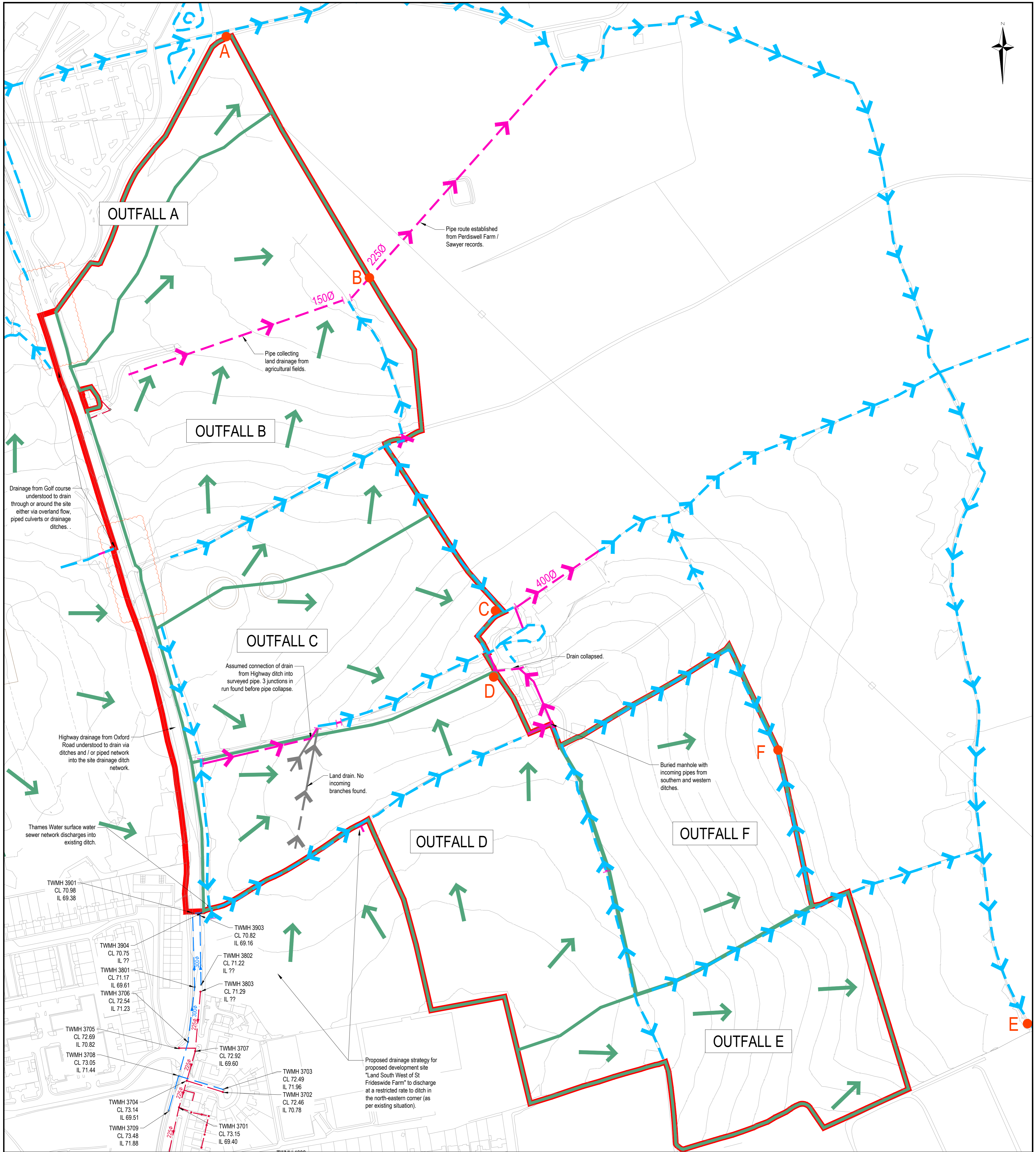


Appendix F
Existing Drainage Plan



NOTES

- This drawing to be read in conjunction with all other drawings and specifications.
- Dimensions to be scaled for planning purposes only.
- Reproduced from Ordnance Survey digital data with the permission of the Controller of His Majesty's Stationery office Crown Copyright (100022432).
- Topographical survey information taken from Brunel Surveys Ltd drawing number 17932-500-01 Feb 2018. Drainage information from topographical survey, Glanville site visits and investigations 2017 and 2021, Drain Technology CCTV survey 3 August 2021 (Report Ref 6143) and Sawyer drainage records.

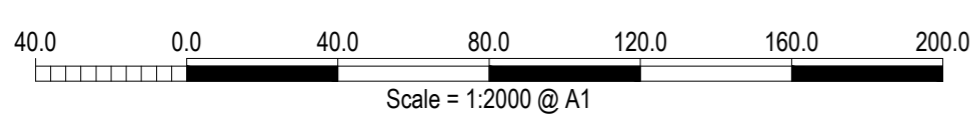
All existing formal drainage routes will be maintained through the development. All ditches carrying off-site flows will be retained as green corridors within the masterplan, and culverted only where necessary, for example under road corridors. Improvements and clearance of existing drainage routes, including ditches and culverts, will be considered where necessary, removing blockages, improving flows and improving direction of flows through the existing drainage system. Consideration will also be given to reinstating existing culverts to open ditches where possible and reasonable.

KEY

- Site boundary
- Existing ditch and direction of flow
- Pipe route (CCTV surveyed)
- Pipe route (from records / interpolation)
- Land drain route (CCTV surveyed)
- Land drain route (from records / interpolation)
- Thames Water Surface Water Sewer (From Records)
- Thames Water Foul Water Sewer (From Records)
- Headwall
- Catchment boundary
- General drainage direction within catchment
- Indicative outfall point

TABLE 1: Catchment Areas

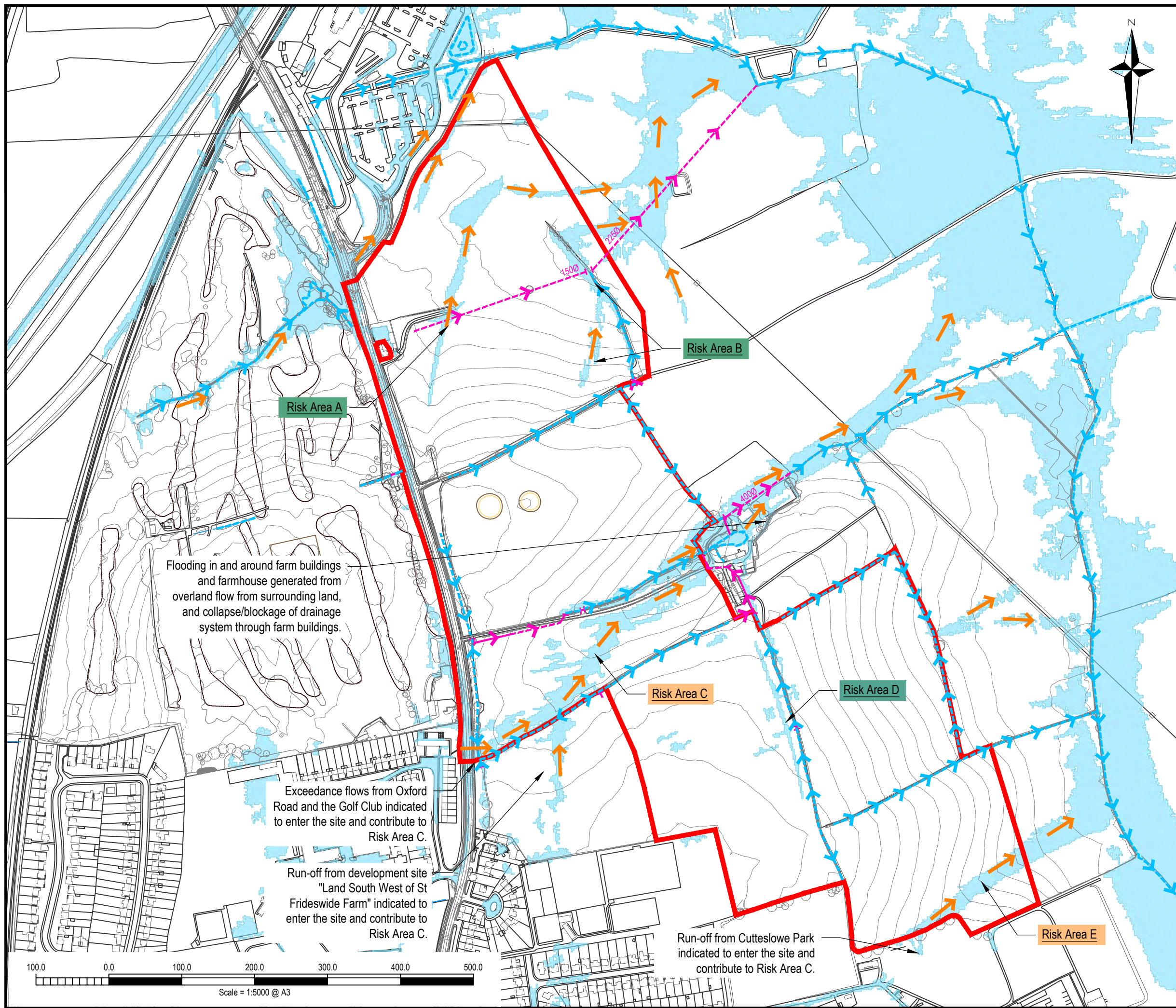
Outfall Reference	Total Area (ha)
A	2.06
B	13.59
C	6.12
D	10.44
E	6.11
F	6.29
TOTAL	44.61



PA1	Issued for Planning Approval	09/02/2023	JH
Rev	Description	Date	Chkd
<p>Glanville Cornerstone House 62 Foxhall Road, Didcot Oxon, OX11 7AD Tel: (01235) 515550 Fax: (01235) 817799 postbox@glanvillegroup.com www.glanvillegroup.com</p>			
Client:	Bellway Homes Limited and Christ Church, Oxford		
Project:	Water Eaton (Site PR6a) Land East of Oxford Road		
Title:	Existing Drainage Plan		
Project Engineer:	C. Salt	Scale:	1:2000 @ A1
Project Director:	J. Hanlon	Date:	December 2022
Status:	PLANNING APPROVAL		
Drawing No.	8210440-1102	Rev	PA1

Appendix G

Surface Water Flood Risk Map



NOTES

1. This drawing to be read in conjunction with all other drawings and specifications.
2. Dimensions not to be scaled.
3. Topographical survey information taken from Brunel Surveys Ltd drawing number 17932-500-01 Feb 2018.
4. Surface water flood risk mapping published online on the data.gov.uk website, licensed under the Open Government Licence v3.0. © Environment Agency copyright and/or database right 2015. All rights reserved.

KEY

- Site boundary
 - - - Existing ditch and direction of flow
 - Pipe route (CCTV surveyed)
 - - - Pipe route (from records / interpolation)
 - Overland flow route
- Risk of Flooding from Surface Water**
- Low risk (1 in 1000 year return period)
- Risk Area**
- Flood risk generated from site itself with no contribution from off-site sources.
 - Flood risk generated from a combination of on-site and off-site flows.

Flooding in and around farm buildings and farmhouse generated from overland flow from surrounding land, and collapse/blockage of drainage system through farm buildings.

Exceedance flows from Oxford Road and the Golf Club indicated to enter the site and contribute to Risk Area C.

Run-off from development site "Land South West of St Frideswide Farm" indicated to enter the site and contribute to Risk Area C.

Run-off from Cutteslowe Park indicated to enter the site and contribute to Risk Area C.

PA1	Issued for Planning Approval	09/02/2023 BW	JH
Rev.	Description	Date	Chkd

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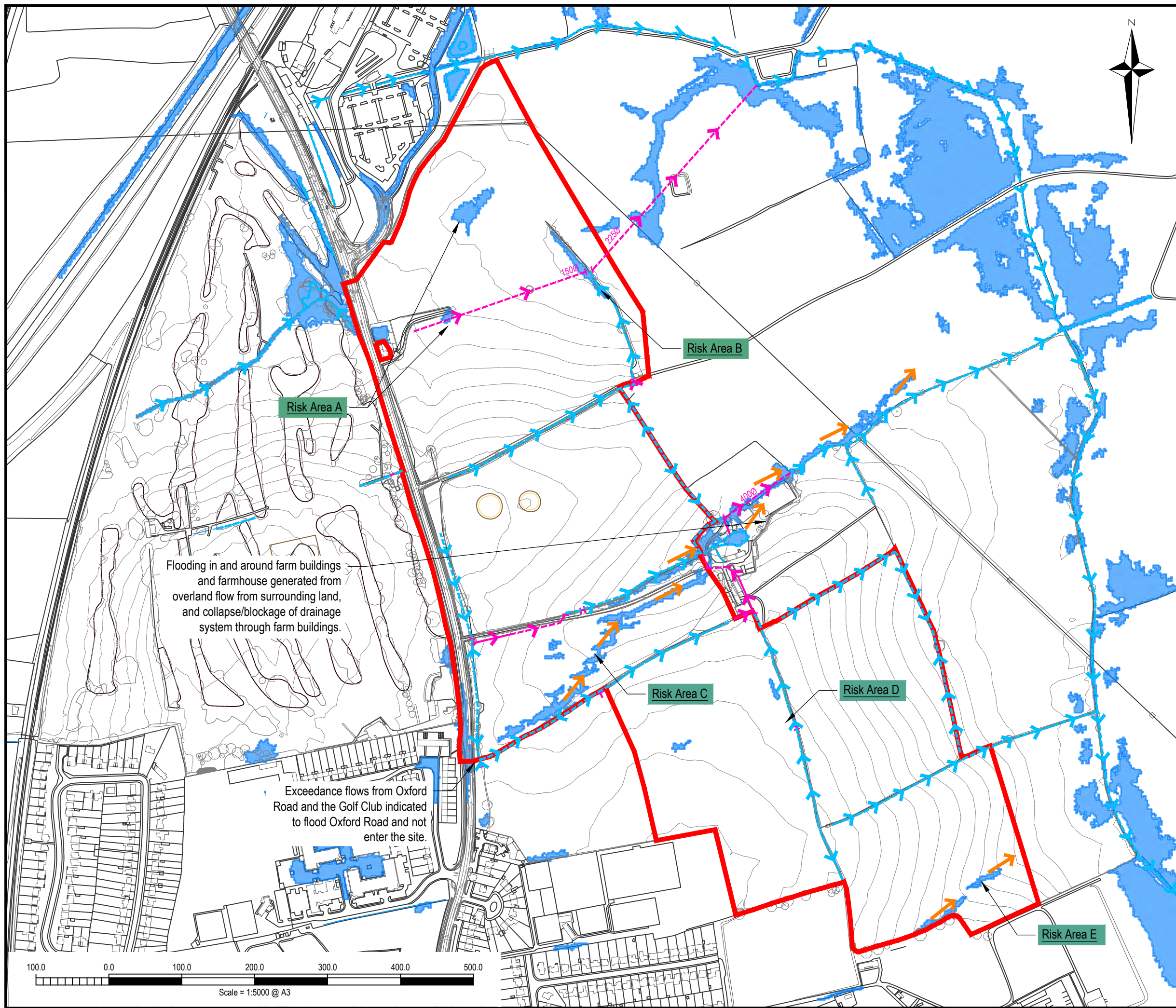
Client : Bellway Homes Limited and Christ Church, Oxford

Project : Water Eaton (Site PR6a) Land East of Oxford Road

Title : Risk of Flooding From Surface Water Low Risk (1 in 1000 year event)

Project Engineer : C Salt Scale : 1:5000 @A3
 Project Director : J Hanlon Date : December 2022
 Status : PLANNING APPROVAL

Drawing No. 8210440-1201 Rev PA1



NOTES

1. This drawing to be read in conjunction with all other drawings and specifications.
2. Dimensions not to be scaled.
3. Topographical survey information taken from Brunel Surveys Ltd drawing number 17932-500-01 Feb 2018.
4. Surface water flood risk mapping published online on the data.gov.uk website, licensed under the Open Government Licence v3.0. © Environment Agency copyright and/or database right 2015. All rights reserved.

KEY

- Site boundary
 - - - Existing ditch and direction of flow
 - Pipe route (CCTV surveyed)
 - - - Pipe route (from records / interpolation)
 - Overland flow route
- Risk of Flooding from Surface Water**
- Medium risk (1 in 100 year return period)
- Risk Area**
- Flood risk generated from site itself with no contribution from off-site sources.
 - Flood risk generated from a combination of on-site and off-site flows.

PA1	Issued for Planning Approval	09/02/2023 BW	JH
Rev.	Description	Date	Chkd



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Client : Bellway Homes Limited and Christ Church, Oxford

Project : Water Eaton (Site PR6a) Land East of Oxford Road

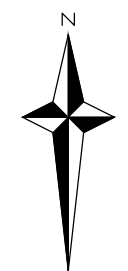
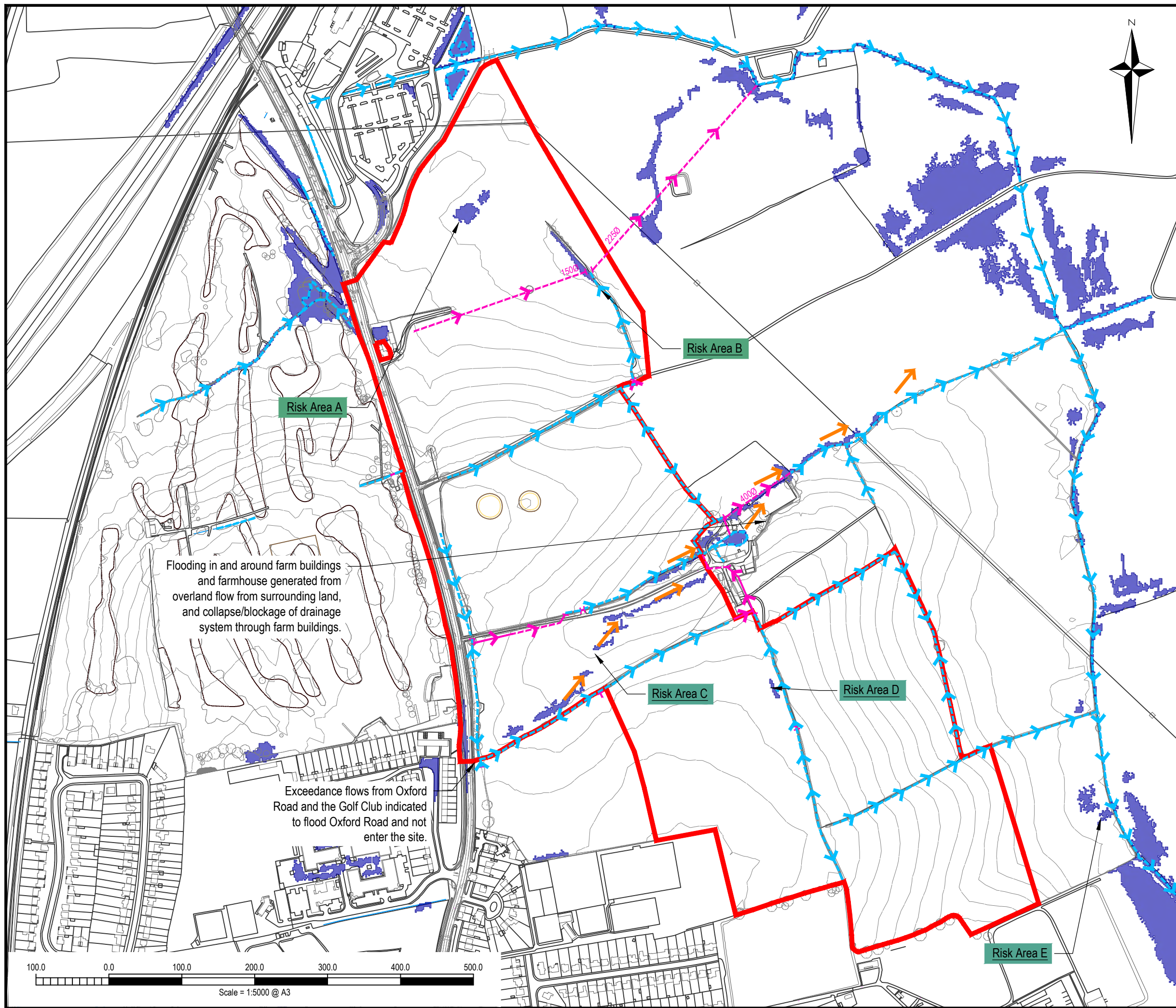
Title : Risk of Flooding From Surface Water
 Medium Risk
 (1 in 100 year event)

Project Engineer : C Salt Scale : 1:5000 @A3

Project Director : J Hanlon Date : December 2022

Status : PLANNING APPROVAL

Drawing No. 8210440-1202 Rev PA1



NOTES

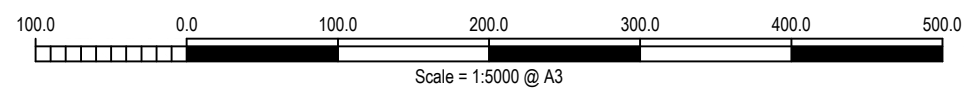
1. This drawing to be read in conjunction with all other drawings and specifications.
2. Dimensions not to be scaled.
3. Topographical survey information taken from Brunel Surveys Ltd drawing number 17932-500-01 Feb 2018.
4. Surface water flood risk mapping published online on the data.gov.uk website, licensed under the Open Government Licence v3.0. © Environment Agency copyright and/or database right 2015. All rights reserved.

KEY

- Site boundary
 - Existing ditch and direction of flow
 - Pipe route (CCTV surveyed)
 - - - Pipe route (from records / interpolation)
 - Overland flow route
- Risk of Flooding from Surface Water**
- High risk (1 in 30 year return period)
 - Risk Area Flood risk generated from site itself with no contribution from off-site sources.
 - Risk Area Flood risk generated from a combination of on-site and off-site flows.

Flooding in and around farm buildings and farmhouse generated from overland flow from surrounding land, and collapse/blockage of drainage system through farm buildings.

Exceedance flows from Oxford Road and the Golf Club indicated to flood Oxford Road and not enter the site.



PA1	Issued for Planning Approval	09/02/2023 BW	JH
Rev.	Description	Date	Chkd

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Client : Bellway Homes Limited and Christ Church, Oxford

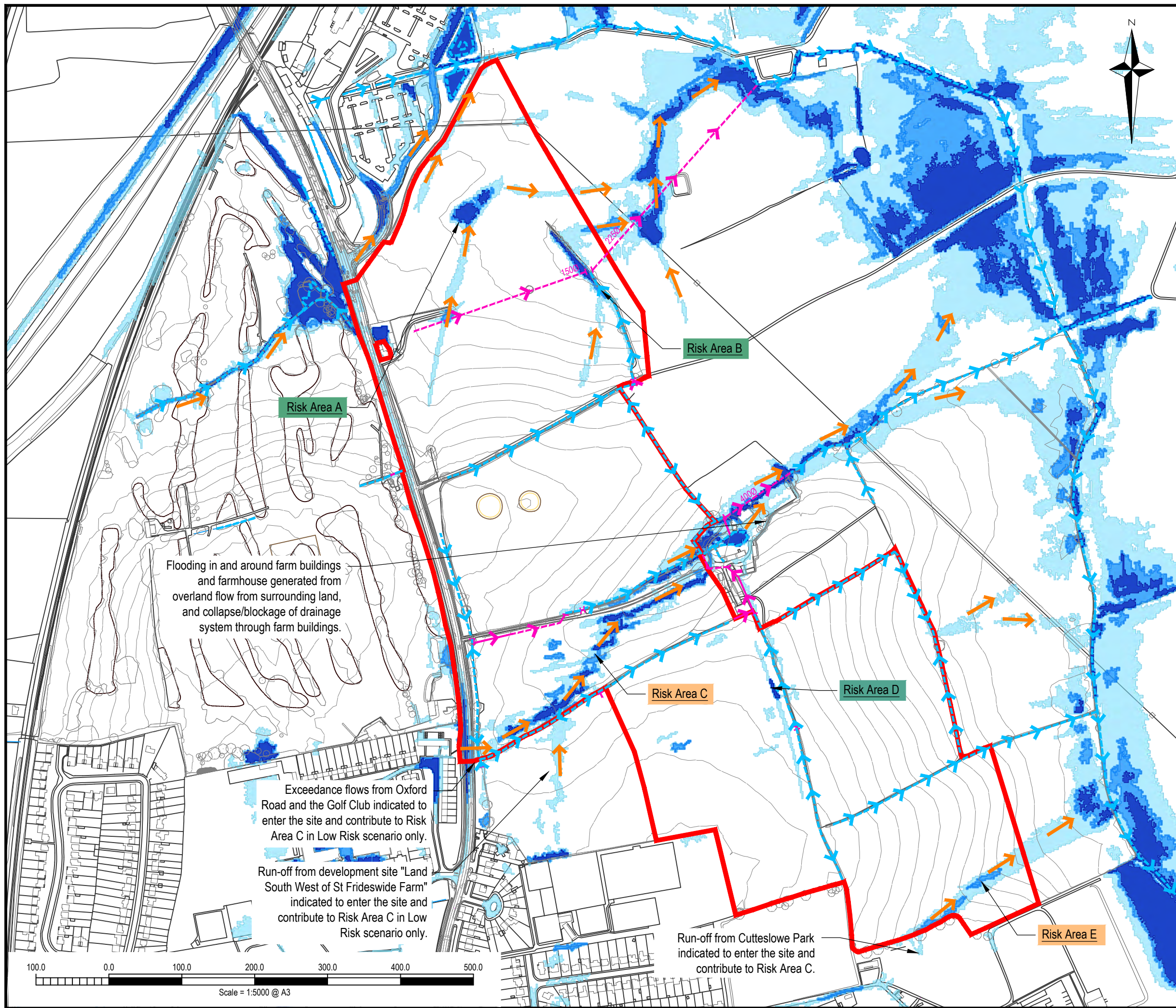
Project : Water Eaton (Site PR6a) Land East of Oxford Road

Title : Risk of Flooding From Surface Water High Risk (1 in 30 year event)

Project Engineer : C Salt Scale : 1:5000 @A3
 Project Director : J Hanlon Date : December 2022

Status : PLANNING APPROVAL

Drawing No. 8210440-1203 Rev PA1



Flooding in and around farm buildings and farmhouse generated from overland flow from surrounding land, and collapse/blockage of drainage system through farm buildings.

Exceedance flows from Oxford Road and the Golf Club indicated to enter the site and contribute to Risk Area C in Low Risk scenario only.

Run-off from development site "Land South West of St Frideswide Farm" indicated to enter the site and contribute to Risk Area C in Low Risk scenario only.

Run-off from Cutteslowe Park indicated to enter the site and contribute to Risk Area C.

NOTES

1. This drawing to be read in conjunction with all other drawings and specifications.
2. Dimensions not to be scaled.
3. Topographical survey information taken from Brunel Surveys Ltd drawing number 17932-500-01 Feb 2018.
4. Surface water flood risk mapping published online on the data.gov.uk website, licensed under the Open Government Licence v3.0. © Environment Agency copyright and/or database right 2015. All rights reserved.

KEY

- Site boundary
 - - - Existing ditch and direction of flow
 - Pipe route (CCTV surveyed)
 - - - Pipe route (from records / interpolation)
 - Overland flow route
- Risk of Flooding from Surface Water**
- High risk (1 in 30 year return period)
 - Medium risk (1 in 100 year return period)
 - Low risk (1 in 1000 year return period)
- Risk Area**
- Risk Area Flood risk generated from site itself with no contribution from off-site sources.
 - Risk Area Flood risk generated from a combination of on-site and off-site flows.

PA1	Issued for Planning Approval	09/02/2023 BW	JH
Rev.	Description	Date	Chkd

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Client : Bellway Homes Limited and Christ Church, Oxford

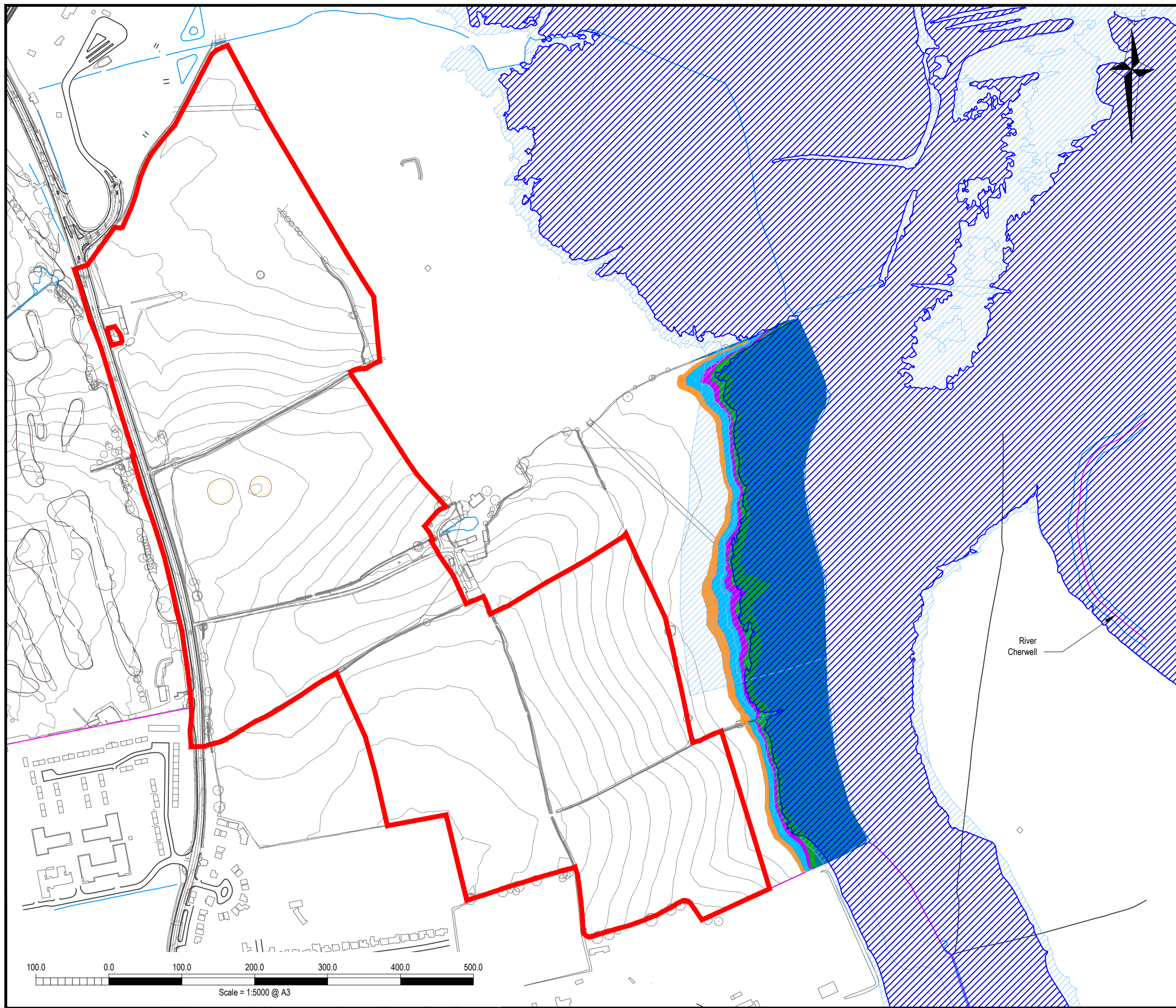
Project : Water Eaton (Site PR6a) Land East of Oxford Road

Title : Risk of Flooding From Surface Water All Risk Scenarios

Project Engineer : C Salt Scale : 1:5000 @A3
 Project Director : J Hanlon Date : December 2022
 Status : PLANNING APPROVAL

Drawing No. 8210440-1204 Rev PA1

Appendix H
Fluvial Flood Risk Map



NOTES

1. This drawing to be read in conjunction with all other drawings and specifications.
2. Dimensions not to be scaled.
3. Topographical survey information taken from Brunel Surveys Ltd drawing number 17932-500-01 Feb 2018.
4. Flood Map for Planning obtained from environment.data.gov.uk. Information licensed under Open Government License v3.0
5. Modelled Fluvial Flood Extents from Environment Agency Flood Model obtained from Product 5, 6 and 7 data request 2021. Lower Cherwell Flood Risk Mapping Report (10509/45), PBA, August 2005.

KEY

Site boundary
 Site boundary

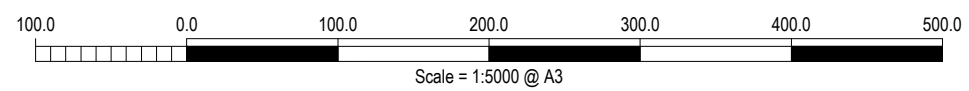
Flood Zone Map
 Based on broad-scale Flood Map for Planning (refer to Note 4)

Flood Zone 2

Flood Zone 3

Modelled Fluvial Flood Extents
 Based on Environment Agency flood model 2005 (refer to Note 5) plotted on detailed topographical survey data. Extents shown for topographical survey area only.

KEY	RETURN PERIOD	FLOOD ZONE
	1 in 1,000 years	Flood Zone 2
	1 in 100 years +70% Climate Change	-
	1 in 100 years +49% Climate Change	Upper CC Allowance
	1 in 100 years +25% Climate Change	Higher CC Allowance
	1 in 100 years +15% Climate Change	Central CC Allowance
	1 in 100 years	Flood Zone 3



PA1	Issued for Planning Approval	09/02/2023 BW	JH
Rev.	Description	Date	Chkd

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Client : **Bellway Homes Limited and Christ Church, Oxford**

Project : **Water Eaton (Site PR6a) Land East of Oxford Road**

Title : **Fluvial Flood Risk Map**

Project Engineer : C Salt Scale : 1:5000 @A3
 Project Director : J Hanlon Date : December 2022
 Status : **PLANNING APPROVAL**

Drawing No. 8210440-1210 Rev **PA1**

Appendix I
Environment Agency Product 4 Data

Product 4 (Detailed Flood Risk) for North Oxford Triangle, OX2 8HF

Our Ref: THM_64417

Product 4 is designed for developers where Flood Risk Standing Advice FRA (Flood Risk Assessment) Guidance Note 3 Applies. This is:

- i) "all applications in Flood Zone 3, other than non-domestic extensions less than 250 sq metres; and all domestic extensions", and
- ii) "all applications with a site area greater than 1 ha" in Flood Zone 2.

Product 4 includes the following information:

Ordnance Survey 1:25k colour raster base mapping;
Flood Zone 2 and Flood Zone 3;
Relevant model node locations and unique identifiers (for cross referencing to the water levels, depths and flows table);
Model extents showing *defended* scenarios;
FRA site boundary (where a suitable GIS layer is supplied);
Flood defence locations (where available/relevant) and unique identifiers; (supplied separately)
Flood Map areas benefiting from defences (where available/relevant);
Flood Map flood storage areas (where available/relevant);
Historic flood events outlines (where available/relevant, not the Historic Flood Map) and unique identifiers;
Statutory (Sealed) Main River (where available within map extents);

A table showing:

- i) Model node X/Y coordinate locations, unique identifiers, and levels and flows for *defended* scenarios.
- ii) Flood defence locations unique identifiers and attributes; (supplied separately)
- iii) Historic flood events outlines unique identifiers and attributes; and
- iv) Local flood history data (where available/relevant).

Please note:

If you will be carrying out computer modelling as part of your Flood Risk Assessment, please read the enclosed guidance which sets out our requirements and best practice for computer river modelling.

This information is based on that currently available as of the date of this letter. You may feel it is appropriate to contact our office at regular intervals, to check whether any amendments/ improvements have been made. Should you re-contact us after a period of time, please quote the above reference in order to help us deal with your query.

This information is provided subject to the enclosed notice which you should read.

This letter is not a Flood Risk Assessment. The information supplied can be used to form part of your Flood Risk Assessment. Further advice and guidance regarding Flood Risk Assessments can be found on our website at

<http://www.environment-agency.gov.uk/research/planning/82584.aspx>

If you would like advice from us regarding your development proposals you can complete our pre application enquiry form which can be found at

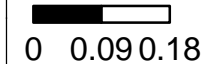
<http://www.environment-agency.gov.uk/research/planning/33580.aspx>

FRA Map centred on: North Oxford Triangle, OX2 8HF

Created on 10/11/2017 REF: THM_64417



Kilometres



Legend

- Main River
- Flooding from rivers or sea (FZ3)
- Extent of extreme flood (FZ2)

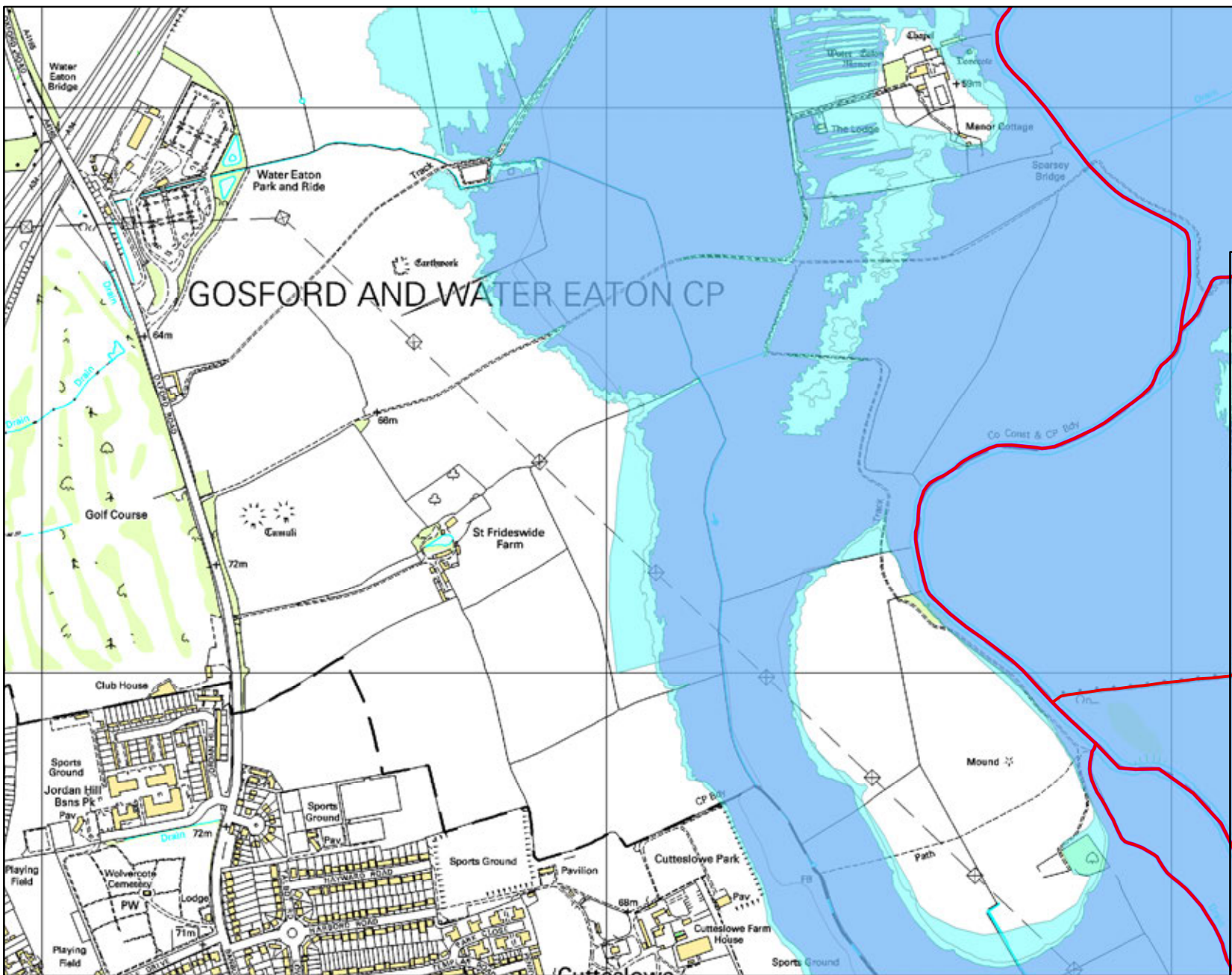
Flooding from rivers or sea without defences (Flood Zone 3) shows the area that could be affected by flooding:

- from the sea with a 1 in 200 or greater chance of happening each year
- or from a river with a 1 in 100 or greater chance of happening each year.

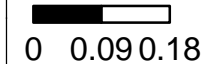
The Extent of an extreme flood (Flood Zone 2) shows the extent of an extreme flood from rivers or the sea with up to a 1 in 1000 chance of occurring each year.

Flood Map for Planning centred on: St Frideswide Farm Oxford

Created on 10/11/2017 REF: THM_64417



Kilometres



Legend

- Main River
- Flooding from rivers or sea (FZ3)
- Extent of extreme flood (FZ2)

Flooding from rivers or sea without defences (Flood Zone 3) shows the area that could be affected by flooding:
- from the sea with a 1 in 200 or greater chance of happening each year
- or from a river with a 1 in 100 or greater chance of happening each year.

The Extent of an extreme flood (Flood Zone 2) shows the extent of an extreme flood from rivers or the sea with up to a 1 in 1000 chance of occurring each year.

Defence information

Defence Location:

Description: This location is not currently protected by any formal defences and we do not currently have any flood alleviation works planned for the area. However we continue to maintain certain watercourses and the schedule of these can be found on our internet pages.

Model information

THM_64417

Model: Cherwell (Thrupps Bridge to Thames Confluence) 2006

Description: The information provided is taken from the River Cherwell mapping and modelling study completed in February 2006. The study was carried out using ISIS software.

The model extents were mapped to a composite ground surface with a varied vertical resolution. The ground surface around Kidlington was obtained using a broad scale method (synthetic aperture radar) with an average vertical resolution of $\pm 0.5\text{m}$. The in channel river nodes are more accurate and should be compared with locally obtained ground levels to determine the actual flood risk.

Model design runs:

1 in 5 / 20% AEP; 1 in 10 / 10% AEP; 1 in 20 / 5% AEP; 1 in 100 / 1% AEP and 1 in 200 / 0.5% AEP (used for climate change)

Mapped Outputs:

1 in 5 / 20% AEP; 1 in 20 / 5% AEP; 1 in 100 / 1% AEP and 1 in 200 / 0.5% AEP (used for climate change)

Model accuracy:

Levels $\pm 250\text{mm}$

Mapped Extents $\pm 500\text{mm}$

FRA Map centred on: St Frideswide Farm Oxford

Created on 10/11/2017 REF: THM_64417



Kilometres
0 0.09 0.18

Legend

- Cherwell Model Node Data
- Main River
- 20% AEP flood extent
- 5% AEP flood extent
- 1% AEP flood extent

AEP = Annual Exceedance Probability
The probability of a flood of a particular magnitude, or greater, occurring in any given year

1%CC = 1% Climate Change extent
This is the 1% AEP event with an allowance for climate change (+20% on river flows)

Modelled in-channel flood flows and levels

THM_64417

The modelled flood levels and flows for the closest most appropriate model node points for your site that are within the river channel are provided below:

Node label	Model	Easting	Northing	Flood Levels (mAOD)				
				20% AEP	5% AEP	1% AEP	1% AEP (+20% on river flows)	0.1% AEP
06114_MN_CH.114u	Cherwell (Thrupps Bridge to Thames Confluence) 2006	451849	211900	58.14	58.36	58.52	58.67	0.00
06114_MN_CH.113	Cherwell (Thrupps Bridge to Thames Confluence) 2006	451874	211875	58.13	58.35	58.51	58.66	0.00
06114_MN_CH.110	Cherwell (Thrupps Bridge to Thames Confluence) 2006	452025	211648	58.07	58.30	58.46	58.62	0.00
06114_MN_CH.105	Cherwell (Thrupps Bridge to Thames Confluence) 2006	451636	211376	57.97	58.20	58.38	58.56	0.00
06114_MN_CH.100	Cherwell (Thrupps Bridge to Thames Confluence) 2006	451704	211031	57.87	58.12	58.32	58.51	0.00

Node label	Model	Easting	Northing	Flood Flows (m3/s)				
				20% AEP	5% AEP	1% AEP	1% AEP (+20% on river flows)	0.1% AEP
06114_MN_CH.114u	Cherwell (Thrupps Bridge to Thames Confluence) 2006	451849	211900	65.64	89.41	116.47	140.09	0.00
06114_MN_CH.113	Cherwell (Thrupps Bridge to Thames Confluence) 2006	451874	211875	65.48	89.16	116.15	139.68	0.00
06114_MN_CH.110	Cherwell (Thrupps Bridge to Thames Confluence) 2006	452025	211648	64.17	87.15	113.59	136.26	0.00
06114_MN_CH.105	Cherwell (Thrupps Bridge to Thames Confluence) 2006	451636	211376	62.53	84.24	109.24	130.35	0.00
06114_MN_CH.100	Cherwell (Thrupps Bridge to Thames Confluence) 2006	451704	211031	61.45	82.34	105.68	125.04	0.00

Note:

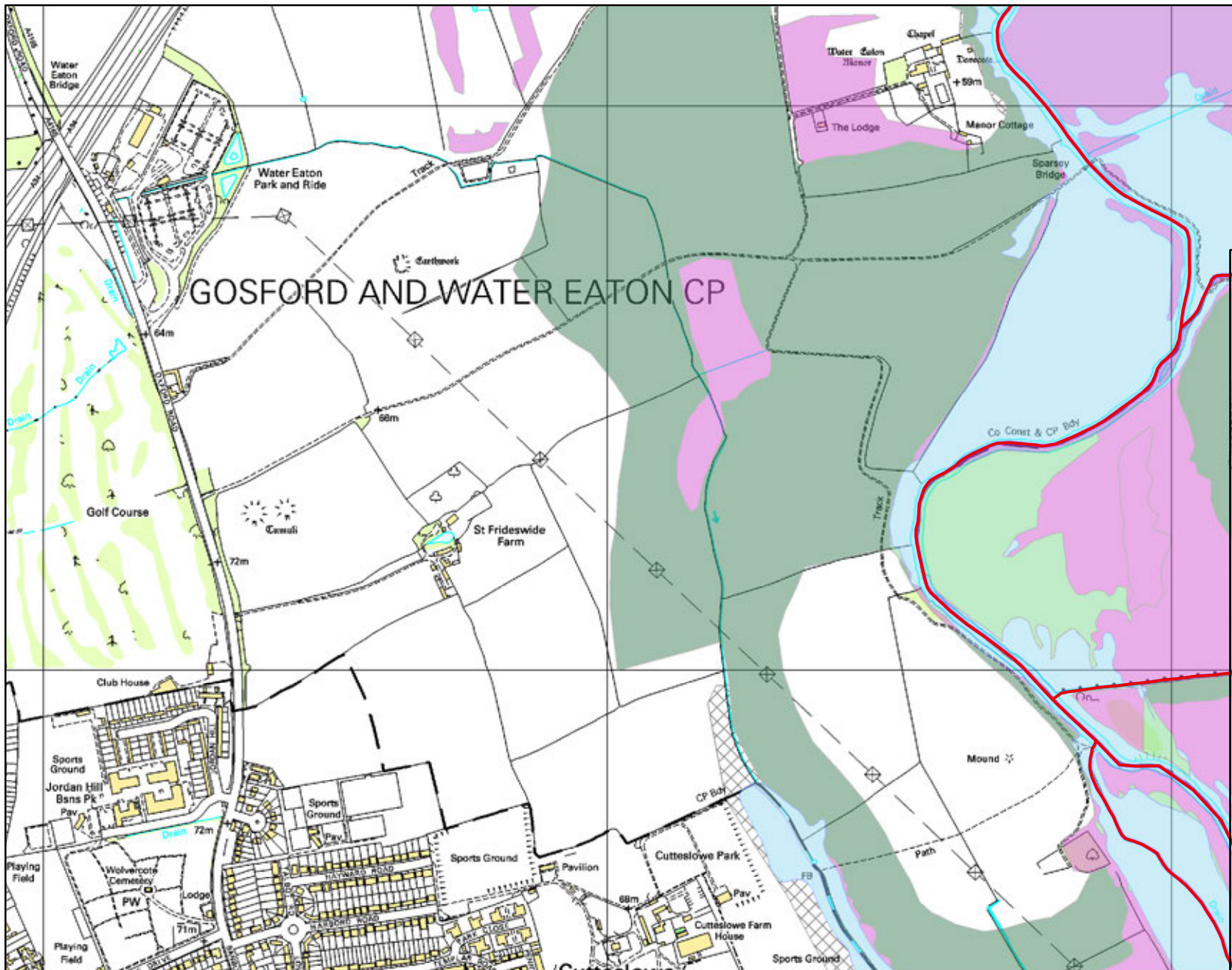
Due to recent changes in guidance on the allowances for climate change, the 20% increase in river flows should no longer to be used for development design purposes. The data included in this Product can be used for interpolation of levels as part of an Intermediate level assessment.

For further advice on the new allowances please visit

<https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances>

Historic Flood Map centred on: St Frideswide Farm Oxford

Created on 10/11/2017 REF: THM_64417



Kilometres
0 0.09 0.18

Legend

- Main River
- Flood Event Outlines**
- year**
- 1947
- 1977
- 1979
- 1998
- 2002
- 2007

Historic flood data

THM_64417

Our records show that the area of your site has been affected by flooding.
Information on the floods that have affected your site is provided in the table below:

Flood Event Code	Flood Event Name	Start Date	End Date	Source of Flooding	Cause of Flooding
EA0619470300082	06MarchSpring1947	01/01/1947	12/12/1947	main river	channel capacity exceeded (no raised defences)
EA0619770800055	06AugustSummer1977	01/01/1977	12/12/1977	main river	channel capacity exceeded (no raised defences)
EA0619790200104	06FebruaryWinter1979	01/01/1979	12/12/1979	main river	channel capacity exceeded (no raised defences)
EA0619980400094	06AprilEaster1998	01/04/1998	30/04/1998	main river	channel capacity exceeded (no raised defences)
EA0620030102399	06JanuaryNewYear2003	23/12/2002	12/01/2003	main river	channel capacity exceeded (no raised defences)
ea061142825	Gosford and Water Eaton CP_Fluvia	19/07/2007	29/07/2007	main river	channel capacity exceeded (no raised defences)

Please note the Environment Agency maps flooding to land not individual properties. Floodplain extents are an indication of the geographical extent of a historic flood. They do not provide information regarding levels of individual properties, nor do they imply that a property has flooded internally.

Start and End Dates shown above may represent a wider range where the exact dates are not available.