

DRAINAGE NOTE

LAND ADJOINING SMITHY HOUSE, BOWER LANE, OXSPRING

YORKSHIRE LAND

14/08/2025



DRAINAGE NOTE

LAND ADJOINING SMITHY HOUSE, BOWER LANE, OXSPRING

FOR

YORKSHIRE LAND



49679-ECE-XX-XX-RP-C-0002

14 August 2025

Eastwood Consulting Engineers is a trading name of Eastwood and Partners (Consulting Engineers) Limited
Registered Office: St Andrew's House, 23 Kingfield Road, Sheffield, S11 9AS, Company No: 1835021, VAT Registration No: 738 2114 44

Directors: S R Ellis BEng CEng MStructE MICE | S J English BEng CEng MStructE | C A Topliss BSc CEnv CSci CGeol SiLC FICE FGS
A R Priest BEng | A G Marshall BEng CEng MStructE

Technical Directors: M P Chappell BEng CEng FStructE | K Edwards MSci CGeol FGS | C Hodge EngTech MICE | A J Kerlake BEng FGS

Associates/Principals: A M Cross MEng CEng MICE | A Lavelle MEng CEng MICE | R A Noble BSc FGS | C L Capes BSc FGS | R Wall BSc CGeol FGS
W T Chidawanyika BSc CEng MIEI MICE | A J Cartledge MEng CEng MStructE | C J Burgoyne BSc IEng MICE
G C Burgin BSc MSc FGS | J G Morris MEng CEng MStructE MICE

Consultants: P Richardson BSc CEng MICE FStructE | S D Preston BEng CEng FICE FStructE | K R Pursall BEng CEng MStructE

LAND ADJOINING SMITHY HOUSE, BOWER LANE, OXSPRING

DRAINAGE NOTE

YORKSHIRE LAND

Introduction

This Drainage Note has been prepared on the instruction of Yorkshire Land to summarise a proposed drainage strategy for a development site at Bower Lane, Oxspring.

Existing site

The site is located off Bower Hill in Oxspring to the south-west of Barnsley, centred on coordinates 427230, 402000 (Appendix 1), and has an area of approximately 0.33 ha.

The site is bound by Bower Hill to the west, a pub and residential dwelling to the south, an agricultural field to the east and a grassed field surrounded by woodland to the north. The whole site is currently occupied by vegetation.

The site falls from approximately 181.64 mAOD in the west to approximately 178.08 mAOD in the north-east at an average gradient of 1 in 28 (Appendix 2). There is 1.00 - 2.15 m deep topographic depression in the eastern portion of the site with top of bank levels ranging between 178.05 and 179.75 mAOD and bottom of bank levels ranging between 176.79 and 178.36 mAOD.

Proposed development

Proposals are for the development of four residential properties with access from Bower Hill to the west (Appendix 3).

Ground conditions

The British Geological Survey records show the underlying bedrock geology as Sandstone of the Grenoside Sandstone Formation. Superficial deposits are not recorded for the majority of the site, but Sand and Gravel of the River Terrace Deposits 2 are recorded in the north-eastern portion of the site.

Sustainable Drainage Systems (SuDS)

SuDS methods are considered in line with the hierarchy proposed in the SuDS Manual (CIRIA C753).

SuDS methods include water infiltration systems such as soakaways, basins and filter strips, together with swales, pervious pavements, detention basins, ponds and other wetland solutions. The various methods are considered in detail in The SuDS Manual (CIRIA C753).

Infiltration type SuDS will not be viable due to the sloping topography of the ground and small site area meaning soakaways could not be located 5 m from dwellings as required by Building Regulations Part H 2015. A summary of potential SuDS features is included in Appendix 7.

Watercourse

The nearest watercourse is an unnamed watercourse that is culverted through the central portion of the site with a south to north orientation. This watercourse ultimately discharges to the River Don at a point approximately 70 m north of the site. The culvert is proposed to be diverted to enable the required easement either side of the culvert as part of the development. Discharge to this watercourse is subject to approval from the Lead Local Flood Authority.

Flood Risk

The Environment Agency Flood Map for Planning (Appendix 4) records the site to lie in Flood Zone 1 at very low risk of flooding from rivers or sea. The Environment Agency surface water flood risk maps (Appendix 4) for the present day and climate change (2040-2060s) scenarios show an isolated area of surface water ponding in the eastern portion of the site, which is likely due to previous ground reprofiling work.

It should be noted that the surface water flood risk is from runoff generated on-site ponding at the topographic low point and is not from off-site flows.

As part of the development, the ground levels will be altered to raise depressions in the ground surfacing within the eastern portion of the site. Surface water ponding originating from site runoff will be accommodated by the proposed drainage system which will direct water to an attenuation feature. The raising of levels and presence of the proposed drainage system will remove the pre-development flood risk.

Consultation with LLFA

Barnsley Council LLFA were contacted to confirm whether the development proposals to address flood risk and drainage were acceptable in principle. The site drainage and flood risk management proposals were sent to the LLFA and the following response was received (Appendix 5):

- A minimum 3 m easement either side of the culvert crossing the site will be required.
- The proposed surface water discharge rate of 3.5 l/s is suitable.
- The land drainage proposals would be acceptable in principle.

Surface water drainage proposals

The final disposal strategy for surface water run-off requires detailed consideration and approval during the design phase of the project.

- The surface water drainage system will drain via gravity to attenuation crates in the north-western portion of the site before discharging to the culverted watercourse at a point within the northern boundary of the site. This is subject to formal approval from the Lead Local Flood Authority.
- Surface water discharge will be restricted to the minimum practical rate of 3.5 l/s as agreed with the Lead Local Flood Authority (Appendix 7).
- Attenuation storage will be provided in below ground storage in the north-western portion of the site for rainfall events up to the 1 in 100 year plus 40% climate change return period. The total attenuated storage volume will be approximately 95 m³, subject to detailed design.
- Discharge to ordinary watercourse will likely require ordinary watercourse consent from the LLFA.
- The surface water drainage system will be maintained by a private management company.

Foul drainage proposals

Foul water will likely discharge via gravity to the 225 mm public combined sewer near the site entrance (Appendix 6). This is subject to approval from Yorkshire Water.

The foul water drainage system will be managed by a private maintenance company.

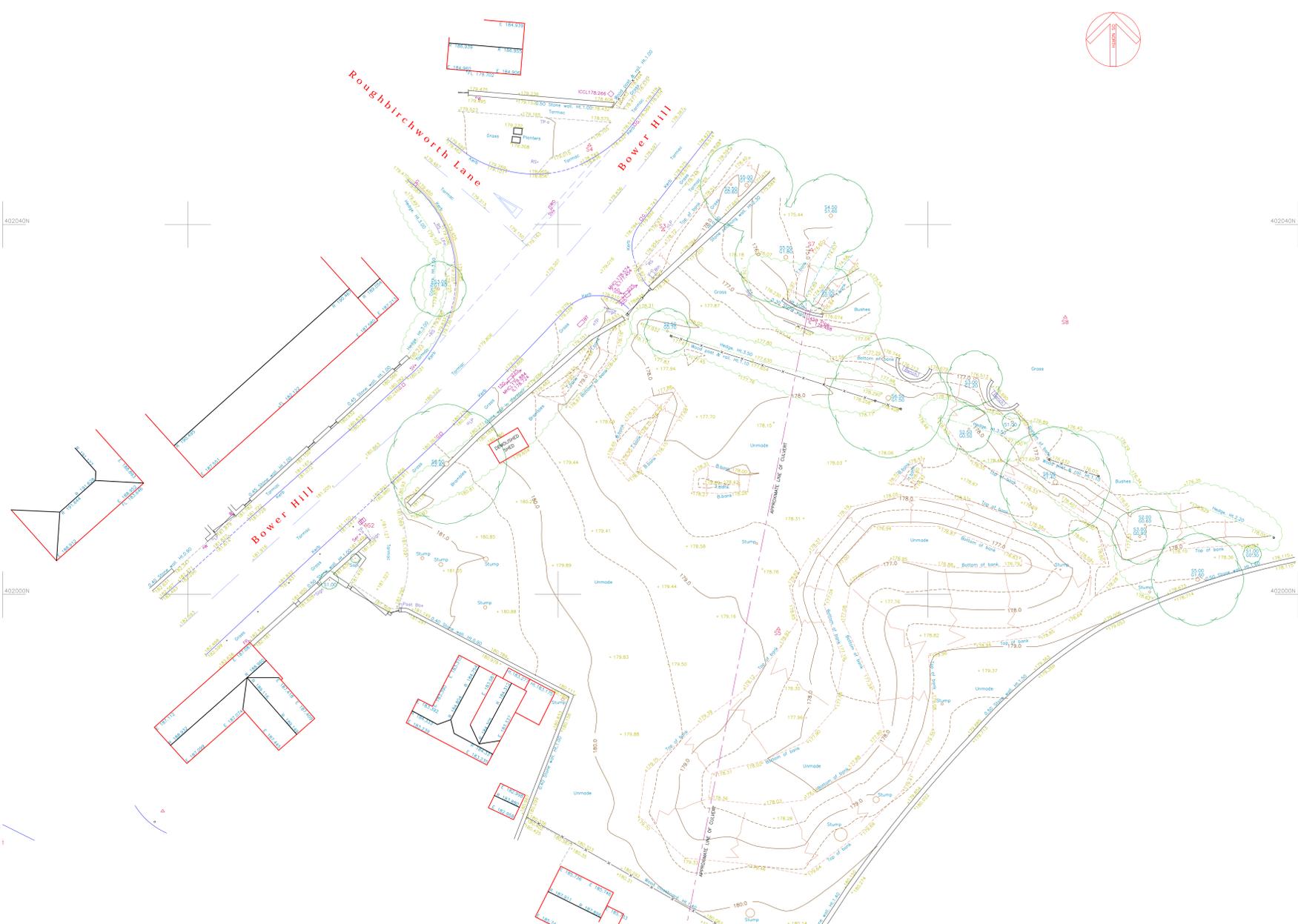
Appendices

Appendix 1 –	Site location plan
Appendix 2 – Haycock and Todd	Topographic survey
Appendix 3 – Syndicate Design Limited	Proposed site layout
Appendix 4 - Environment Agency	Online flood maps
Appendix 5 – Barnsley Council LLFA	Email correspondence
Appendix 6 – Yorkshire Water	Sewer map
Appendix 7 - Eastwood Consulting Engineers	SuDS checklist
	Drainage Appraisal Layout
	Attenuation calculations

Appendix 1



Appendix 2



Haycock+Todd
 Land Survey Consultants | Architectural Surveyors
 The Hollies, 43 Church Street, Royston,
 Barnsley, S71 4QU. T: 01226 709600
 E: info@hond-surveying.co.uk W: hond-surveying.co.uk

Site Survey
Bower Hill,
Oxspring, Sheffield.
S36 8YA

Sheet 1 of 1	Surveyed by RF
Datum	Drawn by RF
OSD - Related to Ordnance Survey using One Point Localisation on Station 54, Orientation at OS Grid North.	Date of Survey May 2025
LEVEL - Related to Ordnance Survey by connection to the OS Active Network by G.P.S	Scale 1/200
	Survey Job No. S11108

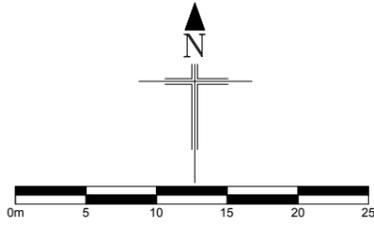
Station	Easting	Northing	Level
S1	427139.807	401973.645	184.024
S2	427179.224	402007.498	181.211
S3	427211.373	402039.394	178.941
S4	427203.407	402048.582	178.715
S5	427223.830	401996.374	178.980
S6	427206.917	401951.353	181.038
S7	427227.406	402037.255	175.175
S8	427254.830	402029.971	175.424

LEGEND

Manhole shown thus	Rockery	Watercourse
Inspection Cover	Spot Level	+123.562
Gully	Part Line	Not used
Lamp Post	Fence Line	Not used
Manhole	Height Line	Not used
Electricity Pole	Contours on Interval	10.0
Road Traffic Signs	Contours on Interval	5.0
Traffic Light	Tree Symbol	Not used
Bottom Sign	Over Line	Not used
Water Feature	Spot Level	11.11338
Post Office Telephone	Flow Drain	Not used
Fire Hydrant	Surface Water	Not used
Survey Point	Survey Station	Not used
Stop Tap Water		
Unknown Service		

Appendix 3

PROPOSED SITE PLAN - OPTION 3
Scale 1:500



Client :
Project : BOWER HILL
OXSPRING SHEFFIELD

Hill Top House, Hill Top, Newmillerdam,
Wakefield, WF2 6QB
T: 0771 0394783
E: info@syndicatedesignltd.co.uk

syndicate design limited
architectural solutions

Drawing :
OPTION 3
PROPOSED SITE PLAN

Scale @ A3	1:500	Date	15/07/25
Drawn	MF	Checked	
Drawing No.	BH-103	Rev.	

Appendix 4



Environment Agency – Risk of Surface Water Flooding – Present Day Scenario



Environment Agency – Surface Water Flood Depths up to 20cm – Present Day Scenario



Environment Agency – Surface Water Flood Depths up to 30cm – Present Day Scenario



Environment Agency – Surface Water Flood Depths up to 60cm – Present Day Scenario



Environment Agency – Surface Water Flood Depths up to 90cm – Present Day Scenario



Environment Agency – Surface Water Flood Depths up to 120cm – Present Day Scenario



Environment Agency – Risk of Surface Water Flooding – Climate Change 2040-2060s



Environment Agency – Surface Water Flood Depths up to 20cm – Climate Change 2040-2060s



Environment Agency – Surface Water Flood Depths up to 30cm – Climate Change 2040-2060s



Environment Agency – Surface Water Flood Depths up to 60cm – Climate Change 2040-2060s



Environment Agency – Surface Water Flood Depths up to 90cm – Climate Change 2040-2060s



Environment Agency – Surface Water Flood Depths up to 120cm – Climate Change 2040-2060s

Flood map for planning

Your reference
Unspecified

Location (easting/northing)
427220/401994

Created
25 April 2025 11:57

Your selected location is in flood zone 1, an area with a low probability of flooding.

You will need to do a flood risk assessment if your site is **any of the following**:

- bigger than 1 hectare (ha)
- in an area with critical drainage problems as notified by the Environment Agency
- identified as being at increased flood risk in future by the local authority's strategic flood risk assessment
- at risk from other sources of flooding (such as surface water or reservoirs) and its development would increase the vulnerability of its use (such as constructing an office on an undeveloped site or converting a shop to a dwelling)

Notes

The flood map for planning shows river and sea flooding data only. It doesn't include other sources of flooding. It is for use in development planning and flood risk assessments.

This information relates to the selected location and is not specific to any property within it. The map is updated regularly and is correct at the time of printing.

Flood risk data is covered by the Open Government Licence which sets out the terms and conditions for using government data. <https://www.nationalarchives.gov.uk/doc/open-government-licence/version/3>

Use of the address and mapping data is subject to Ordnance Survey public viewing terms under Crown copyright and database rights 2025 AC0000807064. <https://flood-map-for-planning.service.gov.uk/os-terms>



Flood map for planning

Your reference
Unspecified

Location (easting/northing)
427220/401994

Scale
1:2,500

Created
25 Apr 2025 11:57

-  Selected area
-  Flood zone 3
-  Flood zone 2
-  Flood zone 1
-  Flood defence
-  Main river
-  Water storage area



Appendix 5

Jessica Stevenson-Steels

From: Grayson , Ian (SENIOR ENGINEER - ASSETS) <iangrayson@barnsley.gov.uk> on behalf of Grayson , Ian (SENIOR ENGINEER - ASSETS)
Sent: 20 May 2025 15:28
To: Jessica Stevenson-Steels
Subject: RE: 49679 - Land at Oxspring

Hello Jessica

I can you confirm that the development would be acceptable in principle for the land drainage proposals.

Thanks

From: Jessica Stevenson-Steels <jessica.stevenson-steels@eastwoodce.com>
Sent: 19 May 2025 10:34
To: Grayson , Ian (SENIOR ENGINEER - ASSETS) <iangrayson@barnsley.gov.uk>
Cc: Chris Hodge <chris.hodge@eastwoodce.com>
Subject: RE: 49679 - Land at Oxspring

CAUTION: This email originated from outside of the organisation. Do not click links or open attachments unless you recognise the sender and know the content is safe.

Good morning Ian,

Please find attached the EA surface water flood maps (2040-2060) for this site.

The maps show an isolated area of surface water ponding in the eastern portion of the site, which is likely down to historic reprofiling when the landowner was shaping this to create a pond which never came to fruition. It should be noted that the surface water ponding is from runoff generated on-site collating at the topographic low point and is not from off-site.

As part of the development, the ground levels will be altered to raise depressions in the ground surfacing. Surface water ponding originating from site runoff will be accommodated by the proposed drainage system which will direct water to an attenuation feature. The raising of levels and presence of the proposed drainage system will remove the pre-development flood risk as part of the development.

Please can you confirm that development would be acceptable in principle given the mitigation measures above.

Kind regards,

Jessica Stevenson-Steels BSc MCIWEM
Environmental Engineer
DD: 0114 399 4504
T: 0114 255 4554
www.eastwoodce.com



Eastwood Consulting Engineers is a trading name of Eastwood and Partners (Consulting Engineers) Limited
Registered Office: St Andrew's House, 23 Kingfield Road, Sheffield, S11 9AS
Company No: 1835021, VAT Registration No: 738 2114 44, Web: www.eastwoodce.com Tel: 0114 255 4554

Email confidentiality notice: This message is private and confidential. If you have received this message in error, please notify us and remove it from your system.

From: Grayson , Ian (SENIOR ENGINEER - ASSETS) <iangrayson@barnsley.gov.uk>
Sent: 15 May 2025 15:01
To: Chris Hodge <chris.hodge@eastwoodce.com>
Subject: RE: 49679 - Land at Oxspring

Hello Chris

We would ask for 3 metre minimum easement and your proposed discharge rate is fine. Has the new property sold yet it's been on the market a while?

Thanks

From: Chris Hodge <chris.hodge@eastwoodce.com>
Sent: 15 May 2025 13:54
To: Grayson , Ian (SENIOR ENGINEER - ASSETS) <iangrayson@barnsley.gov.uk>
Subject: 49679 - Land at Oxspring

CAUTION: This email originated from outside of the organisation. Do not click links or open attachments unless you recognise the sender and know the content is safe.

Good afternoon Ian,

We are looking at the site shown attached and looking to develop some constraints for the site. There is currently a culvert which runs through the site, likely to be an old brick/stone arch type based on site visit and further upstream has been culverted under the new plot with a 750mm twinwall (see attached).

The outfall towards the picnic area is only a 450mm diameter but we would probably look to divert this through the site in the similar 750mm twinwall.

What sort of standoff/easement would Barnsley look for through the site typically, would 3m either side be sufficient given this would likely only accommodate 5No. plots, we obviously want to maximise developable area?

There is also a small area of isolated SW flooding showing on the maps but this is likely down to historic reprofiling when the landowner was shaping this to create a pond which never came to fruition.

In terms of discharge rate would we be safe working to greenfield/minimum practical for blockages of 3.5l/s?

Any thoughts appreciated

Regards
Chris Hodge
Technical Director

Direct dial 01142554554
www.eastwoodce.com



Eastwood Consulting Engineers is a trading name of Eastwood and Partners (Consulting Engineers) Limited
Registered Office: St Andrew's House, 23 Kingfield Road, Sheffield, S11 9AS
Company No: 1835021, VAT Registration No: 738 2114 44

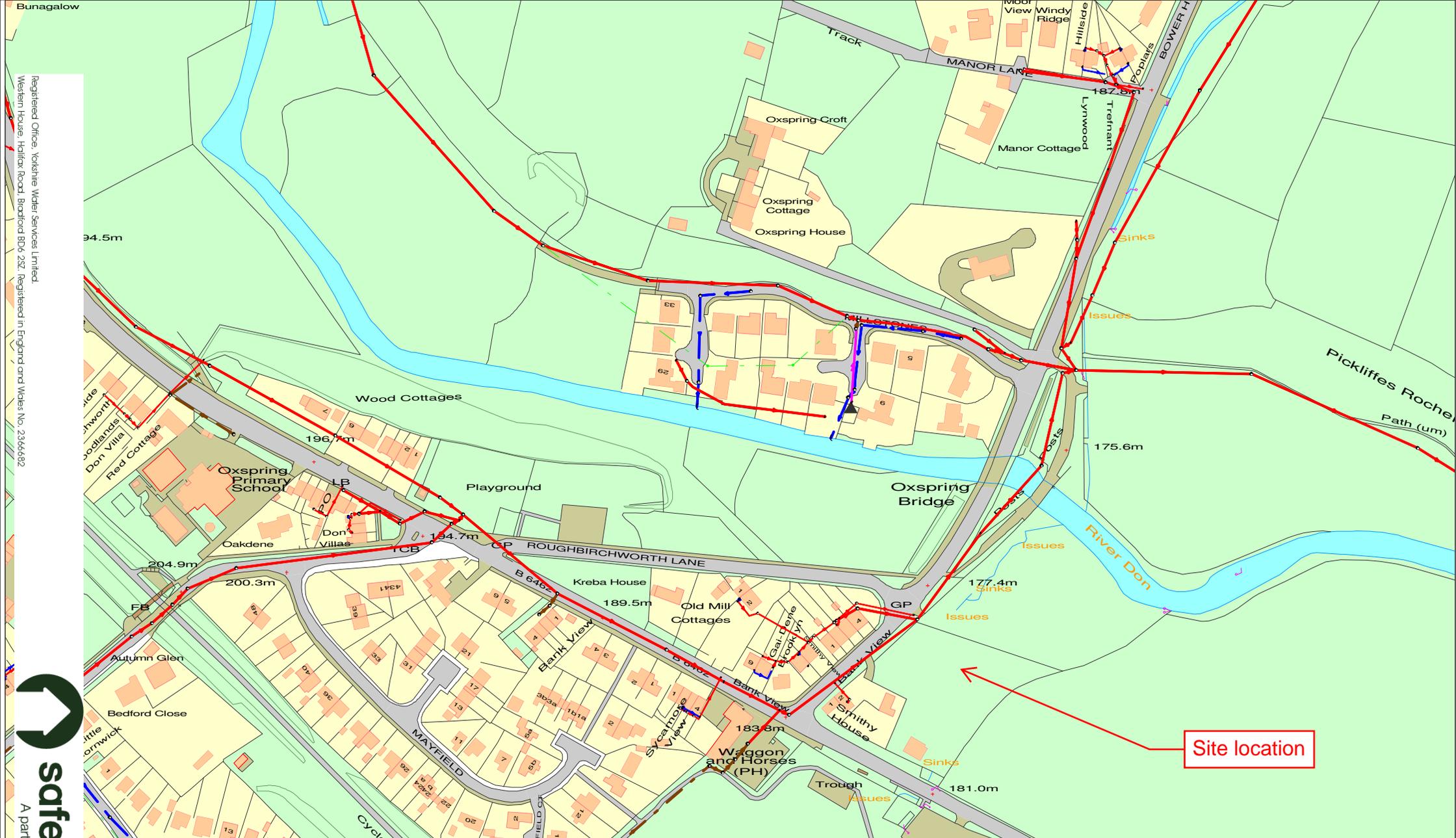
Web: www.eastwoodce.com
Tel: 0114 255 4554

Email confidentiality notice: This message is private and confidential. If you have received this message in error, please notify us and remove it from your system.

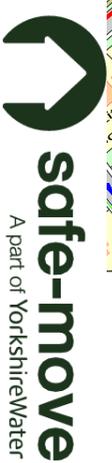
*** Barnsley Council Disclaimer: This email and any files attached are confidential for the use of the intended recipient. If you have received this email in error please notify the sender as soon as possible and delete the communication from your system without copying, disseminating or distributing the same in any way by any means. Any views or opinions expressed belong solely to the author and do not necessarily represent those of the council. In particular, the council will not accept liability for any defamatory statements made by email communications. Recipients are responsible for ensuring that all emails and files sent are checked for viruses. The council will not accept liability for damage caused by any virus transmitted by this email. No guarantees are offered on the security, content and accuracy of any emails and files received. Be aware that this email communication may be intercepted for regulatory, quality control, or crime detection purposes unless otherwise prohibited. The content of this email and any attachment may be stored for future reference. Link to privacy statement - <https://www.barnsley.gov.uk/services/information-and-privacy/your-privacy/>

*** Barnsley Council Disclaimer: This email and any files attached are confidential for the use of the intended recipient. If you have received this email in error please notify the sender as soon as possible and delete the communication from your system without copying, disseminating or distributing the same in any way by any means. Any views or opinions expressed belong solely to the author and do not necessarily represent those of the council. In particular, the council will not accept liability for any defamatory statements made by email communications. Recipients are responsible for ensuring that all emails and files sent are checked for viruses. The council will not accept liability for damage caused by any virus transmitted by this email. No guarantees are offered on the security, content and accuracy of any emails and files received. Be aware that this email communication may be intercepted for regulatory, quality control, or crime detection purposes unless otherwise prohibited. The content of this email and any attachment may be stored for future reference. Link to privacy statement - <https://www.barnsley.gov.uk/services/information-and-privacy/your-privacy/>

Appendix 6



Registered Office, Yorkshire Water Services Limited
 Western House, Halifax Road, Bradford BD6 2SZ, Registered in England and Wales No. 2366692



426673 : 401880

Map Name : SE2601NE

Title

Partial Key

This plan is furnished as a general guide only and no warranty as to its correctness is given or implied. This plan must not be relied upon in the event of excavations or other works made in the vicinity of public sewers. No house or property connections are shown.



Yorkshire Water,
 PO Box 500,
 Halifax Road,
 Bradford BD6 2LZ
 Contact Name :
 Nicola Crabtree
 Contact Tel :

Notes

(Ody) COPYRIGHT STATEMENTS: Reproduced by permission of Ordnance Survey on behalf of HMSO © Crown copyright and database 2014. All rights reserved Ordnance Survey Licence number 100022432

- Foul Sewer = F
- Combined Sewer = C
- Surface Water Sewer = SW
- Trade Sewer = TD
- Partially Separate = PS

Date Req : 23/06/2015, 13:19:16

Date Gen : 23/06/2015, 13:19:19

Source : Sewer Network Enquiry

Appendix 7

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	2	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	1.000	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)
S1	0.162	5.00	180.500	1200	3.095
Atten			178.200	1200	2.100
FC			178.200	1200	2.130

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)
1.000	S1	Atten	5.000	0.600	177.405	177.375	0.030	166.7	225	5.08	49.3
1.001	Atten	FC	5.000	0.600	176.100	176.070	0.030	166.7	225	5.17	49.0

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)
1.000	1.010	40.1	28.8	2.870	0.600	0.162	0.0	141	1.095
1.001	1.010	40.1	28.7	1.875	1.905	0.162	0.0	141	1.095

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)
1.000	5.000	166.7	225	Circular	180.500	177.405	2.870	178.200	177.375	0.600
1.001	5.000	166.7	225	Circular	178.200	176.100	1.875	178.200	176.070	1.905

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	S1	1200	Manhole	Adoptable	Atten	1200	Manhole	Adoptable
1.001	Atten	1200	Manhole	Adoptable	FC	1200	Manhole	Adoptable

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Normal	Starting Level (m)	
Rainfall Events	Singular	Skip Steady State	x	Check Discharge Rate(s)	x
Summer CV	1.000	Drain Down Time (mins)	240	Check Discharge Volume	x
Winter CV	1.000	Additional Storage (m³/ha)	20.0		

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 %)
1	0	0	0
30	0	0	0
100	40	0	0

Node FC Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	176.070	Product Number	CTL-SHE-0081-3500-1550-3500
Design Depth (m)	1.550	Min Outlet Diameter (m)	0.100
Design Flow (l/s)	3.5	Min Node Diameter (mm)	1200

Node Atten Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	1.0	Invert Level (m)	176.100
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	

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	66.5	0.0	1.500	66.5	0.0	1.501	0.0	0.0

Results for 1 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
15 minute summer	S1	10	177.522	0.116	18.0	0.2537	0.0000	OK
240 minute summer	Atten	152	176.263	0.163	7.5	10.4579	0.0000	OK
240 minute summer	FC	152	176.262	0.192	2.9	0.2176	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m ³)	Discharge Vol (m ³)
15 minute summer	S1	1.000	Atten	17.8	0.923	0.444	0.0966	
240 minute summer	Atten	1.001	FC	2.9	0.243	0.072	0.1672	
240 minute summer	FC	Hydro-Brake®		2.9				28.5

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 (m ³)	Flood (m ³)	Status
15 minute summer	S1	10	177.759	0.354	69.7	0.7711	0.0000	SURCHARGED
120 minute winter	Atten	118	176.818	0.718	22.0	46.1720	0.0000	SURCHARGED
120 minute winter	FC	118	176.818	0.748	3.4	0.8457	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m ³)	Discharge Vol (m ³)
15 minute summer	S1	1.000	Atten	69.1	1.737	1.721	0.1956	
120 minute winter	Atten	1.001	FC	3.4	0.303	0.085	0.1989	
120 minute winter	FC	Hydro-Brake®		3.1				57.8

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

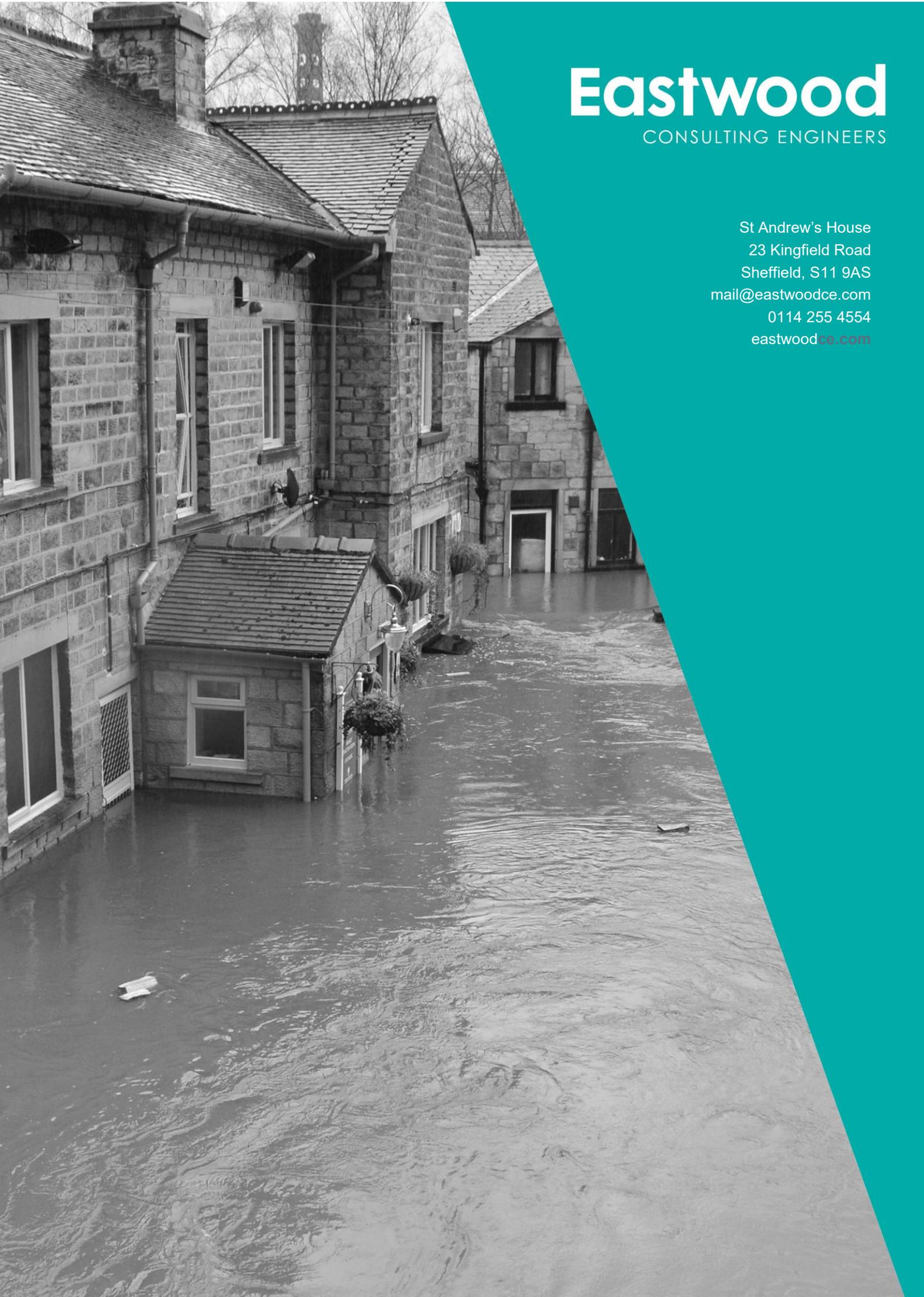
Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
15 minute summer	S1	10	178.130	0.725	124.6	1.5795	0.0000	SURCHARGED
480 minute summer	Atten	352	177.600	1.500	22.6	96.4737	0.0000	SURCHARGED
480 minute summer	FC	352	177.600	1.530	3.5	1.7302	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m ³)	Discharge Vol (m ³)
15 minute summer	S1	1.000	Atten	122.9	3.090	3.060	0.1968	
480 minute summer	Atten	1.001	FC	3.5	0.243	0.087	0.1989	
480 minute summer	FC	Hydro-Brake®		3.5				122.3

SUDS Type	SUDS Technique	Description	Suitable	Comments
Source Control	Green roof	Vegetated roof that reduces runoff volume and rate	No	Expected planning requirement for traditional pitched roofs to match neighbouring housing.
	Rain garden/ bio retention area	Small depressions in the ground that can act as infiltration points.	No	Limited areas of rain gardens to be developed.
	Rainwater harvesting/rainwater butts	Rainwater is stored and re-used	Yes	Individual water butts can be used for garden watering.
	Permeable paving	Paving which allows inflow of rainwater into underlying construction/soil	No	Limited suitable space.
Infiltration	Soakaway	Pit or trench which stores and disposes of water to the ground	No	Infiltration type SuDS will not be viable due to the sloping topography of the ground and small site area meaning soakaways could not be located 5 m from dwellings as required by Building Regulations Part H 2015
	Filter Drain	Trench which conveys and/or disposes of water to the ground.	No	Lack of suitable open space.
	Infiltration Basin	Shallow basin which stores and disposes of water to the ground	No	
Conveyance	Swale	Shallow vegetated depression which conducts and retains water	No	Lack of suitable space.
Detention	Subsurface storage	Traditional underground pipes, tank storage, or modular systems	Yes	Area available on the site for an attenuation tank/ crates.
	Detention Basin	Normally dry but may have small permanent water pools at the inlet and outlet. They can function as POS	No	Lack of suitable public open space and unsuitable for small sites.

Bower Hill, Oxspring
SuDS Checklist

Detention	Pond	Permanent body of water	No	Lack of suitable public open space and unsuitable for small sites.
	Wetland	Permanent body of shallow water or marsh	No	



Eastwood

CONSULTING ENGINEERS

St Andrew's House
23 Kingfield Road
Sheffield, S11 9AS
mail@eastwoodce.com
0114 255 4554
eastwoodce.com