

1.0 Introduction

Geo-Environmental was instructed by Wates Developments Limited to undertake an intrusive investigation at the site off Tye Lane, Walberton, BN18 0AN.

Eight monitoring wells were installed within window sampling boreholes to depths of 3.0mbgl to allow for groundwater monitoring. The purpose of this was in response to local concerns of ground conditions on the site and ultimately to inform the drainage strategy to be designed by the client's engineers.

2.0 Site Description

The intrusive site investigation was undertaken an area of open farmland situated east of Tye Lane, Walberton, Arundel, BN18 0AN. At the time of the site walkover, the site was generally flat and roughly rectangular in plan area, and comprised rough pasture and was vacant of any buildings.

The site was bound by mature and semi-mature trees with Tye Lane to the west. Avisford Park Golf Club was located immediately adjacent to the northern boundary, with the surrounding land comprising a residential properties with amenities to the south and east. Access to the site was via Yapton Lane to the east.

3.0 Ground Conditions

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 locally overlying the River Terrace Deposits with the London Clay at depth.

Topsoil was encountered in all investigation positions to depths of 0.15m to 0.30mbgl and typically consisted of grass overlying dark brown slightly sandy clay with occasional rootlets and flint gravel.

Soils inferred to be the River Terrace Deposits were encountered in all locations from underlying the Topsoil to a depth of 3.0m bgl (maximum depth of the investigation). The deposits were of a mixed composition comprising silty CLAY and gravelly silty CLAY.

It was anticipated that the London Clay Formation (Clay, Silt and Sand) would underlie the River Terrace Deposits, however, this formation was not proved during the investigation. A summary of the encountered ground conditions is presented in Table 1.

On completion of the window sampling borehole, groundwater monitoring standpipes were installed within all borehole locations to facilitate return monitoring on seven occasions between 30th January 2017 and 11th April 2017, during what would be considered the wetter months in the year.

Depth (m bgl)	Description	Stratum	Position
0.0 – 0.15 - 0.30	Grass overlying dark brown slightly sandy clay with occasional rootlets.	Topsoil	All Positions
0.15-0.30 – 3.0	Brown silty CLAY with rare fine to coarse angular flint gravel, overlying orangish brown gravelly silty CLAY with rare black specks.	River Terrace Deposits	

Table 1: Summary of encountered ground conditions.

The approximate positions of the window sampler boreholes are presented in Figure 1. For more detailed descriptions of the ground conditions at specific locations, reference should be made to the borehole logs attached in Appendix A.

4.0 Encountered Groundwater and Groundwater Monitoring Results

The majority of boreholes were dry on completion with the exception of WS5 and WS8 which recorded levels between 0.95mbgl and 1.06mbgl. Based on the underlying ground conditions set out above, this is not considered to be groundwater, but is most likely an accumulation of water sitting on top of the London Clay Formation within the more granular soils of the River Terrace Deposits.

Monitoring of the standpipes within the boreholes identified that groundwater was still present within WS5 and WS8 at relatively shallow depths of around 0.61m and 2.26m bgl., whilst no groundwater was encountered in any of the other exploratory holes. As previously discussed, this is believed to be an accumulation of water sitting on top of the London Clay Formation within the more granular soils of the River Terrace Deposits.

It should be noted that changes in groundwater levels do occur for a number of reasons including seasonal effects and variations in drainage. Such fluctuations may only be recorded by the measurement of the groundwater level within a standpipe or piezometer installed within appropriate response zones. However, the testing was undertaken during winter months and therefore represent a worst case scenario.

The depths of groundwater recorded during the intrusive investigation and over the monitoring period are presented in Table 2.

Groundwater Depths (mbgl)							
	Fieldwork	Visit 2	Visit 3	Visit 4	Visit 5	Visit 6	Visit 7
Location	30/01/17	09/02/17	14/02/17	28/02/17	14/03/17	28/03/17	11/04/17
WS1	Dry	Dry	Dry	Dry	Dry	Dry	Dry
WS2	Dry	Dry	Dry	Dry	Dry	Dry	Dry
WS3	Dry	Dry	Dry	Dry	Dry	Dry	Dry
WS4	Dry	Dry	Dry	Dry	Dry	Dry	Dry
WS5	1.06	1.52	1.49	1.14	1.54	1.90	2.26
WS6	Dry	Dry	Dry	Dry	Dry	Dry	Dry
WS7	Dry	Dry	Dry	Dry	Dry	Dry	Dry
WS8	0.95	0.61	0.90	0.74	1.15	1.85	2.00

Table 2: Groundwater Depths

FIGURES

Project Title: Land West of Yapton Road

Title : Figure 1 - Site Location Plan

Location : Walberton

Scale: 1:5000

Project No. : GE16054

Engineer: Cesar Azevedo

Client : Wates Developments



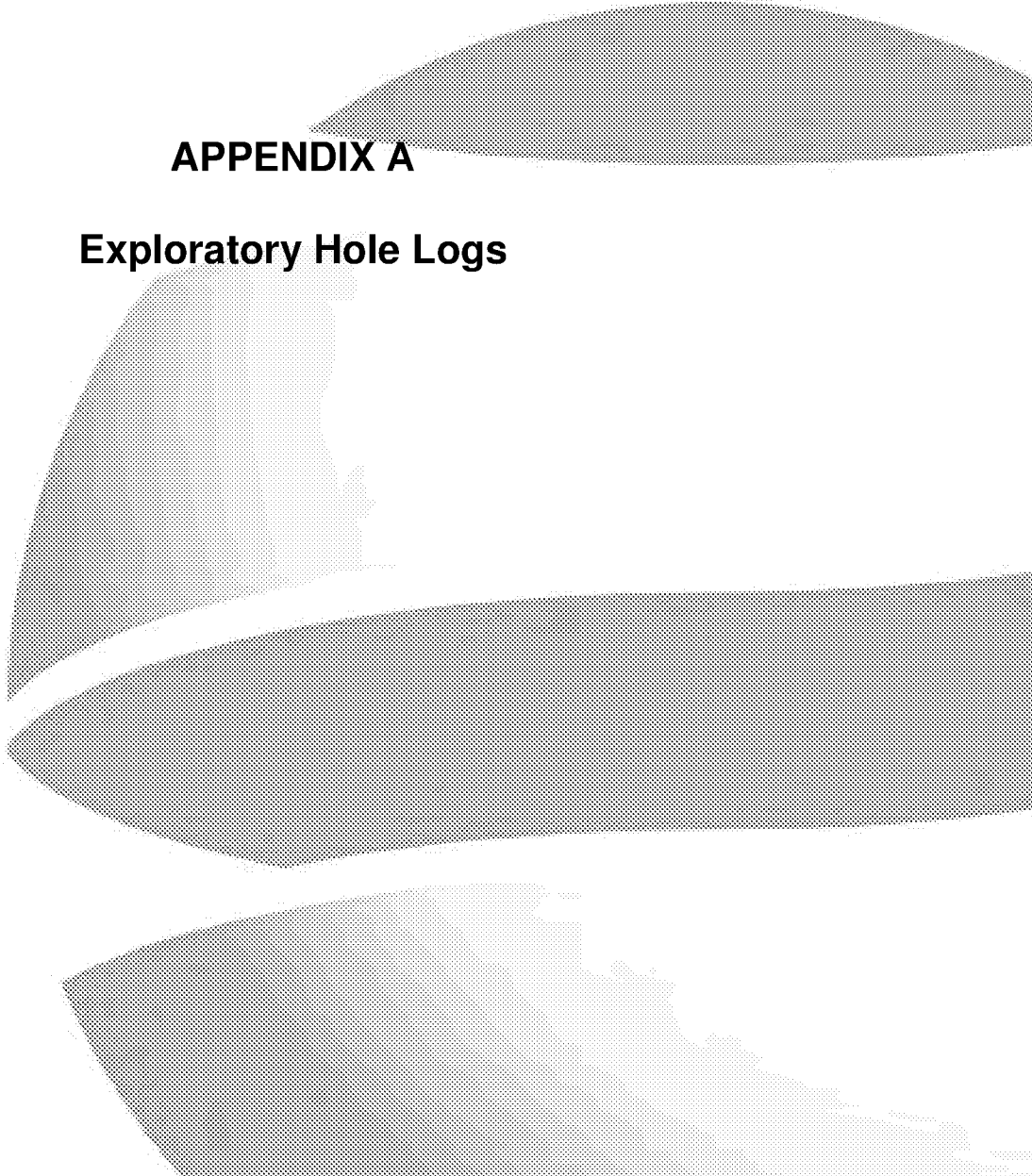
Geo-Environmental

Legend Key

Location By Type - WLS



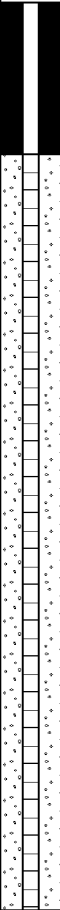
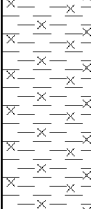
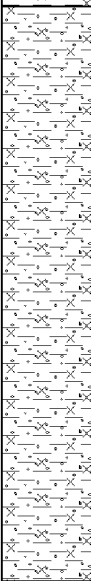
200 Metres
800 Feet

A large, stylized, wavy graphic element in a light gray color with a fine grid pattern, resembling a ribbon or a stylized wave, flowing from the top right towards the bottom left.

APPENDIX A

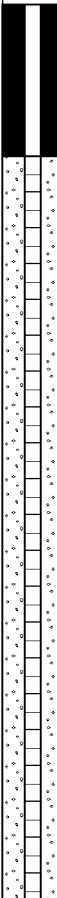
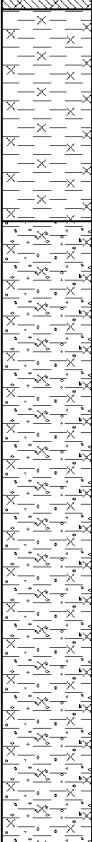
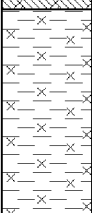
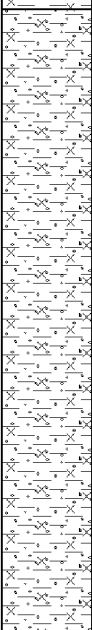
Exploratory Hole Logs

 Geo-Environmental www.gesl.net		Unit 7, Danworth Farm Hurstpierpoint BN6 9GL				Borehole Log				Borehole No. WS1	
Project Name: Land West of Yapton Road		Project No. GE16054		Co-ords: 497636E - 106265N		Sheet 1 of 1		Hole Type WLS			
Location: Walberton		Level:		Scale 1:25		Logged By CA					
Client: Wates Developments		Dates: 30/01/2017									

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
		Depth (m)	Type	Results						
					0.15		 Grass over dark brown slightly sandy clay with occasional rootlets.  TOPSOIL			
					1.10		 Firm dark orangish brown silty CLAY with rare fine to coarse angular flint gravel. RIVER TERRACE DEPOSITS			
					3.00		 Firm dark orangish brown gravelly silty CLAY with rare black specks. Gravel is fine to coarse angular flint. RIVER TERRACE DEPOSITS			
								End of Borehole at 3.00m		

Casing		Water Strikes (mbgl)		Chiselling (mbgl)		Remarks	
Diameter	Depth (m)	Depth Strike	Rose to	Depth from	Depth to		
						Groundwater not encountered.	

 Geo-Environmental www.gesl.net		Unit 7, Danworth Farm Hurstpierpoint BN6 9GL				Borehole Log				Borehole No. WS2	
Project Name: Land West of Yapton Road		Project No. GE16054		Co-ords: 497571E - 106216N		Hole Type WLS					
Location: Walberton		Level:		Scale 1:25		Logged By CA					
Client: Wates Developments		Dates: 30/01/2017									

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.20		 Grass over dark brown slightly sandy clay with occasional rootlets. TOPSOIL		
							 Firm dark brown silty CLAY with rare fine to coarse angular flint gravel. RIVER TERRACE DEPOSITS		
					0.90		 Firm dark orangish brown gravelly silty CLAY with rare black specks. Gravel is fine to coarse angular flint. RIVER TERRACE DEPOSITS		
					3.00		End of Borehole at 3.00m		3
									4
									5

Casing		Water Strikes (mbgl)		Chiselling (mbgl)		Remarks
Diameter	Depth (m)	Depth Strike	Rose to	Depth from	Depth to	
						Groundwater not encountered.





Geo-Environmental

Unit 7, Danworth Farm
Hurstpierpoint
BN6 9GL
www.gesl.net

Borehole Log

Borehole No.

WS3

Sheet 1 of 1

Project Name: Land West of Yapton Road

Project No.
GE16054

Co-ords: 497493E - 106072N

Hole Type
WLS

Location: Walberton

Level:

Scale
1:25

Client: Wates Developments

Dates: 30/01/2017

Logged By

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.30		Grass over dark brown slightly sandy clay with occasional rootlets. TOPSOIL		
					2.20		Firm dark brown silty CLAY with rare fine to coarse angular flint gravel. RIVER TERRACE DEPOSITS		
					3.00		Firm dark orangish brown gravelly silty CLAY with rare black specks. Gravel is fine to coarse angular flint. RIVER TERRACE DEPOSITS		
							End of Borehole at 3.00m		
Casing		Water Strikes (mbgl)		Chiselling (mbgl)		Remarks Groundwater not encountered.			
Diameter	Depth (m)	Depth Strike	Rose to	Depth from	Depth to				





Geo-Environmental

Unit 7, Danworth Farm
Hurstpierpoint
BN6 9GL
www.gesl.net

Borehole Log

Borehole No.

WS4

Sheet 1 of 1

Project Name: Land West of Yapton Road

Project No.
GE16054

Co-ords: 497351E - 106182N

Hole Type
WLS

Location: Walberton

Level:

Scale
1:25

Client: Wates Developments

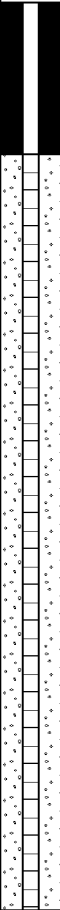
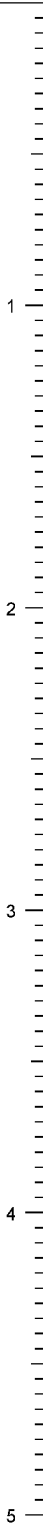
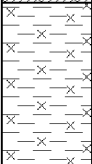
Dates: 30/01/2017

Logged By
CA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.30		Grass over dark brown slightly sandy clay with occasional rootlets and flint gravel. TOPSOIL	1	
							Firm dark brown silty CLAY with rare fine to coarse angular flint gravel. RIVER TERRACE DEPOSITS		
							Firm dark orangish brown gravelly silty CLAY with rare black specks. Gravel is fine to coarse angular flint. RIVER TERRACE DEPOSITS		
					2.10			2	
					3.00		End of Borehole at 3.00m	3	
								4	
								5	

Casing		Water Strikes (mbgl)		Chiselling (mbgl)		Remarks
Diameter	Depth (m)	Depth Strike	Rose to	Depth from	Depth to	
						Groundwater not encountered.

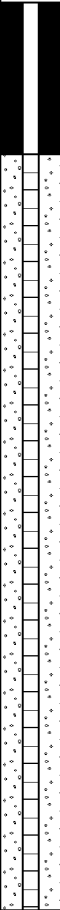
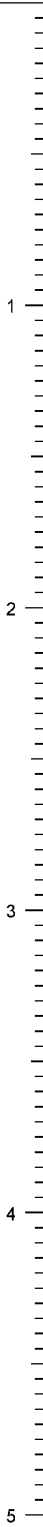
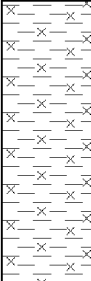
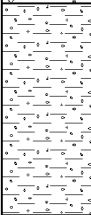
 Unit 7, Danworth Farm Hurstpierpoint BN6 9GL www.gesl.net		Borehole Log				Borehole No. WS5 Sheet 1 of 1	
Project Name: Land West of Yapton Road		Project No. GE16054		Co-ords: 497268E - 106264N		Hole Type WLS	
Location: Walberton				Level:		Scale 1:25	
Client: Wates Developments				Dates: 30/01/2017		Logged By CA	

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.25		 Grass over dark brown slightly sandy clay with occasional rootlets and flint gravel. TOPSOIL		
							 Firm dark brown silty CLAY with rare fine to coarse angular flint gravel. RIVER TERRACE DEPOSITS		
					0.80		 Firm dark orangish brown gravelly silty CLAY with rare black specks. Gravel is fine to coarse angular flint. RIVER TERRACE DEPOSITS		
							<i>Groundwater encountered at 1.06m likely to be perched water.</i>		
					2.60		 Firm dark orangish brown very gravelly silty CLAY with rare black specks. Gravel is fine to coarse angular flint. RIVER TERRACE DEPOSITS		
					3.00		End of Borehole at 3.00m		

Casing		Water Strikes (mbgl)		Chiselling (mbgl)		Remarks
Diameter	Depth (m)	Depth Strike	Rose to	Depth from	Depth to	
						Groundwater encountered at 1.06m (probably perched water).



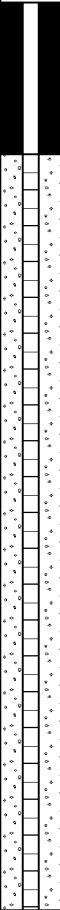
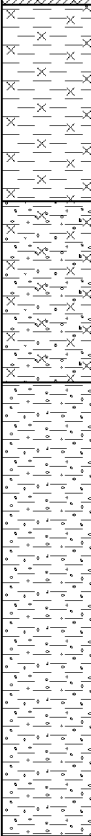
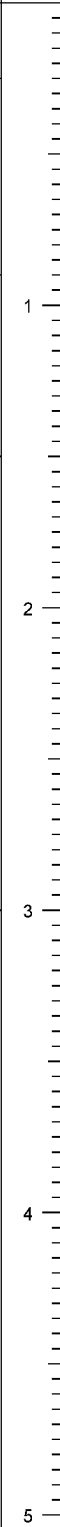
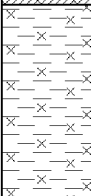
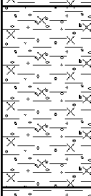
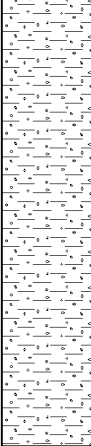
 Geo-Environmental www.gesl.net		Unit 7, Danworth Farm Hurstpierpoint BN6 9GL				Borehole Log				Borehole No. WS6							
Project Name:		Land West of Yapton Road				Project No.		GE16054		Co-ords:		497187E - 106209N		Hole Type		WLS	
Location:		Walberton				Level:						Scale		1:25			
Client:		Wates Developments				Dates:		30/01/2017				Logged By		CA			

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.25		 Grass over dark brown slightly sandy clay with occasional rootlets and flint gravel. TOPSOIL		
							 Firm dark brown silty CLAY with rare fine to coarse angular flint gravel. RIVER TERRACE DEPOSITS		
					1.20				 Firm dark orangish brown gravelly silty CLAY with rare black specks. Gravel is fine to coarse angular flint. RIVER TERRACE DEPOSITS
					2.30				 Firm dark orangish brown very gravelly silty CLAY with rare black specks. Gravel is fine to coarse angular flint. RIVER TERRACE DEPOSITS
					3.00		End of Borehole at 3.00m		

Casing		Water Strikes (mbgl)		Chiselling (mbgl)		Remarks
Diameter	Depth (m)	Depth Strike	Rose to	Depth from	Depth to	
						Groundwater not encountered.



 Unit 7, Danworth Farm Hurstpierpoint BN6 9GL www.gesl.net		Borehole Log		Borehole No. WS7 Sheet 1 of 1	
Project Name: Land West of Yapton Road		Project No. GE16054		Co-ords: 497082E - 106184N	
Location: Walberton		Level:		Hole Type WLS	
Client: Wates Developments		Dates: 30/01/2017		Scale 1:25	
Logged By CA					

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.25		 Grass over dark brown slightly sandy clay with occasional rootlets and flint gravel. TOPSOIL		
							 Firm dark brown silty CLAY with rare fine to coarse angular flint gravel. RIVER TERRACE DEPOSITS		
					0.90		 Firm dark orangish brown gravelly silty CLAY with rare black specks. Gravel is fine to coarse angular flint. RIVER TERRACE DEPOSITS		
					1.50		 Firm dark orangish brown very gravelly silty CLAY with rare black specks. Gravel is fine to coarse angular flint. RIVER TERRACE DEPOSITS		
					3.00		End of Borehole at 3.00m		

Casing		Water Strikes (mbgl)		Chiselling (mbgl)		Remarks
Diameter	Depth (m)	Depth Strike	Rose to	Depth from	Depth to	
						Groundwater not encountered.





Geo-Environmental

Unit 7, Danworth Farm
Hurstpierpoint
BN6 9GL
www.gesl.net

Borehole Log

Borehole No.

WS8

Sheet 1 of 1

Project Name: Land West of Yapton Road

Project No.
GE16054

Co-ords: 497104E - 106341N

Hole Type
WLS

Location: Walberton

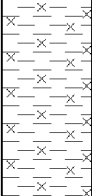
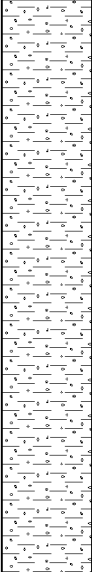
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Scale
1:25

Client: Wates Developments

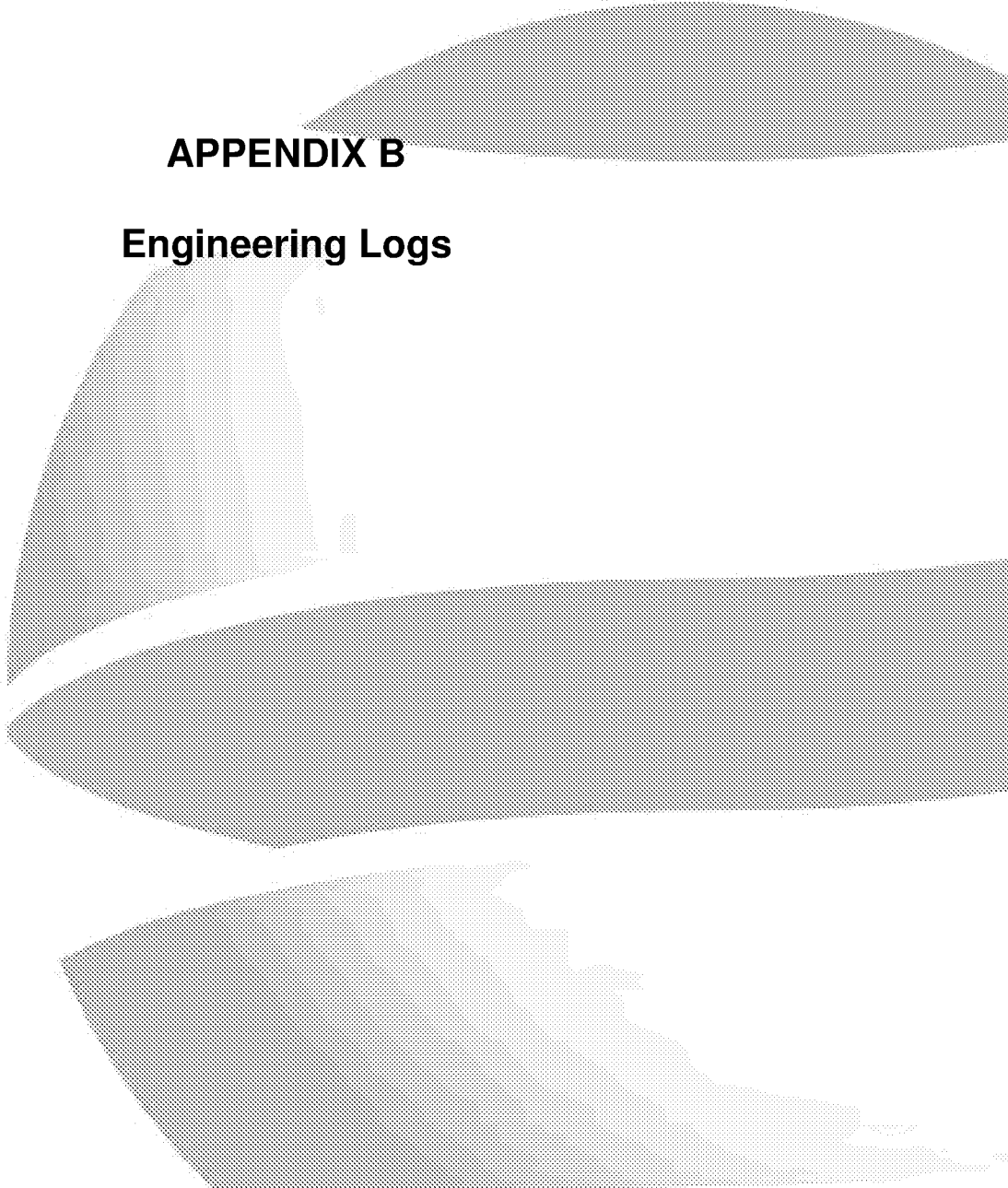
Dates: 30/01/2017

Logged By
CA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.20			Grass over dark brown slightly sandy clay with occasional rootlets and flint gravel. TOPSOIL	1
								Firm dark brown orangish silty CLAY with rare fine to coarse angular flint gravel. RIVER TERRACE DEPOSITS	
					0.90			Firm dark orangish brown gravelly silty CLAY with rare black specks. Gravel is fine to coarse angular flint. RIVER TERRACE DEPOSITS	
					1.10			Firm dark orangish brown very gravelly silty CLAY with rare black specks. Gravel is fine to coarse angular flint. RIVER TERRACE DEPOSITS	
					3.00		End of Borehole at 3.00m		3
									4
									5

Casing		Water Strikes (mbgl)		Chiselling (mbgl)		Remarks
Diameter	Depth (m)	Depth Strike	Rose to	Depth from	Depth to	
						Groundwater encountered at 0.95m (probably perched water).





APPENDIX B

Engineering 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: Tye Lane

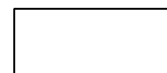
Project No.
GE16861

Co-ords: 497037.00 - 106355.00
Level:

Date
02/11/2017

Location: Walberton

Dimensions
(m):



Scale
1:25

Client: Wates Developments Ltd

Depth
3.20

Logged
KO'D

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.10	ES		0.20			Dark brown clayey sand with rootlets (TOPSOIL) TOPSOIL	
	0.50	D					Medium strength dark brown sandy CLAY RIVER TERRACE DEPOSITS	
	1.00	D		0.90			Sub-angular flint GRAVEL with cobbles in an orange brown clayey sandy matrix. RIVER TERRACE DEPOSITS	1
	1.70	D		1.70			Medium strength orange brown very sandy CLAY with grey-brown sandy lenses. RIVER TERRACE DEPOSITS	2
				2.30			High strength dark orangey brown and grey slightly sandy CLAY with orange-brown sandy lenses. RIVER TERRACE DEPOSITS	
	3.00	D		3.20				3
							End of Pit at 3.20m	
								4
								5
Water Strike								
Depth Strike								
		Remarks	Trial pit did not drain					
		Stability						





Unit 7, Danworth Farm
Hurstpierpoint
BN6 9GL

Geo-Environmental www.gesl.net

Trial Pit Log

Trial Pit No

TP2

Sheet 1 of 1

Project Name: Tye Lane

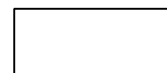
Project No.
GE16861

Co-ords: 497123.00 - 106160.00
Level:

Date
01/11/2017

Location: Walberton

Dimensions
(m):



Scale
1:25

Client: Wates Developments Ltd

Depth
3.30

Logged
GE

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.10	ES		0.25			Dark grey brown silty clayey sand with rootlets (TOPSOIL) TOPSOIL	
	1.00 1.00	D PP	PP=1.5kg/cm2				Medium strength, becoming high strength orange brown silty sandy CLAY RIVER TERRACE DEPOSITS	1
	2.00	PP	PP=2kg/cm2	2.20			Well-graded rounded to sub-angular flint GRAVEL in a matrix of orange-brown silty sandy CLAY. Becomes less clayey and very sandy from 2.8m. RIVER TERRACE DEPOSITS	2
	2.30	D		3.30				3
							End of Pit at 3.30m	4
								5
Water Strike								
Depth Strike								
		Remarks	Pit dry and stable					
		Stability						





Unit 7, Danworth Farm
Hurstpierpoint
BN6 9GL

Geo-Environmental www.gesl.net

Trial Pit Log

Trial Pit No

TP4

Sheet 1 of 1

Project Name: Tye Lane

Project No.
GE16861

Co-ords: 497315.00 - 106138.00
Level:

Date
01/11/2017

Location: Walberton

Dimensions
(m):

Scale
1:25

Client: Wates Developments Ltd

Depth
3.00

Logged

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.10	ES		0.17			Dark grey brown silty clayey sand with rootlets (TOPSOIL) TOPSOIL	
	0.50	D					Medium strength, becoming high strength orange brown silty sandy CLAY RIVER TERRACE DEPOSITS	1
	1.00	PP	PP=1.5kg/cm2	1.30			Well-graded rounded to sub-angular flint GRAVEL in a matrix of orange-brown silty sandy CLAY RIVER TERRACE DEPOSITS	2
	1.80	D		2.70			Light grey, off white chalky sandy well-graded rounded to sub-angular flint GRAVEL RIVER TERRACE DEPOSITS	3
				3.00			End of Pit at 3.00m	4
								5

Water Strike	Remarks	Pit dry and stable
Depth Strike	Stability	





Unit 7, Danworth Farm
Hurstpierpoint
BN6 9GL

Geo-Environmental www.gesl.net

Trial Pit Log

Trial Pit No

TP5

Sheet 1 of 1

Project Name: Tye Lane

Project No.
GE16861

Co-ords: 497574.00 - 106063.00
Level:

Date
01/11/2017

Location: Walberton

Dimensions
(m):

Scale
1:25

Client: Wates Developments Ltd

Depth
2.90

Logged

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.10	ES		0.15			Dark grey brown silty clayey sand with rootlets (TOPSOIL) TOPSOIL	
	1.00 1.00	D PP	PP=1.5kg/cm2	1.10			Medium strength, becoming high strength orange brown silty sandy CLAY RIVER TERRACE DEPOSITS	1
				2.30			Well-graded rounded to sub-angular flint GRAVEL in a matrix of orange brown silty sandy CLAY RIVER TERRACE DEPOSITS	2
	2.50	D		2.90			Light grey, off white chalky sandy well-graded rounded to sub-angular flint GRAVEL. RIVER TERRACE DEPOSITS	3
							End of Pit at 2.90m	4
								5
Water Strike								
Depth Strike								
		Remarks	Pit dry and stable					
		Stability						





Unit 7, Danworth Farm
Hurstpierpoint
BN6 9GL

Geo-Environmental/ www.gesl.net

Trial Pit Log

Trial Pit No

TP6

Sheet 1 of 1

Project Name: Tye Lane

Project No.
GE16861

Co-ords: 497594.00 - 106225.00
Level:

Date
01/11/2017

Location: Walberton

Dimensions
(m):

Scale
1:25

Client: Wates Developments Ltd

Depth
3.00

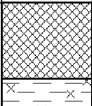
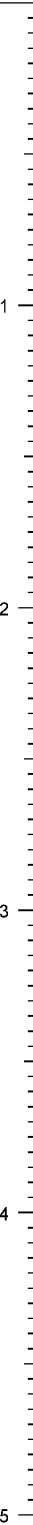
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Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.10	ES		0.30			Dark grey brown silty clayey sand with rootlets (TOPSOIL) TOPSOIL	
	0.50	D					High strength orange brown silty sandy CLAY RIVER TERRACE DEPOSITS	
	1.00	D		1.90			High strength orange brown silty sandy CLAY with abundant well-graded rounded to sub angular flint gravel RIVER TERRACE DEPOSITS	1
	1.00	PP	PP=2kg/cm2				High strength orange brown silty sandy CLAY with abundant well-graded rounded to sub angular flint gravel RIVER TERRACE DEPOSITS	2
	1.50	PP	PP=2kg/cm2	2.20			Light grey, off-white chalky sandy well-graded rounded to sub-angular flint GRAVEL RIVER TERRACE DEPOSITS	
	2.00	D					Light grey, off-white chalky sandy well-graded rounded to sub-angular flint GRAVEL RIVER TERRACE DEPOSITS	
	2.00	PP	PP=2.2kg/cm2	3.00			Light grey, off-white chalky sandy well-graded rounded to sub-angular flint GRAVEL RIVER TERRACE DEPOSITS	
							End of Pit at 3.00m	3
								4
								5

Water Strike	Remarks	Pit dry and stable
Depth Strike	Stability	



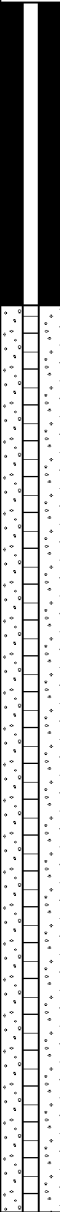
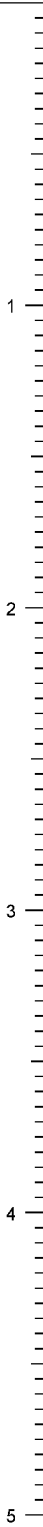
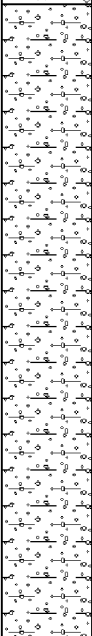
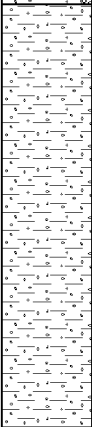
 Unit 7, Danworth Farm Hurstpierpoint BN6 9GL www.gesl.net		Borehole Log		Borehole No. WS1	
Project Name: Tye Lane		Project No. GE16861		Co-ords: 497068E - 106278N	
Location: Walberton		Level:		Scale 1:25	
Client: Wates Developments Ltd		Dates: 01/11/2017		Logged By WH	

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.20	ES		0.25		 Dark brown silty clay with abundant rootlets, frequent gravel and rare brick fragments. Gravel is sub-rounded to angular fine to coarse flints. Brick fragments are fine to medium gravel. TOPSOIL		
		0.50	D				 High strength dark brown slightly silty CLAY with frequent gravel and occasional rootlets. Gravel is fine to medium angular to sub-rounded flints with rare chert gravel. RIVER TERRACE DEPOSITS		
		0.50	PP	1.8kg/cm2					
		0.70	ES				 ...5cm band of flint gravel		
		1.00	D				 ...rootlets no longer present		
		1.00	PP	4.2kg/cm2					
		1.50	D						
		1.50	PP	2.8kg/cm2					
		1.70	D		1.70		 High strength orange brown and grey mottled slightly sandy very gravelly CLAY. Gravel is fine to coarse angular to sub-rounded flints. RIVER TERRACE DEPOSITS		
		2.20	D						
		2.70	D		2.80		 High strength brown orange fissured CLAY with frequent gravel and occasional dark brown specks. Gravel is fine to coarse angular to sub-rounded flints. RIVER TERRACE DEPOSITS		
		2.90	D						
3.00	PP	0.8kg/cm2							
3.40	D								
3.50	PP	1.2kg/cm2							
		4.00	D		4.00				
		4.00	PP	1.5kg/cm2			End of Borehole at 4.00m		

Casing		Water Strikes (mbgl)		Chiselling (mbgl)		Remarks
Diameter	Depth (m)	Depth Strike	Rose to	Depth from	Depth to	



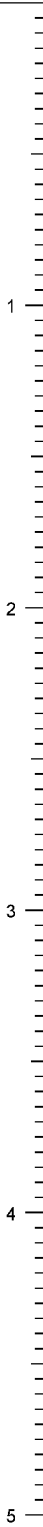
 Unit 7, Danworth Farm Hurstpierpoint BN6 9GL www.gesl.net		Borehole Log				Borehole No. WS2	
Project Name: Tye Lane		Project No. GE16861		Co-ords: 497167E - 106320N		Sheet 1 of 1	
Location: Walberton				Level:		Hole Type WS	
Client: Wates Developments Ltd				Dates: 01/11/2017		Scale 1:25	
Logged By WH							

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.20	ES	2.0kg/cm2	0.20		Turf over dark brown silty CLAY with abundant rootlets and frequent gravel. Gravel is sub-rounded to angular fine to coarse flints.		
	0.25	PP							TOPSOIL
	0.50	D		0.50		Dark brown silty CLAY with abundant gravel. Gravel is sub-rounded to angular fine to coarse flints.			
	0.70	ES				RIVER TERRACE DEPOSITS			
	1.00	D				Medium strength dark brown slightly cobbly very clayey GRAVEL with occasional rootlets. Cobbles and gravel are fine to coarse sub-rounded to very angular flints.			
						RIVER TERRACE DEPOSITS			
	1.50	D				...colour change to orange brown			
	2.00	D							
	2.60	D		2.60		Medium to high strength dark brown very gravelly CLAY with frequent cobbles. Cobbles and gravel are fine to coarse sub-rounded to very angular flints.			
	3.00	D				RIVER TERRACE DEPOSITS			
3.50	D								
4.00	D		4.00		End of Borehole at 4.00m				

Casing		Water Strikes (mbgl)		Chiselling (mbgl)		Remarks
Diameter	Depth (m)	Depth Strike	Rose to	Depth from	Depth to	
						Standpipe instal.



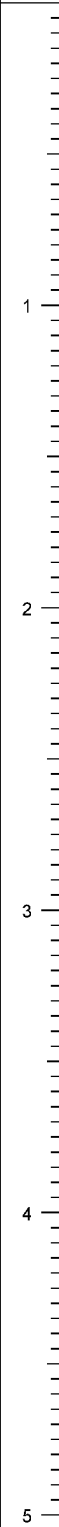
 Unit 7, Danworth Farm Hurstpierpoint BN6 9GL www.gesl.net		Borehole Log				Borehole No. WS3 Sheet 1 of 1	
Project Name: Tye Lane		Project No. GE16861		Co-ords: 497153E - 106252N		Hole Type WS	
Location: Walberton				Level:		Scale 1:25	
Client: Wates Developments Ltd				Dates: 01/11/2017		Logged By WH	

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.15	ES		0.15			Dark brown silty CLAY with abundant rootlets and organic material and frequent gravel. Gravel is fine to medium sub-angular to sub-rounded flints. TOPSOIL	
		0.50	D					Medium strength dark brown slightly silty CLAY with frequent gravel and occasional rootlets. Gravel is fine to medium angular to sub-rounded flints. RIVER TERRACE DEPOSITS	
		0.50	PP	2.6kg/cm2					
		0.70	ES						
		1.00	D						
		1.00	PP	0.8kg/cm2					
		1.20	D		1.20			...becomes gravelly to 1.2m bgl	
		1.50	D					Medium to high strength orange brown and grey mottled slightly sandy slightly gravelly CLAY with rare rootlets. Gravel is fine to coarse angular to sub-rounded flints. RIVER TERRACE DEPOSITS	
		1.50	PP	3.8kg/cm2					
		2.00	D		2.00			Medium to high strength orange brown and grey mottled slightly sandy very gravelly CLAY. Gravel is fine to coarse angular to sub-rounded flints. RIVER TERRACE DEPOSITS	
		2.00	PP	2.9kg/cm2					
		2.50	D						
		2.50	PP	2.8kg/cm2					
		2.80	D		2.70			pale yellowish brown clayey SAND & GRAVEL. Gravel is fine to coarse angular to sub-rounded flints. RIVER TERRACE DEPOSITS	
		3.30	D		3.10			Medium strength brown orange fissured CLAY with frequent gravel and occasional dark brown specks. Gravel is fine to coarse angular to sub-rounded flints. RIVER TERRACE DEPOSITS	
	3.50	PP	1.2kg/cm2						
	3.80	D							
	3.90	PP	1.1kg/cm2				...becomes gravelly		
				4.00			End of Borehole at 4.00m	4	
								5	

Casing		Water Strikes (mbgl)		Chiselling (mbgl)		Remarks
Diameter	Depth (m)	Depth Strike	Rose to	Depth from	Depth to	



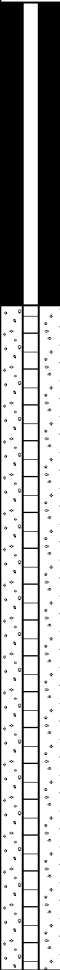
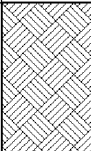
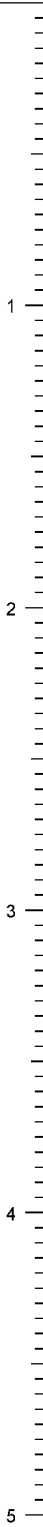
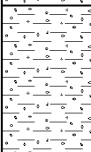
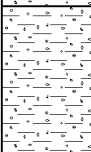
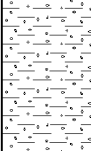
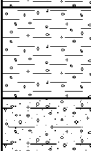
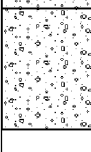
 Unit 7, Danworth Farm Hurstpierpoint BN6 9GL www.gesl.net		Borehole Log				Borehole No. WS4 Sheet 1 of 1	
Project Name: Tye Lane		Project No. GE16861		Co-ords: 497249E - 106243N		Hole Type WS	
Location: Walberton				Level:		Scale 1:25	
Client: Wates Developments Ltd				Dates: 01/11/2017		Logged By K'O'D	

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.20	ES	1.4kg/cm2	0.30		Grass over dark brown silty CLAY with occasional gravel. TOPSOIL		
		0.50	D						Medium strength dark brown slightly silty slightly gravelly CLAY with dark grey flecking. Gravel is sub-angular flint. RIVER TERRACE DEPOSITS
		0.50	PP						
		0.70	ES	0.8kg/cm2	1.20		Medium strength dark brown slightly silty gravelly CLAY with dark grey flecking. Gravel is sub-angular flint. RIVER TERRACE DEPOSITS		
		1.00	D						
		1.00	PP						
		1.50	D	0.3kg/cm2	1.90		High strength orange brown slightly silty gravelly CLAY with dark grey flecking and occasional cobbles. Gravel and cobbles are sub-angular flint. RIVER TERRACE DEPOSITS		
		1.50	PP						
		2.00	D						
		2.00	PP	1.9kg/cm2	2.20		High strength orange brown slightly sandy very gravelly CLAY with occasional cobbles. Gravels and cobbles are sub angular flint. RIVER TERRACE DEPOSITS		
2.50	D								
2.50	PP								
2.50	PP	2.0kg/cm2	3.10		...clay is slightly wet to 3.1mbgl				
3.00	D								
3.50	D								
3.50	D	3.50	4.00		Dark brown clayey slightly sandy GRAVEL with cobbles. Gravel and cobbles are sub-angular flint. RIVER TERRACE DEPOSITS				
3.50	D								
4.00	D								
4.00	D	4.00	4.00		Pale brown slightly clayey sandy GRAVEL. Gravel is sub angular flint. RIVER TERRACE DEPOSITS				
4.00	D								
4.00	D								
End of Borehole at 4.00m								4	
									5

Casing		Water Strikes (mbgl)		Chiselling (mbgl)		Remarks
Diameter	Depth (m)	Depth Strike	Rose to	Depth from	Depth to	

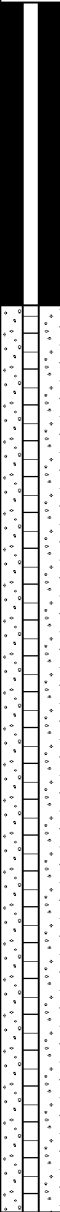
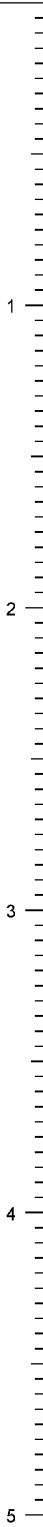
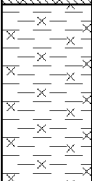
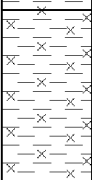
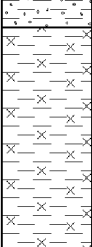


 Unit 7, Danworth Farm Hurstpierpoint BN6 9GL www.gesl.net		Borehole Log				Borehole No. WS5 Sheet 1 of 1	
Project Name: Tye Lane		Project No. GE16861		Co-ords: 497266E - 106196N		Hole Type WS	
Location: Walberton				Level:		Scale 1:25	
Client: Wates Developments Ltd				Dates: 01/11/2017		Logged By K'O'D	

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.20	ES	0.6kg/cm2			Grass over dark brown sandy slightly gravelly CLAY with abundant rootlets and organic material. Gravel is sub-angular flint. TOPSOIL		
	0.50	D			0.50				Medium strength orange brown gravelly CLAY with rootlets and occasional cobbles. Gravel is sub-angular flint. RIVER TERRACE DEPOSITS
	0.50	PP							
			0.70	ES		0.80			Medium to high strength orange brown gravelly CLAY with grey-black flecking, rootlets, organic traces and occasional cobbles. Gravel and cobbles are sub-angular flint. RIVER TERRACE DEPOSITS
			1.00	D		1.30			
			1.50	D	4.5kg/cm2				
			1.50	PP					
			2.00	D		2.30			
			2.50	D	2.60		Dark brown-orange clayey sandy GRAVEL. Gravel is sub-angular flint. RIVER TERRACE DEPOSITS		
			3.00	D	2.80		White-pale brown sandy slightly cobbley GRAVEL with structureless chalk. Gravel and cobbles are sub-angular flint. RIVER TERRACE DEPOSITS		
					3.20	End of Borehole at 3.20m			

Casing		Water Strikes (mbgl)		Chiselling (mbgl)		Remarks	
Diameter	Depth (m)	Depth Strike	Rose to	Depth from	Depth to		
						Standpipe instal. Refusal at 3.2m due to density.	

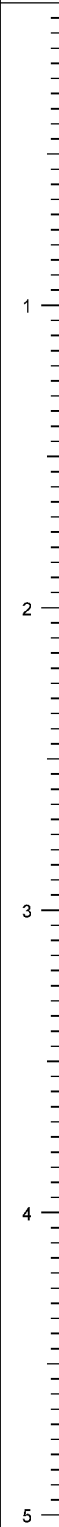
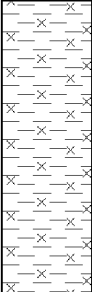
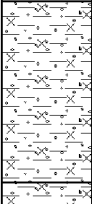
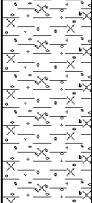
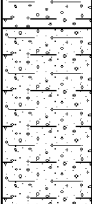
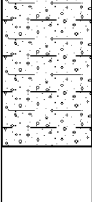
 Unit 7, Danworth Farm Hurstpierpoint BN6 9GL www.gesl.net		Borehole Log		Borehole No. WS6 Sheet 1 of 1	
Project Name: Tye Lane		Project No. GE16861		Co-ords: 497423E - 106257N	
Location: Walberton		Level:		Hole Type WS	
Client: Wates Developments Ltd		Dates: 01/11/2017		Scale 1:25	
Logged By WH					

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.20 0.25	ES PP	1.2kg/cm2	0.30		 Dark brown silty CLAY with abundant rootlets and organic material and frequent gravel. Gravel is fine to medium sub-angular to sub-rounded flints. TOPSOIL		
		0.50 0.50	D PP	4.1kg/cm2			 Medium to high strength dark brown slightly silty CLAY with occasional gravel and rootlets. Gravel is fine to medium sub-angular to sub-rounded flints. RIVER TERRACE DEPOSITS		
		0.70	ES						
		1.00 1.00	D PP	4.8kg/cm2			...colour change to dark orange brown ...rootlets no longer present		
		1.50 1.50	D PP	4.2kg/cm2					
		2.00 2.00	D PP	3.8kg/cm2					
		2.30	D		2.25		 Medium to high strength brown silty CLAY with occasional gravel and rootlets. Gravel is fine to medium sub-angular to sub-rounded flints. RIVER TERRACE DEPOSITS		
		2.90	D		2.90		 Medium strength light brown very gravelly CLAY. Gravel is fine to coarse sub-rounded to sub-angular chalk with occasional flint gravel. RIVER TERRACE DEPOSITS		
		3.30	D		3.20		 Medium to high strength brown silty CLAY with occasional gravel and rootlets. Gravel is fine to medium sub-angular to sub-rounded flints and chalk. RIVER TERRACE DEPOSITS		
		3.80	D		4.00				
End of Borehole at 4.00m									

Casing		Water Strikes (mbgl)		Chiselling (mbgl)		Remarks
Diameter	Depth (m)	Depth Strike	Rose to	Depth from	Depth to	
						Standpipe instal.



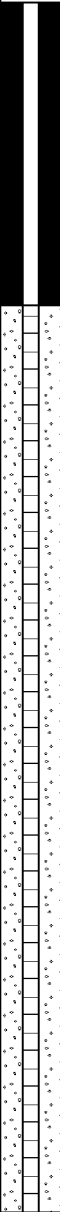
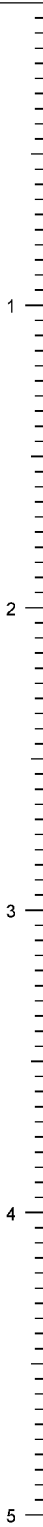
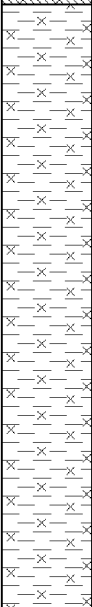
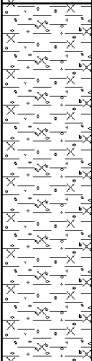
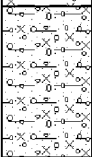
 Unit 7, Danworth Farm Hurstpierpoint BN6 9GL www.gesl.net		Borehole Log				Borehole No. WS7 Sheet 1 of 1	
Project Name: Tye Lane		Project No. GE16861		Co-ords: 497400E - 106195N		Hole Type WS	
Location: Walberton				Level:		Scale 1:25	
Client: Wates Developments Ltd				Dates: 01/11/2017		Logged By KO'D	

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.20	ES		0.40		Grass over silty CLAY with rootlets and organic materials. TOPSOIL		
	0.50	D		0.8kg/cm2					Medium strength orange brown slightly silty CLAY with dark grey-black flecks. Occasional rootlets. RIVER TERRACE DEPOSITS
	0.50	PP							
	0.70	ES							
	1.00	D		0.8kg/cm2		High strength orange brown slightly silty gravelly CLAY with dark grey-black flecks frequent cobbles and occasional rootlets. Gravel and cobbles are sub-angular flint. RIVER TERRACE DEPOSITS			
	1.00	PP							
	1.50	D		1.8kg/cm2		Medium to high strength orange brown slightly silty gravelly CLAY with dark grey-black flecks and occasional cobbles. Gravel and cobbles are sub-angular flint. RIVER TERRACE DEPOSITS			
	1.50	PP							
	2.00	D		2.2kg/cm2		...becomes very gravelly to 2.8mbgl			
	2.00	PP							
2.50	D		1.6kg/cm2		Dark orangey brown clayey slightly silty GRAVEL. Gravel is sub-angular flint. RIVER TERRACE DEPOSITS				
2.50	PP								
3.00	D		1.6kg/cm2		White-pale brown clayey sandy GRAVEL with structureless chalk. Gravel is sub angular flint. Cohesive gravel. RIVER TERRACE DEPOSITS				
3.00	PP								
3.50	D				White-pale brown clayey very sandy GRAVEL with chalk fragments and frequent cobbles. Gravel and cobbles are sub-angular flint. RIVER TERRACE DEPOSITS				
4.00	D								
End of Borehole at 4.00m								4	
								5	

Casing		Water Strikes (mbgl)		Chiselling (mbgl)		Remarks
Diameter	Depth (m)	Depth Strike	Rose to	Depth from	Depth to	



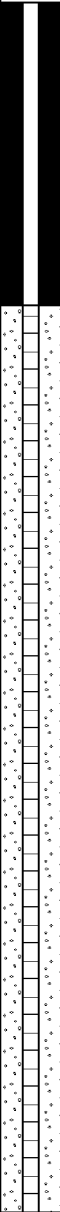
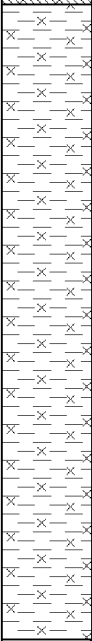
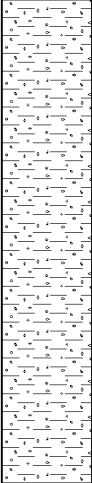
 Unit 7, Danworth Farm Hurstpierpoint BN6 9GL www.gesl.net		Borehole Log				Borehole No. WS8	
Project Name: Tye Lane		Project No. GE16861		Co-ords: 497418E - 106137N		Sheet 1 of 1 Hole Type WS	
Location: Walberton				Level:		Scale 1:25	
Client: Wates Developments Ltd				Dates: 02/11/2017		Logged By WH	

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.20	ES		0.30		Crop over dark brown silty CLAY with abundant rootlets and organic material and frequent gravel. Gravel is fine to medium sub-angular to sub-rounded flints. TOPSOIL		
		0.50	D						
		0.70	ES						
		1.00	D		2.30		Medium strength orange brown slightly silty CLAY with occasional rootlets, roots (3mm diameter) and gravel. Gravel is fine to medium very angular to sub-rounded flints. RIVER TERRACE DEPOSITS		
		1.00	PP	3.8kg/cm2					
		1.50	D						
		1.50	PP	5.0kg/cm2		...roots no longer present. Becomes slightly gravelly to 1.8m bgl.			
		2.00	D						
		2.00	PP	5.0kg/cm2					
		2.25	PP	4.4kg/cm2			Medium to high strength orange brown slightly silty gravelly CLAY with frequent coarse sand. Gravel is fine to medium very angular to sub-rounded flints and occasional chalk. RIVER TERRACE DEPOSITS		
		2.50	D						
		2.75	PP	3.4kg/cm2					
		3.00	D		3.50		Off-white cream sandy gravelly CLAY. Some of the clay is pale brown silica clay, which's proportion decreases with depth. Gravel is chalk with frequent flint. Chalk is fine to medium sub-angular to sub-rounded, very weak low density. Flint is fine to coarse very angular to sub-rounded. RIVER TERRACE DEPOSITS		
		3.50	D						
		3.50	PP	4.1kg/cm2					
	4.00	D		4.00		End of Borehole at 4.00m			
	4.00	PP	2.5kg/cm2						

Casing		Water Strikes (mbgl)		Chiselling (mbgl)		Remarks
Diameter	Depth (m)	Depth Strike	Rose to	Depth from	Depth to	
						Standpipe instal.



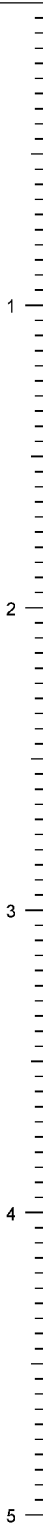
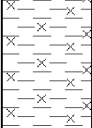
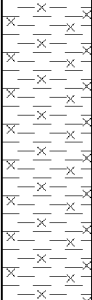
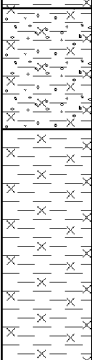
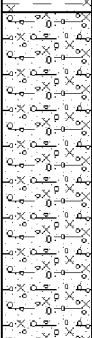
 Unit 7, Danworth Farm Hurstpierpoint BN6 9GL www.gesl.net		Borehole Log				Borehole No. WS9 Sheet 1 of 1	
Project Name: Tye Lane		Project No. GE16861		Co-ords: 497523E - 106242N		Hole Type WS	
Location: Walberton				Level:		Scale 1:25	
Client: Wates Developments Ltd				Dates: 01/11/2017		Logged By WH	

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.25 0.30	PP ES	3.2kg/cm2	0.30		 Light brown silty CLAY with abundant rootlets and organic material and frequent gravel. Gravel is fine to medium sub-angular to sub-rounded flints. TOPSOIL	 Medium to high strength brown silty CLAY with occasional gravel, rootlets and rare cobbles. Cobbles and gravel are fine to medium sub-angular to sub-rounded flints. RIVER TERRACE DEPOSITS <i>...becomes orange brown and fissured with frequent gravel.</i> <i>...becomes slightly gravelly, fine to coarse flints to 1.6m bgl.</i>	 Medium to high strength dark brown very gravelly CLAY with frequent cobbles. Cobbles and gravel are fine to coarse sub-rounded to very angular flints. RIVER TERRACE DEPOSITS
		0.50 0.50	D PP	0.8kg/cm2					
		0.75 0.80	PP ES	1.2kg/cm2					
		1.00 1.00	D PP	3.4kg/cm2					
		1.50 1.50	D PP	1.2kg/cm2					
		2.00	D						
		2.30	PP	2.3kg/cm2					
		2.50	D						
		3.00	D						
		3.50	D						
					4.00		End of Borehole at 4.00m		

Casing		Water Strikes (mbgl)		Chiselling (mbgl)		Remarks
Diameter	Depth (m)	Depth Strike	Rose to	Depth from	Depth to	
						Standpipe instal. Poor recovery for last metre.

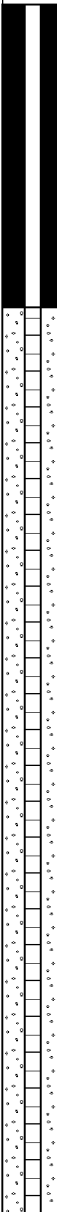
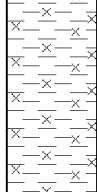
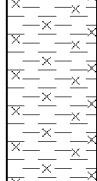
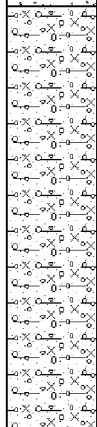


 Unit 7, Danworth Farm Hurstpierpoint BN6 9GL www.gesl.net		Borehole Log			Borehole No. WS10 Sheet 1 of 1	
Project Name: Tye Lane		Project No. GE16861		Co-ords: 497515E - 106180N		Hole Type WS
Location: Walberton				Level:		Scale 1:25
Client: Wates Developments Ltd				Dates: 02/11/2017		Logged By WH

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.20	ES	1.9kg/cm2	0.25		Dark brown silty CLAY with abundant rootlets and organic material and frequent gravel. Gravel is fine to medium sub-angular to sub-rounded flints and chalk. TOPSOIL		
		0.25	PP						
		0.50	D	1.2kg/cm2			Medium to high strength orange brown silty sandy CLAY with frequent gravel occasional rootlets and black specks. Gravel is fine to medium very angular to sub-rounded flints. RIVER TERRACE DEPOSITS		
		0.50	PP						
		0.70	ES			...colour change to dark orange brown			
		1.00	D	1.9kg/cm2			High strength orange brown slightly silty slightly gravelly CLAY with occasional rootlets. Gravel is fine to coarse very angular to sub-rounded flints. RIVER TERRACE DEPOSITS		
		1.00	PP						
		1.50	D	1.8kg/cm2			Medium strength to high strength orange brown slightly silty CLAY with frequent gravel. Gravel is fine to medium very angular to sub-rounded flints. RIVER TERRACE DEPOSITS		
		1.50	PP						
		2.00	D	1.1kg/cm2			Off-white cream sandy gravelly CLAY. Some of the clay is pale brown silica clay, which's proportion decreases with depth. Gravel is chalk with frequent flint. Chalk is fine to medium sub-angular to sub-rounded, very weak low denisty. Flint is fine to coarse very angular to sub-rounded. RIVER TERRACE DEPOSITS		
2.00	PP								
2.50	D	2.3kg/cm2							
2.50	PP								
3.00	D	0.6kg/cm2							
3.00	PP								
3.50	D	2.6kg/cm2							
3.50	PP								
4.00	D		4.00		End of Borehole at 4.00m				

Casing		Water Strikes (mbgl)		Chiselling (mbgl)		Remarks	
Diameter	Depth (m)	Depth Strike	Rose to	Depth from	Depth to		

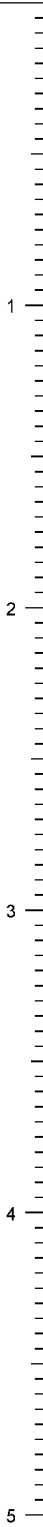
 Unit 7, Danworth Farm Hurstpierpoint BN6 9GL www.gesl.net		Borehole Log				Borehole No. WS11 Sheet 1 of 1	
Project Name: Tye Lane		Project No. GE16861		Co-ords: 497582E - 106160N		Hole Type WS	
Location: Walberton				Level:		Scale 1:25	
Client: Wates Developments Ltd				Dates: 02/11/2017		Logged By WH	

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.20 0.25	ES PP	0.8kg/cm2	0.30		 Turf over dark brown silty CLAY with abundant rootlets and organic material and frequent gravel. Gravel is fine to medium sub-angular to sub-rounded flints. TOPSOIL	1	
		0.50 0.50 0.70	D PP ES	1.2kg/cm2		 Medium to high strength orange brown slightly silty CLAY with frequent gravel and occasional roots (2mm diameter). Gravel is fine to coarse very angular to sub-rounded flints. RIVER TERRACE DEPOSITS			
		1.00 1.00	D PP	2.6kg/cm2		 Orange brown slightly silty very gravelly CLAY with occasional roots (2mm diameter). Gravel is fine to coarse very angular to sub-rounded flints. RIVER TERRACE DEPOSITS <i>...roots no longer present</i>	2		
		1.50 1.50 1.60	D PP D	3.6kg/cm2	1.60				
		2.00	D						
		2.50 2.60	D D		2.60				
		3.00	D			 Off-white cream sandy gravelly CLAY. Some of the clay is pale brown silica clay, which's proportion decreases with depth. Gravel is chalk with frequent flint. Chalk is fine to medium sub-angular to sub-rounded, very weak low density. Flint is fine to coarse very angular to sub-rounded. RIVER TERRACE DEPOSITS <i>...becomes predominantly white chalk clay</i>	3		
		3.50 3.50	D PP	2.0kg/cm2					
		4.00	D		4.00			4	
	End of Borehole at 4.00m								

Casing		Water Strikes (mbgl)		Chiselling (mbgl)		Remarks
Diameter	Depth (m)	Depth Strike	Rose to	Depth from	Depth to	
						Standpipe instal.



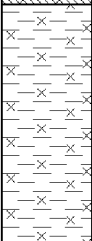
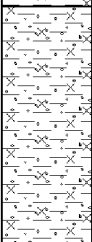
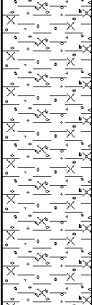
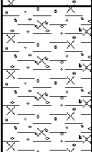
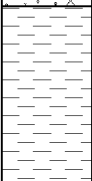
 Unit 7, Danworth Farm Hurstpierpoint BN6 9GL www.gesl.net		Borehole Log		Borehole No. WS12 Sheet 1 of 1	
Project Name: Tye Lane		Project No. GE16861		Co-ords: 497495E - 106104N	
Location: Walberton		Level:		Hole Type WS	
Client: Wates Developments Ltd		Dates: 02/11/2017		Scale 1:25	
Logged By K.O'D					

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.20	ES	0.8kg/cm2	0.20		Grass over dark brown, sandy CLAY with rootlets and organics, occasional cobbles and rare brick fragments. Cobbles are flint. TOPSOIL		
		0.50	D		0.70				Medium strength dark brown slightly sandy CLAY with dark grey-black flecking and rare gravel. Gravel is sub-angular flint. RIVER TERRACE DEPOSITS
		0.50	PP						
		0.70	ES	1.1kg/cm2	1.20		Medium strength dark brown slightly sandy very gravelly CLAY with grey-black flecking and slightly sandy orange clay lenses. RIVER TERRACE DEPOSITS		
		1.00	D						
		1.00	PP						
		1.50	D	1.0kg/cm2	1.80		Orange brown slightly sandy GRAVEL. Gravel is sub-angular flint. RIVER TERRACE DEPOSITS		
		2.00	D						
		2.00	PP						
		2.50	D	2.6kg/cm2	2.10		Orange brown slightly sandy gravelly CLAY with black flecking. Gravel is sub-angular flint. RIVER TERRACE DEPOSITS		
		2.50	PP						
		2.50	PP						
3.00	D	2.80	2.80		Orange brown clayey sandy GRAVEL with cobbles and black-grey flecking. Gravel and cobbles are angular to sub-angular flint. RIVER TERRACE DEPOSITS				
3.50	D								
3.50	D								
4.00	D	4.00	4.00		Off-white cream sandy gravelly CLAY. Some of the clay is pale brown silica clay, which's proportion decreases with depth. Gravel is chalk with frequent flint. Chalk is fine to medium sub-angular to sub-rounded, very weak low density. Flint is fine to coarse very angular to sub-rounded. RIVER TERRACE DEPOSITS ...flint cobbles and gravel become rare to end of borehole				
4.00	D								
End of Borehole at 4.00m								4	
5									

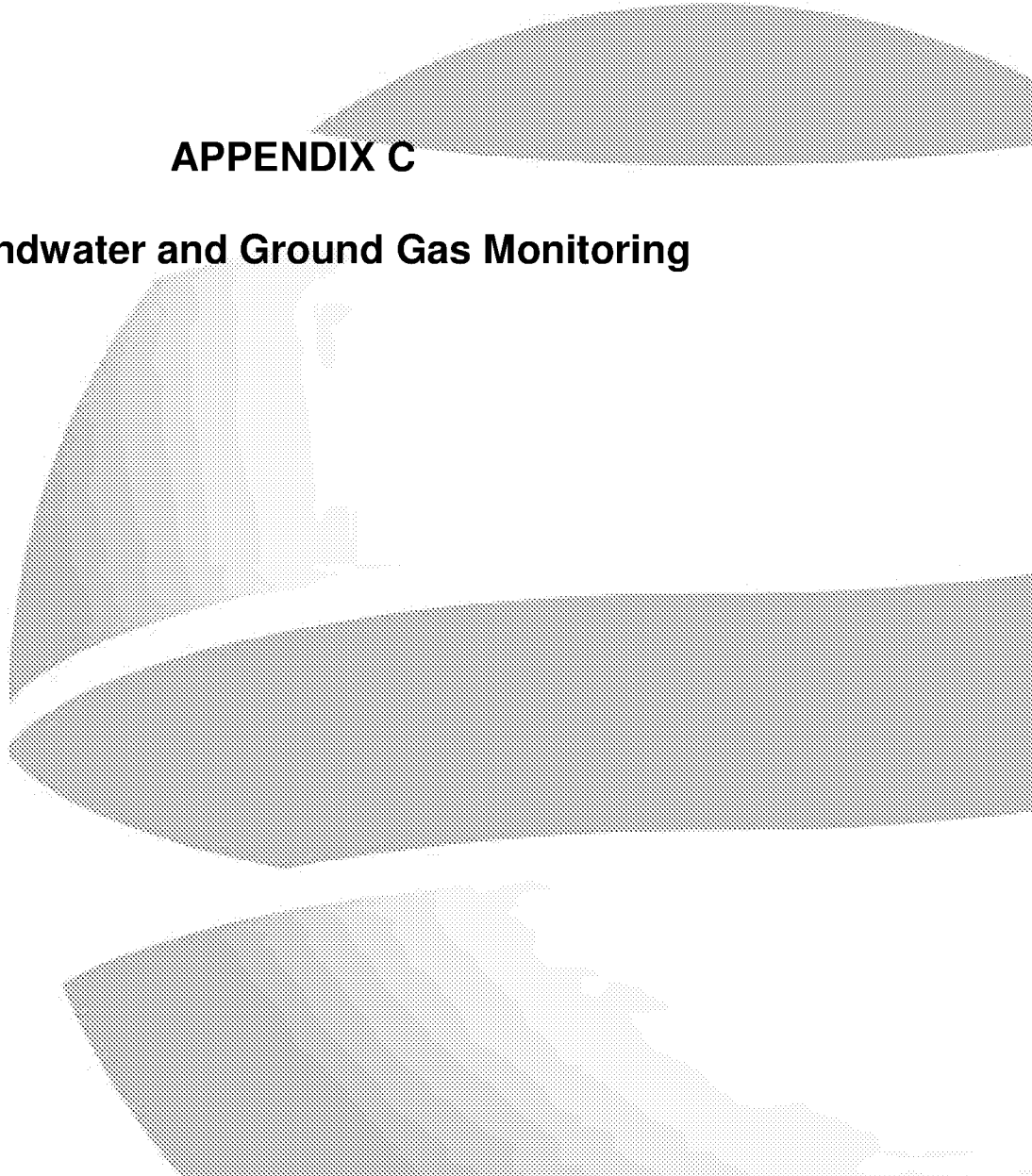
Casing		Water Strikes (mbgl)		Chiselling (mbgl)		Remarks
Diameter	Depth (m)	Depth Strike	Rose to	Depth from	Depth to	



 Unit 7, Danworth Farm Hurstpierpoint BN6 9GL www.gesl.net		Borehole Log				Borehole No. WS13 Sheet 1 of 1	
Project Name: Tye Lane		Project No. GE16861		Co-ords: 497305E - 106278N		Hole Type WS	
Location: Walberton				Level:		Scale 1:25	
Client: Wates Developments Ltd				Dates: 02/11/2017		Logged By WH	

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.10	PP	1.7kg/cm2	0.30			Turf over dark brown silty CLAY with abundant rootlets and organic material and frequent gravel. Gravel is fine to medium sub-angular to sub-rounded flints. TOPSOIL	
		0.20	ES						
		0.50	D	2.5kg/cm2	1.10		Medium to high strength orange brown slightly silty CLAY with frequent gravel and occasional rootlets and roots (1mm diameter). Gravel is fine to medium very angular to sub-rounded flints. RIVER TERRACE DEPOSITS		
		0.50	PP						
		0.70	ES						
		1.00	D	4.4kg/cm2			Medium to high strength orange brown slightly silty gravelly CLAY with occasional rootlets. Gravel is fine to medium very angular to sub-rounded flints. RIVER TERRACE DEPOSITS		
		1.00	PP						
		1.50	D	1.6kg/cm2			...rootlets no longer present ...becomes very gravelly		
		1.50	PP						
		2.00	D				Orange brown slightly silty slightly gravelly CLAY. Gravel is fine to medium very angular to sub-rounded flints. RIVER TERRACE DEPOSITS		
		2.50	D						
		3.00	D	1.5kg/cm2	2.90		Medium strength orange brown CLAY with occasional gravel and dark brown specks. Gravel is fine to coarse angular to sub-rounded flints. RIVER TERRACE DEPOSITS		
		3.00	PP						
		3.50	D	0.6kg/cm2	3.40				
		3.50	PP						
		4.00	D	0.2kg/cm2	4.00		End of Borehole at 4.00m		
4.00	PP								

Casing		Water Strikes (mbgl)		Chiselling (mbgl)		Remarks	
Diameter	Depth (m)	Depth Strike	Rose to	Depth from	Depth to		



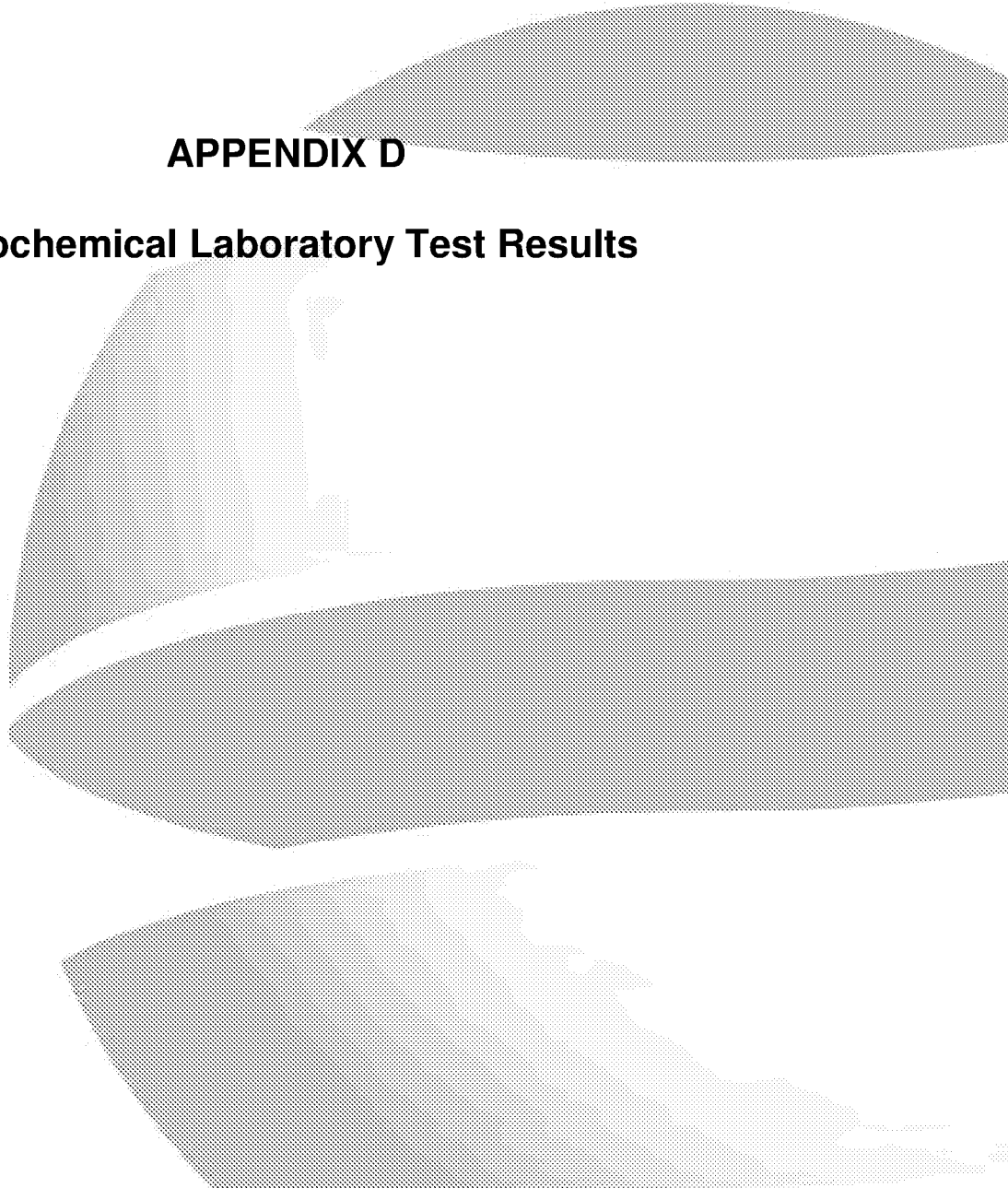
APPENDIX C

Groundwater and Ground Gas Monitoring

Project: Tye Lane, Walburton
 Ref: GE16861
 Client:



Location	Date	Time (sec)	CH ₄ (%)	CO ₂ (%)	O ₂ (%)	Flow (l/hr)	VOC (ppm)	Pressure (mb)	GWL (m bgl)	GSV/Ghgs		Characteristic Situation		CS1 Limiting Value Check			NHBC			
										CH ₄	CO ₂	BS8485 & C665		Flow	CH ₄	CO ₂	CH ₄		CO ₂	
												CH ₄	CO ₂				GSV	Conc.	GSV	Conc.
WS2	07/12/17	10	0.0	0.2	20.5	0.0	0.0	1010	2.44	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	07/12/17	20	0.0	0.2	20.5	0.0	0.00	1010	2.44	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	07/12/17	30	0.0	0.2	20.5	0.0	0.00	1010	2.44	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	07/12/17	60	0.0	0.1	20.5	0.0	0.00	1010	2.44	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	07/12/17	120	0.0	0.1	20.6	0.0	0.00	1010	2.44	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS5	07/12/17	10	0.0	2.5	20.8	0.0	0.0	1010	DRY	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS5	07/12/17	20	0.0	3.1	19.2	0.0	0.00	1010	DRY	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS5	07/12/17	30	0.0	3.1	19.0	0.0	0.00	1010	DRY	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS5	07/12/17	60	0.0	3.1	18.8	0.0	0.00	1010	DRY	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS5	07/12/17	120	0.0	3.1	18.8	0.0	0.00	1010	DRY	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS6	07/12/17	10	0.0	0.2	20.5	0.0	0.0	1010	DRY	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS6	07/12/17	20	0.0	0.3	20.5	0.0	0.00	1010	DRY	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS6	07/12/17	30	0.0	0.2	20.5	0.0	0.00	1010	DRY	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS6	07/12/17	60	0.0	0.1	20.5	0.0	0.00	1010	DRY	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS6	07/12/17	120	0.0	0.2	20.5	0.0	0.00	1010	DRY	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS8	07/12/17	10	0.0	2.3	20.4	0.0	0.0	1010	DRY	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS8	07/12/17	20	0.0	3.8	19.0	0.0	0.00	1010	DRY	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS8	07/12/17	30	0.0	3.9	18.3	0.0	0.00	1010	DRY	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS8	07/12/17	60	0.0	4.0	18.0	0.0	0.00	1010	DRY	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS8	07/12/17	120	0.0	4.1	17.9	0.0	0.00	1010	DRY	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS9	07/12/17	10	0.0	0.5	20.7	0.0	0.0	1010	3.37	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS9	07/12/17	20	0.0	0.5	20.4	0.0	0.00	1010	3.37	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS9	07/12/17	30	0.0	0.5	20.4	0.0	0.00	1010	3.37	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS9	07/12/17	60	0.0	0.3	20.4	0.0	0.00	1010	3.37	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS9	07/12/17	120	0.0	0.3	20.5	0.0	0.00	1010	3.37	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS11	07/12/17	10	0.0	0.1	20.6	0.0	0.0	1010	DRY	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS11	07/12/17	20	0.0	0.1	20.6	0.0	0.00	1010	DRY	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS11	07/12/17	30	0.0	0.1	20.6	0.0	0.00	1010	DRY	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS11	07/12/17	60	0.0	0.1	20.6	0.0	0.00	1010	DRY	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS11	07/12/17	120	0.0	0.1	20.6	0.0	0.00	1010	DRY	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN



APPENDIX D

Geochemical Laboratory Test Results



Unit A2
Windmill Road
Ponswood Industrial Estate
St Leonards on Sea



THE ENVIRONMENTAL LABORATORY LTD

Analytical Report Number: 17-14803

Issue: 1

Date of Issue: 10/11/2017

Contact: Glyn Evans

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

Quotation No: Q14-00021

Order No: PO2567

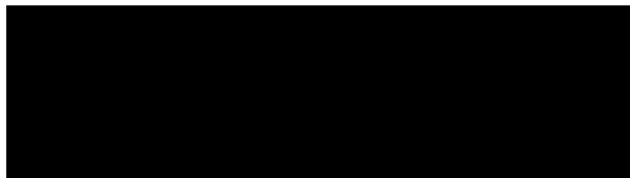
Customer Reference: GE16861

Date Received: 06/11/2017

Date Approved: 10/11/2017

Details: Tye Lane, Walberton

Approved by:



Mike Varley, Technical Manager

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

Sample Summary

Report No.: 17-14803

Elab No.	Client's Ref.	Date Sampled	Date Scheduled	Description	Deviations
117392	TP1 0.10	01/11/2017	07/11/2017	Silty loam	
117393	TP2 0.10	01/11/2017	07/11/2017	Silty loam	c
117394	TP4 0.10	01/11/2017	07/11/2017	Silty loam	
117395	TP5 0.10	01/11/2017	07/11/2017	Silty loam	
117396	TP6 0.10	01/11/2017	07/11/2017	Silty loam	
117397	WS1 0.20	01/11/2017	07/11/2017	Silty loam	
117398	WS1 0.70	01/11/2017	07/11/2017	Silty loam	
117399	WS2 0.20	01/11/2017	07/11/2017	Silty loam	
117400	WS3 0.15	01/11/2017	07/11/2017	Silty loam	
117401	WS4 0.10	01/11/2017	07/11/2017	Silty loam	
117402	WS5 0.10	01/11/2017	07/11/2017	Silty loam	
117403	WS6 0.20	01/11/2017	07/11/2017	Silty loam	
117404	WS6 0.70	01/11/2017	07/11/2017	Silty loam	
117405	WS7 0.10	01/11/2017	07/11/2017	Silty loam	
117406	WS8 0.20	02/11/2017	07/11/2017	Silty loam	
117407	WS9 0.30	01/11/2017	07/11/2017	Silty loam	
117408	WS10 0.20	02/11/2017	07/11/2017	Silty loam	
117409	WS11 0.20	01/11/2017	07/11/2017	Silty loam	
117410	WS12 0.20	01/11/2017	07/11/2017	Silty loam	
117411	WS13 0.20	01/11/2017	07/11/2017	Silty loam	
117412	WS2 0.70	01/11/2017	07/11/2017		
117413	WS3 0.70	01/11/2017	07/11/2017		
117414	WS4 0.70	01/11/2017	07/11/2017		
117415	WS5 0.70	01/11/2017	07/11/2017		
117416	WS7 0.70	01/11/2017	07/11/2017		
117417	WS8 0.70	02/11/2017	07/11/2017		
117418	WS9 0.80	01/11/2017	07/11/2017		
117419	WS10 0.70	02/11/2017	07/11/2017		
117420	WS11 0.70	02/11/2017	07/11/2017		
117421	WS12 0.70	02/11/2017	07/11/2017		
117422	WS13 0.70	02/11/2017	07/11/2017		

Results Summary

Report No.: 17-14803

ELAB Reference	117392	117393	117394	117395	117396	117397
Customer Reference						
Sample ID						
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sample Location	TP1	TP2	TP4	TP5	TP6	WS1
Sample Depth (m)	0.10	0.10	0.10	0.10	0.10	0.20
Sampling Date	01/11/2017	01/11/2017	01/11/2017	01/11/2017	01/11/2017	01/11/2017
Determinand	Codes	Units	LOD			
Metals						
Arsenic	M	mg/kg	1	7.2	15.7	7.8
Barium	U	mg/kg	10	57.6	55.0	59.6
Beryllium	U	mg/kg	1	< 1.0	< 1.0	< 1.0
Cadmium	M	mg/kg	0.5	0.6	0.6	0.9
Chromium	M	mg/kg	5	22.0	20.7	22.9
Copper	M	mg/kg	5	13.5	16.2	17.6
Lead	M	mg/kg	5	32.0	31.4	39.8
Mercury	M	mg/kg	0.5	1.0	1.5	1.2
Nickel	M	mg/kg	5	13.8	13.1	13.6
Selenium	M	mg/kg	1	1.1	1.4	1.4
Vanadium	M	mg/kg	5	26.8	27.5	31.4
Zinc	M	mg/kg	5	54.1	60.3	62.4
Anions						
Water Soluble Chloride	M	mg/kg	40	< 40	44	47
Water Soluble Sulphate	M	g/l	0.02	0.06	0.04	0.04
Inorganics						
Elemental Sulphur	N	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 (SO4)	U	%	0.02	0.03	0.05	0.04
Water Soluble Boron	N	mg/kg	0.5	< 0.5	0.6	1.1
Miscellaneous						
pH	M	pH units	0.1	8.0	7.8	7.6
Total Organic Carbon	N	%	0.01	0.36	1.2	0.95
Phenols						
Total Phenols	N	mg/kg	6	< 6	c < 6	< 6
Polyaromatic hydrocarbons						
Naphthalene	M	mg/kg	0.1	< 0.1	c < 0.1	< 0.1
Acenaphthylene	M	mg/kg	0.1	< 0.1	c < 0.1	< 0.1
Acenaphthene	M	mg/kg	0.1	< 0.1	c < 0.1	< 0.1
Fluorene	M	mg/kg	0.1	< 0.1	c < 0.1	< 0.1
Phenanthrene	M	mg/kg	0.1	< 0.1	c < 0.1	< 0.1
Anthracene	M	mg/kg	0.1	< 0.1	c < 0.1	< 0.1
Fluoranthene	M	mg/kg	0.1	< 0.1	c < 0.1	< 0.1
Pyrene	M	mg/kg	0.1	< 0.1	c < 0.1	< 0.1
Benzo(a)anthracene	M	mg/kg	0.1	< 0.1	c < 0.1	< 0.1
Chrysene	M	mg/kg	0.1	< 0.1	c < 0.1	< 0.1
Benzo(b)fluoranthene	M	mg/kg	0.1	0.1	c 0.2	0.2
Benzo(k)fluoranthene	M	mg/kg	0.1	< 0.1	c 0.2	0.1
Benzo(a)pyrene	M	mg/kg	0.1	< 0.1	c < 0.1	< 0.1
Indeno(1,2,3-cd)pyrene	M	mg/kg	0.1	< 0.1	c < 0.1	< 0.1
Dibenzo(a,h)anthracene	M	mg/kg	0.1	< 0.1	c < 0.1	< 0.1
Benzo(g,h,i)perylene	M	mg/kg	0.1	0.1	c < 0.1	< 0.1
Total PAH(16)	M	mg/kg	0.4	0.5	c 1.4	0.6

Results Summary

Report No.: 17-14803

ELAB Reference	117392	117393	117394	117395	117396	117397
Customer Reference						
Sample ID						
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sample Location	TP1	TP2	TP4	TP5	TP6	WS1
Sample Depth (m)	0.10	0.10	0.10	0.10	0.10	0.20
Sampling Date	01/11/2017	01/11/2017	01/11/2017	01/11/2017	01/11/2017	01/11/2017

Determinand	Codes	Units	LOD						
BTEX									
Benzene	M	ug/kg	10	< 10.0	c < 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Toluene	M	ug/kg	10	< 10.0	c < 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Ethylbenzene	M	ug/kg	10	< 10.0	c < 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Xylenes	M	ug/kg	10	< 10.0	c < 10.0	< 10.0	< 10.0	< 10.0	< 10.0
TPH CWG									
>C5-C6 Aliphatic	N	mg/kg	0.01	< 0.01	c < 0.01	< 0.01	< 0.01	< 0.01	< 0.01
>C6-C8 Aliphatic	N	mg/kg	0.01	< 0.01	c < 0.01	< 0.01	< 0.01	< 0.01	< 0.01
>C8-C10 Aliphatic	N	mg/kg	1	< 1.0	c < 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C10-C12 Aliphatic	N	mg/kg	1	< 1.0	c < 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C12-C16 Aliphatic	N	mg/kg	1	< 1.0	c < 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C16-C21 Aliphatic	N	mg/kg	1	< 1.0	c < 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C21-C35 Aliphatic	N	mg/kg	1	< 1.0	c < 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C35-C40 Aliphatic	N	mg/kg	1	< 1.0	c < 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C5-C7 Aromatic	N	mg/kg	0.01	< 0.01	c < 0.01	< 0.01	< 0.01	< 0.01	< 0.01
>C7-C8 Aromatic	N	mg/kg	0.01	< 0.01	c < 0.01	< 0.01	< 0.01	< 0.01	< 0.01
>C8-C10 Aromatic	N	mg/kg	1	< 1.0	c < 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C10-C12 Aromatic	N	mg/kg	1	< 1.0	c < 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C12-C16 Aromatic	N	mg/kg	1	< 1.0	c < 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C16-C21 Aromatic	N	mg/kg	1	< 1.0	c < 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C21-C35 Aromatic	N	mg/kg	1	< 1.0	c < 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C35-C40 Aromatic	N	mg/kg	1	< 1.0	c < 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total (>C5-C40) Ali/Aro	N	mg/kg	1	< 1.0	c < 1.0	< 1.0	< 1.0	< 1.0	< 1.0
OrganoChlorine Pesticides									
alpha-HCH	M	ug/kg	10	< 10	n/t	< 10	n/t	< 10	n/t
beta HCH	M	ug/kg	10	< 10	n/t	< 10	n/t	< 10	n/t
gamma-HCH	M	ug/kg	10	< 10	n/t	< 10	n/t	< 10	n/t
delta-HCH	N	ug/kg	10	< 10	n/t	< 10	n/t	< 10	n/t
Heptachlor	N	ug/kg	10	< 10	n/t	< 10	n/t	< 10	n/t
Aldrin	M	ug/kg	10	< 10	n/t	< 10	n/t	< 10	n/t
Heptachlor expoxide	N	ug/kg	10	< 10	n/t	< 10	n/t	< 10	n/t
trans-Chlordane	N	ug/kg	10	< 10	n/t	< 10	n/t	< 10	n/t
alpha cis-Chlordane	N	ug/kg	10	< 10	n/t	< 10	n/t	< 10	n/t
p,p-DDE	M	ug/kg	10	< 10	n/t	< 10	n/t	< 10	n/t
Dieldrin	M	ug/kg	10	< 10	n/t	< 10	n/t	< 10	n/t
Endrin	N	ug/kg	10	< 10	n/t	< 10	n/t	< 10	n/t
p,p-DDD	M	ug/kg	10	< 10	n/t	< 10	n/t	< 10	n/t
Endosulfan II	N	ug/kg	10	< 10	n/t	< 10	n/t	< 10	n/t
Endrin aldehyde	N	ug/kg	10	< 10	n/t	< 10	n/t	< 10	n/t
p,p-DDT	M	ug/kg	10	< 10	n/t	< 10	n/t	< 10	n/t
Endosulphan sulphate	M	ug/kg	10	< 10	n/t	< 10	n/t	< 10	n/t
Methoxychlor	N	ug/kg	10	< 10	n/t	< 10	n/t	< 10	n/t
Endrin ketone	N	ug/kg	10	< 10	n/t	< 10	n/t	< 10	n/t

Results Summary

Report No.: 17-14803

ELAB Reference	117398	117399	117400	117401	117402	117403	117404	117405
Customer Reference								
Sample ID								
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sample Location	WS1	WS2	WS3	WS4	WS5	WS6	WS6	WS7
Sample Depth (m)	0.70	0.20	0.15	0.10	0.10	0.20	0.70	0.10
Sampling Date	01/11/2017	01/11/2017	01/11/2017	01/11/2017	01/11/2017	01/11/2017	01/11/2017	01/11/2017

Determinand	Codes	Units	LOD								
Metals											
Arsenic	M	mg/kg	1	5.9	4.9	5.4	7.0	8.2	8.6	10.6	7.1
Barium	U	mg/kg	10	47.4	45.3	45.7	54.4	61.9	59.6	67.1	51.7
Beryllium	U	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cadmium	M	mg/kg	0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Chromium	M	mg/kg	5	18.3	14.3	14.7	20.0	22.8	23.6	28.1	20.3
Copper	M	mg/kg	5	10.0	11.0	12.4	13.7	16.1	20.9	15.7	12.8
Lead	M	mg/kg	5	9.3	16.9	20.0	24.4	35.5	27.3	13.2	24.0
Mercury	M	mg/kg	0.5	1.5	1.0	1.4	1.5	1.4	1.8	1.5	1.5
Nickel	M	mg/kg	5	13.4	9.1	9.1	11.3	13.6	14.5	19.0	11.7
Selenium	M	mg/kg	1	< 1.0	< 1.0	1.2	1.1	1.5	1.3	1.1	1.1
Vanadium	M	mg/kg	5	23.5	18.2	19.9	27.9	32.8	31.7	37.9	28.5
Zinc	M	mg/kg	5	42.6	41.9	50.4	153	64.2	57.8	52.6	48.8
Anions											
Water Soluble Chloride	M	mg/kg	40	< 40	< 40	< 40	< 40	58	< 40	48	< 40
Water Soluble Sulphate	M	g/l	0.02	0.03	0.02	0.03	0.03	0.02	0.02	0.03	0.02
Inorganics											
Elemental Sulphur	N	mg/kg	20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
Hexavalent Chromium	N	mg/kg	0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8
Total Sulphide	N	mg/kg	2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Total Cyanide	M	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Acid Soluble Sulphate (SO4)	U	%	0.02	0.03	0.03	0.05	0.04	0.04	0.04	0.03	0.04
Water Soluble Boron	N	mg/kg	0.5	< 0.5	0.5	0.9	0.7	1.0	0.8	0.5	0.9
Miscellaneous											
pH	M	pH units	0.1	7.4	6.8	6.9	7.0	6.1	7.1	7.8	6.8
Total Organic Carbon	N	%	0.01	0.20	0.42	0.95	0.69	1.4	0.88	0.23	0.98
Phenols											
Total Phenols	N	mg/kg	6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6
Polyaromatic hydrocarbons											
Naphthalene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.3	< 0.1	< 0.1	< 0.1
Fluorene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.2
Anthracene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	M	mg/kg	0.1	< 0.1	< 0.1	0.1	< 0.1	0.4	< 0.1	< 0.1	0.5
Pyrene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.1	< 0.1	< 0.1	0.4
Benzo(a)anthracene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.3
Chrysene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.3
Benzo(b)fluoranthene	M	mg/kg	0.1	< 0.1	0.1	0.2	< 0.1	< 0.1	< 0.1	< 0.1	0.3
Benzo(k)fluoranthene	M	mg/kg	0.1	< 0.1	< 0.1	0.2	< 0.1	< 0.1	< 0.1	< 0.1	0.2
Benzo(a)pyrene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.7	0.1	0.2
Indeno(1,2,3-cd)pyrene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.1
Dibenzo(a,h)anthracene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(g,h,i)perylene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	0.1	< 0.1	< 0.1	< 0.1	0.1
Total PAH(16)	M	mg/kg	0.4	< 0.4	< 0.4	0.6	0.4	1.8	0.8	< 0.4	2.7

Results Summary

Report No.: 17-14803

ELAB Reference	117398	117399	117400	117401	117402	117403	117404	117405
Customer Reference								
Sample ID								
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sample Location	WS1	WS2	WS3	WS4	WS5	WS6	WS6	WS7
Sample Depth (m)	0.70	0.20	0.15	0.10	0.10	0.20	0.70	0.10
Sampling Date	01/11/2017	01/11/2017	01/11/2017	01/11/2017	01/11/2017	01/11/2017	01/11/2017	01/11/2017

Determinand	Codes	Units	LOD								
BTEX											
Benzene	M	ug/kg	10	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Toluene	M	ug/kg	10	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Ethylbenzene	M	ug/kg	10	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Xylenes	M	ug/kg	10	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
TPH CWG											
>C5-C6 Aliphatic	N	mg/kg	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
>C6-C8 Aliphatic	N	mg/kg	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
>C8-C10 Aliphatic	N	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C10-C12 Aliphatic	N	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C12-C16 Aliphatic	N	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C16-C21 Aliphatic	N	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C21-C35 Aliphatic	N	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C35-C40 Aliphatic	N	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C5-C7 Aromatic	N	mg/kg	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
>C7-C8 Aromatic	N	mg/kg	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
>C8-C10 Aromatic	N	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C10-C12 Aromatic	N	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C12-C16 Aromatic	N	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C16-C21 Aromatic	N	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C21-C35 Aromatic	N	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C35-C40 Aromatic	N	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total (>C5-C40) Ali/Aro	N	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
OrganoChlorine Pesticides											
alpha-HCH	M	ug/kg	10	n/t	n/t	< 10	n/t	n/t	n/t	n/t	< 10
beta HCH	M	ug/kg	10	n/t	n/t	< 10	n/t	n/t	n/t	n/t	< 10
gamma-HCH	M	ug/kg	10	n/t	n/t	< 10	n/t	n/t	n/t	n/t	< 10
delta-HCH	N	ug/kg	10	n/t	n/t	< 10	n/t	n/t	n/t	n/t	< 10
Heptachlor	N	ug/kg	10	n/t	n/t	< 10	n/t	n/t	n/t	n/t	< 10
Aldrin	M	ug/kg	10	n/t	n/t	< 10	n/t	n/t	n/t	n/t	< 10
Heptachlor expoxide	N	ug/kg	10	n/t	n/t	< 10	n/t	n/t	n/t	n/t	< 10
trans-Chlordane	N	ug/kg	10	n/t	n/t	< 10	n/t	n/t	n/t	n/t	< 10
alpha cis-Chlordane	N	ug/kg	10	n/t	n/t	< 10	n/t	n/t	n/t	n/t	< 10
p,p-DDE	M	ug/kg	10	n/t	n/t	< 10	n/t	n/t	n/t	n/t	< 10
Dieldrin	M	ug/kg	10	n/t	n/t	< 10	n/t	n/t	n/t	n/t	< 10
Endrin	N	ug/kg	10	n/t	n/t	< 10	n/t	n/t	n/t	n/t	< 10
p,p-DDD	M	ug/kg	10	n/t	n/t	< 10	n/t	n/t	n/t	n/t	< 10
Endosulfan II	N	ug/kg	10	n/t	n/t	< 10	n/t	n/t	n/t	n/t	< 10
Endrin aldehyde	N	ug/kg	10	n/t	n/t	< 10	n/t	n/t	n/t	n/t	< 10
p,p-DDT	M	ug/kg	10	n/t	n/t	< 10	n/t	n/t	n/t	n/t	< 10
Endosulphan sulphate	M	ug/kg	10	n/t	n/t	< 10	n/t	n/t	n/t	n/t	< 10
Methoxychlor	N	ug/kg	10	n/t	n/t	< 10	n/t	n/t	n/t	n/t	< 10
Endrin ketone	N	ug/kg	10	n/t	n/t	< 10	n/t	n/t	n/t	n/t	< 10

Results Summary

Report No.: 17-14803

ELAB Reference:	117406	117407	117408	117409	117410	117411
Customer Reference:						
Sample ID:						
Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sample Location:	WS8	WS9	WS10	WS11	WS12	WS13
Sample Depth (m):	0.20	0.30	0.20	0.20	0.20	0.20
Sampling Date:	02/11/2017	01/11/2017	02/11/2017	01/11/2017	01/11/2017	01/11/2017
Determinand	Codes	Units	LOD			
Metals						
Arsenic	M	mg/kg	1	6.5	5.2	6.9
Barium	U	mg/kg	10	49.6	38.7	48.8
Beryllium	U	mg/kg	1	< 1.0	< 1.0	< 1.0
Cadmium	M	mg/kg	0.5	< 0.5	< 0.5	< 0.5
Chromium	M	mg/kg	5	17.6	13.8	16.8
Copper	M	mg/kg	5	13.8	10.0	14.1
Lead	M	mg/kg	5	24.9	14.8	25.7
Mercury	M	mg/kg	0.5	1.3	1.3	1.5
Nickel	M	mg/kg	5	10.8	9.4	11.1
Selenium	M	mg/kg	1	1.1	< 1.0	1.4
Vanadium	M	mg/kg	5	23.8	17.8	23.0
Zinc	M	mg/kg	5	53.2	35.3	51.5
Anions						
Water Soluble Chloride	M	mg/kg	40	43	< 40	44
Water Soluble Sulphate	M	g/l	0.02	0.03	0.02	0.03
Inorganics						
Elemental Sulphur	N	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 (SO4)	U	%	0.02	0.04	0.04	0.05
Water Soluble Boron	N	mg/kg	0.5	1.0	0.6	0.9
Miscellaneous						
pH	M	pH units	0.1	6.5	6.7	6.6
Total Organic Carbon	N	%	0.01	0.95	0.34	0.75
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	0.2
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	0.2
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	0.2
Benzo(a)pyrene	M	mg/kg	0.1	< 0.1	0.3	< 0.1
Indeno(1,2,3-cd)pyrene	M	mg/kg	0.1	< 0.1	< 0.1	0.2
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	0.2
Total PAH(16)	M	mg/kg	0.4	< 0.4	< 0.4	0.9

Results Summary

Report No.: 17-14803

ELAB Reference	117406	117407	117408	117409	117410	117411
Customer Reference						
Sample ID						
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sample Location	WS8	WS9	WS10	WS11	WS12	WS13
Sample Depth (m)	0.20	0.30	0.20	0.20	0.20	0.20
Sampling Date	02/11/2017	01/11/2017	02/11/2017	01/11/2017	01/11/2017	01/11/2017

Determinand	Codes	Units	LOD						
BTEX									
Benzene	M	ug/kg	10	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Toluene	M	ug/kg	10	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Ethylbenzene	M	ug/kg	10	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Xylenes	M	ug/kg	10	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
TPH CWG									
>C5-C6 Aliphatic	N	mg/kg	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
>C6-C8 Aliphatic	N	mg/kg	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
>C8-C10 Aliphatic	N	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C10-C12 Aliphatic	N	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C12-C16 Aliphatic	N	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C16-C21 Aliphatic	N	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C21-C35 Aliphatic	N	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C35-C40 Aliphatic	N	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C5-C7 Aromatic	N	mg/kg	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
>C7-C8 Aromatic	N	mg/kg	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
>C8-C10 Aromatic	N	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C10-C12 Aromatic	N	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C12-C16 Aromatic	N	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C16-C21 Aromatic	N	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C21-C35 Aromatic	N	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C35-C40 Aromatic	N	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total (>C5-C40) Ali/Aro	N	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
OrganoChlorine Pesticides									
alpha-HCH	M	ug/kg	10	n/t	n/t	n/t	n/t	n/t	n/t
beta HCH	M	ug/kg	10	n/t	n/t	n/t	n/t	n/t	n/t
gamma-HCH	M	ug/kg	10	n/t	n/t	n/t	n/t	n/t	n/t
delta-HCH	N	ug/kg	10	n/t	n/t	n/t	n/t	n/t	n/t
Heptachlor	N	ug/kg	10	n/t	n/t	n/t	n/t	n/t	n/t
Aldrin	M	ug/kg	10	n/t	n/t	n/t	n/t	n/t	n/t
Heptachlor epoxide	N	ug/kg	10	n/t	n/t	n/t	n/t	n/t	n/t
trans-Chlordane	N	ug/kg	10	n/t	n/t	n/t	n/t	n/t	n/t
alpha cis-Chlordane	N	ug/kg	10	n/t	n/t	n/t	n/t	n/t	n/t
p,p-DDE	M	ug/kg	10	n/t	n/t	n/t	n/t	n/t	n/t
Dieldrin	M	ug/kg	10	n/t	n/t	n/t	n/t	n/t	n/t
Endrin	N	ug/kg	10	n/t	n/t	n/t	n/t	n/t	n/t
p,p-DDD	M	ug/kg	10	n/t	n/t	n/t	n/t	n/t	n/t
Endosulfan II	N	ug/kg	10	n/t	n/t	n/t	n/t	n/t	n/t
Endrin aldehyde	N	ug/kg	10	n/t	n/t	n/t	n/t	n/t	n/t
p,p-DDT	M	ug/kg	10	n/t	n/t	n/t	n/t	n/t	n/t
Endosulphan sulphate	M	ug/kg	10	n/t	n/t	n/t	n/t	n/t	n/t
Methoxychlor	N	ug/kg	10	n/t	n/t	n/t	n/t	n/t	n/t
Endrin ketone	N	ug/kg	10	n/t	n/t	n/t	n/t	n/t	n/t

Results Summary

Report No.: 17-14803

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 (%)
117392	0.10	TP1	Brown soil, Stones	No asbestos detected	n/t	n/t	n/t	n/t
117393	0.10	TP2	Brown soil, Stones	No asbestos detected	n/t	n/t	n/t	n/t
117394	0.10	TP4	Brown soil, Stones	No asbestos detected	n/t	n/t	n/t	n/t
117395	0.10	TP5	Brown soil	No asbestos detected	n/t	n/t	n/t	n/t
117396	0.10	TP6	Brown soil, Stones	No asbestos detected	n/t	n/t	n/t	n/t
117397	0.20	WS1	Brown soil, Stones	No asbestos detected	n/t	n/t	n/t	n/t
117398	0.70	WS1	Brown soil, Stones	No asbestos detected	n/t	n/t	n/t	n/t
117399	0.20	WS2	Brown soil, Stones	No asbestos detected	n/t	n/t	n/t	n/t
117400	0.15	WS3	Brown soil, Stones	No asbestos detected	n/t	n/t	n/t	n/t
117401	0.10	WS4	Brown soil	No asbestos detected	n/t	n/t	n/t	n/t
117402	0.10	WS5	Brown soil, root	No asbestos detected	n/t	n/t	n/t	n/t
117403	0.20	WS6	Brown soil	No asbestos detected	n/t	n/t	n/t	n/t
117404	0.70	WS6	Brown soil	No asbestos detected	n/t	n/t	n/t	n/t
117405	0.10	WS7	Brown soil, Stones	No asbestos detected	n/t	n/t	n/t	n/t
117406	0.20	WS8	Brown soil	No asbestos detected	n/t	n/t	n/t	n/t
117407	0.30	WS9	Brown soil, Stones	No asbestos detected	n/t	n/t	n/t	n/t
117408	0.20	WS10	Brown soil	No asbestos detected	n/t	n/t	n/t	n/t
117409	0.20	WS11	Brown soil, stones, metal	No asbestos detected	n/t	n/t	n/t	n/t
117410	0.20	WS12	Brown soil, Stones	No asbestos detected	n/t	n/t	n/t	n/t
117411	0.20	WS13	Brown soil	No asbestos detected	n/t	n/t	n/t	n/t

Method Summary

Report No.: 17-14803

Parameter	Codes	Analysis Undertaken On	Date Tested	Method Number	Technique
Soil					
Sulphide	N	As submitted sample	09/11/2017	109	Colorimetry
Hexavalent chromium	N	As submitted sample	09/11/2017	110	Colorimetry
pH	M	Air dried sample	10/11/2017	113	Electromeric
Acid Soluble Sulphate	U	Air dried sample	10/11/2017	115	Ion Chromatography
Aqua regia extractable metals	M	Air dried sample	09/11/2017	118	ICPMS
Phenols in solids	N	As submitted sample	09/11/2017	121	HPLC
Elemental Sulphur	N	Air dried sample	09/11/2017	122	HPLC
PAH (GC-FID)	M	As submitted sample	08/11/2017	133	GC-FID
Water soluble anions	M	Air dried sample	09/11/2017	172	Ion Chromatography
Organochlorine Pesticides in solids	M	As submitted sample	08/11/2017	173	GC-MS
BTEX in solids	M	As submitted sample	09/11/2017	181A	GC-MS
Water soluble boron	N	Air dried sample	09/11/2017	202	Colorimetry
Total cyanide	M	As submitted sample	09/11/2017	204	Colorimetry
Total organic carbon/Total sulphur	N	Air dried sample	10/11/2017	210	IR
Aliphatic hydrocarbons in soil	N	As submitted sample	08/11/2017	214	GC-FID
Aliphatic/Aromatic hydrocarbons in soil	N	As submitted sample	09/11/2017	214	GC-FID
Aromatic hydrocarbons in soil	N	As submitted sample	08/11/2017	214	GC-FID
Low range Aliphatic hydrocarbons soil	N	As submitted sample	09/11/2017	214	GC-MS
Low range Aromatic hydrocarbons soil	N	As submitted sample	09/11/2017	214	GC-MS
Asbestos identification	U	As submitted sample	09/11/2017	PMAN	Microscopy

Tests marked N are not UKAS accredited



Report Information

Report No.: 17-14803

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
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)

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

PCB congener results may include any coeluting PCBs

Uncertainty of measurement for the determinands tested are available upon request

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) |

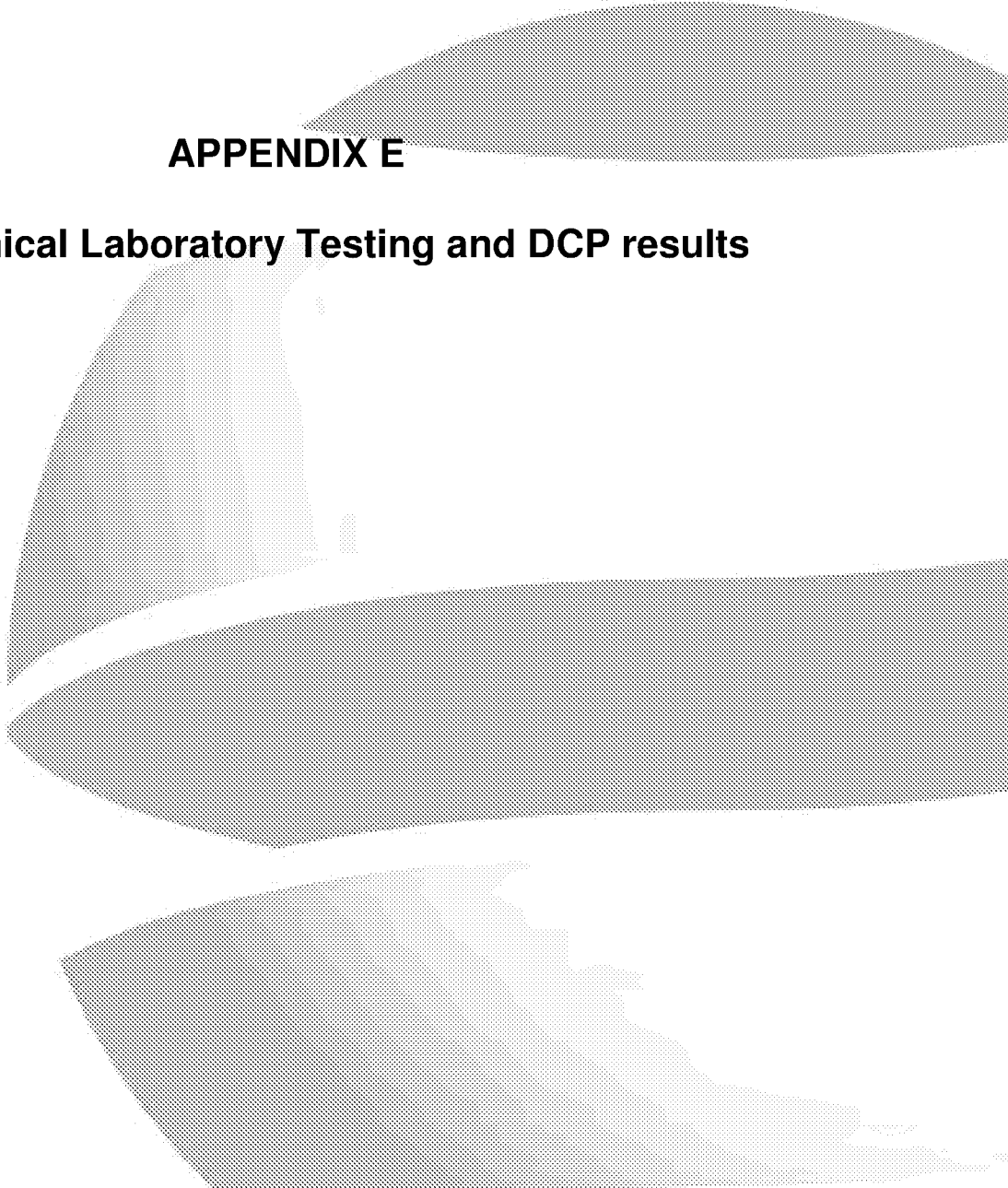
Where a sample has a deviation code, the applicable test result may be invalid.

Sample Retention and Disposal

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

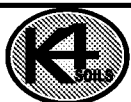
All water samples will be retained for 7 days following the date of the test report

Charges may apply to extended sample storage



APPENDIX E

Geotechnical Laboratory Testing and DCP results

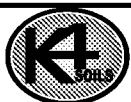


Summary of Natural Moisture Content, Liquid Limit and Plastic Limit Results

Job No. 23621	Project Name Tye Lane, Walberton	Programme	
		Samples received	06/11/2017
Project No. GE16861	Client GESL	Schedule received	07/11/2017
		Project started	08/11/2017
		Testing Started	17/11/2017

Hole No.	Sample				Soil Description	NMC %	Passing 425µm %	LL %	PL %	PI %	Remarks
	Ref	Top	Base	Type							
TP2	-	1.00	-	D	Brown slightly gravelly fine sandy silty CLAY (gravel is fine and sub-angular)	23	97	42	20	22	
TP4	-	0.50	-	D	Brown slightly gravelly fine sandy silty CLAY (gravel is fine and sub-angular)	24	95	37	21	16	
TP5	-	1.00	-	D	Brown slightly gravelly fine sandy silty CLAY (gravel is fm and sub-angular)	22	95	42	20	22	
TP6	-	0.50	-	D	Brown slightly gravelly fine sandy silty CLAY (gravel is fm and sub-angular)	22	95	41	21	20	
TP6	-	1.00	-	D	Brown and orangish brown mottled slightly gravelly fine sandy silty CLAY with rare carbonaceous deposits (gravel is fm and sub-angular)	20	99	39	20	19	
WS1	-	1.00	-	D	Brown slightly fine sandy gravelly silty CLAY (gravel is fmc and angular to sub-angular)	20	49	44	18	26	
WS2	-	1.00	-	D	Brown sandy silty clayey GRAVEL (gravel is fmc and sub-angular to angular)	15	29	35	20	15	
WS2	-	2.00	-	D	Brown silty sandy clayey GRAVEL (gravel is fmc and sub-angular)	15	26	34	21	13	Sample washed to obtain test fraction
WS3	-	1.00	-	D	Brown gravelly fine sandy silty CLAY (gravel is fmc and angular to sub-angular)	21	48	35	20	15	
WS4	-	1.50	-	D	Brown slightly gravelly fine sandy silty CLAY (gravel is fmc and sub-angular)	24	68	41	20	21	
WS5	-	1.00	-	D	Orangish brown and brown mottled sandy slightly gravelly silty CLAY with occasional fine rootlets (gravel is fine and angular)	13	99	41	20	21	
WS5	-	2.00	-	D	Brown gravelly sandy silty CLAY with traces of rootlets (gravel is fmc and angular to sub-angular)	14	60	45	20	25	

 2519	Test Methods: BS1377: Part 2: 1990: Natural Moisture Content : clause 3.2 Atterberg Limits: clause 4.3 and 5.0				Test Report by K4 SOILS LABORATORY Unit 8 Olds Close Olds Approach Watford Herts WD18 9RU Tel: 01923 711 288 Email: James@k4soils.com				Checked and Approved Initials J.P Date: 22/11/2017	
	Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)								MSF-5-R1(b)	



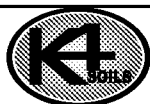
Summary of Natural Moisture Content, Liquid Limit and Plastic Limit Results

Job No. 23621	Project Name Tye Lane, Walberton	Programme	
		Samples received	06/11/2017
Project No. GE16861	Client GESL	Schedule received	07/11/2017
		Project started	08/11/2017
		Testing Started	17/11/2017

Hole No.	Sample				Soil Description	NMC %	Passing 425µm %	LL %	PL %	PI %	Remarks
	Ref	Top	Base	Type							
WS6	-	1.50	-	D	Brown and orangish brown fine sandy silty CLAY with rare fine gravel	18	99	39	20	19	
WS7	-	1.00	-	D	Brown slightly gravelly fine sandy silty CLAY with occasional black flecks (gravel is fine and angular)	22	99	40	20	20	
WS8	-	1.00	-	D	Brown slightly gravelly sandy silty CLAY with roots (gravel is fine and sub-angular)	15	98	42	22	20	
WS8	-	2.00	-	D	Brown slightly gravelly sandy silty CLAY with occasional roots and rootlets (gravel is fmc and sub-angular)	16	69	43	21	22	
WS9	-	1.50	-	D	Brown slightly fine sandy gravelly silty CLAY (gravel is fmc and angular to sub-angular)	20	64	43	18	25	
WS10	-	1.00	-	D	Brown slightly gravelly fine sandy silty CLAY (gravel is fine and sub-angular)	23	97	42	21	21	
WS10	-	2.00	-	D	Brown gravelly fine sandy silty CLAY (gravel is fmc and sub-angular)	23	60	47	21	26	
WS11	-	1.50	-	D	Brown slightly gravelly slightly fine sandy silty CLAY with roots and rootlets (gravel is fm and sub-angular)	19	93	45	21	24	
WS11	-	2.00	-	D	Brown slightly sandy clayey GRAVEL (gravel is fmc and angular)	21	15	49	24	25	Sample washed to obtain test fraction
WS12	-	1.00	-	D	Brown sandy gravelly silty CLAY (gravel is fmc and angular)	21	35	39	21	18	Sample washed to obtain test fraction
WS13	-	1.00	-	D	Orangish brown mottled brown slightly gravelly fine sandy silty CLAY (gravel is fm and sub-angular to angular)	18	95	41	20	21	
WS13	-	1.50	-	D	Brown and orangish brown mottled fine sandy gravelly silty CLAY (gravel is fmc and sub-angular to angular)	19	40	35	19	16	

 UKAS TESTING	Test Methods: BS1377: Part 2: 1990: Natural Moisture Content : clause 3.2 Atterberg Limits: clause 4.3 and 5.0	Test Report by K4 SOILS LABORATORY Unit 8 Olds Close Olds Approach Watford Herts WD18 9RU Tel: 01923 711 288 Email: James@k4soils.com	Checked and Approved Initials J.P Date: 22/11/2017
	2519	Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)	

MSF-5-R1(b)



PARTICLE SIZE DISTRIBUTION

Job Ref 23621

Borehole/Pit No. TP2

Site Name Tye Lane, Walberton

Sample No. -

Project No. GE16861

Client

GESL

Depth Top 2.30 m

Soil Description

Brown slightly sandy gravelly silty CLAY (gravel is fmc and angular to sub-rounded)

Depth Base - m

Sample Type D

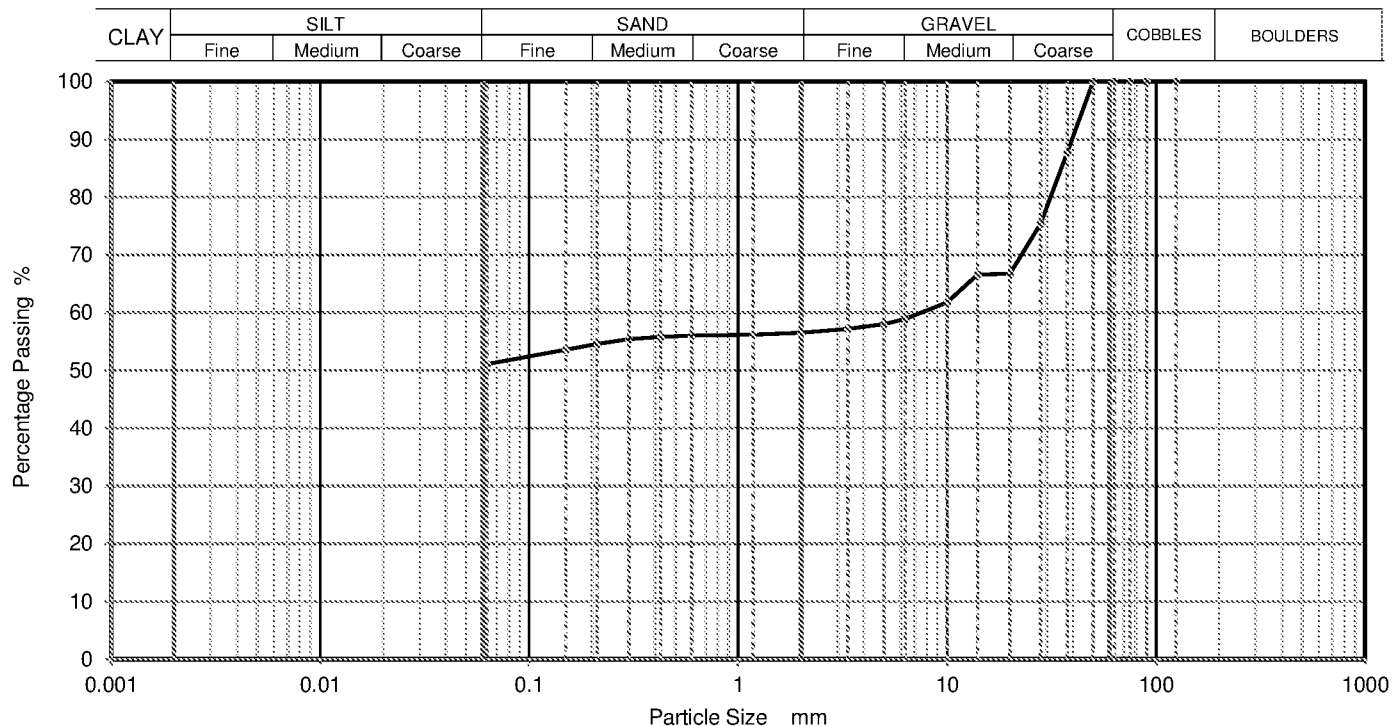
Samples received 06/11/2017

Schedules received 07/11/2017

Test Method BS1377:Part 2: 1990, clause 9.0

Project started 08/11/2017

Date tested 20/11/2017



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	88		
28	75		
20	67		
14	67		
10	62		
6.3	59		
5	58		
3.35	57		
2	57		
1.18	56		
0.6	56		
0.425	56		
0.3	55		
0.212	55		
0.15	54		
0.063	51		

Dry Mass of sample, g

388

Sample Proportions	% dry mass
Very coarse	0.0
Gravel	43.5
Sand	5.4
Fines <0.063mm	51.2

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	
Curvature Coefficient	

Remarks

Preparation and testing in accordance with BS1377 unless noted below



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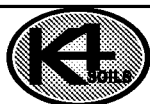
Tel: 01923 711288

Checked and Approved

Initials: J.P

Date: 22/11/2017

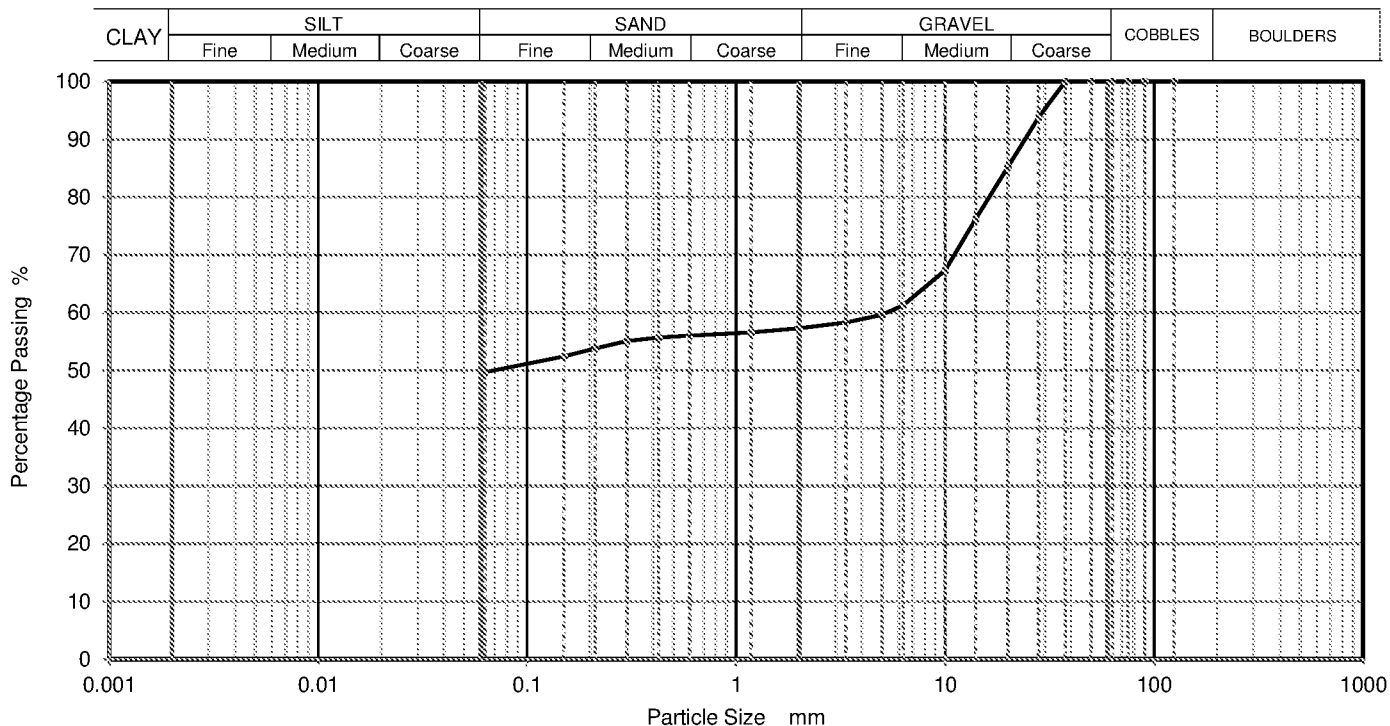
MSF-5-R3



PARTICLE SIZE DISTRIBUTION

Job Ref	23621
Borehole/Pit No.	TP4
Sample No.	-
Depth Top	1.80 m
Depth Base	- m
Sample Type	D
Samples received	06/11/2017
Schedules received	07/11/2017
Project started	08/11/2017
Date tested	20/11/2017

Site Name	Tye Lane, Walberton		
Project No.	GE16861	Client	GESL
Soil Description	Brown slightly sandy gravelly silty CLAY (gravel is fmc and angular to sub-rounded)		
Test Method	BS1377:Part 2: 1990, clause 9.0		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	94		
20	85		
14	76		
10	67		
6.3	61		
5	60		
3.35	58		
2	57		
1.18	57		
0.6	56		
0.425	56		
0.3	55		
0.212	54		
0.15	52		
0.063	50		

Dry Mass of sample, g 260

Sample Proportions	% dry mass
Very coarse	0.0
Gravel	42.7
Sand	7.6
Fines <0.063mm	49.7

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	
Curvature Coefficient	

Remarks
Preparation and testing in accordance with BS1377 unless noted below



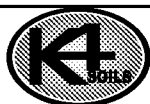
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Checked and Approved

Initials: J.P

Date: 22/11/2017

MSF-5-R3



PARTICLE SIZE DISTRIBUTION

Job Ref 23621

Borehole/Pit No. TP5

Site Name Tye Lane, Walberton

Sample No. -

Project No. GE16861

Client

GESL

Depth Top 2.50 m

Soil Description

Brown slightly sandy slightly gravelly silty CLAY with occasional fm chalk fragments (gravel is fmc and angular to sub-rounded)

Depth Base - m

Sample Type D

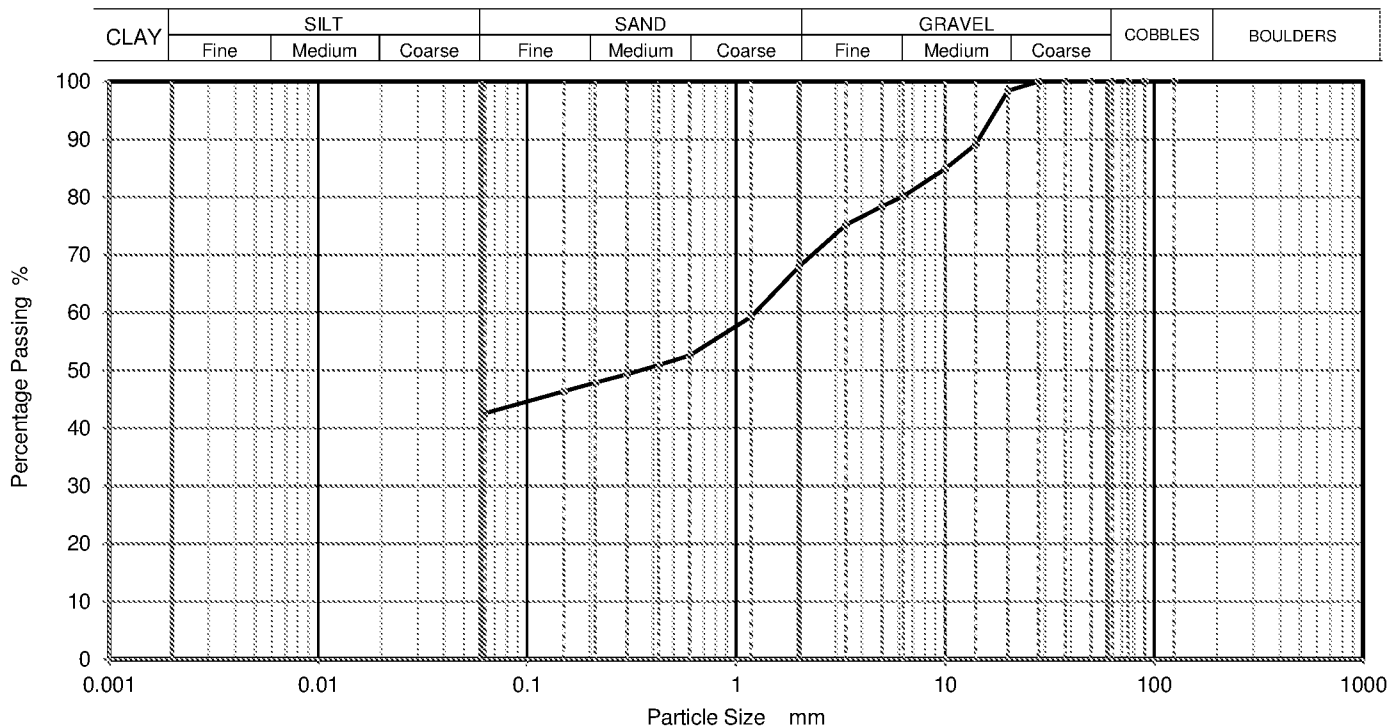
Samples received 06/11/2017

Schedules received 07/11/2017

Test Method BS1377:Part 2: 1990, clause 9.0

Project started 08/11/2017

Date tested 20/11/2017



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	98		
14	89		
10	85		
6.3	80		
5	78		
3.35	75		
2	68		
1.18	59		
0.6	53		
0.425	51		
0.3	49		
0.212	48		
0.15	46		
0.063	43		

Dry Mass of sample, g

364

Sample Proportions	% dry mass
Very coarse	0.0
Gravel	32.0
Sand	25.4
Fines <0.063mm	42.6

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	
Curvature Coefficient	

Remarks

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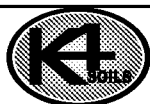
Tel: 01923 711288

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Initials: J.P

Date: 22/11/2017

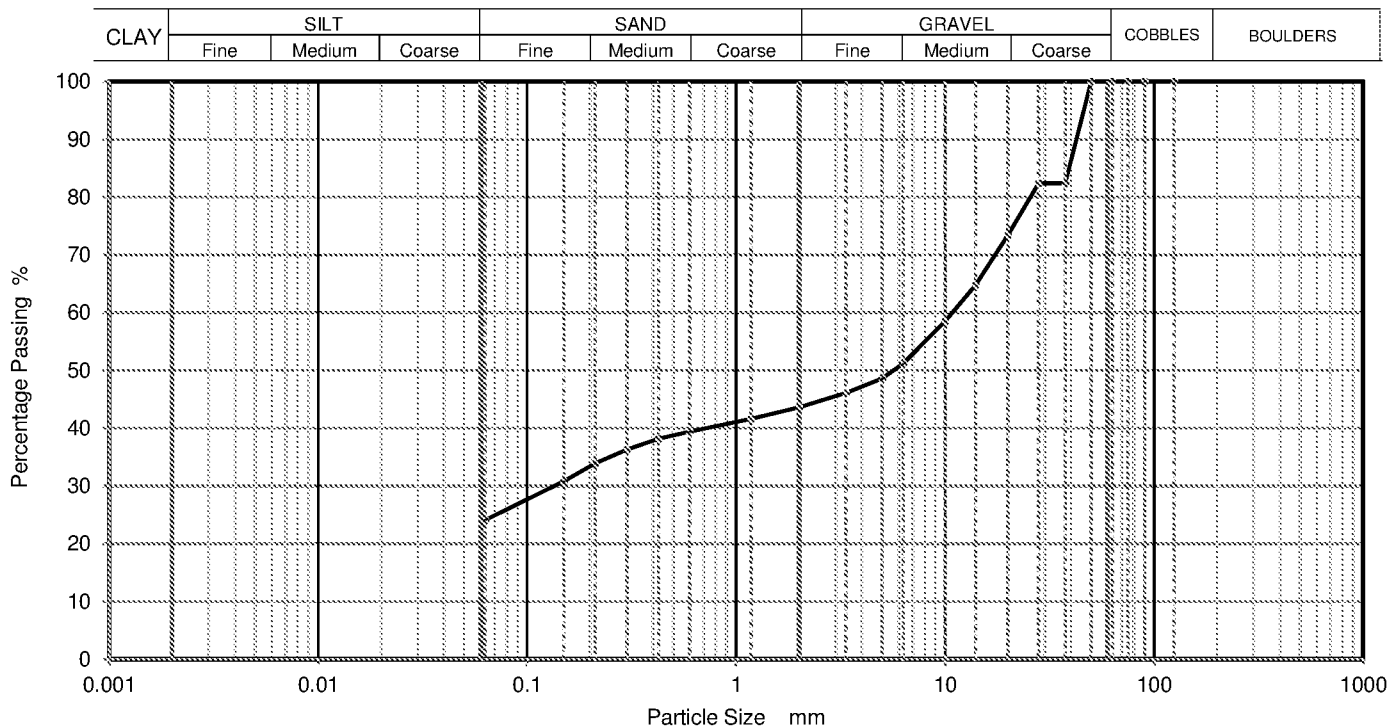
MSF-5-R3



PARTICLE SIZE DISTRIBUTION

Job Ref	23621
Borehole/Pit No.	WS3
Sample No.	-
Depth Top	2.80 m
Depth Base	- m
Sample Type	D
Samples received	06/11/2017
Schedules received	07/11/2017
Project started	08/11/2017
Date tested	20/11/2017

Site Name	Tye Lane, Walberton		
Project No.	GE16861	Client	GESL
Soil Description	Light greyish brown sandy very clayey GRAVEL (gravel is fmc and angular)		
Test Method	BS1377:Part 2: 1990, clause 9.0		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	82		
28	82		
20	73		
14	65		
10	59		
6.3	51		
5	49		
3.35	46		
2	44		
1.18	42		
0.6	39		
0.425	38		
0.3	36		
0.212	34		
0.15	31		
0.063	24		

Dry Mass of sample, g 639

Sample Proportions	% dry mass
Very coarse	0.0
Gravel	56.4
Sand	19.5
Fines <0.063mm	24.1

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	
Curvature Coefficient	

Remarks
Preparation and testing in accordance with BS1377 unless noted below

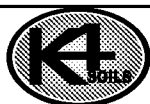


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Date: 22/11/2017

MSF-5-R3



PARTICLE SIZE DISTRIBUTION

Job Ref 23621

Borehole/Pit No. WS7

Site Name Tye Lane, Walberton

Sample No. -

Project No. GE16861

Client

GESL

Depth Top 2.50 m

Soil Description

Brown slightly sandy slightly gravelly silty CLAY (gravel is fmc and angular to sub-angular)

Depth Base - m

Sample Type D

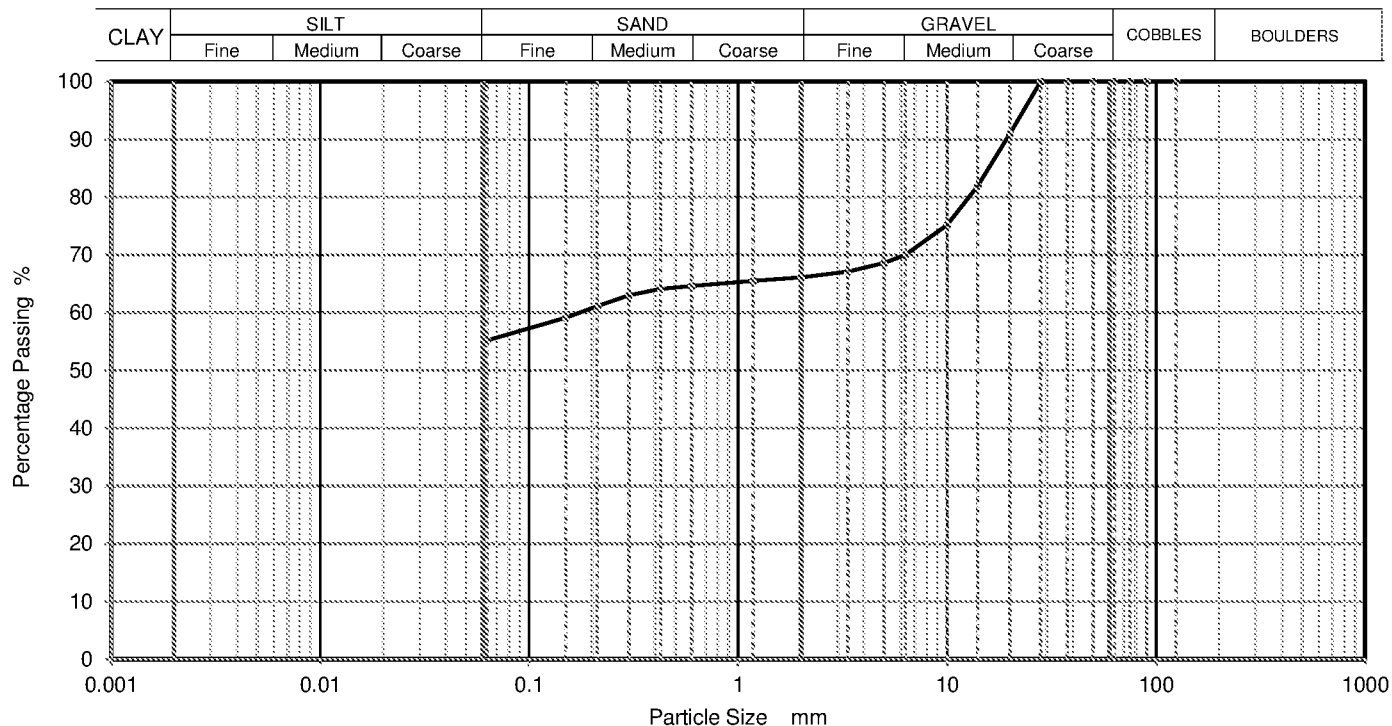
Samples received 06/11/2017

Schedules received 07/11/2017

Test Method BS1377:Part 2: 1990, clause 9.0

Project started 08/11/2017

Date tested 20/11/2017



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	91		
14	82		
10	75		
6.3	70		
5	69		
3.35	67		
2	66		
1.18	66		
0.6	65		
0.425	64		
0.3	63		
0.212	61		
0.15	59		
0.063	55		

Dry Mass of sample, g

200

Sample Proportions	% dry mass
Very coarse	0.0
Gravel	33.9
Sand	10.8
Fines <0.063mm	55.2

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	
Curvature Coefficient	

Remarks

Preparation and testing in accordance with BS1377 unless noted below



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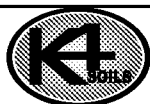
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MSF-5-R3



PARTICLE SIZE DISTRIBUTION

Job Ref 23621

Borehole/Pit No. WS9

Site Name Tye Lane, Walberton

Sample No. -

Project No. GE16861

Client

GESL

Depth Top 2.50 m

Soil Description

Brown slightly sandy very clayey GRAVEL (gravel is fmc and sub-angular to angular)

Depth Base - m

Sample Type D

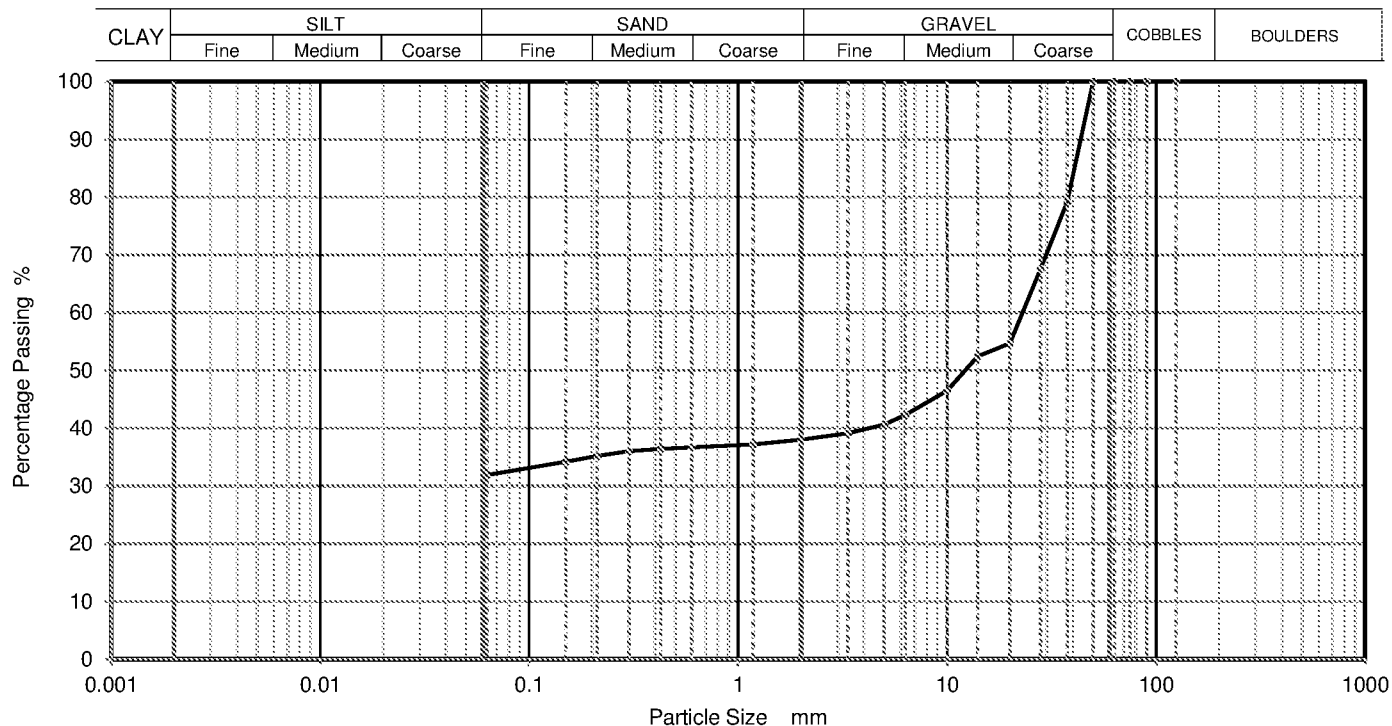
Samples received 06/11/2017

Schedules received 07/11/2017

Test Method BS1377:Part 2: 1990, clause 9.0

Project started 08/11/2017

Date tested 20/11/2017



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	79		
28	68		
20	55		
14	52		
10	47		
6.3	42		
5	41		
3.35	39		
2	38		
1.18	37		
0.6	37		
0.425	36		
0.3	36		
0.212	35		
0.15	34		
0.063	32		

Dry Mass of sample, g

437

Sample Proportions	% dry mass
Very coarse	0.0
Gravel	62.0
Sand	6.1
Fines <0.063mm	31.9

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	
Curvature Coefficient	

Remarks

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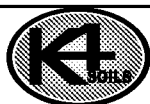
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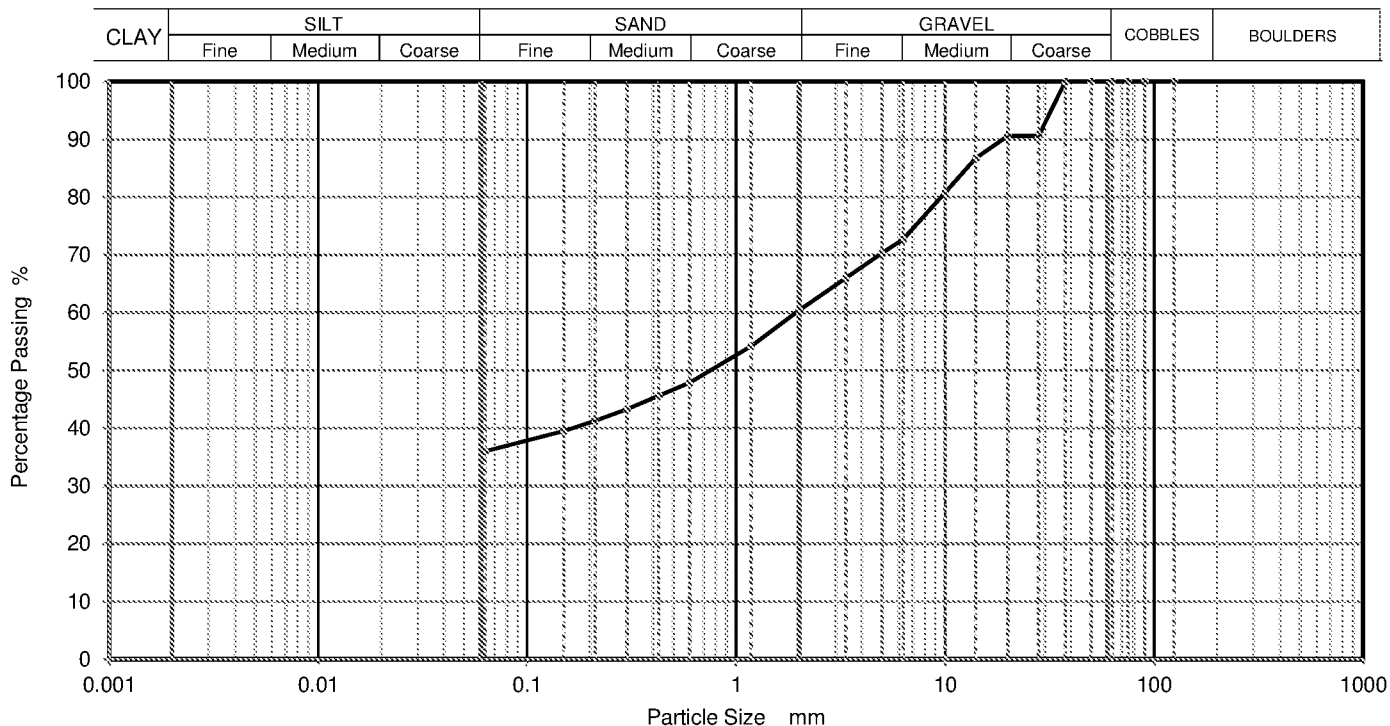
MSF-5-R3



PARTICLE SIZE DISTRIBUTION

Job Ref	23621
Borehole/Pit No.	WS10
Sample No.	-
Depth Top	3.50 m
Depth Base	- m
Sample Type	D
Samples received	06/11/2017
Schedules received	07/11/2017
Project started	08/11/2017
Date tested	20/11/2017

Site Name	Tye Lane, Walberton		
Project No.	GE16861	Client	GESL
Soil Description	Brown slightly sandy gravelly silty CLAY with occasional fm chalk fragments (gravel is fmc and angular to sub-rounded)		
Test Method	BS1377:Part 2: 1990, clause 9.0		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	91		
20	91		
14	87		
10	81		
6.3	73		
5	70		
3.35	66		
2	60		
1.18	54		
0.6	48		
0.425	46		
0.3	43		
0.212	41		
0.15	40		
0.063	36		

Dry Mass of sample, g 291

Sample Proportions	% dry mass
Very coarse	0.0
Gravel	39.6
Sand	24.5
Fines <0.063mm	36.0

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	
Curvature Coefficient	

Remarks
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Date: 22/11/2017

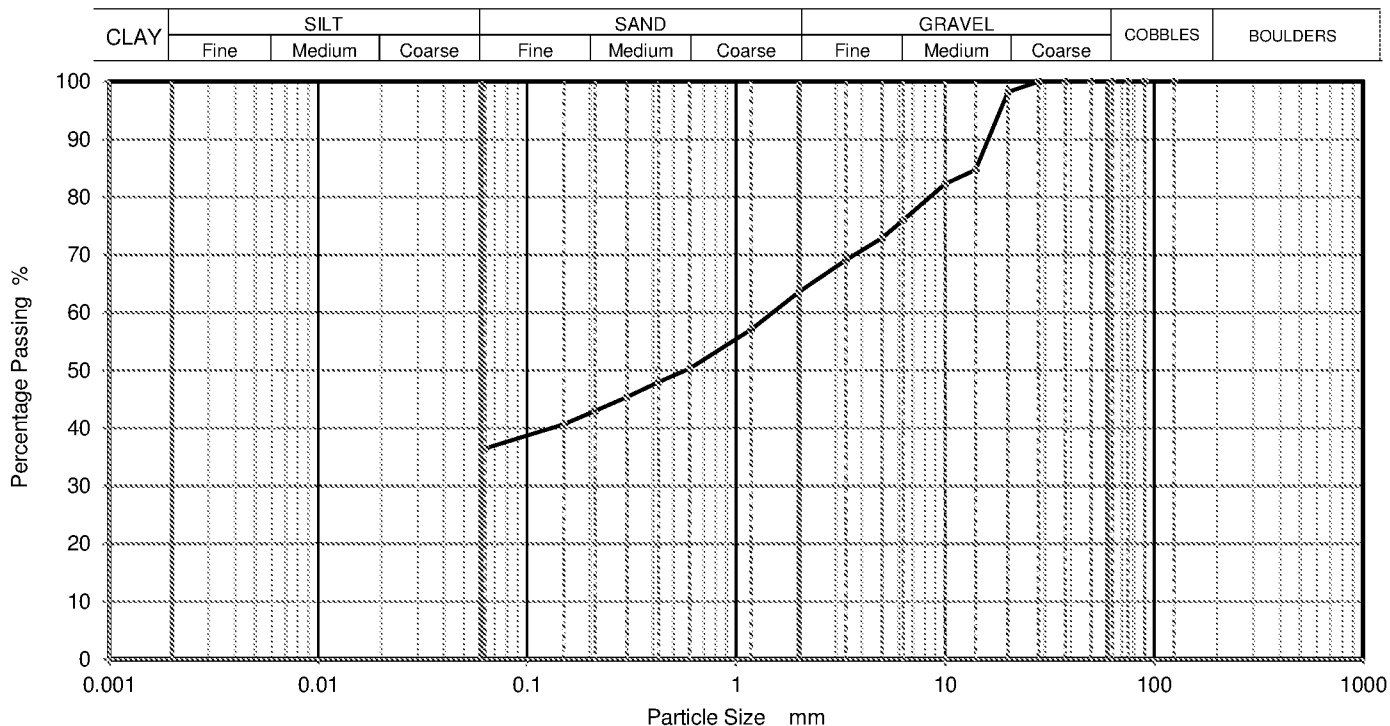
MSF-5-R3



PARTICLE SIZE DISTRIBUTION

Job Ref	23621
Borehole/Pit No.	WS11
Sample No.	-
Depth Top	3.00 m
Depth Base	- m
Sample Type	D
Samples received	06/11/2017
Schedules received	07/11/2017
Project started	08/11/2017
Date tested	20/11/2017

Site Name	Tye Lane, Walberton		
Project No.	GE16861	Client	GESL
Soil Description	Brown slightly sandy gravelly silty CLAY with occasional fm chalk fragments (gravel is fmc and angular to sub-rounded)		
Test Method	BS1377:Part 2: 1990, clause 9.0		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	98		
14	85		
10	82		
6.3	76		
5	73		
3.35	69		
2	64		
1.18	57		
0.6	50		
0.425	48		
0.3	45		
0.212	43		
0.15	41		
0.063	37		

Dry Mass of sample, g 291

Sample Proportions	% dry mass
Very coarse	0.0
Gravel	36.4
Sand	27.1
Fines <0.063mm	36.5

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	
Curvature Coefficient	

Remarks
Preparation and testing in accordance with BS1377 unless noted below

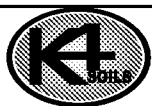


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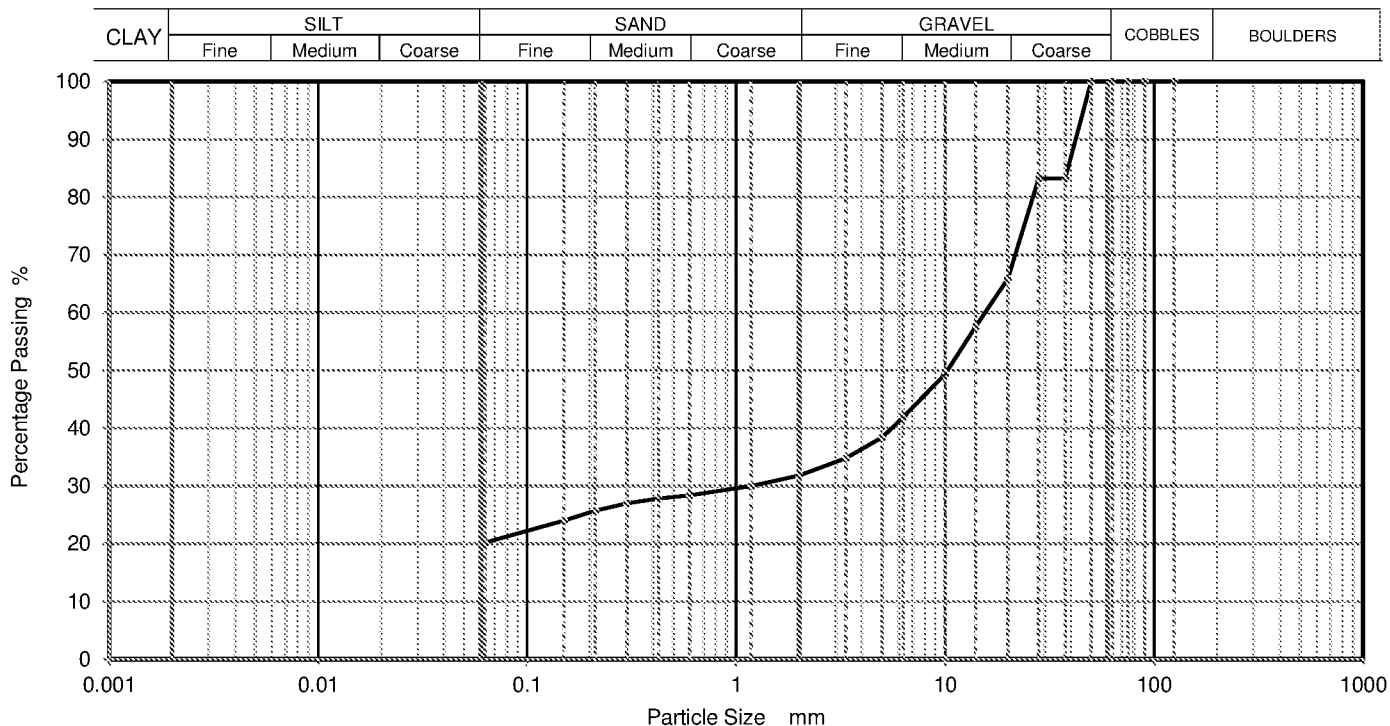
MSF-5-R3



PARTICLE SIZE DISTRIBUTION

Job Ref	23621
Borehole/Pit No.	WS12
Sample No.	-
Depth Top	2.50 m
Depth Base	- m
Sample Type	D
Samples received	06/11/2017
Schedules received	07/11/2017
Project started	08/11/2017
Date tested	20/11/2017

Site Name	Tye Lane, Walberton		
Project No.	GE16861	Client	GESL
Soil Description	Brown sandy very clayey GRAVEL (gravel is fmc and angular to sub-angular)		
Test Method	BS1377:Part 2: 1990, clause 9.0		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	83		
28	83		
20	66		
14	58		
10	49		
6.3	42		
5	38		
3.35	35		
2	32		
1.18	30		
0.6	28		
0.425	28		
0.3	27		
0.212	26		
0.15	24		
0.063	20		

Dry Mass of sample, g

520

Sample Proportions	% dry mass
Very coarse	0.0
Gravel	68.2
Sand	11.6
Fines <0.063mm	20.2

Grading Analysis	
D100 mm	
D60 mm	15.5
D30 mm	1.18
D10 mm	
Uniformity Coefficient	
Curvature Coefficient	

Remarks

Preparation and testing in accordance with BS1377 unless noted below



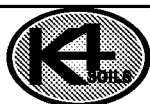
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Initials: J.P

Date: 22/11/2017

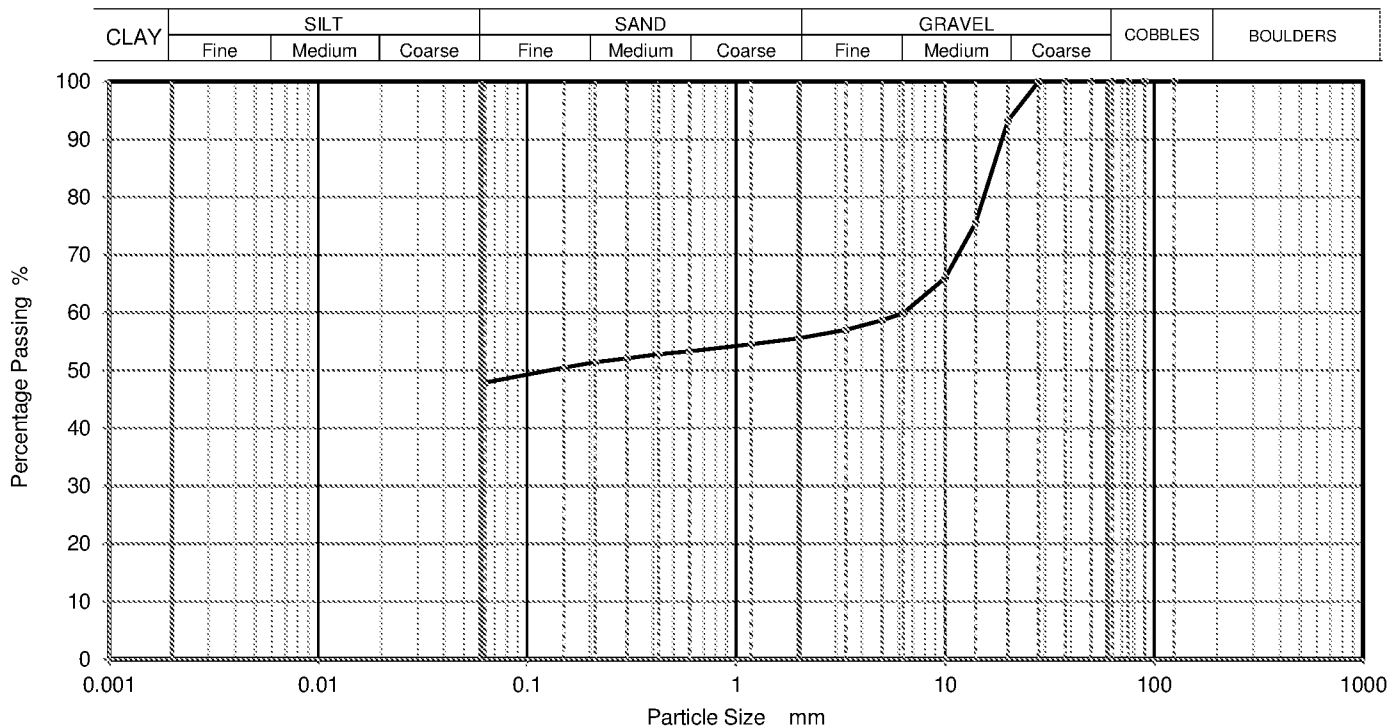
MSF-5-R3



PARTICLE SIZE DISTRIBUTION

Job Ref	23621
Borehole/Pit No.	WS13
Sample No.	-
Depth Top	2.50 m
Depth Base	- m
Sample Type	D
Samples received	06/11/2017
Schedules received	07/11/2017
Project started	08/11/2017
Date tested	20/11/2017

Site Name	Tye Lane, Walberton		
Project No.	GE16861	Client	GESL
Soil Description	Brown slightly sandy gravelly silty CLAY (gravel is fmc and angular to sub-angular)		
Test Method	BS1377:Part 2: 1990, clause 9.0		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	93		
14	76		
10	66		
6.3	60		
5	59		
3.35	57		
2	56		
1.18	55		
0.6	53		
0.425	53		
0.3	52		
0.212	51		
0.15	51		
0.063	48		

Dry Mass of sample, g 295

Sample Proportions	% dry mass
Very coarse	0.0
Gravel	44.4
Sand	7.7
Fines <0.063mm	47.9

Grading Analysis	
D100 mm	
D60 mm	6.34
D30 mm	
D10 mm	
Uniformity Coefficient	
Curvature Coefficient	

Remarks
Preparation and testing in accordance with BS1377 unless noted below



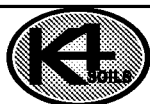
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Initials: J.P

Date: 22/11/2017

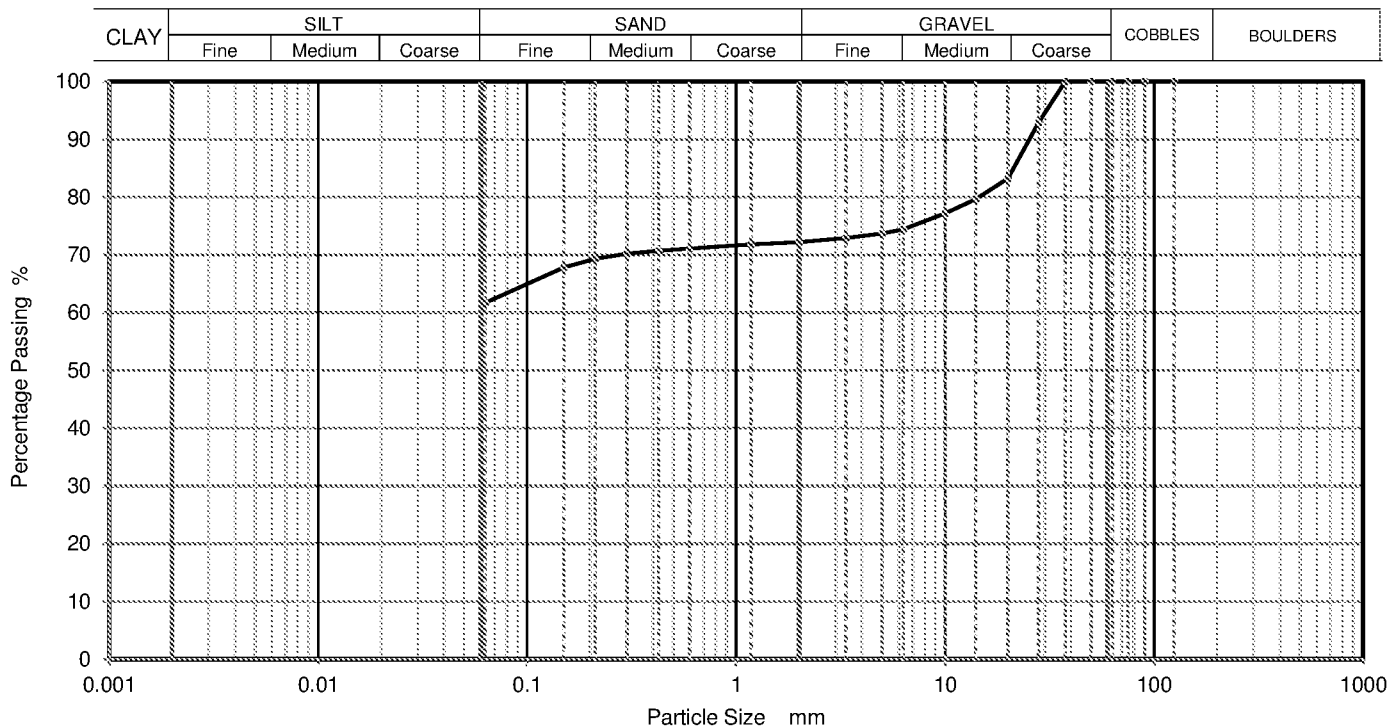
MSF-5-R3



PARTICLE SIZE DISTRIBUTION

Job Ref	23621
Borehole/Pit No.	WS13
Sample No.	-
Depth Top	4.00 m
Depth Base	- m
Sample Type	D
Samples received	06/11/2017
Schedules received	07/11/2017
Project started	08/11/2017
Date tested	20/11/2017

Site Name	Tye Lane, Walberton		
Project No.	GE16861	Client	GESL
Soil Description	Brown slightly sandy slightly gravelly silty CLAY (gravel is fmc and sub-angular to angular)		
Test Method	BS1377:Part 2: 1990, clause 9.0		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	93		
20	83		
14	80		
10	77		
6.3	74		
5	74		
3.35	73		
2	72		
1.18	72		
0.6	71		
0.425	71		
0.3	70		
0.212	69		
0.15	68		
0.063	62		

Dry Mass of sample, g 232

Sample Proportions	% dry mass
Very coarse	0.0
Gravel	27.8
Sand	10.5
Fines <0.063mm	61.7

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	
Curvature Coefficient	

Remarks
Preparation and testing in accordance with BS1377 unless noted below

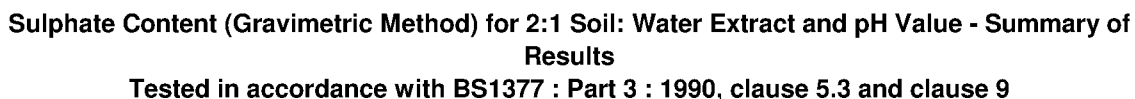


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MSF-5-R3

[illegible]

Checked and Approved	
Initials	J.P
Date:	22/11/2017

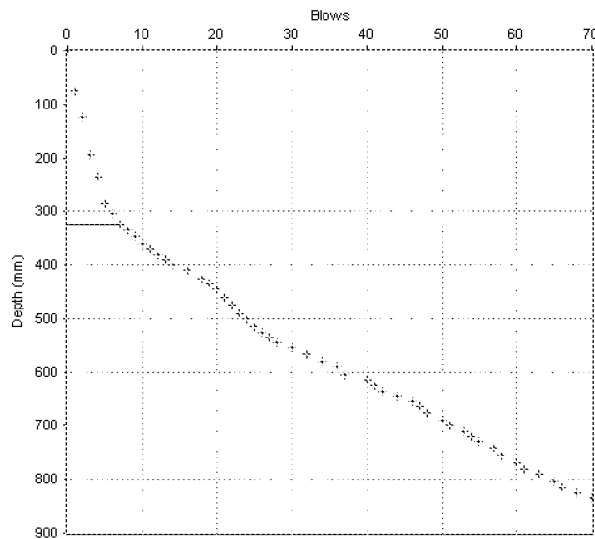
DCP Layer Strength Analysis Report

Project Name: DCP1

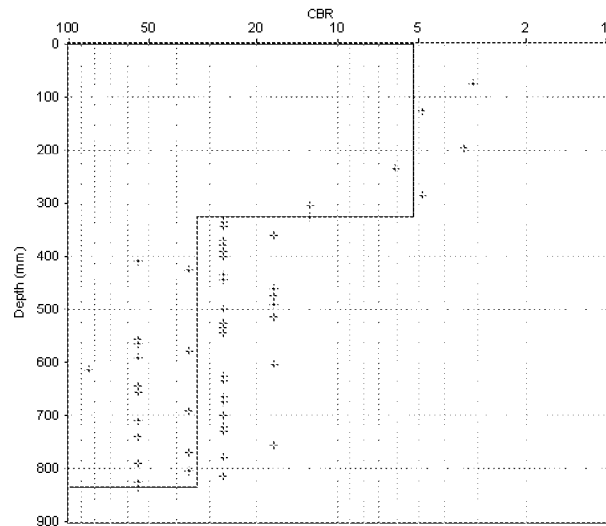
Chainage (km): 0.000
 Direction:
 Location/Offset: Carriageway
 Cone Angle: 60 degrees
 Zero Error (mm): 95
 Test Date: 02/11/2017

Surface Type: Unpaved
 Thickness (mm): 0
 Base Type:
 Thickness (mm):
 Surface Moisture: Unknown
 Moisture adjustment factor: Not adjusted

Layer Boundaries: Chainage 0.000



Layer Boundaries Chart



CBR Chart

Layer Properties

Nb.	Penetration Rate (mm/blow)	CBR (%)	Thickness (mm)	Depth to layer bottom (mm)
1	46.43	5	325	325
2	8.10	33	510	835

CBR Relationship:

TFL equation: $\log_{10}(\text{CBR}) = 2.48 - 1.057 \times \log_{10}(\text{Strength})$

Report produced by

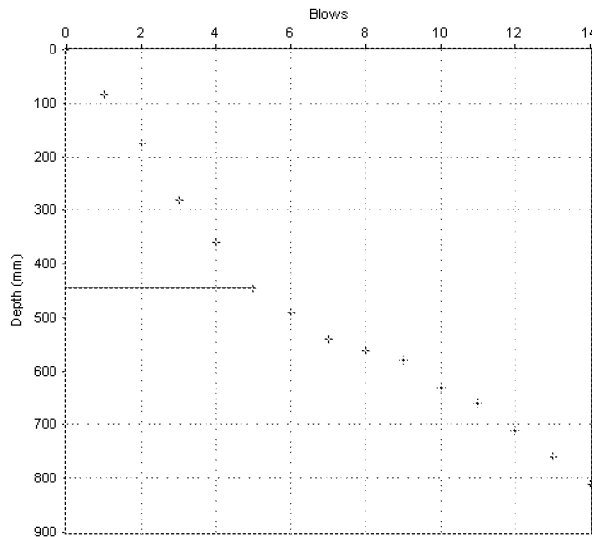
DCP Layer Strength Analysis Report

Project Name: DCP2

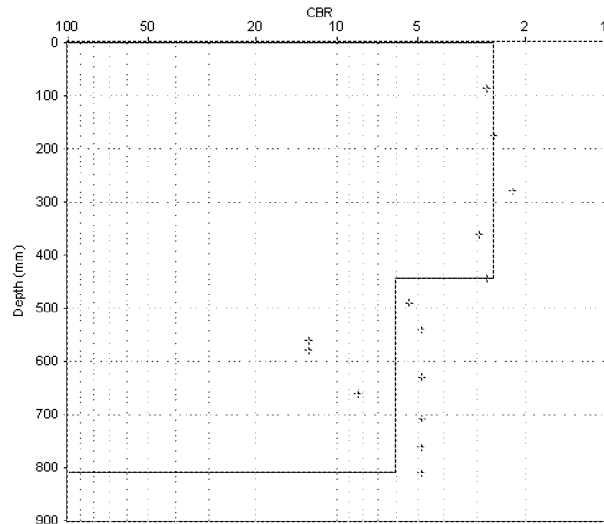
Chainage (km): 0.000
 Direction:
 Location/Offset: Carriageway
 Cone Angle: 60 degrees
 Zero Error (mm): 120
 Test Date: 22/11/2017

Surface Type: Unpaved
 Thickness (mm): 0
 Base Type:
 Thickness (mm):
 Surface Moisture: Unknown
 Moisture adjustment factor: Not adjusted

Layer Boundaries: Chainage 0.000



Layer Boundaries Chart



CBR Chart

Layer Properties

No.	Penetration Rate (mm/blow)	CBR (%)	Thickness (mm)	Depth to layer bottom (mm)
1	89.00	3	445	445
2	40.56	6	365	810

CBR Relationship:

TRL equation: $\log_{10}(\text{CBR}) = 2.48 - 1.057 \times \log_{10}(\text{Strength})$

Report produced by

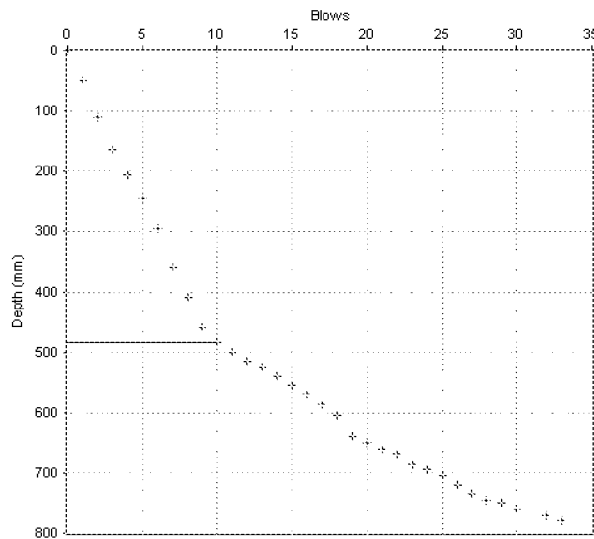
DCP Layer Strength Analysis Report

Project Name: DCP3

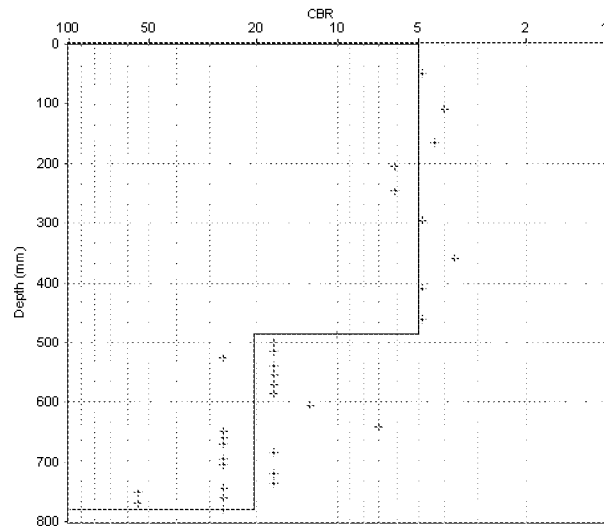
Chainage (km): 0.000
 Direction:
 Location/Offset: Carriageway
 Cone Angle: 60 degrees
 Zero Error (mm): 150
 Test Date: 02/11/2017

Surface Type: Unpaved
 Thickness (mm): 0
 Base Type:
 Thickness (mm):
 Surface Moisture: Unknown
 Moisture adjustment factor: Not adjusted

Layer Boundaries: Chainage 0.000



Layer Boundaries Chart



CBR Chart

Layer Properties

Nb.	Penetration Rate (mm/blow)	CBR (%)	Thickness (mm)	Depth to layer bottom (mm)
1	48.50	5	485	485
2	12.83	20	295	780

CBR Relationship:

TFL equation: $\log_{10}(\text{CBR}) = 2.48 - 1.057 \times \log_{10}(\text{Strength})$

Report produced by

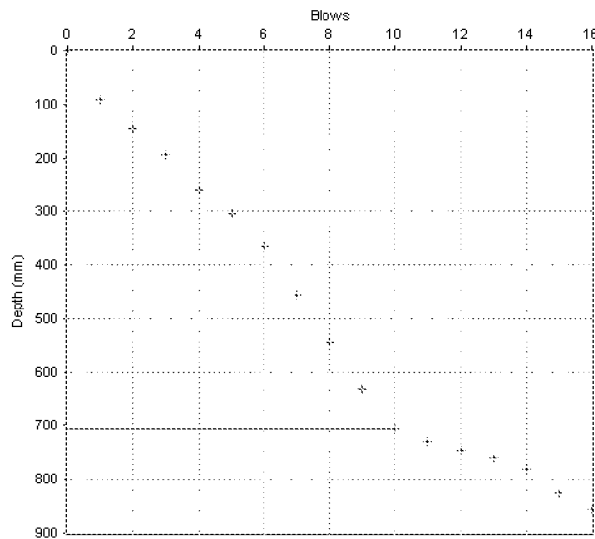
DCP Layer Strength Analysis Report

Project Name: DCP4

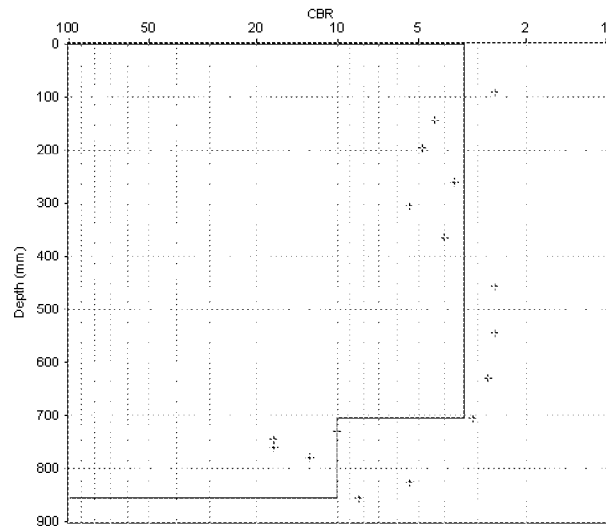
Chainage (km): 0.000
 Direction:
 Location/Offset: Carriageway
 Cone Angle: 60 degrees
 Zero Error (mm): 115
 Test Date: 02/11/2017

Surface Type: Unpaved
 Thickness (mm): 0
 Base Type:
 Thickness (mm):
 Surface Moisture: Unknown
 Moisture adjustment factor: Not adjusted

Layer Boundaries: Chainage 0.000



Layer Boundaries Chart



CBR Chart

Layer Properties

Nb.	Penetration Rate (mm/blow)	CBR (%)	Thickness (mm)	Depth to layer bottom (mm)
1	70.50	3	705	705
2	25.00	10	150	855

CBR Relationship:

TFL equation: $\log_{10}(\text{CBR}) = 2.48 - 1.057 \times \log_{10}(\text{Strength})$

Report produced by

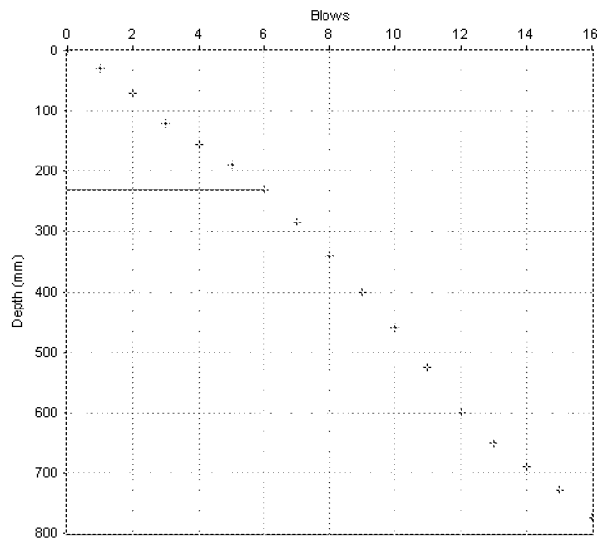
DCP Layer Strength Analysis Report

Project Name: DCP5

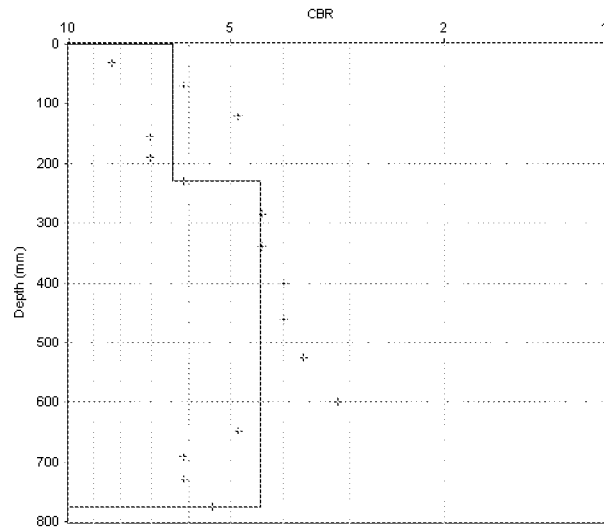
Chainage (km): 0.000
 Direction:
 Location/Offset: Carriageway
 Cone Angle: 60 degrees
 Zero Error (mm): 160
 Test Date: 02/11/2017

Surface Type: Unpaved
 Thickness (mm): 0
 Base Type:
 Thickness (mm):
 Surface Moisture: Unknown
 Moisture adjustment factor: Not adjusted

Layer Boundaries: Chainage 0.000



Layer Boundaries Chart



CBR Chart

Layer Properties

Nb.	Penetration Rate (mm/blow)	CBR (%)	Thickness (mm)	Depth to layer bottom (mm)
1	38.33	6	230	230
2	54.50	4	545	775

CBR Relationship:

TFL equation: $\log_{10}(\text{CBR}) = 2.48 - 1.057 \times \log_{10}(\text{Strength})$

Report produced by

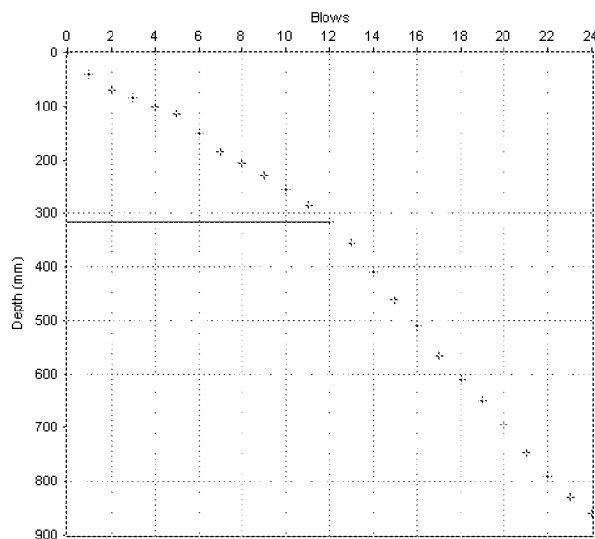
DCP Layer Strength Analysis Report

Project Name: DCP6

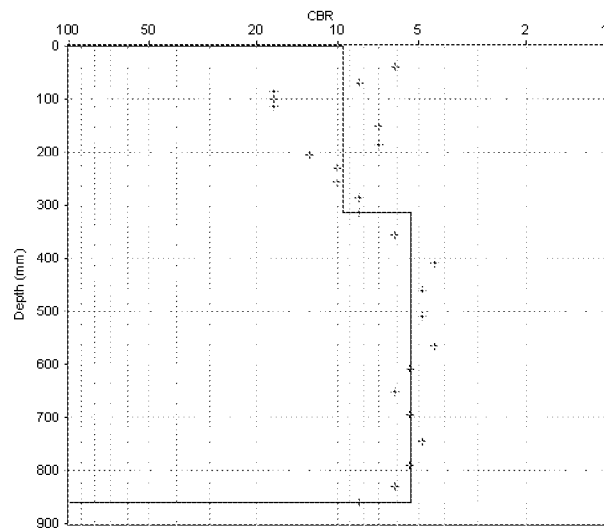
Chainage (km): 0.000
 Direction:
 Location/Offset: Carriageway
 Cone Angle: 60 degrees
 Zero Error (mm): 100
 Test Date: 02/11/2017

Surface Type: Unpaved
 Thickness (mm): 0
 Base Type:
 Thickness (mm):
 Surface Moisture: Unknown
 Moisture adjustment factor: Not adjusted

Layer Boundaries: Chainage 0.000



Layer Boundaries Chart



CBR Chart

Layer Properties

Nb.	Penetration Rate (mm/blow)	CBR (%)	Thickness (mm)	Depth to layer bottom (mm)
1	26.25	10	315	315
2	45.42	5	545	860

CBR Relationship:

TFL equation: $\log_{10}(\text{CBR}) = 2.48 - 1.057 \times \log_{10}(\text{Strength})$

Report produced by

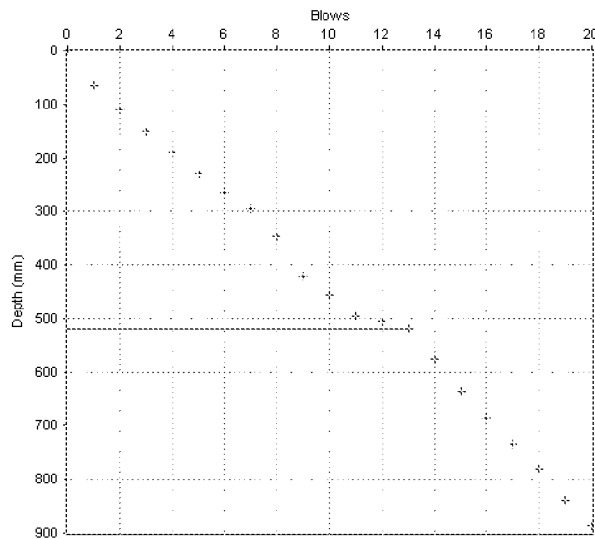
DCP Layer Strength Analysis Report

Project Name: DCP7

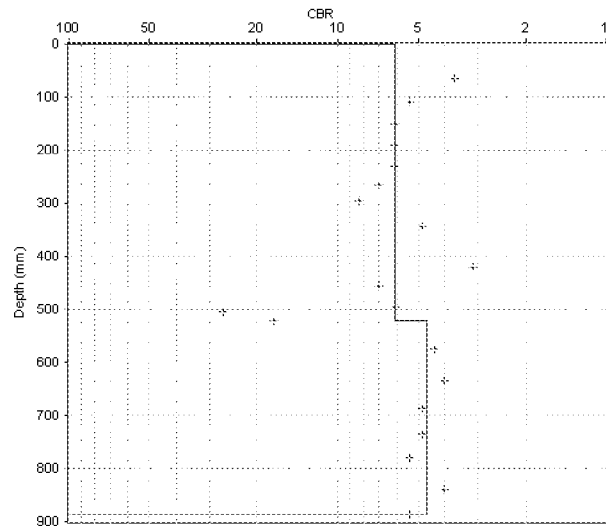
Chainage (km): 0.000
 Direction:
 Location/Offset: Carriageway
 Cone Angle: 60 degrees
 Zero Error (mm): 75
 Test Date: 02/11/2017

Surface Type: Unpaved
 Thickness (mm): 0
 Base Type:
 Thickness (mm):
 Surface Moisture: Unknown
 Moisture adjustment factor: Not adjusted

Layer Boundaries: Chainage 0.000



Layer Boundaries Chart



CBR Chart

Layer Properties

Nb.	Penetration Rate (mm/blow)	CBR (%)	Thickness (mm)	Depth to layer bottom (mm)
1	40.00	6	520	520
2	52.14	5	365	885

CBR Relationship:

TFL equation: $\log_{10}(\text{CBR}) = 2.48 - 1.057 \times \log_{10}(\text{Strength})$

Report produced by

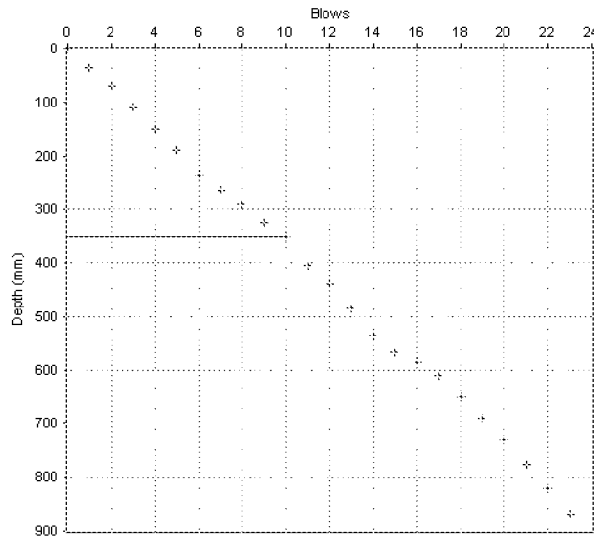
DCP Layer Strength Analysis Report

Project Name: DCP8

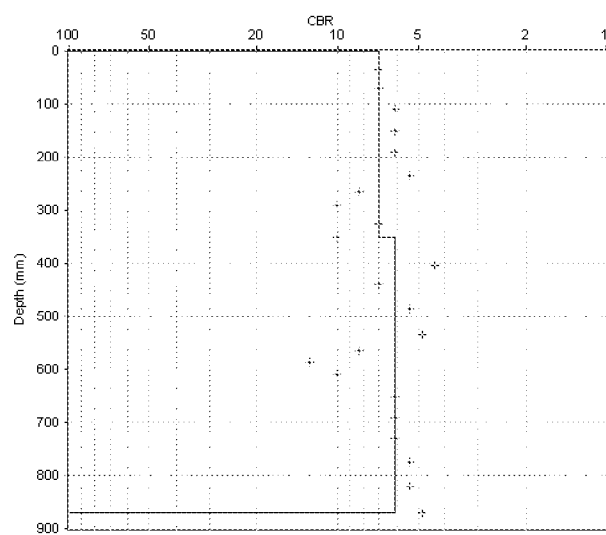
Chainage (km): 0.000
 Direction:
 Location/Offset: Carriageway
 Cone Angle: 60 degrees
 Zero Error (mm): 70
 Test Date: 02/11/2017

Surface Type: Unpaved
 Thickness (mm): 0
 Base Type:
 Thickness (mm):
 Surface Moisture: Unknown
 Moisture adjustment factor: Not adjusted

Layer Boundaries: Chainage 0.000



Layer Boundaries Chart



CBR Chart

Layer Properties

Nb.	Penetration Rate (mm/blow)	CBR (%)	Thickness (mm)	Depth to layer bottom (mm)
1	35.00	7	350	350
2	40.00	6	520	870

CBR Relationship:

TFL equation: $\log_{10}(\text{CBR}) = 2.48 - 1.057 \times \log_{10}(\text{Strength})$

Report produced by

APPENDIX F

CLEA Model Output and ESI Stats

STEP 5: RESULTS

Find AC

Print Reports

Back to Guide

		Ratio of ADE to relevant Health Criteria Value			Soil Assessment Criteria			Soil Saturation Limit	Pathway Contributions (%)										
		oral HCV	inhal HCV	Combined	oral HCV	inhal HCV	Combined		direct soil ingestion	sum of consumption of homegrown produce and attached	dermal contact (indoor)	dermal contact (outdoor)	inhalation of dust (indoor)	inhalation of dust (outdoor)	inhalation of vapour (indoor)	inhalation of vapour (outdoor)	oral background	inhalation background	Total
Number	Chemical	(dimensionless)	(dimensionless)	(dimensionless)	mg kg ⁻¹	mg kg ⁻¹	mg kg ⁻¹	mg kg ⁻¹	%	%	%	%	%	%	%	%	%	%	%
1	Arsenic	1.00	0.38	NR			NR	NR	79.89	7.54	0.45	11.86	0.25	0.00	0.00	0.00	0.00	0.00	100.00
2	Cadmium	0.91	0.10	1.00				NR	11.21	39.70	0.00	0.06	0.04	0.00	0.00	0.00	49.96	0.04	100.00
3	Chromium III	0.15	0.85	1.00				NR	85.63	1.03	0.00	0.00	0.27	0.00	0.00	0.00	13.01	0.06	100.00
4	Mercury, inorganic	0.93	0.07	1.00				NR	66.71	30.08	0.00	0.00	0.21	0.00	0.00	0.00	3.00	0.00	100.00
5	Nickel	0.14	1.00	NR			NR	NR	32.77	16.18	0.03	0.81	0.10	0.00	0.00	0.00	49.90	0.10	99.90
6	Copper	0.50	0.50	1.00				NR	36.15	13.78	0.00	0.00	0.11	0.00	0.00	0.00	49.92	0.04	100.00
7	Zinc	1.00	0.00	1.00				NR	23.95	26.00	0.00	0.00	0.08	0.00	0.00	0.00	49.95	0.02	100.00
8	Selenium	1.00	NR	NR		NR	NR	NR	40.59	29.46	0.00	0.00	0.13	0.00	0.00	0.00	30.82	0.00	100.00
9	Chromium VI	1.00	NR	NR		NR	NR	NR	36.29	26.02	0.00	0.00	0.00	0.00	0.00	0.00	37.70	0.00	100.00
10	Barium	1.00	NR	NR		NR	NR	NR	49.28	0.57	0.00	0.00	0.16	0.00	0.00	0.00	50.00	0.00	100.00
11	Beryllium	0.19	0.81	1.00			NR	NR	47.43	2.49	0.00	0.00	0.15	0.00	0.00	0.00	49.92	0.00	100.00
12	Vanadium	0.90	0.10	1.00				NR	27.91	26.36	0.00	0.00	0.09	0.00	0.00	0.00	45.56	0.09	100.00
13	Phenol	0.31	0.69	1.00				8.28E+04	0.92	87.49	0.05	1.37	0.00	0.00	0.80	0.00	8.34	1.03	100.00
14																			
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30																			

Client/Ref no:
 Project ref: GE16661
 Site ref:
 Data description: Near Surface Soils
 Contaminant(s): Metals, inorganics and BAP
 Test scenario: Planning
 Date: 7 December 2017
 User details: JT

	Arsenic (mg/kg)	Barium (mg/kg)	Beryllium (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Copper (mg/kg)	Lead (mg/kg)	Mercury (mg/kg)	Nickel (mg/kg)	Selenium (mg/kg)	Vanadium (mg/kg)	Zinc (mg/kg)	Total Cyanide (mg/kg)	Total Phenols (mg/kg)
Critical concentration, C _c	37	1330	41.2	26	3010	5200	200	169	127	350	107	19400	34	293
Notes														
Full dataset size	18	18	18	18	18	18	18	18	18	18	18	18	18	18
Outliers present?	Yes	No	Yes	No	No	No	No	No	No	No	No	Yes	No	No
Number of values temporarily excluded	0													
Number removed by filter	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sample size, n	18	18	18	18	18	18	18	18	18	18	18	18	18	18
Sample mean, $\bar{x}$	7.55	54.1722222	0.52777778	0.36944444	19.7222222	15.1888889	27.2388889	1.44444444	12.1666667	1.23888889	26.6722222	59.9333333	0.5	3
Standard deviation, s	2.32410641	7.18870074	0.11785113	0.21360966	3.29983165	3.24289067	7.20425845	0.25718435	1.8553579	0.32564667	4.88018871	24.661258	0	0
Number of non-detects	0	0	17	13	0	0	0	0	0	2	0	0	18	18
Get non-detect values to:	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit
Distribution	Non-normal	Normal	Non-normal	Non-normal	Normal	Normal	Normal	Normal	Normal	Normal	Non-normal	Normal	Non-normal	Single value
Statistical approach	Auto: Chi-sq test	Auto: One-sample t	Auto: Chi-sq test	Auto: Chi-sq test	Auto: One-sample t	Auto: One-sample t	Auto: One-sample t	Auto: One-sample t	Auto: One-sample t	Auto: One-sample t	Auto: Chi-sq test	Auto: One-sample t	Auto: Chi-sq test	Auto: Chi-sq test

Test scenario	Planning: Is true mean lower than critical concentration ($\mu < C_c$)?				Evidence level required		95%	Use Normal distribution to test for outliers						
Population 1: μ_1 (mg/kg)	53.76077786	752.9703958	-1464.2	-509.0651803	3844.642857	6783.235343	-101.7402865	2764.079588	262.588998	-4543.783894	69.83375412	3327.200651	N/A	N/A
Upper confidence limit for true mean concentration, μ_U	9.93779235	57.1197997	0.6488583	0.5889075	21.0752497	16.5185689	30.1928455	1.54989755	12.9274177	1.57345903	28.6732423	85.2703674	0.5	3
Evidence level	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Base conclusion	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level
Result	$\mu < C_c$	$\mu < C_c$	$\mu < C_c$	$\mu < C_c$	$\mu < C_c$	$\mu < C_c$	$\mu < C_c$	$\mu < C_c$	$\mu < C_c$	$\mu < C_c$	$\mu < C_c$	$\mu < C_c$	$\mu < C_c$	$\mu < C_c$
Export dataset	✖	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔

Back to data

Go to outlier test

Go to normality test

Show individual summary

Client/client ref:
 Project ref: GE16061
 Site ref:
 Data description: Near Surface Soils
 Contaminant(s): Metals, inorganics and PAH
 Test scenario: Planning
 Date: 7 December 2017
 User details: JT

Critical concentration, C_c	5					
Notes						
Full dataset size	18	0	0	0	0	0
Outliers present?	Yes					
Number of outliers temporarily excluded						
Number removed by filter	0	0	0	0	0	0
Sample size, n	18	0	0	0	0	0
Sample mean, $\bar{x}$	0.10833333	No Data	No Data	No Data	No Data	No Data
Standard deviation, s	0.16201852					
Number of non-detects	15	0	0	0	0	0
Est non-detect value, x_{nd}	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit
Distribution	Non-normal					
Statistical approach	Auto: Chi-sq test	Auto	Auto	Auto	Auto	Auto

Test scenario						
Statistic, t , (or k)	128.0939016					
Upper confidence limit (or 100% upper prediction limit)	0.27479154					
Evidence level	100%					
Base decision rule	evidence level					
Result	$\mu < C_c$					
Export dataset	Or	Or	Or	Or	Or	Or

[Back to data](#)