

Surface Water Drainage Statement

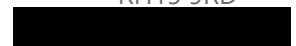
Former Bartons Infant School, North Bersted
Bognor Regis PO22 9BD

Client

Gravity Consulting Engineers
Capitol Building
Olbury
Berkshire RG12 8FZ
Ref: 11642C
First Issue: 17 October 2024

Consulting Engineers

GTA Civils & Transport Ltd
Maple House
192-198 London Rd
Burgess Hill
RH15 9RD



1.0 INTRODUCTION

This Statement demonstrates the viability of using SuDS for the proposed development at the former Bartons Infant School, North Bersted, Bognor Regis PO22 9BD. The proposal is to build 20No. new dwelling houses and associated car parking, cycle parking and landscaping.

The objective of this Statement is to assist in the discharge Planning Condition #22 of Arun District Council Planning Permission Ref. BE/40/22/PL, which reads as follows:

22. Surface water drainage scheme:

Prior to the commencement of development, construction drawings of the surface water drainage network, associated sustainable drainage components and flow control mechanisms and a construction method statement shall be submitted and agreed in writing by the Local Planning Authority. The scheme shall then be constructed as per the agreed drawings, method statement, FRA by GTA Civils & Transport, 29th March 2022, Corrected First Issue and Drainage Layout by GTA Civils & Transport, 21/06/2023, revision P7 and remain in perpetuity for the lifetime of the development unless agreed in writing by the Local Planning Authority. No alteration to the agreed drainage scheme shall occur without prior written approval from the Local Authority.

Reason: To ensure that the development achieves a high standard of sustainability and to comply with NPPF and Policy W SP1, W DM2 and W DM3 in Arun Local Plan.

This statement sets out the proposed drainage strategy that complies with local and national SuDS policy.

No responsibility is accepted to any third party for all or part of this study in connection with this or any other development.

2.0 EXISTING SITE

The application site, located in North Bersted, lies in the area administered by Arun District Council (ADC). The site, measuring approximately 0.6ha, comprises a former school campus with hardcourts and grass playing fields. The site has access from Romney Broadwalk to the west. Appendix A shows a site location map and aerial view.

Hydrology: The Aldingbourne Rife – a Main River – is located outside the site's east boundary and flows in a southeasterly direction. Between the site's boundary and the Aldingbourne Rife is a ditch. The ditch is an unnamed Ordinary Watercourse with no defined outfall (blind ditch).

Topography: A topographical survey of the existing site has been conducted, with levels above Ordnance Datum (AOD) - see Appendix B. Broadly speaking, the site has a slope from south to north, with ambient levels ranging between 3.96m AOD and 2.81m AOD.

Geology: the BGS online map shows the bedrock consists of 5 formations: Lewes Nodular Chalk, Seaford Chalk, Newhaven Chalk, Culver Chalk and Portsdown Chalk. A stratum of River Terrace Deposits (sand, silt and clay) overlies this solid bedrock.

Existing surface water drainage: the site drains into the Aldingbourne Rife to the east via a 150mm outfall. Southern Water's sewer records (in Appendix B) show a 150mmØ surface water sewer's head of run outside the site's entrance on Romney Broadwalk. This joins a 225mmØ pipe before bearing east along Van Gogh Place through a 300mmØ pipe.

Groundwater: monitoring exercises were carried out from 24th November 2021 to 30th March 2022 by Risk Management Ltd. The results to AOD are contained in Appendix C. Using the local ground level as the datum, the shallowest recorded levels at each location ranged between 1.04m bgl and 1.15m bgl.

Soil soakage testing was carried out in accordance with BRE Digest 365 at 4 locations within the site. The report is shown in Appendix C. The first location (SA1) yielded no result, while the rates varied between 1.86 and 4.13×10^{-6} m/s at the other 3 test locations.

Flood risk: the Flood Risk Assessment for the site by GTA Civils & Transport Ltd considered flood risk from all sources and identified the risk profile as 'Low'.

3.0 PROPOSED SURFACE WATER DRAINAGE

This proposal is for Full Planning Permission for building 20No dwelling houses. The proposed Surface Water Drainage Layout is shown in Appendix D.

The order of the SuDS hierarchy was considered.

The reuse of rainwater via site-wide rainwater harvesting tanks is not commensurate with the scale of the development due to space constraints and from the fact that each householder would be required to maintain their own tank which is not generally considered good practice or commercially viable.

The groundwater monitoring exercises undertaken in 2020/21 revealed high groundwater levels at circa 1m bgl - as set out in Section 2.0 above. Infiltration features are not viable as at least 1m of standoff will be expected between the formation level of any such features and the highest water table level. In addition, the soil's soakage rates measured/calculated during the winter period – as set out in Appendix C – were low (null and in the -6m/s range), which precludes infiltration as the main method for surface water disposal.

This being the case, the proposed means of disposal of surface water is to the watercourse to the east, via a new 150mm diameter outfall exiting the site from the road between Plots 11 and 12.

The greenfield runoff rate (QBar) for the positively drained area of 0.316 ha is 1.1 l/s – refer to the drainage calculations in Appendix E. The restriction to the watercourse will be to 2.0 l/s by means of a vortex (e.g, Hydro-Brake) flow control device. This flow restriction is generally accepted as the practical minimum limit of vortex devices for Major Developments (this keeps the flood risk from blockages to acceptable limits) and is significantly lower than that of the pre-development, which discharges unrestricted to the river to the east. Calculations for the existing runoff rates are in Appendix E and a comparison with proposed rates over different storm events is shown in the following table:

Storm event	Existing brownfield runoff rate (l/s)	Proposed runoff rate (l/s)
1 in 2 year	47.5	2.0
1 in 30 year	50.7 + flooding	2.0
1 in 100 year	50.7 + flooding	2.0
1 in 100 year + 45%	n/a	2.0

Various sustainable drainage systems were considered to store the excess storm water:

- Porous pavings: areas of porous paving are proposed for individual drives at the end of the roads on the east part of the site. This is for water treatment only and is not accounted for in the storage calculations, apart from the 2No bays located next to the central island.
- Ponds: there is limited space for ponds in this design.

- Swales: shallow dry swales are proposed for the road drainage, for water treatment benefits only.

The development's surface water which backs up in the drainage system as result of the flow restriction will be held within a composite storage device located in the centre of the site. The storage comprises:

- a cellular tank as model Geolite 600 by SDS
- a stone storage blanket located over the tank
- stone fill to the sides of the tank
- a stone sub-base under the 2No parking bays adjacent to the central island.

A section through the composite storage is shown on the Drainage Details Sheet in Appendix D.

The tank and granular fill have been sized to hold the volume in the critical 1 in 100 years + 45% climate change event. A summary of the storage volumes is presented in the following table:

Storage element	Area m ²	Effective Depth m	Porosity %	Volume m ³
Cellular tank	137	1.5	95	195.2
Granular blanket	137	0.2	30	8.2
Granular surround	80	1.7	30	40.8
Granular sub-base	26	0.25	30	1.96
Total				246.6

The drainage calculations to FEH2022 for the 1 in 2, 1 in 30, 1 in 30+45% climate change, 1 in 100, and 1 in 100+ 45% climate change events are shown in Appendix E. The Volumetric Run-off Coefficient (Cv) for summer, winter, design and simulation events within the calculations is set to 1. The Additional Storage parameter is set to zero and the calculations shows that the attenuation storage half-drains in less than 24 hours (1440 minutes maximum). The plan areas, depths and levels of drainage infrastructure accurately correspond with the supporting calculations.

A surcharged outfall is included in the model with a depth of 320mm from the outfall invert level. This corresponds to the lowest top of bank level (outfall IL = 1.410 + 0.32 = 1.73m top of bank).

Buoyancy: the peak groundwater level was recorded as 1.84m AOD on 24th November 2021 within BH3 and 2nd February 2022 in BH1 – refer to the groundwater monitoring results in Appendix C. The invert level of the attenuation tank is at 1.835m AOD. These figures have been used in the flotation calculations in Appendix E which show that the tank is not in danger of flotation.

The main roads will be impermeable and constructed to adoptable standard. These will drain into the network described above. The surface water sewers will be offered for adoption to ICOSA under a Section 104 agreement.

The parking bays in permeable paving will not be lined but are treated as impermeable for the drainage calculations due to the very low soakage rates.

Water quality benefits: runoff from the road is directed towards swales and areas of permeable paving. The exception to this regime is the bellmouth access which drains to a road gully. A proprietary treatment device - Smart Sponge by Naylor Drainage – will be installed in the road gully pot for the holding and removal of hydrocarbons from surface water runoff.

The swales will provide the necessary treatment according to CIRIA guidelines table 26.2 Pollution hazard indices. This table shows that for a residential estate road the TSS, Metals and hydrocarbon indices are 0.5, 0.4 and 0.4 respectively:

TABLE 26.2 Pollution hazard indices for different land use classifications

Land use	Pollution hazard level	Total suspended solids (TSS)	Metals	Hydrocarbons
Residential roofs	Very low	0.2	0.2	0.05
Other roofs (typically commercial/ industrial roofs)	Low	0.3	0.2 (up to 0.8 where there is potential for metals to leach from the roof)	0.05
Individual property driveways, residential car parks, low traffic roads (eg cul de sacs, homezones and general access roads) and non-residential car parking with infrequent change (eg schools, offices) ie < 300 traffic movements/day	Low	0.5	0.4	0.4

CIRIA SUDS manual table 26.2

Table 26.4 below shows the mitigation indices for discharge to a watercourse. It demonstrates that the combination of the swales, granular stone infiltration blankets, and permeable drives will achieve a suitable level of treatment for the site.

TABLE 26.3 Indicative SuDS mitigation indices for discharges to surface waters

Type of SuDS component	Mitigation indices ¹		
	TSS	Metals	Hydrocarbons
Filter strip	0.4	0.4	0.5
Filter drain	0.4 ²	0.4	0.4
Swale	0.5	0.6	0.6
Bioretention system	0.8	0.8	0.8
Permeable pavement	0.7	0.6	0.7
Detention basin	0.5	0.5	0.6
Pond ⁴	0.7 ³	0.7	0.5
Wetland	0.8 ³	0.8	0.8
Proprietary treatment systems ^{5,6}	These must demonstrate that they can address each of the contaminant types to acceptable levels for frequent events up to approximately the 1 in 1 year return period event, for inflow concentrations relevant to the contributing drainage area.		

CIRIA SUDS manual table 26.3

Urban creep: the LLFA requires Major Developments to factor in an additional 10% of contributing area at planning stage to allow for future extensions of each dwelling house, without having to consider additional SuDS storage at a later date. This has been included in the calculations in Appendix E, as shown on the impermeable area plan in Appendix D.

Exceedance flows: exceedance flows are shown on the Surface Water Drainage plan in Appendix D to demonstrate the exceedance flow routes for events in excess of the design event or following failure of the drainage network. This shows the surface water exiting from the lowest surface level in the drainage system at +3.230 from the permeable paved road end at the east end of the site, and then flowing down the steps at the boundary to drain into the Aldingbourne Rife.

Natural catchments design: as can be seen from the contours on the topographical survey in Appendix B, the land slopes towards the Aldingbourne Rife to the northeast. The proposed surface water network replicates the natural drainage catchment by draining via gravity to the corresponding point of discharge (the watercourse). Easements to the watercourse are shown by yellow dashed lines on the Surface Water Drainage layout.

Maintenance of the SuDS network will be contracted out to ICOSA. A Maintenance Plan has been set up in line with industry best practice – as set out in The SuDS Manual (CIRIA C753, 2015) – and the Susdrain website (www.susdrain.org). This will be provided as a separate document.

Conclusion: This development will not increase the flood risk, either on this site or to neighbouring properties, and so complies fully with the 2021 NPPF and current PPG.

4.0 CONSTRUCTION METHOD STATEMENT

A Construction Method Statement is contained in Appendix F.

5.0 PERMISSIONS

The connection to the Aldingbourne Rife will be via a 150mm pipe with pre-cast concrete headwall splayed in the direction of river flow and fitted with a flap valve. – refer to the Surface Water Drainage plan and Sewer Outfall Sections in Appendix D. The Aldingbourne Rife is a Main River and as such the drainage works associated with the headwall will require approval from the Environment Agency.

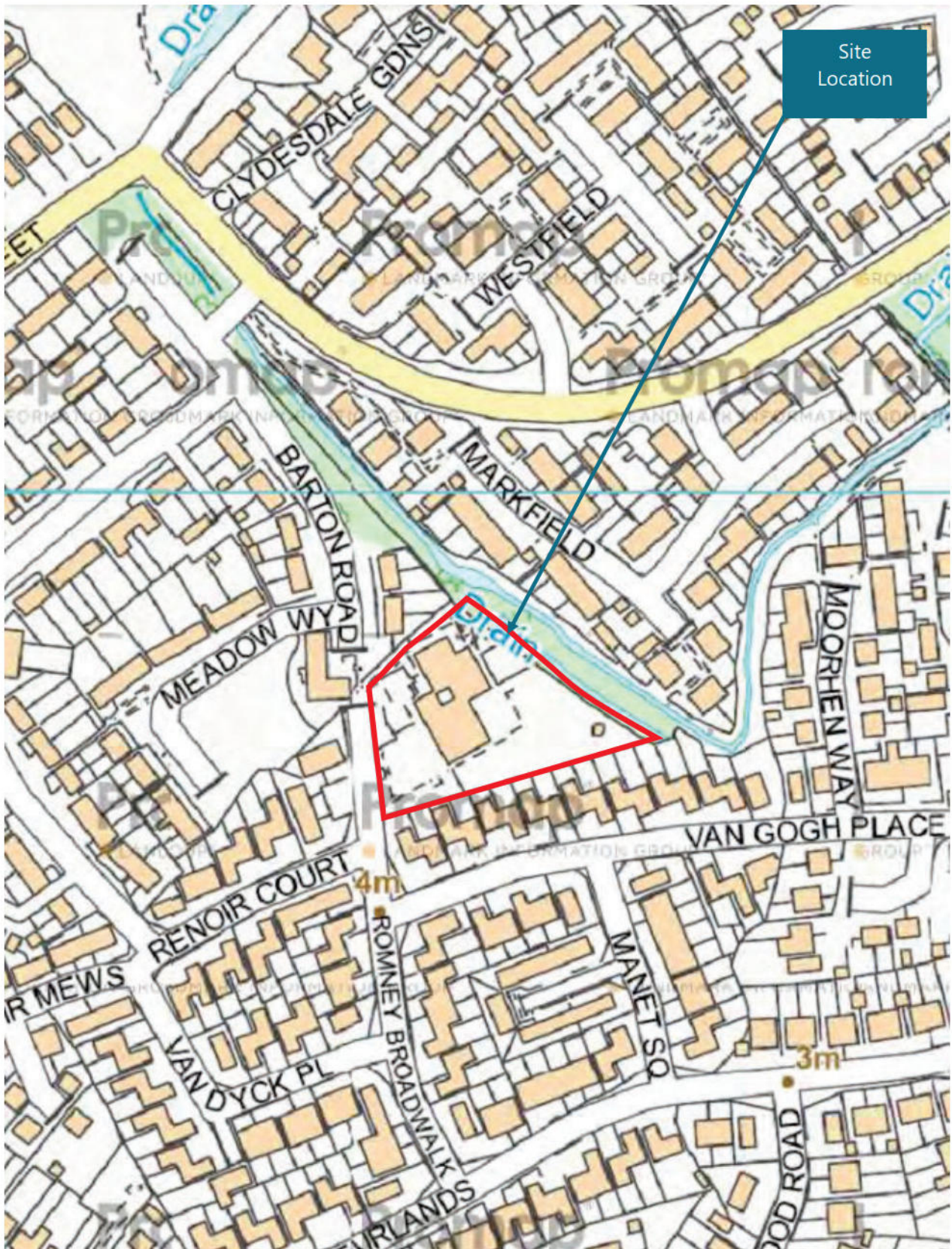
The crossing under the blind ditch with the 150mm surface water drain would normally require Land Drainage Consent (LDC) from the LLFA or their agent, however, in this case Paul Cann as the Principal Drainage Engineer for ADC has agreed that oversight of the crossing may be covered under the planning process and no LDC will be required.

The existing surface water outfall to the Aldingbourne Rife is to be abandoned, with the entire network to be grubbed out and drainage outfall capped at the boundary.

- End of Statement -

Initial Issue: 15 December 2023
First Issue: 17 October 2024

APPENDIX A – SITE LOCATION MAP & AERIAL VIEW





APPENDIX B – TOPOGRAPHIC SURVEY & SEWER RECORDS



QUALITY LEVELS	USE CATEGORY/TYPE	SUPPORTING DATA
--- very poor --- --- poor --- --- moderate ---	Use under all	1. Using only one or two types of wood and wood products 2. Using wood and wood products in a way that does not use the wood in its natural state (e.g., paint, stain, etc.)
--- poor ---	1. Medium use	1. Using wood and wood products in a way that does not use the wood in its natural state (e.g., paint, stain, etc.)
--- moderate ---	2. Medium use	1. Using wood and wood products in a way that does not use the wood in its natural state (e.g., paint, stain, etc.)
--- good ---	3. Good use	1. Using wood and wood products in a way that does not use the wood in its natural state (e.g., paint, stain, etc.)
--- very good ---	4. Very good use	1. Using wood and wood products in a way that does not use the wood in its natural state (e.g., paint, stain, etc.)

No. sitting _____ 	No. standing _____ 	No. of children _____ 	No. of children _____ 
--	---	--	--

LEGEND TO FIGURE 1

Category	Item	Value
Inventory Systems	Inventory Systems	1
	Inventory Systems	2
	Inventory Systems	3
	Inventory Systems	4
	Inventory Systems	5
	Inventory Systems	6
	Inventory Systems	7
	Inventory Systems	8
	Inventory Systems	9
	Inventory Systems	10
Inventory Systems	Inventory Systems	11
	Inventory Systems	12
	Inventory Systems	13
	Inventory Systems	14
	Inventory Systems	15
	Inventory Systems	16
	Inventory Systems	17
	Inventory Systems	18
	Inventory Systems	19
	Inventory Systems	20

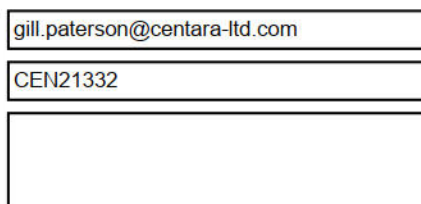
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LEVELLING NOTES

It is with us! Our studies are a must on O'Sullivan Road by Google

LOVELL
PARTNERSHIPS

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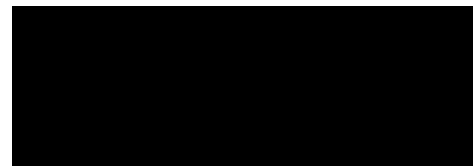


WARNING: Unknown (UNK) materials may include Bonded Asbestos Cement.

Manhole Reference	Liquid Type	Cover Level	Invert Level	Depth to Invert
4902	F	3.67	2.58	
4903	F	3.43	2.54	
4904	F	3.56	2.46	
5002	F	4.14	2.47	
5003	F	4.22	2.02	
5701	F	0.00	0.00	
5901	F	3.46	2.55	
5902	F	3.33	2.34	
5903	F	3.31	2.33	
5904	F	3.73	3.39	
5905	F	3.68	3.28	
5906	F	3.54	3.18	
5907	F	3.59	3.26	
5908	F	3.62	3.38	
5909	F	3.64	3.12	
5910	F	3.69	2.96	
6001	F	3.51	1.74	
6002	F	3.34	0.00	
6005	F	0.00	0.00	
6801	F	0.00	0.00	
6802	F	0.00	0.00	
6901	F	3.24	2.28	
6902	F	3.16	2.21	
6903	F	3.30	2.08	
6904	F	3.22	1.88	
6905	F	3.11	1.72	
6906	F	3.23	1.65	
6907	F	3.16	1.55	
6908	F	2.47	1.30	
6909	F	3.27	2.01	
6910	F	2.78	2.18	
6911	F	3.13	2.38	
6912	F	0.00	0.00	
6913	F	0.00	0.00	
7902	F	2.71	1.30	
7903	F	2.69	0.00	
4851	S	3.97	2.24	
4852	S	3.66	2.46	
5051	S	3.54	1.17	
5053	S	0.00	0.00	
5054	S	0.00	0.00	
5752	S	3.59	2.33	
5851	S	3.54	1.97	
5852	S	3.94	2.15	
5853	S	3.64	2.79	
5951	S	3.30	0.95	
5952	S	3.56	2.22	
6051	S	3.04	2.07	

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APPENDIX C – SOAKAGE TESTING AND GROUNDWATER MONITORING RESULTS



11th March 2021

MSP/RML 7634

The Civil Engineering Practice
11 Tungsten Building
George Street
Fishersgate
Sussex
BN41 1RA

For the attention of Martin Kempshall

Dear Martin,

**BRE 365 SOIL INFILTRATION TESTING
AT
FORMER BARTONS INFANT SCHOOL, NORTH BERSTED, BOGNOR REGIS, PO22 9BH**

Further to your e-mailed instructions to proceed, dated 18th December 2020, we confirm that we attended the above noted site on Wednesday 10th March 2021 in order to undertake 4 No. BRE 365 Soil Infiltration Tests.

We now have pleasure in enclosing the following factual information.

1. *Figures 1 - 4 - Trial Pit Records (SA1 – SA4)*
2. *Soil Percolation Test Result Sheets (SA1 – SA4)*
3. *Drawing No. RML 7634/1 - Sketch Fieldwork Location Plan*

Soil Percolation Tests (SA1 – SA4) were undertaken at the locations as indicated on the appended Drawing No. RML 7634/1, generally in accordance with the methods described in BRE Digest 365 “Soakaway Design” and B.S. 5930:2015.

Soil Percolation Tests

Trial Pit SA1 was mechanically excavated to a depth of 1.50m below existing ground level and was approximately 1.45m long and 0.40m wide. The trial pit was then filled by a lorry mounted water bowser and the depth to water measured regularly. Only one filling was undertaken owing to the poor soakage rate.

Trial Pit SA2 was mechanically excavated to a depth of 0.70m below existing ground level and was approximately 1.00m long and 0.40m wide. The trial pit was then filled by a lorry mounted water bowser and the depth to water measured regularly. Only one filling was undertaken owing to the poor soakage rate.

Trial Pit SA3 was mechanically excavated to a depth of 1.50m below existing ground level and was approximately 1.50m long and 0.40m wide. The trial pit was then filled by a lorry mounted water bowser and the depth to water measured regularly. Only one filling was undertaken owing to the poor soakage rate.

Trial Pit SA4 was mechanically excavated to a depth of 0.70m below existing ground level and was approximately 1.10m long and 0.30m wide. The trial pit was then filled by a lorry mounted water bowser and the depth to water measured regularly. Only two fillings were undertaken owing to the poor soakage rate.

Owing to the poor soakage rate encountered no Soil Infiltration Test Rate (f) could be determined for Trial Pit SA1. Extrapolated results for Trial Pits SA2, SA3 & SA4 were used to calculate the following Soil Infiltration Test Rates (f);

$$\text{SA1} \quad f = \text{N/A}$$

$$\text{SA2} \quad f = 1.86 \times 10^{-6} \text{ m/s}$$

$$\text{SA3} \quad f = 4.13 \times 10^{-6} \text{ m/s}$$

$$\text{SA4} \quad f = 3.39 \times 10^{-6} \text{ m/s}$$

However, as highlighted above, it should be noted that the results for Trial Pit SA2, SA3 & SA4 are based on extrapolating the percolation graphs and that, in practice, the soakage may not get down to the t_{75} value.

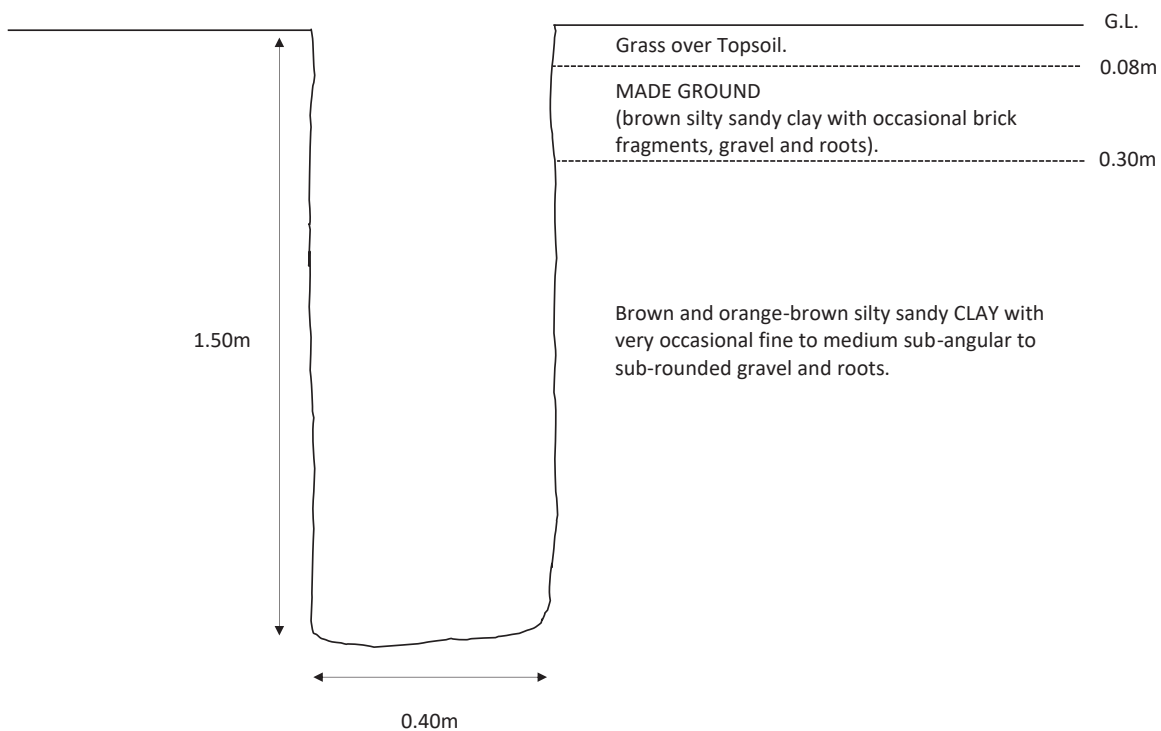
Trial Pit SA4 did record a full test on the first filling, however, owing to the considerable difference in soakage rate observed in the second filling an extrapolated value from the second filling was used to calculate the above Soil Infiltration Rate (f).

We trust that you will find the enclosed self-explanatory, however, should you have any queries please do not hesitate to contact the writer at the above noted address.

yours faithfully,
for RISK MANAGEMENT LIMITED



Richard Price B.Sc. (Hons), F.G.S., MEnv.Sc.
Project Engineer



RECORD OF MECHANICALLY EXCAVATED TRIAL PIT

Title : **TRIAL PIT SA1**

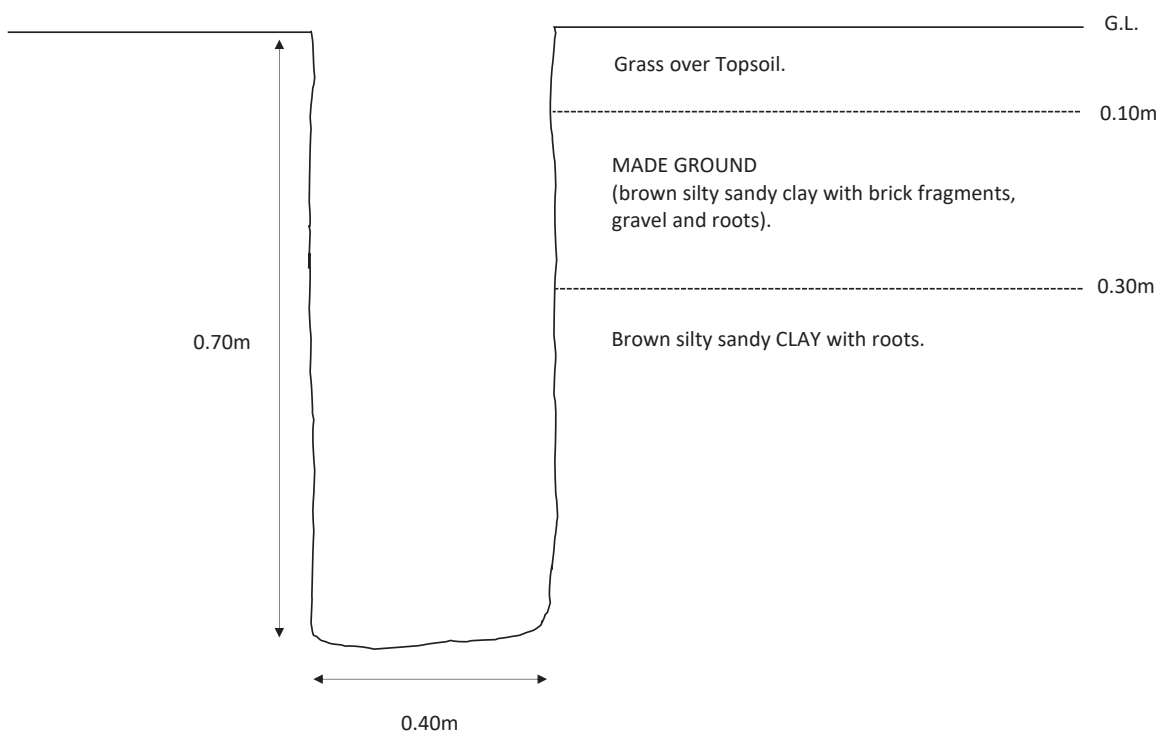
Project Location : Former Bartons Infant School, North Bersted, Bognor Regis, PO22 9BH

Job No : RML 7634

Scale : Not To Scale

Figure No. **1**

Date : 10th March 2021



Title : **TRIAL PIT SA2**

Project Location : Former Bartons Infant School, North
Bersted, Bognor Regis, PO22 9BH

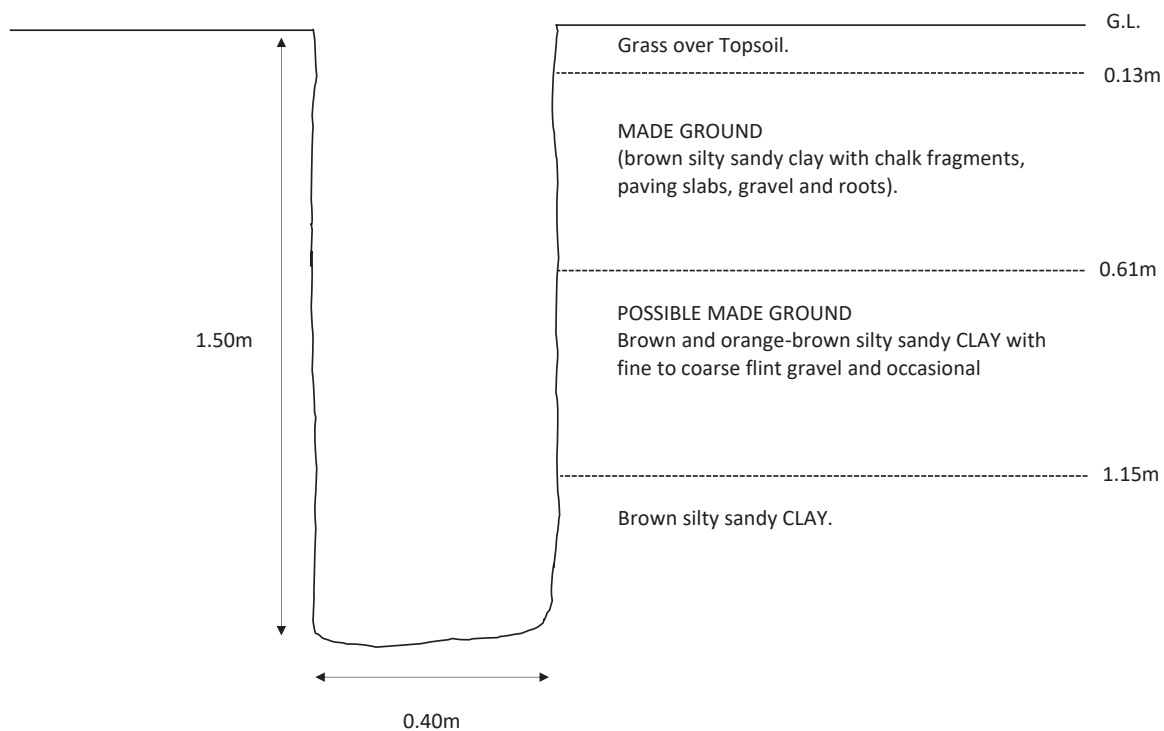
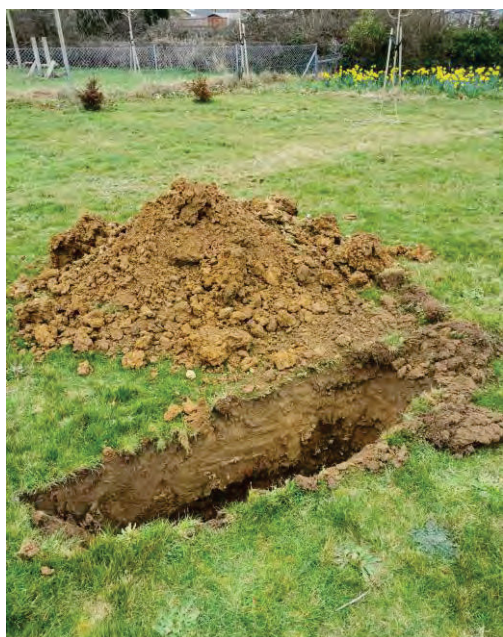
RECORD OF MECHANICALLY EXCAVATED TRIAL PIT

Job No : RML 7634

Scale : Not To Scale

Figure No. **2**

Date : 10th March 2021



Title : **TRIAL PIT SA3**

Project Location : Former Bartons Infant School, North
Bersted, Bognor Regis, PO22 9BH

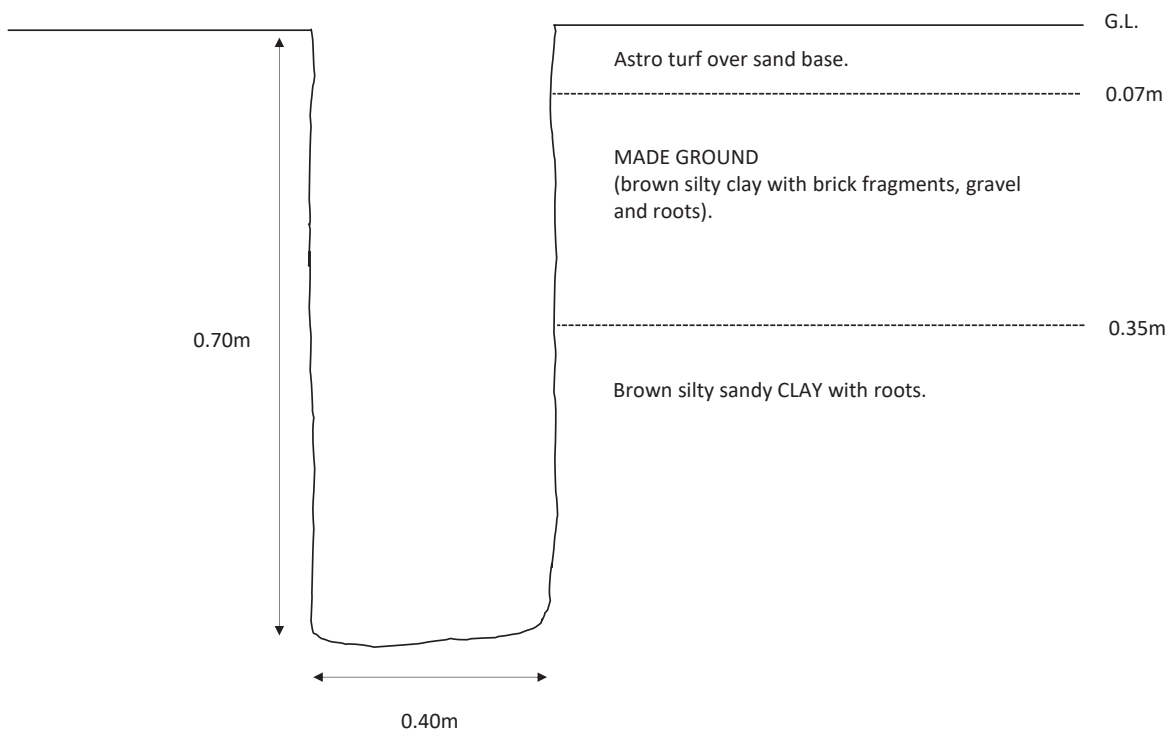
RECORD OF MECHANICALLY EXCAVATED TRIAL PIT

Job No : RML 7634

Scale : Not To Scale

Figure No. **3**

Date : 10th March 2021



Title : **TRIAL PIT SA4**

Project Location : Former Bartons Infant School, North Bersted, Bognor Regis, PO22 9BH

RECORD OF MECHANICALLY EXCAVATED TRIAL PIT

Job No : RML 7634

Scale : Not To Scale

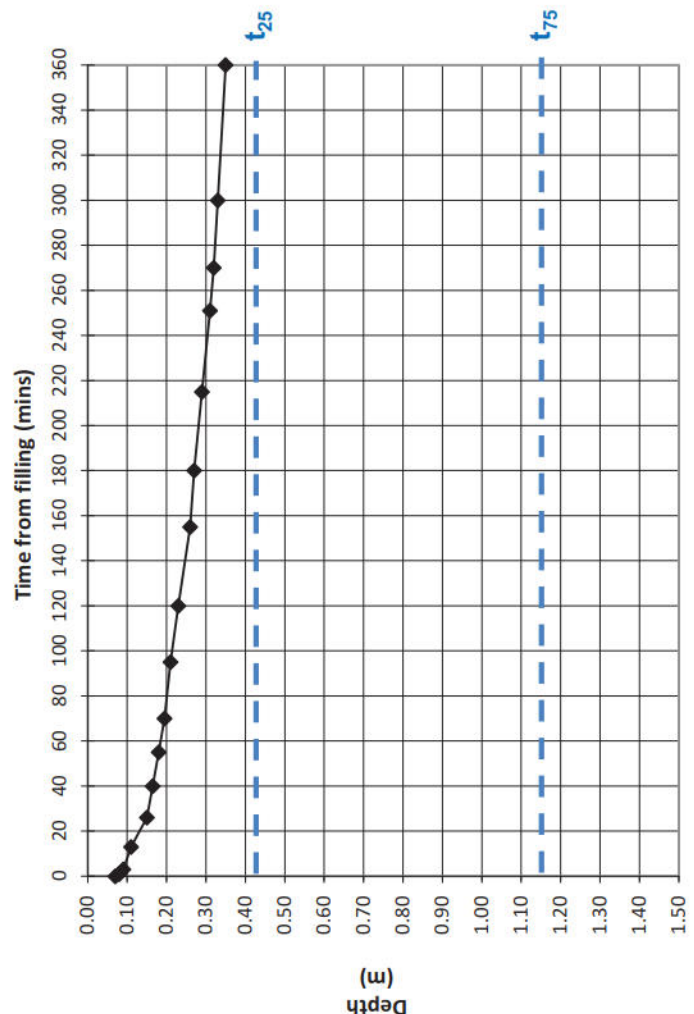
Figure No. **4**

Date : 10th March 2021

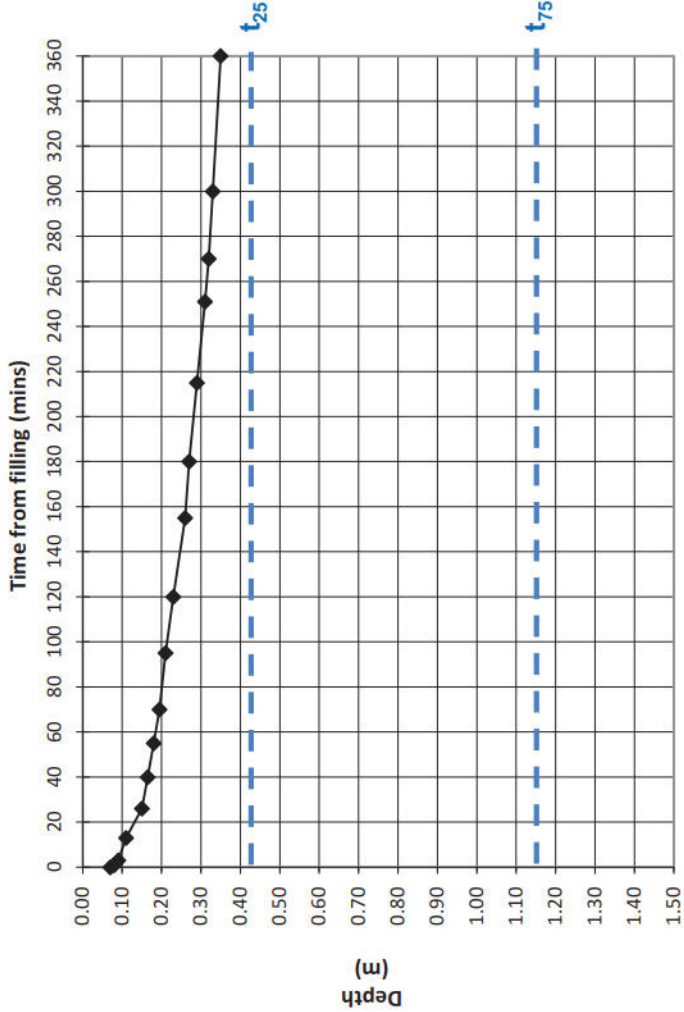
		BRE DIGEST 365 SOIL INFILTRATION TEST (SA1)		Risk Management Limited 	
Project Name :		Former Bartons Infant School, North Bersted, Bognor Regis, PO22 9BH		Job No. RML 7634 Date : March 2021	
Test Depth (m)					
1.50					
Depth (m)	Time (mins)				
0.070	0				
0.080	1				
0.090	3				
0.110	13				
0.150	26				
0.165	40				
0.180	55				
0.195	70				
0.210	95				
0.230	120				
0.260	155				
0.270	180				
0.290	215				
0.310	251				
0.320	270				
0.330	300				
0.350	360				
TIME TAKEN TO FALL BETWEEN 25% and 75% - N/A					

Depth (m)

Time from filling (mins)



Time from filling (mins)	Depth (m)
0	0.070
1	0.080
3	0.090
13	0.110
26	0.150
40	0.165
55	0.180
70	0.195
95	0.210
120	0.230
155	0.260
180	0.270
215	0.290
251	0.310
270	0.320
300	0.330
360	0.350



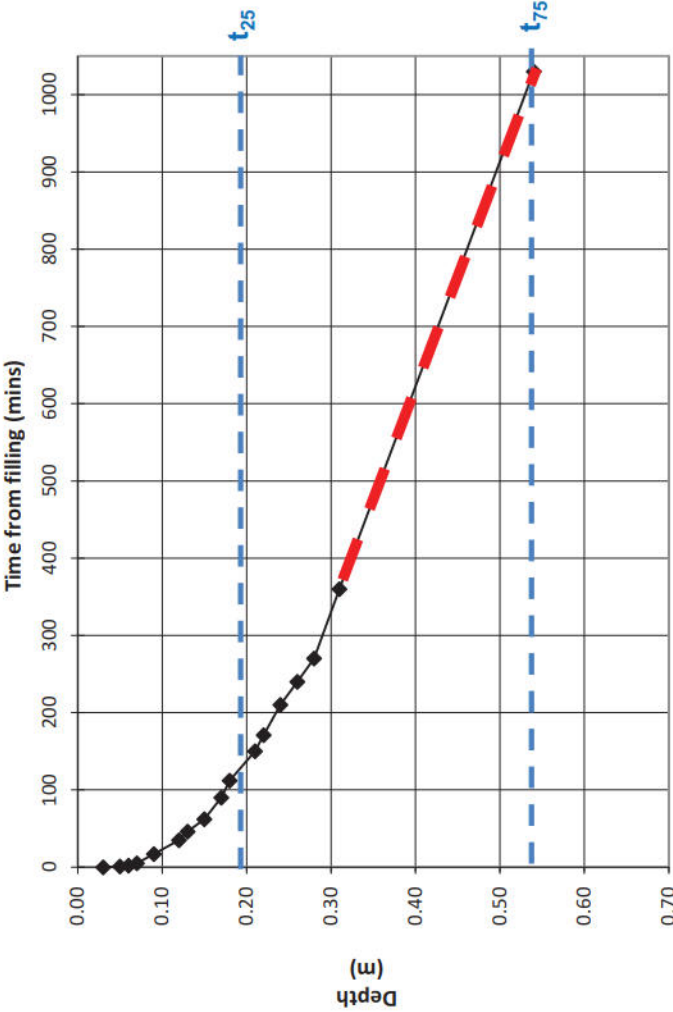
SOIL PERCOLATION TEST SA1

Project Name : Former Bartons Infant School, North Bersted, Bognor Regis, PO22 9BH

Project No: RML 7634

Date : March 2021

Trial Pit No.	SA1
Depth of pit (m)	1.50
Width of pit (m)	0.40
Length of pit (m)	1.45
Depth of water in pit (m)	1.43
Volume of 75% to 25% (V_{p75})	0.41
Mean surface area through which flow occurs (a_{p50})	3.23
Time for outflow (minutes) 75% to 25% (t_{p75-25})	N/A
Time for outflow (seconds) 75% to 25% (t_{p75-25})	N/A
Soil Infiltration Rate (f) m/s =	N/A

	BRE DIGEST 365 SOIL INFILTRATION TEST (SA2)	Risk Management Limited
Project Name : Former Bartons Infant School, North Bersted, Bognor Regis, PO22 9BH	One Filling	Job No. RML 7634 Date : March 2021
Test Depth (m) 0.70		
Depth (m) Time (mins)		
0.030 0 0.050 1 0.060 2 0.070 5 0.090 17 0.120 35 0.130 46 0.150 62 0.170 90 0.180 112 0.210 150 0.220 171 0.240 210 0.260 240 0.280 270 0.310 360 0.540 1030		
TIME TAKEN TO FALL BETWEEN 25% and 75% Extrapolated 895 minutes		

SOIL PERCOLATION TEST SA2

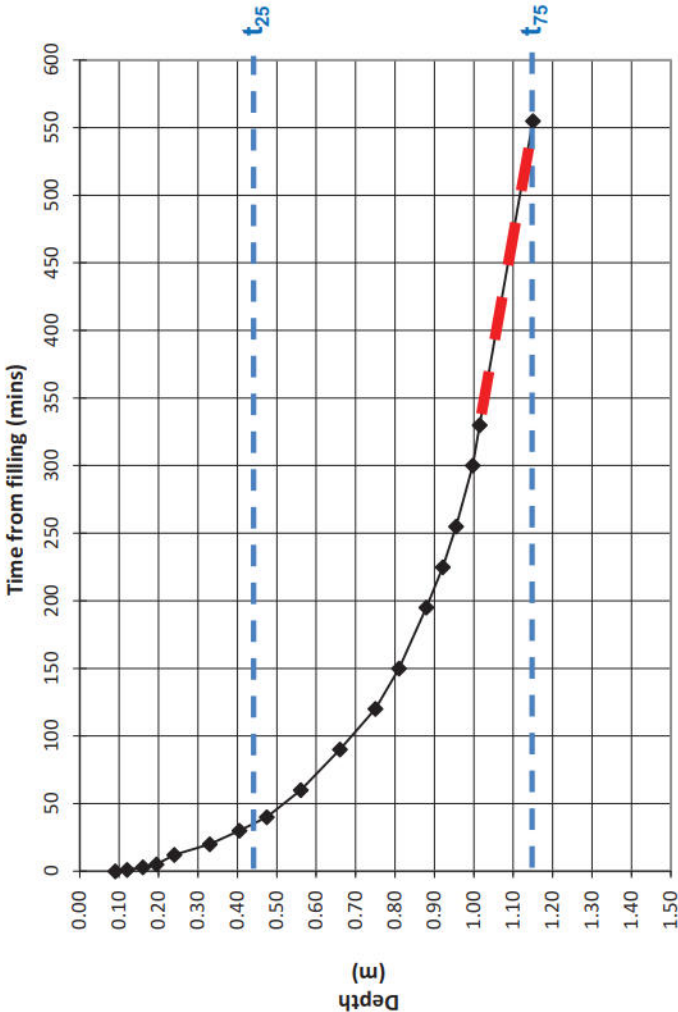
Project Name : Former Bartons Infant School, North Bersted, Bognor Regis, PO22 9BH

Project No: RML 7634

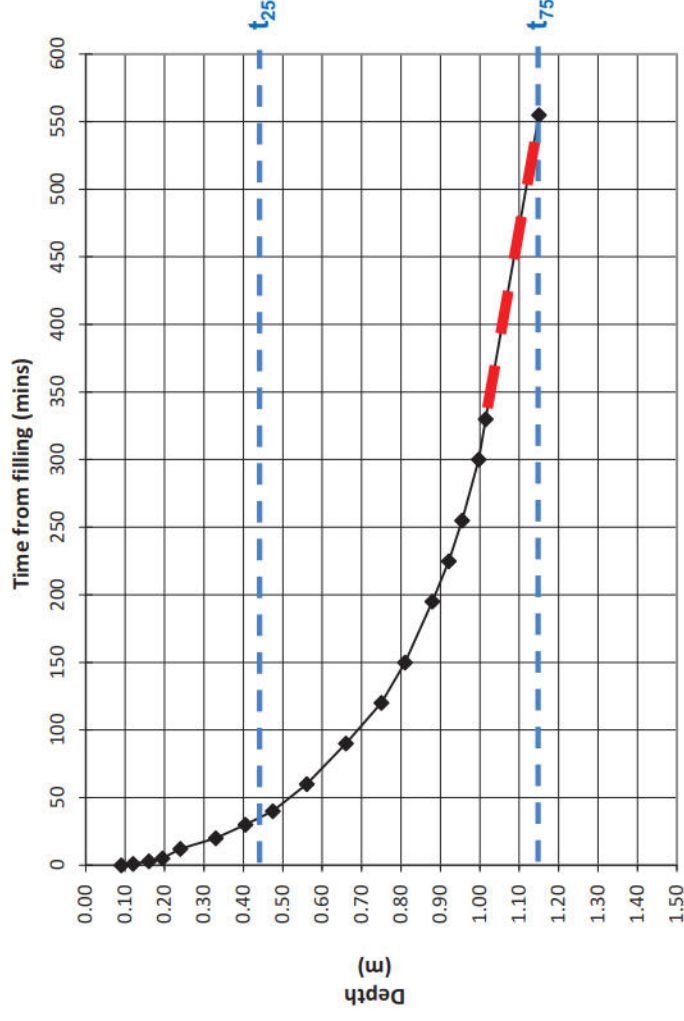
Date : March 2021

Trial Pit No.	SA2
Depth of pit (m)	0.70
Width of pit (m)	0.40
Length of pit (m)	1.00
Depth of water in pit (m)	0.67
Volume of 75% to 25% (V_{p75})	0.13
Mean surface area through which flow occurs (a_{p50})	1.34
Time for outflow (minutes) 75% to 25% (t_{p75-25})	895
Time for outflow (seconds) 75% to 25% (t_{p75-25})	53700
Soil Infiltration Rate (f) m/s =	1.86E-06

	BRE DIGEST 365 SOIL INFILTRATION TEST (SA3)		Risk Management Limited	
Project Name : Former Bartons Infant School, North Bersted, Bognor Regis, PO22 9BH		One Filling		Job No. RML 7634
Test Depth (m)				Date : March 2021
1.50				
Depth (m)	Time (mins)			
0.090	0			
0.120	1			
0.160	3			
0.195	5			
0.240	12			
0.330	20			
0.405	30			
0.475	40			
0.561	60			
0.660	90			
0.750	120			
0.810	150			
0.880	195			
0.921	225			
0.955	255			
0.997	300			
1.015	330			
1.150	555			
TIME TAKEN TO FALL BETWEEN 25% and 75% Extrapolated 520 minutes				



Time from filling (mins)	Depth (m)
0	0.090
1	0.120
3	0.160
5	0.195
12	0.240
20	0.330
30	0.405
40	0.475
60	0.561
90	0.660
120	0.750
150	0.810
195	0.880
225	0.921
255	0.955
300	0.997
330	1.015
555	1.150



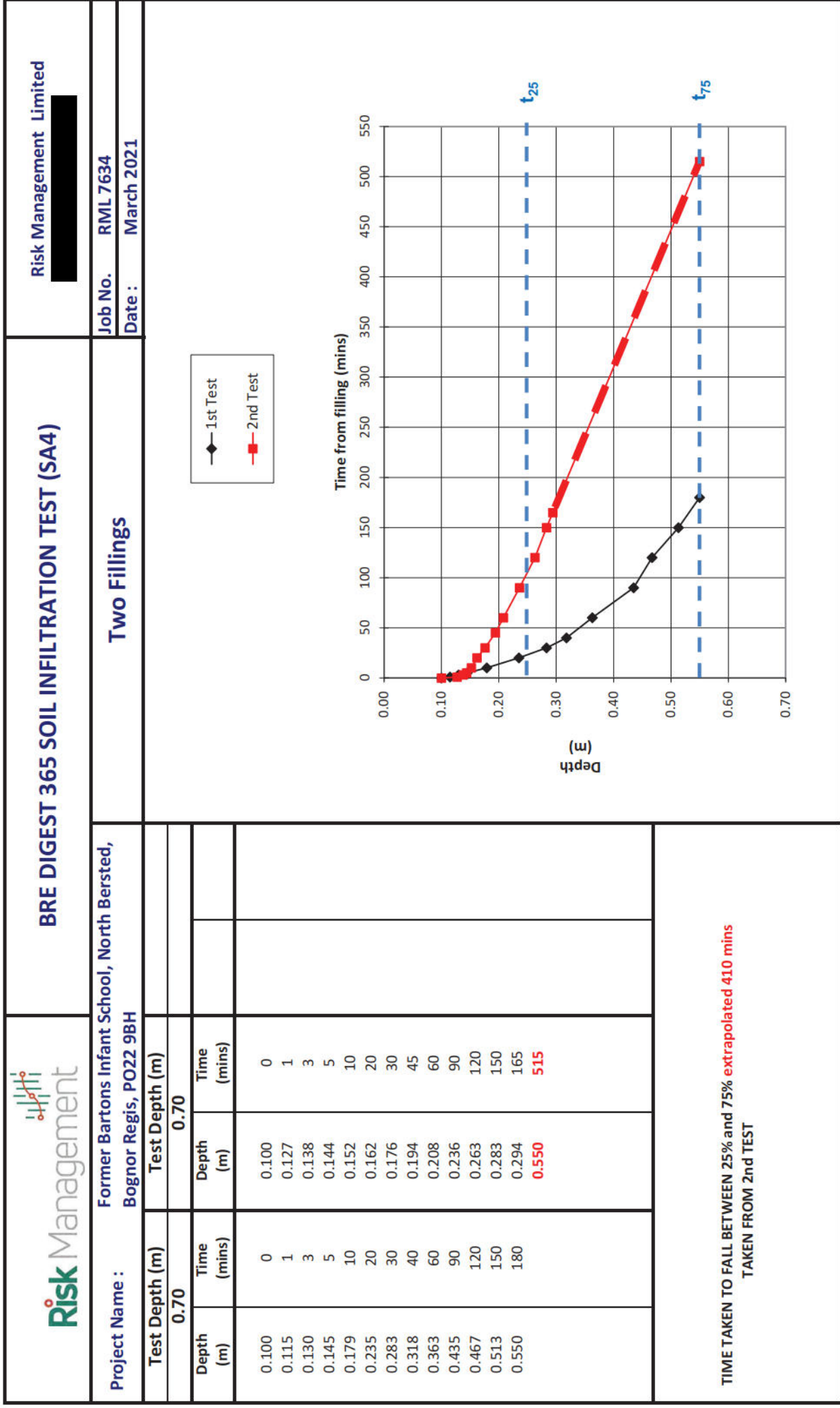
SOIL PERCOLATION TEST SA3

Project Name : Former Bartons Infant School, North Bersted, Bognor Regis, PO22 9BH

Project No: RML 7634

Date : March 2021

Trial Pit No.	SA3
Depth of pit (m)	1.50
Width of pit (m)	0.40
Length of pit (m)	1.50
Depth of water in pit (m)	1.41
Volume of 75% to 25% (V_{p75})	0.42
Mean surface area through which flow occurs (a_{p50})	3.28
Time for outflow (minutes) 75% to 25% (t_{p75-25})	520
Time for outflow (seconds) 75% to 25% (t_{p75-25})	31200
Soil Infiltration Rate (f) m/s =	4.13E-06



SOIL PERCOLATION TEST SA4

Project Name : Former Bartons Infant School, North Bersted, Bognor Regis, PO22 9BH

Project No: RML 7634

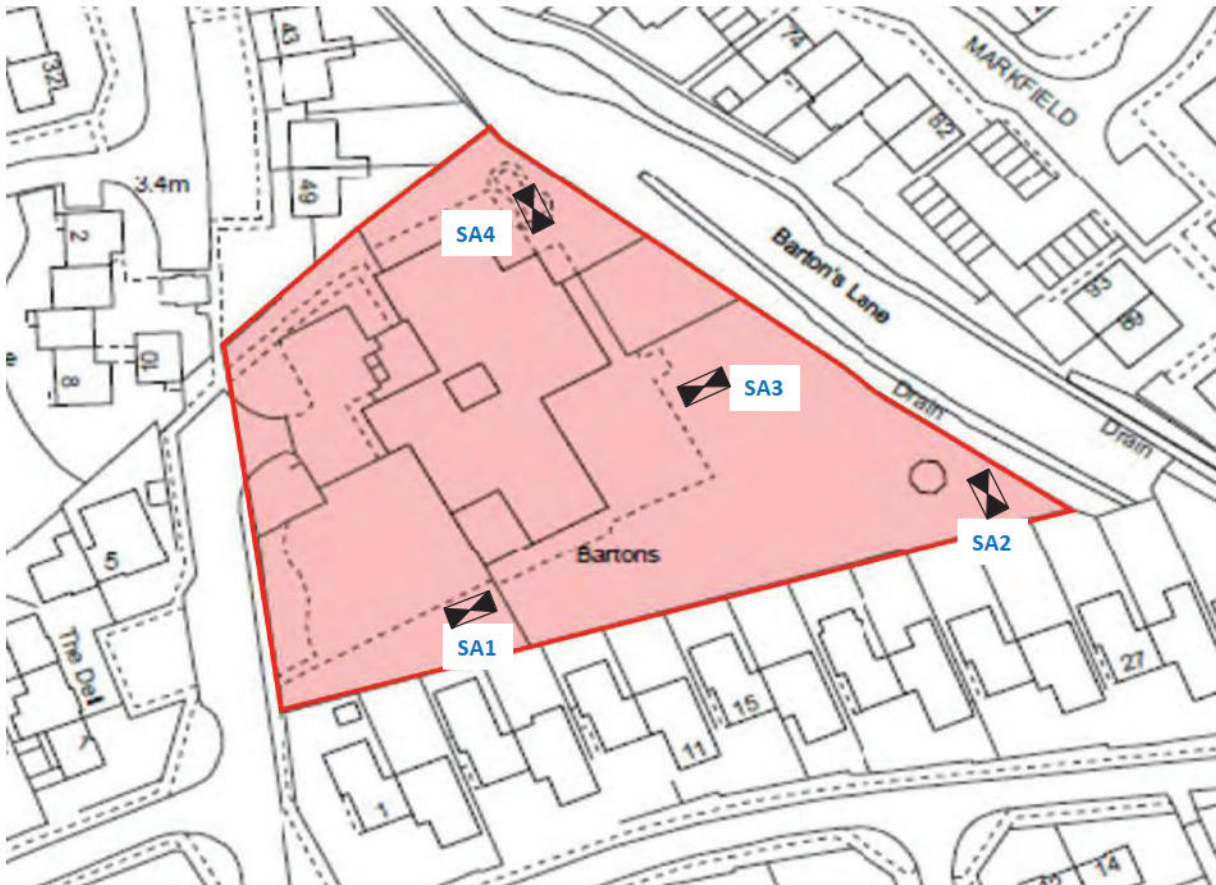
Date : March 2021

Trial Pit No.	SA4
Depth of pit (m)	0.70
Width of pit (m)	0.30
Length of pit (m)	1.10
Depth of water in pit (m)	0.57
Volume of 75% to 25% (V_{p75})	0.09
Mean surface area through which flow occurs (a_{p50})	1.13
Time for outflow (minutes) 75% to 25% (t_{p75-25})	410
Time for outflow (seconds) 75% to 25% (t_{p75-25})	24600
Soil Infiltration Rate (f) m/s =	3.39E-06

KEY



Trial Pit Location



RISK MANAGEMENT LIMITED
Unit 10 Coopers Place, Combe Lane,
Godalming, Surrey GU8 5SZ
Tel : 01883 343572

Title :

**SKETCH FIELDWORK
LOCATION PLAN**

Project Location :

Former Bartons Infant School, North Bersted, Bognor
Regis, PO22 9BH

Report

Date : March 2021

Scale : NTS

Drawn By : MSP

Drg. No. RML 7634 /1

11th February 2022

MSP/RML 7919

Lovell
100 St. John Street
London
EC1M 4EH

For the attention of Ben Weller

Dear Sirs,

**GROUNDWATER MONITORING
AT
FORMER BARTONS INFANT SCHOOL,
NORTH BERSTED, BOGNOR REGIS, PO22 9BH**

Further to your instruction dated 22nd November 2021, we confirm we have now completed the groundwater monitoring visits and have pleasure in enclosing the following factual information.

1. *Groundwater Monitoring Results Sheet*
2. *Drawing No. RML 7919/1 - Sketch Fieldwork Location Plan*

We trust that you will find the enclosed self-explanatory, however, should you have any queries please do not hesitate to contact the writer at the above noted address.

yours faithfully,
for RISK MANAGEMENT LIMITED



Richard Price B.Sc. (Hons), F.G.S., M.I.Env.Sc.
Project Manager



Risk Management Limited

GROUNDWATER MONITORING RESULTS

Project Name: Former Bartons Infant School, North Bersted, Bognor Regis, PO22 9BH

Project No. : RML 7919

Date : April 2022

BH	Date							Groundwater
No.								Level
								(m)
BH1	24th November 2021							1.62
BH1	8th December 2021							1.12
BH1	22nd December 2021							1.28
BH1	5th January 2022							1.11
BH1	19th January 2022							1.17
BH1	2nd February 2022							1.84
BH1	16th February 2022							1.08
BH1	2nd March 2022							1.11
BH1	17th March 2022							1.18
BH1	30th March 2022							1.49
BH2	24th November 2021							1.49
BH2	8th December 2021							1.33
BH2	22nd December 2021							1.44
BH2	5th January 2022							1.22
BH2	19th January 2022							1.34
BH2	2nd February 2022							1.43
BH2	16th February 2022							1.30
BH2	2nd March 2022							1.47
BH2	17th March 2022							1.40
BH2	30th March 2022							1.45
BH3	24th November 2021							1.84
BH3	8th December 2021							1.59
BH3	22nd December 2021							1.80
BH3	5th January 2022							1.56
BH3	19th January 2022							1.71
BH3	2nd February 2022							1.43
BH3	16th February 2022							1.46
BH3	2nd March 2022							1.38
BH3	17th March 2022							1.66
BH3	30th March 2022							1.82

KEY



Borehole Location



RISK MANAGEMENT LIMITED
Unit 10 Coopers Place, Combe Lane,
Godalming, Surrey GU8 5SZ
Tel : 01883 343572

Title :

**SKETCH FIELDWORK
LOCATION PLAN**

Project Location : Former Bartons Infant School, North Bersted, Bognor
Regis, PO22 9BH

Report
Date : April 2022

Scale : NTS

Drawn By : MSP

Drg. No. RML 7919 /1

APPENDIX D – DRAINAGE AND LEVELS DRAWINGS

