Our Ref: YEX1757

12th January 2021

For the attention of Prime Developers Ltd,

Ref: Land at Kingsbridge Road, Harpurhey M9 5SQ

We thank you for your request to undertake permeability testing at the above mentioned site and take pleasure in enclosing the results of this work. The investigation was undertaken on the 6th January 2021 in accordance with your instruction to proceed. This letter describes the work undertaken, presents the data obtained and discusses the results of the tests.

Geology

An examination of the available British Geological Survey data of the area for the site has been examined and indicates that the site has superficial drift deposits composed of Glaciofluvial Till (clay, silt, sand and gravel) and bedrock deposits recorded as Triassic strata of the Chester Formation (sandstone).

Fieldworks

The programme of this investigation included the excavation of two (2no.) trial pits. The locations of the soakaway tests were selected by the *Your*Environment (YE).

During this work, the soils encountered were logged in general accordance with BS 5930: 1990, as amended in 2007, and full descriptions are given on the trial pit records, which are also appended to this letter.

Soakaway Tests

During the soakaway tests the water achieved a fall from 75% to 25% of the effective depth of the storage volume. The results obtained from the soakaway tests are summarised below:

Table 1: *Soakaway Test Results*

WS	Soakage Area Dimensions (m)	Depth (m)	Soil Description (Base of TP)	Infiltration Rate (m/sec)	Drainage Characteristics
TP1 test1	2.2 x 0.8	1.8	Light brown sandy CLAY/clayey SAND.	2.3E-4	Good
TP1 test2	2.2 x 0.8	1.8	Light brown sandy CLAY/clayey SAND.	2.5E-4	Good
TP1 test3	2.2 x 0.8	1.8	Light brown sandy CLAY/clayey SAND.	2.2E-4	Good
TP2 test1	2.2 x 0.8	1.7	Light brown sandy CLAY/clayey SAND.	2.2E-4	Good
TP2 test2	2.2 x 0.8	1.7	Light brown sandy CLAY/clayey SAND.	2.5E-4	Good

TP2 test3	2.2 x 0.8	1.7	Light brown sandy CLAY/clayey SAND.	2.3E-4	Good

Discussion

The natural soils encountered beneath the site were recorded as a sandy CLAY/clayey SAND. The soakage rates obtained during the investigation were found to be good and representative of permeable natural strata. Given the data from the tests, it is considered that the use of soakaways for disposal of surface water are suitable at this site.

References

Building Research Establishment (BRE) Digest 365, *Soakaway Design*, September 1991.

British Standards Institution (1999) BS5930: *Code of practice for site investigations*, B.S.I., London.

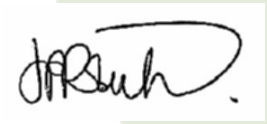
British Standards Institution (2007), Amendment No 1, BS5930: *Code of practice for site investigations*, B.S.I., London.

We trust that this information is of interest and should you have any other requirements do not hesitate to contact us.

For and on behalf of

*Your*Environment

Yours Faithfully,



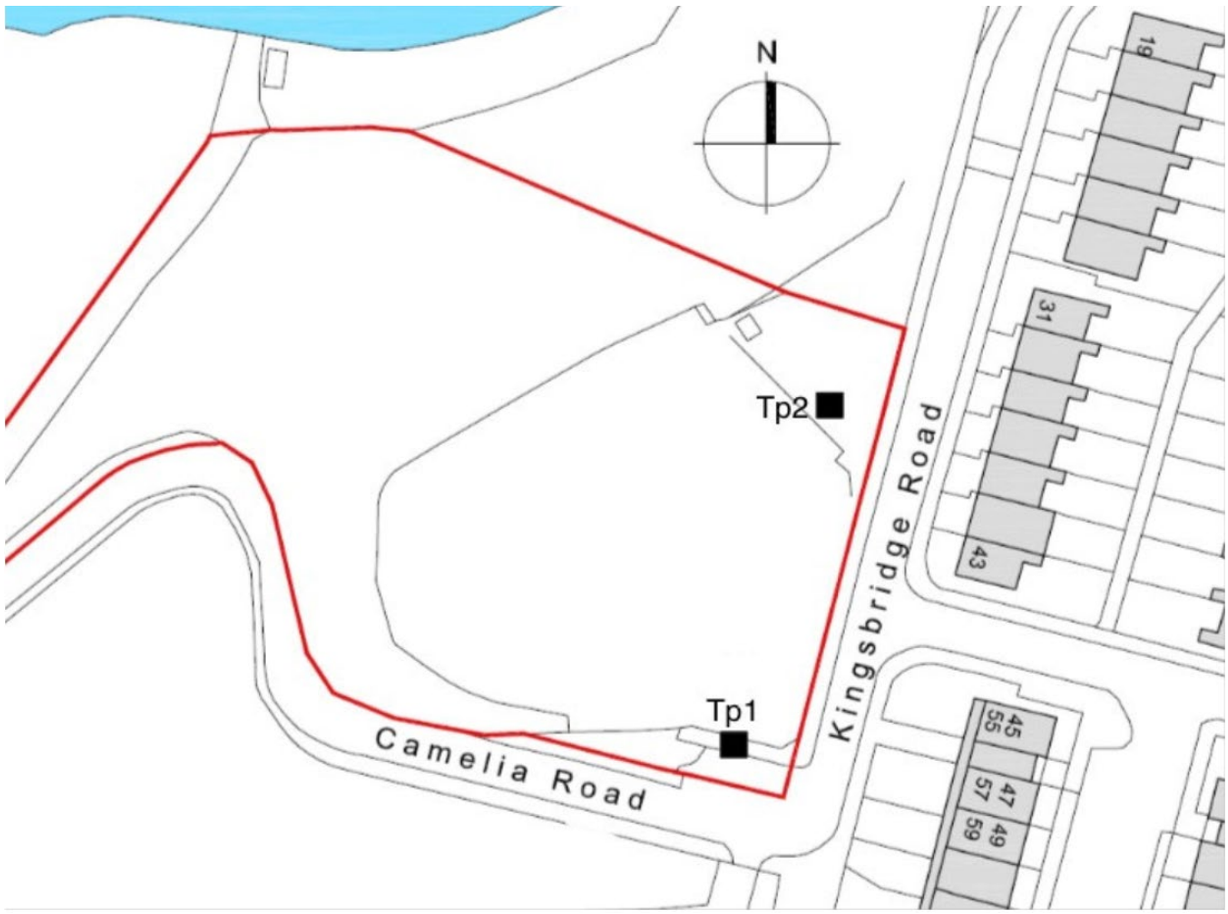
Jonny Roberts

Principal Geoenvironmental Engineer

Enc.

Appendix A: Site Investigation Plan
Appendix B: Trial Pit Logs
Appendix C: Soakaway Test Results
Appendix D: Photographs

APPENDIX A: Site investigation plan



Title: **Investigation Location Plan**

Your Environment	Site Name: **Kingsbridge Road, Harpurhey**	Job No: **YEX1757**

APPENDIX B: Trial pit logs

YourGeotechnical

Trial Pit Log

TrialPit No: TP1
Sheet 1 of 1

Project Name: Kingsbridge Road	Project No. YEX1757	Co-ords: - Level:	Date 06/01/2021
Location: Harpurhey M9 5SQ		Dimensions (m): Depth 1.80	Scale 1:25
Client: Prime Developers Ltd			Logged PH

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
							Made Ground: Brown sandy gravelly clay. Gravel is fine to coarse angular of sandstone, brick and concrete
				1.10			Light brown sandy CLAY/clayey SAND
				1.80			End of Pit at 1.80m

Remarks: No groundwater encountered

Stability:

AGS

YourGeotechnical

Trial Pit Log

TrialPit No: TP2
Sheet 1 of 1

Project Name: Kingsbridge Road	Project No. YEX1757	Co-ords: - Level:	Date 06/01/2021
Location: Harpurhey M9 5SQ		Dimensions (m): Depth 1.70	Scale 1:25
Client: Prime Developers Ltd			Logged PH

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
							Made Ground: Brown sandy gravelly clay. Gravel is fine to coarse angular of sandstone, brick and concrete
				1.10			Light brown sandy CLAY/clayey SAND
				1.70			End of Pit at 1.70m

Remarks: No groundwater encountered

Stability:

AGS

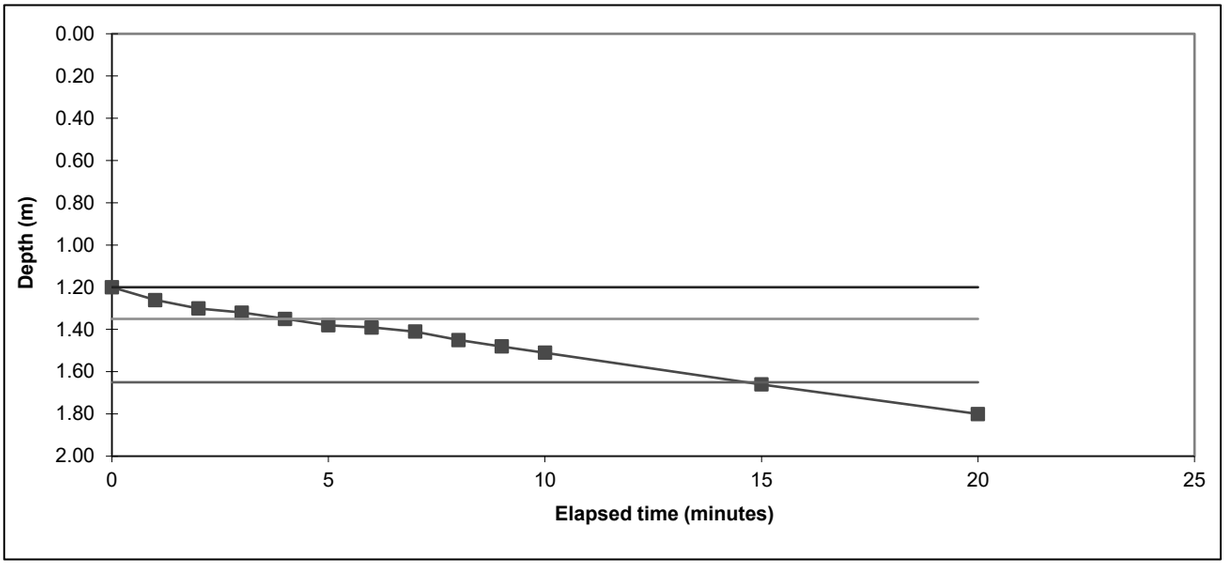
APPENDIX C: Soakway test results

Your Environment

Soakaway Test

Trial Pit No:	TP1	Test No:	1	Date:	06/01/2021
Length (m):	2.200		Datum Height:	0.00	m agl
Width (m):	0.80		Granular infill:	None	
Depth (m):	1.80		Porosity of infill:	1	(assumed)

Elapsed time (minutes)	Water Depth (m below datum)	Elapsed time (minutes)	Water Depth (m below datum)
0	1.200		
1	1.260		
2	1.300		
3	1.320		
4	1.350		
5	1.380		
6	1.390		
7	1.410		
8	1.450		
9	1.480		
10	1.510		
15	1.660		
20	1.800		



Start water depth for analysis (mbgl)	1.20		
75% effective depth (mbgl):	1.35	Elapsed time (mins):	4.0
50% effective depth (mbgl):	1.50		
25% effective depth (mbgl):	1.65	Elapsed time (mins):	14.7
Base of soakage zone (mbgl):	1.80		

Volume outflow between 75% and 25% effective depth (m^3):	0.528
Mean surface area of outflow (m^2):	3.56
(side area at 50% effective depth + base area)	
Time for outflow between 75% and 25% effective depth (mins):	10.7

Soil infiltration rate (m/s):	**2.3E-4**

Remarks Results processed following BRE 365 (2007).

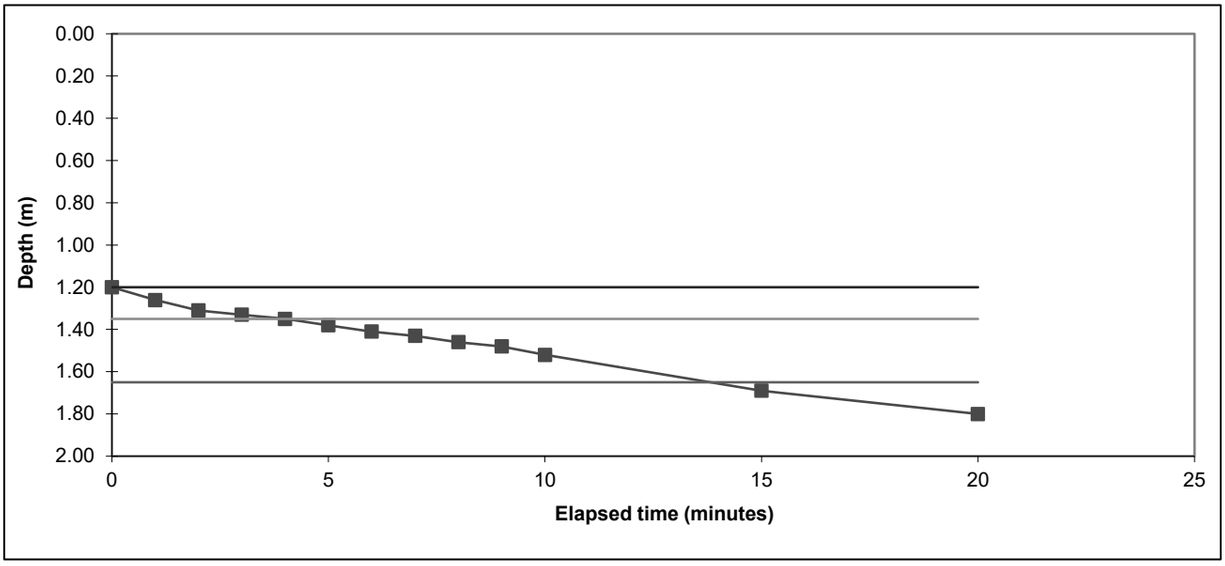
Client:	Prime Developers Ltd	**TP1**
Site:	Kingsbridge Road, Harpurhey	

Your Environment

Soakaway Test

Trial Pit No:	TP1	Test No:	2	Date:	06/01/2021
Length (m):	2.200		Datum Height:	0.00	m agl
Width (m):	0.80		Granular infill:	None	
Depth (m):	1.80		Porosity of infill:	1	(assumed)

Elapsed time (minutes)	Water Depth (m below datum)	Elapsed time (minutes)	Water Depth (m below datum)
0	1.200		
1	1.260		
2	1.310		
3	1.330		
4	1.350		
5	1.380		
6	1.410		
7	1.430		
8	1.460		
9	1.480		
10	1.520		
15	1.690		
20	1.800		



Start water depth for analysis (mbgl)	1.20		
75% effective depth (mbgl):	1.35	Elapsed time (mins):	4.0
50% effective depth (mbgl):	1.50		
25% effective depth (mbgl):	1.65	Elapsed time (mins):	13.8
Base of soakage zone (mbgl):	1.80		

Volume outflow between 75% and 25% effective depth (m^3):	0.528
Mean surface area of outflow (m^2):	3.56
(side area at 50% effective depth + base area)	
Time for outflow between 75% and 25% effective depth (mins):	9.8

Soil infiltration rate (m/s):	**2.5E-4**

Remarks Results processed following BRE 365 (2007).

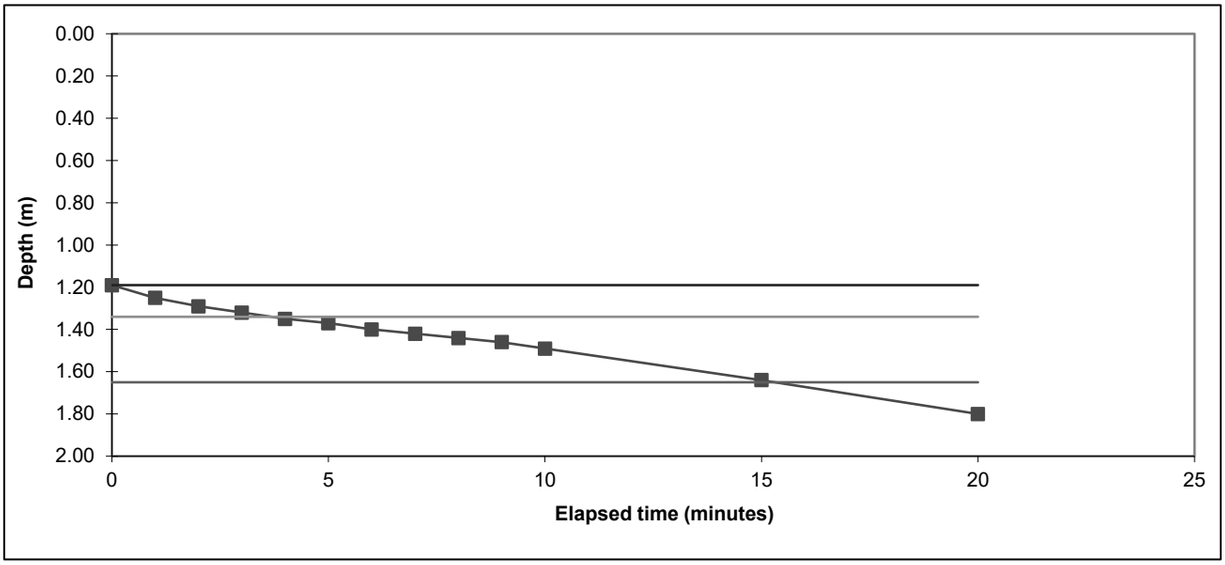
Client:	Prime Developers Ltd	**TP1**
Site:	Kingsbridge Road, Harpurhey	

Your Environment

Soakaway Test

Trial Pit No:	TP1	Test No:	3	Date:	06/01/2021
Length (m):	2.200		Datum Height:	0.00	m agl
Width (m):	0.80		Granular infill:	None	
Depth (m):	1.80		Porosity of infill:	1	(assumed)

Elapsed time (minutes)	Water Depth (m below datum)	Elapsed time (minutes)	Water Depth (m below datum)
0	1.190		
1	1.250		
2	1.290		
3	1.320		
4	1.350		
5	1.370		
6	1.400		
7	1.420		
8	1.440		
9	1.460		
10	1.490		
15	1.640		
20	1.800		



Start water depth for analysis (mbgl)	1.19		
75% effective depth (mbgl):	1.34	Elapsed time (mins):	3.7
50% effective depth (mbgl):	1.50		
25% effective depth (mbgl):	1.65	Elapsed time (mins):	15.3
Base of soakage zone (mbgl):	1.80		

Volume outflow between 75% and 25% effective depth (m^3):	0.546
Mean surface area of outflow (m^2):	3.56
(side area at 50% effective depth + base area)	
Time for outflow between 75% and 25% effective depth (mins):	11.6

Soil infiltration rate (m/s):	**2.2E-4**

Remarks Results processed following BRE 365 (2007).

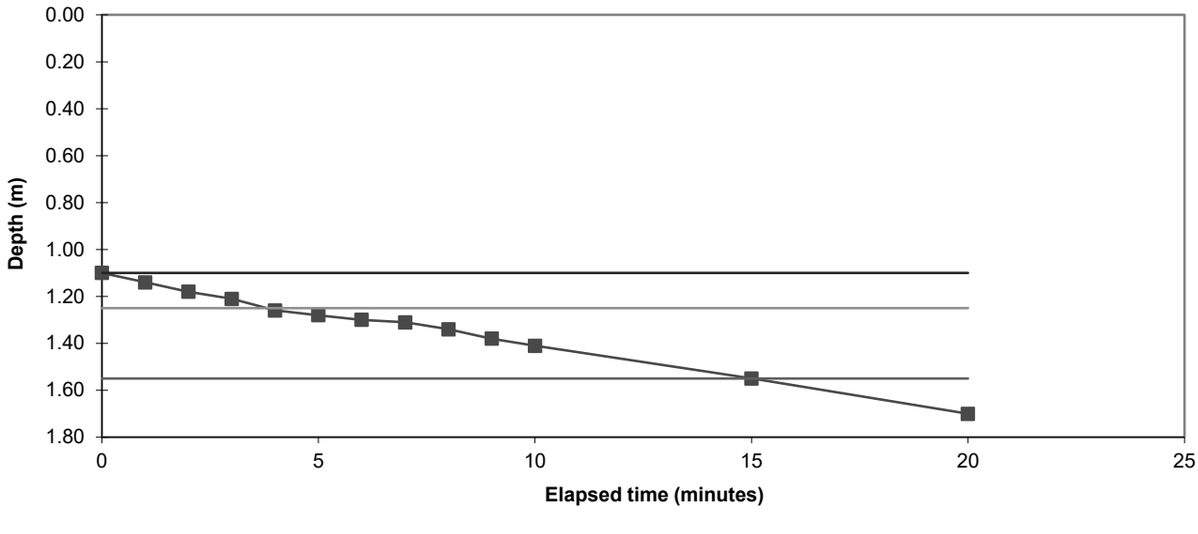
Client:	Prime Developers Ltd	**TP1**
Site:	Kingsbridge Road, Harpurhey	

Your Environment

Soakaway Test

Trial Pit No:	TP2	Test No:	1	Date:	06/01/2021
Length (m):	2.200		Datum Height:	0.00	m agl
Width (m):	0.80		Granular infill:	None	
Depth (m):	1.70		Porosity of infill:	1	(assumed)

Elapsed time (minutes)	Water Depth (m below datum)	Elapsed time (minutes)	Water Depth (m below datum)
0	1.100		
1	1.140		
2	1.180		
3	1.210		
4	1.260		
5	1.280		
6	1.300		
7	1.310		
8	1.340		
9	1.380		
10	1.410		
15	1.550		
20	1.700		



Start water depth for analysis (mbgl)	1.10		
75% effective depth (mbgl):	1.25	Elapsed time (mins):	3.8
50% effective depth (mbgl):	1.40		
25% effective depth (mbgl):	1.55	Elapsed time (mins):	15.0
Base of soakage zone (mbgl):	1.70		

Volume outflow between 75% and 25% effective depth (m^3):	0.528
Mean surface area of outflow (m^2):	3.56
(side area at 50% effective depth + base area)	
Time for outflow between 75% and 25% effective depth (mins):	11.2

Soil infiltration rate (m/s):	**2.2E-4**

Remarks Results processed following BRE 365 (2007).

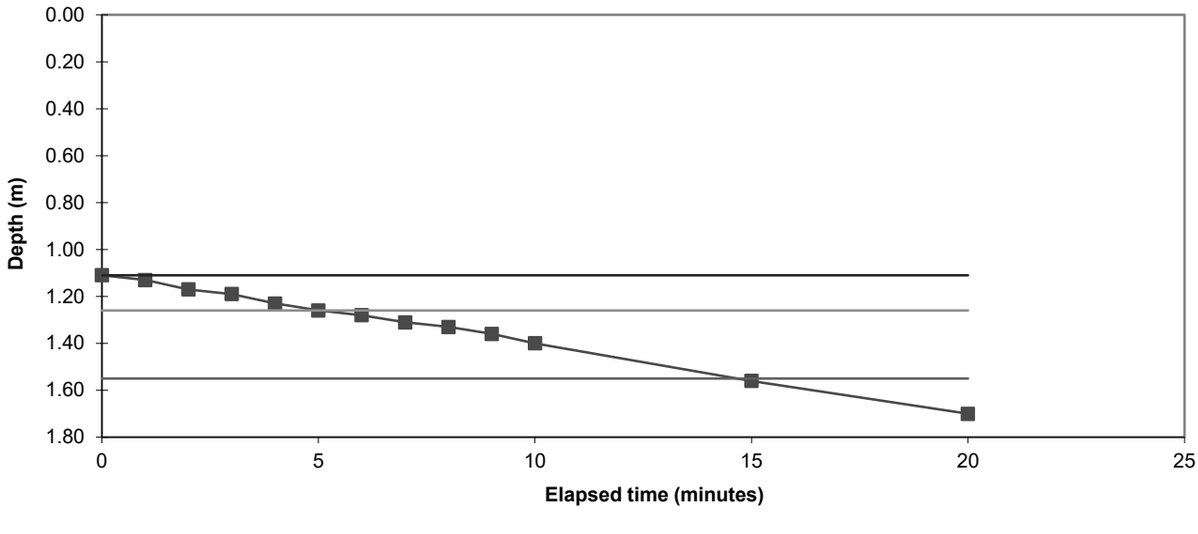
Client:	Prime Developers Ltd	**TP2**
Site:	Kingsbridge Road, Harpurhey	

Your Environment

Soakaway Test

Trial Pit No:	TP2	Test No:	2	Date:	06/01/2021
Length (m):	2.200		Datum Height:	0.00	m agl
Width (m):	0.80		Granular infill:	None	
Depth (m):	1.70		Porosity of infill:	1	(assumed)

Elapsed time (minutes)	Water Depth (m below datum)	Elapsed time (minutes)	Water Depth (m below datum)
0	1.110		
1	1.130		
2	1.170		
3	1.190		
4	1.230		
5	1.260		
6	1.280		
7	1.310		
8	1.330		
9	1.360		
10	1.400		
15	1.560		
20	1.700		



Start water depth for analysis (mbgl)	1.11		
75% effective depth (mbgl):	1.26	Elapsed time (mins):	5.0
50% effective depth (mbgl):	1.41		
25% effective depth (mbgl):	1.55	Elapsed time (mins):	14.7
Base of soakage zone (mbgl):	1.70		

Volume outflow between 75% and 25% effective depth (m^3):	0.510
Mean surface area of outflow (m^2):	3.50
(side area at 50% effective depth + base area)	
Time for outflow between 75% and 25% effective depth (mins):	9.7

Soil infiltration rate (m/s):	**2.5E-4**

Remarks Results processed following BRE 365 (2007).

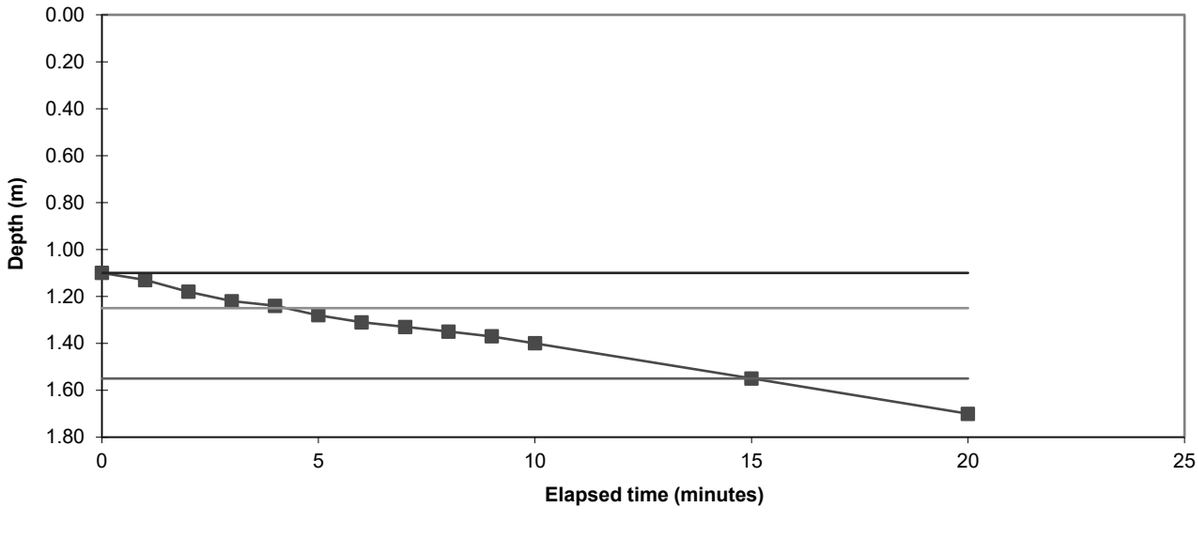
Client:	Prime Developers Ltd	**TP2**
Site:	Kingsbridge Road, Harpurhey	

Your Environment

Soakaway Test

Trial Pit No:	TP2	Test No:	3	Date:	06/01/2021
Length (m):	2.200		Datum Height:	0.00	m agl
Width (m):	0.80		Granular infill:	None	
Depth (m):	1.70		Porosity of infill:	1	(assumed)

Elapsed time (minutes)	Water Depth (m below datum)	Elapsed time (minutes)	Water Depth (m below datum)
0	1.100		
1	1.130		
2	1.180		
3	1.220		
4	1.240		
5	1.280		
6	1.310		
7	1.330		
8	1.350		
9	1.370		
10	1.400		
15	1.550		
20	1.700		



Start water depth for analysis (mbgl)	1.10		
75% effective depth (mbgl):	1.25	Elapsed time (mins):	4.3
50% effective depth (mbgl):	1.40		
25% effective depth (mbgl):	1.55	Elapsed time (mins):	15.0
Base of soakage zone (mbgl):	1.70		

Volume outflow between 75% and 25% effective depth (m^3):	0.528
Mean surface area of outflow (m^2):	3.56
(side area at 50% effective depth + base area)	
Time for outflow between 75% and 25% effective depth (mins):	10.7

Soil infiltration rate (m/s):	**2.3E-4**

Remarks Results processed following BRE 365 (2007).

Client:	Prime Developers Ltd	**TP2**
Site:	Kingsbridge Road, Harpurhey	

APPENDIX D: Photographs

Site: Kingsbridge Road, Harpurhey
Client: Prime Developers Ltd
Job Reference: YEX1757, Dated: January 2021

A.



B.



C.



Your Environment

A. TP1 Excavation

B. TP2 Excavation

C. TP1 Spoil

Your Environment