Flood Risk Assessment

UNION TERRACE
RAWTENSTALL
ROSSENDALE

for

Mr. and Mrs. Coyne

Report Number 4190

March 2022

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Flood Risk Assessment

UNION TERRACE, RAWTENSTALL, ROSSENDALE

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1 INTRODUCTION

1.1 At the request of Martin Walsh Architectural, acting on behalf of Mr. and Mrs. Coyne, a Flood Risk Assessment (FRA) has been carried out for land adjoining Union Terrace in Rawtenstall. It is proposed to develop the site with a detached residential property and separate detached garage.

1.2 The Flood Risk Assessment has been prepared in accordance with The National Planning Policy Framework (NPPF), which is the official document that regulates the assessment of flood risks and their appropriate mitigation measures in the planning process. To accompany the NPPF there is the "Technical Guidance to the National Planning Framework" document of March 2012. This replaces PPS25: Development and Flood Risk.

1.3 The National Planning Policy Framework sets strict tests to protect people and property from flooding which all local planning authorities are expected to follow. Where these tests are not met, national policy is clear that new development should not be allowed. The mains steps to be followed are set out below which, in summary, are designed to ensure that if there are better sites in terms of flood risk, or a proposed development cannot be made safe, it should not be permitted.

1.4 A site-specific flood risk assessment is required to assess the flood risk associated with the change of use proposals. The information provided in the flood risk assessment should be credible and fit for purpose. Site-specific flood risk assessments should always be proportionate to the degree of flood risk and make optimum use of information already available.

2 THE SITE

2.1 The site covers an area of approximately 0.06 hectares. It is located on Union Terrace, approximately 1km east of the centre of Rawtenstall and 25km north of Manchester. The Ordnance National Survey Grid Reference is 381975, 422565 and it lies between approximately 172 and 177 mAOD. Figure 1 shows the general site location, whilst figure 2 shows the site in more detail.

2.2 The site was inspected on 28th February 2022. It comprises a roughly rectangular plot of land, with Fallbarn Road forming the northeastern boundary. To the southeast is a row of stone terraced houses, comprising Union Terrace. To the southwest is grassland, which rises up steeply to the southwest. The grassland also continues to the northwest of the site.

2.3 The site itself comprises two main levels. The northwestern half is at a lower level and consists of two small wooden workshop type buildings with profiled metal roofs. There is also a mobile caravan stored on the site. There is also a small area of concrete hardstanding. The southeastern half comprises a higher level grassed area, used until recently for keeping chickens. It is separated from the lower area by a dry stone retaining wall and path.

Lower area looking to southeast

View of lower area looking to northwest

View towards higher area looking to southeast

View of higher area looking northeast towards Fallbarn Road

View of higher area looking east towards Fallbarn Road

View from southernmost corner of site looking northwest

View from Fallbarn Road looking south

2.4 The land to the southwest of the site is undulating, due to mass movement, and this is discussed further in Section 3.

Undulating land rising to the southwest of the site

2.5 To the opposite side of Fallbarn Road is the River Irwell. There has been a failure in the river wall, and repairs are nearing completion. There is evidence of movement in Fallbarn Road due to the collapse. The movement does not appear to have extended onto the site, but this cannot be known for certain.

View along Fallbarn Road showing river bank repairs

View along Fallbarn Road showing river bank repairs

2.6 There is a drain discharging to a gulley on Fallbarn Road. The drain appears to pass in a southwesterly direction below the southeastern half of the site.

3 GEOLOGY AND HYDROGEOLOGY

3.1 Maps of the British Geological Survey (BGS), show the site to be underlain by the Glacial Till commonly known as Boulder Clay. This typically comprises firm to very stiff sandy clays, with varying amounts of gravel, cobbles and boulders. Alluvium deposited by the river lies along the northeastern boundary of the site.

3.2 The underlying bedrock is recorded as comprising predominantly mudstones and siltstones of the Millstone Grit Group. There are no faults shown on the geological maps to affect the site.

3.3 The land immediately to the south and southwest of the site is shown to be affected by 'Mass Movement Deposits'.

3.4 The area affected is usually shown as an approximation, and as such may include some or all of the site.

3.5 The aquifer within the superficial and bedrock deposits is designated as Secondary A. This is described as permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers.

3.6 Details provided by the Environment Agency in the GroundSure Enviro-Insight Report, indicate there to be no current or historical licensed surface water or groundwater abstraction points within at least 1km of the site.

4 SITE SPECIFIC FLOOD RISK ASSESSMENT

4.1 The assessment is based on the Environment Agency's maps of flood risk zones. These cover all of England and Wales and map areas prone to flooding in terms of the following:

Zone 1 - Low Probability (Little or No Risk)

This zone comprises land assessed as having a less than 1 in 1000 annual probability of river or sea flooding in any year. There are no development constraints.

Zone 2 - Medium Probability (Low to Medium Risk)

This zone comprises land assessed as having between a 1 in 100 (1%) and 1 in 1000 (0.1%) annual probability of river flooding or between a 1 in 200 and 1 in 1000 annual probability of sea flooding in any year.

Zone 3a - High Probability (High Risk)

This zone and the site itself comprises land assessed as having a 1 in 100 or greater annual probability of river flooding or a 1 in 200 or greater annual probability of flooding from sea in any year.

Zone 3b - Functional Floodplain

This zone comprises land where water has to flow or be stored in times of flood. The annual probability that such land will flood will be 1 in 20 or greater.

Flooding from Rivers

4.2 A search has been made of the Environment Agency's on-line Flood Map for Planning and the report is attached in Appendix 1. The Environment Agency has also been contacted with respect to anticipated flood levels. Its full response is presented in Appendix 2. The extreme northern part of the site lies within Flood Zone 3. The vast majority of the site is shown to be unaffected by flooding (Flood Zone 1).

4.3 Reference has been made to the "Technical Guidance to the National Planning Policy Framework". In terms of vulnerability to flooding appropriate developments for each flood zone are given. The proposed residential development of the site would be classed as *"more vulnerable".*

Flood Vulnerability Zone	Essential Infrastructure	Water Compatible Development	Highly Vulnerable	More Vulnerable	Less Vulnerable
1	Appropriate	Appropriate	Appropriate	Appropriate	Appropriate
2	Appropriate	Appropriate	Exception test required	Appropriate	Appropriate
3a	Exception test required	Appropriate	Inappropriate	Exception Test required	Appropriate
3b	Exception test required	Appropriate	Inappropriate	Inappropriate	Inappropriate

4.4 The Environment Agency has two modelling points near to the site. Node 3 is located by the bridge, over the River Irwell (Victoria Way), just upstream of the site. Node 4 is located approximately 150m downstream.

4.5 With reference to Node 3, the 1 in 100 year flood level is 172.75 mAOD, which allows for a 70% increase in flow due to climate change. The 1 in 1000 year flood level is very similar at 172.74 mAOD.

4.6 The topographic survey of the site records the lower groundlevel at the site to be 172.89 mAOD. Groundlevel at the proposed location of the detached garage is approximately 173.31 mAOD, and therefore 400mm above future flood levels. The proposed finished floor level of the house has yet to be determined, but is likely to be circa 176 mAOD, which is in excess of 3m above future flood levels.

4.7 It should also be noted that the site is downstream of Node 3, and in reality the future flood levels will be less than the levels quoted in Section 4.4 above.

Historical Flooding

4.8 According to the Environment Agency data, there has been no recorded flooding on the site.

Flood Defences

4.9 There are no flood defences.

Flood Storage Areas

4.10 The site does not act as a Flood Storage Area.

Surface Water Flooding

4.11 According to Ambiental Risk Analytics, the northeastern edge of the site has a 1 in 100 year chance of surface water flooding to a depth of between 0.1m and 0.3m.

Groundwater Flooding

4.12 Ambiental Risk Analytics state that the risk of groundwater flooding is low.

4.13 Any groundwater present in the more permeable horizons of the alluvium is likely to be in hydraulic continuity with the river. Under normal flow conditions in the river, any groundwater present in the alluvium is likely to be several metres below ground level at the site. During periods of flooding in the river there is potential for

groundwater levels beneath the site to rise. However, the duration of major flood events in the river is likely to be too short to support a significant increase in groundwater level due to slow seepage from river to groundwater. On this basis, it can be concluded that the site is unlikely to be at risk of flooding from groundwater.

Surface water run-off and stormwater sewers

4.14 There is an anecdotal report of a culvert below the site. However, the Environment Agency, United Utilities or Lancashire County Council has any records to confirm this.

Site Access and Egress

4.15 Based on 1 in 100 and 1 in 1000 year flood events, the topographic survey confirms that levels on Fallbarn Road are above the predicted flood levels and therefore unaffected by flooding.

Surface Water Management

4.16 It is proposed to discharge surface water to the existing piped system. It is anticipated therefore that there will be a reduction in the rate of infiltration and surface water run-off from the site. As such there is no requirement for additional surface water management and control.

Floodplain Storage

4.17 The site does not act as a Flood Storage Area. As such the proposed use of the site will not lead to any loss of floodplain storage.

5 CONCLUSIONS

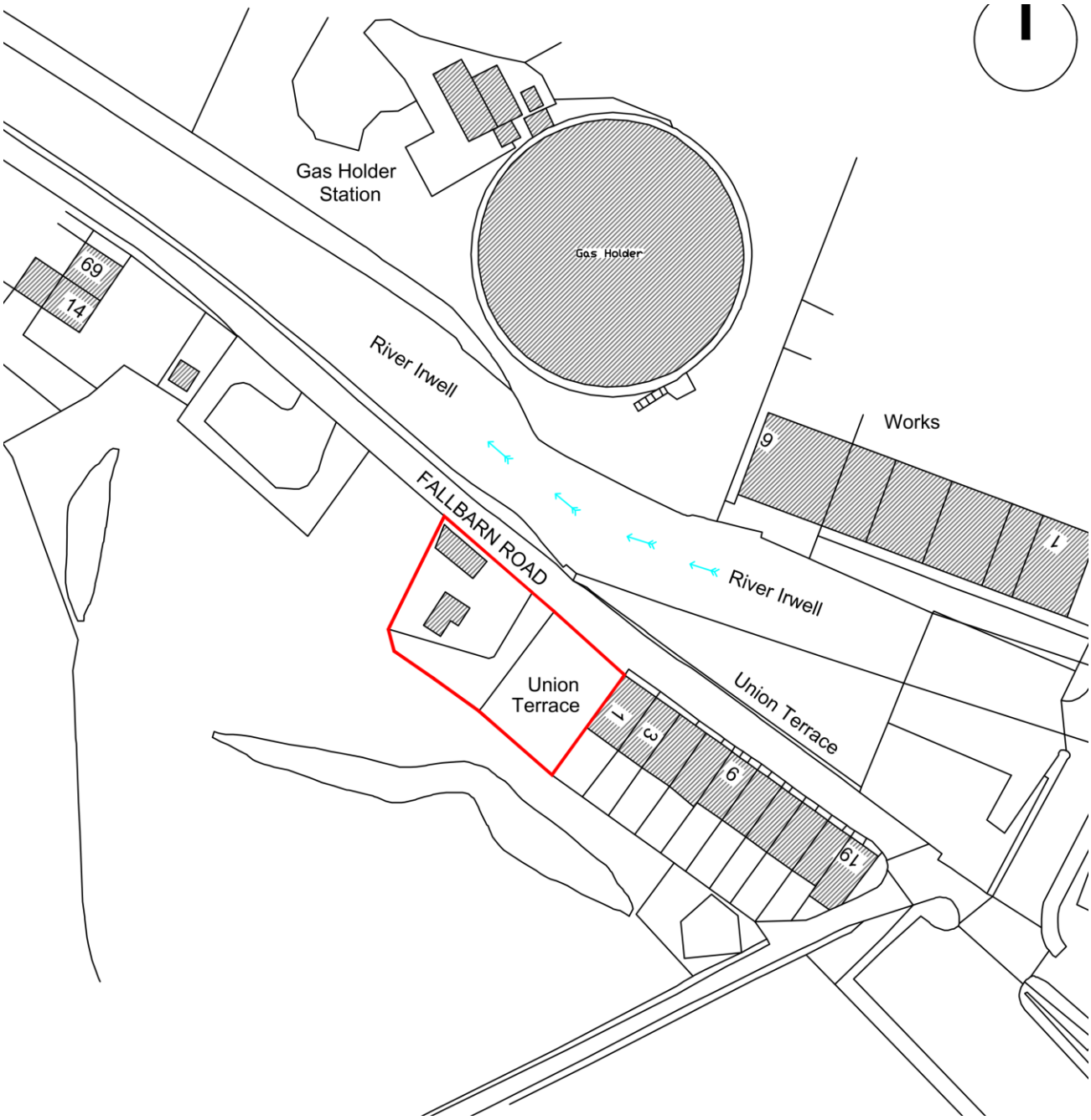
5.1 This Flood Risk Assessment has been undertaken to provide the necessary risk information to support the proposed development.

5.2 The predicted flood levels are below the current groundlevels, and as such the site will be unaffected by flooding. The proposed development is therefore considered to be appropriate, with negligible risk to residents or property.

A D Joyce

BSc MSc ARSM CEng CGeol CEnv MICE FGS SiLC SQP

March 2022



Union Terrace, Fallbarn Road, Rawtenstall

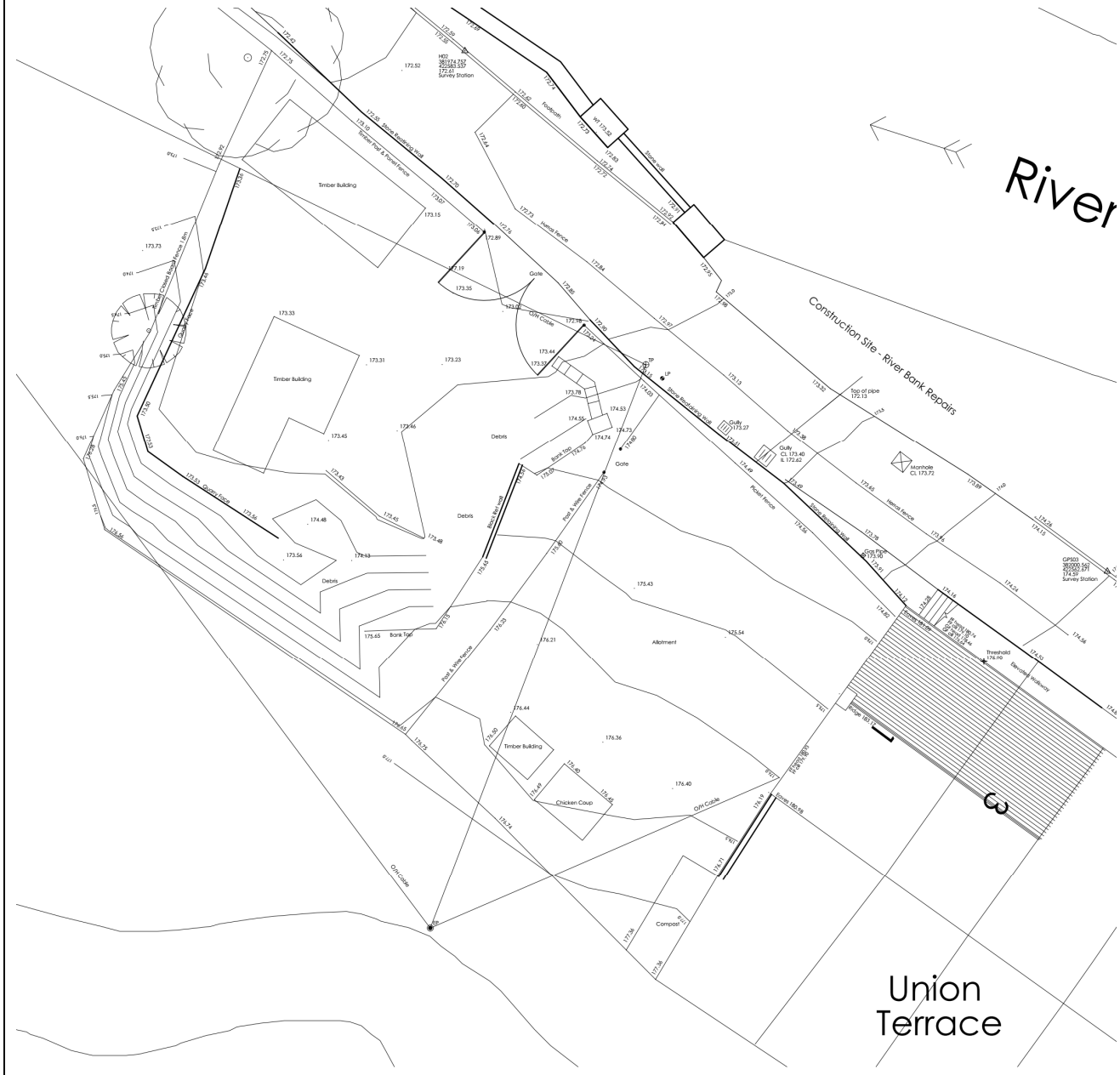
Site Location

Michael D Joyce Associates LLP

Geotechnical and Geoenvironmental Consultants

Scale: NTS

Figure: 1



Union Terrace, Fallbarn Road, Rawtenstall

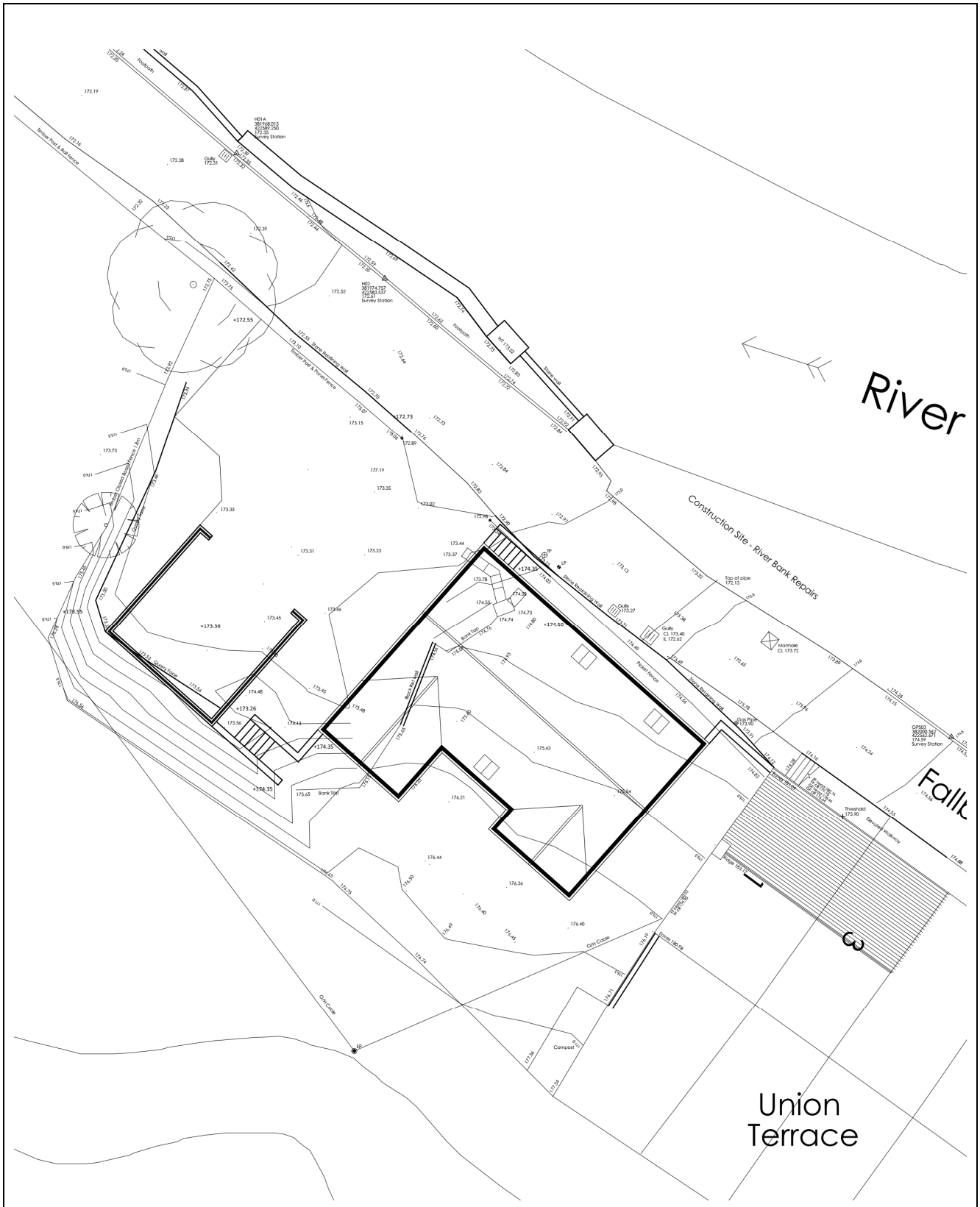
Site Plan

Michael D Joyce Associates LLP

Geotechnical and Geoenvironmental Consultants

Scale: NTS

Figure: 2



Union Terrace, Fallbarn Road, Rawtenstall

Development Proposals

Michael D Joyce Associates LLP

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Scale: NTS

Figure: 3

APPENDIX 1

Environment Agency Flood Map for Planning

Flood map for planning

Your reference	Location (easting/northing)	Created
Union Terrace	**381975/422565**	**18 Feb 2022 13:58**

Your selected location is in flood zone 1, an area with a low probability of flooding.

This means:

- you don't need to do a flood risk assessment if your development is smaller than 1 hectare and not affected by other sources of flooding
- you may need to do a flood risk assessment if your development is larger than 1 hectare or affected by other sources of flooding or in an area with critical drainage problems

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.

Environment Agency

Flood map for planning

Your reference
Union Terrace

Location (easting/northing)
381975/422565

Scale
1:2500

Created
18 Feb 2022 13:58

- Selected point
- Flood zone 3
- Flood zone 3: areas benefitting from flood defences
- Flood zone 2
- Flood zone 1
- Flood defence
- Main river
- Flood storage area

0 20 40 60m

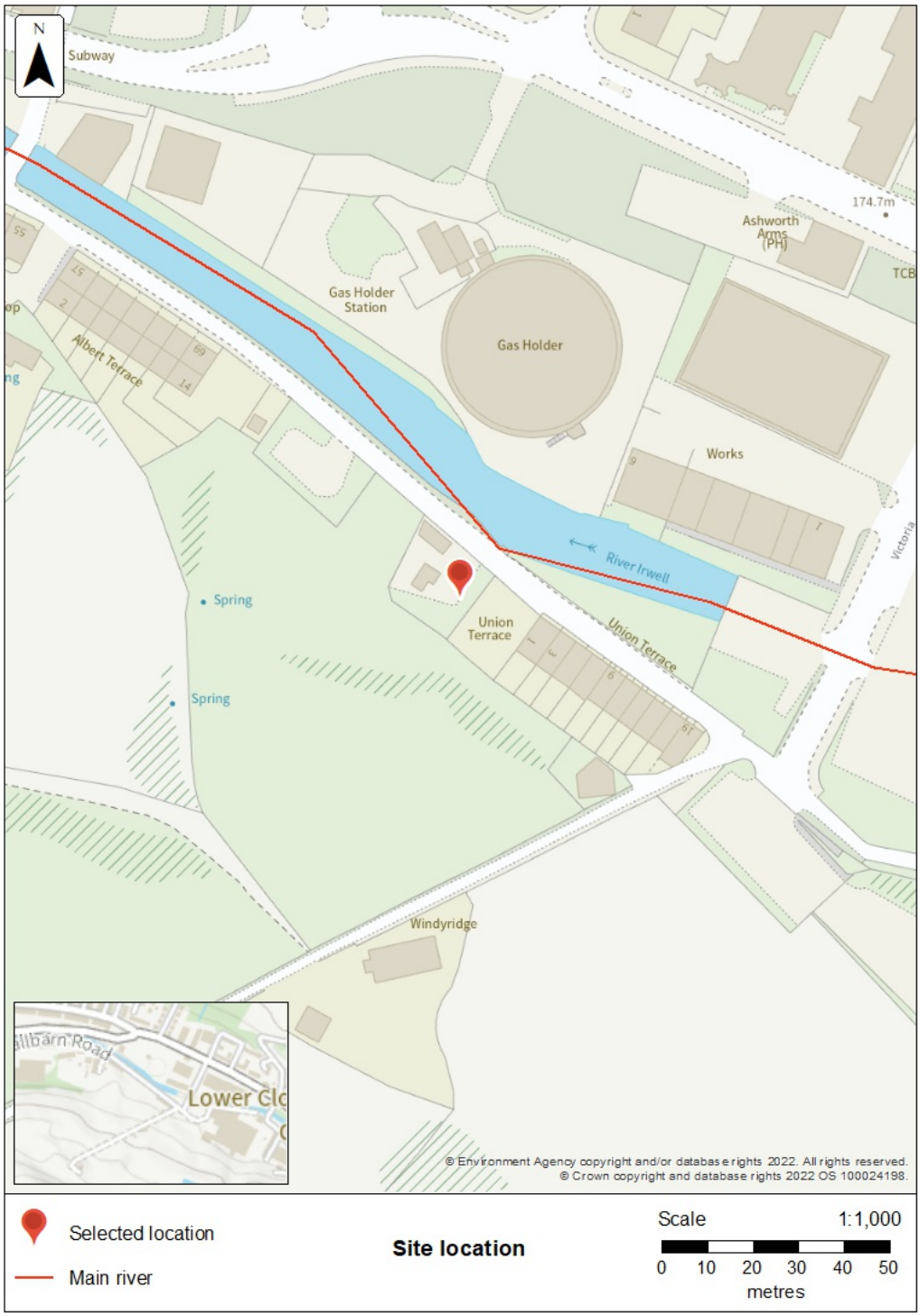
APPENDIX 2

Correspondence from the Environment Agency

Flood risk assessment data

Location of site: 381975 / 422565 (shown as easting and northing coordinates)
Document created on: 28 February 2022
This information was previously known as a product 4.
Customer reference number: GMMC251232AB

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)
- modelled data
- information about strategic flood risk assessments
- information about this data
- information about flood risk activity permits
- help and advice

Information that's unavailable

This document **does not** contain:

- historic flooding
- flood defences and attributes

We do not have historic flooding data for this location. You can 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.

We aren't able to display flood defence locations and attributes as there are no formal flood defences in the area of interest.

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: River Irwell and Limey Water 2011
Scenario(s): No defences exist fluvial; Defended fluvial
Date: 31 March 2012

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 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 development is in flood zone 1.

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

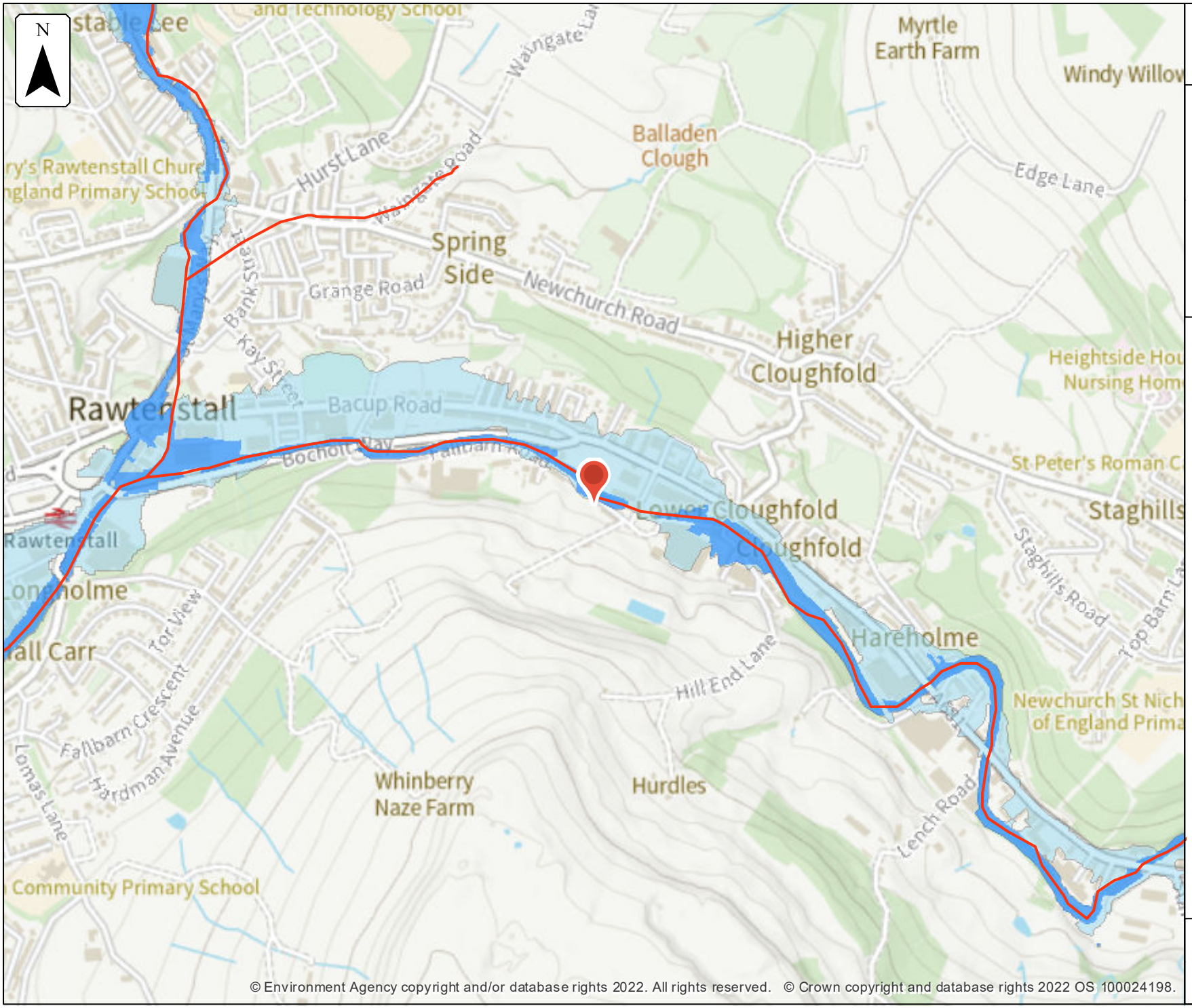
Flood zone 2 shows the area at risk of flooding for an undefended flood event with:

- 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.



Environment Agency

Flood map for planning

Location (easting/northing)
381975/422565

Scale
1:10,000

Created
28 Feb 2022

Selected location

Main river

Flood zone 3

Flood zone 2

0 100 200 300 400 500
metres

Modelled data

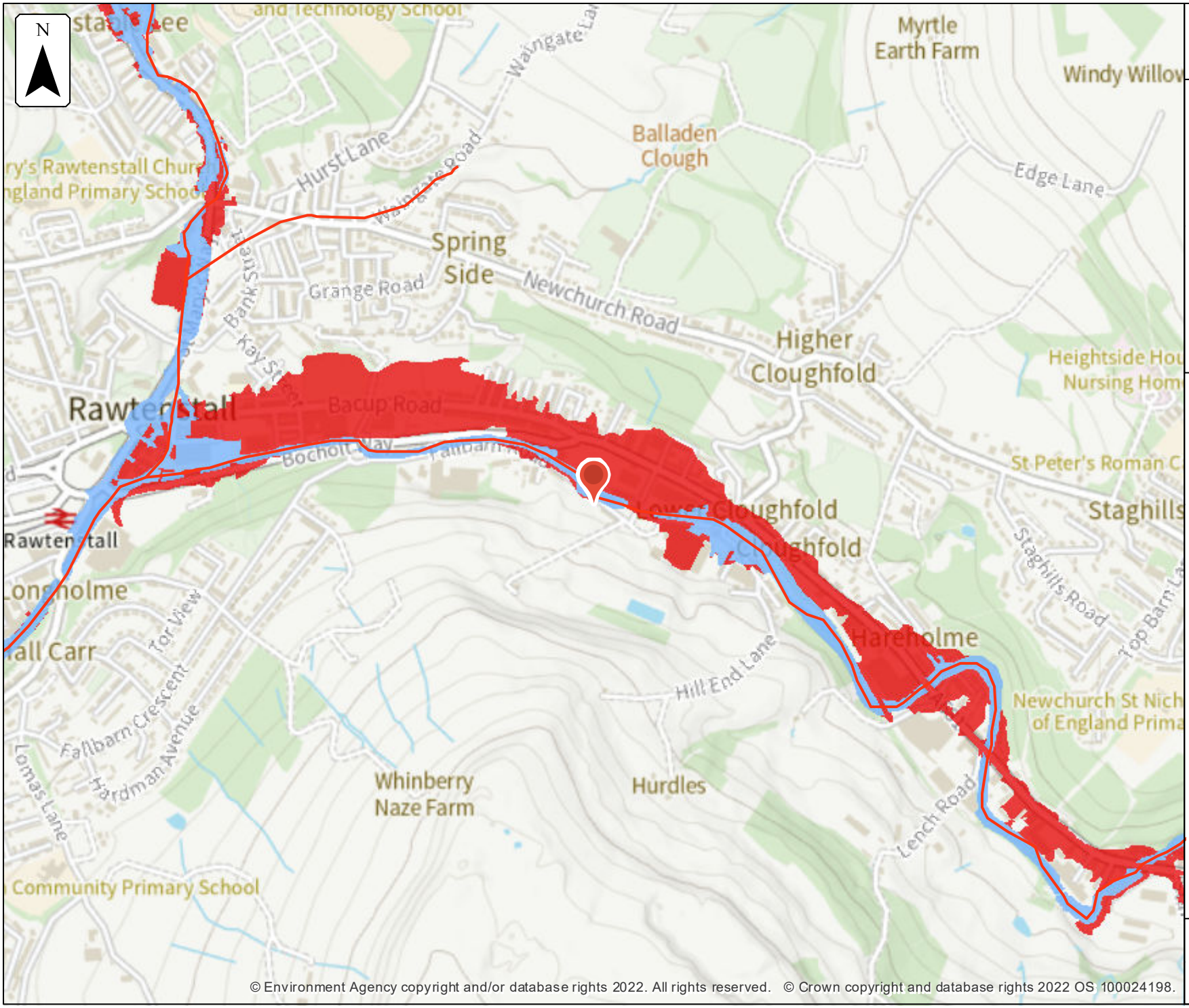
This section provides details of different scenarios we have modelled and includes the following (where available):

- 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

Modelled scenarios

The following scenarios are included:

- Defended modelled fluvial: risk of flooding from rivers where there are flood defences
- No defences exist modelled fluvial: risk of flooding from rivers where there are no flood defences



Environment Agency

Defended modelled fluvial extent

Location (easting/northing)
381975/422565

Scale
1:10,000

Created
28 Feb 2022

Model name
Rossendale 2012 D

Selected location

Main river

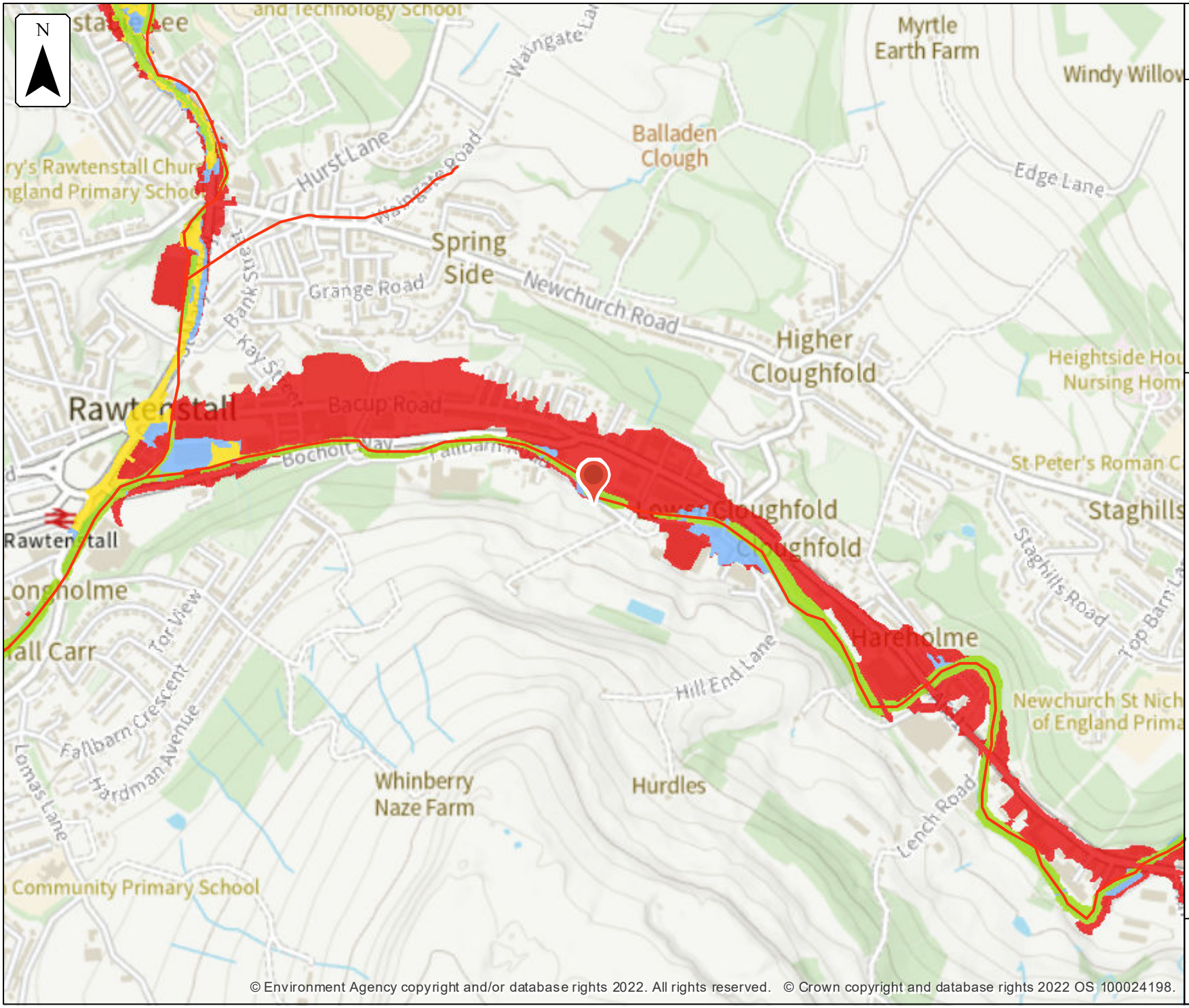
Modelled flood extent

0.1% AEP

1% AEP

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

0 100 200 300 400 500
metres



Environment Agency

No defences exist modelled fluvial extent

Location (easting/northing)
381975/422565

Scale
1:10,000

Created
28 Feb 2022

Model name
Rossendale 2012

Selected location

Main river

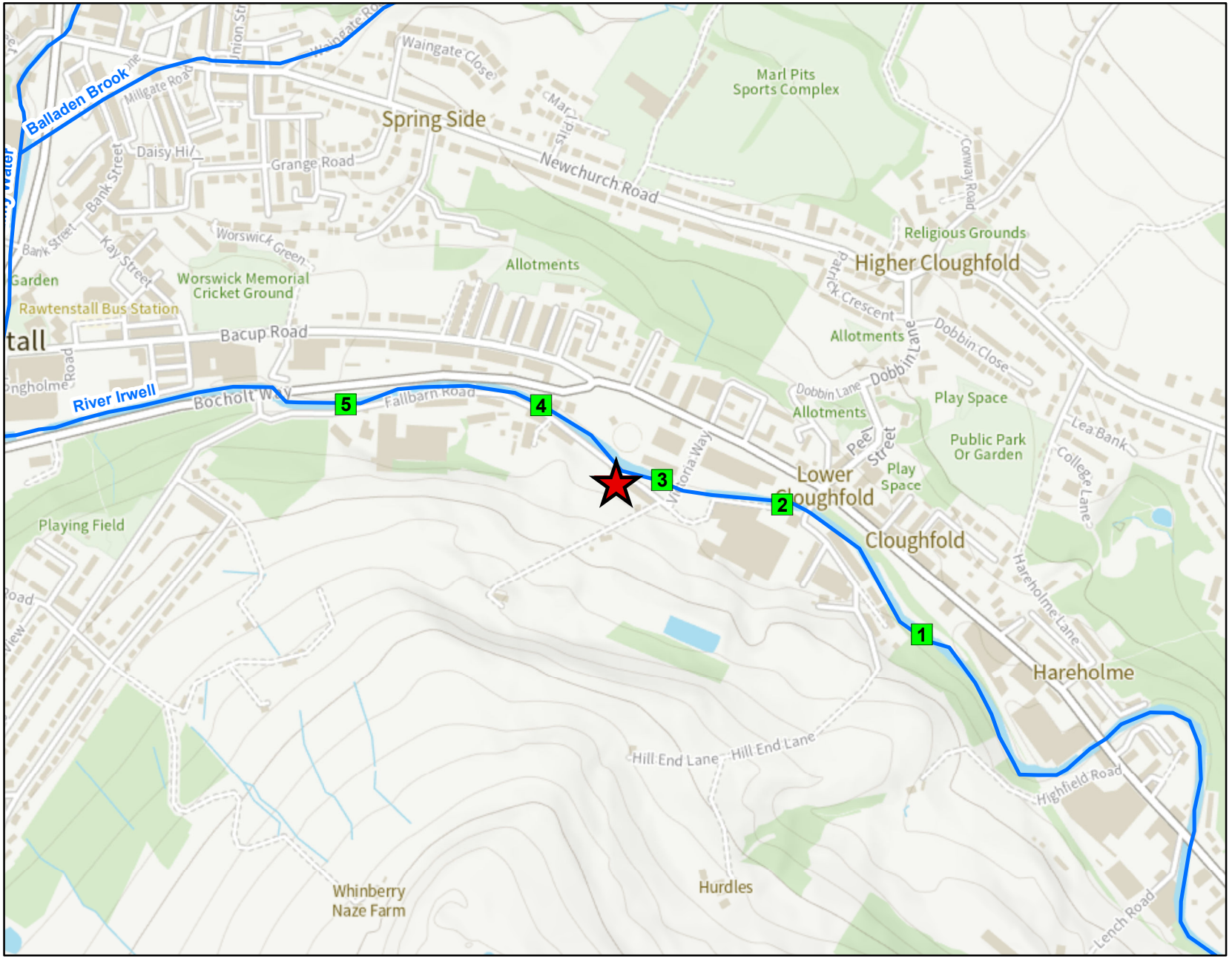
Modelled flood extent

- 0.1% AEP
- 1% AEP
- 1.33% AEP
- 5% AEP

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

0 100 200 300 400 500
metres

Model Measurements Map - River Irwell and Limey Water 2011



Environment Agency

1:7,500

N

Legend

- Site Location
- Model Measurements
- Main River

Contact Us: National Customer Contact Centre, PO Box 544, Rotherham, S60 1BY. Tel: 08708 506 506 (Mon-Fri 8-6). Email: enquiries@environment-agency.gov.uk

					Undefended								Defended	
Map Reference	Model Node Reference	Easting	Northing	Data	10 % AEP (1 in 10 year)	5 % AEP (1 in 20 year)	1.33 % AEP (1 in 75 year)	1 % AEP (1 in 100 year)	1 % AEP (1 in 100 year) + 30% Increase flow	1 % AEP (1 in 100 year) + 35% Increase flow	1 % AEP (1 in 100 year) + 70% Increase flow	0.1 % AEP (1 in 1000 year)	1 % AEP (1 in 100 year)	0.1 % AEP (1 in 1000 year)
1	ea0140IRWE08_0999	382385	422365	Modelled Water Level (m aodN)	176.02	176.13	176.45	176.95	177.03	177.03	177.07	177.35	176.94	177.35
				Modelled Flow (cumecs)	42.89	48.30	59.18	74.07	77.25	77.18	79.71	108.50	74.02	108.50
2	ea0140IRWE08_0735	382196	422531	Modelled Water Level (m aodN)	175.07	175.26	175.61	175.96	176.02	176.03	176.07	176.14	175.96	176.14
				Modelled Flow (cumecs)	42.89	48.28	59.16	73.91	76.24	76.58	78.25	112.59	73.78	112.59
3	ea0140IRWE08_0568d	382036	422570	Modelled Water Level (m aodN)	172.46	172.48	172.51	172.61	172.74	172.74	172.75	172.74	172.65	172.74
				Modelled Flow (cumecs)	42.89	48.28	59.16	74.01	76.65	76.94	78.83	101.01	80.29	101.01
4	ea0140IRWE08_0386u	381875	422667	Modelled Water Level (m aodN)	169.62	169.76	170.05	170.65	171.08	171.11	171.24	172.20	170.64	172.20
				Modelled Flow (cumecs)	42.97	48.42	59.39	74.30	75.36	75.31	75.10	72.75	74.56	72.75
5	ea0140IRWE08_0110	381615	422665	Modelled Water Level (m aodN)	167.91	168.01	168.20	168.45	168.50	168.50	168.53	169.10	168.45	169.10
				Modelled Flow (cumecs)	42.97	48.40	59.36	74.20	77.13	77.49	79.45	105.48	73.97	105.48

Model data taken from River Irwell and Limey Water 2011

AEP - Annual Exceedence Probability

m aodN - metres above ordnance datum Newlyn

cumecs - cubic metres per second

Notes: *Climate Change Scenario - 30%, 35% and 70% increases in flow calculated for the 2080's (2070 - 2115). Please see https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances for more information regarding the new climate change guidance. The location of the site and the type (vulnerability) of development determine the climate change allowances to consider in any flood risk assessment.

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 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

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