

19 Edward Street, M7 1SN, Minor Flood Risk Assessment

FEBRUARY 2024

Executive Summary

Background

A Flood Risk Assessment has been carried out for 19 Edward Street, M7 1SN, at the request of Mr Sohail Musa of SMS Architecture. The planned development is a change of use from Class E(a), to Class F1(f). The property will be used for a 'Less Vulnerable' use as

Flood Risk

The EA's website, Flood Zone Mapping, indicates that this property is within Flood Risk Zone 3. It is understood that this change of use does not constitute a change in vulnerability as the property will remain in the 'less vulnerable' category. According to EA and local Planning Policy guidance, a minor Flood Risk Assessment is required due to the change of use.

Communication with United Utilities has confirmed there is no record of the property suffering from sewer or surface water flooding.

Mitigation

The proposed development will not affect existing ground levels or land use external to the building. However, as part of the change of use of the property, water efficiency measures will be implemented to both minimise the usage of water by the property and to reduce the volume of water discharged into surface water drains. This includes water efficient appliances and fittings. In addition to this, to the rear of the property, a water butt will be installed to capture run-off from the surface of the roof.

Data Sources

This report uses publicly available data from the Environment Agency (EA), DEFRA's MAGIC map application and United Utilities (the Water and Sewerage Company (WASC)), for the property.

Introduction:

Mr Sohail Musa has carried out a Minor Flood Risk Assessment (FRA) for 19 Edward Street, M7 1SN. The report was undertaken in support of a future planning application for change of use of the property from commercial to religious use.

The report will address the vulnerability to flooding from all possible sources. An FRA has been prepared in line with the National Planning Policy Framework and the Planning Policy Guidance where appropriate. The level of detail entered into within any FRA is dependent upon the scale and potential impact of the proposed development, and the vulnerability classification of the proposed land-use.

Site

The site is located at 19 Edward Street, Cheetham Hill, Manchester, M7 1SN. Plans of the development are shown in Appendix 1.

Development

The development consists of the internal renovation of a property to convert it from commercial use (Class E(a)) to religious use (Class F1(f)). There will be no change to existing floor levels or any areas external to the building structure. This development does not constitute a change of vulnerability classification and remains 'less vulnerable'¹.

Vulnerability

The EA's Flood Zone Mapping website has been consulted (Appendix 2). This indicates that the site is within Flood Zone 3. Therefore, the EA's guidance states that an FRA is required.

¹ NPPF, Annex 3: Flood risk vulnerability classification, <https://www.gov.uk/guidance/national-planning-policy-framework/annex-3-flood-risk-vulnerability-classification>

Consultation

Source	Details	
Environment Agency	Flood Zone	Flood Zone 3: shows the area at risk of flooding for an undefended flood event with a: <ul style="list-style-type: none"> 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.
	Records of Flooding	Historic flood event data available in Appendix 3. This indicates there was flooding from the main river in December 2015 due to overtopping of flood defences. There were also floods in 1954, 1946 and 1866 when the channel capacity was exceeded and there were no raised defences.
	Surface Water Flooding ²	There is a low risk of surface water flooding of less than 300mm for the areas around the site.
	Flooding from reservoirs	The risk of flooding from reservoirs is covered in Appendix 5.
	Groundwater Source Protection Zone	Not within Source Protection Zone
United Utilities³	UU Wastewater Developer department was contacted regarding sewer flooding history for the site. UU confirmed that they did not have records of internal or external sewer flooding of properties in the vicinity of the site as a result of overloaded sewers.	

Assessment of Flood Risk

Flood Zones

The flood map from the EA indicates the property is in Flood Zone 3.

Sources of Flooding

Fluvial

The property is within Flood Zone 3 and the risk of fluvial flooding is considered High. Appendix 7 provides detailed flood levels from the EA. These indicate that in a 1:1000-year event, the maximum water level at the property location would be 3.55m.

Tidal

The study area is remote from the sea and tidally influenced water bodies. Therefore, the flood risk associated with this source is considered Negligible.

Pluvial (Rainfall)

The surface water flood risk maps show that the area has the potential to flood during prolonged heavy rainfall. The risk of flooding from surface water flooding is Low but should be considered further during the detailed design.

² Appendix 4

³ Appendix 9

Surface Water (Overland flow)

This relates to surface water entering the site. Any surface water arising from areas around the site are likely to be intercepted by highway drains and therefore pose little threat to the development.

Groundwater

Searches on DEFRA's MAGIC Map records indicate that this an area with Medium - Low groundwater flooding risk.⁴

Sewers

Correspondence with UU has confirmed that they have no records of sewer flooding within the vicinity of the proposed development. Therefore, the flood risk associated with this source is considered Very Low.

Artificial sources

According to the EA's online maps, the study area is at risk from reservoir flooding. It is assumed that the relevant reservoir owner and operator will meet their requirements and have appropriate flood plans in place.

Mitigation Measures

Proposed Site Levels and Developments Level

There is no proposed change to existing site or floor levels.

Flood Resistance and Resilience

The development proposed may be subject to flooding at more extreme events than those considered. Flood resilience measures should be included into ground floor construction to aid recovery after any event. If utilised, typical measures would include solid floors, use of suitable materials and services fed from upper floors with outlets at high level. The need should be discussed and agreed with building control officers during detailed design.

Resilience measures that are recommended include:

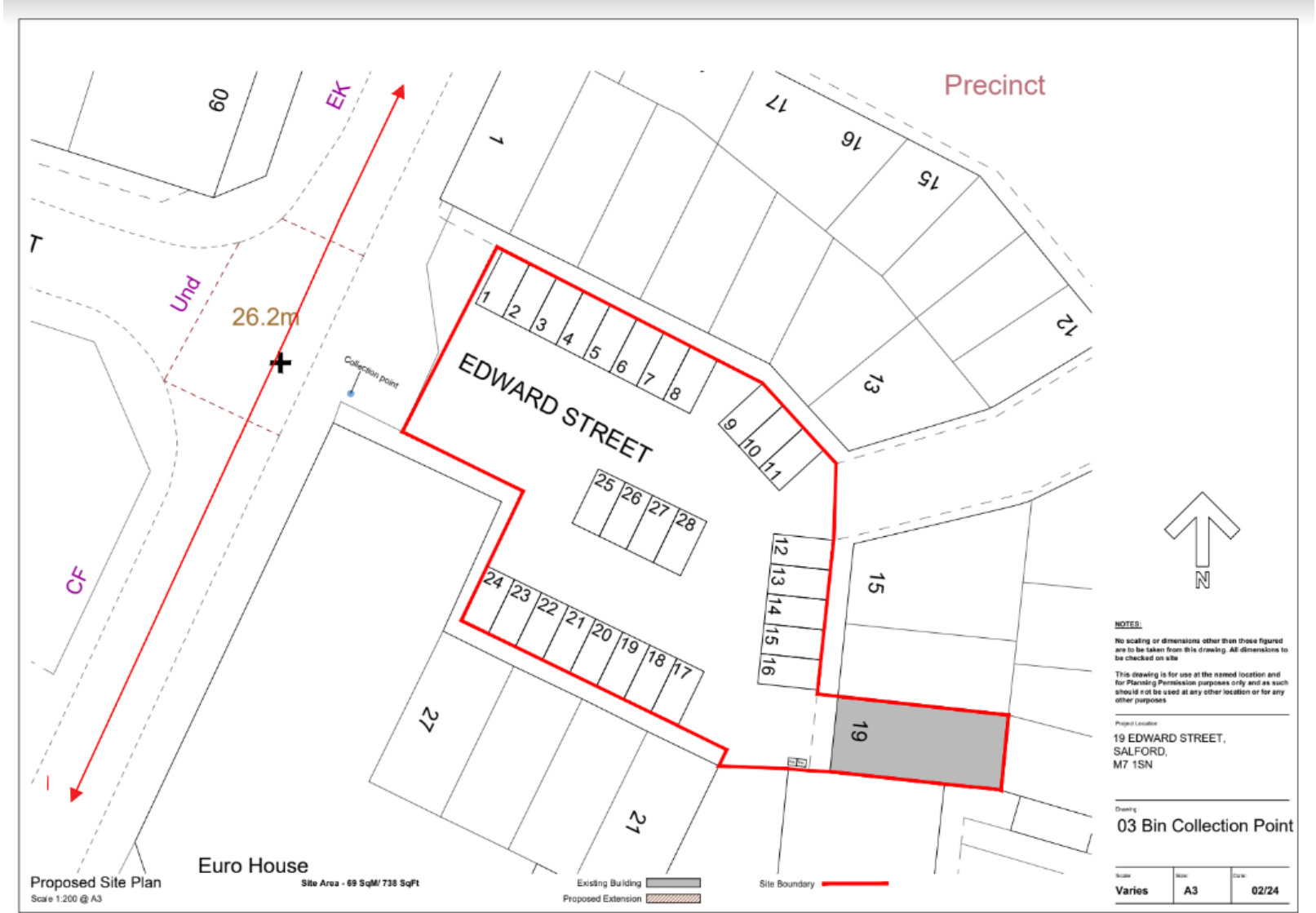
- Existing materials have low permeability to be at least 600mm above the estimated flood level.
- Doors and windows are flood resistant to at least 600mm above the estimated flood level.
- There is access to all spaces to enable drying and cleaning.

Residual Risk

It is impossible to completely guard against flooding since extreme events greater than the design standard event are always possible.

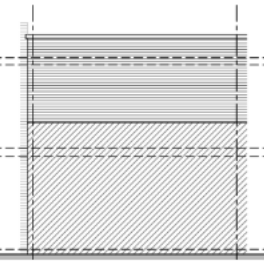
⁴ Appendix 8

Appendix 1: Site Location

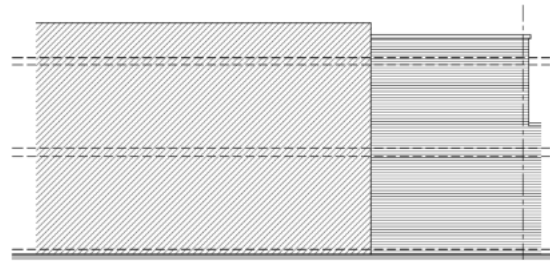




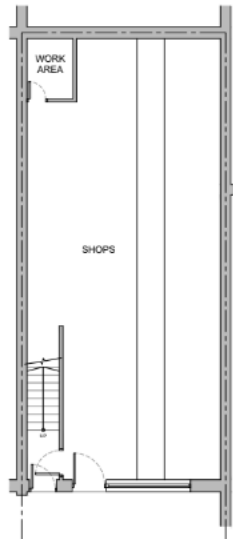
FRONT ELEVATION
1:100



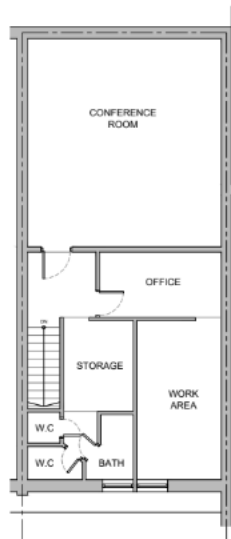
FRONT ELEVATION
1:100



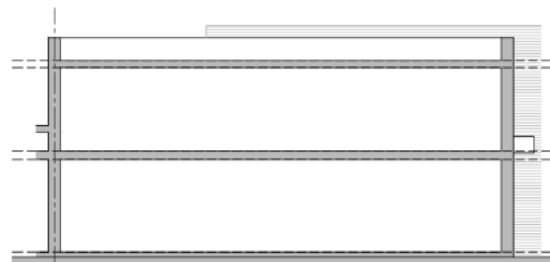
RIGHT ELEVATION
1:100



GROUND FLOOR PLAN
1:100



FIRST FLOOR PLAN
1:100



LEFT ELEVATION
1:100

NOTES:

No scaling or dimensions other than those figured are to be taken from this drawing. All dimensions to be checked on site.

This drawing is for use at the named location and for Planning/Permission purposes only and as such should not be used at any other location or for any other purposes.

Project Location:

19 EDWARD STREET,
SALFORD,
M7 1SN

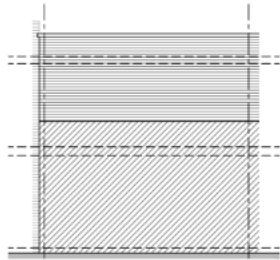
Drawing:

01 Existing Building

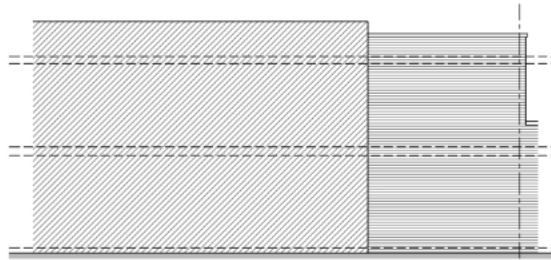
Scale	Size	Date
1:100	A3	01/24



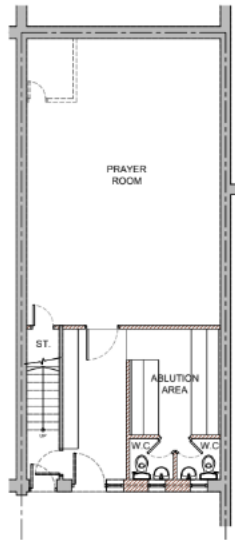
FRONT ELEVATION
1:100



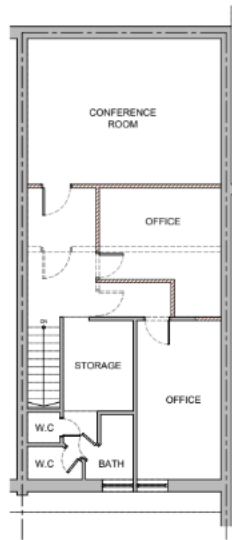
FRONT ELEVATION
1:100



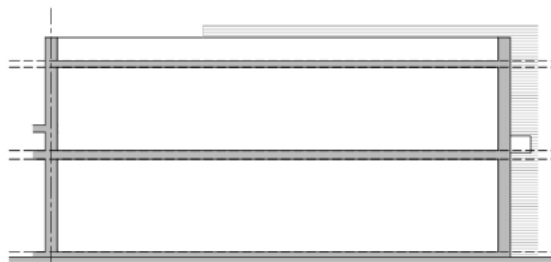
RIGHT ELEVATION
1:100



GROUND FLOOR PLAN
1:100



FIRST FLOOR PLAN
1:100



LEFT ELEVATION
1:100

NOTES:

No scaling or dimensions other than those figured are to be taken from this drawing. All dimensions to be checked on site.

This drawing is for use at the named location and for Planning Permission purposes only and as such should not be used at any other location or for any other purposes.

Project Location:

19 EDWARD STREET,
SALFORD,
M7 1SN

Drawing:

02 Proposed Building
- REV B

Scale 1:100



Scale	Size	Date
1:100	A3	02/24

Appendix 2: EA Flood Map for Planning



Flood map for planning

Your reference
<Unspecified>

Location (easting/northing)
383339/399704

Created
13 Feb 2024 13:24

**Your selected location is in flood zone 3
– an area with a high probability of flooding.**

This means:

- you may need to complete a flood risk assessment for development in this area
- you should ask the Environment Agency about the level of flood protection at your location and request a Flood Defence Breach Hazard Map (You can email the Environment Agency at: enquiries@environment-agency.gov.uk)
- you should follow the Environment Agency's standing advice for carrying out a flood risk assessment (find out more at www.gov.uk/guidance/flood-risk-assessment-standing-advice)

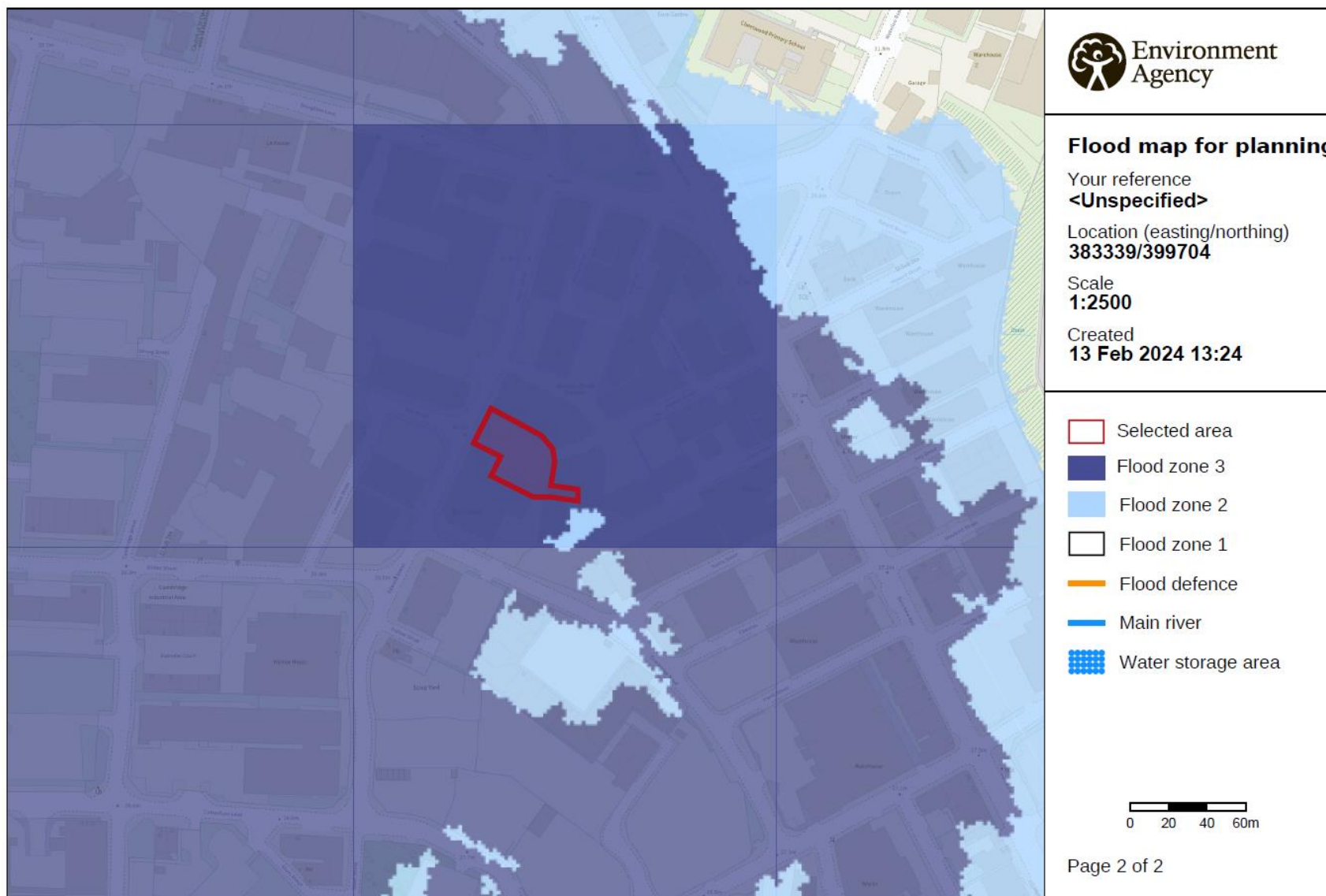
Notes

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

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

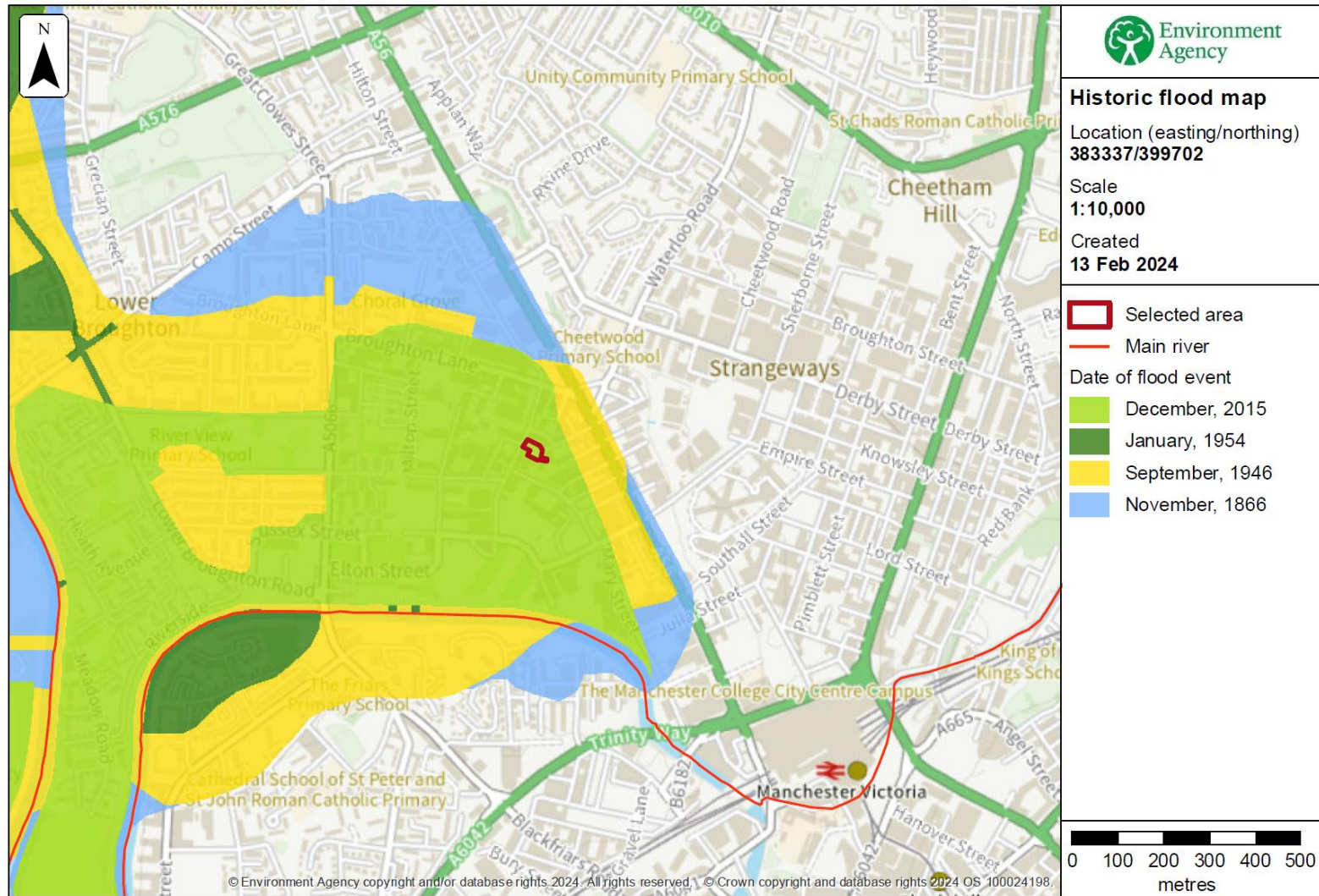
Flood risk data is covered by the Open Government Licence which sets out the terms and conditions for using government data. <https://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/>

Use of the address and mapping data is subject to Ordnance Survey public viewing terms under Crown copyright and database rights 2022 OS 100024198. <https://flood-map-for-planning.service.gov.uk/os-terms>



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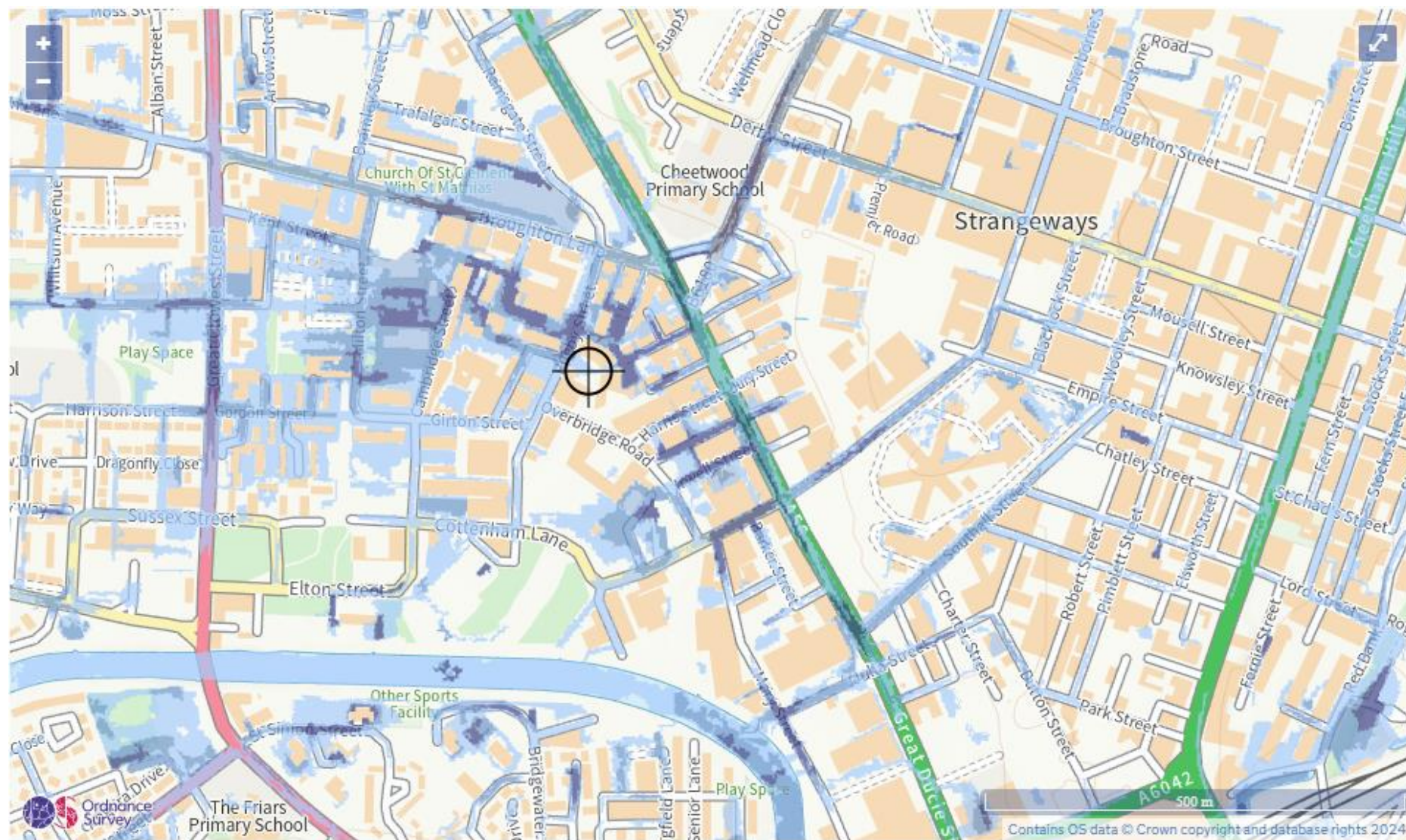
Appendix 3: Historic Flood Map



Historic flood event data

Start date	End date	Source of flood	Cause of flood	Affects location
26 December 2015	26 December 2015	main river	overtopping of defences	Yes
21 January 1954	22 January 1954	main river	channel capacity exceeded (no raised defences)	No
20 September 1946	21 September 1946	main river	channel capacity exceeded (no raised defences)	Yes
01 November 1866	02 November 1866	main river	channel capacity exceeded (no raised defences)	Yes

Appendix 4: Surface Water Flood Risk Maps from EA long term flood risk service



Extent of flooding from surface water

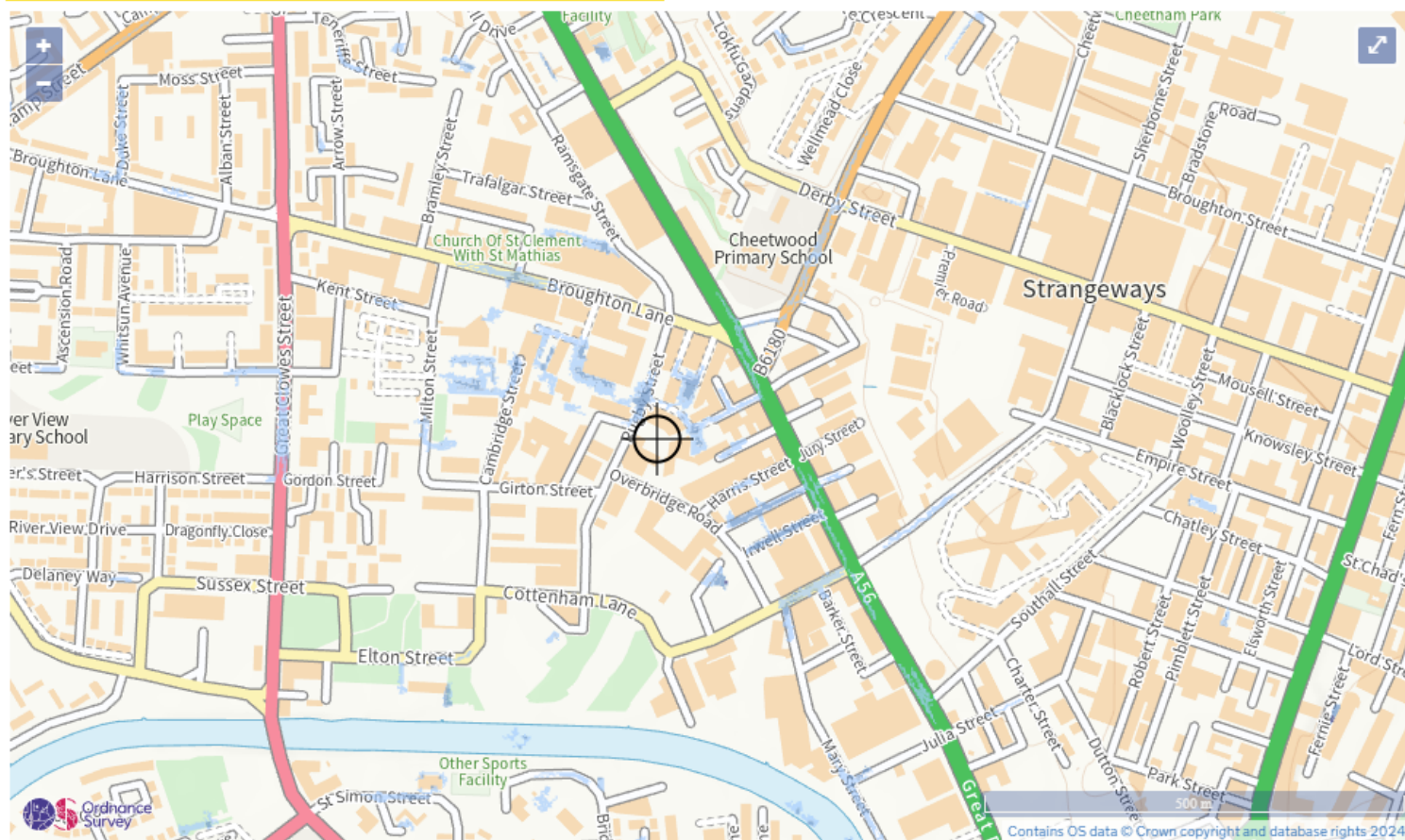
● High ● Medium ● Low ○ Very low ⊕ Location you selected

Flood risk

High risk: depth

Location

M71SN



Surface water flood risk: water depth in a high risk scenario

Flood depth (millimetres)

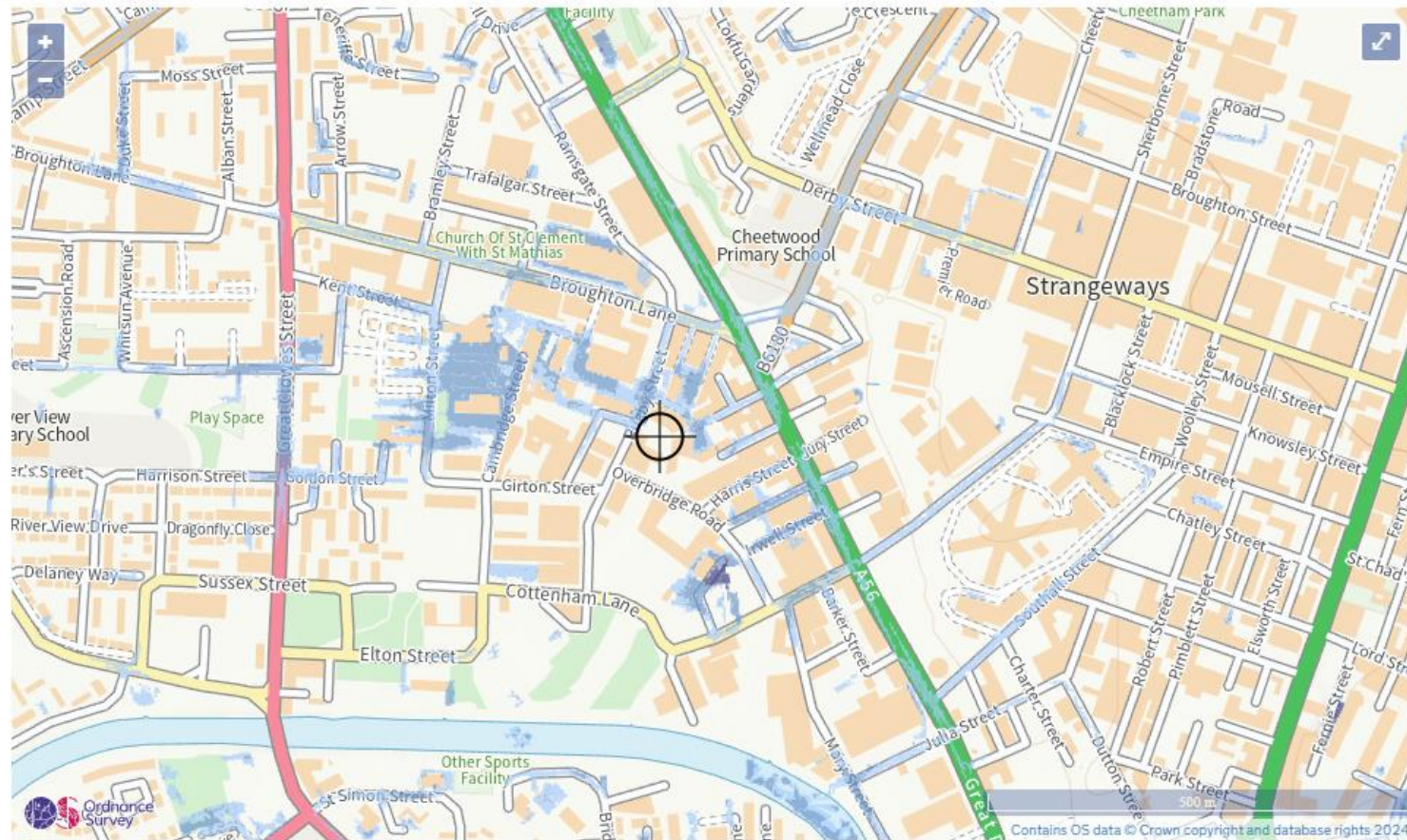
Over 900mm 300 to 900mm Below 300mm Location you selected

Flood risk

Medium risk: depth

Location

M71SN



Surface water flood risk: water depth in a medium risk scenario

Flood depth (millimetres)

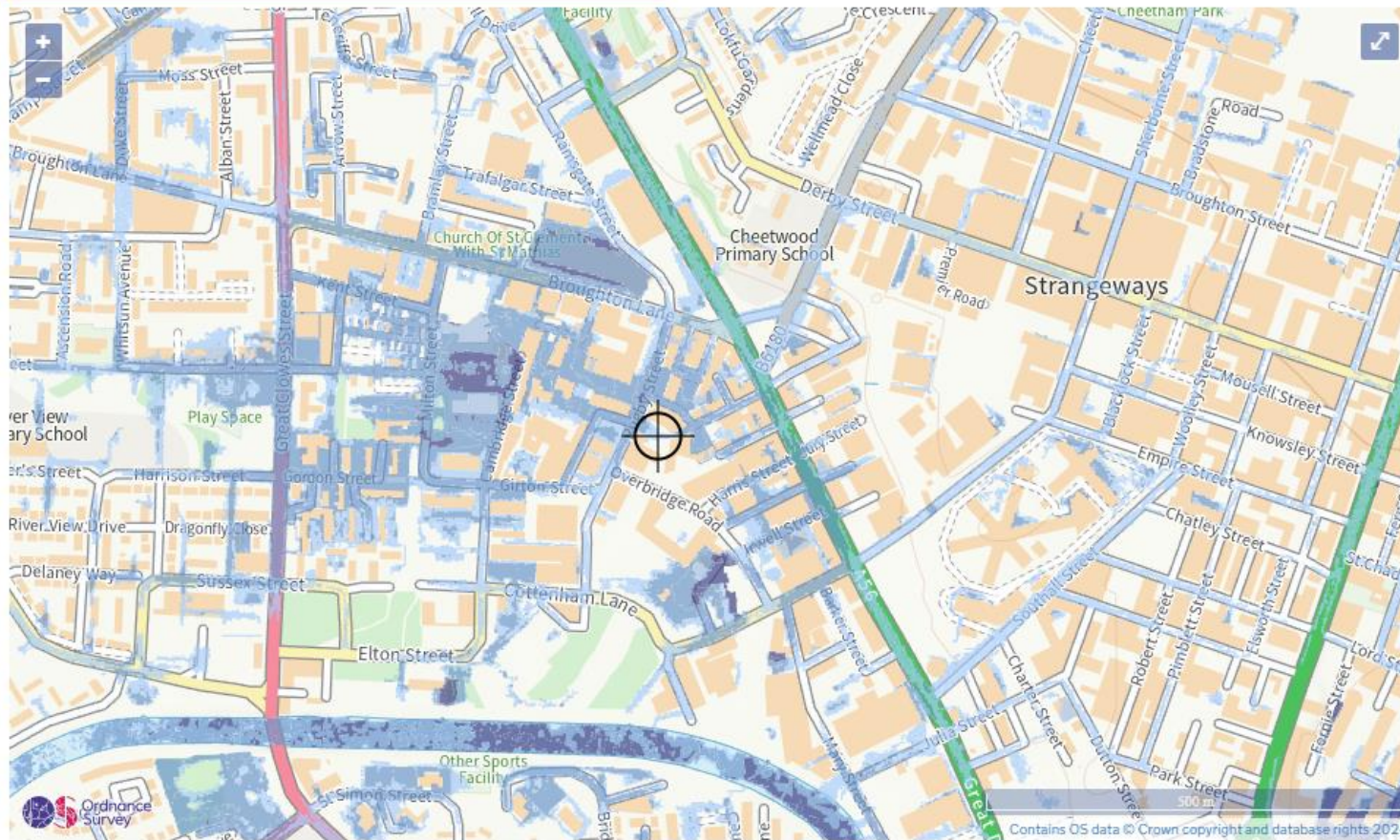
Over 900mm 300 to 900mm Below 300mm Location you selected

Flood risk

Low risk: depth

Location

M71SN



Surface water flood risk: water depth in a low risk scenario

Flood depth (millimetres)

Over 900mm 300 to 900mm Below 300mm Location you selected

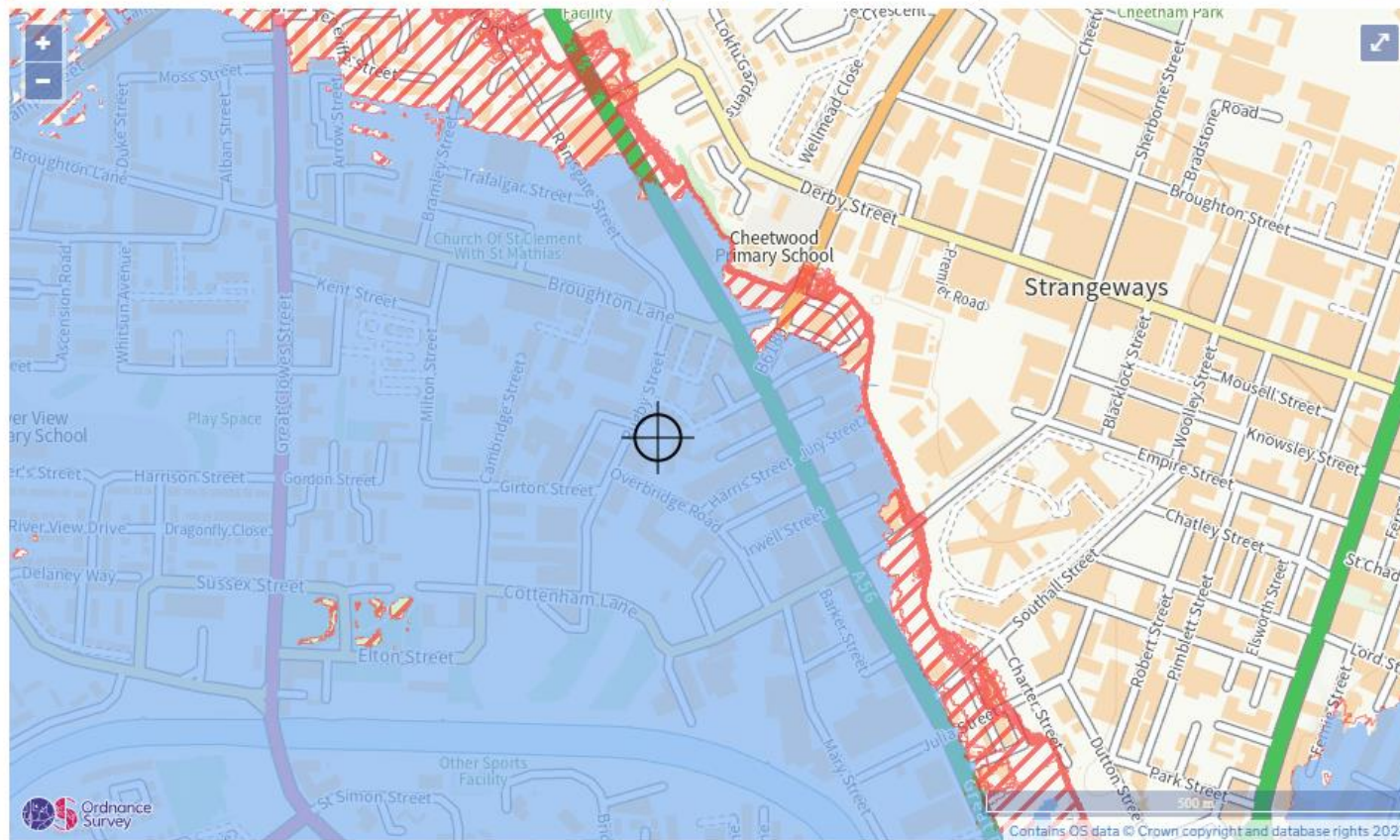
Appendix 5: Maximum extent of flooding from reservoirs

Flood risk

Extent of flooding

Location

M71SN



Maximum extent of flooding from reservoirs:

 when river levels are normal
 when there is also flooding from rivers
 Location you selected

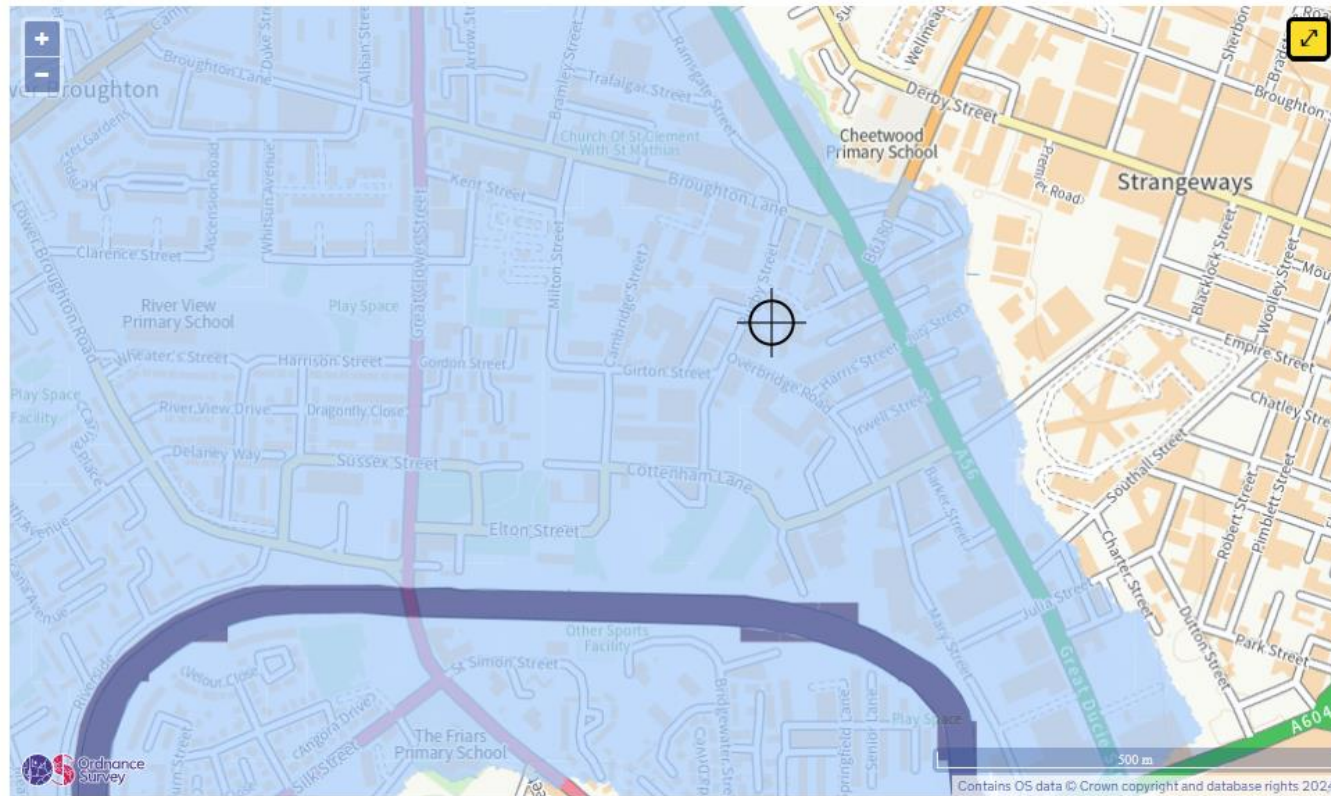
Appendix 6: Maximum extent of flooding from rivers

Flood risk

Extent of flooding

Location

M71SN



Extent of flooding from rivers or the sea

● High ● Medium ● Low ● Very Low ⊕ Location you selected

Appendix 7: Information from the EA on flood risk, including modelled water levels

Flood risk assessment data

Location of site: 383337 / 399702 (shown as easting and northing coordinates)

Document created on: 13 February 2024

This information was previously known as a product 4.

Customer reference number: BWG5GR13U9Y8

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)
- historic flooding
- 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

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

About the models used

Model name: Lower Irwell Model 2017

Scenario(s): Defended fluvial, defences removed fluvial, defended climate change fluvial, defences removed climate change fluvial

Date: 1 April 2018

These models contain 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 occurring 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

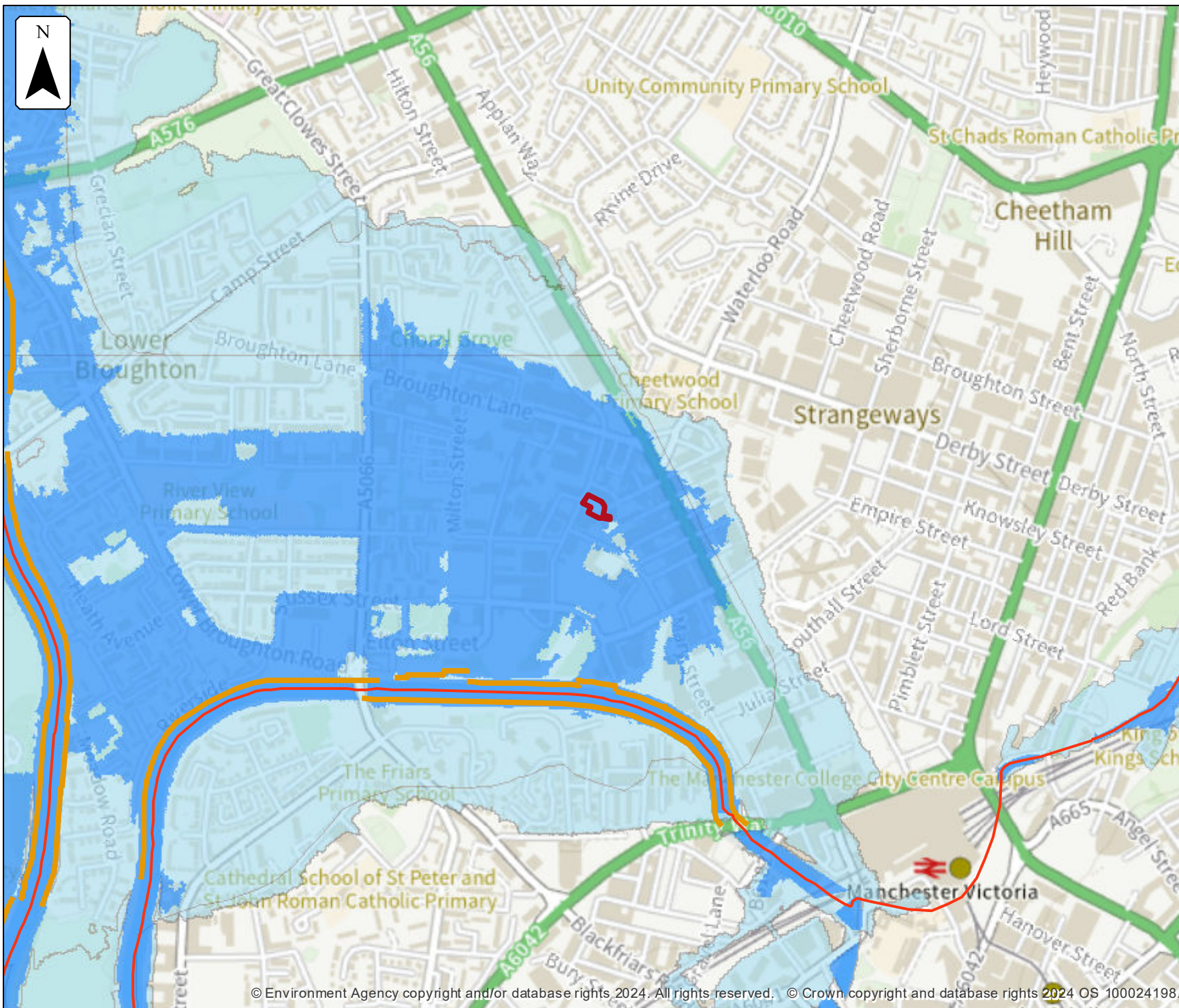
Flood zone 2 shows the area at risk of flooding for an undefended flood event with:

- 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

This data is updated on a quarterly basis as better data becomes available.



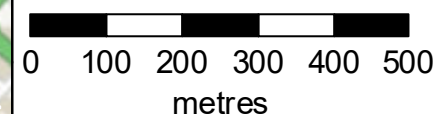
Flood map for planning

Location (easting/northing)
383337/399702

Scale
1:10,000

Created
13 Feb 2024

-  Selected area
-  Main river
-  Flood defence
-  Flood zone 3
-  Flood zone 2



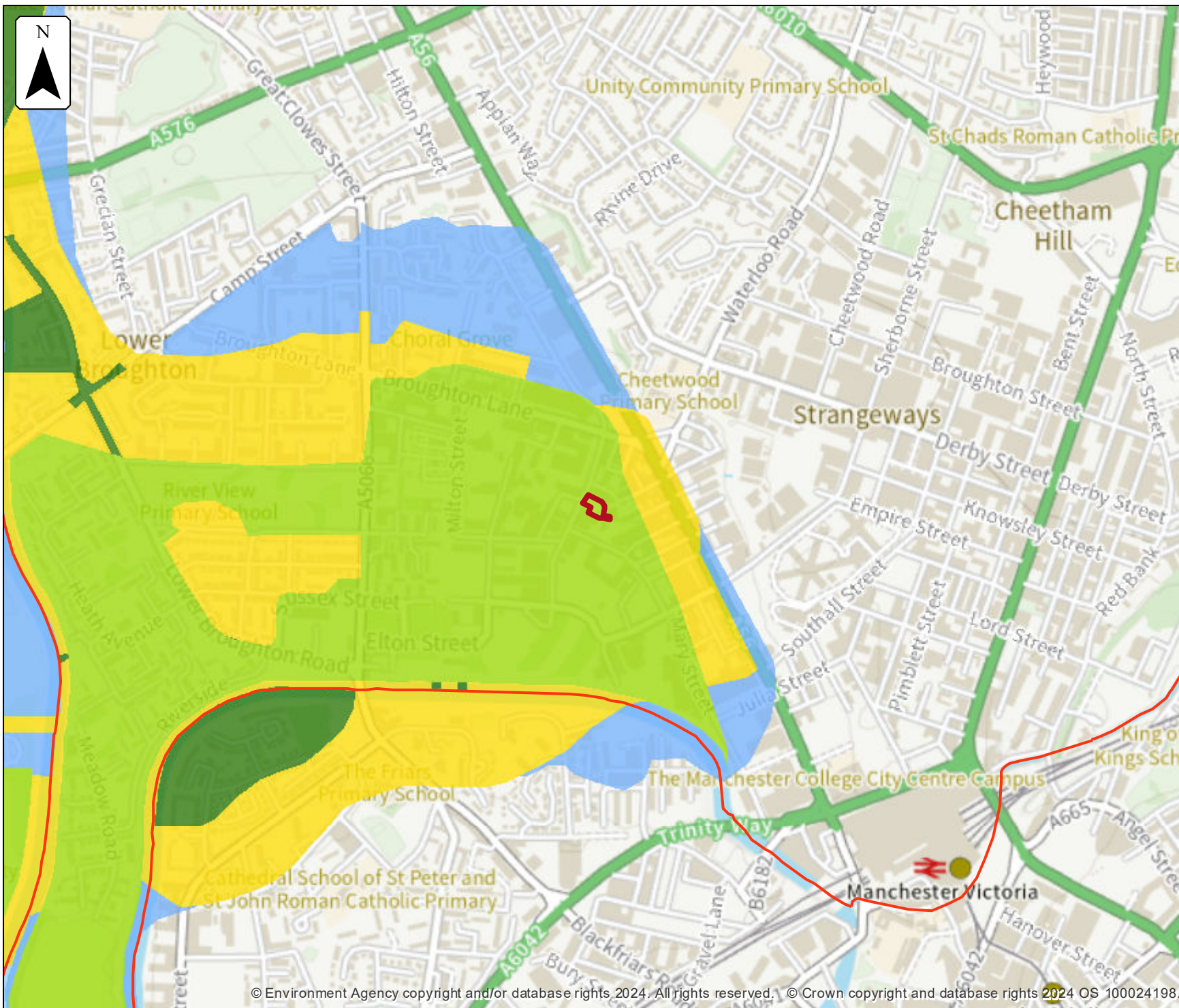
Historic flooding

This map is an indicative outline of areas that have previously flooded. Remember that:

- our records are incomplete, so the information here is based on the best available data
- it is possible not all properties within this area will have flooded
- other flooding may have occurred that we do not have records for
- flooding can come from a range of different sources - we can only supply flood risk data relating to flooding from rivers or the sea

You can also contact your Lead Local Flood Authority or Internal Drainage Board to see if they have other relevant local flood information. Please note that some areas do not have an Internal Drainage Board.

[Download recorded flood outlines in GIS format](#)



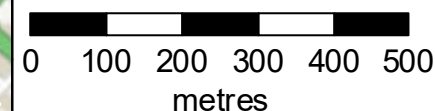
Historic flood map

Location (easting/northing)
383337/399702

Scale
1:10,000

Created
13 Feb 2024

-  Selected area
-  Main river
- Date of flood event
 -  December, 2015
 -  January, 1954
 -  September, 1946
 -  November, 1866



Historic flood event data

Start date	End date	Source of flood	Cause of flood	Affects location
26 December 2015	26 December 2015	main river	overtopping of defences	Yes
21 January 1954	22 January 1954	main river	channel capacity exceeded (no raised defences)	No
20 September 1946	21 September 1946	main river	channel capacity exceeded (no raised defences)	Yes
01 November 1866	02 November 1866	main river	channel capacity exceeded (no raised defences)	Yes

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



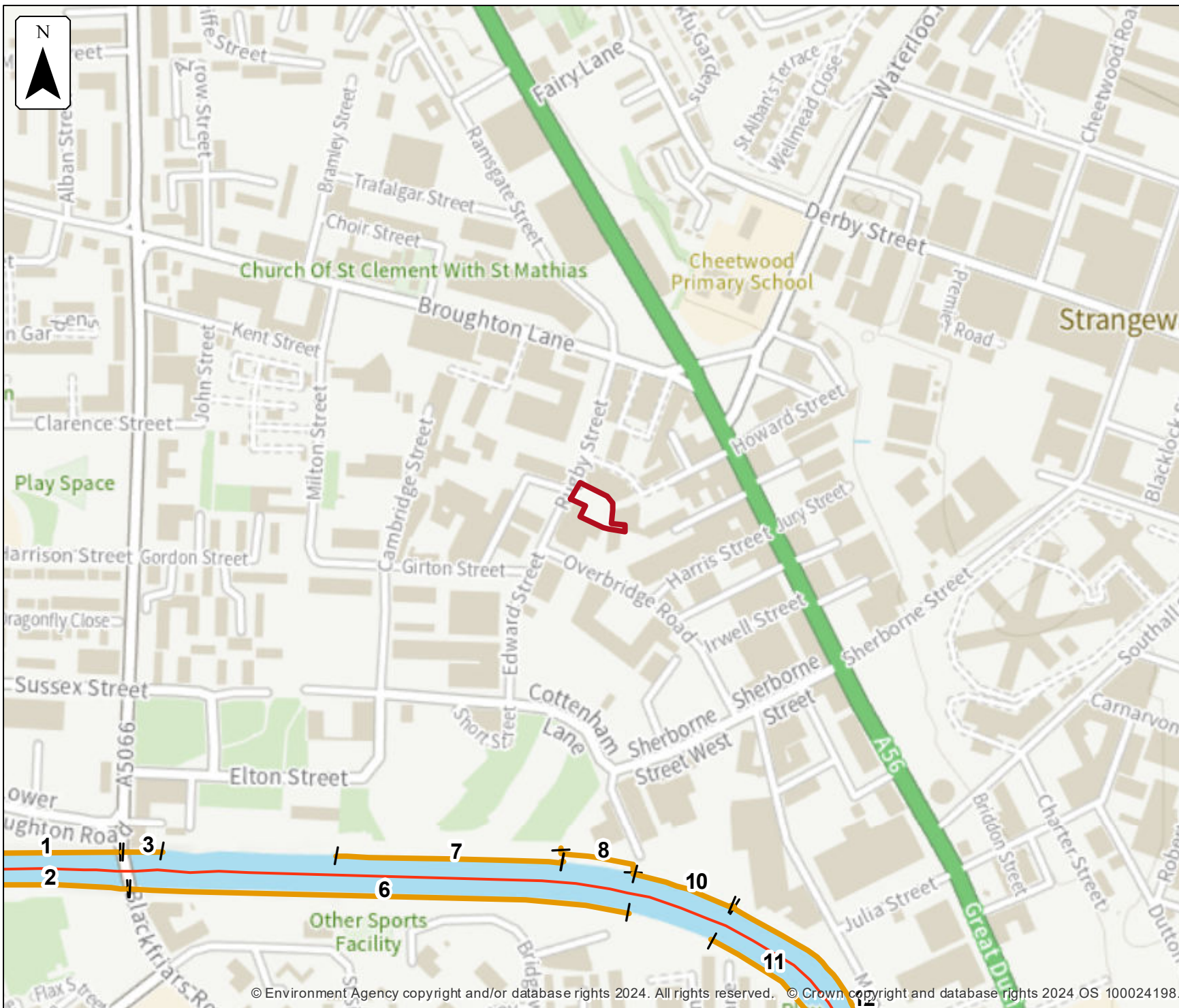
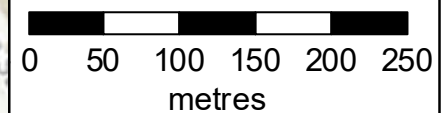
Flood defences

Location (easting/northing)
383337/399702

Scale
1:5,000

Created
13 Feb 2024

-  Selected area
-  Main river
-  Flood defence



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	185864	Embankment	75	Good	27.60	28.33	
2	88841	Engineered High Ground	75	Fair	23.06	28.58	
3	89056	Engineered High Ground	75	Fair	28.33	27.06	
6	89057	Embankment	75	Good	28.58	27.01	
7	452758	Embankment	75	Good	27.10	27.10	27.10
8	181081	Wall	75	Fair	27.07	27.10	
10	88893	Engineered High Ground	75	Fair	27.20	27.44	
11	90728	Engineered High Ground	75	Fair	27.10	25.58	
12	88831	Engineered High Ground	75	Fair	27.44	27.66	

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

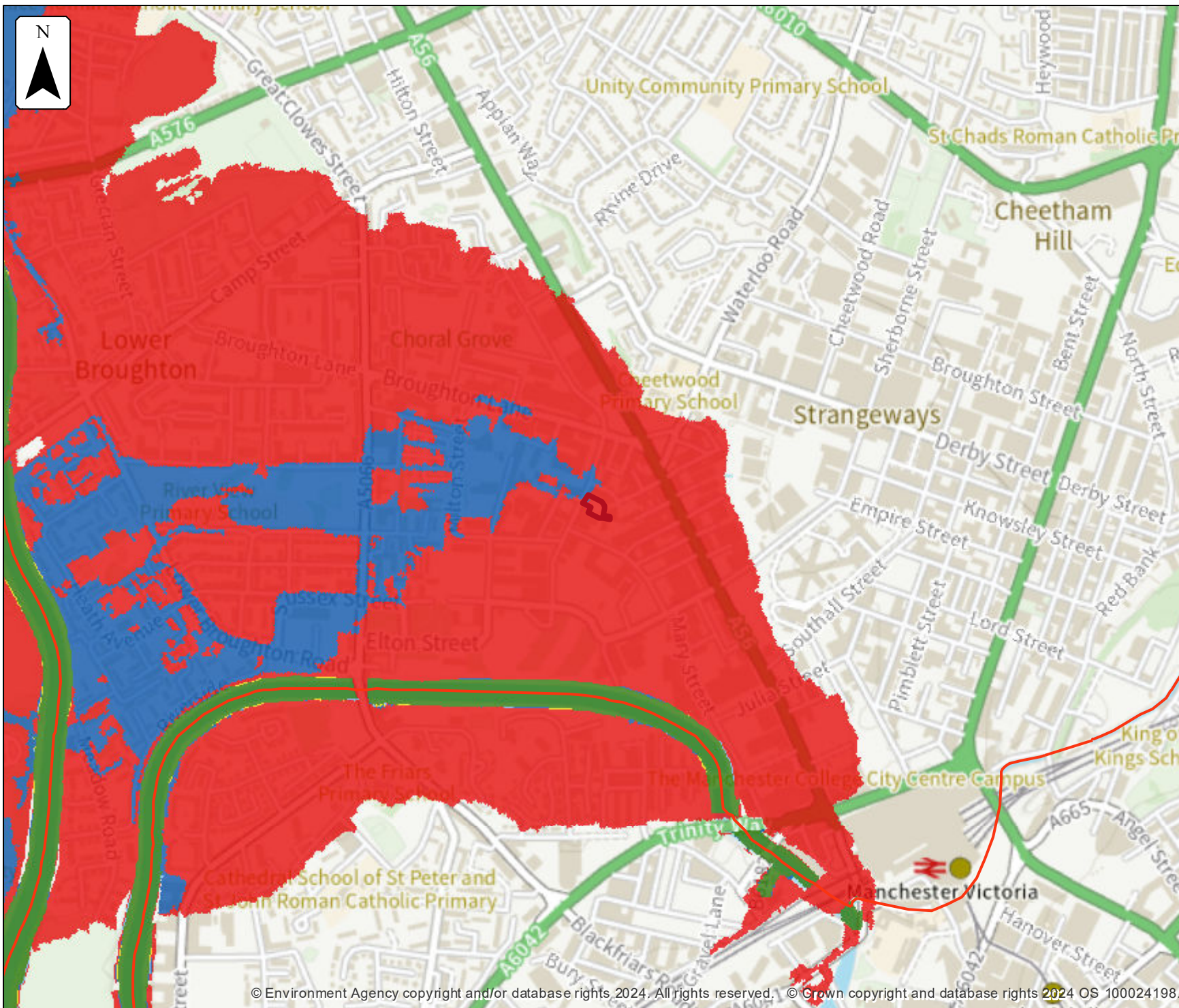
The climate change data included in the models may not include the latest [flood risk assessment climate change allowances](#). Where the new allowances are not available you will need to consider this data and factor in the new allowances to demonstrate the development will be safe from flooding.

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
- No defences exist modelled fluvial: risk of flooding from rivers where there are no flood defences
- Defended climate change modelled fluvial: risk of flooding from rivers where there are flood defences, including estimated impact of climate change
- Defences removed climate change modelled fluvial: risk of flooding from rivers where flood defences have been removed, including estimated impact of climate change
- No defences exist climate change modelled fluvial: risk of flooding from rivers where there are no flood defences, including estimated impact of climate change



Defended modelled fluvial extent

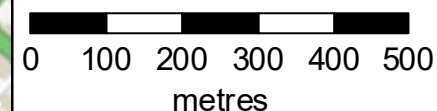
Location (easting/northing)
383337/399702

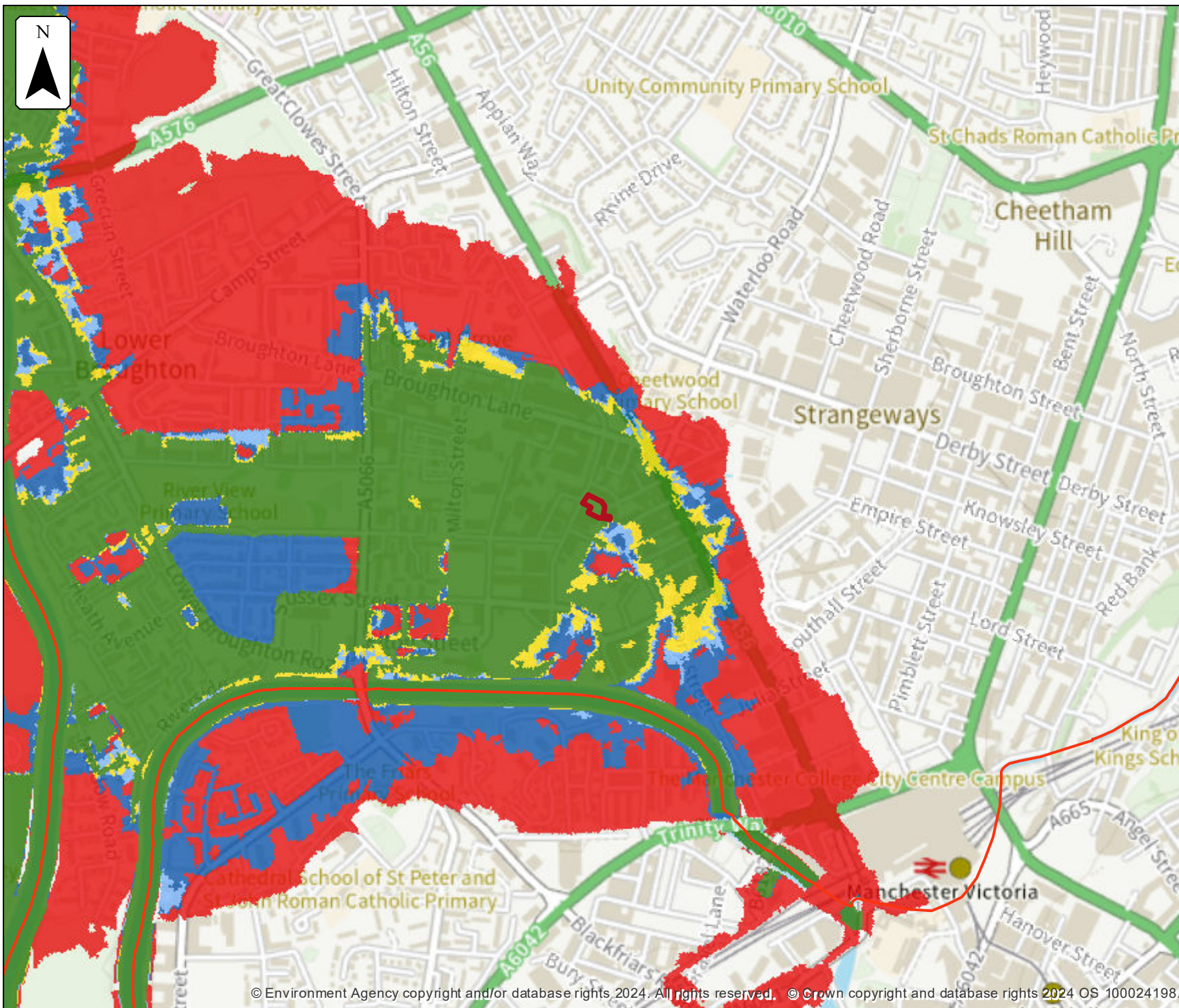
Scale Created
1:10,000 13 Feb 2024

Model name
**Lower Irwell Model
2017**

-  Selected area
-  Main river
- Modelled flood extent
 -  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





Defences removed modelled fluvial extent

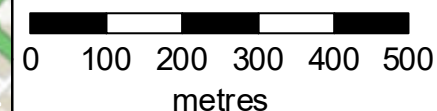
Location (easting/northing)
383337/399702

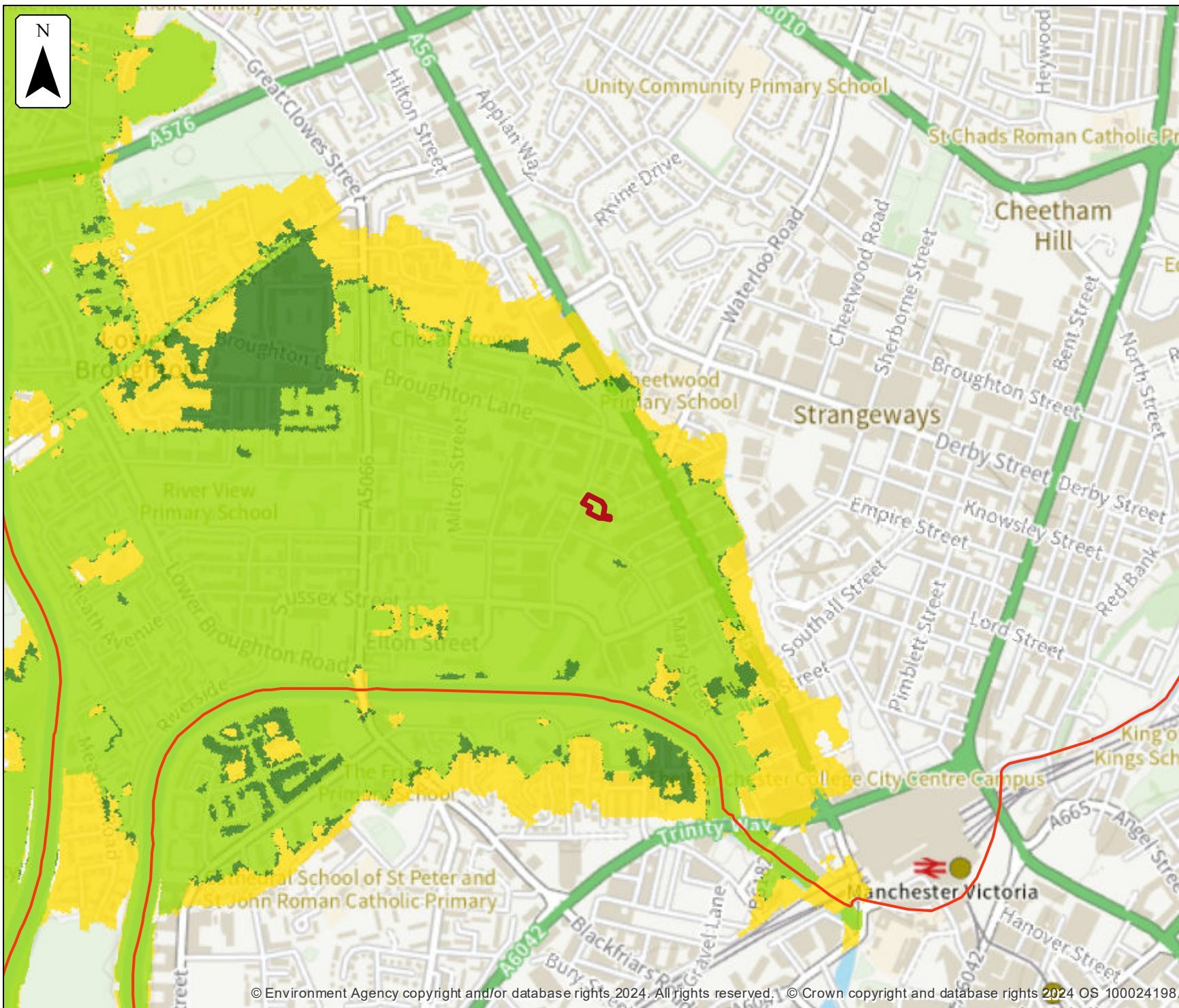
Scale Created
1:10,000 13 Feb 2024

Model name
**Lower Irwell Model
2017**

- Selected area
- Main river
- Modelled flood extent
 - 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





Defended climate change modelled fluvial extent

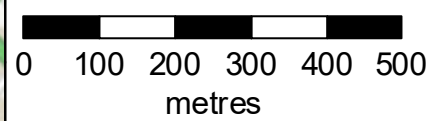
Location (easting/northing)
383337/399702

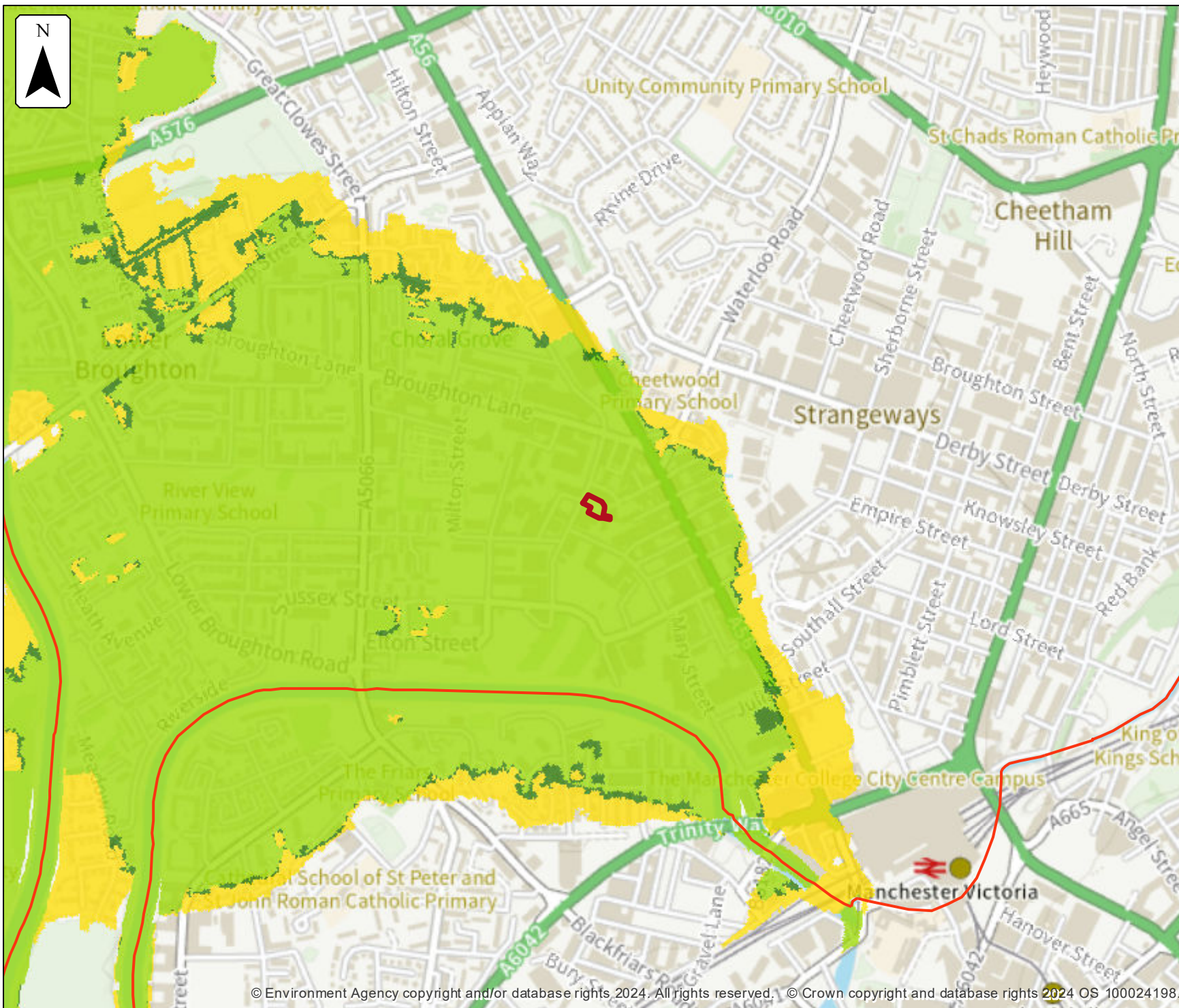
Scale Created
1:10,000 13 Feb 2024

Model name
**Lower Irwell Model
2017**

-  Selected area
-  Main river
- Modelled flood extent
 -  1.0% AEP (+30%)
 -  1.0% AEP (+35%)
 -  1.0% AEP (+70%)

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





Defences removed climate change modelled fluvial extent

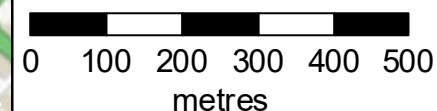
Location (easting/northing)
383337/399702

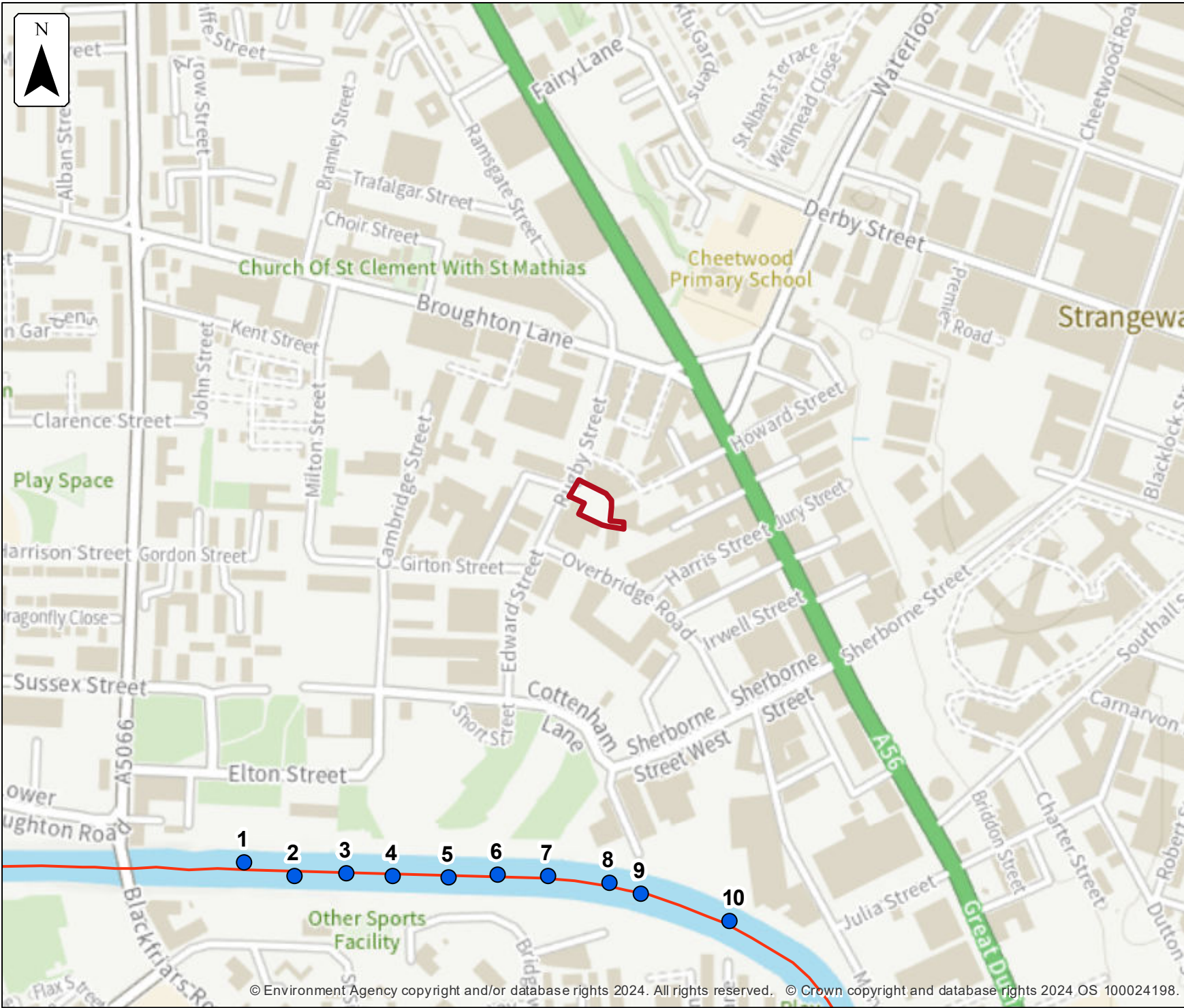
Scale Created
1:10,000 13 Feb 2024

Model name
**Lower Irwell Model
2017**

-  Selected area
-  Main river
- Modelled flood extent
 -  1.0% AEP (+30%)
 -  1.0% AEP (+35%)
 -  1.0% AEP (+70%)

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





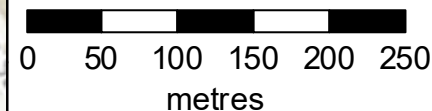
Defended modelled fluvial node locations

Location (easting/northing)
383337/399702

Scale Created
1:5,000 13 Feb 2024

Model name
**Lower Irwell Model
2017**

-  Selected area
-  Modelled location
-  Main river



Modelled node locations data

Defended

Label	Modelled location ID	Easting	Northing	4% AEP		2% AEP		1.33% AEP		1% AEP		0.5% AEP		0.1% AEP	
				Level	Flow	Level	Flow	Level	Flow	Level	Flow	Level	Flow	Level	Flow
1	946031	382997	399355	26.41	387.02	26.62	406.52	26.74	417.24	26.82	424.93	27.11	472.34	30.31	437.04
2	946026	383046	399341	26.39	387.05	26.61	406.56	26.73	417.28	26.80	424.98	27.10	472.36	30.30	437.53
3	946123	383096	399343	26.37	387.08	26.58	406.60	26.71	417.34	26.78	425.03	27.08	472.38	30.30	436.74
4	945988	383142	399341	26.35	387.12	26.57	406.65	26.69	417.38	26.76	425.09	27.06	472.40	30.29	435.80
5	946131	383196	399340	26.32	387.16	26.55	406.70	26.67	417.44	26.74	425.15	27.04	472.42	30.29	433.58
6	946121	383243	399342	26.30	387.20	26.52	406.74	26.65	417.49	26.72	425.20	27.02	472.45	30.28	437.52
7	946075	383292	399342	26.28	387.25	26.51	406.80	26.63	417.55	26.70	425.26	27.0	472.48	30.27	449.06
8	945984	383352	399334	26.26	387.29	26.48	406.85	26.61	417.61	26.68	425.33	26.98	472.52	30.24	474.40
9	946006	383383	399324	26.24	387.32	26.46	406.88	26.59	417.65	26.66	425.36	26.96	472.53	30.24	494.47
10	946007	383468	399298	26.11	387.40	26.34	406.98	26.47	417.76	26.54	425.47	26.83	472.59	30.19	519.73

Data in this table comes from the Lower Irwell Model 2017 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.



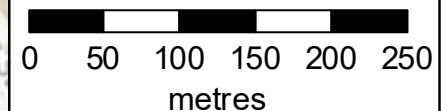
Defences removed modelled fluvial node locations

Location (easting/northing)
383337/399702

Scale Created
1:5,000 13 Feb 2024

Model name
**Lower Irwell Model
2017**

-  Selected area
-  Modelled location
-  Main river



Modelled node locations data

Defences removed

Label	Modelled location ID	Easting	Northing	4% AEP		2% AEP		1.33% AEP		1% AEP		0.5% AEP		0.1% AEP	
				Level	Flow	Level	Flow	Level	Flow	Level	Flow	Level	Flow	Level	Flow
1	946031	382997	399355	26.34	387.89	26.63	416.45	26.76	427.71	27.0	436.85	27.54	454.23	30.65	451.03
2	946026	383046	399341	26.32	387.91	26.61	416.48	26.74	427.75	26.99	436.84	27.54	454.02	30.65	450.20
3	946123	383096	399343	26.29	387.92	26.59	416.52	26.72	427.78	26.96	440.39	27.51	459.66	30.64	444.25
4	945988	383142	399341	26.27	387.94	26.57	416.54	26.70	427.80	26.94	443.18	27.48	464.63	30.64	440.40
5	946131	383196	399340	26.25	387.96	26.55	416.56	26.67	432.01	26.90	451.54	27.43	478.80	30.63	434.91
6	946121	383243	399342	26.22	387.97	26.52	416.62	26.65	432.83	26.87	453.49	27.40	485.19	30.63	438.68
7	946075	383292	399342	26.20	387.99	26.50	416.66	26.63	432.81	26.86	453.95	27.38	487.55	30.62	443.73
8	945984	383352	399334	26.18	388.01	26.48	416.70	26.61	433.33	26.83	457.32	27.35	498.71	30.60	466.21
9	946006	383383	399324	26.15	388.03	26.46	416.72	26.59	434.26	26.80	460.26	27.32	507.94	30.59	489.16
10	946007	383468	399298	26.02	388.06	26.33	416.74	26.46	434.28	26.67	460.28	27.18	509.27	30.55	517.98

Data in this table comes from the Lower Irwell Model 2017 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.



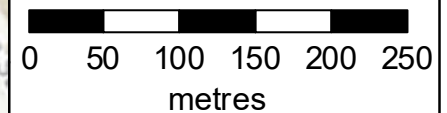
Defended climate change modelled fluvial node locations

Location (easting/northing)
383337/399702

Scale Created
1:5,000 13 Feb 2024

Model name
**Lower Irwell Model
2017**

-  Selected area
-  Modelled location
-  Main river



Modelled node locations data

Defended climate change

Label	Modelled location ID	Easting	Northing	1.0% AEP (+30%)		1.0% AEP (+35%)		1.0% AEP (+70%)	
				Level	Flow	Level	Flow	Level	Flow
1	946031	382997	399355	27.72	482.70	27.89	480.78	29.63	463.17
2	946026	383046	399341	27.71	482.70	27.88	480.75	29.62	463.0
3	946123	383096	399343	27.69	482.71	27.86	480.79	29.61	462.24
4	945988	383142	399341	27.66	482.72	27.84	481.0	29.60	461.07
5	946131	383196	399340	27.62	492.54	27.79	490.72	29.59	470.83
6	946121	383243	399342	27.58	497.49	27.75	497.68	29.58	483.80
7	946075	383292	399342	27.56	501.37	27.73	502.26	29.56	490.74
8	945984	383352	399334	27.52	516.71	27.69	518.61	29.53	509.23
9	946006	383383	399324	27.50	526.40	27.66	532.84	29.52	523.36
10	946007	383468	399298	27.36	528.87	27.52	539.41	29.45	541.44

Data in this table comes from the Lower Irwell Model 2017 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.



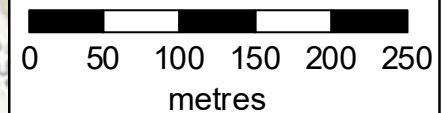
Defences removed climate change modelled fluvial node locations

Location (easting/northing)
383337/399702

Scale Created
1:5,000 13 Feb 2024

Model name
**Lower Irwell Model
2017**

-  Selected area
-  Modelled location
-  Main river



Modelled node locations data

Defences removed climate change

Label	Modelled location ID	Easting	Northing	1.0% AEP (+30%)		1.0% AEP (+35%)		1.0% AEP (+70%)	
				Level	Flow	Level	Flow	Level	Flow
1	946031	382997	399355	28.38	457.56	28.61	457.53	30.04	464.22
2	946026	383046	399341	28.36	457.37	28.60	457.26	30.03	463.98
3	946123	383096	399343	28.34	460.20	28.58	458.67	30.02	459.68
4	945988	383142	399341	28.33	463.96	28.57	461.90	30.01	457.02
5	946131	383196	399340	28.30	474.76	28.55	472.64	30.01	461.79
6	946121	383243	399342	28.26	484.19	28.52	481.16	30.0	467.52
7	946075	383292	399342	28.22	492.24	28.48	489.0	29.98	469.35
8	945984	383352	399334	28.18	508.89	28.44	506.19	29.95	480.96
9	946006	383383	399324	28.16	525.61	28.42	522.09	29.95	502.07
10	946007	383468	399298	28.02	548.53	28.30	545.82	29.89	530.36

Data in this table comes from the Lower Irwell Model 2017 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.



Defended modelled fluvial extent and height

Location (easting/northing)
383337/399702

Scale Created
1:500 13 Feb 2024

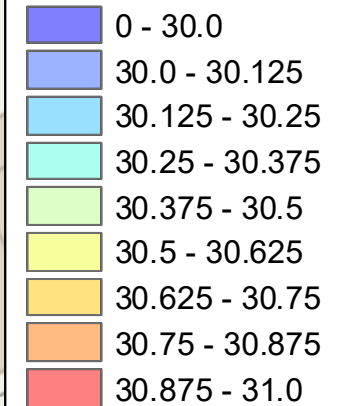
Model name
**Lower Irwell Model
2017**

 Selected area

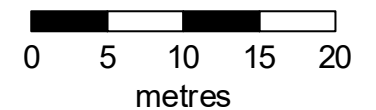
 Main river

Modelled 2D grid

Water level in mAOD



This map shows the
0.1% AEP height data



Sample point data

Defended

Label	Easting	Northing	5% AEP		2% AEP		1.33% AEP		1% AEP		0.5% AEP		0.1% AEP	
			Depth	Height	Depth	Height	Depth	Height	Depth	Height	Depth	Height	Depth	Height
1	383340	399674			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	3.45	30.30
2	383351	399674			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	3.24	30.30
3	383362	399674			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	2.78	30.30
4	383373	399674			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	3.01	30.30
5	383318	399685			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	3.71	30.31
6	383329	399685			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	3.55	30.31
7	383340	399685			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	3.56	30.31
8	383351	399685			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	3.55	30.31
9	383362	399685			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	3.53	30.30
10	383373	399685			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	3.81	30.30
11	383318	399696			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	3.62	30.31
12	383329	399696			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	3.71	30.31
13	383340	399696			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	3.71	30.31
14	383351	399696			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	3.59	30.31
15	383362	399696			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	3.63	30.31
16	383307	399707			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	3.93	30.31

Label	Easting	Northing	5% AEP		2% AEP		1.33% AEP		1% AEP		0.5% AEP		0.1% AEP	
			Depth	Height	Depth	Height	Depth	Height	Depth	Height	Depth	Height	Depth	Height
17	383318	399707			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	3.85	30.31
18	383329	399707			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	3.87	30.31
19	383340	399707			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	3.76	30.31
20	383351	399707			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	3.54	30.31
21	383362	399707			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	3.85	30.31
22	383307	399718			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	4.01	30.31
23	383318	399718			NoData	NoData	NoData	NoData	NoData	NoData	0.07	26.29	4.09	30.31
24	383329	399718			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	3.90	30.31
25	383340	399718			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	3.61	30.31
26	383351	399718			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	3.67	30.31
27	383318	399729			NoData	NoData	NoData	NoData	NoData	NoData	0.18	26.29	4.20	30.31
28	383329	399729			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	3.86	30.31

Data in this table comes from the Lower Irwell Model 2017 model.

Height values are shown in mAOD, and depth values are shown in metres.

Any blank cells show where a particular scenario has not been modelled for this location.

Cells which contain text 'NoData' for a scenario show that return period has been modelled but there is no flood risk for that return period for that location.



Defences removed modelled fluvial extent and height

Location (easting/northing)
383337/399702

Scale Created
1:500 13 Feb 2024

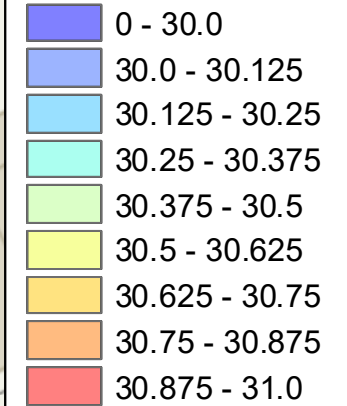
Model name
**Lower Irwell Model
2017**

 Selected area

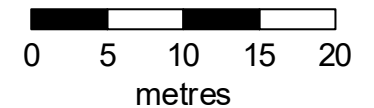
 Main river

Modelled 2D grid

Water level in mAOD



This map shows the
0.1% AEP height data



Sample point data

Defences removed

Label	Easting	Northing	5% AEP		2% AEP		1.33% AEP		1% AEP		0.5% AEP		0.1% AEP	
			Depth	Height	Depth	Height	Depth	Height	Depth	Height	Depth	Height	Depth	Height
1	383340	399674			0.35	27.20	0.59	27.44	0.68	27.54	0.94	27.80	3.80	30.65
2	383351	399674			0.15	27.20	0.38	27.44	0.48	27.54	0.74	27.80	3.59	30.65
3	383362	399674			NoData	NoData	NoData	NoData	NoData	NoData	0.28	27.80	3.12	30.64
4	383373	399674			0.10	27.20	0.23	27.44	0.28	27.54	0.51	27.80	3.35	30.64
5	383318	399685			0.61	27.20	0.85	27.44	0.94	27.54	1.21	27.80	4.06	30.65
6	383329	399685			0.44	27.20	0.68	27.44	0.78	27.54	1.04	27.80	3.89	30.65
7	383340	399685			0.45	27.20	0.69	27.44	0.79	27.54	1.06	27.81	3.90	30.65
8	383351	399685			0.44	27.20	0.68	27.44	0.78	27.54	1.04	27.81	3.89	30.65
9	383362	399685			0.43	27.20	0.67	27.44	0.77	27.54	1.03	27.80	3.88	30.65
10	383373	399685			0.70	27.20	0.94	27.44	1.04	27.54	1.31	27.80	4.15	30.65
11	383318	399696			0.52	27.20	0.75	27.44	0.85	27.54	1.12	27.81	3.97	30.65
12	383329	399696			0.60	27.20	0.84	27.44	0.94	27.54	1.21	27.81	4.05	30.65
13	383340	399696			0.60	27.20	0.84	27.44	0.94	27.54	1.21	27.81	4.05	30.65
14	383351	399696			0.48	27.20	0.72	27.44	0.82	27.54	1.09	27.81	3.93	30.65
15	383362	399696			0.53	27.20	0.76	27.44	0.87	27.54	1.13	27.81	3.98	30.65
16	383307	399707			0.82	27.20	1.06	27.44	1.16	27.54	1.43	27.81	4.27	30.66

Label	Easting	Northing	5% AEP		2% AEP		1.33% AEP		1% AEP		0.5% AEP		0.1% AEP	
			Depth	Height	Depth	Height	Depth	Height	Depth	Height	Depth	Height	Depth	Height
17	383318	399707			0.74	27.20	0.97	27.44	1.07	27.54	1.34	27.81	4.19	30.66
18	383329	399707			0.76	27.20	1.00	27.44	1.09	27.54	1.36	27.81	4.21	30.65
19	383340	399707			0.65	27.20	0.89	27.44	0.99	27.54	1.26	27.81	4.10	30.65
20	383351	399707			0.43	27.20	0.67	27.44	0.76	27.54	1.03	27.81	3.88	30.65
21	383362	399707			0.74	27.20	0.98	27.44	1.08	27.54	1.35	27.81	4.19	30.65
22	383307	399718			0.90	27.20	1.14	27.44	1.24	27.54	1.51	27.81	4.35	30.66
23	383318	399718			0.98	27.20	1.22	27.44	1.32	27.54	1.59	27.81	4.43	30.66
24	383329	399718			0.79	27.20	1.02	27.44	1.12	27.54	1.39	27.81	4.24	30.65
25	383340	399718			0.51	27.20	0.74	27.44	0.84	27.54	1.11	27.81	3.96	30.65
26	383351	399718			0.57	27.20	0.80	27.44	0.90	27.54	1.17	27.81	4.02	30.65
27	383318	399729			1.09	27.20	1.33	27.44	1.43	27.54	1.70	27.81	4.54	30.66
28	383329	399729			0.75	27.20	0.99	27.44	1.08	27.54	1.36	27.81	4.20	30.66

Data in this table comes from the Lower Irwell Model 2017 model.

Height values are shown in mAOD, and depth values are shown in metres.

Any blank cells show where a particular scenario has not been modelled for this location.

Cells which contain text 'NoData' for a scenario show that return period has been modelled but there is no flood risk for that return period for that location.



Defended climate change modelled fluvial extent and height

Location (easting/northing)
383337/399702

Scale Created
1:500 13 Feb 2024

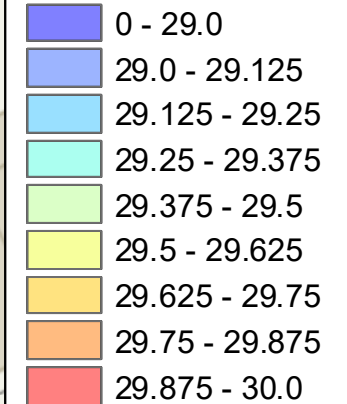
Model name
**Lower Irwell Model
2017**

 Selected area

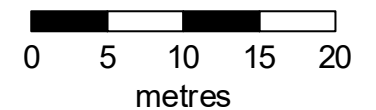
 Main river

Modelled 2D grid

Water level in mAOD



This map shows the
1.0% AEP +70% height data



Sample point data

Defended climate change

Label	Easting	Northing	1% AEP (+30%)		1% AEP (+35%)		1% AEP (+70%)	
			Depth	Height	Depth	Height	Depth	Height
1	383340	399674	1.03	27.88	1.15	28.00	2.77	29.62
2	383351	399674	0.83	27.89	0.95	28.00	2.56	29.62
3	383362	399674	0.37	27.89	0.48	28.00	2.09	29.61
4	383373	399674	0.60	27.89	0.71	28.00	2.32	29.61
5	383318	399685	1.30	27.89	1.42	28.01	3.03	29.63
6	383329	399685	1.13	27.89	1.25	28.01	2.87	29.63
7	383340	399685	1.14	27.89	1.26	28.01	2.88	29.63
8	383351	399685	1.13	27.89	1.25	28.02	2.87	29.63
9	383362	399685	1.12	27.89	1.24	28.01	2.85	29.62
10	383373	399685	1.39	27.89	1.51	28.01	3.12	29.62
11	383318	399696	1.21	27.89	1.33	28.02	2.94	29.63
12	383329	399696	1.29	27.89	1.42	28.02	3.03	29.63
13	383340	399696	1.29	27.89	1.41	28.02	3.03	29.63
14	383351	399696	1.18	27.89	1.30	28.02	2.91	29.63
15	383362	399696	1.22	27.89	1.34	28.01	2.95	29.63
16	383307	399707	1.51	27.90	1.64	28.02	3.25	29.64

Label	Easting	Northing	1% AEP (+30%)		1% AEP (+35%)		1% AEP (+70%)	
			Depth	Height	Depth	Height	Depth	Height
17	383318	399707	1.43	27.90	1.55	28.02	3.17	29.63
18	383329	399707	1.45	27.89	1.57	28.02	3.19	29.63
19	383340	399707	1.34	27.89	1.46	28.02	3.08	29.63
20	383351	399707	1.12	27.89	1.24	28.02	2.85	29.63
21	383362	399707	1.43	27.89	1.55	28.01	3.17	29.63
22	383307	399718	1.59	27.90	1.72	28.02	3.33	29.63
23	383318	399718	1.67	27.90	1.79	28.02	3.41	29.63
24	383329	399718	1.48	27.89	1.60	28.02	3.22	29.63
25	383340	399718	1.20	27.89	1.32	28.02	2.93	29.63
26	383351	399718	1.26	27.90	1.38	28.02	2.99	29.63
27	383318	399729	1.78	27.90	1.91	28.02	3.52	29.63
28	383329	399729	1.44	27.90	1.57	28.02	3.18	29.63

Data in this table comes from the Lower Irwell Model 2017 model.

Height values are shown in mAOD, and depth values are shown in metres.

Any blank cells show where a particular scenario has not been modelled for this location.

Cells which contain text 'NoData' for a scenario show that return period has been modelled but there is no flood risk for that return period for that location.



**Defences removed
climate change
modelled fluvial
extent and height**

Location (easting/northing)
383337/399702

Scale Created
1:500 13 Feb 2024

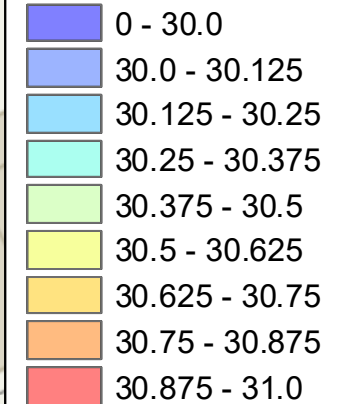
Model name
**Lower Irwell Model
2017**

 Selected area

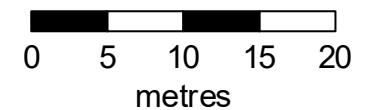
 Main river

Modelled 2D grid

Water level in mAOD



This map shows the
1.0% AEP +70% height data



Sample point data

Defences removed climate change

Label	Easting	Northing	1% AEP (+30%)		1% AEP (+35%)		1% AEP (+70%)	
			Depth	Height	Depth	Height	Depth	Height
1	383340	399674	1.56	28.41	1.78	28.63	3.17	30.03
2	383351	399674	1.35	28.41	1.57	28.63	2.97	30.03
3	383362	399674	0.89	28.41	1.11	28.63	2.50	30.02
4	383373	399674	1.12	28.41	1.34	28.63	2.73	30.02
5	383318	399685	1.83	28.42	2.05	28.64	3.44	30.03
6	383329	399685	1.66	28.42	1.88	28.64	3.27	30.03
7	383340	399685	1.68	28.43	1.90	28.65	3.28	30.03
8	383351	399685	1.67	28.43	1.89	28.65	3.27	30.04
9	383362	399685	1.65	28.42	1.86	28.64	3.26	30.03
10	383373	399685	1.92	28.42	2.14	28.64	3.53	30.03
11	383318	399696	1.74	28.43	1.96	28.65	3.35	30.04
12	383329	399696	1.83	28.43	2.05	28.65	3.43	30.03
13	383340	399696	1.83	28.43	2.05	28.65	3.43	30.04
14	383351	399696	1.71	28.43	1.93	28.65	3.32	30.04
15	383362	399696	1.75	28.42	1.97	28.64	3.36	30.03
16	383307	399707	2.05	28.43	2.27	28.65	3.66	30.04

Label	Easting	Northing	1% AEP (+30%)		1% AEP (+35%)		1% AEP (+70%)	
			Depth	Height	Depth	Height	Depth	Height
17	383318	399707	1.97	28.43	2.19	28.65	3.57	30.04
18	383329	399707	1.99	28.43	2.20	28.65	3.59	30.04
19	383340	399707	1.88	28.43	2.10	28.65	3.48	30.04
20	383351	399707	1.66	28.43	1.87	28.65	3.26	30.04
21	383362	399707	1.97	28.43	2.18	28.64	3.57	30.03
22	383307	399718	2.13	28.43	2.35	28.65	3.73	30.04
23	383318	399718	2.21	28.43	2.43	28.65	3.81	30.04
24	383329	399718	2.02	28.43	2.23	28.65	3.62	30.04
25	383340	399718	1.74	28.43	1.95	28.65	3.34	30.04
26	383351	399718	1.80	28.43	2.01	28.65	3.40	30.04
27	383318	399729	2.32	28.43	2.54	28.65	3.93	30.04
28	383329	399729	1.98	28.43	2.20	28.65	3.58	30.04

Data in this table comes from the Lower Irwell Model 2017 model.

Height values are shown in mAOD, and depth values are shown in metres.

Any blank cells show where a particular scenario has not been modelled for this location.

Cells which contain text 'NoData' for a scenario show that return period has been modelled but there is no flood risk for that return period for that location.

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

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.

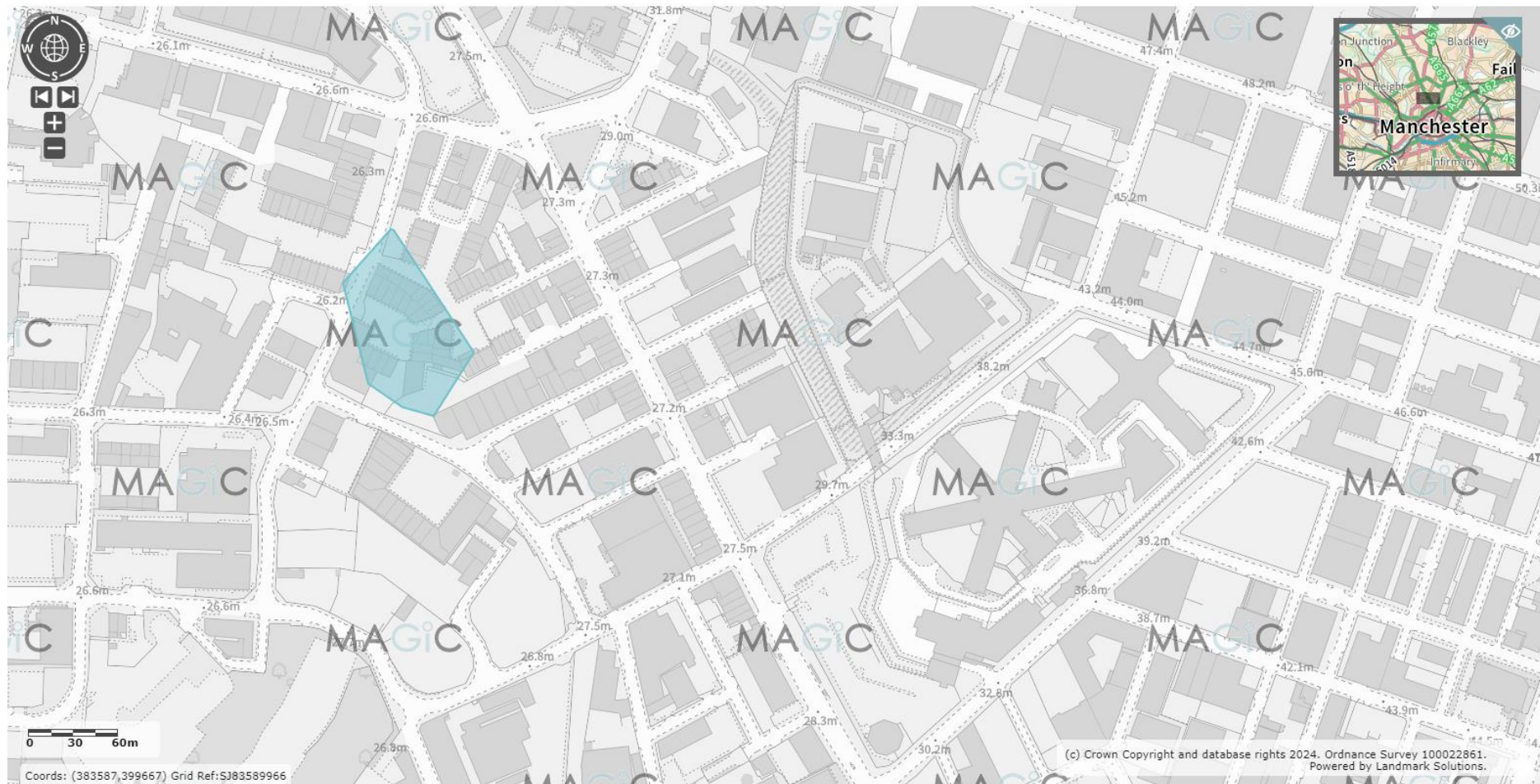
[Find out more about flood risk activity permits](#)

Help and advice

Contact the Greater Manchester Merseyside and Cheshire Environment Agency team at inforequests.gmmc@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

Appendix 8: Output from DEFRA MAGIC Application in relation to Groundwater Vulnerability



Site Check Results

Site Check Report Report generated on Fri Mar 01 2024

You selected the location: Centroid Grid Ref: SJ83339970

The following features have been found in your search area:

Groundwater Vulnerability Map (England)

Classification

Medium - Low

Appendix 9: Correspondence with United Utilities

Good afternoon, Afzal

I can confirm that we have no current record of sewer flooding on our DG5 register within the vicinity of the proposed development. The DG5 register is a register of properties that have flooded as a result of hydraulic inadequacy of the public sewer network.

Please note that United Utilities Water Limited (UUW) can only record and check flooding events which are reported to us and we have to comply with our Regulators instructions on the qualification of flooding events to place on the register.

Our response does not include:

- any sewer flooding events caused by blockages or collapses which are the result of third party actions, natural events or other actions over which UUW has no control and not a facet of sewer capacity; or
- any historical sewer flooding events that have been removed from the register as a result of investment in our infrastructure.

Kind regards

Lana Jaundrell
Assistant Developer Engineer
Developer Services & Metering
Customer Services
T: 07876854801
unitedutilities.com

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***Please note my working days are: 07:30-15:30 Tuesday, Thursday & Friday ***