Southern Testing
Environmental & Geotechnical

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Contamination Investigation Report



Desk Studies | Risk Assessments | Site Investigations | Geotechnical | Contamination Investigations | Remediation Design and Validation

Site: Homefields Farm, Bulls Lane, Cowfold RH13 8AP

Client: Mr R Fine

Report Date: 7th May 2021

Project Reference: J14766

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AGS ace constructionline CHAS bsi ISO 9001 Quality Management FS 29280 ISO 14001 Environmental Management EMS 506775 OHSAS 18001 Occupational Health & Safety Management OHS 506776 smas worksafe consultant www.smasltd.com CSCS Platinum British Drilling Association

A INTRODUCTION

1 Authority

Our authority for carrying out the first phase of this work is contained in a completed Southern Testing order form from Ms Maria Tozzi on behalf of Mr R Fine, dated 14th October 2020 and for the second Phase in a similar order from Mr A Pierre of BdCC Ltd. dated 11th March 2021.

2 Location

The site is located approximately 2.5km east of the town of Cowfold, West Sussex, to the south of Bulls Lane. The approximate National Grid Reference of the site is TQ 23364 23449. The site location is shown on Fig 1, Appendix A.

3 Object

An earth bund is being created at the site to help visually screen overhead power-lines from a newly built detached house. Further to a site visit, the Local Authority Environmental Health Officer has raised concerns about the environmental suitability of the soils being used. The bund is situated in a field adjacent to the house and does not form part of any formal garden. We understand that it is proposed to plant the bund with trees and the adjacent field to create a woodland area. It is estimated the bund volume is in the order of 4000-5000m^3

For the purposes of the contamination risk assessment, the proposed development land use is classified as Public Open Space (residential), CLEA Model Ref [1] / C4SL Report Ref [2].

4 Investigation Brief

In accordance with the Client's instructions, and our quotation, the following was included in our initial brief for this investigation:

- 6 No. trial pits excavated by mechanical excavator
- Environmental sampling and laboratory testing as appropriate for the soils encountered

The initial fieldwork was carried out on the 9th November 2020 at which time the weather was generally dry.

Further to the submission of our initial report to the Local Authority Environmental Protection Officer concerns were raised over the disparity between the volume of certified soils imported and the volume of soil estimated to be within the bund as a whole. Additional work was requested and the broad scope of the work agreed with Southern Testing.

5 Scope

This report presents our exploratory hole logs and test results only. As with any site there may be differences in soil conditions between exploratory hole positions.

This report is not an engineering design and the figures and calculations contained in the report should be used by the Engineer, taking note that variations will apply, according to variations in design loading, in techniques used, and in site conditions. Our figures therefore should not supersede the Engineer's design.

The site investigation was conducted and this report has been prepared for the sole internal use and reliance of Mr R Fine and his appointed Engineers. This report shall not be relied upon or transferred to any other parties without the express written authorisation of Southern Testing Laboratories Limited. If an unauthorised third party comes into possession of this report they rely on it at their peril and the authors owe them no duty of care and skill.





R Jiagge BSc (Hons) MSc FGS MIEnvSc CSci
(Countersigned)

S F Pratt BSc MSc CGeol FGS DIC
(Signed)

For and on behalf of Southern Testing Laboratories Limited

B FIELDWORK

6 General Site Description

The site comprises a former agricultural field situated at an elevation of around 35m AOD. The natural ground level falls gently to the south and the site is situated in a small valley trending broadly east to west. A small tributary of the Cowfold Stream (ultimately leading to the River Adur), and possibly spring fed flows in a southerly direction just to the east of the site and along the southern site boundary. Adjacent to the southern site boundary, this was dry at the time of our site work.

We understand that the bund is formed by soils obtained from the adjacent house build (foundation arisings etc.) and also from some imported soils. Those obtained from the adjacent build are more toward the core of the bund with imported soils more toward the top. The bund is linear, running broadly north to south with a steep face of perhaps 30 degrees on its western edge, and a more gentle slope of about 8-10 degrees on the eastern side. The natural soils underlying the bund were encountered at the base of TP 3 and TP6.

7 Geology

The British Geological Survey Map for the area indicated the site is situated on the Tunbridge Wells Sand Formation.

7.1 Tunbridge Wells Sand Formation

The Tunbridge Wells Sand Formation comprises part of the Lower Cretaceous Wealden Group and consists predominantly of fine to medium grained sandstone, siltstone and silty sand rhythms with finely bedded mudstones and thin limestones.

7.2 Groundwater

The site is situated over a Secondary A bedrock aquifer. There are no drift deposits and therefore no drift aquifer designation. The groundwater vulnerability is high, but the site is not situated in a groundwater Source Protection Zone (SPZ).

8 Soils as Found

Six trial pits were initially excavated at locations along the bund, as shown on the site plan, Figure 2 during our first visit of November 2020 (TP1 to TP6). At this time, some locations did not prove the bottom of the bund (the underlying natural soils) due to the limits of the excavator. Additional pits (TP101 to TP106) were excavated on the 12th April 2021 with a 13T excavator capable of reaching the bund base. Photographs showing selected trial pit arisings are shown in Appendix B. The soils encountered are described in detail in the attached exploratory hole logs (Appendix A), but in general comprised soft or firm, brown gravelly clay with occasional man-made inclusions such as brick, tile and geotextile fabric. Some patches of grey limestone gravel (assumed associated with road sub-base) and fibrous organic matter were also encountered. In general, the materials were soil based and there were no indications of significant visual or olfactory contamination. The soils encountered were similar in visit 2 to those encountered in visit 1 with the exception of the natural soils proven at the base of each location during visit 2. Detailed soil logs are provided in Appendix

A, and a summary is given below.

Depth below bund surface (m)	Thickness (m)	Soil Type	Description
GL to 1.0/3.8	1.0/3.0	Made ground	Generally firm, brown gravelly clay. Gravel is flint, limestone and occasional tile, brick, concrete and some geotextile fabric (MADE GROUND). Occasional patch of fibrous organic matter. Soft dark grey/black organic clay layers at base, TP101,103 and 105
1.6 to 2.9 (TP1 only)	1.3	Made ground	Mauveish-brown clayey limestone gravel with geotextile fragments (MADE GROUND).
1.0 to 3.5m	0.3+	Clay	Stiff, orange-brown silty CLAY or clayey SILT. (original natural ground).
3.8-4.2m (TP102 only)	0.4	Topsoil	Dark grey-brown topsoilly silt with matted grass) (former topsoil).

9 Testing

Based on a visual and olfactory interpretation of the arisings, no significant or specific contamination was expected. In most cases, due to the consistency in the soil composition, composite samples from the soil profile were considered most appropriate. These are labelled as being at 0.0m. Discrete samples were taken in several pits, particularly during visit 2, targeting particular soil layers, following discussion with the Local Authority Environmental Protection Officer. The following tests were carried out on the samples obtained from each pit:

Test Suite	Number of Samples	Soil Tested
STL Key Contamination Suite	20	Made ground
Asbestos Screen	20	Made ground
Petroleum Hydrocarbons	6	Made ground
Waste Acceptance Criteria (WAC)	1	Composite sample

The test results are presented in full in Appendix E. A summary and discussion of the significance of the results is given below.

10 Discussion

None of the tested samples recorded contaminant concentrations in excess of the screening values for an open space (residential) land use scenario. Asbestos was detected in one sample only, TP103 at 1.5m. Subsequent quantification of this sample revealed an asbestos concentration less than 0.001%. Consequently no significant risks are anticipated from asbestos.

With respect to the more stringent residential without plant uptake land use, and as an indication of contaminant levels only, one sample from TP3 contained a slightly elevated Benzo(a)Pyrene concentration at 3.2mg/kg against a screening value of 2.6mg/kg. Screening values are provided in Appendix C.

Based on these results, the risks to future users of the site are considered to be sufficiently low. Due to the low contaminant concentrations no risks are perceived for controlled waters. Any short term risks such as when planting the woodland should be managed by wearing appropriate PPE and ensuring normal good hygiene practice.

No remedial action to deal with any contamination is therefore considered necessary.

No methanogenic materials were discovered within the bund materials. Soil organic matter (SOM) content was recorded between 0.4% and 2.8%.

A single WAC analysis carried out on a composite sample recorded total organic carbon content at 0.3%. Given, the low organic matter content of the bund materials, the potential for land gas generation is considered to be negligible.

For waste classification purposes, the bund materials could be classified as Non-hazardous based on the results of the geochemical laboratory analysis. The measured concentrations of WAC parameters analysed also meet inert waste criteria.

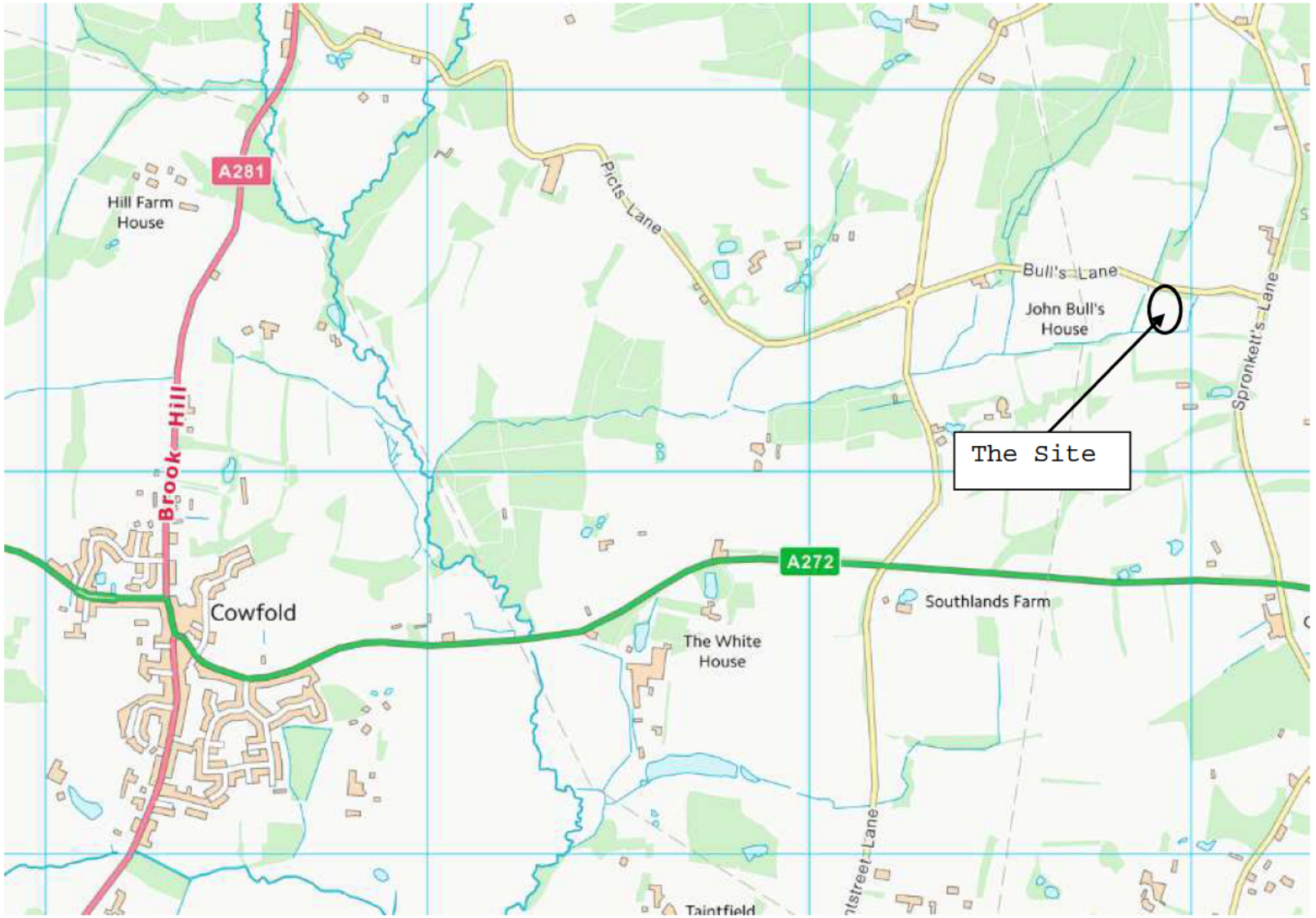
On the basis of the above, the bund materials could be considered Inert.

References

[1] Environment Agency, "Updated technical background to the CLEA model," 2009.

[2] Contaminated Land: Applications in Real Environments (CL:AIRE), "Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination," 2014.

APPENDIX A – EXPLORATORY HOLE LOGS & SITE PLAN



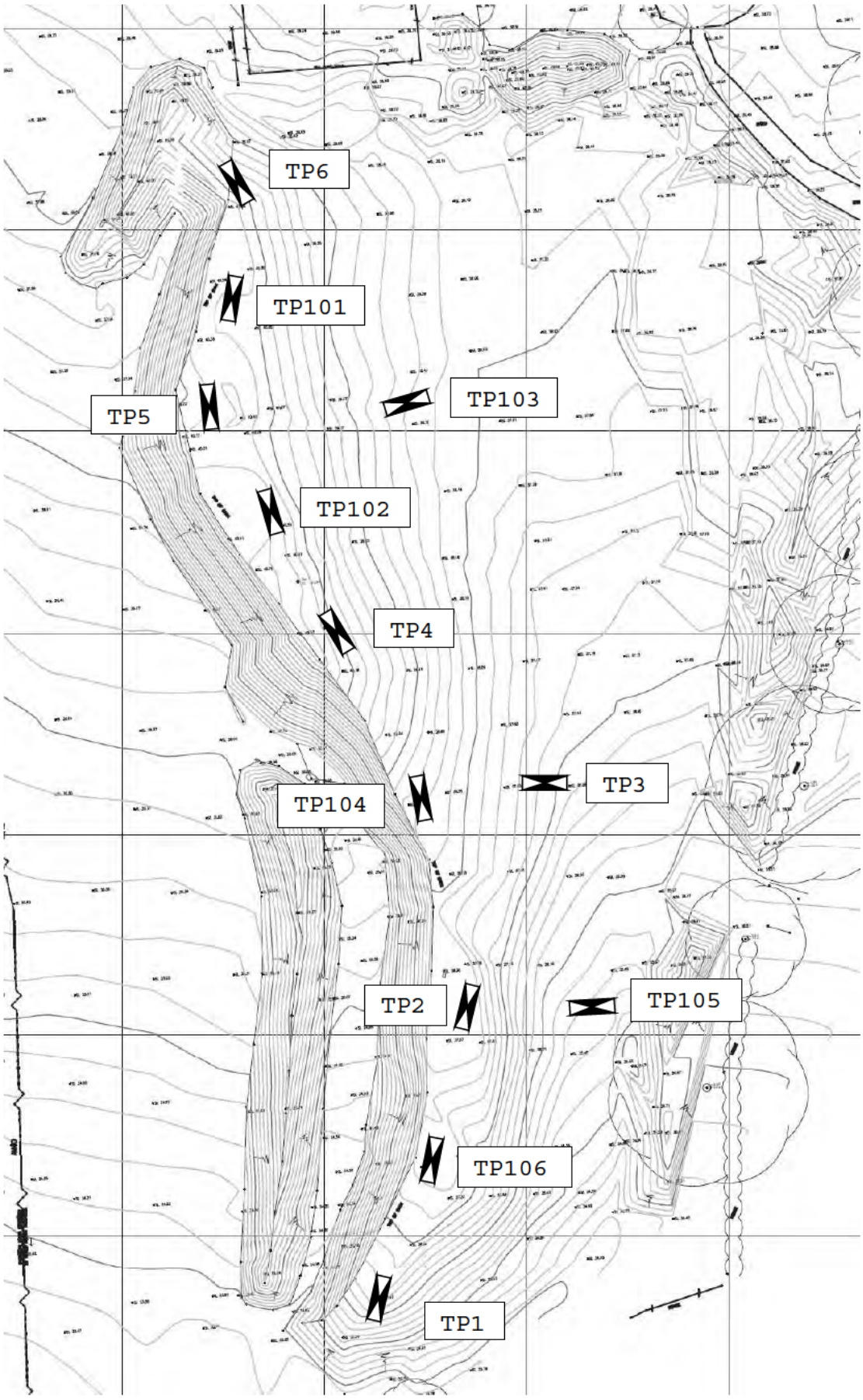
NB: Positions of Boreholes and/or Trial Pits are only indicative unless dimensioned

Site: Homefields Farm, Bulls Lane, Cowfold, RH13 8AP	STL: J14608	Fig No: 1
Date: 12 November 2020	Site Location Plan	

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Southern Testing: Keeble House, Stuart Way, East Grinstead, West Sussex RH19 4QA
ST Consult: Twigden Barns, Brixworth Road, Creaton, Northampton NN6 8NN

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NB: Positions of Boreholes and/or Trial Pits are only indicative unless dimensioned

Site:	Homefields Farm, Bulls Lane, Cowfold, RH13 8AP	STL: J14766	Fig No: 2
Date:	16 April 2021		

Southern Testing

Southern Testing: Keeble House, Stuart Way, East Grinstead, West Sussex RH19 4QA
ST Consult: Twigden Barns, Brixworth Road, Creaton, Northampton NN6 8NN

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Key to Exploratory Hole Logs, Plans and Sections

Backfill Symbols		Pipe Symbols		Principal Soil Types		Principal Rock Types		Drilling Records	
Arisings		Plain Pipe		Topsoil		Mudstone		Water Strike	
Concrete		Slotted Pipe		Made Ground		Claystone		Depth Water Rose	
Blacktop		Piezometer		Clay		Siltstone		Total Core Recovery (%) [TCR]	
Bentonite		Piezometer Tip		Silt		Sandstone		Solid Core Recovery (%) [SCR]	
Gravel Filter		Filter Tip		Sand		Limestone		Rock Quality Index (%) RQD]	
Sand Filter		Extensometer		Gravel		Chalk		Fracture Index (fractures / m) [FI]	
		Inclinometers		Peat					

All soil and rock descriptions are in general accordance with BS5930 2015, BS EN ISO 14688-1:2002+A1:2013 and BS EN ISO 14689-1:2003. Chalk descriptions are also based on CIRIA C574 and "Logging the Chalk – R.N. Mortimer 2015". The Geology Code is only provided where a positive identification of the sample strata has been made.

Location / Method Identifiers	
BH	Borehole (undefined)
CP	Cable Percussive
RC	Rotary Core
RO	Rotary Open Hole
ODC	Rotary Odex/Symmetrix drilling cased
CP+RC	Cable Percussive to Rotary Core
SNC	Sonic
CFA	Continuous Flight Auger
FA	Flight Auger
VC	Vibro Core
WLS+RC	Windowless (Dynamic) Sampler to Rotary Core
WLS	Windowless Sampler
WS	Window Sampler
HA	Hand Auger
C	Road / Pavement Core
IP	Inspection Pit (Hand Excavation)
TP	Trial Pit (Machine Excavated)
OP	Observation Pit (Supported Excavation Hand or Machine)

In-situ Test Location / Method	
DP	Dynamic Probe
CPT	Cone Penetration Test
CBR	In-situ CBR Test
DCP	CBR using Dynamic Cone Penetrometer
CBRT	CBR using TRL Probe
PB	Plate Bearing Test
SPT (S)	Standard Penetration Test (Split Barrel Sampler)
SPT (C)	Standard Penetration Test (Solid Cone)
N	SPT Result
-/-	Blows/Penetration (mm) after seating drive
-*/-	Total Blows / Penetration (mm)
( )	Extrapolated Value
PPT	Perth Penetration (In-House Method - Equivalent N Value)
HP / UCS	Strength from Hand Penetrometer (kN/m^2)
IVN	Strength from Hand Vane ((kN/m^2) P = peak, R = residual
PID	Photo Ionisation Detector (ppm)
MEXE	Mexi-Cone CBR (%)

Samples / Test Type	
B	Bulk Sample
BLK	Block Sample
C	Core Sample
CBRS	CBR Mould Sample
D	Small Disturbed Sample
ES	Environmental Sample (Soil)
EW	Environmental Sample (Water)
GS	Environmental Sample (Gas)

Samples / Test Type	
SPTLS	Standard Penetration Test Split Barrel Sample
TW	Thin Wall Push In Sample (e.g. Shelby Sampler)
U	Undisturbed Open Drive Sample (blows to take)
UT	Thin Wall Undisturbed Open Drive Sample (blows to take)
W	Water Sample (Geotechnical)
SP	Sample from Stockpile
P	Piston Sample
AMAL	Amalgamated Sample

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Start - End Date:	Project ID:	Machine Type:	TP1
09/11/2020	J14608		Sheet 1 of 1

Project Name:	Cowfold	Remarks:	Co-ordinates:	Level (m AOD):	Logger:
Location:	Homefields Farm, Bulls Lane, RH13 8AP	Dry Hole			
Client:	Mr R Fine				

Samples and Insitu Testing			Level (m AOD)	Thickness (m)	Legend	Depth (m bgl)	Stratum Description
Depth (m)	Type	Results					
0.00 - 2.90	ES			(1.60)			Firm, mid brown sandy clay with occasional chalk gravel and cobbles, patches of mauve-grey limestone gravel (clean road stone) and occasional concrete cobbles (MADE GROUND).
							Some geotextile fabric.
						1.60	Mauveish brown, clayey, sandy limestone gravel with occasional geotextile fragments (MADE GROUND).
				(1.30)			
						2.90	Pit terminated at 2.90m.

1 2 3 4

Pit Dimension (m)		Pit Stability:	Water Strikes:
Width:			
Length:			
Depth:			

Southern Testing ST Consult	Start - End Date:	Project ID:	Machine Type:	TP2
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Project Name:	Cowfold	Remarks:	Co-ordinates:	Level (m AOD):	Logger:
Location:	Homefields Farm, Bulls Lane, RH13 8AP	Dry Hole.			
Client:	Mr R Fine				

Samples and Insitu Testing			Level (m AOD)	Thickness (m)	Legend	Depth (m bgl)	Stratum Description
Depth (m)	Type	Results					
0.00 - 2.90	ES			(2.90)		2.90	Firm, mauveish-brown sandy gravelly clay. Gravel is predominantly fine to medium flint and limestone with occasional chalk, brick, tile, geogrid and geotextile. Occasional patch of dark grey slightly organic clay. Very occasional wood fragment (MADE GROUND).
							Pit terminated at 2.90m.

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3
4

Pit Dimension (m)		Pit Stability:	Water Strikes:
Width:			
Length:			
Depth:			

Southern Testing ST Consult	Start - End Date:	Project ID:	Machine Type:	TP3
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Project Name:	Cowfold	Remarks:	Co-ordinates:	Level (m AOD):	Logger:
Location:	Homefields Farm, Bulls Lane, RH13 8AP	Dry Hole			
Client:	Mr R Fine				

Samples and Insitu Testing			Level (m AOD)	Thickness (m)	Legend	Depth (m bgl)	Stratum Description
Depth (m)	Type	Results					
0.00 - 1.00	ES			(1.00)			Firm, mid brown, sandy gravelly clay. Gravel is flint and limestone predominantly with occasional cobble of brick and very occasional corrugated plastic fragment. (MADE GROUND).
				(0.30)		1.00	Stiff, light orange-brown very silty CLAY (original natural ground less topsoil).
						1.30	Pit terminated at 1.30m.

Pit Dimension (m)		Pit Stability:	Water Strikes:
Width:			
Length:			
Depth:			

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Start - End Date:	Project ID:	Machine Type:	TP4
09/11/2020	J14608		Sheet 1 of 1

Project Name:	Cowfold	Remarks:	Co-ordinates:	Level (m AOD):	Logger:
Location:	Homefields Farm, Bulls Lane, RH13 8AP	Dry Hole.			
Client:	Mr R Fine				

Samples and Insitu Testing			Level (m AOD)	Thickness (m)	Legend	Depth (m bgl)	Stratum Description
Depth (m)	Type	Results					
0.00 - 2.60	ES			(2.60)			Firm, brownish-grey, slightly organic silty clay with occasional fibrous organic matter and patches of light orange-brown gravelly silty clay (MADE GROUND).
2.60 - 3.10	ES			(0.50)		2.60	Firm to stiff, light brown and orange-brown mottled, slightly gravelly, very silty clay (MADE GROUND).
						3.10	Pit terminated at 3.10m.

Pit Dimension (m)		Pit Stability:	Water Strikes:
Width:			
Length:			
Depth:			

Southern Testing ST Consult	Start - End Date:	Project ID:	Machine Type:	TP5
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Project Name:	Cowfold	Remarks:	Co-ordinates:	Level (m AOD):	Logger:
Location:	Homefields Farm, Bulls Lane, RH13 8AP	Dry Hole.			
Client:	Mr R Fine				

Samples and Insitu Testing			Level (m AOD)	Thickness (m)	Legend	Depth (m bgl)	Stratum Description
Depth (m)	Type	Results					
0.00 - 3.00	ES			(3.00)		3.00	Soft to firm, brownish-grey, gravelly silty clay with occasional fibrous organic matter and large patches of brown-orange very silty clay towards base. Some geotextile fabric in top 1.0m. Gravel is fine to medium flint, grey limestone and occasional brick and sandstone cobbles (MADE GROUND).
							Pit terminated at 3.00m.

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Pit Dimension (m)		Pit Stability:	Water Strikes:
Width:			
Length:			
Depth:			

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Start - End Date:	Project ID:	Machine Type:	TP6
09/11/2020	J14608		Sheet 1 of 1

Project Name:	Cowfold	Remarks:	Co-ordinates:	Level (m AOD):	Logger:
Location:	Homefields Farm, Bulls Lane, RH13 8AP	Dry Hole.			
Client:	Mr R Fine				

Samples and Insitu Testing			Level (m AOD)	Thickness (m)	Legend	Depth (m bgl)	Stratum Description
Depth (m)	Type	Results					
0.00 - 3.00	ES			(2.70)			Firm, light brown patched orange-brown gravelly clay. Gravel is fine to medium flint, sandstone and occasional brick and sandstone cobbles. (MADE GROUND).
				(0.30)		2.70	Stiff, orange-brown mottled, very silty clay with occasional fine to medium sandstone gravel.
						3.00	Pit terminated at 3.00m.

Pit Dimension (m)		Pit Stability:	Water Strikes:
Width:			
Length:			
Depth:			

Southern Testing ST Consult	Start - End Date:	Project ID:	Machine Type:	TP101
www.southerntesting.co.uk tel:01342 333100 www.stconsult.co.uk tel:01604 500020	12/04/2021	J14766		Sheet 1 of 1

Project Name:	Horsham	Remarks:	Co-ordinates:	Level (m AOD):	Logger:
Location:	Homefields Farm, Bulls Lane, Cowfold	Dry Hole.			
Client:	Adam Pierre B&CC Ltd.				

Samples and Insitu Testing			Level (m AOD)	Thickness (m)	Legend	Depth (m bgl)	Stratum Description
Depth (m)	Type	Results					
				(0.90)			Firm to stiff, light brown gravelly silty clay MADE GROUND. Gravel is sub-rounded flint, brick and occasional concrete.
						0.90	
				(1.80)			Firm to stiff, dark brown, slightly topsoilly gravelly sandy clay MADE GROUND. Gravel is flint, occasional cobbles of brick, concrete and tile. Occasional patch of fibrous vegetable matter.
						2.70	
				(0.30)			Stiff, light brown-grey clayey silt MADE GROUND with some decayed grass (former topsoil?)
						3.00	
				(0.30)			Stiff, orange and brown mottled silty CLAY with some weak ironstone and siltstone gravel.
						3.30	

1 2 3 4

Pit Dimension (m)		Pit Stability:	Water Strikes:
Width:			
Length:			
Depth:			

Southern Testing ST Consult	Start - End Date:	Project ID:	Machine Type:	TP102
www.southerntesting.co.uk tel:01342 333100 www.stconsult.co.uk tel:01604 500020	12/04/2021	J14766		Sheet 1 of 2

Project Name:	Horsham	Remarks:	Co-ordinates:	Level (m AOD):	Logger:
Location:	Homefields Farm, Bulls Lane, Cowfold	Dry Hole			
Client:	Adam Pierre B&CC Ltd.				

Samples and Insitu Testing			Level (m AOD)	Thickness (m)	Legend	Depth (m bgl)	Stratum Description	
Depth (m)	Type	Results						
				(2.00)			Soft to firm, pinkish-brown very gravelly clay MADE GROUND. Gravel is fine to medium limestone (road stone) with occasional mesh terram and geotextile fragments.	1
				(0.40)		2.00	Firm to stiff, orange-brown mottled grey-brown silty clay MADE GROUND.	2
				(0.60)		2.40	Stiff, light grey-brown clayey, gravelly silt MADE GROUND with occasional grey organic clay patches. Gravel is fine to medium mudstone.. becoming soft to firm with depth.	
				(0.80)		3.00	Soft to stiff, light to dark grey slightly organic silty gravelly clay MADE GROUND. Gravel is fine to medium flint and occasional brick.	3
				(0.40)		3.80	Dark grey-brown topsoilly SILT with matted grass at top (former topsoil and subsoil).	4

Pit Dimension (m)		Pit Stability:	Water Strikes:
Width:			
Length:			
Depth:			

Southern Testing ST Consult	Start - End Date:	Project ID:	Machine Type:	TP102
www.southerntesting.co.uk tel:01342 333100 www.stconsult.co.uk tel:01604 500020	12/04/2021	J14766		Sheet 2 of 2

Project Name:	Horsham	Remarks:	Co-ordinates:	Level (m AOD):	Logger:
Location:	Homefields Farm, Bulls Lane, Cowfold	Dry Hole			
Client:	Adam Pierre B&CC Ltd.				

Samples and Insitu Testing			Level (m AOD)	Thickness (m)	Legend	Depth (m bgl)	Stratum Description
Depth (m)	Type	Results					
						4.20	Dark grey-brown topsoilly SILT with matted grass at top (former topsoil and subsoil).

Pit Dimension (m)		Pit Stability:	Water Strikes:
Width:			
Length:			
Depth:			

Southern Testing ST Consult	Start - End Date:	Project ID:	Machine Type:	TP103
www.southerntesting.co.uk tel:01342 333100 www.stconsult.co.uk tel:01604 500020	12/04/2021	J14766		Sheet 1 of 1

Project Name:	Horsham	Remarks:	Co-ordinates:	Level (m AOD):	Logger:
Location:	Homefields Farm, Bulls Lane, Cowfold	Dry Hole			
Client:	Adam Pierre B&CC Ltd.				

Samples and Insitu Testing			Level (m AOD)	Thickness (m)	Legend	Depth (m bgl)	Stratum Description
Depth (m)	Type	Results					
				(1.30)			Soft to firm, sandy, gravelly, cobbly clay MADE GROUND. Gravel if fine to medium brick, earthenware, tile, chalk and occasional plastic sheeting.
						1.30	
				(0.50)			Soft, dark grey/black organic gravelly clay MADE GROUND. Gravel is fine to medium ash, sandstone, siltstone and occasional small wood fragments.
						1.80	
				(0.40)			Stiff, orange-brown gravelly silty CLAY.
						2.20	

1 2 3 4

Pit Dimension (m)		Pit Stability:	Water Strikes:
Width:			
Length:			
Depth:			

Southern Testing ST Consult	Start - End Date:	Project ID:	Machine Type:	TP104
www.southerntesting.co.uk tel:01342 333100 www.stconsult.co.uk tel:01604 500020	12/04/2021	J14766		Sheet 1 of 1

Project Name:	Horsham	Remarks:	Co-ordinates:	Level (m AOD):	Logger:
Location:	Homefields Farm, Bulls Lane, Cowfold	Dry Hole			
Client:	Adam Pierre B&CC Ltd.				

Samples and Insitu Testing			Level (m AOD)	Thickness (m)	Legend	Depth (m bgl)	Stratum Description
Depth (m)	Type	Results					
				(2.80)			Soft to firm, greyish-brown, very gravelly clay MADE GROUND. Gravel is predominantly fine to medium flint with occasional tile, earthenware, blacktop, brick and occasional cobble/boulder of concrete. Some small plastic sheeting fragments.
				(0.40)		2.80	Stiff, orange-brown mottled grey-brown gravelly silty CLAY with occasional fine to medium siltsone gravel.
						3.20	

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2
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4

Pit Dimension (m)		Pit Stability:	Water Strikes:
Width:			
Length:			
Depth:			

Southern Testing ST Consult	Start - End Date:	Project ID:	Machine Type:	TP105
www.southerntesting.co.uk tel:01342 333100 www.stconsult.co.uk tel:01604 500020	12/04/2021	J14766		Sheet 1 of 1

Project Name:	Horsham	Remarks:	Co-ordinates:	Level (m AOD):	Logger:
Location:	Homefields Farm, Bulls Lane, Cowfold	Slight seepage at base			
Client:	Adam Pierre B&CC Ltd.				

Samples and Insitu Testing			Level (m AOD)	Thickness (m)	Legend	Depth (m bgl)	Stratum Description
Depth (m)	Type	Results					
				(0.95)		0.95	Firm to stiff, dry, light brown gravelly silty clay MADE GROUND. Gravel is fine to coarse sub-rounded chalk, flint and occasional brick.
				(0.55)		1.50	Soft, dark grey organic, gravelly clay MADE GROUND with a little ash and some plastic (cable ties). Gravel is fine to medium with some cobbles, ash, sandstone flint, pottery, tile.
				(0.30)		1.80	Stiff, light orange-brown, very silty CLAY/clayey SILT.

Pit Dimension (m)		Pit Stability:	Water Strikes:
Width:			
Length:			
Depth:			

Southern Testing ST Consult	Start - End Date:	Project ID:	Machine Type:	TP106
www.southerntesting.co.uk tel:01342 333100 www.stconsult.co.uk tel:01604 500020	12/04/2021	J14766		Sheet 1 of 1

Project Name:	Horsham	Remarks:	Co-ordinates:	Level (m AOD):	Logger:
Location:	Homefields Farm, Bulls Lane, Cowfold	Dry Hole			
Client:	Adam Pierre B&CC Ltd.				

Samples and Insitu Testing			Level (m AOD)	Thickness (m)	Legend	Depth (m bgl)	Stratum Description
Depth (m)	Type	Results					
				(3.30)			Firm to stiff, light brown mottled grey-brown silty, gravelly clay MADE GROUND with patches of slightly organic clay. Gravel is fine to coarse chalk, sandstone, flint, brick tile and geogrid plastic.
				(0.20)		3.30 3.50	Very stiff, pale orange-brown clayey SILT with occasional siltstone/sandstone and black ironstained sandstone gravel.

1
2
3
4

Pit Dimension (m)		Pit Stability:	Water Strikes:
Width:			
Length:			
Depth:			

APPENDIX B – PHOTOGRAPHS

	
TP101	TP101 arisings
	
TP102	TP102 arisings
	
TP103	TP103 arisings



TP104



TP104 arisings



TP105



TP105 arisings





TP1



Arisings TP1



Bund view from south to north



Bund from south looking north-east



Bund from south looking north-west



Arisings TP2



TP2



TP3



Arisings TP3



TP4



Arisings TP5



TP5 with geotextile

	
Arisings TP6	TP6

APPENDIX C – SCREENING VALUES

These screening values are valid at the time of writing but may be subject to change and any such changes will have implications for the assessments based on them. Their validity should be confirmed at the time of site development.

Table 1 – Tier 1 Screening Values

Contaminant	Units	Proposed Land Use					
		Residential with home grown produce consumption	Residential without home grown produce consumption	Open Space * (Residential)	Open Space * (Park)	Allotments	Commercial / Industrial
Arsenic (As) [2]	mg/kg	37	40	79	170	43	640
Cadmium (Cd) [2]	mg/kg	11	85	120	555	1.9	190
Trivalent Chromium (CrIII) [2]	mg/kg	910	910	1,500	33,000	18,000	8600
Hexavalent Chromium (CrVI) [2]	mg/kg	6	6	7.7	220	1.8	33
Lead (Pb) [3]	mg/kg	200	310	630	1300	80	2330
Mercury (Hg) [1,2,7]	mg/kg	7.6-11	9.2-15	40	68-71	6.0	29-320
Selenium (Se) [2]	mg/kg	250	430	1,100	1,800	88	12,000
Nickel (Ni) [2,4]	mg/kg	130	180	230	800	53	980
Copper (Cu) [2,4]	mg/kg	2,400	7,100	12,000	44,000	520	68,000
Zinc (Zn) [2,4]	mg/kg	3,700	40,000	81,000	170,000	620	730,000
Phenol [1,2]	mg/kg	120-380	440-1200	440-1300	440-1300	23-83	440-1300
Benzo[a]pyrene [1,5]	mg/kg	1.7-2.4	2.6	4.9	10	0.67-2.7	36
Naphthalene [1,2]	mg/kg	2.3-1.3	2.3-13	77-430+	77-430+	4.1-24	77-430+
Total Cyanide (CN) [6]	mg/kg	/	/	/	/	/	/
Free Cyanide [6]	mg/kg	/	/	/	/	/	/
Complex Cyanides [6]	mg/kg	/	/	/	/	/	/
Thiocyanate [6]	mg/kg	/	/	/	/	/	/

Notes:

* Open Space levels calculated on the basis of the exposure modelling developed in the C4SL research.

+ Screening values constrained to saturation limit. Higher values may be acceptable on a site specific basis.

[1] Where ranges of values are given for organic contaminants the screening value is dependent on the Soil +Organic Matter.

[2] LQM/CIEH S4UL (2014). Copyright Land Quality Management Ltd. reproduced with permission; Publication Number S4UL 3116. All rights reserved.

[3] C4SL (DEFRA 2014).

[4] Copper, Zinc and Nickel may have phototoxic effects at the given concentrations. Alternative criteria should be adopted for importation of Topsoil or other soils for cultivation. BS3882:2015 and BS8601:2013 suggest values of 200 to 300mg/kg for Zn, 100 to 200mg/kg for Cu, and 60 to 110mg/kg for Ni, for topsoil and subsoil, depending on pH.

[5] Based on the Surrogate Marker approach and modelled using the modified exposure parameters of C4SL but retaining 'minimal risk' HCV.

[6] Screening criteria derived on a site specific basis if test results indicate.

[7] S4UL for Methyl Mercury, higher concentrations may be tolerable if inorganic mercury is the only species present. Lower concentrations apply for elemental Mercury.

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Analytical Report Number : 20-41066

Project / Site name:	Homefields Farm, Cowfold	**Samples received on:**	11/11/2020
Your job number:	J14608	**Samples instructed on/ Analysis started on:**	11/11/2020
Your order number:	J14608 1	**Analysis completed by:**	23/11/2020
Report Issue Number:	1	**Report issued on:**	23/11/2020
Samples Analysed:	7 soil samples		

Signed: [redacted]

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

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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.

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The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 20-41066
Project / Site name: Homefields Farm, Cowfold
Your Order No: J14608 1

Lab Sample Number				1681824	1681825	1681826	1681827
Sample Reference				TP1	TP2	TP3	TP4
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.00	0.00	0.00	1.50
Date Sampled				09/11/2020	09/11/2020	09/11/2020	09/11/2020
Time Taken				0830	0930	1000	1100
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	14	19	19
Total mass of sample received	kg	0.001	NONE	1.5	1.2	1.5	1.5
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected
General Inorganics							
pH - Automated	pH Units	N/A	MCERTS	8.1	8.5	7.8	7.8
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.19	0.19	0.66	0.21
Sulphide	mg/kg	1	MCERTS	11	34	32	12
Organic Matter	%	0.1	MCERTS	0.9	1.4	2	2.5
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	0.6	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	8	0.71
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	1.4	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	0.56	9.6	2
Pyrene	mg/kg	0.05	MCERTS	< 0.05	0.58	7.9	1.7
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	0.35	4.6	1.3
Chrysene	mg/kg	0.05	MCERTS	< 0.05	0.26	3.2	1.2
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	0.33	3.7	1.1
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	0.14	1.8	0.82
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	0.27	3.2	1
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	1.5	0.54
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.4	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	1.7	0.6
Total PAH							
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80	2.49	47.4	11

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Analytical Report Number: 20-41066
Project / Site name: Homefields Farm, Cowfold
Your Order No: J14608 1

Lab Sample Number				1681824	1681825	1681826	1681827
Sample Reference				TP1	TP2	TP3	TP4
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.00	0.00	0.00	1.50
Date Sampled				09/11/2020	09/11/2020	09/11/2020	09/11/2020
Time Taken				0830	0930	1000	1100
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**				
Heavy Metals / Metalloids							
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	11	13	13	7.3
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.6	0.5	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	21	25	29	20
Copper (aqua regia extractable)	mg/kg	1	MCERTS	48	34	32	18
Lead (aqua regia extractable)	mg/kg	1	MCERTS	38	54	220	56
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	18	20	21	11
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	150	140	120	65
Petroleum Hydrocarbons							
TPH C10 - C40	mg/kg	10	MCERTS	-	< 10	-	-
TPH2 (C6 - C10)	mg/kg	0.1	MCERTS	-	< 0.1	-	-
TPH C6 - C40	mg/kg	10	NONE	-	< 10	-	-

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

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Analytical Report Number: 20-41066
Project / Site name: Homefields Farm, Cowfold
Your Order No: J14608 1

Lab Sample Number				1681828	1681829	1681830
Sample Reference				TP4	TP5	TP6
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				2.80	0.00	0.00
Date Sampled				09/11/2020	09/11/2020	09/11/2020
Time Taken				1100	1200	1200
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	15	14	15
Total mass of sample received	kg	0.001	NONE	0.5	1.5	1.5
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected
General Inorganics						
pH - Automated	pH Units	N/A	MCERTS	7.3	8.2	8.4
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.038	0.3	0.12
Sulphide	mg/kg	1	MCERTS	4	40	< 1.0
Organic Matter	%	0.1	MCERTS	0.5	1.5	0.7
Total Phenols						
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Speciated PAHs						
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	0.73	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	1.5	< 0.05
Pyrene	mg/kg	0.05	MCERTS	< 0.05	1.3	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	0.87	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05	0.83	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	0.76	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	0.54	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	0.72	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	0.38	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	0.45	< 0.05
Total PAH						
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80	8.09	< 0.80

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Analytical Report Number: 20-41066
Project / Site name: Homefields Farm, Cowfold
Your Order No: J14608 1

Lab Sample Number				1681828	1681829	1681830
Sample Reference				TP4	TP5	TP6
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				2.80	0.00	0.00
Date Sampled				09/11/2020	09/11/2020	09/11/2020
Time Taken				1100	1200	1200
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
Heavy Metals / Metalloids						
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	9.2	12	17
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	0.6	< 0.2
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	19	23	29
Copper (aqua regia extractable)	mg/kg	1	MCERTS	13	31	28
Lead (aqua regia extractable)	mg/kg	1	MCERTS	19	84	44
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	13	18	25
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	45	160	120
Petroleum Hydrocarbons						
TPH C10 - C40	mg/kg	10	MCERTS	< 10	-	< 10
TPH2 (C6 - C10)	mg/kg	0.1	MCERTS	< 0.1	-	< 0.1
TPH C6 - C40	mg/kg	10	NONE	< 10	-	< 10

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

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number : 20-41066
Project / Site name: Homefields Farm, Cowfold

* 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 *
1681824	TP1	None Supplied	0	Brown clay and sand with gravel.
1681825	TP2	None Supplied	0	Brown clay and sand with chalk and vegetation.
1681826	TP3	None Supplied	0	Light brown clay and sand with gravel.
1681827	TP4	None Supplied	1.5	Light brown clay and sand with vegetation and gravel.
1681828	TP4	None Supplied	2.8	Light brown clay and sand with vegetation and gravel.
1681829	TP5	None Supplied	0	Brown clay and sand with gravel and plastic.
1681830	TP6	None Supplied	0	Light brown clay with vegetation and gravel.

Analytical Report Number : 20-41066
Project / Site name: Homefields Farm, Cowfold

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
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
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
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode.	In-house method	L010-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
TPH2 (Soil)	Determination of hydrocarbons C6-C10 by headspace GC-MS.	In-house method based on USEPA8260	L088-PL	W	MCERTS
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
TPH Banding in Soil by FID	Determination of hexane extractable hydrocarbons in soil by GC-FID.	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	W	MCERTS
TPH C6 - C40 (soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method.	L076-PL	W	NONE

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.

Sample Deviation Report

Analytical Report Number : 20-41066
Project / Site name: Homefields Farm, Cowfold

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
TP4	None Supplied	S	1681828	b	TPH2 (Soil)	L088-PL	b

Key: **a** - No sampling date **b** - Incorrect container
c - Holding time **d** - Headspace **e** - Temperature

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e: reception@i2analytical.com

Analytical Report Number : 20-41067

Project / Site name:	Homefields Farm, Cowfold	**Samples received on:**	11/11/2020
Your job number:	J14608	**Samples instructed on/ Analysis started on:**	11/11/2020
Your order number:	J14608 1	**Analysis completed by:**	20/11/2020
Report Issue Number:	1	**Report issued on:**	20/11/2020
Samples Analysed:	1 wac multi sample		

Signed: [redacted]

Rachel Bradley
Deputy Quality Manager
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.

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

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email:reception@i2analytical.com

Waste Acceptance Criteria Analytical Results

Report No:	**20-41067**						
					Client:	**SOUTHERNT**	
Location	**Homefields Farm, Cowfold**						
Lab Reference (Sample Number)	1681831				**Landfill Waste Acceptance Criteria Limits**		
Sampling Date	09/11/2020				Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID	WAC						
Depth (m)	0.00						
Solid Waste Analysis							
TOC (%)**	0.3				3%	5%	6%
Loss on Ignition (%) **	3.2				--	--	10%
BTEX (µg/kg) **	< 10				6000	--	--
Sum of PCBs (mg/kg) **	< 0.30				1	--	--
Mineral Oil (mg/kg) #	< 10				500	--	--
Total PAH (WAC-17) (mg/kg)	3.75				100	--	--
pH (units)**	7.6				--	>6	--
Acid Neutralisation Capacity (mol / kg)	7.1				--	To be evaluated	To be evaluated
Eluate Analysis (BS EN 12457 - 3 preparation utilising end over end leaching procedure)	2:1	8:1		Cumulative 10:1	Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg (mg/kg)		
	mg/l	mg/l		mg/kg			
Arsenic *	< 0.010	< 0.010		< 0.050	0.5	2	25
Barium *	0.030	0.021		0.22	20	100	300
Cadmium *	< 0.0005	< 0.0005		< 0.0020	0.04	1	5
Chromium *	< 0.0010	< 0.0010		0.0064	0.5	10	70
Copper *	0.011	0.0063		0.068	2	50	100
Mercury *	< 0.0015	< 0.0015		< 0.010	0.01	0.2	2
Molybdenum *	< 0.0030	< 0.0030		< 0.020	0.5	10	30
Nickel *	0.0024	0.0012		0.013	0.4	10	40
Lead *	< 0.0050	< 0.0050		0.045	0.5	10	50
Antimony *	< 0.0050	< 0.0050		< 0.020	0.06	0.7	5
Selenium *	< 0.010	< 0.010		< 0.040	0.1	0.5	7
Zinc *	0.018	0.0077		0.088	4	50	200
Chloride *	16	< 4.0		41	800	15000	25000
Fluoride	0.58	0.50		5.1	10	150	500
Sulphate *	80	26		310	1000	20000	50000
TDS*	260	140		1500	4000	60000	100000
Phenol Index (Monohydric Phenols) *	< 0.13	< 0.13		< 0.50	1	-	-
DOC	20	8.0		92	500	800	1000
Leach Test Information							
Stone Content (%)	< 0.1						
Sample Mass (kg)	1.5						
Dry Matter (%)	83						
Moisture (%)	17						
Stage 1							
Volume Eluate L2 (litres)	0.32						
Filtered Eluate VE1 (litres)	0.18						

Results are expressed on a dry weight basis, after correction for moisture content where applicable.

*= UKAS accredited (liquid eluate analysis only)

Stated limits are for guidance only and i2 cannot be held responsible for any discrepancies with current legislation

** = MCERTS accredited

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes as defined by the Waste (England and Wales) Regulations 2011 (as amended) and EA Guidance WM3.
This analysis is only applicable for landfill acceptance criteria (The Environmental Permitting (England and Wales) Regulations) and does not give any indication as to whether a waste may be hazardous or non-hazardous.

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The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number : 20-41067
Project / Site name: Homefields Farm, Cowfold

* 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 *
1681831	WAC	None Supplied	0	Brown clay and sand with vegetation and gravel

Analytical Report Number : 20-41067
Project / Site name: Homefields Farm, Cowfold

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
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
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
Preparation WAC leachate		In-house method	L043-PL	W	NONE
Speciated WAC-17 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. MCERTS accredited except Coronene.	L064-PL	D	MCERTS
Chloride in WAC leachate (BS EN 12457-3 Prep)	Determination of Chloride colorimetrically by discrete analyser.	In house based on MEWAM Method ISBN 0117516260.	L082-PL	W	ISO 17025
Fluoride in WAC leachate (BS EN 12457-3 Prep)	Determination of fluoride in leachate by 1:1ratio with a buffer solution followed by Ion Selective Electrode.	In-house method based on Standard Methods for the Examination of Water and Waste Water, 21st Ed.	L033-PL	W	ISO 17025
Phenol Index in WAC leachate (BS EN 12457-3 Prep)	Determination of monohydric phenols in leachate by continuous flow analyser.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
Sulphate in WAC leachate (BS EN 12457-3 Prep)	Determination of sulphate in leachate by acidification followed by ICP-OES.	In-house method based on Standard Methods for the Examination of Water and Waste Water, 21st Ed.	L039-PL	W	ISO 17025
TDS in WAC leachate (BS EN 12457-3 Prep)	Determination of total dissolved solids in leachate by electrometric measurement.	In-house method based on Standard Methods for the Examination of Water and Waste Water, 21st Ed.	L031-PL	W	NONE
DOC in WAC leachate (BS EN 12457-3 Prep)	Determination of dissolved organic carbon in leachate by TOC/DOC NDIR analyser.	In-house method based on Standard Methods for the Examination of Water and Waste Water, 21st Ed.	L037-PL	W	NONE
Acid neutralisation capacity of soil	Determination of acid neutralisation capacity by addition of acid or alkali followed by electronic probe.	In-house method based on Guidance an Sampling and Testing of Wastes to Meet Landfill Waste Acceptance	L046-PL	W	NONE
Loss on ignition of soil @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace.	In house method.	L047-PL	D	MCERTS
Mineral Oil in Soil C10 - C40	Determination of dichloromethane/hexane extractable hydrocarbons in soil by GC-MS.	In-house method based on USEPA 8270	L076-PL	D	NONE
pH in soil	Determination of pH in soil by addition of water followed by electrometric measurement.	In house method.	L005-PL	W	MCERTS
Total organic carbon in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L023-PL	D	MCERTS
Metals in WAC leachate (BS EN 12457-3 Prep)	Determination of metals in leachate by acidification followed by ICP-OES.	In-house method based on Standard Methods for the Examination of Water and Waste Water, 21st Ed.	L039-PL	W	ISO 17025

Analytical Report Number : 20-41067
Project / Site name: Homefields Farm, Cowfold

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
PCB's by GC-MS in soil	Determination of PCB by extraction with acetone and hexane followed by GC-MS.	In-house method based on USEPA 8082	L027-PL	D	MCERTS
BTEX (Sum of BTEX compounds) in soil	Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260	L073B-PL	W	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.

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Analytical Report Number : 21-68439

Replaces Analytical Report Number: 21-68439, issue no. 1
Additional analysis undertaken.

Project / Site name:	Homefields Farm, Cowfold	**Samples received on:**	14/04/2021
Your job number:	J14766	**Samples instructed on/ Analysis started on:**	14/04/2021
Your order number:	J14766-1	**Analysis completed by:**	06/05/2021
Report Issue Number:	2	**Report issued on:**	06/05/2021
Samples Analysed:	14 soil samples		

[redacted]

Signed:

Joanna Wawrzeczko
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.

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The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 21-68439
Project / Site name: Homefields Farm, Cowfold
Your Order No: J14766-1

Lab Sample Number				1835458	1835459	1835460	1835461	1835462
Sample Reference				TP101	TP101	TP102	TP102	TP102
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.50	1.50	0.00-2.00	2.50	3.50
Date Sampled				12/04/2021	12/04/2021	12/04/2021	12/04/2021	12/04/2021
Time Taken				0830	0830	0900	0900	0900
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	16	18	15	18	16
Total mass of sample received	kg	0.001	NONE	0.40	0.40	0.40	0.40	0.40
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	-	-	-
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	-	-	-
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	-	-	-
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	7.5	7.7	7.9	6.6	7.9
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.11	0.12	0.18	0.063	0.29
Sulphide	mg/kg	1	MCERTS	5.8	5.9	9.4	1.0	31
Organic Matter	%	0.1	MCERTS	0.8	2.8	1.8	0.4	2.8
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.71	< 0.05	1.8
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	0.62
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	2.7	1.6	< 0.05	6.3
Pyrene	mg/kg	0.05	MCERTS	< 0.05	2.4	1.6	< 0.05	5.6
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	1.5	0.92	< 0.05	2.5
Chrysene	mg/kg	0.05	MCERTS	< 0.05	1.3	0.81	< 0.05	2.0
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	1.7	1.0	< 0.05	2.7
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	0.68	0.52	< 0.05	0.96
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	1.5	1.0	< 0.05	2.2
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	0.69	0.51	< 0.05	1.0
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	0.22	< 0.05	< 0.05	0.30
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	0.82	0.61	< 0.05	1.2
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80	13.5	9.33	< 0.80	27.3
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	11	11	10	7.2	9.9
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.4	0.4	0.5	0.2	0.5
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	34	19	21	27	16
Copper (aqua regia extractable)	mg/kg	1	MCERTS	28	23	29	20	19
Lead (aqua regia extractable)	mg/kg	1	MCERTS	35	92	57	18	48
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	34	13	17	11	13
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	1.1	< 1.0	< 1.0	1.3
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	110	160	130	41	110

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Analytical Report Number: 21-68439
Project / Site name: Homefields Farm, Cowfold
Your Order No: J14766-1

Lab Sample Number				1835458	1835459	1835460	1835461	1835462
Sample Reference				TP101	TP101	TP102	TP102	TP102
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.50	1.50	0.00-2.00	2.50	3.50
Date Sampled				12/04/2021	12/04/2021	12/04/2021	12/04/2021	12/04/2021
Time Taken				0830	0830	0900	0900	0900
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Petroleum Hydrocarbons								
TPH C10 - C40	mg/kg	10	MCERTS	-	-	-	-	-
TPH2 (C6 - C10)	mg/kg	0.1	MCERTS	-	-	-	-	-
TPH C6 - C40	mg/kg	10	NONE	-	-	-	-	-

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

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Analytical Report Number: 21-68439
Project / Site name: Homefields Farm, Cowfold
Your Order No: J14766-1

Lab Sample Number				1835463	1835464	1835465	1835466	1835467
Sample Reference				TP103	TP103	TP104	TP104	TP105
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.00-1.30	1.50	0.00-1.20	1.20-2.80	0.00-0.95
Date Sampled				12/04/2021	12/04/2021	12/04/2021	12/04/2021	12/04/2021
Time Taken				0930	0930	0930	0930	1030
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	14	18	12	12	12
Total mass of sample received	kg	0.001	NONE	0.40	0.40	0.40	0.40	0.40
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	Chrysotile	-	-	-
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Detected	Not-detected	Not-detected	Not-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	7.8	8.0	8.1	8.2	8.1
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.51	0.28	1.6	0.89	0.037
Sulphide	mg/kg	1	MCERTS	2.0	30	6.3	6.0	< 1.0
Organic Matter	%	0.1	MCERTS	1.3	2.0	0.9	1.5	1.4
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.68	< 0.05	0.63	0.23	0.46
Anthracene	mg/kg	0.05	MCERTS	0.20	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	1.2	0.23	1.3	0.61	0.54
Pyrene	mg/kg	0.05	MCERTS	1.1	0.26	1.2	0.57	0.52
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.57	< 0.05	0.74	0.36	0.19
Chrysene	mg/kg	0.05	MCERTS	0.41	< 0.05	0.63	0.32	0.18
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	0.63	< 0.05	0.89	0.49	0.20
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.17	< 0.05	0.35	0.19	0.11
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.56	< 0.05	0.83	0.44	0.21
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.23	< 0.05	0.41	0.24	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.28	< 0.05	0.52	0.33	< 0.05
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	6.00	< 0.80	7.48	3.78	2.41
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	12	14	11	9.1	9.3
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.4	0.6	0.5	0.5	0.3
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	29	25	26	20	21
Copper (aqua regia extractable)	mg/kg	1	MCERTS	36	68	28	37	19
Lead (aqua regia extractable)	mg/kg	1	MCERTS	67	160	89	110	76
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	23	19	22	16	14
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	100	160	190	220	78

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Analytical Report Number: 21-68439
Project / Site name: Homefields Farm, Cowfold
Your Order No: J14766-1

Lab Sample Number				1835463	1835464	1835465	1835466	1835467
Sample Reference				TP103	TP103	TP104	TP104	TP105
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.00-1.30	1.50	0.00-1.20	1.20-2.80	0.00-0.95
Date Sampled				12/04/2021	12/04/2021	12/04/2021	12/04/2021	12/04/2021
Time Taken				0930	0930	0930	0930	1030
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Petroleum Hydrocarbons								
TPH C10 - C40	mg/kg	10	MCERTS	-	240	-	-	-
TPH2 (C6 - C10)	mg/kg	0.1	MCERTS	-	< 0.1	-	-	-
TPH C6 - C40	mg/kg	10	NONE	-	240	-	-	-

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

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Analytical Report Number: 21-68439
Project / Site name: Homefields Farm, Cowfold
Your Order No: J14766-1

Lab Sample Number				1835468	1835469	1835470	1835471
Sample Reference				TP105	TP106	TP106	TP106
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.50	0.00-1.50	1.50-3.30	2.00
Date Sampled				12/04/2021	12/04/2021	12/04/2021	12/04/2021
Time Taken				1030	1100	1100	1100
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	15	15	15	25
Total mass of sample received	kg	0.001	NONE	0.40	0.40	0.40	0.14
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	-	-
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	-
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	-	-
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	-	-
General Inorganics							
pH - Automated	pH Units	N/A	MCERTS	8.0	8.0	7.9	-
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.18	0.15	0.16	-
Sulphide	mg/kg	1	MCERTS	10	5.3	< 1.0	-
Organic Matter	%	0.1	MCERTS	1.1	1.2	0.9	-
Total Phenols							
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-
Speciated PAHs							
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	-
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	-
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	-
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	-
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	-
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	-
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	-
Pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	-
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	-
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	-
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	-
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	-
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	-
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	-
Total PAH							
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80	< 0.80	< 0.80	-
Heavy Metals / Metalloids							
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	12	11	9.0	-
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.6	0.5	0.4	-
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	-
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	20	23	30	-
Copper (aqua regia extractable)	mg/kg	1	MCERTS	31	28	25	-
Lead (aqua regia extractable)	mg/kg	1	MCERTS	49	70	39	-
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	-
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	21	18	26	-
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	1.7	< 1.0	< 1.0	-
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	140	130	110	-

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 21-68439
Project / Site name: Homefields Farm, Cowfold
Your Order No: J14766-1

Lab Sample Number				1835468	1835469	1835470	1835471
Sample Reference				TP105	TP106	TP106	TP106
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.50	0.00-1.50	1.50-3.30	2.00
Date Sampled				12/04/2021	12/04/2021	12/04/2021	12/04/2021
Time Taken				1030	1100	1100	1100
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**				
Petroleum Hydrocarbons							
TPH C10 - C40	mg/kg	10	MCERTS	< 10	-	-	< 10
TPH2 (C6 - C10)	mg/kg	0.1	MCERTS	< 0.1	-	-	< 0.1
TPH C6 - C40	mg/kg	10	NONE	< 10	-	-	< 10

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

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Analytical Report Number: 21-68439
Project / Site name: Homefields Farm, Cowfold
Your Order No: J14766-1

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
1835464	TP103	1.50	119	Loose Fibres	**Chrysotile**	< 0.001	**< 0.001**

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

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The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number : 21-68439
Project / Site name: Homefields Farm, Cowfold

* 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 *
1835458	TP101	None Supplied	0.5	Brown loam and clay with gravel.
1835459	TP101	None Supplied	1.5	Brown loam and sand with gravel and vegetation.
1835460	TP102	None Supplied	0.00-2.00	Brown loam and clay with gravel.
1835461	TP102	None Supplied	2.5	Brown loam and clay with vegetation.
1835462	TP102	None Supplied	3.5	Brown loam and clay with gravel and vegetation.
1835463	TP103	None Supplied	0.00-1.30	Brown clay and sand with vegetation.
1835464	TP103	None Supplied	1.5	Brown clay and loam.
1835465	TP104	None Supplied	0.00-1.20	Brown loam and clay with gravel and vegetation.
1835466	TP104	None Supplied	1.20-2.80	Brown clay and sand with gravel and vegetation.
1835467	TP105	None Supplied	0.00-0.95	Brown clay and sand with vegetation.
1835468	TP105	None Supplied	1.5	Brown clay and sand with gravel and vegetation.
1835469	TP106	None Supplied	0.00-1.50	Brown clay and loam with gravel and vegetation.
1835470	TP106	None Supplied	1.50-3.30	Brown clay and loam with gravel and vegetation.
1835471	TP106	None Supplied	2	Brown clay and loam with vegetation.

Analytical Report Number : 21-68439
Project / Site name: Homefields Farm, Cowfold

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
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
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
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
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
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
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode.	In-house method	L010-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
TPH2 (Soil)	Determination of hydrocarbons C6-C10 by headspace GC-MS.	In-house method based on USEPA8260	L088-PL	W	MCERTS
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
TPH Banding in Soil by FID	Determination of hexane extractable hydrocarbons in soil by GC-FID.	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-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
TPH C6 - C40 (soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method.	L076-PL	W	NONE

Analytical Report Number : 21-68439
Project / Site name: Homefields Farm, Cowfold

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

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.

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Sample Deviation Report

Analytical Report Number : 21-68439
Project / Site name: Homefields Farm, Cowfold

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
TP105	None Supplied	S	1835468	b	TPH2 (Soil)	L088-PL	b

Key: **a** - No sampling date **b** - Incorrect container
c - Holding time **d** - Headspace **e** - Temperature