

LIMITATIONS

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The conclusions reached in this report are necessarily restricted to those which can be determined from the information consulted, and may be subject to amendment in the light of additional information becoming available. These conclusions may not be appropriate for alternative schemes.

The extent of the exploratory holes, laboratory testing and monitoring undertaken may have been restricted due to a number of factors including accessibility, the presence of buried or overhead services, current development and site usage, timescales or clients specification. The exploratory holes only assess a small proportion of the site area with respect to the site as a whole, and as such may only provide an overall assessment of ground conditions on site. The presence of hotspots of undisclosed contamination or exceptional and unforeseen ground conditions cannot be discounted.

Eurocode 7 gives guidance on the type of sampling, sample quality, number and spacing of intrusive investigations, and number of laboratory tests required. It is intended that the Geotechnical Information section of this report will fulfil the general requirements of the Ground Investigation Report as set out in section 6 of Eurocode¹, although this is subject to

¹ BS EN 1997 Eurocode 7- Geotechnical Design - Part 1: General Rules (2004) and Part 2: Ground Investigation and Testing (2007)

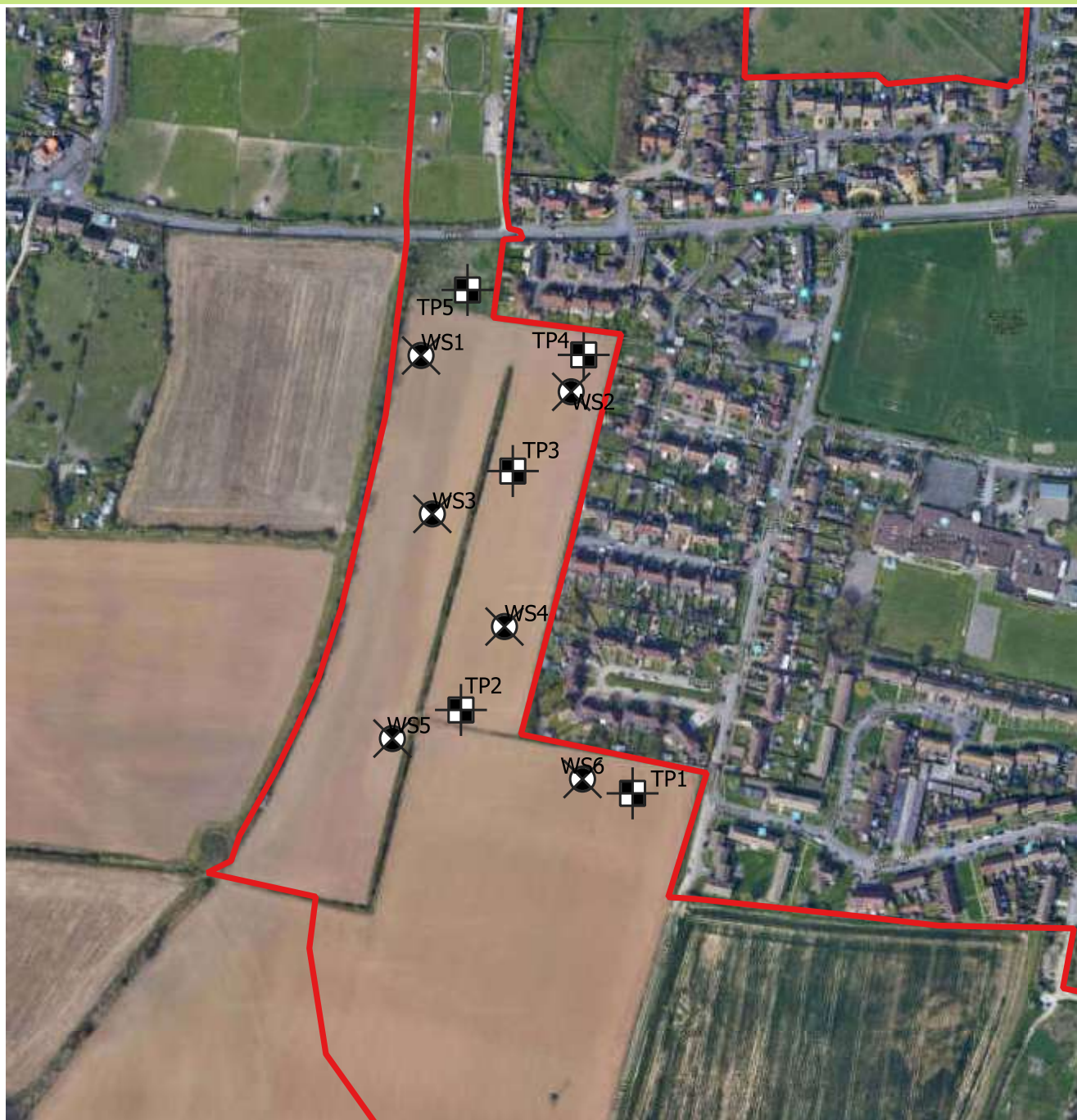
the restrictions imposed on the investigation as listed above. For geotechnical design, Eurocode 7 requires the Geotechnical Design Report to address both the geotechnical and structural aspects of the geotechnical design for both the limit and serviceability states. The Geotechnical Appraisal section of this report will not meet the requirements of a Geotechnical Design Report (GDR), and should therefore be used for preliminary guidance only.

The presence of asbestos may be noted during the site walkover survey, intrusive investigations and/or from the results of contamination testing. However, this report does not constitute an asbestos survey. On this basis, the presence of asbestos on site cannot be discounted and a full asbestos survey should be undertaken.

Figures



Client:	Persimmon Homes Thames Valley	Date :	28/01/2020	Project ID:	LP2150
	Project:		Title :		Fig. No.
	West Sompting		Site Location		1



Legend

- Boundary
- Trialpit soakage locations
- Window sampler



Client: Persimmon Thames Valley Ltd

Project: West Sompting Phase 1

Title: Exploratory Hole Plan

Date: 04/02/2020

Project ID: LP02150

Figure No. 2

Resource and Environmental
Consultants Ltd
Environmental House,
Segensworth Business Centre,
Fareham, PO15 5RQ
Tel: 0161 868 1300
Fax: 0161 868 1301
E-mail: sales@recltd.co.uk
Website: www.recltd.co.uk

Prepared collection to
include: Hirsch, subject
re: Irish - general & a
Southern paper

APPENDIX C – SITE PHOTOGRAPHS

Site Photographs



Plate 1: View from south eastern field facing north west



Plate 2: WS5 with well cover (before addition of cement)



Plate 3: View from north eastern field facing north



Plate 4: WS1 completed



Plate 5: TP1 with arisings



Plate 6: TP2 with arisings



Plate 7: TP3 with arisings



Plate 8: TP4 during soakage testing



Plate 9: TP5

APPENDIX D – TRIAL HOLE AND BOREHOLE LOGS

Trial Hole and
Borehole Logs



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Borehole Log

Borehole No.

WS1

Sheet 1 of 1

Project Name: West Sompting

Project No.
LP2150

Co-ords: -

Hole Type
WLS

Location: Land west of Loose Lane, Sompting, BN15 0DQ

Level:

Scale
1:20

Client: Persimmon Thames Valley Ltd

Dates: 19/12/2019 - 19/12/2019

Logged By
KT

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					1.00			Soft brown silty slightly gravelly CLAY. Gravel is fine to coarse sub-rounded to angular flint.	
								Firm brown slightly silty very gravelly CLAY. Gravel is fine to coarse sub-rounded to angular flint. <i>Too gravelly for hand pen at 1m</i>	1
								<i>Hand Pen at 1.95m = 285kPa</i>	2
					2.90 3.00			Stiff brown slightly gravelly sandy CLAY. Gravel is fine to coarse sub-rounded to angular flint Medium dense becoming dense orangey brown fine to medium sand	3
					4.00			End of borehole at 4.00 m	4

Remarks

Borehole remained dry and stable. Install was plain pipe and bentonite from GL to 1m plain and slotted pipe and gravel to 4m





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Borehole Log

Borehole No.

WS2

Sheet 1 of 2

Project Name: West Sompting

Project No.
LP2150

Co-ords: -

Hole Type
WLS

Location: Land west of Loose Lane, Sompting, BN15 0DQ

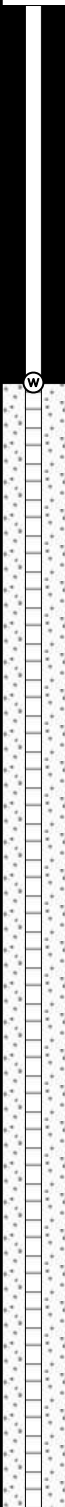
Level:

Scale
1:20

Client: Persimmon Thames Valley Ltd

Dates: 19/12/2019 - 19/12/2019

Logged By
KT

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.50			Soft brown silty slightly gravelly CLAY. Gravel is fine to coarse sub-rounded to angular flint.	
		1.00		N=9 (3,2/3,2,2,2)				Firm brown slightly silty very gravelly CLAY. Gravel is fine to coarse sub-rounded to angular flint.	1
		2.00		N=20 (4,6/5,5,4,6)				<u>Too gravelly for hand pen at 2m</u>	2
		3.00		N=38 (4,6/7,10,10,11)					3
					3.50			Firm brown silty slightly gravelly CLAY. Gravel is fine sub-angular flint <u>Hand Pen at 3.5m = 240kPa</u>	
					3.90			Firm brown gravelly CLAY. Gravel is fine to	4
Continued on next sheet									

Remarks

Borehole remained dry and stable. Install was plain pipe and bentonite to 1m and slotted pipe and gravel to 5m





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Borehole Log

Borehole No.

WS2

Sheet 2 of 2

Project Name: West Sompting

Project No.
LP2150

Co-ords: -

Hole Type
WLS

Location: Land west of Loose Lane, Sompting, BN15 0DQ

Level:

Scale
1:20

Client: Persimmon Thames Valley Ltd

Dates: 19/12/2019 - 19/12/2019

Logged By
KT

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		4.00		N=53 (6,6/12,13,13,15)				coarse sub-rounded to sub-angular flint. <u>Hand Pen at 3.9m = 330kPa</u>	
					4.90 5.00			Medium dense orangey brown fine to medium sand End of borehole at 5.00 m	5
									6
									7
									8

Remarks

Borehole remained dry and stable. Install was plain pipe and bentonite to 1m and slotted pipe and gravel to 5m





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Borehole Log

Borehole No.

WS3

Sheet 1 of 2

Project Name: West Sompting

Project No.
LP2150

Co-ords: -

Hole Type
WLS

Location: Land west of Loose Lane, Sompting, BN15 0DQ

Level:

Scale
1:20

Client: Persimmon Thames Valley Ltd

Dates: 19/12/2019 - 19/12/2019

Logged By
KT

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					1.00			Firm brown silty slightly gravelly CLAY. Gravel is fine to medium sub-rounded to angular flint.	
								Stiff brown silty very gravelly CLAY. Gravel is fine to coarse sub-angular to angular flint.	1
								<i>Hand Pen at 2.5m = 255kPa</i>	2
									3
		3.50	D		3.50			Firm brownish white structureless chalk putty	
								Medium dense orangey brown fine to medium sand	
								Continued on next sheet	4

Remarks

Borehole remained dry and stable. Install was plain pipe and bentonite to 1m and slotted pipe with gravel to 5m





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Borehole Log

Borehole No.

WS3

Sheet 2 of 2

Project Name: West Sompting

Project No.
LP2150

Co-ords: -

Hole Type
WLS

Location: Land west of Loose Lane, Sompting, BN15 0DQ

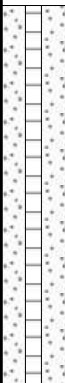
Level:

Scale
1:20

Client: Persimmon Thames Valley Ltd

Dates: 19/12/2019 - 19/12/2019

Logged By
KT

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					5.00				
								End of borehole at 5.00 m	5
									6
									7
									8

Remarks

Borehole remained dry and stable. Install was plain pipe and bentonite to 1m and slotted pipe with gravel to 5m





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Borehole Log

Borehole No.

WS4

Sheet 1 of 2

Project Name: West Sompting

Project No.
LP2150

Co-ords: -

Hole Type
WLS

Location: Land west of Loose Lane, Sompting, BN15 0DQ

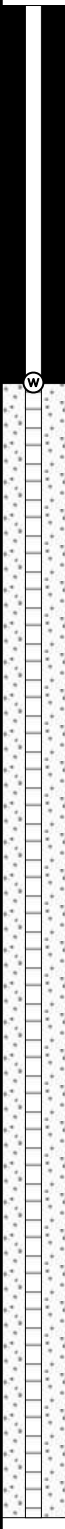
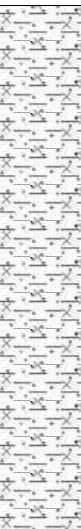
Level:

Scale
1:20

Client: Persimmon Thames Valley Ltd

Dates: 19/12/2019 - 19/12/2019

Logged By
KT

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		1.00		N=7 (1,1/1,1,2,3)	1.40			Firm brown silty slightly gravelly CLAY. Gravel is fine to medium sub-rounded to angular flint and rare fine sub-rounded chalk. <u>Hand Pen at 1m =110kPa</u> <u>Hand Pen at 1.3m =100kPa</u>	1
		2.00		N=7 (5,4/2,1,2,2)	2.50			Firm brown silty very gravelly CLAY. Gravel is fine to coarse sub-angular to angular flint.	2
		3.00		N=12 (2,3/3,3,3,3)				Firm brown silty slightly gravelly slightly sandy CLAY. Gravel is fine to medium sub-rounded to angular flint. <u>Too gravelly for hand pen at 2.5m</u>	3
		4.00		N=2 (1,1/1,0,1,0)				Continued on next sheet	4

Remarks

Borehole remained dry and stable. Install was plain pipe and bentonite to 1m and slotted pipe surrounded by gravel to 5m





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Borehole Log

Borehole No.

WS4

Sheet 2 of 2

Project Name: West Sompting

Project No.
LP2150

Co-ords: -

Hole Type
WLS

Location: Land west of Loose Lane, Sompting, BN15 0DQ

Level:

Scale
1:20

Client: Persimmon Thames Valley Ltd

Dates: 19/12/2019 - 19/12/2019

Logged By
KT

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					5.00			End of borehole at 5.00 m	5
									6
									7
									8

Remarks

Borehole remained dry and stable. Install was plain pipe and bentonite to 1m and slotted pipe surrounded by gravel to 5m





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Borehole Log

Borehole No.

WS5

Sheet 1 of 1

Project Name: West Sompting

Project No.
LP2150

Co-ords: -

Hole Type
WLS

Location: Land west of Loose Lane, Sompting, BN15 0DQ

Level:

Scale
1:20

Client: Persimmon Thames Valley Ltd

Dates: 19/12/2019 - 19/12/2019

Logged By
KT

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
								Firm becoming stiff brown silty slightly gravelly CLAY. Gravel is fine to medium sub-rounded to sub-angular flint and rare fine sub-rounded chalk.	
								Hand Pen at 1m =190kPa	1
								Hand Pen at 1.5m =175kPa	2
					2.30			Firm brown silty gravelly CLAY. Gravel is fine to coarse sub-angular to angular flint and rare fine sub-rounded chalk.	
								Too gravelly for hand pen at 2.5m	3
		4.00		N=18 (1,1/4,5,5,4)	4.00			End of borehole at 4.00 m	4

Remarks

Could not recover 3m and below because borehole kept collapsing to 3m due to water strike at this depth within very gravelly soil. Install was plain pipe and bentonite to 1m and slotted pipe with gravel to 3m





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Borehole Log

Borehole No.

WS6

Sheet 1 of 2

Project Name: West Sompting

Project No.
LP2150

Co-ords: -

Hole Type
WLS

Location: Land west of Loose Lane, Sompting, BN15 0DQ

Level:

Scale
1:20

Client: Persimmon Thames Valley Ltd

Dates: 19/12/2019 - 19/12/2019

Logged By
KT

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.20			Firm brown silty slightly gravelly CLAY with occasional wood fragments. Gravel is fine to medium sub-angular flint and rare fine sub-rounded chalk	
		1.00		N=13 (2,2/3,4,3,3)				Firm slightly reddish brown silty gravelly CLAY. Gravel is fine to medium angular to sub-angular flint and rare fine sub-rounded chalk	1
		2.00		N=18 (3,3/3,5,4,6)					2
		3.00		N=5 (2,2/1,2,1,1)					3
					3.50				
		4.00		N=22 (3,4/4,5,5,8)				Medium dense orangey brown fine to medium sand <i>Too gravelly for hand pen until 3.5m</i>	4
Continued on next sheet									

Remarks

Borehole collapsed to 4m within sand. Install was plain pipe and bentonite to 1m and slotted pipe with gravel to 5m





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Borehole Log

Borehole No.

WS6

Sheet 2 of 2

Project Name: West Sompting

Project No.
LP2150

Co-ords: -

Hole Type
WLS

Location: Land west of Loose Lane, Sompting, BN15 0DQ

Level:

Scale
1:20

Client: Persimmon Thames Valley Ltd

Dates: 19/12/2019 - 19/12/2019

Logged By
KT

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		5.00		N=1 (1,1/1,0,0,0)	5.00			End of borehole at 5.00 m	5
									6
									7
									8

Remarks

Borehole collapsed to 4m within sand. Install was plain pipe and bentonite to 1m and slotted pipe with gravel to 5m





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Trial Pit Log

Trialpit No

TP1

Sheet 1 of 1

Project Name: West Sompting

Project No.
LP2150

Co-ords: -
Level:

Date
30/01/2020

Location: Land west of Loose Lane, Sompting, BN15 0DQ

Dimensions (m):

1.1

Depth
0.64

0.5

Scale
1:25

Logged
KT

Client: Persimmon Thames Valley Ltd

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
				0.05			Brown slightly silty clayey TOPSOIL with occasional rootlets
				0.30			Soft brown clayey slightly silty slightly gravelly SUBSOIL with occasional rootlets. Gravel is fine to coarse sub-angular to angular flint.
				0.64			Firm reddish brown silty gravelly CLAY. Gravel is fine to medium sub-angular to angular flint
							End of pit at 0.64 m

1

2

3

4

5

Remarks: Trial pit remained dry and stable

Stability:





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Trial Pit Log

Trialpit No

TP2

Sheet 1 of 1

Project Name: West Sompting

Project No.
LP2150

Co-ords: -
Level:

Date
30/01/2020

Location: Land west of Loose Lane, Sompting, BN15 0DQ

Dimensions (m):

1.3

Depth
1.05

0.5

Scale
1:25

Logged
KT

Client: Persimmon Thames Valley Ltd

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
				0.05			Brown slightly silty clayey TOPSOIL with occasional roots	
				0.40			Brown silty clayey slightly gravelly SUBSOIL. Gravel is fine to coarse sub-angular to sub-rounded flint.	
				1.05			Brown gravelly slightly silty CLAY. Gravel is fine to coarse sub-angular to angular flint	
							End of pit at 1.05 m	1
								2
								3
								4
								5

Remarks: Trial pit remained dry and stable

Stability:





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Trial Pit Log

Trialpit No

TP3

Sheet 1 of 1

Project Name: West Sompting

Project No.
LP2150

Co-ords: -
Level:

Date
30/01/2020

Location: Land west of Loose Lane, Sompting, BN15 0DQ

Dimensions
(m):

1.4

Depth
0.67

0.5

Scale
1:25

Logged
KT

Client: Persimmon Thames Valley Ltd

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
				0.10			Turnips over brown clayey slightly gravelly TOPSOIL with frequent roots. Gravel is rare fine sub-angular flint.
				0.25			Firm brown slightly silty slightly gravelly clayey SUBSOIL with occasional rootlets. Gravel is fine to medium sub-angular to angular flint.
				0.67			Reddish brown silty gravelly CLAY. Gravel is fine to coarse sub-angular to angular flint and rare fine to medium sub-rounded chalk.
							End of pit at 0.67 m

1

2

3

4

5

Remarks: Trial pit remained dry and stable - however after it was filled with water for BRE365 soakage testing, walls collapsed to 0.52m.

Stability:





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Trial Pit Log

Trialpit No

TP4

Sheet 1 of 1

Project Name: West Sompting

Project No.
LP2150

Co-ords: -
Level:

Date
31/01/2020

Location: Land west of Loose Lane, Sompting, BN15 0DQ

Dimensions
(m):

1.4

Depth
1.03

0.5

Scale
1:25

Logged
MW

Client: Persimmon Thames Valley Ltd

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
				0.30			Greyish brown slightly sandy gravelly clayey TOPSOIL. Sand is coarse and gravel is fine to medium angular flint.	
				1.03			Stiff orangish brown gravelly CLAY. Gravel is medium to coarse flint	
							End of pit at 1.03 m	1
								2
								3
								4
								5

Remarks: Trial pit remained dry and stable

Stability:

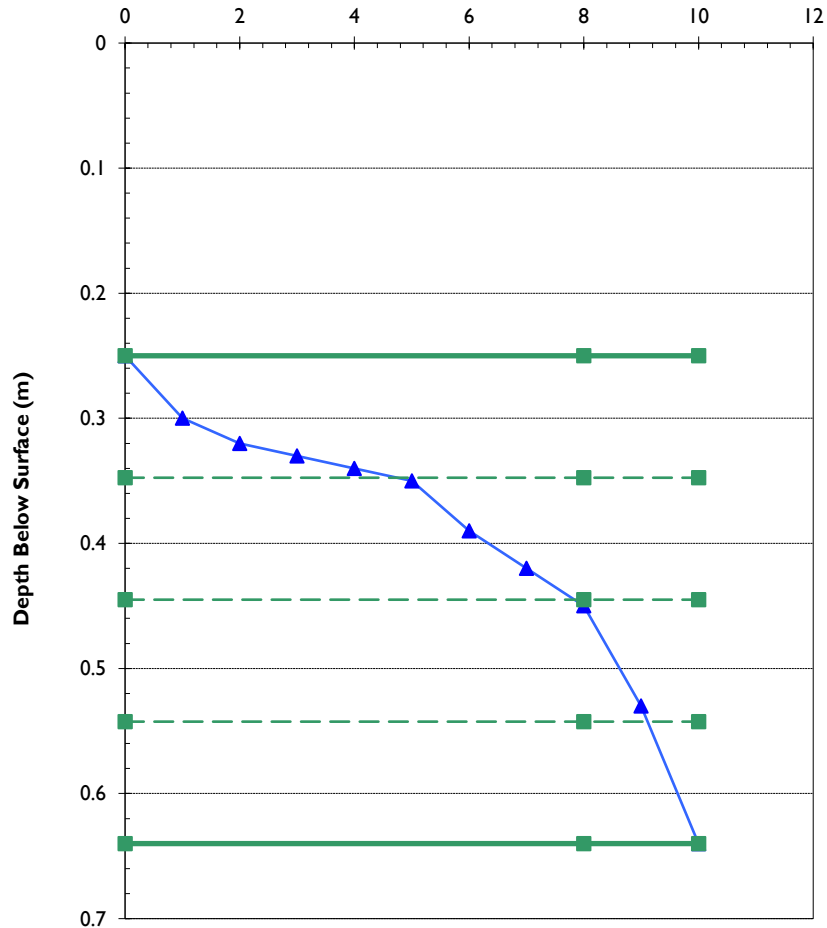


APPENDIX E – SOAKAGE TEST RESULTS

Soakage Test Results

BRE Digest 365 - Soakage Test

Filling to Max Water Depth (min)



initial)

Test Hole No: TP1
Test No: Test No 1



Pit Length (m)	1.1
Pit Width (m)	0.5
Depth to Pit Base (m)	0.64
Depth to Top of Permeable Soils (m)	
Depth to Groundwater Surface (m)	
Depth to Top of Granular Fill (m)	
Voids Assumed for Granular Fill (%)	
Depth of Water at Start of Test (m)	0.25
Max Water Dropdown during Test (m)	0.39
Total Soakage Test Time (min)	10
Mean Internal Discharge Area (m2)	1.174
Discharge Rate (litre/min)	24.57812
Soakage Rate (litre/m2/min)	20.93537
BRE Soil Infiltration Rate (m/sec)	0.000349

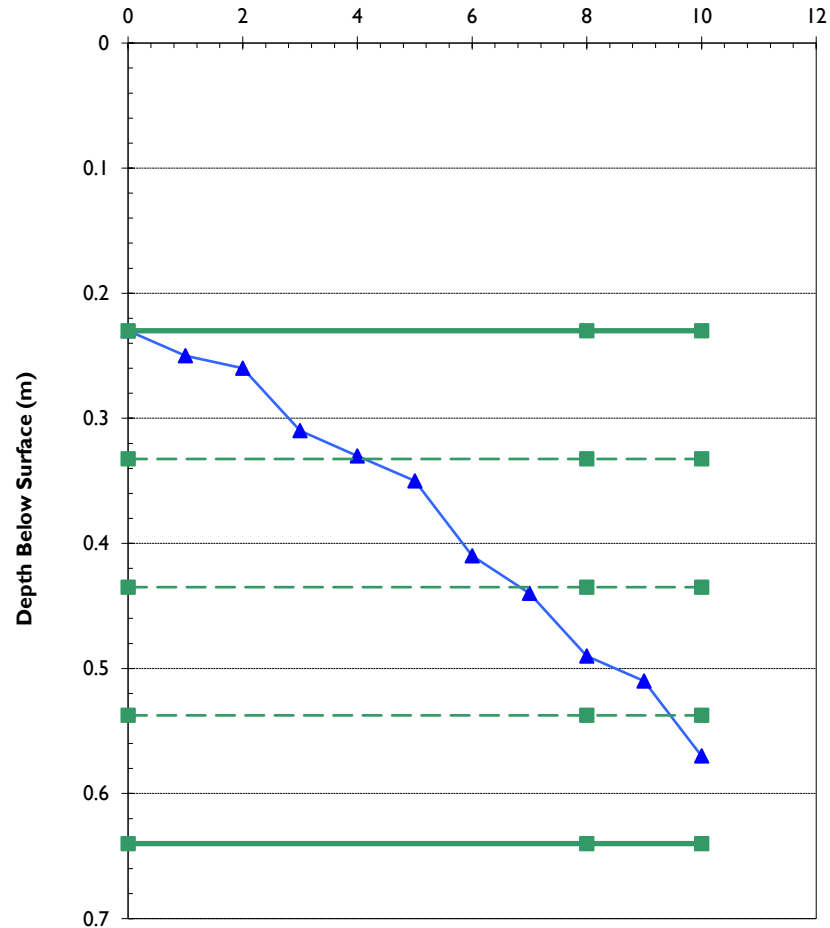
Comments:

Pit was emptied at finish of test.

Client: Persimmon Homes Thames Valley Ltd.
Site: Land west of Loose Lane, West Sompting BN15 0DQ
Tested By: MS
Test Date: 03/02/20

BRE Digest 365 - Soakage Test

Filling to Max Water Depth (min)



repeated)

Test Hole No: TP1
Test No: Test No 2



Pit Length (m)	1.1
Pit Width (m)	0.5
Depth to Pit Base (m)	0.64
Depth to Top of Permeable Soils (m)	
Depth to Groundwater Surface (m)	
Depth to Top of Granular Fill (m)	
Voids Assumed for Granular Fill (%)	
Depth of Water at Start of Test (m)	0.23
Max Water Dropdown during Test (m)	0.34
Total Soakage Test Time (min)	10
Mean Internal Discharge Area (m2)	1.206
Discharge Rate (litre/min)	21.14063
Soakage Rate (litre/m2/min)	17.52954
BRE Soil Infiltration Rate (m/sec)	0.000292

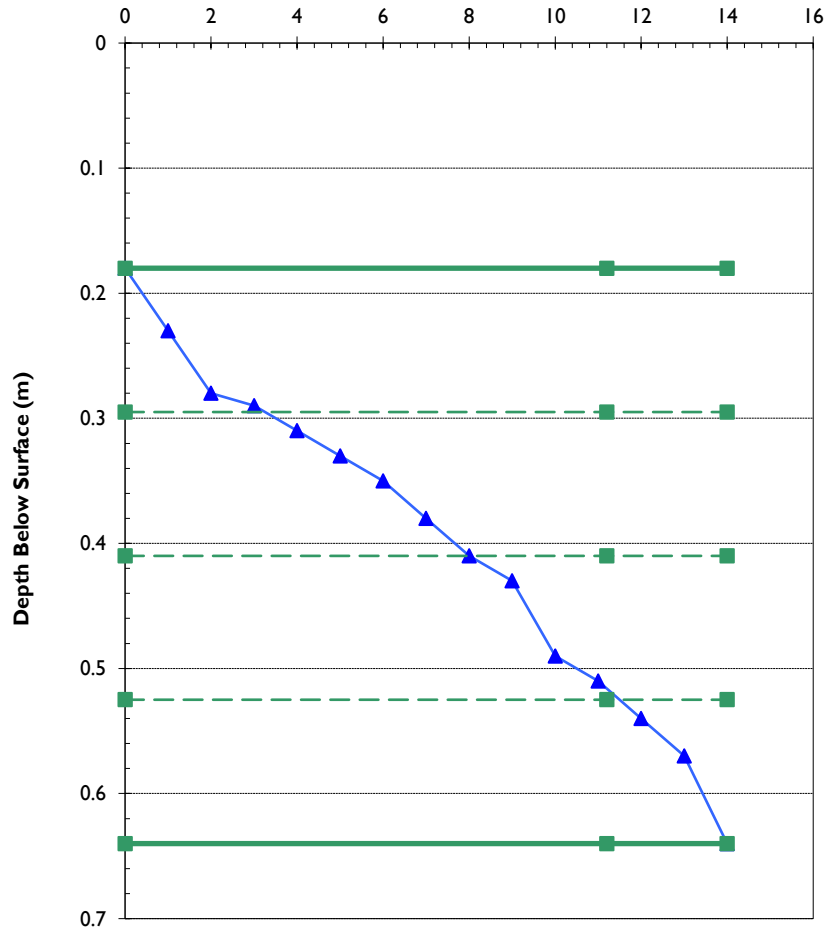
Comments:

Pit was nearly emptied at finish of test.

Client: Persimmon Homes Thames Valley Ltd.
Site: Land west of Loose Lane, West Sompting BN15 0DQ
Tested By: MS
Test Date: 03/02/20

BRE Digest 365 - Soakage Test

Filling to Max Water Depth (min)



Test Hole No: TP1
Test No: Test No 3

repeated)



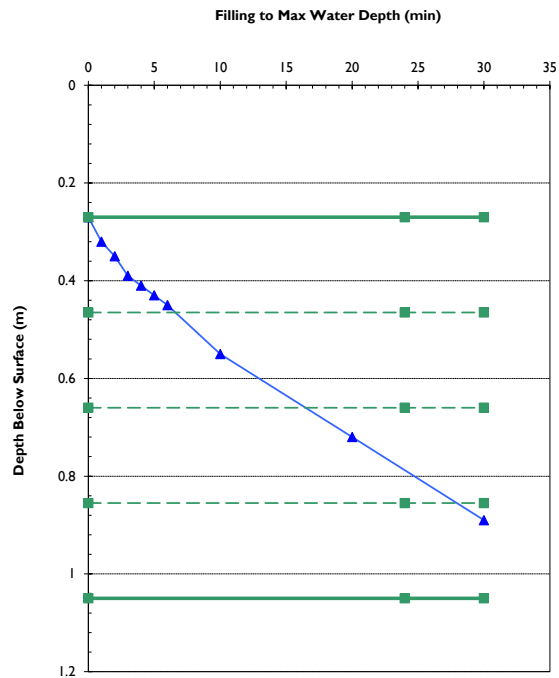
Pit Length (m)	1.1
Pit Width (m)	0.5
Depth to Pit Base (m)	0.64
Depth to Top of Permeable Soils (m)	
Depth to Groundwater Surface (m)	
Depth to Top of Granular Fill (m)	
Voids Assumed for Granular Fill (%)	
Depth of Water at Start of Test (m)	0.18
Max Water Dropdown during Test (m)	0.46
Total Soakage Test Time (min)	14
Mean Internal Discharge Area (m2)	1.286
Discharge Rate (litre/min)	15.33333
Soakage Rate (litre/m2/min)	11.92328
BRE Soil Infiltration Rate (m/sec)	0.000199

Comments:

Pit was emptied at finish of test.

Client: Persimmon Homes Thames Valley Ltd.
Site: Land west of Loose Lane, West Sompting BN15 0DQ
Tested By: MS
Test Date: 03/02/20

BRE Digest 365 - Soakage Test



nitial)

Test Hole No: TP2
Test No: Test No 1



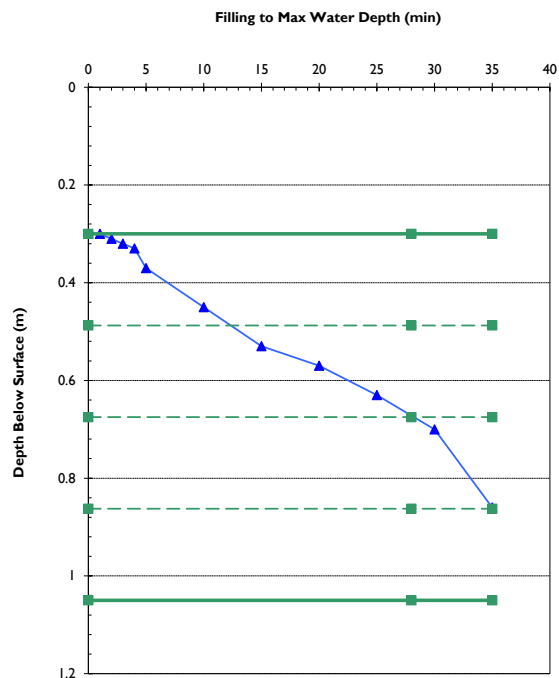
Pit Length (m)	1.3
Pit Width (m)	0.5
Depth to Pit Base (m)	1.05
Depth to Top of Permeable Soils (m)	
Depth to Groundwater Surface (m)	
Depth to Top of Granular Fill (m)	
voids Assumed for Granular Fill (%)	
Depth of Water at Start of Test (m)	0.27
Max Water Dropdown during Test (m)	0.62
Total Soakage Test Time (min)	30
Mean Internal Discharge Area (m2)	2.054
Discharge Rate (litre/min)	11.87845
Soakage Rate (litre/m2/min)	5.78308
BRE Soil Infiltration Rate (m/sec)	9.64E-05

Comments:

Pit was nearly emptied at finish of test.

Client: Persimmon Homes Thames Valley Ltd.
Site: Land west of Loose Lane, West Sompting BN15 0DQ
Tested By: MS
Test Date: 03/02/20

BRE Digest 365 - Soakage Test



Test Hole No: TP2
 Test No: Test No 2
 repeated

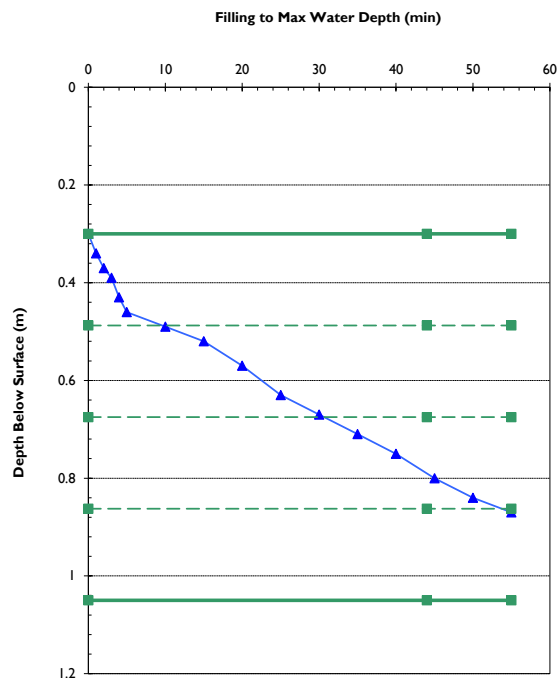


Pit Length (m)	1.3
Pit Width (m)	0.5
Depth to Pit Base (m)	1.05
Depth to Top of Permeable Soils (m)	
Depth to Groundwater Surface (m)	
Depth to Top of Granular Fill (m)	
Voids Assumed for Granular Fill (%)	
Depth of Water at Start of Test (m)	0.3
Max Water Dropdown during Test (m)	0.56
Total Soakage Test Time (min)	35
Mean Internal Discharge Area (m2)	2.0045
Discharge Rate (litre/min)	10.6869
Soakage Rate (litre/m2/min)	5.331453
BRE Soil Infiltration Rate (m/sec)	8.89E-05

Comments: Water level fell to 50% -- 25% max water depth, Result not compliant with BRE365 requirements

Client: Persimmon Homes Thames Valley Ltd.
 Site: Land west of Loose Lane, West Sompting BN15 0DQ
 Tested By: MS
 Test Date: 03/02/20

BRE Digest 365 - Soakage Test



Test Hole No: TP2
 Test No: Test No 3
 repeated

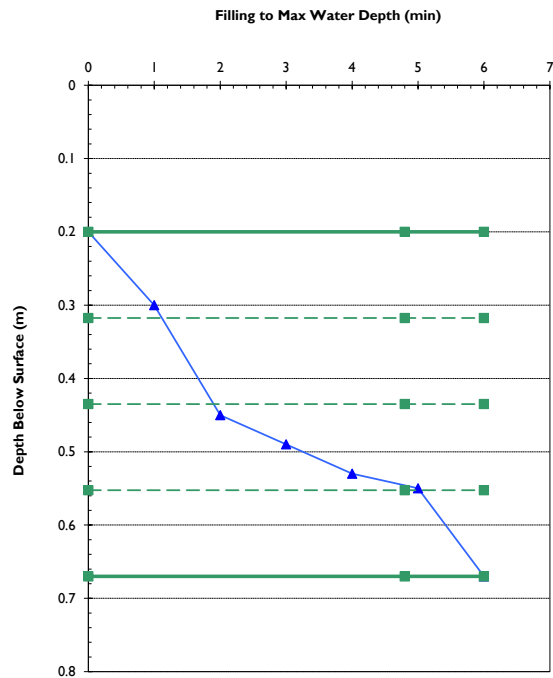


Pit Length (m)	1.3
Pit Width (m)	0.5
Depth to Pit Base (m)	1.05
Depth to Top of Permeable Soils (m)	
Depth to Groundwater Surface (m)	
Depth to Top of Granular Fill (m)	
Voids Assumed for Granular Fill (%)	
Depth of Water at Start of Test (m)	0.3
Max Water Dropdown during Test (m)	0.57
Total Soakage Test Time (min)	55
Mean Internal Discharge Area (m2)	2
Discharge Rate (litre/min)	5.518868
Soakage Rate (litre/m2/min)	2.759434
BRE Soil Infiltration Rate (m/sec)	4.6E-05

Comments:
 Pit was nearly emptied at finish of test.

Client: Persimmon Homes Thames Valley Ltd.
 Site: Land west of Loose Lane, West Sompting BN15 0DQ
 Tested By: MS
 Test Date: 03/02/20

BRE Digest 365 - Soakage Test



initial)

Test Hole No: TP3
Test No: Test No 1



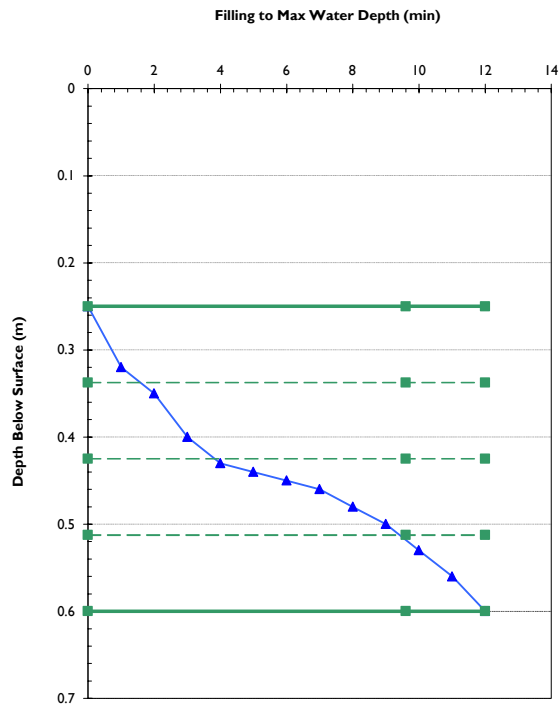
Pit Length (m)	1.4
Pit Width (m)	0.5
Depth to Pit Base (m)	0.67
Depth to Top of Permeable Soils (m)	
Depth to Groundwater Surface (m)	
Depth to Top of Granular Fill (m)	
voids Assumed for Granular Fill (%)	
Depth of Water at Start of Test (m)	0.2
Max Water Dropdown during Test (m)	0.47
Total Soakage Test Time (min)	6
Mean Internal Discharge Area (m2)	1.593
Discharge Rate (litre/min)	42.13447
Soakage Rate (litre/m2/min)	26.44976
BRE Soil Infiltration Rate (m/sec)	0.000441

Comments:

Pit was emptied at finish of test.

Client: Persimmon Homes Thames Valley Ltd.
Site: Land west of Loose Lane, West Sompting BN15 0DQ
Tested By: MS
Test Date: 03/02/20

BRE Digest 365 - Soakage Test



Test Hole No: TP3
 Test No: Test No 2
 {repeated}



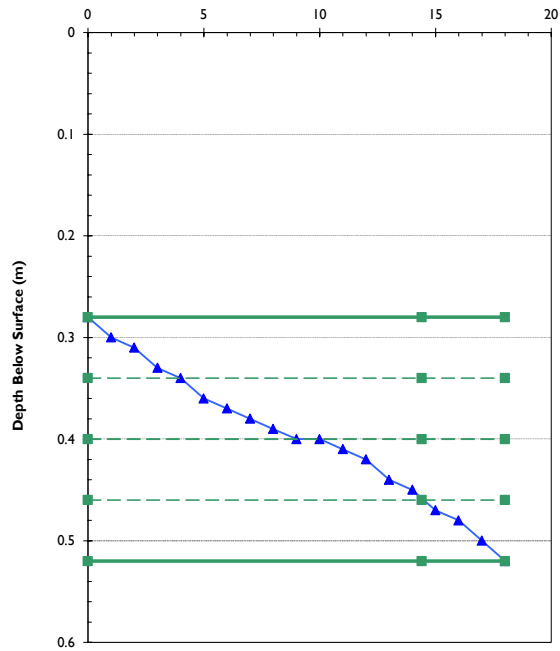
Pit Length (m)	1.4
Pit Width (m)	0.5
Depth to Pit Base (m)	0.6
Depth to Top of Permeable Soils (m)	
Depth to Groundwater Surface (m)	
Depth to Top of Granular Fill (m)	
voids Assumed for Granular Fill (%)	
Depth of Water at Start of Test (m)	0.25
Max Water Dropdown during Test (m)	0.35
Total Soakage Test Time (min)	12
Mean Internal Discharge Area (m2)	1.365
Discharge Rate (litre/min)	15.6383
Soakage Rate (litre/m2/min)	11.45663
BRE Soil Infiltration Rate (m/sec)	0.000191

Comments: Walls collapsed to 0.6m
 Pit was emptied at finish of test.

Client: Persimmon Homes Thames Valley Ltd.
 Site: Land west of Loose Lane, West Sompting BN15 0DQ
 Tested By: MS
 Test Date: 30/01/20

BRE Digest 365 - Soakage Test

Filling to Max Water Depth (min)



repeated)

Test Hole No: TP3
Test No: Test No 3

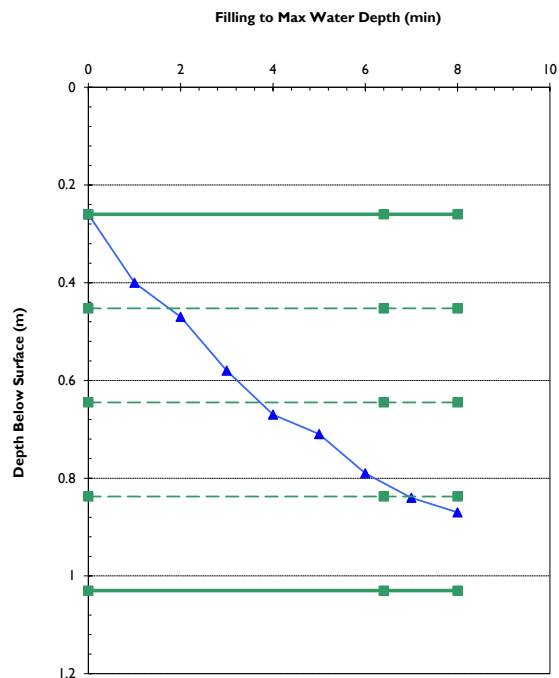


Pit Length (m)	1.4
Pit Width (m)	0.5
Depth to Pit Base (m)	0.52
Depth to Top of Permeable Soils (m)	
Depth to Groundwater Surface (m)	
Depth to Top of Granular Fill (m)	
voids Assumed for Granular Fill (%)	
Depth of Water at Start of Test (m)	0.28
Max Water Dropdown during Test (m)	0.24
Total Soakage Test Time (min)	18
Mean Internal Discharge Area (m2)	1.156
Discharge Rate (litre/min)	8
Soakage Rate (litre/m2/min)	6.920415
BRE Soil Infiltration Rate (m/sec)	0.000115

Comments: Pit walls collapsed to 0.52
Pit was emptied at finish of test.

Client: Persimmon Homes Thames Valley Ltd.
Site: Land west of Loose Lane, West Sompting BN15 0DQ
Tested By: MS
Test Date: 30/01/20

BRE Digest 365 - Soakage Test



initial)

Test Hole No: TP4
Test No: Test No 1



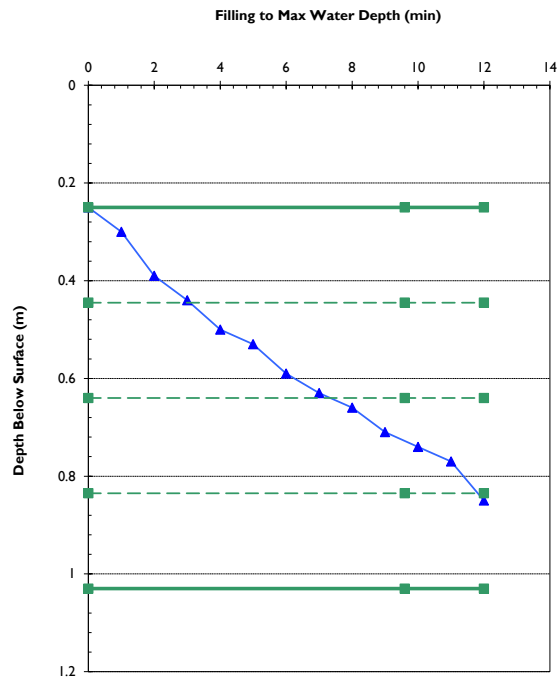
Pit Length (m)	1.4
Pit Width (m)	0.5
Depth to Pit Base (m)	1.03
Depth to Top of Permeable Soils (m)	
Depth to Groundwater Surface (m)	
Depth to Top of Granular Fill (m)	
Voids Assumed for Granular Fill (%)	
Depth of Water at Start of Test (m)	0.26
Max Water Dropdown during Test (m)	0.61
Total Soakage Test Time (min)	8
Mean Internal Discharge Area (m2)	2.163
Discharge Rate (litre/min)	51.82692
Soakage Rate (litre/m2/min)	23.96067
BRE Soil Infiltration Rate (m/sec)	0.000399

Comments:

Pit was nearly emptied at finish of test.

Client: Persimmon Homes Thames Valley Ltd.
Site: Land west of Loose Lane, West Sompting BN15 0DQ
Tested By: MS
Test Date: 03/02/20

BRE Digest 365 - Soakage Test



Test Hole No: TP4
 Test No: Test No 2
 repeated

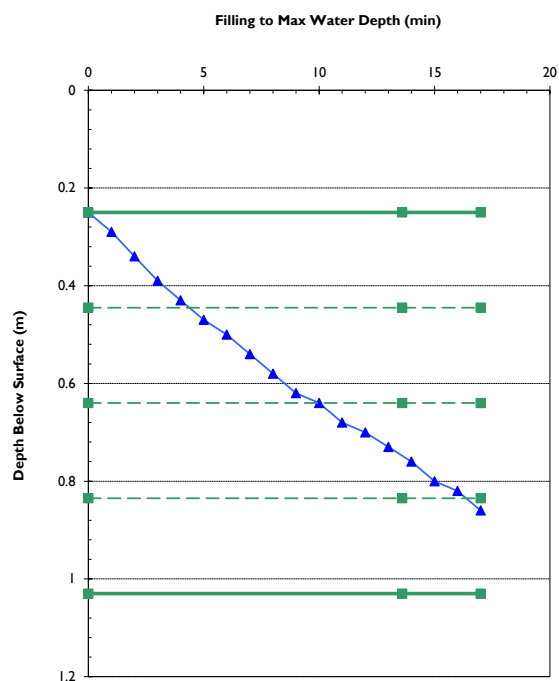


Pit Length (m)	1.4
Pit Width (m)	0.5
Depth to Pit Base (m)	1.03
Depth to Top of Permeable Soils (m)	
Depth to Groundwater Surface (m)	
Depth to Top of Granular Fill (m)	
voids Assumed for Granular Fill (%)	
Depth of Water at Start of Test (m)	0.25
Max Water Dropdown during Test (m)	0.6
Total Soakage Test Time (min)	12
Mean Internal Discharge Area (m2)	2.182
Discharge Rate (litre/min)	31.27446
Soakage Rate (litre/m2/min)	14.33293
BRE Soil Infiltration Rate (m/sec)	0.000239

Comments:
 Pit was nearly emptied at finish of test.

Client: Persimmon Homes Thames Valley Ltd.
 Site: Land west of Loose Lane, West Sompting BN15 0DQ
 Tested By: MS
 Test Date: 03/02/20

BRE Digest 365 - Soakage Test



Test Hole No: TP4
 Test No: Test No 3
 repeated

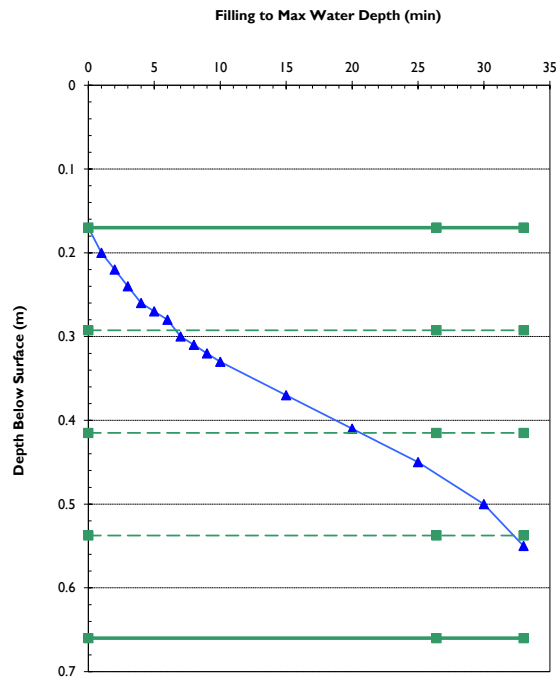


Pit Length (m)	1.4
Pit Width (m)	0.5
Depth to Pit Base (m)	1.03
Depth to Top of Permeable Soils (m)	
Depth to Groundwater Surface (m)	
Depth to Top of Granular Fill (m)	
voids Assumed for Granular Fill (%)	
Depth of Water at Start of Test (m)	0.25
Max Water Dropdown during Test (m)	0.61
Total Soakage Test Time (min)	17
Mean Internal Discharge Area (m2)	2.182
Discharge Rate (litre/min)	22.75
Soakage Rate (litre/m2/min)	10.42621
BRE Soil Infiltration Rate (m/sec)	0.000174

Comments:
 Pit was nearly emptied at finish of test.

Client: Persimmon Homes Thames Valley Ltd.
 Site: Land west of Loose Lane, West Sompting BN15 0DQ
 Tested By: MS
 Test Date: 03/02/20

BRE Digest 365 - Soakage Test



initial)

Test Hole No: TP5
Test No: Test No 1



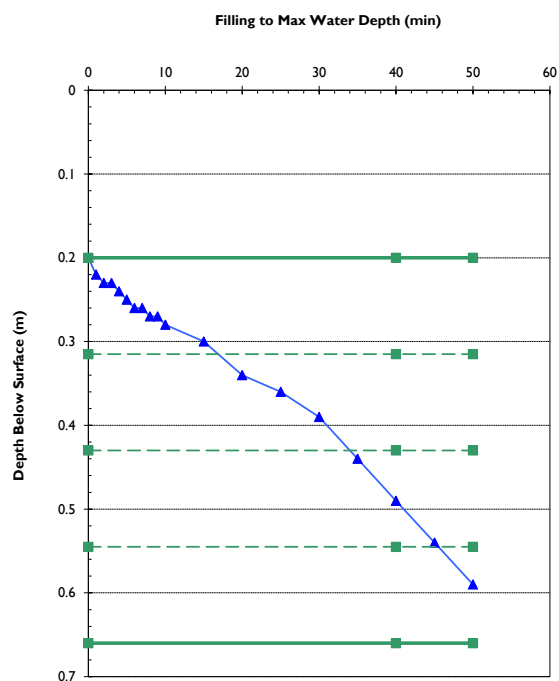
Pit Length (m)	1.1
Pit Width (m)	0.5
Depth to Pit Base (m)	0.66
Depth to Top of Permeable Soils (m)	
Depth to Groundwater Surface (m)	
Depth to Top of Granular Fill (m)	
voids Assumed for Granular Fill (%)	
Depth of Water at Start of Test (m)	0.17
Max Water Dropdown during Test (m)	0.38
Total Soakage Test Time (min)	33
Mean Internal Discharge Area (m2)	1.334
Discharge Rate (litre/min)	5.258537
Soakage Rate (litre/m2/min)	3.941931
BRE Soil Infiltration Rate (m/sec)	6.57E-05

Comments:

Pit was nearly emptied at finish of test.

Client: Persimmon Homes Thames Valley Ltd.
Site: Land west of Loose Lane, West Sompting BN15 0DQ
Tested By: MS
Test Date: 03/02/20

BRE Digest 365 - Soakage Test



Test Hole No: TP5
 Test No: Test No 2
 repeated

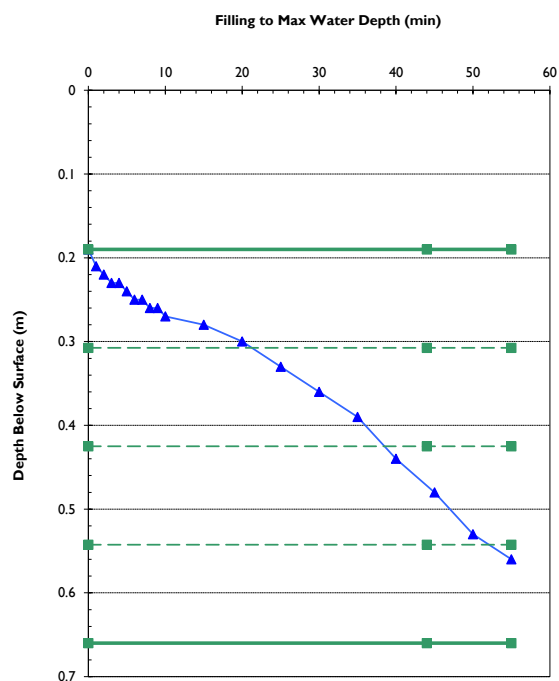


Pit Length (m)	1.1
Pit Width (m)	0.5
Depth to Pit Base (m)	0.66
Depth to Top of Permeable Soils (m)	
Depth to Groundwater Surface (m)	
Depth to Top of Granular Fill (m)	
voids Assumed for Granular Fill (%)	
Depth of Water at Start of Test (m)	0.2
Max Water Dropdown during Test (m)	0.39
Total Soakage Test Time (min)	50
Mean Internal Discharge Area (m2)	1.286
Discharge Rate (litre/min)	4.419214
Soakage Rate (litre/m2/min)	3.436403
BRE Soil Infiltration Rate (m/sec)	5.73E-05

Comments:
 Pit was nearly emptied at finish of test.

Client: Persimmon Homes Thames Valley Ltd.
 Site: Land west of Loose Lane, West Sompting BN15 0DQ
 Tested By: MS
 Test Date: 03/02/20

BRE Digest 365 - Soakage Test



Test Hole No: TP5
 Test No: Test No 3
 repeated)



Pit Length (m)	1.1
Pit Width (m)	0.5
Depth to Pit Base (m)	0.66
Depth to Top of Permeable Soils (m)	
Depth to Groundwater Surface (m)	
Depth to Top of Granular Fill (m)	
voids Assumed for Granular Fill (%)	
Depth of Water at Start of Test (m)	0.19
Max Water Dropdown during Test (m)	0.37
Total Soakage Test Time (min)	55
Mean Internal Discharge Area (m2)	1.302
Discharge Rate (litre/min)	4.191892
Soakage Rate (litre/m2/min)	3.219579
BRE Soil Infiltration Rate (m/sec)	5.37E-05

Comments:
 Pit was nearly emptied at finish of test.

Client: Persimmon Homes Thames Valley Ltd.
 Site: Land west of Loose Lane, West Sompting BN15 0DQ
 Tested By: MS
 Test Date: 03/02/20

Robert Clark
Persimmon Homes Thames Valley
Charles Church House
Knoll Road
Surrey
GU15 3TQ



26th March 2020

Our ref. MW/20/LP002150

Re: LP002150 Groundwater monitoring at land west of Loose Lane, Sompting, West Sussex

Dear Robert,

1 Introduction

Leap Environmental Ltd (hereafter referred to as **LEAP**) has been appointed by Persimmon Homes Thames Valley to undertake winter groundwater monitoring and shallow infiltration tests in land west of Loose Lane, Sompting, West Sussex, BN15 0DQ (refer to site location plan as Figure 1, Appendix B). This work has been undertaken in accordance with our appointment dated 13th December 2019 as instructed by Robert Clark of Persimmon Homes Thames Valley.

This document presents the results of the groundwater winter monitoring only. The results of the infiltration testing have been reported separately in February 2020.

The area of investigation covers approximately 5.6Ha and comprises three rectangular agricultural fields. The south eastern field, closest to Loose Lane is used for grazing sheep and the remaining two fields, making up the western and northern portions of the site (bisected by a row of trees aligned roughly northeast to southwest), were planted with winter crops. The site is bounded by residential properties along the eastern and northern boundaries and fields to the west and south. We understand that the site will be developed for a residential end-use with associated infrastructure and soft landscaping as per Drawing No. 2017-D1358-SK300 in Appendix B.

The site has been the subject of previous investigations by **LEAP** and a third party (Resource and Environmental Consultants [REC] Ltd). The following reports should be read in conjunction with this letter:

- '*LP2150 Infiltration testing at land west of Loose Lane, Sompting, West Sussex*' Letter Report by **LEAP** dated 06/02/20

- 'Geo-Environmental Site Investigation Sompting, West Sussex' by REC Ltd for Persimmon Homes South Coast Issued July 2014 report ref 20612/Report 2.1 Draft.

2 Background Summary

2.1 Geology

The site is underlain by superficial Head deposits over Tarrant Chalk Member.

2.1.1 Head Deposits

Head deposits accumulated largely by solifluction (the slow downslope movement of soil in response to the seasonal freezing and thawing of ground) and hillwash, mainly under periglacial conditions during the Quaternary glaciations. In general, it occurs beneath concave slopes on the flanks and floors of valleys. It is locally derived and its content reflects the base geology, in this instance it comprises of variable deposits of impure clays, silts and sands, locally gravelly.

2.1.2 Tarrant Chalk Member

Chalk is a very fine-grained white limestone. It consists predominantly of the disaggregated skeletal remains of tiny planktonic algae, composed of almost pure calcium carbonate.

2.2 Hydrogeology

The superficial Head deposits beneath the site are classed as a Secondary Undifferentiated Aquifer and the Tarrant Chalk is a Principal Aquifer.

2.3 Previous Investigation

REC Ltd intrusive ground investigation was across a wider development area (~28 hectares) and comprised 15 no. windowless sampler boreholes to between 3 and 5 mbgl; 6 No. cable percussion holes to up to 19.5 mbgl; 19 no. trial pits to up to 3.7 mbgl; and 7 No. soakage tests to 2 mbgl.

A plan showing REC's site investigation location is presented in Appendix B.

REC Ltd logged made ground across the site to a maximum depth of 0.5m. This consisted of varying proportions of clay, silt and flint gravel, except for WS105 which encountered black clayey sandy gravel of fine to coarse asphalt, brick as well as flint. WS105 was the only position where anthropogenic materials were described by REC Ltd. Head deposits were encountered beneath this to a maximum depth of 5m; these varied across the site and comprised both fine and coarse soils. Underlying the Head deposits was the Tarrant Chalk Member. This was encountered only in CP103 within the subject area, from a depth of 2.2mbgl. This was recovered as structureless gravelly clay. CP103 was located approximately 30m east southeast from LEAP's WS3 position. REC Ltd recorded groundwater strikes between 2.4 to 7.5 m bgl.

3 Fieldwork

3.1 Methodology

LEAP have carried out an intrusive investigation, and onsite monitoring at locations specified by the client to fulfil the objectives of this investigation. The intrusive investigation comprised:

- 6 No. windowless sampler boreholes to depths between 4.0 to 5.0 m bgl with monitoring well installations;
- 5 No. 0.64 – 1.05m deep machine excavated trial pits (TP1-TP5); and
- 5 No. BRE365 soakage tests (i.e. 3 No. tests in each pit).

The weather during the visits was predominantly overcast and wet. Rainfall in December 2019 was 116% of average, 100% of average in January, and 276% of average in February 2020.

A site plan for the location of each excavation is presented in Figure 2 of Appendix B.

A summary of the installations is provided in Table 1, below.

Table 1. Summary of the exploratory monitoring well installations

Borehole	Type	Plain Well Screen (mbgl) and ID (mm)	Slotted Well Screen (mbgl)	Bentonite Seal (mbgl)
WS1	GW	GL - 1	1-4	GL - 1
WS2	GW	GL - 1	1-5	GL - 1
WS3	GW	GL - 1	1-5	GL - 1
WS4	GW	GL - 1	1-5	GL - 1
WS5	GW	GL - 1	1-3	GL - 1
WS6	GW	GL - 1	1-4	GL - 1

GW = Groundwater

4 Ground Conditions

The logs created for each trial hole are presented in Appendix D. In summary the ground encountered was topsoil or made ground, over gravelly silty clay Head deposits.

Table 2. Summary of the exploratory hole logs

Depth from (mbgl)	Depth to (mbgl)	Geology	Description
GL	0.05/0.3	TOPSOIL	Brown slightly silty occasionally sandy clayey TOPSOIL with occasional rootlets. Occasionally gravelly; gravel is rare fine sub-angular flint
GL	0.2	MADE GROUND	Dark brown gravelly clayey MADE GROUND with many rootlets. Gravel is medium to coarse angular flint. Present in TP5 only
GL/0.3	2.9/5.0*	Silty/gravelly CLAY	Varying mixtures of clay, silt, and gravel (most often gravelly silty CLAY). Gravel is fine to coarse angular to sub-rounded flint and chalk [HEAD DEPOSITS] A firm brownish white silty clay was recovered in WS3 from 3.2 m to 3.5 m
2.9/3.5	4.0*/5.0*	Orangey brown SAND	Medium dense to dense orange brown fine to medium SAND

***full depth not proven**

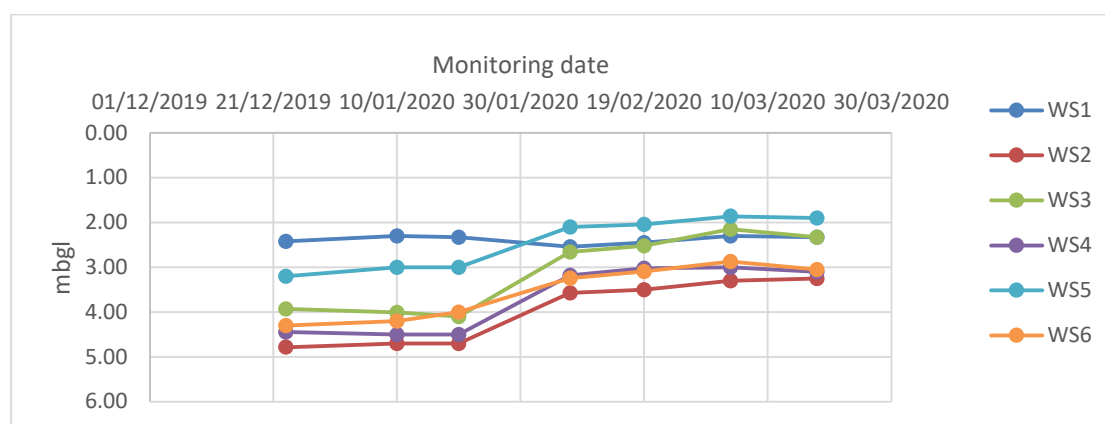
The ground was generally uniform across the site (topsoil/made ground over Head deposits). Made ground was only encountered in the north west corner of the site, within TP5.

A water strike was recorded in WS5 only at 3.0 m.

5 Groundwater Monitoring

Groundwater monitoring was undertaken from 23rd December 2019 to 18th March 2020. The elevations are summarised in the chart below and full results are provided in Appendix E.

Chart 1. Summary of groundwater elevations recorded by LEAP



Please do not hesitate to contact the undersigned if you require any further information.

Yours sincerely,

Martin Weil

Enc.

Appendix A - Limitations

Appendix B - Figures

Appendix C – Photos

Appendix D – Trial Hole Logs

Appendix E – Groundwater Monitoring Results

This letter report has been prepared by Leap Environmental Ltd on the basis of information received from a variety of sources which Leap Environmental Ltd believes to be accurate. Nevertheless, Leap Environmental Ltd cannot and does not guarantee the authenticity or reliability of the information it has obtained from others.

Leap Environmental Ltd has used all reasonable skill, care and diligence in the design and execution of this report, taking into account the manpower and resources devoted to it in agreement with the Client. Although every

reasonable effort has been made to obtain all relevant information, all potential contamination, environmental constraints or liabilities associated with the site may not necessarily have been revealed.

This report is generally consistent with the Eurocode requirements for a Ground Investigation Report, noting the limitations on brief to provision of pile design information only. However, the laboratory testing has been carried out on samples which do not comply with the Eurocode classifications as identified in tables 2 and 3 of EN ISO 22475-1. This report should not be deemed as a Geotechnical Design Report, and where any calculations have been made, these are not Eurocode compliant and are for indicative purposes only.

The conclusions reached in this report are necessarily restricted to those which can be determined from the information consulted, and may be subject to amendment in the light of additional information becoming available. These conclusions may not be appropriate for alternative schemes.

This report is confidential to the Client, and Leap Environmental Ltd accepts no responsibility whatsoever to third parties to whom this report, or any part thereof, is made known, unless formally agreed by Leap Environmental Ltd beforehand. Any such party relies upon the report at their own risk.

APPENDIX A - LIMITATIONS

Limitations

LIMITATIONS

This report is confidential to the Client, and Leap Environmental Ltd accepts no responsibility whatsoever to third parties to whom this report, or any part thereof, is made known, unless formally agreed by Leap Environmental Ltd beforehand. Any such party relies upon the report at their own risk. Unless explicitly agreed otherwise in writing, this report has been prepared under LEAP's standard terms and conditions, as included in the quotation for this works.

This report has been prepared by Leap Environmental Ltd on the basis of information received from a variety of sources which Leap Environmental Ltd believes to be accurate. Nevertheless, Leap Environmental Ltd cannot and does not guarantee the authenticity or reliability of the information it has obtained from others.

Leap Environmental Ltd has used all reasonable skill, care and diligence in the design and execution of this report, taking into account the manpower and resources devoted to it in agreement with the Client. Although every reasonable effort has been made to obtain all relevant information, all potential contamination, environmental constraints or liabilities associated with the site may not necessarily have been revealed. LEAP cannot be held responsible for any disclosures or changes in regulation that are provided post production of this report, and will not automatically update the report.

The conclusions reached in this report are necessarily restricted to those which can be determined from the information consulted, and may be subject to amendment in the light of additional information becoming available. These conclusions may not be appropriate for alternative schemes.

The extent of the exploratory holes, laboratory testing and monitoring undertaken may have been restricted due to a number of factors including accessibility, the presence of buried or overhead services, current development and site usage, timescales or clients specification. The exploratory holes only assess a small proportion of the site area with respect to the site as a whole, and as such may only provide an overall assessment of ground conditions on site. The presence of hotspots of undisclosed contamination or exceptional and unforeseen ground conditions cannot be discounted.

Eurocode 7 gives guidance on the type of sampling, sample quality, number and spacing of intrusive investigations, and number of laboratory tests required. It is intended that the Geotechnical Information section of this report will fulfil the general requirements of the Ground Investigation Report as set out in section 6 of Eurocode¹, although this is subject to

¹ BS EN 1997 Eurocode 7- Geotechnical Design - Part 1: General Rules (2004) and Part 2: Ground Investigation and Testing (2007)

the restrictions imposed on the investigation as listed above. For geotechnical design, Eurocode 7 requires the Geotechnical Design Report to address both the geotechnical and structural aspects of the geotechnical design for both the limit and serviceability states. The Geotechnical Appraisal section of this report will not meet the requirements of a Geotechnical Design Report (GDR), and should therefore be used for preliminary guidance only.

The presence of asbestos may be noted during the site walkover survey, intrusive investigations and/or from the results of contamination testing. However, this report does not constitute an asbestos survey. On this basis, the presence of asbestos on site cannot be discounted and a full asbestos survey should be undertaken.

Figures



Legend

Boundary

	Client:	Persimmon Thames Valley Ltd	Title:	Development Boundary	Project ID:	LP02150
	Project:	West Sompting Phase 1	Date:	17/12/19	Figure No.	1

TP1

WS1 TP2

WS2

TP3

WS3

WS4

TP4

WS5

WS6 TP5

© OpenStreetMap contributors

Legend



Boundary



Trialpit soakage locations



Window sampler



Client:

Persimmon Thames
Valley Ltd

Title:

Exploratory Hole
Plan

Project ID:

LP02150

Project:

West Sompting

Date:

23/03/20

Figure No.

02

Key



Trial Pit Location



Window Sample
Probehole Location



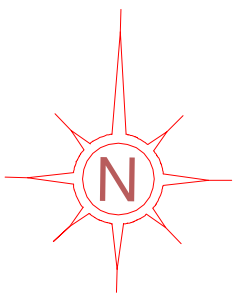
California Bearing
Ratio Test Location



Cable Percussion
Test Location

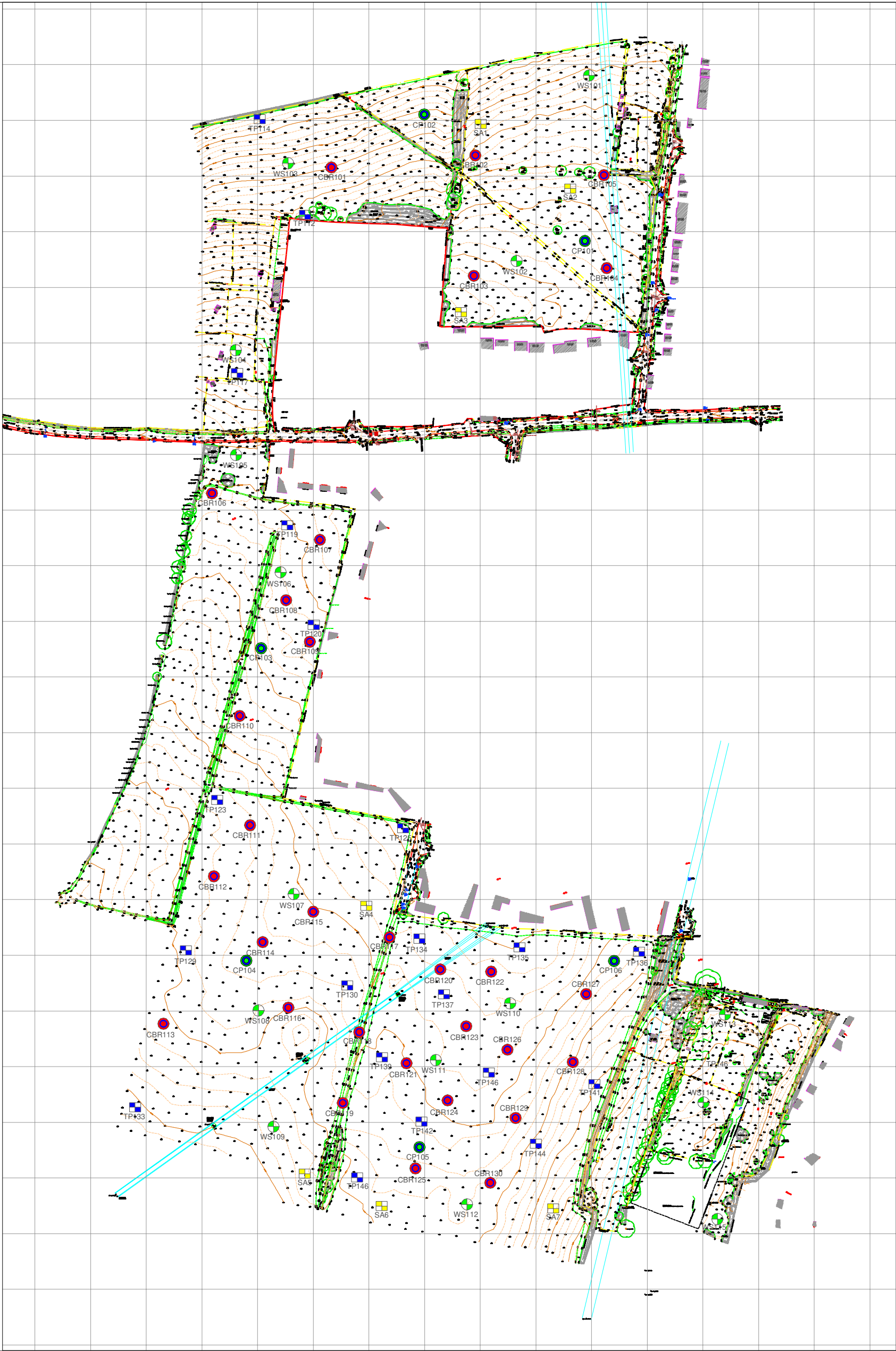


Soakaway Pit Location



The client must not amend any drawing, design or other intellectual property produced by REC Ltd. without permission in writing from REC Ltd. in advance of any amendments being made.

In the event that such written permission is not obtained in advance of the amendments being made, RE C Ltd. shall not be liable for any damage and/or losses occurring as a result of the amended drawing, design or intellectual property.

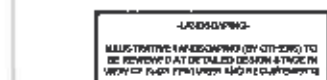


Job Title:	Client:	Job No: 20612	DATE 01-07-14	Drawing Title:
Sompting, West Sussex	PFA Consulting	Drawn by: P.S.Sullivan		Figure 3: Intrusive Works Locations
		Approved by: P.Hird		
		Scale: NTS		

Notes:



Resource and Environmental Consultants Ltd
Environmental House,
Segensworth Business Centre,
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Website: www.rec ltd.co.uk



SHALLOW INFILTRATION TESTS

11/11/2011

APPENDIX C – SITE PHOTOGRAPHS

Site Photographs



Plate 1: View from south eastern field facing north west



Plate 2: WS5 with well cover (before addition of cement)

APPENDIX D – TRIAL HOLE AND BOREHOLE LOGS

Trial Hole and
Borehole Logs



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Borehole Log

Borehole No.

WS1

Sheet 1 of 1

Project Name: West Sompting

Project No.
LP2150

Co-ords: -

Hole Type
WLS

Location: Land west of Loose Lane, Sompting, BN15 0DQ

Level:

Scale
1:20

Client: Persimmon Thames Valley Ltd

Dates: 19/12/2019 - 19/12/2019

Logged By
KT

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					1.00			Soft brown silty slightly gravelly CLAY. Gravel is fine to coarse sub-rounded to angular flint.	
								Firm brown slightly silty very gravelly CLAY. Gravel is fine to coarse sub-rounded to angular flint. <i>Too gravelly for hand pen at 1m</i>	1
								<i>Hand Pen at 1.95m = 285kPa</i>	2
					2.90 3.00			Stiff brown slightly gravelly sandy CLAY. Gravel is fine to coarse sub-rounded to angular flint Medium dense becoming dense orangey brown fine to medium sand	3
					4.00			End of borehole at 4.00 m	4

Remarks

Borehole remained dry and stable. Install was plain pipe and bentonite from GL to 1m plain and slotted pipe and gravel to 4m





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Borehole Log

Borehole No.

WS2

Sheet 1 of 2

Project Name: West Sompting

Project No.
LP2150

Co-ords: -

Hole Type
WLS

Location: Land west of Loose Lane, Sompting, BN15 0DQ

Level:

Scale
1:20

Client: Persimmon Thames Valley Ltd

Dates: 19/12/2019 - 19/12/2019

Logged By
KT

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.50			Soft brown silty slightly gravelly CLAY. Gravel is fine to coarse sub-rounded to angular flint.	
		1.00		N=9 (3,2/3,2,2,2)				Firm brown slightly silty very gravelly CLAY. Gravel is fine to coarse sub-rounded to angular flint.	1
		2.00		N=20 (4,6/5,5,4,6)				<u>Too gravelly for hand pen at 2m</u>	2
		3.00		N=38 (4,6/7,10,10,11)					3
					3.50			Firm brown silty slightly gravelly CLAY. Gravel is fine sub-angular flint <u>Hand Pen at 3.5m = 240kPa</u>	
					3.90			Firm brown gravelly CLAY. Gravel is fine to	4
Continued on next sheet									

Remarks

Borehole remained dry and stable. Install was plain pipe and bentonite to 1m and slotted pipe and gravel to 5m





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Borehole Log

Borehole No.

WS2

Sheet 2 of 2

Project Name: West Sompting

Project No.
LP2150

Co-ords: -

Hole Type
WLS

Location: Land west of Loose Lane, Sompting, BN15 0DQ

Level:

Scale
1:20

Client: Persimmon Thames Valley Ltd

Dates: 19/12/2019 - 19/12/2019

Logged By
KT

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		4.00		N=53 (6,6/12,13,13,15)				coarse sub-rounded to sub-angular flint. <u>Hand Pen at 3.9m = 330kPa</u>	
					4.90 5.00			Medium dense orangey brown fine to medium sand End of borehole at 5.00 m	5
									6
									7
									8

Remarks

Borehole remained dry and stable. Install was plain pipe and bentonite to 1m and slotted pipe and gravel to 5m





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Borehole Log

Borehole No.

WS3

Sheet 1 of 2

Project Name: West Sompting

Project No.
LP2150

Co-ords: -

Hole Type
WLS

Location: Land west of Loose Lane, Sompting, BN15 0DQ

Level:

Scale
1:20

Client: Persimmon Thames Valley Ltd

Dates: 19/12/2019 - 19/12/2019

Logged By
KT

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					1.00			Firm brown silty slightly gravelly CLAY. Gravel is fine to medium sub-rounded to angular flint.	
								Stiff brown silty very gravelly CLAY. Gravel is fine to coarse sub-angular to angular flint.	1
									2
					3.20				3
		3.50	D		3.50			Pale brownish white gravelly SILT. Gravel is rare fine to medium sub-rounded to angular chalk	
								Medium dense orangey brown fine to medium sand	
									4

Hand Pen at 2.5m = 255kPa

Continued on next sheet

Remarks

Borehole remained dry and stable. Install was plain pipe and bentonite to 1m and slotted pipe with gravel to 5m





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Borehole Log

Borehole No.

WS3

Sheet 2 of 2

Project Name: West Sompting

Project No.
LP2150

Co-ords: -

Hole Type
WLS

Location: Land west of Loose Lane, Sompting, BN15 0DQ

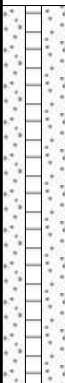
Level:

Scale
1:20

Client: Persimmon Thames Valley Ltd

Dates: 19/12/2019 - 19/12/2019

Logged By
KT

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					5.00			End of borehole at 5.00 m	5
									6
									7
									8

Remarks

Borehole remained dry and stable. Install was plain pipe and bentonite to 1m and slotted pipe with gravel to 5m





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Borehole Log

Borehole No.

WS4

Sheet 1 of 2

Project Name: West Sompting

Project No.
LP2150

Co-ords: -

Hole Type
WLS

Location: Land west of Loose Lane, Sompting, BN15 0DQ

Level:

Scale
1:20

Client: Persimmon Thames Valley Ltd

Dates: 19/12/2019 - 19/12/2019

Logged By
KT

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		1.00		N=7 (1,1/1,1,2,3)	1.40			Firm brown silty slightly gravelly CLAY. Gravel is fine to medium sub-rounded to angular flint and rare fine sub-rounded chalk. <u>Hand Pen at 1m =110kPa</u> <u>Hand Pen at 1.3m =100kPa</u>	1
		2.00		N=7 (5,4/2,1,2,2)	2.50			Firm brown silty very gravelly CLAY. Gravel is fine to coarse sub-angular to angular flint.	2
		3.00		N=12 (2,3/3,3,3,3)				Firm brown silty slightly gravelly slightly sandy CLAY. Gravel is fine to medium sub-rounded to angular flint. <u>Too gravelly for hand pen at 2.5m</u>	3
		4.00		N=2 (1,1/1,0,1,0)					4
Continued on next sheet									

Remarks

Borehole remained dry and stable. Install was plain pipe and bentonite to 1m and slotted pipe surrounded by gravel to 5m





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Borehole Log

Borehole No.

WS4

Sheet 2 of 2

Project Name: West Sompting

Project No.
LP2150

Co-ords: -

Hole Type
WLS

Location: Land west of Loose Lane, Sompting, BN15 0DQ

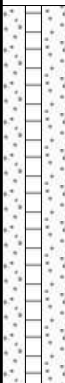
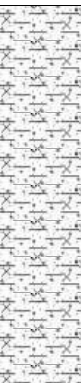
Level:

Scale
1:20

Client: Persimmon Thames Valley Ltd

Dates: 19/12/2019 - 19/12/2019

Logged By
KT

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					5.00				
								End of borehole at 5.00 m	5
									6
									7
									8

Remarks

Borehole remained dry and stable. Install was plain pipe and bentonite to 1m and slotted pipe surrounded by gravel to 5m





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Borehole Log

Borehole No.

WS5

Sheet 1 of 1

Project Name: West Sompting

Project No.
LP2150

Co-ords: -

Hole Type
WLS

Location: Land west of Loose Lane, Sompting, BN15 0DQ

Level:

Scale
1:20

Client: Persimmon Thames Valley Ltd

Dates: 19/12/2019 - 19/12/2019

Logged By
KT

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
								Firm becoming stiff brown silty slightly gravelly CLAY. Gravel is fine to medium sub-rounded to sub-angular flint and rare fine sub-rounded chalk.	
								Hand Pen at 1m = 190kPa	1
								Hand Pen at 1.5m = 175kPa	2
					2.30			Firm brown silty gravelly CLAY. Gravel is fine to coarse sub-angular to angular flint and rare fine sub-rounded chalk.	
								Too gravelly for hand pen at 2.5m	3
		4.00		N=18 (1,1/4,5,5,4)	4.00			End of borehole at 4.00 m	4

Remarks

Could not recover 3m and below because borehole kept collapsing to 3m due to water strike at this depth within very gravelly soil. Install was plain pipe and bentonite to 1m and slotted pipe with gravel to 3m





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Borehole Log

Borehole No.

WS6

Sheet 1 of 2

Project Name: West Sompting

Project No.
LP2150

Co-ords: -

Hole Type
WLS

Location: Land west of Loose Lane, Sompting, BN15 0DQ

Level:

Scale
1:20

Client: Persimmon Thames Valley Ltd

Dates: 19/12/2019 - 19/12/2019

Logged By
KT

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.20			Firm brown silty slightly gravelly CLAY with occasional wood fragments. Gravel is fine to medium sub-angular flint and rare fine sub-rounded chalk	
		1.00		N=13 (2,2/3,4,3,3)				Firm slightly reddish brown silty gravelly CLAY. Gravel is fine to medium angular to sub-angular flint and rare fine sub-rounded chalk	1
		2.00		N=18 (3,3/3,5,4,6)					2
		3.00		N=5 (2,2/1,2,1,1)					3
					3.50				
		4.00		N=22 (3,4/4,5,5,8)				Medium dense orangey brown fine to medium sand <i>Too gravelly for hand pen until 3.5m</i>	4
Continued on next sheet									

Remarks

Borehole collapsed to 4m within sand. Install was plain pipe and bentonite to 1m and slotted pipe with gravel to 4m





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Borehole Log

Borehole No.

WS6

Sheet 2 of 2

Project Name: West Sompting

Project No.
LP2150

Co-ords: -

Hole Type
WLS

Location: Land west of Loose Lane, Sompting, BN15 0DQ

Level:

Scale
1:20

Client: Persimmon Thames Valley Ltd

Dates: 19/12/2019 - 19/12/2019

Logged By
KT

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		5.00		N=1 (1,1/1,0,0,0)	5.00				
								End of borehole at 5.00 m	5
									6
									7
									8

Remarks

Borehole collapsed to 4m within sand. Install was plain pipe and bentonite to 1m and slotted pipe with gravel to 4m



APPENDIX E – GROUNDWATER MONITORING

Groundwater Monitoring

			Groundwater Monitoring Record					
			West Sompting LP2150					
			Location:					
			WS1	WS2	WS3	WS4	WS5	WS6
Engineer:	AU /KT	Borehole Depth (m)	3.93	4.78	4.65	5.15	3.50	4.30
Date:	23/12/19	Water Level (m bgl)	2.42	4.78	3.93	4.44	3.20	4.30
	10/01/20	Water Level (m bgl)	2.30	4.70	4.01	4.50	3.00	4.20
	20/01/20	Water Level (m bgl)	2.33	4.70	4.10	4.50	3.00	4.00
	07/02/20	Water Level (m bgl)	2.54	3.57	2.66	3.18	2.10	3.24
	19/02/20	Water Level (m bgl)	2.45	3.50	2.52	3.02	2.04	3.09
	04/03/20	Water Level (m bgl)	2.30	3.30	2.15	3.00	1.86	2.87
	18/03/20	Water Level (m bgl)	2.33	3.25	2.33	3.10	1.90	3.05

Appendix D Hydraulic Assessment - Permeable Paving Catchment

Permeable Paving Storage Calculations (Rev. A)

Owing to the variation of infiltration rates established across the site at shallow depths, further to testing conducted by LEAP Environmental, an assessment has been made in relation to each catchment – i.e. the areas within close proximity of each of the test locations.

This assessment has been undertaken to ensure accuracy of the required storage provision, in view of the associated rates of infiltration.

TP1 Catchment (Green)

Permeable Paving Extents (Plan Area) = 869.088m²

Total Catchment (Inclusive of Urban Creep @ 10%) = 955.997m²

Infiltration Rate (TP1) = 1.99x10⁻⁴

Storage Estimate

Return Period (years)	100		OK
Climate Change (%)	40		Cancel
Impermeable Area (ha)	0.096	Update	
Peak Discharge (l/s)	0.000		
Infiltration Coefficient (m/hr) (leave blank if no infiltration)	0.71640	Calc	
Required Storage (m ³)		Calc	
from	101		
to	101		
With infiltration (m ³)			
from	8		
to	41		

TP2 Catchment (Orange)

Permeable Paving Extents (Plan Area) = 2,145.728m²

Total Catchment (Inclusive of Urban Creep @ 10%) = 2,360.301m²

Infiltration Rate (TP2) = 4.60x10⁻⁵

Storage Estimate

Return Period (years)	100		OK
Climate Change (%)	40		Cancel
Impermeable Area (ha)	0.236	Update	
Peak Discharge (l/s)	0.000		
Infiltration Coefficient (m/hr) (leave blank if no infiltration)	0.16560	Calc	
Required Storage (m ³)		Calc	
from	249		
to	249		
With infiltration (m ³)			
from	40		
to	147		

TP3 Catchment (Yellow)

Permeable Paving Extents (Plan Area) = 1,309.055m²

Total Catchment (Inclusive of Urban Creep @ 10%) = 1,439.961m²

Infiltration Rate (TP3) = 1.15x10⁻⁴

Storage Estimate

Return Period (years)	100			OK
Climate Change (%)	40			Cancel
Impermeable Area (ha)	0.144	Update		
Peak Discharge (l/s)	0.000			
Infiltration Coefficient (m/hr) (leave blank if no infiltration)	0.41400	Calc		
Required Storage (m ³)	Calc			
from	152			
to	152			
With infiltration (m ³)				
from	16			
to	72			

TP4 Catchment (Purple)

Permeable Paving Extents (Plan Area) = 401.791m²

Total Catchment (Inclusive of Urban Creep @ 10%) = 441.970m²

Infiltration Rate (TP4) = 1.74x10⁻⁴

Storage Estimate

Return Period (years)	100			OK
Climate Change (%)	40			Cancel
Impermeable Area (ha)	0.044	Update		
Peak Discharge (l/s)	0.000			
Infiltration Coefficient (m/hr) (leave blank if no infiltration)	0.62640	Calc		
Required Storage (m ³)	Calc			
from	46			
to	46			
With infiltration (m ³)				
from	4			
to	20			

TP5 Catchment (Red)

Permeable Paving Extents (Plan Area) = 134.896m²

Total Catchment (Inclusive of Urban Creep @ 10%) = 148,386m²

Infiltration Rate (TP5) = 5.37x10⁻⁵

Storage Estimate

Return Period (years)	100		OK
Climate Change (%)	40		Cancel
Impermeable Area (ha)	0.014	Update	
Peak Discharge (l/s)	0.000		
Infiltration Coefficient (m/hr) (leave blank if no infiltration)	0.19332	Calc	
Required Storage (m ³)	Calc		
from	16		
to	16		
With Infiltration (m ³)			
from	2		
to	9		

Appendix E Hydraulic Assessment - Roof Area Catchment

Roof Area Storage Calculations

Owing to the variation of infiltration rates established across the site at shallow depths, further to testing conducted by LEAP Environmental, an assessment has been made in relation to each catchment – i.e. the areas within close proximity of each of the test locations.

This assessment has been undertaken to ensure accuracy of the required storage provision, in view of the associated rates of infiltration.

TP1 Catchment (Green)

Roof Area = 1,210.742m²

Total Catchment (Inclusive of Urban Creep @ 10%) = 1,331.816m²

Infiltration Rate (TP1) = 1.99x10⁻⁴

Return Period (years)	100	OK Cancel
Climate Change (%)	40	
Impermeable Area (ha)	0.133	Calc
Peak Discharge (l/s)	0.000	
Infiltration Coefficient (m/hr) (leave blank if no infiltration)	0.71640	
Required Storage (m ³)	Calc	
from	212	
to	212	
With infiltration (m ³)		
from	11	
to	57	

Plots in Catchment Area = 20 No. (22 inc. Flats)

Storage per Plot (Average) = 2.85m³

TP2 Catchment (Orange)

Roof Area = 2,253.926m²

Total Catchment (Inclusive of Urban Creep @ 10%) = 2,479.319m²

Infiltration Rate (TP2) = 4.60x10⁻⁵

Return Period (years)	100	OK Cancel
Climate Change (%)	40	
Impermeable Area (ha)	0.248	Calc
Peak Discharge (l/s)	0.000	
Infiltration Coefficient (m/hr) (leave blank if no infiltration)	0.16560	Calc
Required Storage (m ³)		
from	395	
to	395	
With infiltration (m ³)		
from	42	
to	154	

Plots in Catchment Area = 35 No.

Storage per Plot (Average) = 4.40m³

TP3 Catchment (Yellow)

Roof Area = 1,473.372m²

Total Catchment (Inclusive of Urban Creep @ 10%) = 1,620.709m²

Infiltration Rate (TP3) = 1.15x10⁻⁴

Return Period (years)	100	OK Cancel
Climate Change (%)	40	
Impermeable Area (ha)	0.162	Calc
Peak Discharge (l/s)	0.000	
Infiltration Coefficient (m/hr) (leave blank if no infiltration)	0.41400	Calc
Required Storage (m ³)		
from	258	
to	258	
With infiltration (m ³)		
from	18	
to	61	

Plots in Catchment Area = 23 No.

Storage Per Plot (Average) = 3.52m³

TP4 Catchment (Purple)

Roof Area = 631.709m²

Total Catchment (Inclusive of Urban Creep @ 10%) = 694.879m²

Infiltration Rate (TP4) = 1.74x10⁻⁴

Return Period (years)	100	OK Cancel
Climate Change (%)	40	
Impermeable Area (ha)	0.069	Calc
Peak Discharge (l/s)	0.000	
Infiltration Coefficient (m/hr) (leave blank if no infiltration)	0.52640	Calc
Required Storage (m ³)	Calc	
from	110	
to	110	
With infiltration (m ³)		
from	6	
to	31	

Plots in Catchment Area = 13 No.

Storage per Plot (Average) = 2.38m³

TP5 Catchment (Red)

Roof Area = 320.566m²

Total Catchment (Inclusive of Urban Creep @ 10%) = 352.623m²

Infiltration Rate (TP5) = 5.37x10⁻⁵

Return Period (years)	100	OK Cancel
Climate Change (%)	40	
Impermeable Area (ha)	0.035	Calc
Peak Discharge (l/s)	0.000	
Infiltration Coefficient (m/hr) (leave blank if no infiltration)	0.19332	Calc
Required Storage (m ³)	Calc	
from	56	
to	56	
With infiltration (m ³)		
from	6	
to	21	

Plots in Catchment Area = 3 No.

Storage per Plot (Average) = 7m³

Appendix F Hydraulic Assessment – Highway Catchment



Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	100	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	10	Minimum Velocity (m/s)	1.00
FSR Region	England and Wales	Connection Type	Level Soffits
M5-60 (mm)	19.800	Minimum Backdrop Height (m)	1.500
Ratio-R	0.350	Preferred Cover Depth (m)	1.200
CV	0.750	Include Intermediate Ground	✓
Time of Entry (mins)	5.00	Enforce best practice design rules	✓

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
30	0.092	5.00	8.150	1200	516464.180	104762.224	1.350
29	0.034	5.00	8.400	1200	516469.219	104789.904	1.694
28	0.014	5.00	8.400	1200	516468.933	104796.569	1.716
27	0.027	5.00	8.450	1200	516463.909	104802.777	1.793
26			8.400	1200	516456.510	104805.374	1.769
25	0.020	5.00	8.300	1200	516438.296	104806.399	1.899
24	0.015	5.00	8.000	1200	516418.344	104849.723	1.350
23	0.065	5.00	7.900	1200	516411.659	104810.816	1.800
22			7.700	1200	516401.693	104808.084	1.624
21	0.008	5.00	7.550	1200	516388.402	104810.242	1.505
20	0.008	5.00	7.450	1200	516374.469	104812.829	1.462
19	0.027	5.00	7.150	1200	516338.270	104821.030	1.248
18			7.000		516331.571	104822.547	1.114
17	0.015	5.00	9.400	1200	516444.114	104955.461	1.350
16	0.021	5.00	9.100	1200	516435.893	104931.357	1.350
15	0.012	5.00	8.900	1200	516432.417	104913.122	1.350
14	0.012	5.00	8.800	1200	516430.497	104898.879	1.350
13	0.034	5.00	8.650	1200	516424.835	104876.625	1.353
12	0.037	5.00	8.150	1200	516357.575	104896.242	1.320
11			8.100		516350.462	104898.316	1.319
10	0.028	5.00	10.200	1200	516448.783	105059.380	1.425
9	0.066	5.00	9.800	1200	516433.082	104997.904	1.448
8	0.027	5.00	9.600	1200	516433.755	104982.621	1.425
7	0.034	5.00	9.000	1200	516380.489	104980.276	1.480
6			8.850		516370.791	104979.849	1.395
5	0.028	5.00	10.300	1200	516433.215	105080.685	1.350
4	0.051	5.00	10.200	1200	516375.318	105136.658	1.350
3	0.087	5.00	9.800	1200	516374.893	105086.083	1.350
2			9.750	1200	516369.203	105086.609	1.338
1			9.700		516363.513	105087.136	1.326



Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
5.002	2	1	5.714	0.600	8.412	8.374	0.038	150.0	225	5.99	50.0
5.001	3	2	5.714	0.600	8.450	8.412	0.038	150.0	225	5.90	50.0
5.000	5	3	58.571	0.600	8.950	8.450	0.500	117.1	225	5.81	50.0
6.000	4	3	50.577	0.600	8.850	8.450	0.400	126.4	225	5.73	50.0
4.003	7	6	9.707	0.600	7.520	7.455	0.065	150.0	225	6.94	50.0
4.002	8	7	53.318	0.600	8.175	7.520	0.655	81.4	225	6.79	50.0
4.001	9	8	15.298	0.600	8.352	8.175	0.177	86.4	225	6.17	50.0
4.000	10	9	63.449	0.600	8.775	8.352	0.423	150.0	225	5.99	50.0
3.005	12	11	7.409	0.600	6.830	6.781	0.049	150.0	225	7.32	50.0
3.004	13	12	70.062	0.600	7.297	6.830	0.467	150.0	225	7.20	50.0
3.003	14	13	22.963	0.600	7.450	7.297	0.153	150.0	225	6.11	50.0
3.002	15	14	14.372	0.600	7.550	7.450	0.100	143.7	225	5.75	50.0
3.001	16	15	18.563	0.600	7.750	7.550	0.200	92.8	225	5.53	50.0
3.000	17	16	25.467	0.600	8.050	7.750	0.300	84.9	225	5.30	50.0
1.010	19	18	6.869	0.600	5.902	5.886	0.016	432.0	300	8.29	50.0
1.009	20	19	37.116	0.600	5.988	5.902	0.086	432.0	300	8.14	50.0
1.008	21	20	14.171	0.600	6.045	5.988	0.057	248.6	300	7.31	50.0
1.007	22	21	13.465	0.600	6.076	6.045	0.031	432.0	300	7.07	50.0
1.006	23	22	10.334	0.600	6.100	6.076	0.024	432.0	300	6.77	50.0
1.005	25	23	27.001	0.600	6.401	6.100	0.301	89.7	300	6.54	50.0
2.000	24	23	39.477	0.600	6.650	6.100	0.550	71.8	300	5.35	50.0
1.004	26	25	18.243	0.600	6.631	6.570	0.061	300.0	300	6.27	50.0
1.003	27	26	7.842	0.600	6.657	6.631	0.026	300.0	300	5.94	50.0
1.002	28	27	7.986	0.600	6.684	6.657	0.027	300.0	300	5.79	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
5.002	1.065	42.3	24.7	1.113	1.101	0.166	0.0	123	1.105
5.001	1.065	42.3	24.7	1.125	1.113	0.166	0.0	123	1.105
5.000	1.207	48.0	4.2	1.125	1.125	0.028	0.0	44	0.743
6.000	1.161	46.2	7.6	1.125	1.125	0.051	0.0	62	0.866
4.003	1.065	42.3	23.1	1.255	1.170	0.155	0.0	118	1.086
4.002	1.450	57.7	18.0	1.200	1.255	0.121	0.0	87	1.288
4.001	1.407	55.9	14.0	1.223	1.200	0.094	0.0	77	1.178
4.000	1.065	42.3	4.2	1.200	1.223	0.028	0.0	48	0.685
3.005	1.065	42.3	19.5	1.095	1.094	0.131	0.0	108	1.046
3.004	1.065	42.3	14.0	1.128	1.095	0.094	0.0	89	0.960
3.003	1.065	42.3	8.9	1.125	1.128	0.060	0.0	70	0.847
3.002	1.088	43.3	7.2	1.125	1.125	0.048	0.0	62	0.811
3.001	1.357	54.0	5.4	1.125	1.125	0.036	0.0	48	0.875
3.000	1.420	56.5	2.2	1.125	1.125	0.015	0.0	30	0.693
1.010	0.750	53.0	46.2	0.948	0.814	0.310	0.0	218	0.842
1.009	0.750	53.0	42.2	1.162	0.948	0.283	0.0	203	0.830
1.008	0.992	70.1	41.0	1.205	1.162	0.275	0.0	165	1.030
1.007	0.750	53.0	39.8	1.324	1.205	0.267	0.0	194	0.821
1.006	0.750	53.0	39.8	1.500	1.324	0.267	0.0	194	0.821
1.005	1.660	117.4	27.9	1.599	1.500	0.187	0.0	99	1.370
2.000	1.858	131.3	2.2	1.050	1.500	0.015	0.0	27	0.713
1.004	0.902	63.8	24.9	1.469	1.430	0.167	0.0	130	0.847
1.003	0.902	63.8	24.9	1.493	1.469	0.167	0.0	130	0.847
1.002	0.902	63.8	20.9	1.416	1.493	0.140	0.0	118	0.811



Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.001	29	28	6.671	0.600	6.706	6.684	0.022	300.0	300	5.64	50.0
1.000	30	29	28.135	0.600	6.800	6.706	0.094	300.0	300	5.52	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.001	0.902	63.8	18.8	1.394	1.416	0.126	0.0	111	0.787
1.000	0.902	63.8	13.7	1.050	1.394	0.092	0.0	94	0.722

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
5.002	5.714	150.0	225	Circular	9.750	8.412	1.113	9.700	8.374	1.101
5.001	5.714	150.0	225	Circular	9.800	8.450	1.125	9.750	8.412	1.113
5.000	58.571	117.1	225	Circular	10.300	8.950	1.125	9.800	8.450	1.125
6.000	50.577	126.4	225	Circular	10.200	8.850	1.125	9.800	8.450	1.125
4.003	9.707	150.0	225	Circular	9.000	7.520	1.255	8.850	7.455	1.170
4.002	53.318	81.4	225	Circular	9.600	8.175	1.200	9.000	7.520	1.255
4.001	15.298	86.4	225	Circular	9.800	8.352	1.223	9.600	8.175	1.200
4.000	63.449	150.0	225	Circular	10.200	8.775	1.200	9.800	8.352	1.223
3.005	7.409	150.0	225	Circular	8.150	6.830	1.095	8.100	6.781	1.094
3.004	70.062	150.0	225	Circular	8.650	7.297	1.128	8.150	6.830	1.095
3.003	22.963	150.0	225	Circular	8.800	7.450	1.125	8.650	7.297	1.128
3.002	14.372	143.7	225	Circular	8.900	7.550	1.125	8.800	7.450	1.125
3.001	18.563	92.8	225	Circular	9.100	7.750	1.125	8.900	7.550	1.125
3.000	25.467	84.9	225	Circular	9.400	8.050	1.125	9.100	7.750	1.125
1.010	6.869	432.0	300	Circular	7.150	5.902	0.948	7.000	5.886	0.814
1.009	37.116	432.0	300	Circular	7.450	5.988	1.162	7.150	5.902	0.948
1.008	14.171	248.6	300	Circular	7.550	6.045	1.205	7.450	5.988	1.162
1.007	13.465	432.0	300	Circular	7.700	6.076	1.324	7.550	6.045	1.205

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
5.002	2	1200	Manhole	Adoptable	1		Junction	
5.001	3	1200	Manhole	Adoptable	2	1200	Manhole	Adoptable
5.000	5	1200	Manhole	Adoptable	3	1200	Manhole	Adoptable
6.000	4	1200	Manhole	Adoptable	3	1200	Manhole	Adoptable
4.003	7	1200	Manhole	Adoptable	6		Junction	
4.002	8	1200	Manhole	Adoptable	7	1200	Manhole	Adoptable
4.001	9	1200	Manhole	Adoptable	8	1200	Manhole	Adoptable
4.000	10	1200	Manhole	Adoptable	9	1200	Manhole	Adoptable
3.005	12	1200	Manhole	Adoptable	11		Junction	
3.004	13	1200	Manhole	Adoptable	12	1200	Manhole	Adoptable
3.003	14	1200	Manhole	Adoptable	13	1200	Manhole	Adoptable
3.002	15	1200	Manhole	Adoptable	14	1200	Manhole	Adoptable
3.001	16	1200	Manhole	Adoptable	15	1200	Manhole	Adoptable
3.000	17	1200	Manhole	Adoptable	16	1200	Manhole	Adoptable
1.010	19	1200	Manhole	Adoptable	18		Junction	
1.009	20	1200	Manhole	Adoptable	19	1200	Manhole	Adoptable
1.008	21	1200	Manhole	Adoptable	20	1200	Manhole	Adoptable
1.007	22	1200	Manhole	Adoptable	21	1200	Manhole	Adoptable



Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.006	10.334	432.0	300	Circular	7.900	6.100	1.500	7.700	6.076	1.324
1.005	27.001	89.7	300	Circular	8.300	6.401	1.599	7.900	6.100	1.500
2.000	39.477	71.8	300	Circular	8.000	6.650	1.050	7.900	6.100	1.500
1.004	18.243	300.0	300	Circular	8.400	6.631	1.469	8.300	6.570	1.430
1.003	7.842	300.0	300	Circular	8.450	6.657	1.493	8.400	6.631	1.469
1.002	7.986	300.0	300	Circular	8.400	6.684	1.416	8.450	6.657	1.493
1.001	6.671	300.0	300	Circular	8.400	6.706	1.394	8.400	6.684	1.416
1.000	28.135	300.0	300	Circular	8.150	6.800	1.050	8.400	6.706	1.394

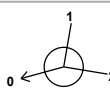
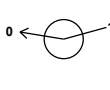
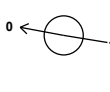
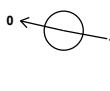
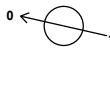
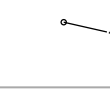
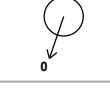
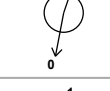
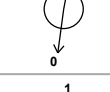
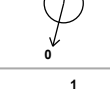
Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.006	23	1200	Manhole	Adoptable	22	1200	Manhole	Adoptable
1.005	25	1200	Manhole	Adoptable	23	1200	Manhole	Adoptable
2.000	24	1200	Manhole	Adoptable	23	1200	Manhole	Adoptable
1.004	26	1200	Manhole	Adoptable	25	1200	Manhole	Adoptable
1.003	27	1200	Manhole	Adoptable	26	1200	Manhole	Adoptable
1.002	28	1200	Manhole	Adoptable	27	1200	Manhole	Adoptable
1.001	29	1200	Manhole	Adoptable	28	1200	Manhole	Adoptable
1.000	30	1200	Manhole	Adoptable	29	1200	Manhole	Adoptable

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
30	516464.180	104762.224	8.150	1.350	1200		0	1.000	6.800	300
29	516469.219	104789.904	8.400	1.694	1200		1	1.000	6.706	300
28	516468.933	104796.569	8.400	1.716	1200		0	1.001	6.706	300
27	516463.909	104802.777	8.450	1.793	1200		1	1.001	6.684	300
26	516456.510	104805.374	8.400	1.769	1200		0	1.002	6.684	300
25	516438.296	104806.399	8.300	1.899	1200		1	1.002	6.657	300
24	516418.344	104849.723	8.000	1.350	1200		0	1.003	6.657	300
							1	1.003	6.631	300
							0	1.004	6.631	300
							1	1.004	6.570	300
							0	1.005	6.401	300
							0	2.000	6.650	300

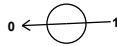
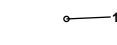
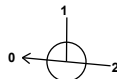
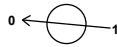


Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
23	516411.659	104810.816	7.900	1.800	1200		1	2.000	6.100	300
						2	1.005	6.100	300	
						0	1.006	6.100	300	
22	516401.693	104808.084	7.700	1.624	1200		1	1.006	6.076	300
						0	1.007	6.076	300	
21	516388.402	104810.242	7.550	1.505	1200		1	1.007	6.045	300
						0	1.008	6.045	300	
20	516374.469	104812.829	7.450	1.462	1200		1	1.008	5.988	300
						0	1.009	5.988	300	
19	516338.270	104821.030	7.150	1.248	1200		1	1.009	5.902	300
						0	1.010	5.902	300	
18	516331.571	104822.547	7.000	1.114			1	1.010	5.886	300
17	516444.114	104955.461	9.400	1.350	1200		0	3.000	8.050	225
16	516435.893	104931.357	9.100	1.350	1200		1	3.000	7.750	225
						0	3.001	7.750	225	
15	516432.417	104913.122	8.900	1.350	1200		1	3.001	7.550	225
						0	3.002	7.550	225	
14	516430.497	104898.879	8.800	1.350	1200		1	3.002	7.450	225
						0	3.003	7.450	225	
13	516424.835	104876.625	8.650	1.353	1200		1	3.003	7.297	225
						0	3.004	7.297	225	
12	516357.575	104896.242	8.150	1.320	1200		1	3.004	6.830	225
						0	3.005	6.830	225	
11	516350.462	104898.316	8.100	1.319			1	3.005	6.781	225



Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
10	516448.783	105059.380	10.200	1.425	1200		0	4.000	8.775	225
9	516433.082	104997.904	9.800	1.448	1200		1	4.000	8.352	225
8	516433.755	104982.621	9.600	1.425	1200		0	4.001	8.352	225
7	516380.489	104980.276	9.000	1.480	1200		1	4.001	8.175	225
6	516370.791	104979.849	8.850	1.395			0	4.002	8.175	225
5	516433.215	105080.685	10.300	1.350	1200		1	4.002	7.520	225
4	516375.318	105136.658	10.200	1.350	1200		0	4.003	7.520	225
3	516374.893	105086.083	9.800	1.350	1200		1	4.003	7.455	225
2	516369.203	105086.609	9.750	1.338	1200		0	5.000	8.950	225
1	516363.513	105087.136	9.700	1.326			1	5.001	8.450	225

Simulation Settings

Rainfall Methodology	FSR	Analysis Speed	Normal
FSR Region	England and Wales	Skip Steady State	x
M5-60 (mm)	19.800	Drain Down Time (mins)	240
Ratio-R	0.350	Additional Storage (m³/ha)	20.0
Summer CV	0.750	Check Discharge Rate(s)	x
Winter CV	0.840	Check Discharge Volume	x

Storm Durations

15	60	180	360	600	960	2160	4320	7200	10080
30	120	240	480	720	1440	2880	5760	8640	



Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
100	40	10	0

Node 18 Soakaway Storage Structure

Base Inf Coefficient (m/hr)	0.55080	Invert Level (m)	5.700	Depth (m)	0.800
Side Inf Coefficient (m/hr)	0.55080	Time to half empty (mins)	35	Inf Depth (m)	0.800
Safety Factor	1.0	Pit Width (m)	23.000	Number Required	1
Porosity	0.95	Pit Length (m)	5.000		

Node 11 Soakaway Storage Structure

Base Inf Coefficient (m/hr)	0.55080	Invert Level (m)	6.400	Depth (m)	0.800
Side Inf Coefficient (m/hr)	0.55080	Time to half empty (mins)	33	Inf Depth (m)	0.800
Safety Factor	1.0	Pit Width (m)	10.000	Number Required	1
Porosity	0.95	Pit Length (m)	5.000		

Node 6 Soakaway Storage Structure

Base Inf Coefficient (m/hr)	0.55080	Invert Level (m)	7.150	Depth (m)	1.200
Side Inf Coefficient (m/hr)	0.55080	Time to half empty (mins)	45	Inf Depth (m)	1.200
Safety Factor	1.0	Pit Width (m)	9.000	Number Required	1
Porosity	0.95	Pit Length (m)	5.000		

Node 1 Soakaway Storage Structure

Base Inf Coefficient (m/hr)	0.55080	Invert Level (m)	8.000	Depth (m)	1.200
Side Inf Coefficient (m/hr)	0.55080	Time to half empty (mins)	45	Inf Depth (m)	1.200
Safety Factor	1.0	Pit Width (m)	9.000	Number Required	1
Porosity	0.95	Pit Length (m)	5.000		



Results for 100 year +40% CC +10% A Critical Storm Duration. Lowest mass balance: 99.55%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	30	12	7.976	1.176	60.0	3.0932	0.0000	FLOOD RISK
15 minute winter	29	13	7.932	1.226	70.6	1.9286	0.0000	SURCHARGED
15 minute winter	28	13	7.902	1.218	72.2	1.5961	0.0000	SURCHARGED
15 minute winter	27	13	7.860	1.203	83.3	1.7591	0.0000	SURCHARGED
15 minute winter	26	13	7.800	1.169	75.2	1.3223	0.0000	SURCHARGED
15 minute winter	25	13	7.691	1.290	81.7	1.7578	0.0000	SURCHARGED
15 minute winter	24	13	7.507	0.857	18.0	1.1780	0.0000	SURCHARGED
15 minute winter	23	13	7.503	1.403	125.5	2.7016	0.0000	SURCHARGED
15 minute winter	22	13	7.322	1.246	115.9	1.4095	0.0000	SURCHARGED
15 minute winter	21	13	7.103	1.058	118.7	1.3204	0.0000	SURCHARGED
15 minute winter	20	13	6.861	0.873	122.1	1.0919	0.0000	SURCHARGED
60 minute winter	19	50	6.500	0.598	95.8	0.9618	0.0000	SURCHARGED
60 minute winter	18	51	6.496	0.610	95.3	86.9199	0.0000	OK
15 minute winter	17	10	8.113	0.063	9.8	0.0861	0.0000	OK
15 minute winter	16	12	7.950	0.200	23.4	0.2952	0.0000	OK
15 minute winter	15	12	7.926	0.376	31.8	0.4992	0.0000	SURCHARGED
15 minute winter	14	12	7.885	0.435	33.7	0.5772	0.0000	SURCHARGED
15 minute winter	13	11	7.793	0.496	52.7	0.8361	0.0000	SURCHARGED
60 minute winter	12	49	7.181	0.351	46.0	0.6139	0.0000	SURCHARGED
60 minute winter	11	50	7.177	0.396	45.8	36.8856	0.0000	OK
15 minute winter	10	12	8.963	0.188	18.3	0.2945	0.0000	OK
15 minute winter	9	11	8.914	0.562	60.8	1.1986	0.0000	SURCHARGED
15 minute winter	8	11	8.761	0.586	61.6	0.9073	0.0000	SURCHARGED
60 minute winter	7	50	8.251	0.731	54.5	1.1953	0.0000	SURCHARGED
60 minute winter	6	51	8.245	0.790	51.0	46.7936	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
15 minute winter	30	1.000	29	48.4	0.687	0.758	1.9812
15 minute winter	29	1.001	28	63.1	0.897	0.990	0.4698
15 minute winter	28	1.002	27	65.7	0.933	1.030	0.5624
15 minute winter	27	1.003	26	75.2	1.068	1.179	0.5522
15 minute winter	26	1.004	25	73.0	1.089	1.145	1.2847
15 minute winter	25	1.005	23	81.8	1.162	0.697	1.9014
15 minute winter	24	2.000	23	14.9	0.225	0.113	2.7799
15 minute winter	23	1.006	22	115.9	1.646	2.187	0.7277
15 minute winter	22	1.007	21	115.4	1.639	2.177	0.9482
15 minute winter	21	1.008	20	119.1	1.691	1.697	0.9979
15 minute winter	20	1.009	19	122.6	1.741	2.313	2.6137
60 minute winter	19	1.010	18	95.3	1.407	1.797	0.4837
60 minute winter	18	Infiltration		24.4			
15 minute winter	17	3.000	16	9.7	0.723	0.171	0.5757
15 minute winter	16	3.001	15	24.0	0.943	0.445	0.7159
15 minute winter	15	3.002	14	27.4	0.946	0.634	0.5716
15 minute winter	14	3.003	13	32.8	0.930	0.775	0.9133
15 minute winter	13	3.004	12	47.1	1.185	1.113	2.7864
60 minute winter	12	3.005	11	45.8	1.268	1.082	0.2947
60 minute winter	11	Infiltration		11.2			
15 minute winter	10	4.000	9	17.7	0.575	0.419	2.3888
15 minute winter	9	4.001	8	46.6	1.333	0.833	0.6084
15 minute winter	8	4.002	7	60.4	1.518	1.047	2.1205
60 minute winter	7	4.003	6	51.0	1.305	1.204	0.3861
60 minute winter	6	Infiltration		11.6			



Results for 100 year +40% CC +10% A Critical Storm Duration. Lowest mass balance: 99.55%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	5	12	9.221	0.271	18.3	0.4295	0.0000	SURCHARGED
15 minute winter	4	11	9.336	0.486	33.3	0.9543	0.0000	SURCHARGED
15 minute winter	3	12	9.162	0.712	94.9	1.8157	0.0000	SURCHARGED
60 minute winter	2	50	9.103	0.691	55.1	0.7815	0.0000	SURCHARGED
60 minute winter	1	51	9.099	0.725	54.4	46.9842	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
15 minute winter	5	5.000	3	17.2	0.502	0.359	2.3294
15 minute winter	4	6.000	3	30.8	0.775	0.667	2.0115
15 minute winter	3	5.001	2	91.6	2.304	2.164	0.2273
60 minute winter	2	5.002	1	54.4	1.367	1.284	0.2273
60 minute winter	1	Infiltration		11.6			



Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	100	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	10	Minimum Velocity (m/s)	1.00
FSR Region	England and Wales	Connection Type	Level Soffits
M5-60 (mm)	19.800	Minimum Backdrop Height (m)	1.500
Ratio-R	0.350	Preferred Cover Depth (m)	1.200
CV	0.750	Include Intermediate Ground	✓
Time of Entry (mins)	5.00	Enforce best practice design rules	✓

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
5	0.011	5.00	7.150	1200	516344.544	104792.208	1.050
4	0.037	5.00	7.100	1200	516327.513	104717.538	1.050
3	0.011	5.00	7.125	1200	516329.156	104733.935	1.185
2	0.011	5.00	7.050	1200	516336.848	104763.063	1.311
1			7.000		516325.708	104765.918	1.400

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.002	2	1	11.500	0.600	5.739	5.600	0.139	82.7	150	6.12	50.0
2.000	5	2	30.144	0.600	6.100	5.899	0.201	150.0	150	5.61	50.0
1.001	3	2	30.127	0.600	5.940	5.739	0.201	150.0	150	5.95	50.0
1.000	4	3	16.479	0.600	6.050	5.940	0.110	150.0	150	5.34	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.002	1.106	19.5	10.4	1.161	1.250	0.070	0.0	78	1.125
2.000	0.818	14.5	1.6	0.900	1.001	0.011	0.0	34	0.545
1.001	0.818	14.5	7.2	1.035	1.161	0.048	0.0	75	0.817
1.000	0.818	14.5	5.5	0.900	1.035	0.037	0.0	64	0.763

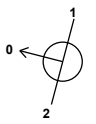
Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.002	11.500	82.7	150	Circular	7.050	5.739	1.161	7.000	5.600	1.250
2.000	30.144	150.0	150	Circular	7.150	6.100	0.900	7.050	5.899	1.001
1.001	30.127	150.0	150	Circular	7.125	5.940	1.035	7.050	5.739	1.161
1.000	16.479	150.0	150	Circular	7.100	6.050	0.900	7.125	5.940	1.035

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.002	2	1200	Manhole	Adoptable	1		Junction	
2.000	5	1200	Manhole	Adoptable	2	1200	Manhole	Adoptable
1.001	3	1200	Manhole	Adoptable	2	1200	Manhole	Adoptable
1.000	4	1200	Manhole	Adoptable	3	1200	Manhole	Adoptable



Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
5	516344.544	104792.208	7.150	1.050	1200		0	2.000	6.100 150
4	516327.513	104717.538	7.100	1.050	1200		0	1.000	6.050 150
3	516329.156	104733.935	7.125	1.185	1200		1	1.000	5.940 150
2	516336.848	104763.063	7.050	1.311	1200		1 2	1.001 1.001	5.940 5.739 150
1	516325.708	104765.918	7.000	1.400			1	1.002	5.600 150

Simulation Settings

Rainfall Methodology	FSR	Analysis Speed	Normal
FSR Region	England and Wales	Skip Steady State	x
M5-60 (mm)	19.800	Drain Down Time (mins)	240
Ratio-R	0.350	Additional Storage (m³/ha)	20.0
Summer CV	0.750	Check Discharge Rate(s)	x
Winter CV	0.840	Check Discharge Volume	x

Storm Durations

15	60	180	360	600	960	2160	4320	7200	10080
30	120	240	480	720	1440	2880	5760	8640	

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
100	40	10	0

Node 1 Soakaway Storage Structure

Base Inf Coefficient (m/hr)	0.55080	Invert Level (m)	5.350	Depth (m)	0.400
Side Inf Coefficient (m/hr)	0.55080	Time to half empty (mins)	18	Inf Depth (m)	0.400
Safety Factor	1.0	Pit Width (m)	15.000	Number Required	1
Porosity	0.95	Pit Length (m)	3.000		



Results for 100 year +40% CC +10% A Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	5	12	6.223	0.123	7.2	0.1670	0.0000	OK
15 minute winter	4	12	7.008	0.958	24.0	1.8268	0.0000	FLOOD RISK
15 minute winter	3	12	6.796	0.856	24.7	1.1423	0.0000	SURCHARGED
15 minute winter	2	12	6.202	0.463	33.7	0.6089	0.0000	SURCHARGED
30 minute winter	1	28	5.740	0.140	30.7	16.6871	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
15 minute winter	5	2.000	2	7.1	0.713	0.488	0.4978
15 minute winter	4	1.000	3	18.2	1.034	1.259	0.2901
15 minute winter	3	1.001	2	23.1	1.313	1.599	0.5304
15 minute winter	2	1.002	1	33.2	1.887	1.700	0.2004
30 minute winter	1	Infiltration		9.0			

Soakaway ID (Node)	SA1 (18)	SA2 (11)	SA3 (6)	SA4 (1)	SA5 (1 - Additional Road)
CL (Ground Level)	7.00m AOD	8.100m AOD	8.850m AOD	9.700m AOD	7.00m AOD
Depth of Cover	0.500m	0.900m	0.500m	0.500m	1.250m
Top of Tank Level	6.500m AOD	7.200m AOD	8.350m AOD	9.20m AOD	5.75m AOD
Tank Invert	5.700m AOD	6.400m AOD	7.150m AOD	8.00m AOD	5.35m AOD
Groundwater Level (Peak)	1.86m BGL (5.140m AOD)	2.15m BGL (5.95m AOD)	2.15m BGL (6.70m AOD)	2.30m BGL (7.40m AOD)	1.86m BGL (5.140m AOD)
Groundwater Freeboard	560mm	0.450mm	0.450mm	0.600mm	0.210mm
Soakaway Length	23.00m	10.00m	9.00m	9.00m	15m
Soakaway Width	5.00m	5.00m	5.00m	5.00m	3m
Soakaway Depth	0.800m	0.800m	1.200m	1.200m	0.400m