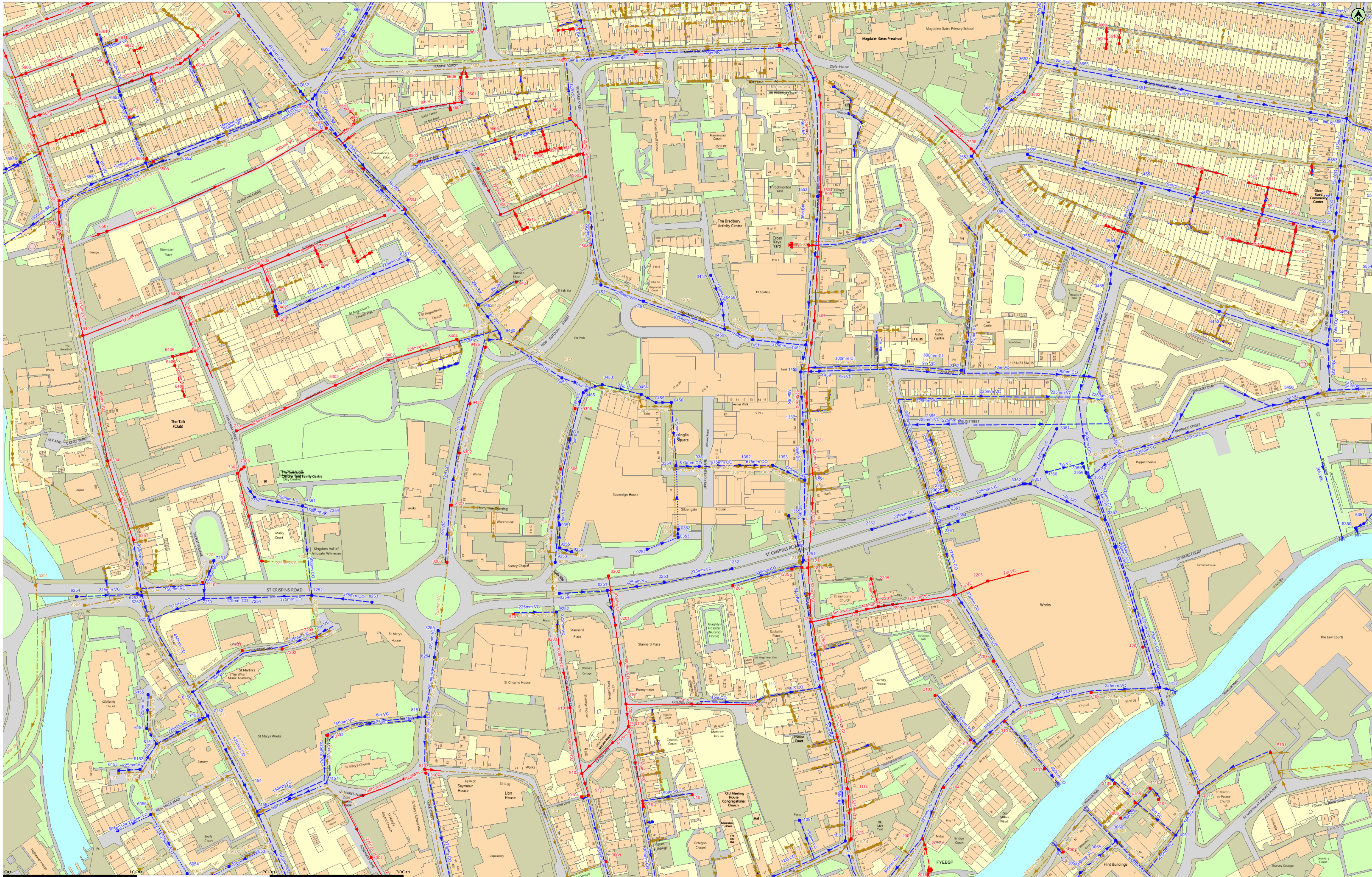


## Appendix G Anglian Water Sewer Records



(c) Crown copyright and database rights 2022 Ordnance Survey 100022432 Date: 21/06/22 Scale: 1:1250 Map Centre: 623069,309376 Data updated: 31/05/22 Our Ref: 882987 - 1 Wastewater Plan A1

This plan is provided by Anglian Water pursuant to its obligations under the Water Industry Act 1991 sections 198 or 199. It must be used in conjunction with any search results attached. This information on this plan is based on data currently recorded but position must be regarded as approximate. Service pipes, private sewers and drains are generally not shown. Users of this map are strongly advised to commission their own survey of the area shown on the plan before carrying out any works. The actual position of all apparatus MUST be established by trial holes. No liability whatsoever, including liability for negligence, is accepted by Anglian Water for any error or inaccuracy or omission, including the failure to accurately record, or record at all, the location of any water main, discharge pipe, sewer or disposal main or any item of apparatus. This information is valid for the date printed. This plan is produced by Anglian Water Services Limited (c) Crown copyright and database rights 2022 Ordnance Survey 100022432. This map is to be used for the purposes of viewing the location of Anglian Water plant only. Any other uses of the map data or further copies is not permitted. This notice is not intended to exclude or restrict liability for death or personal injury resulting from negligence.

|  |  |
|--|--|
| <ul style="list-style-type: none"> <li>Foul Sewer</li> <li>Surface Sewer</li> <li>Combined Sewer</li> <li>Final Effluent</li> <li>Rising Main*</li> <li>Private Sewer*</li> <li>Decommissioned Sewer*</li> </ul> | <ul style="list-style-type: none"> <li>Outfall*</li> <li>Inlet*</li> <li>Manhole*</li> </ul> |
|--|--|

|  |  |
|--|--|
| <ul style="list-style-type: none"> <li>Sewage Treatment Works</li> <li>Public Pumping Station</li> <li>Decommissioned Pumping Station</li> </ul> | <ul style="list-style-type: none"> <li>James.cahuzac@eastp.co.uk</li> <li>Anglia Square</li> </ul> |
|--|--|





| Manhole Reference | Easting | Northing | Liquid Type | Cover Level | Invert Level | Depth to Invert |
|-------------------|---------|----------|-------------|-------------|--------------|-----------------|
| 3552              | 623330  | 309532   | S           | -           | -            | 1.8             |
| 3553              | 623305  | 309554   | S           | -           | -            | 1.9             |
| 3554              | 623392  | 309521   | S           | -           | -            | -               |
| 3555              | 623324  | 309590   | S           | -           | -            | -               |
| 3651              | 623303  | 309624   | S           | -           | -            | 2.1             |
| 3652              | 623332  | 309659   | S           | -           | -            | 2.1             |
| 3653              | 623359  | 309654   | S           | -           | -            | -               |
| 4051              | 623435  | 309080   | S           | 3.97        | 1.56         | 2.41            |
| 4157              | 623423  | 309190   | S           | -           | -            | 2.77            |
| 4453              | 623468  | 309472   | S           | -           | -            | 2.7             |
| 4551              | 623409  | 309568   | S           | -           | -            | -               |
| 4552              | 623449  | 309558   | S           | -           | -            | -               |
| 4651              | 623413  | 309644   | S           | -           | -            | -               |
| 4652              | 623468  | 309633   | S           | -           | -            | -               |
| 5350              | 623570  | 309310   | S           | 2.1         | 0.51         | 1.59            |
| 5351              | 623576  | 309313   | S           | -           | -            | -               |
| 5451              | 623550  | 309413   | S           | 2.86        | 0.28         | 2.58            |
| 5454              | 623549  | 309447   | S           | -           | -            | 2.16            |
| 5455              | 623551  | 309469   | S           | -           | -            | 2.415           |
| 5456              | 623531  | 309408   | S           | -           | -            | -               |
| 5551              | 623554  | 309532   | S           | -           | -            | 1.92            |
| 5552              | 623556  | 309557   | S           | -           | -            | 1.95            |
| 5553              | 623559  | 309581   | S           | -           | -            | 1.67            |
| 5555              | 622569  | 309584   | S           | -           | -            | -               |
| 5556              | 622558  | 309579   | S           | -           | -            | 1.168           |
| 5651              | 623563  | 309617   | S           | -           | -            | 1.76            |
| 5652              | 623572  | 309688   | S           | -           | -            | 1.98            |
| 5653              | 623575  | 309691   | S           | -           | -            | -               |
| 5654              | 623536  | 309621   | S           | 10.441      | 9.016        | 1.425           |
| 5655              | 623545  | 309696   | S           | -           | -            | -               |
| 6054              | 622694  | 309051   | S           | 4.022       | 1.333        | 2.689           |
| 6055              | 622667  | 309095   | S           | 4.04        | 1.834        | 2.206           |
| 6056              | 622642  | 309083   | S           | 4.319       | 2.634        | 1.685           |
| 6151              | 622671  | 309148   | S           | -           | 1.8          | -               |
| 6152              | 622659  | 309129   | S           | -           | 2.05         | -               |
| 6153              | 622643  | 309128   | S           | -           | 2.2          | -               |
| 6154              | 622664  | 309160   | S           | -           | 2.1          | -               |
| 6155              | 622665  | 309185   | S           | -           | 2.5          | -               |
| 6156              | 622698  | 309187   | S           | -           | -            | 1.2             |
| 6251              | 622666  | 309241   | S           | -           | -            | 1.83            |
| 6252              | 622660  | 309259   | S           | -           | 1.548        | -               |
| 6253              | 622657  | 309260   | S           | -           | 1.829        | -               |
| 6254              | 622611  | 309258   | S           | -           | 2.999        | -               |
| 6551              | 622622  | 309568   | S           | 9.29        | 2.49         | 6.8             |
| 6552              | 622688  | 309590   | S           | 10.73       | 7.65         | 3.08            |
| 6652              | 622644  | 309634   | S           | -           | -            | 1.27            |
| 7052              | 622725  | 309056   | S           | 4.102       | 1.861        | 2.241           |
| 7053              | 622749  | 309067   | S           | 3.721       | 2.26         | 1.461           |
| 7152              | 622710  | 309169   | S           | -           | 1.3          | -               |
| 7153              | 622703  | 309166   | S           | -           | 1.4          | -               |
| 7154              | 622737  | 309117   | S           | -           | -            | 2.9             |
| 7155              | 622748  | 309094   | S           | -           | -            | -               |
| 7156              | 622771  | 309107   | S           | -           | -            | -               |
| 7157              | 622798  | 309118   | S           | -           | -            | -               |
| 7251              | 622714  | 309285   | S           | -           | -            | 1.575           |
| 7252              | 622788  | 309259   | S           | -           | -            | -               |
| 7253              | 622707  | 309257   | S           | -           | 1.734        | -               |
| 7254              | 622745  | 309258   | S           | -           | 1.893        | -               |
| 7351              | 622780  | 309326   | S           | -           | -            | 1.83            |
| 7352              | 622745  | 309333   | S           | -           | -            | 1.6             |
| 7354              | 622797  | 309321   | S           | -           | -            | 1.3             |
| 7451              | 622760  | 309476   | S           | -           | -            | 1.15            |
| 7652              | 622779  | 309637   | S           | -           | -            | 3.81            |
| 7653              | 622788  | 309632   | S           | -           | -            | 7.77            |
| 8151              | 622873  | 309169   | S           | 4.32        | 1.96         | 2.36            |
| 8152              | 622802  | 309153   | S           | -           | -            | -               |
| 8153              | 622861  | 309166   | S           | -           | -            | -               |
| 8253              | 622833  | 309254   | S           | -           | 2.548        | -               |
| 8254              | 622879  | 309213   | S           | -           | -            | -               |
| 8255              | 622882  | 309233   | S           | -           | -            | -               |
| 8452              | 622807  | 309490   | S           | -           | -            | 1.38            |
| 8557              | 622860  | 309511   | S           | -           | -            | -               |
| 8653              | 622810  | 309662   | S           | 10.267      | 7.447        | 2.82            |
| 8654              | 622829  | 309696   | S           | 9.982       | 6.202        | 3.78            |
| 9252              | 622971  | 309247   | S           | -           | -            | 2.25            |
| 9253              | 622970  | 309284   | S           | -           | -            | 3.99            |
| 9254              | 622973  | 309261   | S           | -           | -            | -               |
| 9255              | 622973  | 309295   | S           | -           | -            | -               |
| 9256              | 622982  | 309292   | S           | -           | -            | -               |
| 9351              | 622973  | 309312   | S           | -           | -            | -               |
| 9459              | 622975  | 309422   | S           | -           | -            | 3               |
| 9460              | 622930  | 309452   | S           | -           | -            | 3.15            |
| 9462              | 622912  | 309477   | S           | -           | -            | 3.48            |
| 9465              | 622991  | 309411   | S           | -           | -            | -               |

| Manhole Reference | Easting | Northing | Liquid Type | Cover Level | Invert Level | Depth to Invert |
|-------------------|---------|----------|-------------|-------------|--------------|-----------------|
|-------------------|---------|----------|-------------|-------------|--------------|-----------------|

| Manhole Reference | Easting | Northing | Liquid Type | Cover Level | Invert Level | Depth to Invert |
|-------------------|---------|----------|-------------|-------------|--------------|-----------------|
|-------------------|---------|----------|-------------|-------------|--------------|-----------------|

| Manhole Reference | Easting | Northing | Liquid Type | Cover Level | Invert Level | Depth to Invert |
|-------------------|---------|----------|-------------|-------------|--------------|-----------------|
|-------------------|---------|----------|-------------|-------------|--------------|-----------------|

## Louisa Wade

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**From:** Anglian Water <planningliaison@anglianwater.co.uk>  
**Sent:** 24 March 2017 14:51  
**To:** Louisa Wade  
**Cc:** orders@argyllenviro.com  
**Subject:** Anglia Square, Norwich NR3 1DY, NORWICH - Mancroft Flood Risk Query Response

Louisa Wade,

Thank you for your Flood Risk Query you submitted for Anglia Square, Norwich NR3 1DY, NORWICH - Mancroft.

Our response to this is: Anglian Water is able to confirm that we have no records of flooding in the vicinity that can be attributed to capacity limitations in the public sewerage system. It is possible that other flooding may have occurred that we do not have records of, other organisations such as the Local Authority, Internal Drainage Board or the Environment Agency may have records.

Should you have any questions relating to this please contact 0345 0265 458. Your reference for this enquiry is 00020764.

Kind Regards  
Growth and Planning Services Team

**Louisa Wade**

---

**To:** Marianna Dyason  
**Subject:** RE: Sewer flooding record query

---

**From:** Planning Liaison <[planningliaison@anglianwater.co.uk](mailto:planningliaison@anglianwater.co.uk)>  
**Sent:** 22 June 2022 08:06  
**To:** James Cahuzac <[james.cahuzac@eastp.co.uk](mailto:james.cahuzac@eastp.co.uk)>  
**Subject:** RE: Sewer flooding record query

Good morning James,

Thank you for your email.

We are no able to send over individual instances of flooding, as this is confidential information.

Anglian Water is able to confirm that there have been instances of flooding within the vicinity of the proposed development. It is also possible that other flooding may have occurred that we do not have records of, other organisations such as the Local Authority, Internal Drainage Board or the Environment Agency may have records. We recommend you submit a pre planning application form to enable Anglian Water to advise you of any suitable connection points for the proposed development and identify any mitigation that would be required. Further details including the application form can be found on our website.

Kind regards,  
Charlotte



**Pre-development Team**  
Team: 07929 786 955

**Anglian Water Services Limited**  
Thorpe Wood House, Thorpe Wood, Peterborough, Cambridgeshire, PE3 6WT

**anglianwater**



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**From:** James Cahuzac <[james.cahuzac@eastp.co.uk](mailto:james.cahuzac@eastp.co.uk)>  
**Sent:** 21 June 2022 11:55  
**To:** Planning Liaison <[planningliaison@anglianwater.co.uk](mailto:planningliaison@anglianwater.co.uk)>  
**Subject:** Sewer flooding record query

**\*EXTERNAL MAIL\*** - Please be aware this mail is from an external sender - **THINK BEFORE YOU CLICK**

Dear Sir/Madam,

I am working on a project in Norwich at postcode NR3 1DY and there is a concern regarding sewer flood risk. Would it be possible to have the updated DG5 records for this area please?

Kind regards,  
James



**James Cahuzac**  
**Civil Engineer**

Unit 23, The Maltings, Roydon Road, Stanstead Abbots, Hertfordshire, SG12 8HG  
Tel: 01920 871777  
Web: [www.eastp.co.uk](http://www.eastp.co.uk)

TRANSPORT ASSESSMENT, TRAFFIC MODELLING, FLOOD RISK ASSESSMENT,  
FLOOD MODELLING, DETAILED HIGHWAY AND DRAINAGE DESIGN.



EAS is a trading name of EAS Transport Planning Ltd registered 5751442

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# Pre-Planning Assessment Report

Anglia Square

InFlow Reference: PPE-0143339

Assessment Type: Used Water

Report published: 08/04/2022





Thank you for submitting a pre-planning enquiry.

This has been produced for EAS Transport Planning Ltd.

Your reference number is **PPE-0143339**.

This report can be submitted as a drainage strategy for the development should it seek planning permission.

If you have any questions upon receipt of this report, you can submit a further question via InFlow. Alternatively, please contact the Planning & Capacity team on **07929 786 955** or email [planningliaison@anglianwater.co.uk](mailto:planningliaison@anglianwater.co.uk)

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## Section 1 - Proposed development

The response within this report has been based on the following information which was submitted as part of your application:

| List of planned developments |              |
|------------------------------|--------------|
| Type of development          | No. Of units |
| Shops                        | 50           |
| Restaurants and cafes        | 25           |
| Dwellings                    | 1500         |

The anticipated residential build rate is:

| Year       | Y1 | Y2 | Y3 | Y4 | Y5 | Y6 | Y7 | Y8 | Y9 | Y10 | Y11 | Y12  |
|------------|----|----|----|----|----|----|----|----|----|-----|-----|------|
| Build rate | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50  | 50  | 1025 |

**Development type:** Brownfield

**Planning application status:** Unknown

**Site grid reference number:** TG2302009411

The comments contained within this report relate to the public water mains and sewers indicated on our records.

Your attention is drawn to the disclaimer in the useful information section of this report.

## Section 2 - Assets affected

Our records indicate that we have the following types of assets within or overlapping the boundary of your development site as listed in the table below.

Additionally, it is highly recommended that you carry out a thorough investigation of your proposed working area to establish whether any unmapped public or private sewers and lateral drains are in existence. We are unable to permit development either over or within the easement strip without our prior consent. The extent of the easement is provided in the table below. Please be aware that the existing water mains/public sewers should be located in highway or open space and not in private gardens. This is to ensure available access for any future maintenance and repair and this should be taken into consideration when planning your site layout.

| Water and Used water easement information |                |                                       |
|---|----------------|---------------------------------------|
| Asset type                                | Pipe size (mm) | Total easement required (m)           |
| Water mains                               | 152            | 6.00 m overall easement               |
| Water mains                               | 76             | 6.00 m overall easement               |
| Water mains                               | 102            | 4.50 m overall easement               |
| Water mains                               | 127            | 6.00 m overall easement               |
| Water mains                               | 102            | 4.50 m overall easement               |
| Sewer mains                               | 675            | 6.00 m either side of the centre line |
| Sewer mains                               | 300            | 3.00 m either side of the centre line |
| Sewer mains                               | 225            | 3.00 m either side of the centre line |
| Sewer mains                               | 150            | 3.00 m either side of the centre line |
| Sewer mains                               | 9              | 3.00 m either side of the centre line |
| Sewer mains                               | Unknown        | 3.00 m either side of the centre line |
| Sewer mains                               | 27             | 3.00 m either side of the centre line |
| Sewer mains                               | 7              | 4.50 m either side of the centre line |
| Sewer mains                               | 850            | 4.00 m either side of the centre line |
| Sewer mains                               | 36             | 3.00 m either side of the centre line |
| Sewer mains                               | 24             | 6.00 m either side of the centre line |
| Sewer mains                               | 375            | 3.00 m either side of the centre line |
| Sewer mains                               | 225            | 3.00 m either side of the centre line |

If it is not possible to avoid our assets then these may need to be diverted in accordance with Section 185 of the Water Industry Act (1991). You will need to make a formal application if you would like a diversion to be considered.

Due to the private sewer transfer in October 2011 many newly adopted public used water assets and their history are not indicated on our records. You also need to be aware that your development site may contain private water mains, drains or other assets not shown on our records. These are private assets and not the responsibility of Anglian Water but that of the landowner.

### **Section 3 - Water recycling services**

In examining the used water system we assess the ability for your site to connect to the public sewerage network without causing a detriment to the operation of the system. We also assess the receiving water recycling centre and determine whether the water recycling centre can cope with the increased flow and effluent quality arising from your development.

#### **Water recycling centre**

The foul drainage from the proposed development is in the catchment of Whitlingham Trowse Water Recycling Centre, which currently has capacity to treat the flows from your development site. Anglian Water cannot reserve capacity and the available capacity at the water recycling centre can be reduced at any time due to growth, environmental and regulation driven changes.

#### **Used water network**

Our assessment has been based on development flows connecting to the nearest foul water sewer of the same size or greater pipe diameter to that required to drain the site. The infrastructure to convey foul water flows to the receiving sewerage network is assumed to be the responsibility of the developer. Conveyance to the connection point is considered as Onsite Work and includes all work carried out upstream from of the point of connection, including making the connection to our existing network. This connection point has been determined in reference to the calculated discharge flow and on this basis, a 375mm internal diameter pipe is required to drain the development site. The preferred connection point at manhole 1310 is to a 300mm sewer, that does not have capacity to accommodate the flows from the full development. The foul sewerage system will have capacity for the development if the connection is made over several points across the network surrounding the development site.

In order to assess a suitable drainage strategy and provide connection points, please provide us with a site layout and phasing plan. Anglian water has assessed the impact of gravity flows from the planned development to the public foul sewerage network. We can confirm that this is acceptable as the foul sewerage system, at present, has available capacity for your site.

Please note that Anglian Water will request a suitably worded condition at planning application stage to ensure this strategy is implemented to mitigate the risk of flooding.

It is assumed that the developer will provide the necessary infrastructure to convey flows from the site to the network. Consequently, this report does not include any costs for the conveyance of flows.

#### **Surface water disposal**

In principle, your proposed method of surface water disposal is acceptable to Anglian Water. It is our understanding that the evidence to confirm compliance with the surface water hierarchy is not available. Once the evidence has been confirmed, then a connection point may be made to manhole 1355 at NGR TG 23145 09319 at a rate of 242l/s. Our assessment has been based on development flows connecting to the nearest surface water sewer of the same size or greater pipe diameter. It is your responsibility to provide the evidence to confirm that all alternative methods of surface water disposal have been explored and these will be required before your connection can be agreed. This is subject to satisfactory evidence which shows the surface water management hierarchy as outlined in Building Regulations Part H has been explored. This would encompass the results from the site specific infiltration testing and/or confirmation that the flows cannot be discharged to a watercourse. Anglian Water's surface water policy follows the Surface Water hierarchy, outlined in Part H of the Building Regulations. Should your assumptions or evidence change then an alternative solution, connection point or flow rate may be required.

You are therefore advised to update Anglian Water with the key supporting evidence at your earliest convenience.

As you may be aware, Anglian Water will consider the adoption of SuDs provided that they meet the criteria outline in our SuDs adoption manual. This can be found on our [website](#). We will adopt features located in public open space that are designed and constructed, in conjunction with the Local Authority and Lead Local Flood Authority (LLFA), to the criteria within our SuDs adoption manual. Specifically, developers must be able to demonstrate:

1. Effective upstream source control,
2. Effective exceedance design, and
3. Effective maintenance schedule demonstrating that the assets can be maintained both now and in the future with adequate access.

If you wish to look at the adoption of any SuDs then an expression of interest form can be found on our [website](#)

### Trade Effluent

We note that you do not have any trade effluent requirements. Should this be required in the future you will need our written formal consent. This is in accordance with Section 118 of the Water Industry Act (1991).

### Used Water Budget Costs

Your development site will be required to pay an Infrastructure charge for each new property connecting to the public water and sewerage network that benefits from Full planning permission. The infrastructure charge replaces the zonal charge as previously identified.

You will be required to pay an infrastructure charge upon connection for each new plot on your development site. The infrastructure charge are types of charges set out in Section 146(2) of the Water Industry Act 1991.

The charge should be paid by anyone who wishes to build or develop a property and is payable upon request of connection.

- The Infrastructure Charge is based on the cost of any reinforcement and upgrades to our existing network (“Network Reinforcements”), whether designed to address strategic or local capacity issues. For more information on our Infrastructure Charge, please see the ‘Useful Information’ section of this report.

Infrastructure charges are raised on a standard basis of one charge per new connection (one for water and one for sewerage).

### The Water Recycling Infrastructure charge for your dwellings is:

| Infrastructure charge | Number of units | Total       |
|-----------------------|-----------------|-------------|
| £ 490                 | 1500            | £735,000.00 |

Please note that you should also budget for infrastructure charges on non-household premises where applicable and these will be calculated according to the number and type of water fittings in the premises. This is called the “relevant multiplier” method of calculating the charge and the relevant multiplier will be applied to the figures set out in our 2022-23 Developer Charging Arrangements to arrive at the amount payable. Details of the relevant multiplier for each fitting can be found on our [website](#).

## Section 4 - Map of Proposed Point of Connection(s)

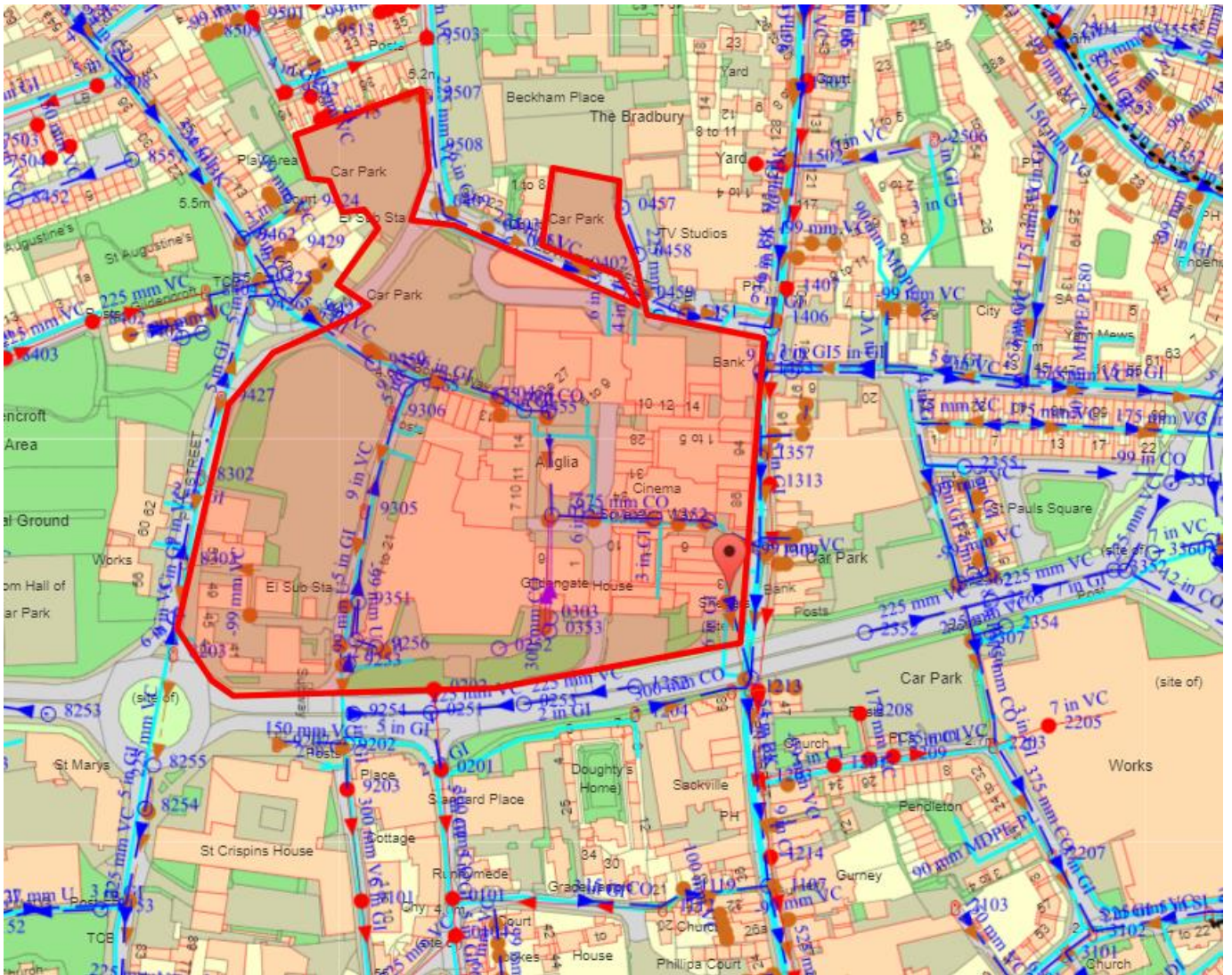


Figure 2: Showing your water recycling surface water point of connection

## **Section 5 - Useful information**

### **Water Industry Act – Key used water sections**

#### **Section 98:**

This provides you with the right to requisition a new public sewer. The new public sewer can be constructed by Anglian Water on your behalf. Alternatively, you can construct the sewer yourself under section 30 of the Anglian Water Authority Act 1977.

#### **Section 102:**

This provides you with the right to have an existing sewerage asset vested by us. It is your responsibility to bring the infrastructure to an adoptable condition ahead of the asset being vested.

#### **Section 104:**

This provides you with the right to have a design technically vetted and an agreement reached that will see us adopt your assets following their satisfactory construction and connection to the public sewer.

#### **Section 106:**

This provides you with the right to have your constructed sewer connected to the public sewer.

#### **Section 185**

This provides you with the right to have a public sewerage asset diverted.

Details on how to make a formal application for a new sewer, new connection or diversion are available on our [website](#) or via our Development Services team on **0345 60 66 087**.

### **Sustainable drainage systems**

Many existing urban drainage systems can cause problems of flooding, pollution or damage to the environment and are not resilient to climate change in the long term. .

Our preferred method of surface water disposal is through the use of Sustainable Drainage Systems or SuDS.

SuDS are a range of techniques that aim to mimic the way surface water drains in natural systems within urban areas. For more information on SuDS, please visit our [website](#)

We recommend that you contact the Local Authority and Lead Local Flood Authority (LLFA) for your site to discuss your application.

### **Private sewer transfers**

Sewers and lateral drains connected to the public sewer on the 1 July 2011 transferred into Water Company ownership on the 1 October 2011. This follows the implementation of the Floods and Water Management Act (FWMA). This included sewers and lateral drains that were subject to an existing Section 104 Adoption Agreement and those that were not. There were exemptions and the main non-transferable assets were as follows:

Surface water sewers and lateral drains that do not discharge to the public sewer, e.g. those that discharged to a watercourse.

Foul sewers and lateral drains that discharged to a privately owned sewage treatment/collection facility.

Pumping stations and rising mains will transfer between 1 October 2011 and 1 October 2016.

The implementation of Section 42 of the FWMA will ensure that future private sewers will not be created. It is anticipated that all new sewer applications will need to have an approved section 104 application ahead of a section 106 connection.

It is anticipated that all new sewer applications will need to have an approved Section104 application ahead of a Section 106 connection

## **Encroachment**

Anglian Water operates a risk based approach to development encroaching close to our used water infrastructure. We assess the issue of encroachment if you are planning to build within 400 metres of a water recycling centre or, within 15 metres to 100 metres of a pumping station. We have more information available on our [website](#)

### **Locating our assets**

Maps detailing the location of our water and used water infrastructure including both underground assets and above ground assets such as pumping stations and recycling centres are available from [digdat](#)

All requests from members of the public or non-statutory bodies for maps showing the location of our assets will be subject to an appropriate administrative charge.

We have more information on our [website](#)

### **Charging arrangements**

Our charging arrangements and summary for this year's water and used water connection and infrastructure charges can be found on our [website](#)

## **Section 6 - Disclaimer**

The information provided in this report is based on data currently held by Anglian Water Services Limited ('Anglian Water') or provided by a third party. Accordingly, the information in this report is provided with no guarantee of accuracy, timeliness, completeness and is without indemnity or warranty of any kind (express or implied).

This report should not be considered in isolation and does not nullify the need for the enquirer to make additional appropriate searches, inspections and enquiries. Anglian Water supports the plan led approach to sustainable development that is set out in the National Planning Policy Framework ('NPPF') and any infrastructure needs identified in this report must be considered in the context of current, adopted and/or emerging local plans. Where local plans are absent, silent or have expired these needs should be considered against the definition of sustainability holistically as set out in the NPPF.

Whilst the information in this report is based on the presumption that proposed development obtains planning permission, nothing in this report confirms that planning permission will be granted or that Anglian Water will be bound to carry out the works/proposals contained within this report.

No liability whatsoever, including liability for negligence is accepted by Anglian Water or its partners, employees or agents, for any error or omission, or for the results obtained from the use of this report and/or its content.

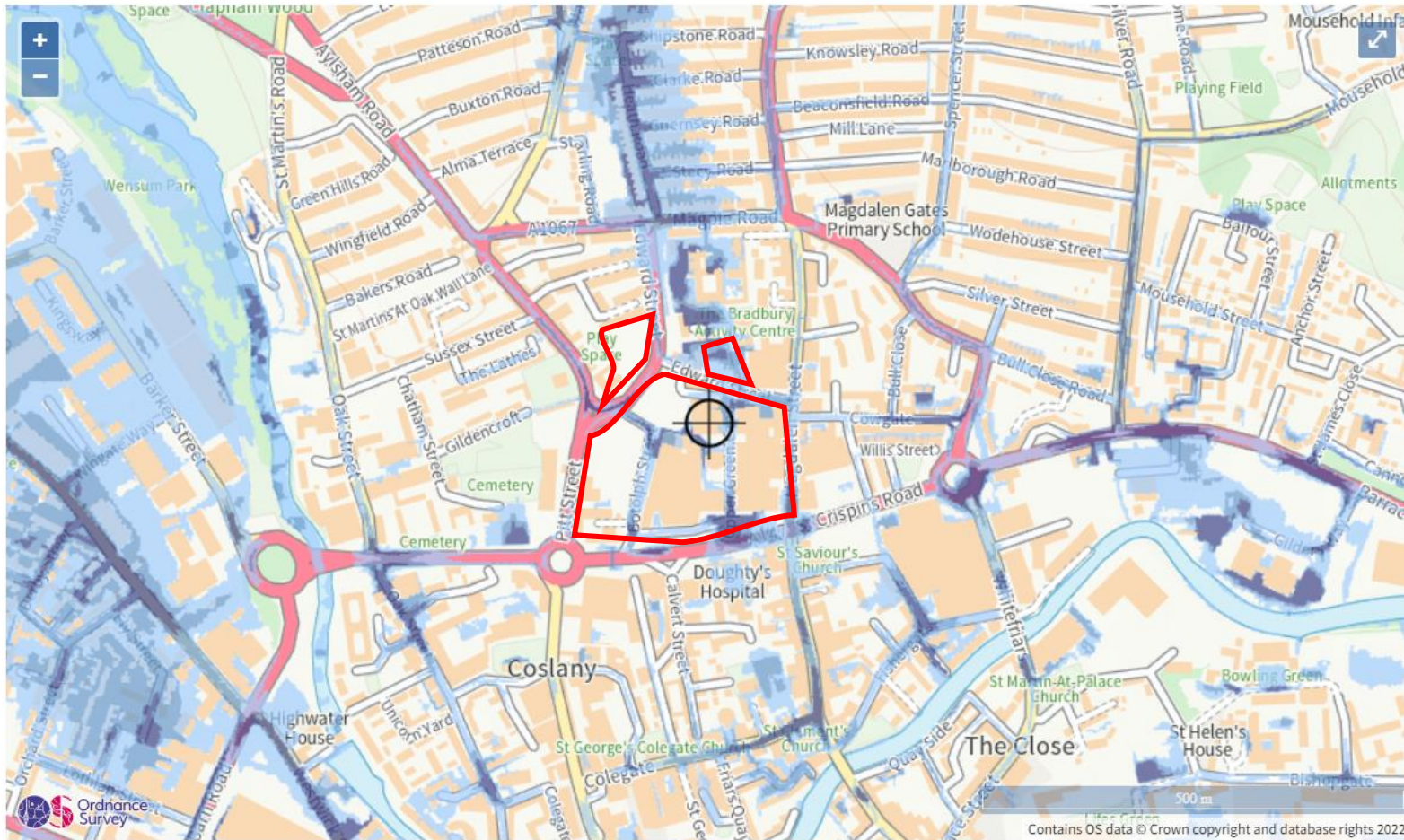
Furthermore, in no event will any of those parties be liable to the applicant or any third party for any decision made or action taken as a result of reliance on this report.

This report is valid from the date issued and the enquirer is advised to resubmit their request for an up to date report should there be a delay in submitting any subsequent application for water supply/sewer connection(s). Our pre-planning reports are valid for 12 months, however please note Anglian Water cannot reserve capacity and available capacity in our network can be reduced at any time due to increased requirements from existing businesses and houses as well as from new housing and new commercial developments.

## Appendix H Surface Water Flood Maps

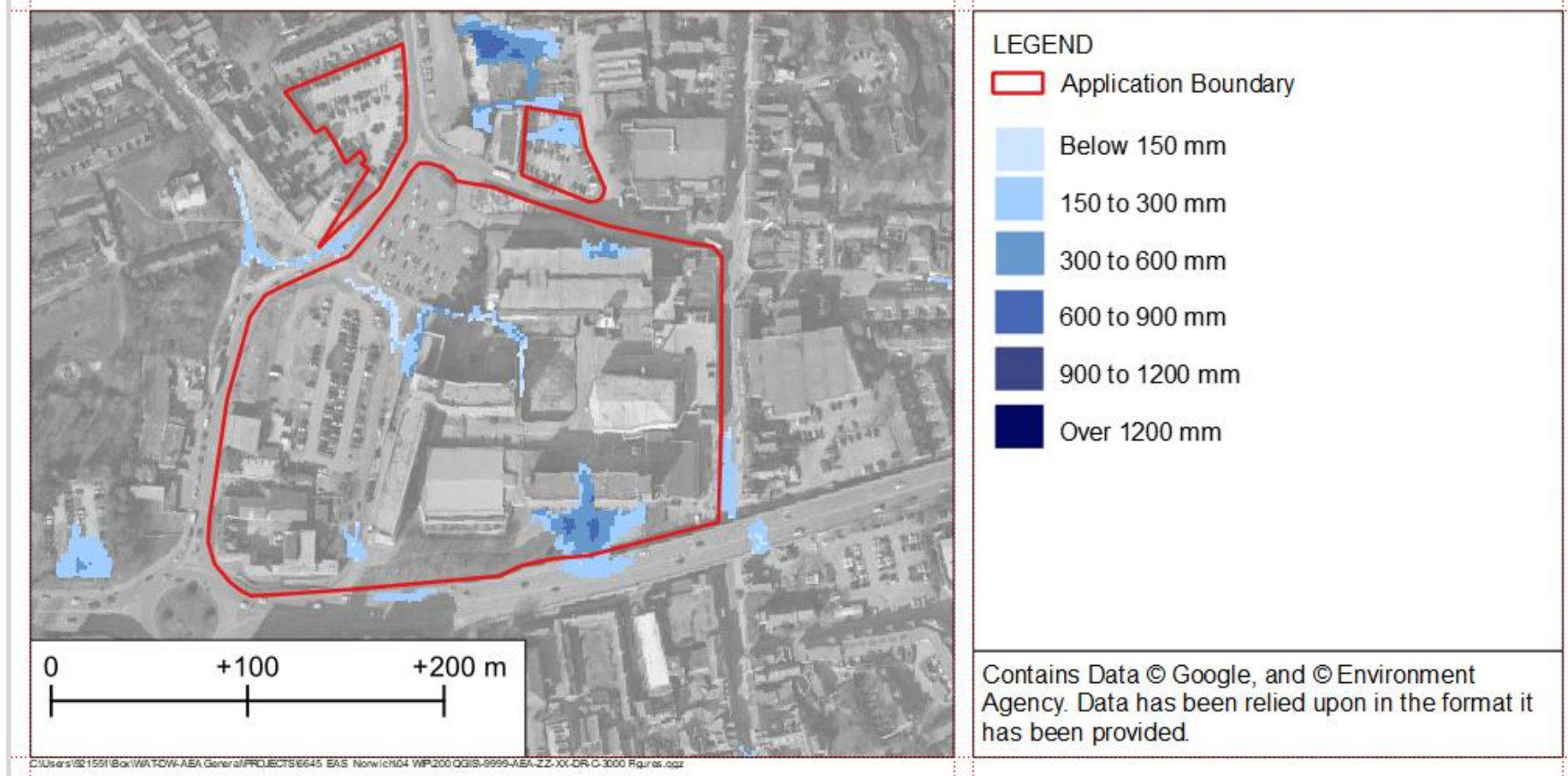


## Long Term Surface Water Flood Risk Map Extents

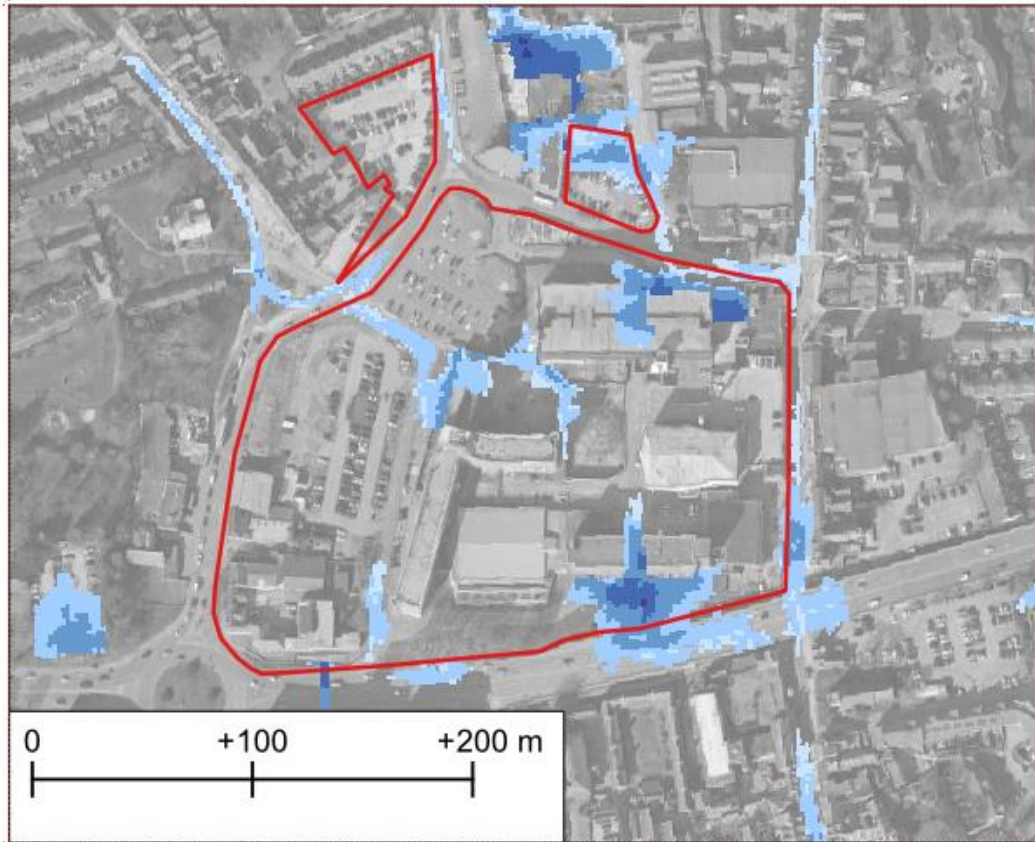


Source: <https://check-long-term-flood-risk.service.gov.uk/map?eastings=623059&northings=309421&map=SurfaceWater>








## Long Term Surface Water Flood Risk Map Depths – High Risk



## Long Term Surface Water Flood Risk Map Depths – Medium Risk

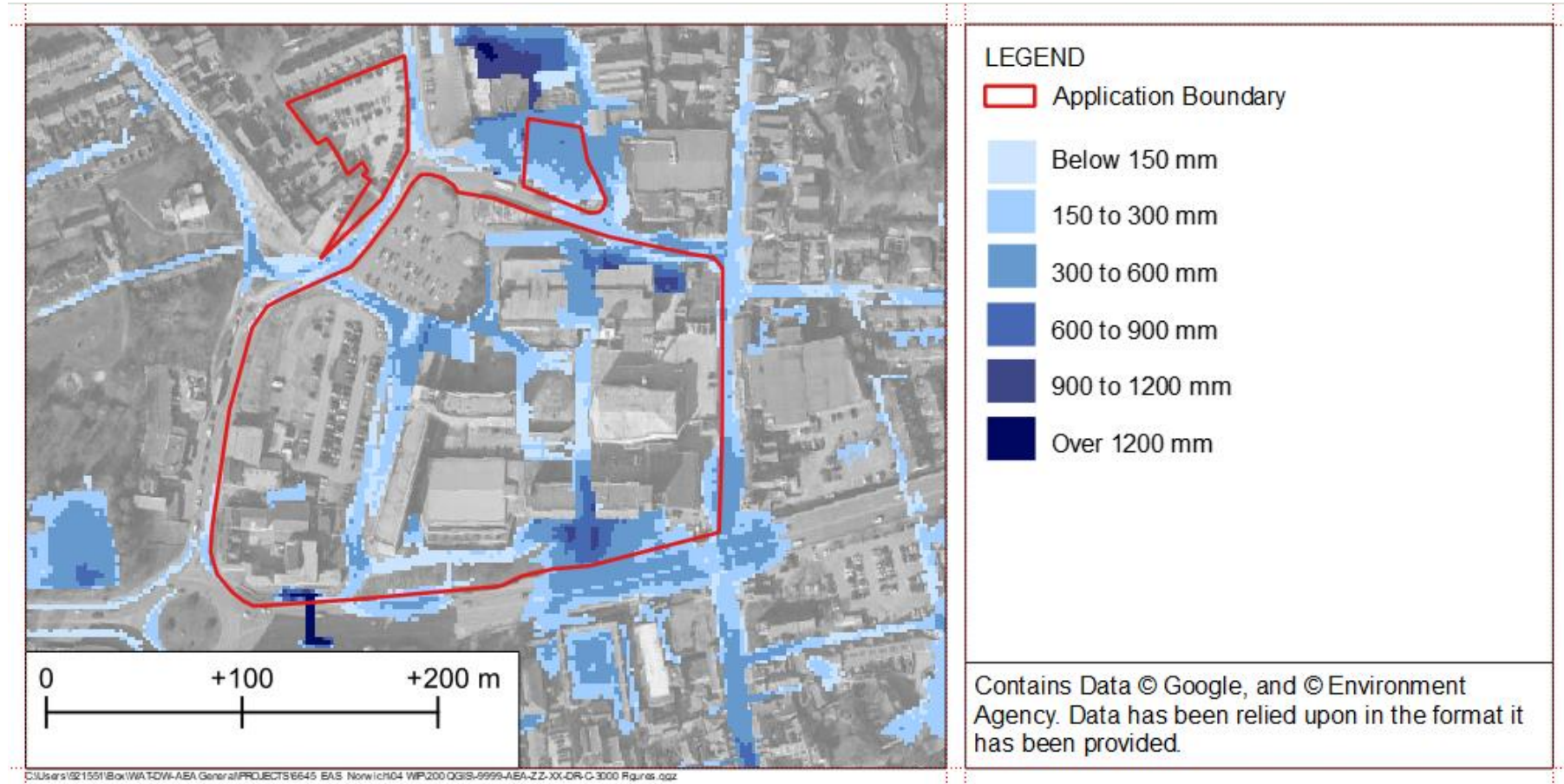


### LEGEND

-  Application Boundary
-  Below 150 mm
-  150 to 300 mm
-  300 to 600 mm
-  600 to 900 mm
-  900 to 1200 mm
-  Over 1200 mm

Contains Data © Google, and © Environment Agency. Data has been relied upon in the format it has been provided.

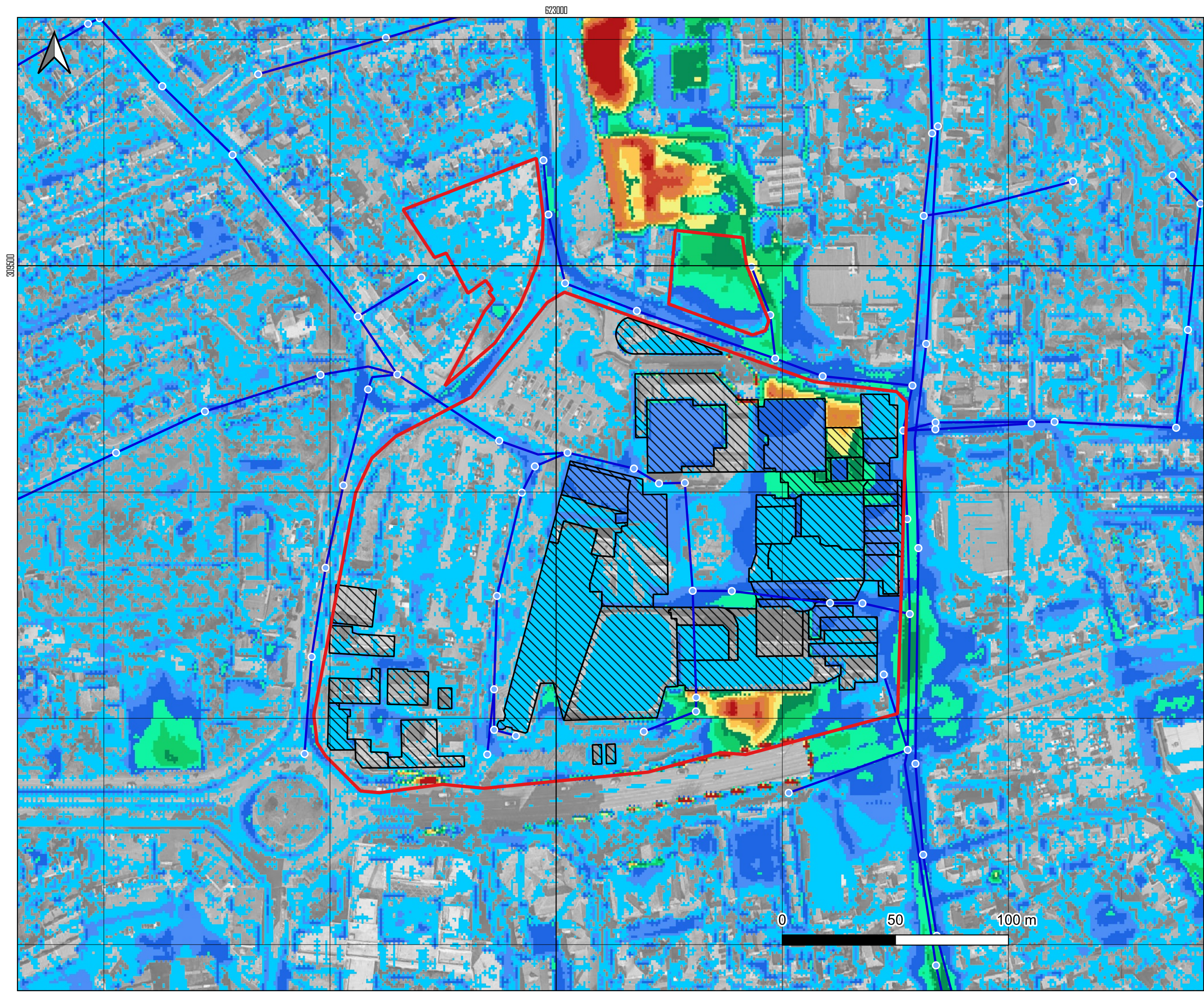
## Long Term Surface Water Flood Risk Map Depths – Low Risk



## Appendix I Modelled Surface Water Flood Depth

All Flood Maps can be downloaded using the link:

<https://royalhaskoningdhv.box.com/s/rigektt5l5imndj4ah9uj9x0lj6nbyzv>



**Key**

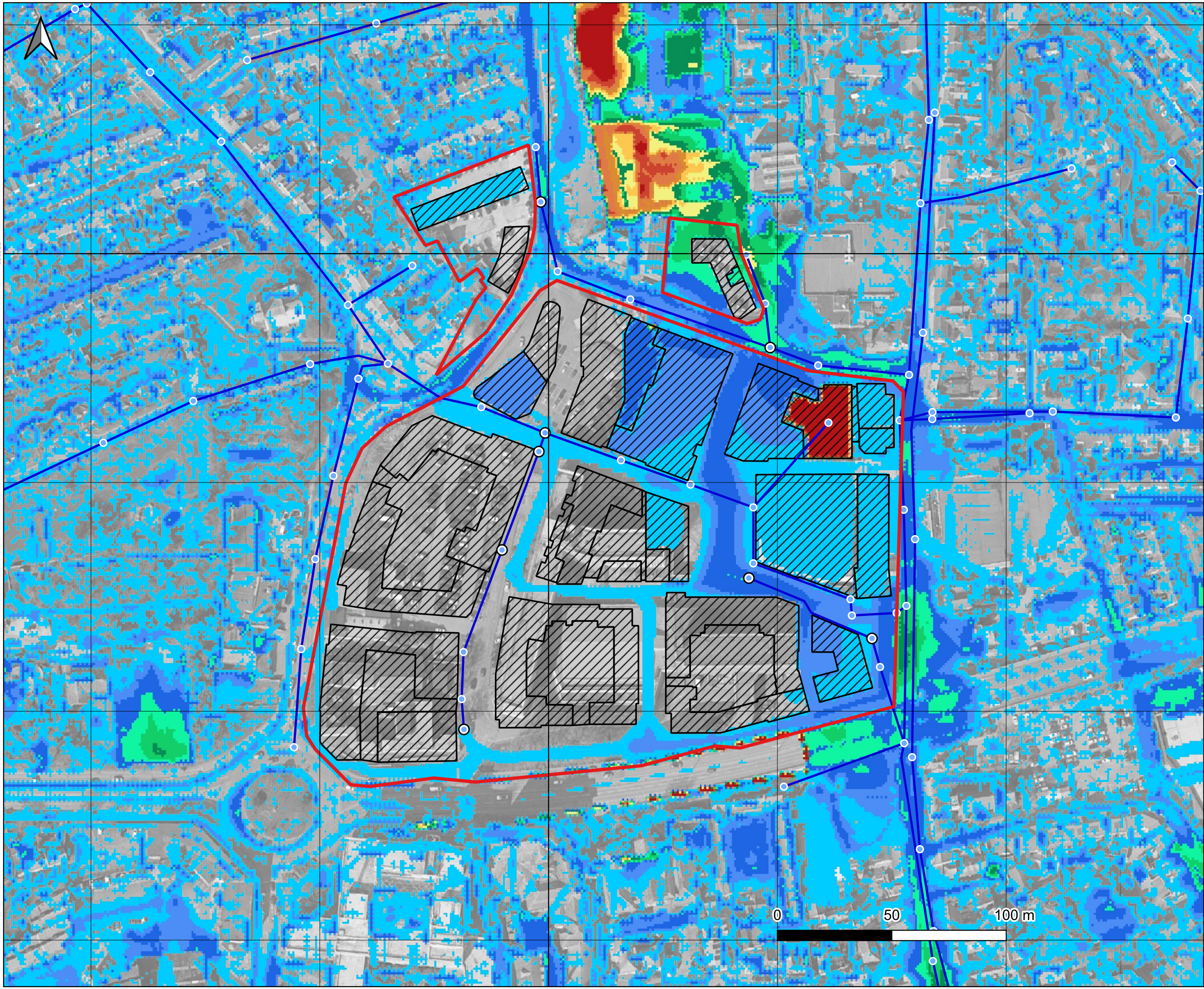
- Application Boundary
- Existing Sewer Pits
- Existing Culverts
- Existing OnSite Buildings

**Flood Depth (m)**






|  |              |
|--|--------------|
|  | <= 0.005     |
|  | 0.005 - 0.05 |
|  | 0.05 - 0.1   |
|  | 0.1 - 0.2    |
|  | 0.2 - 0.3    |
|  | 0.3 - 0.4    |
|  | 0.4 - 0.5    |
|  | 0.5 - 0.6    |
|  | 0.6 - 0.7    |
|  | 0.7 - 0.8    |
|  | 0.8 - 0.9    |
|  | 0.9 - 1.0    |
|  | > 1.0        |

**ANGLIA SQUARE  
SURFACE WATER MODEL**














**Existing Conditions**  
**1:100 Year plus 45% Climate  
Change Flood Event**



**Key**

-  Application Boundary
-  Proposed Sewer Pits
-  Proposed Culverts
-  Proposed OnSite Buildings
-  On Site Drainage Inflows

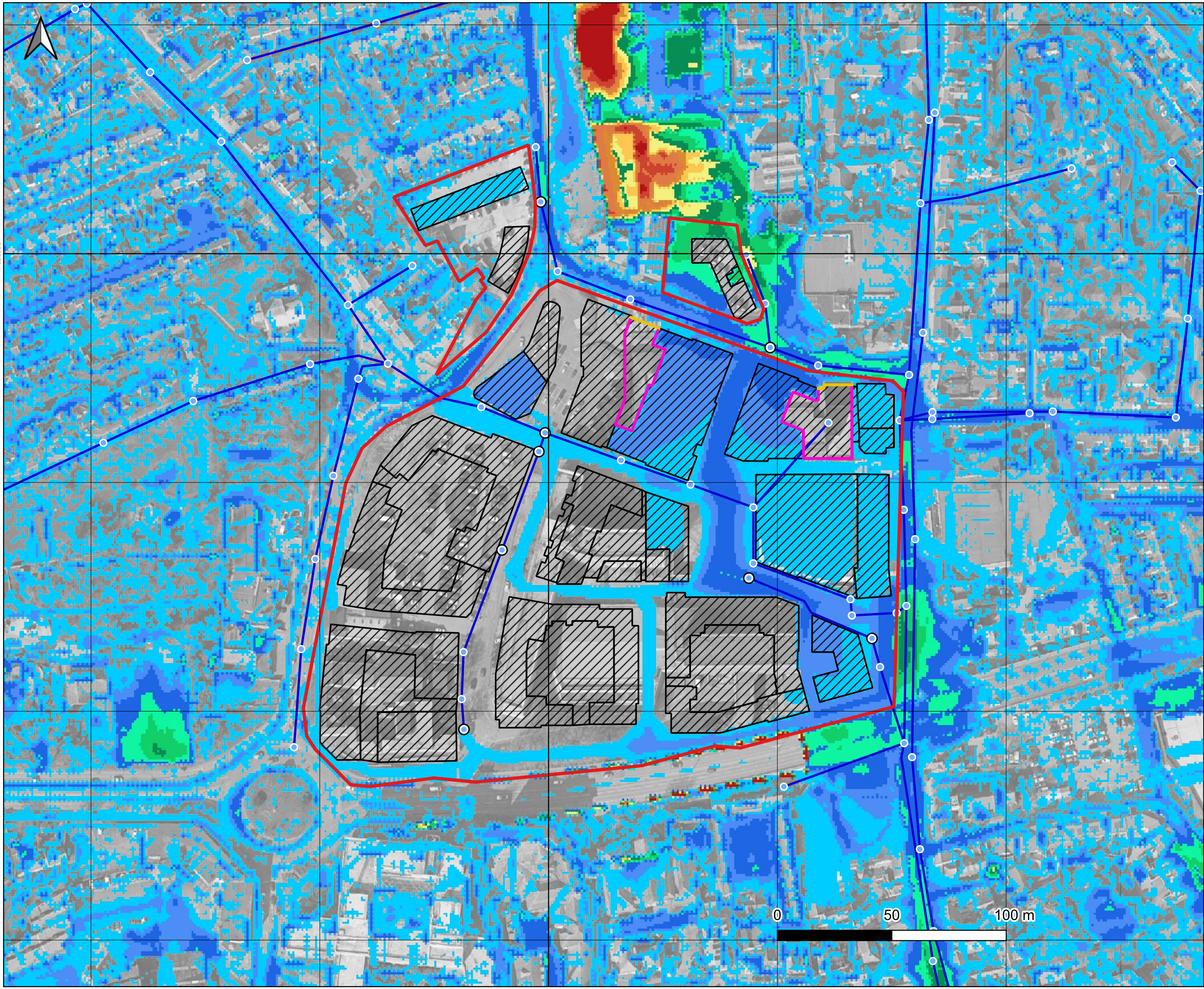
**Flood Depth (m)**

-  <= 0.005
-  0.005 - 0.05
-  0.05 - 0.1
-  0.1 - 0.2
-  0.2 - 0.3
-  0.3 - 0.4
-  0.4 - 0.5
-  0.5 - 0.6
-  0.6 - 0.7
-  0.7 - 0.8
-  0.8 - 0.9
-  0.9 - 1.0
-  > 1.0

**ANGLIA SQUARE  
SURFACE WATER MODEL**

**Proposed (Unmitigated)  
Conditions**

**1:100 Year plus 45% Climate  
Change Flood Event**



**Key**

- Application Boundary
- Proposed Sewer Pits
- Proposed Culverts
- Proposed Barriers
- Proposed Walls
- Proposed OnSite Buildings
- On Site Drainage Inflows

**Flood Depth (m)**

- <= 0.005
- 0.005 - 0.05
- 0.05 - 0.1
- 0.1 - 0.2
- 0.2 - 0.3
- 0.3 - 0.4
- 0.4 - 0.5
- 0.5 - 0.6
- 0.6 - 0.7
- 0.7 - 0.8
- 0.8 - 0.9
- 0.9 - 1.0
- > 1.0

**ANGLIA SQUARE SURFACE WATER MODEL**

**Proposed (Mitigated) Conditions**

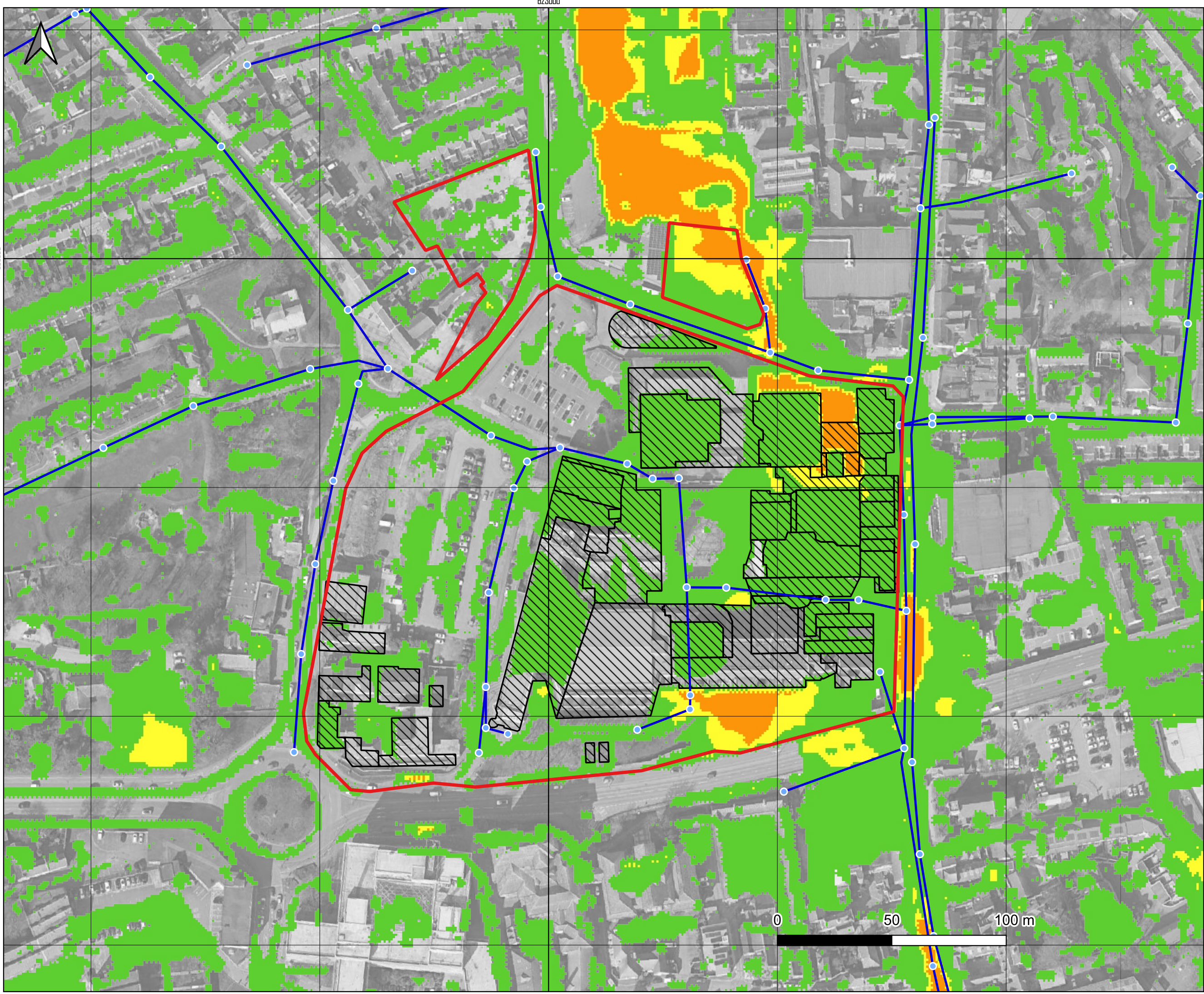
**1:100 Year plus 45% Climate Change Flood Event**



## Appendix J Modelled Surface Water Hazard Mapping

All Flood Maps can be downloaded using the link:

<https://royalhaskoningdhv.box.com/s/rigektt5l5imndj4ah9uj9x0lj6nbyzv>



**Key**

- Application Boundary
- Existing Sewer Pits
- Existing Culverts
- Existing OnSite Buildings

**Flood Hazard Rating**

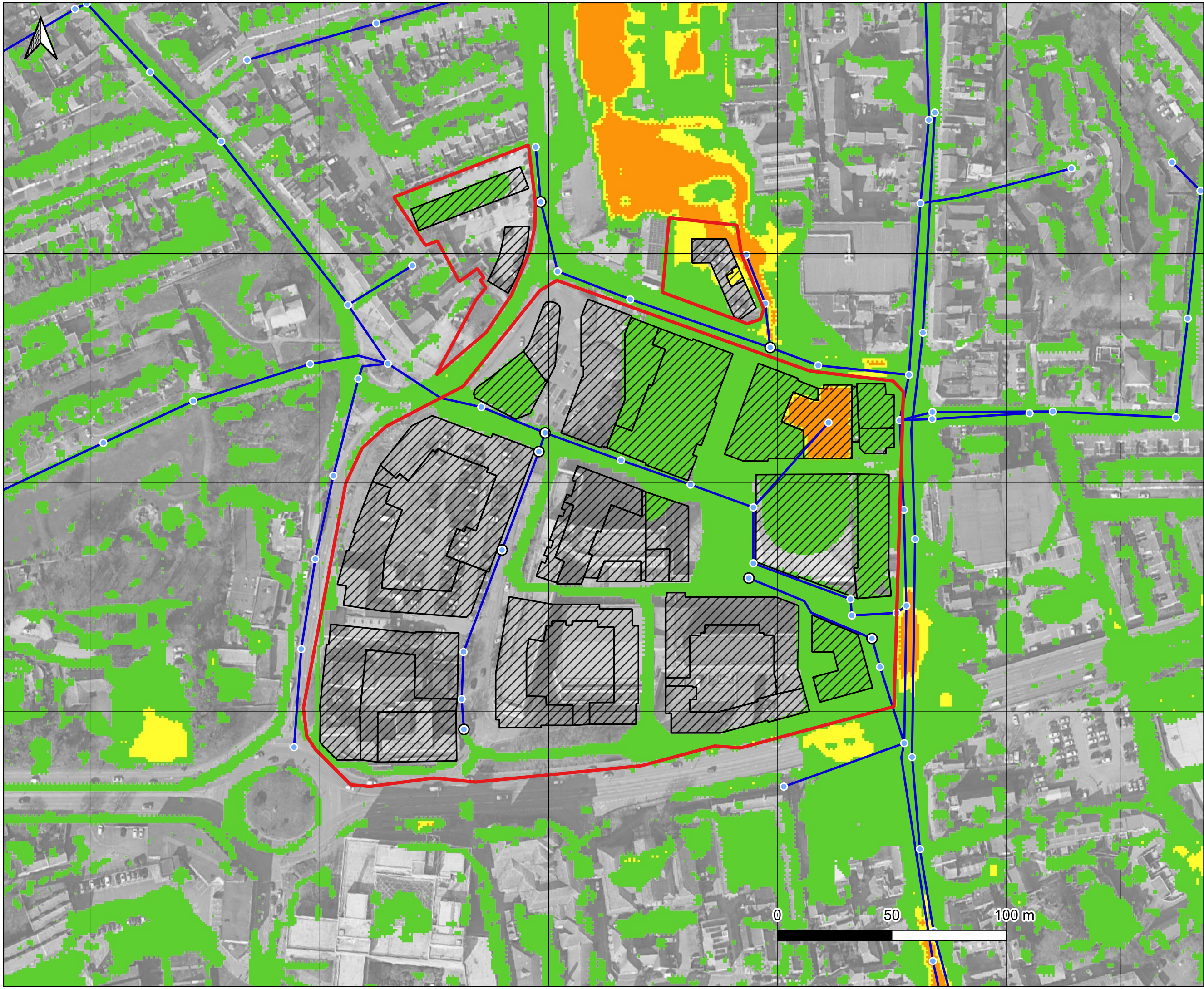
- <= 0.005
- 0.005 - 0.75
- 0.75 - 1.25
- 1.25 - 2.00
- > 2.00

**ANGLIA SQUARE  
SURFACE WATER MODEL**

**Existing Conditions  
1:100 Year plus 45% Climate  
Change Flood Event**

623000

309500



### Key

- Application Boundary
- Proposed Sewer Pits
- Proposed Culverts
- Proposed OnSite Buildings
- On Site Drainage Inflows

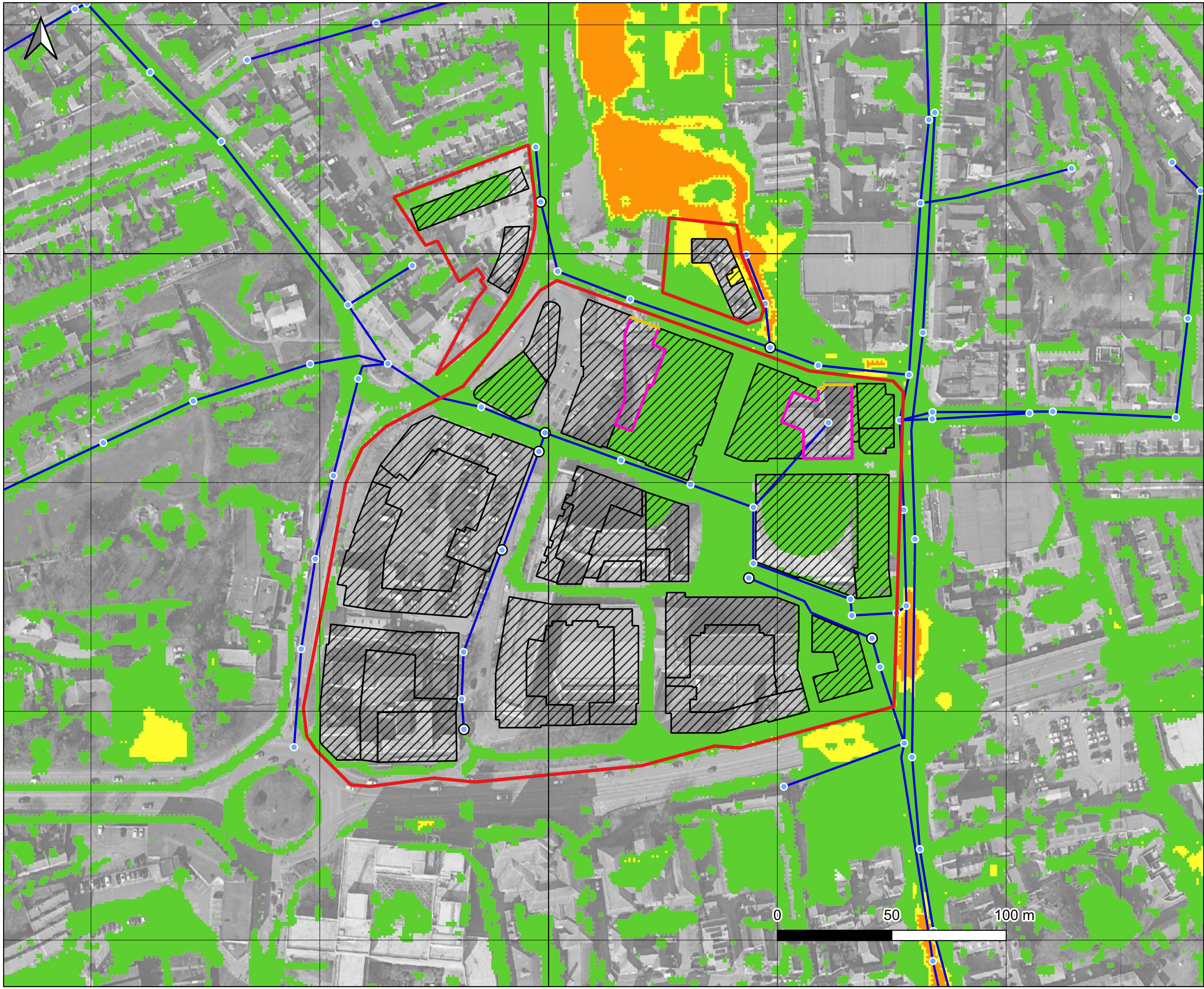
### Flood Hazard Rating

- $\leq 0.005$
- $0.005 - 0.75$
- $0.75 - 1.25$
- $1.25 - 2.00$
- $> 2.00$

### ANGLIA SQUARE SURFACE WATER MODEL

Proposed (Unmitigated) Conditions

1:100 Year plus 45% Climate Change Flood Event



**Key**

- Application Boundary
- Proposed Sewer Pits
- Proposed Culverts
- Proposed Barriers
- Proposed Walls
- Proposed OnSite Buildings
- On Site Drainage Inflows

**Flood Hazard Rating**

- <= 0.005
- 0.005 - 0.75
- 0.75 - 1.25
- 1.25 - 2.00
- > 2.00

**ANGLIA SQUARE  
SURFACE WATER MODEL**

**Proposed (Mitigated)  
Conditions**

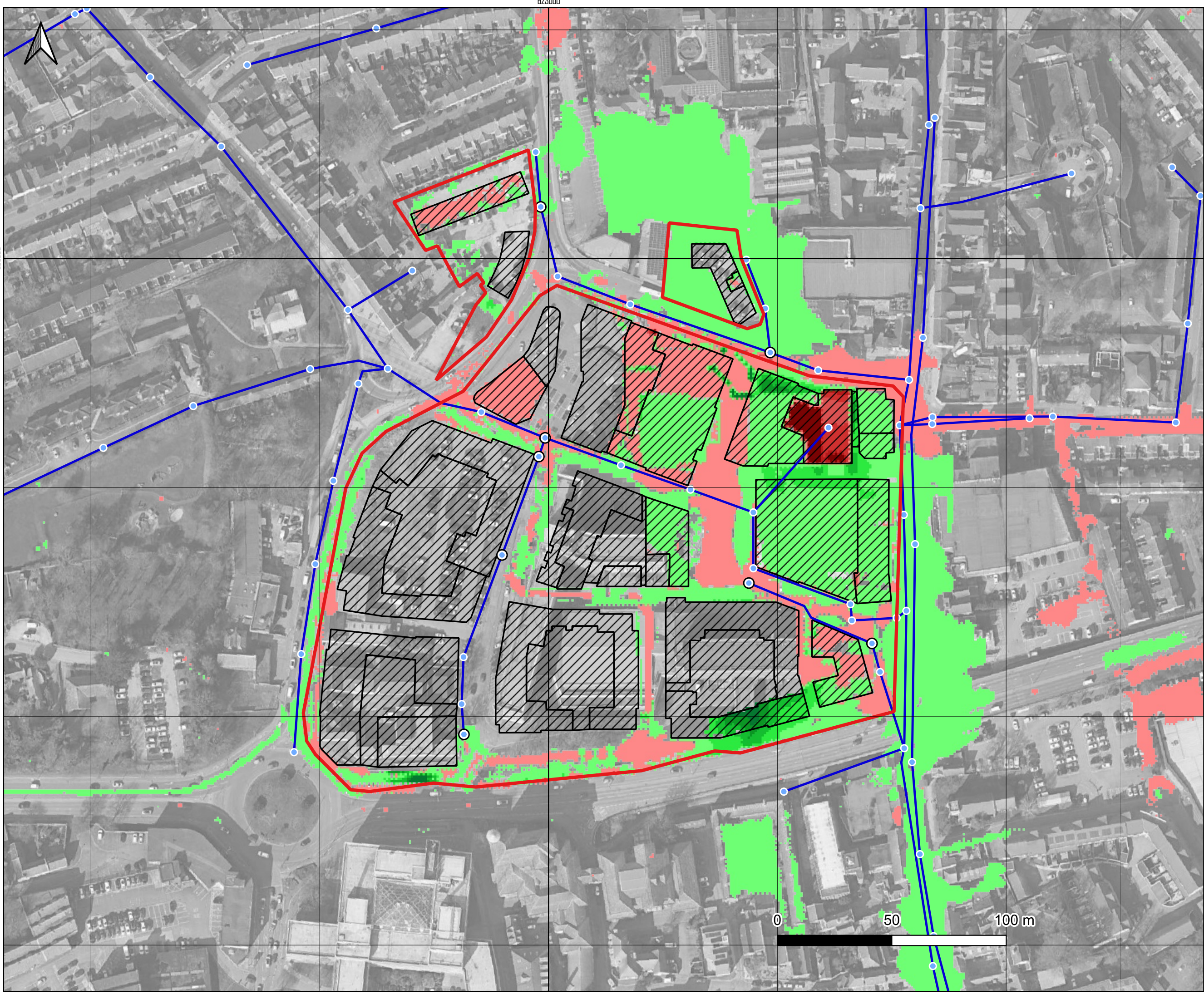
**1:100 Year plus 45% Climate  
Change Flood Event**



## Appendix K Offsite Impact Map

All Flood Maps can be downloaded using the link:

<https://royalhaskoningdhv.box.com/s/riqektt5l5imndj4ah9uj9x0lj6nbyzv>



**Key**

- Application Boundary
- Proposed Sewer Pits
- Proposed Culverts
- Proposed On Site Buildings
- On Site Drainage Inflows

**Change in Flood Depth (m)**

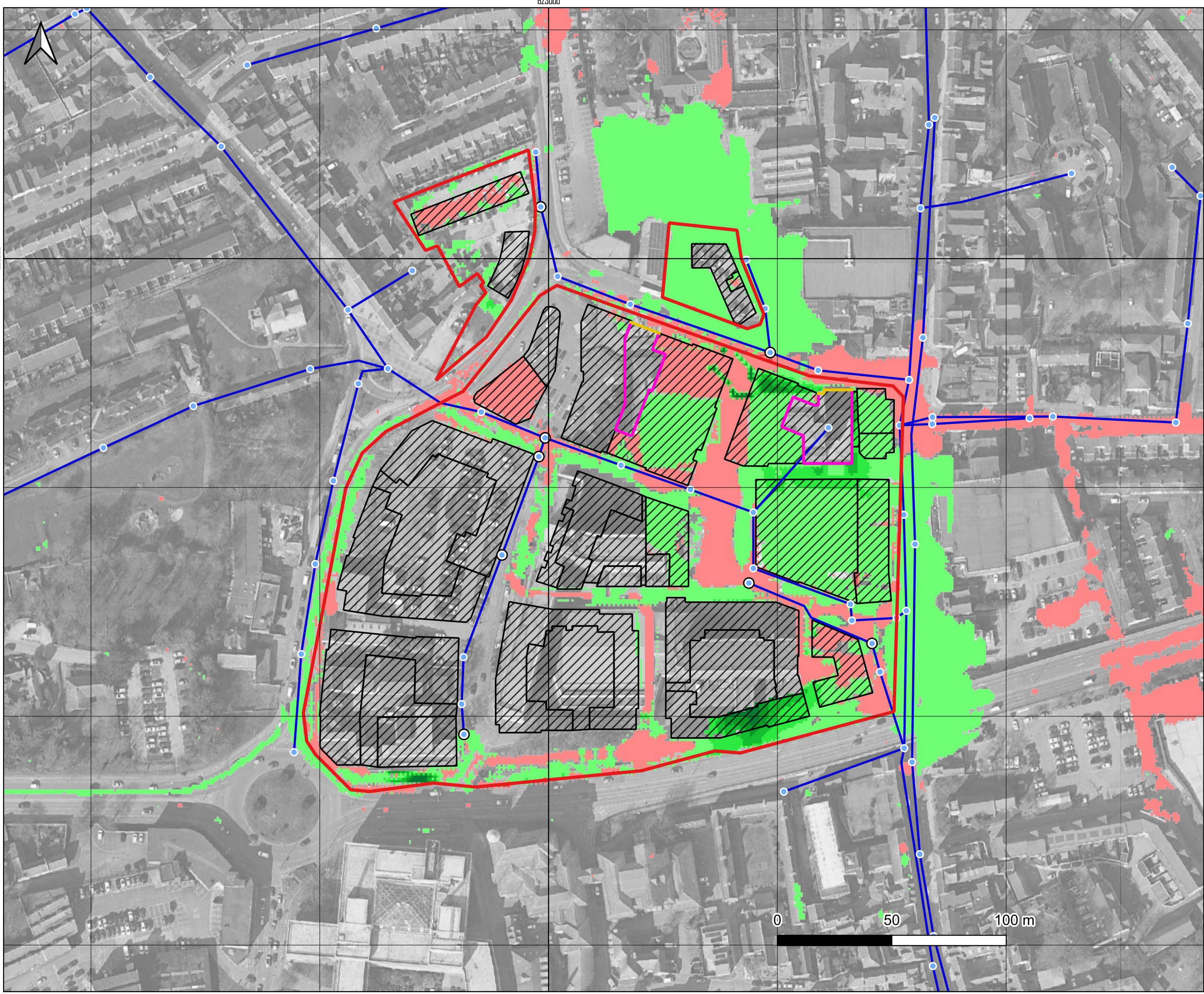
- <=0.8
- 0.8 - -0.6
- 0.6 - -0.4
- 0.4 - -0.2
- 0.2 - -0.005
- 0.005 - 0.005
- 0.005 - 0.2
- 0.2 - 0.4
- 0.4 - 0.6
- 0.6 - 0.8
- > 0.8

**ANGLIA SQUARE  
SURFACE WATER MODEL**

**Proposed (Unmitigated)  
Conditions**

**1:100 Year plus 45% Climate  
Change Flood Event**





**Key**

- Application Boundary
- Proposed Sewer Pits
- Proposed Culverts
- Proposed Barriers
- Proposed Walls
- Proposed OnSite Buildings
- On Site Drainage Inflows

**Change in Flood Depth (m)**

|  |                |
|--|----------------|
|  | <=0.8          |
|  | -0.8 - -0.6    |
|  | -0.6 - -0.4    |
|  | -0.4 - -0.2    |
|  | -0.2 - -0.005  |
|  | -0.005 - 0.005 |
|  | 0.005 - 0.2    |
|  | 0.2 - 0.4      |
|  | 0.4 - 0.6      |
|  | 0.6 - 0.8      |
|  | > 0.8          |

**ANGLIA SQUARE  
SURFACE WATER MODEL**

**Proposed (Mitigated)  
Conditions**

**1:100 Year plus 45% Climate  
Change Flood Event**



## Appendix L Attenuation Tank Alarm System Components



**From:** [Brian M Back](#)  
**To:** [Louisa Wade](#)  
**Subject:** RE: Attenuation Tank Alarm System Query our ref RDN22124  
**Date:** 12 July 2022 19:42:07  
**Attachments:** [image001.png](#)  
[BDT-Level-Transducer-Issue-2.0.pdf](#)  
[RDNET1000 Gateway Receiver Data Sheet Issue 2.0.pdf](#)  
[Flood Sentinel 4-Zone Receiver.pdf](#)

This message was sent from an **e-mail domain unknown to Royal HaskoningDHV**. Please be cautious.

Dear Louisa

Sorry we missed you earlier, but simple answer is yes we can provide an attenuator alarm system. We have such systems installed with the likes of Anglian Water and the Royal Mail just to name a few.

Our systems are unique in the market place as they are designed to permit autonomous real-time control too. This enables the units to provide an inhibit signal to control a diversion valve when the site is un-manned. Again we have similar installations with the likes of Anglian Water across East Anglian.

The products that underpin this are the BDT level sensor which is a simple to use unit that is battery powered and mounted in the top of the tank and the matching receiver.

There are two options here, one the Gateway that can provide outputs to the sites BMS and or control a valve and the other the Sentinel that produces an audible alert in the gatekeeper lodge.

With this system you can have one or both units should this be required, in fact as many receivers and several BDTs can be fitted, for example it is common to have two, each set at a different level to give an early warning then a final warning.

Finally, should you wish to receive some formal consultancy support we are able to offer this too.

Best regards

Brian

**Eur Ing Brian M Back** BEng(Hons) HND CEng FIET MloD  
Founder & CEO

**Mob: +44(0)7711 720 576 - Tel: +44(0)1279 600 440 - E-mail: [brian@radio-data-networks.com](mailto:brian@radio-data-networks.com)**



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Please visit the foot of the [www.radio-data-networks.com](http://www.radio-data-networks.com) home page to access a copy of our GDPR Privacy Policy

**BDT  
Level**

# **BDT Level Transducer & Wireless Head Unit**

**Wireless Technology with 10 – Year Battery Life!**

**Blocked Sewer Detection & Alarms**

**Sewer Level Monitoring**

**Sewer Surge Monitoring**

**Flood Warning**

**Drainage Blockage Reporting**

**Wet Well Alarms**

**SuDS & Blocked Sewer Monitoring**

**Basement Flooding Alarm**

**High Level Alarms**



**R D N**

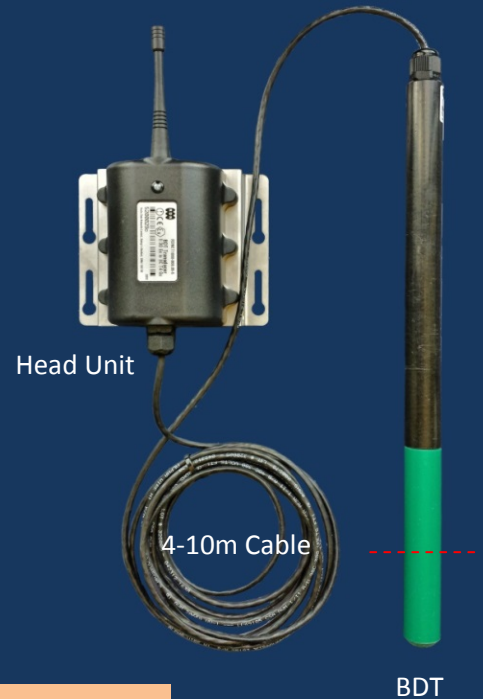


# BDT Level Transducer & Wireless Head Unit

## BDT Wireless Level Transducer & Head Unit:

The BDT Wireless Level Transmitter is an award winning and widely used alternative to using ultrasonics for real-time blockage and surcharge detection in sewers, storm drains, tanks and wet wells.

Using Bulk Dielectric Transducer Technology the unit has no moving parts, is easy to install, easy to setup and thanks to its low power consumption has a battery life of 10-years in spite of broadcasting data every 2.5 seconds. The BDT is ideal for drive-by monitoring or fixed networks where messages can be delivered to existing SCADA, remote data servers or interfaced with BMS/telemetry over distances of many km using our Network Boosters, Gateway Receivers or Cellular Data Concentrators.



## Areas of Use:

- Detecting Blockages in Sewer Networks
- Sewer Surcharge Monitoring
- Industrial & Commercial Sewer Alarms
- Wet Well High Alarms
- Storm Drain Monitoring
- Basement Flooding Alarm



## Key Features:

- Set Point from 0.3m to 4.5m (10m optional) depth
- IP68 100% submersible design 10 year battery life
- Green HDPE injection moulded transducer housing
- Real-time 2.5 second read and transmission rate
- No field programming or software required
- Installed from surface to eliminate the need and cost of confined space entry
- ATEX certified Zone 2
- Licence Free: EN-300-220 and R&TTE Directive
- Compatible with RDNET1000™ Boosters and Receivers
- Supplied with stainless steel mounting bracket
- Set point simple to set by curling cable
- Receiver options include: Gateway with relays to telemetry or SCADA, handheld patrol receiver or PC

- Remote Asset Monitoring
- Radio Telemetry
- Environmental Monitoring
- Energy & Water Sub-Metering
- Water Quality Monitoring
- Sewer & CSO Monitoring
- SCADA & Pump Control
- Temperature & Humidity

[www.radio-data-networks.com](http://www.radio-data-networks.com)

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Hertfordshire, CM22 7QU, ENGLAND

Tel: +44(0)1279 600 440 6 - Lines

E-mail: [sales@radio-data-networks.com](mailto:sales@radio-data-networks.com)

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# Sentinel 4-Zone Receiver

Sentinel 4-Zone

Flood Alarm Receiver

Blocked Sewer Alarm Receiver

Lone Worker Alarm

Basement Flood Alarm

Machine / Pump Monitoring Receiver

Oil Interceptor Monitoring Receiver

Fat Oil & Grease Trap Alarm Receiver

Security Alarm Receiver



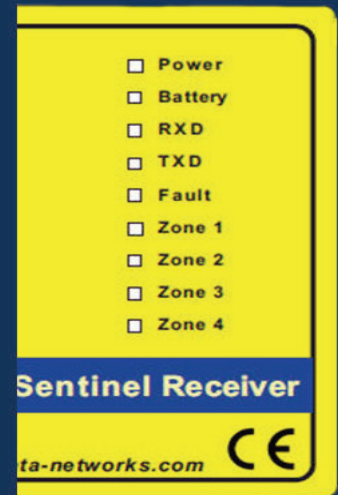
RDN



# Sentinel 4-Zone Receiver

## Sentinel 4-Zone Receiver

The Sentinel 4-Zone receiver can be supplied to support a wide variety of wireless transducers including BDT Lite blocked sewer alarms, float switch transmitters, lone worker call points, basement flood alarms and site security transmitters. The receiver is supplied in a smart stainless steel wall box for indoor use and is provided with an internal power supply and bi-colour status LEDs for each zone. Simple to install and ready to use the receiver comes complete with internal mutable sounder and dual relay contacts to drive an external sounder, telephone auto dialler or BMS system.



## Typical Applications:

- Restaurants and Kitchens
- Retail and Warehouses
- Hotels & Leisure Industry
- Rail & Airports



## Key Features:

- Stainless steel wall box with custom notation panels in any language
- Choice of VHF or UHF operation with up to 4-zones
- Mains power supply with battery backup option
- N-type antenna port for local or remote antenna
- Status LEDs:
  - o 4 x bi-colour zone LEDs (green = OK, red = alarm)
  - o 1 x Fault LED
  - o 1 x RX Data LED
  - o 1 x Power LEDs
- CE, EN300-220 and EN60950 certified

- Remote Asset Monitoring
- Radio Telemetry
- Environmental Monitoring
- Energy & Water Sub-Metering
- Water Quality Monitoring
- Sewer & CSO Monitoring
- SCADA & Pump Control
- Temperature & Humidity

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Tel: +44(0)1279 600 440 6 - Lines

E-mail: [sales@radio-data-networks.com](mailto:sales@radio-data-networks.com)

Gateway  
Receiver

# Gateway Receivers

BMS & SCADA Interface

Blocked Sewer Alarm Receiver

Meter Reading Pulse Outputs

Pump Controller

Alarm Relay Outputs

Analogue Level (4-20mA)

Serial RS232 / USB / LAN Interface

Lone Worker Receiver

Lighting Control

Pollution Valve Status

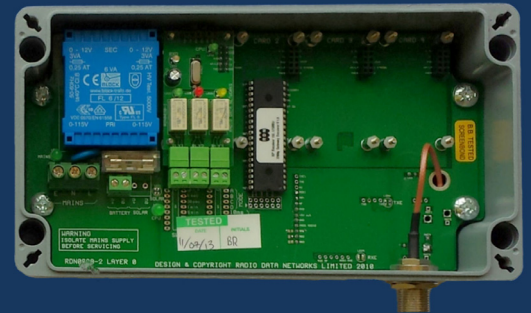




# Gateway Receivers

## -RDNET1000™ Gateway Receiver

The Gateway Receiver is a highly popular and widely deployed receiver that provides a simple yet effective interface between our extensive range of wireless sensors, call points, alarm transmitters, radio telemetry outstations and existing telemetry, BMS or SCADA. Configured simply by plug in modules the Gateway Receiver is available with 4-way and 8-way chassis as standard and is also available in modular format permitting units of up to 64-way capacity to be constructed to special order. The Gateway is available with receiver strips for licence free LP, Band II and ERMES operation. Plug in modules include: digital, pulse, power switching and analogue. The 4-way and 8-way Gateway Receivers also include a low noise linear mains power supply, a battery float charger and the facility to connect an external 12V backup battery.



### Application Include:

- Interface to Existing Telemetry/BMS
- Blocked Sewer & CSO Monitoring
- Radio Telemetry Receiver
- Adopted Pumping Station Alarms
- Lighting, Valve or Pump Control Receiver
- Lone Worker System Interface
- Serial Data to SCADA /PC (RS232) or USB
- Flood Alarm Receiver



### Key Features:

- Integrated BAND II, licence free or ERMES receiver strip, with dual band split frequency option on 8-way version
- Tough die cast wall mounting box
- 4, 8 or up to 64 way plug in card options
- Plug in card options include: Relay, Digital, RS232, Analogue 4-20mA, Power Switching and Pulse Relay
- 230V or 12V dc operation with integrated battery float charger
- No software or programming required
- Supplied pre-drilled with 20mm conduit entries
- N-type antenna port
- CE and EN60950 compliant

- Remote Asset Monitoring
- Radio Telemetry
- Environmental Monitoring
- Energy & Water Sub-Metering
- Water Quality Monitoring
- Sewer & CSO Monitoring
- SCADA & Pump Control
- Temperature & Humidity

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## Appendix M Emergency Planning Team Response



**From:** [EMERGENCY PLANNING](#)  
**To:** [Louisa Wade](#)  
**Cc:** [Armitage, Tracy](#)  
**Subject:** RE: Emergency Flood Plan for Planning Application Ref: 22/00434/F (Hybrid application for the redevelopment of Anglia Square)  
**Date:** 24 June 2022 10:30:32  
**Attachments:** [image003.png](#)  
[Norwich Emergency Planning Guidance - Flood Response Plan.pdf](#)

---

Good morning Louisa

Further to your email, please find attached guidance that has been put together to assist with the development of a Flood Response Plan, which may helpful.

I see no reason why we cannot condition the preparation of the emergency flood plan, I have copied our planning case officer into this email for information.

The Environment Agency and the Association of Directors of Environment, Economy, Planning and Transport (ADEPT) have produced some joint [guidance](#) on flood risk emergency plans and includes a useful checklist at appendix 2.

It would be useful if practical information was offered to the residents on the need to be prepared in the event of a flooding incident, such as registering with the EA Floodline service for early warnings of potential flooding and to plan ahead what to do if they were at threat of flooding or evacuation. Encourage residents to put together an emergency kit and to consider practising what they would do in the event of a flood (much like they would do in the event of a fire). Refuge is a last resort, better to be prepared and in a safe location rather than a rescue situation. There should be a plan of action of who needs to do what, who to advise, and what happens in the worst case scenario. It's about knowing the risks, being informed and preparing accordingly.

Norwich City Council has a number of designated rest centres. If a rest centre is to be activated, residents would be advised which location to go to well in advance of any flooding event, however many may choose to go to family or friends. Which rest centre is to be used would be dependent on the extent of the threat and numbers of evacuees, hence the preference not to identify these within the flood response plan so that residents do not assume they are open to receive evacuees - the location would be advised to evacuees as part of the evacuation process

It would also be useful to consider surface water flooding events, please find a [link](#) to an information leaflet on our website.

I hope this information is helpful to you.

Many thanks and kind regards,

**Teresa Cannon**  
**Emergency Planning Manager**  
Development & City Services  
**Norwich City Council**