

23 March, 2018

Mr E Newlyn
Rydon Homes Ltd
Rydon House
Forest Row
East Sussex
RH18 5DW

Dear Mr Newlyn

LAND NORTH OF WATER LANE, ANGMERING WATER LEVEL MONITORING – WINTER 2017

Rydon Homes and Gleeson Strategic Land propose to develop an area of land located to the North of Water Lane in Angmering for mixed development purposes. The proposed development comprises residential units with private and adopted highways, approximately 3 hectares of employment land, public open space, play areas, associated infrastructure and landscaping.

Idom Merebrook Limited (Merebrook) has been commissioned by Rydon Homes and Gleeson Strategic Land to undertake preliminary site investigation works and to advise on the geo-environmental implications of the redevelopment of the site for the proposed end use.

A Phase 1 (Non-intrusive Investigation) and a Phase 2a (Preliminary Exploratory Investigation) have been undertaken by Merebrook for the subject site. These are presented in Merebrook report reference GEA-19495-17-318 Rev A dated February 2018.

A Flood Risk Assessment has also been undertaken by Merebrook, report reference FRA-19495-16-140 R1 dated January 2018. The FRA includes an indicative drainage strategy. In order to assess the potential for infiltration as a disposal method for surface water management, and any engineering inclusions required for the use of basins (e.g. lining), Merebrook installed five boreholes (MBH01 to MBH05) to a maximum depth of 10 metres below ground level (m bgl) across the northern land parcel. The locations are indicated on drawing 19495-304-004 attached, together with exploratory hole records. Water levels have been monitored over the 2017 / 2018 winter period and results from seven monitoring rounds are reported below.

Soakage testing was undertaken in two locations in September 2015, and results, together with an appraisal of ground conditions are presented in Idom Merebrook Geo-Environmental Assessment reference GEA-19495-17-318 Rev A dated February 2018. As can be seen from the exploratory hole records attached for the five cable percussion boreholes, the underlying geology comprises cohesive deposits of low permeability, predominantly assigned to the London Clay Formation.

Groundwater level monitoring has been undertaken on seven occasions: 27 September 2017, 24 October 2017, 21 November 2017, 11 January 2018, 24 January 2018, 14 February 2018 and 23 March 2018.

	Date of Monitoring Visit													
	27/09/17		24/10/17		21/11/17		11/01/18		24/01/18		14/02/18		23/03/18	
Location	DTW*	DTB*	DTW*	DTB*	DTW*	DTB*	DTW*	DTB*	DTW*	DTB*	DTW*	DTB*	DTW*	DTB*
MBH101	5.72	9.72	1.42	9.74	1.31	9.74	1.06	9.72	1.10	9.72	1.12	9.80	1.10	9.77
MBH102	1.01	9.81	0.89	9.78	0.74	9.77	0.60	9.86	0.60	9.86	-	-	0.71	9.93
MBH103	0.72	9.92	0.35	10.00	0.42	10.03	0.35	10.01	0.08	10.00	0.12	10.00	0.37	9.99

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Registered in England No. 02740216 Registered office as above
offices London Kent Derbyshire Cardiff Manchester Salford

	Date of Monitoring Visit													
	27/09/17		24/10/17		21/11/17		11/01/18		24/01/18		14/02/18		23/03/18	
Location	DTW*	DTB*	DTW*	DTB*	DTW*	DTB*	DTW*	DTB*	DTW*	DTB*	DTW*	DTB*	DTW*	DTB*
MBH104	5.83	10.05	1.87	9.97	0.81	10.10	0.32	10.05	0.15	10.05	0.15	10.05	0.31	10.00
MBH105	1.10	9.97	0.98	10.02	0.76	10.02	0.00	9.56	0.62	9.56	-	-	0.51	9.50

*DTW – depth to water

- unable to locate (borehole position covered by farm activities)

*DTB – depth to base

Based upon the information available to date, it does not appear that soakaways will be feasible on this development parcel due to the impermeable geology and relatively high water table, and it is considered likely that any surface water attenuation features will need to be lined. The indicative drainage strategy has taken these findings into account.

Yours sincerely



Dr Lisa Horsley
For Idom Merebrook Ltd

cc File
Mark Jackson – Gleeson Strategic Land

enc Drawing 19495-304-004
Exploratory hole records



	Site boundary
	Merebrook trial pit with location reference
	Merebrook window sample with location reference
	Merebrook soakage test pit with location reference
	Merebrook cable percussion borehole installed for water level monitoring

Based on IM drawing ref: 19495-304-001	22-08-2017	
	SC	RH
Issue Details	Dwn	Chd

Client

Rydon Homes
&
Gleeson Strategic Land

Project	Water Lane, Angmering
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Dwg Title

Approximate Site Investigation Location

Land to the North of Water Lane

Job No. 19495	Dwg No. 304-004	Revision -
Scale 1:2500	Date August 2017	Frame Dimensions n (A1) 791 x 5
Drawn SC	Checked RH	Approved LGS





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Project Name:

Water Lane

Project No.

19495

Location:

Angmering

Equipment:

Cable Percussion Rig

Co-ords:

Level:

Dates:

13/09/2017

Borehole No.

MBH101

Sheet 1 of 1

Hole Type

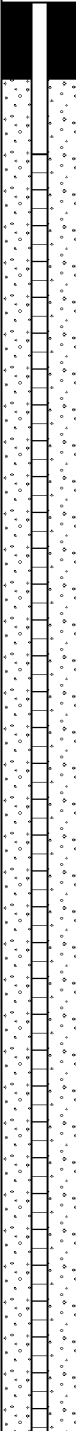
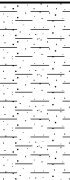
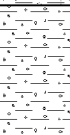
CP

Scale

1:50

Logged By

JW

Well	Wtr Strk	Sample and In Situ Testing			Coring				Depth (m)	Level (m)	Legend	Stratum Description		
		Depth (m)	Type	Results	FI	TCR	SCR	RQD						
		1.50 1.50 - 1.95	SPT(S) D	N=4 (1,1/1,1,1,1)					1.20			Soft brown sandy CLAY.	1	
													Soft brown gravelly CLAY.	2
		2.50 2.50 - 2.95	SPT(S) D	N=10 (1,2/2,2,3,3)					2.10				Stiff blue/brown mottled CLAY.	3
		3.50 3.50 - 3.95	SPT(S) D	N=12 (2,2/2,3,3,4)									4	
		4.50 4.50 - 4.95	SPT(S) D	N=16 (2,3/3,4,4,5)									5	
		6.00 6.00 - 6.45	SPT(S) D	N=17 (2,3/3,4,5,5)					5.60				Stiff grey CLAY with brown weathering.	6
		7.50 7.50 - 7.95	SPT(S) D	N=20 (2,4/4,5,5,6)									7	
		9.00 9.00 - 9.45	SPT(S) D	N=23 (4,5/5,5,6,7)									8	
								9.45			End of Borehole at 9.45m	9		
												10		

D = small disturbed sample (tub)
J = organic sample (amber glass jar)
V = volatile sample (amber glass vial)
B = bulk bag sample
SPT(C) = Standard Penetration Test (Cone)
SPT(S) = Standard Penetration Test (Split Spoon)

HSV = hand shear vane (kPa)
PP = pocket penetrometer (kg.cm2)
PID = photoionisation detector (ppm)
FI = fracture index
TCR = total core recovery
SCR = solid core recovery
RQD = rock quality designation

Remarks

Standpipe is left 0.5m above ground level



Borehole Log

MBH102

Sheet 1 of 1

Project No.
19495

Co-ords:

Hole Type
CP

Location: Angmering

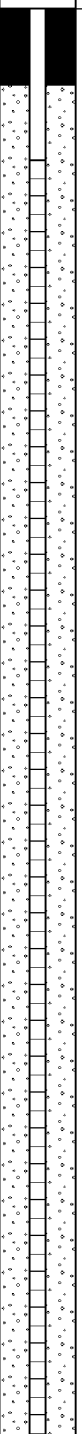
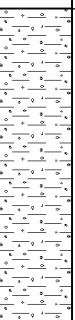
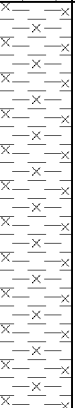
Level:

Scale
1:50

Equipment: Cable Percussion Rig

Dates: 13/09/2017

Logged By
JW

Well	Wtr Strk	Sample and In Situ Testing			Coring				Depth (m)	Level (m)	Legend	Stratum Description			
		Depth (m)	Type	Results	FI	TCR	SCR	RQD							
		1.50 1.50 - 1.95	SPT(S) D	N=8 {1,1/2,1,2,3}					2.10			Firm brown gravelly CLAY.	1		
		2.50 2.50 - 2.95	SPT(S) D	N=14 {1,2/3,3,4,4}								Stiff blue mottled brown CLAY.	2		
		3.50 3.50 - 3.95	SPT(S) D	N=14 {2,2/3,4,3,4}								Stiff blue mottled brown gravelly CLAY.	3		
		4.50 4.50 - 4.95	SPT(S) D	N=18 {2,3/4,4,5,5}								Stiff blue mottled brown CLAY.	4		
		6.00 6.00 - 6.45	SPT(S) D	N=18 {4,5/5,4,5,4}								Brown very gravelly CLAY.	5		
		7.50 7.50 - 7.95	SPT(S) D	N=17 {2,3/4,4,4,5}								Stiff grey silty CLAY.	6		
		9.00 9.00 - 9.45	SPT(S) D	N=23 {2,3/4,5,7,7}										7	
															8
															9

HSV = hand shear vane (kPa)
 PP = pocket penetrometer (kg.cm²)
 PID = photoionisation detector (ppm)
 FI = fracture index
 TCR = total core recovery
 SCR = solid core recovery
 RQD = rock quality designation

Remarks

Standpipe is left 0.5m above ground level



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Project Name:

Water Lane

Project No.

19495

Location:

Angmering

Equipment:

Cable Percussion Rig

Co-ords:

Level:

Dates:

13/09/2017

Borehole No.

M8H103

Sheet 1 of 1

Hole Type

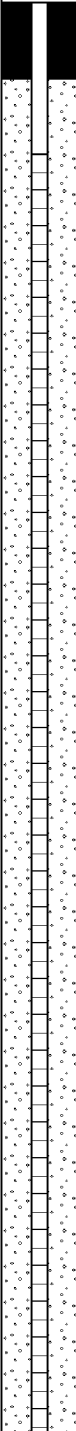
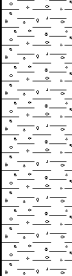
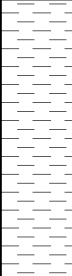
CP

Scale

1:50

Logged By

JW

Well	Wtr Strk	Sample and In Situ Testing			Coring				Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results	FI	TCR	SCR	RQD					
												Vegetation over TOPSOIL.	
		1.50 1.50 - 1.95	SPT(S) D	N=10 (1,2/2,2,3,3)					0.20			Brown sandy gravelly CLAY. Gravel is Flint.	1
		2.50 2.50 - 2.95	SPT(S) D	N=14 (2,3/3,3,3,5)					2.10			Firm brown sandy CLAY.	2
		3.50 3.50 - 3.95	SPT(S) D	N=9 (2,2/2,2,2,3)									3
		4.50 4.50 - 4.95	SPT(S) D	N=11 (1,2/3,2,3,3)					4.00			Firm to stiff fissured CLAY.	4
		6.00 6.00 - 6.45	SPT(S) D	N=12 (1,2/2,3,3,4)									5
		7.50 7.50 - 7.95	SPT(S) D	N=22 (2,3/3,5,6,8)									6
		9.00 9.00 - 9.45	SPT(S) D	N=34 (3,4/7,8,8,11)									7
								9.45			End of Borehole at 9.45m	8	
												9	
												10	

D = small disturbed sample (tub)
J = organic sample (amber glass jar)
V = volatile sample (amber glass vial)
B = bulk bag sample
SPT(C) = Standard Penetration Test (Cone)
SPT(S) = Standard Penetration Test (Split Spoon)

HSV = hand shear vane (kPa)
PP = pocket penetrometer (kg.cm2)
PID = photoionisation detector (ppm)
FI = fracture index
TCR = total core recovery
SCR = solid core recovery
RQD = rock quality designation

Remarks

Standpipe is left 0.5m above ground level



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Project Name:

Water Lane

Project No.

19495

Location:

Angmering

Equipment:

Cable Percussion Rig

Co-ords:

Level:

Dates:

14/09/2017

Borehole No.

MBH104

Sheet 1 of 1

Hole Type

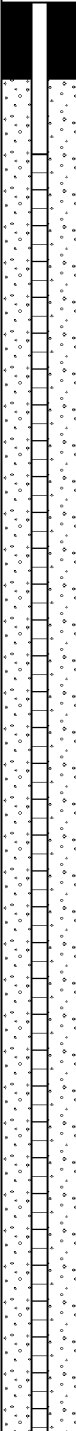
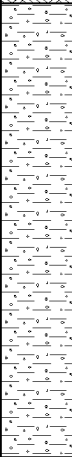
CP

Scale

1:50

Logged By

JW

Well	Wtr Strk	Sample and In Situ Testing			Coring				Depth (m)	Level (m)	Legend	Stratum Description		
		Depth (m)	Type	Results	FI	TCR	SCR	RQD						
									0.40			Vegetation over TOPSOIL.		
												Brown sandy gravelly CLAY. Gravel is Flint.	1	
		1.50 1.50 - 1.95	SPT(S) D	N=10 (1,2/3,2,2,3)									2	
		2.50 2.50 - 2.95	SPT(S) D	N=11 (1,1/2,3,3,3)									3	
		3.50 3.50 - 3.95	SPT(S) D	N=12 (2,2/2,3,3,4)									4	
		4.50 4.50 - 4.95	SPT(S) D	N=11 (2,3/2,3,3,3)									5	
		6.00 6.00 - 6.45	SPT(S) D	N=15 (2,2/3,4,4,4)									6	
		7.50 7.50 - 7.95	SPT(S) D	N=27 (2,3/4,7,7,9)									7	
													8	
														9
														10

D = small disturbed sample (tub)
J = organic sample (amber glass jar)
V = volatile sample (amber glass vial)
B = bulk bag sample
SPT(C) = Standard Penetration Test (Cone)
SPT(S) = Standard Penetration Test (Split Spoon)

HSV = hand shear vane (kPa)
PP = pocket penetrometer (kg.cm2)
PID = photoionisation detector (ppm)
FI = fracture index
TCR = total core recovery
SCR = solid core recovery
RQD = rock quality designation

Remarks

Standpipe is left 0.5m above ground level



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Project Name:

Water Lane

Project No.

19495

Location:

Angmering

Equipment:

Cable Percussion Rig

Co-ords:

Level:

Dates:

14/09/2017

Borehole No.

MBH105

Sheet 1 of 1

Hole Type

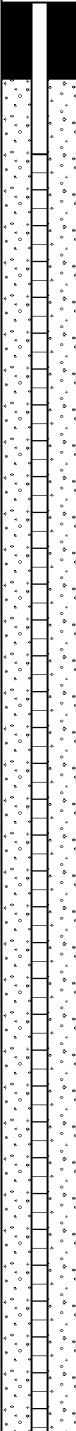
CP

Scale

1:50

Logged By

JW

Well	Wtr Strk	Sample and In Situ Testing			Coring				Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results	FI	TCR	SCR	RQD					
											MADE GROUND.		
	1.50 1.50 - 1.95	SPT(S) D	N=8 (2,2/2,2,2,2)					1.00			Firm blue mottled brown CLAY.	1	
	2.50 2.50 - 2.95	SPT(S) D	N=10 (1,2/2,3,2,3)									2	
	3.50	SPT(S)	N=10 (2,3/2,2,3,3)									3	
	4.50 4.50 - 4.95	SPT(S) D	N=15 (2,3/4,4,3,4)					4.10			Stiff grey weathered CLAY.	4	
	6.00 6.00 - 6.45	SPT(S) D	N=16 (2,3/3,4,4,5)									5	
	6.50	D										6	
	7.50 7.50 - 7.95	SPT(S) D	N=18 (1,3/3,4,5,6)									7	
	9.00 9.00 - 9.45	SPT(S) D	N=21 (3,5/4,5,6,6)					8.30			Stiff silty grey CLAY.	8	
								9.45			End of Borehole at 9.45m	9	
											10		

D = small disturbed sample (tub)
J = organic sample (amber glass jar)
V = volatile sample (amber glass vial)
B = bulk bag sample
SPT(C) = Standard Penetration Test (Cone)
SPT(S) = Standard Penetration Test (Split Spoon)

HSV = hand shear vane (kPa)
PP = pocket penetrometer (kg.cm2)
PID = photoionisation detector (ppm)
FI = fracture index
TCR = total core recovery
SCR = solid core recovery
RQD = rock quality designation

Remarks

Standpipe is left 0.5m above ground level