Reid Jones partnership

Consulting Civil & Structural Engineers

FLOOD RISK ASSESSMENT

Of

45 & 47 WHALLEY ROAD, CLITHEROE

For

STANTON ANDREWS

Project No.: 12175				
Issue Date	**Revision**	**Status**	**Issued By**	**Checked By**
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QMS ISO 9001 : 2015 REGISTERED QUALITY MANAGEMENT

CONTENTS

1. INTRODUCTION

1.1 This Flood Risk Assessment has been prepared on behalf of Stanton Andrews to support a Planning Application for the project at 45 Whalley Road in Clitheroe. The project involves renovation of an existing function hall / tavern and adjoining building into a mixed-use property, separating the property into 2 distinct buildings. A 4 bedroom domestic property, with the remainder split into residential units at first floor level and commercial units on the ground floor. These buildings will be served by a new gravel finished parking area, hardstanding and a refurbished tarmac yard. There will be removal of 2No. trees in the new landscaped area. There will be no overall increase to the impermeable areas on the site, and therefore no additional surface water management to control surface water runoff.

1.2 The site location is at 45-47 Whalley Road, Clitheroe, BB7 1EE. The site covers an area of approximately 30 x 25 m, with associated parking, external grassed and paved areas.p

2. SITE DESCRIPTION AND LOCATION

2.1 The development location is shown in Figure 1.

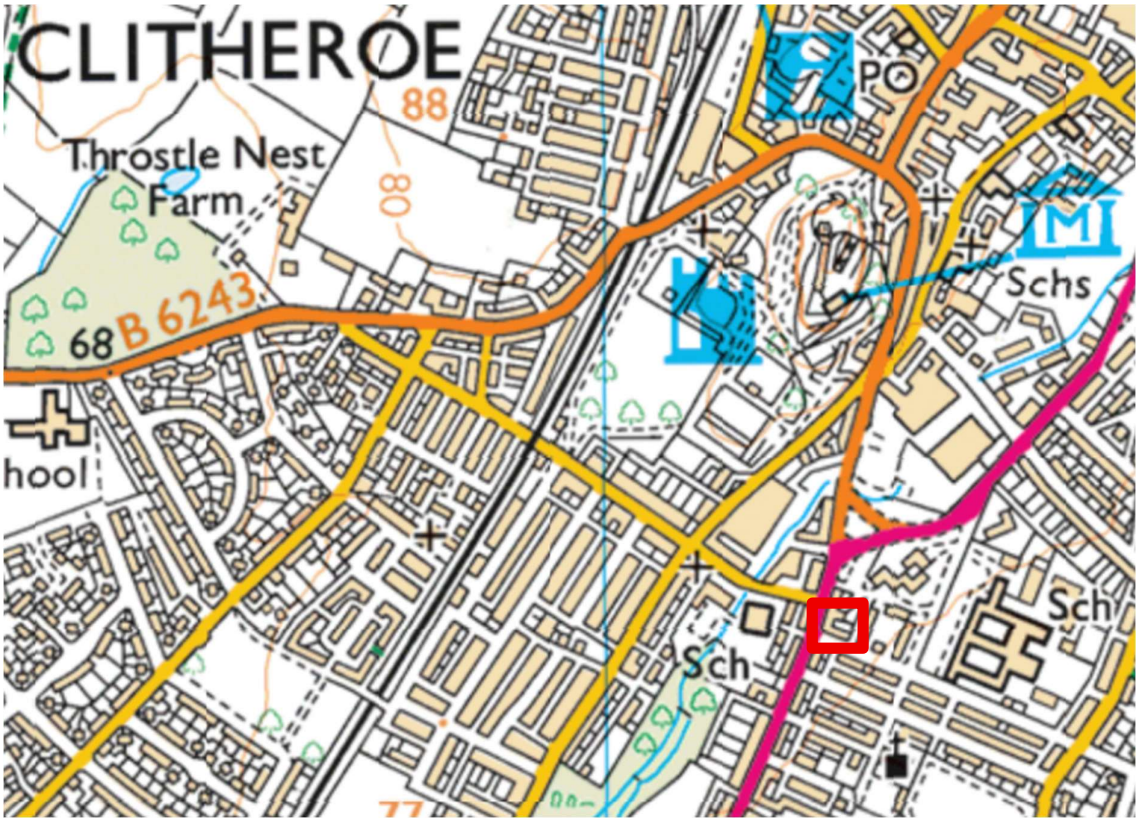


Figure 1: Site Location Plan

2.2 The site covers an area of approximately 30 x 25m. The development site is occupied by the existing commercial building, external hardstanding, external grassed and paved areas.

2.3 The site is bounded by Whalley Road, Turner St, commercial units and domestic properties. The site is centred at Ordnance Survey reference 74240 E, 41280 N.

2.4 The nearest watercourse is Mearley Brook which runs 85m from the Western Site boundary. The stream is classified as an Ordinary Watercourse (responsibility of the LLFA to maintain). The watercourse flows in a generally south westerly direction and discharges into the River Ribble.

3. INVESTIGATIONS AND ENQUIRIES

3.1 Initial investigations show that the site is partially within flood zone 3 & 2 as shown below. This indicates that the site has a high probability of flooding from rivers and the sea. Further information was requested from the Environment Agency (EA) and can be found in Appendix A.

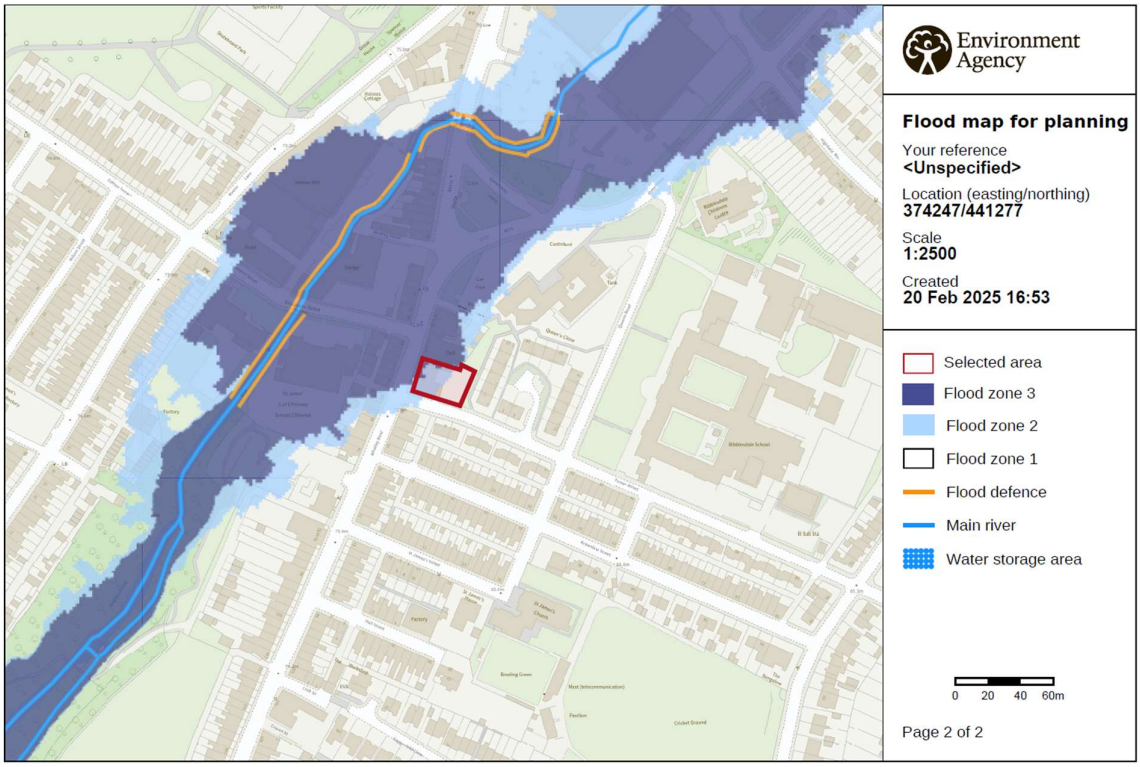


Figure 2: EA Flood Zone Map

The online Long Term Flood Risk Service was reviewed, indicating a very low annual probability of surface water flooding, and groundwater flooding in the area is unlikely. This also indicated that a low yearly risk of flooding and medium long term yearly risk of flooding by rivers and the sea. This is due to the existing flood defences installed along Mearley Brook, the past 5 floods did not affect the location. See Appendix A for further information.

3.2 The online Soilscape Viewer indicates that the underlying geology consists of slowly permeable seasonally wet acid loamy and clayey soils, suggesting favourable conditions for infiltration if required.

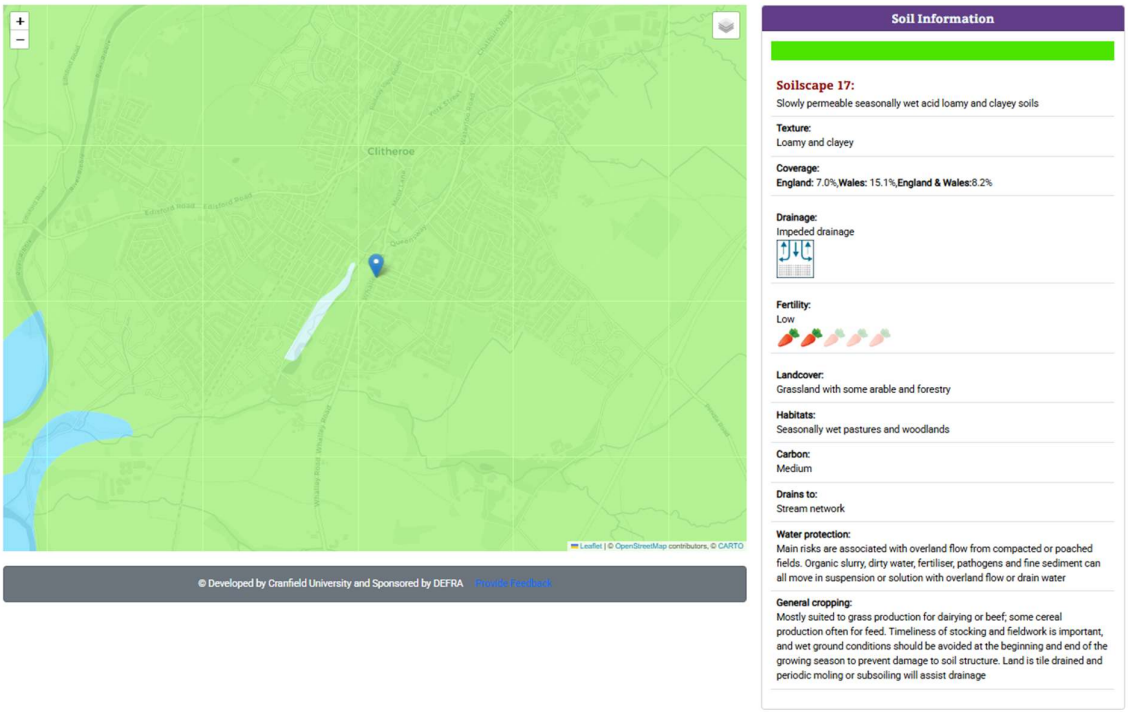


Figure 3: SoilScape Viewer

4. DESIGNING FOR FLOOD RESILIENCE

4.1 Finished Levels

Finished floor levels cannot be moved to be compliant with NPPF requirements. The maximum modelled water level in mAOD for 0.1AEP + 30% height = 73.5m.

The NPPF requirement would be 73.5 + 0.60 = 74.1mAOD. Current FFL sits at 72.92mAOD. Proposed is 73.0OmAOD. This NPPF requirement is not feasible to achieve. It is expected an exemption will be granted.

4.2 Flood Resistance / Resilience Measures

In order to provide an extra element of safety it is recommended that flood resilience/resistance measures are set 300mm above the proposed finished floor level in properties at the lower end of the site.

Flood proofing is a technique by which buildings are designed to withstand the effects of flooding. There are two main categories of flood proofing, which are dry proofing and wet proofing.

Dry proofing methods are designed to keep water out of the building, and wet proofing methods are designed to improve the ability of the property to withstand effects of flooding once the water has entered the building.

In addition, fixtures and fittings should be built to withstand immersion in water or designed to be easily replaced.

The differential pressures across load bearing walls and the flotation effect that will occur during flood events should be taken into account when considering dry proofing techniques.

For most existing properties this means that dry flood proofing should only be considered if the expected flood depth is under 0.9m.

The table below summarises recommendations for flood proofing measures which can be incorporated within the design for the proposed redevelopment works. Such

measures are put forward in accordance with 'Development and Flood Risk Guidance for the Construction Industry' CIRIA C624, London 2004.

It would be preferable to avoid external doors as this would remove a potential point of flood inflows. However, since free access and egress into the building will be required, flood resistant doors and/or the use of flood resistant stop logs or flood boards should be considered.

Full details of manufacturer's or suppliers of flood protection equipment may be obtained from the Flood Protection Association (website: www.thefpa.org.uk).

Feature	Considerations to Improve Flood Proofing
External Walls	Careful consideration of materials: use low permeability materials to limit water penetration if dry proofing required. Consider applying a water-resistant coating. Provide fitting for flood boards or other temporary barriers across openings in the walls.
Internal Walls	Avoid use of gypsum plaster and plasterboards; use more flood resistant linings (e.g. hydraulic lime, ceramic tiles). Avoid use of stud partition walls.
Floors	Avoid use of chipboard floors. Use concrete floors with integrated and continuous damp proof membrane and damp-proof course. Solid concrete floors are preferable; if a suspended floor is to be used, provide facility for drainage of sub-floor void. Use solid insulation materials.
Basements	Waterproofing basement walls and floors including openings for services prevents groundwater flooding. Including sumps and backup generators in case of electrical failure can assist in preventing excessive damage due to flooding. Having flood alarms installed in basement areas can alert property owners and residents prior to surface water flooding events.
Fitting, Fixtures and Services	If possible, locate all fittings, fixtures and services above design floor level. Avoid chipboard and MDF. Consider use of removable plastic fittings. Use solid doors treated with waterproof coatings. Avoid using double-glazed window units that may fill with flood water. Use solid wood staircases. Avoid fitted carpets. Locate electrical, gas and telephone equipment and systems above flood level. Fit anti-flooding devices to drainage systems.

4.3 Flood Protection Equipment

Keeping water out of the building, or limiting the ingress of floodwater, is recommended when considering flood protection measures.

Excluding water will help to reduce damage to the internal fabric of the building and its contents. Such measures are referred to as dry proofing and include:

- Temporary flood barriers.
- Measures to reduce seepage through walls and floors.
- The installation of non-return valves on sewers.

Movable flood barriers can be very effective in preventing or reducing the volume of floodwater entering through doors and other external openings in walls, such as windows and airbricks, as long as a good quality product is installed in accordance with the manufacturer's instructions.

Although barriers may not totally prevent the ingress of water into a building, they can provide valuable time in which to move people, vehicles, expensive equipment and other essential items to higher levels before floodwater rises inside the building.

Flood barriers on wall openings can also reduce the amount of contaminated silt and debris entering the property. Water that seeps through the ground or walls is likely to be filtered to some extent and therefore is usually cleaner than floodwater entering larger openings such as gaps around doors and airbricks.

4.4 A successful resistance strategy ensures that every water entry point on the property is protected. If a single point is missed or a flood defence product fails, the property will begin to take in floodwater which compromises all other protection measures and results in a failed package of works.

5. RECOMMENDATIONS AND CONCLUSIONS

5.1 Online research indicates that part of the site is located within Flood Zone 3, with a high risk of flooding from rivers and a low risk of flooding from surface water or groundwater.

5.2 New flood prevention measures as oulined in the designing for flood resiliance section of this report should be implemented to mitigate damage from flooding.

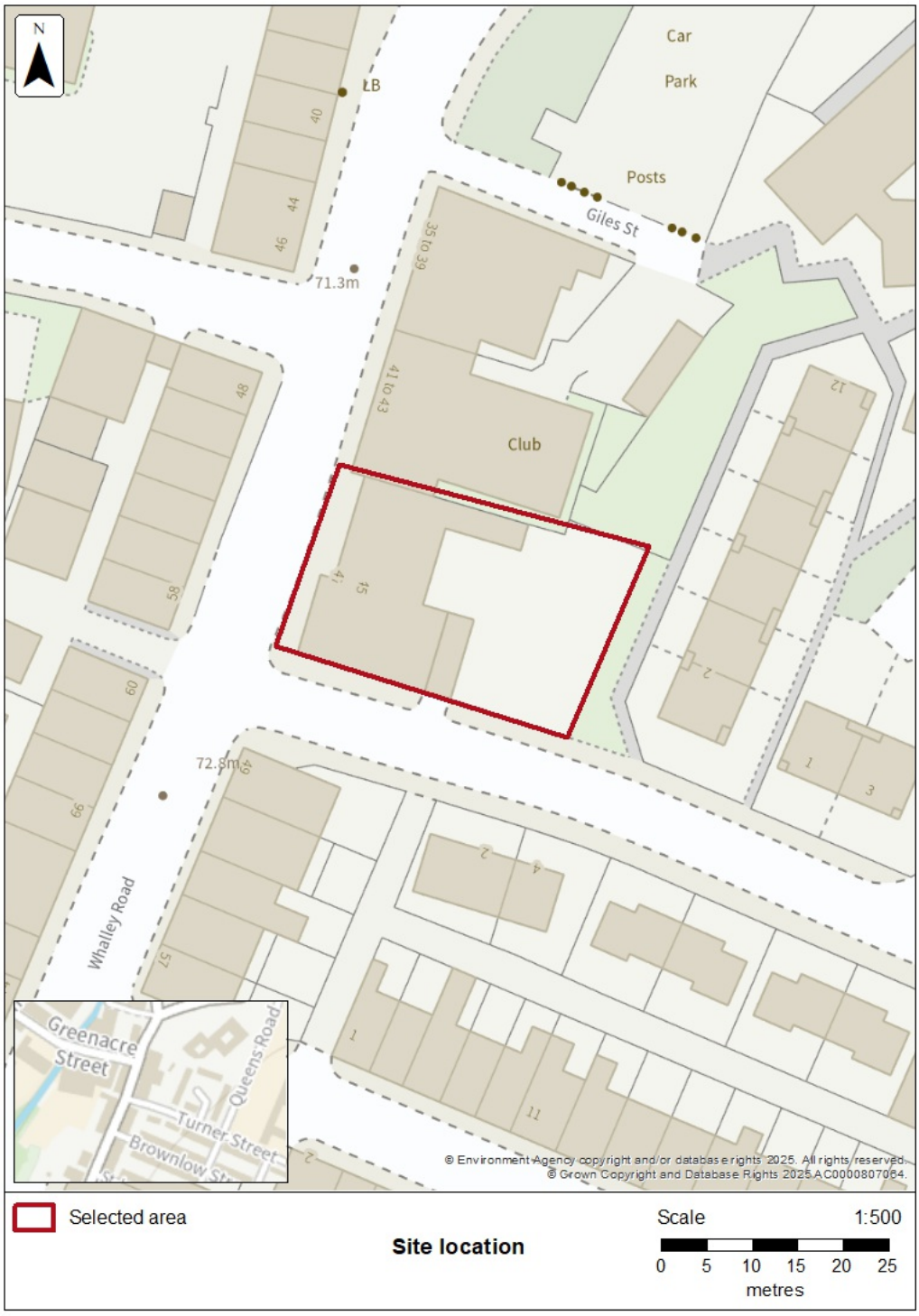
APPENDIX A

EA FLOOD RISK ASSESSMENT DATA

Flood risk assessment data

Location of site: 374245 / 441278 (shown as easting and northing coordinates)
Document created on: 24 February 2025
This information was previously known as a product 4.
Customer reference number: 8DHUU879EAXR

Map showing the location that flood risk assessment data has been requested for.



How to use this information

You can use this information as part of a flood risk assessment for a planning application. To do this, you should include it in the appendix of your flood risk assessment.

We recommend that you work with a flood risk consultant to get your flood risk assessment.

Included in this document

In this document you'll find:

- how to find information about surface water and other sources of flooding
- information on the models used
- definitions for the terminology used throughout
- flood map for planning (rivers and the sea)
- past floods
- flood defences and attributes
- information to help you assess if there is a reduced flood risk from rivers and the sea because of defences
- modelled data
- climate change modelled data
- information about strategic flood risk assessments
- information about this data
- information about flood risk activity permits
- help and advice

Surface water and other sources of flooding

Use the long term flood risk service to find out about the risk of flooding from:

- surface water
- ordinary watercourses
- reservoirs

Or you can contact your Lead Local Flood Authority for further information.

Your Lead Local Flood Authority is Lancashire County.

For information about sewer flooding, contact the relevant water company for the area.

About the models used

Model name: Mearley Brook 2018
Scenario(s): Defended fluvial, defences removed fluvial, defended climate change fluvial
Date: 1 December 2017

This model contains the most relevant data for your area of interest.

Terminology used

Annual exceedance probability (AEP)

This refers to the probability of a flood event occurring in any year. The probability is expressed as a percentage. For example, a large flood which is calculated to have a 1% chance of occuring in any one year, is described as 1% AEP.

Metres above ordnance datum (mAOD)

All flood levels are given in metres above ordnance datum which is defined as the mean sea level at Newlyn, Cornwall.

Flood map for planning (rivers and the sea)

Your selected location is in flood zone 3.

Flood zone 3 shows the area at risk of flooding for an undefended flood event with a:

- 0.5% or greater probability of occurring in any year for flooding from the sea
- 1% or greater probability of occurring in any year for fluvial (river) flooding

Flood zone 2 shows the area at risk of flooding for an undefended flood event with:

- between a 0.1% and 0.5% probability of occurring in any year for flooding from the sea
- between a 0.1% and 1% probability of occurring in any year for fluvial (river) flooding

It's important to remember that the flood zones on this map:

- refer to the land at risk of flooding and do not refer to individual properties
- refer to the probability of river and sea flooding, ignoring the presence of defences
- do not take into account potential impacts of climate change

The flood zones are not currently being updated. The last update was in November 2023. Some of the flood zones may have changed, however all source data is included in the models below.


N
Clitheroe
Clitheroe
Malkin Street
Moor Road
Kirk
York Street
Parson Lane
Lowergate
Bawdlands
B6243
Road
Bleasdale Avenue
West View
Woone Lane
Highfield Road
Hayhurst Street
Bolland Prospect
Turner Street
Littlemoor Road
Peel Park Avenue
Shays Drive
Langshaw Drive
Kemple View
George Street
Primrose
Littlemoor
Whalley Road
Higher Standen Drive
Ludlow Road
Kenilworth Drive
Environment Agency
Flood map for planning
Location (easting/northing)
374245/441278
Scale
1:10,000
Created
24 Feb 2025
Selected area
Main river
Flood defence
Flood zone 3
Flood zone 2
0 100 200 300 400 500
metres
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Past floods

Past flood events included in this document

The recorded flood outlines included in this document are for areas of land local to your site location that have been flooded by any of these sources:

- ephemeral water
- main rivers
- ordinary watercourses
- the sea
- unknown

Data limitations

The outlines do not include flooding from:

- drainage where rainfall has led to surface water ponding or overland runoff
- artificial, water-bearing sewer, water supply and wastewater treatment pipelines

Changes to flood defences

The defences (also known as assets) that were in place may also have changed. For example, assets may have been built more recently than the last recorded flood outline.

What the recorded flood outlines dataset is

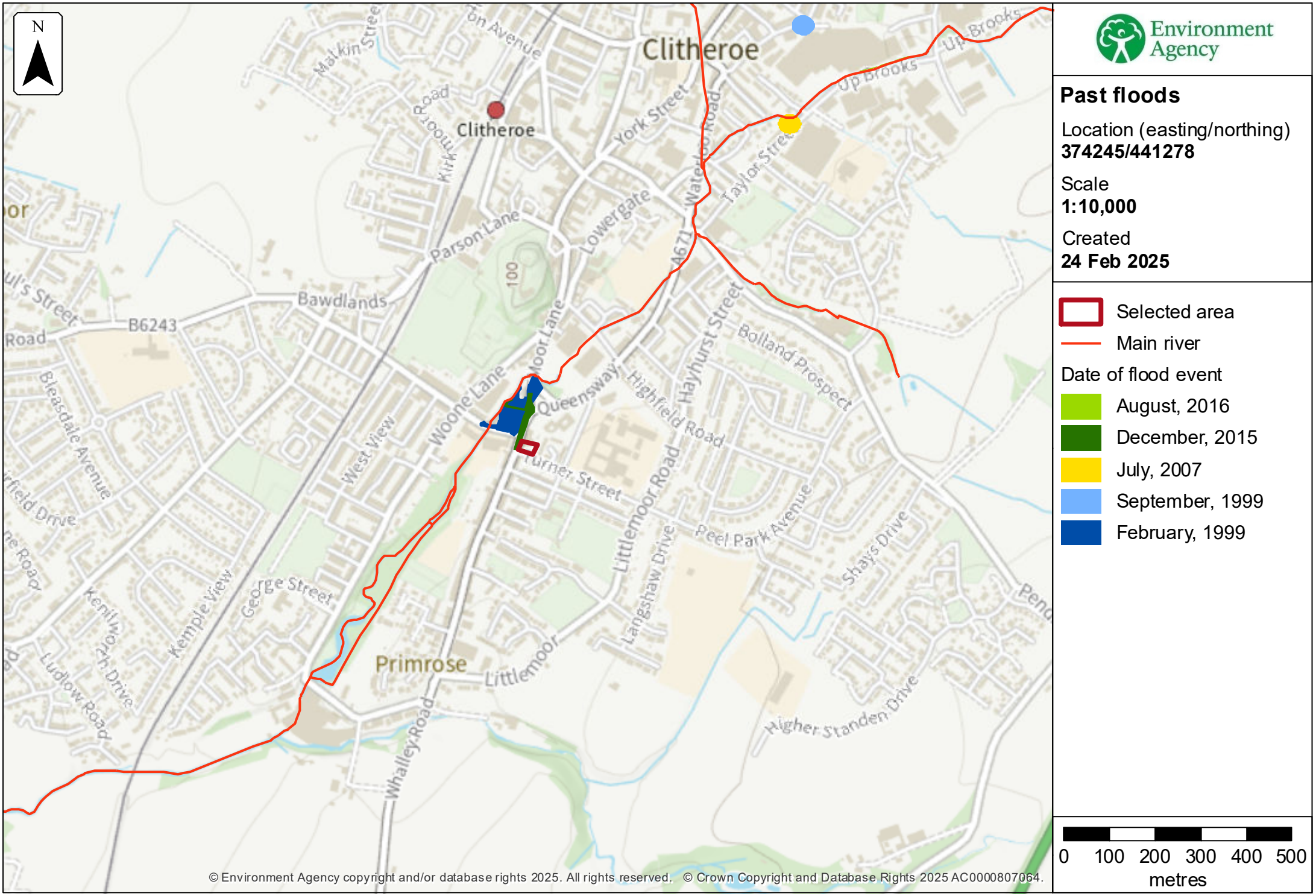
The recorded flood outlines are a geographical information system (GIS) data layer that show our verified records of areas that have flooded in the past from:

- rivers
- the sea
- groundwater
- surface water

Download the complete recorded flood outlines dataset, which includes data quality flags for outlines recorded after April 2020. This indicates the confidence we have in an outline.

Get flood information from other organisations

Contact Lancashire County Lead Local Flood Authority (LLFA) and your drainage board to get information about past flooding caused by surface water or drainage systems.


N
Clitheroe
Clitheroe
Primrose
Bawdlands
B6243
Parson Lane
Lowergate
York Street
Waterloo Road
A671
Taylor Street
Up Brooks
Woone Lane
Queensway
Highfield Road
Hayhurst Street
Bolland Prospect
Turner Street
Littlemoor Road
Peel Park Avenue
Shays Drive
Langshaw Drive
Littlemoor
Whalley Road
Higher Standen Drive
West View
Bleasdale Avenue
Kemple View
George Street
Ludlow Road
Kirk Moor Road
Malkin Street
100
Environment Agency
Past floods
Location (easting/northing)
374245/441278
Scale
1:10,000
Created
24 Feb 2025
Selected area
Main river
Date of flood event
August, 2016
December, 2015
July, 2007
September, 1999
February, 1999
0 100 200 300 400 500
metres
© Environment Agency copyright and/or database rights 2025. All rights reserved. © Crown Copyright and Database Rights 2025 AC0000807064.

Data on past flood events

Start date	End date	Source of flood	Cause of flood	Affects location
22 August 2016	23 August 2016	main river	channel capacity exceeded (no raised defences)	No
26 December 2015	27 December 2015	unknown	unknown	No
3 July 2007	4 July 2007	ordinary watercourse	obstruction/blockage - culvert	No
29 September 1999	30 September 1999	main river	channel capacity exceeded (no raised defences)	No
19 February 1999	20 February 1999	main river	other	No

Flood defences and attributes

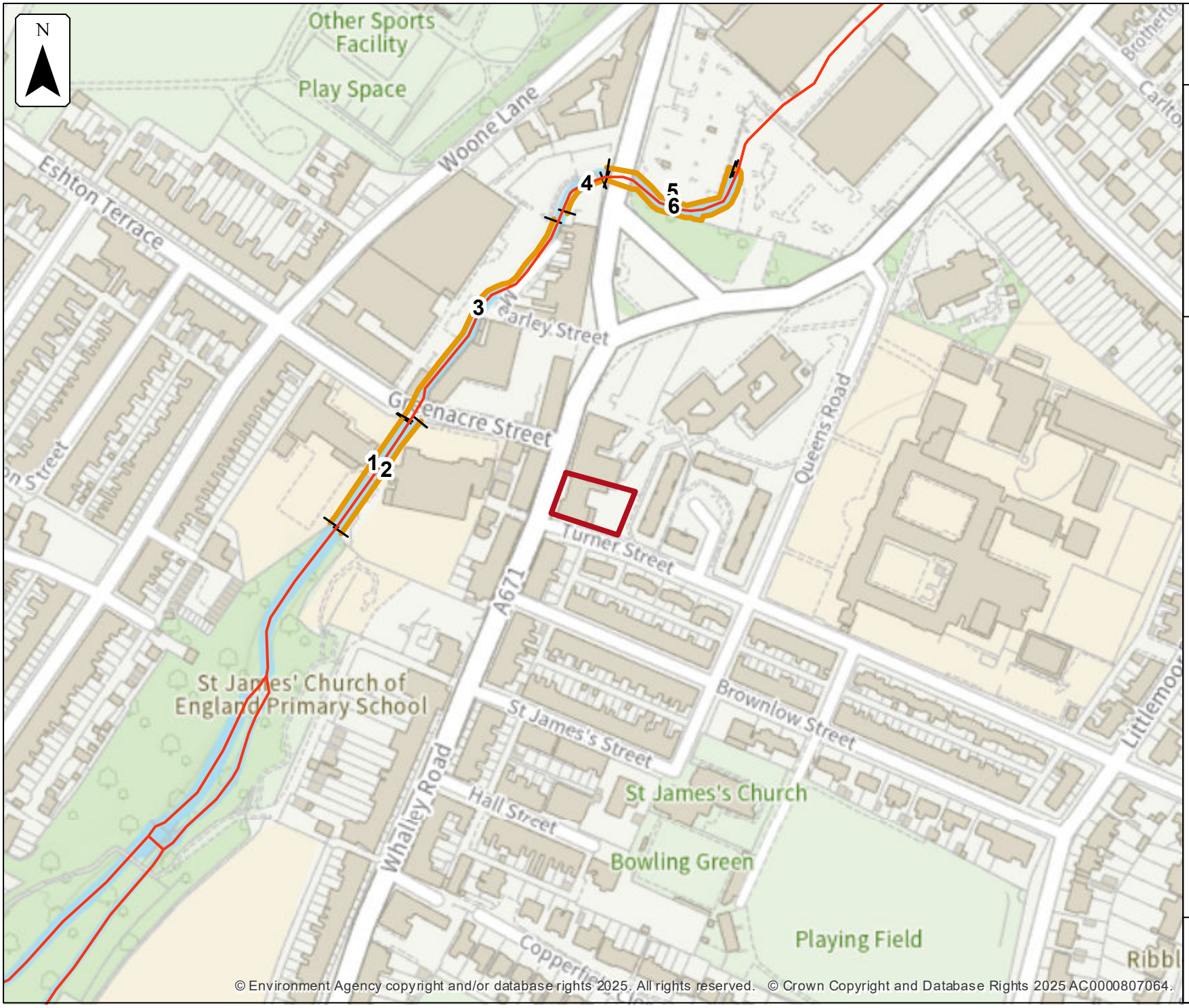
The flood defences map shows the location of the flood defences present.

The flood defences data table shows the type of defences, their condition and the standard of protection. It shows the height above sea level of the top of the flood defence (crest level). The height is In mAOD which is the metres above the mean sea level at Newlyn, Cornwall.

It's important to remember that flood defence data may not be updated on a regular basis. The information here is based on the best available data.

Use this information:

- to help you assess if there is a reduced flood risk for this location because of defences
- with any information in the modelled data section to find out the impact of defences on flood risk



Environment Agency

Flood defences

Location (easting/northing)
374245/441278

Scale
1:2,500

Created
24 Feb 2025

- Selected area
- Main river
- Flood defence

0 25 50 75 100
metres

Flood defences data

Label	Asset ID	Asset Type	Standard of protection (years)	Current condition	Downstream actual crest level (mAOD)	Upstream actual crest level (mAOD)	Effective crest level (mAOD)
1	64624	Wall	100	Fair	73.14	73.16	73.14
2	69518	Wall	100	Fair	72.94	72.94	72.94
3	95088	Wall	10	Fair	71.54	73.16	71.54
4	64401	Wall	10	Fair	72.33	73.65	72.33
5	67007	Wall	100	Fair	74.01	76.82	74.01
6	67006	Wall	10	Fair	73.65	72.86	72.86

Any blank cells show where a particular value has not been recorded for an asset.

Modelled data

This section provides details of different scenarios we have modelled and includes the following (where available):

- outline maps showing the area at risk from flooding in different modelled scenarios
- modelled node point map(s) showing the points used to get the data to model the scenarios and table(s) providing details of the flood risk for different return periods
- map(s) showing the approximate water levels for the return period with the largest flood extent for a scenario and table(s) of sample points providing details of the flood risk for different return periods

Climate change

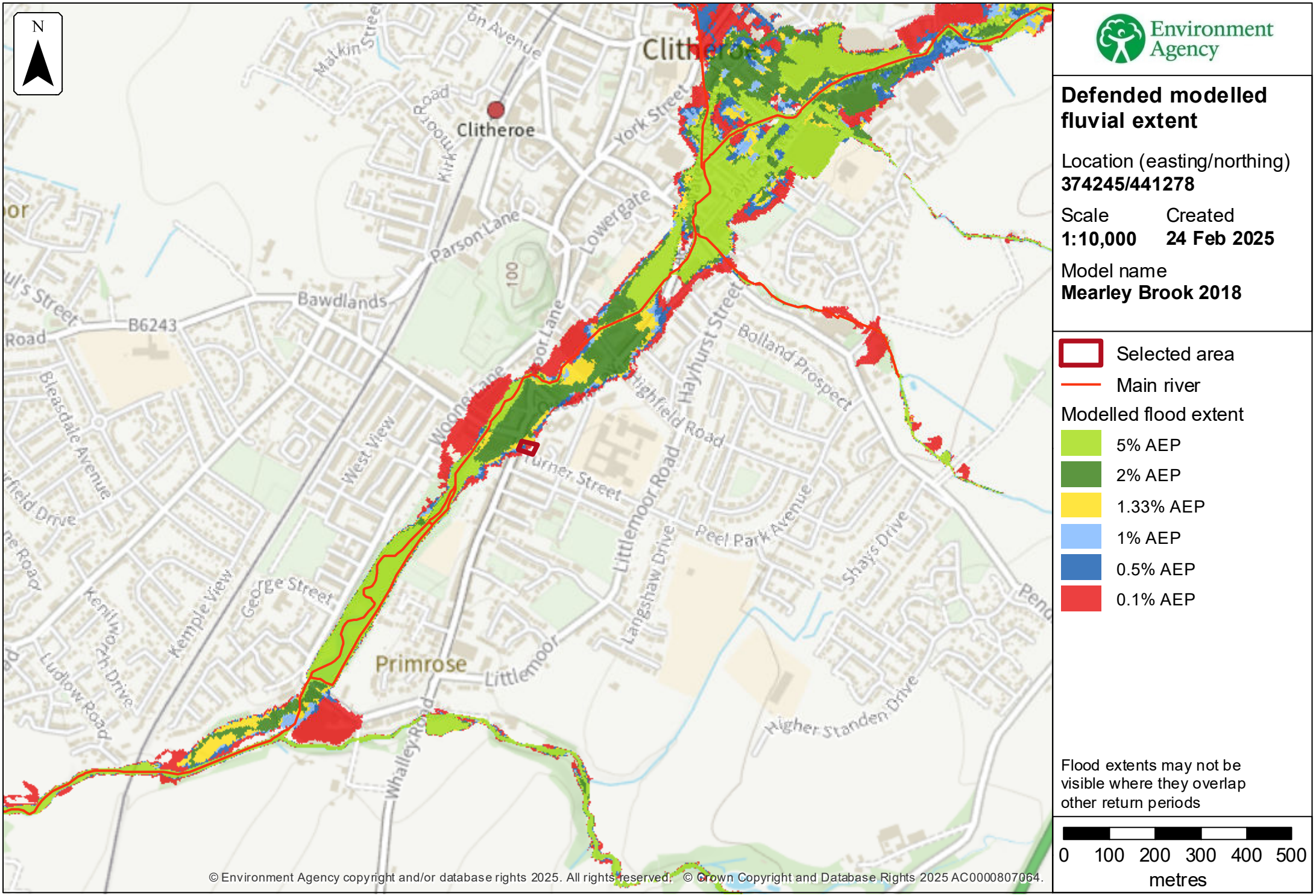
The climate change data included in the models may not include the latest flood risk assessment climate change allowances. Where the new allowances are not available you will need to consider this data and factor in the new allowances to demonstrate the development will be safe from flooding.

The Environment Agency will incorporate the new allowances into future modelling studies. For now, it's your responsibility to demonstrate that new developments will be safe in flood risk terms for their lifetime.

Modelled scenarios

The following scenarios are included:

- Defended modelled fluvial: risk of flooding from rivers where there are flood defences
- Defences removed modelled fluvial: risk of flooding from rivers where flood defences have been removed
- Defended climate change modelled fluvial: risk of flooding from rivers where there are flood defences, including estimated impact of climate change



Environment Agency

Defended modelled fluvial extent

Location (easting/northing)
374245/441278

Scale
1:10,000

Created
24 Feb 2025

Model name
Mearley Brook 2018

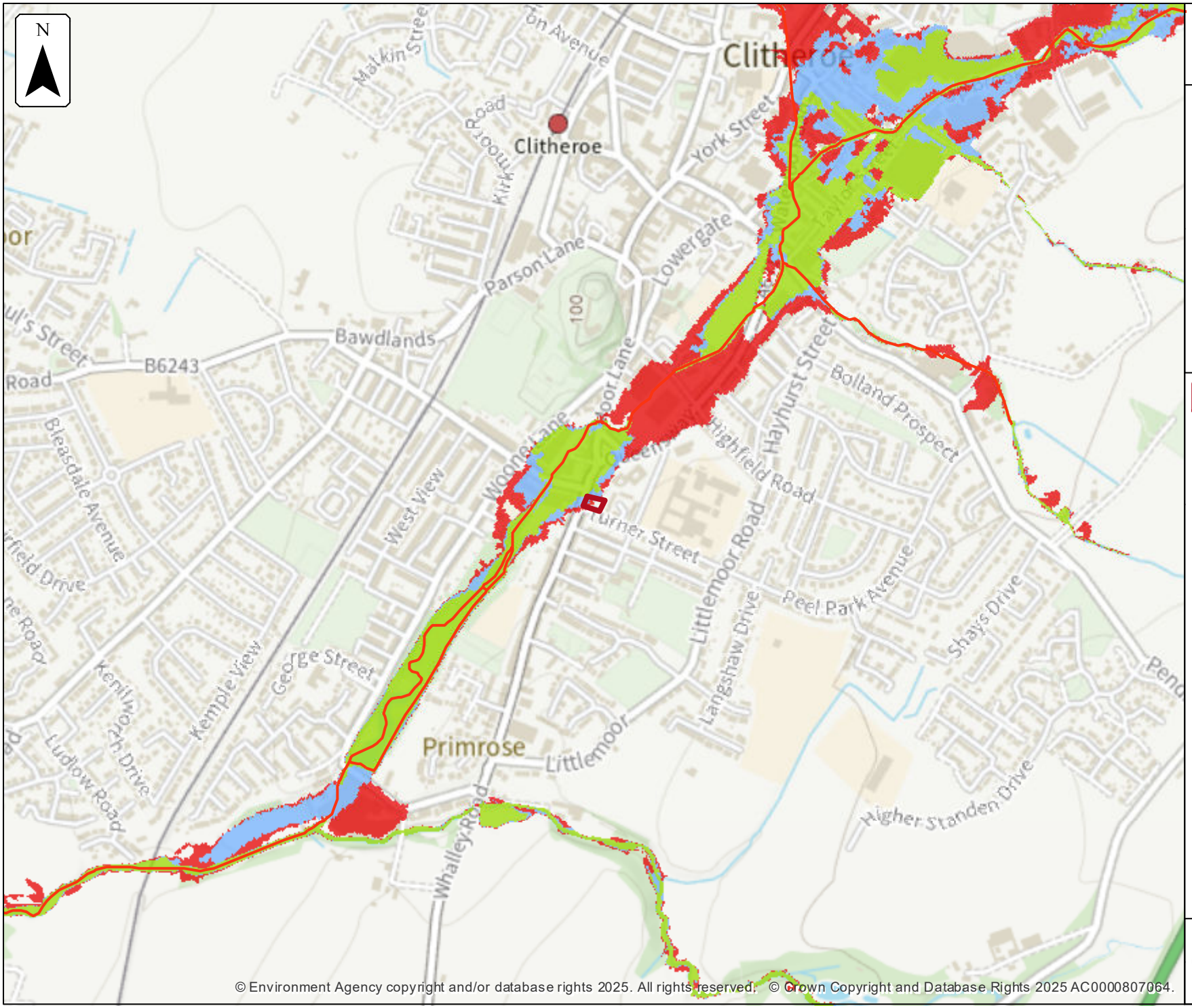
- Selected area
- Main river

Modelled flood extent

- 5% AEP
- 2% AEP
- 1.33% AEP
- 1% AEP
- 0.5% AEP
- 0.1% AEP

Flood extents may not be visible where they overlap other return periods

0 100 200 300 400 500
metres



Environment Agency

Defences removed modelled fluvial extent

Location (easting/northing)
374245/441278

Scale
1:10,000

Created
24 Feb 2025

Model name
Mearley Brook 2018

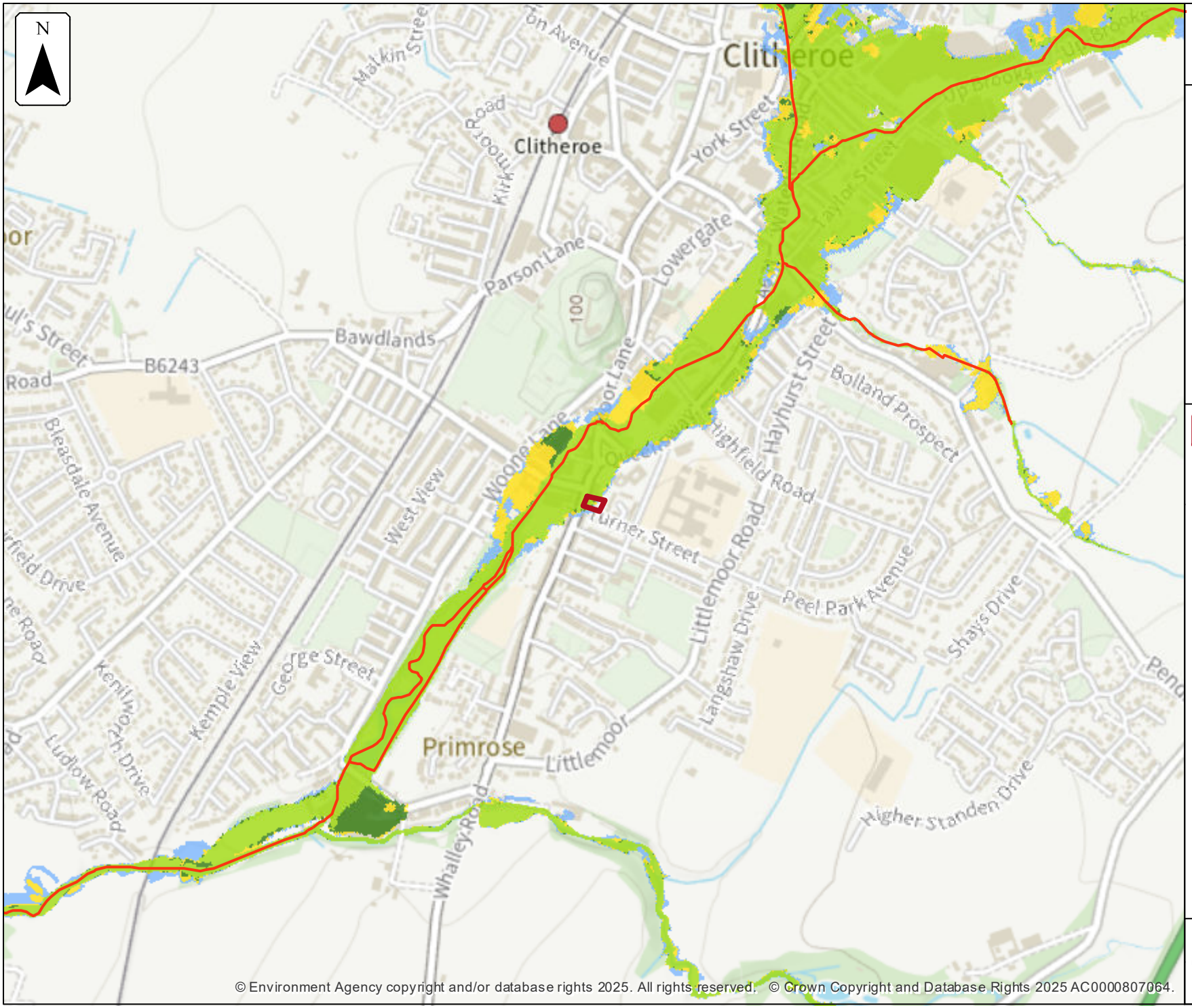
- Selected area
- Main river

Modelled flood extent

- 5% AEP
- 1% AEP
- 0.1% AEP

Flood extents may not be visible where they overlap other return periods

0 100 200 300 400 500
metres



Environment Agency

Defended climate change modelled fluvial extent

Location (easting/northing)
374245/441278

Scale
1:10,000

Created
24 Feb 2025

Model name
Mearley Brook 2018

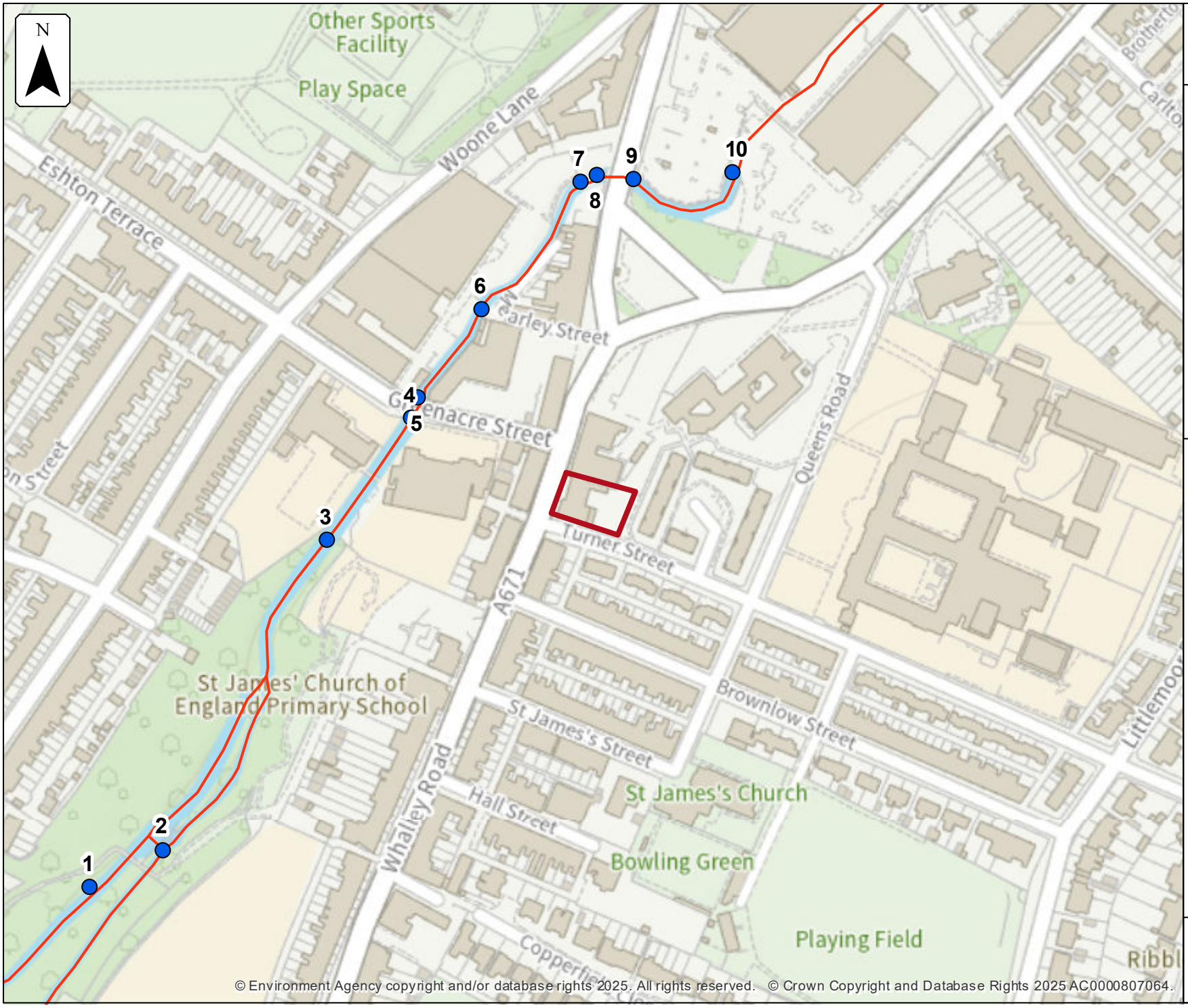
- Selected area
- Main river

Modelled flood extent

- 1% AEP (+30%)
- 1% AEP (+35%)
- 1% AEP (+70%)
- 0.1% AEP (+30%)

Flood extents may not be visible where they overlap other return periods

0 100 200 300 400 500
metres



Environment Agency

Defended modelled fluvial node locations

Location (easting/northing)
374245/441278

Scale
1:2,500

Created
24 Feb 2025

Model name
Mearley Brook 2018

Selected area
Modelled location
Main river

0 25 50 75 100
metres

Modelled node locations data

Defended

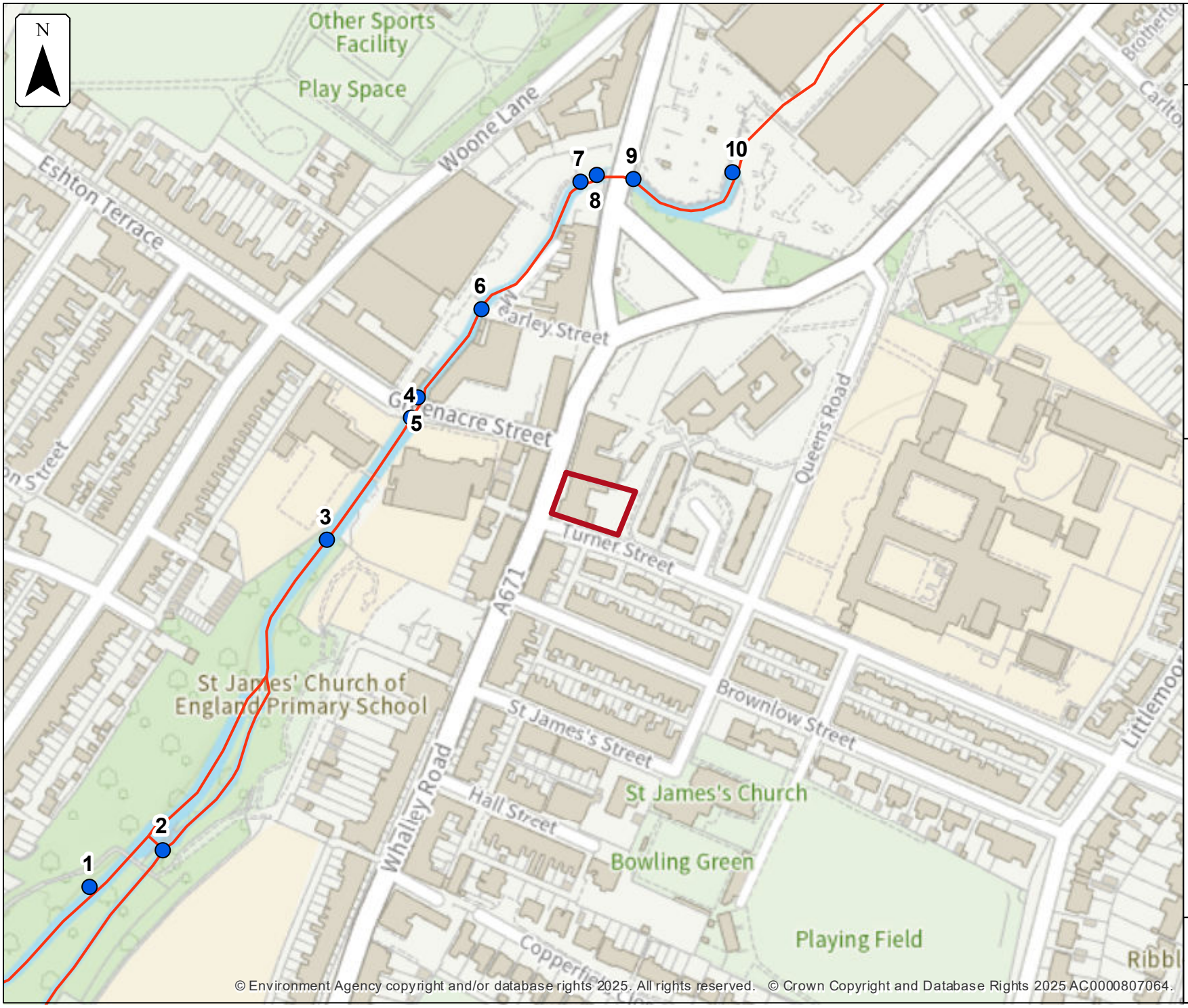
Label	Modelled location ID	Easting	Northing	50% AEP	20% AEP	10% AEP	5% AEP	4% AEP	3.33% AEP	2% AEP	1.33% AEP	1% AEP	0.5% AEP	0.1% AEP
				Level	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level
1	982433	374000	441090	69.61	69.76	69.89	70.02	70.08	70.13	70.32	70.61	70.75	70.93	71.07
2	982362	374035	441108	69.69	69.82	69.94	70.06	70.11	70.15	70.33	70.64	70.78	70.96	71.12
3	982191	374115	441260	70.51	70.66	70.78	70.90	70.93	70.94	70.99	71.10	71.18	71.35	71.75
4	982466	374156	441319	70.77	70.95	71.12	71.29	71.33	71.38	71.45	71.54	71.62	71.79	72.17
5	982306	374160	441329	70.86	71.12	71.40	71.71	71.80	71.88	72.0	72.10	72.22	72.48	72.95
6	982380	374190	441372	70.93	71.26	71.53	71.82	71.89	71.96	72.08	72.17	72.28	72.53	73.0
7	982328	374239	441434	71.24	71.41	71.61	71.84	71.90	71.96	72.06	72.15	72.26	72.54	73.0
8	982200	374246	441438	71.26	71.42	71.63	71.85	71.91	71.97	72.07	72.15	72.26	72.56	73.05
9	982378	374265	441436	71.52	71.82	72.22	72.69	72.82	72.95	73.20	73.32	73.43	73.60	73.85
10	982254	374313	441439	71.55	71.83	72.22	72.75	72.90	73.03	73.29	73.41	73.50	73.68	74.0

Data in this table comes from the Mearley Brook 2018 model.
Level values are shown in mAOD, and flow values are shown in cubic metres per second.
Any blank cells show where a particular scenario has not been modelled for this location.
If no level or flow data is available for a scenario, no table will be shown.

Defended

Label	Modelled location ID	Easting	Northing	50% AEP	20% AEP	10% AEP	5% AEP	4% AEP	3.33% AEP	2% AEP	1.33% AEP	1% AEP	0.5% AEP	0.1% AEP
				Flow	Flow	Flow	Flow	Flow	Flow	Flow	Flow	Flow	Flow	Flow
1	982433	374000	441090	11.59	14.95	18.13	21.37	22.16	22.81	24.61	26.85	28.33	31.97	50.47
2	982362	374035	441108	1.0	1.02	1.58	2.49	2.73	2.93	3.70	7.38	8.74	11.27	18.03
3	982191	374115	441260	12.06	15.40	18.75	22.19	23.03	23.71	25.44	27.34	29.24	32.10	42.01
4	982466	374156	441319	12.06	15.40	18.76	22.19	23.03	23.71	24.72	25.01	25.13	26.32	28.35
5	982306	374160	441329	12.06	15.40	18.76	22.19	23.03	23.71	24.72	25.01	25.13	26.32	28.35
6	982380	374190	441372	11.88	15.14	18.50	21.88	22.71	23.38	24.38	24.58	24.69	25.86	26.41
7	982328	374239	441434	11.88	15.14	18.50	21.89	22.72	23.49	24.90	25.39	25.60	25.85	26.0
8	982200	374246	441438	11.88	15.14	18.50	21.89	22.72	23.49	24.90	25.39	25.60	25.85	26.0
9	982378	374265	441436	11.88	15.14	18.50	21.89	22.72	23.49	25.39	26.41	26.80	27.26	27.71
10	982254	374313	441439	11.81	15.04	18.40	21.76	22.59	23.36	25.24	26.17	26.61	27.15	27.69

Data in this table comes from the Mearley Brook 2018 model.
Level values are shown in mAOD, and flow values are shown in cubic metres per second.
Any blank cells show where a particular scenario has not been modelled for this location.
If no level or flow data is available for a scenario, no table will be shown.



Environment Agency

Defences removed modelled fluvial node locations

Location (easting/northing)
374245/441278

Scale
1:2,500

Created
24 Feb 2025

Model name
Mearley Brook 2018

Selected area
Modelled location
Main river

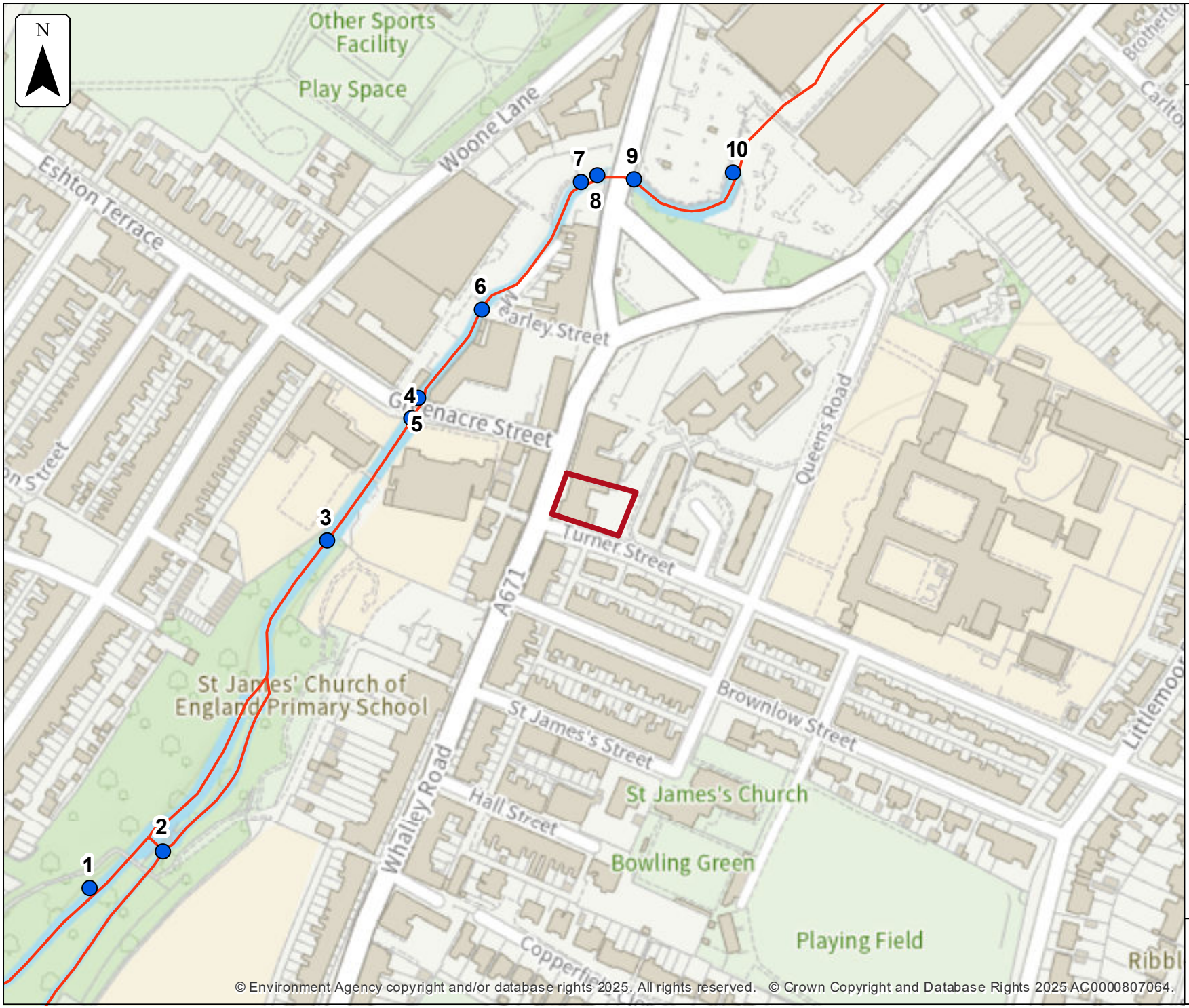
0 25 50 75 100
metres

Modelled node locations data

Defences removed

Label	Modelled location ID	Easting	Northing	5% AEP	1% AEP	0.1% AEP	5% AEP	1% AEP	0.1% AEP
				Level	Level	Level	Flow	Flow	Flow
1	982433	374000	441090	70.0	70.78	71.06	21.05	28.69	49.97
2	982362	374035	441108	70.04	70.81	71.11	2.39	9.06	17.76
3	982191	374115	441260	70.89	71.21	71.74	21.85	31.76	42.21
4	982466	374156	441319	71.33	71.88	72.40	19.43	19.70	19.83
5	982306	374160	441329	71.66	72.25	72.69	19.43	19.70	19.83
6	982380	374190	441372	71.78	72.31	72.70	15.92	15.86	19.85
7	982328	374239	441434	71.77	72.30	72.72	16.98	17.28	17.48
8	982200	374246	441438	71.78	72.30	72.73	16.98	17.28	17.48
9	982378	374265	441436	72.21	72.52	72.98	16.99	17.30	17.51
10	982254	374313	441439	72.11	72.18	73.32	21.81	31.25	42.34

Data in this table comes from the Mearley Brook 2018 model.
Level values are shown in mAOD, and flow values are shown in cubic metres per second.
Any blank cells show where a particular scenario has not been modelled for this location.
If no level or flow data is available for a scenario, no table will be shown.



Environment Agency

Defended climate change modelled fluvial node locations

Location (easting/northing)
374245/441278

Scale
1:2,500

Created
24 Feb 2025

Model name
Mearley Brook 2018

Selected area
Modelled location
Main river

0 25 50 75 100
metres

Modelled node locations data

Defended climate change

Label	Modelled location ID	Easting	Northing	1% AEP (+30%)	1% AEP (+35%)	1% AEP (+70%)	0.1% AEP (+30%)	1% AEP (+30%)	1% AEP (+35%)	1% AEP (+70%)	0.1% AEP (+30%)
				Level	Level	Level	Level	Flow	Flow	Flow	Flow
1	982433	374000	441090	71.0	71.02	71.06	71.18	35.09	39.07	46.10	64.43
2	982362	374035	441108	71.03	71.05	71.09	71.25	12.48	12.96	15.80	22.42
3	982191	374115	441260	71.44	71.47	71.65	72.02	33.94	34.96	40.05	45.66
4	982466	374156	441319	71.87	71.91	72.08	72.45	26.85	27.32	28.22	28.49
5	982306	374160	441329	72.60	72.66	72.87	73.20	26.85	27.32	28.22	28.49
6	982380	374190	441372	72.65	72.70	72.91	73.24	26.21	26.37	26.43	26.32
7	982328	374239	441434	72.67	72.73	72.92	73.24	25.90	25.92	25.97	25.94
8	982200	374246	441438	72.70	72.77	72.97	73.30	25.90	25.92	25.97	25.94
9	982378	374265	441436	73.67	73.69	73.80	73.97	27.36	27.41	27.62	27.82
10	982254	374313	441439	73.75	73.78	73.92	74.21	27.28	27.35	27.61	27.84

Data in this table comes from the Mearley Brook 2018 model.
Level values are shown in mAOD, and flow values are shown in cubic metres per second.
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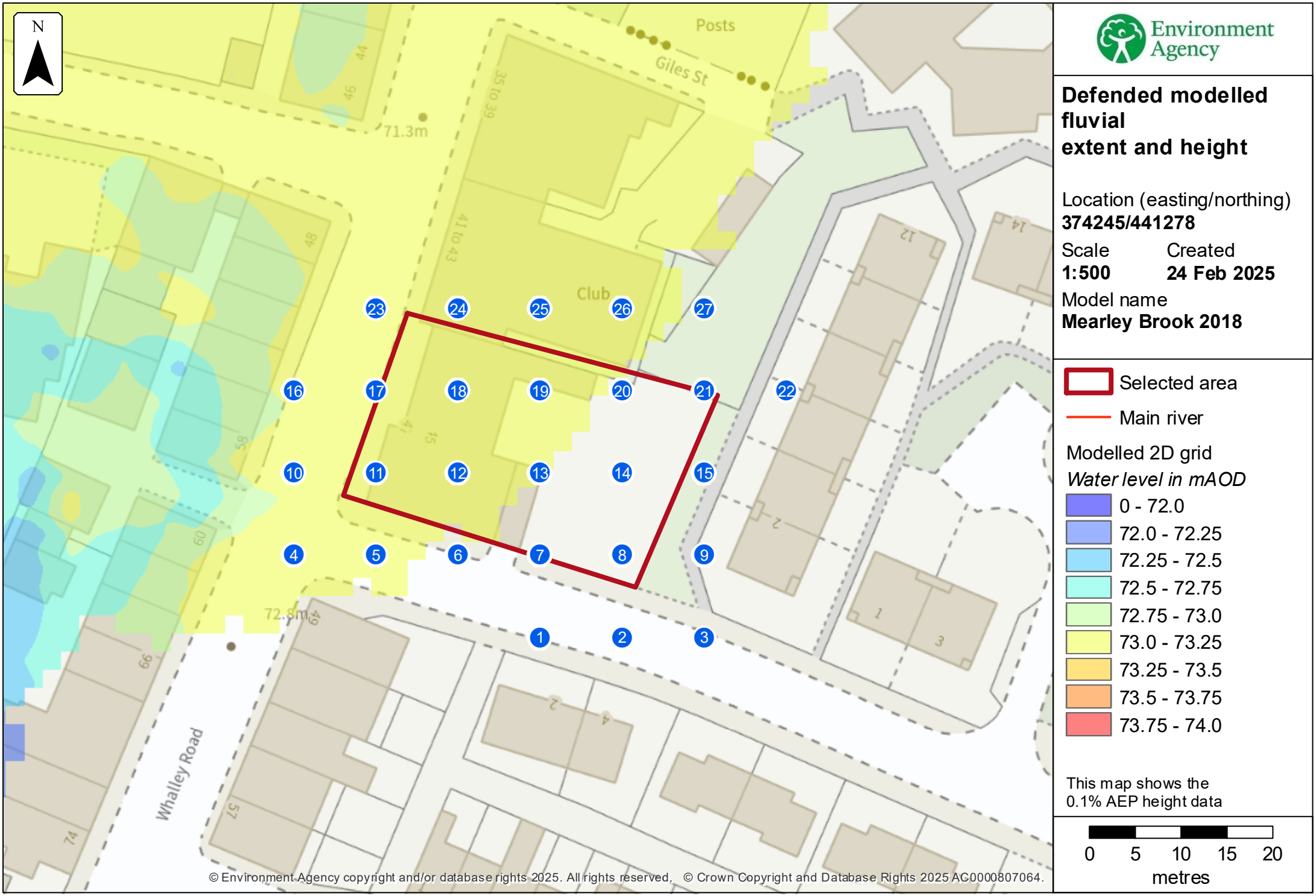

Environment Agency

Defended modelled fluvial extent and height

Location (easting/northing)
374245/441278

Scale
1:500

Created
24 Feb 2025

Model name
Mearley Brook 2018

Selected area

Main river

Modelled 2D grid
Water level in mAOD

- 0 - 72.0
- 72.0 - 72.25
- 72.25 - 72.5
- 72.5 - 72.75
- 72.75 - 73.0
- 73.0 - 73.25
- 73.25 - 73.5
- 73.5 - 73.75
- 73.75 - 74.0

This map shows the 0.1% AEP height data

0 5 10 15 20
metres

Sample point data

Defended

Label	Easting	Northing	50% AEP	20% AEP	10% AEP	5% AEP	4% AEP	3.33% AEP	2% AEP	1.33% AEP	1% AEP	0.5% AEP	0.1% AEP
			Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth
1	374246	441257	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
2	374255	441257	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
3	374264	441257	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
4	374219	441266	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	0.37
5	374228	441266	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	0.23
6	374237	441266	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
7	374246	441266	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
8	374255	441266	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
9	374264	441266	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
10	374219	441275	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	0.02	0.28	0.74
11	374228	441275	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	0.06	0.49
12	374237	441275	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	0.28
13	374246	441275	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
14	374255	441275	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
15	374264	441275	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
16	374219	441284	NoData	NoData	NoData	NoData	NoData	NoData	NoData	0.21	0.34	0.63	1.08

Label	Easting	Northing	50% AEP	20% AEP	10% AEP	5% AEP	4% AEP	3.33% AEP	2% AEP	1.33% AEP	1% AEP	0.5% AEP	0.1% AEP
			Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth
17	374228	441284	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	0.20	0.48	0.94
18	374237	441284	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	0.21	0.67
19	374246	441284	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	0.03	0.46
20	374255	441284	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
21	374264	441284	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
22	374273	441284	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
23	374228	441293	NoData	NoData	NoData	NoData	NoData	NoData	0.06	0.38	0.51	0.79	1.25
24	374237	441293	NoData	NoData	NoData	NoData	NoData	NoData	NoData	0.26	0.38	0.67	1.13
25	374246	441293	NoData	NoData	NoData	NoData	NoData	NoData	NoData	0.24	0.37	0.66	1.12
26	374255	441293	NoData	NoData	NoData	NoData	NoData	NoData	NoData	0.25	0.37	0.66	1.12
27	374264	441293	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
Max value in selected area:			Could not determine	Could not determine	Could not determine	Could not determine	Could not determine	Could not determine	Could not determine	0.21	0.33	0.62	1.08

Data in this table comes from the Mearley Brook 2018 model.
Height values are shown in mAOD, and depth values are shown in metres.
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'Max value in selected area' is the deepest depth or highest height at any location within your drawn boundary.

Defended

Label	Easting	Northing	50% AEP	20% AEP	10% AEP	5% AEP	4% AEP	3.33% AEP	2% AEP	1.33% AEP	1% AEP	0.5% AEP	0.1% AEP
			Height	Height	Height	Height	Height	Height	Height	Height	Height	Height	Height
1	374246	441257	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
2	374255	441257	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
3	374264	441257	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
4	374219	441266	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	73.01
5	374228	441266	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	73.01
6	374237	441266	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
7	374246	441266	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
8	374255	441266	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
9	374264	441266	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
10	374219	441275	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	72.28	72.56	73.03
11	374228	441275	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	72.56	73.01
12	374237	441275	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	73.01
13	374246	441275	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
14	374255	441275	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
15	374264	441275	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
16	374219	441284	NoData	NoData	NoData	NoData	NoData	NoData	NoData	72.15	72.28	72.57	73.02
17	374228	441284	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	72.28	72.56	73.02

Label	Easting	Northing	50% AEP	20% AEP	10% AEP	5% AEP	4% AEP	3.33% AEP	2% AEP	1.33% AEP	1% AEP	0.5% AEP	0.1% AEP
			Height	Height	Height	Height	Height	Height	Height	Height	Height	Height	Height
18	374237	441284	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	72.56	73.02
19	374246	441284	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	72.56	73.02
20	374255	441284	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
21	374264	441284	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
22	374273	441284	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
23	374228	441293	NoData	NoData	NoData	NoData	NoData	NoData	71.83	72.15	72.28	72.56	73.02
24	374237	441293	NoData	NoData	NoData	NoData	NoData	NoData	NoData	72.15	72.28	72.56	73.02
25	374246	441293	NoData	NoData	NoData	NoData	NoData	NoData	NoData	72.15	72.28	72.56	73.02
26	374255	441293	NoData	NoData	NoData	NoData	NoData	NoData	NoData	72.15	72.28	72.56	73.03
27	374264	441293	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
Max value in selected area:			Could not determine	Could not determine	Could not determine	Could not determine	Could not determine	Could not determine	Could not determine	72.15	72.28	72.56	73.03

Data in this table comes from the Mearley Brook 2018 model.
Height values are shown in mAOD, and depth values are shown in metres.
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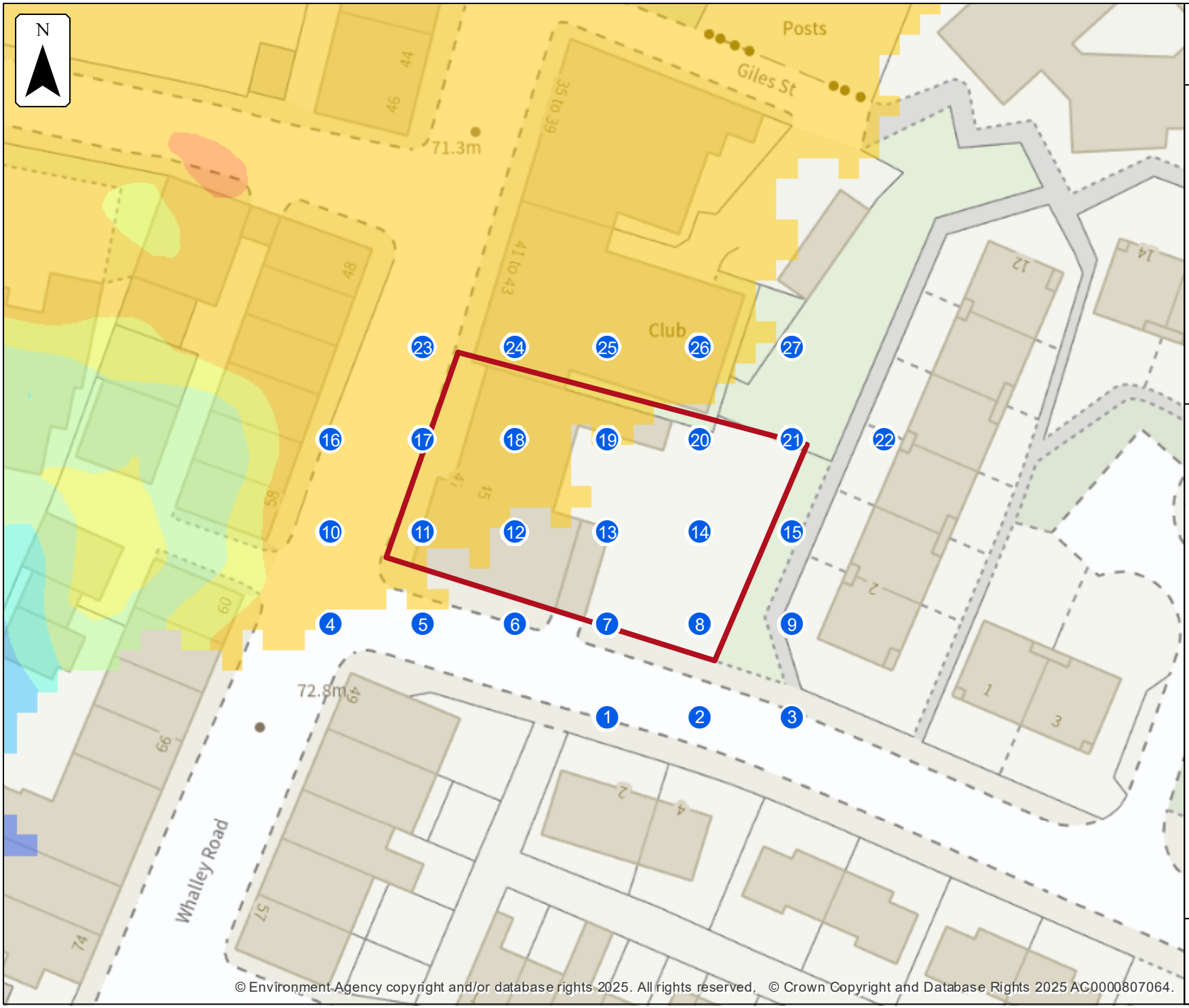

Environment Agency

Defences removed modelled fluvial extent and height

Location (easting/northing)
374245/441278

Scale
1:500

Created
24 Feb 2025

Model name
Mearley Brook 2018

Selected area

Main river

Modelled 2D grid
Water level in mAOD

- 0 - 72.0
- 72.0 - 72.125
- 72.125 - 72.25
- 72.25 - 72.375
- 72.375 - 72.5
- 72.5 - 72.625
- 72.625 - 72.75
- 72.75 - 72.875
- 72.875 - 73.0

This map shows the 0.1% AEP height data

0 5 10 15 20
metres

Sample point data

Defences removed

Label	Easting	Northing	5% AEP	1% AEP	0.1% AEP	5% AEP	1% AEP	0.1% AEP
			Depth	Depth	Depth	Height	Height	Height
1	374246	441257	NoData	NoData	NoData	NoData	NoData	NoData
2	374255	441257	NoData	NoData	NoData	NoData	NoData	NoData
3	374264	441257	NoData	NoData	NoData	NoData	NoData	NoData
4	374219	441266	NoData	NoData	NoData	NoData	NoData	NoData
5	374228	441266	NoData	NoData	NoData	NoData	NoData	NoData
6	374237	441266	NoData	NoData	NoData	NoData	NoData	NoData
7	374246	441266	NoData	NoData	NoData	NoData	NoData	NoData
8	374255	441266	NoData	NoData	NoData	NoData	NoData	NoData
9	374264	441266	NoData	NoData	NoData	NoData	NoData	NoData
10	374219	441275	NoData	0.02	0.41	NoData	72.30	72.71
11	374228	441275	NoData	NoData	0.23	NoData	NoData	72.71
12	374237	441275	NoData	NoData	NoData	NoData	NoData	NoData
13	374246	441275	NoData	NoData	NoData	NoData	NoData	NoData
14	374255	441275	NoData	NoData	NoData	NoData	NoData	NoData
15	374264	441275	NoData	NoData	NoData	NoData	NoData	NoData
16	374219	441284	NoData	0.36	0.77	NoData	72.31	72.72

Label	Easting	Northing	5% AEP	1% AEP	0.1% AEP	5% AEP	1% AEP	0.1% AEP
			Depth	Depth	Depth	Height	Height	Height
17	374228	441284	NoData	0.24	0.65	NoData	72.30	72.71
18	374237	441284	NoData	NoData	0.30	NoData	NoData	72.71
19	374246	441284	NoData	NoData	0.17	NoData	NoData	72.72
20	374255	441284	NoData	NoData	NoData	NoData	NoData	NoData
21	374264	441284	NoData	NoData	NoData	NoData	NoData	NoData
22	374273	441284	NoData	NoData	NoData	NoData	NoData	NoData
23	374228	441293	NoData	0.54	0.95	NoData	72.30	72.71
24	374237	441293	NoData	0.37	0.78	NoData	72.30	72.71
25	374246	441293	NoData	0.39	0.80	NoData	72.30	72.71
26	374255	441293	NoData	0.31	0.70	NoData	72.30	72.72
27	374264	441293	NoData	NoData	NoData	NoData	NoData	NoData
Max value in selected area:			Could not determine	0.38	0.79	Could not determine	72.30	72.72

Data in this table comes from the Mearley Brook 2018 model.
Height values are shown in mAOD, and depth values are shown in metres.
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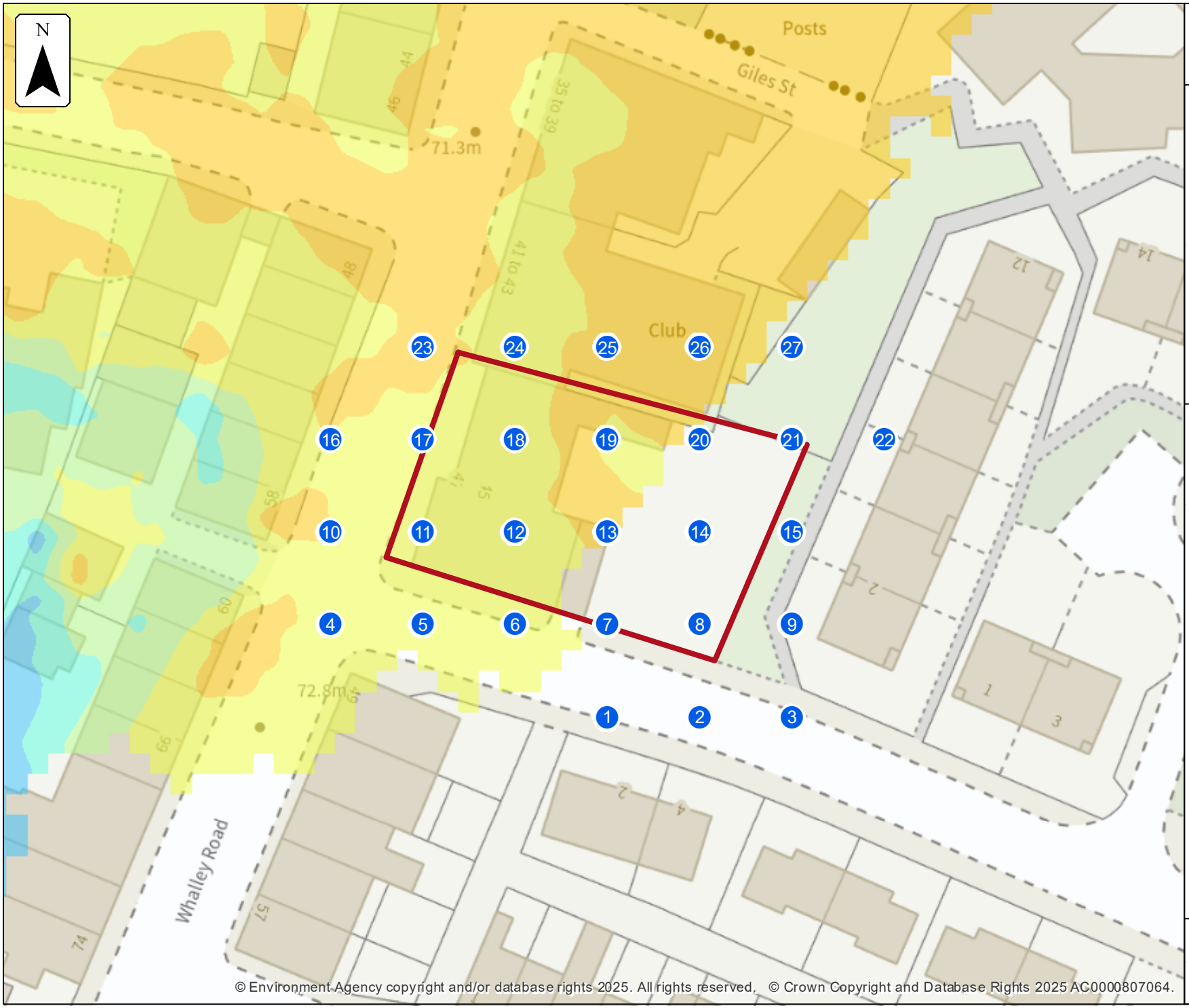
If no height or depth data is available for a scenario, no table will be shown.
'Max value in selected area' is the deepest depth or highest height at any location within your drawn boundary.



Environment Agency

Defended climate change modelled fluvial extent and height

Location (easting/northing)
374245/441278

Scale
1:500

Created
24 Feb 2025

Model name
Mearley Brook 2018

Selected area

Main river

Modelled 2D grid
Water level in mAOD

- 0 - 72.0
- 72.0 - 72.25
- 72.25 - 72.5
- 72.5 - 72.75
- 72.75 - 73.0
- 73.0 - 73.25
- 73.25 - 73.5
- 73.5 - 73.75
- 73.75 - 74.0

This map shows the 0.1% AEP +30% height data

0 5 10 15 20
metres

Sample point data

Defended climate change

Label	Easting	Northing	1% AEP (+30%)	1% AEP (+35%)	1% AEP (+70%)	0.1% AEP (+30%)	1% AEP (+30%)	1% AEP (+35%)	1% AEP (+70%)	0.1% AEP (+30%)
			Depth	Depth	Depth	Depth	Height	Height	Height	Height
1	374246	441257	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
2	374255	441257	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
3	374264	441257	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
4	374219	441266	NoData	0.11	0.30	0.60	NoData	72.74	72.93	73.24
5	374228	441266	NoData	0.01	0.16	0.46	NoData	72.75	72.94	73.24
6	374237	441266	NoData	NoData	NoData	0.22	NoData	NoData	NoData	73.24
7	374246	441266	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
8	374255	441266	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
9	374264	441266	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
10	374219	441275	0.41	0.47	0.66	0.97	72.69	72.75	72.95	73.26
11	374228	441275	0.17	0.23	0.42	0.72	72.69	72.75	72.93	73.23
12	374237	441275	NoData	NoData	0.20	0.50	NoData	NoData	72.94	73.24
13	374246	441275	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
14	374255	441275	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
15	374264	441275	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
16	374219	441284	0.76	0.81	1.01	1.31	72.69	72.75	72.94	73.25

Label	Easting	Northing	1% AEP (+30%)	1% AEP (+35%)	1% AEP (+70%)	0.1% AEP (+30%)	1% AEP (+30%)	1% AEP (+35%)	1% AEP (+70%)	0.1% AEP (+30%)
			Depth	Depth	Depth	Depth	Height	Height	Height	Height
17	374228	441284	0.61	0.67	0.86	1.17	72.69	72.75	72.94	73.25
18	374237	441284	0.34	0.40	0.59	0.89	72.69	72.75	72.94	73.24
19	374246	441284	0.14	0.19	0.38	0.68	72.69	72.75	72.95	73.24
20	374255	441284	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
21	374264	441284	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
22	374273	441284	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
23	374228	441293	0.92	0.98	1.18	1.48	72.69	72.75	72.94	73.25
24	374237	441293	0.80	0.86	1.05	1.35	72.69	72.75	72.94	73.24
25	374246	441293	0.79	0.85	1.04	1.35	72.69	72.75	72.95	73.25
26	374255	441293	0.79	0.85	1.05	1.36	72.69	72.75	72.95	73.26
27	374264	441293	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
Max value in selected area:			0.75	0.81	1.00	1.31	72.69	72.75	72.95	73.26

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Strategic flood risk assessments

We recommend that you check the relevant local authority's strategic flood risk assessment (SFRA) as part of your work to prepare a site specific flood risk assessment.

This should give you information about:

- the potential impacts of climate change in this catchment
- areas defined as functional floodplain
- flooding from other sources, such as surface water, ground water and reservoirs

Your Lead Local Flood Authority is Lancashire County.

About this data

This data has been generated by strategic scale flood models and is not intended for use at the individual property scale. If you're intending to use this data as part of a flood risk assessment, please include an appropriate modelling tolerance as part of your assessment. The Environment Agency regularly updates its modelling. We recommend that you check the data provided is the most recent, before submitting your flood risk assessment.

Flood risk activity permits

Under the Environmental Permitting (England and Wales) Regulations 2016 some developments may require an environmental permit for flood risk activities from the Environment Agency. This includes any permanent or temporary works that are in, over, under, or nearby a designated main river or flood defence structure.

Find out more about flood risk activity permits

Help and advice

Contact the Cumbria and Lancashire Environment Agency team at inforequests.cmblnc@environment-agency.gov.uk for:

- more information about getting a product 5, 6, 7 or 8
- general help and advice about the site you're requesting data for