as referenced below:

- Ground and Environmental Services Limited (GES); Geo-environmental Investigation for 57 Baker Street, Reading, RG1 7XX; Report Ref: 12240/GEI, dated September 2019.
- 3e Consulting Engineers Limited (3e); Supplementary Geotechnical and Preliminary off-site Disposal Assessment for 57 Baker Street, Reading, RG1 7XX; Report Ref: P21-319/SSI, dated November 2021.

Summary of Geo-environmental Assessment and Remedial Recommendations

From the contamination risk assessment completed for this site by GES elevated levels of non-volatile Lead, Arsenic, Benzo(a)anthracene, Chrysene, Benzo(b)fluoranthene, Benzo(a)pyrene and Dibenzo(a,h)anthracene contamination were identified within the made ground deposits during the investigation works, which were considered to represent a potential risk to human health. When considering the nature of the proposed development no risk was considered in areas of proposed buildings and hard-standing due to the thickness of hardcover breaking any available pollutant pathways. However, where made ground remained in areas of landscaping the identified levels of contaminants were considered to represent a potential risk to human health where pathways were available.

As a result remedial recommendations outlined within the Geo-environmental investigation report included for the installation of a simple clean cover system within areas of landscaping (including private gardens) to minimise the risk to human health (future end users). The assessment completed by GES indicated that approximately 560mm of soil would be required within areas of landscaping to sever the linkage of pollutants, based upon a residential end-use with home grown produce end use, as per the modelling calculations generated utilising the BRE 465 'Cover Systems for Land Regeneration, Thickness of Cover Systems for Contaminated Land' 2004.

Validation of Remedial Works

To provide an initial assessment as to the suitability of the clean cover materials (topsoil) to be placed across the site, and prior to importation, the results of testing provided by the source supplier (Springbridge Direct Limited) were provided to Hydrock 3E for review, with a copy of the Chemtest Analytical Test Report included within this report (report no. 22-24011-2). From the results of the testing no elevated levels of contaminants were recorded for the sample of topsoil tested by the source supplier supporting the suitability of these materials for use on this site. In addition, from the provided BS3882:2105 report the topsoil was also confirmed as compliant for use as a plant growth medium and multipurpose topsoil.

To further confirm the suitability of the clean cover materials placed within all areas of soft landscaping across the development area, a representative from Hydrock 3E also attended site on 28th September 2022 in order to obtain representative samples of the clean cover (topsoil) materials placed within plots 7, 8, the recreation area and 3 no. stockpiles located on site, to aid in confirming suitability of these materials for use as part of the clean cover system. Each representative sample of topsoil was sent to the laboratory for appropriate chemical analysis using current human health assessment criteria based upon a Residential with home grown produce end use (S4UL's and C4SL's).

To aid in the validation works proposed site plans were also provided by Kings Meadows Homes with copies included within this report. From the provided plans areas of soft landscaping are confined to the front of plots 1-6, the gardens of plots 7, 8, and 9, and within recreational areas adjacent to plot 1. No landscaping is proposed to the rear of plots 1-6 with courtyard paving and raised planters confirmed within this area, which effectively breaks any available pathways and negates the requirement for a clean cover system in these areas.

Due to the nature of the development works validation of the placement of the clean cover was also completed over two visits, with the initial inspection completed on 28th September 2022 following importation of the topsoil and completion of landscaping for Plots 7 to 9. Following the initial visit an additional inspection was completed on 14th October 2022 to confirm placement of the clean cover within the front garden areas of Plots 1 to 6.

Characterisation of Clean Cover Materials

The site visit on the 28th September 2022 undertaken following importation of the topsoil and placement of the clean cover within Plots 7 to 9. During the site visit a visual inspection of the topsoil materials placed within the garden areas of Plots 7 to 9, the recreational area and stockpiled topsoil to be placed within Plots 1 to 6 was undertaken, to ensure these materials were absent of obvious contamination (i.e. staining, etc.). During the inspection, no visual and/or olfactory evidence of potential contamination was noted confirming these materials as texturally suitable for use on this site.

Suitability of Clean Cover Materials

In order to confirm suitability of the clean cover materials following emplacement, validation of the clean cover system has been undertaken in general accordance with remedial recommendations included within the report produced by GES and YALPAG: Verification Requirements for Cover Systems, Version 4.1, June 2021. Due to the nature of the development works validation of the placement of the clean cover was also completed over two inspections; completed on 28th September and 14th October 2022.

In order to confirm the suitability of the clean cover materials placed within the development area, 6 no. representative samples of the clean cover (topsoil) materials were obtained during the visit completed on 28th September 2022, from plots 7, 8, the recreation area and 3 no. stockpiles located on site, with these materials due for placement within Plots 1 to 6. Each samples was screened for the following range of analytes; Metals, Metalloids, PAH's (USEPA 16) TPH's and Asbestos (presence), in accordance with the testing schedule outlined in the Geo-environmental report produced by GES and YALPAG guidance based upon a conservative brownfield source type.

The following supporting document is attached:

- Chemtest Environmental Analytical Test Report (Ref: 22-37992-1)

Laboratory Analysis

The results of the laboratory analysis have been assessed against current human health assessment criteria based upon a Residential with home grown produce end use (S4UL's and C4SL's). In summary, no elevated levels of contaminants have been identified for the samples of topsoil placed within the development area as part of the clean cover system, confirming these materials as suitable for use on this site.

Validation of Clean Cover Thickness

To ensure the adequate thickness of clean cover has been implemented in areas of soft landscaping, a series of manually excavated trial pits were undertaken within the rear gardens of Plots 7 and 8, and recreational area during the site visit undertaken on 28th September 2022, with a further 2 no. trial pits completed within the front garden areas of Plots 1 to 6 on 14th October 2022, the locations of which are included on Drawings G0001 & G0001A.

Within inspection pits excavated within the rear gardens of Plots 8 and 9 (to cover plot range 7 to 9) and the recreational area, the clean cover was noted to wholly comprise dark brown silty clayey sand topsoil with rootlets to a depths of between 0.45m and 0.56m, with topsoil placed within all landscaping areas also underlain by a geotextile membrane and break layer.

As outlined the report produced by GES remedial recommendations included for the placement of approximately 560mm of soil within landscaped areas to sever pollutant linkages, with between 450mm and 560mm of topsoil confirmed as having been placed within Plots 7 to 9 and the recreational area. However, as noted during the validation works the presence of a geotextile membrane and break layer was also confirmed within all areas of landscaping (below the topsoil materials), which would break available pathways. As a result the combined thickness of topsoil and presence of the geotextile membrane within Plots 7 to 9 and the recreational area are considered sufficient to mitigate any future risk to human health.

Within inspection pits excavated within the front garden areas of Plots 2 and 5 (to cover plot range 1 to 6) the clean cover was also noted to wholly comprise dark brown silty clayey sand topsoil to a minimum depth of 0.56m, with geotextile break layer at the base.

Conclusions

From the findings of the validation works we confirm that the clean cover (topsoil) materials within all areas of soft across the site are suitable for use. In addition, we can also confirm that a suitable thickness of clean cover has been placed within areas of soft landscaping in combination with a basal geotextile membrane and break layer.

We trust our comments and attachments are to your satisfaction and if you require any further information or clarification please do not hesitate to contact us.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Alexander Middleton', with a horizontal line above it.

Alexander Middleton

Geo-environmental Engineer

Enclosed :

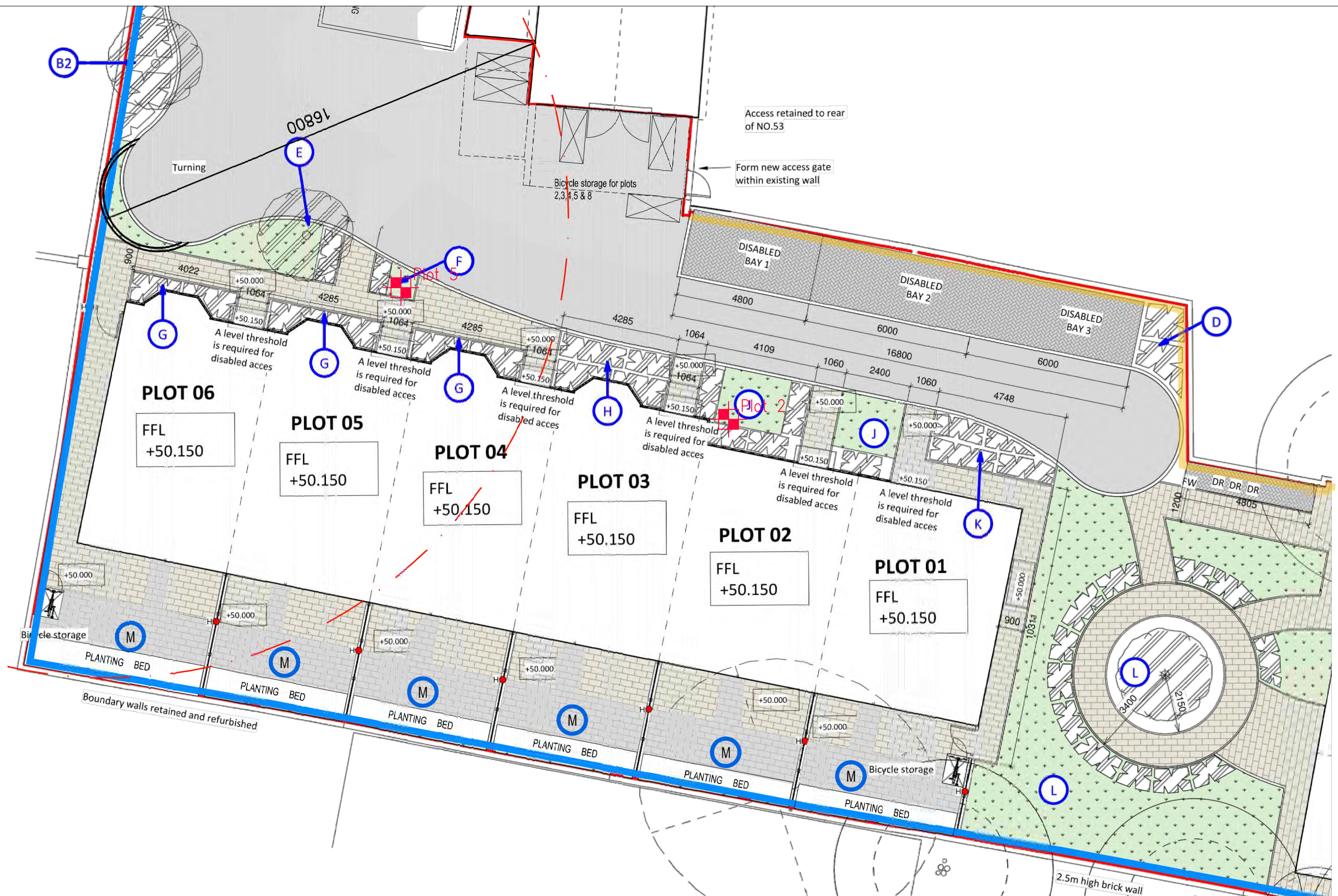
G0001 & G0001A – Validation Sample Point Location Plans

G0002 & G0002A – Photographic Record Sheets

Proposed Site Plans for Plots 1-6 and 7-9 (Drawing Ref's: 501-002-06, Rev. E and 501-003-04, Rev. D.

Chemtest Analytical Test Report (Reference 22-24011-2)

Chemtest Analytical Test Report (Reference: 22-37992-1)



Key:



Manually Excavated Trial Pit and Sample Point Location



Stockpile Sample Point Location

**Hydrock
3E**

2 Esh Plaza
Sir Bobby Robson Way
Great Park
Newcastle upon Tyne
NE13 9BA

tel: 0191 230 2993

www.3econsult.com

Project **57 Baker Street, Reading
for Kings Meadow Homes**

Title **Validation Sample Location Plan - Plot 1 to 6**

Scale **NTS** Drawn **AM** Checked **~** Date **Oct 2022**

Job No. **P21-319** Drawing No. **G0001A** Rev **0**



Photo 1 - Showing Completed Clean Cover within Plots 7 to 9



Photo 2 - Showing Location of Inspection Pit within Plot 7



Photo 3: Confirming Clean Cover Thickness and Presence of Geotextile Break Layer within Plot 7



Photo 4: Confirming Clean Cover Thickness and Presence of Geotextile Break Layer within Recreational Area



Photo 5: Confirming Clean Cover Thickness and Presence of Geotextile Break Layer within Plot 8



2 Esh Plaza
Sir Bobby Robson Way
Great Park
Newcastle upon Tyne
NE13 9BA

tel: 0191 230 2993

www.3econsult.com

Project 57 Baker Street, Reading for Kings Meadow Homes			
Title Validation Photo Record Sheet - Plots 7 to 9			
Scale NTS	Drawn AM	Checked NW	Date Sept 2022
Job No. P21-319	Drawing No. G0002		Rev 0



Photo 6: Confirming Clean Cover Thickness and Presence of Geotextile Break Layer within Plot 5



Photo 7: Confirming Clean Cover Thickness and Presence of Geotextile Break Layer within Plot 5



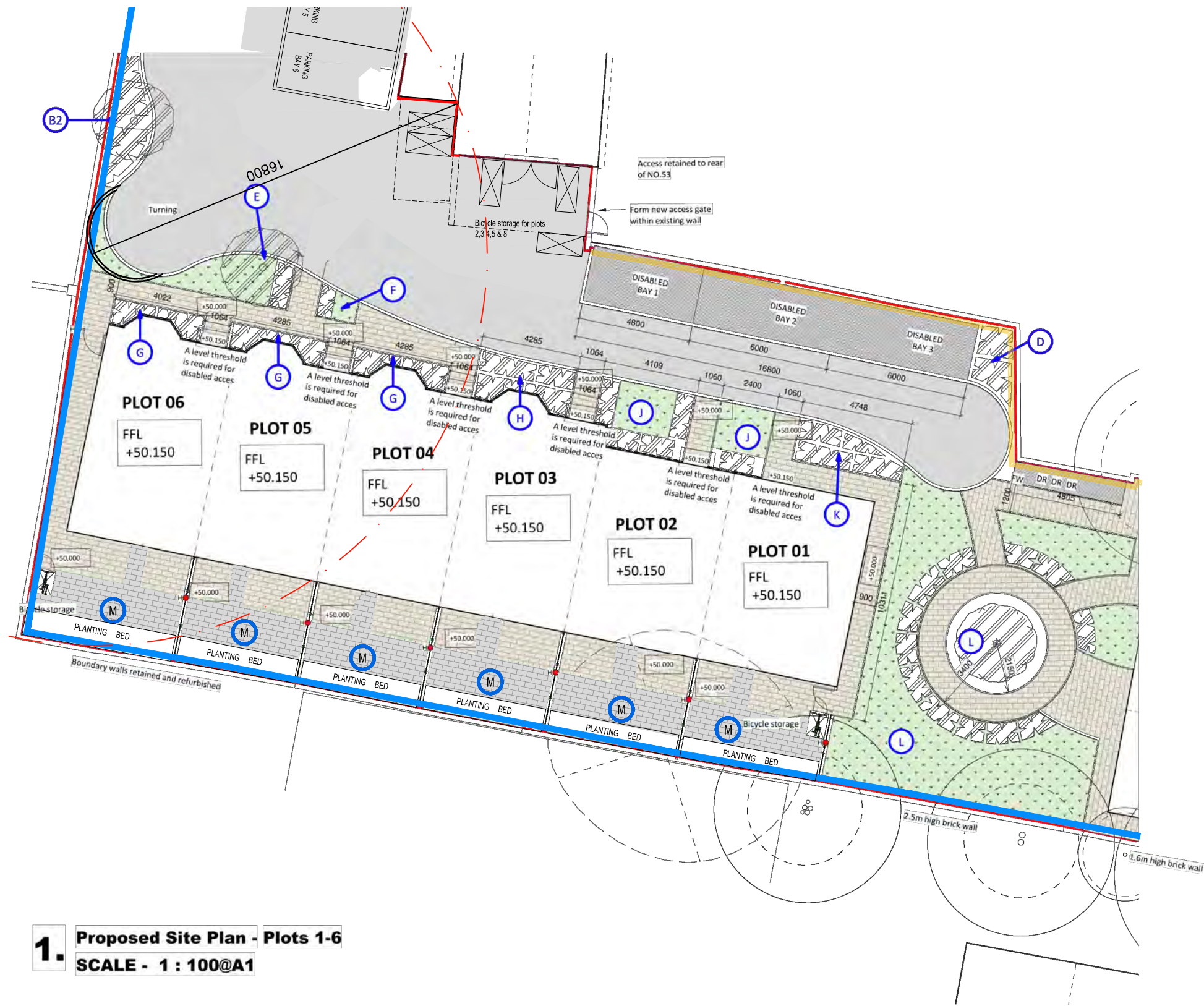
Photo 8: Confirming Clean Cover Thickness and Presence of Geotextile Break Layer within Plot 2



2 Esh Plaza
Sir Bobby Robson Way
Great Park
Newcastle upon Tyne
NE13 9BA

tel: 0191 230 2993
www.3econsult.com

Project 57 Baker Street, Reading for Kings Meadow Homes			
Title Validation Photo Record Sheet - Plots 1 to 6			
Scale NTS	Drawn AM	Checked NW	Date 26.10.22
Job No. P21-319	Drawing No. G0002A		Rev 0



1. Proposed Site Plan - Plots 1-6
SCALE - 1 : 100@A1

LEGEND

BOUNDARY TREATMENT

- Render existing wall
- denotes site boundary.
- 1.8m high timber fencing panels with timber posts and gravel boards
- denotes 215mm brick garden wall, Brickwork to match new build property.
- 1.8m high timber fencing panels with timber posts and gravel boards
- Brick wall painted white

SOFT LANDSCAPING

- denotes existing trees to be removed.
- denotes existing trees to be retained. Refer to Landscape Planning Ltd information for details.
- denotes root protection area
- garden planting, refer to planting schedule and planting specification TBC
- grass.

HARD LANDSCAPING

- Tobermore Pedesta Hand Lay 60mm Charcoal block paving or similar
- Tobermore Tegula block paving 80mm Heather (width 160mm - mix 3 sizes) or similar
- Tarmac
- Yorkstone or similar
- Indicative External Bollard
- Garden lighting - Design to be agreed by client
- denotes existing ground levels. REF Existing topographic survey drawing
- denotes proposed ground levels. - TO BE CONFIRMED ON SITE WITH EXISTING SITE LEVELS

Proposed external bin store location and design to be agreed by client

- non-recyclable waste.
- dry recycling.
- Food waste.
- 220 L Ecomax compost bin.
- Hedgehog holes

E	Boundary changes	03-08-22
D	Boundary changes	28-04-22
A	Boundary changes	09-02-22
REV	COMMENTS	DATE

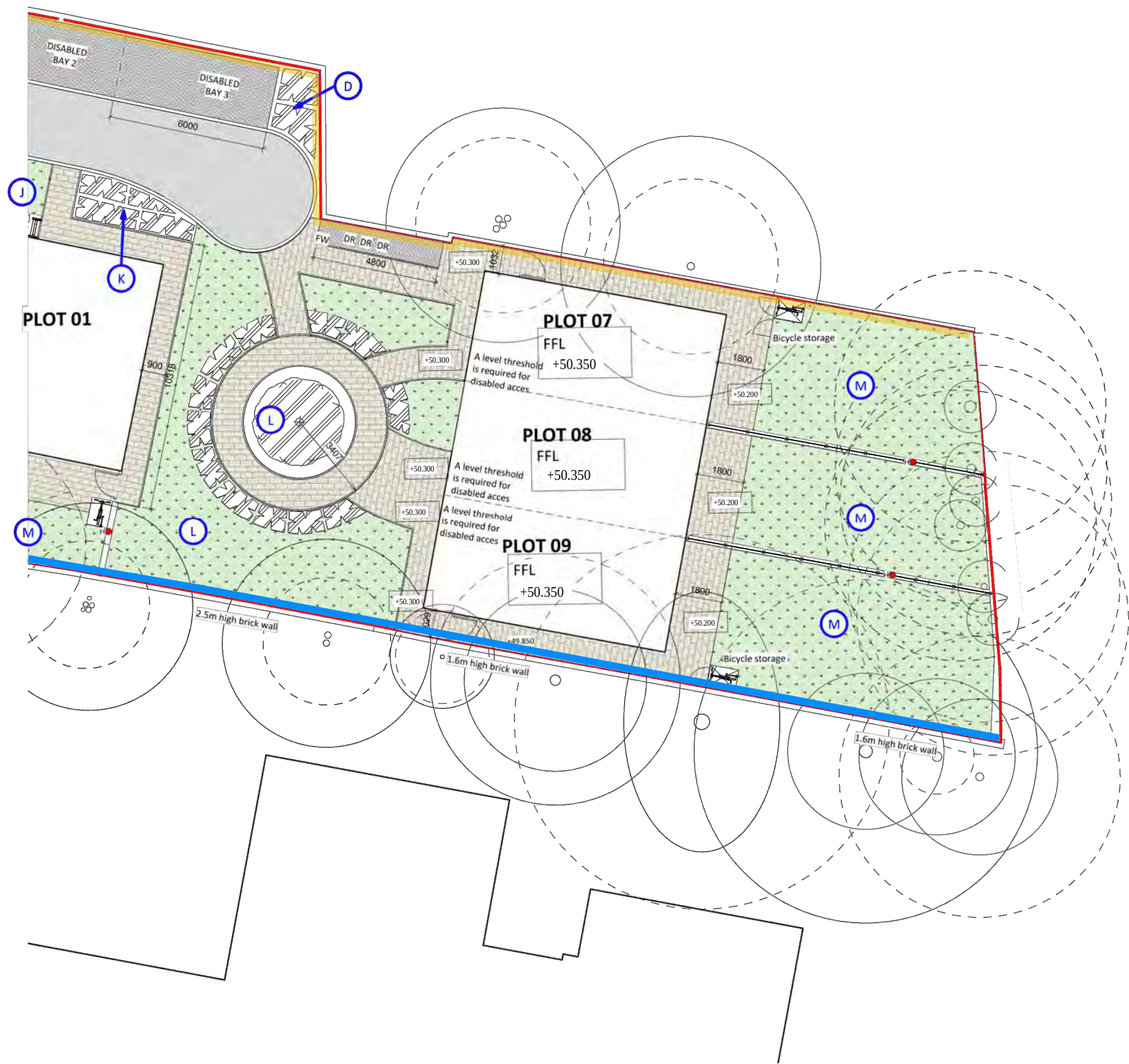
Tony Day Architecture Ltd
Planning • Design • Architecture
www.tonydayarchitecture.co.uk info@tonydayarchitecture.co.uk

CLIENT Kings Meadow Homes
PROJECT 57 Baker Street, Reading, RG1 7XX
DRAWING PLOTS 1-6 PROPOSED SITE PLAN

SCALE 1:200 @ A3
DRAWN P.Bonney
NO 501-002-06
REV E

THIS DRAWING MUST NOT BE SCALED UNLESS ISSUED FOR PLANNING PURPOSES. ALL DIMENSIONS ARE TO BE VERIFIED PRIOR TO SETTING OUT, COMMENCING WORK, OR PRODUCTION OF FABRICATION DRAWINGS. REPORT ANY DISCREPANCIES TO THE SUPERVISING OFFICER IMMEDIATELY. ©

1:200 scale Bar
This Drawing has been produced for printing onto A3 size paper
0m 2.0m 4.0m 8.0m 16.0m



LEGEND

BOUNDARY TREATMENT

- Render existing wall
- denotes site boundary.
- 1.8m high timber fencing panels with timber posts and gravel boards
- denotes 215mm brick garden wall, Brickwork to match new build property.
- 1.8m high timber fencing panels with timber posts and gravel boards
- Brick wall painted white

SOFT LANDSCAPING

- denotes existing trees to be removed.
- denotes existing trees to be retained. Refer to Landscape Planning Ltd information for details.
- denotes root protection area
- garden planting, refer to planting schedule and planting specification TBC
- grass.

HARD LANDSCAPING

- Tobermore Pedesta Hand Lay 60mm Charcoal block paving or similar
- Tobermore Tegula block paving 80mm Heather (width 160mm - mix 3 sizes) or similar
- Tarmac
- Yorkstone or similar
- Indicative External Bollard
- Garden lighting - Design to be agreed by client
- denotes existing ground levels. REF Existing topographic survey drawing
- denotes proposed ground levels. - TO BE CONFIRMED ON SITE WITH EXISTING SITE LEVELS
- Proposed external bin store location and design to be agreed by client.
- non-recyclable waste.
- dry recycling.
- food waste.
- 220 L Ecomax compost bin.
- Hedgehog holes

REV	COMMENTS	DATE
C	Boundary changes	03-08-22
B	Boundary changes	28-04-22
B	Boundary changes	09-02-22
A	FFL Level Revised	29-10-21

Tony Day Architecture Ltd
Planning • Design • Architecture
www.tonydayarchitecture.co.uk info@tonydayarchitecture.co.uk

CLIENT Kings Meadow Homes
PROJECT 57 Baker Street, Reading, RG1 7XX
DRAWING PLOTS 7-9 PROPOSED SITE PLAN

SCALE 1:200 @ A3 DRAWN P.Bonney NO 501-003-04 REV D

THIS DRAWING MUST NOT BE SCALED UNLESS ISSUED FOR PLANNING PURPOSES. ALL DIMENSIONS ARE TO BE VERIFIED PRIOR TO SETTING OUT, COMMENCING WORK, OR PRODUCTION OF FABRICATION DRAWINGS. REPORT ANY DISCREPANCIES TO THE SUPERVISING OFFICER IMMEDIATELY. ©

1. Proposed Site Plan - Plots 7-9
SCALE - 1 : 100@A1

1:200 scale Bar
This Drawing has been produced for printing onto A3 size paper
0m 2.0m 4.0m 8.0m 16.0m



Amended Report

Report No.:	22-24011-2		
Initial Date of Issue:	06-Jul-2022	Date of Re-Issue:	19-Jul-2022
Client	Springbridge Direct Ltd		
Client Address:	Oxford Road Denham Middlesex UB9 4DF		
Contact(s):	Tom Hawkins		
Project	Springbridge Yard		
Quotation No.:	Q22-26866	Date Received:	27-Jun-2022
Order No.:	124625	Date Instructed:	27-Jun-2022
No. of Samples:	2		
Turnaround (Wkdays):	10	Results Due:	08-Jul-2022
Date Approved:	06-Jul-2022		
Approved By:			

Details: Stuart Henderson, Technical Manager

Results - Soil

Project: Springbridge Yard

Client: Springbridge Direct Ltd	Chemtest Job No.:		22-24011		
Quotation No.: Q22-26866	Chemtest Sample ID.:		1456183		
Order No.: 124625	Client Sample Ref.:		Topsoil		
	Client Sample ID.:		Top		
	Sample Type:		SOIL		
	Date Sampled:		23-Jun-2022		
	Asbestos Lab:		COVENTRY		
Determinand	Accred.	SOP	Units	LOD	
ACM Type	U	2192		N/A	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected
Moisture	N	2030	%	0.020	9.6
Soil Colour	N	2040		N/A	Brown
Other Material	N	2040		N/A	None
Soil Texture	N	2040		N/A	Loam
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	2.1
Cyanide (Total)	M	2300	mg/kg	0.50	0.60
Arsenic	M	2455	mg/kg	0.5	8.2
Cadmium	M	2455	mg/kg	0.10	< 0.10
Chromium	M	2455	mg/kg	0.5	7.0
Copper	M	2455	mg/kg	0.50	8.8
Mercury	M	2455	mg/kg	0.05	3.2
Nickel	M	2455	mg/kg	0.50	4.3
Lead	M	2455	mg/kg	0.50	33
Selenium	M	2455	mg/kg	0.25	1.1
Zinc	M	2455	mg/kg	0.50	28
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10
Naphthalene	N	2700	mg/kg	0.010	< 0.010

Results - Soil

Project: Springbridge Yard

Client: Springbridge Direct Ltd	Chemtest Job No.:		22-24011		
Quotation No.: Q22-26866	Chemtest Sample ID.:		1456183		
Order No.: 124625	Client Sample Ref.:		Topsoil		
	Client Sample ID.:		Top		
	Sample Type:		SOIL		
	Date Sampled:		23-Jun-2022		
	Asbestos Lab:		COVENTRY		
Determinand	Accred.	SOP	Units	LOD	
Acenaphthylene	N	2700	mg/kg	0.010	< 0.010
Acenaphthene	N	2700	mg/kg	0.010	< 0.010
Fluorene	N	2700	mg/kg	0.010	< 0.010
Phenanthrene	N	2700	mg/kg	0.010	< 0.010
Anthracene	N	2700	mg/kg	0.010	< 0.010
Fluoranthene	N	2700	mg/kg	0.010	0.82
Pyrene	N	2700	mg/kg	0.010	0.82
Benzo[a]anthracene	N	2700	mg/kg	0.010	0.34
Chrysene	N	2700	mg/kg	0.010	0.57
Benzo[b]fluoranthene	N	2700	mg/kg	0.010	0.50
Benzo[k]fluoranthene	N	2700	mg/kg	0.010	0.16
Benzo[a]pyrene	N	2700	mg/kg	0.010	0.35
Indeno(1,2,3-c,d)Pyrene	N	2700	mg/kg	0.010	< 0.010
Dibenz(a,h)Anthracene	N	2700	mg/kg	0.010	< 0.010
Benzo[g,h,i]perylene	N	2700	mg/kg	0.010	< 0.010
Total Of 16 PAH's	N	2700	mg/kg	0.20	3.6
Benzene	M	2760	µg/kg	1.0	< 1.0
Toluene	M	2760	µg/kg	1.0	< 1.0
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0
o-Xylene	M	2760	µg/kg	1.0	< 1.0
Total Phenols	M	2920	mg/kg	0.10	< 0.10

Results - Topsoil Report

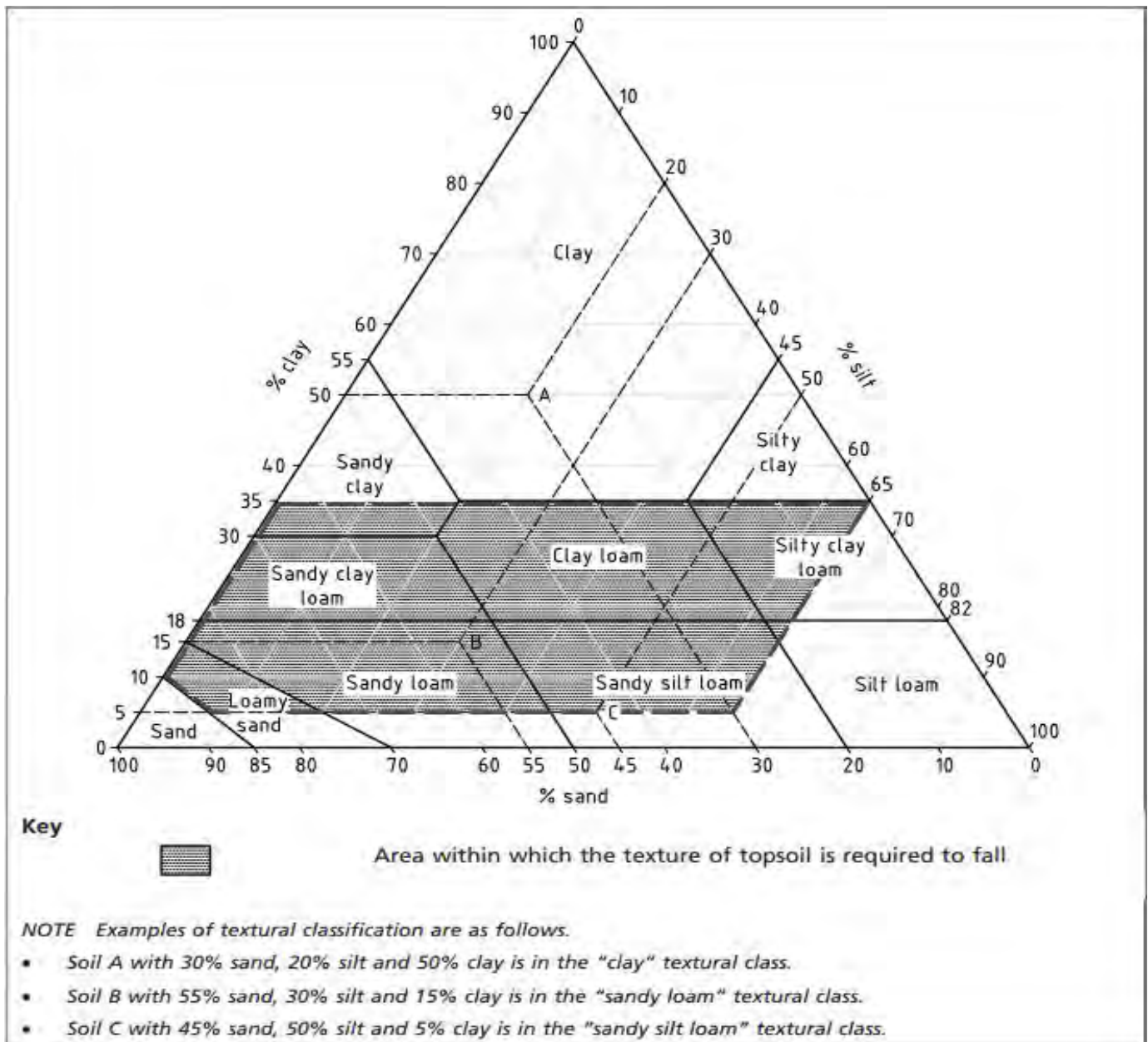
BS3882:2015

Chemtest Job No.: 22-24011
 Chemtest Sample ID.: 1456183
 Client Sample Ref.: Topsoil
 Sample Location:
 Client Sample ID.: Top
 Top Depth (m):
 Bottom Depth (m):
 Date Sampled: 23-Jun-2022
 Time Sampled:

Parameter	Units	Multipurpose Range	Result	Compliant with Multipurpose Range? (Y/N)	Compliant with Specific Purpose Range? (Y/N)		
Texture					Acid	Low F	Calc.
Clay content	%		6.0				
Silt content	%		10.0				
Sand content	%		84				
Soil texture class		See Attached Chart	Sandy Loam	YES			
Mass Loss on Ignition							
Clay 5-20%		3.0-20	6.5	YES	YES	YES	YES
Clay 20-35%		5.0-20					
Stone Content	% m/m						
>2mm		0-30	16	YES			
>20mm		0-10	< 0.020	YES			
>50mm		0	< 0.020	YES			
Soil pH value		5.5-8.5	8.5	YES	NO	YES	YES
Carbonate (Calcareous only)	%		0.51				NO
Electrical Conductivity	µS/cm	If >3300 do ESP	2500	YES			
Available Nutrient Content							
Nitrogen %		>0.15	0.23	YES	YES		YES
Extractable phosphorus	mg/l	16-140	32	YES	YES	NO	YES
Extractable potassium	mg/l	121-1500	820	YES	YES		YES
Extractable magnesium	mg/l	51-600	160	YES	YES		YES
Carbon : Nitrogen Ratio		<20:1	16.6/1	YES	YES	YES	YES
Exchangeable sodium	%	<15	2.6				
Available Calcium	mg/l		360				
Available Sodium	mg/l		75				
Phytotoxic Contaminants (by soil pH)		< 6.0	6.0-7.0	> 7.0			
Zinc (Nitric Acid extract)	mg/kg	<200	<200	<300	18	YES	
Copper (Nitric Acid extract)	mg/kg	<100	<135	<200	6.1	YES	
Nickel (Nitric Acid extract)	mg/kg	<60	<75	<110	< 5.0	YES	
Visible Contaminants	% mm						
>2mm		<0.5	0.000	YES			
..... of which plastics		<0.25	0.000	YES			
..... man-made sharps		zero in 1kg	0.000	YES			

Topsoil: Texture Classification Chart

BS3882:2015



Permission to reproduce extracts from BS 3882:2015 is granted by BSI.
British Standards can be obtained in PDF or hard copy formats from the BSI online shop: www.bsigroup.com/Shop or by contacting BSI Customer Services for hardcopies only: Tel: +44 (0)20 8996 9001, Email: cservices@bsigroup.com.

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2020	Electrical Conductivity	Electrical conductivity (EC) of aqueous extract or calcium sulphate solution for topsoil	Measurement of the electrical resistance of a 2:1 water/soil extract.
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2115	Total Nitrogen in Soils	Nitrogen	Determination by elemental analyser
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2260	Carbonate	Carbonate	Titration
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2400	Cations	Cations	ICP-MS
2420	Phosphate	Phosphate	Spectrophotometry - Discrete analyser
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazine.
2620	LOI 440	LOI 440 Trommel Fines	Determination of the proportion by mass that is lost from a soil by ignition at 440°C.
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

customerservices@chemtest.com



Final Report

Report No.: 22-37992-1
Initial Date of Issue: 11-Oct-2022
Client 3E Consulting Engineers Ltd
Client Address: 2 Esh Plaza, Sir Bobby Robson Way
Great park
Newcastle upon Tyne
NE13 9BA

Contact(s): Nicola Watson
Project P21-319 Baker Street, Reading

Quotation No.: Q20-21147 **Date Received:** 05-Oct-2022

Order No.: P21-319 **Date Instructed:** 05-Oct-2022

No. of Samples: 6

Turnaround (Wkdays): 5 **Results Due:** 11-Oct-2022

Date Approved: 11-Oct-2022

Approved By:

Details: Stuart Henderson, Technical
Manager

Results - Soil

Project: P21-319 Baker Street, Reading

Client: 3E Consulting Engineers Ltd	Chemtest Job No.:					22-37992	22-37992	22-37992	22-37992	22-37992	22-37992
Quotation No.: Q20-21147	Chemtest Sample ID.:					1518870	1518871	1518872	1518873	1518874	1518875
	Sample Location:					SH1	SH2	SH3	Rec Area	Plot 7	Plot 8
	Sample Type:					SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):								0.3	0.3	0.3
	Date Sampled:					28-Sep-2022	28-Sep-2022	28-Sep-2022	28-Sep-2022	28-Sep-2022	28-Sep-2022
	Asbestos Lab:					DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	Accred.	SOP	Units	LOD							
ACM Type	U	2192		N/A	-	-	-	-	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	10	11	12	13	14	11	
Stones and Removed Materials	N	2030	%	0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
Soil Colour	N	2040		N/A	Brown	Brown	Brown	Brown	Brown	Brown	Brown
Other Material	N	2040		N/A	Stones	Stones	Stones	Stones	Stones and Roots	Stones	
Soil Texture	N	2040		N/A	Sand	Sand	Sand	Sand	Sand	Sand	Sand
pH	M	2010		4.0	8.2	8.2	8.1	8.1	8.2	8.3	
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	2.9	2.9	2.8	3.1	1.9	2.6	
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	0.38	0.42	0.42	0.42	0.33	0.25	
Sulphate (Total)	U	2430	%	0.010	0.36	0.38	0.33	0.42	0.24	0.25	
Arsenic	M	2455	mg/kg	0.5	8.2	9.8	6.4	8.1	8.4	9.5	
Cadmium	M	2455	mg/kg	0.10	0.25	0.26	0.15	0.22	0.17	0.22	
Chromium	M	2455	mg/kg	0.5	13	14	12	12	10	13	
Copper	M	2455	mg/kg	0.50	32	29	20	26	18	21	
Mercury	M	2455	mg/kg	0.05	0.13	0.13	0.10	0.15	0.12	0.15	
Nickel	M	2455	mg/kg	0.50	8.5	9.7	7.4	7.9	7.9	11	
Lead	M	2455	mg/kg	0.50	57	72	43	51	45	55	
Selenium	M	2455	mg/kg	0.25	0.41	0.46	0.38	0.39	0.43	0.52	
Zinc	M	2455	mg/kg	0.50	78	100	58	76	67	72	
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Total Organic Carbon	M	2625	%	0.20	4.2	3.7	4.2	4.1	5.7	3.6	
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Aromatic TPH >C16-C21	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	

Results - Soil

Project: P21-319 Baker Street, Reading

Client: 3E Consulting Engineers Ltd	Chemtest Job No.:		22-37992	22-37992	22-37992	22-37992	22-37992	22-37992
Quotation No.: Q20-21147	Chemtest Sample ID.:		1518870	1518871	1518872	1518873	1518874	1518875
	Sample Location:		SH1	SH2	SH3	Rec Area	Plot 7	Plot 8
	Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):					0.3	0.3	0.3
	Date Sampled:		28-Sep-2022	28-Sep-2022	28-Sep-2022	28-Sep-2022	28-Sep-2022	28-Sep-2022
	Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	Accred.	SOP	Units	LOD				
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10	< 10	< 10
Naphthalene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	M	2800	mg/kg	0.10	0.32	0.82	0.44	0.44
Anthracene	M	2800	mg/kg	0.10	< 0.10	0.15	0.12	0.10
Fluoranthene	M	2800	mg/kg	0.10	0.82	1.6	1.4	1.3
Pyrene	M	2800	mg/kg	0.10	0.81	1.3	1.2	1.1
Benzo[a]anthracene	M	2800	mg/kg	0.10	0.52	0.81	0.67	0.62
Chrysene	M	2800	mg/kg	0.10	0.41	0.62	0.57	0.54
Benzo[b]fluoranthene	M	2800	mg/kg	0.10	0.77	1.1	0.96	0.97
Benzo[k]fluoranthene	M	2800	mg/kg	0.10	0.30	0.38	0.16	0.34
Benzo[a]pyrene	M	2800	mg/kg	0.10	0.66	1.0	0.81	0.84
Indeno(1,2,3-c,d)Pyrene	M	2800	mg/kg	0.10	< 0.10	0.89	< 0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	0.14	< 0.10	< 0.10
Benzo[g,h,i]perylene	M	2800	mg/kg	0.10	< 0.10	1.0	< 0.10	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	4.6	9.8	6.3	6.3

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenzo[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

customerservices@chemtest.com