

Soakaway Testing - Results

CLIENT Stuart Lyons Haulage Ltd c/o Paul Basham Associates
SITE ADDRESS Windroos, Worthing Road, Wick, Littlehampton, West Sussex B
REPORT REFERENCE GWPR1624
ENGINEER Roger Foord, Ground and Water Limited
INVESTIGATION LOCATIONS Please see Figure 1 attached. Site works was undertaken between 30th March 2016 and 10th April 2016.

GROUND CONDITIONS ENCOUNTERED

Summary of Strata Encountered (TP1, TP2, TP3 , TP5, TP6 & TP8)		
Strata	Depth Encountered (m bgl)	Thickness (m)
TOPSOIL (TP1, TP2, TP3, TP5 and TP8): Dark brown silty sand to dark brown slightly gravelly sandy, locally silty clay. Sand is fine to medium grained. Gravel is occasional, fine to coarse, sub-angular to sub-rounded flint.	GL	0.20 - 0.40
MADE GROUND (TP6): Dark brown gravelly sandy clay. Sand is fine to medium grained. Gravel is occasional to abundant, fine to coarse, sub-angular to sub-rounded flint and brick.	GL	0.80
AEOLIAN DEPOSITS: Brown to orange brown very silty CLAY, orange brown slightly sandy very silty CLAY to Orange brown slightly gravelly sandy very silty CLAY. Sand is fine to medium grained. Gravel is rare to occasional, fine, sub-angular to sub-rounded flint.	0.20 - 0.80	1.30 – 2.90
UNDIFFERENTIATED RIVER TERRACE DEPOSITS (TP2, TP3, TP5, TP6 and TP8): Orange brown slightly gravelly clayey SAND, orange brown slightly clayey SAND to pale brown and off white slightly clayey very gravelly SAND. Sand is fine to medium grained. Gravel is occasional, fine to coarse, sub-angular to sub-rounded flint and chalk in TP2. Deposits become more chalky with depth in TP2. An orange brown slightly gravelly very silty CLAY was encountered between 1.80-2.60m bgl in TP8. Sand is fine grained. Gravel is occasional, fine to medium, sub-angular to sub-rounded flint.	1.50 – 3.10	0.70 - >2.00
NEW CHALK FORMATION (TP1, TP3 and TP8): Structureless CHALK composed of off white to white slightly sandy gravelly clayey SILT with occasional sub-angular cobbles. Gravel and cobbles are medium dense, weak with occasional orange brown staining. Matrix is uncompacted and off white. (CIRIA C574: Grade Dm).	2.00 – 3.30	>0.70 - >1.50

GROUNDWATER Groundwater was not encountered in the trial pits.

INFILTRATION RATE

Soakaway tests, in accordance with the principles of BRE365, were undertaken within each of the trial holes at 3.50m bgl within TP1 and TP2 and at 4.00m bgl within TP3, TP5, TP6 and TP8. The trial holes were bottomed out within the soils of the Undifferentiated River Terrace Deposits or the New Pit Chalk Formation. The infiltration rates recorded within the trial pits can be seen tabulated overpage.

The trial pits were then backfilled with coarse gravel and three soakaway tests were then conducted within the granular infill. The recorded infiltration rates have been corrected to account for the presence of granular infill using a void ratio of 0.40 for the gravel.

The infiltration rates are given below. The lowest recorded is in bold.

BRE 365 Test Results – Recorded Infiltration Rates m/s			
	Test 1	Test 2	Test 3
TP1 @ 3.50m bgl within New Pit Chalk Formation	6.11 x10⁻⁷ m/s	9.57 x10 ⁻⁷ m/s	1.09 x10 ⁻⁶ m/s
TP2 @ 3.50m bgl within River Terrace Deposits	4.16 x10 ⁻⁵ m/s	3.64 x10⁻⁵ m/s	5.55 x10 ⁻⁵ m/s
TP3 @ 4.00m bgl within New Pit Chalk Formation	1.02 x10 ⁻⁶ m/s	1.04 x10 ⁻⁶ m/s	7.13 x10⁻⁷ m/s
TP5 @ 4.00m bgl within River Terrace Deposits	1.56 x10 ⁻⁴ m/s	1.16 x10⁻⁴ m/s	1.38 x10 ⁻⁴ m/s
TP6 @ 4.00m bgl within River Terrace Deposits	9.72 x10⁻⁶ m/s	1.24 x10 ⁻⁵ m/s	1.34 x10 ⁻⁵ m/s
TP8 @ 4.20m bgl within New Pit Chalk Formation	5.63 x10 ⁻⁴ m/s	7.02 x10 ⁻⁴ m/s	5.03 x10⁻⁴ m/s

Soakaways constructed within the soils of the Undifferentiated River Terrace Deposits or the New Pit Chalk Formation are likely to perform to a satisfactory standard.

The site was located within a **Secondary A Aquifer** comprising the superficial deposits of the Undifferentiated River Terrace Deposits overlying a **Principal Aquifer** comprising the bedrock deposits of the New Pit Chalk Formation.

Examination of the Environment Agency records showed that the site **was not** located within a **Groundwater Source Protection Zone (SPZ)** as classified in the Policy and Practice for the Protection of Groundwater.

Consultation with the Environment Agency must be sought regarding any use that may have an impact on groundwater resources.

Please feel free to contact us should you have any queries regarding the information enclosed within this letter report.

Yours sincerely

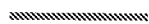


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Senior Geotechnical Engineer
For and on behalf of Ground and Water Limited

Enc.

Figure 1	Site Location Plan
Figure 2	Trial Hole Location Plan
Appendix A	Trial Hole Logs

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APPROXIMATE SITE BONDARY

NOT TO SCALE

Project:

Windroos, Worthing Road, Wick, Littlehampton, West Sussex BN17 6LY

Client:

Stuart Lyons Haulage Limited c/o Paul Basham Associates

Date:

April 2016

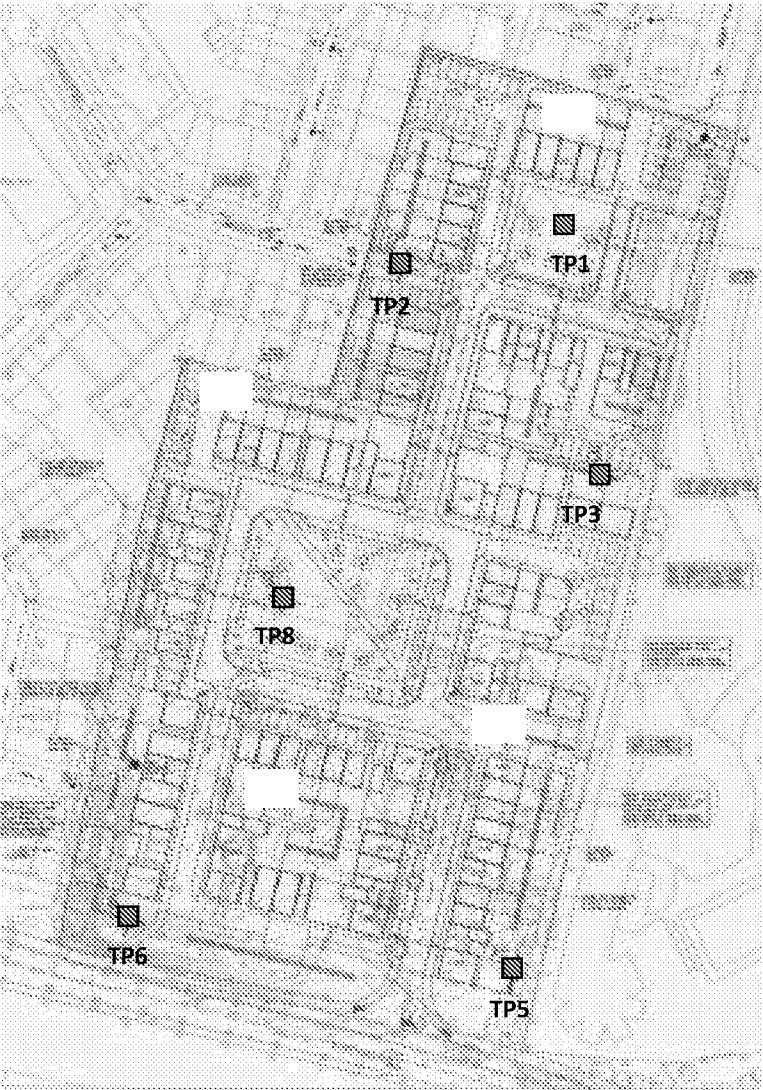
Site Location Plan

Ref:

GWPR1624

Figure 1

ground&water



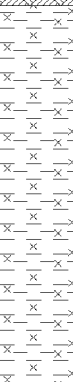
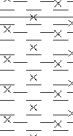
----- APPROXIMATE SITE BONDARY

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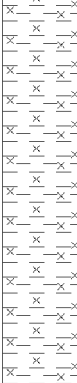
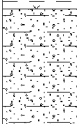
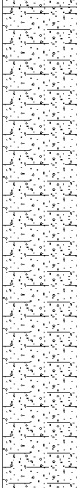
Project: Windroos, Worthing Road, Wick, Littlehampton, West Sussex BN17 6LY		Figure 2 ground&water
Client: Stuart Lyons Haulage Limited c/o Paul Basham Associates	Date: April 2016	
Trial Hole Location Plan	Ref: GWPR1624	

Appendix A
Trial Hole Logs

Ground and Water Limited. Registered in England & Wales number 07032001. Registered Office: 15 Bow Street, Alton, Hampshire GU34 1NY.

Ground and Water Ltd							Trialpit No TP1 Sheet 1 of 1		
Project Name Windroos				Project No. GWPR1624		Co-ords: - Level: -		Date 30/03/2016	
Location: Worthing Road, Wick, Littlehampton, West Sussex BN17 6LY				Dimensions: -				Scale 1:25	
Client: Stuart Lyons Haulage Ltd				Depth 3.50m				Logged By RF	
Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description			
Depth (m)	Type	Results							
1.00	D		0.30			TOPSOIL: Dark brown silty sand. Sand is fine grained.		1	
						AEOLIAN DEPOSITS: Brown very silty CLAY.			
2.00	D		1.60			AEOLIAN DEPOSITS: Orange brown very silty CLAY.		2	
						NEW PIT CHALK FORMATION: Structureless CHALK composed of off white to white slightly sandy gravelly clayey SILT with occasional sub-angular cobbles. Gravel and cobbles are medium dense, weak with occasional orange brown staining. Matrix is uncompact and off white. (CIRIA C574: Grade Dm).			
3.00	D		2.00					3	
									
			3.50					4	
Trialpit Complete at 3.50 m									
Remarks: Roots noted to 0.30m bgl. Standpipe installed to 3.50m bgl. Trial pits back filled with gravel to 0.90m bgl.									
Groundwater: No groundwater encountered.									



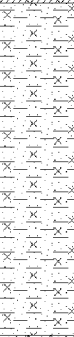
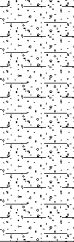
Ground and Water Ltd						Trialpit No TP2 Sheet 1 of 1	
Project Name Windroos			Project No. GWPR1624		Co-ords: - Level: -		Date 30/03/2016
Location: Worthing Road, Wick, Littlehampton, West Sussex BN17 6LY			Dimensions: -			Scale 1:25	
Client: Stuart Lyons Haulage Ltd			Depth 3.50m			Logged By RF	
Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description	
Depth (m)	Type	Results					
1.00	D		0.20			TOPSOIL: Dark brown slightly gravelly sandy clay. Sand is fine to medium grained. Gravel is occasional, fine to coarse, sub-angular to sub-rounded flint.	
						AEOLIAN DEPOSITS: Brown very silty CLAY.	
2.00	D		1.50			UNDIFFERENTIATED RIVER TERRACE DEPOSITS: Orange brown slightly gravelly clayey SAND. Sand is fine to medium grained. Gravel is occasional, fine to coarse, sub-angular to sub-rounded flint.	
			1.90			UNDIFFERENTIATED RIVER TERRACE DEPOSITS: Pale brown and off white slightly clayey very gravelly SAND. Sand is fine to coarse grained. Gravel is occasional, fine to cobble sized, sub-angular to sub-rounded flint and chalk; becomes more chalky with depth.	
3.00	D						
			3.50			Trialpit Complete at 3.50 m	
Remarks:		Roots noted to 1.10m bgl. Standpipe installed to 3.50m bgl. Trial pit back filled with gravel to 0.80m bgl.					
Groundwater:		No groundwater encountered.					



Ground and Water Ltd							Trialpit No TP3 Sheet 1 of 1		
Project Name Windroos				Project No. GWPR1624		Co-ords: - Level: -		Date 30/03/2016	
Location: Worthing Road, Wick, Littlehampton, West Sussex BN17 6LY				Dimensions: - Depth 4.00m				Scale 1:25	
Client: Stuart Lyons Haulage Ltd								Logged By RF	
Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description			
Depth (m)	Type	Results							
1.00	D		0.40			TOPSOIL: Dark brown slightly gravelly silty clay. Gravel is occasional, fine to coarse, sub-angular to sub-rounded flint.		1	
						AEOLIAN DEPOSITS: Brown very silty CLAY.			
2.00	D							2	
3.00	D		2.75			AEOLIAN DEPOSITS: Orange brown slightly sandy very silty CLAY. Sand is fine to medium grained.		3	
4.00	D		3.30			NEW PIT CHALK FORMATION: Structureless CHALK composed of off white to white slightly sandy gravelly clayey SILT with occasional sub-angular cobbles. Gravel and cobbles are medium dense, weak with occasional orange brown staining. Matrix is uncompact and off white. (CIRIA C574: Grade Dm).		4	
			4.00		Trialpit Complete at 4.00 m				
Remarks:		Roots noted to 0.40m bgl. Standpipe installed to 4.00m bgl. Trial pit back filled with gravel to 1.20m bgl.							
Groundwater:		No groundwater encountered.							

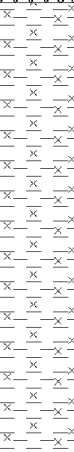


Polibase 3.1 (B) 42220 Standard Trialpit Log v2 dated 27th Nov 03

Ground and Water Ltd							Trialpit No TP5 Sheet 1 of 1	
Project Name Windroos			Project No. GWPR1624		Co-ords: - Level: -		Date 30/03/2016	
Location: Worthing Road, Wick, Littlehampton, West Sussex BN17 6LY					Dimensions: -		Scale 1:25	
Client: Stuart Lyons Haulage Ltd					Depth 4.00m		Logged By RF	
Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description		
Depth (m)	Type	Results						
1.00	D					TOPSOIL: Dark brown slightly gravelly sandy clay. Sand is fine to medium grained. Gravel is occasional, fine to coarse, sub-angular to sub-rounded flint.		1
2.00	D		2.00			AEOLIAN DEPOSITS: Brown slightly sandy very silty CLAY with pockets of orange silt with depth. Sand is fine grained.		2
3.00	D		3.10			UNDIFFERENTIATED RIVER TERRACE DEPOSITS: Orange brown clayey gravelly SAND. Sand is fine to medium grained. Gravel is occasional to abundant, fine to coarse, sub-angular to sub-rounded flint		3
4.00	D		3.90 4.00			UNDIFFERENTIATED RIVER TERRACE DEPOSITS: Orange brown clayey gravelly SAND. Sand is fine to medium grained. Gravel is occasional to abundant, fine to coarse, sub-angular to sub-rounded flint and chalk.		4
Trialpit Complete at 4.00 m								
Remarks:		Roots noted to 0.60m bgl. Standpipe installed to 4.00m bgl. Trial pit back filled with gravel to 1.20m bgl.						
Groundwater:		No groundwater encountered.						

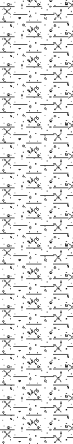
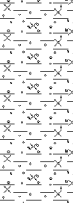
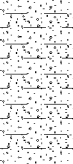


Polibase 3.1 (B) 4 2220 Standard Trialpit Log v2 dated 27th Nov 03

Ground and Water Ltd							Trialpit No TP6 Sheet 1 of 1	
Project Name Windroos			Project No. GWPR1624		Co-ords: - Level: -		Date 30/03/2016	
Location: Worthing Road, Wick, Littlehampton, West Sussex BN17 6LY					Dimensions: -		Scale 1:25	
Client: Stuart Lyons Haulage Ltd					Depth 4.00m		Logged By RF	
Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description		
Depth (m)	Type	Results						
1.00	D		0.80			MADE GROUND: Dark brown gravelly sandy clay. Sand is fine to medium grained. Gravel is occasional to abundant, fine to coarse, sub-angular to sub-rounded flint and brick.		
						AELIAN DEPOSITS: Brown very silty CLAY.		
2.00	D		2.30					
3.00	D					UNDIFFERENTIATED RIVER TERRACE DEPOSITS: Orange brown slightly clayey SAND. Sand is fine to medium grained.		
4.00	D		4.00					
						Trialpit Complete at 4.00 m		
Remarks:		Roots noted to 2.10m bgl. Standpipe installed to 4.00m bgl. Trial pit back filled with gravel to 0.80m bgl.						
Groundwater:		No groundwater encountered.						



Polibase 3.1 (B) 4/22/20 Standard Trialpit Log v2 dated 27th Nov 03

Ground and Water Ltd						Trialpit No TP8 Sheet 1 of 1	
Project Name Windroos			Project No. GWPR1624		Co-ords: - Level: -		Date 30/03/2016
Location: Worthing Road, Wick, Littlehampton, West Sussex BN17 6LY					Dimensions: -		Scale 1:25
Client: Stuart Lyons Haulage Ltd					Depth 4.20m		Logged By RF
Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description	
Depth (m)	Type	Results					
1.00	D		0.30			TOPSOIL: Dark brown slightly gravelly silty clay. Gravel is occasional, fine to coarse, sub-angular to sub-rounded flint.	1
			1.80			AEOLIAN DEPOSITS: Orange brown slightly gravelly sandy very silty CLAY. Sand is fine to medium grained. Gravel is rare to occasional, fine, sub-angular to sub-rounded flint.	
2.00	D		2.60			UNDIFFERENTIATED RIVER TERRACE DEPOSITS: Orange brown slightly gravelly very silty CLAY. Sand is fine grained. Gravel is occasional, fine to medium, sub-angular to sub-rounded flint.	2
			3.30			UNDIFFERENTIATED RIVER TERRACE DEPOSITS: Orange brown slightly gravelly slightly clayey SAND. Sand is fine to medium grained. Gravel is occasional, fine to coarse, sub-angular to sub-rounded flint.	
3.00	D		4.20			NEW PIT CHALK FORMATION: Structureless CHALK composed of off white to white slightly sandy gravelly clayey SILT with occasional sub-angular cobbles. Gravel and cobbles are medium dense, weak with occasional orange brown staining. Matrix is uncompact and off white. (CIRIA C574: Grade Dm).	3
			4.20				
4.00	D						4
Trialpit Complete at 4.20 m							
Remarks: Roots noted to 0.45m bgl. Standpipe installed to 4.00m bgl. Trial pit back filled with gravel to 1.20m bgl.							
Groundwater: No groundwater encountered.							



Polibase 3.1 (B) 4 42220 Standard Trialpit Log v2 dated 27th Nov 03