Ruddlesden geotechnical

Soakaway Test Report

Teddington Playing Fields, Teddington, Greater London

Quantum Land and Property Ltd

October 2016

AC/JW/SR/16325/STR

REPORT CONTROL SHEET

Site address	Teddington Playing Fields Teddington Greater London TW11 9HZ
Client	Quantum Land and Property Ltd
Report title	Soakaway Test Report
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1 INTRODUCTION

1.1 General

In September 2016, a soakaway test investigation was undertaken by Ruddlesden geotechnical ltd on behalf of Quantum Land and Property Ltd at Teddington Playing Fields, Teddington, Greater London.

The investigation was undertaken to determine the permeability of the ground and to provide a soil infiltration rate to enable soakaway drainage design. The investigation comprised the formation of three soakaway tests in general accordance with BRE DG 365.

1.2 Development Proposals

It is understood that the northern third of the existing playing fields is to be developed for residential purposes. No further details were provided at the time of writing this report.

1.3 Scope of Investigation

The investigation covers aspects relating to soakaway drainage design. The brief was understood to comprise the following:

- Undertake in-situ soakaway testing in accordance with BRE DG 365.
- Use data to provide soil infiltration rates.
- Provide any other relevant comments relating to soakaway drainage design.

1.4 Scope of Report

The report is presented as a description of the procedures employed and the data obtained. This is followed by a description of the ground conditions and soakaway test results. The final part of the report comprises a discussion of results together with recommendations for soakaway design.

2 THE SITE

2.1 Site Location

The site is located at Teddington Playing Fields, Teddington, Greater London, see Appendix C (Dwg. Nos. 16325/01 and 16325/AP). The British National Grid Reference of the site is 516451, 170838, and the nearest postcode is TW11 9HL.

The site is located within a predominantly residential area, approximately in the centre of the town of Teddington, in the London Borough of Richmond upon Thames.

Access to the site is gained via Udney Park Road, to the west of the site.

2.2 Site Description

The site is roughly rectangular in shape, measuring approximately 200m x 280m, and is generally flat and level.

The site comprises a large recreational sports field, together with a tennis court, clubhouse building, other small ancillary structures and a car parking area.

The sports field comprises mowed grass at the surface and is currently split into a series of football, rugby and cricket pitches.

The clubhouse is located in the west of the site and comprises a two-storey (and locally one-storey) building of brick construction with a tiled pitched roof.

The car parking area is located within the west of the site, to the south of the clubhouse building, and comprises loose gravel at the surface. A storage building is located within the northeast of the car parking area and is of concrete block construction with a corrugated metal roof.

The tennis court is located within the southwest corner of the site and comprises artificial grass at the surface. A series of large manhole covers were observed within the south of the site, adjacent to the east of the tennis court. Anecdotal evidence (personal communication with the groundsman) suggests that these covers are associated with a large water main.

Numerous trees and hedgerows, no taller than approximately 20m in height, are located at the site, predominantly around the site's perimeter.

The site is bordered to the north and southwest by residential properties and to the east, south and west by Kingston Lane, Cromwell Road and Udney Park Road, respectively, before residential properties.

Photographs of the site are presented in Appendix B of this report.

2.3 Site Geology

The British Geological Survey (BGS) map of the area indicates the site to be underlain by the Quaternary Kempton Park Gravel Formation, which is described as 'sand and gravel, locally with lenses of silt, clay or peat'.

This is shown to be underlain by the Palaeogene London Clay Formation, which is described as 'bioturbated or poorly laminated, blue-grey or grey-brown, slightly calcareous, silty to very silty clay, clayey silt and sometimes silt, with some layers of sandy clay'.

3 FIELDWORK

All fieldwork was undertaken on 08 September 2016.

Three soakaway tests were undertaken in accordance with BRE DG 365: Soakaway Design. The setting out of all the trial pits was the responsibility of Ruddlesden geotechnical ltd.

The trial pits were excavated to sufficient depth to expose the target stratum. The vertical sides were trimmed square. A 1500-gallon water bowser was used to supply the large volumes of water required at a quick rate.

The pit was filled with water and allowed to drain. The fall in water level was recorded with time.

As discussed below, the rates of infiltration were insufficient to allow the tests to be carried out three times at each location to simulate the ground conditions once the soakaway becomes active.

Trial pit logs and photographs, showing the ground conditions encountered, are presented in Appendix A and Appendix B; the soakaway testing results are presented in Appendix C; and a plan showing the soakaway test locations is presented in Appendix D.

4 RESULTS OF THE INVESTIGATION

4.1 General

The following sections provide a summary of ground conditions encountered and soakaway testing results. Further details are provided in the appendices of this report.

4.2 Ground Conditions Encountered

4.2.1 Topsoil

Topsoil was typically encountered to depths of between 0.20m and 0.30m below existing ground levels.

4.2.2 Made Ground

Made ground was encountered at all three test locations, to depths of between 0.65m and 1.20m below existing ground level.

The made ground typically comprised light brown sandy and gravelly silt, with fragments of anthropogenic materials, including metal, glass, brick, ceramic and occasional charcoal.

4.2.3 Natural Geology

Kempton Park Gravel Formation

Beneath the made ground, (medium dense) orange brown slightly clayey slightly silty sand and gravel was encountered to the maximum depth excavated of between 2.40m and 2.60m.

The density of the granular deposits was estimated from a visual assessment only, i.e. ease of excavation and stability of trial pit sides.

4.3 Groundwater

No groundwater was encountered in any of the trial pits during the investigation.

4.4 Soakaway Test Results

Full details of the soakaway testing results are provided in Appendix C of this report and are summarised in the table below:

Table 1: Summary of Soakaway Test Results

Test No.	Total Recorded Fall of Water Level (m)	Duration of Test (minutes)	Soil Infiltration Rate (m/s)
SA1	0.28	321	*
SA2	0.55	277	*
SA3	0.54	226	*

* Test failed to reach 75% of the effective depth. No soil infiltration rate calculation possible.

5 DISCUSSION OF RESULTS AND RECOMMENDATIONS

It is understood that soakaways are proposed as a means of surface water drainage for the residential development of land at Teddington Playing Fields, Teddington, Greater London. The existing site plan is shown on the soakaway test location plan (Appendix D of this report).

In summary, water level falls of between 0.28m and 0.55m were recorded over a maximum time period of 321 minutes. All of the tests failed to reach 75% of the effective depth.

It is considered that the differing rates of infiltration recorded is likely attributed to the variable fines content (i.e. percentage of clay/ silt) of the Kempton Park Gravel Formation.

Given the rates of infiltration recorded at the site, it is considered that the use of soakaways for surface water drainage might be suitable, although any soakaways would necessarily be quite large. Therefore, if limited space is available on-site to accommodate (relatively large) soakaway drains, it is considered that on-site attenuation combined with off-site discharge would provide a suitable drainage solution at this site.

If the site's suitability for soakaway drainage is to be further explored, it is recommended that further soakaway testing be undertaken in full accordance with BRE DG 365 (i.e. three times at each location), at the location and depth of any proposed soakaways.

No groundwater was encountered in any of the trial pits. It is therefore considered that the seasonal high groundwater table is likely to be below the base of any soakaways (assuming that the base of any soakaway will be no deeper than 2.50m below existing ground levels).

It is of note that no contamination testing or assessment has been undertaken as part of this investigation. It should therefore be considered that any proposed soakaways could mobilise any potential contaminants into the underlying groundwater. However, it is envisaged that soil contamination testing will be undertaken at a later date as part of a Phase 2 site investigation, at which point a more detailed assessment should be undertaken. However, in line with good practice, all soakaways should be built beneath any made ground, which could potentially be generically contaminated.

From an assessment of the site's topography, i.e. generally level, it is considered soakaway drainage will not cause any slope instability.

All soakaways should be designed in accordance with the recommendations provided in BRE DG 365: Soakaway Design.

6 REFERENCES

- Building Research Establishment (2016): DG 365: Soakaway Design.

7 TERMS AND CONDITIONS

1. This report has been prepared for the sole use of the specified client in response to an agreed brief and for the stated purpose. The recommendations used in this report should not be used for any other schemes on or adjacent to this site without further reference to this company.

2. The copyright of this report is owned by Ruddlesden geotechnical ltd. With the exception of the named client, who may copy and distribute the report to deal with matters directly relating to its commission, this report may not be reproduced, published or adapted without written consent of the company.

3. New information, improved practices and legislation may necessitate an alteration to the report in whole or in part after its submission. Therefore, with any change in circumstances, this report should be referred to Ruddlesden geotechnical ltd for reassessment and, if necessary, reappraisal.

4. The comments given in this report assume that ground conditions do not vary beyond the range revealed by the investigation. There may, however, be conditions at or adjacent to the site that have not been disclosed by the investigation and which, therefore, have not been considered in this report. Accordingly, a careful watch should be maintained during any future groundworks and the recommendations of this report reviewed as necessary.

5. Whilst confident in the findings of the report, the recommendations may not necessarily be accepted by other authorities without question. It is advisable that, where appropriate, the report be submitted to the relevant statutory authorities and approval obtained before detailed design, site works or other irrevocable action is undertaken.

6. All comments and recommendations are based on groundwater conditions encountered at the time of investigation. It should be noted that groundwater levels might fluctuate according to the season and from year to year. This may have implications on other recommendations, including foundations and excavations.

7. All third party data referred to in the report, e.g. environmental searches and laboratory testing, has been obtained in good faith from bona fide sources. Ruddlesden geotechnical ltd cannot be held liable for any incorrect information supplied to us.

APPENDICES

APPENDIX A

TRIAL PIT LOGS

Key to Trial Pit and Borehole Logs (Common Symbols)

Strata legend

Made Ground

Topsoil

Clay

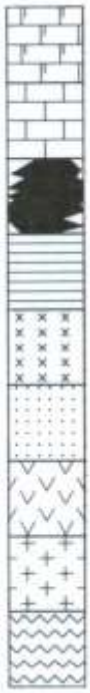
Silt

Sand

Gravel

Peat

Composite soil types will be signified by combined symbols, e.g. silty sand



Chalk

Limestone

Coal

Mudstone

Siltstone

Sandstone

Fine grained igneous rock (e.g. basalt)
Medium grained igneous rock (e.g. granite)

Fine grained metamorphic rock (e.g. slate)

Groundwater

Groundwater strike

Standing groundwater level

Installations

Cement seal

Bentonite seal

Filter pack (slotted pipe)

Samples

D	Small disturbed sample
J	Small disturbed sample (amber glass jar)
B	Disturbed bulk sample
U100	Undisturbed sample (100mm diameter)
W	Water sample

In-situ testing

SPT	Standard Penetration Test (split spoon sampler)
SPT(C)	Standard Penetration Test (solid cone)
V	Shear vane test
CBR	California Bearing Ratio

Rotary drilling

TCR	Total core recovery (%)
SCR	Solid core recovery (%)
RQD	Rock quality designation (%)
FI	Fracture index (fractures/m)
NI	Non-intact

SPT results (examples)

30	N-Value (blows recorded for 300mm penetration, following 150mm seating drive)
50/125	50 blows for 125mm penetration

Field Identification and Description of Soils (Based on Table 7 of BS 5930: 2015)

SOIL GROUP	**Very coarse soils**			**Coarse soils**						**Fine soils**					
PRINCIPAL SOIL TYPE	BOULDERS		COBBLES	GRAVEL			SAND			SILT			CLAY		
Particle size (mm)	Large boulder	Boulder	Cobble	Coarse	Medium	Fine	Coarse	Medium	Fine	Coarse	Medium	Fine			
	>630	630-200	200-63	63-20	20-6.3	6.3-2.0	2.0-0.63	6.3-0.2	0.2-0.063	0.063-0.02	0.02-0.0063	0.0063-0.002	<0.002		
Visual identification	Only seen complete in pits or exposures. Difficult to recover whole from boreholes.			Easily visible to naked eye; particle shape can be described; grading can be described.			Visible to naked eye; no cohesion when dry; grading can be described.			Only coarse silt visible with hand lens; exhibits little plasticity and marked dilatancy; slightly granular or silky to the touch; disintegrates in water; lumps dry quickly; possesses cohesion but can be powdered easily between fingers.			Dry lumps can be broken but not powdered between the fingers; dry lumps disintegrate under water but more slowly than silt; smooth to the touch; exhibits plasticity but no dilatancy; sticks to the fingers and dries slowly; shrinks appreciably on drying usually showing cracks.		
Density/ Consistency	No terms defined. Qualitative description of packing by inspection and ease of excavation.			Classification of relative density on the basis of N-value, or field assessment using hand tests may be made.						**Term**	Very soft	Soft	Firm	Stiff	Very stiff
										Field test	Finger easily pushed in up to 25mm. Exudes between fingers.	Fingers pushed in up to 10mm. Moulded by light finger pressure.	Thumb makes impression easily. Cannot be moulded by fingers. Rolls to thread.	Can be indented slightly by thumb. Crumbles in rolling thread. Remoulds.	Can be indented by thumb nail. Cannot be moulded, crumbles.
Discontinuities	Describe spacing of features such as fissures, shears, partings, isolated beds or laminae, desiccation cracks, rootlets, etc. Fissured: breaks into blocks along unpolished discontinuities. Sheared: breaks into blocks along polished discontinuities.						**Scale of spacing of discontinuities**		**Term**	very widely	widely	medium	closely	very closely	extremely closely
									Mean spacing (mm)	>2000	2000-600	600-200	200-60	60-20	<20
Bedding	Describe thickness of beds in accordance with geological definition. Alternating layers of materials are inter-bedded or inter-laminated and should be described by thickness term if in equal proportions, or by a thickness of and spacing between subordinate layers where unequal.						**Scale of bedding thickness**		**Term**	very thickly bedded	thickly bedded	medium bedded	thinly bedded	very thinly bedded	thickly laminated	thinly laminated
									Mean thickness (mm)	>2000	2000-600	600-200	200-60	60-20	20-6	<6
Colour	**HUE** can be preceded by **LIGHTNESS** and/ or **CHROMA**			Red/ Pink/ Orange/ Yellow/ Cream/ Brown/ Green/ Blue/ White/ Grey/ Black Light/ -/ Dark Reddish/ Pinkish/ Orangish/ Yellowish/ Brownish/ Greenish/ Bluish/ Greyish						Colours may be mottled More than 3 colours is multi-coloured					
Secondary constituents	For mixtures including very coarse soils see section 33.4.4.2 of BS 5930 (2015).			**Terms in coarse soils**	slightly (sandy) B)	(sandy) B)	very (sandy) B)	SAND AND GRAVEL		**Terms in fine soil**	slightly sandy D)	(sandy) D)	very (sandy) F)	Silty CLAY Clayey SILT	Terms used to reflect secondary fine constituents where this is important
				Proportion secondary A)	<5%	5-20% C)	>20% C)	About 50%		**Proportion secondary** A)	<35%	35-65% E)	>65% E)		
Mineralogy	Terms can include: glauconitic/ micaceous/ shelly/ organic/ calcareous. For example: slightly (glauconitic)/ (glauconitic)/ very (glauconitic). Carbonate Content: slightly calcareous – weak or sporadic effervescence from HCl/ calcareous – clear but not sustained effervescence from HCl/ highly calcareous – strong, sustained effervescence from HCl. Organic soils contain secondary finely divided or discrete particles of organic matter often with distinctive smell, might oxidise rapidly. For example: slightly organic-grey/ organic–dark grey/ very organic–black														
Particle shape	Very angular/ Angular/ Subangular/ Subrounded/ Rounded/ Well-rounded A dominant shape can be described, for example: Cubic/ Flat/ Elongate														
PRINCIPAL SOIL TYPE	LARGE BOULDERS	BOULDERS	COBBLES	GRAVEL			SAND			SILT			CLAY		
Tertiary constituents	Example terms include: shell fragments/ pockets of peat/ gypsum crystals/ pyrite nodules/ calcareous concretions/ flint gravel/ brick fragments/ rootlets/ plastic bags. Qualitative proportions can be given: with rare/ with occasional/ with numerous/ frequent/ abundant. Proportions are defined on a site or material specific basis, or subjectively.														
Geological unit	Name in accordance with published geological maps, memoirs or sheet explanations. For example: River Terrace Deposits/ Glacial Sand And Gravel/ Made Ground/ Crackington Formation/ Weathered Heavitree Breccia Formation/ Meadfoot Group/ Upper Devonian Slates/ Alluvium/ Topsoil/ Laminated Beds/ Bude Formation/ Sherwood Sandstone Group														

A) Percentage coarse or fine soil type assessed excluding cobbles and boulders
B) Gravelly or sandy and/ or silty or clayey
C) Can be described as fine soil depending on mass behaviour
D) Gravelly and/ or sandy
E) Can be described as coarse soil depending on mass behaviour
F) Gravelly or sandy

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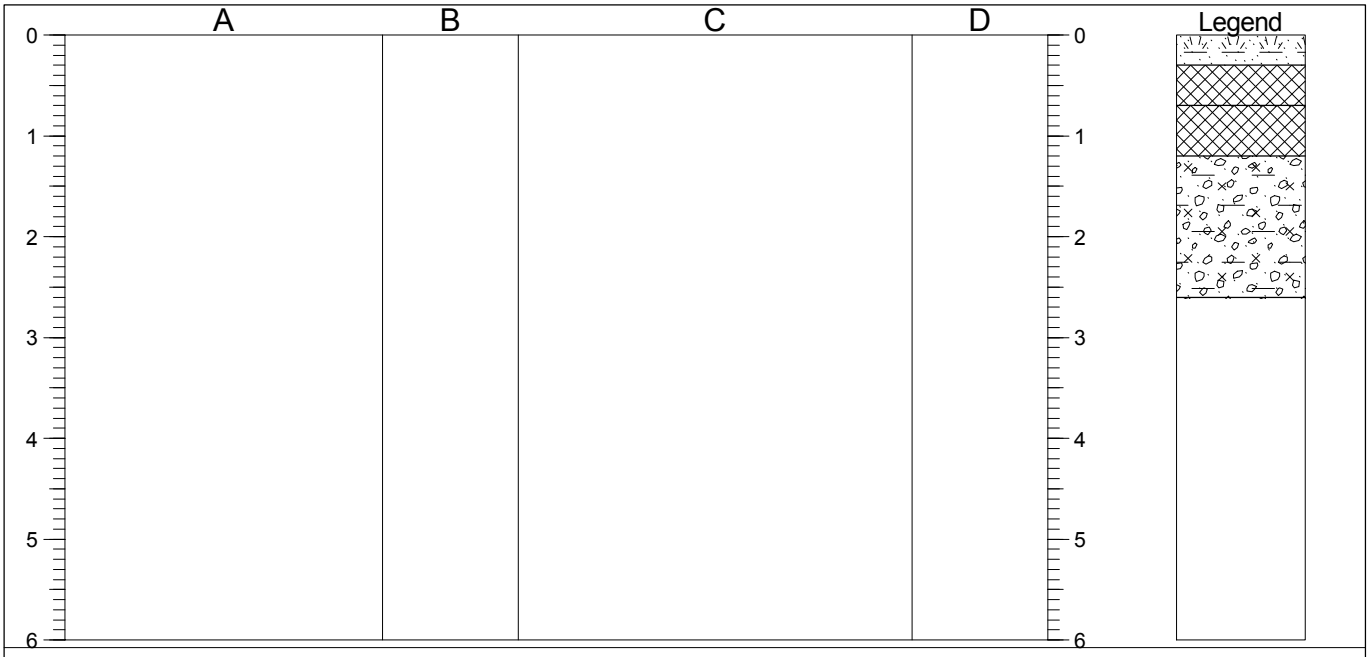
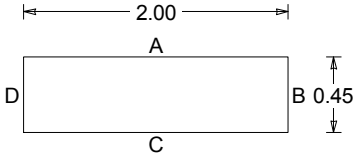
TRIAL PIT LOG

Project				TRIAL PIT No
Teddington Playing Fields, Teddington, Greater London				SA1
Job No	Date	Ground Level (m)	Co-Ordinates (BNG)	
16325	08-09-16		E 516362 N 170840	
Contractor	Method/ Plant	Energy Ratio		Sheet
	JCB 3CX			1 of 1



STRATA			SAMPLES & TESTS		
Depth	No	DESCRIPTION	Depth	No	Remarks/Tests
0.00-0.30		TOPSOIL: Light brown slightly gravelly sandy silt.			
0.30-0.70		MADE GROUND: Light brown sandy silt with brick fragments and occasional carbonaceous material.			
0.70-1.20		MADE GROUND: Light orangish brown slightly clayey silty sand.			
1.20-2.60		(Medium dense) light orangish brown and occasionally brown slightly clayey slightly silty very sandy GRAVEL. Gravel is fine to coarse angular to rounded of mixed lithologies including flint and quartz. (Kempton Park Gravel Formation). 2.00 ...pockets of yellowish brown gravelly sand			

Shoring/Support: None.
Stability: Some minor collapse.
Groundwater: None encountered.



GENERAL REMARKS

1. Density of granular deposits estimated from visual assessment only.

All dimensions in metres Scale 1:75	Client: Quantum Land and Property Ltd	Logged By CR

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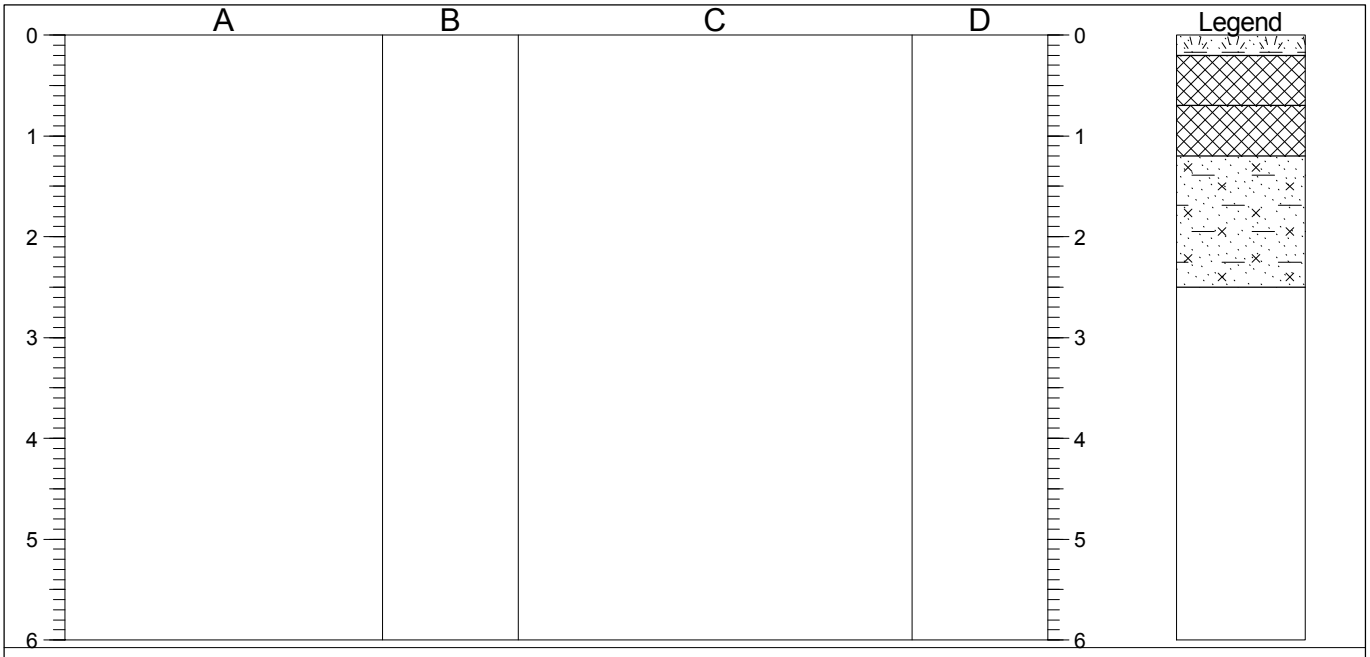
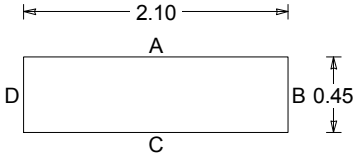
TRIAL PIT LOG

Project				TRIAL PIT No
Teddington Playing Fields, Teddington, Greater London				SA2
Job No	Date	Ground Level (m)	Co-Ordinates (BNG)	
16325	08-09-16		E 516355 N 170923	
Contractor	Method/ Plant	Energy Ratio		Sheet
	JCB 3CX			1 of 1



STRATA			SAMPLES & TESTS		
Depth	No	DESCRIPTION	Depth	No	Remarks/Tests
0.00-0.20		TOPSOIL: Light brown sandy gravelly silt.			
0.20-0.70		MADE GROUND: Light brown sandy gravelly silt with metal fragments, glass, ceramic, brick and occasional charcoal.			
0.70-1.20		MADE GROUND: Light orangish brown slightly clayey silty sand with occasional pockets of silty sandy clay. Rare brick fragments.			
1.20-2.50		(Medium dense) orangish brown slightly clayey slightly silty SAND and GRAVEL. Gravel is fine to coarse subangular to rounded of mixed lithologies including flint, quartz and chert. (Kempton Park Gravel Formation).			
		2.00 ...no clay			
		2.30 ...occasional pockets of yellowish brown gravelly sand			

Shoring/Support: None.
Stability: Much collapse below 1.00m during soakaway testing at 14:14hrs.
Groundwater: None encountered.



GENERAL REMARKS

1. Density of granular deposits estimated from visual assessment only.

All dimensions in metres Scale 1:75	Client: Quantum Land and Property Ltd	Logged By CR

AGS3 UK TP 16325 - TEDDINGTON PLAYING FIELDS, TEDDINGTON, GREATER LONDON.GPJ AGS 3_1.GDT 4/10/16

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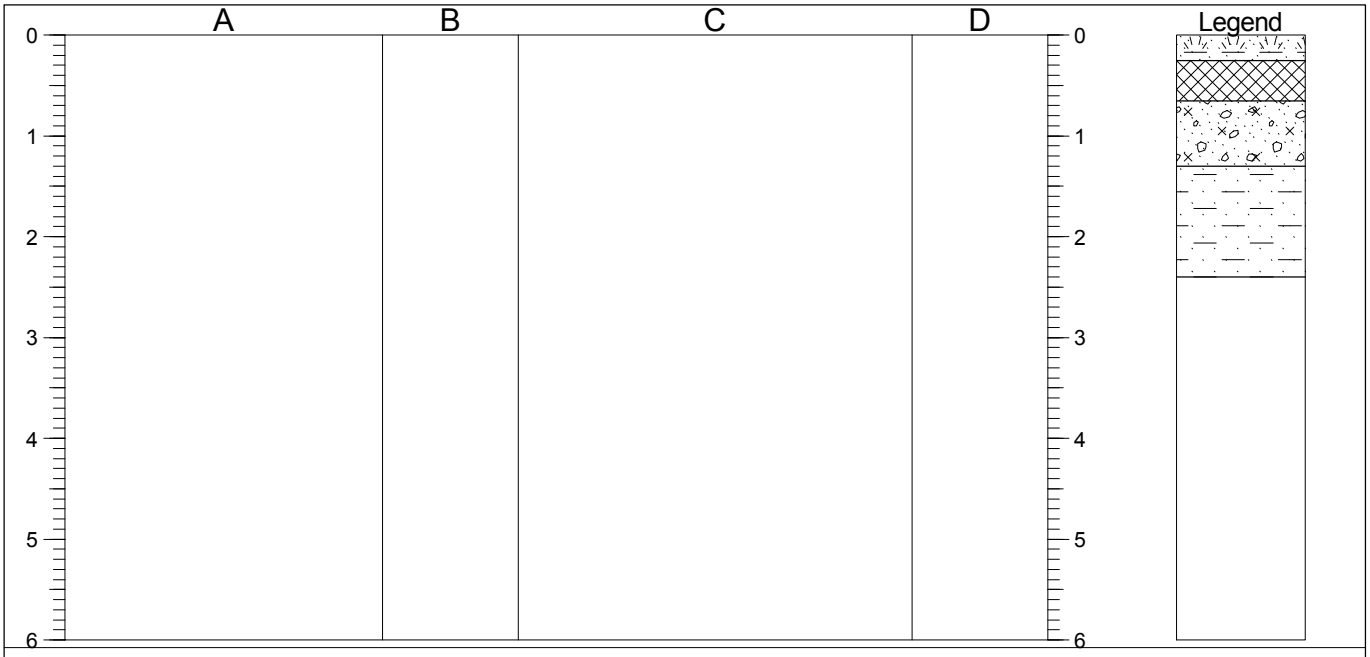
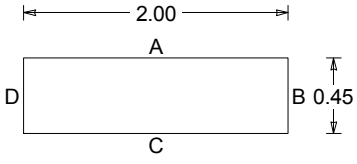
TRIAL PIT LOG

Project				TRIAL PIT No
Teddington Playing Fields, Teddington, Greater London				SA3
Job No	Date	Ground Level (m)	Co-Ordinates (BNG)	
16325	08-09-16		E 516469 N 170951	
Contractor	Method/ Plant	Energy Ratio		Sheet
	JCB 3CX			1 of 1



STRATA			SAMPLES & TESTS		
Depth	No	DESCRIPTION	Depth	No	Remarks/Tests
0.00-0.25		TOPSOIL: Light brown slightly gravelly sandy silt.			
0.25-0.65		MADE GROUND: Light brown sandy gravelly silt.			
0.65-1.30		Loose light brown slightly gravelly silty SAND. Gravel is fine to coarse subangular to rounded of mixed lithologies including weakly cemented sandstone, quartz and flint.			
1.30-2.40		(Medium dense) light orangish brown slightly clayey SAND and GRAVEL. Gravel is fine to coarse subangular to rounded of mixed lithologies including flint and quartz. (Kempton Park Gravel Formation). 2.00 ...(dense) no clay			

Shoring/Support: None.
Stability: Stable.
Groundwater: None encountered.



GENERAL REMARKS

1. Density of granular deposits estimated from visual assessment only.

All dimensions in metres Scale 1:75	Client: Quantum Land and Property Ltd	Logged By CR

APPENDIX B

PHOTOGRAPHS

Plate 1

The west of the site and pavilion, viewed from the northeast.

Plate 2

The east of the site, viewed from the north.

Plate 3

Ground conditions encountered within SA1.

Plate 4

Ground conditions encountered within SA1.

Plate 5

Ground conditions encountered within SA2.

Plate 6

Ground conditions encountered within SA2.

Plate 7

Ground conditions encountered within SA3.

Plate 8

Ground conditions encountered within SA3.

APPENDIX C

SOAKAWAY TEST RESULTS

Soakaway Test Results
In Accordance with BRE 365 "Soakaway Design"

Job Title:	Teddington Playing Fields, Teddington, Greater London
Job No.:	16325
Client:	Quantum Land and Property Ltd
Date:	Sep-16

Test No.	SA1

Trial Pit Dimensions

Length (m):	2.00
Width (m):	0.45
Depth (m):	2.60
Start Water Level (m):	1.65
Total Depth of Test	0.95

Field Results

Time (minutes)	Water Level (mBGL)
0	1.60
1	1.61
3	1.62
43	1.68
97	1.74
123	1.76
179	1.81
226	1.84
281	1.86
291	1.87
321	1.88

Soakaway Test Results
In Accordance with BRE 365 "Soakaway Design"

Calculations

Soil Infiltration Rate (f) = $(V_{p75-25}) / (a_{p50} \times t_{p75-25})$

Where

V_{p75-25} = effective storage volume of water in the trial pit between 75% and 25% effective depth

= 2.00 x 0.45 x 0.48

= 0.4275 m^3

a_{p50} = internal surface area of the trial pit up to 50% effective depth and including the base area

= 0.43 + 1.90 + 0.90

= 3.2275 m^2

t_{p75-25} = time for the water level to fall from 75% to 25% effective depth

25% effective depth = 1.8875

75% effective depth = 2.3625

= - mins

= 0 mins

= 0 secs

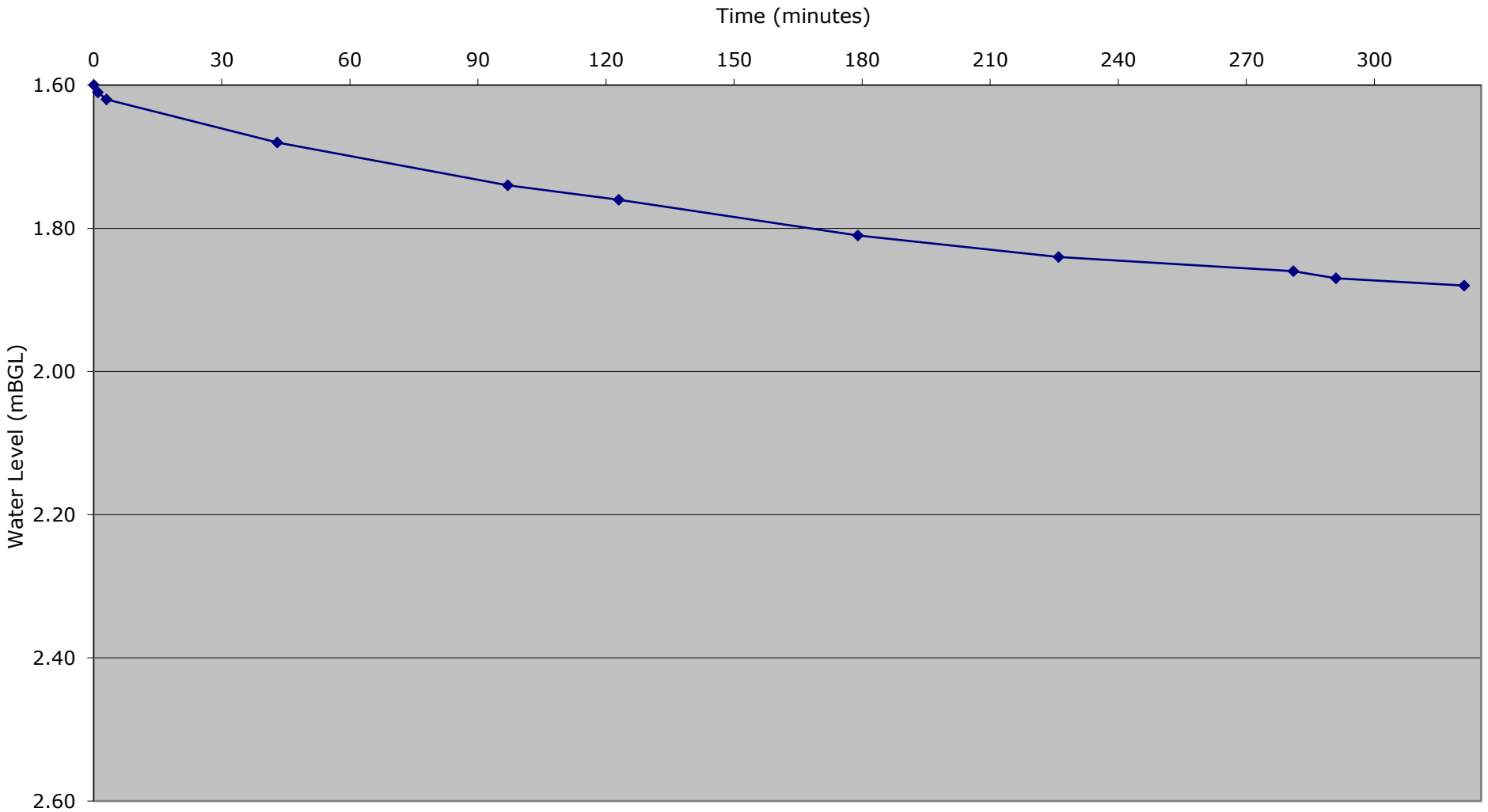
Soil Infiltration Rate (f) = $(V_{p75-25}) / (a_{p50} \times t_{p75-25})$

= 0.4275 / 3.228 x 0

= #DIV/0! m/s

OTHER NOTES:

Soakaway Test Results - SA1



Soakaway Test Results
In Accordance with BRE 365 "Soakaway Design"

Job Title: Teddington Playing Fields, Teddington, Greater London
Job No.: 16325
Client: Quantum Land and Property Ltd
Date: Sep-16

Test No. SA2

Trial Pit Dimensions

Length (m):	2.10
Width (m):	0.45
Depth (m):	2.50
Start Water Level (m):	1.43
Total Depth of Test	1.07

Field Results

Time (minutes)	Water Level (mBGL)
0	1.43
14	1.59
55	1.72
80	1.78
136	1.90
230	1.95
277	1.98

Soakaway Test Results
In Accordance with BRE 365 "Soakaway Design"

Calculations

Soil Infiltration Rate (f) = $(V_{p75-25}) / (a_{p50} \times t_{p75-25})$

Where

V_{p75-25} = effective storage volume of water in the trial pit between 75% and 25% effective depth

= 2.10 x 0.45 x 0.54

= 0.505575 m^3

a_{p50} = internal surface area of the trial pit up to 50% effective depth and including the base area

= 0.48 + 2.25 + 0.95

= 3.6735 m^2

t_{p75-25} = time for the water level to fall from 75% to 25% effective depth

25% effective depth = 1.6975

75% effective depth = 2.2325

= - mins

= 0 mins

= 0 secs

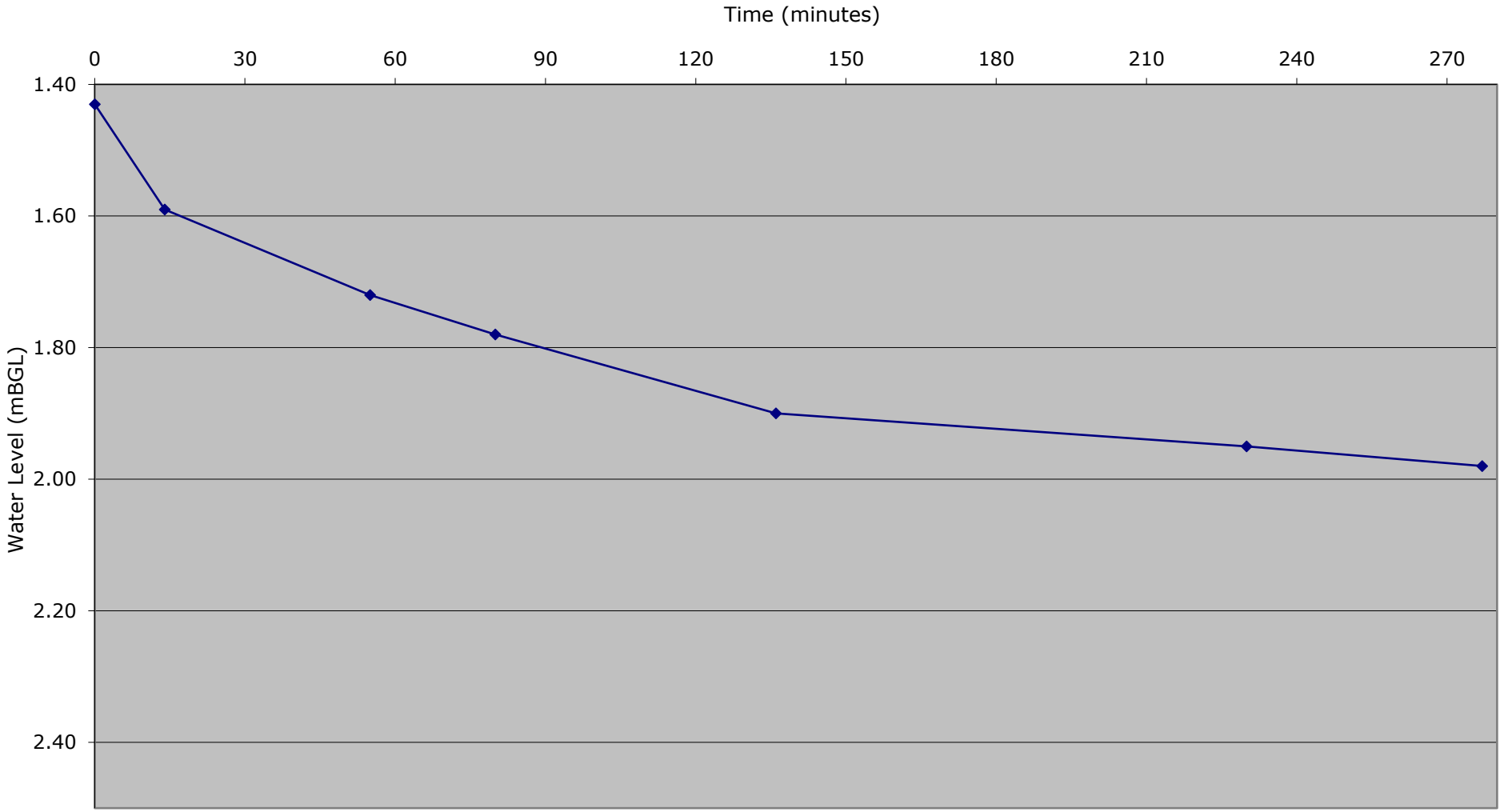
Soil Infiltration Rate (f) = $(V_{p75-25}) / (a_{p50} \times t_{p75-25})$

= 0.505575 / 3.674 x 0

= #DIV/0! m/s

OTHER NOTES:

Soakaway Test Results - SA2



Soakaway Test Results
In Accordance with BRE 365 "Soakaway Design"

Job Title: Teddington Playing Fields, Teddington, Greater London
Job No.: 16325
Client: Quantum Land and Property Ltd
Date: Sep-16

Test No. SA3

Trial Pit Dimensions

Length (m):	2.00
Width (m):	0.45
Depth (m):	2.40
Start Water Level (m):	1.40
Total Depth of Test	1.00

Field Results

Time (minutes)	Water Level (mBGL)
0	1.40
4	1.45
28	1.56
85	1.71
126	1.77
180	1.86
196	1.90
226	1.94

Soakaway Test Results
In Accordance with BRE 365 "Soakaway Design"

Calculations

Soil Infiltration Rate (f) = $(V_{p75-25}) / (a_{p50} \times t_{p75-25})$

Where

V_{p75-25} = effective storage volume of water in the trial pit between 75% and 25% effective depth

= 2.00 x 0.45 x 0.50

= 0.45 m^3

a_{p50} = internal surface area of the trial pit up to 50% effective depth and including the base area

= 0.45 + 2.00 + 0.90

= 3.35 m^2

t_{p75-25} = time for the water level to fall from 75% to 25% effective depth

25% effective depth = 1.65

75% effective depth = 2.15

= - mins

= 0 mins

= 0 secs

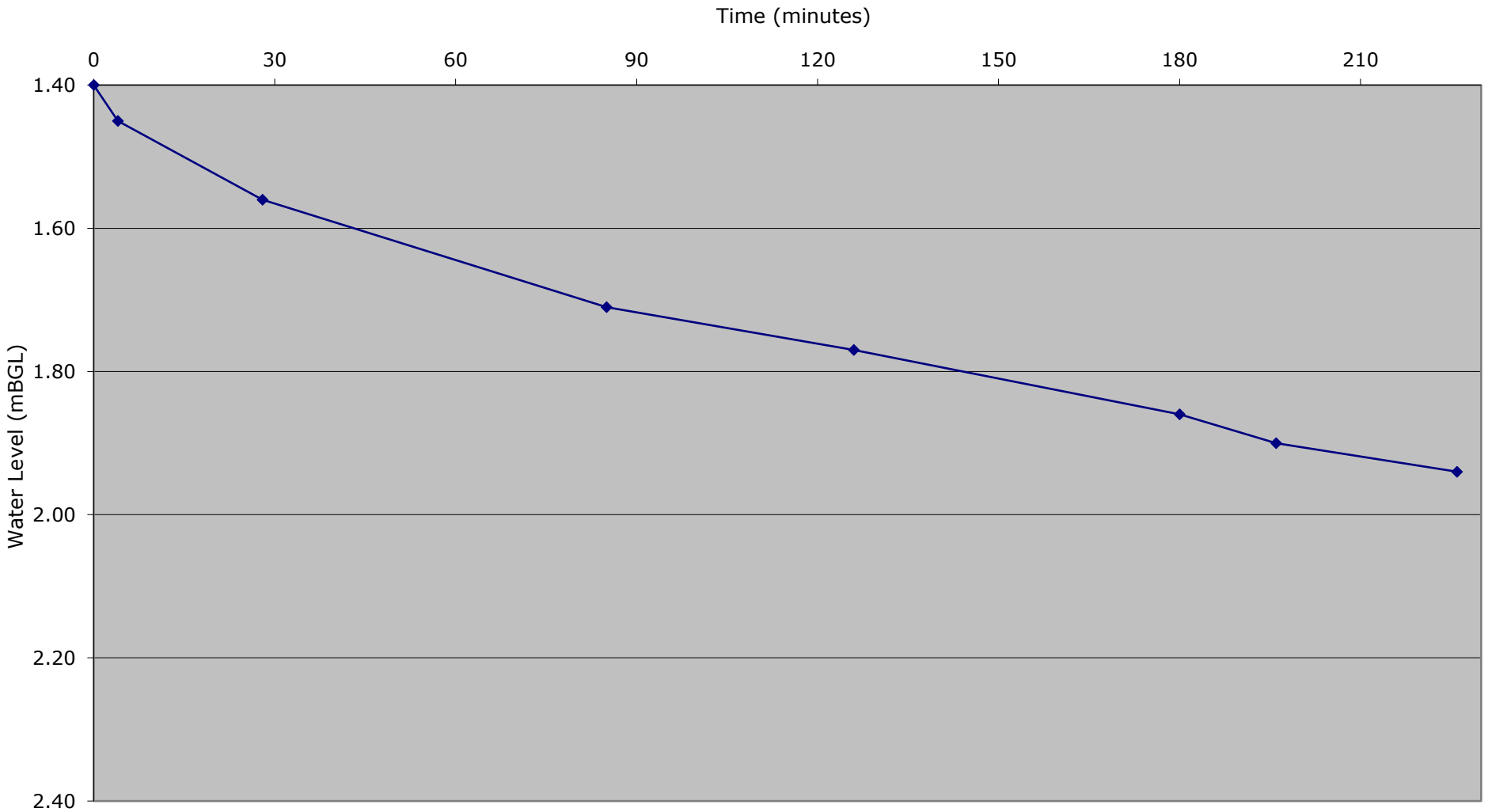
Soil Infiltration Rate (f) = $(V_{p75-25}) / (a_{p50} \times t_{p75-25})$

= 0.45 / 3.35 x 0

= #DIV/0! m/s

OTHER NOTES:

Soakaway Test Results - SA3



APPENDIX D

SOAKAWAY TEST LOCATION PLAN

LEGEND

Soakaway Test

Ruddlesden geotechnical ltd

The Stables
65 Langaton Lane
Pinhoe Exeter
EX1 3SP
www.ruddlesden.co.uk

Job Title: TEDDINGTON PLAYING FIELDS, TEDDINGTON, GREATER LONDON	Dwg No: 16325/02
Drawing Title: SOAKAWAY TEST LOCATION PLAN	Date: SEPT-16
Client: QUANTUM LAND AND PROPERTY LTD	Scale: NTS