

29th April 2022

Our ref: GE20814/WP01/220429



Paul Thomas
Bargate Homes
The New Barn
Vicarage Farm Business Park
Winchester Road
Fair Oak
Hampshire
SO50 7HD

Dear Paul,

RE: Manor Farm, Bedhampton Phase 2 deep Borehole – Preliminary Information

Geo-Environmental Services Limited (Geo-Environmental) was instructed by Bargate Homes to construct a deeper borehole adjacent to BH01 borehole drilled during the previous phase of intrusive ground investigation. A ground water monitoring well was installed down to 16m bgl to enable further monitoring.

The purpose of this investigation was to ascertain the ground conditions, infiltration values of the strata encountered within the borehole and to ascertain the depth of groundwater within a 3m response zone at a greater depth than previously investigated to inform the emerging drainage strategy for the proposed development and address specific queries raised by the Lead Local Flood Authority.

Scope of Works

The following scope of works was agreed with the Client:

- Attendance of a Geo-Environmental Engineer to set out and supervise the intrusive investigation, undertake sampling, in-situ testing and logging of recovered soils from exploratory holes.
- Construction of 1No. cable percussion borehole (BH101) to a depth of 16m bgl together with in-situ testing and sampling at regular intervals.
- Undertake a falling head infiltration test in the borehole at target depth.
- Installation of a groundwater monitoring well within the borehole, with a response zone in the basal 3m of the well to allow return monitoring.

The intrusive investigation works were undertaken on 25th April 2022 to install a deeper monitoring well within a cable percussive borehole to determine groundwater depth within a 13-16m bgl response zone. All works were supervised by a Geo-Environmental Engineer.

Site Description

At the time of the site works in April 2022 the site comprised part of a larger arable field. The field was relatively flat with a very gentle southwards slope. Bounding the site to the south was a hedgerow with a railway line beyond. The western site boundary was formed of a hedgerow and trees with the A3 and A27 at higher level beyond. An industrial unit was located to the north of the site with residential properties located along Lower Road. The remainder of the arable field lay to the east of the site and was fenced off for the Phase 1 development area.

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Ground Conditions

The borehole was located adjacent to a monitoring well installed by cable percussive drilling during previous intrusive investigation, in-line with proposed drainage features.

The ground conditions encountered during the investigation were broadly consistent with the anticipated published sequence of strata. In summary, ground conditions typically comprised River Terrace Deposits overlying Chalk of the White Chalk Subgroup at depth.

Whilst a summary of the ground conditions encountered is presented in Table 1, reference should also be made to the individual exploratory hole logs for further information which are presented within Appendix A. The exploratory hole locations are shown on Figure 2.

Top (m bgl)	Base (m bgl)	Description
0.00	3.00	RIVER TERRACE DEPOSITS: Stiff brown slightly silty CLAY with occasional 1mm rootlets observed in the top 0.5m.
3.00	16.00	CHALK: 3.00-6.00m bgl: Beige to white CHALK matrix composed of subrounded to subangular gravels. Gravels were fine to medium grained, low-medium density chalk. 6.00-16.00m bgl: Recovered as wet white structureless CHALK. Occasional ferruginous staining.

Table 1 Summary of ground conditions

Made Ground was not encountered within any of the exploratory holes.

The methods used to construct the borehole cause loss of any in-situ structure and recovery of disturbed Chalk. As such, it is possible that the quality and weathering condition of the Chalk at depth could differ from that described based on the chalk recovered. The classification as CIRIA Grade Dm has been applied as a conservative estimate.

Groundwater

Groundwater was encountered within BH01 at 6.40m bgl during drilling and rose to 4.50m bgl after drilling had been suspended for 20 minutes.

Groundwater monitoring wells were installed within BH01 with one groundwater monitoring visit scheduled for 4th May 2022. **jwhcihwhich which**

It should also 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 series of standpipes or piezometers installed within appropriate response zones.

Obstructions

No obstructions were encountered during the investigation. Obstructions elsewhere cannot be discounted.

Falling Head Testing



Falling head testing was undertaken within the cable percussive borehole, BH101. The test was undertaken prior to the installation of the groundwater monitoring well.

Groundwater was present within the borehole during testing and was recorded at a depth of 4.50m bgl prior to commencing testing. The estimated preliminary infiltrations rate for the test undertaken within BH101 is summarised within Table 2 below.

Exploratory Hole	Stratum tested	Estimated infiltration rates (m/s)
BH01	Chalk	1.48×10^{-5}

Table 2 Estimated infiltration values derived from borehole falling head testing

Closure

We trust we have interpreted your request correctly and provided sufficient information for your current requirements.

Should you have any queries please do not hesitate to contact us.

Yours sincerely

For and on Behalf of Geo-Environmental



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Enc Figure 1 - Site Location Plan
 Figure 2 – Exploratory Hole Location Plan (Aerial)
 Figure 3 – Exploratory Hole Location Plan (Proposed development)
 Appendix A - Exploratory Hole Logs



FIGURES





Project:	Manor Farm, Bedhampton Ph2 deep BH			Title	Site Location Plan		
Client:	Bargate Homes			Geo-Environmental Services Ltd Unit 7 Danworth Farm, Cuckfield Road Hurstpierpoint, West Sussex BN6 9GL +44(0)1273 832972 www.gesl.net	 Geo-Environmental		
Ref No:	GE20814	Revision:	0				
Drawn:	SA	Date:	08/04/2022				
Figure:	1	Scale:	Not to scale				





Project:	Manor Farm, Bedhampton Ph2 deep BH			Title	Exploratory Hole Location Plan (Aerial)	
Client:	Bargate Homes			Geo-Environmental Services Ltd Unit 7 Danworth Farm, Cuckfield Road Hurstpierpoint, West Sussex BN6 9GL +44(0)1273 832972 www.gesl.net	 Geo-Environmental	
Ref No:	GE20814	Revision:	1			
Drawn:	WP	Date:	29/04/2022			
Figure:	2	Scale:	Not to scale			



Project:	Manor Farm, Bedhampton Ph2 deep BH			Title	Exploratory Hole Location Plan (Proposed development)	
Client:	Bargate Homes			Geo-Environmental Services Ltd Unit 7 Danworth Farm, Cuckfield Road Hurstpierpoint, West Sussex BN6 9GL +44(0)1273 832972 www.gesl.net	 Geo-Environmental	
Ref No:	GE20814	Revision:	0			
Drawn:	WP	Date:	08/04/2022			
Figure:	3	Scale:	Not to scale			

APPENDIX A



 Unit 7, Danworth Farm Hurstpierpoint BN6 9GL www.gesl.net		Borehole Log				Borehole No. BH101 Sheet 1 of 2	
Project Name: Manor Farm, Bedhampton Ph2 deep BH		Project No. GE20814		Co-ords: 51E - 51N		Hole Type CP	
Location:				Level:		Scale 1:50	
Client: Bargate Homes				Dates: 25/04/2022		Logged By WP	

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.50	PP	3.0kg/cm2	0.50		 Crop stubble over stiff dark brown slightly silty CLAY. Occasional 1mm rootlets.  RIVER TERRACE DEPOSITS	1	
		0.70	D				 Firm to stiff brown slightly silty CLAY. RIVER TERRACE DEPOSITS		
		1.00		N=12 (3 for 75mm/2,3,3,4)					
		1.45	D						
		2.00	PP	2.5kg/cm2				2	
		2.00		N=11 (4 for 75mm/3,2,3,3)			 <u>Wet matrix.</u>		
		2.45	D						
		3.00		N=10 (4 for 75mm/2,3,2,3)	3.00			3	
		3.45	D				 Recovered as soft light brown to beige clayey CHALK matrix composed of subrounded to subangular gravels. Gravels are fine to medium grained, low to medium density chalk. WHITE CHALK SUBGROUP		
		4.00		N=10 (3 for 75mm/2,2,3,3)				4	
		4.45	D		4.50		 Recovered as white structureless CHALK comprised of subrounded gravel. Gravels are fine to coarse grained, medium to high density chalk. Occasional ferruginous staining. WHITE CHALK SUBGROUP		
		5.00		N=14 (4 for 75mm/3,3,4,4)				5	
		5.45	D						
		6.00	D		6.00			6	
		6.45	D				 Recovered as wet white structureless CHALK. Occasional ferruginous staining throughout. WHITE CHALK SUBGROUP		
		6.50		N=13 (6 for 75mm/4,3,3,3)			 <u>Very wet matrix.</u>	7	
		7.50	D						
		8.00		N=15 (3 for 75mm/4,3,4,4)				8	
	8.45	D							
	9.00 - 9.50	B					9		
	9.45	D							
	9.50		N=9 (4 for 75mm/2,2,2,3)				10		

Casing		Water Strikes (mbgl)		Chiselling (mbgl)		Remarks	
Diameter	Depth (m)	Depth Strike	Rose to	Depth from	Depth to		
	15.50	6.40	4.50			Wet below 2m. Groundwater recorded at 5.52m bgl following drilling.	



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Borehole No.

Sheet 2 of 2

Project Name:

Manor Farm, Bedhampton Ph2
deep BH

Project No.	GE20814
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Co-ords: 51E - 51N

Hole Type
CP

Location:

Level:

Scale
1:50

Client:

Bargate Homes

Dates: 25/04/2022

Logged By
WP

