

19th December 2019

Our ref: GE18732/FG02/191219



Omar Ramirez-Morales
Bellway Homes Limited (Wessex)
Embankment Way
Castleman Business Centre
Ringwood
Hampshire
BH24 1EU

Dear Omar,

RE: New Barn Lane, North Bersted - Soakage

Geo-Environmental Services Limited (Geo-Environmental) was instructed by Bellway Homes to undertake trial pit soakage testing and collect shallow soil samples for geochemical laboratory analysis to inform water pipe risk assessment and specification, at the above named site.

The purpose of this investigation was to ascertain the ground conditions, infiltration values of the strata underlying key positions on the site and to inform the emerging drainage strategy for the proposed development. Environmental sampling was also required of shallow soils (up to 1.2m bgl) to inform the assessment of water pipe material selection to the local water company (Portsmouth Water). In order to complete the water pipe assessment reference will need to be made to the previous Desk Study and Intrusive Investigation works undertaken by a third party, in order to support the water pipe material selection.

Scope of Works

The following scope of works was agreed with the Client:

- The construction of 6No. machine dug trial pits to provisional depths of 1-2m bgl. (Locations as specified by the Client)
- Attendance of a road tanker or 4x4 water bowser to supply water for trial pit soakage tests. Undertake trial pit soakage tests in general accordance with BRE Digest 365.
- Collection of soil samples from each trial pit location up to 1.2m bgl
- Analysis of soil samples for a suite of commonly occurring brownfield contaminants. Testing included banded hydrocarbons, and BTEX so as to comply with the water authority testing requirements. Due to the sites historic use as farmland and the lack of any plausible pollutant linkages, VOC's and SVOC's were not deemed a risk to the site and were not tested for.

The intrusive investigation was undertaken on 6th December 2019 with the works supervised by a Geo-Environmental Engineer.

Ground Conditions

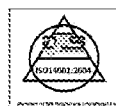
In total, the intrusive investigation comprised the excavation of 6No. trial pits to depths of between 1.40m and 2.0m bgl. Figure 2 presents the exploratory hole locations.

Geo-Environmental Services Ltd
Unit 7 Danworth Farm, Cuckfield Road, Hurstpierpoint, West Sussex BN6 9GL



Site Investigations

Geo-Environmental Services Ltd incorporated in England number 3214980 VAT number 679544479



The ground conditions encountered during the investigation were broadly consistent with the anticipated published sequence of strata. In summary, ground conditions typically comprised a mantle of Topsoil overlying soils inferred to be of the River Terrace Deposits.

The White Chalk Subgroup is understood to be present beneath the River Terrace Deposits on this site. However the pits were not excavated to depths that encountered this formation.

Topsoil was encountered to a depth of 0.25m bgl and typically consisted of grass over dark brown slightly sandy silty clay with frequent roots and rootlets.

Soils inferred to be River Terrace Deposits were encountered from beneath the Topsoil to the maximum extent of the investigation i.e. 2m bgl. The deposits were of a mixed composition and comprised sandy clay, sandy gravelly clay and gravelly clay.

Figure 2 presents the investigation locations. For more a detailed descriptions of the ground conditions, reference should be made to the exploratory hole logs enclosed in Appendix A.

Obstructions

No obstructions were encountered during the intrusive investigation works. However, the presence of natural obstructions elsewhere on site cannot be completely discounted.

Groundwater

Groundwater was encountered within TP1, TP2 and TP3. The depths at which groundwater was encountered are presented within Table 1 below.

Location	Depth of Groundwater (m bgl)	Comments
TP1	1.6	Seepage through pit sidewall
TP2	2.0	Seepage in base of pit
TP3	1.5	Water seepage through sand layers in base and side of pit

Table 1 Summary of Groundwater Depths

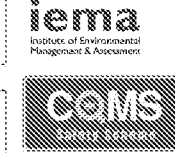
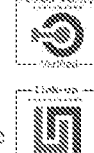
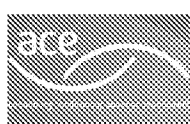
It should also be noted that although groundwater was not noted within TP4-TP6 during the excavation and logging process, when it came to undertaking the soakage testing, groundwater was noted to be present within the base of each of these pits.

Groundwater monitoring wells were installed as part of a separate investigation for the purposes of winter groundwater monitoring. This monitoring is ongoing and due to be reported under separate cover.

Trial Pit Soakage Testing

Trial pit soakage testing was undertaken within 6No. trial pits, TP1-TP6. The soakage testing was undertaken in general accordance with BRE Digest 365. The testing was undertaken over one day.

Water levels within every trial pit increased during the soakage testing period and it was not possible to calculate an infiltration rate for any of the trial pits. Therefore the testing was deemed to have failed. All trial pits comprised cohesive clay layers and groundwater was encountered within all pits prior to commencing testing. The detailed results are presented in Appendix B.



The results from the soakage testing to date indicate that the discharge of storm water to the ground would not be achievable via conventional soakaways on this site. Therefore, on-site storage and attenuation, or alternative storm water disposal options should be considered. If the current site drainage discharges to a ditch or stream network it may be possible to seek an extension of riparian rights to attenuate storm flow to an agreed rate, e.g. green field run off, and discharge to the ditch/watercourse network.

Visual and Olfactory Contamination

No visual or olfactory evidence of contamination was identified during the investigation.

Contamination Assessment

Human Health

The presence of a possible contaminant does not necessarily imply that a site or area is contaminated or that there is any unacceptable risk to human health. A Preliminary Quantitative Risk Assessment has been undertaken in order to evaluate any unacceptable risks posed to human health with respect to the proposed redevelopment. It should be noted that this assessment is protective of the chronic long-term effects of contaminants, which is also likely to be protective of any possible immediate acute effects.

A quantitative risk assessment has been undertaken by comparing the results of the laboratory chemical testing of shallow soils against the ATRISKOIL Soil Screening Values (SSVs) derived by Atkins, or against the Suitable For Use Levels (S4ULs) published by LQM (Copyright Land Quality Management Limited reproduced with permission, Publication Number S4UL3453. All rights Reserved) and Category 4 Screening Levels (C4SLs) published by DEFRA for the proposed end use. Although the C4SLs were released for Part 2A use, the associated policy companion document for the C4SLs indicated that they may also be used for planning. Although the C4SLs represent a marginally higher risk level than the SSACs (low risk rather than minimal risk) it is considered that the risk levels remain very low. Therefore, the final C4SLs are considered to be suitable to assess soils under the planning regime.

The exploratory holes were located to provide general coverage of the site in line with the proposed development. Samples were selected to target the shallow soils and underlying natural ground and to provide coverage of the site. Analysis was undertaken on soil samples collected from these exploratory holes.

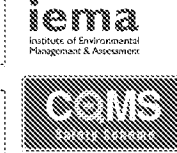
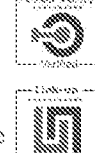
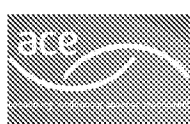
In the first instance the results of the sample analysis were compared to the Tier 1 screening criteria where available. All of the results were noted to be below the respective assessment criteria for a residential end use, therefore further assessment was not considered necessary.

In addition, all samples submitted for laboratory testing were screened for asbestos, no asbestos was identified within any of the samples submitted for screening. The laboratory test results are presented within Appendix C.

Water supply pipe materials

The current guidance on the selection of materials for water supply pipes to be laid in contaminated land is contained in UK Water Industry Research's (UKWIR) report reference 10/WM/03/21 (re-issued 2010). However, the guidance is not mandatory and there has been concerns raised by various industry technical associations regarding the document and the methodologies proposed.

Based on the testing carried out by Geo-Environmental the selection of PE pipe is deemed suitable on this site due to the former greenfield land usage and the laboratory testing analysis that has not identified any contaminants



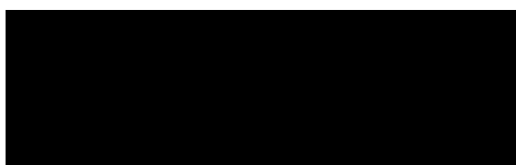
at a level that would impact the site. As such, the utility company should be consulted in order to confirm this initial assessment.

As a matter of good practice and to maximise the protection to maintenance workers, it is recommended that clean, granular backfill is used in service runs and that marker tapes are used for all buried services.

Closure

We trust we have interpreted your request correctly and provided sufficient information for your current requirements. If you have any questions or queries in relation the information provided at this stage please let us know.

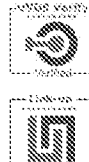
Yours sincerely
For and on Behalf of Geo-Environmental



FIONA GOODE BSc (Hons), MSc, FGS, MEnvSc, RSoBRA
Senior Consultant Engineer

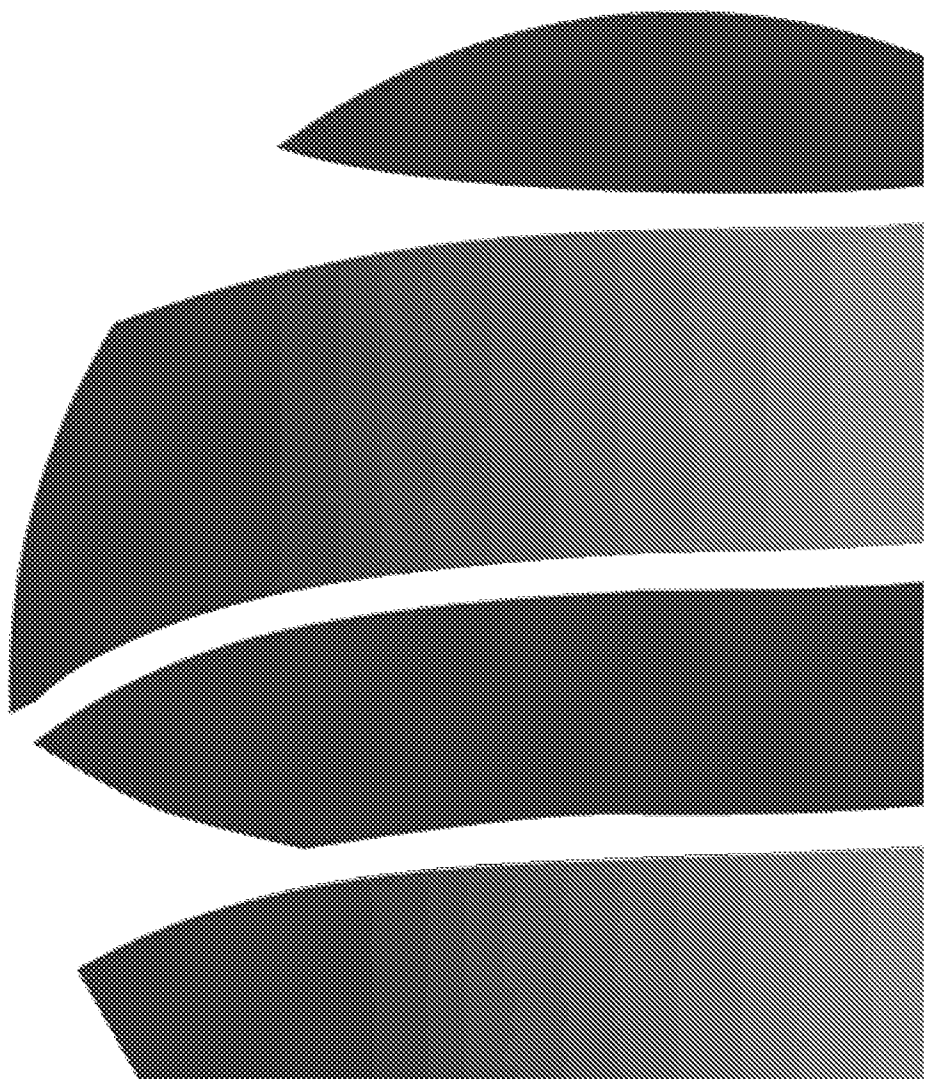


Enc Figure 1 – Site Location Plan
 Figure 2 – Trial Pit Location Plan (proposed development)
 Figure 3 – Trial Pit Location Plan (Aerial)
 Appendix A – Exploratory Hole Logs
 Appendix B – Soakage Test Results
 Appendix C – Geochemical Laboratory Test Results





Figures





Project:	Newbarn Lane, North Bersted, PO21 5DN			Title	Site Location Plan	
Client:	Bellway Homes Ltd (Wessex)			Geo-Environmental Services Ltd Unit 7 Danworth Farm, Cuckfield Road Hurstpierpoint, West Sussex BN6 9GL +44(0)1273 832972 www.gesl.net		 Geo-Environmental
Ref No:	GE18732	Revision:	0			
Drawn:	FG	Date:	08/10/2019			
Figure:	1	Scale:	Not To Scale			



Project:	Newbarn Lane, North Bersted, PO21 5DN			Title	Trial Pit Local Plan (proposed development)		
Client:	Bellway Homes Ltd (Wessex)			Geo-Environmental Services Ltd Unit 7 Danworth Farm, Cuckfield Road Hurstpierpoint, West Sussex BN6 9GL +44(0)1273 832972 www.gesl.net		 Geo-Environmental	
Ref No:	GE18732	Revision:	0				
Drawn:	FG	Date:	03/12/2019				
Figure:	2	Scale:	Not To Scale				

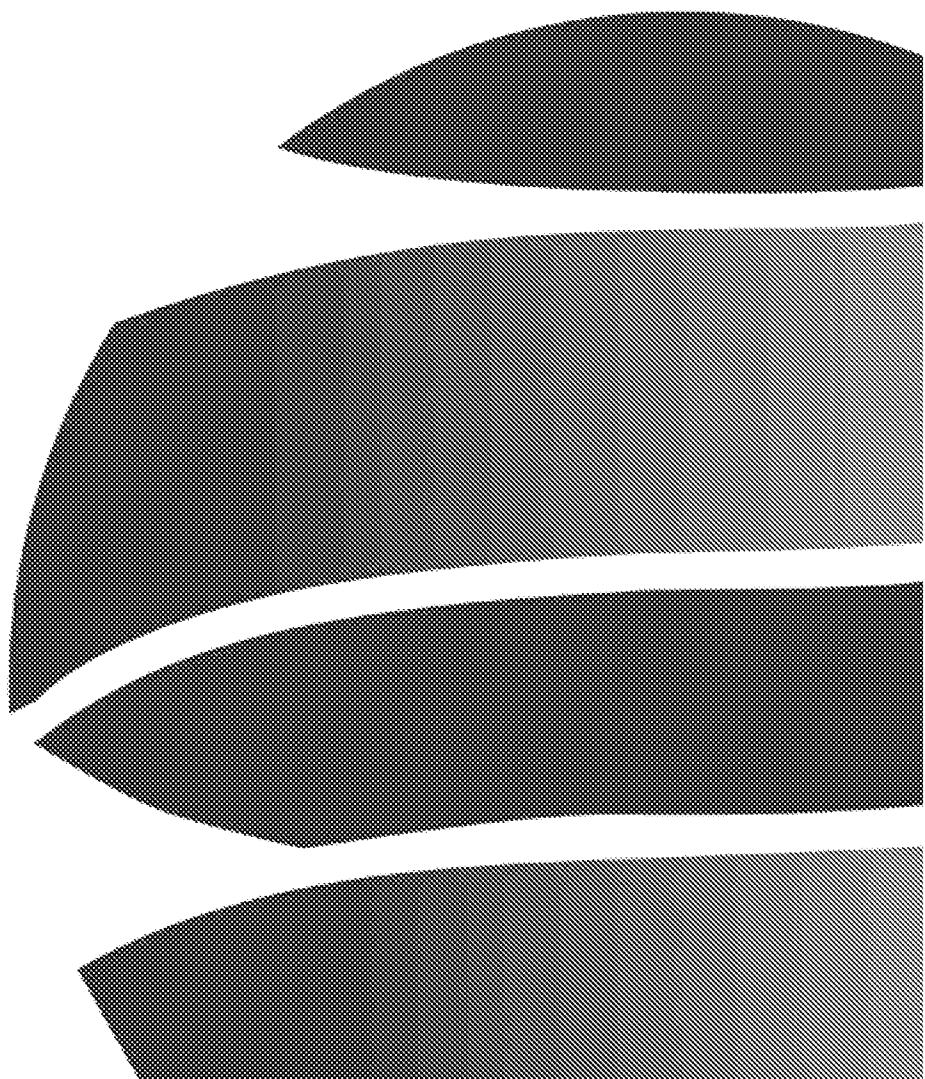


Project:	Newbarn Lane, North Bersted, PO21 5DN			Title	Trial Pit Locations (Aerial)		
Client:	Bellway Homes Ltd (Wessex)			Geo-Environmental Services Ltd Unit 7 Danworth Farm, Cuckfield Road Hurstpierpoint, West Sussex BN6 9GL +44(0)1273 832972 www.gesl.net		 Geo-Environmental	
Ref No:	GE18732	Revision:	0				
Drawn:	FG	Date:	19/12/2019				
Figure:	3	Scale:	Not To Scale				



APPENDIX A

Exploratory Hole Logs





Unit 7, Danworth Farm
Hurstpierpoint
BN6 9GL

Geo-Environmental www.gesl.net

Trial Pit Log

Trial Pit No

TP1

Sheet 1 of 1

Project Name: New Barn Lane

Project No.
GE18732

Co-ords: 191782.00 - 100889.00
Level:

Date
06/12/2019

Location: North Bersted

Dimensions (m):

2.00

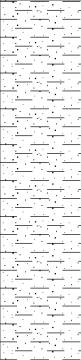
Scale
1:25

Client: Bellway Homes (Wessex)

Depth
1.60

0.50

Logged
FG

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.60	ES		0.20			Grass over dark brown slightly sandy silty CLAY with frequent roots and rootlets TOPSOIL	
				1.40			Firm orange brown slightly sandy CLAY with occasional flint gravel RIVER TERRACE DEPOSITS	1
				1.60			Firm orange and grey mottled slightly sandy CLAY with occasional flint gravel RIVER TERRACE DEPOSITS	2
							End of Pit at 1.60m	3
								4
								5
Water Strike		Remarks		Slight water seepage through sidewall. Soakage testing				
Depth Strike		Stability		Sides stable				





Unit 7, Danworth Farm
Hurstpierpoint
BN6 9GL

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Trial Pit Log

Trial Pit No

TP2

Sheet 1 of 1

Project Name: New Barn Lane

Project No.
GE18732

Co-ords: 491730.00 - 100838.00
Level:

Date
06/12/2019

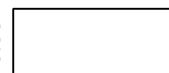
Location: North Bersted

Dimensions (m):

1.90

Depth
2.00

0.50



Scale
1:25

Logged
FG

Client: Bellway Homes (Wessex)

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.40	ES		0.15			Grass over dark brown slightly sandy silty CLAY with frequent roots and rootlets TOPSOIL	
				1.20			Firm brown and orange mottled slightly sandy CLAY. Sand is fine RIVER TERRACE DEPOSITS	1
				2.00			Firm to stiff orange and grey mottled slightly sandy CLAY RIVER TERRACE DEPOSITS	2
							End of Pit at 2.00m	3
								4
								5
Water Strike		Remarks		Groundwater seepage in base of pit. Soakage testing				
Depth Strike		Stability		Sides stable				





Unit 7, Danworth Farm
Hurstpierpoint
BN6 9GL

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Trial Pit Log

Trial Pit No

TP3

Sheet 1 of 1

Project Name: New Barn Lane

Project No.
GE18732

Co-ords: 491669.00 - 100871.00
Level:

Date
06/12/2019

Location: North Bersted

Dimensions (m):

2.00

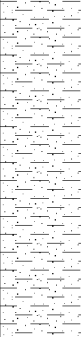
Scale
1:25

Client: Bellway Homes (Wessex)

Depth
1.60

0.50

Logged
FG

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.15	ES		0.25			Grass over dark brown slightly sandy silty CLAY with frequent roots and rootlets TOPSOIL	
				1.40			Firm orange brown slightly sandy CLAY. Sand is fine RIVER TERRACE DEPOSITS	1
				1.60			Firm orange and grey mottled sandy CLAY with frequent bands of grey and orange mottled fine SAND RIVER TERRACE DEPOSITS End of Pit at 1.60m	2
								3
								4
								5
Water Strike								
Depth Strike								
		Remarks	Water seepage through Sand layers in base of pit. Soakage testing					
		Stability	Localised spalling					





Unit 7, Danworth Farm
Hurstpierpoint
BN6 9GL

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Trial Pit Log

Trial Pit No

TP4

Sheet 1 of 1

Project Name: New Barn Lane

Project No.
GE18732

Co-ords: 491760.00 - 100908.00
Level:

Date
06/12/2019

Location: North Bersted

Dimensions (m): 2.10

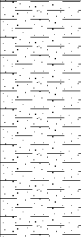
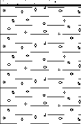
Scale
1:25

Client: Bellway Homes (Wessex)

Depth
1.40

0.50

Logged
FG

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
				0.20			Grass over dark brown slightly sandy silty CLAY with frequent roots and rootlets TOPSOIL	
	1.00	ES		1.00			Firm orange brown slightly sandy CLAY with rare shell fragments RIVER TERRACE DEPOSITS	1
				1.40			Firm orange and grey mottled gravelly CLAY. Gravel is fine to medium sub angular to sub rounded of flint and chalk RIVER TERRACE DEPOSITS	
							End of Pit at 1.40m	
								2
								3
								4
								5
Water Strike								
Depth Strike								
		Remarks	Groundwater not encountered. Soakage testing					
		Stability	Sides stable					





Unit 7, Danworth Farm
Hurstpierpoint
BN6 9GL

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Trial Pit Log

Trial Pit No

TP5

Sheet 1 of 1

Project Name: New Barn Lane

Project No.
GE18732

Co-ords: 491727.00 - 100929.00
Level:

Date
06/12/2019

Location: North Bersted

Dimensions (m):

2.00

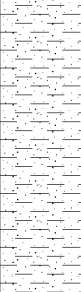
Scale
1:25

Client: Bellway Homes (Wessex)

Depth
1.80

0.50

Logged
FG

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.80	ES		0.20			Grass over dark brown slightly sandy silty CLAY with frequent roots and rootlets TOPSOIL	
				1.20			Firm orange and grey mottled slightly sandy CLAY. Sand is fine RIVER TERRACE DEPOSITS	1
				1.80			Firm to stiff orange and grey mottled slightly sandy CLAY with occasional chalk gravel RIVER TERRACE DEPOSITS	
							End of Pit at 1.80m	2
								3
								4
								5
Water Strike		Remarks		Groundwater not encountered. Soakage testing				
Depth Strike		Stability		Sides stable				





Unit 7, Danworth Farm
Hurstpierpoint
BN6 9GL

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Trial Pit Log

Trial Pit No

TP6

Sheet 1 of 1

Project Name: New Barn Lane

Project No.
GE18732

Co-ords: 491598.00 - 100923.00
Level:

Date
06/12/2019

Location: North Bersted

Dimensions (m): 1.90

Scale
1:25

Client: Bellway Homes (Wessex)

Depth
1.60

0.50

Logged
FG

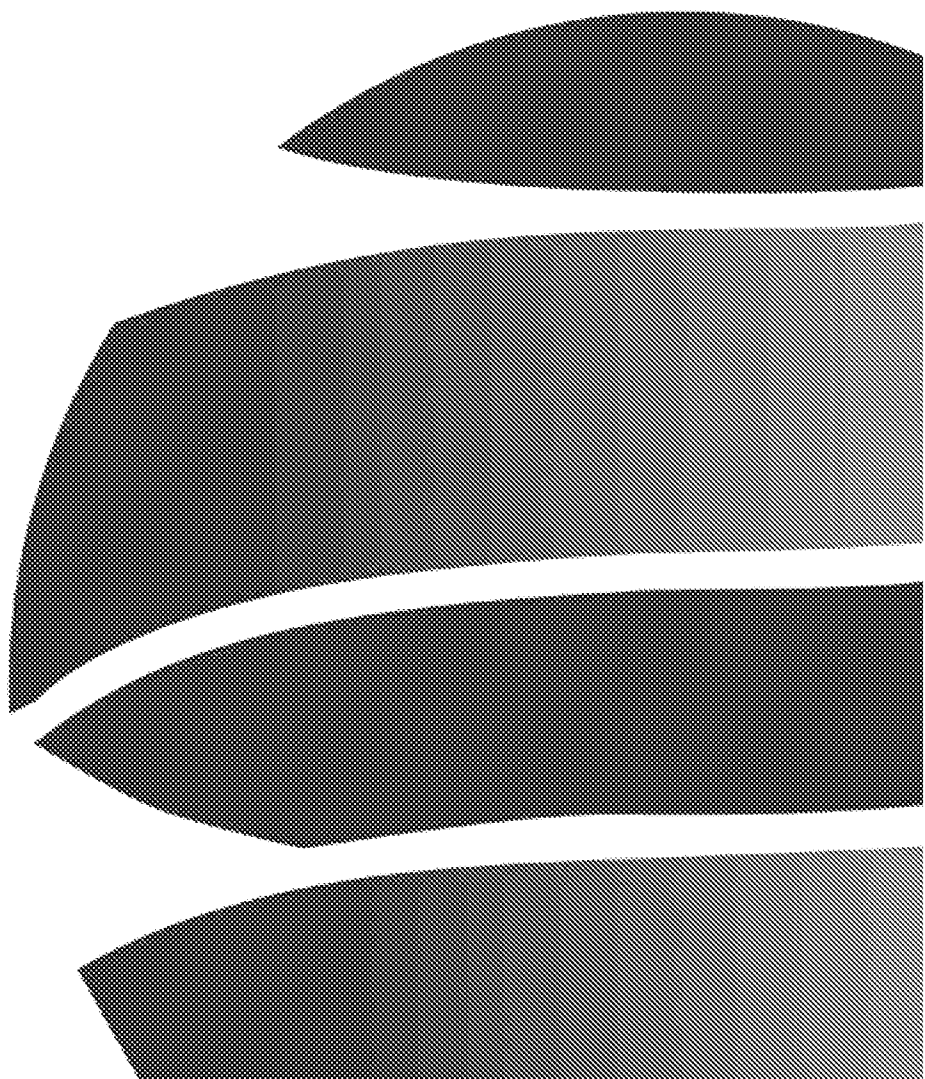
Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.60	ES		0.25			Grass over dark brown slightly sandy silty CLAY with frequent roots and rootlets TOPSOIL	
				0.60			Firm orange and grey mottled slightly sandy CLAY RIVER TERRACE DEPOSITS	
				1.10			Firm orange and grey mottled slightly sandy CLAY with frequent chalk gravel RIVER TERRACE DEPOSITS	1
				1.60			Stiff orange and grey mottled with a whitish hue slightly sandy slightly gravelly CLAY. Gravel is fine and gravel is fine to medium sub angular to sub rounded of flint and chalk RIVER TERRACE DEPOSITS	
							End of Pit at 1.60m	2
								3
								4
								5
Water Strike								
Depth Strike								
		Remarks	Groundwater not encountered. Soakage testing					
		Stability	Sides stable					

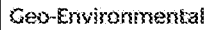




APPENDIX B

Soakage Testing Results

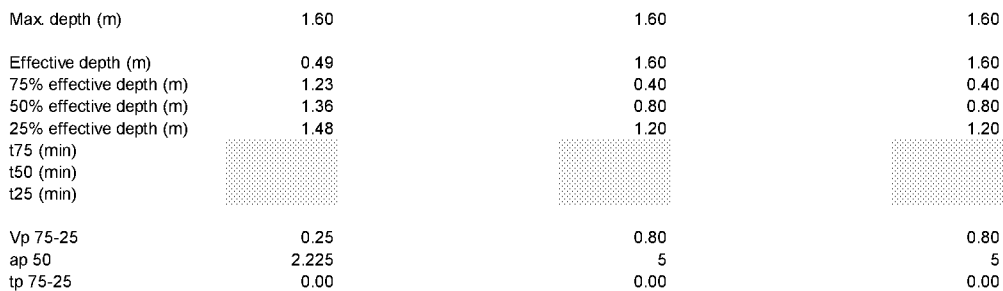


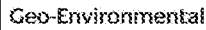


Geo-Environmental Services Limited
Unit 7 Danworth Farm, Cuckfield Road,
Hurstpierpoint, West Sussex BN6 9GL

Job No. : GE18732

Date : 12/12/2019

[illegible]ARUN DISTRICT COUNCIL BE/127/20/DOC



Geo-Environmental Services Limited
Unit 7 Danworth Farm, Cuckfield Road,
Hurstpierpoint, West Sussex BN6 9GL

Job No. : GE18732

Date : 12/12/2019

Test 1

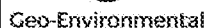
Test 2

Test 3

The graph displays the depth profile for three different tests. The y-axis represents depth in meters, with values ranging from 1.07 to 1.11, where 1.07 is at the top. The x-axis represents time in minutes, ranging from 0 to 200. All three tests (Test 1, Test 2, and Test 3) show a very similar trend: they start at a depth of 1.10m, remain relatively stable until about 10 minutes, then drop slightly to a minimum of about 1.101m at 20 minutes. After this, they rise sharply to a peak of approximately 1.072m around 150 minutes, and finally level off or slightly decline to about 1.07m by 180 minutes.

Time (mins)	Test 1 Depth (m)	Test 2 Depth (m)	Test 3 Depth (m)
0	1.100	1.100	1.100
10	1.100	1.100	1.100
20	1.101	1.101	1.101
30	1.090	1.090	1.090
40	1.091	1.091	1.091
65	1.090	1.090	1.090
130	1.070	1.070	1.070
150	1.072	1.072	1.072
180	1.070	1.070	1.070

Soil infiltration rate (m/s)	Insufficient fall in water to complete test	
Soil infiltration rate (mm/hr)	Insufficient fall in water to complete test	



Soakaway Test Results (after BRE Digest 365)

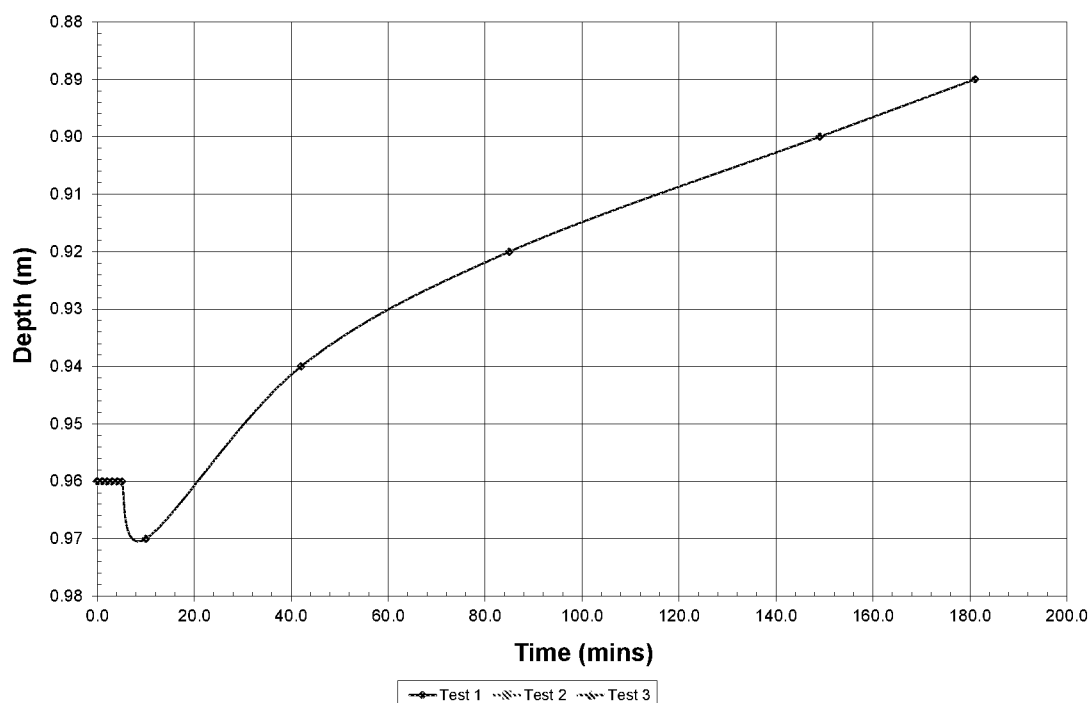
Geo-Environmental Services Limited
Unit 7 Danworth Farm, Cuckfield Road,
Hurstpierpoint, West Sussex BN16 8GL

Project Name : New Barn Lane, North Bersted

Client : Bellway Homes (Wessex)

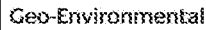
Date : 12/12/2019

Pit reference	TP3
Pit depth (m)	1.60
Pit width (m)	0.50
Pit length (m)	2.00
Depth to standing water (m)	1.35

[illegible][illegible][illegible]

Max. depth (m)	1.60	1.60	1.60
Effective depth (m)	0.64	1.60	1.60
75% effective depth (m)	1.12	0.40	0.40
50% effective depth (m)	1.28	0.80	0.80
25% effective depth (m)	1.44	1.20	1.20
t75 (min)			
t50 (min)			
t25 (min)			
Vp 75-25	0.32	0.80	0.80
ap 50	2.6	5	5
tp 75-25	0.00	0.00	0.00

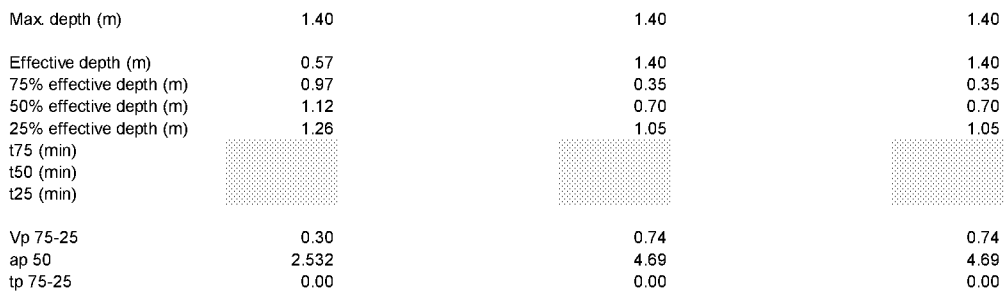
Soil infiltration rate (m/s)	Insufficient fall in water to complete test	
Soil infiltration rate (mm/hr)	Insufficient fall in water to complete test	

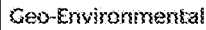


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Date : 12/12/2019

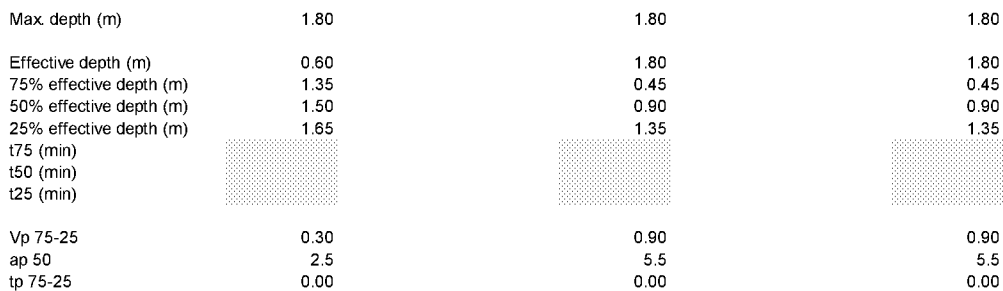
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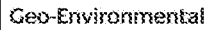


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Hurstpierpoint, West Sussex BN6 9GL

Job No. : GE18732

Date : 12/12/2019

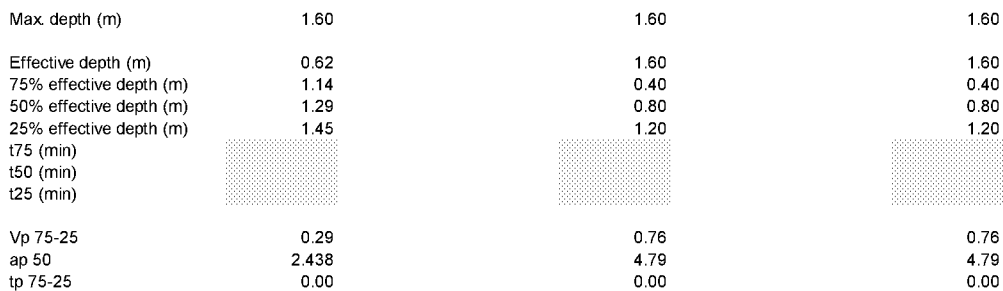
[illegible]ARUN DISTRICT COUNCIL BE/127/20/DOC



Geo-Environmental Services Limited
Unit 7 Danworth Farm, Cuckfield Road,
Hurstpierpoint, West Sussex BN6 9GL

Job No. : GE18732

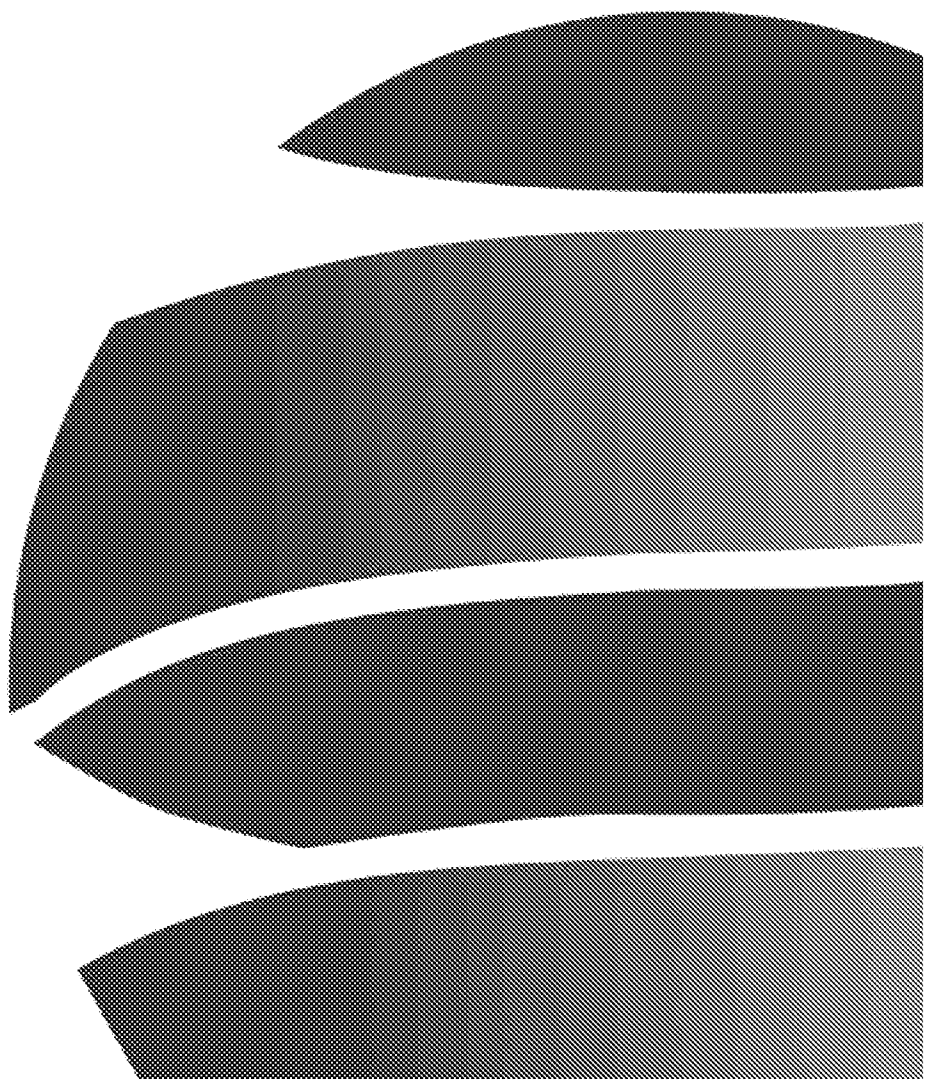
Date : 12/12/2019

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APPENDIX C

Geochemical Laboratory Results





2683



Unit A2
Windmill Road
Ponswood Industrial Estate
St Leonards on Sea
East Sussex
TN38 9BY

THE ENVIRONMENTAL LABORATORY LTD

Analytical Report Number: 19-26182

Issue: 1

Date of Issue: 18/12/2019

Contact: Fiona Goode

Customer Details: GESL
Unit 7
Danworth Farm
Hurstpierpoint
West Sussex BN6 9GL

Quotation No: Q19-01488

Order No: PO-2309

Customer Reference: GE18732

Date Received: 10/12/2019

Date Approved: 18/12/2019

Details: New Barn Lane

Approved by:

Mike Varley, Technical Manager

Any comments, opinions or interpretations expressed herein are outside the scope of UKAS accreditation (Accreditation Number 2683)

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Sample Summary

Report No.: 19-26182, issue number 1

Elab No.	Client's Ref.	Date Sampled	Date Scheduled	Description	Deviations
192063	TP1 0.60	06/12/2019	11/12/2019	Silty loam	
192064	TP2 0.40	06/12/2019	11/12/2019	Silty loam	
192065	TP3 0.15	06/12/2019	11/12/2019	Silty loam	
192066	TP4 1.00	06/12/2019	11/12/2019	Silty loam	
192067	TP5 0.80	06/12/2019	11/12/2019	Silty loam	
192068	TP6 0.50	06/12/2019	11/12/2019	Silty loam	



Results Summary

2683

Report No.: 19-26182, issue number 1

ELAB Reference	192063	192064	192065	192066	192067	192068
Customer Reference						
Sample ID						
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sample Location	TP1	TP2	TP3	TP4	TP5	TP6
Sample Depth (m)	0.60	0.40	0.15	1.00	0.80	0.60
Sampling Date	06/12/2019	06/12/2019	06/12/2019	06/12/2019	06/12/2019	06/12/2019
Determinand	Codes	Units	LOD			
Soil sample preparation parameters						
Material removed	N	%	0.1	3.2	< 0.1	< 0.1
Description of Inert material removed	N		0	Stones	None	None
Metals						
Arsenic	M	mg/kg	1	8.8	11.8	6.1
Barium	U	mg/kg	10	68.5	119	67.2
Beryllium	U	mg/kg	1	< 1.0	1.2	< 1.0
Cadmium	M	mg/kg	0.5	< 0.5	< 0.5	< 0.5
Chromium	M	mg/kg	5	28.4	34.0	22.0
Copper	M	mg/kg	5	13.4	18.0	15.3
Lead	M	mg/kg	5	15.4	21.1	24.3
Mercury	M	mg/kg	0.5	< 0.5	< 0.5	< 0.5
Nickel	M	mg/kg	5	19.5	31.9	15.1
Selenium	M	mg/kg	1	< 1.0	< 1.0	< 1.0
Vanadium	M	mg/kg	5	38.0	46.2	28.0
Zinc	M	mg/kg	5	49.9	64.4	60.8
Anions						
Water Soluble Chloride	M	mg/kg	40	< 40	< 40	< 40
Water Soluble Sulphate	M	g/l	0.02	< 0.02	< 0.02	< 0.02
Inorganics						
Elemental Sulphur	M	mg/kg	20	< 20	< 20	< 20
Hexavalent Chromium	N	mg/kg	0.8	< 0.8	< 0.8	< 0.8
Total Sulphide	N	mg/kg	2	< 2	< 2	< 2
Total Cyanide	M	mg/kg	1	< 1.0	< 1.0	< 1.0
Acid Soluble Sulphate (SO ₄)	U	%	0.02	0.03	0.03	0.04
Water Soluble Boron	N	mg/kg	0.5	0.6	0.6	1.1
Miscellaneous						
pH	M	pH units	0.1	8.5	8.8	7.6
Total Organic Carbon	N	%	0.01	0.32	0.25	0.99
Phenols						
Total Phenols	N	mg/kg	6	< 6	< 6	< 6
Polyaromatic hydrocarbons						
Naphthalene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1
Fluorene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1
Anthracene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1
Pyrene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1
Benzo(a)anthracene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1
Chrysene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1
Benzo(b)fluoranthene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1
Benzo(k)fluoranthene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1
Benzo(a)pyrene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1
Indeno(1,2,3-cd)pyrene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1
Dibenzo(a,h)anthracene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1
Benzo(g,h,i)perylene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1
Total PAH(16)	M	mg/kg	0.4	< 0.4	< 0.4	< 0.4

Tests marked N are not UKAS accredited.

The Environmental Laboratory Ltd. Reg. No. 3882193



Results Summary

2683

Report No.: 19-26182, issue number 1

ELAB Reference	192063	192064	192065	192066	192067	192068
Customer Reference						
Sample ID						
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sample Location	TP1	TP2	TP3	TP4	TP5	TP6
Sample Depth (m)	0.60	0.40	0.15	1.00	0.80	0.60
Sampling Date	06/12/2019	06/12/2019	06/12/2019	06/12/2019	06/12/2019	06/12/2019
Determinand	Codes	Units	LOD			
BTEX						
Benzene	N	ug/kg	10	< 10.0	< 10.0	< 10.0
Toluene	N	ug/kg	10	< 10.0	< 10.0	< 10.0
Ethylbenzene	N	ug/kg	10	< 10.0	< 10.0	< 10.0
Xylenes	N	ug/kg	10	< 10.0	< 10.0	< 10.0
MTBE	N	ug/kg	10	< 10.0	< 10.0	< 10.0
TPH CWG						
>C5-C6 Aliphatic	N	mg/kg	0.01	< 0.01	< 0.01	< 0.01
>C6-C8 Aliphatic	N	mg/kg	0.01	< 0.01	< 0.01	< 0.01
>C8-C10 Aliphatic	N	mg/kg	1	< 1.0	< 1.0	< 1.0
>C10-C12 Aliphatic	M	mg/kg	1	< 1.0	< 1.0	< 1.0
>C12-C16 Aliphatic	M	mg/kg	1	< 1.0	< 1.0	< 1.0
>C16-C21 Aliphatic	M	mg/kg	1	< 1.0	< 1.0	< 1.0
>C21-C35 Aliphatic	M	mg/kg	1	< 1.0	< 1.0	< 1.0
>C35-C40 Aliphatic	M	mg/kg	1	< 1.0	< 1.0	< 1.0
Total aliphatic hydrocarbons (>C5 - C40)	N	mg/kg	1	< 1.0	< 1.0	< 1.0
>C5-C7 Aromatic	N	mg/kg	0.01	< 0.01	< 0.01	< 0.01
>C7-C8 Aromatic	N	mg/kg	0.01	< 0.01	< 0.01	< 0.01
>C8-C10 Aromatic	N	mg/kg	1	< 1.0	< 1.0	< 1.0
>C10-C12 Aromatic	M	mg/kg	1	< 1.0	< 1.0	< 1.0
>C12-C16 Aromatic	M	mg/kg	1	< 1.0	< 1.0	< 1.0
>C16-C21 Aromatic	M	mg/kg	1	< 1.0	< 1.0	< 1.0
>C21-C35 Aromatic	M	mg/kg	1	< 1.0	< 1.0	< 1.0
>C35-C40 Aromatic	M	mg/kg	1	< 1.0	< 1.0	< 1.0
Total aromatic hydrocarbons (>C5 - C40)	N	mg/kg	1	< 1.0	< 1.0	< 1.0
Total petroleum hydrocarbons (>C5 - C40)	N	mg/kg	1	< 1.0	< 1.0	< 1.0

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The Environmental Laboratory Ltd. Reg. No. 3882193

Page 4 of 7



Unit A2, Windmill Road, Ponswood Industrial Estate, St Leonards on Sea, East Sussex, TN38 9BY
Tel: +44 (0)1424 718618, Email: info@elab-uk.co.uk, Web: www.elab-uk.co.uk

Results Summary
Report No.: 19-26182, issue number 1

Asbestos Results

Analytical result only applies to the sample as submitted by the client. Any comments, opinions or interpretations (marked #) in this report are outside UKAS accreditation (Accreditation No2683). They are subjective comments only which must be verified by the client.

Elab No	Depth (m)	Clients Reference	Description of Sample Matrix #	Asbestos Identification	Gravimetric Analysis Total (%)	Gravimetric Analysis by ACM Type (%)	Free Fibre Analysis (%)	Total Asbestos (%)
192063	0.60	TP1	Brown Soil	No asbestos detected	n/t	n/t	n/t	n/t
192064	0.40	TP2	Brown Soil	No asbestos detected	n/t	n/t	n/t	n/t
192065	0.15	TP3	Brown Soil	No asbestos detected	n/t	n/t	n/t	n/t
192066	1.00	TP4	Brown Soil Stones	No asbestos detected	n/t	n/t	n/t	n/t
192067	0.80	TP5	Brown Soil Stones	No asbestos detected	n/t	n/t	n/t	n/t
192068	0.60	TP6	Brown Soil Stones	No asbestos detected	n/t	n/t	n/t	n/t

Method Summary

Report No.: 19-26182, issue number 1

Parameter	Codes	Analysis Undertaken On	Date Tested	Method Number	Technique
Soil					
Sulphide	N	As submitted sample	17/12/2019	109	Colorimetry
Hexavalent chromium	N	As submitted sample	13/12/2019	110	Colorimetry
pH	M	Air dried sample	17/12/2019	113	Electromeric
Acid Soluble Sulphate	U	Air dried sample	16/12/2019	115	Ion Chromatography
Aqua regia extractable metals	M	Air dried sample	13/12/2019	118	ICPMS
Phenols in solids	N	As submitted sample	12/12/2019	121	HPLC
Elemental Sulphur	M	Air dried sample	17/12/2019	122	HPLC
PAH (GC-FID)	M	As submitted sample	13/12/2019	133	GC-FID
Water soluble anions	M	Air dried sample	13/12/2019	172	Ion Chromatography
Low range Aliphatic hydrocarbons soil	N	As submitted sample	13/12/2019	181	GC-MS
Low range Aromatic hydrocarbons soil	N	As submitted sample	13/12/2019	181	GC-MS
BTEX in solids	N	As submitted sample	13/12/2019	181A	GC-MS
Water soluble boron	N	Air dried sample	16/12/2019	202	Colorimetry
Total cyanide	M	As submitted sample	13/12/2019	204	Colorimetry
Total organic carbon/Total sulphur	N	Air dried sample	16/12/2019	210	IR
TPH CWG soil by gc-gc	M	As submitted sample	13/12/2019	214	
Asbestos identification	U	Air dried sample	17/12/2019	PMAN	Microscopy

Tests marked N are not UKAS accredited



Report Information

Report No.: 19-26182, issue number 1

Key

U	hold UKAS accreditation
M	hold MCERTS and UKAS accreditation
N	do not currently hold UKAS accreditation
^	MCERTS accreditation not applicable for sample matrix
*	UKAS accreditation not applicable for sample matrix
S	Subcontracted to approved laboratory UKAS Accredited for the test
SM	Subcontracted to approved laboratory MCERTS/UKAS Accredited for the test
NS	Subcontracted to approved laboratory. UKAS accreditation is not applicable.
I/S	Insufficient Sample
U/S	Unsuitable sample
n/t	Not tested
<	means "less than"
>	means "greater than"

Soil sample results are expressed on an air dried basis (dried at < 30°C), and are uncorrected for inert material removed.

ELAB are unable to provide an interpretation or opinion on the content of this report.

The results relate only to the sample received.

PCB congener results may include any coeluting PCBs

Uncertainty of measurement for the determinands tested are available upon request

Unless otherwise stated, sample information has been provided by the client. This may affect the validity of the results.

Deviation Codes

-
- | | |
|---|--|
| a | No date of sampling supplied |
| b | No time of sampling supplied (Waters Only) |
| c | Sample not received in appropriate containers |
| d | Sample not received in cooled condition |
| e | The container has been incorrectly filled |
| f | Sample age exceeds stability time (sampling to receipt) |
| g | Sample age exceeds stability time (sampling to analysis) |

Where a sample has a deviation code, the applicable test result may be invalid.

Sample Retention and Disposal

All soil samples will be retained for a period of one month

All water samples will be retained for 7 days following the date of the test report

Charges may apply to extended sample storage