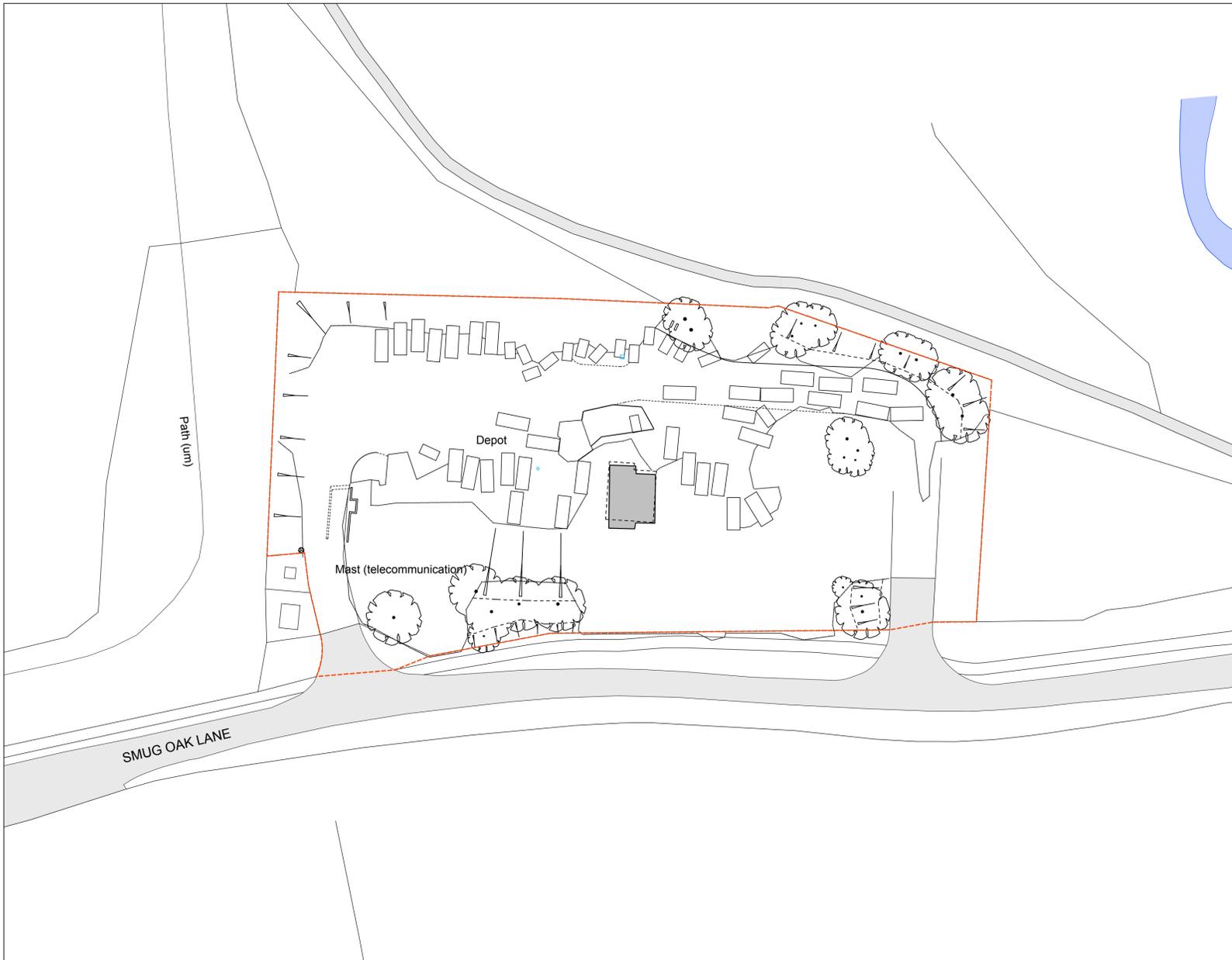


APPENDIX B: PROPOSED DEVELOPMENT

SMUG OAK LANE, ST ALBANS.



General:
 This drawing is the copyright of More Space Architecture Ltd, which cannot be copied without prior consent.
 The drawing is to be read in conjunction with all other drawings, schedules and specifications, and all other relevant consultants and/or specialists' information relating to the project.
 All discrepancies to be relayed back to More Space Architecture Ltd as soon as possible.



EXISTING BLOCK PLAN
 SCALE 1:500



PROPOSED BLOCK PLAN
 SCALE 1:500



REV.	DATE	COMMENT



t: 01702 690745 m: 07581 389076
 e: info@morespacearchitecture.co.uk
 studio on the green, ballards gore golf club,
 gore road, rochford, essex, ss4 2da

CLIENT: SMUG OAK LANE LTD

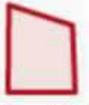
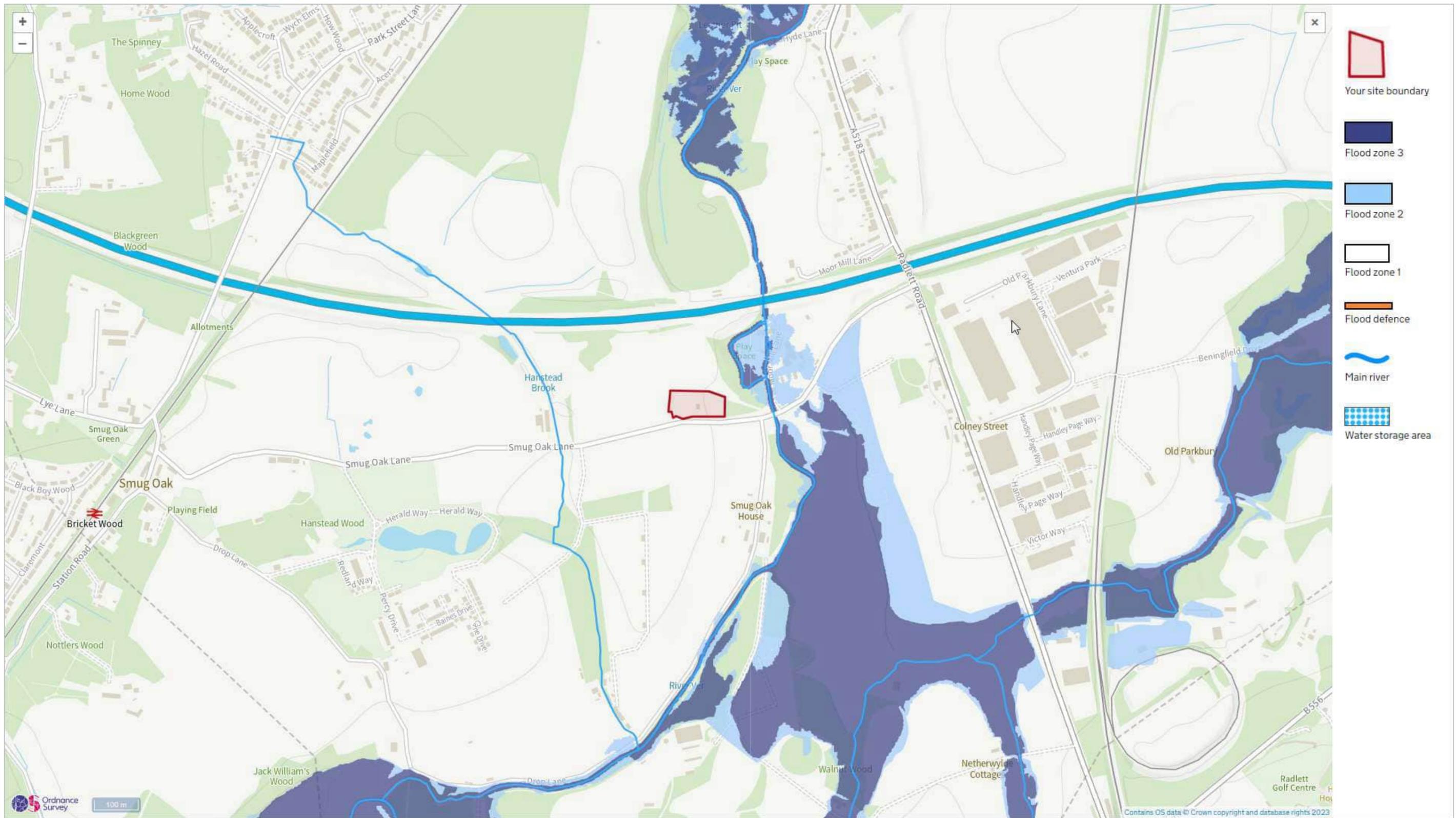
PROJECT: SMUG OAK LANE
 BRICKET WOOD
 ST. ALBANS
 HERTFORDSHIRE

DRAWING: EXISTING AND PROPOSED BLOCK PLANS

SCALE:	DATE:	
1:500 @ A1	19.06.2024	
PROJECT NO:	DRAWING NO:	REVISION:
24-043	103	02

DESIGN - PLANNING - BUILDING REG'S

APPENDIX C: FLOOD RISK INFORMATION



Your site boundary



Flood zone 3



Flood zone 2



Flood zone 1



Flood defence



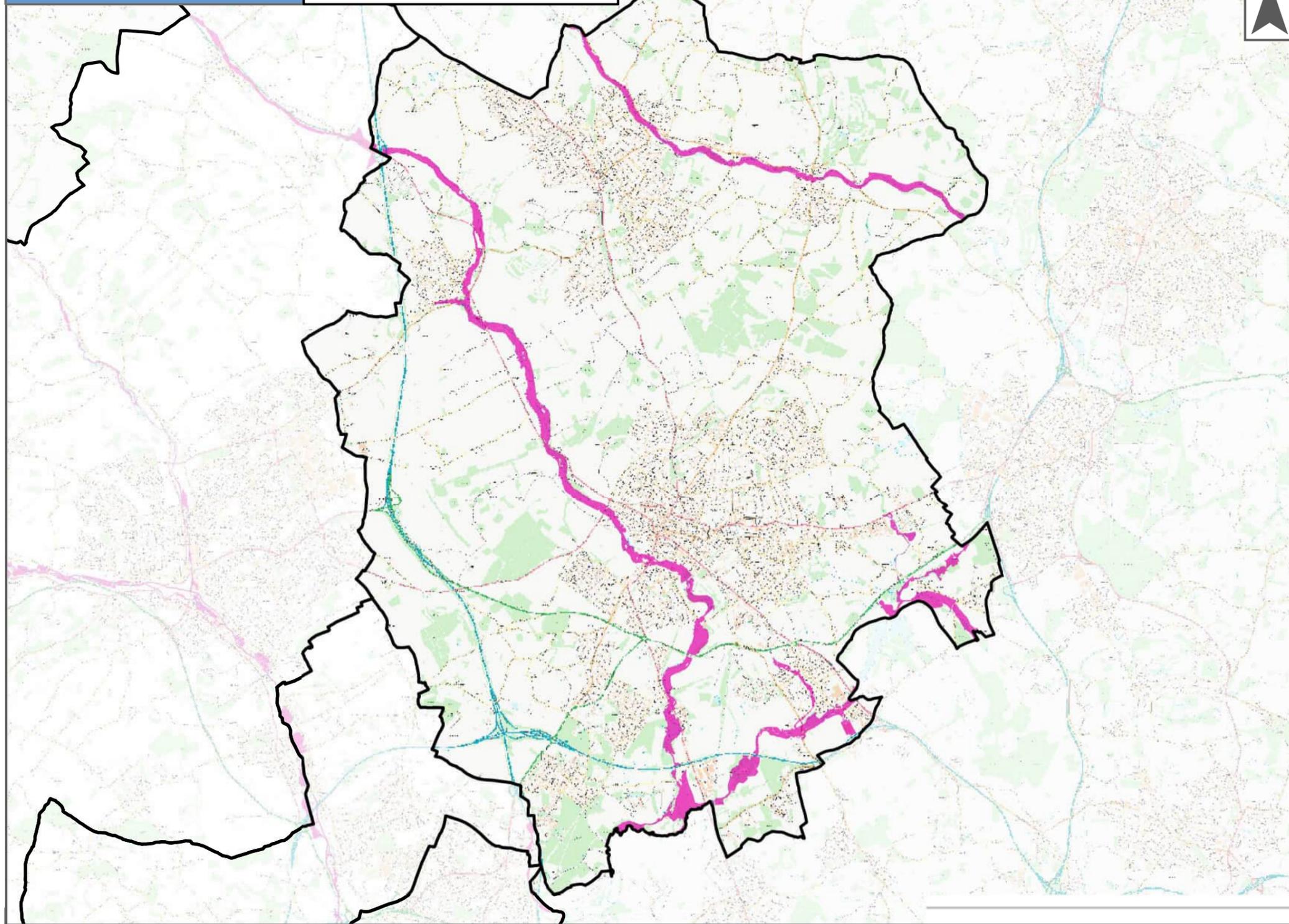
Main river



Water storage area



100 m



LEGEND: Flood Risk Mapping

- | | |
|--------------------|-------------------------------------|
| Flood Zones | Climate Change |
| Flood Zone 2 | Flood Zone 3 + 35%CC |
| Flood Zone 3 | Flood Zone 3 + 70%CC |
| Flood Zone 3b | RoFSW + CC (1 in 100-year + 40% CC) |

- | | |
|---------------------------------------|---------------------------------------|
| JBA Groundwater Flood Risk Map | Defences |
| At least 5m | Embankment |
| 0.5m to 5m | Culvert |
| 0.025m to 0.5m | Wall |
| At or near surface (<0.025m) | Areas Benefitting from Flood Defences |

- | | |
|--|----------------------------|
| Risk of Flooding from Surface Water (RoFSW) | Flood Warning Areas |
| High (1 in 30-year) | Flood Warning Areas |
| Medium (1 in 100-year) | |
| Low (1 in 1,000-year) | |

- Reservoir Inundation Map**
- Reservoir Flood Risk

- Natural Flood Management Opportunities**
- | | |
|--|---------------------------------|
| Runoff Attenuation Features - 1 in 30-year (3.3%AEP) | Tree Planting (Floodplain) |
| Runoff Attenuation Features - 1 in 100-year (1%AEP) | Floodplain Reconnection |
| Tree Planting (Riparian) | Tree Planting (Wider Catchment) |

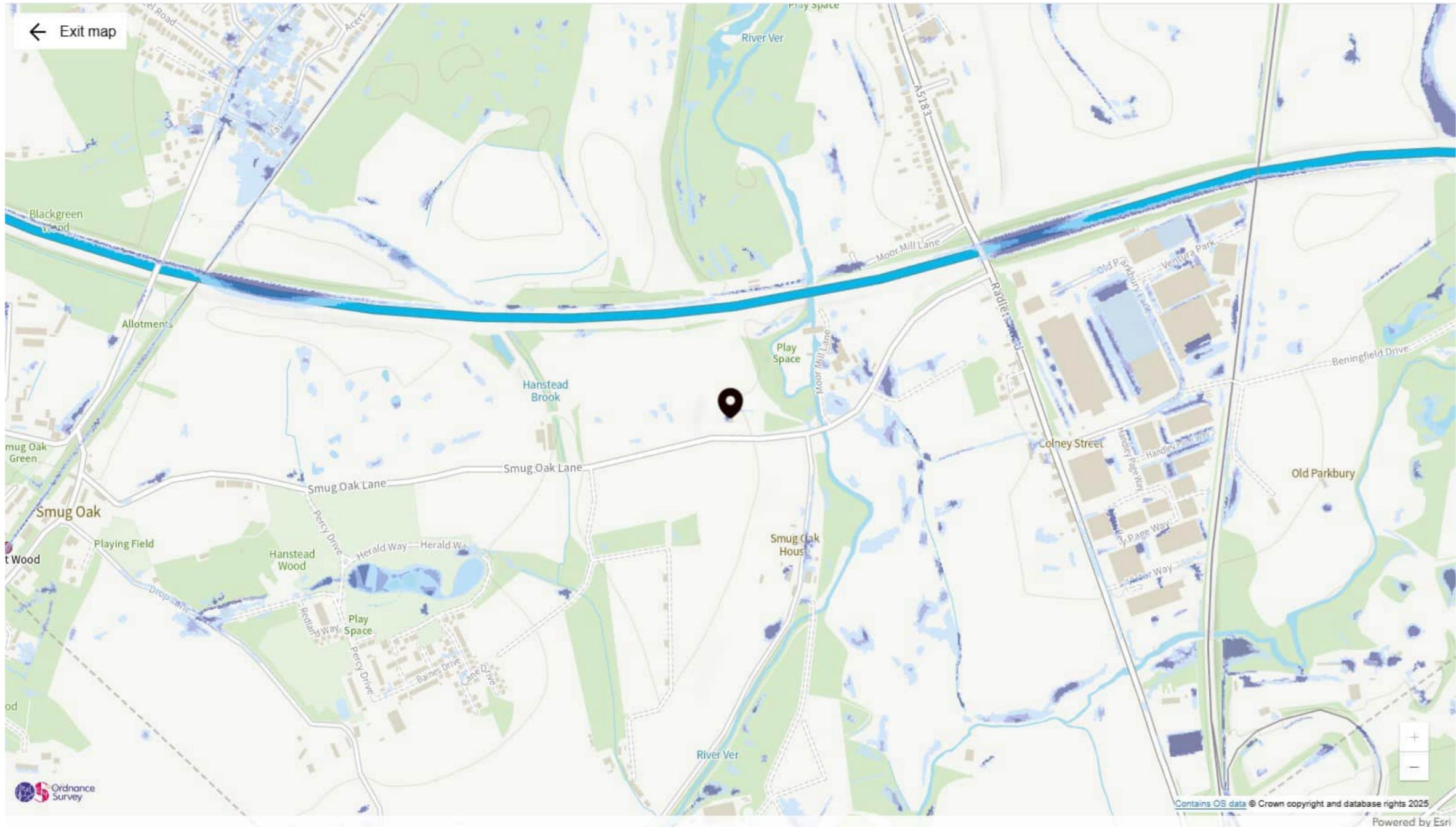
0	0.75	1.5	3	4.5
km				
Version no.	Date	Comment		
v2.0	Sept 2018	Final		

This document is the property of Jeremy Benn Associates Ltd. It shall not be reproduced in whole or in part, nor disclosed to a third party, without the permission of Jeremy Benn Associates Ltd.
 Reproduced from Ordnance Survey mapping with the permission of Ordnance Survey on behalf of the Controller of Her Majesty's Stationary Office. © Crown copyright and database rights 2016.
 EA DRN: Special Licence – Non-commercial Ref: 31600.



LEGEND: Catchment Characteristics

- | | | |
|--------------------------|---|--|
| Study Boundary | WFD Catchments | |
| South West Hertfordshire | Bulbourne | Lee (from Luton Hoo Lakes to Hertford) |
| Watercourses | Chess | Mimram (Codicote Bottom to Lee) |
| Main River | Colne (Confluence with Chess to River Thames) | Pinn |
| Ordinary Watercourses | Colne (from Confluence with Ver to Gade) | Thames upstream of Aylesbury |
| Grand Union Canal | Colne (upper east arm including Mimshall Brook) | Tykeswater |
| | Gade (Upper stretch Great Gaddesden to confluence with Bulbourne / GUC) | Upper Colne and Ellen Brook |
| | Gade (from confluence with Bulbourne to Chess) | Ver |
| | | Whistle Brook |



← Exit map

Surface water map

Yearly chance of flooding

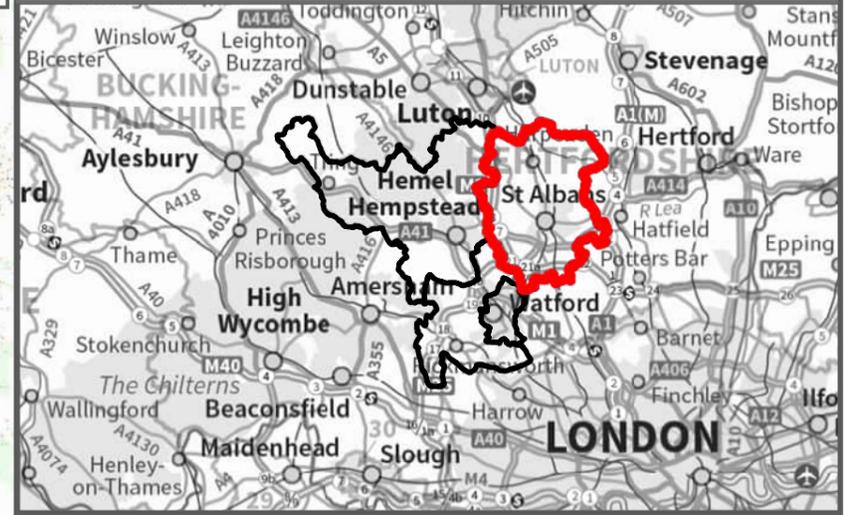
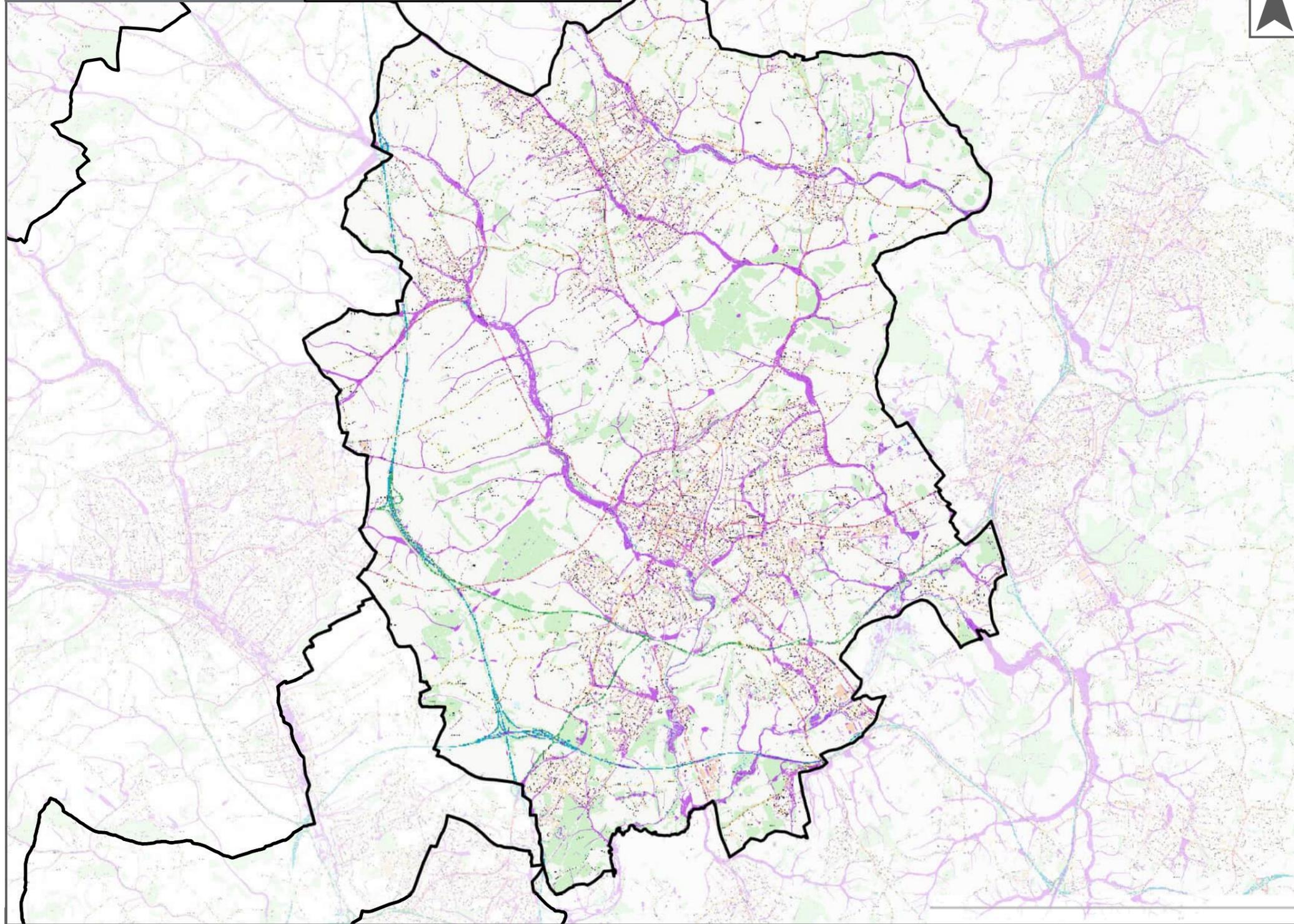
-  Flood area (extent)
-  High chance
-  Medium chance
-  Low chance

Yearly chance of flooding between 2040 and 2060

-  Flood area (extent)

Map details

- Show flooding
-  Selected address



LEGEND: Flood Risk Mapping

- | | |
|---|---|
| <p>Flood Zones</p> <ul style="list-style-type: none"> Flood Zone 2 Flood Zone 3 Flood Zone 3b | <p>Climate Change</p> <ul style="list-style-type: none"> Flood Zone 3 + 35%CC Flood Zone 3 + 70%CC RoFSW + CC (1 in 100-year + 40% CC) |
| <p>JBA Groundwater Flood Risk Map</p> <ul style="list-style-type: none"> At least 5m 0.5m to 5m 0.025m to 0.5m At or near surface (<0.025m) | <p>Defences</p> <ul style="list-style-type: none"> Embankment Culvert Wall Areas Benefitting from Flood Defences |
| <p>Risk of Flooding from Surface Water (RoFSW)</p> <ul style="list-style-type: none"> High (1 in 30-year) Medium (1 in 100-year) Low (1 in 1,000-year) | <p>Flood Warning Areas</p> <ul style="list-style-type: none"> Flood Warning Areas |

0	0.75	1.5	3	4.5
km				
Version no.	Date	Comment		
v2.0	Sept 2018	Final		

This document is the property of Jeremy Benn Associates Ltd. It shall not be reproduced in whole or in part, nor disclosed to a third party, without the permission of Jeremy Benn Associates Ltd.
 Reproduced from Ordnance Survey mapping with the permission of Ordnance Survey on behalf of the Controller of Her Majesty's Stationary Office. © Crown copyright and database rights 2016.
 EA DRN: Special Licence – Non-commercial Ref: 31600.



LEGEND: Catchment Characteristics

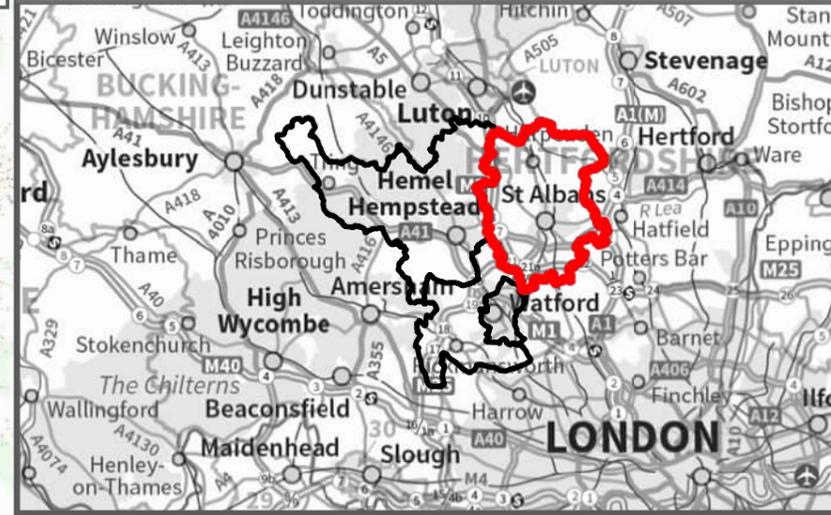
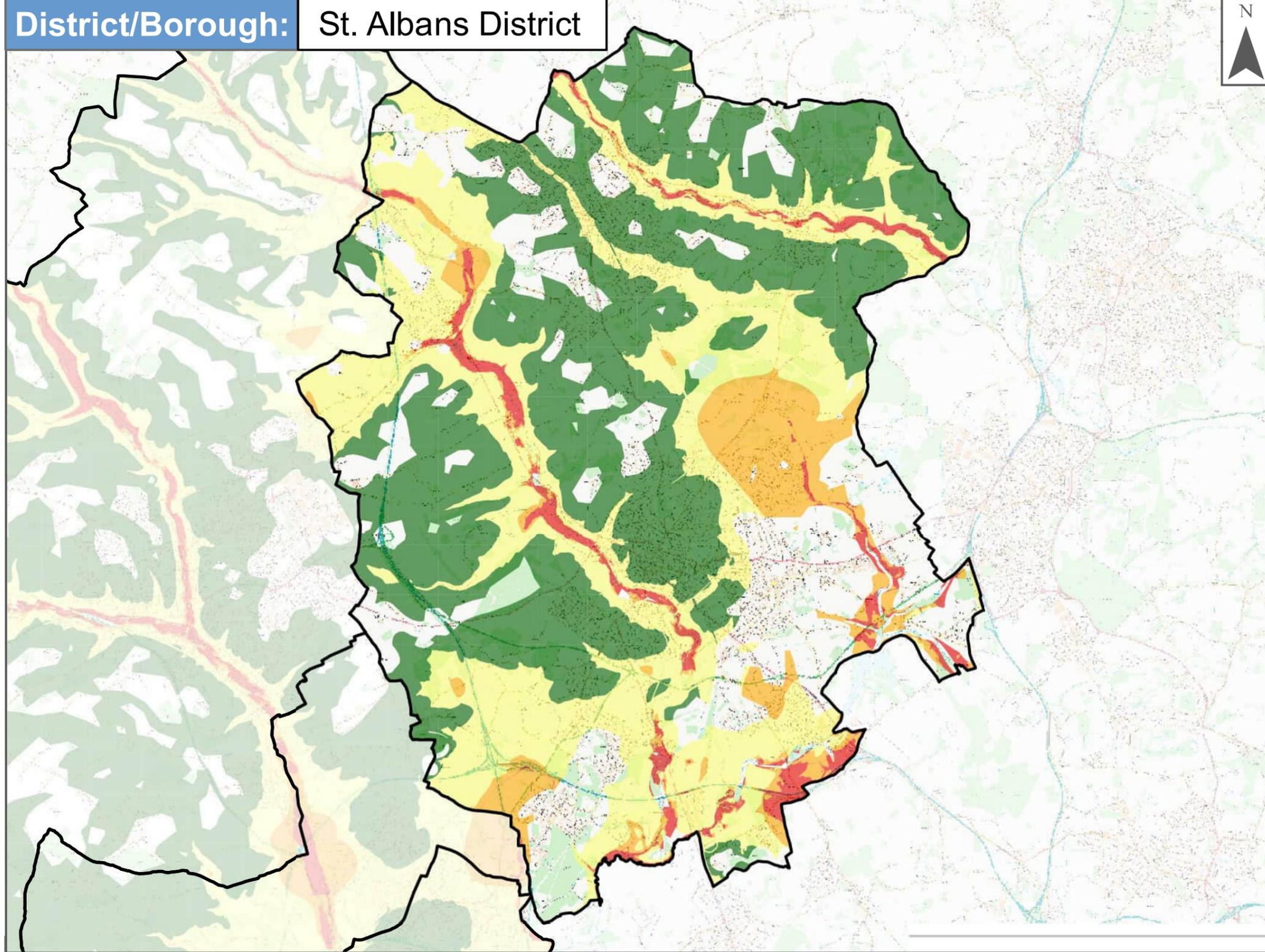
- | | | | |
|--|--|---|--|
| <p>Study Boundary</p> <ul style="list-style-type: none"> South West Hertfordshire | <p>Watercourses</p> <ul style="list-style-type: none"> Main River Ordinary Watercourses Grand Union Canal | <p>WFD Catchments</p> <ul style="list-style-type: none"> Bulbourne Chess Colne (Confluence with Chess to River Thames) Colne (from Confluence with Ver to Gade) Colne (upper east arm including Mimshall Brook) Gade (Upper stretch Great Gaddesden to confluence with Bulbourne / GUC) Gade (from confluence with Bulbourne to Chess) | <ul style="list-style-type: none"> Lee (from Luton Hoo Lakes to Hertford) Mimram (Codicote Bottom to Lee) Pinn Thames upstream of Aylesbury Tykeswater Upper Colne and Ellen Brook Ver Whistle Brook |
|--|--|---|--|

Reservoir Inundation Map

- Reservoir Flood Risk

Natural Flood Management Opportunities

- | | |
|--|---|
| <ul style="list-style-type: none"> Runoff Attenuation Features - 1 in 30-year (3.3%AEP) Runoff Attenuation Features - 1 in 100-year (1%AEP) Tree Planting (Riparian) | <ul style="list-style-type: none"> Tree Planting (Floodplain) Floodplain Reconnection Tree Planting (Wider Catchment) |
|--|---|



LEGEND: Flood Risk Mapping

- | | |
|---|---|
| <p>Flood Zones</p> <ul style="list-style-type: none"> Flood Zone 2 Flood Zone 3 Flood Zone 3b | <p>Climate Change</p> <ul style="list-style-type: none"> Flood Zone 3 + 35%CC Flood Zone 3 + 70%CC RoFSW + CC (1 in 100-year + 40% CC) |
| <p>JBA Groundwater Flood Risk Map</p> <ul style="list-style-type: none"> At least 5m 0.5m to 5m 0.025m to 0.5m At or near surface (<0.025m) | <p>Defences</p> <ul style="list-style-type: none"> Embankment Culvert Wall Areas Benefitting from Flood Defences |
| <p>Risk of Flooding from Surface Water (RoFSW)</p> <ul style="list-style-type: none"> High (1 in 30-year) Medium (1 in 100-year) Low (1 in 1,000-year) | <p>Flood Warning Areas</p> <ul style="list-style-type: none"> Flood Warning Areas |

0	0.75	1.5	3	4.5
km				
Version no.	Date	Comment		
v2.0	Sept 2018	Final		

This document is the property of Jeremy Benn Associates Ltd. It shall not be reproduced in whole or in part, nor disclosed to a third party, without the permission of Jeremy Benn Associates Ltd.
 Reproduced from Ordnance Survey mapping with the permission of Ordnance Survey on behalf of the Controller of Her Majesty's Stationary Office. © Crown copyright and database rights 2016.
 EA DRN: Special Licence – Non-commercial Ref: 31600.



LEGEND: Catchment Characteristics

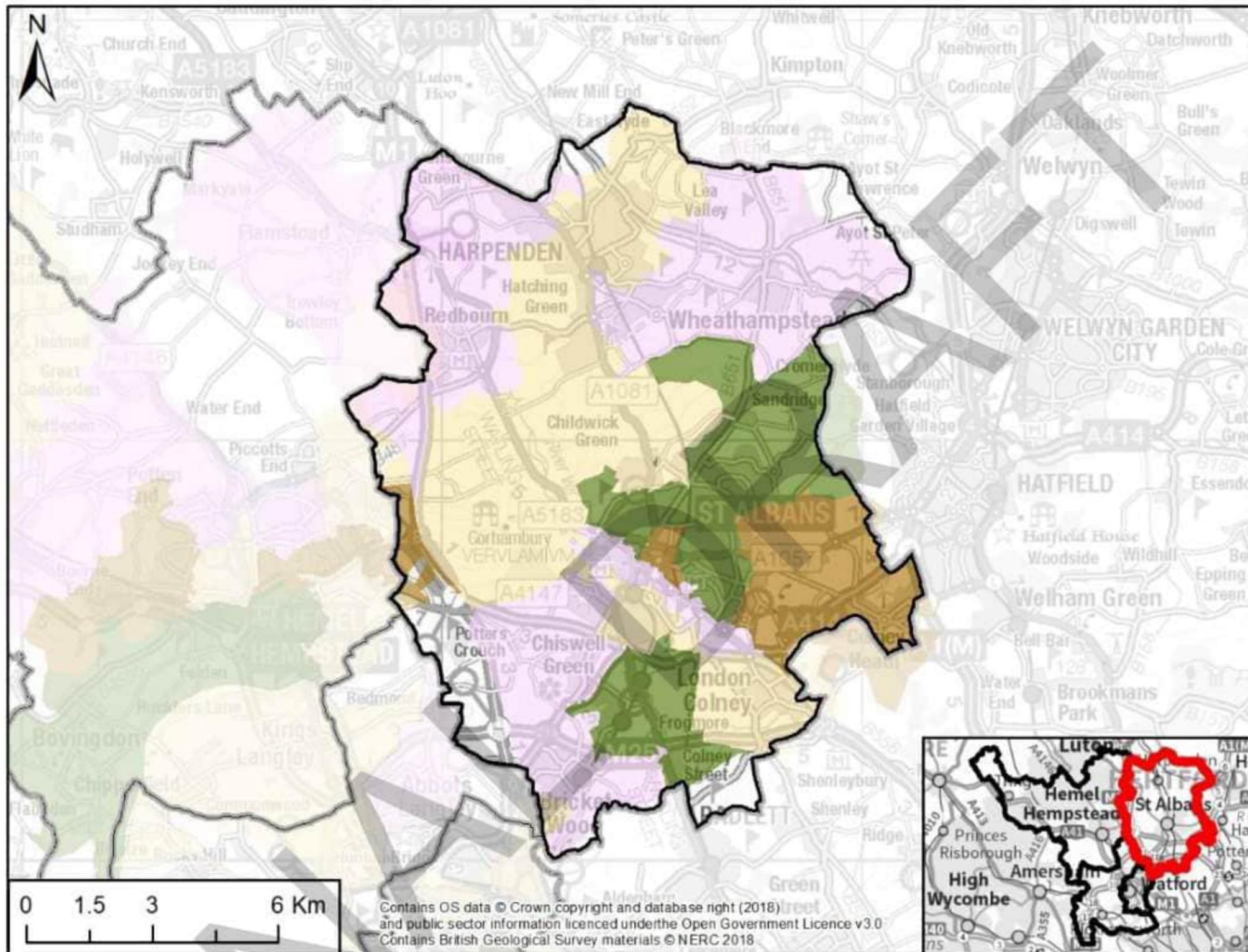
- | | | | |
|--|--|---|--|
| <p>Study Boundary</p> <ul style="list-style-type: none"> South West Hertfordshire | <p>Watercourses</p> <ul style="list-style-type: none"> Main River Ordinary Watercourses Grand Union Canal | <p>WFD Catchments</p> <ul style="list-style-type: none"> Bulbourne Chess Colne (Confluence with Chess to River Thames) Colne (from Confluence with Ver to Gade) Colne (upper east arm including Mimshall Brook) Gade (Upper stretch Great Gaddesden to confluence with Bulbourne / GUC) Gade (from confluence with Bulbourne to Chess) | <ul style="list-style-type: none"> Lee (from Luton Hoo Lakes to Hertford) Mimram (Codicote Bottom to Lee) Pinn Thames upstream of Aylesbury Tykeswater Upper Colne and Ellen Brook Ver Whistle Brook |
|--|--|---|--|

Reservoir Inundation Map

- Reservoir Flood Risk

Natural Flood Management Opportunities

- | | |
|--|---|
| <ul style="list-style-type: none"> Runoff Attenuation Features - 1 in 30-year (3.3%AEP) Runoff Attenuation Features - 1 in 100-year (1%AEP) Tree Planting (Riparian) | <ul style="list-style-type: none"> Tree Planting (Floodplain) Floodplain Reconnection Tree Planting (Wider Catchment) |
|--|---|



South West Hertfordshire Level 1 Strategic Flood Risk Assessment

Number of recorded sewer flooding events

- 1-5
- 6-10
- 11-15
- 16-22



Asset location search



Property Searches

JNP Group
Marlborough House
Holly Walk
LEAMINGTON SPA
CV32 4XP

Search address supplied Land Off Smug Oak Lane
Smug Oak Lane
St Albans
Hertfordshire

Your reference BR31083

Our reference ALS/ALS/24/2023_4863311

Search date 26 July 2023

Notification of Price Changes

From 1st April 2023 Thames water Property Searches will be increasing the prices of its CON29DW, CommercialDW Drainage & Water Enquiries and Asset Location Searches. Historically costs would rise in line with RPI but as this currently sits at 14.2%, we are capping it at 10%.

Customers will be emailed with the new prices by January 1st 2023.

Any orders received with a higher payment prior to the 1st April 2023 will be non-refundable. For further details on the price increase please visit our website at www.thameswater-propertysearches.co.uk



Thames Water Utilities Ltd
Property Searches, PO Box 3189, Slough SL1 4WW



searches@thameswater.co.uk
www.thameswater-propertysearches.co.uk



0800 009 4540

Search address supplied: Land Off Smug Oak Lane, Smug Oak Lane, St Albans, Hertfordshire,

Dear Sir / Madam

An Asset Location Search is recommended when undertaking a site development. It is essential to obtain information on the size and location of clean water and sewerage assets to safeguard against expensive damage and allow cost-effective service design.

The following records were searched in compiling this report: - the map of public sewers & the map of waterworks. Thames Water Utilities Ltd (TWUL) holds all of these.

This search provides maps showing the position, size of Thames Water assets close to the proposed development and also manhole cover and invert levels, where available.

Please note that none of the charges made for this report relate to the provision of Ordnance Survey mapping information. The replies contained in this letter are given following inspection of the public service records available to this company. No responsibility can be accepted for any error or omission in the replies.

You should be aware that the information contained on these plans is current only on the day that the plans are issued. The plans should only be used for the duration of the work that is being carried out at the present time. Under no circumstances should this data be copied or transmitted to parties other than those for whom the current work is being carried out.

Thames Water do update these service plans on a regular basis and failure to observe the above conditions could lead to damage arising to new or diverted services at a later date.

Contact Us

If you have any further queries regarding this enquiry please feel free to contact a member of the team on 0800 009 4540, or use the address below:

Thames Water Utilities Ltd
Property Searches
PO Box 3189
Slough
SL1 4WW

Email: searches@thameswater.co.uk

Web: www.thameswater-propertysearches.co.uk

Waste Water Services

Please provide a copy extract from the public sewer map.

Enclosed is a map showing the approximate lines of our sewers. Our plans do not show sewer connections from individual properties or any sewers not owned by Thames Water unless specifically annotated otherwise. Records such as "private" pipework are in some cases available from the Building Control Department of the relevant Local Authority.

Where the Local Authority does not hold such plans it might be advisable to consult the property deeds for the site or contact neighbouring landowners.

This report relates only to sewerage apparatus of Thames Water Utilities Ltd, it does not disclose details of cables and or communications equipment that may be running through or around such apparatus.

The sewer level information contained in this response represents all of the level data available in our existing records. Should you require any further Information, please refer to the relevant section within the 'Further Contacts' page found later in this document.

For your guidance:

- The Company is not generally responsible for rivers, watercourses, ponds, culverts or highway drains. If any of these are shown on the copy extract they are shown for information only.
- Any private sewers or lateral drains which are indicated on the extract of the public sewer map as being subject to an agreement under Section 104 of the Water Industry Act 1991 are not an 'as constructed' record. It is recommended these details be checked with the developer.

Clean Water Services

Please provide a copy extract from the public water main map.

With regard to the fresh water supply, this site falls within the boundary of another water company. For more information, please redirect your enquiry to the following address:

Affinity Water Ltd
Tamblin Way
Hatfield

Asset location search



Property Searches

AL10 9EZ
Tel: 0345 3572401

For your guidance:

- Assets other than vested water mains may be shown on the plan, for information only.
- If an extract of the public water main record is enclosed, this will show known public water mains in the vicinity of the property. It should be possible to estimate the likely length and route of any private water supply pipe connecting the property to the public water network.

Payment for this Search

A charge will be added to your suppliers account.

Further contacts:

Waste Water queries

Should you require verification of the invert levels of public sewers, by site measurement, you will need to approach the relevant Thames Water Area Network Office for permission to lift the appropriate covers. This permission will usually involve you completing a TWOSA form. For further information please contact our Customer Centre on Tel: 0845 920 0800. Alternatively, a survey can be arranged, for a fee, through our Customer Centre on the above number.

If you have any questions regarding sewer connections, budget estimates, diversions, building over issues or any other questions regarding operational issues please direct them to our service desk. Which can be contacted by writing to:

Developer Services (Waste Water)
Thames Water
Clearwater Court
Vastern Road
Reading
RG1 8DB

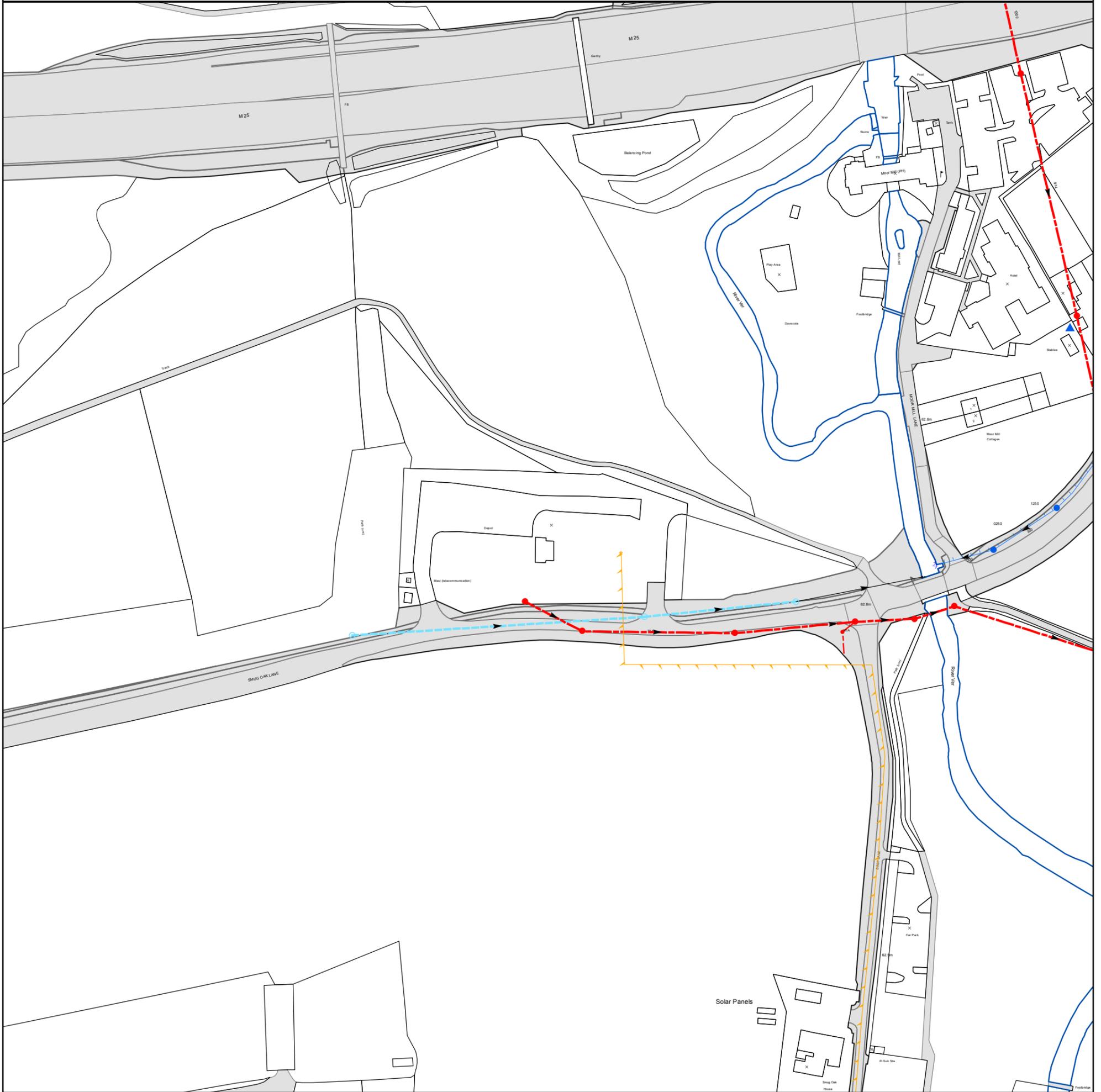
Tel: 0800 009 3921
Email: developer.services@thameswater.co.uk

Clean Water queries

Should you require any advice concerning clean water operational issues or clean water connections, please contact:

Developer Services (Clean Water)
Thames Water
Clearwater Court
Vastern Road
Reading
RG1 8DB

Tel: 0800 009 3921
Email: developer.services@thameswater.co.uk



0 10 20 40 60 80
Meters

The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual position of mains and services must be verified before any works are undertaken. Crown copyright Reserved

Scale: 1:1789
Width: 500m
Printed By: Krishna1
Print Date: 26/07/2023
Map Centre: 514879,202281
Grid Reference: TL1402SE

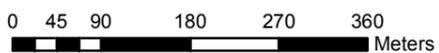
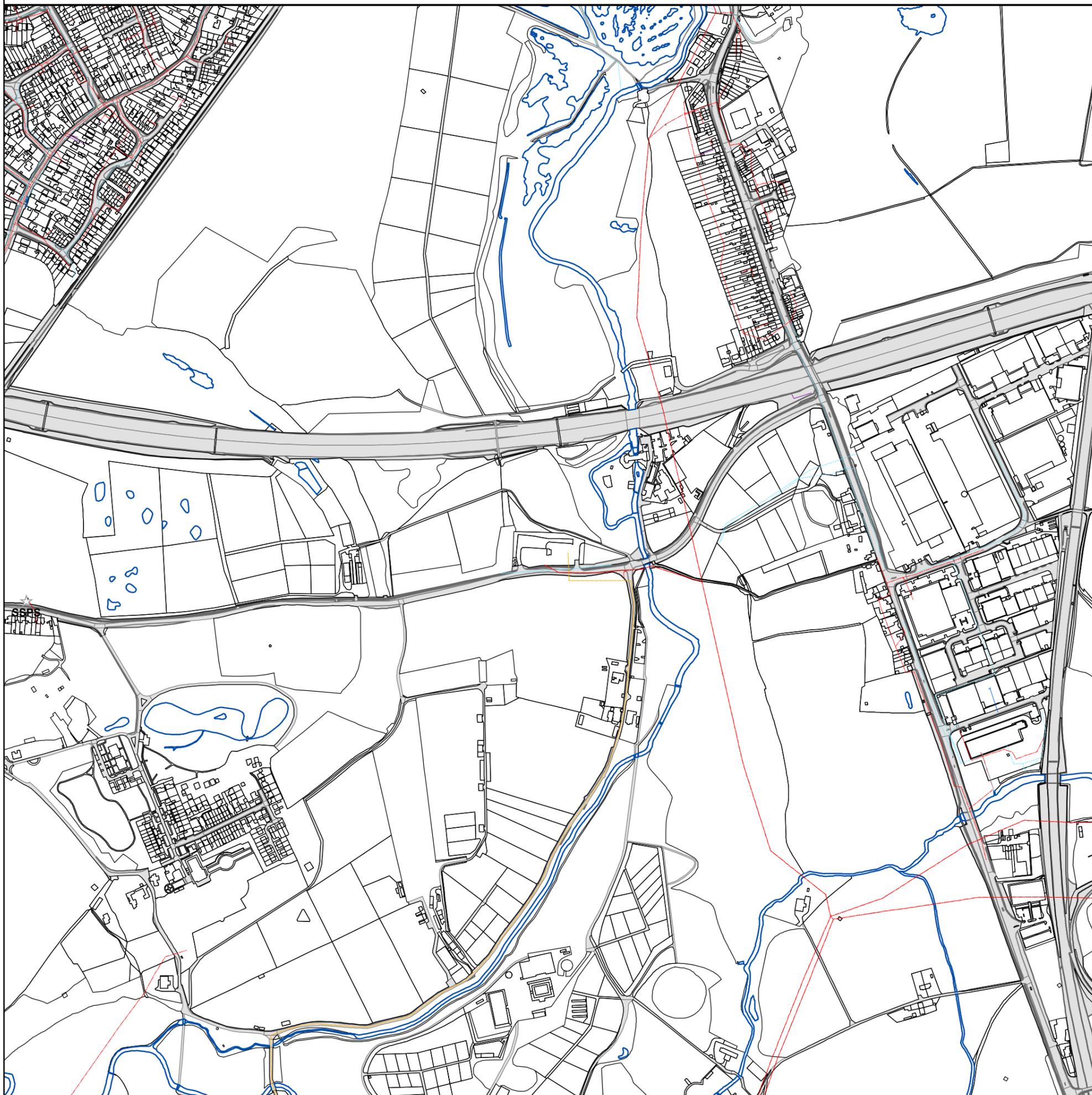
Comments:

ALS/ALS/24/2023_4863311

NB: Level quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates no Survey information is available.

REFERENCE	COVER LEVEL	INVERT LEVEL
05/1		
1250	63.11	62.36
05/2		
05/3		
05/5		
K7		61.11
05/4		

REFERENCE	COVER LEVEL	INVERT LEVEL
0250	63.22	62.3
KS02		
05/6		
K06	63.17	60.79
KS03		
KS01		
021A		



The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual position of mains and services must be verified before any works are undertaken. Crown copyright Reserved

Scale: 1:7161
Width: 2000m
Printed By: Krishna1
Print Date: 26/07/2023
Map Centre: 514879,202281
Grid Reference: TL1402SE

Comments:



Asset Location Search - Sewer Key

Public Sewer Types (Operated and maintained by Thames Water)

-  **Foul Sewer:** A sewer designed to convey waste water from domestic and industrial sources to a treatment works.
-  **Surface Water Sewer:** A sewer designed to convey surface water (e.g. rain water from roofs, yards and car parks) to rivers or watercourses.
-  **Combined Sewer:** A sewer designed to convey both waste water and surface water from domestic and industrial sources to a treatment works.
-  Storm Sewer
-  Sludge Sewer
-  Foul Trunk Sewer
-  Surface Trunk Sewer
-  Combined Trunk Sewer
-  Foul Rising Main
-  Surface Water Rising Main
-  Combined Rising Main
-  Vacuum
-  Thames Water Proposed
-  Vent Pipe
-  Gallery

Other Sewer Types (Not operated and maintained by Thames Water)

-  Sewer
-  Culverted Watercourse
-  Proposed
-  Decommissioned Sewer
-  Content of this drainage network is currently unknown
-  Ownership of this drainage network is currently unknown

Notes:

- 1) All levels associated with the plans are to Ordnance Datum Newlyn.
- 2) All measurements on the plan are metric.
- 3) Arrows (on gravity fed sewers) or flecks (on rising mains) indicate the direction of flow.
- 4) Most private pipes are not shown on our plans, as in the past, this information has not been recorded.

Sewer Fittings

A feature in a sewer that does not affect the flow in the pipe. Example: a vent is a fitting as the function of a vent is to release excess gas.

-  Air Valve
-  Meter
-  Dam Chase
-  Vent
-  Fitting

Operational Controls

A feature in a sewer that changes or diverts the flow in the sewer. Example: A hydrobrake limits the flow passing downstream.

-  Ancillary
-  Drop Pipe
-  Control Valve
-  Weir

End Items

End symbols appear at the start or end of a sewer pipe. Examples: an Undefined End at the start of a sewer indicates that Thames Water has no knowledge of the position of the sewer upstream of that symbol. Outfall on a surface water sewer indicates that the pipe discharges into a stream or river.

-  Inlet
-  Outfall
-  Undefined End

Other Symbols

Symbols used on maps which do not fall under other general categories.

-  Change of Characteristic Indicator
-  Public / Private Pumping Station
-  Invert Level
-  Summit

Areas

Lines denoting areas of underground surveys, etc.

-  Agreement
-  Chamber
-  Operational Site

Ducts or Crossings

-  Casement
 -  Conduit Bridge
 -  Subway
 -  Tunnel
- Ducts may contain high voltage cables. Please check with Thames Water.

5) 'na' or '0' on a manhole indicates that data is unavailable.

6) The text appearing alongside a sewer line indicates the internal diameter of the pipe in millimeters. Text next to a manhole indicates the manhole reference number and should not be taken as a measurement. If you are unsure about any text or symbology, please contact Property Searches on 0800 009 4540.

Payment Terms and Conditions

All sales are made in accordance with Thames Water Utilities Limited (TWUL) standard terms and conditions unless previously agreed in writing.

1. All goods remain in the property of Thames Water Utilities Ltd until full payment is received.
2. Provision of service will be in accordance with all legal requirements and published TWUL policies.
3. All invoices are strictly due for payment within 14 days of the date of the invoice. Any other terms must be accepted/agreed in writing prior to provision of goods or service or will be held to be invalid.
4. Penalty interest may be invoked by TWUL in the event of unjustifiable payment delay. Interest charges will be in line with UK Statute Law 'The Late Payment of Commercial Debts (Interest) Act 1998'.
5. Interest will be charged in line with current Court Interest Charges, if legal action is taken.
6. A charge may be made at the discretion of the company for increased administration costs.

A copy of Thames Water's standard terms and conditions are available from the Commercial Billing Team (cashoperations@thameswater.co.uk).

We publish several Codes of Practice including a guaranteed standards scheme. You can obtain copies of these leaflets by calling us on 0800 316 9800.

If you are unhappy with our service, you can speak to your original goods or customer service provider. If you are still not satisfied with the outcome provided, we will refer the matter to a Senior Manager for resolution who will provide you with a response.

If you are still dissatisfied with our final response, and in certain circumstances such as you are buying a residential property or commercial property within certain parameters, The Property Ombudsman will investigate your case and give an independent view. The Ombudsman can award compensation of up to £25,000 to you if he finds that you have suffered actual financial loss and/or aggravation, distress, or inconvenience because of your search not keeping to the Code. Further information can be obtained by visiting www.tpos.co.uk or by sending an email to admin@tpos.co.uk.

If the Goods or Services covered by this invoice falls under the regulation of the 1991 Water Industry Act, and you remain dissatisfied you can refer your complaint to Consumer Council for Water on 0300 034 2222 or write to them at Consumer Council for Water, 1st Floor, Victoria Square House, Victoria Square, Birmingham, B2 4AJ.

Ways to pay your bill

Credit Card	BACS Payment	Telephone Banking
Please Call 0800 009 4540 quoting your invoice number starting CBA or ADS	Account number 90478703 Sort code 60-00-01 A remittance advice must be sent to: Thames Water Utilities Ltd., PO Box 3189, Slough SL1 4WW. or email ps.billing@thameswater.co.uk	By calling your bank and quoting: Account number 90478703 Sort code 60-00-01 and your invoice number

Thames Water Utilities Ltd Registered in England & Wales No. 2366661 Registered Office Clearwater Court, Vastern Rd, Reading, Berks, RG1 8DB.

APPENDIX D: DRAINAGE STRATEGY

JNP Group		Page 1
3rd Floor, Marlborough House 48 Holly Walk Leamington Spa CV32 4XP	Land Off Smug Oak Lane Sustainable Drainage Strategy Greenfield Runoff Rates	
Date 15/08/2023 17:13 File BR31083-JNP-XX-XX-CA-C-9001 G...	Designed by JNP Group Checked by RM	
Micro Drainage	Source Control 2020.1.3	

ICP SUDS Mean Annual Flood

Input

Return Period (years) 2 SAAR (mm) 661 Urban 0.000
Area (ha) 1.000 Soil 0.300 Region Number Region 6

Results 1/s

QBAR Rural 1.7

QBAR Urban 1.7

Q2 years 1.5

Q1 year 1.4

Q30 years 3.9

Q100 years 5.4

Pre- planning enquiry

Application form

Please complete this form and return it to us at
developer.services@thameswater.co.uk or
Thames Water, Developer Services, Clearwater Court,
Vastern Road, Reading, RG1 8DB.



Application for a pre-planning enquiry

Please complete ALL relevant sections of this form in BLOCK CAPITALS

Use this form to find out if there's existing capacity in our network for your proposed development. Please ensure you complete the form in full and we'll respond within 21 calendar days from receipt of your completed application form. We'll let you know if sufficient capacity already exists in the network or if further modelling will be needed to determine if network adjustments or reinforcement will be required.

Is your application for: Water and sewerage Water Sewerage (Please tick one.)

Section A - About you

(i) Details of applicant

Company name	JNP Group		
	Developer <input type="checkbox"/>	Consultant <input type="checkbox"/>	Land promoter <input type="checkbox"/> SLP <input type="checkbox"/> NAV <input type="checkbox"/> Other <input type="text"/>
Title	Mr <input type="checkbox"/>	Mrs <input type="checkbox"/> Ms <input type="checkbox"/> Miss <input type="checkbox"/> Dr <input type="checkbox"/>	Other <input type="text"/>
First name(s)	Rodrigo		
Last name	Magno		
Preferred phone no.	01926889955		
Alternative phone no.	07516729255		
Email address	rodrigo.magno@jnpgroup.co.uk		
Full postal address	Address line 1	Portobello House	
	Address line 2	Portobello Way	
	Town	Warwick	
	County	Warwickshire	Postcode

(ii) Who should we contact to discuss the application?

Applicant Nominated contact (Please tick one.)

If nominated contact:

Company name	<input type="text"/>			
	Developer <input type="checkbox"/>	Consultant <input type="checkbox"/>	Land promoter <input type="checkbox"/> SLP <input type="checkbox"/> NAV <input type="checkbox"/>	Other <input type="text"/>
Title	Mr <input type="checkbox"/>	Mrs <input type="checkbox"/> Ms <input type="checkbox"/> Miss <input type="checkbox"/> Dr <input type="checkbox"/>	Other <input type="text"/>	
First name(s)	<input type="text"/>			

Last name

Preferred phone no.

Alternative phone no.

Email address

Full postal address

Address line 1

Address line 2

Town

County Postcode

Section B - About the site

(i) Your site address

Same as applicant Same as nominated contact At another location (Please tick one.)

If another location:

Site name

Full postal address

Address line 1

Address line 2

Town

County Postcode

Does the developer own the site? Yes No Don't know

What is the local authority?

Ordnance Survey grid ref

Type of site Greenfield Brownfield Mixed

How big is the site? hectares

(ii) Your planning status (If you've already started the planning process).

Is the development identified in the local plan? Yes No Don't know If Yes, reference number

Does it have outline planning permission? Yes No Don't know If Yes, reference number

Does it have full planning permission? Yes No Don't know If Yes, reference number

Does the development have building regulations permission? Yes No Don't know

(iii) Your development

To enable us to determine whether the capacity is sufficient or whether further modelling and reinforcement of our network will be required please provide details of the properties currently existing on the site (where applicable) and how you will phase your development. The information you provide at this stage will help improve the accuracy of our assessment. If you have more than 6 phases for your development please add details on a separate sheet.

Property type	Existing site to be demolished	Proposed site						Total
		Phase 1	Phase 2	Phase 3	Phase 4	Phase 5	Phase 6	
Start on site date		TBC						
Date of Occupation		TBC						
General housing (total units)		9						
Flat (total units)								
Primary school (max. pupil capacity)								
Secondary school (max. pupil capacity)								
Boarding school (max. pupil capacity)								
Assembly hall (max. capacity)								
Cinema (max. capacity)								
Theatre (max. capacity)								
Sports hall (max. capacity)								
Hotel (total bedrooms)								
Guest house (total bedrooms)								
Motel (total bedrooms)								
Holiday apartment (total capacity)								
Leisure park (max. capacity)								
Caravan park standard (total spaces)								
Caravan site standard (total spaces)								
Camping site standard (total spaces)								
Camping site serviced (total spaces)								
Student accommodation (max. capacity)								
Public house (max. capacity)								
Restaurant / Day care centre (max. capacity)								
Drive in restaurant (max. capacity)								
Hospital (total beds)								
Nursing / Care home (total beds)								
Offices (gross internal area in m ²)								
Shopping centre (gross internal area in m ²)								
Warehouse (gross internal area in m ²)								
Commercial premises (gross internal area in m ²)								
Manufacturing unit (gross internal area in m ²)								
Other (please state units and description)								

Section C - About the water supply

(Not required if only applying for sewerage connection).

(i) Phasing water supply for your development

If you already have a plan for the phasing of your development please give details below.

Property type	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5	Phase 6
Date water connection required						
Estimated peak clean water flow rate (litre/sec)						
Break tank capacity, if any (m ³)						

If you're using a break tank please advise what measures you plan to take to avoid high peak flow over a short period of time.

Section D - About your sewerage connections

(Not required if only applying for water connection).

(i) Your existing sewerage connections (brownfield site only).

Please give us details of your existing connections.

	Foul water	Surface water
Does the site have the following sewerage connections?	<input type="checkbox"/>	<input type="checkbox"/>
What is the type of discharge method?	<input type="checkbox"/> Gravity	<input type="checkbox"/> Gravity
	<input type="checkbox"/> Pumped	<input type="checkbox"/> Pumped
If sewage is pumped, what is the pump rate?	<input type="text"/> litres/sec	<input type="text"/> litres/sec
What is the existing impermeable area per connection?		<input type="text"/> m ²
What are the existing connection points? (For example, 'X' properties to TW manhole ref 'Y')		

(ii) Your proposed sewerage connections

Please give us details of your proposed connections.

	Foul water	Surface water
Does the site have the following sewerage connections?	<input type="checkbox"/>	<input type="checkbox"/>
What is the type of discharge method?	<input type="checkbox"/> Gravity	<input type="checkbox"/> Gravity
	<input type="checkbox"/> Pumped	<input type="checkbox"/> Pumped
If sewage is pumped, what is the pump rate?	<input type="text"/> litres/sec	<input type="text"/> litres/sec
What is your proposed approach to surface water drainage?	/	<input type="checkbox"/> Sustainable drainage system (SuDS)
		<input type="checkbox"/> Traditional piped system
Do you propose using separate highway surface water drainage systems?	/	<input type="checkbox"/> Yes No
If the surface water rate is attenuated, to what rate is it attenuated?	/	2 litres/sec
What is the proposed impermeable area per connection?	/	< 7250 m ²
What are the proposed connection points? (For example, 'X' properties to TW manhole ref 'Y')	Existing public foul water sewer along Smug Oak Lane (manhole references not provided in Asset Location Search)	Existing public surface water sewer along Smug Oak Lane (manhole references not provided in Asset Location Search)

Please note: The developer is expected to follow the local authority's drainage strategy and be able to demonstrate how the proposed (attenuated) discharge rate of any surface water flows have been calculated. For developments in Greater London, please refer to the London Plan Drainage Hierarchy (Policy 5.13). We will challenge the rates provided if they are not in line with those based on the local drainage strategies.

Section E - What next?

(i) What we need to process your application:

- Completed application** (ensure all relevant sections of this form are completed in full)
- Site location plan** (showing the site with nearby buildings, road and any sewers)
- Scaled site layout** (showing existing and proposed layouts including Point of Connection to our water network)
- Site drainage strategy plan** (if available at this stage showing all proposed sewers, pipe sizes and gradients)
- CCTV and topographical surveys** (if available for existing brownfield sites)

Please make sure any attachments are in PDF format and don't exceed a total of 20MB in size per email. All drawings must be of suitable detail and have a drawing reference number on them.

Please note: without this information we may need to make assumptions about your requirements when calculating your budget estimate (if requested).

(ii) How we'll use this information

We'll use the information you give on this application form, and potentially share it with our delivery partners, to provide the service you've requested.

This could include contacting you to discuss your application and/or provide more details, visiting the site where work needs to be carried out and invoicing you when appropriate. Your feedback is important to us, so we may also use the information to ask for your feedback on how we can improve our performance.

We won't use this information for marketing purposes without contacting you to seek your consent.

You can find Thames Water's privacy policy at thameswater.co.uk/Legal/Privacy.

(iii) Declaration

Print name	Rodrigo Magno
Job title	Associate
Company	JNP Group
Date	01/08/2023
Signature	

(iv) Submitting your application

Please send your completed form to receive your capacity check in 21 calendar days:

Via email:

developer.services@thameswater.co.uk

Or send to:

Thames Water Developer Services, Clearwater Court, Vastern Road, Reading RG1 8DB

Getting in touch

For enquiries regarding this application or any other questions relating to your building or development work please contact us:



thameswater.co.uk/developerservices



developer.services@thameswater.co.uk



0800 009 3921

Monday – Friday, 8am – 5pm



**Thames Water,
Developer Services,
Clearwater Court,
Vastern Road,
Reading,
Berkshire RG1 8DB**





Mr Rodrigo Magno

JNP Group
Portobello House,
Portobello Way,
Warwick,
Warwickshire,
CV34 5GJ



05 September 2023

Pre-planning enquiry: Confirmation of sufficient capacity

Site: Land Off Smug Oak Lane, Bricket Wood, St. Albans, Hertfordshire - AL2 3PN

Dear Mr Magno,

Thank you for providing information on your proposed development.

Proposed site: Housing (09 units).

Proposed foul water discharge by gravity into Thames Water Trunk sewer within Smug Oak Lane.

Proposed surface water discharge at 2.0 l/s for all storm events up to and including 1:100yr+40%CC into existing Thames Water gravity sewer network within Smug Oak Lane.

We have completed the assessment of the foul water flows and surface water flows based on the information submitted in your application with the purpose of assessing sewerage capacity within the existing Thames Water sewer network.

Foul Water

If your proposals progress in line with the details you've provided, we're pleased to confirm that there will be sufficient sewerage capacity in our network to serve foul flows from your development.

This confirmation is valid for 12 months or for the life of any planning approval that this information is used to support, to a maximum of three years.

You'll need to keep us informed of any changes to your design – for example, an increase in the number or density of homes. Such changes could mean there is no longer sufficient capacity.

Surface Water

In accordance with the Building Act 2000 Clause H3.3, positive connection of surface water to a public sewer will only be consented when it can be demonstrated that the hierarchy of disposal methods have been examined and proven to be impracticable. Before we can consider your surface water needs, you'll need written approval from the lead local flood authority that you have followed the sequential approach to the disposal of surface water and considered all practical means.

The disposal hierarchy being:



1. rainwater use as a resource (for example rainwater harvesting, blue roofs for irrigation)
2. rainwater infiltration to ground at or close to source
3. rainwater attenuation in green infrastructure features for gradual release (for example green roofs, rain gardens)
4. rainwater discharge direct to a watercourse (unless not appropriate)
5. controlled rainwater discharge to a surface water sewer or drain
6. controlled rainwater discharge to a combined sewer

Where connection to the public sewerage network is still required to manage surface water flows, we will accept these flows at a discharge rate in line with CIRIA's best practice guide on SuDS or that stated within the sites planning approval.

If the above surface water hierarchy has been followed and if the flows are restricted as described in the drainage strategy, then Thames Water would not have any objections to the proposal.

Please see the attached 'Planning your wastewater' leaflet for additional information.

What happens next?

Please make sure you submit your connection application, giving us at least 21 days' notice of the date you wish to make your new connection/s.

If you have any further questions, please contact me on 07747647155.

Yours sincerely,

Zaid Kazi

Developer Services – Adoptions Engineer

Pre-planning & Sewer Adoptions Team

Mob: 07747647155

developer.services@thameswater.co.uk

Clearwater Court, Vastern Road, Reading, RG1 8DB

Find us online at developers.thameswater.co.uk



Design Notes

- The proposed drainage strategy is based on the following information:
 - Topographical survey undertaken by EDI Surveys Ltd. (February 2023) (ref. 21017/T/01-01 A).
 - Thames Water's Asset Location Search and Pre-Application Enquiry (July & August 2023) (ref. ALS/ALS24/2023_4863311).
 - Proposed Site Layout by More Space Architecture (June 2024) (ref. 24-043/103/02).
- The site's location within drinking water safeguard zones (surface water and groundwater) and within a groundwater source protection zone (Zone I), combined with the site's previous uses as a quarry pit, landfill, and tanker depot (sewage sludge) and the presumed high risk of pollutant mobilisation are expected to preclude the use of infiltration drainage at the development site.
- The proposed surface water drainage strategy has been preliminarily designed to collect, convey and attenuate runoff from all areas to be made impermeable (0.268 ha) before discharge towards the river Ver via the existing public surface water sewer along Smug Oak Lane. This includes a 10% increase on impermeable areas (urban creep).
- The proposed drainage strategy has been designed so that flooding does not occur on any part of the site for all events up to 1.0% AEP (1 in 100 year) + 40% climate change allowance.
- Overland flows resulting from exceedance events are expected to leave the developed site via natural overland flow routes as currently occurs (i.e., pre-development conditions), without posing any increased flood risk on site or elsewhere.

- Where this drawing has been issued in electronic .dwg format, it has been done so in good faith. JNP Group do not take any responsibility for any inaccuracies in the electronic data, which should be checked against the paper (or .pdf) drawing issue. Any apparent discrepancies should be immediately reported to JNP Group. The electronic .dwg file should not be assumed to be to scale and should not be used for 'overlaying', setting out or checking of any third party information. All dimensions should be taken from the paper (or .pdf) version of the drawing. Electronic drawings may contain third party information. JNP Group take no responsibility for this information, which should be checked against the originators paper drawing(s).
- All dimensions are millimetres (mm), and levels are in metres (m) unless noted otherwise and should be checked on site prior to construction/fabrication.
- Do not scale from this drawing. Only figured dimensions are to be relied upon. Don't hesitate to get in touch with JNP Group if additional information is required.
- Any discrepancies between drawings of different scales and between drawings and specifications, where appropriate, to be reported to JNP Group for decision.
- Copyright reserved. This drawing may only be used for The Client and location specified in the title block. It may not be copied or disclosed to any third party without the prior written consent of JNP Group.
- This drawing should only be used for construction if the drawing status is "A4 - Approved/Stage Complete". JNP Group takes no responsibility for construction works undertaken to drawings that are not marked with this status.



KEY

- Development Site Boundary
- Proposed Development
 - Permeable Surface
 - Impermeable Surface (Roofs)
 - Impermeable Surface (Access)
- Drainage Strategy
 - Foul Water Sewer (Existing)
 - Foul Water Sewer (Proposed)
 - Surface Water Sewer (Existing)
 - Surface Water Sewer (Proposed)
 - Rain Garden (with geocellular tanks)
 - Pervious Pavement
 - Overland Flow Route

Rev	Date	Description	Drn/CHK/1/APP/1
P03	04/02/2025	Revised layout.	RM / RM / RM
P02	05/09/2023	Client's comments addressed.	RM / RM / RM
P01	17/08/2023	First issue.	RM / RM / RM

Substability: **S2 - Suitable for Information**

JNP GROUP
CONSULTING ENGINEERS

Amersham • Brighouse • Bristol • Glasgow
Hartlepool • Sheffield • Warwick

www.jnpgroup.co.uk

Client: **Smug Oak Lane Limited**

Job: **Land Off Smug Oak Lane, St. Albans**

Title: **Sustainable Drainage Strategy**

Classification:	FI_60_20	
Scale @ A1:	1:200	

Project: Originator - Volume/System - Level/Location - Type Discipline - Number
BR31083- JNP-XX-XX-DR-C-2001 P03

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Normal	Additional Storage (m ³ /ha)	0.0
Summer CV	1.000	Skip Steady State	x	Check Discharge Rate(s)	x
Winter CV	1.000	Drain Down Time (mins)	240	Check Discharge Volume	x

Storm Durations

15	60	180	360	600	960	2160	4320	7200	10080
30	120	240	480	720	1440	2880	5760	8640	

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

Node Pervious Pavement Online Hydro-Brake® Control

Flap Valve	x	Objective (HE)	Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	68.700	Product Number	CTL-SHE-0032-4000-0600-4000
Design Depth (m)	0.600	Min Outlet Diameter (m)	0.075
Design Flow (l/s)	0.4	Min Node Diameter (mm)	1200

Node Rain Garden (A) Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	68.730	Slope (1:X)	9999.9
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)		Depth (m)	0.500
Safety Factor	2.0	Width (m)	4.400	Inf Depth (m)	
Porosity	0.95	Length (m)	3.900		

Node Rain Garden (B) Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	68.730	Slope (1:X)	9999.9
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)		Depth (m)	0.500
Safety Factor	2.0	Width (m)	8.500	Inf Depth (m)	
Porosity	0.95	Length (m)	7.800		

Node Rain Garden (C) Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	68.730	Slope (1:X)	9999.9
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)		Depth (m)	0.500
Safety Factor	2.0	Width (m)	4.600	Inf Depth (m)	
Porosity	0.95	Length (m)	6.200		

Node Rain Garden (D) Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	68.730	Slope (1:X)	9999.9
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)		Depth (m)	0.500
Safety Factor	2.0	Width (m)	4.700	Inf Depth (m)	
Porosity	0.95	Length (m)	4.400		

Node Rain Garden (E) Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	68.730	Slope (1:X)	9999.9
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)		Depth (m)	0.500
Safety Factor	2.0	Width (m)	10.200	Inf Depth (m)	
Porosity	0.95	Length (m)	3.000		

Node Rain Garden (F) Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	68.730	Slope (1:X)	9999.9
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)		Depth (m)	0.500
Safety Factor	2.0	Width (m)	10.000	Inf Depth (m)	
Porosity	0.95	Length (m)	2.900		

Node Rain Garden (G) Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	68.730	Slope (1:X)	9999.9
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)		Depth (m)	0.500
Safety Factor	2.0	Width (m)	7.800	Inf Depth (m)	
Porosity	0.95	Length (m)	10.700		

Node Pervious Pavement Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	68.700	Slope (1:X)	9999.9
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)		Depth (m)	0.600
Safety Factor	2.0	Width (m)	4.800	Inf Depth (m)	
Porosity	0.30	Length (m)	231.800		

Results for 2 year Critical Storm Duration. Lowest mass balance: 99.96%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
960 minute winter	Rain Garden (A)	945	68.853	0.123	0.0	0.3975	0.0000	SURCHARGED
960 minute winter	Rain Garden (B)	945	68.853	0.123	0.4	7.8662	0.0000	SURCHARGED
960 minute winter	Rain Garden (C)	945	68.853	0.123	0.2	3.4632	0.0000	SURCHARGED
960 minute winter	Rain Garden (D)	945	68.853	0.123	0.0	0.4482	0.0000	SURCHARGED
960 minute winter	Rain Garden (E)	945	68.853	0.123	0.0	0.5912	0.0000	SURCHARGED
960 minute winter	Rain Garden (F)	945	68.853	0.123	0.0	0.5681	0.0000	SURCHARGED
960 minute winter	Rain Garden (G)	945	68.853	0.123	0.5	9.3081	0.0000	SURCHARGED
960 minute winter	Pervious Pavement	945	68.853	0.153	3.7	47.1357	0.0000	OK
15 minute summer	Outfall	1	68.075	0.000	0.3	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
960 minute winter	Rain Garden (A)	Rain Garden (A)	Pervious Pavement	0.0	-0.003	-0.002	0.0078	
960 minute winter	Rain Garden (B)	Rain Garden (B)	Pervious Pavement	-0.4	-0.126	-0.060	0.0172	
960 minute winter	Rain Garden (C)	Rain Garden (C)	Pervious Pavement	-0.2	-0.058	-0.025	0.0162	
960 minute winter	Rain Garden (D)	Rain Garden (D)	Pervious Pavement	0.0	-0.004	-0.004	0.0172	
960 minute winter	Rain Garden (E)	Rain Garden (E)	Pervious Pavement	0.0	-0.005	-0.005	0.0172	
960 minute winter	Rain Garden (F)	Rain Garden (F)	Pervious Pavement	0.0	-0.005	-0.005	0.0172	
960 minute winter	Rain Garden (G)	Rain Garden (G)	Pervious Pavement	-0.5	-0.145	-0.071	0.0172	
960 minute winter	Pervious Pavement	Hydro-Brake®	Outfall	0.3				20.1

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.96%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
1440 minute summer	Rain Garden (A)	1470	69.009	0.279	0.1	1.6056	0.0000	SURCHARGED
1440 minute summer	Rain Garden (B)	1470	69.009	0.279	0.9	17.8631	0.0000	SURCHARGED
1440 minute summer	Rain Garden (C)	1470	69.009	0.279	0.4	7.8643	0.0000	SURCHARGED
1440 minute summer	Rain Garden (D)	1470	69.009	0.279	0.1	1.8658	0.0000	SURCHARGED
1440 minute summer	Rain Garden (E)	1470	69.009	0.279	0.1	2.6003	0.0000	SURCHARGED
1440 minute summer	Rain Garden (F)	1470	69.009	0.279	0.1	2.4812	0.0000	SURCHARGED
1440 minute summer	Rain Garden (G)	1470	69.009	0.279	1.1	21.3629	0.0000	SURCHARGED
1440 minute summer	Pervious Pavement	1470	69.009	0.309	7.7	99.0967	0.0000	SURCHARGED
15 minute summer	Outfall	1	68.075	0.000	0.3	0.0000	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)
1440 minute summer	Rain Garden (A)	Rain Garden (A)	Pervious Pavement	-0.1	-0.011	-0.008	0.0078	
1440 minute summer	Rain Garden (B)	Rain Garden (B)	Pervious Pavement	-0.9	-0.113	-0.125	0.0172	
1440 minute summer	Rain Garden (C)	Rain Garden (C)	Pervious Pavement	-0.4	-0.050	-0.054	0.0162	
1440 minute summer	Rain Garden (D)	Rain Garden (D)	Pervious Pavement	-0.1	-0.013	-0.014	0.0172	
1440 minute summer	Rain Garden (E)	Rain Garden (E)	Pervious Pavement	-0.1	-0.018	-0.020	0.0172	
1440 minute summer	Rain Garden (F)	Rain Garden (F)	Pervious Pavement	-0.1	-0.017	-0.019	0.0172	
1440 minute summer	Rain Garden (G)	Rain Garden (G)	Pervious Pavement	-1.1	-0.135	-0.149	0.0172	
1440 minute summer	Pervious Pavement	Hydro-Brake®	Outfall	0.3				27.6

Results for 100 year Critical Storm Duration. Lowest mass balance: 99.96%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
1440 minute winter	Rain Garden (A)	1440	69.091	0.361	0.1	2.5578	0.0000	SURCHARGED
1440 minute winter	Rain Garden (B)	1440	69.091	0.361	0.7	23.1242	0.0000	SURCHARGED
1440 minute winter	Rain Garden (C)	1440	69.091	0.361	0.3	10.1800	0.0000	SURCHARGED
1440 minute winter	Rain Garden (D)	1440	69.091	0.361	0.1	2.9940	0.0000	SURCHARGED
1440 minute winter	Rain Garden (E)	1440	69.091	0.361	0.1	4.2232	0.0000	SURCHARGED
1440 minute winter	Rain Garden (F)	1440	69.091	0.361	0.1	4.0249	0.0000	SURCHARGED
1440 minute winter	Rain Garden (G)	1440	69.091	0.361	0.9	27.8085	0.0000	SURCHARGED
1440 minute winter	Pervious Pavement	1440	69.091	0.391	6.6	126.4879	0.0000	SURCHARGED
15 minute summer	Outfall	1	68.075	0.000	0.3	0.0000	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)
1440 minute winter	Rain Garden (A)	Rain Garden (A)	Pervious Pavement	-0.1	-0.011	-0.008	0.0078	
1440 minute winter	Rain Garden (B)	Rain Garden (B)	Pervious Pavement	-0.7	-0.107	-0.105	0.0172	
1440 minute winter	Rain Garden (C)	Rain Garden (C)	Pervious Pavement	-0.3	-0.068	-0.045	0.0162	
1440 minute winter	Rain Garden (D)	Rain Garden (D)	Pervious Pavement	-0.1	-0.013	-0.015	0.0172	
1440 minute winter	Rain Garden (E)	Rain Garden (E)	Pervious Pavement	-0.1	-0.019	-0.021	0.0172	
1440 minute winter	Rain Garden (F)	Rain Garden (F)	Pervious Pavement	-0.1	-0.018	-0.020	0.0172	
1440 minute winter	Rain Garden (G)	Rain Garden (G)	Pervious Pavement	-0.9	-0.115	-0.126	0.0172	
1440 minute winter	Pervious Pavement	Hydro-Brake®	Outfall	0.3				29.4

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.96%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
2880 minute winter	Rain Garden (A)	2820	69.258	0.528	0.1	4.7054	0.0000	SURCHARGED
2880 minute winter	Rain Garden (B)	2820	69.257	0.527	0.5	32.0891	0.0000	SURCHARGED
2880 minute winter	Rain Garden (C)	2820	69.258	0.528	0.2	14.1438	0.0000	SURCHARGED
2880 minute winter	Rain Garden (D)	2820	69.257	0.527	0.1	5.5428	0.0000	SURCHARGED
2880 minute winter	Rain Garden (E)	2820	69.257	0.527	0.2	7.9036	0.0000	SURCHARGED
2880 minute winter	Rain Garden (F)	2820	69.257	0.527	0.1	7.5228	0.0000	SURCHARGED
2880 minute winter	Rain Garden (G)	2820	69.257	0.527	0.7	38.9448	0.0000	SURCHARGED
2880 minute winter	Pervious Pavement	2820	69.258	0.558	5.0	182.1327	0.0000	FLOOD RISK
15 minute summer	Outfall	1	68.075	0.000	0.3	0.0000	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)
2880 minute winter	Rain Garden (A)	Rain Garden (A)	Pervious Pavement	-0.1	-0.012	-0.009	0.0078	
2880 minute winter	Rain Garden (B)	Rain Garden (B)	Pervious Pavement	-0.5	-0.084	-0.077	0.0172	
2880 minute winter	Rain Garden (C)	Rain Garden (C)	Pervious Pavement	-0.2	-0.048	-0.033	0.0162	
2880 minute winter	Rain Garden (D)	Rain Garden (D)	Pervious Pavement	-0.1	-0.014	-0.015	0.0172	
2880 minute winter	Rain Garden (E)	Rain Garden (E)	Pervious Pavement	-0.2	-0.020	-0.022	0.0172	
2880 minute winter	Rain Garden (F)	Rain Garden (F)	Pervious Pavement	-0.1	-0.019	-0.021	0.0172	
2880 minute winter	Rain Garden (G)	Rain Garden (G)	Pervious Pavement	-0.7	-0.092	-0.093	0.0172	
2880 minute winter	Pervious Pavement	Hydro-Brake®	Outfall	0.4				59.6



JNP GROUP

CONSULTING ENGINEERS

Brighouse

Woodvale House
Woodvale Road
Brighouse
West Yorkshire
HD6 4AB

telephone

01484 400691

email

brighouse@jnpgroup.co.uk

Chesham (HQ)

Link House
St Mary's Way
Chesham
Buckinghamshire
HP5 1HR

telephone

01494 771221

email

chesham@jnpgroup.co.uk

Glasgow

Oxford House
71 Oxford Street
Glasgow
G59 5EP

telephone

0141 378 0808

email

glasgow@jnpgroup.co.uk

Hartlepool

The Innovation Centre
Venture Court
Queens Meadow Business Park
Hartlepool
TS25 5TG

telephone

01429 239539

email

hartlepool@jnpgroup.co.uk

Leamington Spa

Marlborough House
48 Holly Walk
Leamington Spa
Warwickshire
CV32 4XP

telephone

01926 889955

email

leamingtonspa@jnpgroup.co.uk

Sheffield

MBP2 Meadowhall Business Park
Carbrook Hall Road
Sheffield
South Yorkshire
S9 2EQ

telephone

0114 244 3500

email

sheffield@jnpgroup.co.uk