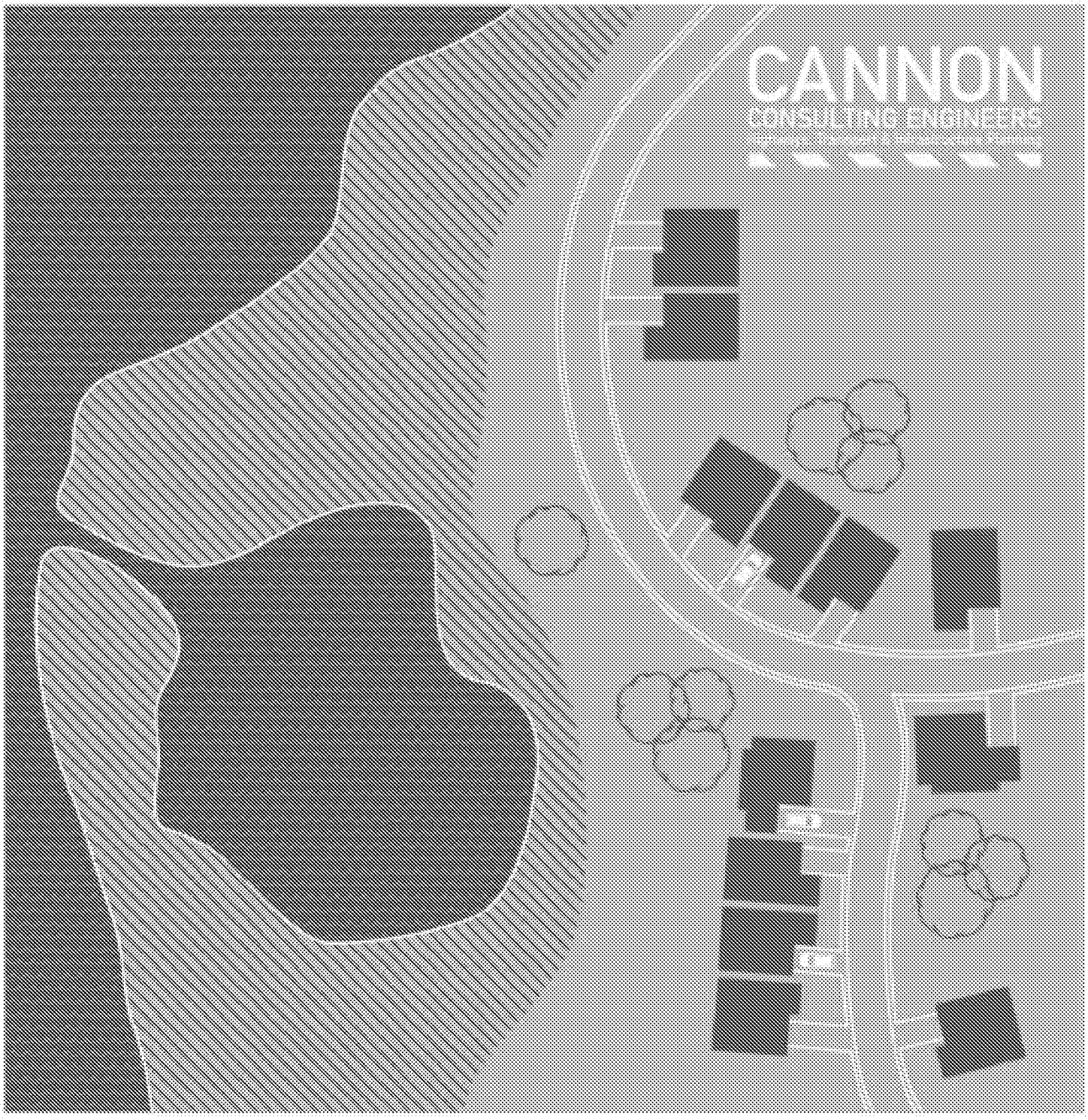

flood risk assessment

Nursery Fields, West Bersted, West Sussex

CCE/U101/FRA1-03

October 2020

For Landform Bersted Ltd

ARUN DISTRICT COUNCIL BE/87/21/OUT

Document Review Sheet

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Reference	Date	Author	Checked
CCE/U101/FRA1-01	September 2020	JH	RT
CCE/U101/FRA1-02	October 2020	JH	RT
CCE/U101/FRA1-03	November 2020	JH	RT

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Contents

1. Introduction
2. Forms of Flooding
3. Surface Water Management
4. Conclusions

Figures

1. Site Location Plan
2. Flood Zone & Reservoir Inundation Map
3. Groundwater Source Protection Zone Map
4. Surface Water Flood Map

Appendices

A. Existing Site
Topographical survey
Southern Water sewer plans
Arun District Council drainage plan
Infiltration Test results
Groundwater monitoring plan and results

B. Proposed Site
Illustrative Layout
Indicative Surface water management strategy
Typical sections
Development catchment and exceedance plan
Causeway flow results
Outline surface water maintenance plan

Summary Table

Site location	Land west of Chalcraft Lane, Bersted, West Sussex, PO21 5FW. Grid reference 496162, 100732.
Planning application	Outline
Existing site	Greenfield (agricultural land)
Site area	Approximately 14 ha
Proposed development	Residential
Flood Zone	1
Reservoir Inundation Zone	None
Surface water flooding	Some small spots of pooling on and around the site (associated with the ditch network).
Surface water management	On-site treatment and attenuation with restricted discharge (Q_{BAR}) to boundary watercourses.

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1.0 Introduction

1.1 This Flood Risk Assessment (FRA) has been prepared for the use of Landform Bersted Ltd to support an outline planning application for residential development of land to the west of Chalcraft Lane, Bersted, West Sussex. Refer to Figure 1 for a site location plan.

1.2 The development proposal comprises up to 225 residential dwellings with associated infrastructure, open space and access. The site forms part of the West of Bersted Strategic Housing Site SD3 identified in the Arun District Council (ADC) Local Plan. The Framework Masterplan for the SD3 strategic site was endorsed by the Arun DC Planning Committee on 30 September 2020 and the Nursery Fields proposals (refer to appendix B) form a part of this area.

1.3 This assessment takes account of the National Planning Policy Framework (NPPF) and the definitions of sources of flooding within the Flood and Water Management Act (FWMA) 2010.

1.4 The report has been prepared following a site visit and a review of the Arun Strategic Surface Water Management Strategy (SSWMS) and Strategic Flood Risk Assessment (SFRA).

1.5 The Nursery Fields site extends to approximately 14 ha of primarily agricultural land and is approximately centred on Ordnance Survey grid reference 496162, 100732.

1.6 The land around the site can be broadly defined as residential land to the north and east, open land to the west and south. The land which abuts the north-western corner of the site benefits from a permission for residential development. The land which abuts the north-eastern site boundary is a formal playing field. The other notable off-site land use is the cemetery to the south of the site.

1.7 There are various ditches/watercourses running through and making up the boundaries of the site. These are shown on the topographical survey and the Arun District Council drainage plan in Appendix A.

1.8 The site is divided into two main sub-catchments. The northern two thirds of the site slopes northwards with levels fall from approximately 7.0 m AOD to approximately 4.5 m AOD. The southern third of the site is relatively flat with levels varying from approximately 7.3 m AOD to 6.8 m AOD. This section of the site drains 'outwards' to the ditches/watercourses which run along the majority of the sub-catchment boundaries.

1.9 British Geological Survey (BGS) mapping describes the site geology as river terrace deposits (superficial geology) over the clays silts and sands of the Lambeth Group in the south of the site and Chalk (the Lewes Nodular Chalk formation) in the north. Trial pit logs (see Appendix A for the infiltration test investigation) confirm the presence of made ground or topsoil over superficial deposits of sandy, silty, gravelly clay.

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1.10 Groundwater monitoring wells have been installed at the site and will continue to be recorded for several months in order to obtain winter levels. A location plan and table of the results are included in Appendix A.

1.11 Currently it is not proposed to remove/fill or pipe any sections of the existing ditches other than to form points of access.

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2.0 Forms of Flooding

Watercourses and Tidal

2.1 As shown on Figure 2 the site sits in Flood Zone 1 (the low probability flood area) and is not considered likely to flood as the result of overtopping from a watercourse or from coastal flooding.

Surface water flooding

2.2 Surface water flood mapping (see Figure 4) shows only minor spots of flooding on the site. The spots are likely to be the result of localised pooling of direct rainfall on the site. The scale of the flooding means that it is not considered a notable threat to the proposals.

2.3 Both the northern and southern boundary ditches are highlighted on the mapping. This is to be expected as the maps show where water will pool and/or flow. The mapping is effectively highlighting the presence of the ditches as functional land drains.

Surface Water Sewers

2.4 Southern Water sewer plans (extract included in Appendix A) show no currently adopted surface water or combined networks upstream/upslope of the site and therefore no associated flood risk.

Groundwater

2.5 The area is prone to seasonally shallow groundwater levels. Current levels (June 2020) are more than 2 m below ground level (see appended table and plans) but this is expected to be higher during wetter months. Quantifying the likelihood of groundwater flooding is problematic and the ADC Surface Water Management Study (SSWMS) does not include any reports of groundwater flooding in the area. The various ditches rising within, and running along the boundaries of the site will help to intercept rising groundwater and channel it away from the site. Should groundwater rise to a point where it emerged at the site it would tend to flow off-site via the network of ditches (rather than pooling on site to a point where it would enter the proposed buildings).

Reservoirs

2.6 The site does not lie in a reservoir inundation area (see image Figure 2).

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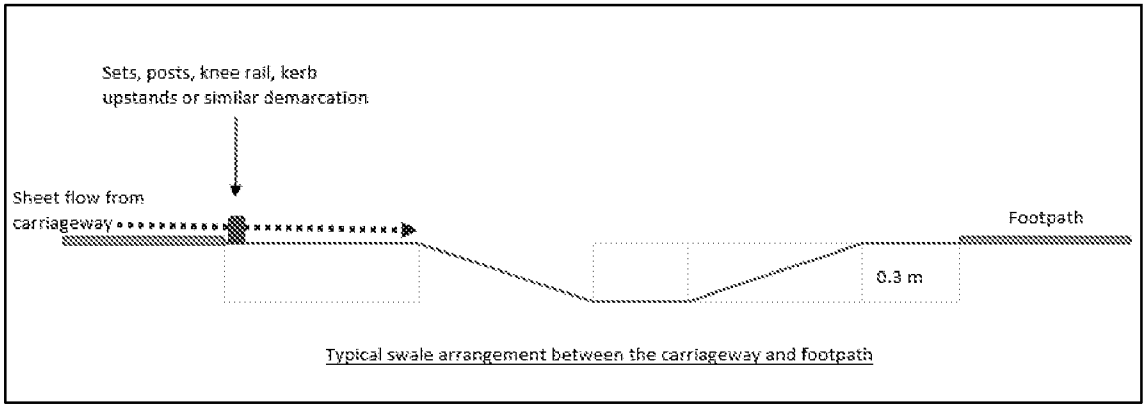
3.0 Surface Water Management

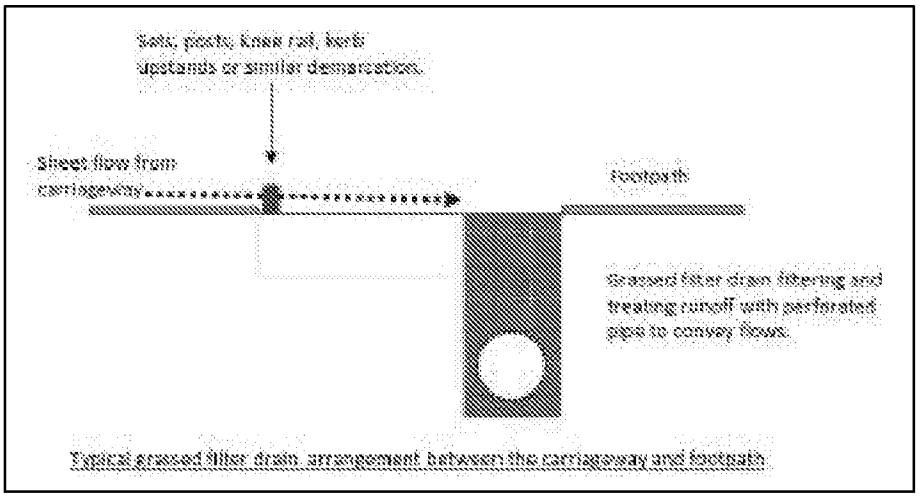
3.1 Initial infiltration testing at the site suggests that the geology may support minimal infiltration rate, but within the generally accepted range. However, given the potential for shallow groundwater at the site the proposed surface water management scheme focuses on a restricted discharge to the adjacent ditches. This strategy does not prejudice the inclusion of localised areas of infiltration (unlined permeable paving, private infiltration blankets for example) at later stages if this is supported by long term groundwater monitoring and more detailed ground investigations.

3.2 The proposed surface water management scheme (refer to the plans and calculations in Appendix B) relies on several attenuation facilities around the edges of the site. The maximum design flow from each basin will be set at the mean annual greenfield rate (Q_{BAR}) of 1.6 l/s/ha factored by the impermeable catchment feeding the basin. The basins are sized to manage flows from up to and including the 1 in 100 annual probability storm with 40 % climate change allowance.

3.3 Road runoff will be drained via swales, roadside SuDS planters, and grassed filter drains. Flow from the road surface will either be overland/sheet flow or via channels through raised footways.



Typical swale arrangement between the carriageway and footpath



Typical grassed filter drain arrangement between the carriageway and footpath

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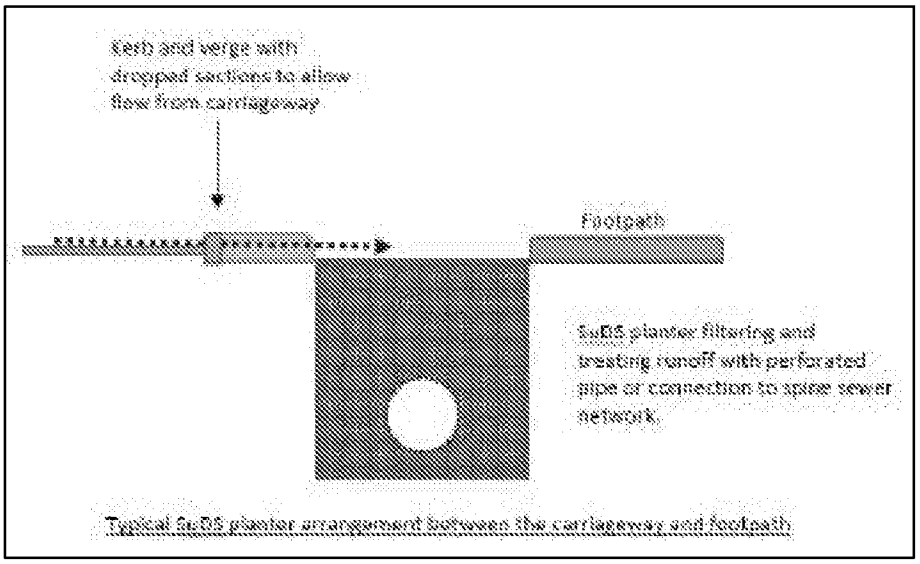

Typical SuDS planter arrangement between the carriageway and footpath

3.4 Runoff will be conveyed to the attenuation basins via a network of channels, shallow pipework (underdrains and 'traditional' pipework where necessary).

Treatment

3.5 Based on Table 26.2 in the SuDS Manual the highest pollution hazard level for the site would be medium (based on the more heavily trafficked spine road and the commercial parcel). The treatment provided by the roadside SuDS features and basins is able to provide sufficient treatment prior to disposal to the watercourses.

3.6 The pollution scores for the Medium hazard category are 0.7, 0.6, and 0.7 (for suspended solids, metals and hydrocarbons respectively). The proposed combination of roadside SuDS planters/swales upstream of the basin provides sufficient treatment for runoff from the higher risk roads with minimum scores of 0.75 (0.5 + 0.25), 0.9 (0.6 + 0.3), and 0.9 (0.6 + 0.3).

Maintenance

3.7 Maintenance responsibilities for the attenuation and treatment facilities and their outfalls will be determined at the appropriate later stages. Currently it is envisaged that all or part the scheme will be managed by a private management company (as part of the broader landscape management) with some elements offered to Southern Water. Outline maintenance schedules are included in Appendix B.

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4.0 Conclusions

4.1 The proposed development is not considered to be subject to significant or unmanageable flooding from the sources identified in the Flood and Water Management Act 2010 (FWMA).

4.2 The surface water management strategy relies on restricted discharge to ditches.

4.3 The assessed surface water management scheme provides sufficient on-site attenuation to manage the 1 in 100 annual probability storm plus 40 % climate change allowance.

4.4 The proposed features provide a suitable level of treatment for the proposed land uses.

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Figures

1. Site Location Plan
2. Flood Zone & Reservoir Inundation Map
3. Groundwater Source Protection Zone Map
4. Surface Water Flood Map

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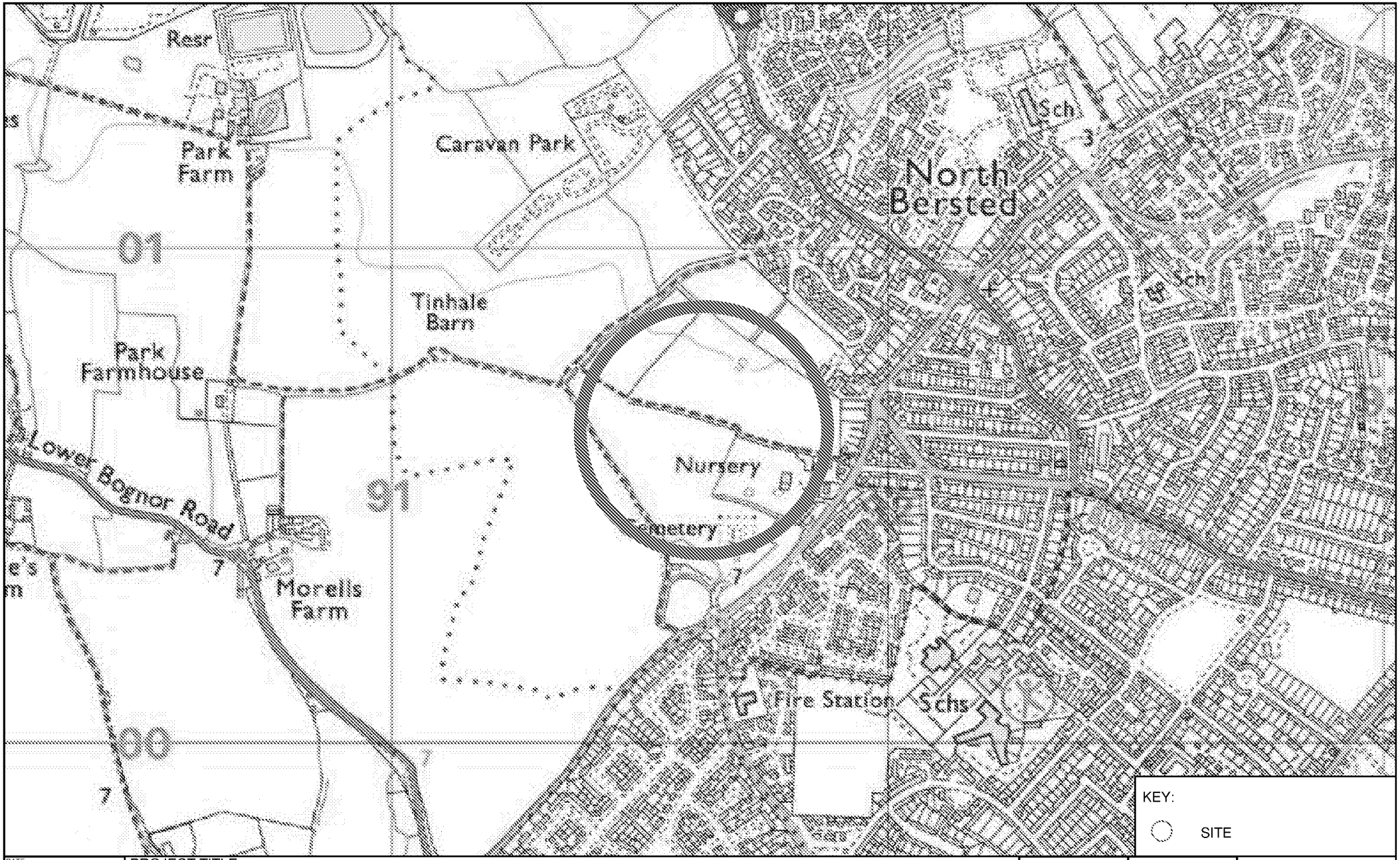

DATE 26/06/2020	PROJECT TITLE NURSERY FIELDS, BERSTED	FIGURE NUMBER 1	PROJECTNO. U101
DRAWN BY DP	FIGURE TITLE SITE LOCATION PLAN		CANNON CONSULTING ENGINEERS
SCALE @ A4 SIZE D.N.S.			

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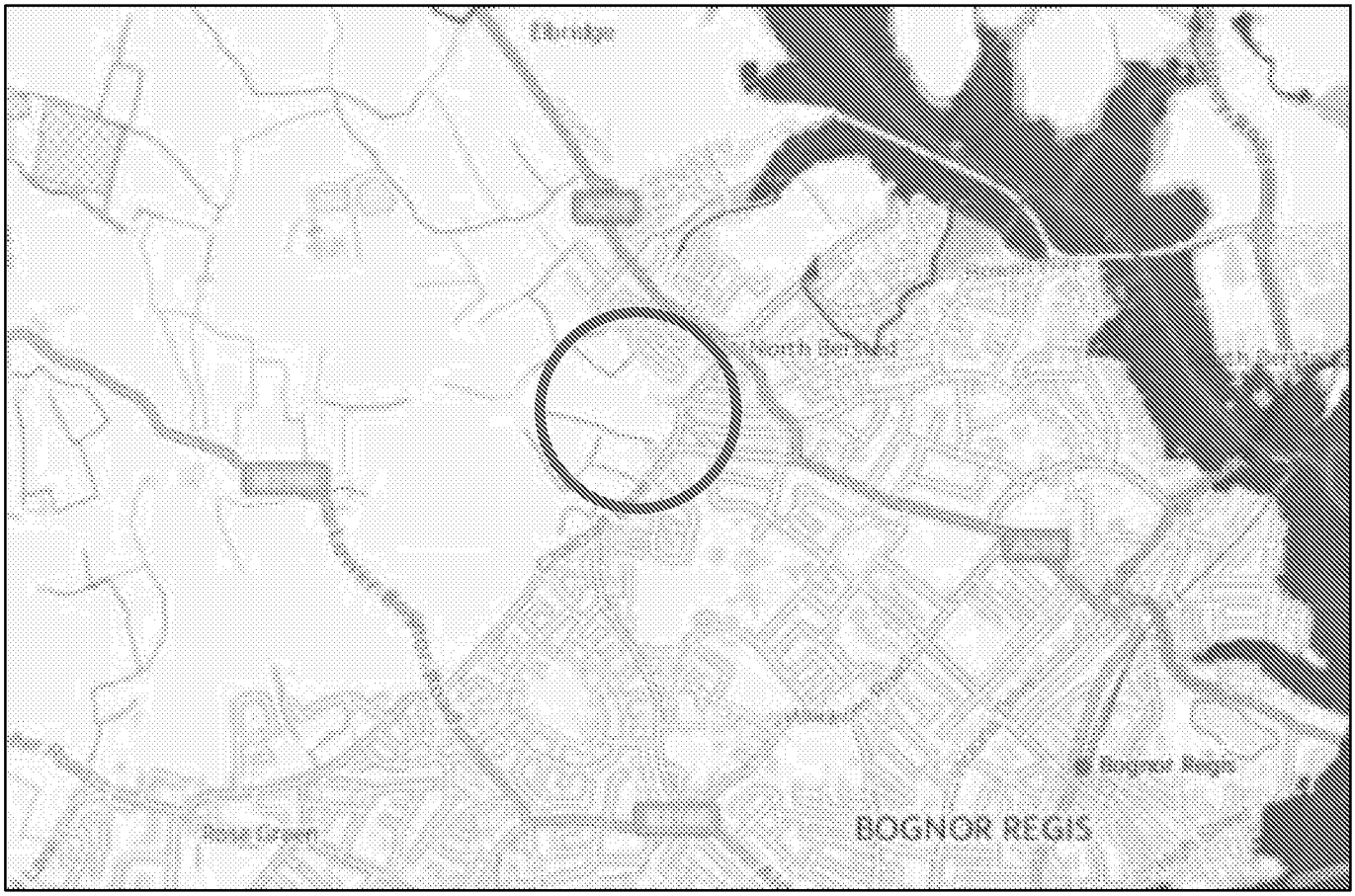

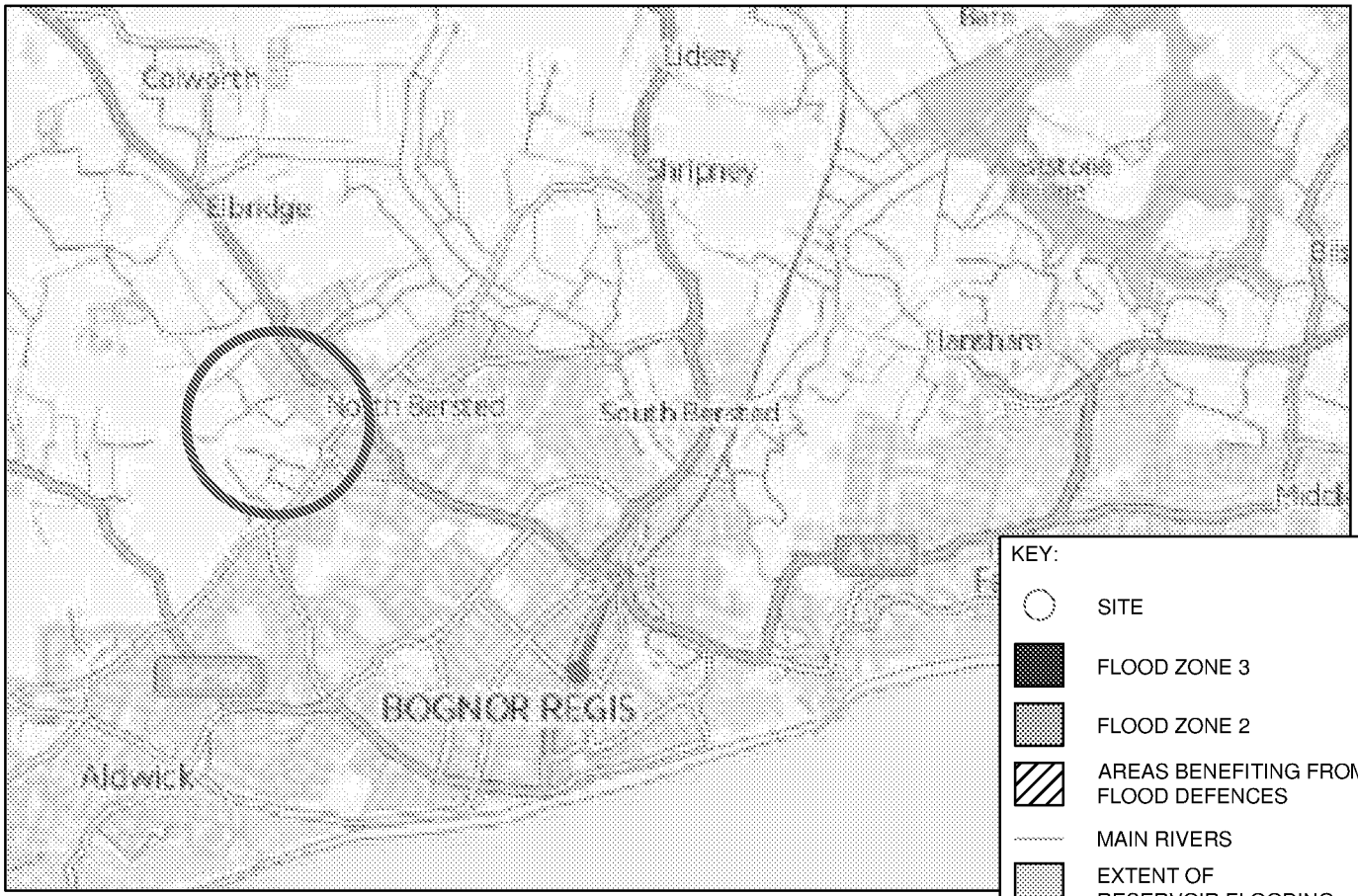

KEY:

- SITE
- FLOOD ZONE 3
- FLOOD ZONE 2
- AREAS BENEFITING FROM FLOOD DEFENCES
- MAIN RIVERS
- EXTENT OF RESERVOIR FLOODING

DATE 26/06/2020	PROJECT TITLE NURSERY FIELDS, BERSTED	DRAWING NUMBER 2	PROJECT NO. U101	CANNON CONSULTING ENGINEERS
DRAWN BY DP	FIGURE TITLE FLOOD ZONES & RESERVOIR INUNDATION PLAN			
SCALE @ A4 SIZE D.N.S.				

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DRAWN BY: DP	FIGURE TITLE: GROUNDWATER SOURCE PROTECTION ZONES PLAN			
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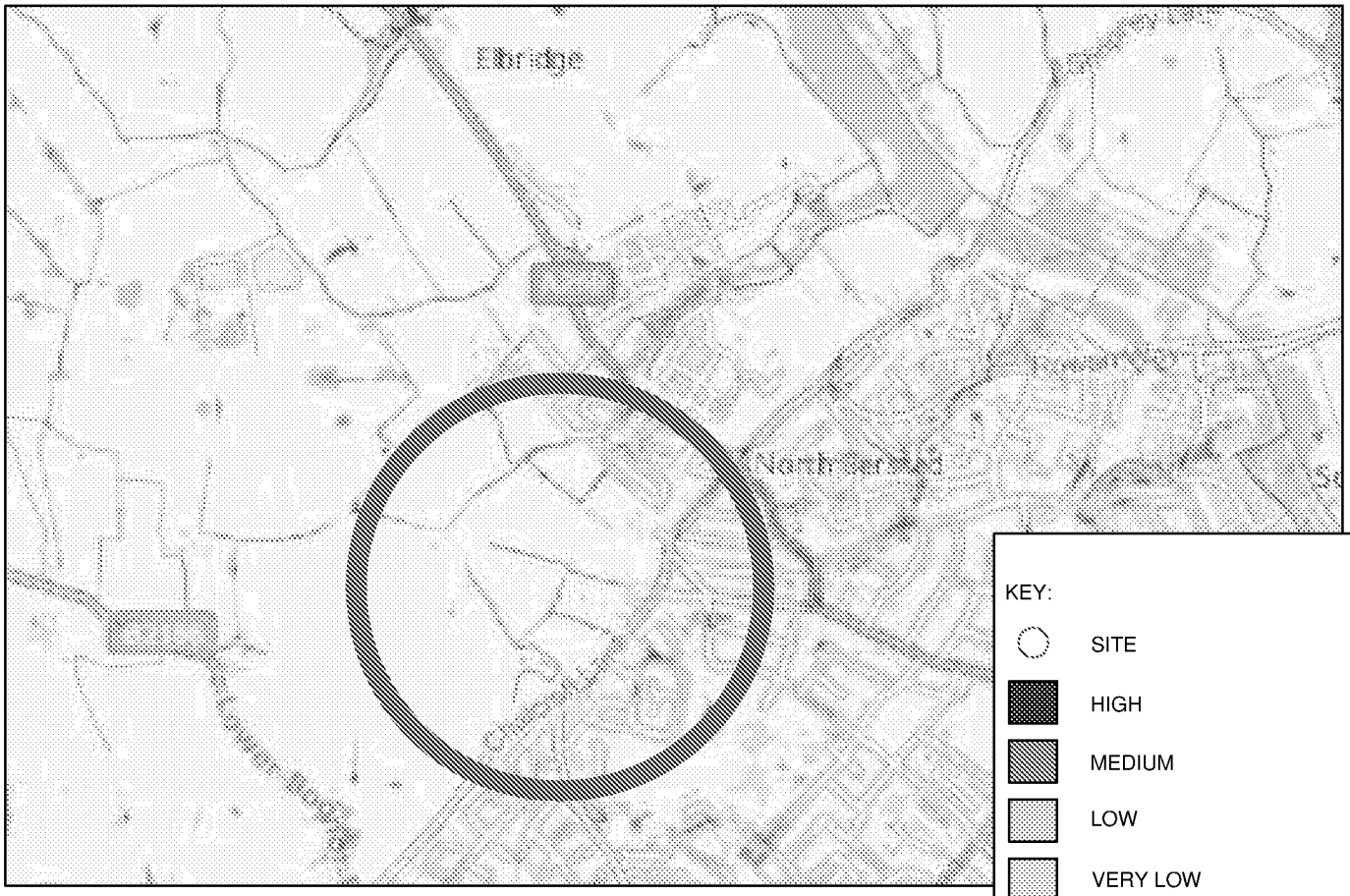

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A. Existing Site

Topographical survey
Southern Water sewer plans
Arun District Council drainage plan
Infiltration Test results
Groundwater monitoring plan and results

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Survey Notes

1. All levels and coordinates relate to a GPS derived datum. Control was established using Ordnance Survey's Active GPS Network OSGB32(36). Translated from ETRS89 using OSGM02 and OSTN15 models. Control station information may not be shown on this drawing, please contact Plandescil Ltd should you require assistance.
2. All levels shown adjacent to kerb lines have been taken at channel face unless stated otherwise.
3. Not all existing services are necessarily shown on this drawing. All services that could be located at the time of the survey have been positioned but should be taken as approximate and used as a guide to their presence. Manhole pipe route directions and pipe diameters have been recorded where visible and accessible. Clarification of all underground routes, inverts and classification must be confirmed by the individual service provider prior to project construction.
4. Land ownership boundaries and legal title extents have not been identified in this survey. Fences have been surveyed at post positions and changes of direction. Hedges located at face or line of main stem, see drawing note to specify.
5. Not all trees have been surveyed, trees shown as below have been fixed by trunk position. Level relates to ground at base of trunk.

Example of surveyed tree, species not recorded unless stated. Trunk diameter shown to scale, average canopy spread surveyed and plotted to scale.

Areas of dense trees and vegetation have been shown by the approximate ground coverage and have no trunk positioning.

Areas of non surveyed planting, positions shown indicatively only, or perimeter surveyed where level information is present.

6. This survey has been merged with Ordnance Survey Master Map Data. Boundaries and physical objects have only been fixed where level information is present. See Licence details No. AL100005917 All Ordnance Survey mapping is subject to their own accuracy and tolerances.
7. The information presented in this survey is a recording of what was present and accessible at the time of survey. Areas of the site not surveyed are represented by Ordnance Survey mapping.
8. The original survey drawing is produced to scale, printed copies to be scaled at users risk. If any stated dimensions are not clear please contact Plandescil Ltd for assistance.

Survey Control Station Table

Station Ref:	Easting	Northing	Level m. AD	Description
PDC1	491831.887	100502.113	6.45	Survey Nail
PDC2	491900.619	100479.530	6.61	Survey Nail
PDC3	491847.620	100407.385	7.21	Survey Nail

See notes for description of site datum and value

Rev	Date	Chkd	Description
A	14.05.20	CSJ	First Issue
0	11.05.20	CSJ	DRAFT ISSUE

plandescil
consulting engineers

Connaught Road Attleborough Norfolk NR17 2BW
Telephone: (01953) 452001 Fax: (01953) 456955
E-mail: pdc@plandescil.co.uk www.plandescil.co.uk

civil / structural / environmental / surveying

Client
Landform Estates

Project
Proposed Development at Land N West of Chalcroft Ln Bognor Regis. PO21 5TS

Drawing Title
Topographical Survey

Scale U.N.O.	Date	Drawn By
1:500 (A0)	April 2020	JMW

Drawing No. 26027/001 Rev A

1:500 - DRAWING SCALE REFERENCE (m)
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Site location plan
Scale 1:5000

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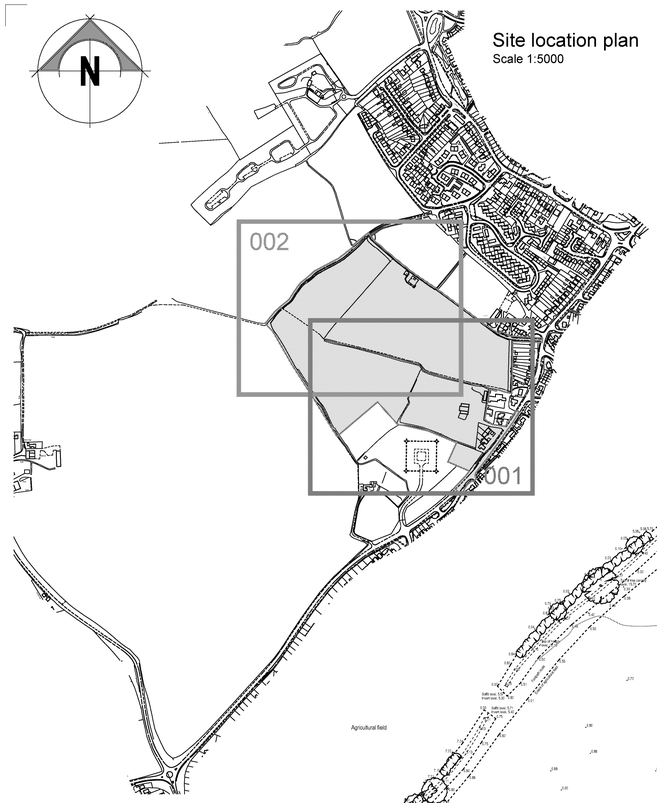
Site location plan
Scale 1:5000



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See notes for description of site datum and value

SURVEY DRAWING OVERLAID
David J. Webb Surveys Ltd (June 2015)
Drawing no. 3992 - 1 Partially used and overlaid to Plandescil Survey. No checks have been made on the data overlaid.

Rev	Date	Chkd	Description
A	14.05.20	CSJ	First issue
0	11.05.20	CSJ	DRAFT ISSUE

plandescil
consulting engineers
Connaught Road Attleborough Norfolk NR17 2BW
Telephone: (01953) 452001 Fax: (01953) 456955
E-mail: pdc@plandescil.co.uk www.plandescil.co.uk
civil / structural / environmental / surveying

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Project
Proposed Development at Land N West of Chalcroft Ln Bognor Regis. PO21 5TS

Drawing Title
Topographical Survey

Scale U.N.O.	Date	Drawn By
1:500 (A0)	April 2020	JMW

Drawing No. 26027/002 Rev A

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Data updated: 01/04/20

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Map Centre: 491649,100697

Date: 06/04/20

Our Ref: 380544 - 1

Wastewater Plan A1

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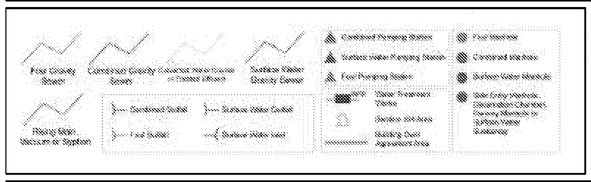

jenni.askew@cannonce.co.uk

Bersted

The positions of pipes shown on this plan are believed to be correct, but Southern Water Services Ltd accept no responsibility in the event of inaccuracy. The actual positions should be determined on site. This plan is produced by Southern Water Services Ltd (c) Crown copyright and database rights 2020 Ordnance Survey 100031673 .This map is to be used for the purposes of viewing the location of Southern Water plant only. Any other uses of the map data or further copies is not permitted.

WARNING: BAC pipes are constructed of Bonded Asbestos Cement.

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

Manhole Reference	Liquid Type	Cover Level	Invert Level	Depth to Invert
0202	F	0.00	0.00	
0504	F	6.90	5.42	
06BB	F	0.00	0.00	
0804	F	0.00	0.00	
6001	F	4.66	2.82	
6101	F	4.52	3.08	
7001	F	3.74	2.14	
7002	F	3.87	2.45	
7003	F	4.01	2.76	
7004	F	4.09	3.09	
7005	F	4.27	3.35	
7006	F	4.44	3.32	
7007	F	4.50	2.22	
7008	F	0.00	0.00	
700D	F	0.00	0.00	
7101	F	4.67	2.38	
7202	F	7.82	5.78	
7203	F	7.88	6.68	
7207	F	0.00	0.00	
720D	F	0.00	0.00	
7901	F	4.52	3.18	
7902	F	4.50	3.71	
7903	F	0.00	0.00	
7904	F	0.00	0.00	
8001	F	3.08	0.48	
8002	F	3.25	1.39	
8003	F	4.10	1.93	
8004	F	3.35	1.34	
8005	F	3.24	0.86	
8006	F	3.72	1.80	
801D	F	0.50	0.50	
8102	F	3.47	0.77	
8103	F	3.28	0.58	
8201	F	7.61	5.31	
8202	F	7.84	5.07	
8203	F	7.14	4.70	
8204	F	7.60	0.00	
8205	F	0.00	0.00	
8206	F	0.00	0.00	
820D	F	0.00	0.00	
8210	F	0.00	0.00	
822D	F	0.00	0.00	
823D	F	0.00	0.00	
824D	F	0.00	0.00	
8301	F	7.79	6.72	
8302	F	7.32	2.97	
8303	F	7.70	0.00	
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8405	F	0.00	0.00	
8406	F	0.00	0.00	
8407	F	0.00	0.00	
8601	F	6.34	4.28	
8701	F	5.76	4.56	
8702	F	0.00	0.00	
870D	F	0.00	0.00	
871D	F	0.00	0.00	
8801	F	4.40	2.58	
8802	F	0.00	0.00	
880D	F	0.00	0.00	
8901	F	3.78	2.23	
8902	F	3.87	2.02	
8903	F	4.03	1.90	
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9205	F	0.00	0.00	
920D	F	0.00	0.00	
921D	F	0.00	0.00	
9301	F	7.01	5.61	
9302	F	6.40	4.83	
9303	F	7.11	6.24	
9304	F	7.35	4.58	
930D	F	0.00	0.00	
9401	F	7.33	4.25	

Manhole Reference	Liquid Type	Cover Level	Invert Level	Depth to Invert
9403	F	7.06	4.77	
9404	F	7.18	4.47	
9501	F	6.64	5.15	
9502	F	7.02	6.68	
950D	F	0.00	0.00	
951D	F	0.00	0.00	
952D	F	0.00	0.00	
953D	F	0.00	0.00	
9601	F	5.69	3.72	
9602	F	5.70	3.60	
9603	F	5.68	1.05	
9604	F	5.81	4.28	
9605	F	7.04	5.96	
9606	F	6.25	4.96	
960D	F	0.00	0.00	
9701	F	0.00	0.85	
9801	F	4.24	2.93	
9802	F	4.81	2.87	
9803	F	4.38	3.07	
9804	F	4.51	3.43	
9805	F	0.00	0.00	
9806	F	0.00	0.00	
9807	F	0.00	0.00	
9808	F	0.00	0.00	
9809	F	0.00	0.00	
9810	F	0.00	0.00	
981D	F	0.00	0.00	
983D	F	0.00	0.00	
984D	F	0.00	0.00	
9901	F	4.19	3.13	
9902	F	4.25	2.86	
9903	F	3.94	2.29	
9904	F	3.87	2.78	
9905	F	5.37	3.87	
9906	F	4.05	2.77	
9907	F	0.00	0.00	
9908	F	0.00	0.00	
990D	F	0.00	0.00	
6051	S	4.86	2.83	
6052	S	4.60	2.67	
6053	S	4.90	2.90	
6151	S	4.31	2.35	
6152	S	4.51	0.00	
6153	S	4.70	2.92	
6154	S	4.69	3.12	
6155	S	0.00	0.00	
7051	S	4.19	2.66	
7052	S	3.80	2.63	
7053	S	4.00	2.26	
7054	S	4.13	2.51	
7055	S	4.36	2.68	
7056	S	4.47	3.13	
7151	S	4.29	2.30	
7951	S	4.07	2.29	
7952	S	4.15	2.40	
7953	S	4.25	3.27	
7954	S	4.24	2.74	
8051	S	3.73	0.00	
8052	S	3.64	2.10	
8053	S	3.55	2.10	
8054	S	3.69	2.19	
8055	S	3.32	1.80	
8056	S	3.64	2.20	
8057	S	3.33	2.34	
8058	S	3.28	2.35	
8059	S	3.41	2.39	
805D	S	1.66	1.66	
8060	S	3.24	2.25	
8061	S	3.65	2.45	
8062	S	3.23	1.66	
806D	S	1.74	1.74	
8251	S	7.78	5.93	
8252	S	7.40	5.74	
8351	S	7.84	6.72	
8352	S	7.58	5.57	
8353	S	7.27	6.72	
8451	S	7.54	5.38	
8452	S	7.28	5.45	
8453	S	6.80	5.59	
8454	S	6.75	5.62	
8750	S	0.00	0.00	
8751	S	0.00	0.00	
875D	S	0.00	0.00	
876D	S	0.00	0.00	
8851	S	4.19	2.39	
8852	S	4.39	3.06	
8853	S	4.63	2.72	
8951	S	3.87	2.57	
8952	S	0.00	2.51	
8953	S	4.04	2.42	
8955	S	3.75	2.31	
8956	S	3.86	0.00	
8957	S	4.23	2.69	
8958	S	3.77	2.51	
9051	S	3.11	2.02	
9052	S	3.26	1.83	
9053	S	3.18	1.74	
9054	S	3.16	1.88	
9055	S	3.15	1.99	
9056	S	3.15	1.76	
9150	S	4.58	2.40	
9151	S	4.34	2.32	
9152	S	4.04	2.24	
9153	S	3.72	2.16	

Manhole Reference	Liquid Type	Cover Level	Invert Level	Depth to Invert
9251	S	7.35	6.15	
9252	S	7.55	6.43	
9253	S	7.38	6.30	
9351	S	6.87	5.57	
9352	S	6.29	5.40	
9451	S	7.21	5.26	
9452	S	7.17	5.07	
9453	S	6.98	5.46	
9454	S	6.78	4.74	
9551	S	5.90	4.94	
9552	S	6.10	3.78	
9553	S	6.73	0.00	
9554	S	6.25	3.89	
9555	S	6.34	4.26	
9651	S	6.28	0.00	
9751	S	0.00	0.00	
9752	S	5.26	0.00	
9753	S	0.00	0.00	
9851	S	4.40	3.24	
9852	S	4.88	3.40	
9853	S	4.80	3.76	
9951	S	4.19	3.30	
9952	S	4.16	3.17	
9953	S	3.86	2.82	
9954	S	3.71	2.71	
9955	S	4.01	2.93	

Manhole Reference	Liquid Type	Cover Level	Invert Level	Depth to Invert

Manhole Reference	Liquid Type	Cover Level	Invert Level	Depth to Invert

Manhole Reference	Liquid Type	Cover Level	Invert Level	Depth to Invert

Arun District Council Maps

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Soil Infiltration Testing Results - Factual Report

Nursery Fields, Bersted

Client: Landform Bersted Limited

Reference: 72302/R/015

Status: Draft for Comments

Date: 5th October 2020

Issued by: **Nott Group**

Unit L26
Hastingwood Industrial Park
Wood Lane
Birmingham
B24 9QR

Prepared by:

Name Mark Hiatt MSci (Hons) CGeol EurGeol FGS

Signature

Title **Geotechnical Director**

Checked and Approved by:

Name Ed Bullivant BSc FGS CGeol SiLC

Signature

Title **Director**

This report has been prepared by Nott Group with all reasonable skill, care and diligence within the terms of the Contract with the client, incorporation of our General Terms and Condition of Business and taking account of the resources devoted to us by agreement with the client.

We disclaim any responsibility to the client and others in respect of any matters outside the scope of the above.

This report is confidential to the client and we accept no responsibility of whatsoever nature to third parties to whom this report, or any part thereof, is made known. Any such party relies on the report at its own risk.

Contents

1. Brief **1**
2. Ground Conditions Summary **1**
2.1 Published Geology 1
2.2 Ground Conditions Encountered 2
3. Testing Methodology and Results **3**
3.1 Infiltration Testing and Results 3
3.2 Assessment of Results and Recommendations 4

Appendices

Appendix A **Trial Pit Location Plan**
Appendix B **Infiltration Test Results**
Appendix C **Trial Pit Logs**

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1. Brief

The Nott Group have been instructed by the client to undertake soil infiltration testing at the above site.

This report has been prepared for the exclusive use of the client for the purpose of assisting them in evaluating the potential soakaway design for the above site.

The information presented within this report is based on observations made on site and ground conditions encountered which can vary between test locations.

2. Ground Conditions Summary

2.1 Published Geology

The following table summarises the published geological information for the site.

Table 1: Published Site Geology

Data	Information
Solid Geology	The Lambeth Group is mapped across the majority of the site and is described by the British Geological Survey (BGS) as vertically and laterally variable sequences mainly of clay, some silty or sandy, with some sands and gravels, minor limestones and lignites and occasional sandstone and conglomerate. White Chalk subgroup is mapped across the northern part of the site including Lewes Nodular Chalk Formation, Seaford Chalk Formation, Newhaven Chalk Formation, Culver Chalk Formation and Portsdown Chalk Formation (Undifferentiated)
Superficial Geology	The River Terrace Deposits are mapped across the entire site and is described by the BGS as Sand and gravel, locally with lenses of silt, clay or peat.
Made Ground	A small amount of Worked Ground (undivided) is mapped in the eastern corner of the site by the BGS.

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2.2 Ground Conditions Encountered

The following table summarises the ground conditions encountered during the site works for the infiltration testing. Full descriptions of the ground conditions encountered can be found in Appendix C.

Table 2: Ground Conditions Encountered Summary

Strata Encountered	Description	Depth in meters below ground level (m bgl)
Topsoil	Brown very clayey slightly gravelly CLAY. Gravel is fine to medium angular quartz.	TP1: 0.00m - 0.45m TP2: 0.00m - 0.34m TP3: 0.00m - 0.44m TP4: 0.00m - 0.40m TP5: 0.00m - 0.42m TP6: 0.00m - 0.31m TP7: 0.00m - 0.25m TP8: 0.00m - 0.31m
Natural Superficial Deposits	Orange brown sandy slightly gravelly CLAY. Gravel is medium angular flint and quartz. Brown sandy slightly gravelly CLAY. Gravel is medium angular flint and quartz.	TP1: 0.45m – 1.45m TP2: 0.34m – 1.35m TP3: 0.44m – 1.40m TP4: 0.40m – 0.65m TP5: 0.42m – 0.68m TP6: 0.31m – 0.60m TP7: 0.25m – 1.50m TP8: 0.31m – 1.45m

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3. Testing Methodology and Results

3.1 Infiltration Testing and Results

The testing has been undertaken in general accordance of BRE Digest 365 2016 for Soakaway Design. The results of the testing are summarised in the following table. A full set of results with the adopted methodology are enclosed in Appendix B.

The site works were undertaken over four days (23rd to 26th August 2020). The first two day comprised the excavation of all pits and filling of water with follow-up monitoring and recording. At the end of the first and second days the trial pits were made safe. The subsequent days comprised the refilling of the pits with water and further monitoring and recording.

The test locations and trial pit logs are enclosed in Appendix A and C.

Table 3: Results Summary

Trial Pit Location	Depth of Pit (m begl)	Minimum Result Obtained (m/s)	Comments
TP1	1.45m	1.0E-06	3 tests undertaken
TP2	1.35m	2.1E-06	3 tests undertaken
TP3	1.40m	1.4E-06	3 tests undertaken
TP4	0.6m	1.0E-06	3 tests undertaken
TP5	0.68m	1.1E-06	3 tests undertaken
TP6	0.6m	1.2E-06	3 tests undertaken
TP7	1.50	1.5E-06	3 tests undertaken
TP8	1.45	2.1E-06	3 tests undertaken

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3.2 Assessment of Results and Recommendations

Based upon the above results and the ground conditions encountered (in accordance with BRE 365 2016) we recommend that for deep soakaways (approximately 1.5m below ground level) that an infiltration rate of 1.0E-06 m/s is adopted. For shallower soakaways (approximately 0.6m below ground level) an infiltration rate of 1.0E-06 m/s should be adopted. Further testing may be necessary to confirm this. Groundwater level monitoring is also warranted and has been commenced.

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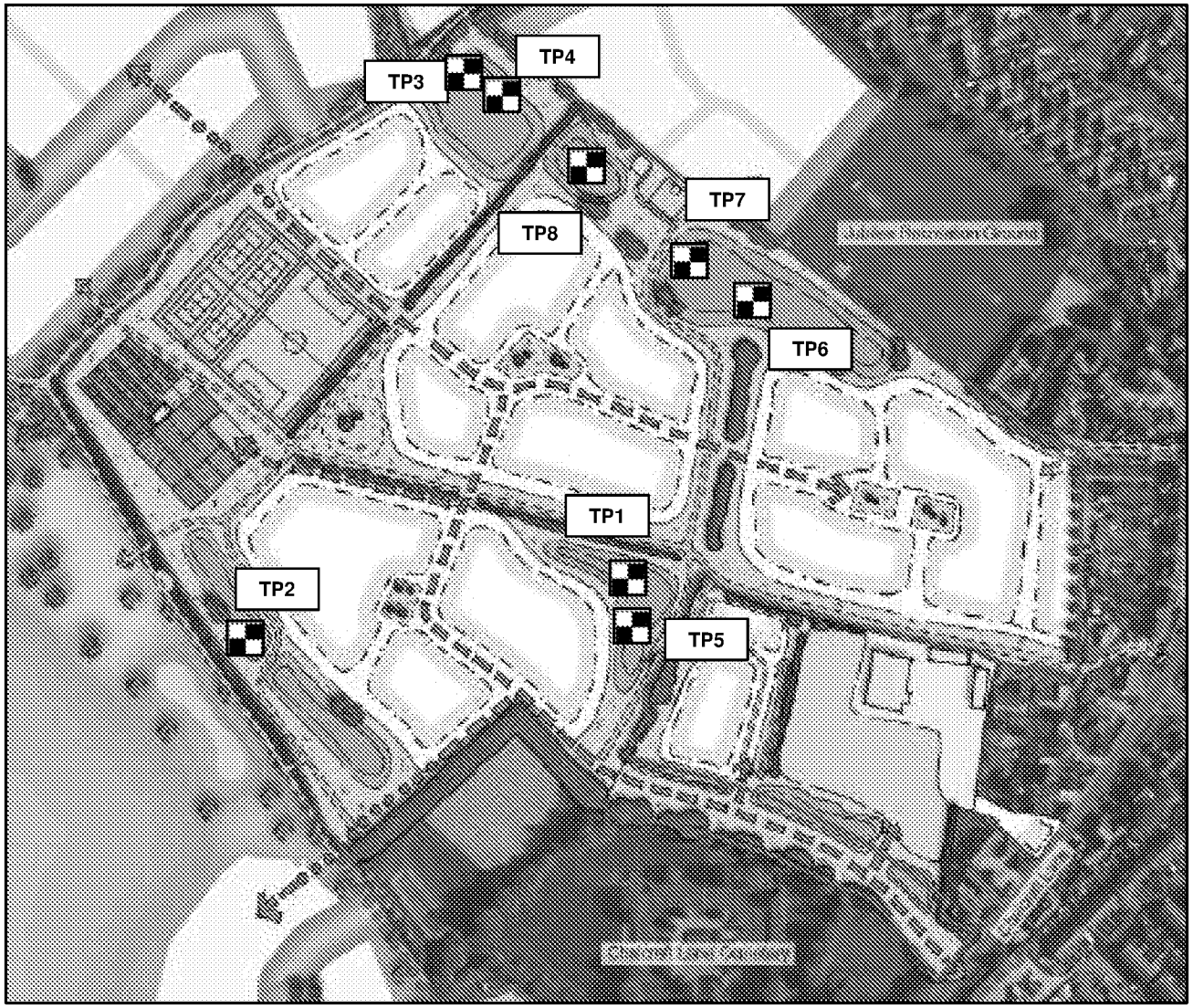
Appendix A Trial Pit Location Plan



Key

Machine Excavated Trial Pit (TP)

N

Do Not Scale

NottGroup

Title:	**Appendix A – Trial Pit Location Plan**
Project Name:	**Nursery Fields, Bersted**
Client:	**Landform Bersted Limited**
Project No: **72302**	Date: **10/09/2020** / Drawing No **1**

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Appendix B Infiltration Test Results

Project No.: 73002 — Nott Group

Site: Nursery Fields — Infiltration Test

Test Location: TP1 test 1

Date: 23rd, 24th and 25th August 2020

Analysis using method as described in BRE Digest 365 2016

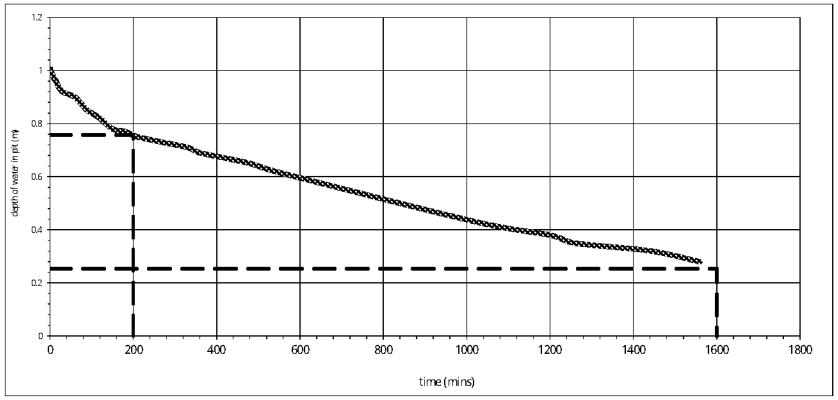
	width (m)	length (m)	
test pit top dimensions	0.41	1.62	
test pit base dimensions	0.4	1.6	test infiltration rate (f) = 1.5E-06 m/s
test pit depth	1.45	m	groundwater depth before adding water (m) = 0

time (mins)	depth to water surface (m)	depth of water in pit (m)	time elapsed from test start (mins)	volume of water lost from test start (m^3)	area of walls and base from test start (m^2)
0	0.44	1.01	0	0.00	4.70
1	0.45	1	1	0.01	4.68
2	0.45	1	2	0.01	4.68
3	0.45	1	3	0.01	4.68
4	0.455	0.995	4	0.01	4.67
5	0.46	0.99	5	0.01	4.66
10	0.48	0.97	10	0.03	4.62
15	0.49	0.96	15	0.03	4.60
20	0.51	0.94	20	0.05	4.56
25	0.52	0.93	25	0.05	4.54
30	0.53	0.92	30	0.06	4.52
45	0.54	0.91	45	0.07	4.50
60	0.55	0.9	60	0.07	4.48
75	0.575	0.875	75	0.09	4.43
90	0.6	0.85	90	0.10	4.38
120	0.63	0.82	120	0.12	4.32
150	0.67	0.78	150	0.15	4.24
180	0.68	0.77	180	0.16	4.22
210	0.7	0.75	210	0.17	4.18
270	0.72	0.73	270	0.18	4.14
330	0.74	0.71	330	0.20	4.10
360	0.76	0.69	360	0.21	4.06
420	0.78	0.67	420	0.22	4.02
480	0.8	0.65	480	0.24	3.97
540	0.83	0.62	540	0.25	3.91
1020	1.02	0.43	1020	0.38	3.53
1200	1.07	0.38	1200	0.41	3.43
1260	1.1	0.35	1260	0.43	3.37
1440	1.13	0.32	1440	0.45	3.31
1560	1.17	0.28	1560	0.48	3.23

0.7575 m water depth
time is 200.0 minutes

0.2525 m water depth
time is 1600.0 minutes

Extrapalated values			Tp75-25	Vp75-25	Ap50	F
200	0.6925	0.7575	0	0.00		
1600	1.1975	0.2525	1400	0.33	2.67	1.5E-06



Project No.: 73002 — Nott Group

Site: Nursery Fields — Infiltration Test

Test Location: TP1 test 2

Date: 23rd, 24th and 25th August 2020

Analysis using method as described in BRE Digest 365 2016

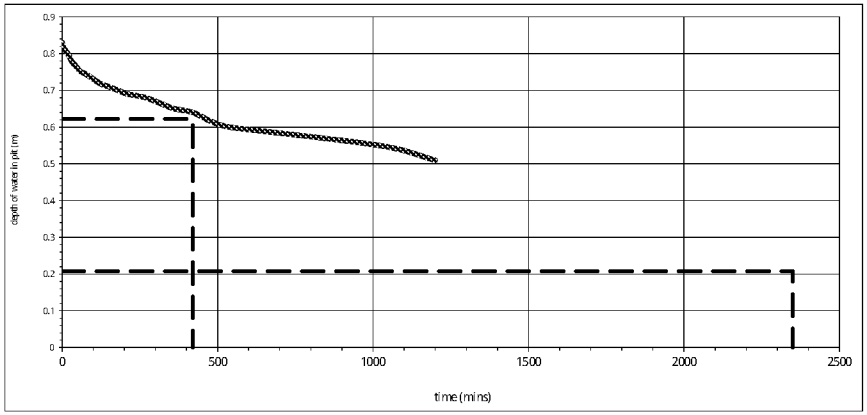
	width (m)	length (m)	
test pit top dimensions	0.41	1.62	
test pit base dimensions	0.4	1.6	test infiltration rate (f) = 1.0E-06 m/s
test pit depth	1.45	m	groundwater depth before adding water (m) = 0

time (mins)	depth to water surface (m)	depth of water in pit (m)	time elapsed from test start (mins)	volume of water lost from test start (m^3)	area of walls and base from test start (m^2)
0	0.62	0.83	0	0.00	3.97
5	0.635	0.815	5	0.01	3.94
10	0.64	0.81	10	0.01	3.93
25	0.66	0.79	25	0.03	3.89
30	0.67	0.78	30	0.03	3.87
45	0.685	0.765	45	0.04	3.84
60	0.7	0.75	60	0.05	3.81
75	0.705	0.745	75	0.06	3.80
120	0.73	0.72	120	0.07	3.75
150	0.74	0.71	150	0.08	3.73
180	0.75	0.7	180	0.08	3.71
210	0.76	0.69	210	0.09	3.69
270	0.77	0.68	270	0.10	3.67
330	0.79	0.66	330	0.11	3.63
360	0.8	0.65	360	0.12	3.61
420	0.81	0.64	420	0.12	3.59
480	0.835	0.615	480	0.14	3.54
540	0.85	0.6	540	0.15	3.51
1020	0.9	0.55	1020	0.18	3.41
1200	0.94	0.51	1200	0.21	3.33

0.6225 m water depth
time is 420.0 minutes

0.2075 m water depth
time is 2350.0 minutes

Extrapalated values			Tp75-25	Vp75-25	Ap50	F
420	0.8275	0.6225	0	0.00		
2350	1.2425	0.2075	1930	0.27	2.30	1.0E-06



Project No.: 73002

Site: Nursery Fields

Test Location: TP1 test 3

Date 23rd, 24th and 25th August 2020

Nott Group

Infiltration Test

Analysis using method as described in BRE Digest 365 2016

	width (m)	length (m)
test pit top dimensions	0.41	1.62
test pit base dimensions	0.4	1.6
test pit depth	1.45	m

test infiltration rate (f) = 1.8E-06 m/s

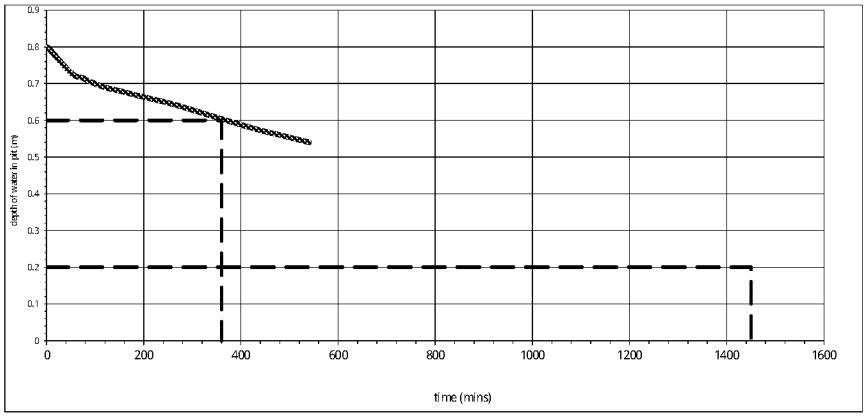
groundwater depth before adding water (m) = 0

time (mins)	depth to water surface (m)	depth of water in pit (m)	time elapsed from test start (mins)	volume of water lost from test start (m^3)	area of walls and base from test start (m^2)
0	0.65	0.8	0	0.00	3.85
5	0.655	0.795	5	0.00	3.84
45	0.715	0.735	45	0.04	3.72
60	0.73	0.72	60	0.05	3.69
75	0.735	0.715	75	0.06	3.68
90	0.745	0.705	90	0.06	3.66
120	0.76	0.69	120	0.07	3.63
150	0.77	0.68	150	0.08	3.61
180	0.78	0.67	180	0.08	3.59
210	0.79	0.66	210	0.09	3.57
270	0.81	0.64	270	0.10	3.53
420	0.87	0.58	420	0.14	3.41
480	0.89	0.56	480	0.16	3.37
540	0.91	0.54	540	0.17	3.33

0.6 m water depth
time is 360.0 minutes

0.2 m water depth
time is 1450.0 minutes

Extrapalated values			Tp75-25	Vp75-25	Ap50	F
360	0.85	0.6	0	0.00		
1450	1.25	0.2	1090	0.26	2.24	1.8E-06



Project No.: 73002

Site: Nursery Fields

Test Location: TP2 test 1

Date 23rd, 24th and 25th August 2020

Nott Group

Infiltration Test

Analysis using method as described in BRE Digest 365 2016

	width (m)	length (m)
test pit top dimensions	0.39	1.71
test pit base dimensions	0.4	1.7
test pit depth	1.35	m

test infiltration rate (f) = 2.6E-06 m/s

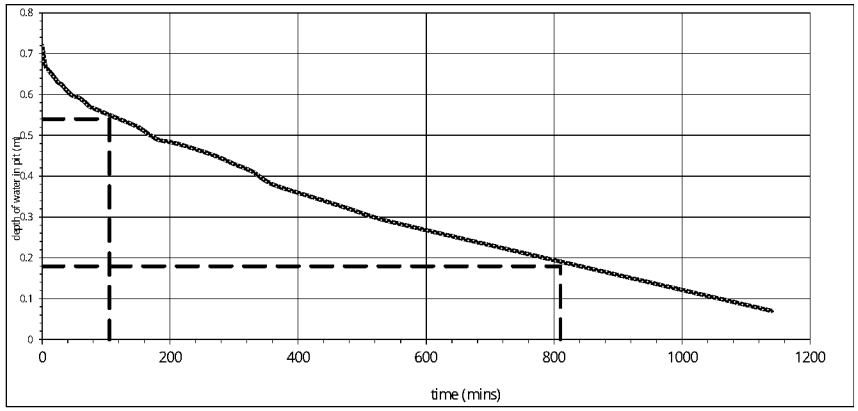
groundwater depth before adding water (m) =

time (mins)	depth to water surface (m)	depth of water in pit (m)	time elapsed from test start (mins)	volume of water lost from test start (m^3)	area of walls and base from test start (m^2)
0	0.63	0.72	0	0.00	3.70
1	0.64	0.71	1	0.01	3.68
2	0.65	0.7	2	0.01	3.66
3	0.66	0.69	3	0.02	3.64
4	0.67	0.68	4	0.03	3.62
5	0.68	0.67	5	0.03	3.60
10	0.69	0.66	10	0.04	3.58
15	0.7	0.65	15	0.05	3.56
20	0.71	0.64	20	0.05	3.54
25	0.72	0.63	25	0.06	3.52
30	0.725	0.625	30	0.06	3.50
45	0.75	0.6	45	0.08	3.45
60	0.76	0.59	60	0.09	3.43
75	0.78	0.57	75	0.10	3.39
90	0.79	0.56	90	0.11	3.37
120	0.81	0.54	120	0.12	3.33
150	0.83	0.52	150	0.13	3.28
180	0.86	0.49	180	0.16	3.22
210	0.87	0.48	210	0.16	3.20
270	0.9	0.45	270	0.18	3.14
300	0.92	0.43	300	0.20	3.10
330	0.94	0.41	330	0.21	3.05
360	0.97	0.38	360	0.23	2.99
420	1	0.35	420	0.25	2.93
480	1.03	0.32	480	0.27	2.86
540	1.06	0.29	540	0.29	2.80
1140	1.28	0.07	1140	0.44	2.34

0.54 m water depth
time is 105.0 minutes

0.18 m water depth
time is 810.0 minutes

Extrapalated values			Tp75-25	Vp75-25	Ap50	F
105	0.81	0.54	0	0.00		
810	1.17	0.18	705	0.24	2.19	2.6E-06



Project No.: 73002
Site: Nursery Fields
Test Location: TP2 test 2
Date 23rd, 24th and 25th August 2020

Nott Group
Infiltration Test

Analysis using method as described in BRE Digest 365 2016

	width (m)	length (m)
test pit top dimensions	0.39	1.71
test pit base dimensions	0.4	1.7
test pit depth	1.35	m

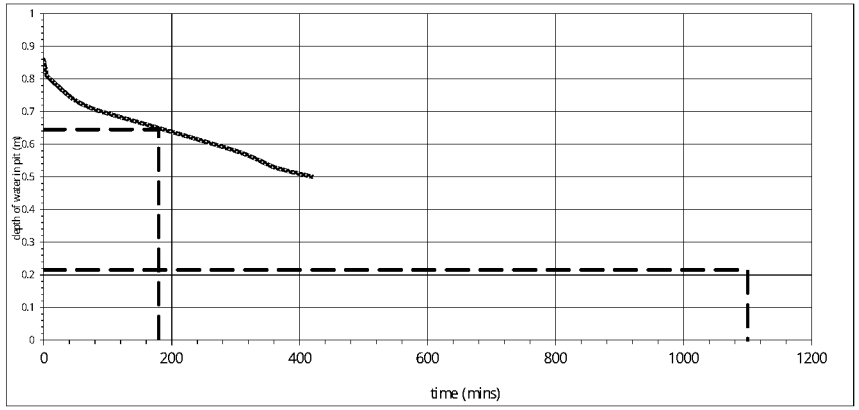
test infiltration rate (f) = 2.1E-06 m/s
groundwater depth before adding water (m) =

time (mins)	depth to water surface (m)	depth of water in pit (m)	time elapsed from test start (mins)	volume of water lost from test start (m^3)	area of walls and base from test start (m^2)
0	0.49	0.86	0	0.00	4.29
1	0.5	0.85	1	0.01	4.27
2	0.51	0.84	2	0.01	4.25
3	0.52	0.83	3	0.02	4.23
4	0.53	0.82	4	0.03	4.21
5	0.54	0.81	5	0.03	4.19
10	0.55	0.8	10	0.04	4.17
45	0.61	0.74	45	0.08	4.04
75	0.64	0.71	75	0.10	3.98
90	0.65	0.7	90	0.11	3.96
300	0.77	0.58	300	0.19	3.70
360	0.82	0.53	360	0.22	3.60
420	0.85	0.5	420	0.24	3.54

0.645 m water depth
time is 180.0 minutes

0.215 m water depth
time is 1100.0 minutes

Extrapalated values			Tp75-25	Vp75-25	Ap50	F
180	0.705	0.645	0	0.00		
1100	1.135	0.215	920	0.29	2.49	2.1E-06



Project No.: 73002
Site: Nursery Fields
Test Location: TP2 test 3
Date 23rd, 24th and 25th August 2020

Nott Group
Infiltration Test

Analysis using method as described in BRE Digest 365 2016

	width (m)	length (m)
test pit top dimensions	0.39	1.71
test pit base dimensions	0.4	1.7
test pit depth	1.35	m

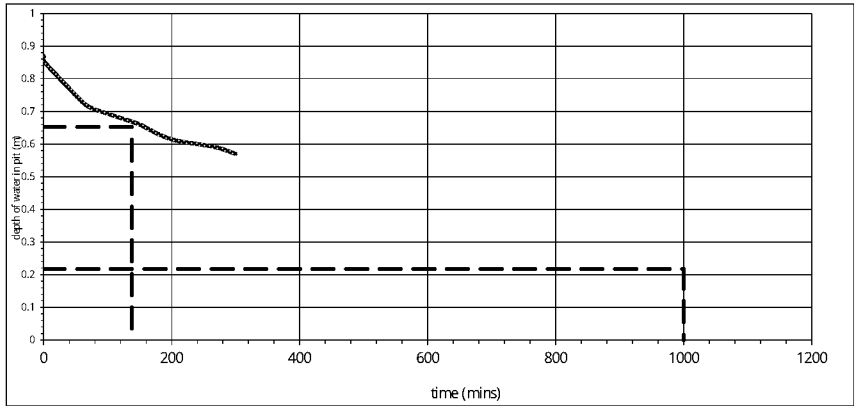
test infiltration rate (f) = 2.3E-06 m/s
groundwater depth before adding water (m) = 0

time (mins)	depth to water surface (m)	depth of water in pit (m)	time elapsed from test start (mins)	volume of water lost from test start (m^3)	area of walls and base from test start (m^2)
0	0.48	0.87	0	0.00	4.33
1	0.49	0.86	1	0.01	4.31
2	0.5	0.85	2	0.01	4.29
60	0.62	0.73	60	0.09	4.04
75	0.64	0.71	75	0.11	4.00
90	0.65	0.7	90	0.11	3.98
120	0.67	0.68	120	0.13	3.94
150	0.69	0.66	150	0.14	3.89
180	0.72	0.63	180	0.16	3.83
210	0.74	0.61	210	0.17	3.79
270	0.76	0.59	270	0.19	3.75
300	0.78	0.57	300	0.20	3.70

0.6525 m water depth
time is 138.0 minutes

0.2175 m water depth
time is 1000.0 minutes

Extrapalated values			Tp75-25	Vp75-25	Ap50	F
138	0.6975	0.6525	0	0.00		
1000	1.1325	0.2175	862	0.29	2.51	2.3E-06



Project No.: 73002 — Nott Group

Site: Nursery Fields — Infiltration Test

Test Location: TP3 - test 1

Date: 23rd, 24th and 25th August 2020 — Analysis using method as described in BRE Digest 365 2016

	width (m)	length (m)
test pit top dimensions	0.42	1.76
test pit base dimensions	0.4	1.7
test pit depth	1.4	m

test infiltration rate (f) = 1.4E-06 m/s

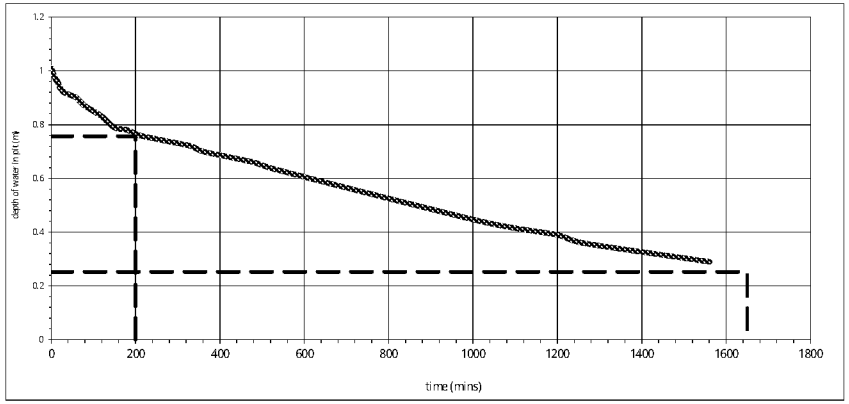
groundwater depth before adding water (m) = 0

time (mins)	depth to water surface (m)	depth of water in pit (m)	time elapsed from test start (mins)	volume of water lost from test start (m^3)	area of walls and base from test start (m^2)
0	0.39	1.01	0	0.00	4.98
1	0.4	1	1	0.01	4.96
2	0.4	1	2	0.01	4.96
3	0.4	1	3	0.01	4.96
4	0.405	0.995	4	0.01	4.95
5	0.41	0.99	5	0.01	4.94
10	0.43	0.97	10	0.03	4.89
15	0.44	0.96	15	0.04	4.87
20	0.46	0.94	20	0.05	4.83
25	0.47	0.93	25	0.06	4.81
30	0.48	0.92	30	0.06	4.79
45	0.49	0.91	45	0.07	4.76
60	0.5	0.9	60	0.08	4.74
75	0.525	0.875	75	0.10	4.69
90	0.54	0.86	90	0.11	4.66
120	0.57	0.83	120	0.13	4.59
150	0.61	0.79	150	0.16	4.51
180	0.62	0.78	180	0.17	4.49
210	0.64	0.76	210	0.18	4.44
270	0.66	0.74	270	0.19	4.40
330	0.68	0.72	330	0.21	4.36
360	0.7	0.7	360	0.22	4.31
420	0.72	0.68	420	0.24	4.27
480	0.74	0.66	480	0.25	4.23
540	0.77	0.63	540	0.27	4.16
1020	0.96	0.44	1020	0.40	3.76
1200	1.01	0.39	1200	0.44	3.65
1260	1.04	0.36	1260	0.46	3.59
1560	1.11	0.29	1560	0.51	3.44

0.7575 m water depth
time is 200.0 minutes

0.2525 m water depth
time is 1650.0 minutes

Extrapalated values			Tp75-25	Vp75-25	Ap50	F
200	0.6425	0.7575	0	0.00		
1650	1.1475	0.2525	1450	0.35	2.82	1.4E-06



Project No.: 73002 — Nott Group

Site: Nursery Fields — Infiltration Test

Test Location: TP3 - test 2

Date: 23rd, 24th and 25th August 2020 — Analysis using method as described in BRE Digest 365 2016

	width (m)	length (m)
test pit top dimensions	0.42	1.76
test pit base dimensions	0.4	1.7
test pit depth	1.4	m

test infiltration rate (f) = 1.4E-06 m/s

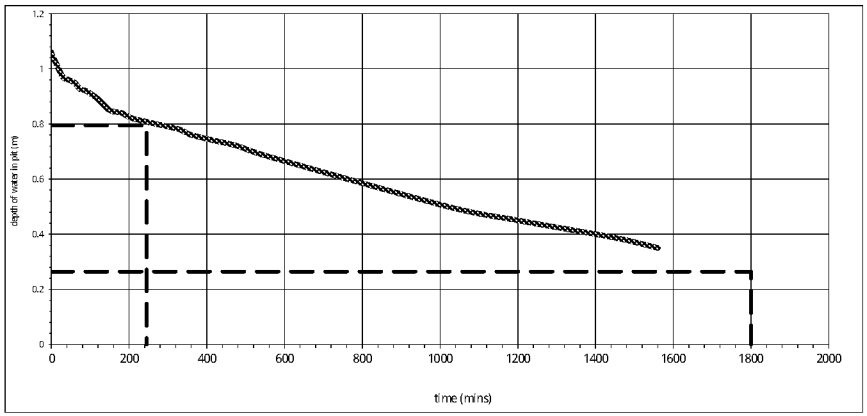
groundwater depth before adding water (m) = 0

time (mins)	depth to water surface (m)	depth of water in pit (m)	time elapsed from test start (mins)	volume of water lost from test start (m^3)	area of walls and base from test start (m^2)
0	0.34	1.06	0	0.00	5.20
1	0.35	1.05	1	0.01	5.17
2	0.35	1.05	2	0.01	5.17
30	0.43	0.97	30	0.07	5.00
45	0.44	0.96	45	0.07	4.98
60	0.45	0.95	60	0.08	4.96
75	0.475	0.925	75	0.10	4.91
90	0.48	0.92	90	0.10	4.89
120	0.51	0.89	120	0.12	4.83
150	0.55	0.85	150	0.15	4.74
180	0.56	0.84	180	0.16	4.72
210	0.58	0.82	210	0.17	4.68
270	0.6	0.8	270	0.19	4.64
330	0.62	0.78	330	0.20	4.59
360	0.64	0.76	360	0.22	4.55
420	0.66	0.74	420	0.23	4.51
480	0.68	0.72	480	0.24	4.46
540	0.71	0.69	540	0.27	4.40
1020	0.9	0.5	1020	0.40	4.00
1200	0.95	0.45	1200	0.43	3.89
1440	1.01	0.39	1440	0.48	3.76
1560	1.05	0.35	1560	0.50	3.68

0.795 m water depth
time is 245.0 minutes

0.265 m water depth
time is 1800.0 minutes

Extrapalated values			Tp75-25	Vp75-25	Ap50	F
245	0.605	0.795	0	0.00		
1800	1.135	0.265	1555	0.37	2.93	1.4E-06



Project No.: 73002
Site: Nursery Fields
Test Location: TP3 test 3
Date 23rd, 24th and 25th August 2020

Nott Group
Infiltration Test

Analysis using method as described in BRE Digest 365 2016

	width (m)	length (m)
test pit top dimensions	0.42	1.76
test pit base dimensions	0.4	1.7
test pit depth	1.4	m

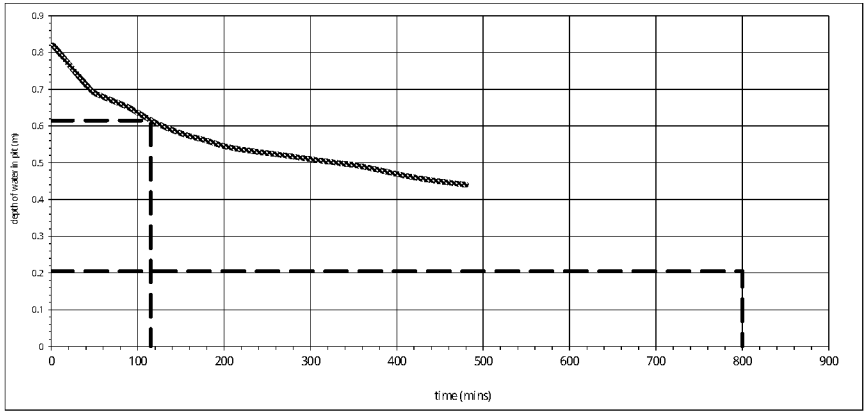
test infiltration rate (f) = 2.9E-06 m/s
groundwater depth before adding water (m) = 0

time (mins)	depth to water surface (m)	depth of water in pit (m)	time elapsed from test start (mins)	volume of water lost from test start (m^3)	area of walls and base from test start (m^2)
0	0.58	0.82	0	0.00	4.16
1	0.58	0.82	1	0.00	4.16
2	0.58	0.82	2	0.00	4.16
45	0.7	0.7	45	0.09	3.91
60	0.72	0.68	60	0.10	3.86
90	0.75	0.65	90	0.12	3.80
120	0.79	0.61	120	0.15	3.71
150	0.82	0.58	150	0.17	3.65
180	0.84	0.56	180	0.18	3.61
210	0.86	0.54	210	0.20	3.56
270	0.88	0.52	270	0.21	3.52
330	0.9	0.5	330	0.23	3.48
360	0.91	0.49	360	0.23	3.46
420	0.94	0.46	420	0.25	3.39
480	0.96	0.44	480	0.27	3.35

0.615 m water depth
time is 115.0 minutes

0.205 m water depth
time is 800.0 minutes

Extrapalated values			Tp75-25	Vp75-25	Ap50	F
115	0.785	0.615	0	0.00		
800	1.195	0.205	685	0.29	2.41	2.9E-06



Project No.: 73002
Site: Nursery Fields
Test Location: TP4 - test 1
Date 23rd, 24th and 25th August 2020

Nott Group
Infiltration Test

Analysis using method as described in BRE Digest 365 2016

	width (m)	length (m)
test pit top dimensions	0.44	1.64
test pit base dimensions	0.4	1.64
test pit depth	0.7	m

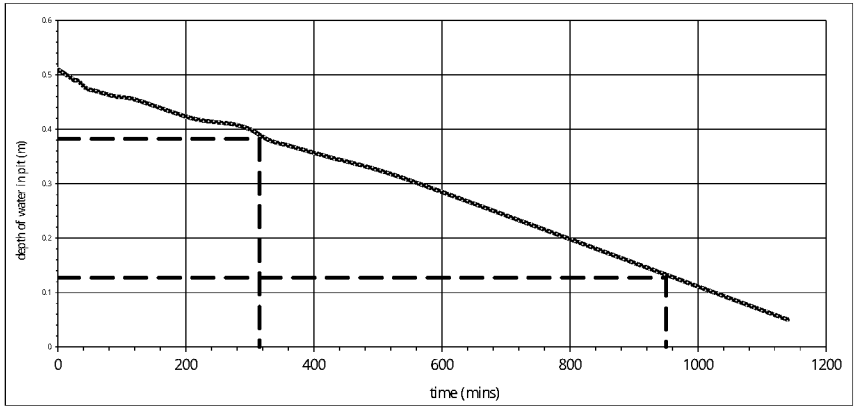
test infiltration rate (f) = 2.7E-06 m/s
groundwater depth before adding water (m) = 0

time (mins)	depth to water surface (m)	depth of water in pit (m)	time elapsed from test start (mins)	volume of water lost from test start (m^3)	area of walls and base from test start (m^2)
0	0.19	0.51	0	0.00	2.75
20	0.205	0.495	20	0.01	2.72
25	0.21	0.49	25	0.01	2.71
30	0.21	0.49	30	0.01	2.71
45	0.225	0.475	45	0.02	2.68
60	0.23	0.47	60	0.03	2.67
75	0.235	0.465	75	0.03	2.66
90	0.24	0.46	90	0.04	2.65
120	0.245	0.455	120	0.04	2.64
210	0.28	0.42	210	0.06	2.57
270	0.29	0.41	270	0.07	2.55
300	0.3	0.4	300	0.08	2.52
330	0.32	0.38	330	0.09	2.48
360	0.33	0.37	360	0.10	2.46
420	0.35	0.35	420	0.11	2.42
540	0.39	0.31	540	0.14	2.34
1140	0.65	0.05	1140	0.31	1.81

0.3825 m water depth
time is 315.0 minutes

0.1275 m water depth
time is 950.0 minutes

Extrapalated values			Tp75-25	Vp75-25	Ap50	F
315	0.3175	0.3825	0	0.00		
950	0.5725	0.1275	635	0.17	1.70	2.7E-06



Project No.: 73002
Site: Nursery Fields
Test Location: TP4 - test 2
Date 23rd, 24th and 25th August 2020

Nott Group
Infiltration Test

Analysis using method as described in BRE Digest 365 2016

	width (m)	length (m)
test pit top dimensions	0.44	1.64
test pit base dimensions	0.4	1.64
test pit depth	0.7	m

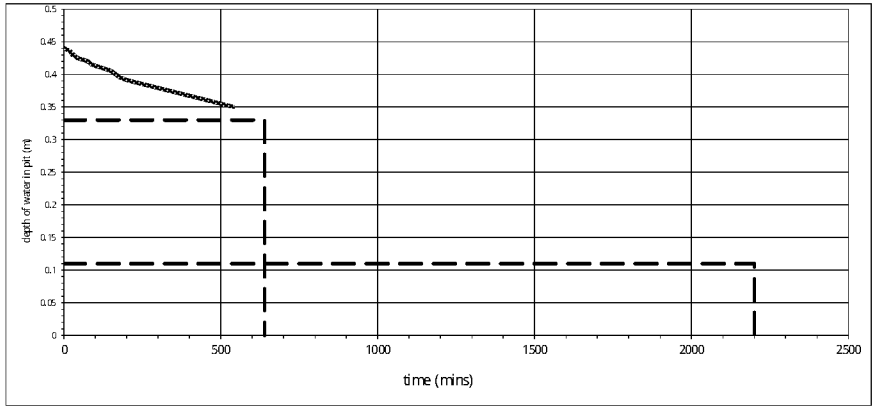
test infiltration rate (f) = 1.0E-06 m/s
groundwater depth before adding water (m) = 0

time (mins)	depth to water surface (m)	depth of water in pit (m)	time elapsed from test start (mins)	volume of water lost from test start (m^3)	area of walls and base from test start (m^2)
0	0.26	0.44	0	0.00	2.46
20	0.265	0.435	20	0.00	2.45
25	0.27	0.43	25	0.01	2.44
30	0.27	0.43	30	0.01	2.44
45	0.275	0.425	45	0.01	2.43
75	0.28	0.42	75	0.01	2.42
90	0.285	0.415	90	0.02	2.41
120	0.29	0.41	120	0.02	2.40
150	0.295	0.405	150	0.02	2.39
180	0.305	0.395	180	0.03	2.37
210	0.31	0.39	210	0.03	2.36
540	0.35	0.35	540	0.06	2.28
600	0.35	0.35	600	0.06	2.28
1140	0.35	0.35	1140	0.06	2.28
1200	0.34	0.36	1200	0.06	2.30

0.33 m water depth
time is 640.0 minutes

0.11 m water depth
time is 2200.0 minutes

Extrapalated values			Tp75-25	Vp75-25	Ap50	F
640	0.37	0.33	0	0.00		
2200	0.59	0.11	1560	0.15	1.56	1.0E-06



Project No.: 73002
Site: Nursery Fields
Test Location: TP4 - test 3
Date 23rd, 24th and 25th August 2020

Nott Group
Infiltration Test

Analysis using method as described in BRE Digest 365 2016

	width (m)	length (m)
test pit top dimensions	0.44	1.64
test pit base dimensions	0.4	1.64
test pit depth	0.7	m

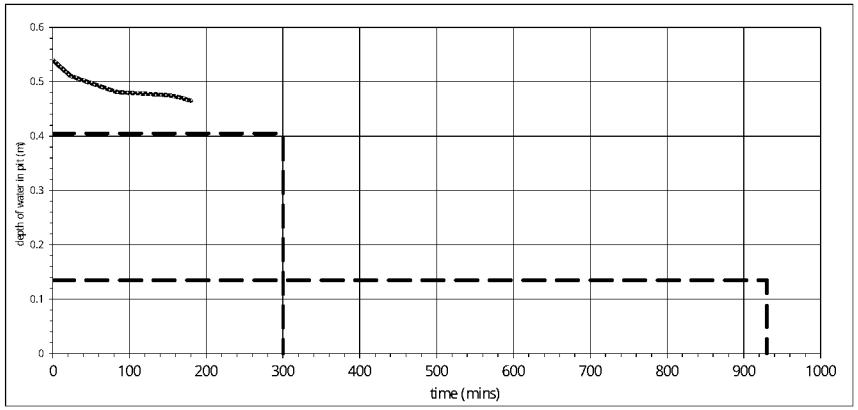
test infiltration rate (f) = 2.8E-06 m/s
groundwater depth before adding water (m) = 0

time (mins)	depth to water surface (m)	depth of water in pit (m)	time elapsed from test start (mins)	volume of water lost from test start (m^3)	area of walls and base from test start (m^2)
0	0.16	0.54	0	0.00	2.88
20	0.185	0.515	20	0.02	2.82
25	0.19	0.51	25	0.02	2.81
75	0.215	0.485	75	0.04	2.76
90	0.22	0.48	90	0.04	2.75
150	0.225	0.475	150	0.05	2.74
180	0.235	0.465	180	0.05	2.72

0.405 m water depth
time is 300.0 minutes

0.135 m water depth
time is 930.0 minutes

Extrapalated values			Tp75-25	Vp75-25	Ap50	F
300	0.295	0.405	0	0.00		
930	0.565	0.135	630	0.18	1.76	2.8E-06



Project No.: 73002
Site: Nursery Fields
Test Location: TP5 test 1
Date 23rd, 24th and 25th August 2020

Nott Group
Infiltration Test

Analysis using method as described in BRE Digest 365 2007

	width (m)	length (m)
test pit top dimensions	0.4	1.5
test pit base dimensions	0.35	1.5
test pit depth	0.68	m

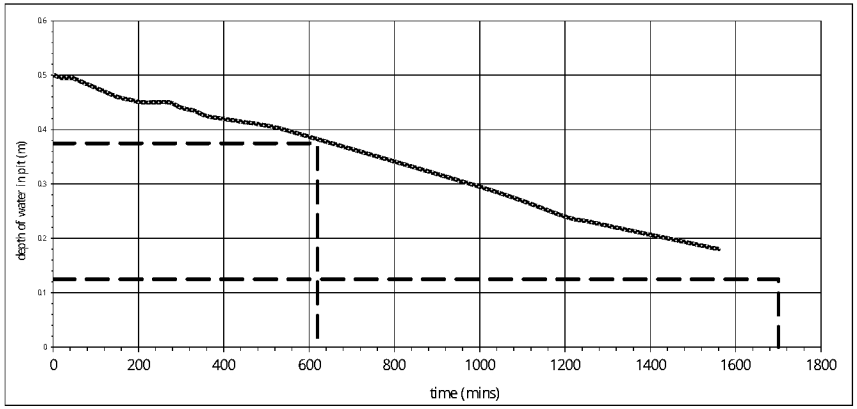
test infiltration rate (f) = 1.5E-06 m/s
groundwater depth before adding water (m) = 0

time (mins)	depth to water surface (m)	depth of water in pit (m)	time elapsed from test start (mins)	volume of water lost from test start (m^3)	area of walls and base from test start (m^2)
0	0.18	0.5	0	0.00	2.39
1	0.18	0.5	1	0.00	2.39
2	0.18	0.5	2	0.00	2.39
20	0.185	0.495	20	0.00	2.38
25	0.185	0.495	25	0.00	2.38
30	0.185	0.495	30	0.00	2.38
45	0.185	0.495	45	0.00	2.38
60	0.19	0.49	60	0.01	2.37
75	0.195	0.485	75	0.01	2.37
90	0.2	0.48	90	0.01	2.36
120	0.21	0.47	120	0.02	2.34
150	0.22	0.46	150	0.02	2.32
180	0.225	0.455	180	0.03	2.31
210	0.23	0.45	210	0.03	2.30
270	0.23	0.45	270	0.03	2.30
300	0.24	0.44	300	0.03	2.28
330	0.245	0.435	330	0.04	2.27
360	0.255	0.425	360	0.04	2.25
420	0.263	0.417	420	0.05	2.24
480	0.27	0.41	480	0.05	2.22
540	0.28	0.4	540	0.06	2.21
1020	0.39	0.29	1020	0.12	2.00
1200	0.44	0.24	1200	0.15	1.91
1260	0.45	0.23	1260	0.15	1.89
1440	0.48	0.2	1440	0.17	1.83
1560	0.5	0.18	1560	0.18	1.79

0.375 m water depth
time is 620.0 minutes

0.125 m water depth
time is 1700.0 minutes

Extrapalated values			Tp75-25	Vp75-25	Ap50	F
620	0.305	0.375	0	0.00		
1700	0.555	0.125	1080	0.14	1.46	1.5E-06



Project No.: 73002
Site: Nursery Fields
Test Location: TP5 test 2
Date 23rd, 24th and 25th August 2020

Nott Group
Infiltration Test

Analysis using method as described in BRE Digest 365 2007

	width (m)	length (m)
test pit top dimensions	0.4	1.5
test pit base dimensions	0.35	1.5
test pit depth	0.68	m

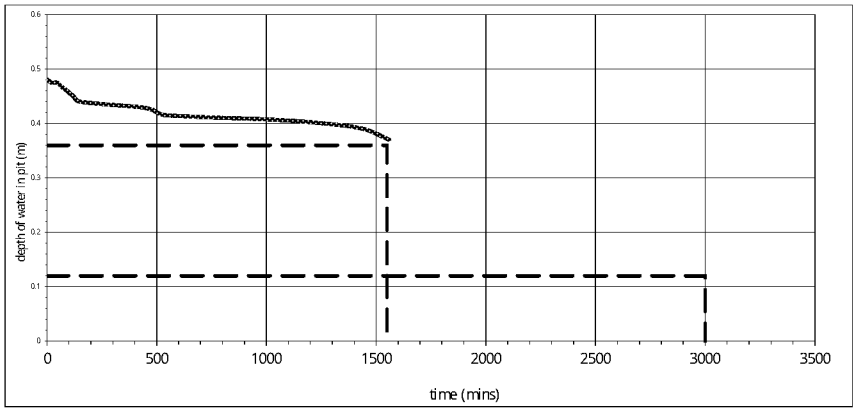
test infiltration rate (f) = 1.1E-06 m/s
groundwater depth before adding water (m) = 0

time (mins)	depth to water surface (m)	depth of water in pit (m)	time elapsed from test start (mins)	volume of water lost from test start (m^3)	area of walls and base from test start (m^2)
0	0.2	0.48	0	0.00	2.32
1	0.2	0.48	1	0.00	2.32
2	0.2	0.48	2	0.00	2.32
20	0.205	0.475	20	0.00	2.31
25	0.205	0.475	25	0.00	2.31
30	0.205	0.475	30	0.00	2.31
45	0.205	0.475	45	0.00	2.31
60	0.21	0.47	60	0.01	2.30
75	0.215	0.465	75	0.01	2.29
90	0.22	0.46	90	0.01	2.28
120	0.23	0.45	120	0.02	2.26
150	0.24	0.44	150	0.02	2.24
420	0.25	0.43	420	0.03	2.22
480	0.255	0.425	480	0.03	2.21
540	0.265	0.415	540	0.04	2.20
1020	0.273	0.407	1020	0.04	2.18
1260	0.28	0.4	1260	0.05	2.17
1440	0.29	0.39	1440	0.05	2.15
1560	0.31	0.37	1560	0.06	2.11

0.36 m water depth
time is 1550.0 minutes

0.12 m water depth
time is 3000.0 minutes

Extrapalated values			Tp75-25	Vp75-25	Ap50	F
1550	0.32	0.36	0	0.00		
3000	0.56	0.12	1450	0.13	1.42	1.1E-06



Project No.: 73002

Site: Nursery Fields

Test Location: TP5 test 3

Date 23rd, 24th and 25th August 2020

Nott Group

Infiltration Test

Analysis using method as described in BRE Digest 365 2007

	width (m)	length (m)
test pit top dimensions	0.4	1.5
test pit base dimensions	0.35	1.5
test pit depth	0.68	m

test infiltration rate (f) = 1.9E-06 m/s

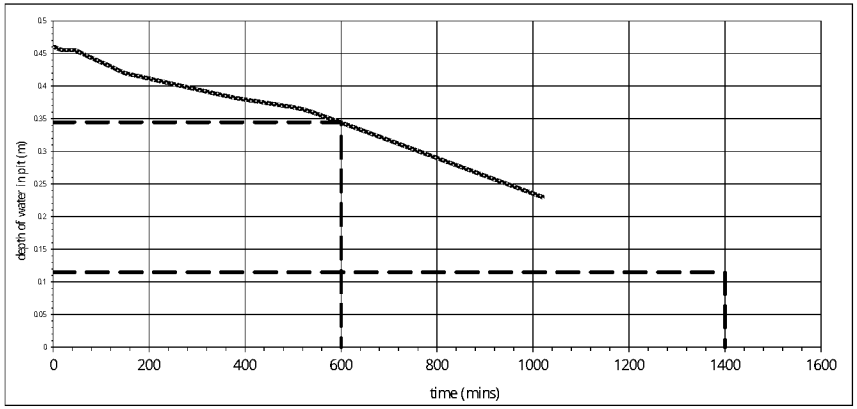
groundwater depth before adding water (m) = 0

time (mins)	depth to water surface (m)	depth of water in pit (m)	time elapsed from test start (mins)	volume of water lost from test start (m^3)	area of walls and base from test start (m^2)
0	0.22	0.46	0	0.00	2.24
1	0.22	0.46	1	0.00	2.24
2	0.22	0.46	2	0.00	2.24
20	0.225	0.455	20	0.00	2.23
25	0.225	0.455	25	0.00	2.23
30	0.225	0.455	30	0.00	2.23
45	0.225	0.455	45	0.00	2.23
60	0.23	0.45	60	0.01	2.22
75	0.235	0.445	75	0.01	2.21
90	0.24	0.44	90	0.01	2.20
120	0.25	0.43	120	0.02	2.19
150	0.26	0.42	150	0.02	2.17
180	0.265	0.415	180	0.03	2.16
360	0.295	0.385	360	0.04	2.10
420	0.303	0.377	420	0.05	2.09
480	0.31	0.37	480	0.05	2.07
540	0.32	0.36	540	0.06	2.05
1020	0.45	0.23	1020	0.13	1.81

0.345 m water depth
time is 600.0 minutes

0.115 m water depth
time is 1400.0 minutes

Extrapalated values			Tp75-25	Vp75-25	Ap50	F
600	0.335	0.345	0	0.00		
1400	0.565	0.115	800	0.13	1.38	1.9E-06



Project No.: 73002

Site: Nursery Fields

Test Location: TP6 test 1

Date 24th, 25th and 26th August 2020

Nott Group

Infiltration Test

Analysis using method as described in BRE Digest 365 2007

	width (m)	length (m)
test pit top dimensions	0.35	1.48
test pit base dimensions	0.35	1.48
test pit depth	0.6	m

test infiltration rate (f) = 1.7E-06 m/s

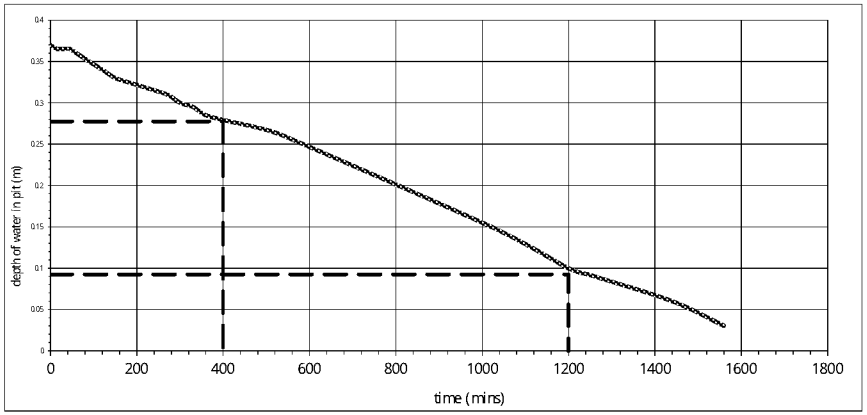
groundwater depth before adding water (m) = 0

time (mins)	depth to water surface (m)	depth of water in pit (m)	time elapsed from test start (mins)	volume of water lost from test start (m^3)	area of walls and base from test start (m^2)
0	0.23	0.37	0	0.00	1.87
15	0.235	0.365	15	0.00	1.86
20	0.235	0.365	20	0.00	1.86
25	0.235	0.365	25	0.00	1.86
30	0.235	0.365	30	0.00	1.86
45	0.235	0.365	45	0.00	1.86
60	0.24	0.36	60	0.01	1.85
75	0.245	0.355	75	0.01	1.84
90	0.25	0.35	90	0.01	1.84
120	0.26	0.34	120	0.02	1.82
150	0.27	0.33	150	0.02	1.80
180	0.275	0.325	180	0.02	1.79
210	0.28	0.32	210	0.03	1.78
270	0.29	0.31	270	0.03	1.76
300	0.3	0.3	300	0.04	1.74
330	0.305	0.295	330	0.04	1.73
360	0.315	0.285	360	0.04	1.72
420	0.323	0.277	420	0.05	1.70
480	0.33	0.27	480	0.05	1.69
540	0.34	0.26	540	0.06	1.67
1020	0.45	0.15	1020	0.11	1.47
1200	0.5	0.1	1200	0.14	1.38
1260	0.51	0.09	1260	0.15	1.36
1440	0.54	0.06	1440	0.16	1.30
1560	0.57	0.03	1560	0.18	1.25

0.2775 m water depth
time is 400.0 minutes

0.0925 m water depth
time is 1200.0 minutes

Extrapalated values			Tp75-25	Vp75-25	Ap50	F
400	0.3225	0.2775	0	0.00		
1200	0.5075	0.0925	800	0.10	1.20	1.7E-06



Project No.: 73002 — Nott Group

Site: Nursery Fields — Infiltration Test

Test Location: TP6 test 2

Date: 24th, 25th and 26th August 2020

Analysis using method as described in BRE Digest 365 2007

	width (m)	length (m)
test pit top dimensions	0.35	1.48
test pit base dimensions	0.35	1.48
test pit depth	0.6	m

test infiltration rate (f) = 1.6E-06 m/s

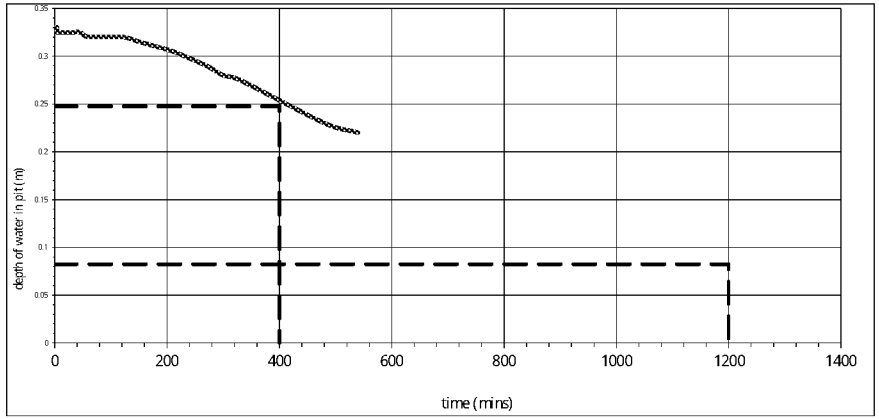
groundwater depth before adding water (m) = 0

time (mins)	depth to water surface (m)	depth of water in pit (m)	time elapsed from test start (mins)	volume of water lost from test start (m^3)	area of walls and base from test start (m^2)
0	0.27	0.33	0	0.00	1.73
1	0.27	0.33	1	0.00	1.73
2	0.27	0.33	2	0.00	1.73
3	0.27	0.33	3	0.00	1.73
4	0.27	0.33	4	0.00	1.73
5	0.275	0.325	5	0.00	1.72
10	0.275	0.325	10	0.00	1.72
15	0.275	0.325	15	0.00	1.72
20	0.275	0.325	20	0.00	1.72
25	0.275	0.325	25	0.00	1.72
30	0.275	0.325	30	0.00	1.72
45	0.275	0.325	45	0.00	1.72
60	0.28	0.32	60	0.01	1.71
120	0.28	0.32	120	0.01	1.71
150	0.285	0.315	150	0.01	1.70
180	0.29	0.31	180	0.01	1.69
210	0.295	0.305	210	0.01	1.68
270	0.31	0.29	270	0.02	1.65
300	0.32	0.28	300	0.03	1.63
330	0.325	0.275	330	0.03	1.63
480	0.37	0.23	480	0.05	1.54
540	0.38	0.22	540	0.06	1.52

0.2475 m water depth
time is 400.0 minutes

0.0825 m water depth
time is 1200.0 minutes

Extrapalated values			Tp75-25	Vp75-25	Ap50	F
400	0.3525	0.2475	0	0.00		
1200	0.5175	0.0825	800	0.09	1.12	1.6E-06



Project No.: 73002 — Nott Group

Site: Nursery Fields — Infiltration Test

Test Location: TP6 - test 3

Date: 24th, 25th and 26th August 2020

Analysis using method as described in BRE Digest 365 2007

	width (m)	length (m)
test pit top dimensions	0.35	1.48
test pit base dimensions	0.35	1.48
test pit depth	0.6	m

test infiltration rate (f) = 1.2E-06 m/s

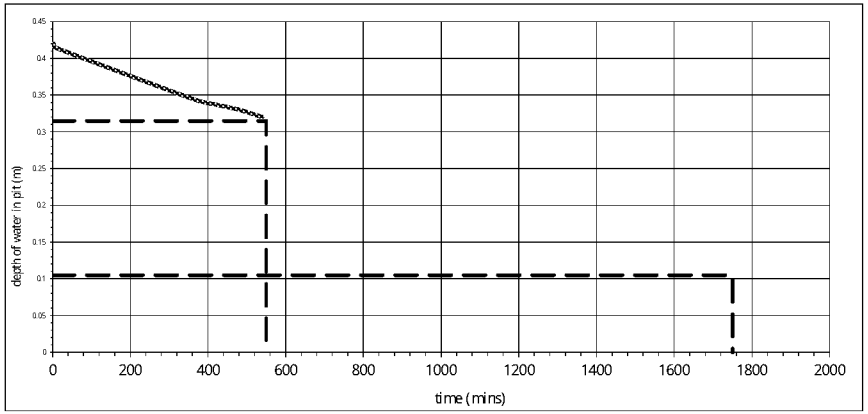
groundwater depth before adding water (m) = 0

time (mins)	depth to water surface (m)	depth of water in pit (m)	time elapsed from test start (mins)	volume of water lost from test start (m^3)	area of walls and base from test start (m^2)
0	0.18	0.42	0	0.00	2.06
1	0.18	0.42	1	0.00	2.06
2	0.18	0.42	2	0.00	2.06
3	0.18	0.42	3	0.00	2.06
4	0.18	0.42	4	0.00	2.06
5	0.185	0.415	5	0.00	2.05
360	0.255	0.345	360	0.04	1.92
420	0.263	0.337	420	0.04	1.90
480	0.27	0.33	480	0.05	1.89
540	0.28	0.32	540	0.05	1.87

0.315 m water depth
time is 550.0 minutes

0.105 m water depth
time is 1750.0 minutes

Extrapalated values			Tp75-25	Vp75-25	Ap50	F
550	0.285	0.315	0	0.00		
1750	0.495	0.105	1200	0.11	1.29	1.2E-06



Project No.: 73002 — Nott Group

Site: Nursery Fields — Infiltration Test

Test Location: TP7 - test 1

Date: 24th, 25th and 26th August 2020

Analysis using method as described in BRE Digest 365 2007

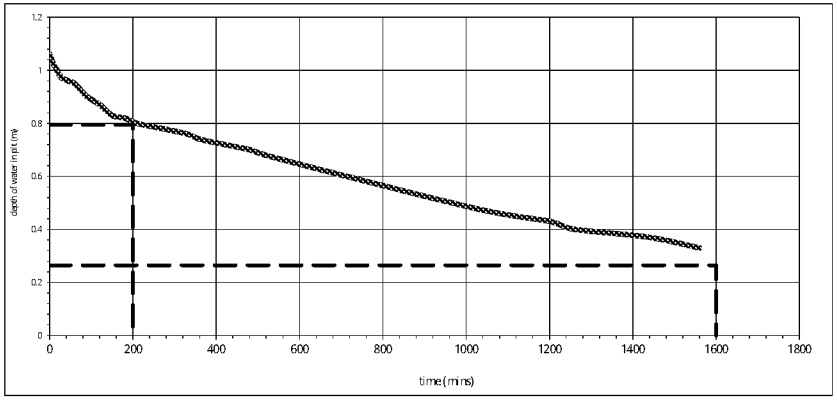
	width (m)	length (m)	
test pit top dimensions	0.41	1.62	
test pit base dimensions	0.4	1.6	test infiltration rate (f) = 1.5E-06 m/s
test pit depth	1.5	m	groundwater depth before adding water (m) = 0

time (mins)	depth to water surface (m)	depth of water in pit (m)	time elapsed from test start (mins)	volume of water lost from test start (m^3)	area of walls and base from test start (m^2)
0	0.44	1.06	0	0.00	4.90
1	0.45	1.05	1	0.01	4.88
2	0.45	1.05	2	0.01	4.88
3	0.45	1.05	3	0.01	4.88
4	0.455	1.045	4	0.01	4.87
5	0.46	1.04	5	0.01	4.86
10	0.48	1.02	10	0.03	4.82
15	0.49	1.01	15	0.03	4.80
20	0.51	0.99	20	0.05	4.76
25	0.52	0.98	25	0.05	4.74
30	0.53	0.97	30	0.06	4.72
45	0.54	0.96	45	0.07	4.70
60	0.55	0.95	60	0.07	4.68
75	0.575	0.925	75	0.09	4.63
90	0.6	0.9	90	0.10	4.58
120	0.63	0.87	120	0.12	4.52
150	0.67	0.83	150	0.15	4.44
180	0.68	0.82	180	0.16	4.42
210	0.7	0.8	210	0.17	4.38
270	0.72	0.78	270	0.18	4.34
330	0.74	0.76	330	0.20	4.30
360	0.76	0.74	360	0.21	4.26
420	0.78	0.72	420	0.22	4.22
480	0.8	0.7	480	0.24	4.18
540	0.83	0.67	540	0.26	4.12
1020	1.02	0.48	1020	0.38	3.73
1200	1.07	0.43	1200	0.41	3.63
1260	1.1	0.4	1260	0.43	3.57
1440	1.13	0.37	1440	0.45	3.51
1560	1.17	0.33	1560	0.48	3.43

0.795 m water depth
time is 200.0 minutes

0.265 m water depth
time is 1600.0 minutes

Extrapalated values			Tp75-25	Vp75-25	Ap50	F
200	0.705	0.795	0	0.00		
1600	1.235	0.265	1400	0.34	2.77	1.5E-06



Project No.: 73002 — Nott Group

Site: Nursery Fields — Infiltration Test

Test Location: TP7 - test 2

Date: 24th, 25th and 26th August 2020

Analysis using method as described in BRE Digest 365 2007

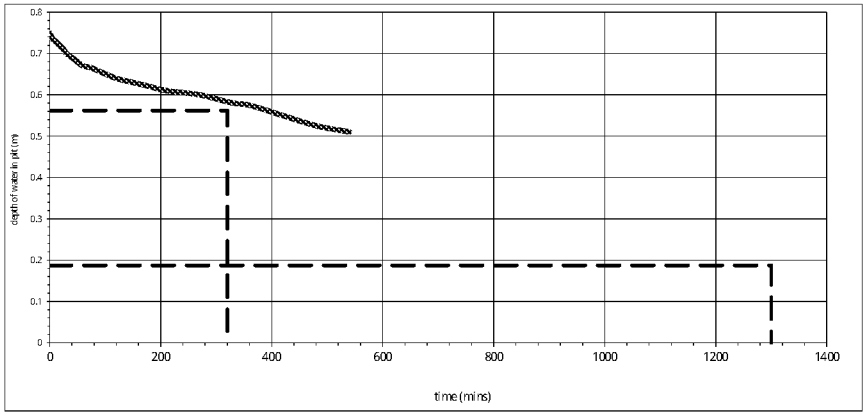
	width (m)	length (m)	
test pit top dimensions	0.41	1.62	
test pit base dimensions	0.4	1.6	test infiltration rate (f) = 1.9E-06 m/s
test pit depth	1.5	m	groundwater depth before adding water (m) = 0

time (mins)	depth to water surface (m)	depth of water in pit (m)	time elapsed from test start (mins)	volume of water lost from test start (m^3)	area of walls and base from test start (m^2)
0	0.75	0.75	0	0.00	3.65
5	0.765	0.735	5	0.01	3.62
10	0.77	0.73	10	0.01	3.61
25	0.79	0.71	25	0.03	3.57
30	0.8	0.7	30	0.03	3.55
45	0.815	0.685	45	0.04	3.52
60	0.83	0.67	60	0.05	3.49
75	0.835	0.665	75	0.06	3.48
120	0.86	0.64	120	0.07	3.43
150	0.87	0.63	150	0.08	3.41
180	0.88	0.62	180	0.08	3.39
210	0.89	0.61	210	0.09	3.37
270	0.9	0.6	270	0.10	3.35
330	0.92	0.58	330	0.11	3.31
360	0.925	0.575	360	0.11	3.30
420	0.95	0.55	420	0.13	3.25
480	0.975	0.525	480	0.15	3.20
540	0.99	0.51	540	0.16	3.17

0.5625 m water depth
time is 320.0 minutes

0.1875 m water depth
time is 1300.0 minutes

Extrapalated values			Tp75-25	Vp75-25	Ap50	F
320	0.9375	0.5625	0	0.00		
1300	1.3125	0.1875	980	0.24	2.14	1.9E-06



Project No.: 73002

Site: Nursery Fields

Test Location: TP7 - test 3

Date 24th, 25th and 26th August 2020

Nott Group

Infiltration Test

Analysis using method as described in BRE Digest 365 2007

	width (m)	length (m)
test pit top dimensions	0.41	1.62
test pit base dimensions	0.4	1.6
test pit depth	1.5	m

test infiltration rate (f) = 2.0E-06 m/s

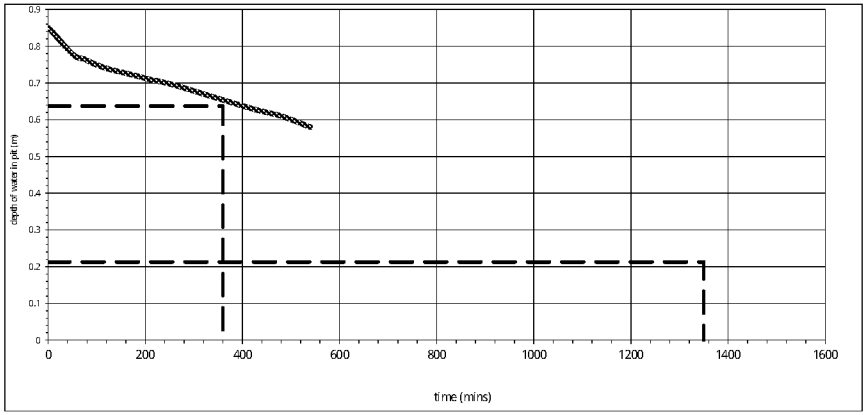
groundwater depth before adding water (m) = 0

time (mins)	depth to water surface (m)	depth of water in pit (m)	time elapsed from test start (mins)	volume of water lost from test start (m^3)	area of walls and base from test start (m^2)
0	0.65	0.85	0	0.00	4.05
5	0.655	0.845	5	0.00	4.04
45	0.715	0.785	45	0.04	3.92
60	0.73	0.77	60	0.05	3.89
75	0.735	0.765	75	0.06	3.88
90	0.745	0.755	90	0.06	3.86
120	0.76	0.74	120	0.07	3.83
150	0.77	0.73	150	0.08	3.81
180	0.78	0.72	180	0.08	3.79
210	0.79	0.71	210	0.09	3.77
270	0.81	0.69	270	0.10	3.73
420	0.87	0.63	420	0.14	3.61
480	0.89	0.61	480	0.16	3.57
540	0.92	0.58	540	0.18	3.51
480	0.89	0.61	480	0.16	3.57
540	0.92	0.58	540	0.18	3.51

0.6375 m water depth
time is 360.0 minutes

0.2125 m water depth
time is 1350.0 minutes

Extrapalated values			Tp75-25	Vp75-25	Ap50	F
360	0.8625	0.6375	0	0.00		
1350	1.2875	0.2125	990	0.27	2.34	2.0E-06



Project No.: 73002

Site: Nursery Fields

Test Location: TP8 test 1

Date 24th, 25th and 26th August 2020

Nott Group

Infiltration Test

Analysis using method as described in BRE Digest 365 2007

	width (m)	length (m)
test pit top dimensions	0.42	1.77
test pit base dimensions	0.4	1.7
test pit depth	1.45	m

test infiltration rate (f) = 2.1E-06 m/s

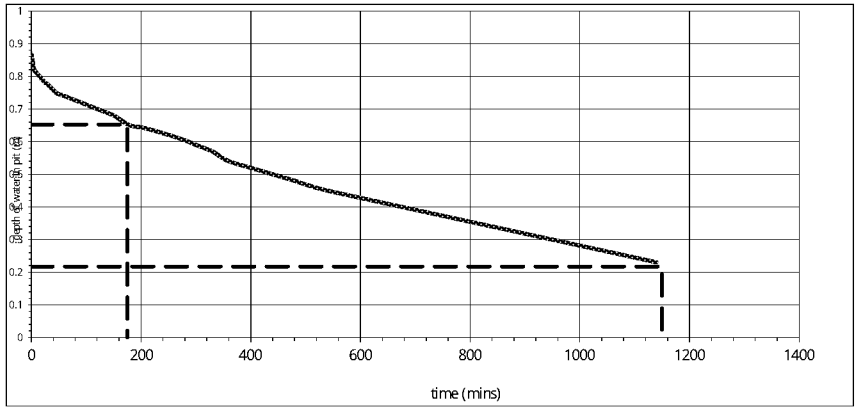
groundwater depth before adding water (m) =

time (mins)	depth to water surface (m)	depth of water in pit (m)	time elapsed from test start (mins)	volume of water lost from test start (m^3)	area of walls and base from test start (m^2)
0	0.58	0.87	0	0.00	4.38
1	0.59	0.86	1	0.01	4.36
2	0.6	0.85	2	0.01	4.34
3	0.61	0.84	3	0.02	4.32
4	0.62	0.83	4	0.03	4.29
5	0.63	0.82	5	0.04	4.27
10	0.64	0.81	10	0.04	4.25
15	0.65	0.8	15	0.05	4.23
20	0.66	0.79	20	0.06	4.21
25	0.67	0.78	25	0.06	4.19
30	0.675	0.775	30	0.07	4.18
45	0.7	0.75	45	0.09	4.12
60	0.71	0.74	60	0.09	4.10
90	0.73	0.72	90	0.11	4.06
120	0.75	0.7	120	0.12	4.02
150	0.77	0.68	150	0.14	3.97
180	0.8	0.65	180	0.16	3.91
210	0.81	0.64	210	0.16	3.89
270	0.84	0.61	270	0.19	3.82
300	0.86	0.59	300	0.20	3.78
330	0.88	0.57	330	0.21	3.74
360	0.91	0.54	360	0.23	3.67
420	0.94	0.51	420	0.26	3.61
480	0.97	0.48	480	0.28	3.55
540	1	0.45	540	0.30	3.48
1140	1.22	0.23	1140	0.45	3.02

0.6525 0.45
time is 0.48

0.2175 m water depth
time is 1150.0 minutes

Extrapalated values			Tp75-25	Vp75-25	Ap50	F
175	0.7975	0.6525	0	0.00		
1150	1.2325	0.2175	975	0.30	2.52	2.1E-06



Project No.: 73002 — Nott Group

Site: Nursery Fields — Infiltration Test

Test Location: TP8 test 2

Date: 24th, 25th and 26th August 2020 — Analysis using method as described in BRE Digest 365 2007

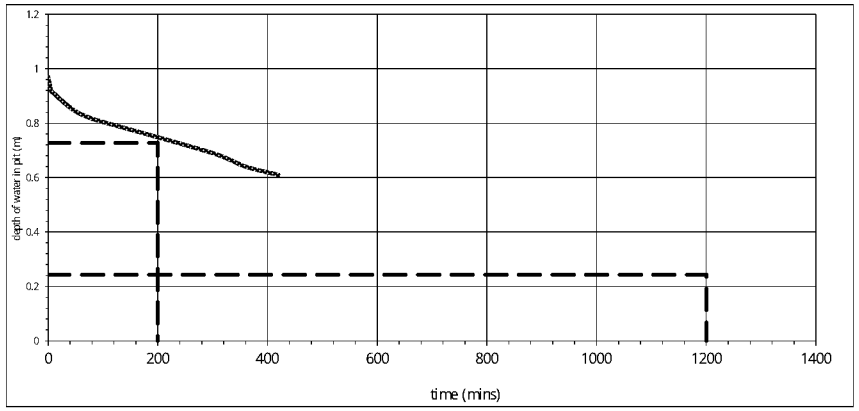
	width (m)	length (m)	
test pit top dimensions	0.42	1.77	
test pit base dimensions	0.4	1.7	test infiltration rate (f) = 2.1E-06 m/s
test pit depth	1.45	m	groundwater depth before adding water (m) =

time (mins)	depth to water surface (m)	depth of water in pit (m)	time elapsed from test start (mins)	volume of water lost from test start (m^3)	area of walls and base from test start (m^2)
0	0.48	0.97	0	0.00	4.81
1	0.49	0.96	1	0.01	4.79
2	0.5	0.95	2	0.01	4.77
3	0.51	0.94	3	0.02	4.75
4	0.52	0.93	4	0.03	4.73
5	0.53	0.92	5	0.04	4.70
10	0.54	0.91	10	0.04	4.68
45	0.6	0.85	45	0.09	4.55
75	0.63	0.82	75	0.11	4.49
90	0.64	0.81	90	0.11	4.47
300	0.76	0.69	300	0.20	4.21
360	0.81	0.64	360	0.24	4.10
420	0.84	0.61	420	0.26	4.04

0.7275 m water depth
time is 200.0 minutes

0.2425 m water depth
time is 1200.0 minutes

Extrapalated values			Tp75-25	Vp75-25	Ap50	F
200	0.7225	0.7275	0	0.00		
1200	1.2075	0.2425	1000	0.34	2.74	2.1E-06



Project No.: 73002 — Nott Group

Site: Nursery Fields — Infiltration Test

Test Location: TP8 test 3

Date: 24th, 25th and 26th August 2020 — Analysis using method as described in BRE Digest 365 2007

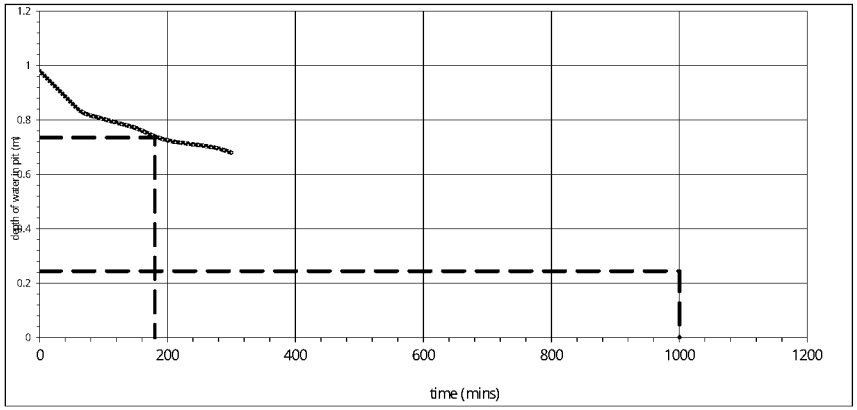
	width (m)	length (m)	
test pit top dimensions	0.42	1.77	
test pit base dimensions	0.4	1.7	test infiltration rate (f) = 2.5E-06 m/s
test pit depth	1.45	m	groundwater depth before adding water (m) = 0

time (mins)	depth to water surface (m)	depth of water in pit (m)	time elapsed from test start (mins)	volume of water lost from test start (m^3)	area of walls and base from test start (m^2)
0	0.47	0.98	0	0.00	4.86
60	0.61	0.84	60	0.10	4.55
75	0.63	0.82	75	0.12	4.51
90	0.64	0.81	90	0.12	4.49
120	0.66	0.79	120	0.14	4.45
150	0.68	0.77	150	0.15	4.40
180	0.71	0.74	180	0.17	4.34
210	0.73	0.72	210	0.19	4.30
270	0.75	0.7	270	0.20	4.25
300	0.77	0.68	300	0.21	4.21

0.735 m water depth
time is 180.0 minutes

0.245 m water depth
time is 1000.0 minutes

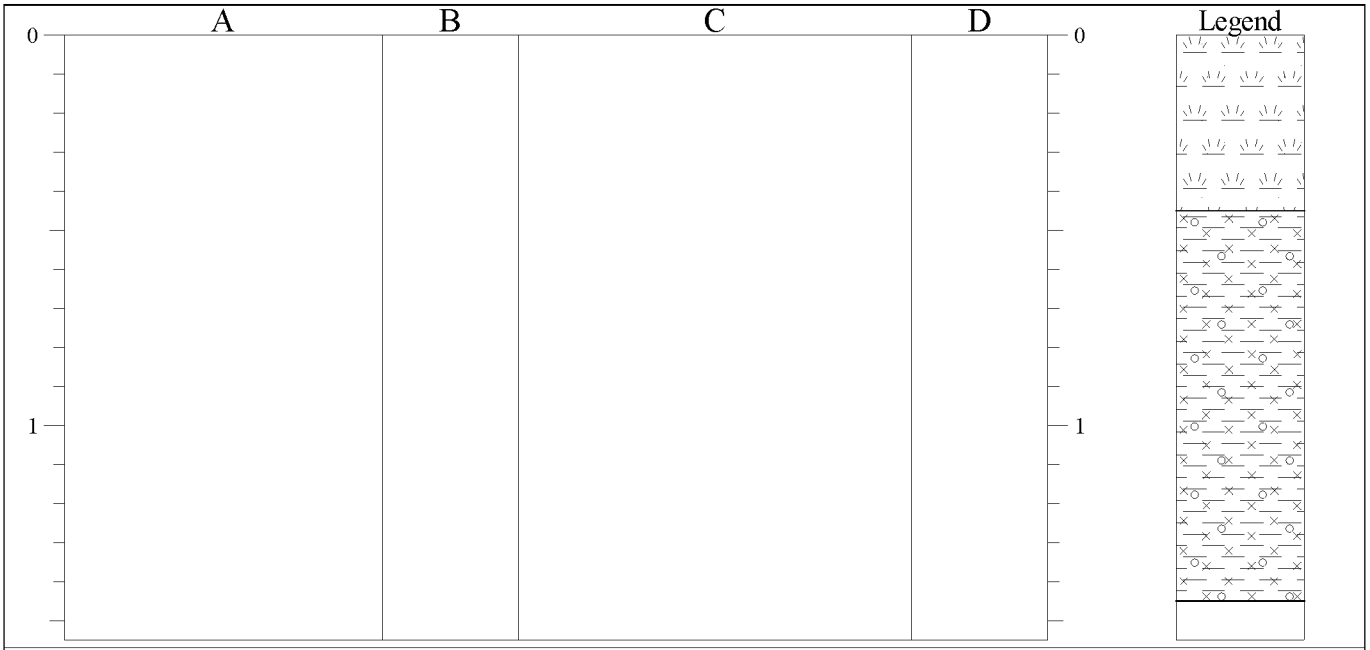
Extrapalated values			Tp75-25	Vp75-25	Ap50	F
180	0.715	0.735	0	0.00		
1000	1.205	0.245	820	0.34	2.76	2.5E-06



Appendix C Trial Pit Logs

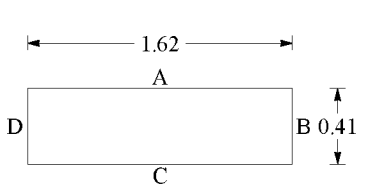
TRIAL PIT LOG

Project				TRIAL PIT No
Bersted, Bognor Regis, West Sussex				TP1
Job No	Date	Ground Level (m)	Co-Ordinates ()	
73002	23-08-20			
Contractor				Sheet
Nott Group				1 of 1



STRATA			SAMPLES & TESTS		
Depth	No	DESCRIPTION	Depth	No	Remarks/Tests
0.00-0.45		Soft brown slightly gravelly silty CLAY. Gravel is fine rounded quartz. (Topsoil).			
0.45-1.45		Soft orange brown slightly gravelly silty CLAY. Gravel is fine angular flint and quartz.			

Shoring/Support: None.
Stability: All sides noted to be stable.



GENERAL REMARKS

No groundwater encountered.

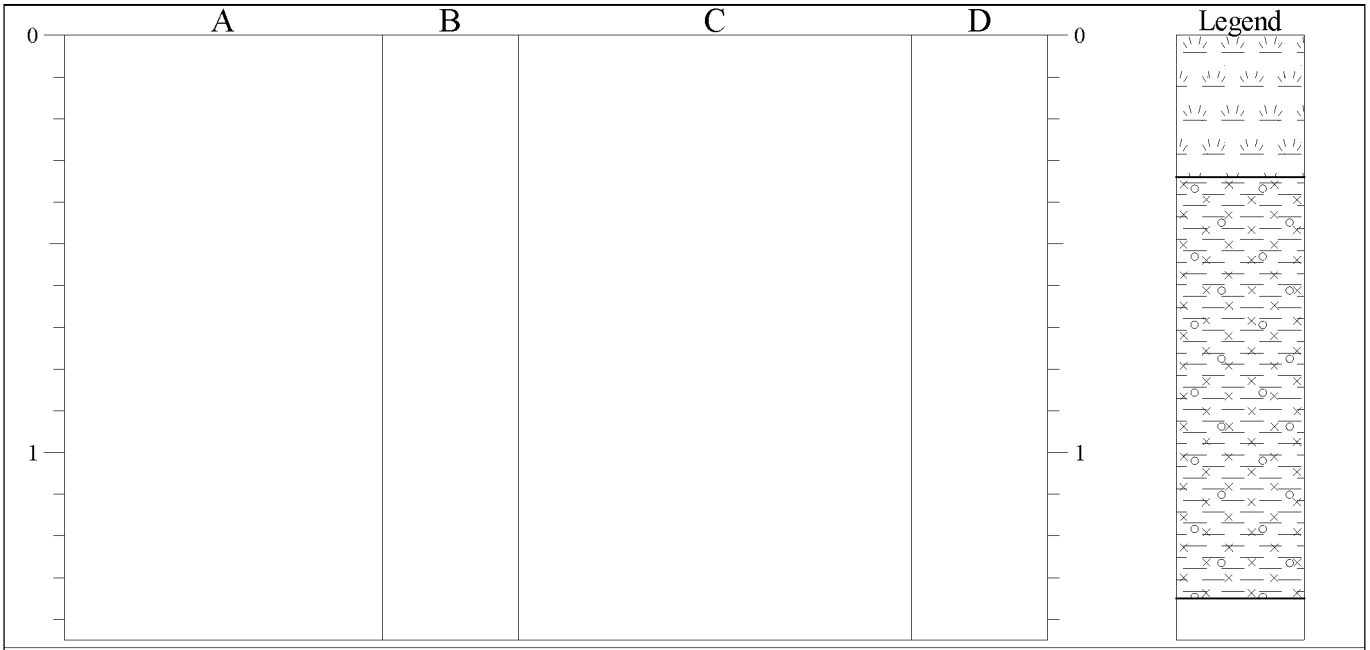
All dimensions in metres Scale 1:19.375	Client Landform Bersted Limited	Method/ Plant Used Wheeled excavator	Logged By EB

AGS3 UK TP CHALCRAFT LAND BERSTEAD SOAKAWAY.GPJ GINT STD AGS 3_1.GDT 27/8/20

ARUN DISTRICT COUNCIL BE/87/21/OUT

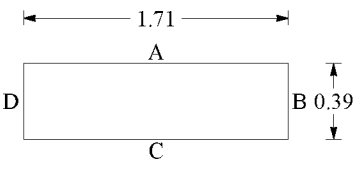
TRIAL PIT LOG

Project				TRIAL PIT No
Bersted, Bognor Regis, West Sussex				TP2
Job No	Date	Ground Level (m)	Co-Ordinates ()	
73002	23-08-20			
Contractor				Sheet
Nott Group				1 of 1



STRATA			SAMPLES & TESTS		
Depth	No	DESCRIPTION	Depth	No	Remarks/Tests
0.00-0.34		Soft brown slightly gravelly silty CLAY. Gravel is fine to coarse sub rounded to rounded flint. (Topsoil).			
0.34-1.35		Soft orange brown slightly gravelly silty CLAY. Gravel is fine sub rounded flint and quartz.			

Shoring/Support: None.
Stability: All sides noted to be stable.



GENERAL REMARKS

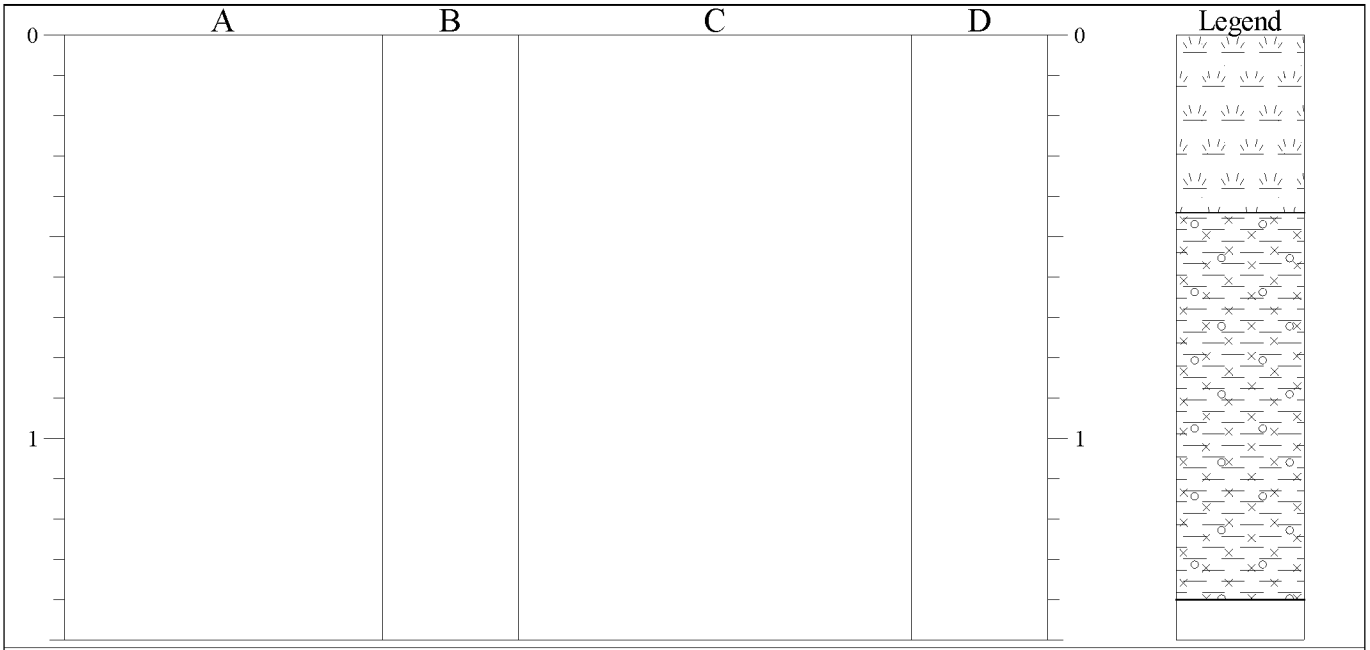
No groundwater encountered.

All dimensions in metres Scale 1:18.125	Client Landform Bersted Limited	Method/ Plant Used Wheeled excavator	Logged By EB

AGS3 UK TP CHALCRAFT LAND BERSTEAD SOAKAWAY.GPJ GINT STD AGS 3_1.GDT 27/8/20

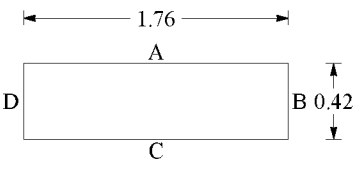
TRIAL PIT LOG

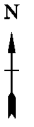
Project				TRIAL PIT No
Bersted, Bognor Regis, West Sussex				TP3
Job No	Date	Ground Level (m)	Co-Ordinates ()	
73002	23-08-20			
Contractor				Sheet
Nott Group				1 of 1



STRATA			SAMPLES & TESTS		
Depth	No	DESCRIPTION	Depth	No	Remarks/Tests
0.00-0.44		Soft brown slightly gravelly silty CLAY. Gravel is fine to medium sub rounded to rounded flint and quartz. (Topsoil).			
0.44-1.40		Firm orange brown slightly gravelly silty CLAY. Gravel is fine to coarse angular to sub rounded flint.			

Shoring/Support: None.
Stability: All sides noted to be stable.





GENERAL REMARKS

No groundwater encountered.

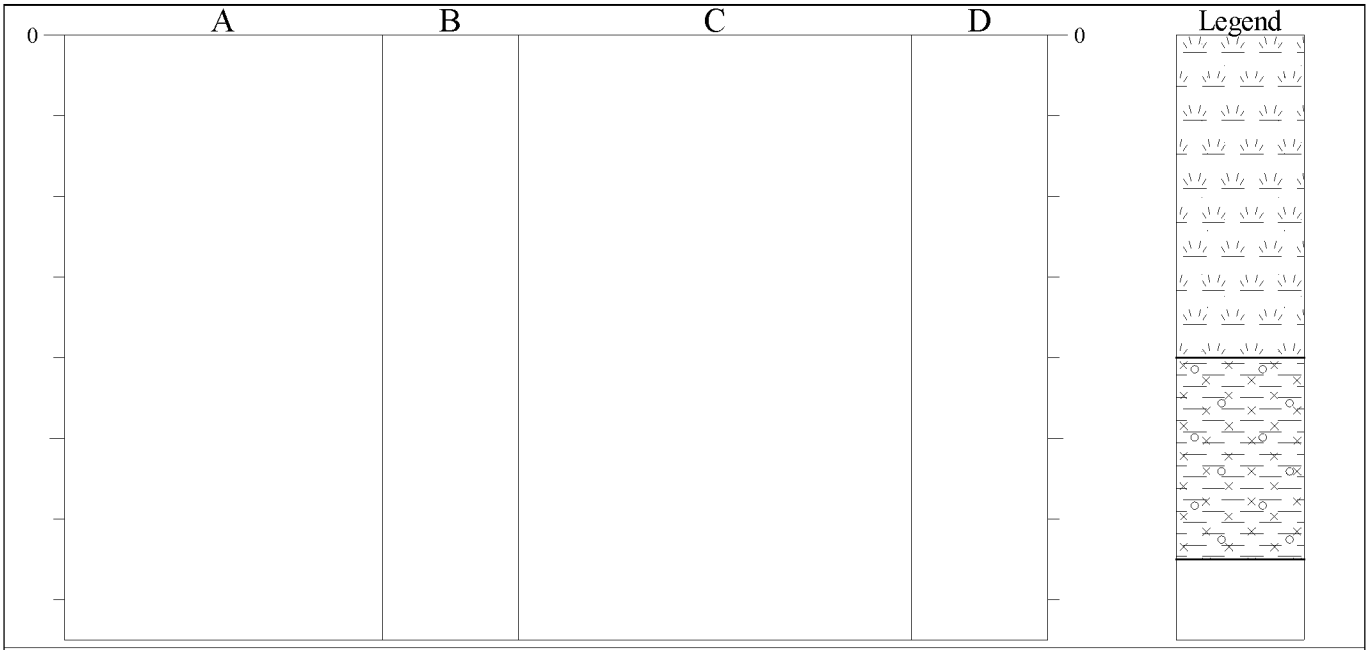
All dimensions in metres Scale 1:18.75	Client Landform Bersted Limited	Method/ Plant Used Wheeled excavator	Logged By EB

AGS3 UK TP CHALCRAFT LAND BERSTEAD SOAKAWAY.GPJ GINT STD AGS 3_1.GDT 27/8/20

ARUN DISTRICT COUNCIL BE/87/21/OUT

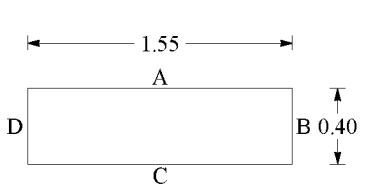
TRIAL PIT LOG

Project				TRIAL PIT No
Bersted, Bognor Regis, West Sussex				TP4
Job No	Date	Ground Level (m)	Co-Ordinates ()	
73002	23-08-20			
Contractor				Sheet
Nott Group				1 of 1



STRATA			SAMPLES & TESTS		
Depth	No	DESCRIPTION	Depth	No	Remarks/Tests
0.00-0.40		Soft brown slightly gravelly silty CLAY. Gravel is fine to medium sub rounded to rounded flint and quartz. (Topsoil).			
0.40-0.65		Firm orange brown slightly gravelly silty CLAY. Gravel is fine to coarse angular to sub rounded flint.			

Shoring/Support: None.
Stability: All sides noted to be stable.



GENERAL REMARKS

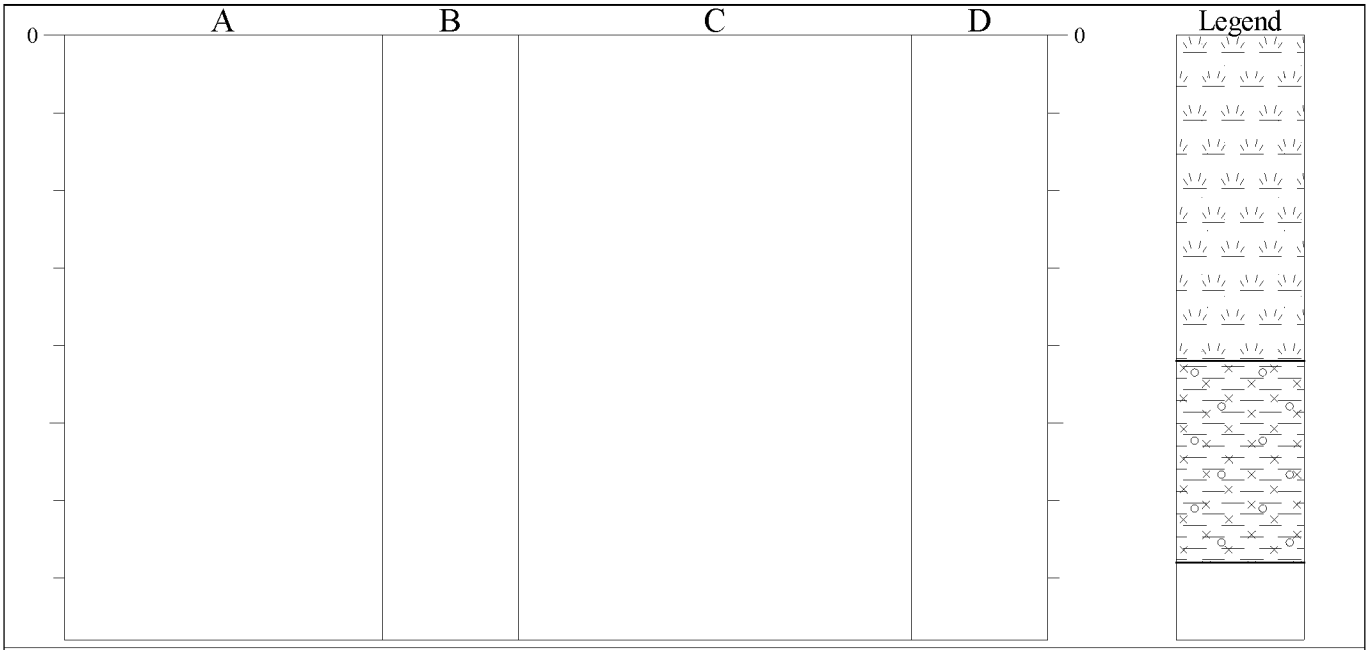
No groundwater encountered.

All dimensions in metres Scale 1:9.375	Client Landform Bersted Limited	Method/ Plant Used Wheeled excavator	Logged By EB

AGS3 UK TP CHALCRAFT LAND BERSTEAD SOAKAWAY.GPJ GINT STD AGS 3_1.GDT 27/8/20

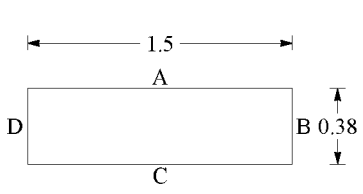
TRIAL PIT LOG

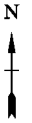
Project				TRIAL PIT No
Bersted, Bognor Regis, West Sussex				TP5
Job No	Date	Ground Level (m)	Co-Ordinates ()	
73002	23-08-20			
Contractor				Sheet
Nott Group				1 of 1



STRATA			SAMPLES & TESTS		
Depth	No	DESCRIPTION	Depth	No	Remarks/Tests
0.00-0.42		Soft brown slightly gravelly silty CLAY. Gravel is fine rounded quartz. (Topsoil).			
0.42-0.68		Soft orange brown slightly gravelly silty CLAY. Gravel is fine angular flint and quartz.			

Shoring/Support: None.
Stability: All sides noted to be stable.





GENERAL REMARKS

No groundwater encountered.

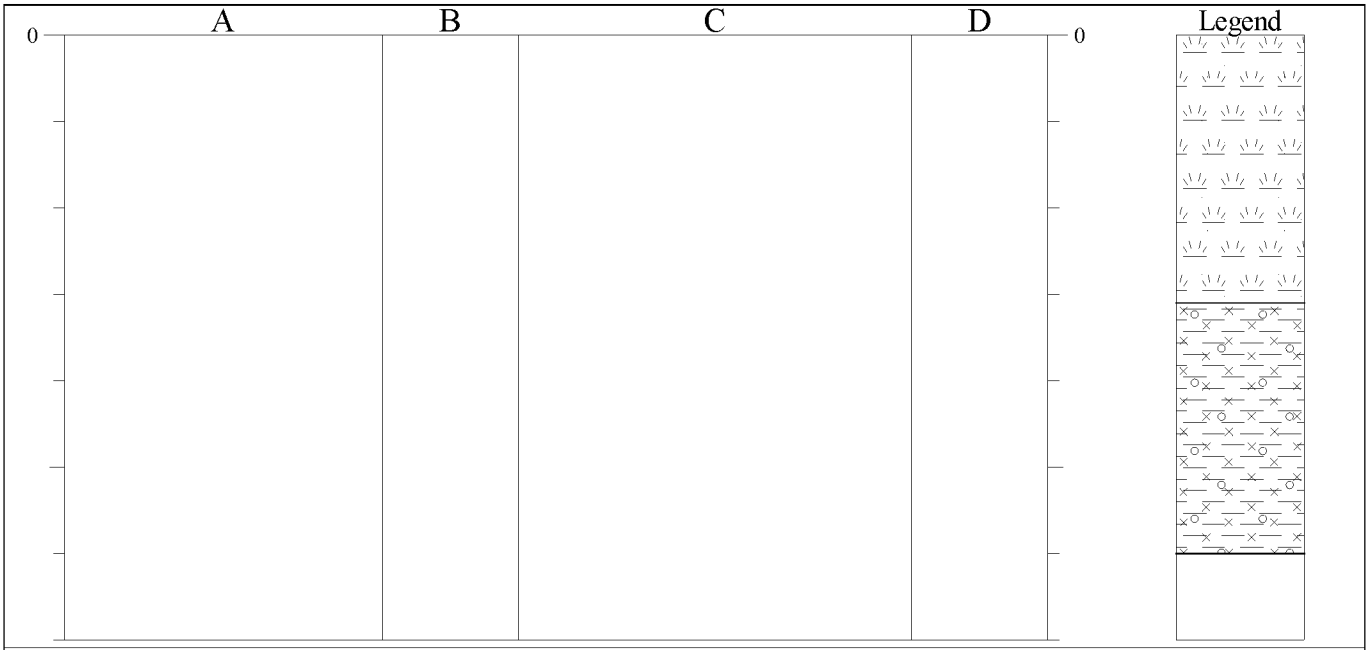
All dimensions in metres Scale 1:9.75	Client Landform Bersted Limited	Method/ Plant Used Wheeled excavator	Logged By EB

AGS3 UK TP CHALCRAFT LAND BERSTEAD SOAKAWAY.GPJ GINT STD AGS 3_1.GDT 27/8/20

ARUN DISTRICT COUNCIL BE/87/21/OUT

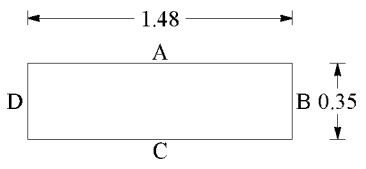
TRIAL PIT LOG

Project				TRIAL PIT No
Bersted, Bognor Regis, West Sussex				TP6
Job No	Date	Ground Level (m)	Co-Ordinates ()	
73002	24-08-20			
Contractor				Sheet
Nott Group				1 of 1



STRATA			SAMPLES & TESTS		
Depth	No	DESCRIPTION	Depth	No	Remarks/Tests
0.00-0.31		Soft brown slightly gravelly silty CLAY. Gravel is fine to coarse sub rounded to rounded flint. (Topsoil).			
0.31-0.60		Soft orange brown slightly gravelly silty CLAY. Gravel is fine sub rounded flint and quartz.			

Shoring/Support: None.
Stability: All sides noted to be stable.



GENERAL REMARKS

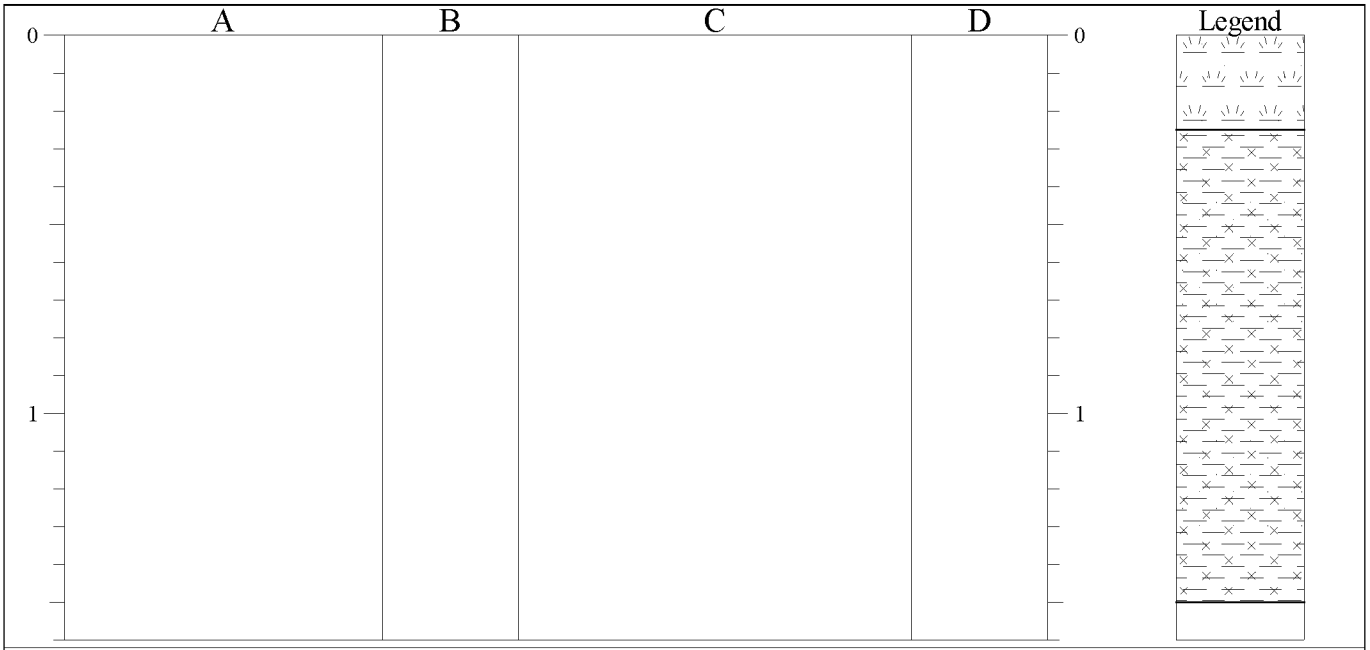
No groundwater encountered.

All dimensions in metres Scale 1:8.75	Client Landform Bersted Limited	Method/ Plant Used Wheeled excavator	Logged By EB

AGS3 UK TP CHALCRAFT LAND BERSTEAD SOAKAWAY.GPJ GINT STD AGS 3_1.GDT 27/8/20

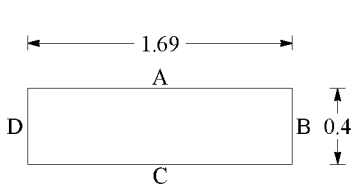
TRIAL PIT LOG

Project				TRIAL PIT No
Bersted, Bognor Regis, West Sussex				TP7
Job No	Date	Ground Level (m)	Co-Ordinates ()	
73002	24-08-20			
Contractor				Sheet
Nott Group				1 of 1



STRATA			SAMPLES & TESTS		
Depth	No	DESCRIPTION	Depth	No	Remarks/Tests
0.00-0.25		Soft brown slightly sandy gravelly silty CLAY. Gravel is fine angular to sub rounded flint. (Topsoil).			
0.25-1.50		Firm brown and orange brown slightly sandy silty CLAY.			

Shoring/Support: None.
Stability: All sides noted to be stable.



GENERAL REMARKS

No groundwater encountered.

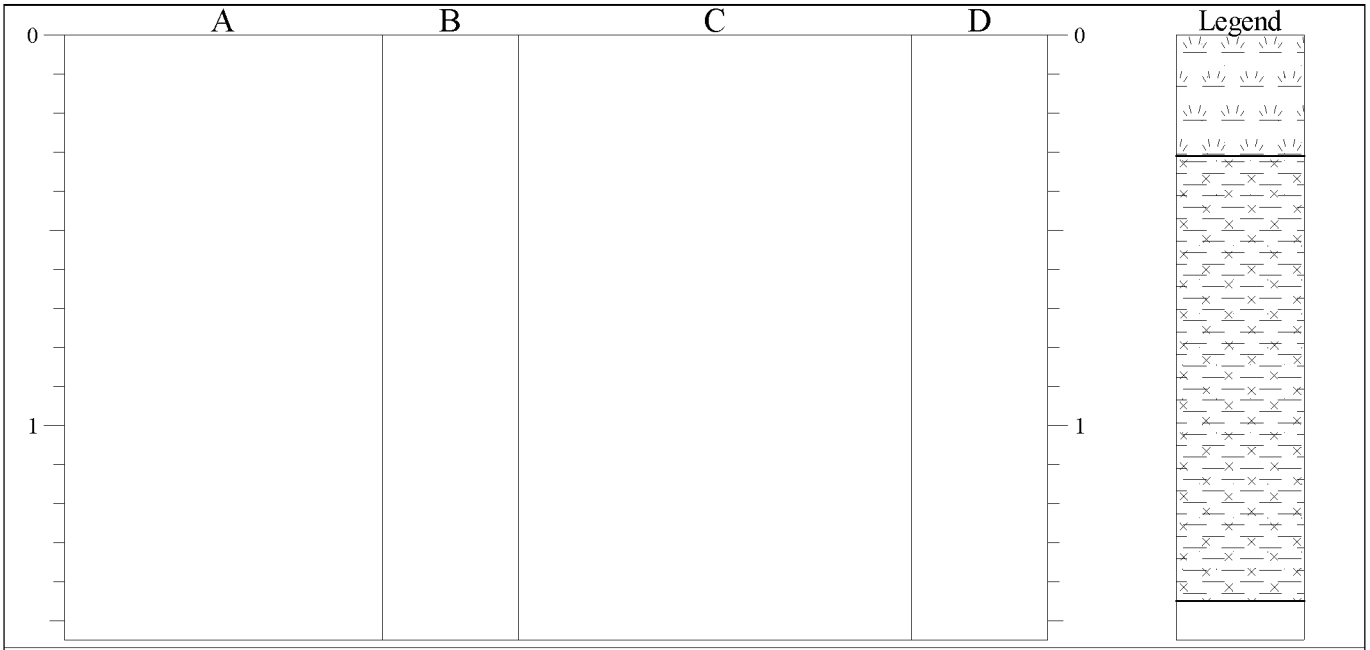
All dimensions in metres Scale 1:20	Client Landform Bersted Limited	Method/ Plant Used Wheeled excavator	Logged By EB

AGS3 UK TP CHALCRAFT LAND BERSTEAD SOAKAWAY.GPJ GINT STD AGS 3_1.GDT 27/8/20

ARUN DISTRICT COUNCIL BE/87/21/OUT

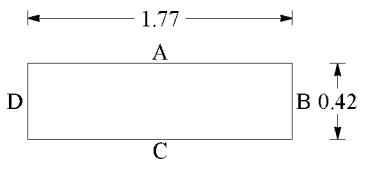
TRIAL PIT LOG

Project				TRIAL PIT No
Bersted, Bognor Regis, West Sussex				TP8
Job No	Date	Ground Level (m)	Co-Ordinates ()	
73002	24-08-20			
Contractor				Sheet
Nott Group				1 of 1



STRATA			SAMPLES & TESTS		
Depth	No	DESCRIPTION	Depth	No	Remarks/Tests
0.00-0.31		Soft brown slightly sandy gravelly silty CLAY. Gravel is fine angular to sub rounded flint. (Topsoil).			
0.31-1.45		Firm brown and orange brown slightly sandy silty CLAY.			

Shoring/Support: None.
Stability: All sides noted to be stable.



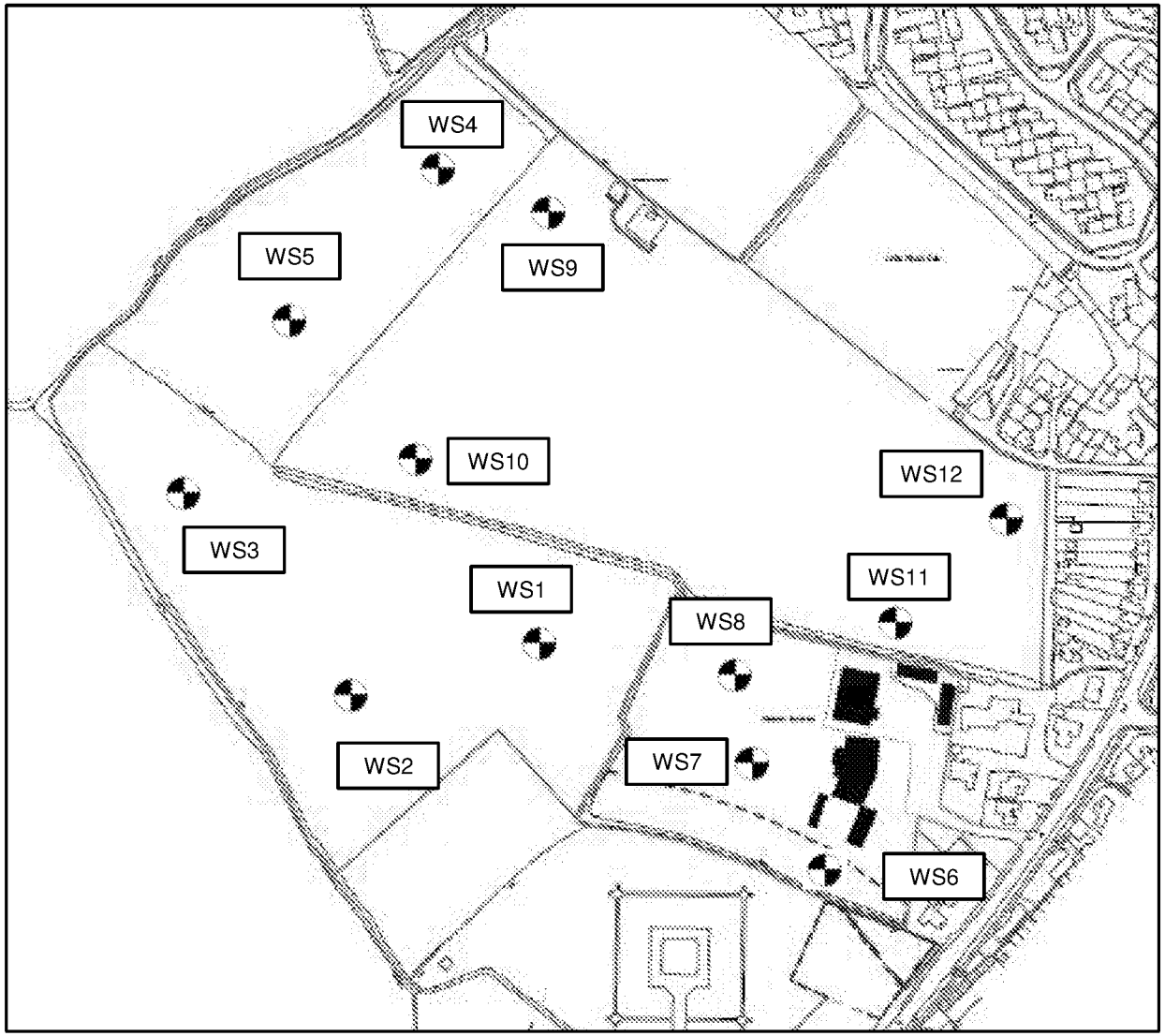
GENERAL REMARKS

No groundwater encountered.

All dimensions in metres Scale 1:19.375	Client Landform Bersted Limited	Method/ Plant Used Wheeled excavator	Logged By EB

AGS3 UK TP CHALCRAFT LAND BERSTEAD SOAKAWAY.GPJ GINT STD AGS 3_1.GDT 27/8/20

ARUN DISTRICT COUNCIL BE/87/21/OUT



Key

Borehole Location

Do Not Scale

NottGroup

Title:	**Appendix A – Groundwater Monitoring Boreholes**
Project Name:	**Chalcraft Lane, West Bersted**
Client:	**Landform Bersted Limited**
Project No: **73002**	Date: **08/05/2020** / Drawing No **1**

ARUN DISTRICT COUNCIL BE/87/21/OUT

Chalcraft Lane, Bersted	Depth of Groundwater (m below ground level)

Borehole Reference	23/06/2020	15/07/2020	21/08/2020	15/09/2020
WS1	1.82	1.75	2.32	1.71
WS2	2.18	2.0	2.71	2.0
WS3	2.68	2.45	2.73	2.41
WS4	2.48	2.31	2.46	2.25
WS5	2.92	2.82	2.82	2.75
WS6	2.66	2.50	2.56	2.45
WS7	2.57	2.53	2.52	2.48
WS8	2.62	2.55	2.59	2.46
WS9	2.37	2.22	2.59	2.15
WS10	2.80	2.65	2.67	2.75
WS11	2.33	2.10	2.15	2.05
WS12	2.83	2.71	2.80	2.61

Borehole Reference	15/10/2020			
WS1	1.82			
WS2	2.11			
WS3	2.33			
WS4	2.26			
WS5	2.42			
WS6	2.36			
WS7	2.32			
WS8	2.19			
WS9	2.39			
WS10	2.27			
WS11	1.95			
WS12	2.20			

B. Proposed Site

Illustrative Layout
Indicative Surface water management strategy
Typical sections
Development catchment and exceedance plan
Causeway flow results
Outline surface water maintenance plan
Proposed culvert strategy

ARUN DISTRICT COUNCIL BE/87/21/OUT

Nursery Fields
Illustrative Masterplan
for Landform Bersted Ltd

Drawing No: 01304_MP_001
Scale @ A3: 1:2000 Rev: D3

0 20 40 80m

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N

OUTFALL TO EXISTING DITCH T.B.C.

OUTFALL TO EXISTING DITCH T.B.C.

CATCHMENT 01A BASIN
CATCHMENT AREA = 1.12ha
IMPERMEABLE AREA = 0.72ha (60%)
BASIN VOLUME = 2396m³
BASIN DEPTH = 0.9m
DEPTH OF WATER = 0.393m (0.507m FREEBOARD)
SIDE SLOPES - 1 in 3

CATCHMENT 01B BASIN
CATCHMENT AREA = 0.85ha
IMPERMEABLE AREA = 0.51ha (60%)
BASIN VOLUME = 821m³
BASIN DEPTH = 0.9m
DEPTH OF WATER = 0.717m (0.183m FREEBOARD)
SIDE SLOPES - 1 in 3

OUTFALL TO EXISTING DITCH T.B.C.

Jubilee Playing Field

CATCHMENT 02 BASIN
CATCHMENT AREA = 3.31ha
IMPERMEABLE AREA = 1.99ha (60%)
BASIN VOLUME = 6029m³
BASIN DEPTH = 1.5m
DEPTH OF WATER = 0.716 (0.784m FREEBOARD)
SIDE SLOPES - 1 in 3

CATCHMENT 04 BASIN
CATCHMENT AREA = 1.08ha
IMPERMEABLE AREA = 0.65ha (60%)
BASIN VOLUME = 2544m³
DEPTH OF WATER = 0.389m (0.611m FREEBOARD)
BASIN DEPTH = 1.0m
SIDE SLOPES - 1 in 4

CATCHMENT 03 BASIN
CATCHMENT AREA = 1.04ha
IMPERMEABLE AREA = 0.63ha (60%)
BASIN VOLUME = 1751m³
DEPTH OF WATER = 0.563m (0.437m FREEBOARD)
BASIN DEPTH = 1.0m
SIDE SLOPES - 1 in 4

OUTFALL TO EXISTING DITCH T.B.C.

OUTFALL TO EXISTING DITCH T.B.C.

Bersted Brooks

KEY

- INDICATIVE ATTENUATION BASIN
- WET HABITAT (MICRO POOL/SCRAPES)
- ORIFICE CONTROL CHAMBER
- HEADWALL

NOTES

REV	DESCRIPTION	DE	DR	CH	DATE
P02	NEW MASTERPLAN ADDED		DP		10/2020
P01	ATTENUATION BASINS REVISED		DP		09/2020

DESIGNED BY	DRAWN BY	CHECKED BY
-	DP	-

SCALE @ A1 SIZE	DATE
D.N.S.	17/06/2020

PROJECT TITLE
NURSERY FIELDS, BERSTED

DRAWING TITLE
OUTLINE SURFACE WATER MANAGEMENT STRATEGY

CLIENT
LANDFORM BERSTED LTD

CANNON
CONSULTING ENGINEERS
Highways, Transport & Infrastructure Planning

Peek House, 20 Eastcheap
London,
EC3M 1EB
Tel: 020 7717 5870
info@cannonce.co.uk

Cambridge House, Lanwades
Business Park, Kentford,
Newmarket, CB8 7PN
Tel: 01638 555107
www.cannonce.co.uk

DRAWING NUMBER
U101 - PL - SK - 302

REV.
P02

M:\U101 Chatcroft Lane, West Bersted\DRAWINGS\AUTOCAD\CURRENT DRGS\U101 - PL - SK - 302 - P02 SW STRATEGY (WHOLE SITE)

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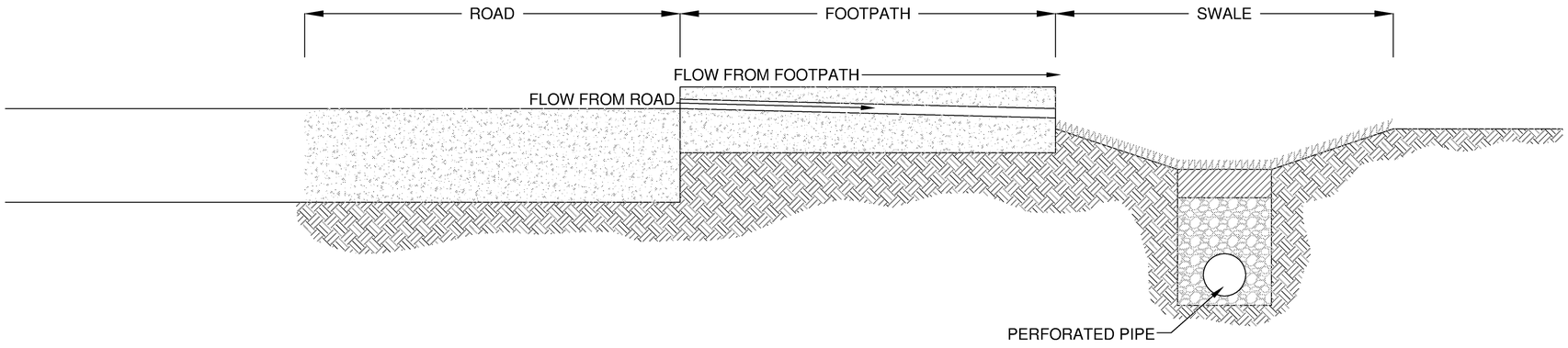
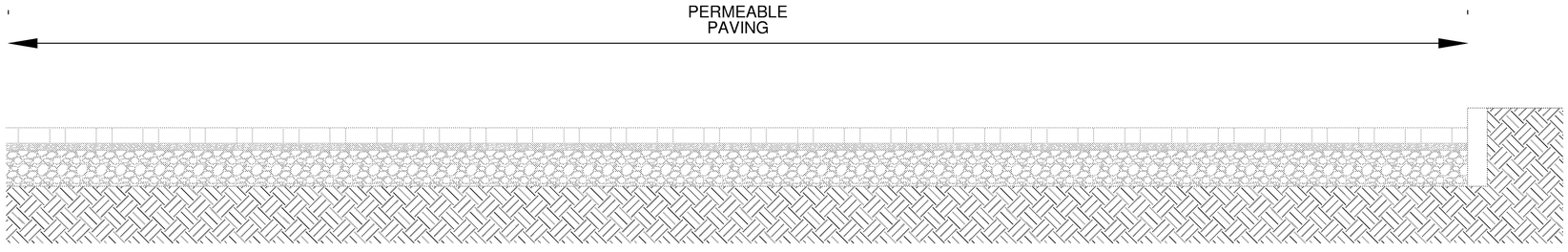


TYPICAL SECTION OF INTERACTION
BETWEEN ROAD AND UNDERDRAINED SWALE



TYPICAL SECTION OF PERMEABLE PAVING

KEY

NOTES

REV	DESCRIPTION	DE	DR	CH	DATE

DESIGNED BY	DRAWN BY	CHECKED BY
-	DP	-

SCALE @ A1 SIZE	DATE
D.N.S.	22/07/2020

PROJECT TITLE
CHALCROFT NURSERIES,
WEST BERSTED

DRAWING TITLE
SECTIONS

CLIENT
LANDFORM BERSTED LIMITED

CANNON
CONSULTING ENGINEERS
Highways, Transport & Infrastructure Planning

Peek House, 20 Eastcheap
London,
EC3M 1EB
Tel: 020 7717 5870
info@cannonce.co.uk

Cambridge House, Lanwades
Business Park, Kentford,
Newmarket, CB8 7PN
Tel: 01638 555107
www.cannonce.co.uk

DRAWING NUMBER	REV.
U101 - PL - SK - 306	-

M:\U101 Chalcroft Lane, West Bersted\DRAWINGS\AUTOCAD\CURRENT DRGS\U101 - PL - SK - 306 - SECTIONS

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ARUN DISTRICT COUNCIL BE/87/21/OUT

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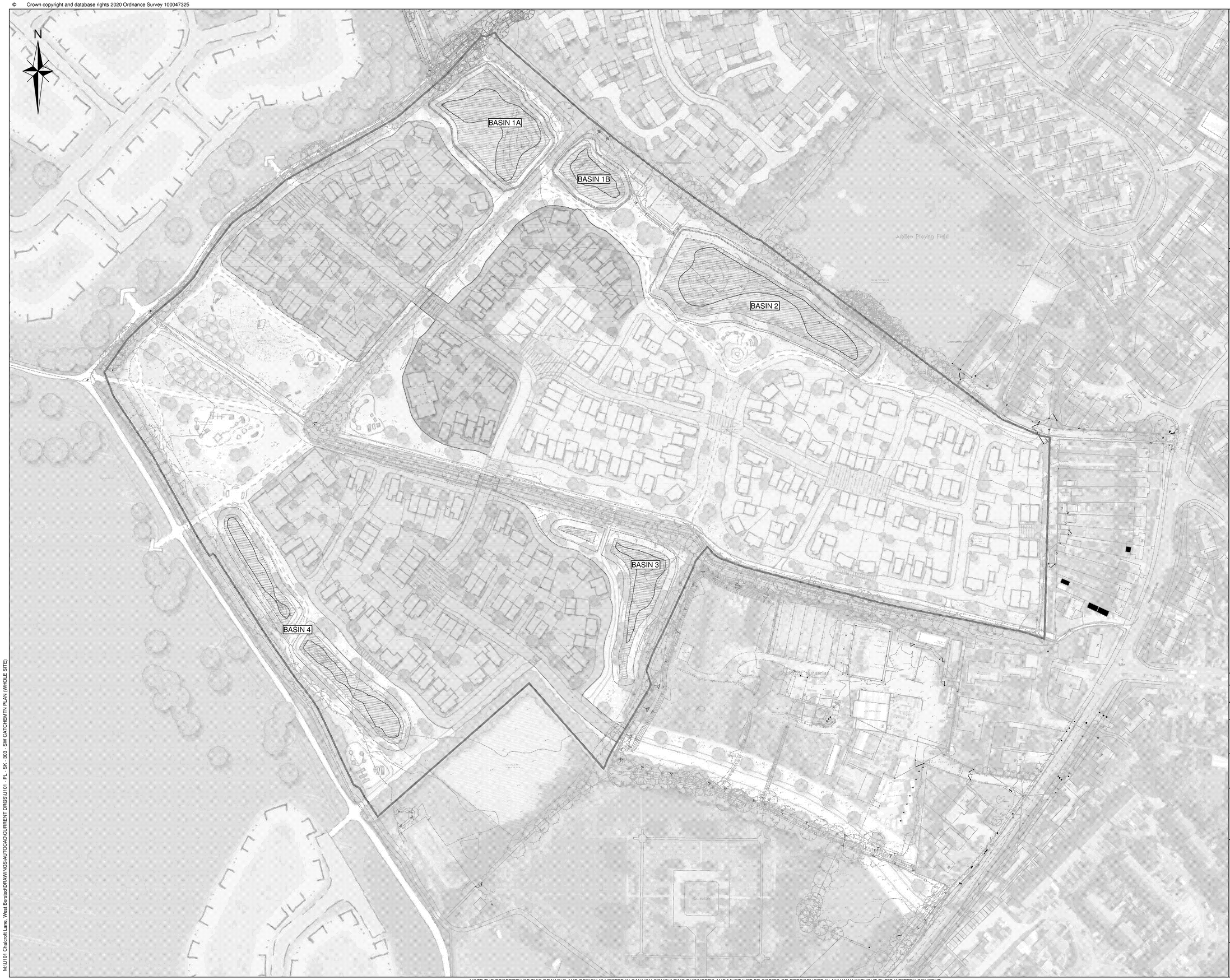

KEY

- IMPERMEABLE CATCHMENT AREA TO ATTENUATION BASIN 1A
- IMPERMEABLE CATCHMENT AREA TO ATTENUATION BASIN 1B
- IMPERMEABLE CATCHMENT AREA TO ATTENUATION BASIN 2
- IMPERMEABLE CATCHMENT AREA TO ATTENUATION BASIN 3
- IMPERMEABLE CATCHMENT AREA TO ATTENUATION BASIN 4

NOTES

REV	DESCRIPTION	DE	DR	CH	DATE

DESIGNED BY	DRAWN BY	CHECKED BY
-	DP	-

SCALE @ A1 SIZE	DATE
D.N.S.	09/10/2020

PROJECT TITLE

NURSERY FIELDS, BERSTED

DRAWING TITLE

IMPERMEABLE CATCHMENT PLAN

CLIENT

LANDFORM BERSTED LTD

CANNON
CONSULTING ENGINEERS
Highways, Transport & Infrastructure Planning

Peak House, 20 Eastcheap
London,
EC3M 1EB
Tel. 020 7717 5870
info@cannonce.co.uk

Cambridge House, Lanwades
Business Park, Kentford,
Newmarket, CB8 7PN
Tel. 01638 555107
www.cannonce.co.uk

DRAWING NUMBER	REV.
U101 - PL - SK - 303	-

M:\U101 Chalcroft Lane, West Bersted\DRAWINGS\AUTOCAD\CURRENT DRGS\U101 - PL - SK - 303 SW CATCHEMTN PLAN (WHOLE SITE)

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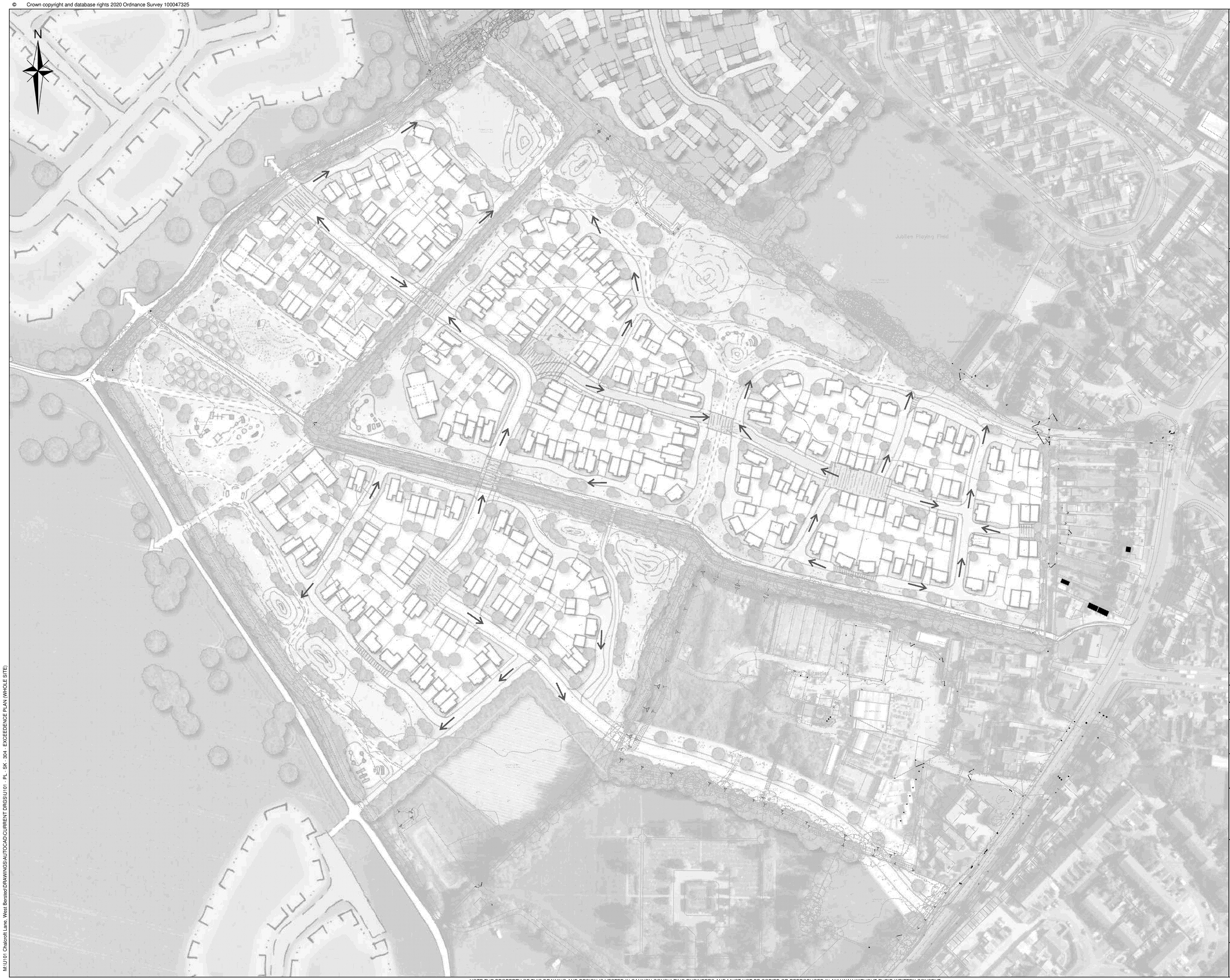

KEY

OVERLAND/EXCEEDENCE FLOW ROUTE

NOTES

REV	DESCRIPTION	DE	DR	CH	DATE

DESIGNED BY	DRAWN BY	CHECKED BY
-	DP	-

SCALE @ A1 SIZE	DATE
D.N.S.	09/10/2020

PROJECT TITLE

NURSERY FIELDS, BERSTED

DRAWING TITLE

OVERLAND FLOW AND EXCEEDENCE ROUTE

CLIENT

LANDFORM BERSTED LTD

CANNON
CONSULTING ENGINEERS
Highways, Transport & Infrastructure Planning

Peak House, 20 Eastcheap
London,
EC3M 1EB
Tel. 020 7717 5870
info@cannonce.co.uk

Cambridge House, Lanwades
Business Park, Kentford,
Newmarket, CB8 7PN
Tel. 01638 555107
www.cannonce.co.uk

DRAWING NUMBER	REV.
U101 - PL - SK - 304	-

M:\U101 Chalcroft Lane, West Bersted\DRAWINGS\AUTOCAD\CURRENT DRGS\U101 - PL - SK - 304 - EXCEEDENCE PLAN (WHOLE SITE)

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ARUN DISTRICT COUNCIL BE/87/21/OUT

ICP SUDS Mean Annual Flood

Input

Return Period (years)	100	Soil	0.299
Area (ha)	1.000	Urban	0.000
SAAR (mm)	716	Region Number	Region 7

Results l/s

QBAR Rural	1.9
QBAR Urban	1.9
Q100 years	5.9
Q1 year	1.6
Q30 years	4.2
Q100 years	5.9

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Design Settings

Rainfall Methodology	FEH-13	Minimum Velocity (m/s)	1.00
Return Period (years)	100	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	0.950	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	x
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Depth (m)
BASIN	0.720	5.00	5.100	0.900

Simulation Settings

Rainfall Methodology	FEH-13	Analysis Speed	Normal	Additional Storage (m³/ha)	20.0
Summer CV	0.950	Skip Steady State	x	Check Discharge Rate(s)	x
Winter CV	0.950	Drain Down Time (mins)	240	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	0	0

Node BASIN Online Orifice Control

Flap Valve	x	Design Depth (m)	0.900	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Design Flow (l/s)	1.2		
Invert Level (m)	4.200	Diameter (m)	0.024		

Node BASIN Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	4.200
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	2391.0	0.0	0.450	2662.0	0.0	0.900	2945.0	0.0

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ARUN DISTRICT COUNCIL BE/87/21/OUT

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.99%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m^3)	Flood (m^3)	Status
10080 minute winter	BASIN	9600	4.593	0.393	5.3	993.1620	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m^3)
10080 minute winter	BASIN	Orifice	0.7	295.2

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ARUN DISTRICT COUNCIL BE/87/21/OUT

Design Settings

Rainfall Methodology	FEH-13	Minimum Velocity (m/s)	1.00
Return Period (years)	100	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	0.950	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	x
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Depth (m)
BASIN	0.510	5.00	5.100	0.900

Simulation Settings

Rainfall Methodology	FEH-13	Analysis Speed	Normal	Additional Storage (m³/ha)	20.0
Summer CV	0.950	Skip Steady State	x	Check Discharge Rate(s)	x
Winter CV	0.950	Drain Down Time (mins)	240	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	0	0

Node BASIN Online Orifice Control

Flap Valve	x	Design Depth (m)	0.900	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Design Flow (l/s)	0.8		
Invert Level (m)	4.200	Diameter (m)	0.020		

Node BASIN Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	4.200
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	755.0	0.0	0.450	912.0	0.0	0.900	1080.0	0.0

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ARUN DISTRICT COUNCIL BE/87/21/OUT

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.99%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
10080 minute winter	BASIN	8040	4.917	0.717	3.8	639.9209	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m³)
10080 minute winter	BASIN	Orifice	0.7	291.3

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ARUN DISTRICT COUNCIL BE/87/21/OUT

Design Settings

Rainfall Methodology	FEH-13	Minimum Velocity (m/s)	1.00
Return Period (years)	100	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	0.950	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	x
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Depth (m)
BASIN	1.990	5.00	5.700	1.500

Simulation Settings

Rainfall Methodology	FEH-13	Analysis Speed	Normal	Additional Storage (m³/ha)	20.0
Summer CV	0.950	Skip Steady State	x	Check Discharge Rate(s)	x
Winter CV	0.950	Drain Down Time (mins)	240	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	0	0

Node BASIN Online Orifice Control

Flap Valve	x	Design Depth (m)	1.200	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Design Flow (l/s)	3.2		
Invert Level (m)	4.200	Diameter (m)	0.037		

Node BASIN Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	4.200
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	3307.0	0.0	0.600	3868.0	0.0	1.200	4452.0	0.0	1.500	4752.0	0.0

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ARUN DISTRICT COUNCIL BE/87/21/OUT

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.99%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m^3)	Flood (m^3)	Status
10080 minute winter	BASIN	9360	4.916	0.716	14.7	2627.4840	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m^3)
10080 minute winter	BASIN	Orifice	2.4	967.3

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ARUN DISTRICT COUNCIL BE/87/21/OUT

Design Settings

Rainfall Methodology	FEH-13	Minimum Velocity (m/s)	1.00
Return Period (years)	100	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	0.950	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	x
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Depth (m)
BASIN	0.630	5.00	7.000	1.000

Simulation Settings

Rainfall Methodology	FEH-13	Analysis Speed	Normal	Additional Storage (m³/ha)	20.0
Summer CV	0.950	Skip Steady State	x	Check Discharge Rate(s)	x
Winter CV	0.950	Drain Down Time (mins)	240	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	0	0

Node BASIN Online Orifice Control

Flap Valve	x	Design Depth (m)	1.000	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Design Flow (l/s)	1.0		
Invert Level (m)	6.000	Diameter (m)	0.021		

Node BASIN Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	6.000
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	1221.0	0.0	0.500	1701.0	0.0	1.000	2207.0	0.0

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ARUN DISTRICT COUNCIL BE/87/21/OUT

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.99%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m^3)	Flood (m^3)	Status
10080 minute winter	BASIN	9540	6.563	0.563	4.7	847.5037	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m^3)
10080 minute winter	BASIN	Orifice	0.7	281.0

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ARUN DISTRICT COUNCIL BE/87/21/OUT

Design Settings

Rainfall Methodology	FEH-13	Minimum Velocity (m/s)	1.00
Return Period (years)	100	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	0.950	Preferred Cover Depth (m)	0.500
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	x
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Depth (m)
BASIN A	0.325	5.00	6.500	1200	1.000
BASIN B	0.325	5.00	6.500	1200	1.000
OUTFALL			6.500	1200	1.200
1			6.500	1200	1.100

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)
PN 1.000	BASIN A	1	5.000	0.600	5.500	5.400	0.100	50.0	150	5.06	50.0
PN 2.000	BASIN B	1	5.000	0.600	5.500	5.400	0.100	50.0	150	5.06	50.0
PN 1.001	1	OUTFALL	5.000	0.600	5.400	5.300	0.100	50.0	150	5.12	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)
PN 1.000	1.426	25.2	55.8	0.850	0.950	0.325	0.0	150	1.453
PN 2.000	1.426	25.2	55.8	0.850	0.950	0.325	0.0	150	1.453
PN 1.001	1.426	25.2	111.6	0.950	1.050	0.650	0.0	150	1.453

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)
PN 1.000	5.000	50.0	150	CIRCULAR	6.500	5.500	0.850	6.500	5.400	0.950
PN 2.000	5.000	50.0	150	CIRCULAR	6.500	5.500	0.850	6.500	5.400	0.950
PN 1.001	5.000	50.0	150	CIRCULAR	6.500	5.400	0.950	6.500	5.300	1.050

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
PN 1.000	BASIN A	1200	Manhole	Adoptable	1	1200	Manhole	Adoptable
PN 2.000	BASIN B	1200	Manhole	Adoptable	1	1200	Manhole	Adoptable
PN 1.001	1	1200	Manhole	Adoptable	OUTFALL	1200	Manhole	Adoptable

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Manhole Schedule

Node	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
BASIN A	6.500	1.000	1200	0	PN 1.000	5.500	150
BASIN B	6.500	1.000	1200	0	PN 2.000	5.500	150
OUTFALL	6.500	1.200	1200	1	PN 1.001	5.300	150
1	6.500	1.100	1200	1	PN 2.000	5.400	150
				2	PN 1.000	5.400	150
				0	PN 1.001	5.400	150

Simulation Settings

Rainfall Methodology	FEH-13	Analysis Speed	Normal	Additional Storage (m³/ha)	20.0
Summer CV	0.950	Skip Steady State	x	Check Discharge Rate(s)	x
Winter CV	0.950	Drain Down Time (mins)	240	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	0	0

Node OUTFALL Online Orifice Control

Flap Valve	x	Design Depth (m)	1.000	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Design Flow (l/s)	1.0		
Invert Level (m)	5.300	Diameter (m)	0.021		

Node BASIN A Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	5.500
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	0

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	745.0	0.0	0.500	1075.0	0.0	1.000	1431.0	0.0

Node BASIN B Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	5.500
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	540

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Depth (m)	Area (m^2)	Inf Area (m^2)	Depth (m)	Area (m^2)	Inf Area (m^2)	Depth (m)	Area (m^2)	Inf Area (m^2)
0.000	1085.0	0.0	0.500	1469.0	0.0	1.000	1878.0	0.0

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Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.98%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
10080 minute winter	BASIN A	9540	5.889	0.389	2.4	342.4507	0.0000	SURCHARGED
10080 minute winter	BASIN B	9600	5.889	0.389	2.5	482.7834	0.0000	SURCHARGED
10080 minute winter	OUTFALL	9540	5.889	0.589	1.1	0.6657	0.0000	OK
10080 minute winter	1	9540	5.889	0.489	0.8	0.5527	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
10080 minute winter	BASIN A	PN 1.000	1	0.8	0.352	0.033	0.0880	
10080 minute winter	BASIN B	PN 2.000	1	0.8	0.236	0.032	0.0880	
10080 minute winter	OUTFALL	Orifice		0.7				339.2
10080 minute winter	1	PN 1.001	OUTFALL	1.1	0.118	0.042	0.0880	

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ARUN DISTRICT COUNCIL BE/87/21/OUT

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1 Basin Maintenance

Maintenance schedule	Required action	Frequency
Regular maintenance	Removal of litter and debris	Monthly
	Cut grass	Half yearly
	Manage other vegetation	Monthly then as required
	Inspect and clear inlets, outlets, overflows etc	Monthly
	Inspect and repair banks, pipes, headwalls etc	Monthly
	Inspect inlets and basin for silt accumulation	Monthly until able to establish the required silt removal frequency, then in accordance with established frequency
	Manage vegetation in wetter areas (micro-pools etc)	Annually or as established by ecologist/landscape architect
	Tidy dead growth	Annually (as per growing season)
	Remove sediment from traps, forebays etc	Annually
Occasional maintenance	Reseed	As required.
	Prune adjacent trees	Every 2 years, or as otherwise advised
	Silt removal	Every 5 years (depending on the requirement for regular maintenance)
Remedial actions	Repair erosion or other damage	As required
	Repair inlets, outlets and overflows	As required

2 Swale / Grassed Filter Drain Maintenance

Maintenance schedule	Required action	Frequency
Regular maintenance	Litter and debris removal	Monthly, as required
	Grass cutting	Monthly, as required by season
	Upkeep of any other planting	Monthly, then decreasing in frequency, as required by season
	Inspect the swale bed for any ponding (a possible indication of reduced infiltration).	Monthly, as required
	Inspect inlets, outlets, overflows for debris and condition	Monthly
	Inspect system for silt (traps, chambers and surfaces)	Half yearly
Occasional maintenance	Reseed and replant bare areas, consider reasons for poor growth and failure of plants to establish and amend planting, improve soil etc	As required
Remedial actions	Repair erosion or other damage (reseed or re-turf)	As required.
	Relevel uneven surfaces	As required.
	Scarify topsoil, remediate soil to improve any reduction in infiltration	As required.
	Remove notable accumulations of sediment	As required.
	Remove and safely dispose of any oils or petrol residues.	As required

3 Pervious Pavement Maintenance

Maintenance schedule	Required action	Frequency
Regular maintenance	Brushing and vacuuming (standard cosmetic sweep over whole surface)	Once a year, after autumn leaf fall, or reduced frequency as required, based on site-specific observations of clogging or manufacturer's recommendations – pay particular attention to areas where water runs onto pervious surface from adjacent impermeable areas as this area is most likely to collect the most sediment
Remedial actions	Remedial work to any depressions, rutting and cracked or broken blocks considered detrimental to the structure performance or a hazard to users, and replace lost jointing material	As required
	Rehabilitation of surface and upper substructure by remedial sweeping	Every 10 to 15 years or as required
Monitoring	Initial inspection	Annually
	Inspect tank internally, remove any sediment if present and if required	Every 5 years (or more frequently if necessary)
	Inspect for evidence of poor operation and/or weed growth – if required, take remedial action	Three-monthly, 48 hours after large storms in first six months
	Inspect silt accumulation rates and establish appropriate brushing frequencies	Annually
	Monitor inspection chambers	Annually

4 Orifice Maintenance

Maintenance schedule	Required action	Frequency
Remedial actions	Repair/replace inlets, outlets, overflows.	As required
Monitoring	Check that controls, protection, outlets, inlets and overflows are in good condition and working as intended	Half Yearly

KEY

1. ATTENUATION BASIN
2. ROADSIDE SWALE/GRASSED FILTER DRAIN
3. PERMEABLE PAVING
4. ORIFICE CONTROL CHAMBER

NOTES

REV	DESCRIPTION	DE	DR	CH	DATE
-	-		-		-

DESIGNED BY	DRAWN BY	CHECKED BY
-	DP	-

SCALE @ A1 SIZE	DATE
D.N.S.	09/10/2020

PROJECT TITLE

NURSERY FIELDS, BERSTED

DRAWING TITLE

MAINTENANCE PLAN

CLIENT

LANDFORM BERSTED LIMITED

CANNON
CONSULTING ENGINEERS
Highways. Transport & Infrastructure Planning

Peek House, 20 Eastcheap
London
EC3M 1EB
Tel: 020 7717 5870
info@cannonce.co.uk

Cambridge House, Lanwades
Business Park, Kentford,
Newmarket, CB8 7PN
Tel: 01638 555107
www.cannonce.co.uk

DRAWING NUMBER: U101 - PL - SK - 305

REV.: -

M:\U101 Chalcroft Lane, West Berston\DRAWINGS\AUTOCAD\CURRENT DRGS\U101 - PL - SK - 305 - MAINTENANCE PLAN

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ARUN DISTRICT COUNCIL BE/87/21/OUT

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N

Ridge level. 12.49

Ridge level. 12.41

Tile level. 9.22

Gravel surface

Maintained grass

Natural chalk scrub

Concrete slab

Concave post and timber panel fence 1.83m high

Timber post and rail fence

Mature hedge

Top of fence level. 8.81

Soffit level. 5.97
Invert level. 5.65

Top of tree canopy level. 24.67

Top of tree canopy level. 24.09

Top of tree canopy level. 16.11

Top of tree canopy level. 24.04

Top of tree canopy level. 15.27

Top of tree canopy level. 16.23

Top of tree canopy level. 20.88

Top of tree canopy level. 19.54

Top of tree canopy level. 21.64

Multi stem

Livestock in field at time of survey

Stable

Soffit level. 5.86
Invert level. 5.59

Top of hedge level. 8.52

Top of hedge level. 9.04

Soffit level. 5.79
Invert level. 5.46

Top of wall level. 7.46

Top of tree canopy level. 17.53

Top of tree canopy level. 16.43

Top of tree canopy level. 15.12

Top of tree canopy level. 17.01

Top of tree canopy level. 16.80

Gully cl. 6.40

Gully cl. 6.39

Gully cl. 6.46

Gully cl. 6.43

Gully cl. 6.50

Gully cl. 6.52

Gully cl. 6.49

Gully cl. 6.47

Gas cl. 6.65

Gas cl. 6.52

Gas cl. 6.50

WM cl. 6.61

WM cl. 6.56

Street light

Street light

Street light

Sign

Gas Gov

BT Chamber cl. 7.06

Utility Manhole cl. 7.01 Filled In

PDC 3 level. 7.21

Soil Manhole il. 5.45

600 assumed >

Footpath

Footpath

Footpath

Timber post and rail fence

Post

Timber post and rail fence

KEY

BOX CULVERT

EXISTING DITCH TO BE INFILLED

NOTES

REV	DESCRIPTION	DE	DR	CH	DATE

DESIGNED BY	DRAWN BY	CHECKED BY
-	DP	-

SCALE @ A1 SIZE	DATE
D.N.S.	16/07/2020

PROJECT TITLE

CHALCROFT NURSERY,
WEST BERSTED

DRAWING TITLE

LAND DRAINAGE
ALTERATIONS

CLIENT

LANDFORM BERSTED LIMITED

CANNON
CONSULTING ENGINEERS
Highways, Transport & Infrastructure Planning

Peek House, 20 Eastcheap
London,
EC3M 1EB
Tel: 020 7717 5870
info@cannonce.co.uk

Cambridge House, Lanwades
Business Park, Kentford,
Newmarket, CB8 7PN
Tel: 01638 555107
www.cannonce.co.uk

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