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Drainage Statement

34 Retirement Living Units and Three Dwellings at

Site of Former Magistrates Court, Haverhill

On behalf of

Churchill Retirement Living

June 2021

Document History and Status

Project Number 23299

Date	Version	Prepared By	Reviewed By	Approved By
13 Dec 2019	1.0	Martin Kempshall CEng MICE	Steve Doughty Director	Stuart Magowan IEng MICE
19 Dec 2019	1.1	Martin Kempshall CEng MICE	Stuart Magowan IEng MICE	Stuart Magowan IEng MICE
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25 June 2021	1.3	Martin Kempshall CEng MICE	Stuart Magowan IEng MICE	Stuart Magowan IEng MICE

CONTENTS

1 Non Technical Summary

1.1 This Drainage Statement has been undertaken in accordance with the National Planning Policy Framework on behalf of Churchill Retirement Living Ltd in support of a Planning Application for the demolition of a former day care centre and magistrates court for the construction of 34 retirement living units and three residential dwellings.

1.2 This Statement is to be read in conjunction with all planning, architectural and other reports that accompany the Planning Application for the proposed development.

1.3 The geology of the area comprises Glacial Till above the bedrock geology of upper chalk. Lower permeability clays within the Glacial Till indicates that the site is likely to be unsuitable for infiltration to ground.

1.4 The proposed surface water drainage strategy is for a restricted discharge to the existing site drainage.

1.5 Surface water storage will be provided within cellular storage crates for the main building with voided subbase providing storage beneath driveways for the three dwelling.

1.6 Sufficient volume will be provided to store all storm return periods up to and including the 1:100 year rainfall event with an additional 40% allowance to account for the predicted future effects of climate change.

1.7 Foul drainage will be discharged by gravity via an existing onsite connection to the public foul sewer located beneath Camps Road immediately to the south of the site.

1.8 Existing onsite surface and foul water sewers may be subject to a Section 185 agreement with Anglian Water.

2 Planning Policy Context

2.1 National Planning Policy Framework

2.1.1 The National Planning Policy Framework was updated in February 2019.

2.1.2 With regard to planning and flood risk the policy framework states that *'when determining any planning applications, local planning authorities should ensure that flood risk is not increased elsewhere. Where appropriate, applications should be supported by a site-specific flood-risk assessment.*

2.1.3 Development should only be allowed in areas at risk of flooding where, in the light of this assessment (and the sequential and exception tests, as applicable) it can be demonstrated that:

a) within the site, the most vulnerable development is located in areas of lowest flood risk, unless there are overriding reasons to prefer a different location;

b) the development is appropriately flood resistant and resilient;

c) it incorporates sustainable drainage systems, unless there is clear evidence that this would be inappropriate;

d) any residual risk can be safely managed; and

e) safe access and escape routes are included where appropriate, as part of an agreed emergency plan.'

2.1.4 Footnote 50 reads *'a site-specific flood risk assessment should be provided for all development in Flood Zones 2 and 3. In Flood Zone 1, an assessment should accompany all proposals involving: sites of 1 hectare or more; land which has been identified by the Environment Agency as having critical drainage problems; land identified in a strategic flood risk assessment as being at increased flood risk in future; or land that may be subject to other sources of flooding, where its development would introduce a more vulnerable use.)'*

2.1.5 With regard to major developments the NPPF states that *'major developments should incorporate sustainable drainage systems unless there is clear evidence that this would be inappropriate. The systems used should:*

a) take account of advice from the lead local flood authority;

b) have appropriate proposed minimum operational standards;

c) have maintenance arrangements in place to ensure an acceptable standard of operation for the lifetime of the development; and

d) where possible, provide multifunctional benefits'

2.1.6 Major development is defined as follows:

'For housing, development where 10 or more homes will be provided, or the site has an area of 0.5 hectares or more. For non-residential development it means additional floorspace of 1,000m² or more, or a site of 1 hectare or more, or as otherwise provided in the Town and Country Planning (Development Management Procedure) (England) Order 2015.'

2.2 Lead Local Flood Authority

2.2.1 Suffolk County Council became a Lead Local Flood Authority under the Flood and Water Management Act 2010 and was given a series of new responsibilities to coordinate the management of local flood risk.

2.2.2 As part of their role Suffolk County Council commissioned and produced the following documents:

- Preliminary Flood Risk Assessment - June 2011
- Flood Risk Management Strategy - March 2016
- Suffolk Flood Risk Management Strategy Document – May 2018

2.2.3 The above documents have been reviewed in the preparation of this report

2.3 West Suffolk Council

2.3.1 Forest Heath District Council and St Edmundsbury Borough Council merged in April 2019 to become West Suffolk Council.

2.3.2 Forest Heath District Council and St Edmundsbury Borough Council jointly issued a Strategic Flood Risk Assessment and Water Cycle Study which was adopted in August 2009.

2.3.3 The Strategic Flood Risk Assessment together with supporting documents have been reviewed and are referenced within this report.

2.4 Local Planning Policy

2.4.1 St Edmundsbury Borough Council adopted the Local Plan Core Strategy in December 2010.

2.4.2 The following policies are of specific relevance to this Drainage Statement:

2.4.3 **Policy CS2** Sustainable Development states that *'a high quality, sustainable environment will be achieved by designing and incorporating measures appropriate to the nature and scale of development, including:*

Sustainable design of the built environment:

J) incorporating the principles of sustainable design and construction in accordance with recognised appropriate national standards and codes of practice to cover the following themes:-

- *Water – ensuring water efficiency by managing water demand and using such waste water reuse methods as rainwater harvesting and grey water recycling;*
- *Surface Water Run-off – incorporating flood prevention and risk management measures, such as sustainable urban drainage.'*

2.4.4 Forest Heath District Council and St Edmundsbury Borough Council adopted the Joint Development Management Policies Document Sustainability Appraisal in February 2015.

2.4.5 The following policies are of specific relevance to this Flood Risk Assessment:

2.4.6 **Policy DM6** Flooding and Sustainable Drainage states that 'proposals for all new development will be required to submit schemes appropriate to the scale of the proposal detailing how on-site drainage will be managed so as not to cause or exacerbate flooding elsewhere. Examples include: rainwater harvesting and greywater recycling, and run-off and water management such as Sustainable Urban Drainage Systems (SUDS) or other natural drainage system.'

2.5 Other Policy, Local design guidance and requirements

2.5.1 Anglian Water's Surface Water Drainage Policy is guidance states their preferred position regarding the management of surface water arising from new and redeveloped areas. Section 3.2 of Anglian Water's Policy Document for Previously developed (Brownfield) site states '*Where a Brownfield site is redeveloped, no historic right of connection will exist, and any sewer connections will be treated as new. The site will be treated as if it was Greenfield and therefore discharge rate limited to the equivalent 1 in 1 year Greenfield rate. The Greenfield runoff for the site is calculated using the FEH method. A free Greenfield runoff estimation tool can be accessed on the UKSuDS website www.uksuds.com*

Where the above is not practical, the Developer is asked to calculate the existing Brownfield rates based on the existing roof areas. The discharge rate from the development will be limited to the equivalent 1 in 1 year rate, or an appropriate rate as agreed by Anglian Water.

In both circumstances, Anglian Water will assess the capacity of the public sewers and upon meeting the above policy principles, advise and make recommendations on the proposed development and or new connection.'

3 Existing Site

3.1 Site Location

3.1.1 The site is located on the site of a former day care centre and magistrates' courts at Camps Road, Haverhill, Suffolk at Ordnance Survey reference TL 668 454. The nearest postcode is CB9 8JY.

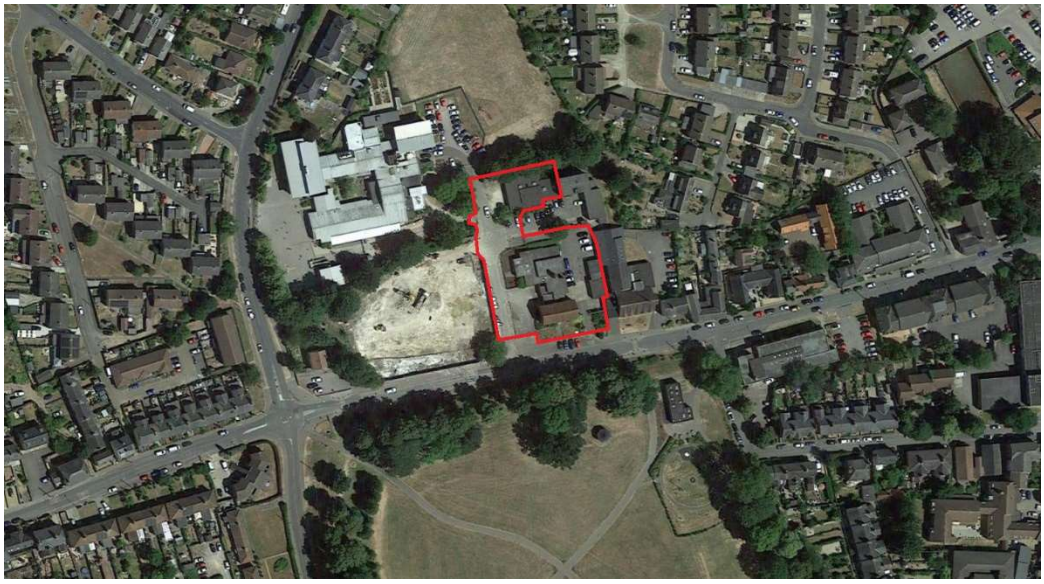


Image 1: Site Location

3.1.2 The site is bounded to the north by Place Farm Primary Academy's playing field, to the west by recently developed residential apartment, Haverhill Methodist Church to the east and Camps Road to the South.

3.1.3 A copy of the site location plan is located in Appendix 1 at the rear of this report.

3.2 Site Description

3.2.1 The site is approximately 3,500m^2 in area including 500m² of access road and currently comprises the former Magistrates Court, ancillary buildings and associated car parking.

3.2.2 Existing ground levels are highest at the northwest corner of the site at approximately 75.8m AOD. The site falls towards its southeast boundary to a level of approximately 71.5m AOD.

3.2.3 A copy of the existing site layout plan is located in Appendix 2 at the rear of this report.

3.3 Existing Drainage

3.3.1 Surface water from the existing site currently discharges in an unrestricted manner via onsite drainage which connections to the 900mm Anglian Water diameter public surface water sewer beneath Camps Road.

3.3.2 The northern part of the site comprising the former day care centre, discharges surface water into a 150mm diameter surface water drain before connecting to a 225mm diameter pipe to the west of the site. The southern section of the site discharges via a 150mm diameter surface water drain. Both systems discharge into the Anglian Water public surface water sewer in Camps Road.

3.3.3 Some of the surface and foul water drainage connections located beneath the site also serve the school to the north and ambulance station to the east of the site.

3.3.4 It is anticipated that the onsite foul sewer system would have been adopted in 2011 by Anglian Water under the Water Industry Act, which may require diverting as part of the development under a S185 of the Water Industry Act.

3.3.5 Foul water from the existing buildings is currently discharged in an unrestricted manner to the 300mm diameter foul public sewer beneath Camps Road.

3.3.6 A copy of the Anglian Water sewer records and CCTV utility survey extracts are located in Appendix 3 at the rear of this report.

3.4 Brownfield runoff rates.

3.4.1 Existing brownfield surface water runoff rates have been calculated using the methodologies set out on Page 16 of Appendix A Suffolk Flood Risk Management Strategy Document.

3.4.2 Site wide calculations are based upon an area of 3,000m². The site access road is to remain as existing and has therefore been discounted from all calculations throughout this Drainage Statement.

3.4.3 The existing peak runoff from roof areas required for Anglian Water's assessment have been based upon the roof area of the existing development which is 1,100m².

3.4.4 Due to the surface water connections from adjacent land assessment of brownfield surface water runoff rates are based upon the existing drainage network serving the site with two calculation methods considered.

3.4.5 Microdrainage greenfield runoff calculator model with IH124 rainfall and Soil Type 5 to calculate average surface water runoff and the Modified Rational Method to calculate peak runoff.

3.4.6 Microdrainage calculations confirm the average surface water runoff rate for the 1:1 year storm event as 5.6l/s and the 1:100 storm event of 13.3l/s for the entire site.

3.4.7 The Modified Rational Method used to calculate the peak surface water runoff off using FEH data for the drainage of the existing roof areas is 9.6l/s for the 1:1 year event and 45.8l/s for the 1:100 year event.

3.4.8 A copy of the existing site runoff rates using Microdrainage IH124 calculation and Modified Rational Method are located in Appendix 4 at the rear of this report.

3.5 Geology and Groundwater

3.5.1 The information provided within the Crossfield Consulting desk top study identifies that the geology of the site comprises Glacial Till with bedrock geology of upper chalk (Seaford Chalk / Lewes. Nodular Chalk beneath).

3.5.2 The nearest borehole record from BGS mapping is located less than 50m to the west of the site. This identifies very high strength grey brown silty clay with some fine to medium gravel size chalk and gravel fragments confirming the presence of Glacial Till.

3.5.3 The presence of lower permeability clays potentially present within the Glacial Till indicates that the site is likely to be unsuitable for infiltration to ground as supported by the Crossfield Consulting desktop study.

3.5.4 This information within the Crossfield Consulting desktop study identifies the potential for contaminant impacted strata further supporting that the use of infiltration to ground would be an unviable method for discharging surface water from the site.

3.5.5 BGS borehole records identify that groundwater was recorded at a depth of 15mbgl during site investigation completed in December 2009.

3.5.6 The online “Magic Map” available from Defra confirms that the site is located above a Major Aquifer classified as having high vulnerability. The site is not located in a Source Protection Zone.

3.5.7 A copy of the BGS Mapping, borehole data and extracts from the Crossfield Consulting Desk Study Report extracts is located in Appendix 5 at the rear of this report.

4 Development Proposals

4.1 Description

4.1.1 The proposed development is for the demolition of a former day care centre and magistrates court and the construction of 34 retirement living units and three residential dwellings.

4.1.2 The retirement housing will be provided across two levels within a single building and will accommodate the 34 units. The three dwellings are to be located to the north of the retirement living unit with individual driveway access.

4.1.3 The total impermeable area of the proposed development is approximately 3,000m², the access road included in the redline boundary is to remain as existing.

4.1.4 The impermeable area associated within the three dwellings is approximately 266m² and 1,435m² for the 34 retirement living units.

4.1.5 A copy of the proposed site layout plan is located in Appendix 6 at the rear of this report.

4.1.6 A copy of the existing and proposed impermeable areas plan are located in Appendix 7 at the rear of this report.

4.2 Drainage Strategy

4.2.1 CIRIA report C753 The SuDS Manual-v6 provides guidance on the redevelopment of brownfield sites. The aim for surface water runoff is to match greenfield runoff rates and volumes where reasonably achievable.

4.2.2 Sufficient storage will be provided to accommodate a 1:100 year storm event including an additional 40% to account for the predicted effects of future climate change as per National Planning Policy Framework requirements.

4.2.3 For surface water discharge, the drainage hierarchy notes the following list of drainage options in order of preference:

1. Infiltration to ground
2. Discharge to a watercourse
3. Discharge to a surface water sewer
4. Discharge to a foul water sewer

4.2.4 Given the ground investigation information completed it has been established that the proposed surface water drainage strategy will be based on a restricted discharge via existing on-site connections.

4.2.5 Suffolk County Council requirements are for discharge rates to be restricted as close to greenfield rates as far as reasonably practical. Alternatively, the brownfield 1yr, 30yr and 100yr peak runoff rates are to be used with a betterment of at least 30%.

4.2.6 Pre-developed greenfield runoff rates have been established using The HR Wallingford tool for Greenfield runoff estimation.

HR Wallingford
Working with water

Greenfield runoff rate estimation for sites

www.uksuds.com | Greenfield runoff tool

Calculated by:	Martin Kempshall
Site name:	Camps Road
Site location:	Haverhill

This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance "Rainfall runoff management for developments", SC030219 (2013) , the SuDS Manual C753 (Ciria, 2015) and the non-statutory standards for SuDS (Defra, 2015). This information on greenfield runoff rates may be
the basis for setting consents for the drainage of surface water runoff from sites.

Site Details

Latitude:	52.08259° N
Longitude:	0.43309° E
Reference:	3795290988
Date:	Jun 25 2021 13:50

Runoff estimation approach IH124

Site characteristics

Total site area (ha): 1

Methodology

Q_{BAR} estimation method:	Calculate from SPR and SAAR
SPR estimation method:	Calculate from SOIL type

Soil characteristics

	Default	Edited
SOIL type:	3	3
HOST class:	N/A	N/A
SPR/SPRHOST:	0.37	0.37

Hydrological characteristics

	Default	Edited
SAAR (mm):	584	584
Hydrological region:	6	6
Growth curve factor 1 year:	0.85	0.85
Growth curve factor 30 years:	2.3	2.3
Growth curve factor 100 years:	3.19	3.19
Growth curve factor 200 years:	3.74	3.74

Notes

(1) Is Q_{BAR} < 2.0 l/s/ha?

When Q_{BAR} is < 2.0 l/s/ha then limiting discharge rates are set at 2.0 l/s/ha.

(2) Are flow rates < 5.0 l/s?

Where flowrates are less than 5.0 l/s consent for discharge is usually set at 5.0 l/s if blockage from vegetation and other materials is possible. Lower consent flowrates may be set where the blockage risk is addressed by using appropriate drainage elements.

(3) Is SPR/SPRHOST ≤ 0.3?

Where groundwater levels are low enough the use of soakaways to avoid discharge offsite would normally be preferred for disposal of surface water runoff.

Greenfield runoff rates

	Default	Edited
Q_{BAR} (l/s):	2.32	2.32
1 in 1 year (l/s):	1.98	1.98
1 in 30 years (l/s):	5.35	5.35
1 in 100 year (l/s):	7.41	7.41
1 in 200 years (l/s):	8.69	8.69

This report was produced using the greenfield runoff tool developed by HR Wallingford and available at www.uksuds.com. The use of this tool is subject to the UKSuDS terms and conditions and licence agreement, which can both be found at www.uksuds.com/terms-and-conditions.htm. The outputs from this tool are estimates of greenfield runoff rates. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, CEH, Hydrosolutions or any other organisation for the use of this data in the design or operational characteristics of any drainage scheme.

Image 2: Greenfield Runoff Calculation

4.2.7 Qbar has been established at 2.3l/s/ha and the 1:100 year peak runoff 7.4l/s/ha.

4.2.8 The greenfield runoff rate for the developed areas of the site has been established at 1.8l/s and the 1:100 year peak runoff 5.8l/s respectively.

4.2.9 Restricted discharges of less than 2l/s are impractical, and it is therefore unviable to restrict surface water discharge to greenfield rates given the site constraints and the drainage strategy will be based upon a betterment of calculated brownfield runoff rates.

4.2.10 A 30% betterment of the 1:1 year runoff rate confirms a site wide surface water runoff rate of 3.9l/s is required, which is a 5.7l/s (58%) reduction on the peak 1:1 year surface water runoff rate from existing roof areas.

4.2.11 Existing surface water catchments will be maintained with the three residential dwellings discharging into the site's northern drainage system and the 34 apartments discharge to the southern system.

4.2.12 Two discharges of 2l/s are proposed in seeking to achieve the required betterment for the site.

4.2.13 For the 34 apartments approximately 84.4m³ of storage is required providing an estimated half drain time of 360 minutes (Approximately 6 hours). This could be provided within a 10m x 11m x 0.8m cellular storage crate.

4.2.14 For the three dwelling approximately 8.1m³ of storage is required within a 250mm deep lined voided the subbase system (30% void ratio) beneath the driveways providing an estimated half drain time of 106 minutes.

4.2.15 Preliminary calculations have been prepared in order to demonstrate that surface water drainage can be adequately accommodated within the site without any increased flood risk elsewhere with the final drainage scheme subject to detailed design.

4.3 Foul Water

4.3.1 Foul water would be discharged via the existing public foul sewer located beneath the site.

4.3.2 The anticipated peak foul water discharge from the site is 1.7 l/s in accordance with Design and Construction Guidance (DCG) for sewers offered for adoption requirements.

4.3.3 Any new connection to the public sewer will be subject to agreement with Southern Water under Section 106 of the Water Industry Act 1991.

4.3.4 The existing foul sewer would require a diversion under S185 of the Water Industry Act.

4.3.5 Copies of the preliminary drainage strategy plan and calculations are located in Appendix 8 at the rear of this report.

4.4 Water Quality

4.4.1 The proposed development is for residential use. In accordance with CIRIA SuDS Manual 2015 (Report C753), the pollution hazard level for this type of development is between very low and low depending on the use/area of the site.

4.4.2 The surface water scheme will include mitigation to ensure that surface water is suitably treated and any pollution risk adequately managed prior to discharge.

4.4.3 Table 26.2 in Chapter 26 of CIRIA report C753 The SuDS Manual provides Pollution Hazard Indices for varying land types. Those of relevance to the development proposals are as follows:

Land Use	Pollution hazard level	Total suspended solids (TSS)	Metals	Hydro-carbons
Residential roofs	Very Low	0.2	0.2	0.05
Individual property driveways, residential car park, low-traffic roads	Low	0.5	0.4	0.4

Table 1: Pollution Hazard Indices

4.4.4 Table 26.3 in Chapter 26 of CIRIA Report C753 The SuDS Manual identifies the water quality mitigation index of SuDS features. An extract from Table 26.3 of CIRIA Report C753 The SuDS Manual is shown below:

SuDS Type	Total suspended solids (TSS)	Metals	Hydro-carbons
Permeable pavement	0.7	0.6	0.7

Table 2: Pollution Mitigation Indices

4.4.5 The proposed use of a lined voided subbase beneath a permeable paved car park will meet the target treatment level required for runoff with a low risk of pollution hazard.

4.4.6 Only surface water runoff from the roof of the building will be discharged directly into the lined cellular storage system. Where additional treatment is required a gravel filter drain will be integrated within the cellular storage system to ensure that the surface water drainage system for the site will adequately mitigate against the risk of pollution.

4.4.7 An outline drainage maintenance schedule is located in Appendix 9 at the rear of this report.

4.4.8 A copy of the Suffolk Country Council SuDS Pro Forma is located in Appendix 10 at the rear of this report.

4.5 Risk to Others

4.5.1 The proposed surface water drainage system will be designed to current standards incorporating SuDS elements providing treatment, attenuation and storage which will minimise runoff leaving the site during times of heavy rain.

4.5.2 Allowance has been made for a 40% increase in rainfall intensities which accords with the requirements under the National Planning Policy Framework.

4.5.3 The proposed drainage system will incorporate sufficient treatment prior to the final discharge destination thus mitigating the risk of pollution from the site.

4.5.4 The risk of surface water flooding to others due to the development proposals is reduced and the resultant risk is negligible.

4.5.5 Sewerage undertakers have an obligation to upgrade the existing networks if a connection to an equivalent or larger sized public sewer is technically achievable.

4.5.6 The residual risk of sewer flooding from this development for the foreseeable future is therefore negligible.

5 Conclusions

5.1 The geology of the area comprises Glacial Till with the bedrock geology of upper chalk.

5.2 The potential presence of lower permeability clays within the Glacial Till demonstrates that the site is likely to be unsuitable for infiltration to ground as supported by the Crossfield Consulting desktop report.

5.3 The proposed surface water drainage strategy is based on two controlled discharges to the existing onsite drainage systems at restricted rates of 2l/s mimicking the 4l/s 1:1 year predeveloped runoff rate for the site.

5.4 A 58% reduction in the peak surface water runoff rate for the 1:1 year storm event for the roof area of the existing development will be provided.

5.5 Preliminary calculations indicate that surface water runoff generated by the proposed development can be attenuated on site for all rainfall events up to the 1:100 year event including an allowance for climate change.

5.6 Water quality improvements will be provided for all areas to ensure water quality requirements from the site are achieved.

5.7 Foul drainage will be discharged by gravity via the existing connection to the public foul sewer located beneath Camps Road immediately south of the site.

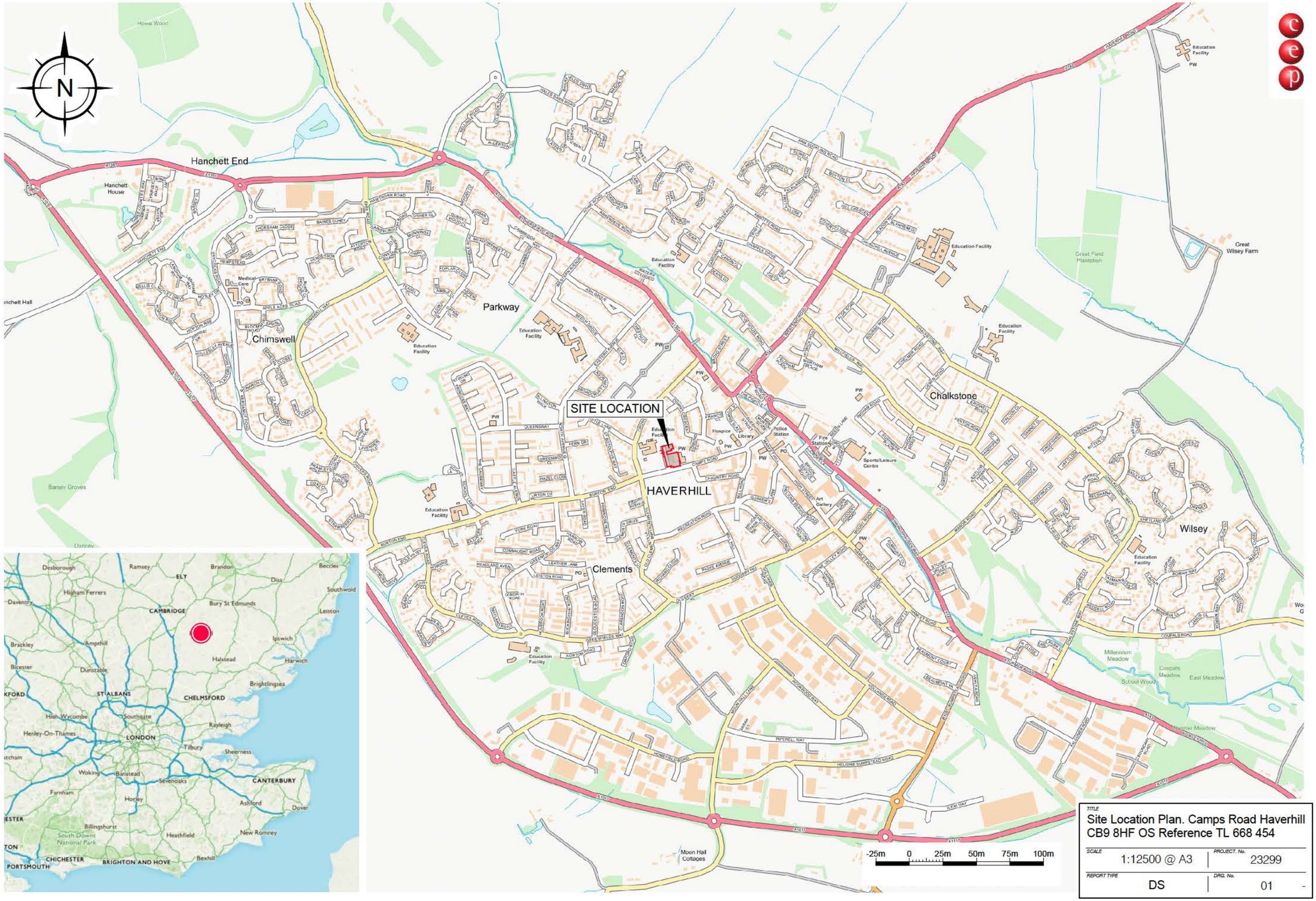
5.8 Existing onsite drainage may require diverting as part of the development under a S185 of the Water Industry Act.

5.9 A suitable SuDS drainage system is proposed which accords with the requirements of national and local guidance.

6 List of Appendices, Images and Tables

Appendix 1

Site Location Plan

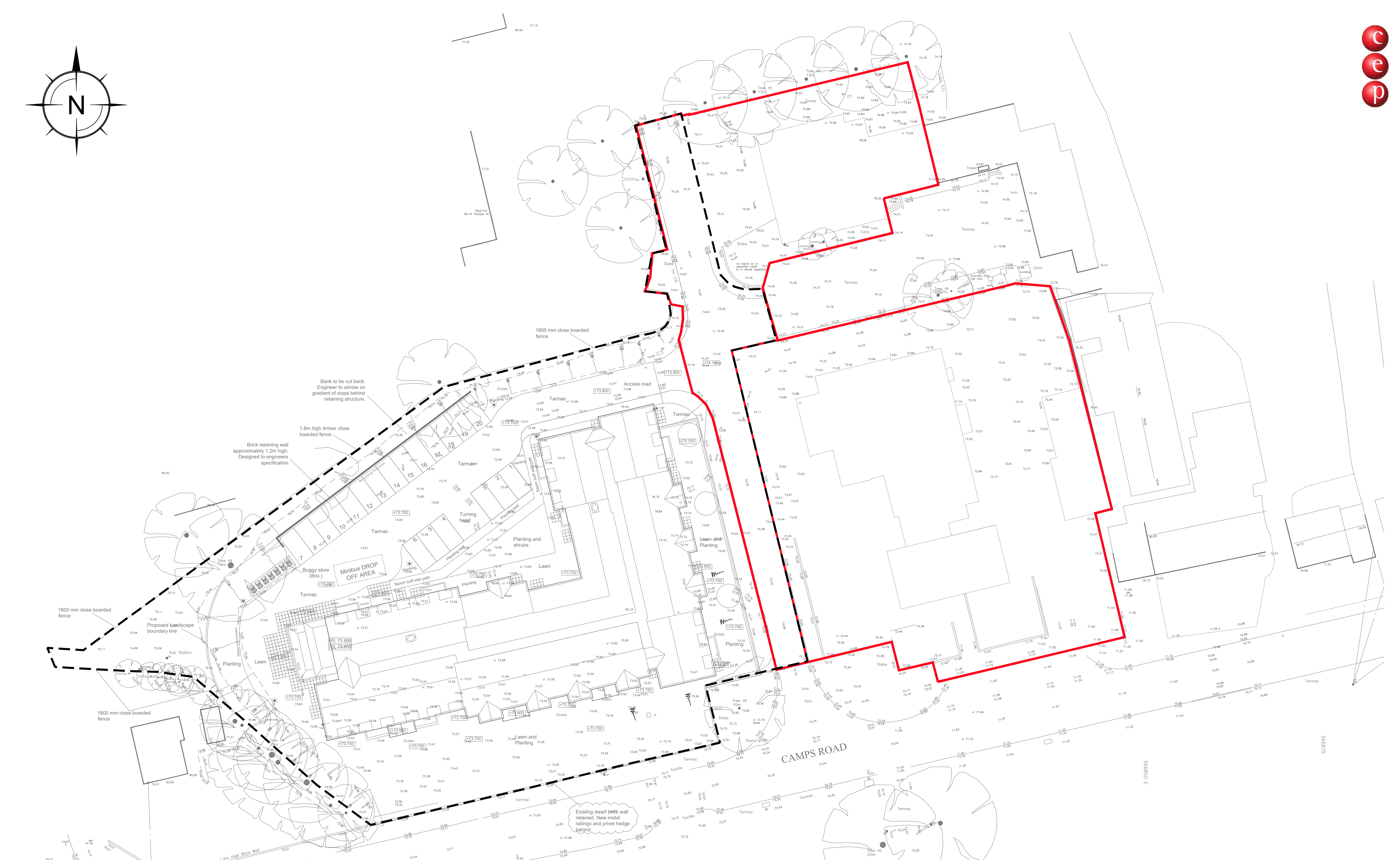


TITLE
Site Location Plan. Camps Road Haverhill CB9 8HF OS Reference TL 668 454

SCALE	PROJECT. No.
1:12500 @ A3	23299
REPORT TYPE	DRG. No.
DS	01 -

Appendix 2

Existing Site Layout Plan



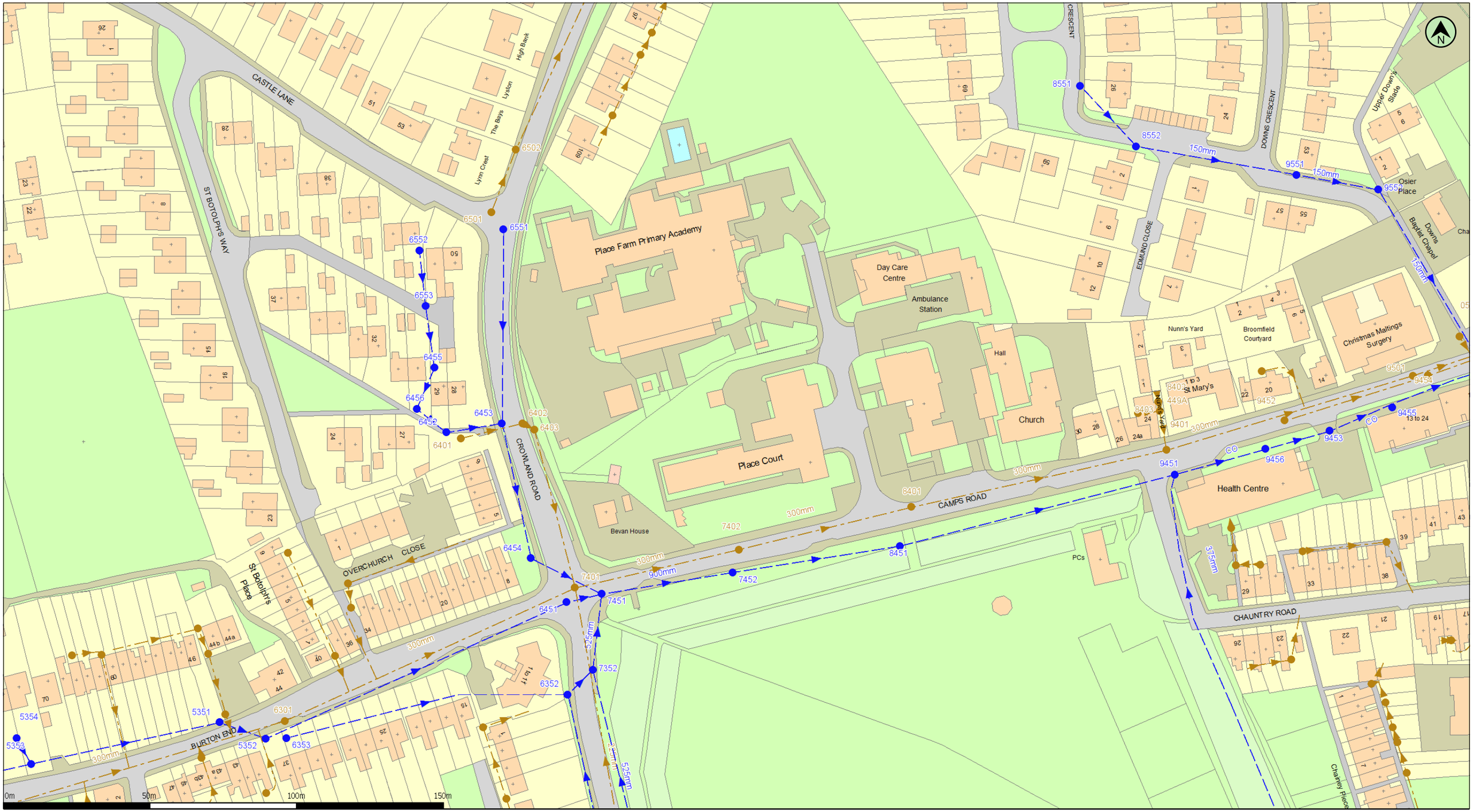
TITLE

Existing Site Layout Plan

SCALE	PROJECT. No.
1:500 @ A3	23299
REPORT TYPE	DRG. No.
DS	02 -

Appendix 3

Anglian Water Sewer Records and CCTV Utility Survey Extract



(c) Crown copyright and database rights 2015 Ordnance Survey 100022432 | Date: 09/10/15 | Scale: 1:1250 | Map Centre: 566756,245485 | Data updated: 02/09/15 | Our Ref: 159659 - 2 | Wastewater Plan A3

This plan is provided by Anglian Water pursuant its obligations under the Water Industry Act 1991 sections 198 or 199. It must be used in conjunction with any search results attached. The information on this plan is based on data currently recorded but position must be regarded as approximate. Service pipes, private sewers and drains are generally not shown. Users of this map are strongly advised to commission their own survey of the area shown on the plan before carrying out any works. The actual position of all apparatus MUST be established by trial holes. No liability whatsoever, including liability for negligence, is accepted by Anglian Water for any error or inaccuracy or omission, including the failure to accurately record, or record at all, the location of any water main, discharge pipe, sewer or disposal main or any item of apparatus. This information is valid for the date printed. This plan is produced by Anglian Water Services Limited (c) Crown copyright and database rights 2015 Ordnance Survey 100022432.This map is to be used for the purposes of viewing the location of Anglian Water plant only. Any other uses of the map data or further copies is not permitted. This notice is not intended to exclude or restrict liability for death or personal injury resulting from negligence.

- Foul Sewer
- Surface Sewer
- Combined Sewer
- Final Effluent
- Rising Main (Colour denotes effluent type)
- Private Sewer (Colour denotes effluent type)
- Decommissioned Sewer (Colour denotes effluent type)
- Outfall (Colour denotes effluent type)
- Inlet (Colour denotes effluent type)
- Manhole (Colour denotes effluent type)
- Sewage Treatment Works
- Pumping Station

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Haverhill

love every drop anglianwater

Manhole Reference	Liquid Type	Cover Level	Invert Level	Depth to Invert
0502	F	68.48	67.54	0.94
449A	F	-	-	-
6301	F	-	-	-
6401	F	-	-	-
6402	F	-	74.48	-
6403	F	-	74.1	-
6501	F	-	-	-
6502	F	-	78.05	-
7401	F	-	70.18	-
7402	F	-	69.65	-
8401	F	-	69.17	-
8402	F	-	-	-
8403	F	-	-	-
9401	F	-	67.25	-
9452	F	-	-	-
9454	F	-	66.64	-
9501	F	-	66.04	-
5351	S	-	-	-
5352	S	-	-	-
5353	S	-	-	-
5354	S	-	-	-
6352	S	-	71.79	-
6353	S	-	-	-
6451	S	-	-	-
6452	S	-	74.64	-
6453	S	-	-	-
6454	S	-	72.76	-
6455	S	-	-	-
6456	S	-	-	-
6551	S	-	77.46	-
6552	S	-	-	-
6553	S	-	-	-
7352	S	-	71.58	-
7451	S	-	-	-
7452	S	-	-	-
8451	S	-	69.41	-
8551	S	-	73.07	-
8552	S	-	71.94	-
9451	S	-	68.05	-
9453	S	-	-	-
9455	S	-	-	-
9456	S	-	-	-
9551	S	-	69.5	-
9552	S	-	68.03	-

Manhole Reference	Liquid Type	Cover Level	Invert Level	Depth to Invert

Manhole Reference	Liquid Type	Cover Level	Invert Level	Depth to Invert

CAMPS ROAD

S5
566800.277mE
245477.643mN
73.351m

S15

S17

S12 BURIED

S8 BURIED

S9

S1
566812.745mE
245443.096mN
72.093m

S16
566838.780mE
245462.996mN
71.431m

S17A
566837.472mE
245476.535mN
72.421m

F6 F17 F18 F19 F24 F25 F31 F32

RWP

JOINS MAIN

COLLARS MH

OBSTRUCTION

Tarmac

Grass

Slabs

Pebbles

Pavior's

Seat

Privet Hedge

Tree Ht 10m

Tree Ht 15m REDCEDAR

Tree Ht 16m

Tree Ht 22m

Tower

Ridge Height 82.22

Ridge Height 81.69

Ridge Height 81.67

Eave Ht 78.84

Eave Ht 75.84

Eave Ht 78.44

0.8m I/R

0.6m High Brk

0.6m Brk

1.8m C/B

Tactile

Appendix 4

Existing Site Runoff Rates

IH 124 Mean Annual Flood

Input

Return Period (years)	1	Soil	0.500
Area (ha)	0.300	Urban	0.750
SAAR (mm)	593	Region Number	Region 6

Results l/s

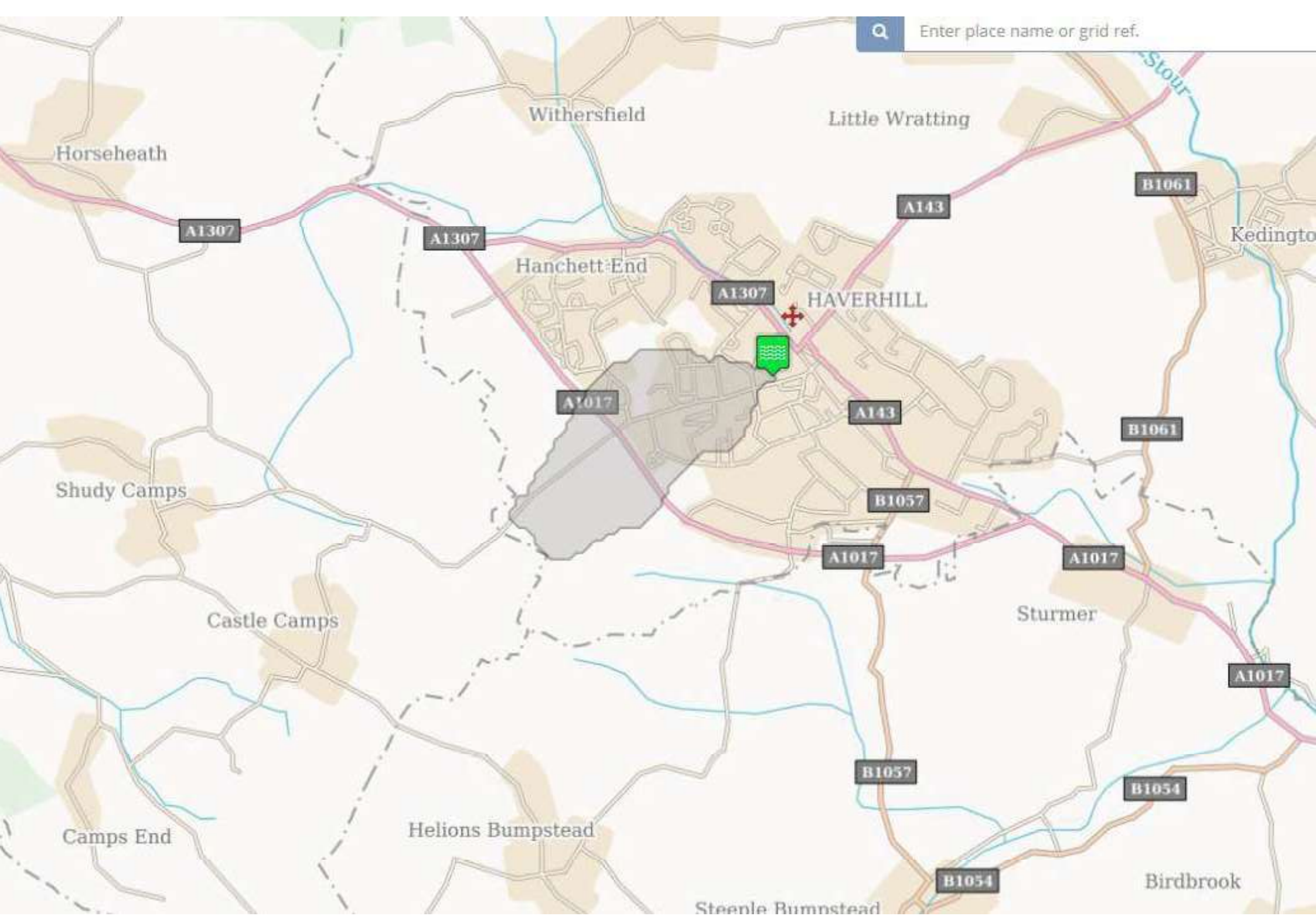
QBAR Rural	2.4
QBAR Urban	6.7
Q1 year	5.7
Q1 year	5.7
Q2 years	6.8
Q5 years	9.0
Q10 years	10.1
Q20 years	11.1
Q25 years	11.4
Q30 years	11.6
Q50 years	12.3
Q100 years	13.5
Q200 years	14.6
Q250 years	14.9
Q1000 years	17.1

Warning: It is unusual to use the IH124 method with an area < 50ha. The Interim Code of Practice recommends that the IH124 method is applied with 50ha and the resulting discharge is linearly interpolated for the required area. The ICP SUDS tab will do this automatically.

Existing Site Runoff Rates

Project Name:	Site of Former Magistrates Court, Haverhill
Project Number:	23299

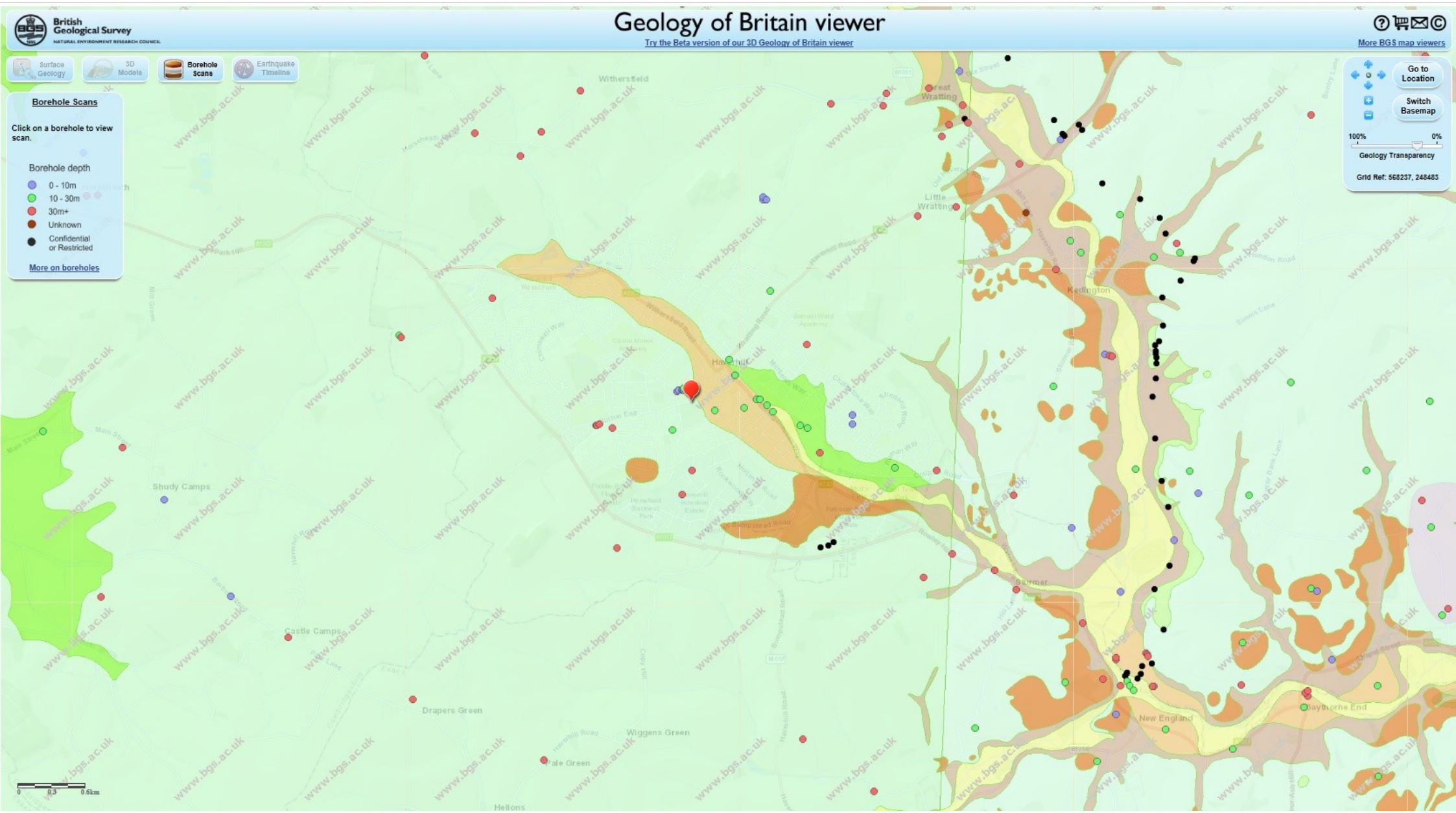
	Q(l/S)	C	Cr	Cv	i (mm/hour) Based on FEH	A (ha)
1 in 1 year peak runoff rate from roof area	**9.6**	0.975	1.3	0.75	32.2	0.11
1 in 1 year peak runoff rate Total from site	**26.2**	0.975	1.3	0.75	32.2	0.3
1 in 30 year peak runoff rate from roof area	**30.3**	0.975	1.3	0.75	101.7	0.11
1 in 30 year peak runoff rate Total from site	**82.7**	0.975	1.3	0.75	101.7	0.3
1 in 100 year peak runoff rate from roof area	**45.8**	0.975	1.3	0.75	153.5	0.11
1 in 100 year peak runoff rate Total from site	**124.8**	0.975	1.3	0.75	153.5	0.3


Enter place name or grid ref.
Withersfield
Little Wratting
Horseheath
A1307
A1307
Hanchett End
A1307
HAVERHILL
A143
B1061
Kedington
A1017
A143
B1061
Shudy Camps
B1057
A1017
A1017
Castle Camps
Sturmer
A1017
B1057
B1054
Camps End
Helions Bumpstead
B1054
Birdbrook
Steeple Bumpstead

VERSION	"FEH CD-R	Version	2.0.1	exported a	12:23:22	GMT	Wed	11-Dec-19
CATCHMEI	GB	566850	245500	TL 66850	45500			
CENTROID	GB	565762	244976	TL 65762	44976			
AREA	1.805							
ALTBAR	102							
ASPBAR	59							
ASPVAR	0.48							
BFIHOST	0.377							
DPLBAR	1.44							
DPSBAR	40.2							
FARL	1							
FPEXT	0.0235							
FPDBAR	0.12							
FPLOC	0.367							
LDP	2.71							
PROPWET	0.26							
RMED-1H	11.4							
RMED-1D	29							
RMED-2D	36.6							
SAAR	593							
SAAR4170	614							
SPRHOST	45.13							
URBCONC1	0.829							
URBEXT19	0.153							
URBLOC19	0.492							
URBCONC2	0.916							
URBEXT20	0.2029							
URBLOC20	0.497							
C	-0.024							
D1	0.29635							
D2	0.28378							
D3	0.28294							
E	0.30585							
F	2.50624							
C(1 km)	-0.024							
D1(1 km)	0.297							
D2(1 km)	0.288							
D3(1 km)	0.288							
E(1 km)	0.306							
F(1 km)	2.499							

Appendix 5

BGS Mapping, Borehole Data and Desk Study Extracts


British Geological Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL
Geology of Britain viewer
Try the Beta version of our 3D Geology of Britain viewer
More BGS map viewers
Surface Geology
3D Models
Borehole Scans
Earthquake Timeline
Borehole Scans
Click on a borehole to view scan.
Borehole depth
0 - 10m
10 - 30m
30m+
Unknown
Confidential or Restricted
More on boreholes
Go to Location
Switch Basemap
100%
0%
Geology Transparency
Grid Ref: 568237, 248483
Withersfield
Great Wratting
Little Wratting
Kedington
Haverhill
Shudy Camps
Castle Camps
Drapers Green
Wiggens Green
Pale Green
Helions
Sturmer
New England
Baythorne End
0
0.3
0.5km

Project	PLACE FARM COMMUNITY PRIMARY SCHOOL CAMPS ROAD, HAVERHILL, SUFFOLK	**Client**	[redacted]
		Engineer	[redacted]
Ground Level		**Coordinates**	m.E. m.N.
Boring Methods	LIGHT CABLE PERCUSSION 150 mm DIAMETER CASED 150 mm DIAMETER G.L. TO 15.00 m	**Hole No.**	**BH7**
		Sheet	1 of 2
		Job No	**12082GI**

WATER				STRATA				SAMPLING/IN SITU TEST			LAB TESTING							
Date/Time at Depth	Depth of Casing m	Depth to Water m	Inst.	Description	Legend	Level	Depth m	Depth m	Type & No.	Blows/ Strength	% <425	W %	W_P %	W_L %	ρ Mg/m^3	c_u kN/m^2	OTHER TESTS AND NOTES
				Made Ground (Flexible surfacing)			0.10										
				Stiff very high strength grey brown silty CLAY with rounded-subrounded fine-medium gravel size chalk fragments and a little rounded fine-medium flint gravel (Glacial Till)				0.40	D1			23					Hand excavated from ground level to 1.20m (120mins)
								1.20-1.70	U1	(80)	81	19	18	34	2.08	171	
								1.70	D2								
								1.90	D3			19					
								2.20-2.70	U2	(100)	74	19	19	33			Undrained triaxial compression attempted on U2 sample failed during extrusion
								2.70	D4								
				- some partings of orange silt with depth				2.90	D5			19					pH and water soluble sulphate
								3.20-3.70	U3	(80)							
								3.70	D6								
								3.90	D7								
								4.20-4.65	S1	N=26							
								4.65	D8			19					
				- high strength at 5.10m approximately				4.90	D9								
								5.10-5.60	U4	(80)	90	21	20	39	2.08	128	
								5.60	D10								
								5.90	D11								
								6.50-6.95	S2	N=4							
								6.95	D12								
								7.50	D13								pH and water soluble sulphate
								8.10-8.55	S3	N=6							
								8.55	D14								
				CHALK recovered as light brown and white, structureless, slightly gravelly sandy SILT. Gravel is subangular fine-medium very weak and low density. Occasional pockets of orange brown SILT and brown sandy CLAY [Grade Dm]			8.70										
								9.60-10.10	U5	(50)							
							10.00										

British Geological Survey

Water Level observations during boring, depths below GL.					
Strike	Depth Obs.	Depth after 5min	10 min	15 min	20 min

WATER
- ▼ 1 First Strike
- ▽ 2 Subsequent Strike
- N - Overnight Depth
- C- Completion Depth
- S Seepage not rising

SAMPLE KEY
- D Small disturbed sample
- B Bulk disturbed sample
- W Water sample
- U Undisturbed sample
- P Piston sample

TEST KEY
- S Standard penetration test
- C Cone penetration test
- K Permeability test
- V In situ vane test

BLOWS / STRENGTH
- N = N value
- 26/150 blows, for 150mm, drive after seating
- 26*, blows for part or whole of seating drive only
- (26) U sample blow count
- V = Vane Strength - kN/m^2

Fieldwork By	MW	
Dates	15/12/09	
Log	BPW	

Sheet 1 of 2 | **BH7**

5.3 Assessment of Ground Stability

The site is not within an area of recorded underground mining or other such mineral extraction. There are also no quarries recorded at or in the vicinity of the site. Therefore, the proposed development should not be constrained by ground stability issues associated with mining or quarrying activities.

The ground conditions expected at the site may be associated with solution features. Granular soils within chalk solution features can be of loose density and, therefore, susceptible to adverse settlements if loads are applied to materials or significant volumes of water enter the deposits. However, there is no record of solution features at, or in close proximity to, the site and the available data indicates risks to be very low to negligible. Notwithstanding this, it would be prudent for any ground investigation at the site to pay close attention to potential anomalous ground conditions that may require additional investigation. In addition, if anomalous ground conditions are identified during construction, the services of an appropriately qualified Geotechnical Engineer should be obtained to assess the ground conditions and potential implications for the development.

5.4 Assessment of Foundations and Ground Floor Construction

Within the western half of the site, a proposed development comprises of a two to three storey structure of load-bearing brick construction.

The Glacial Till strata are likely to provide a suitable founding material. Therefore, it is considered that conventional strip or trench fill footings may be possible for the proposed new building. Footings will need to extend through Made Ground and into competent strata. Allowance should be made for the removal of buried foundations/structures associated with the current and past development.

Due to the expected presence of Made Ground at the site and the likely ground disturbance that will occur during demolition, it is recommended that allowance be made for suspended ground floor slabs. Within influencing distance of trees, deepened footings and a suitable void below the ground floor slab are likely to be required.

5.5 Soakaway Drainage

Soakaways will need to be located to discharge water below Made Ground and away from contaminant-impacted strata that may be present at the site. Soakaways may be precluded by the low permeability clays of the Glacial Till of the Lowestoft Formation strata. Due to the small size of the site and potential constraints relating to ground conditions and contaminant-impacted ground, soakaways appear not to be feasible and it would be prudent to identify alternative drainage solutions prior to site purchase.

6. RECOMMENDATIONS FOR GROUND INVESTIGATIONS

It is recommended that a pre-purchase ground investigation be undertaken at the site to obtain appropriate data to provide an initial assessment of identified potential pollutant linkages and environmental liabilities and to provide a preliminary foundation options appraisal. The use of windowless sampling method is likely to be suitable for an initial phase of investigation

So that an adequate assessment can be made of groundwater quality, it is recommended that boreholes be undertaken prior to purchasing the extended section of the site. A multi-function rig provides greatest versatility for the expected ground conditions and would permit the use of windowless sampling to obtain

suitable samples for laboratory testing and rotary techniques to ensure that the holes reach suitable depths for standpipe installation.

Following site purchase, it may necessary to undertake a supplementary investigation. This is likely to include trial pits.

7. SUMMARY

Churchill Retirement Living Limited proposes to redevelop a site at Place Court Care Home, Camps Road, Haverhill for residential purposes. The site has been divided into two sections; an initial phase of development in the western half of the site (Phase 1) and a possible future development to the east (Phase 2). Place Court Care Home is currently situated on the western section while Council buildings including an ambulance station, magistrate's court and day care centre are situated on the eastern section of the proposed site. Historically, the site included farm buildings associated with Place Farm. The proposed development is to include a block of apartments together with associated car parking and landscaped amenity areas. The development will be for people of retirement age.

Ground conditions at the site are likely to include a limited thickness of Made Ground associated with demolition of past structures and construction of the existing buildings.

The natural strata beneath the site are expected to comprise of River Terrace deposits of silt sand and gravel underlain by the Glacial Till of the Lowestoft Formation (Diamicton) which are likely to be mainly chalky, sandy, stony clay. Upper Chalk strata are expected at depth. Groundwater is unlikely to be at shallow depth.

The western (Phase 1) half of the site is associated with a former farm (farm yard, house and other buildings). This area may include some Made Ground and the possible presence of a limited thickness of Made Ground/disturbed soils that may contain ashes (with metals/polyaromatic hydrocarbons) and traces of asbestos (from demolition materials cannot be discounted at this stage. Hence, allowance should be made for the placement of capping soils in this area.

The eastern (Phase 2) half of the site also includes a former police station and part of an ambulance station. At this stage, the possible presence of former petroleum fuel tanks cannot be discounted. If such fuel tanks were present, and associated with fuel leakage/spillage then, it may be necessary to remove such tanks together with associated fuel-impacted soils. It is also recommended that the ground investigation in this section of the site includes an assessment of the unsaturated soils and groundwater quality o support a risk assessment in relation to Controlled Waters. In addition, allowance should also be made for the placement of capping soils, as for the Phase 1 area.

Conventional strip/trench fill foundations may be appropriate for the proposed development and foundation precautions may be required near to trees.

Soakaway drainage appears not to be feasible. Therefore, an alternative drainage solution should be identified prior to site purchase.

It is recommended that a suitable pre-purchase ground investigation be undertaken. This should include window sampling and/or boreholes that will permit the recovery of shallow soil samples for laboratory testing and allow the installation of standpipes in groundwater to assess water quality below the eastern section of the site. The ground investigation is necessary to confirm the environmental and geotechnical assessments presented in this report, which are preliminary.

Appendix 6

Proposed Site Layout Plan

N

Rear Garden

Rear Garden

Rear Garden

Sub-Station

Ambulance Station

Tarmac

Parking x 14no

Buggies

Amenity

Amenity

Access Road

Access road

Tarmac

Grass

Planting

Tarmac path

Planting bed

Buggy store (7no.) Refer to detail drawing 784

1800 mm close boarded fence

Proposed Landscape boundary line

Sub Station

Planting

Lawn

Slabs

Pavior's

Tree Ht 18m

Tree Ht 10m

Tree Ht 22m

CAMPS ROAD

Tactile

-5m 0 5 10 15 20m

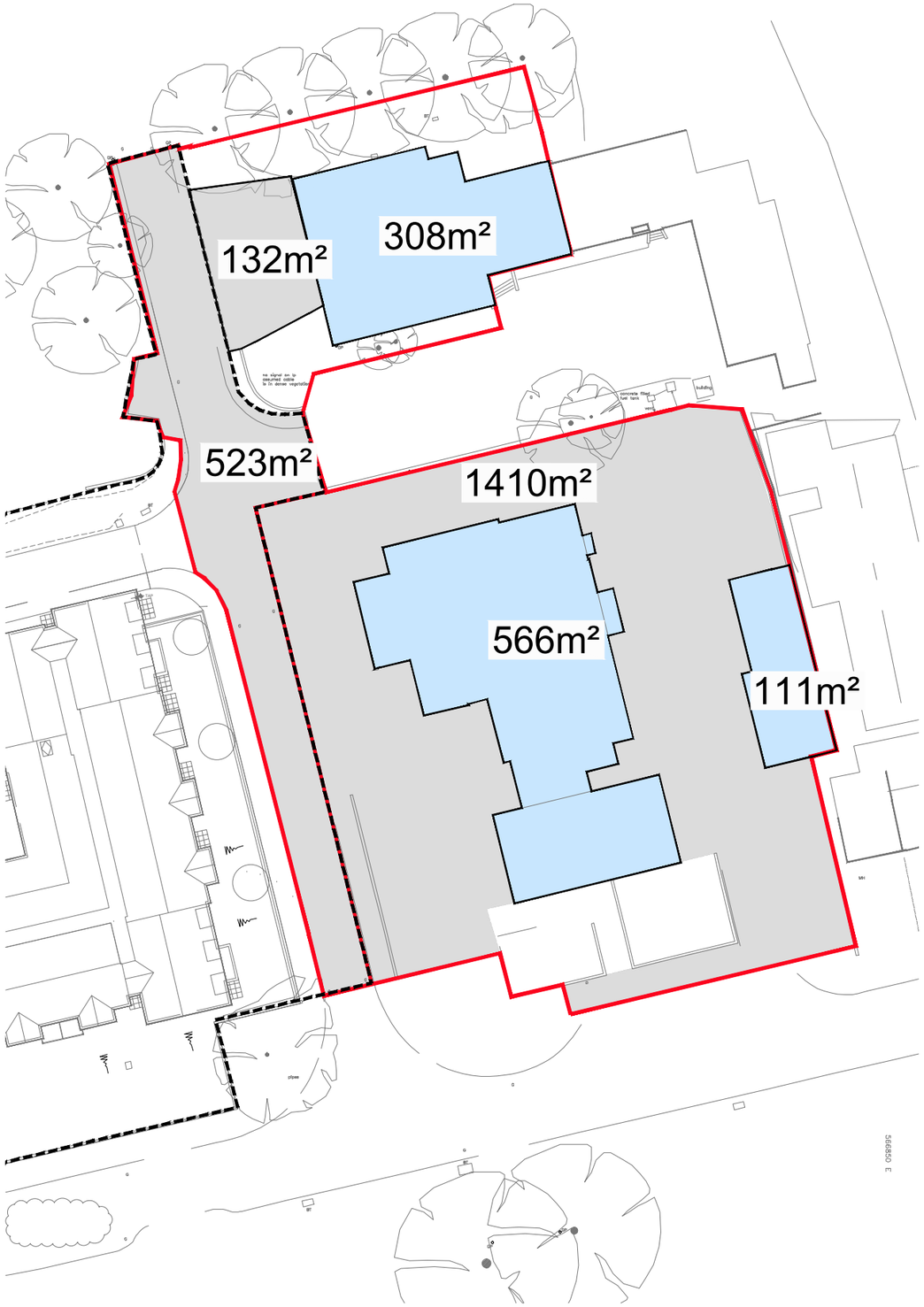
TITLE

Proposed Site Layout Plan

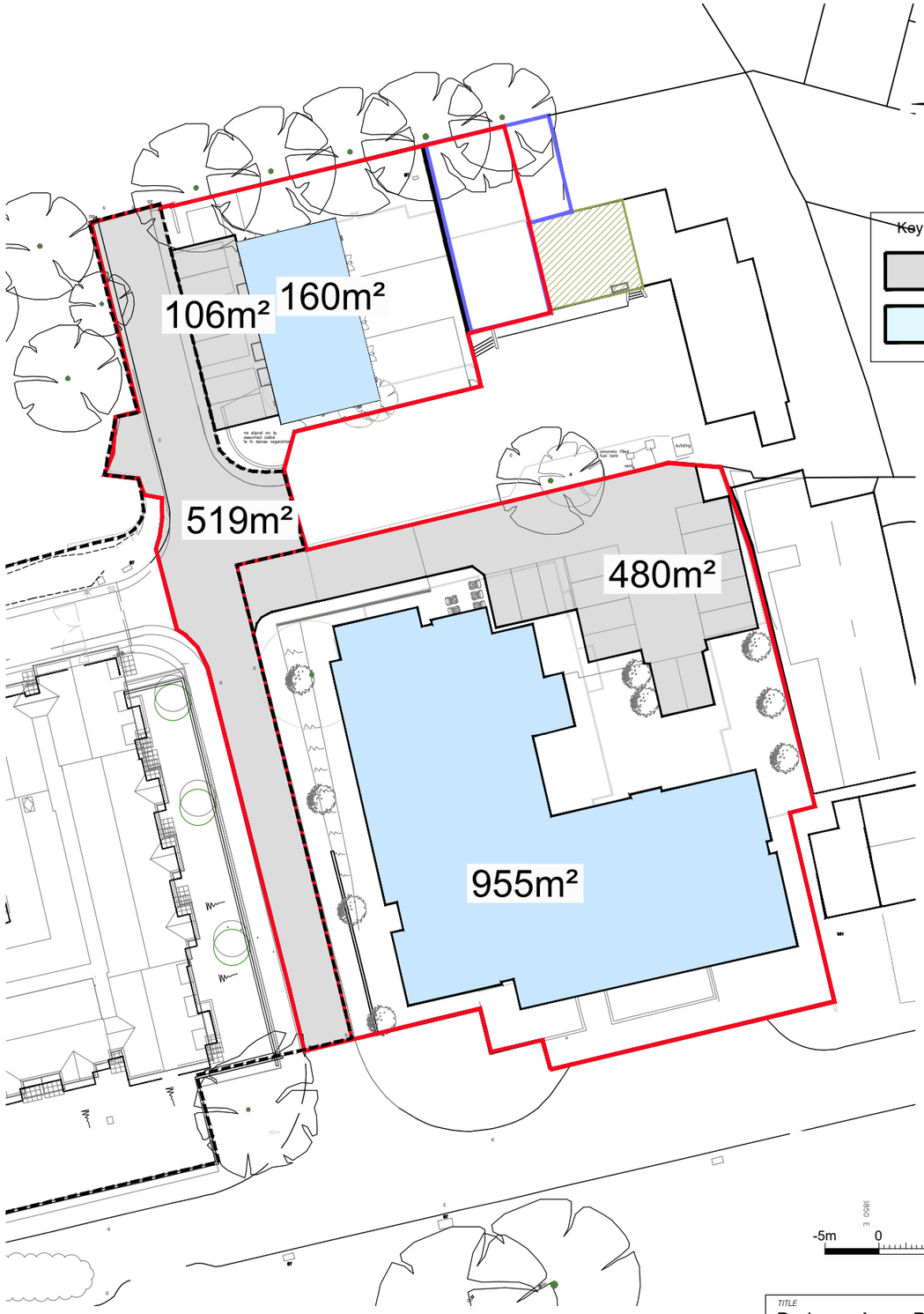
SCALE	PROJECT. No.
1:500 @ A3	23299
REPORT TYPE	DRG. No.
DS	03 B

Appendix 7

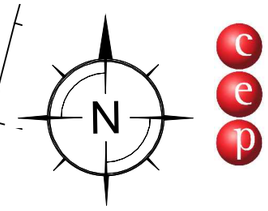
Existing and Proposed Impermeable Areas Plan



EXISTING SITE
(Scale 1:500)



PROPOSED SITE
(Scale 1:500)



-5m 0 5 10 15 20m

TITLE
Drainage Areas Plan

SCALE	PROJECT. No.
1:500 @ A3	23299
REPORT TYPE	DRG. No.
DS	05 B

Appendix 8

Preliminary Drainage Strategy Plan and Calculations

Drainage Legend:

- Voided subbase with impermeable membrane
- Aquacell or similar Storm Water Attenuation Tanks
- 450mmØ Private Type 4 of Type 3 Storm Water Inspection Chamber
- 1200mmØ Private Type 1 of Type 2 Storm Water Manhole
- CP — 450mmØ Catchpit
- RE — Private Storm Water Rodding Eye
- HB — Hydrobrake or similar flow control device
- Fin drain
- 450mm Private Type 4 of Type 3 Foul Water Inspection Chamber
- 1200mmØ Private Type 1 of Type 2 Foul Water Manhole
- Existing Anglian Water Foul Sewer
- Existing Anglian Water Storm Sewer
- Existing private drainage to be abandoned

250mm deep voided subbase providing 8.1m³ of storage

Hydrobrake flow control @ 2l/s

Impermeable surface falls to permeable area and voided subbase

Diverted foul

Permeable paving used for conveyance and water quality treatment only

Existing soakaway to be abandoned

111m² x 0.8m deep attenuation tanks IL 71.225 providing 84m³ of storage

Soft landscaping

Existing soakaway to be abandoned

Existing gully connections draining road picked up and discharged to adjacent site

Existing gully connections draining road picked up and discharged to adjacent site

New manhole for Hydrobrake flow control @ 2l/s. On line of existing lateral

Foul to discharge to new manhole on line of existing lateral

Ambulance Station

Rear Garden

Parking x 14no

Amenity

Access Road

Buggy store (7no.) Refer to detail drawing 784

1800 mm close boarded fence

Proposed Landscape boundary line

Sub Station

Planting

Lawn

Tarmac

Slabs

Pavior's

Grass

Access road

Tarmac path

Planting bed

CAMBS ROAD

7401 IL 70.18

7402 IL 69.65

7452 IL UNK

8401 IL 69.17

8451 IL 69.410

225mmØ

300mmØ

900mmØ

150mmØ

150mmØ

IL 71.0

IL 69.5

1:20 Fall

-5m 0 5 10 15 20m

TITLE	Proposed Drainage Strategy Plan
SCALE	1:500 @ A3
PROJECT. No.	23299
REPORT TYPE	DS
DRG. No.	04 B

Design Settings

Rainfall Methodology	FEH-13	Minimum Velocity (m/s)	1.00
Return Period (years)	2	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	0.750	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	✓
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Depth (m)
1	0.027	5.00	75.000	1200	0.340

Simulation Settings

Rainfall Methodology	FEH-13	Analysis Speed	Normal	Additional Storage (m³/ha)	20.0
Summer CV	0.750	Skip Steady State	x	Check Discharge Rate(s)	x
Winter CV	0.840	Drain Down Time (mins)	1440	Check Discharge Volume	x

Storm Durations

15	30	60	120	180	240	360	480	600	720	960	1440

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0
30	0	0	0
100	20	0	0
100	40	0	0

Node 1 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	74.660	Product Number	CTL-SHE-0075-2000-0440-2000
Design Depth (m)	0.440	Min Outlet Diameter (m)	0.100
Design Flow (l/s)	2.0	Min Node Diameter (mm)	1200

Node 1 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	74.660	Slope (1:X)	9999.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	106	Depth (m)	0.250
Safety Factor	2.0	Width (m)	5.000	Inf Depth (m)	
Porosity	0.30	Length (m)	21.200		

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)	Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
2 year 15 minute summer	102.253	28.934	100 year +20% CC 15 minute summer	418.125	118.315
2 year 15 minute winter	71.756	28.934	100 year +20% CC 15 minute winter	293.421	118.315
2 year 30 minute summer	65.497	18.534	100 year +20% CC 30 minute summer	272.824	77.200
2 year 30 minute winter	45.963	18.534	100 year +20% CC 30 minute winter	191.456	77.200
2 year 60 minute summer	43.012	11.367	100 year +20% CC 60 minute summer	180.874	47.800
2 year 60 minute winter	28.576	11.367	100 year +20% CC 60 minute winter	120.169	47.800
2 year 120 minute summer	31.630	8.359	100 year +20% CC 120 minute summer	114.428	30.240
2 year 120 minute winter	21.014	8.359	100 year +20% CC 120 minute winter	76.023	30.240
2 year 180 minute summer	25.793	6.637	100 year +20% CC 180 minute summer	88.196	22.696
2 year 180 minute winter	16.766	6.637	100 year +20% CC 180 minute winter	57.330	22.696
2 year 240 minute summer	20.907	5.525	100 year +20% CC 240 minute summer	69.381	18.335
2 year 240 minute winter	13.890	5.525	100 year +20% CC 240 minute winter	46.095	18.335
2 year 360 minute summer	16.138	4.153	100 year +20% CC 360 minute summer	51.941	13.366
2 year 360 minute winter	10.490	4.153	100 year +20% CC 360 minute winter	33.763	13.366
2 year 480 minute summer	12.647	3.342	100 year +20% CC 480 minute summer	40.031	10.579
2 year 480 minute winter	8.402	3.342	100 year +20% CC 480 minute winter	26.596	10.579
2 year 600 minute summer	10.267	2.808	100 year +20% CC 600 minute summer	32.128	8.788
2 year 600 minute winter	7.015	2.808	100 year +20% CC 600 minute winter	21.952	8.788
2 year 720 minute summer	9.063	2.429	100 year +20% CC 720 minute summer	28.114	7.535
2 year 720 minute winter	6.091	2.429	100 year +20% CC 720 minute winter	18.894	7.535
2 year 960 minute summer	7.308	1.924	100 year +20% CC 960 minute summer	22.366	5.890
2 year 960 minute winter	4.841	1.924	100 year +20% CC 960 minute winter	14.816	5.890
2 year 1440 minute summer	5.164	1.384	100 year +20% CC 1440 minute summer	15.497	4.153
2 year 1440 minute winter	3.471	1.384	100 year +20% CC 1440 minute winter	10.415	4.153
30 year 15 minute summer	271.112	76.715	100 year +40% CC 15 minute summer	487.812	138.034
30 year 15 minute winter	190.254	76.715	100 year +40% CC 15 minute winter	342.324	138.034
30 year 30 minute summer	175.382	49.627	100 year +40% CC 30 minute summer	318.295	90.067
30 year 30 minute winter	123.075	49.627	100 year +40% CC 30 minute winter	223.365	90.067
30 year 60 minute summer	115.799	30.602	100 year +40% CC 60 minute summer	211.020	55.766
30 year 60 minute winter	76.934	30.602	100 year +40% CC 60 minute winter	140.197	55.766
30 year 120 minute summer	74.125	19.589	100 year +40% CC 120 minute summer	133.499	35.280
30 year 120 minute winter	49.247	19.589	100 year +40% CC 120 minute winter	88.694	35.280
30 year 180 minute summer	57.195	14.718	100 year +40% CC 180 minute summer	102.896	26.479
30 year 180 minute winter	37.178	14.718	100 year +40% CC 180 minute winter	66.885	26.479
30 year 240 minute summer	44.952	11.879	100 year +40% CC 240 minute summer	80.944	21.391
30 year 240 minute winter	29.865	11.879	100 year +40% CC 240 minute winter	53.777	21.391
30 year 360 minute summer	33.560	8.636	100 year +40% CC 360 minute summer	60.597	15.594
30 year 360 minute winter	21.815	8.636	100 year +40% CC 360 minute winter	39.390	15.594
30 year 480 minute summer	25.841	6.829	100 year +40% CC 480 minute summer	46.703	12.342
30 year 480 minute winter	17.168	6.829	100 year +40% CC 480 minute winter	31.028	12.342
30 year 600 minute summer	20.749	5.675	100 year +40% CC 600 minute summer	37.483	10.252
30 year 600 minute winter	14.177	5.675	100 year +40% CC 600 minute winter	25.610	10.252
30 year 720 minute summer	18.178	4.872	100 year +40% CC 720 minute summer	32.800	8.791
30 year 720 minute winter	12.217	4.872	100 year +40% CC 720 minute winter	22.043	8.791
30 year 960 minute summer	14.520	3.824	100 year +40% CC 960 minute summer	26.094	6.871
30 year 960 minute winter	9.619	3.824	100 year +40% CC 960 minute winter	17.285	6.871
30 year 1440 minute summer	10.136	2.717	100 year +40% CC 1440 minute summer	18.080	4.846
30 year 1440 minute winter	6.812	2.717	100 year +40% CC 1440 minute winter	12.151	4.846

Results for 2 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
120 minute winter	1	76	74.709	0.049	1.3	1.5720	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m³)
120 minute winter	1	Hydro-Brake®	0.9	3.7

Results for 30 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
30 minute winter	1	26	74.775	0.115	7.2	3.7935	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m³)
30 minute winter	1	Hydro-Brake®	2.0	5.6

Results for 100 year +20% CC Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute winter	1	47	74.859	0.199	7.4	6.6279	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m³)
60 minute winter	1	Hydro-Brake®	2.0	10.8

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

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute winter	1	49	74.903	0.243	8.6	8.1416	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m³)
60 minute winter	1	Hydro-Brake®	2.0	12.7

Design Settings

Rainfall Methodology	FEH-13	Minimum Velocity (m/s)	1.00
Return Period (years)	2	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	0.750	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	✓
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Depth (m)
1	0.144	5.00	73.100	1200	1.875

Simulation Settings

Rainfall Methodology	FEH-13	Analysis Speed	Normal	Additional Storage (m³/ha)	20.0
Summer CV	0.750	Skip Steady State	x	Check Discharge Rate(s)	x
Winter CV	0.840	Drain Down Time (mins)	1440	Check Discharge Volume	x

Storm Durations

15	30	60	120	180	240	360	480	600	720	960	1440

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0
30	0	0	0
100	20	0	0
100	40	0	0

Node 1 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	71.225	Product Number	CTL-SHE-0070-2000-0800-2000
Design Depth (m)	0.800	Min Outlet Diameter (m)	0.100
Design Flow (l/s)	2.0	Min Node Diameter (mm)	1200

Node 1 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	71.225
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	360

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	111.0	0.0	0.800	111.0	0.0	0.801	0.0	0.0

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)	Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
2 year 15 minute summer	102.253	28.934	100 year +20% CC 15 minute summer	418.125	118.315
2 year 15 minute winter	71.756	28.934	100 year +20% CC 15 minute winter	293.421	118.315
2 year 30 minute summer	65.497	18.534	100 year +20% CC 30 minute summer	272.824	77.200
2 year 30 minute winter	45.963	18.534	100 year +20% CC 30 minute winter	191.456	77.200
2 year 60 minute summer	43.012	11.367	100 year +20% CC 60 minute summer	180.874	47.800
2 year 60 minute winter	28.576	11.367	100 year +20% CC 60 minute winter	120.169	47.800
2 year 120 minute summer	31.630	8.359	100 year +20% CC 120 minute summer	114.428	30.240
2 year 120 minute winter	21.014	8.359	100 year +20% CC 120 minute winter	76.023	30.240
2 year 180 minute summer	25.793	6.637	100 year +20% CC 180 minute summer	88.196	22.696
2 year 180 minute winter	16.766	6.637	100 year +20% CC 180 minute winter	57.330	22.696
2 year 240 minute summer	20.907	5.525	100 year +20% CC 240 minute summer	69.381	18.335
2 year 240 minute winter	13.890	5.525	100 year +20% CC 240 minute winter	46.095	18.335
2 year 360 minute summer	16.138	4.153	100 year +20% CC 360 minute summer	51.941	13.366
2 year 360 minute winter	10.490	4.153	100 year +20% CC 360 minute winter	33.763	13.366
2 year 480 minute summer	12.647	3.342	100 year +20% CC 480 minute summer	40.031	10.579
2 year 480 minute winter	8.402	3.342	100 year +20% CC 480 minute winter	26.596	10.579
2 year 600 minute summer	10.267	2.808	100 year +20% CC 600 minute summer	32.128	8.788
2 year 600 minute winter	7.015	2.808	100 year +20% CC 600 minute winter	21.952	8.788
2 year 720 minute summer	9.063	2.429	100 year +20% CC 720 minute summer	28.114	7.535
2 year 720 minute winter	6.091	2.429	100 year +20% CC 720 minute winter	18.894	7.535
2 year 960 minute summer	7.308	1.924	100 year +20% CC 960 minute summer	22.366	5.890
2 year 960 minute winter	4.841	1.924	100 year +20% CC 960 minute winter	14.816	5.890
2 year 1440 minute summer	5.164	1.384	100 year +20% CC 1440 minute summer	15.497	4.153
2 year 1440 minute winter	3.471	1.384	100 year +20% CC 1440 minute winter	10.415	4.153
30 year 15 minute summer	271.112	76.715	100 year +40% CC 15 minute summer	487.812	138.034
30 year 15 minute winter	190.254	76.715	100 year +40% CC 15 minute winter	342.324	138.034
30 year 30 minute summer	175.382	49.627	100 year +40% CC 30 minute summer	318.295	90.067
30 year 30 minute winter	123.075	49.627	100 year +40% CC 30 minute winter	223.365	90.067
30 year 60 minute summer	115.799	30.602	100 year +40% CC 60 minute summer	211.020	55.766
30 year 60 minute winter	76.934	30.602	100 year +40% CC 60 minute winter	140.197	55.766
30 year 120 minute summer	74.125	19.589	100 year +40% CC 120 minute summer	133.499	35.280
30 year 120 minute winter	49.247	19.589	100 year +40% CC 120 minute winter	88.694	35.280
30 year 180 minute summer	57.195	14.718	100 year +40% CC 180 minute summer	102.896	26.479
30 year 180 minute winter	37.178	14.718	100 year +40% CC 180 minute winter	66.885	26.479
30 year 240 minute summer	44.952	11.879	100 year +40% CC 240 minute summer	80.944	21.391
30 year 240 minute winter	29.865	11.879	100 year +40% CC 240 minute winter	53.777	21.391
30 year 360 minute summer	33.560	8.636	100 year +40% CC 360 minute summer	60.597	15.594
30 year 360 minute winter	21.815	8.636	100 year +40% CC 360 minute winter	39.390	15.594
30 year 480 minute summer	25.841	6.829	100 year +40% CC 480 minute summer	46.703	12.342
30 year 480 minute winter	17.168	6.829	100 year +40% CC 480 minute winter	31.028	12.342
30 year 600 minute summer	20.749	5.675	100 year +40% CC 600 minute summer	37.483	10.252
30 year 600 minute winter	14.177	5.675	100 year +40% CC 600 minute winter	25.610	10.252
30 year 720 minute summer	18.178	4.872	100 year +40% CC 720 minute summer	32.800	8.791
30 year 720 minute winter	12.217	4.872	100 year +40% CC 720 minute winter	22.043	8.791
30 year 960 minute summer	14.520	3.824	100 year +40% CC 960 minute summer	26.094	6.871
30 year 960 minute winter	9.619	3.824	100 year +40% CC 960 minute winter	17.285	6.871
30 year 1440 minute summer	10.136	2.717	100 year +40% CC 1440 minute summer	18.080	4.846
30 year 1440 minute winter	6.812	2.717	100 year +40% CC 1440 minute winter	12.151	4.846

Results for 2 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
180 minute winter	1	132	71.358	0.133	5.6	14.3995	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m³)
180 minute winter	1	Hydro-Brake®	1.9	24.2

Results for 30 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
180 minute winter	1	172	71.580	0.355	12.3	38.3974	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m³)
180 minute winter	1	Hydro-Brake®	2.0	53.2

Results for 100 year +20% CC Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
240 minute winter	1	236	71.855	0.630	15.5	68.1280	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m³)
240 minute winter	1	Hydro-Brake®	2.0	88.6

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

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
240 minute winter	1	236	71.977	0.752	18.1	81.3443	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m³)
240 minute winter	1	Hydro-Brake®	2.0	103.0

Appendix 9

Drainage Maintenance Schedule

Drainage Maintenance Schedule

The Civil Engineering Practice
11 Tungsten Building
George Street
Fishersgate
Sussex
BN41 1RA
01273 424424
reception@civil.co.uk
www.civil.co.uk

Project	**Site of Former Magistrates Court, Haverhill**
Project Number	**23299**
By	Martin Kempshall CEng MICE
Date	25 June 2021

1 Schedule of Maintenance

1.1 Once appointed the Contractor will prepare a site specific method statement for the control of silt and other pollutants during construction. CIRIA Report C532, Control of water pollution from construction sites, provides further guidance on this.

1.2 The Contractor will maintain the proposed drainage system during construction and until the handing over of the site.

1.3 Upon completion management of the shared drainage facilities (where not adopted) will be passed on to the Churchill Retirement Living property management team.

1.4 Maintenance of individual property drainage connections will be the responsibility of Churchill Retirement Living's property management team.

1.5 With adequate maintenance the working design life of a permeable paving system is approximately 25 years.

1.6 The permeable paving blocks shall be lifted and an inspection undertaken at 25 year intervals as follows:

- 3-6mm gravel bedding to be removed and the voided subbase stone inspected.
- The subbase shall be replaced as required where blocked or blinded.
- The impermeable liner shall be inspected using a series of hand dug trial holes to assess its general condition, and where damaged should be replaced and resealed.
- Upon completion of the inspection the voided stone subbase shall be replaced to the original specification and level.
- The 3-6mm bedding shall be replaced with the permeable blocks and reinstated after cleaning or replaced where required.
- Following block reinstatement 3-6mm grit shall be swept into the joints between the permeable blocks.

1.7 Provisions will be made for any infrastructure that has reached the end of its serviceable design life to be replaced on a like for like basis as far as reasonably practicable.

1.8 The hydrobrakes will be maintained in accordance with manufacturer's instructions with the manhole checked monthly.

1.9 The following maintenance schedule details the typical tasks to be undertaken at different intervals.

Maintenance Schedule	Required Action	Frequency
Regular Maintenance	Remove sediment and debris from silt trap chambers, channel drains and inlet chambers	Monthly or as required
	Litter and debris removal – catch pits	Monthly or as required
	Inspect Hydrobrake Chambers	3 Months
	Surface and foul water pipework – jetting / rodding	Every 2 years or as required
	Visual inspection of permeable paving for defects and settlement.	Annually, or after leaf fall
	Sweeping / brushing / Vacuuming of permeable paving	Annually, or after leaf fall
Corrective Maintenance	Repairs to access chambers / manhole covers	As required
	Replace any broken permeable blocks / surface, remedial works to any depressions or rutting	As required
	Inspect inlet, outlet from downpipe and gullies for blockages, standing water and clear	As required
	Full inspection and service of Permeable Paving System	Minimum of every 25 years
	Replace Hydrobrakes	Minimum of every 50 years
	Replace cellular storage crates	50 years or as required.

Table 1: Schedule of Regular and Corrective Maintenance

2 Financing

2.1 The regular maintenance of all private drainage, channels, gutters, rainwater pipes and connections will be the responsibility of Churchill Retirement Living's property management team.

2.2 The regular and corrective maintenance of all shared elements of the drainage system will be managed through the Churchill Retirement Living's property management team on behalf of the Residents on behalf and funded using by a fee levied upon them.

3 Maintenance Summary

Inspection / Action Required	Gullies, Channels and Gutters	Silt Traps, Channel Drainage and Inlet Chambers	Catchpit	Cellular Storage Crates	Permeable Paving / Surfaces	Surface Water Pipework	Hydrobrake
Monthly		✓	✓				
3 Months	✓		✓		✓		✓
1 Year					✓		
After leaf fall in Autumn	✓		✓		✓		
2 Years						✓	
25 Years					✓		
50 Years				✓			✓

Table 2: Drainage System Maintenance Summary

Appendix 10

Suffolk County Council SuDS Pro Forma

Suffolk County Council - Drainage proforma for SW Aspects of Planning Applications

Suffolk County Council

DO NOT PRINT... Appropriate parts of sheet 1 and all of sheet 2 to be completed, starting at top left of sheet1. Yellow cells to be completed by applicant or agent. Most cells have drop down boxes and guidance. Required data will vary, depending on previous answers. Amber cells warn of possible error, lack of required information, non compliance with policies or standards or where special considerations /information may be required. Red cells indicate missing information required for detailed applications . Purple Cells indicate missing information required for outline or detailed applications.

Form completed for Developer/applicant by (name)	Martin Kempshall CEng MICE	Date	08-Nov-19	Contact email or telephone	01273 424424
Form checked for LPA by		Date		Ref No.	
Form checked for SCC Floods by		Date			

District council	West Suffolk – (Forest Heath & St Edmundsbu	Site Name	Risbybate Street
Total Site area (ha)	0.34	Address	28-34 Risbygate Street
Number of homes	50	Road	
Commercial area (ha)	0.00	Town	
Commercial built area (ha)	0	County	Suffolk
Area of POS (ha)	0.00	When was the last pre-app discussion with SCC Floods team?	None
Existing land status	Brown Field	Is a complete FRA included in the application?	Yes
Highest Ground level (m AOD)	51.00	EA Flood Zone(s)	Fz1
Lowest ground level (m AOD)	44.00	Does adjacent existing highway drain into the site?	No
		Is site at risk of SW flooding?	No

Carry on filling in form. SCC Floods team will be consulted

RUNOFF DESTINATION (where proposed SW drainage from site will discharges to)

	scroll down to complete appropriate cells	Sea or Estuary	Ground (Infiltration)	SW Body	Existing SWS, highway drain or another drainage system	Existing Combined Sewer
Is Site next to Estuary or coast?		Neither				
Will the site be drained directly to sea or estuary?		No	Fill in cells in this column below			
SOIL TYPE			3			
Have on site ground investigations been undertaken?			Yes			
Is a ground investigation report included in application?			Yes			
Recommendation from GI Report regarding soakaways - Are conditions suitable?			3. No - Soil instabilty or contamination			
Number of test pits that soakage tests were undertaken in.			0			
Number of test pits with completed test to BRE365			0			
Are field sheets, test results and calculations included in application?			No			
Min Infiltration rate from tests (mm/Hr)			0			
Max infiltration rate from tests (mm/Hr)			0			
Is infiltration type drainage proposed?			No			
			Go to next column			
Name / Location of SW Body						
Reasons (if any) for not draining to a surface water body				Too far by gravity		
Will SW be discharged to a surface water body?				No		
				Go to next column		
Type of existing SW piped drainage system					Surface water sewer- adopted by AW	
Description / Location of SW drainage system					Public Sewer beneath Risbygate Street	
Reason 1 for not draining to SWS, highway drain						
Reason 2 for not draining to SWS , highway drain						
Will SW be discharged to an existing piped SW drainage system?					Yes	
					Carry on down column	
				Fill appropriate column (s) (usually one only) for proposed destination		
Existing impermeable area				0.34	0.30	
Proposed Impermeable area				0.25	0.25	
Method for calculating allowable discharges, existing or Green field flows				Anglian Water prescribed.	Anglian Water prescribed.	
Peak discharge rate to destination						
100 Year return period allowable discharge to SW or combined sewer agreed by AW or SCC (l/sec)					15	
1 year return period	Existing (l/sec)			15		
	Proposed with CC & creep (l/sec)			15		
100 year return period	Existing (l/sec)			83		
	Proposed with CC & creep (l/sec)			15		
	Proposed per ha (l/sec/ha)			44.11764706	0	
	Critical duration (minutes)			15		
Proposed minimum throttle(s) aperture (mm)				75		
Attenuation storage provided to limit peak flow (at critical duration)				72		
Volume control	Required if proposed discharge > 2 l/sec/Ha in 100 Yr RP (see BS8582 5.2.2.4)					
Volume of runoff in 6 Hr duration event (cubic metres)						
100 Year RP existing				255	m3	
100 Year RP + CC +creep proposed				181	m3	
Additional capacity provided in SUDs to control volume				72		
Water quality (WQ)						
Reasons (if any) for not followng best practise for WQ:						
During construction period				5. WQ SUDS are proposed.		
Permanent				5. WQ SUDS are proposed.		
Proposed permament WQ SUDS:						
Volume of proposed treatment pond (Vt) expressed as mm of rain over the impermeable areas on the site.				0		
Depth of rain intercepted (refer to SUDS manual) expressed as mm of rain over the impermeable areas on the site				24		
Volume intercepted (cubic metres)				181		
Capacity of proposed attenuation & volume control SuDs (can be reduced by interception volume)						
Area of site taken up by proposed SuDs				0.064		
Are calculations and drawings included demonstrating there is sufficient and appropriate space for the proposed SUDS volume within the layout?				Yes		

Go to Sheet 2

Boxes below to be completed for all SW Systems

Proposed SW Drainage system

Extent of open SuDS	8. No open SuDs
	fill in cells below
Does application include justification for not using open SUDS?	Yes
Is pumping of SW proposed?	No
Does application include justification for pumping?	No

Management and maintenance arrangements	
Is a management plan included in the application?	Yes
Life time for plan and maintenance costs	100
Discount rate normally 3.5%	

Proposed SW drainage maintenance bodies	**Proposals for ensuring owners are aware of their SW drainage & maintenance requirements**
Owner (for drainage serving single property)	Homebuyers pack and deeds to include plan for private drainage
	Progress with setting up maintenance arrangements
	3. Proposals for management co. not included in application

Please indicate who will maintain what	Location of SuDs elements				
SuD elements	**Private gardens or commercial land**	**Roads, verges and /or footways**	**Parking areas**	**POS**	**Other** eg Mews court
Vegetation, trees, shrubs etc	Estates Management Company	Estates Management Company	Estates Management Company	Estates Management Company	
Permeable paving.	Estates Management Company	Estates Management Company	Estates Management Company	Estates Management Company	
Rills	N/A	N/A	N/A	N/A	
Open SuDS - Erosion protection, De-silting, headwalls,dividing walls	N/A	N/A	N/A	N/A	
Open SuDS - Bollards or fencing	N/A	N/A	N/A	N/A	
Shallow pipes throttles/headwalls at driveway crossings over swales.	N/A	N/A	N/A	N/A	
Shallow pipes throttles / headwalls @ road crossings over swales	N/A	N/A	N/A	N/A	
Litter picking including clearing grates and grilles	Estates Management Company	Estates Management Company	Estates Management Company	Estates Management Company	
Gully Grates -repairs & replacement	Estates Management Company	Estates Management Company	Estates Management Company	Estates Management Company	
Gully pots, connection pipes	Estates Management Company	Estates Management Company	Estates Management Company	Estates Management Company	
Highway carrier drains	Estates Management Company	Estates Management Company	Estates Management Company	Estates Management Company	
Soakaways	N/A				
Oil or petrol interceptors	N/A				
Underground attenuation tanks	N/A				
Surface Water Sewer	Estates Management Company	Estates Management Company	Estates Management Company	Estates Management Company	
Other - please state					
Other - please state					

Availabilty of 3.5m wide access for SuDs maintenance -	1. 3.5m wide access available to all proposed SuDS

Design flood return period for:	
Buildings	100
Gardens (unless designated to store water)	100
Roads	100

Design for blockage and /or Exceedance		
Are exceedance routes/ storage areas for 100 year RP event shown on submitted layout plan(s) including proposed floor and ground levels, buildings and roads.	Yes	Designing for exceedance of 1:100 + 40% as defined within NPPF undertaken as part of design.

SuDS details that are most likely to affect layout and maintenance	
Maximum depth of open SuDS (mm)	0
Maximum depth of water in open SuDS in 100 Year RP (mm)	0
Steepest side slope of open SuDS (1 vertical in x horizontal)	
Steepest longintudinal gradient of any swales.	
Are any buildings < 5m of open SUDS or undergr'd soakaways?	
if yes describe location(s)	
Special protective measures	
means of access/repair SUDs	

Health and Safety - public and maintenance operatives		
Are Designers CDM Health and Safety Plan included?	Yes	No unacceptable or unusual risks to the public or maintenance operatative associated with SuDS infrastructure

Structural Integrity		
Have Structural design and specification details been provided for:		
Pipes -BS EN, Class, strength calcs including bed and surround.	No	Provided at Detailed Design / Discharge of Conditions
Tanks - including geocells / fabric surround	No	Provided at Detailed Design / Discharge of Conditions
Manholes BS EN, size, type etc (SFA 7th edition)	No	Provided at Detailed Design / Discharge of Conditions
Headwalls, dividing walls, bunds & slope stabilty.	No	Provided at Detailed Design / Discharge of Conditions

Other Information normally required (not exhaustive)

Are design calculations provided, cross-referenced to drawing(s -also provided) showing catchments and layout of SuDs, roads, footways and buildings?	Yes	
Are landscaping /planting details shown on drawing(s) provided showing SuDS, and development layout?	Yes	
Are details of SuDS including inlets, outlets, dividing walls, erosion control measures shown on provided plans.	Yes	
Are extents of adoption by each body shown on drawings provided?	No	All SuDS Features adopted by Priva Estates Management Company
Is a completed copy of SCC's Asset register sheet provided?	No	Not Applicable