

Foreman Homes

Via email only: Katherine.Richards@foremanhomes.co.uk

26th April 2022

Our Ref.: 19784/GWLR

Dear Katherine,

Re: Land to the west of Church Lane, Climping, West Sussex, BN17 5QY

We are writing regarding the intrusive investigation undertaken at the above-named site.

Brief

The Soils Limited quotation (reference Q25431 dated 25th October 2021) set the scope of the investigation.

The intrusive investigation comprised:

- 4No. up to 4m deep windowless sampler boreholes
- Installation of 4No groundwater monitoring standpipes
- 12No. winter groundwater monitoring visits (fortnightly, November – April)

General

The site was located at Land to the west of Church Lane, Climping, West Sussex, BN17 5QY, a site location plan has been included as Figure 1. The site was located upon the Lewes Nodular, Seaford, Newhaven, Culver and Portsdown Chalk Formations (Undifferentiated) bedrock, with overlying superficial deposits of Raised Beach Deposits.

Raised Beach Deposits

Raised Beach Deposits consist of shingle, sand, silt and clay. Beach deposits may be in the form of dunes, sheets or banks, now above the level of the present shoreline as a result of earth movement or a general fall in sea level.

Lewes Nodular, Seaford, Newhaven, Culver And Portsdown Chalk Formations (Undifferentiated)

Sedimentary Bedrock formed approximately 72 to 94 million years ago in the Cretaceous Period in a local environment previously dominated by warm chalk seas. These sedimentary rocks are shallow-marine in origin, are biogenic and detrital, generally comprising carbonate material (coccoliths), forming distinctive beds of chalk.

The Lewes Nodular Chalk Formation is composed of hard to very hard nodular chalks and hardgrounds with interbedded soft to medium hard chalks (some grainy)

and marls, and some griotte chinks. The Seaford Chalk Formation can be described as firm white chalk with conspicuous semi-continuous nodular and tabular flint seams. Hardgrounds and thin marls are known from the lowest beds. Some flint nodules are large to very large. The Newhaven Chalk Formation is a soft white friable microporous limestone composed of coccolith biomicrites with a varying proportion of larger shell fragments.

Site Works

Site works were undertaken on the 29th October 2021, which comprised the excavation of 4No. deep windowless sampler boreholes identified as WS101 - WS104 to depths of 4.00m below ground level, with 4No. groundwater monitoring standpipes installed to depths of 3.80m below ground level (WS101) - 4.00m bgl (WS102 – WS104). Soil samples from the exploratory holes were logged onsite.

Prior to excavation, all trial hole locations were scanned for services using a Cat and signal generator (Genny). A trial hole location plan is included as Figure 2.

Ground Conditions

The ground conditions encountered during the site investigation have been summarised in Table 1.

Topsoil (TS)
Raised Beach Deposits (RBDI)
Lewes Nodular, Seaford, Newhaven, Culver And Portsdown Chalk Formations (LPCK)

Table 1 – Summary of Ground Conditions

Strata	Depth Encountered (m bgl)		Typical Description
	Top	Base	
TS	0.00	0.40-0.60	Soft greyish brown sandy to very sandy CLAY with rare angular to rounded fine to medium flint and fine brick gravel.
RBDI	0.40-0.60	2.30 - 4.00 ^{1,2}	Soft light brown and orange slightly gravelly, very sandy CLAY with angular, medium flint gravel. Occasional inconsistent thick beds of light brown and orange SAND with occasional flint gravel.
LPCK	2.30	4.00 ^{1,2}	(WS103, WS104) Structureless CHALK. Recovered as soft white occasionally mottled yellow, occasionally very sandy.

Notes: ¹ encountered to the final depth of trial hole ² base of strata not encountered

The windowless sampler borehole logs are included in Appendix A.

Groundwater

Groundwater was encountered within the windowless sampler borehole WS101 as wet soils at 3.80m bgl, but groundwater was not encountered in W102 – WS104.

Wells were installed in all four windowless sampler boreholes (WS101 – WS104) to allow for future groundwater monitoring on 12No. occasions. Post site work monitoring visits were undertaken monthly from October 2021 to March 2022 with the groundwater depths

recorded from the monitoring standpipes installed in each windowless sampler borehole (WS101 – WS104).

Groundwater Monitoring Records

Monitoring was undertaken on 12No. separate occasions.

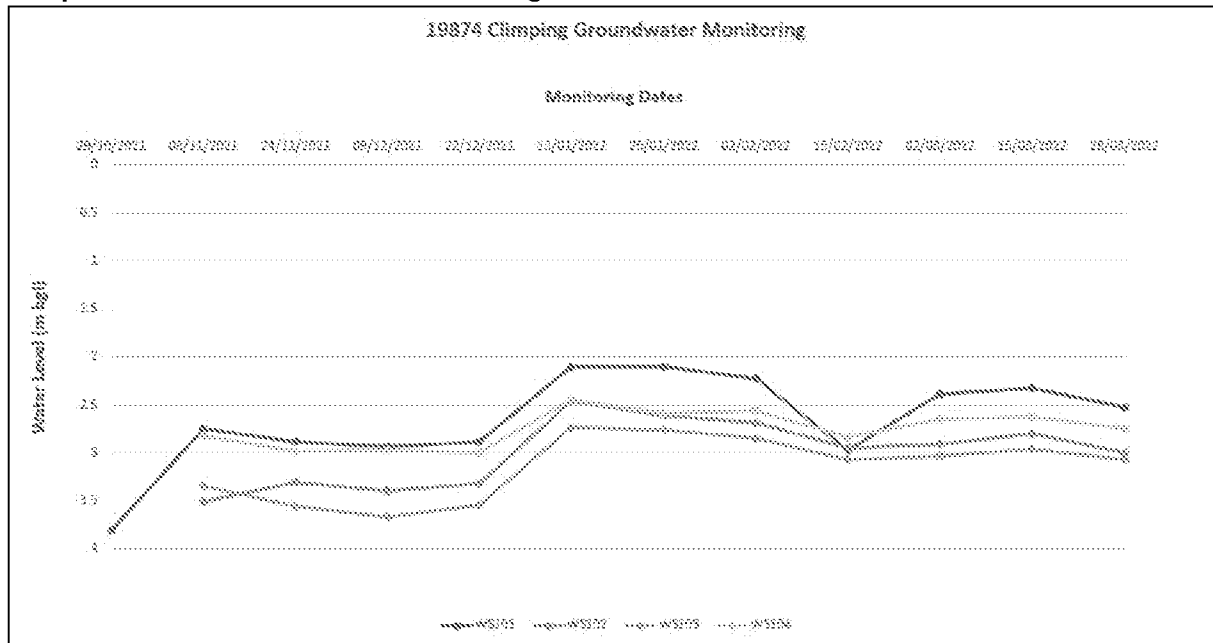
The results of the monitoring are provided within Table 2 and Graph 1.

A site location map and trial hole locations plan are presented on Figures 1 and 2.

Table 2 – Groundwater Monitoring Results

Date	WS	H ₂ O (m bgl)	Base of Well (m bgl)
29/10/2021	WSI01	3.80	4.00
	WSI02	Dry	4.00
	WSI03	Dry	4.00
	WSI04	Dry	4.00
08/11/2021	WSI01	2.75	3.70
	WSI02	3.51	3.51
	WSI03	3.34	3.78
	WSI04	2.82	3.68
24/11/2021	WSI01	2.88	3.70
	WSI02	3.31	3.76
	WSI03	3.55	3.78
	WSI04	2.98	3.65
09/12/2021	WSI01	2.93	3.78
	WSI02	3.39	3.86
	WSI03	3.67	3.67
	WSI04	2.97	3.75
22/12/2021	WSI01	2.88	3.82
	WSI02	3.32	3.92
	WSI03	3.54	3.95
	WSI04	3.00	3.83
13/01/2022	WSI01	2.10	3.90
	WSI02	2.46	3.90
	WSI03	2.74	3.95
	WSI04	2.45	3.85
26/01/2022	WSI01	2.10	3.74
	WSI02	2.61	3.81
	WSI03	2.76	3.82
	WSI04	2.58	3.70
02/02/2022	WSI01	2.22	3.68
	WSI02	2.69	3.75
	WSI03	2.85	3.76
	WSI04	2.56	3.66
15/02/2022	WSI01	2.97	3.74
	WSI02	2.95	3.88
	WSI03	3.07	3.93
	WSI04	2.83	3.74
02/03/2022	WSI01	2.39	3.68
	WSI02	2.91	3.74
	WSI03	3.03	3.76
	WSI04	2.65	3.68
15/03/2022	WSI01	2.33	3.68
	WSI02	2.80	3.77
	WSI03	2.96	3.77
	WSI04	2.62	3.73
28/03/2022	WSI01	2.52	3.75

Date	WS	H ₂ O (m bgl)	Base of Well (m bgl)
	WSI02	2.99	3.82
	WSI03	3.07	3.82
	WSI04	2.75	3.75

Graph 1. Winter Groundwater Monitoring Data

Points with no data recorded indicate the monitoring well was dry with no groundwater observed.

In summary, the depth to groundwater rose to it's peak on the 13th January 2022 between 2.10m and 2.74m bgl, and remained high until 2nd February 2022 at 2.22m to 2.85m bgl, prior to beginning to falling, with the last monitoring visit on the 28th March 2022 recording water levels of 2.52 to 3.07m bgl.

Changes in groundwater level occur for a number of reasons including seasonal effects and variations in drainage. The investigation was conducted in from October 2021 to March 2022 when groundwater levels should be rising from their annual minimum (lowest) elevation, which typically occurs around September to the annual maximum (highest) which typically occurs around March.

The following attachments make up the remainder of this letter report.

Figure 1. Site Location Plan

Figure 2. Trial Hole Location Plan

Appendix A. Field Data

Should you have any further questions please do not hesitate to contact the undersigned.

Yours sincerely,



Deanne Elizabeth Windsor BSc. (Hons)



Graduate Geo-environmental Engineer/Logging Engineer

For and on behalf of Soils Limited.

Enc.

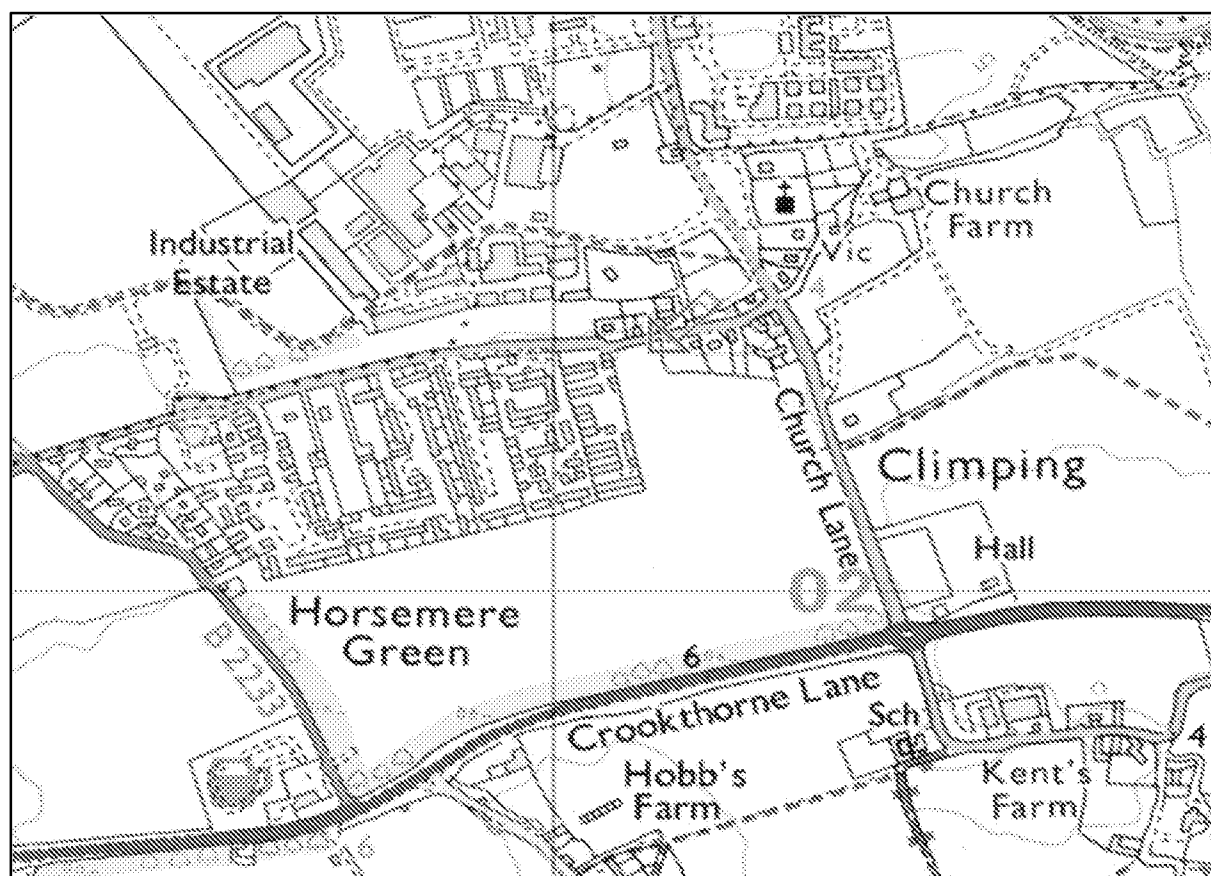


Figure 1 – Site location Plan

Figure number
1

Title
Site Location Plan

Project
Re: Land to the west of Church Lane, Climping,
West Sussex, BN17 5QY

Date
April 2022

Client
Foreman Homes

Reference
19784

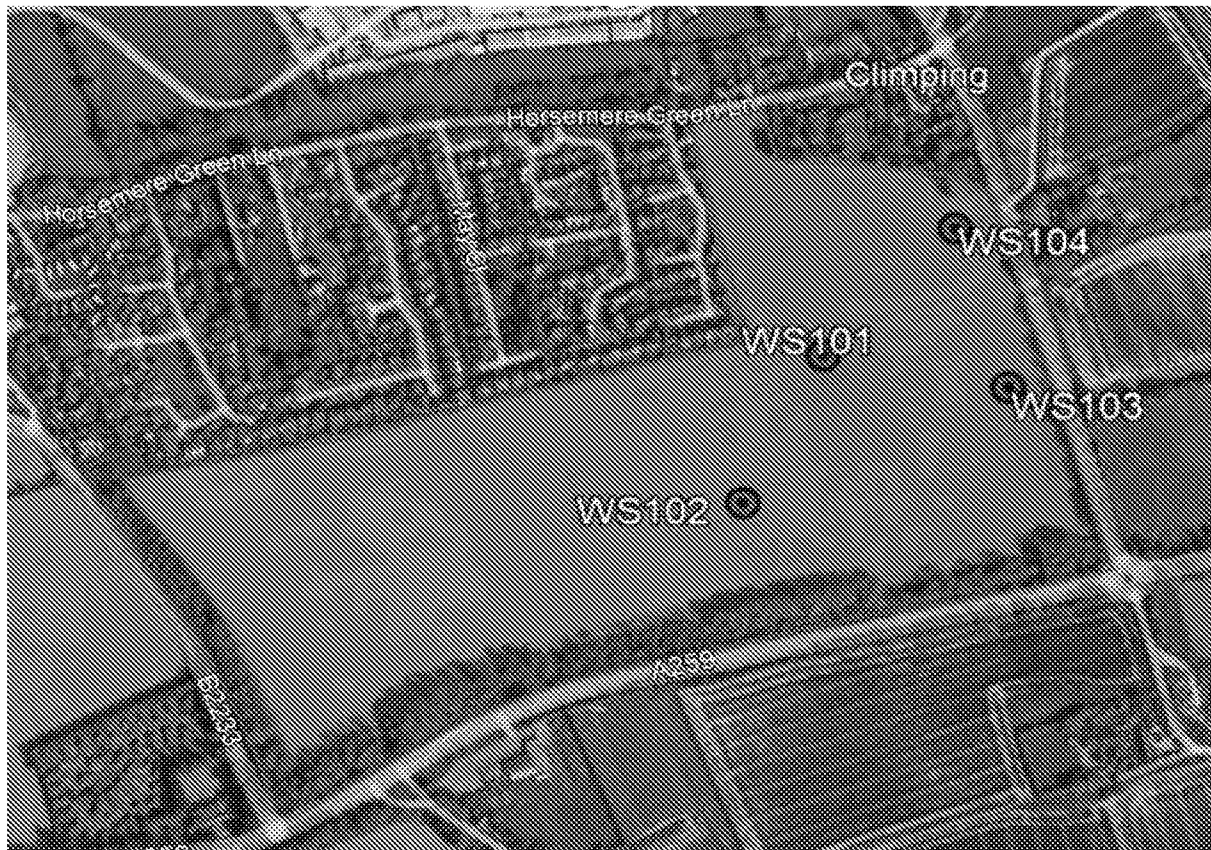


Figure 2. Trial Hole Location Plan

Figure number
2

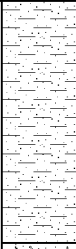
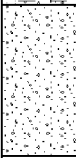
Title
Trial Hole Location Plan

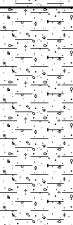
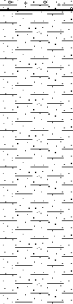
Project
Re: Land to the west of Church Lane, Climping,
West Sussex, BN17 5QY

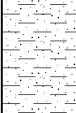
Date
April 2022

Client
Foreman Homes

Reference
19784

	Contract Name: Land to the west of Church Lane, Climping				Client: Foreman Homes				Hole ID: WS101						
	Contract Number: 19784		Start and End Date: 29/10/21		Logged By:		Checked By:		Status:		Hole Type: WS				
	Easting:		Northing:		Ground Level:		Plant Used:		Print Date: 08/11/2021		Scale: 1:50				
Weather:				Termination:								Sheet 1 of 1			
Samples & In Situ Testing				Strata Details								Groundwater			
Depth	Type	Results	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description						Water Strike	Backfill/Installation		
				(1.60)		Soft brown sandy CLAY. Sand is fine to coarse. (RAISED BEACH DEPOSITS)						1			
				1.60		Soft light brown slightly gravelly, very sandy CLAY. Gravel is angular, medium flint. Sand is fine to coarse. (RAISED BEACH DEPOSITS)								2	
				(1.40)											
				3.00		Light brown slightly gravelly SAND. Sand is coarse. Gravel is subangular, medium flint. (RAISED BEACH DEPOSITS)						3			
				(1.00)											
				4.00	End of Borehole at 4.00m						4				
												5			
												6			
												7			
												8			
												9			
												10			
Start & End of Shift Observations				Borehole Diameter		Casing Diameter		Remarks:							
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)							
Chiselling				Installation				Water Strikes							
From (m)	To (m)	Duration	Remarks		Top (m)	Base (m)	Type	Dia (mm)	Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks	
					0.00	1.00	PLAIN		3.80			0	0.00	Groundwater encountered.	
					1.00	4.00	SLOTTED								
Hand vane (HV), Hand penetrometer (HP) reported in kPa. PID reported in ppm.															

	Contract Name: Land to the west of Church Lane, Climping				Client: Foreman Homes				Hole ID: WS102					
	Contract Number: 19784		Start and End Date: 29/10/21		Logged By:		Checked By:		Status:		Hole Type: WS			
	Easting:		Northing:		Ground Level:		Plant Used:		Print Date: 08/11/2021		Scale: 1:50			
Weather:			Termination:								Sheet 1 of 1			
Samples & In Situ Testing				Strata Details								Groundwater		
Depth	Type	Results	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description						Water Strike	Backfill/Installation	
				(0.50)		Soft brown sandy CLAY. Sand is fine to coarse. (RAISED BEACH DEPOSITS)								
				0.50										
				(1.50)		Soft orange and brown slightly gravelly sandy CLAY. Gravel is sub rounded fine to medium flint. (RAISED BEACH DEPOSITS)						1		
				2.00										
				(2.00)		Soft light brown very sandy CLAY. Sand is fine to coarse. (RAISED BEACH DEPOSITS)						2		
				4.00										
						End of Borehole at 4.00m						4		
												5		
												6		
												7		
												8		
												9		
												10		
Start & End of Shift Observations				Borehole Diameter		Casing Diameter		Remarks:						
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)							Dia (mm)
									Water Strikes					
Chiselling				Installation										
From (m)	To (m)	Duration	Remarks		Top (m)	Base (m)	Type	Dia (mm)	Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
					0.00	1.00	PLAIN					0	0.00	No groundwater encountered
					1.00	4.00	SLOTTED							
Hand vane (HV), Hand penetrometer (HP) reported in kPa. PID reported in ppm.														

	Contract Name: Land to the west of Church Lane, Climping				Client: Foreman Homes			Hole ID: WS103						
	Contract Number: 19784		Start and End Date: 29/10/21		Logged By:	Checked By:	Status:	Hole Type: WS						
	Easting:		Northing:		Ground Level:	Plant Used:	Print Date: 08/11/2021	Scale: 1:50						
Weather:			Termination:				Sheet 1 of 1							
Samples & In Situ Testing				Strata Details					Groundwater					
Depth	Type	Results	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description			Water Strike	Backfill/Installation				
				(0.40)		Soft brown very sandy CLAY. Rare fine gravel sized brick frgments. (TOPSOIL)								
				0.40										
				(1.10)		Soft orange and brown very sandy CLAY. Sand is fine to coarse. (RAISED BEACH DEPOSITS)			1					
				1.50										
				(1.30)		Loose orange SAND. Sand is fine to coarse. (RAISED BEACH DEPOSITS)			2					
				2.80										
				(0.80)		Soft light brown very sandy CLAY. Sand is fine to coarse. (RAISED BEACH DEPOSITS)			3					
				3.60										
				(0.40)		Off white soft CHALK. (LEWES NODULAR CHALK, SEAFORD CHALK, NEWHAVEN CHALK, CULVER CHALK AND PORTSDOWN CHALK FORMATION (UNDIFFERENTIATED))								
				4.00		End of Borehole at 4.00m			4					
									5					
									6					
									7					
									8					
									9					
									10					
Start & End of Shift Observations					Borehole Diameter		Casing Diameter		Remarks:					
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)						
Chiselling					Installation				Water Strikes					
From (m)	To (m)	Duration	Remarks		Top (m)	Base (m)	Type	Dia (mm)	Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
					0.00	1.00	PLAIN					0	0.00	No groundwater encountered
					1.00	4.00	SLOTTED							
Hand vane (HV), Hand penetrometer (HP) reported in kPa. PID reported in ppm.														

	Contract Name: Land to the west of Church Lane, Climping				Client: Foreman Homes				Hole ID: WS104					
	Contract Number: 19784		Start and End Date: 29/10/21		Logged By:		Checked By:		Status:		Hole Type: WS			
	Easting:		Northing:		Ground Level:		Plant Used:		Print Date: 08/11/2021		Scale: 1:50			
Weather:				Termination:								Sheet 1 of 1		
Samples & In Situ Testing				Strata Details								Groundwater		
Depth	Type	Results	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description						Water Strike	Backfill/Installation	
				(0.60)		Soft brown very sandy CLAY. Sand is fine to coarse. Rare angular to rounded fine to medium gravel sized flint. (RAISED BEACH DEPOSITS)								
				0.60		Soft brown CLAY. (RAISED BEACH DEPOSITS)								
				(0.90)								1		
				1.50		Soft brown gravelly CLAY. Gravel is angular to subangular fine to medium flint. (RAISED BEACH DEPOSITS)								
				(0.40)										
				1.90		Soft pale yellow sandy CLAY. Sand is fine to coarse. (RAISED BEACH DEPOSITS)								
				(0.40)								2		
				2.30		Pale yellow and off white very sandy CHALK. (LEWES NODULAR CHALK, SEAFORD CHALK, NEWHAVEN CHALK, CULVER CHALK AND PORTSDOWN CHALK FORMATION (UNDIFFERENTIATED))								
				(1.70)								3		
				4.00		End of Borehole at 4.00m						4		
												5		
												6		
												7		
												8		
												9		
												10		
Start & End of Shift Observations					Borehole Diameter		Casing Diameter		Remarks:					
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)						
Chiselling					Installation				Water Strikes					
From (m)	To (m)	Duration	Remarks		Top (m)	Base (m)	Type	Dia (mm)	Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
					0.00	1.00	PLAIN					0	0.00	No groundwater encountered
					1.00	4.00	SLOTTED							
Hand vane (HV), Hand penetrometer (HP) reported in kPa. PID reported in ppm.														