1 Waters Edge, Whalley, Lancashire, BB7 9UF

Flood Risk Assessment

For Mr & Mrs Sutehall

KRS.0843.001.R.001.B

September 2025

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1 Waters Edge, Whalley, Lancashire, BB7 9UF

Project	Flood Risk Assessment
Client	Mr & Mrs Sutehall
Status	Final
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Date	September 2025

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EXECUTIVE SUMMARY

The Site would be expected to remain dry in all but the most extreme conditions. The consequences of flooding are acceptable, and the development would be in accordance with the requirements of the National Planning Policy Framework (NPPF). The Proposed Development would be operated with minimal risk from flooding, would not increase flood risk elsewhere and is compliant with the requirements of the NPPF.

The Proposed Development should not therefore be precluded on the grounds of flood risk or drainage.

1.0 INTRODUCTION

1.1 Background

This Flood Risk Assessment (FRA) has been prepared by KRS Enviro at the request of Mr & Mrs Sutehall to support a planning application for a single storey side and rear extension ("the Proposed Development") at 1 Waters Edge, Whalley, Lancashire, BB7 9UF ("the Site").

This FRA has been carried out in accordance with guidance contained in the National Planning Policy Framework (NPPF)[1], associated Planning Practice Guidance on flood risk and coastal change[2] (PPG) and the PPG 'Site-specific flood risk assessment checklist. This FRA identifies and assesses the risks of all forms of flooding to and from the development and demonstrates how these flood risks will be managed so that the development remains safe throughout the lifetime, taking climate change into account.

It is recognised that developments which are designed without regard to flood risk may endanger lives, damage property, cause disruption to the wider community, damage the environment, be difficult to insure and require additional expense on remedial works. The development design should be such that future users will not have difficulty obtaining insurance or mortgage finance, or in selling all or part of the development, as a result of flood risk issues.

1.2 National Planning Policy Framework (NPPF)

One of the key aims of the NPPF is to ensure that flood risk is taken into account at all stages of the planning process; to avoid inappropriate development in areas at risk of flooding and to direct development away from areas of highest risk.

It advises that where new development is exceptionally necessary in areas of higher risk, this should be safe, without increasing flood risk elsewhere, and where possible, reduce flood risk overall. A risk-based approach is adopted at stages of the planning process, applying a source pathway receptor model to planning and flood risk. To demonstrate this, an FRA is required and should include:

- whether a proposed development is likely to be affected by current or future flooding from all sources;
- whether it will increase flood risk elsewhere;
- whether the measures proposed to deal with these effects and risks are appropriate;
- if necessary, provide the evidence to the Local Planning Authority (LPA) that the Sequential Test can be applied; and
- whether the development will be safe and pass part c) of the Exception Test if this is appropriate.

The report findings are based upon professional judgement and are summarised below with detailed recommendations provided at the end of the report. The report includes rainfall data from the Flood Estimation Handbook (FEH) and hydrogeological information from the British Geological Survey (BGS). The assessment will summarise and refer to these datasets in the text.

[1] Ministry for Housing, Communities and Local Government (2025) National Planning Policy Framework: https://assets.publishing.service.gov.uk/media/675abd214cbda57cacd3476e/NPPF-December-2024.pdf
[2] Communities and Local Government (2022) Planning Practice Guidance - Flood Risk and Coastal Change: https://www.gov.uk/guidance/flood-risk-and-coastal-change

1.3 Report Structure

This FRA has the following report structure:

- Section 2 describes the location and the existing and Proposed Development;
- Section 3 outlines the flood risk to the existing and Proposed Development;
- Section 4 details the proposed surface water drainage for the Site and assesses the potential impacts of the Proposed Development on surface water drainage;
- Section 5 outlines the mitigation measures used to manage the overall level of flood risk;
- Section 6 details the Sequential and Exception Tests; and
- Section 7 presents a summary and conclusions

2.0 LOCATION & DEVELOPMENT DESCRIPTION

2.1 Site Location

The Site is located at 1 Waters Edge, Whalley, Lancashire, BB7 9UF (see Figure 1). The National Grid Reference (NGR) of the Site is 373431, 435974.

Figure 1 - Site Location

2.2 Existing Development

The existing Site consists of an end of terrace residential dwelling (see Appendix 1). The existing finished floor levels are raised 150mm above the external ground levels.

2.3 Proposed Development

The Proposed Development is for a single storey side and rear extension (see Appendix 1). Further details with regard to the Proposed Development can be found in the accompanying information submitted with the planning application.

2.4 Ground Levels

The Site is relatively flat with a ground level of 45.40 metres Above Ordnance Datum (mAOD as per the Environment Agency's LiDAR 1m Digital Terrain Model (DTM).

2.5 Catchment Hydrology

A Mill Race is located approximately 50m to the west of the Site and the River Calder is located approximately 55m to the south of the Site.

2.6 Ground Conditions

The British Geological Survey (BGS) map[3] shows that the bedrock deposits at the Site consist of the Bowland Shale Formation – mudstone. Sedimentary bedrock formed between 337 and 319 million years ago during the Carboniferous period. The superficial deposits consist of Alluvium – clay, silt, sand and gravel. Sedimentary superficial deposit formed between 11.80 thousand years ago and the present during the Quaternary period.

Information from the National Soil Resources Institute[4] details the Site area as being situated on loamy and clayey floodplain soils with naturally high groundwater.

[3] https://mapapps2.bgs.ac.uk/geoindex/home.html?_ga=2.14476159.932338379.1655890995-1831306757.1655472887
[4] http://www.landis.org.uk/soilscapes/

3.0 FLOOD RISK

3.1 Sources of Flooding

All sources of flooding have been considered, these are; fluvial (river) flooding, tidal (coastal) flooding, groundwater flooding, surface water (pluvial) flooding, sewer flooding and flooding from artificial drainage systems/infrastructure failure.

3.2 Environment Agency

Information regarding the current flood risk at the application Site and local flood defences has been obtained from the Environment Agency (see Appendix 2). The Environment Agency has provided modelled data from the Whalley 2017 model.

3.3 Climate Change

Projections of future climate change, in the UK, indicate more frequent, short-duration, high intensity rainfall and more frequent periods of long duration rainfall. Guidance included within the NPPF recommends that the effects of climate change are incorporated into FRA's. Recommended precautionary sensitivity ranges for peak rainfall intensities and peak river flows are outlined in the flood risk assessments: climate change allowances guidance[5]. Table 1 shows the peak river flow allowances by river management catchment.

The flood risk assessments: climate change allowances guidance recommends that the central allowances are used to assess climate change throughout the lifetime of the development which is 100 years. Therefore, the fluvial design event for the Site is the 1 in 100 year (+36%) event.

Table 1 - Peak River Flow Allowances by River Catchment

River Catchment	Allowance Category	2020s	2050s	2080s
Ribble Management Catchment	Upper	+27%	+44%	+71%
	Higher	+19%	+29%	+46%
	Central	+16%	+23%	+36%

3.4 Environment Agency Flood Zones

A review of the Environment Agency's Flood Zones indicates that the Site is located within Flood Zone 3 and therefore has a 'high probability' of flooding as shown in Figures 2 and 3, with a 1 in 100 or greater annual probability of river flooding (>1%) in any year.

The Site should not be designated as Flood Zone 3b 'Functional Floodplain'. The definition of Flood Zone 3b 'Functional Floodplain' as per the PPG is: *"This zone comprises land where water from rivers or the sea has to flow or be stored in times of flood. The identification of functional floodplain should take account of local circumstances and not be defined solely on rigid probability parameters. Functional floodplain will normally comprise:*

- *land having a 3.3% or greater annual probability of flooding, with any existing flood risk management infrastructure operating effectively; or*
- *land that is designed to flood (such as a flood attenuation scheme), even if it would only flood in more extreme events (such as 0.1% annual probability of flooding).*

[5] https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances#high-allowances

Local planning authorities should identify in their Strategic Flood Risk Assessments areas of functional floodplain and its boundaries accordingly, in agreement with the Environment Agency."

The Site does not comprise land where water has to flow or be stored in times of flood. The Site does not perform a water conveyance flood route or a flood storage area. The Site does not provide a function of flood conveyance (i.e. free flow) or flood storage, either through natural processes, or by design (e.g. washlands and flood storage areas). The Site is already developed therefore, the Site is located within Flood Zone 3a.

The Flood Zones are the current best information on the extent of the extremes of flooding from rivers or the sea that would occur without the presence of flood defences, because these can be breached, overtopped and may not be in existence for the lifetime of the development. They show the worst case scenario. The Environment Agency Flood Zones and acceptable development types are explained in Table 2. Table 2 shows that some development types are generally acceptable in Flood Zone 3a.

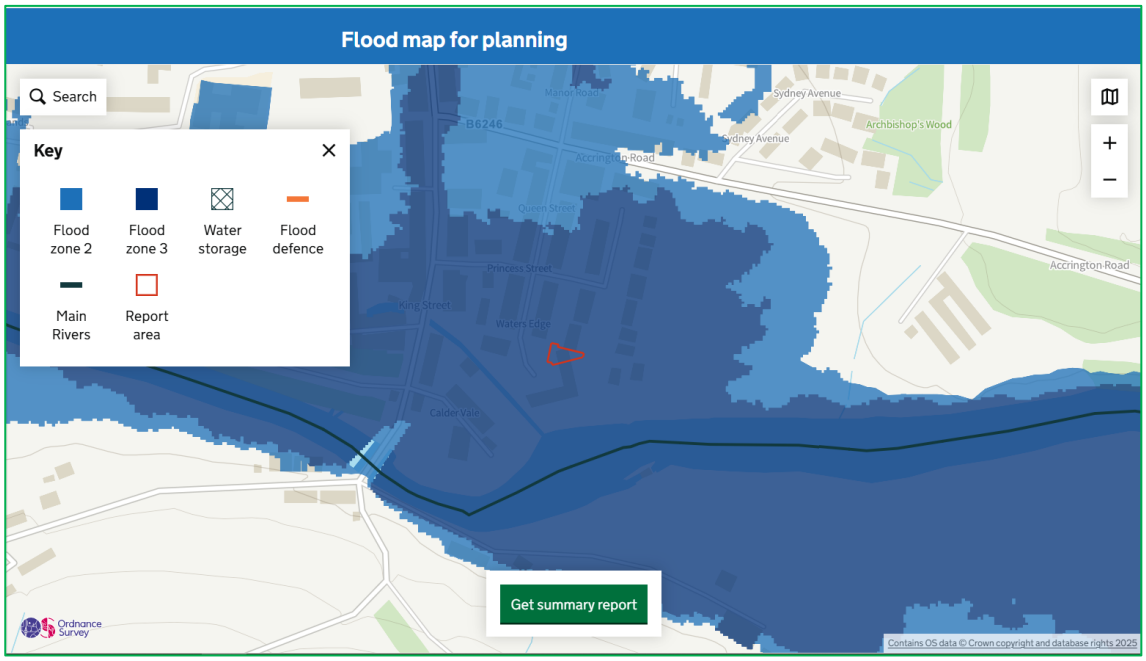


Figure 2 - Environment Agency Flood Zones: Present Day

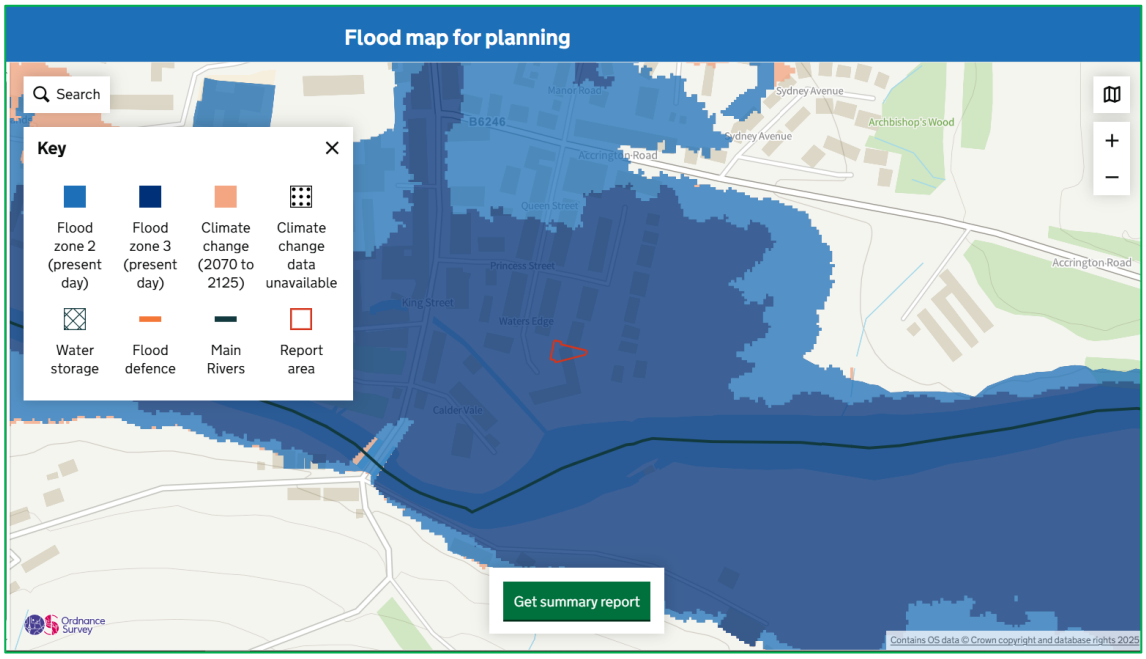


Figure 3 - Environment Agency Flood Zones: 2070 to 2125

Table 2 - Environment Agency Flood Zones and Appropriate Land Use

Flood Zone	Probability	Explanation	Appropriate Land Use
Zone 1	Low	Less than a 1 in 1000 annual probability of river or sea flooding in any year (<0.1%)	All development types generally acceptable
Zone 2	Medium	Between a 1 in 100 and 1 in 1000 annual probability of river flooding (1% - 0.1%) or between a 1 in 200 and 1 in 1000 annual probability of sea flooding (0.5% 0.1%) in any year	Most development type are generally acceptable
Zone 3a	High	A 1 in 100 or greater annual probability of river flooding (>1%) or a 1 in 200 or greater annual probability of flooding from the sea (>0.5%) in any year	Some development types not acceptable
Zone 3b	'Functional Floodplain'	This zone comprises land where water from rivers or the sea has to flow or be stored in times of flood. The identification of functional floodplain should take account of local circumstances and not be defined solely on rigid probability parameters. Functional floodplain will normally comprise: • land having a 3.3% or greater annual probability of flooding, with any existing flood risk management infrastructure operating effectively; or • land that is designed to flood (such as a flood attenuation scheme), even if it would only flood in more extreme events (such as 0.1% annual probability of flooding). Local planning authorities should identify in their Strategic Flood Risk Assessments areas of functional floodplain and its boundaries	Some development types not acceptable

		accordingly, in agreement with the Environment Agency. (Not separately distinguished from Zone 3a on the Flood Map)	

3.5 Flood Vulnerability

In the PPG, appropriate uses have been identified for the Flood Zones. Applying the Flood Risk Vulnerability Classification in the PPG, the existing and proposed use is classified as 'more vulnerable'. It should be noted the Proposed Development is for a replacement of an existing rear extension. The Proposed Development will not change the nature or times of occupation or introduce a new 'more vulnerable' use into the floodplain. Table 3 of this report and the PPG state that 'more vulnerable' uses are appropriate within Flood Zones 3a after the completion of a satisfactory FRA.

Table 3 - Flood Risk Vulnerability and Flood Zone 'Compatibility'

Flood Risk Vulnerability Classification	Essential Infrastructure	Water Compatible	Highly Vulnerable	More Vulnerable	Less Vulnerable
Zone 1	✓	✓	✓	✓	✓
Zone 2	✓	✓	Exception test required	✓	✓
Zone 3a	Exception test required	✓	×	Exception test required	✓
Zone 3b 'Functional Floodplain'	Exception test required	✓	×	×	×

Key: *✓: Development is appropriate, ×: Development should not be permitted.*

3.6 Historic Flooding

Environment Agency data shows that the Site has historically flooded in December 2015 (see Figure 4). The channel capacity was exceeded as no raised flood defences were in place at the time. These records do not give an indication of the depth of flooding on the Site. It is noted that areas within the vicinity of the Site to the south flooded in February 2020 but this did not affect the Site. There are no other records of anecdotal information of flooding at the Site including within the British Hydrological Society "Chronology of British Hydrological Events". No other historical records of flooding for the Site have been recorded.

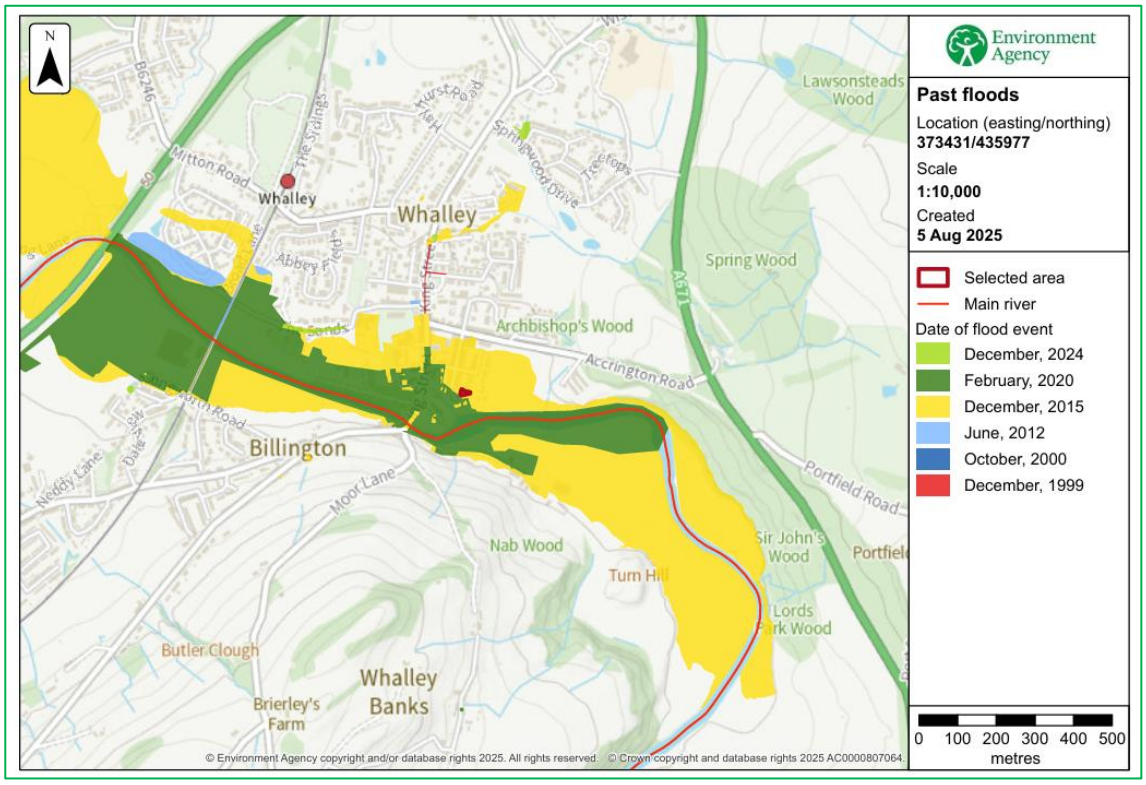


Figure 4 - Environment Agency Historic Flood Outline

3.7 Existing and Planned Flood Defence Measures

The Environment Agency data shows that the Site is not protected against flooding by flood defence measures. However, further property level protection measures will be used to protect the Site from flooding these are discussed in Section 5.0.

3.8 Fluvial (River) Flooding

The primary, but unlikely, flood risk posed to the Site is from fluvial flooding from the River Calder which is located approximately 55m to the south of the Site.

Actual Defended Scenario

Figure 5 shows the model node locations and Table 4 shows the defended Environment Agency floodplain water levels for the Site. The modelled water levels have been compared to the ground level of the Site and areas within the vicinity of the Site to assess the flood risk at the Site in detail. Figures 6 and 7 show the Environment Agency defended modelled flood outlines.

The fluvial design event for the Site is the 1 in 100 year (+36%) event, the floodplain water levels within Table 4 have been updated to take into account the +36% of climate change allowance. For node 14, during the defended 1 in 100 year event the water level has been modelled at 45.99mAOD and during the defended 1 in 100 year (+15%) event the water level has been modelled at 46.31mAOD. This equates to an increase of 0.32m due to a 15% climate change allowance or 0.021m per 1% of climate change, based on the equation shown below:

1% of climate change (m) = total increase from the 1 in 100 to 1 in 100 year (+15%) event (m) / climate change factor (%)

= 46.31 – 45.99mAOD

= 0.32m / 15

= 0.021m / per 1% of climate change

The above has then been pro-rated to calculate the 1 in 100 year (+36%) event which equates to an increase of 0.77m due to a climate change allowance of +36%. This has then been added onto the defended 1 in 100 year water level of 45.99mAOD to calculate the defended 1 in 100 year (+36%) water level. Therefore, the defended 1 in 100 year (+36%) event will have a water level of 46.76mAOD for node 14.

Water levels have been modelled at 45.99mAOD during the defended 1 in 100 year event, at 46.76mAOD during the defended 1 in 100 year (+36%) event and at 47.25mAOD during the defended 1 in 1000 year event. The Site ground level is 45.40mAOD. Therefore, the Site may be inundated with floodwater during the defended 1 in 100 year, defended 1 in 100 (+36%) year and defended 1 in 1000 year events.

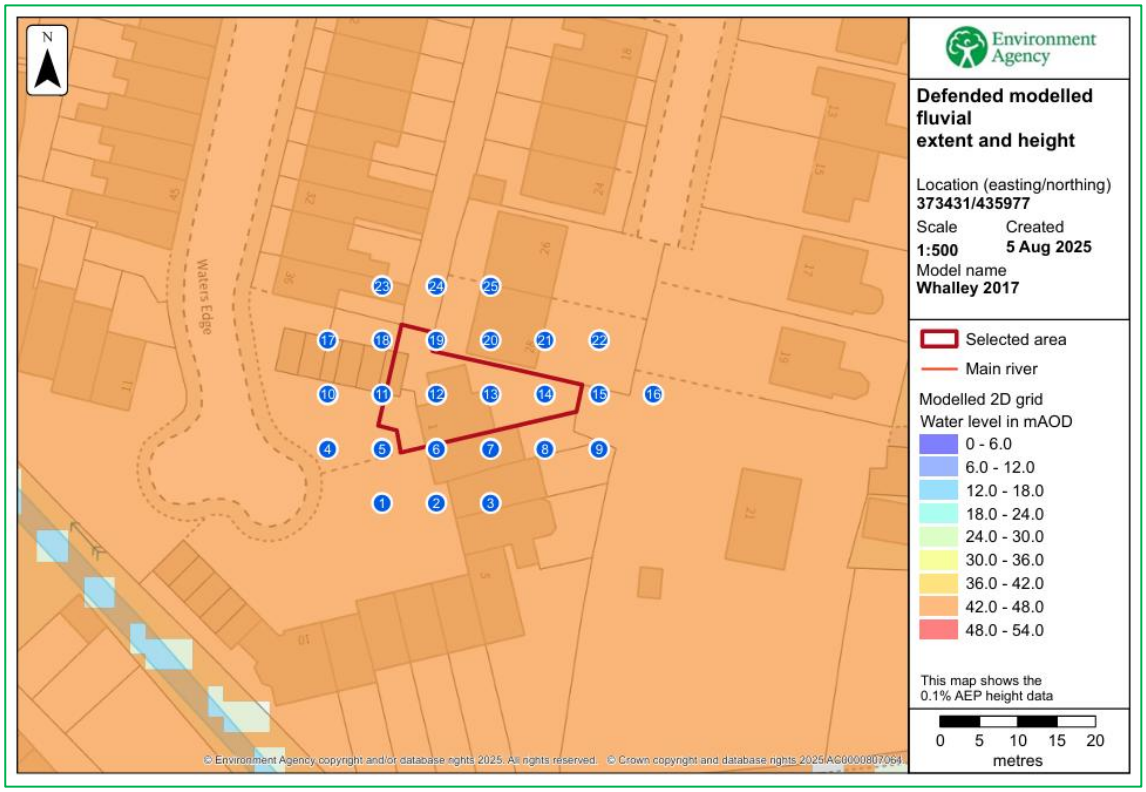


Figure 5 - Environment Agency Modelled Nodes Location Map

Table 4 - Environment Agency Defended Modelled Water Levels (mAOD)

Node Label	Easting	Northing	Return Period (years)					
			75	100	100 (+15%)	100 (+36%)	200	1000
6	373427	435971	45.73	45.77	46.10	46.56	46.16	47.17
11	373420	435978	45.61	45.69	46.06	46.58	46.12	47.16
12	373427	435978	45.70	45.75	46.10	46.59	46.15	47.17
13	373434	435978	45.90	45.97	46.28	46.71	46.33	47.23
14	373441	435978	45.92	45.99	46.31	46.76	46.36	47.25
19	373427	435985	45.70	45.78	46.13	46.62	46.18	47.17

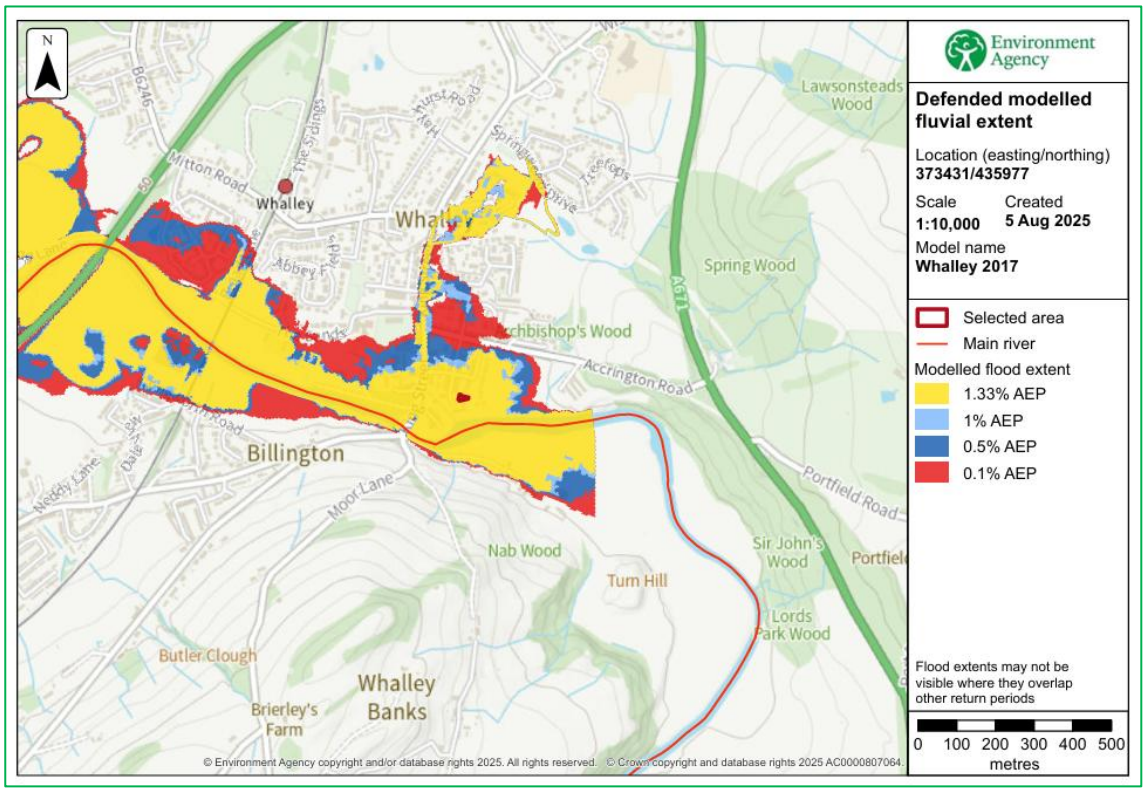


Figure 6 - Environment Agency Defended Modelled Flood Outlines

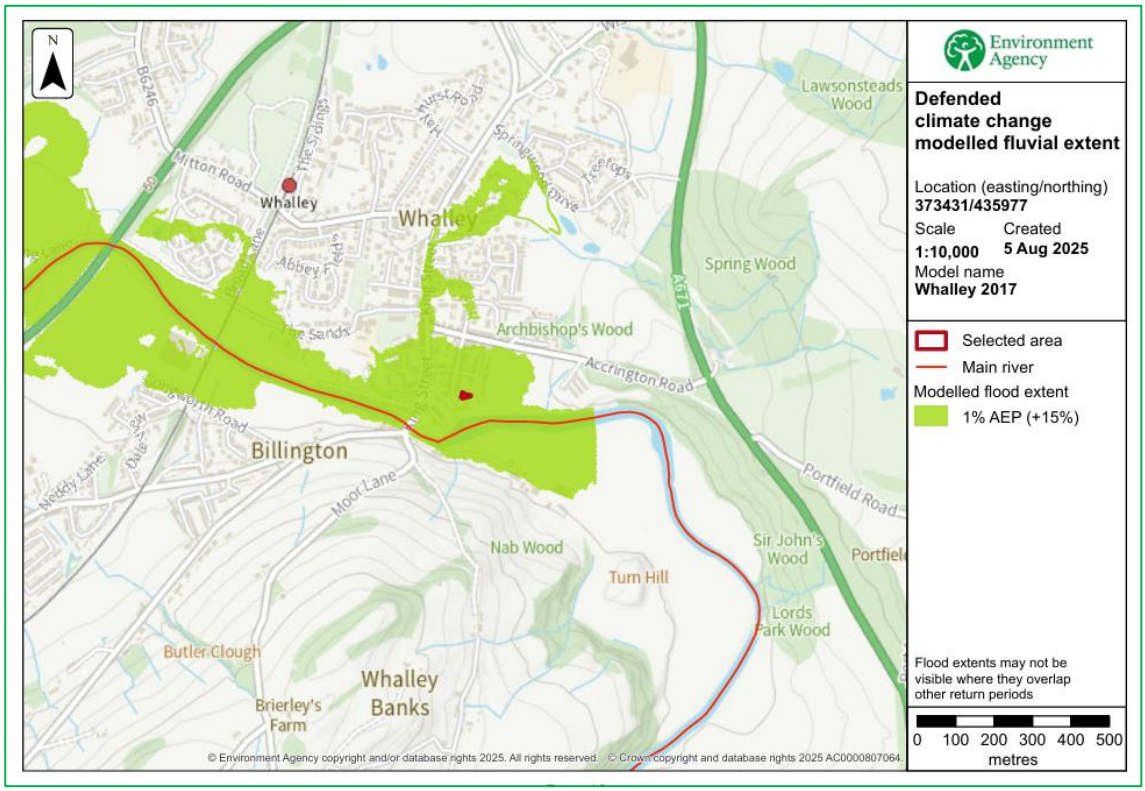


Figure 7 - Environment Agency Defended Climate Change Modelled Flood Outlines

Residual Undefended Scenario

Table 6 shows the undefended Environment Agency floodplain water levels for the Site. The modelled water levels have been compared to the ground level of the Site and areas within the vicinity of the Site to assess the flood risk at the Site in detail. Figures 8 and 9 show the Environment Agency undefended modelled flood outlines.

The fluvial design event for the Site is the 1 in 100 year (+36%) event, the floodplain water levels within Table 5 have been updated to take into account the +36% of climate change allowance. The uplift from the defended 1 in 100 year event to the defended 1 in 100 year (+36%) event as per Table 4 have been used to calculate the undefended 1 in 100 year (+36%) water levels within Table 5.

Water levels have been modelled at 45.99mAOD during the undefended 1 in 100 year event, at 46.31mAOD during the undefended 1 in 100 year (+36%) event and at 47.76mAOD during the undefended 1 in 1000 year event. The Site ground level is 45.40mAOD. Therefore, the Site may be inundated with floodwater during the undefended 1 in 100 year, undefended 1 in 100 (+36%) year and undefended 1 in 1000 year events.

Table 5 - Environment Agency Undefended Modelled Water Levels (mAOD)

Node Label	Easting	Northing	Return Period (years)					
			75	100	100 (+15%)	100 (+36%)	200	1000
6	373427	435971	45.73	45.77	46.11	46.58	46.16	47.17
11	373420	435978	45.62	45.69	46.06	46.58	46.12	47.16
12	373427	435978	45.70	45.75	46.10	46.59	46.15	47.17
13	373434	435978	45.90	45.97	46.28	46.71	46.33	47.23
14	373441	435978	45.92	45.99	46.31	46.76	46.36	47.25
19	373427	435985	45.70	45.78	46.13	46.62	46.18	47.17

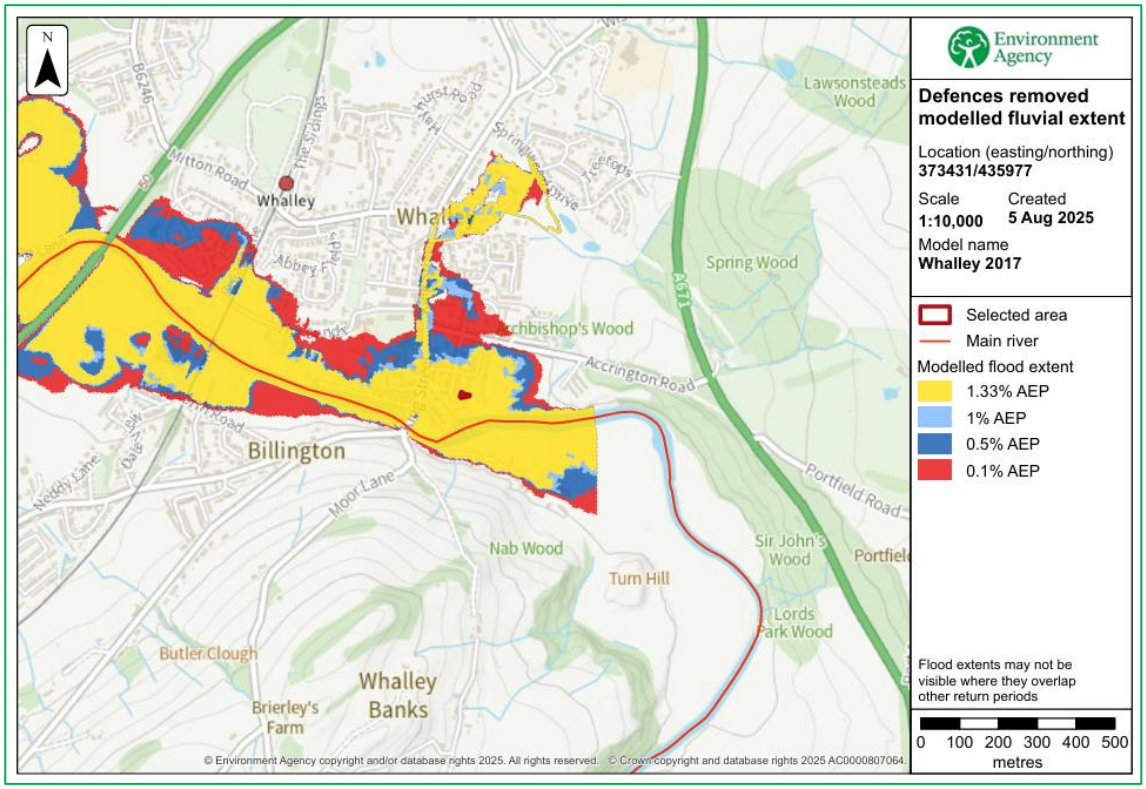


Figure 8 - Environment Agency Undefended Modelled Flood Outlines

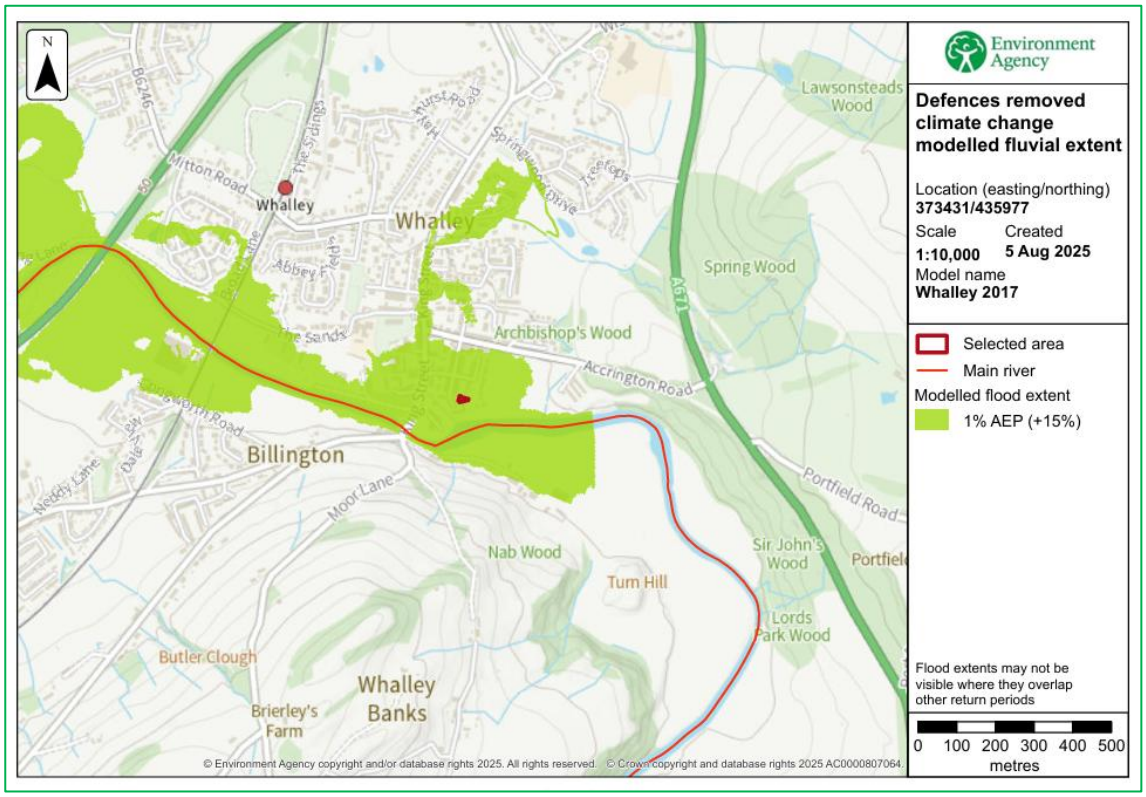


Figure 9 - Environment Agency Undefended Climate Change Modelled Flood Outlines

The Site is one of the last places in the area to flood and remains flood free when other areas close by are flooded. The Site is at such a ground level that it would only flood in the most extreme flood events; the Site will remain flood free for the vast majority of flood events during the lifetime of the Proposed Development.

The mechanism for flooding is generally prolonged episodes of rainfall, which affords good time for flood warnings to be issued. The likelihood of a rapid water level rise and possible rapid inundation of urban areas posing a risk to life is considered to be minimal with a forewarning of two (2) days of a pending flood event. The site is located within a low risk area where the onset of flooding is very gradual (many hours) as per Flood Risk Assessment Guidance for New Development Phase 2, R&D Technical Report FD2320/TR2.

Given the scale and nature of the Proposed Development and the size and location of the fluvial flooding sources it has been concluded that fluvial flooding poses a minimal actual and residual flood risk to the site. Therefore, the risk of fluvial flooding is considered to be of medium significance. The risk from this source will be further mitigated by using a number of property level protection measures to manage and reduce the overall flood risk at the Site (see Section 5.0).

3.9 Tidal (Coastal) Flooding

The Site is not located within the vicinity of tidal flooding sources and the risk of tidal flooding is considered to be not significant.

3.10 Groundwater Flooding

Groundwater flooding is defined as the emergence of groundwater at the ground surface or the rising of groundwater into man-made ground under conditions where the normal range of groundwater levels is exceeded.

Groundwater flooding tends to occur sporadically in both location and time. When groundwater flooding does occur, it tends to mostly affect low-lying areas, below surface infrastructure and buildings (for example, tunnels, basements and car parks) underlain by permeable rocks (aquifers). Environment Agency data shows that flooding from groundwater is unlikely in this area. Site ground conditions suggest a low potential for groundwater flooding. The risk of flooding from groundwater flooding is considered to be not significant.

3.11 Surface Water (Pluvial) Flooding

The Site is not situated near to large areas of poor permeability and the soil conditions at the Site and within the vicinity of the Site indicate that the Site would not be at risk of surface water flooding. Surface water flooding tends to occur sporadically in both location and time such surface water would tend to be confined to the streets around the development.

The Environment Agency Surface Water flood map shows that the Site has a very low risk of surface water flooding with a chance of flooding of less than a 1 in 1000 (0.1%) annual probability of flooding in any year, as shown in Figures 10 to 12.

Given the scale and nature of the Proposed Development and the size and location of the surface water flooding sources it has been concluded that surface water flooding poses a very low flood risk to the Site. Therefore, the risk of flooding from surface water flooding is considered to be not significant.

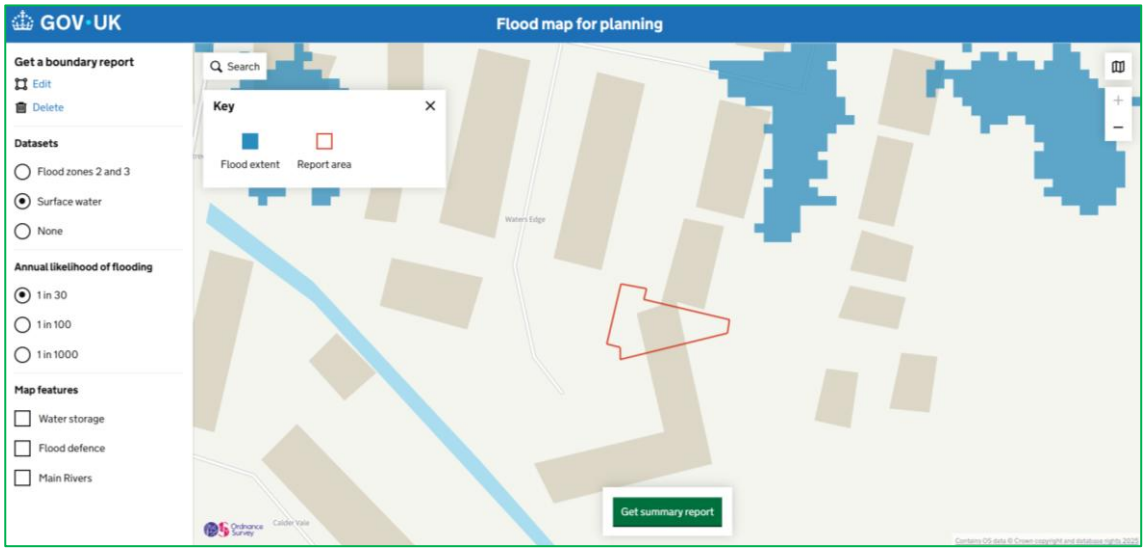


Figure 10 - Environment Agency Surface Water Flood Map: High Risk 1 in 30 Year Event

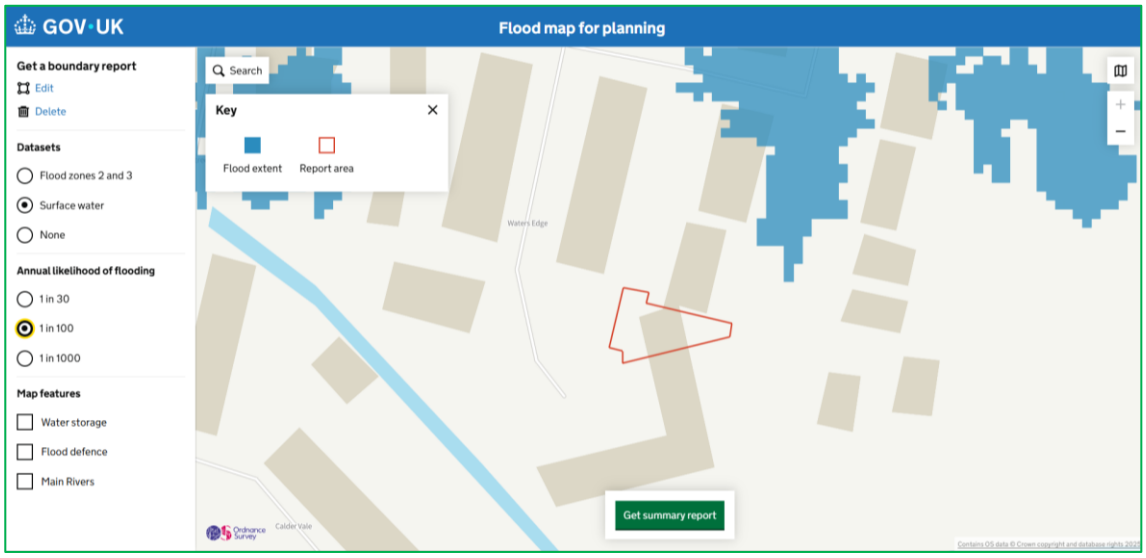


Figure 11 - Environment Agency Surface Water Flood Map: Medium Risk 1 in 100 Year Event

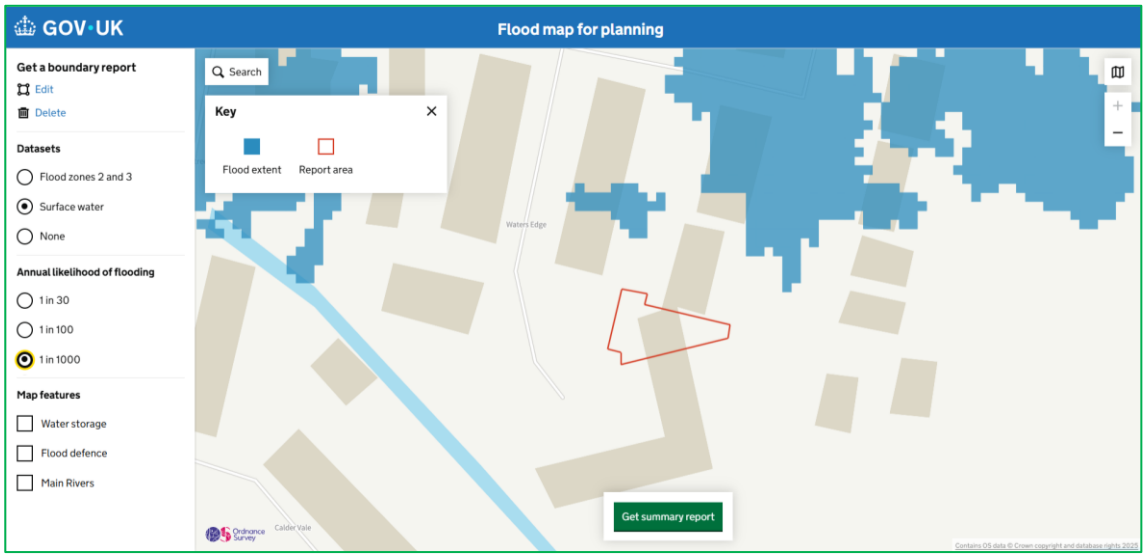


Figure 12 - Environment Agency Surface Water Flood Map: Low Risk 1 in 1000 Year Event

3.12 Sewer Flooding

Sewer flooding occurs when urban drainage networks become overwhelmed and maximum capacity is reached. This can occur if there is a blockage in the network causing water to back up behind it or if the sheer volume of water draining into the system is too great to be handled. Sewer flooding tends to occur sporadically in both location and time such flood flows would tend to be confined to the streets around the development.

There are existing sewers located within the vicinity of the Site and these will inevitably have a limited capacity so in extreme conditions there would be surcharges, which may in turn cause flooding. Flood flows could also be generated by burst water mains, but these would tend to be of a restricted and much lower volume than weather generated events and so can be discounted for the purposes of this assessment.

Given the design parameters normally used for drainage design in recent times and allowing for some deterioration in the performance of the installed systems, which are likely to have been in

place for many years, an appropriate flood risk probability from this source could be assumed to have a return period in the order of 1 in 10 to 1 in 20 years. The provision of adequate level difference between the ground floors and adjacent ground level would reduce the annual probability of damage to property from this source to 1 in 100 years or less. Therefore, the risk of flooding from sewer flooding is considered to be not significant.

3.13 Flooding from Artificial Drainage Systems/Infrastructure Failure

Reservoirs are located within the vicinity of the Site. The Environment Agency flood map shows that the Site is at risk of reservoir flooding (see Figure 13). This map shows the largest area that might be flooded if a reservoir were to fail and release the water it holds. The Environment Agency Reservoir flood map has been prepared for emergency planning purposes and for this reason they reflect a worst-case scenario. Since this is a prediction of a worst-case scenario, it is unlikely that any actual flood would be this large.

Reservoir flooding is extremely unlikely; reservoirs in the UK have a very good safety record. There has been no loss of life in the UK from reservoir flooding since 1925. Since then, reservoir safety legislation has been introduced to make sure reservoirs are well maintained. The hazard is well managed through effective legislation and it is unlikely that the impact zone downstream of these reservoirs should not allow the Proposed Development. The risk of flooding from artificial drainage systems/infrastructure failure is considered to be not significant.

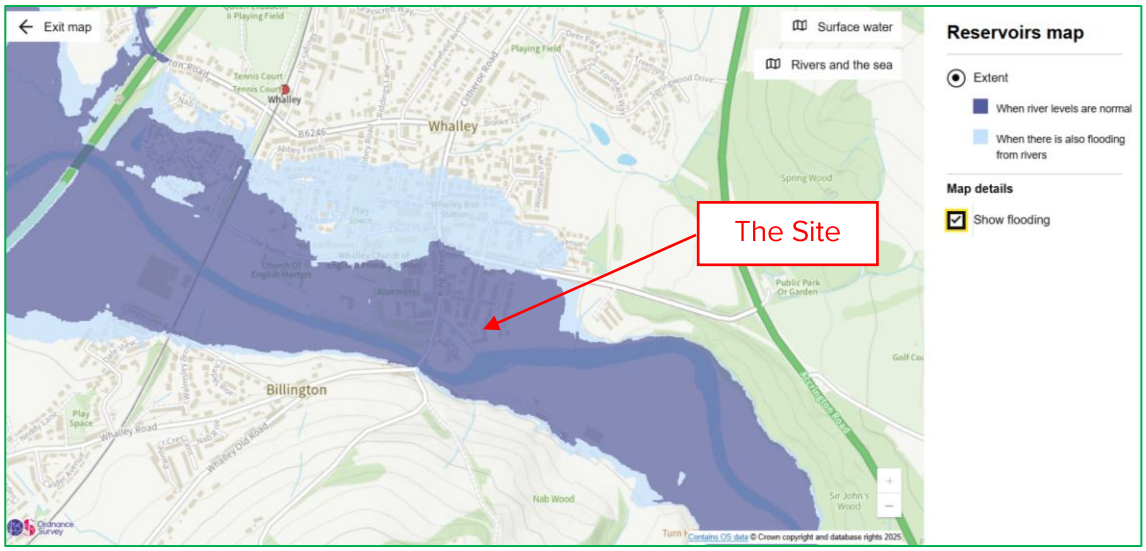


Figure 13 - Environment Agency Reservoir Flood Map

3.14 The Effect of the Development on Flood Risk

The building is existing and no land raising will occur within the Site, therefore the Proposed Development will have no impact on flood risk and the overall direction of the movement of water will be maintained within the developed Site and surrounding area. There will no net loss in flood storage capacity. The conveyance routes (flow paths) will not be blocked or obstructed.

There will be no detriment to the flood storage capacity of the Site. There will be no increase in the flood water levels due to the Proposed Development. There will be no loss in flood storage capacity and no change in the on-site and off-site flood risk.

3.15 Summary of Site Specific Flood Risk

A summary of the sources of flooding and a review of the risk posed by each source at the Site is shown in Table 6.

Table 6 - Risk Posed by Flooding Sources

Sources of Flooding	Potential Flood Risk	Potential Source	Probability/Significance
Fluvial Flooding	Yes	River Calder	Medium
Tidal Flooding	No	None Reported	None
Groundwater Flooding	No	None Reported	None
Surface Water Flooding	No	None Reported	None
Sewer Flooding	No	None Reported	None
Flooding from Artificial Drainage Systems/Infrastructure Failure	Yes	Reservoirs	None

The Site is unlikely to flood except in extreme conditions. The primary, but unlikely, flood risk to the Site is from fluvial flooding from the River Calder. The Site is located within Flood Zone 3a and therefore has a 'high probability' of flooding, with a 1 in 100 or greater annual probability of river flooding (>1%) in any year.

The existing and proposed use is classified as 'more vulnerable'. It should be noted the Proposed Development is for a replacement of an existing rear extension. The Proposed Development will not change the nature or times of occupation or introduce a new 'more vulnerable' use into the floodplain. 'More vulnerable' uses are appropriate within Flood Zones 3a after the completion of a satisfactory FRA.

Actual Defended Scenario

Water levels have been modelled at 45.99mAOD during the defended 1 in 100 year event, at 46.76mAOD during the defended 1 in 100 year (+36%) event and at 47.25mAOD during the defended 1 in 1000 year event. The Site ground level is 45.40mAOD. Therefore, the Site may be inundated with floodwater during the defended 1 in 100 year, defended 1 in 100 (+36%) year and defended 1 in 1000 year events.

Residual Undefended Scenario

Water levels have been modelled at 45.99mAOD during the undefended 1 in 100 year event, at 46.31mAOD during the undefended 1 in 100 year (+36%) event and at 47.76mAOD during the undefended 1 in 1000 year event. The Site ground level is 45.40mAOD. Therefore, the Site may be inundated with floodwater during the undefended 1 in 100 year, undefended 1 in 100 (+36%) year and undefended 1 in 1000 year events.

Given the scale and nature of the Proposed Development and the size and location of the fluvial flooding sources it has been concluded that fluvial flooding poses a minimal actual and residual flood risk to the site. Therefore, the risk of fluvial flooding is considered to be of medium significance. The flood risk at the Site will be further mitigated by using a number of property level protection measures to manage and reduce the overall flood risk at the Site.

The building is existing and no land raising will occur within the Site, therefore the Proposed Development will have no impact on flood risk and the overall direction of the movement of water

will be maintained within the developed Site and surrounding area. There will no net loss in flood storage capacity. The conveyance routes (flow paths) will not be blocked or obstructed.

There will be no detriment to the flood storage capacity of the Site. There will be no increase in the flood water levels due to the Proposed Development. There will be no loss in flood storage capacity and no change in the on-site and off-site flood risk.

4.0 SURFACE WATER DRAINAGE

4.1 Surface Water Management Overview

It is recognised that consideration of flood issues should not be confined to the floodplain. The alteration of natural surface water flow patterns through developments can lead to problems elsewhere in the catchment, particularly flooding downstream. For example, replacing vegetated areas with roofs, roads and other paved areas can increase both the total and the peak flow of surface water runoff from the Site. Changes of land use on previously developed land can also have significant downstream impacts where the existing drainage system may not have sufficient capacity for the additional drainage.

An assessment of the surface water runoff rates has been undertaken, in order to determine the surface water options and attenuation requirements for the Site. The assessment considers the impact of the proposals compared to current conditions. Therefore, the surface water attenuation requirement for the developed Site can be determined and reviewed against existing arrangements.

The surface water drainage arrangements for any development site should be such that the volumes and peak flow rates of surface water leaving a developed site are no greater than the rates prior to the Proposed Development unless specific off-site arrangements are made and result in the same net effect.

4.2 Surface Water Runoff Rates/Volumes

The Proposed Development will not alter the impermeable areas of the Site. There will be no increase in surface water runoff or exacerbation of off-site risk as a result of the development. It is understood that the existing drainage infrastructure at the Site efficiently and effectively manages surface water runoff generated at the Site.

5.0 RISK MANAGEMENT

5.1 Introduction

The flood risk at this location is considered suitable for the Proposed Development within the NPPF. In this flood zone, developers and local authorities should seek opportunities to reduce the overall level of flood risk in the area through the layout and form of the development and the use of flood mitigation measures.

The flooding sources will be mitigated on the Site by using a number of techniques, and mitigation strategies to manage and reduce the overall flood risk at the Site. This will ensure the development will be safe and there is:

- Minimal risk to life;
- Minimal disruption to people living and working in the area;
- Minimal potential damage to property;
- Minimal impact of the Proposed Development on flood risk generally; and;
- Minimal disruption to natural heritage.

The flood risk at the Site will be reduced by mitigation measures; these are discussed in more detail below.

5.2 Finished Floor Levels

The finished floor levels of the extensions will be set no lower than the existing finished floor levels which are raised 150mm above the external ground levels. It is recognised however that owing to limited headroom constraints, massing, planning policy and Building Regulations it is considered impractical to raise the finished floor levels further. Therefore, in order to mitigate against this, it is recommended that the occupants of the Site are sign up to receive flood warnings from the Environment Agency and a Flood Plan to a safe area away from the building during times of flood is developed.

A combination of resistance (proofing) and resilience measures will be included to provide further protection. This is discussed below.

5.3 First Floor Accommodation

Accommodation will be located on the first floor as well as the ground floor of the house. This will allow occupants to retreat to higher floor levels if needed. The levels of the first floor are located well above any floodwater levels. This provides a 'safe haven' above any floodwater levels. This will enable rapid escape should flooding occur which is unlikely.

The upper floors are accessed via internal stairs and are sufficient in size to safely house all occupants of the building. The 'safe haven' will only be required in very extreme events or if a flood warning has not been received.

5.4 Flood Resistance Measures

The flood risk can be mitigated through the design of the extensions. Flood resistance measures are measures that help resist floodwaters entering a property (airbrick covers are an example of a flood resistance measure). Flood resistant measures will be used, including:

- The walls of the extensions will be thick.
- Sealant will be used around all external doors and windows.
- All windows will be located above ground levels.
- All external doors and windows are constructed from hard wearing materials.

These factors will prevent water entering the property and make the property more resistant to seepage.

5.5 Flood Resilience Measures

Flood resilience measures are designed in such a way as to reduce the cost and time required to reinstate the property should it be flooded (tiled floors are an example of a flood resilience measure).

The property will be constructed in such a way that although floodwater may enter the building, elements that are damaged by flood water can be easily repaired or replaced. This is a form of flood resilience. They are suitable as no other measure is practicable. Robust materials and finishes will be used.

All electrics wiring, switches, sockets, socket outlets etc. to be located a minimum of 450mm above the finished floor levels.

5.6 Flood Warning and Evacuation

The Site is located in a flood risk area therefore; the Site will participate in the Environment Agency flood warning telephone service. The Site will register contact details with the Environment Agency' Flood Warnings Service (Floodline 0845 988 1188) in order to receive Flood Warnings. The Environment Agency operate a free flood warning service providing alerts by phone, text or email when flooding is anticipated providing an opportunity for home owners to take necessary precautions, giving enough time for the building to be safely evacuated and mitigation measures to be put in place.

All occupants/visitors of the Site will be made aware of the Environment Agency Floodline telephone number (Call Floodline on 0345 988 1188 or 0845 988 1188 to get more information) and the three Flood Warning Codes and their meaning. The owner of the Site will carry out the role of Flood Warden for the Site and ensure they have an understanding of the flood mechanisms of the Site and will ensure that the safety of the occupants and visitors will not be compromised.

The Environment Agency uses three Flood Warnings Codes. They can be issued in any order, usually ending with an 'all clear'. They are issued by the Environment Agency through their website and Floodline Warning Service. The flood warning will be passed onto the occupier/visitors of the Site verbally, by telephone and/or in person. It will be ensured that everyone receives the flood warnings when required.

5.7 Flood Plan

A Flood Plan outlining the precautions and actions you should take when a flood event is anticipated to help reduce the impact and damage flooding may cause will be developed. Sensible precautions would include raising electrical items, moving valuable items off the ground or where possible moving them to a higher floor, rolling up carpets and rugs and turning off utilities. In addition, consider what actions you would take should the property need to be evacuated including access and egress routes and preparing a flood kit in advance containing warm clothing, medication, a torch, food and wellingtons.

The Flood Plan is a 'living' document and therefore should be periodically reviewed and updated to provide advice and guidance to occupants in the event of an extreme flood. The Flood Plan will therefore reduce the vulnerability of the occupants to flooding and makes them aware of the mechanisms of flooding at the Site.

Residual Risk

If flooding starts to affect the Site without any pre-warning i.e. in real time (e.g. through a failure of the flood warning delivery) the following actions will be taken:

- Occupants and visitors should consider evacuating the Site.
- If flood levels continue to rise, occupants and visitors are advised to evacuate before safe access is lost. Occupants and visitors should monitor the flood progression and evacuate.

The Flood Warden will monitor flood levels and keep occupants and visitors informed and will decide whether to initiate the Flood Plan. If required a 'safe haven' can also be maintained and may be required in very extreme events if a flood warning has not been received.

5.8 Safe Access and Egress Route

The NPPF requires that, where required, safe access and escape is available to/from new developments in flood risk areas. Access routes should be such that occupants can safely access and exit their houses in design flood conditions. These routes must also provide the emergency services with access to the development during a flood event and enable flood defence authorities to carry out any necessary duties during the period of flood.

The Site is at such a ground level that it would only flood in the most extreme flood event. The Site is located where the onset of flooding is very gradual (many hours) as per Flood Risk Assessment Guidance for New Development Phase 2, R&D Technical Report FD2320/TR2. The ground levels rise to the north west of the Site with the water depths decreasing rapidly Therefore, a safe access and egress route, including emergency access can be maintained for vehicles and/or by foot.

Facilities such as community centres, shops etc. are located to the north of the Site. There may also be large areas than those shown in Figure 2 that are flood free located nearer and within the vicinity of the Site. In the event of a flood warning, vital belongings, including waterproof clothing, necessary medication and essentials for infants and children will be collected. It should be ensured that all occupiers and visitors to the Site are accounted for, and then exit the Site using the routes shown in Figure 14.

The Safe Access and Egress Route shown in Figure 14 indicates the exit routes that all people (i.e. occupants and visitors) on Site should follow once a flood warning has been received. People should make their way to areas outside of the flood zone. Therefore, safe access and egress can be maintained in accordance with the NPPF and Environment Agency guidance.

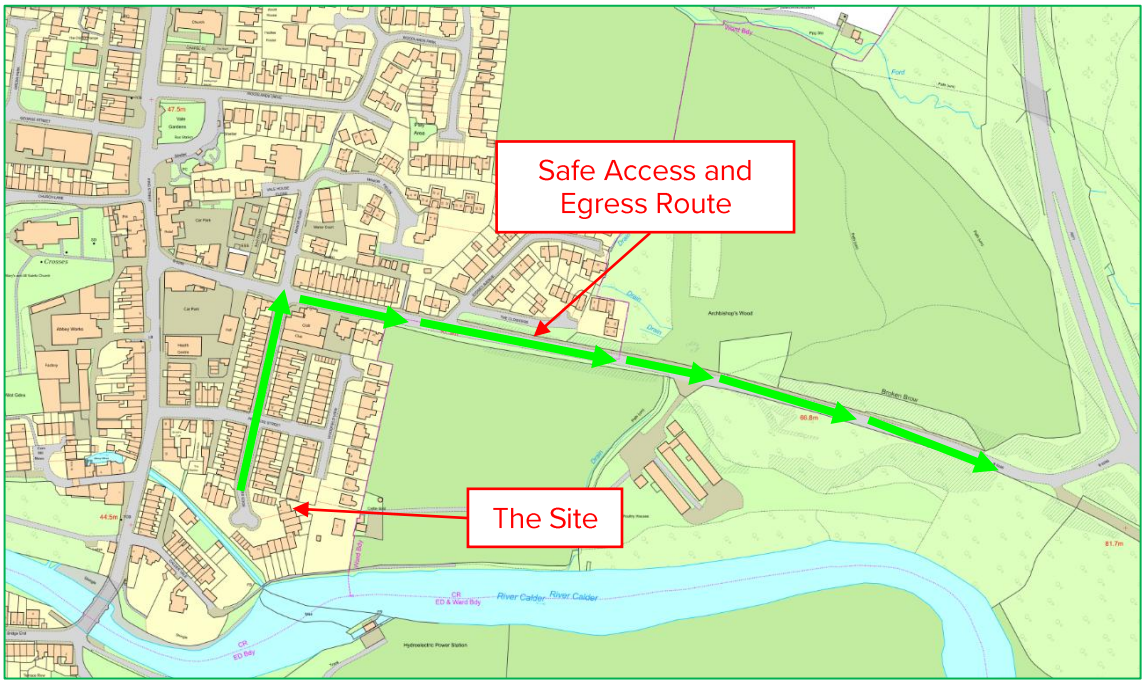


Figure 14 - Safe Access and Egress Route

5.9 Flood Warning Codes/Flood Evacuation Procedures

In order for the following evacuation procedures to be effective:

- The Site will participate in the Environment Agency flood warning telephone service. The Site will register contact details with the Environment Agency' Flood Warnings Service (Floodline 0345 988 1188) in order to receive Flood Warnings/Alerts.
- The flood warning will be passed onto the visitors of the Site verbally, by telephone and/or in person. It will be ensured that everyone receives the flood warnings when required.

Flood Alert

'Flooding of low-lying land and roads is expected. Be aware, be prepared, watch out!'.

The Environment Agency will issue a Flood Alert status when flooding is possible, based upon weather and river/sea conditions. Be prepared to act on your Flood Plan. At this stage occupants and visitors should make themselves aware of the Flood Plan and evacuation routes. Prepare a flood kit of essential items. Monitor local water levels and the flood forecast.

Flood Warning

'Flooding of homes and businesses is expected. Act now!'.

The Flood Warning alert will be issued when water levels are rising, and further rain is expected. The Site will be evacuated. Move family, pets and valuables to a safe place.

Safe access and egress, including emergency access can be maintained for vehicles and/or by foot. Water, electricity and gas supplies should be located and switched off before evacuating. The Environment Agency Floodline on 0345 988 1188 to get more information should be contacted to get more information, periodically and listen to and watch for weather and flood warnings on local radio and television stations.

Severe Flood Warning

'Severe Flooding is expected. There is extreme danger life and property. Act now!'.

If the Site has not already been evacuated, it will be evacuated immediately. Co-operate with the emergency services and call 999 if immediately in danger. Safe access and egress, including emergency access can be maintained for vehicles and/or by foot.

Warning No Longer in Force

'Flood Watches or Flood Warnings are no longer in force for this area'.

Occupants and visitors should contact the Council to check that it is safe to return to the Site. Please be careful water may be around for several days. If there is any doubt that appliances may be water damaged, they must be checked before switching the power or gas back on. Contact your insurance company as soon as possible to get their approval before arranging any clean-up or repairs.

5.10 Flooding Consequences

The mitigation measures detailed above show that the flood risk can be effectively managed and therefore the consequences of flooding are acceptable. The Site is unlikely to flood except in extreme conditions. This takes into account the property level protection measures.

6.0 SEQUENTIAL APPROACH

6.1 Sequential/Exception Tests

The risk-based Sequential Test in accordance with the NPPF aims to steer new development to areas at the lowest probability of flooding (i.e. Flood Zone 1). However, paragraph 176 of the NPPF confirms that: *'Applications for some minor development and changes of use[6] should not be subject to the Sequential or Exception Tests but should still meet the requirements for site-specific flood risk assessments'.*

The development proposals should therefore be considered by the LPA to satisfy the Sequential and Exception Tests as set out in the NPPF.

[6] This includes householder development, small non-residential extensions (with a footprint of less than 250m^2) and changes of use; except for changes of use to a caravan, camping or chalet site, or to a mobile home or park home site, where the sequential and exception tests should be applied as appropriate.

7.0 SUMMARY AND CONCLUSIONS

7.1 Introduction

This report presents a FRA in accordance with the NPPF for the Proposed Development at 1 Waters Edge, Whalley, Lancashire, BB7 9UF.

This FRA identifies and assesses the risks of all forms of flooding to and from the development and demonstrates how these flood risks will be managed so that the development remains safe throughout the lifetime, taking climate change into account.

7.2 Flood Risk

The Site is unlikely to flood except in extreme conditions. The primary, but unlikely, flood risk to the Site is from fluvial flooding from the River Calder. The Site is located within Flood Zone 3a and therefore has a 'high probability' of flooding, with a 1 in 100 or greater annual probability of river flooding (>1%) in any year.

The existing and proposed use is classified as 'more vulnerable'. It should be noted the Proposed Development is for a replacement of an existing rear extension. The Proposed Development will not change the nature or times of occupation or introduce a new 'more vulnerable' use into the floodplain. 'More vulnerable' uses are appropriate within Flood Zones 3a after the completion of a satisfactory FRA.

Actual Defended Scenario

Water levels have been modelled at 45.99mAOD during the defended 1 in 100 year event, at 46.76mAOD during the defended 1 in 100 year (+36%) event and at 47.25mAOD during the defended 1 in 1000 year event. The Site ground level is 45.40mAOD. Therefore, the Site may be inundated with floodwater during the defended 1 in 100 year, defended 1 in 100 (+36%) year and defended 1 in 1000 year events.

Residual Undefended Scenario

Water levels have been modelled at 45.99mAOD during the undefended 1 in 100 year event, at 46.31mAOD during the undefended 1 in 100 year (+36%) event and at 47.76mAOD during the undefended 1 in 1000 year event. The Site ground level is 45.40mAOD. Therefore, the Site may be inundated with floodwater during the undefended 1 in 100 year, undefended 1 in 100 (+36%) year and undefended 1 in 1000 year events.

Given the scale and nature of the Proposed Development and the size and location of the fluvial flooding sources it has been concluded that fluvial flooding poses a minimal actual and residual flood risk to the site. Therefore, the risk of fluvial flooding is considered to be of medium significance. The flood risk at the Site will be further mitigated by using a number of property level protection measures to manage and reduce the overall flood risk at the Site.

The building is existing and no land raising will occur within the Site, therefore the Proposed Development will have no impact on flood risk and the overall direction of the movement of water will be maintained within the developed Site and surrounding area. There will no net loss in flood storage capacity. The conveyance routes (flow paths) will not be blocked or obstructed.

There will be no detriment to the flood storage capacity of the Site. There will be no increase in the flood water levels due to the Proposed Development. There will be no loss in flood storage capacity and no change in the on-site and off-site flood risk.

7.3 Surface Water Drainage

The Proposed Development will not alter the impermeable areas of the Site. It is understood that the existing drainage infrastructure at the Site efficiently and effectively manages surface water runoff generated at the Site. There will be no increase in surface water runoff or exacerbation of off-site risk as a result of the development.

7.4 Risk Management

The flood risk at the Site will be reduced by mitigation measures, discussed below.

Finished Floor Levels: The finished floor levels of the extensions will be set no lower than the existing finished floor levels which are raised 150mm above the external ground levels. It is recognised however that owing to limited headroom constraints, massing, planning policy and Building Regulations it is considered impractical to raise the finished floor levels further. Therefore, in order to mitigate against this, it is recommended that the occupants of the Site are sign up to receive flood warnings from the Environment Agency and a Flood Plan to a safe area away from the building during times of flood is developed.

A combination of resistance (proofing) and resilience measures will be included to provide further protection. This is discussed below.

First Floor Accommodation: Accommodation will be located on the first floor as well as the ground floor of the house. This will allow occupants to retreat to higher floor levels if needed. The levels of the first floor are located well above any floodwater levels. This provides a 'safe haven' above any floodwater levels. This will enable rapid escape should flooding occur which is unlikely.

The upper floors are accessed via internal stairs and are sufficient in size to safely house all occupants of the building. The 'safe haven' will only be required in very extreme events or if a flood warning has not been received.

Flood Resistance Measures: Flood resistant measures will be used, including:

- The walls of the extensions will be thick.
- Sealant will be used around all external doors and windows.
- All windows will be located above ground levels.
- All external doors and windows are constructed from hard wearing materials.

These factors will prevent water entering the property and make the property more resistant to seepage.

Flood Resilience Measures: Robust materials and finishes will be used:

- All electrics wiring, switches, sockets, socket outlets etc. to be located a minimum of 450mm above the finished floor levels.

Flood Warning and Evacuation: The Site is located in a flood risk area therefore; the Site will participate in the Environment Agency flood warning telephone service. The Site will register contact details with the Environment Agency' Flood Warnings Service (Floodline 0845 988 1188) in order to receive Flood Warnings.

Flood Plan: A Flood Plan outlining the precautions and actions you should take when a flood event is anticipated to help reduce the impact and damage flooding may cause will be developed.

Safe Access and Egress Route: The Site is at such a ground level that it would only flood in the most extreme flood event. The Site is located where the onset of flooding is very gradual (many hours) as per Flood Risk Assessment Guidance for New Development Phase 2, R&D Technical Report FD2320/TR2. The ground levels rise to the north of the Site with the water depths decreasing rapidly therefore, a safe access and egress route, including emergency access can be maintained for vehicles and/or by foot.

Facilities such as community centres, shops etc. are located to the north of the Site. In the event of a flood warning, vital belongings, including waterproof clothing, necessary medication and essentials for infants and children will be collected. It should be ensured that all occupiers and visitors to the Site are accounted for, and then exit the Site.

The Safe Access and Egress Route indicates the exit routes that all people (i.e. occupants and visitors) on Site should follow once a flood warning has been received. People should make their way to areas outside of the flood zone. Therefore, safe access and egress can be maintained in accordance with the NPPF and Environment Agency guidance.

Flood Warning Codes/Flood Evacuation Procedures: The flood evacuation procedures have been developed so that the Site can be safely evacuated. The property will participate in the Environment Agency flood warning telephone service. The Site will register contact details with the Environment Agency' Flood Warnings Service (Floodline 0345 988 1188) in order to receive Flood Warnings. Flood warning will be passed onto the visitors of the Site verbally, by telephone and/or in person. It will be ensured that everyone receives the flood warnings when required.

7.5 Sequential/Exception Tests

The development proposals should therefore be considered by the LPA to satisfy the Sequential and Exception Tests as set out in the NPPF.

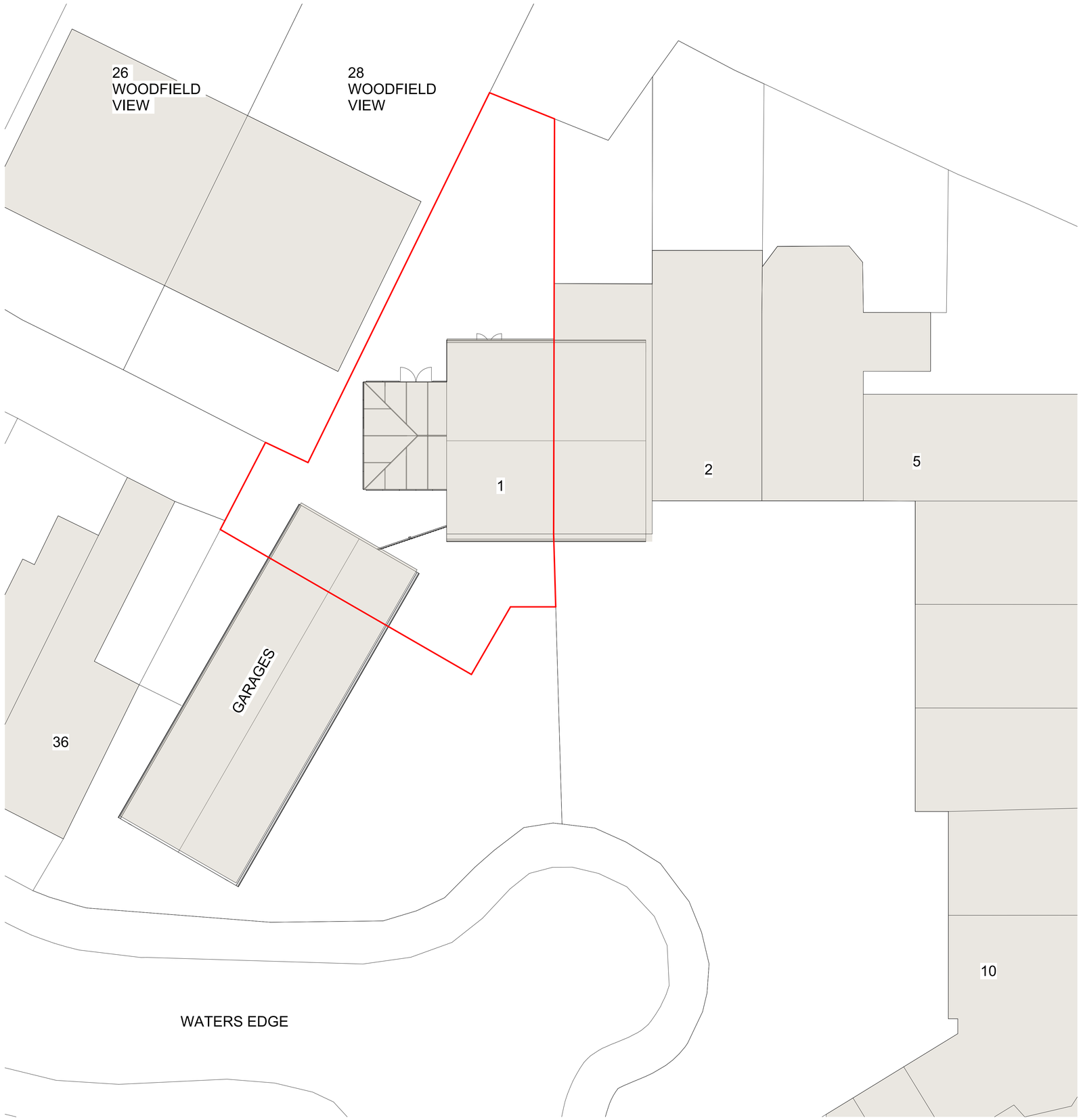
7.6 Conclusion

In conclusion, the Proposed Development, would be expected to remain dry in all but the most extreme conditions. Providing the recommendations made in this FRA are instigated, flood risk from all sources would be minimised, the consequences of flooding are acceptable and the development would be in accordance with the requirements of the NPPF.

This FRA demonstrates that the Proposed Development would be operated with minimal risk from flooding, would not increase flood risk elsewhere and is compliant with the requirements of the NPPF. The development should not therefore be precluded on the grounds of flood risk.

APPENDICES

APPENDIX 1 – Existing and Proposed Site Layout



1 EXISTING SITE PLAN
1 : 100

Peter Hitchen
Architects

Marathon House
The Sidings Business Park
Whalley, BB7 9SE

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NOTES:

No.	Description	Date

CLIENT:
Mr and Mrs Sutehall
1 Waters Edge
Whalley
Clitheroe
BB7 9UF

PROJECT:
Proposed side and rear
extension to existing property

SHEET:
EXISTING SITE PLAN

Project number	PHA/965
Date	29/07/25
Drawn by	JS
Checked by	PH

A101

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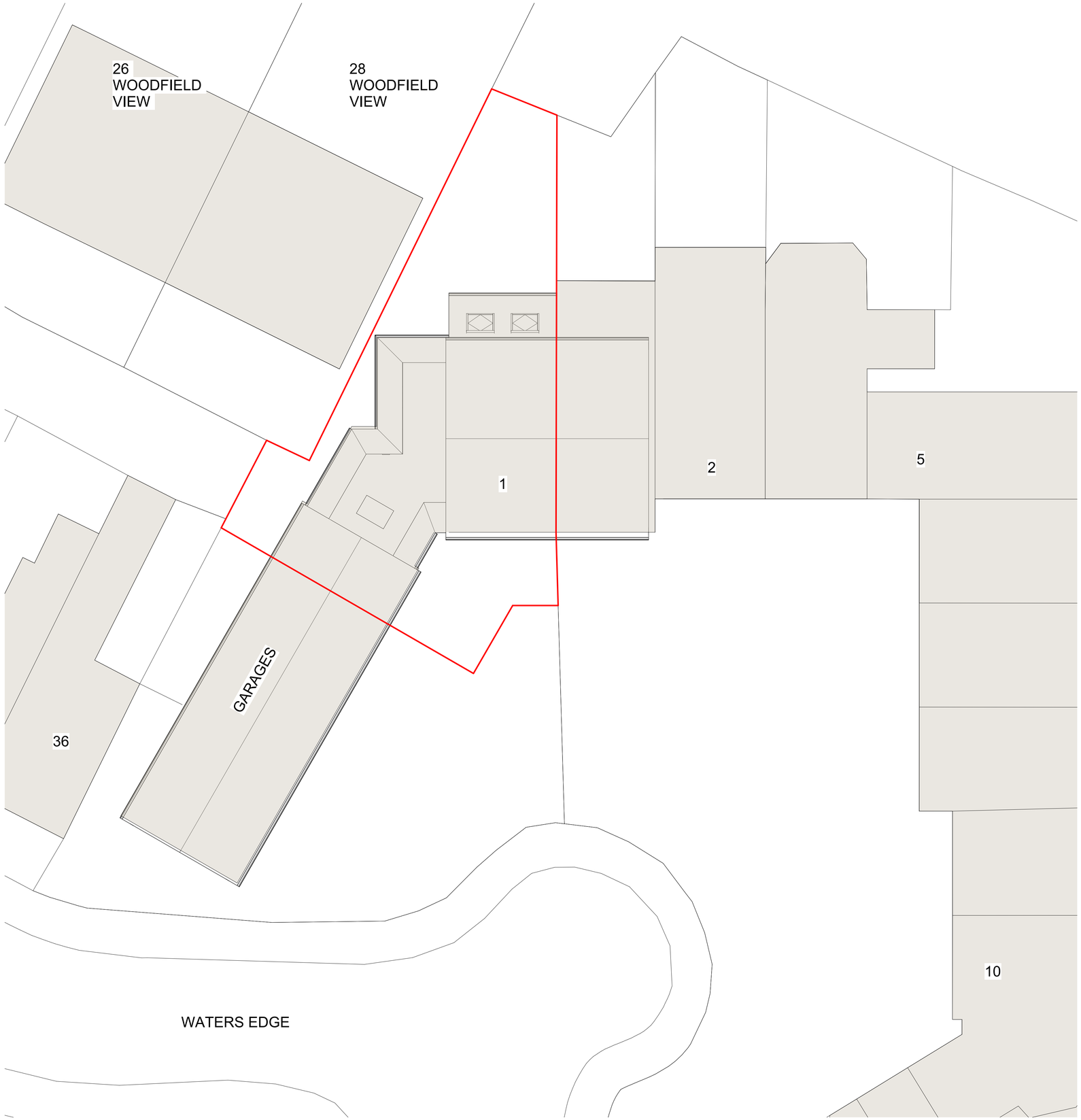

1 PROPOSED SITE PLAN
1 : 100

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Project number	PHA/965
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Drawn by	JS
Checked by	PH

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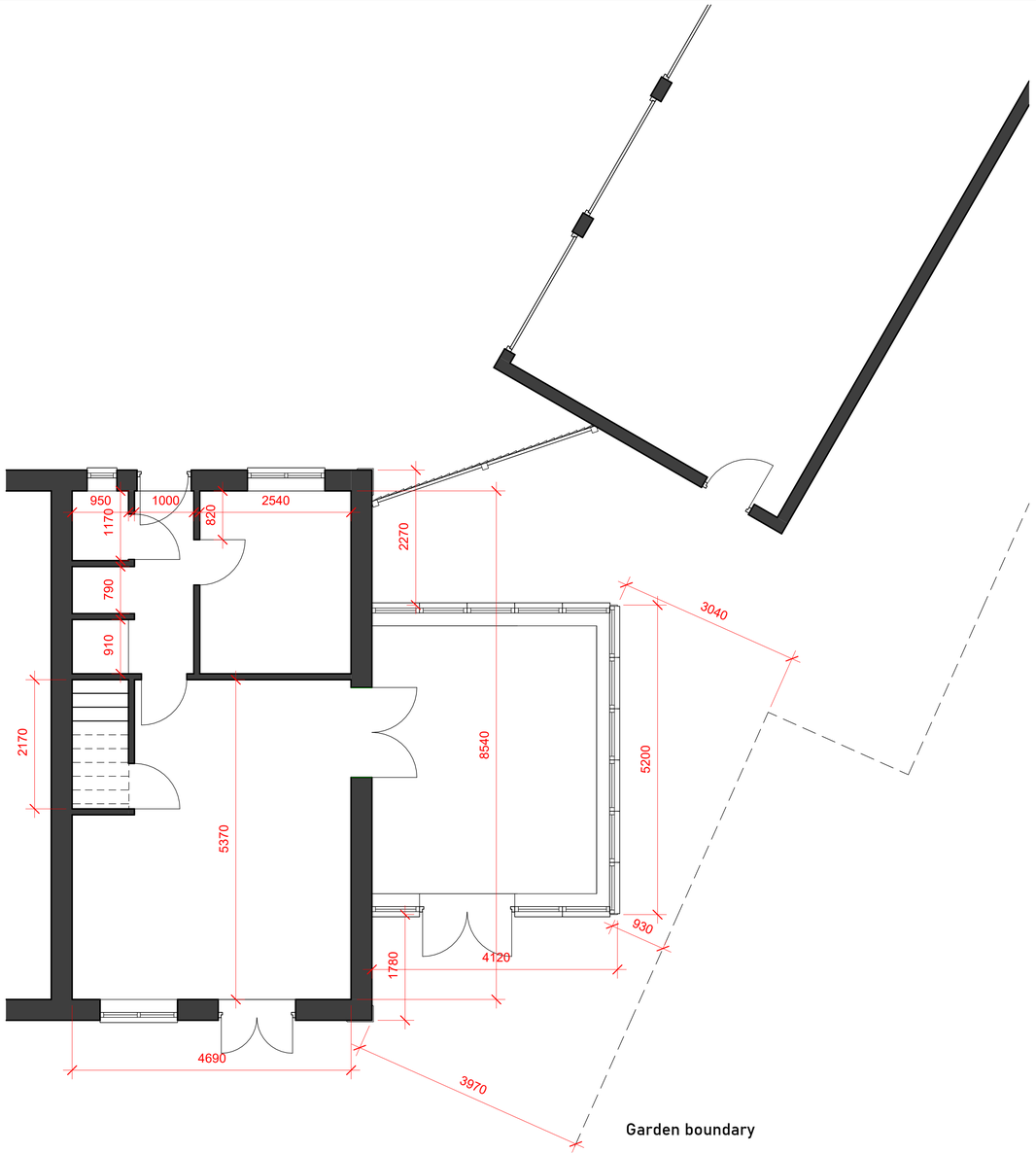

1 0 GROUND FLOOR

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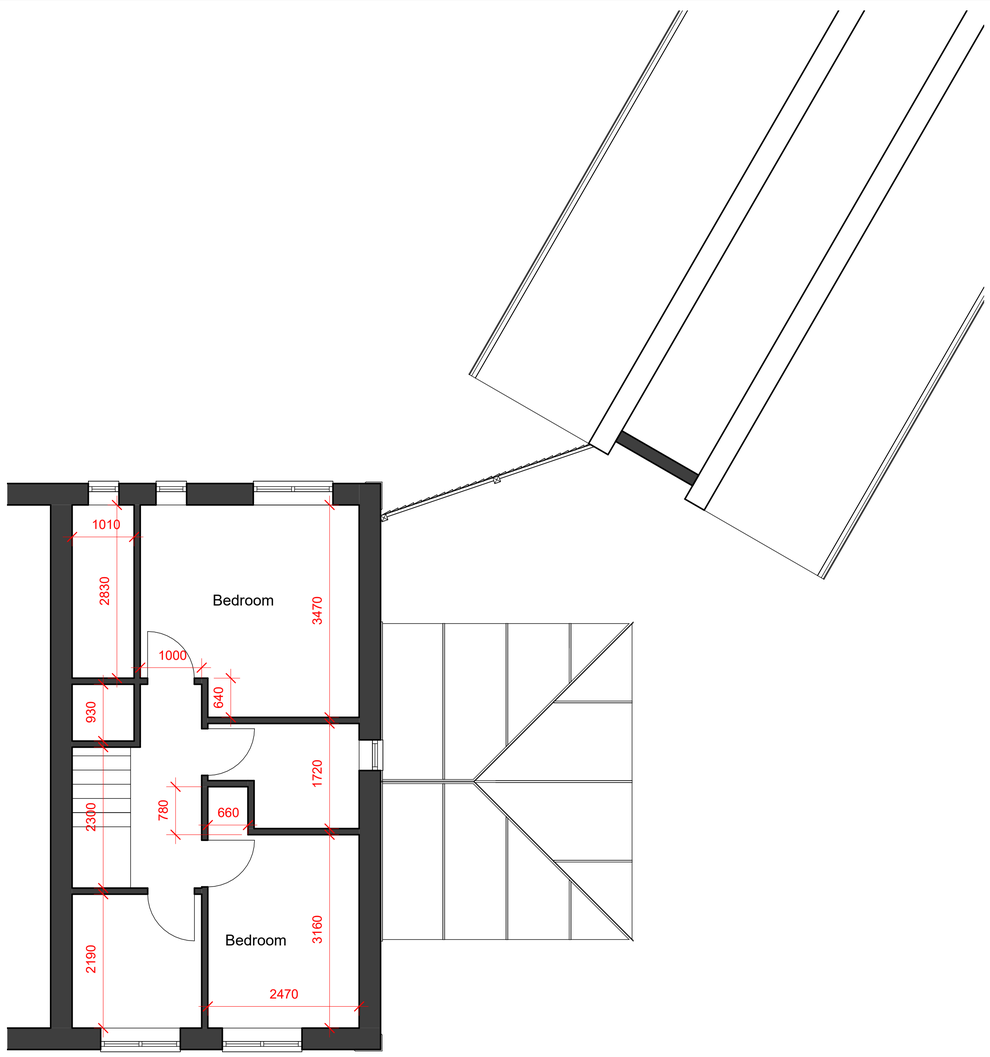

2 1 FIRST FLOOR

1 : 50

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Project number	PHA/965
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Drawn by	JS
Checked by	PH

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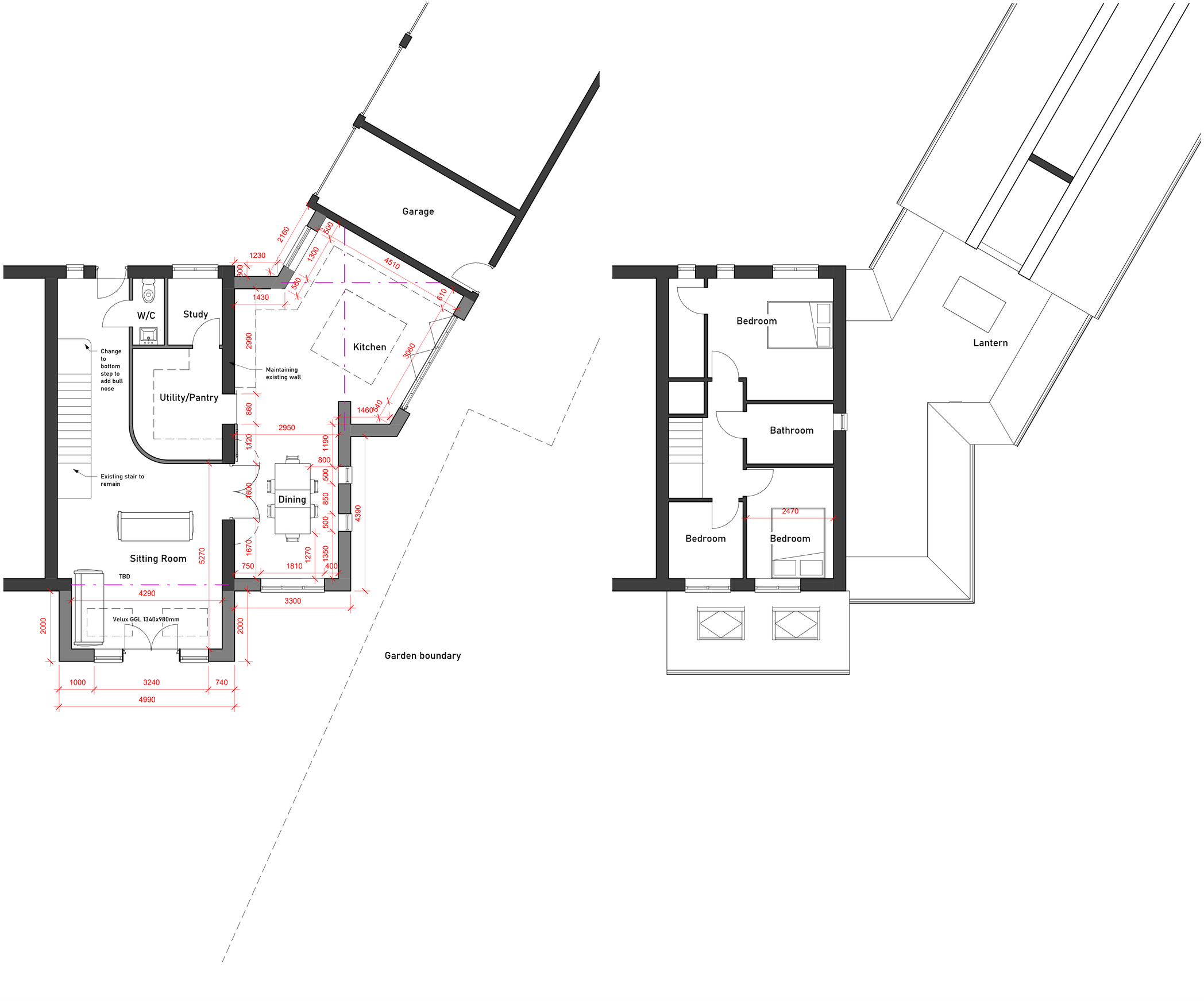

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PROPOSED FLOOR PLANS

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Date	29/07/25
Drawn by	JS
Checked by	PH

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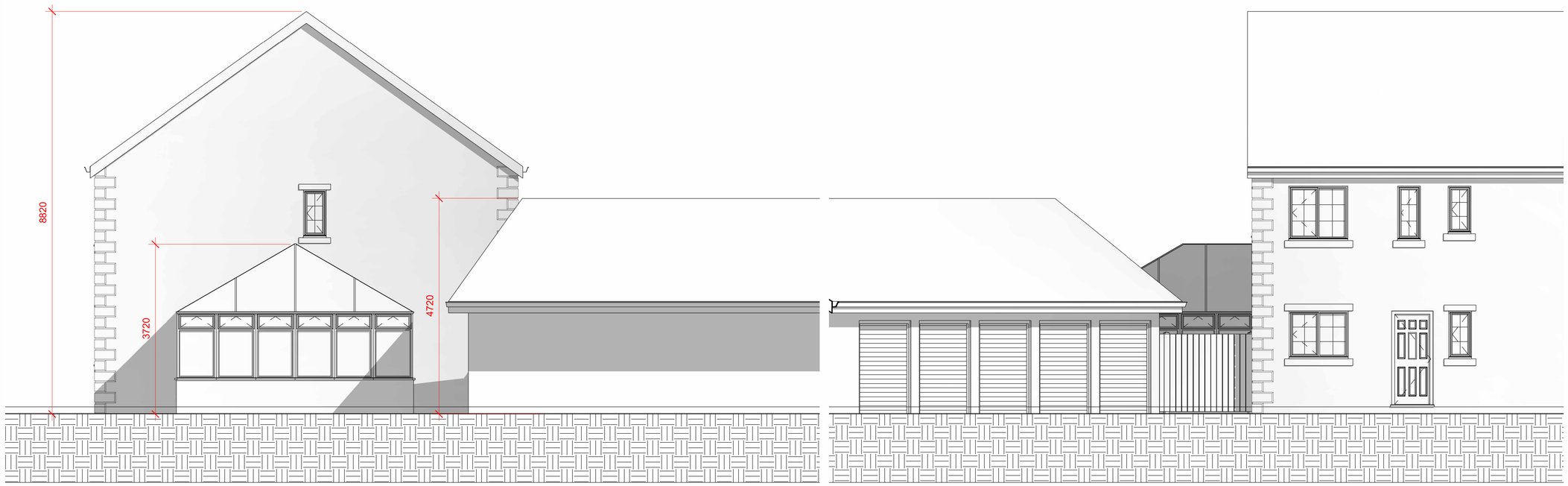

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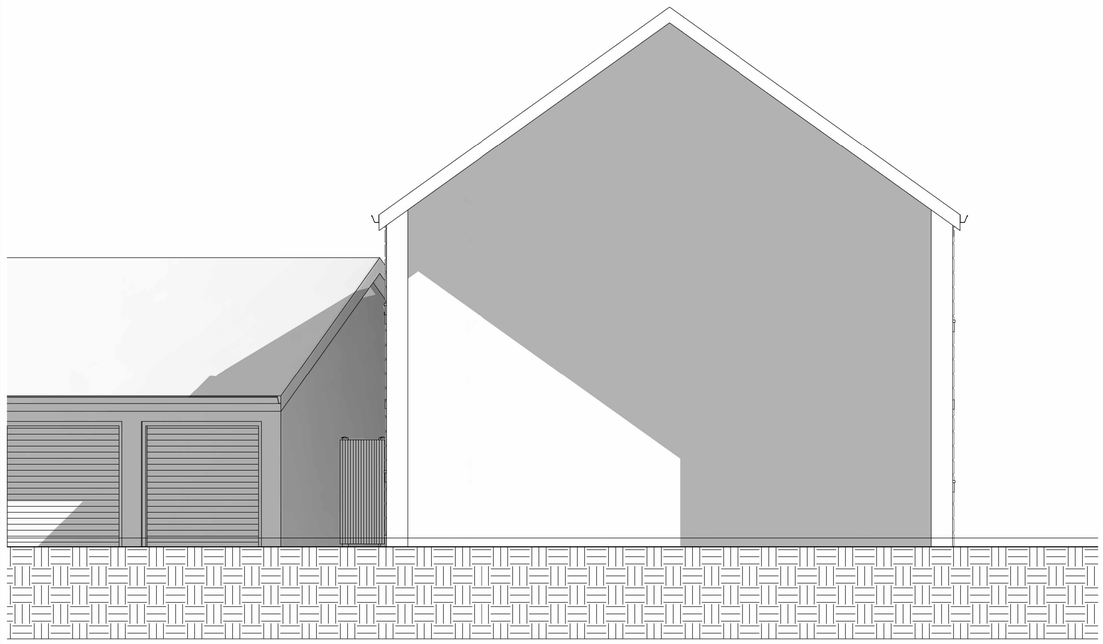

2 EXISTING NORTH
1 : 50

4 EXISTING WEST
1 : 50

3 EXISTING SOUTH
1 : 50

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CLIENT:
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1 Waters Edge
Whalley
Clitheroe
BB7 9UF

PROJECT:
Proposed side and rear extension to existing property

SHEET:
EXISTING ELEVATIONS

Project number	PHA/965
Date	29/07/25
Drawn by	JS
Checked by	PH

A201

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Sheet size	A1

1 PROPOSED EAST

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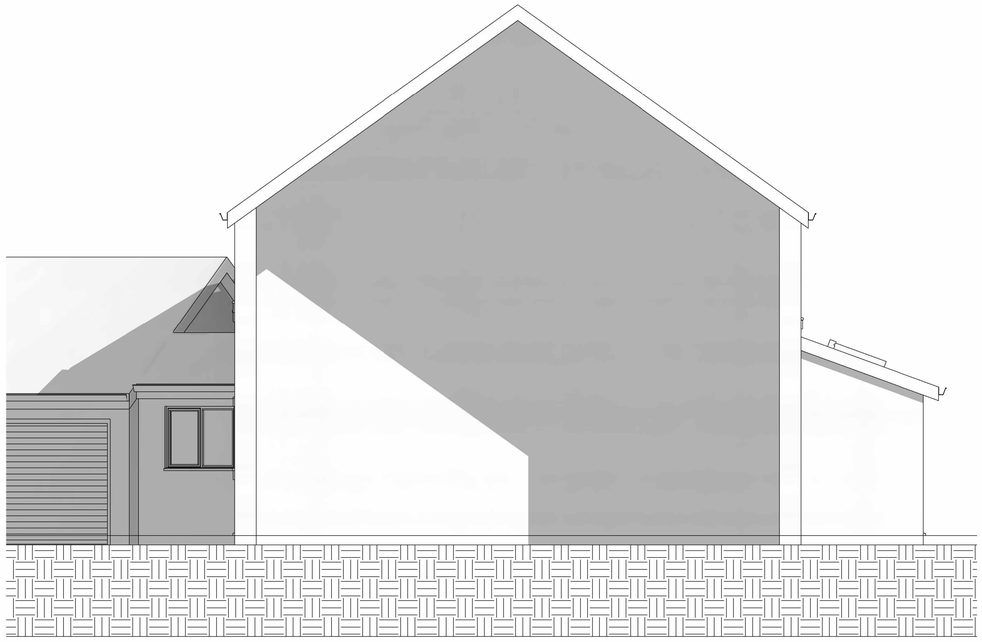
2 PROPOSED NORTH

1 : 50

3 PROPOSED SOUTH

1 : 50



4 PROPOSED WEST

1 : 50

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Marathon House
The Sidings Business Park
Whalley, BB7 9SE

01254 823 885

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NOTES:

No.	Description	Date

CLIENT:

Mr and Mrs Sutehall
1 Waters Edge
Whalley
Clitheroe
BB7 9UF

PROJECT:

Proposed side and rear extension to existing property

SHEET:

PROPOSED ELEVATIONS

Project number	PHA/965
Date	29/07/25
Drawn by	JS
Checked by	PH

A203

Scale	1 : 50
Sheet size	A1

APPENDIX 2 – Environment Agency Data

Flood risk assessment data

Location of site: 373431 / 435977 (shown as easting and northing coordinates)
Document created on: 5 August 2025
This information was previously known as a product 4.
Customer reference number: FBGP9V4G66CT

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
- 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

When using the surface water map on the check your long term flood risk service the following considerations apply:

- surface water extents are suitable for use in planning
- surface water climate change scenarios may help to inform risk assessments, but the available data fall short of what is required to assess planned development
- surface water depth information should not be used for planning purposes

To find out about other factors that might affect the flood risk of this location, you should also check:

- reservoir flood risk
- groundwater flood risk - you could use the British Geological Survey groundwater flooding data, groundwater: current status and flood risk and the guide on mining and groundwater constraints for development - further information may be available from the lead local flood authority (LLFA)
- your local planning authority's SFRA, which includes future flood risk

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: Whalley 2017
Scenario(s): Defended fluvial, defences removed fluvial, defended climate change fluvial, defences removed climate change fluvial
Date: 11 August 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:

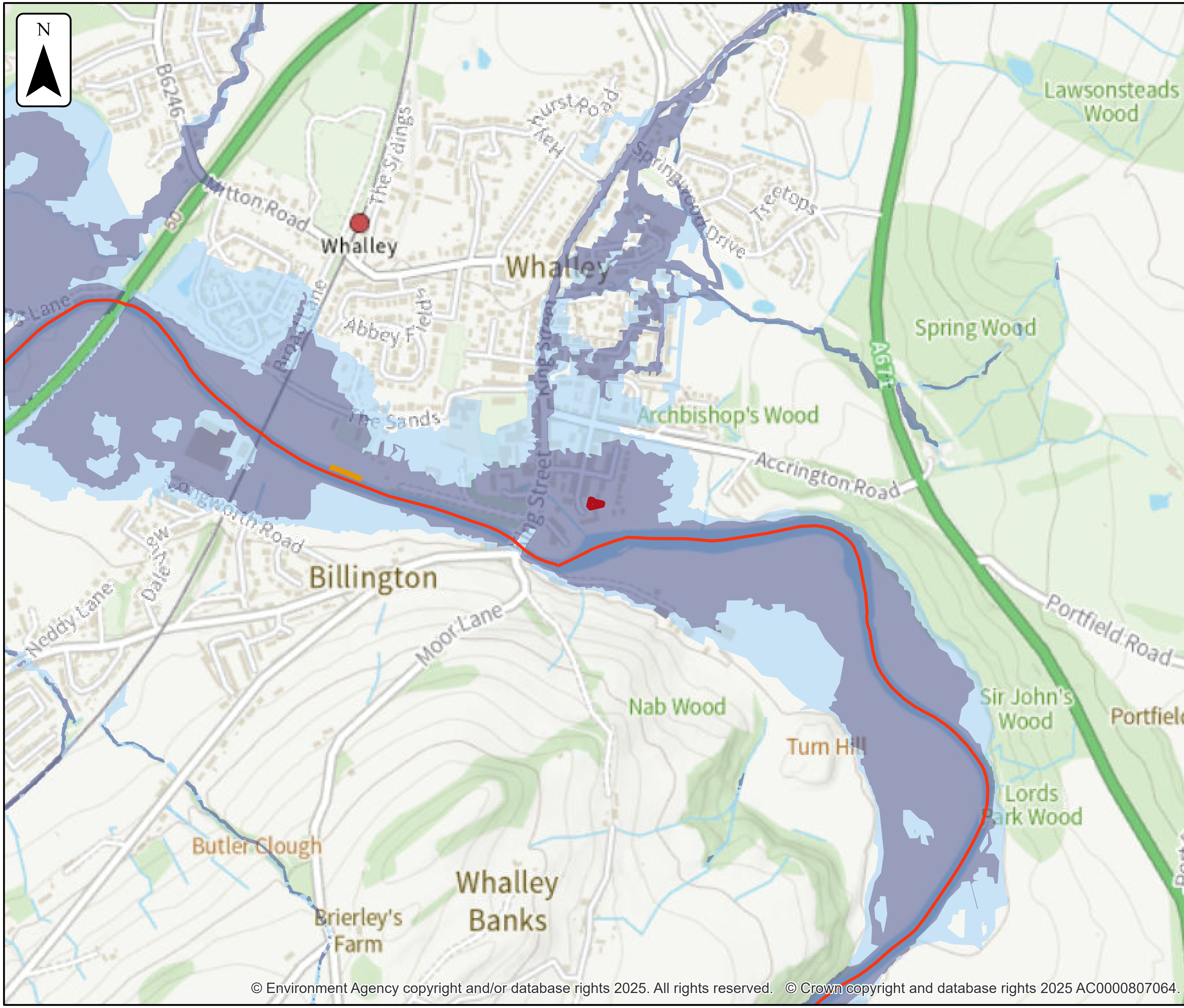
- 0.5% or greater probability of occurring in any year for flooding from the sea
- 1% or greater probability of occurring in any year for fluvial (river) flooding

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



Environment Agency

Flood map for planning

Location (easting/northing)
373431/435977

Scale
1:10,000

Created
5 Aug 2025

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

0 100 200 300 400 500
metres

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

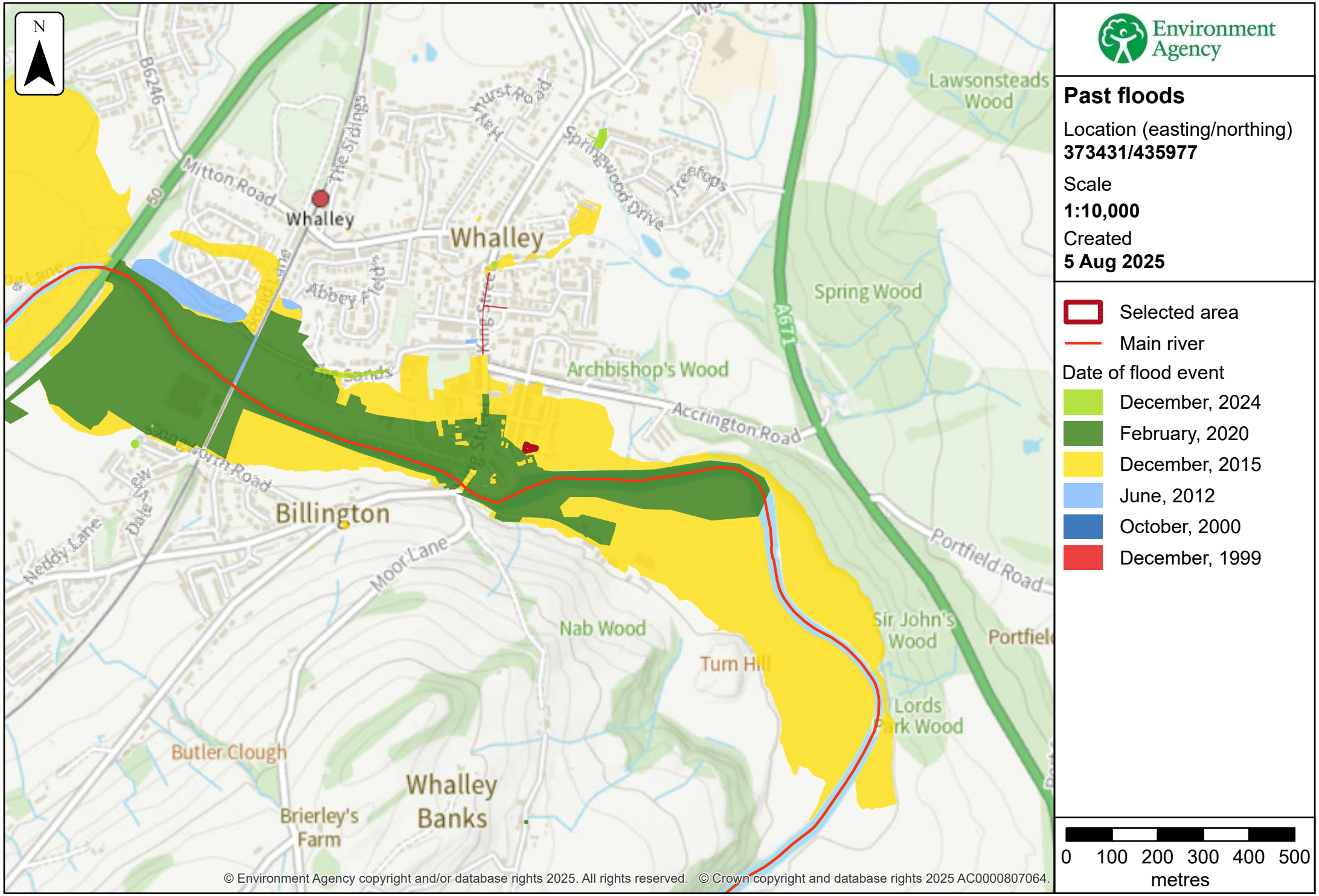
The recorded flood outlines are a geographical information system (GIS) data layer that show our verified records of areas that have flooded in the past from:

- 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.



Data on past flood events

Start date	End date	Source of flood	Cause of flood	Affects location
31 December 2024	1 January 2025	unknown	unknown	No
9 February 2020	10 February 2020	main river	overtopping of defences	No
26 December 2015	27 December 2015	main river	channel capacity exceeded (no raised defences)	Yes
22 June 2012	23 June 2012	unknown	local drainage/surface water	No
26 October 2000	27 October 2000	main river	channel capacity exceeded (no raised defences)	No
11 December 1999	12 December 1999	ordinary watercourse	obstruction/blockage - debris screen	No

Flood defences and attributes

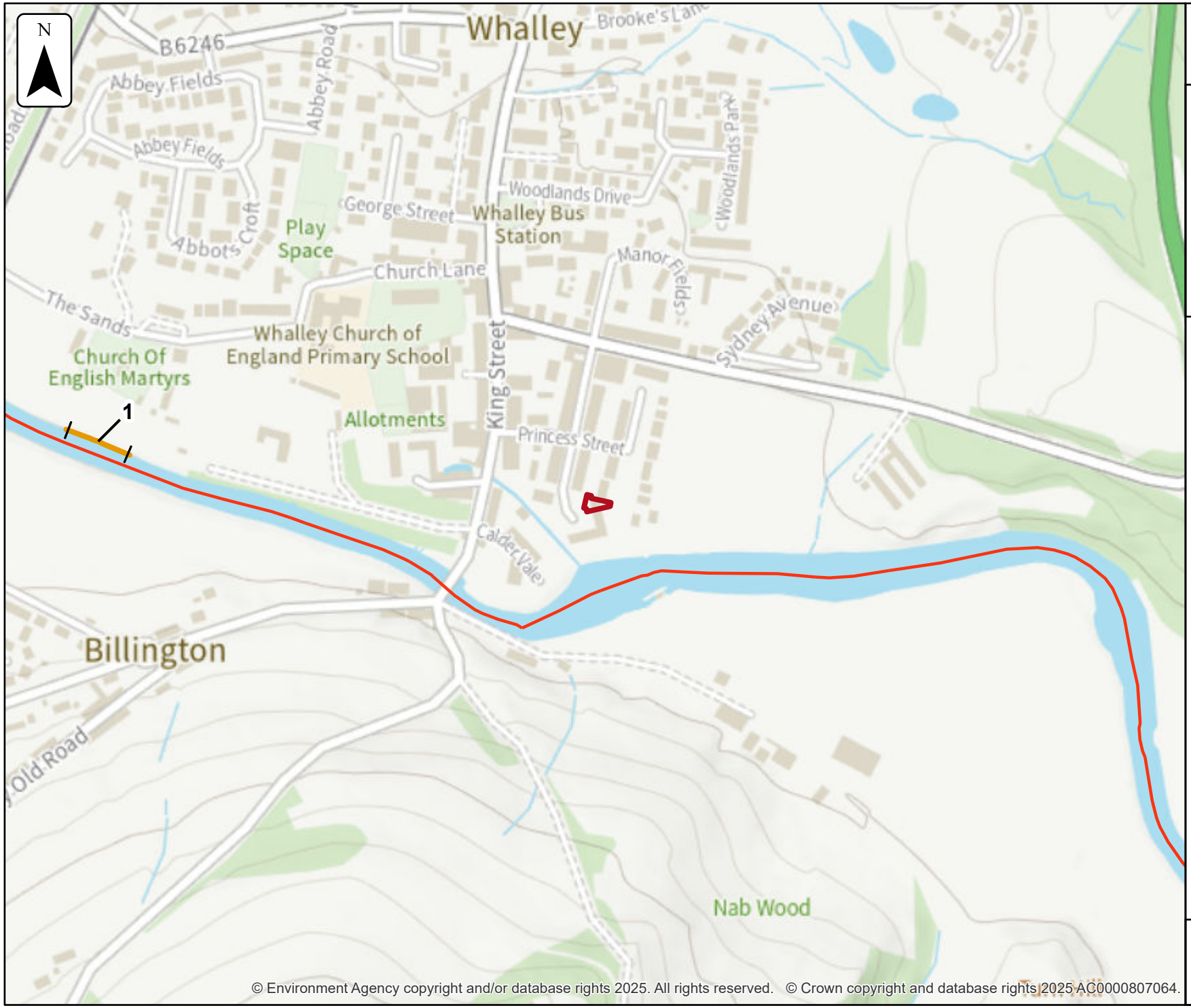
The flood defences map shows the location of the flood defences present.

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)
373431/435977

Scale
1:5,000

Created
5 Aug 2025

- Selected area
- Main river
- Flood defence

0 50 100 150 200 250
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	64827	Embankment	5	Poor	43.90	43.90	43.90

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

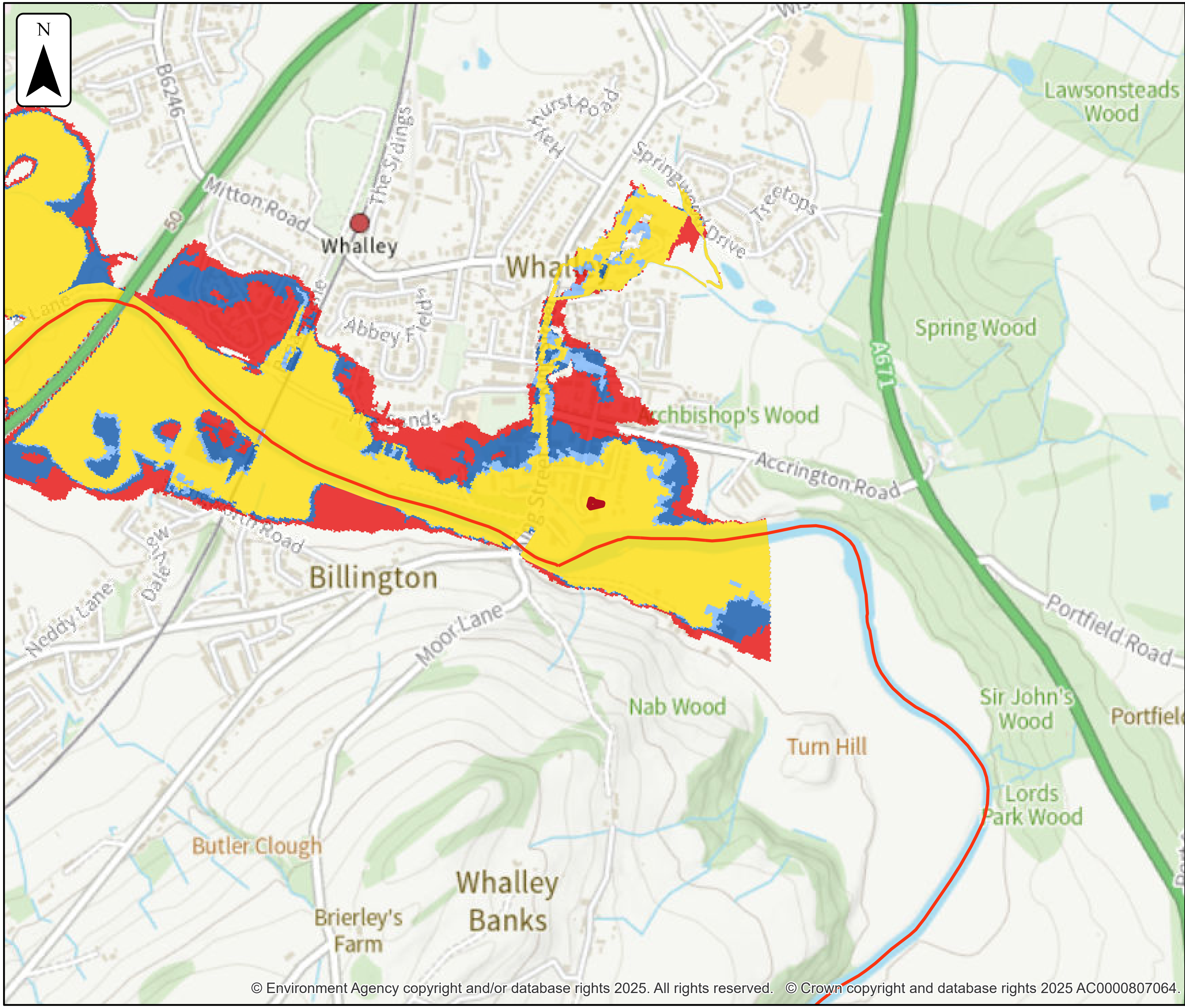
The climate change data included in the models may not include the latest flood risk assessment climate change allowances. Where the new allowances are not available you will need to consider this data and factor in the new allowances to demonstrate the development will be safe from flooding.

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



Environment Agency

Defences removed modelled fluvial extent

Location (easting/northing) **373431/435977**

Scale **1:10,000**

Created **5 Aug 2025**

Model name **Whalley 2017**

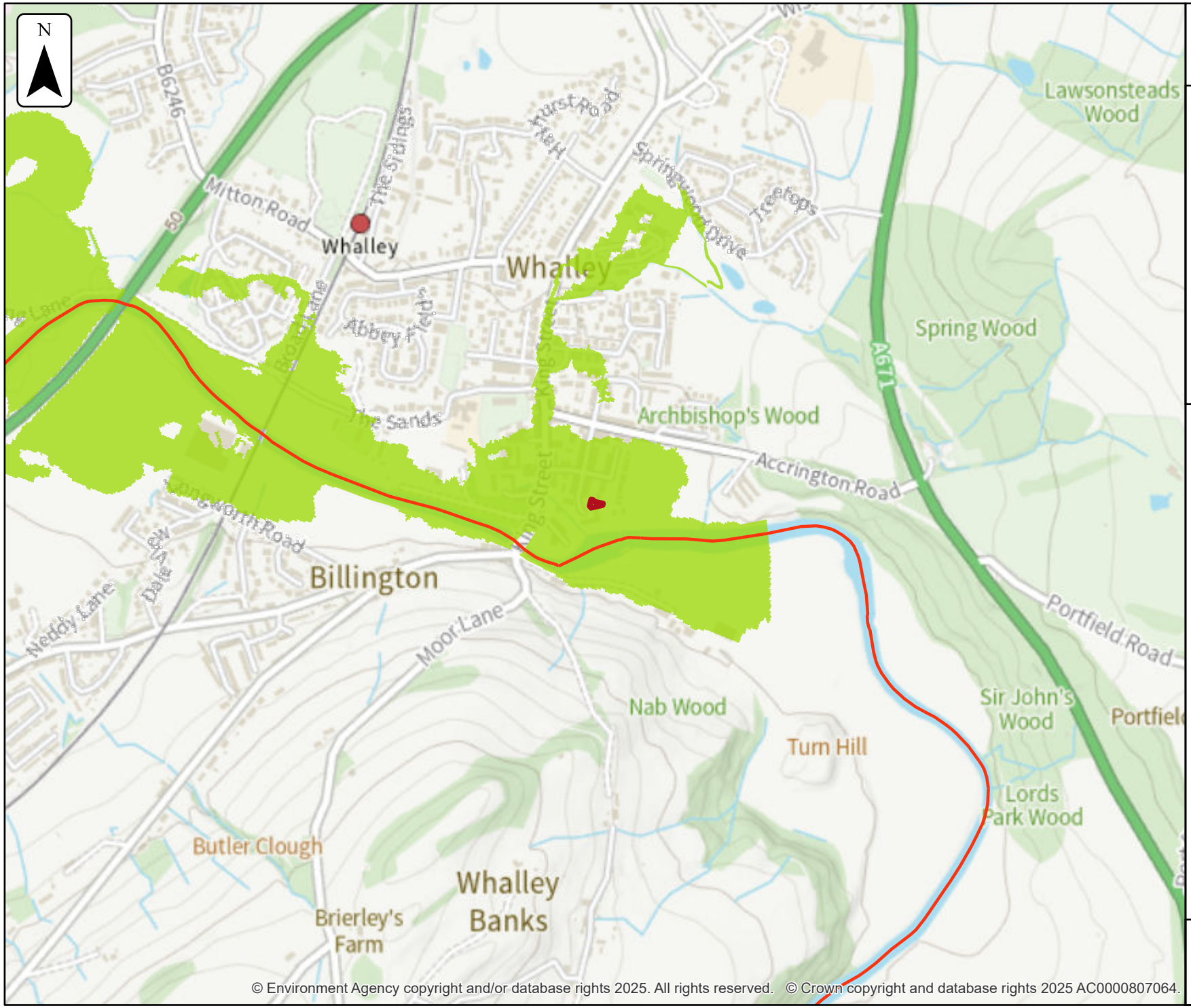
- Selected area
- Main river

Modelled flood extent

- 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 climate change modelled fluvial extent

Location (easting/northing)
373431/435977

Scale
1:10,000

Created
5 Aug 2025

Model name
Whalley 2017

Selected area

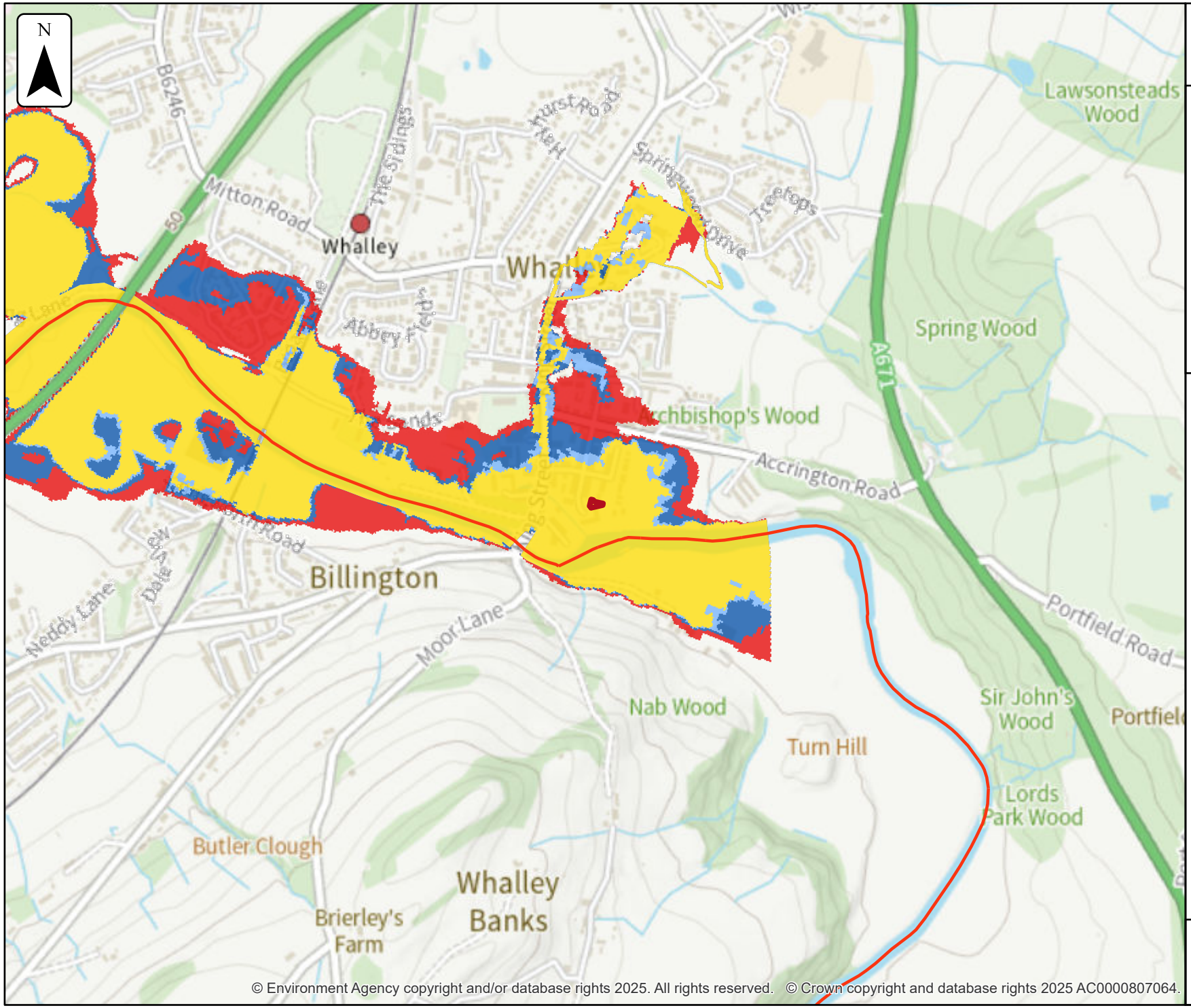
Main river

Modelled flood extent

1% AEP (+15%)

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

0 100 200 300 400 500
metres



Environment Agency

Defended modelled fluvial extent

Location (easting/northing)
373431/435977

Scale
1:10,000

Created
5 Aug 2025

Model name
Whalley 2017

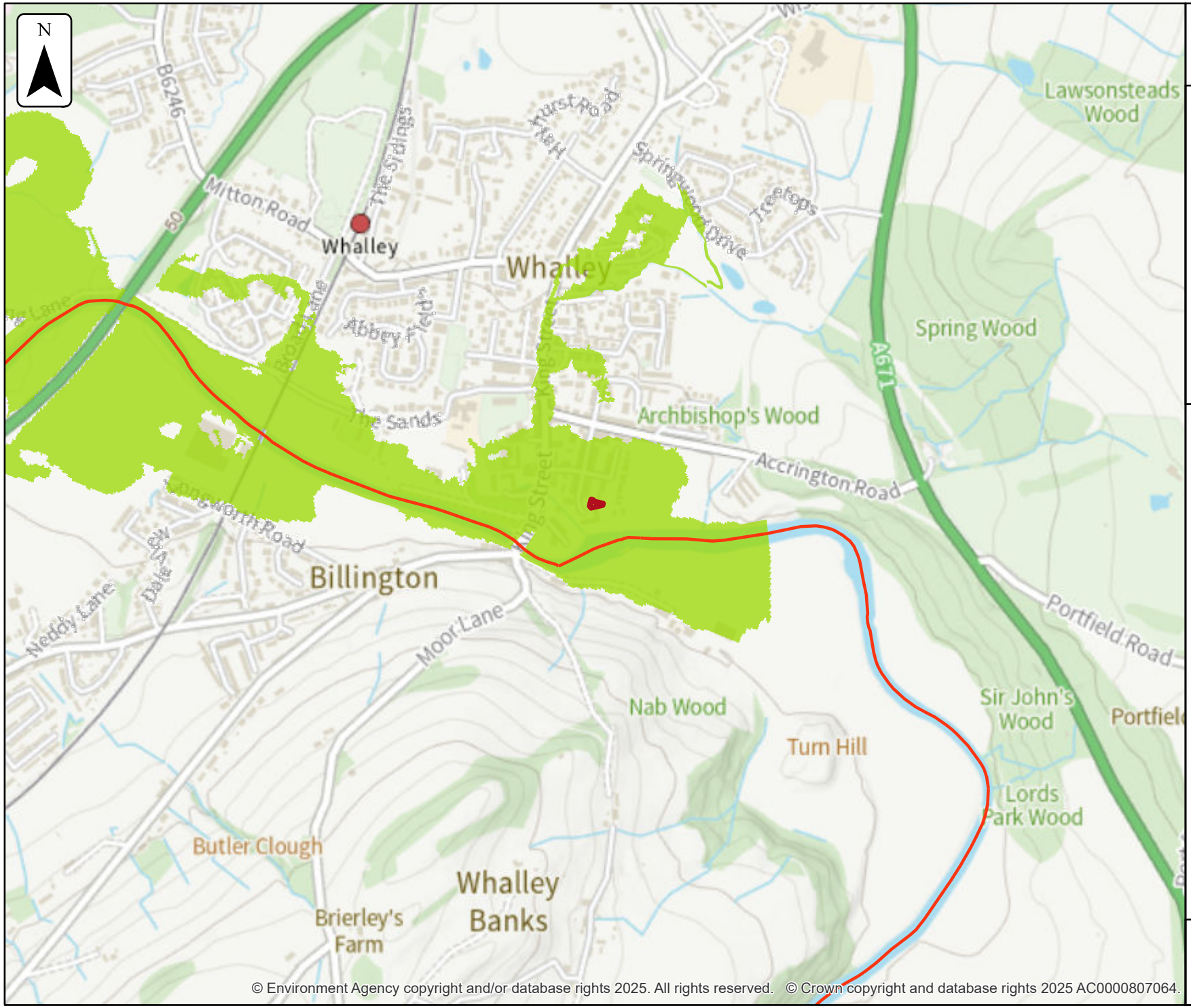
- Selected area
- Main river

Modelled flood extent

- 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

Defended climate change modelled fluvial extent

Location (easting/northing)
373431/435977

Scale
1:10,000

Created
5 Aug 2025

Model name
Whalley 2017

Selected area

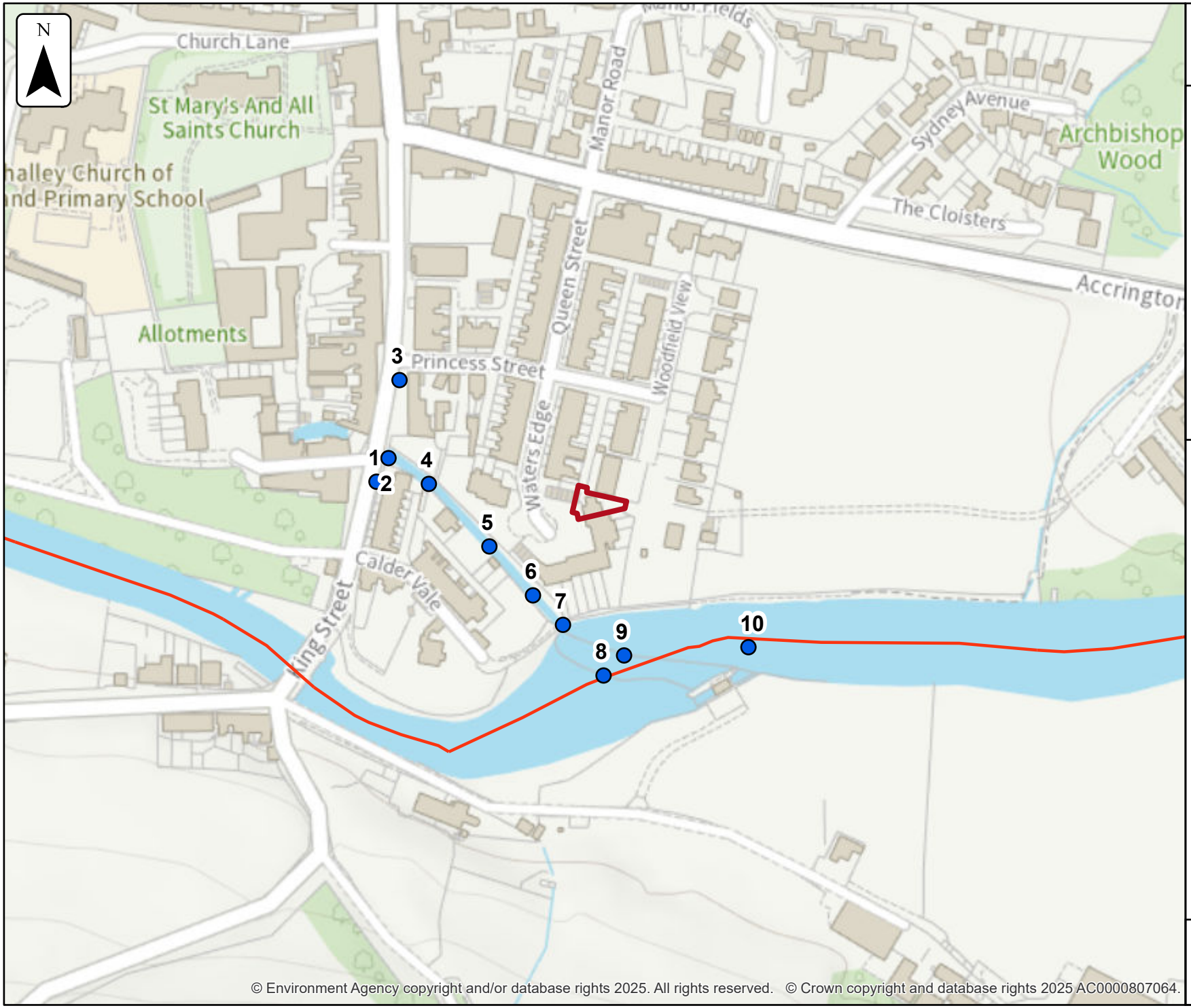
Main river

Modelled flood extent

1% AEP (+15%)

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 node locations

Location (easting/northing)
373431/435977

Scale
1:2,500

Created
5 Aug 2025

Model name
Whalley 2017

- Selected area
- Modelled location
- Main river

0 25 50 75 100
metres

Modelled node locations data

Defences removed

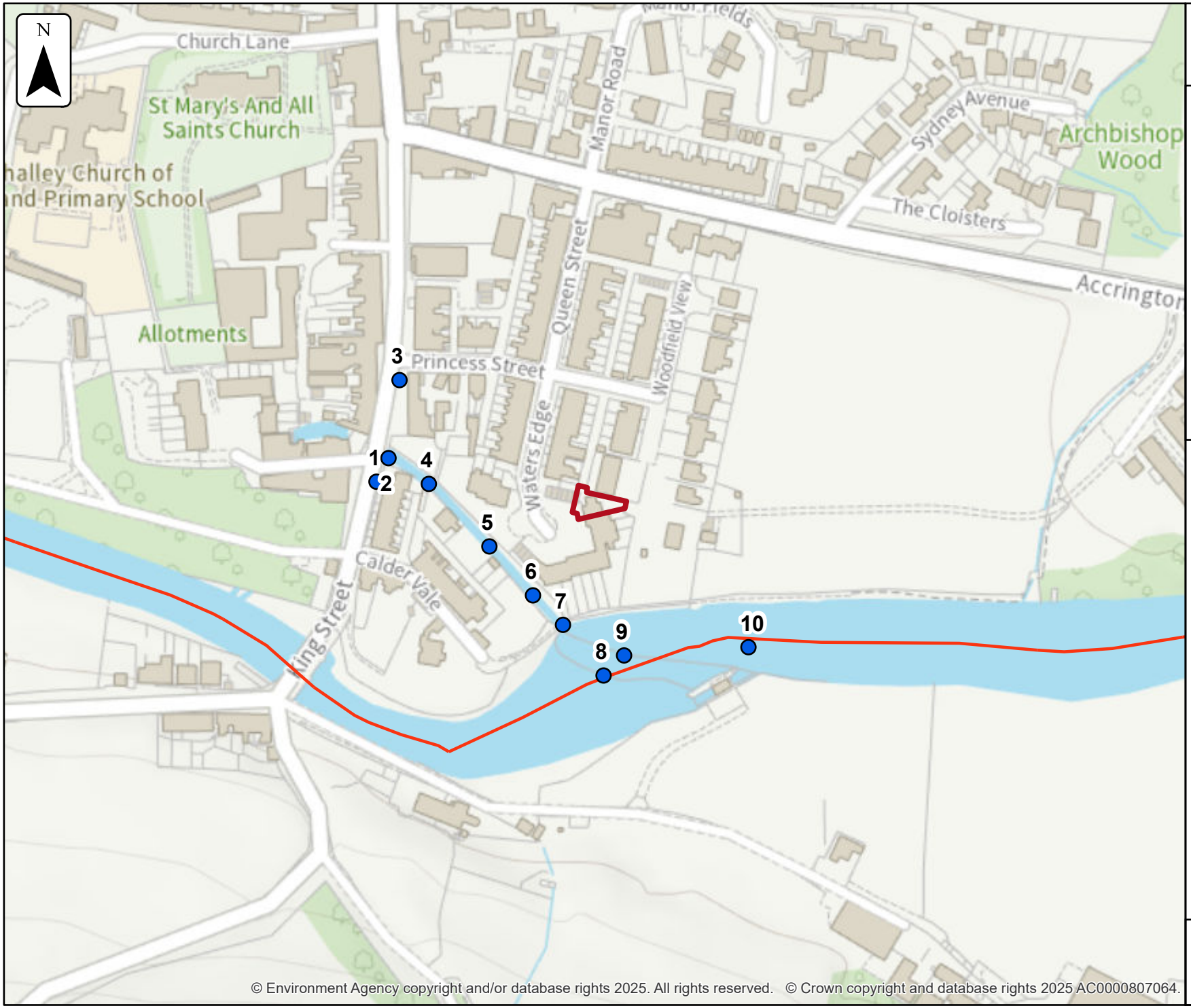
Label	Modelled location ID	Easting	Northing	50% AEP	10% AEP	4% AEP	1.33% AEP	1% AEP	0.5% AEP	0.1% AEP
				Level	Level	Level	Level	Level	Level	Level
1	931653	373325	435988					45.20	45.66	46.70
2	931632	373331	435999	43.51	45.63	44.86	45.30	45.42	45.88	46.92
3	931614	373336	436037					45.40	45.87	46.90
4	931640	373350	435987	43.58	45.65	44.87	45.19	45.31	45.73	46.63
5	931675	373380	435956	43.72	45.67	44.92	45.52	45.65	46.10	47.17
6	931674	373401	435933	43.76	45.69	44.95	45.57	45.69	46.11	47.13
7	931655	373415	435918	43.80	45.69	44.96	45.61	45.74	46.16	47.22
8	931679	373435	435894	44.02	44.83	45.25	45.66	45.77	46.16	47.25
9	931635	373445	435903	44.91	45.98	45.45	45.89	46.01	46.41	47.51
10	931600	373506	435907	45.48	46.38	45.85	46.12	46.19	46.49	47.17

Data in this table comes from the Whalley 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

Label	Modelled location ID	Easting	Northing	50% AEP	10% AEP	4% AEP	1.33% AEP	1% AEP	0.5% AEP	0.1% AEP
				Flow	Flow	Flow	Flow	Flow	Flow	Flow
1	931653	373325	435988					0.40	0.39	0.45
2	931632	373331	435999	0.95	6.34	3.60	3.71	3.71	3.73	3.75
3	931614	373336	436037					0.20	0.20	0.80
4	931640	373350	435987	0.95	6.34	3.86	12.77	14.65	20.80	40.49
5	931675	373380	435956	0.95	6.34	4.14	9.60	9.97	10.73	16.40
6	931674	373401	435933	0.95	6.34	3.89	10.43	11.56	14.71	27.14
7	931655	373415	435918	0.95	6.35	3.19	5.70	6.12	7.74	14.19
8	931679	373435	435894	146.04	233.23	177.37	179.60	179.80	187.33	266.09
9	931635	373445	435903	149.35	245.30	184.26	188.22	188.82	202.29	290.92
10	931600	373506	435907	149.34	245.32	184.76	197.05	203.73	245.20	474.92

Data in this table comes from the Whalley 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.



Environment Agency

Defences removed climate change modelled fluvial node locations

Location (easting/northing)
373431/435977

Scale
1:2,500

Created
5 Aug 2025

Model name
Whalley 2017

Selected area
Modelled location
Main river

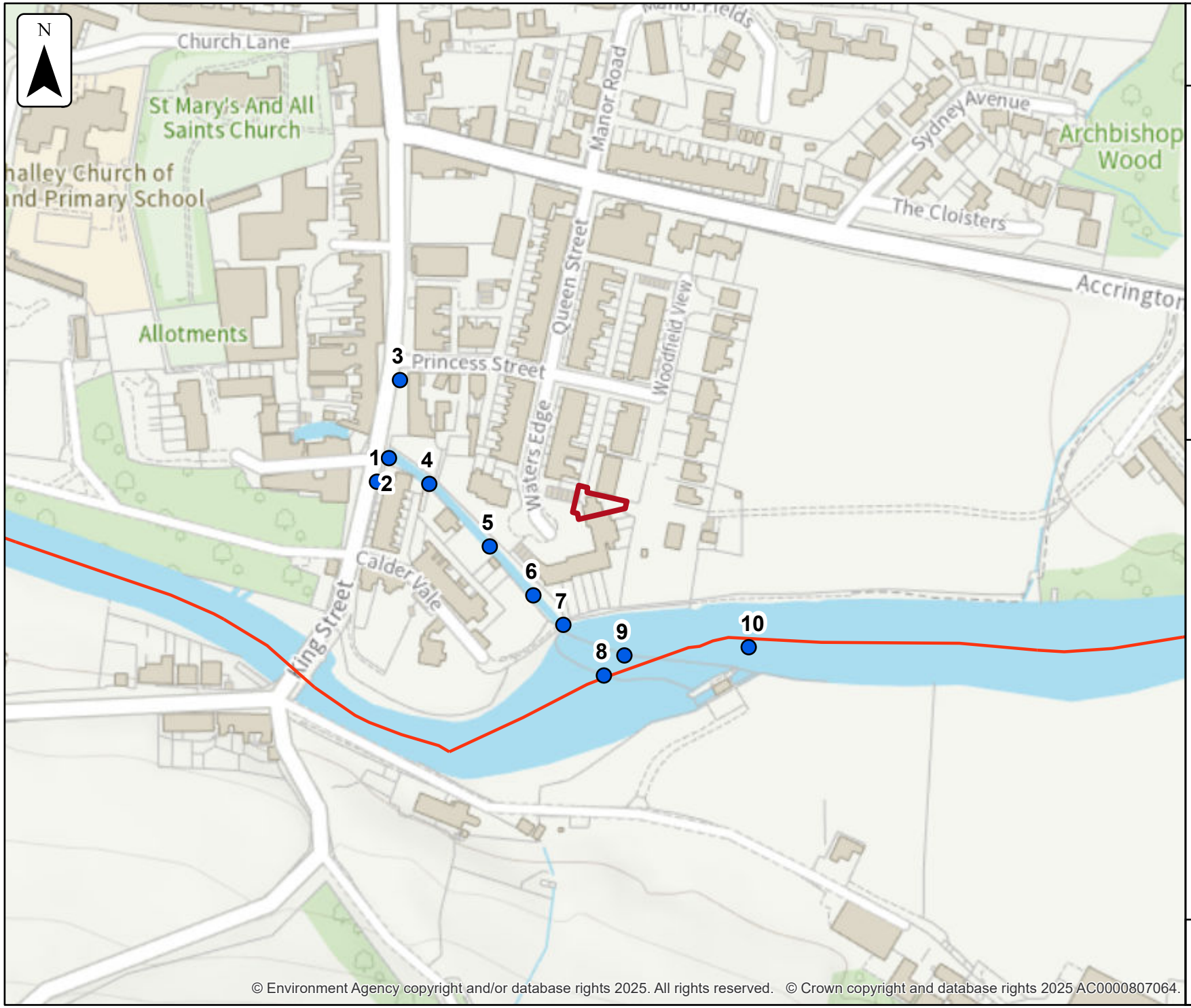
0 25 50 75 100
metres

Modelled node locations data

Defences removed climate change

Label	Modelled location ID	Easting	Northing	1% AEP (+15%)	1% AEP (+15%)
				Level	Flow
1	931653	373325	435988	45.60	0.41
2	931632	373331	435999	45.82	3.73
3	931614	373336	436037	45.81	0.20
4	931640	373350	435987	45.67	19.90
5	931675	373380	435956	46.04	10.58
6	931674	373401	435933	46.05	14.21
7	931655	373415	435918	46.10	7.52
8	931679	373435	435894	46.10	184.26
9	931635	373445	435903	46.35	198.80
10	931600	373506	435907	46.44	237.41

Data in this table comes from the Whalley 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.



Environment Agency

Defended modelled fluvial node locations

Location (easting/northing)
373431/435977

Scale
1:2,500

Created
5 Aug 2025

Model name
Whalley 2017

Selected area
Modelled location
Main river

0 25 50 75 100
metres

Modelled node locations data

Defended

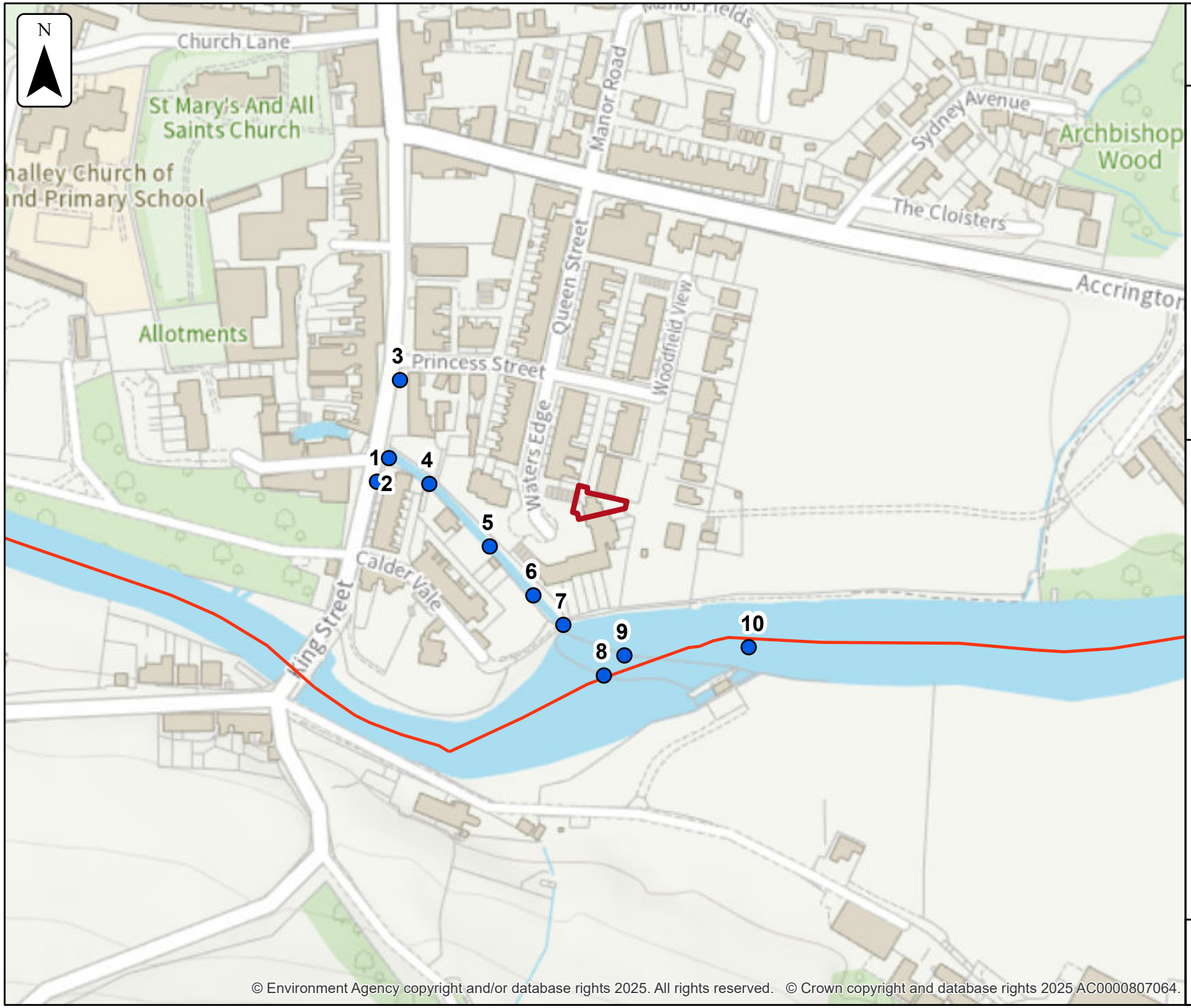
Label	Modelled location ID	Easting	Northing	50% AEP	10% AEP	4% AEP	1.33% AEP	1% AEP	0.5% AEP	0.1% AEP
				Level	Level	Level	Level	Level	Level	Level
1	931653	373325	435988					45.20	45.66	46.70
2	931632	373331	435999	43.51	44.11	44.86	45.29	45.42	45.88	46.92
3	931614	373336	436037					45.40	45.87	46.90
4	931640	373350	435987	43.58	44.13	44.87	45.19	45.30	45.73	46.63
5	931675	373380	435956	43.72	44.17	44.92	45.52	45.65	46.10	47.17
6	931674	373401	435933	43.76	44.19	44.95	45.57	45.69	46.11	47.13
7	931655	373415	435918	43.80	44.20	44.96	45.61	45.74	46.16	47.22
8	931679	373435	435894	44.02	44.87	45.25	45.66	45.77	46.16	47.25
9	931635	373445	435903	44.91	45.07	45.45	45.89	46.01	46.41	47.51
10	931600	373506	435907	45.48	45.68	45.85	46.12	46.19	46.49	47.17

Data in this table comes from the Whalley 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

Label	Modelled location ID	Easting	Northing	50% AEP	10% AEP	4% AEP	1.33% AEP	1% AEP	0.5% AEP	0.1% AEP
				Flow	Flow	Flow	Flow	Flow	Flow	Flow
1	931653	373325	435988					0.40	0.39	0.46
2	931632	373331	435999	0.95	1.37	3.61	3.71	3.72	3.73	3.75
3	931614	373336	436037					0.20	0.21	0.81
4	931640	373350	435987	0.95	1.37	3.88	12.76	14.63	20.77	40.49
5	931675	373380	435956	0.95	1.37	4.10	9.60	9.97	10.73	16.40
6	931674	373401	435933	0.95	1.37	3.88	10.43	11.56	14.70	27.14
7	931655	373415	435918	0.95	1.37	3.18	5.70	6.12	7.74	14.19
8	931679	373435	435894	146.04	170.0	177.37	179.60	179.82	187.40	266.11
9	931635	373445	435903	149.35	174.16	184.27	188.26	188.85	202.36	290.93
10	931600	373506	435907	149.34	174.17	184.73	197.04	203.74	245.08	474.91

Data in this table comes from the Whalley 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.



Environment Agency

Defended climate change modelled fluvial node locations

Location (easting/northing)
373431/435977

Scale
1:2,500

Created
5 Aug 2025

Model name
Whalley 2017

Selected area
Modelled location
Main river

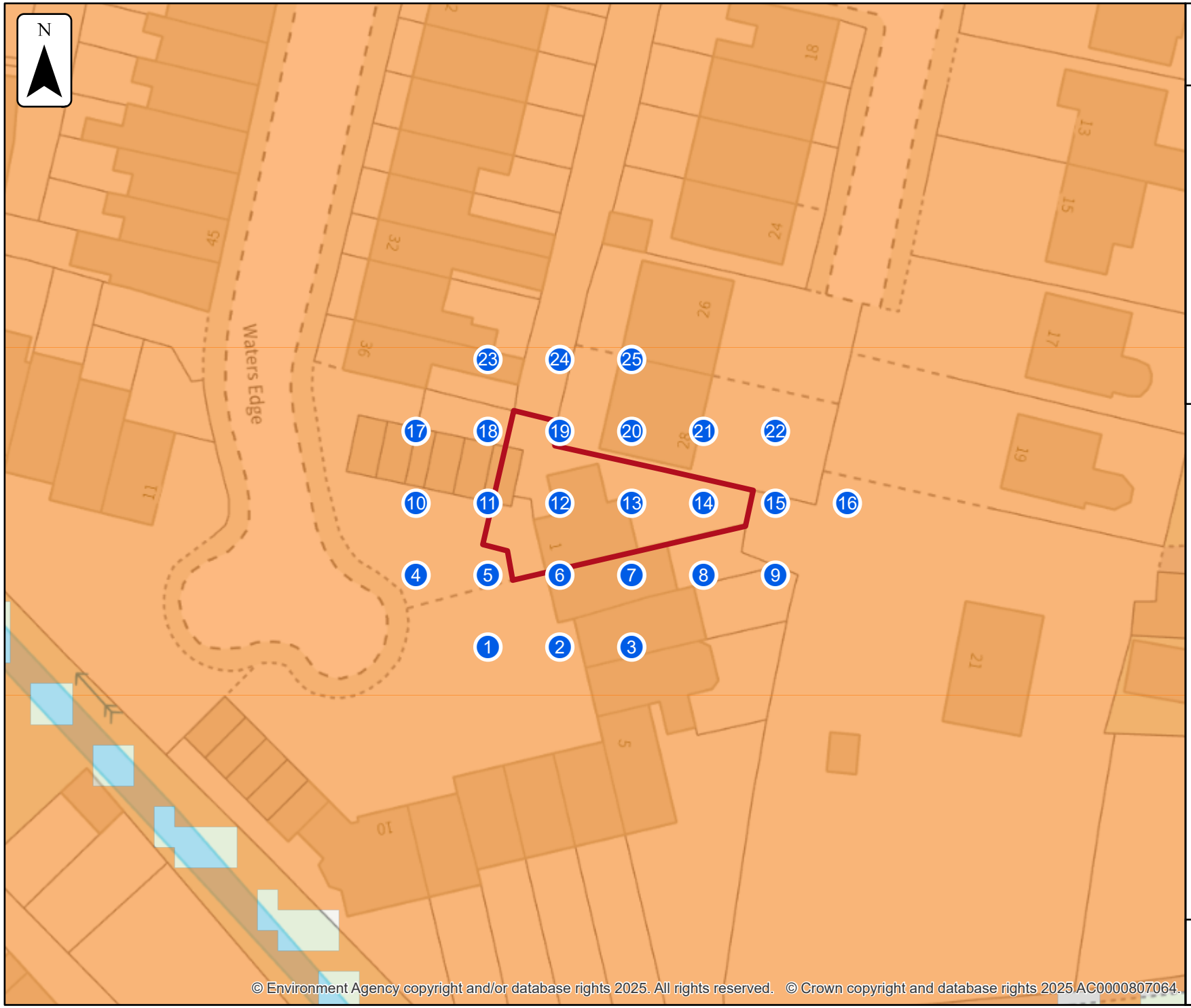
0 25 50 75 100
metres

Modelled node locations data

Defended climate change

Label	Modelled location ID	Easting	Northing	1% AEP (+15%)	1% AEP (+15%)
				Level	Flow
1	931653	373325	435988	45.60	0.41
2	931632	373331	435999	45.82	3.73
3	931614	373336	436037	45.81	0.20
4	931640	373350	435987	45.67	19.88
5	931675	373380	435956	46.04	10.60
6	931674	373401	435933	46.05	14.20
7	931655	373415	435918	46.10	7.52
8	931679	373435	435894	46.10	184.35
9	931635	373445	435903	46.35	198.91
10	931600	373506	435907	46.44	237.22

Data in this table comes from the Whalley 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.



Environment Agency

Defended modelled fluvial extent and height

Location (easting/northing)
373431/435977

Scale
1:500

Created
5 Aug 2025

Model name
Whalley 2017

Selected area

Main river

Modelled 2D grid
Water level in mAOD

- 0 - 6.0
- 6.0 - 12.0
- 12.0 - 18.0
- 18.0 - 24.0
- 24.0 - 30.0
- 30.0 - 36.0
- 36.0 - 42.0
- 42.0 - 48.0
- 48.0 - 54.0

This map shows the 0.1% AEP height data

0 5 10 15 20
metres

Sample point data

Defended

Label	Easting	Northing	50% AEP	10% AEP	4% AEP	1.33% AEP	1% AEP	0.5% AEP	0.1% AEP
			Height	Height	Height	Height	Height	Height	Height
1	373420	435963	NoData	NoData	NoData	45.68	45.72	46.11	47.17
2	373427	435963	NoData	NoData	NoData	45.77	45.81	46.14	47.17
3	373434	435963	NoData	NoData	NoData	45.91	45.98	46.32	47.22
4	373413	435970	NoData	NoData	NoData	45.54	45.64	46.10	47.16
5	373420	435970	NoData	NoData	NoData	45.63	45.69	46.11	47.16
6	373427	435970	NoData	NoData	NoData	45.73	45.77	46.16	47.17
7	373434	435970	NoData	NoData	NoData	45.91	45.98	46.34	47.23
8	373441	435970	NoData	NoData	NoData	45.92	45.99	46.37	47.24
9	373448	435970	NoData	NoData	NoData	45.92	46.00	46.37	47.25
10	373413	435977	NoData	NoData	NoData	45.55	45.65	46.10	47.15
11	373420	435977	NoData	NoData	NoData	45.61	45.69	46.12	47.16
12	373427	435977	NoData	NoData	NoData	45.70	45.75	46.15	47.17

Label	Easting	Northing	50% AEP	10% AEP	4% AEP	1.33% AEP	1% AEP	0.5% AEP	0.1% AEP
			Height	Height	Height	Height	Height	Height	Height
13	373434	435977	NoData	NoData	NoData	45.90	45.97	46.33	47.23
14	373441	435977	NoData	NoData	NoData	45.92	45.99	46.36	47.25
15	373448	435977	NoData	NoData	NoData	45.91	45.99	46.37	47.25
16	373455	435977	NoData	NoData	NoData	45.90	45.98	46.37	47.25
17	373413	435984	NoData	NoData	NoData	45.54	45.64	46.08	47.14
18	373420	435984	NoData	NoData	NoData	45.63	45.70	46.12	47.16
19	373427	435984	NoData	NoData	NoData	45.70	45.78	46.18	47.17
20	373434	435984	NoData	NoData	NoData	45.83	45.89	46.26	47.19
21	373441	435984	NoData	NoData	NoData	45.87	45.95	46.35	47.24
22	373448	435984	NoData	NoData	NoData	45.83	45.94	46.36	47.25
23	373420	435991	NoData	NoData	NoData	45.67	45.76	46.17	47.16
24	373427	435991	NoData	NoData	NoData	45.71	45.82	46.21	47.17

Label	Easting	Northing	50% AEP	10% AEP	4% AEP	1.33% AEP	1% AEP	0.5% AEP	0.1% AEP
			Height	Height	Height	Height	Height	Height	Height
25	373434	435991	NoData	NoData	NoData	45.76	45.86	46.25	47.18
Max value in selected area:			NoData	NoData	NoData	45.92	45.99	46.37	47.25

Data in this table comes from the Whalley 2017 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	10% AEP	4% AEP	1.33% AEP	1% AEP	0.5% AEP	0.1% AEP
			Depth	Depth	Depth	Depth	Depth	Depth	Depth
1	373420	435963	NoData	NoData	NoData	0.13	0.16	0.56	1.61
2	373427	435963	NoData	NoData	NoData	0.15	0.18	0.51	1.55
3	373434	435963	NoData	NoData	NoData	0.37	0.44	0.79	1.68
4	373413	435970	NoData	NoData	NoData	0.15	0.25	0.71	1.77
5	373420	435970	NoData	NoData	NoData	0.18	0.24	0.66	1.71
6	373427	435970	NoData	NoData	NoData	0.24	0.28	0.67	1.68
7	373434	435970	NoData	NoData	NoData	0.43	0.50	0.87	1.75
8	373441	435970	NoData	NoData	NoData	0.43	0.51	0.88	1.75
9	373448	435970	NoData	NoData	NoData	0.26	0.33	0.71	1.59
10	373413	435977	NoData	NoData	NoData	0.19	0.29	0.74	1.79
11	373420	435977	NoData	NoData	NoData	0.26	0.33	0.76	1.80
12	373427	435977	NoData	NoData	NoData	0.22	0.27	0.68	1.69

Label	Easting	Northing	50% AEP	10% AEP	4% AEP	1.33% AEP	1% AEP	0.5% AEP	0.1% AEP
			Depth	Depth	Depth	Depth	Depth	Depth	Depth
13	373434	435977	NoData	NoData	NoData	0.41	0.48	0.84	1.74
14	373441	435977	NoData	NoData	NoData	0.35	0.42	0.80	1.68
15	373448	435977	NoData	NoData	NoData	0.24	0.31	0.69	1.58
16	373455	435977	NoData	NoData	NoData	0.23	0.31	0.70	1.58
17	373413	435984	NoData	NoData	NoData	0.22	0.32	0.76	1.82
18	373420	435984	NoData	NoData	NoData	0.16	0.24	0.65	1.69
19	373427	435984	NoData	NoData	NoData	0.12	0.20	0.60	1.59
20	373434	435984	NoData	NoData	NoData	0.12	0.18	0.55	1.48
21	373441	435984	NoData	NoData	NoData	0.16	0.24	0.63	1.53
22	373448	435984	NoData	NoData	NoData	0.11	0.22	0.64	1.53
23	373420	435991	NoData	NoData	NoData	0.05	0.14	0.54	1.53
24	373427	435991	NoData	NoData	NoData	0.14	0.25	0.64	1.60

Label	Easting	Northing	50% AEP	10% AEP	4% AEP	1.33% AEP	1% AEP	0.5% AEP	0.1% AEP
			Depth	Depth	Depth	Depth	Depth	Depth	Depth
25	373434	435991	NoData	NoData	NoData	0.05	0.15	0.53	1.47
Max value in selected area:			NoData	NoData	NoData	0.44	0.51	0.88	1.80

Data in this table comes from the Whalley 2017 model. Height values are shown in mAOD, and depth values are shown in metres.
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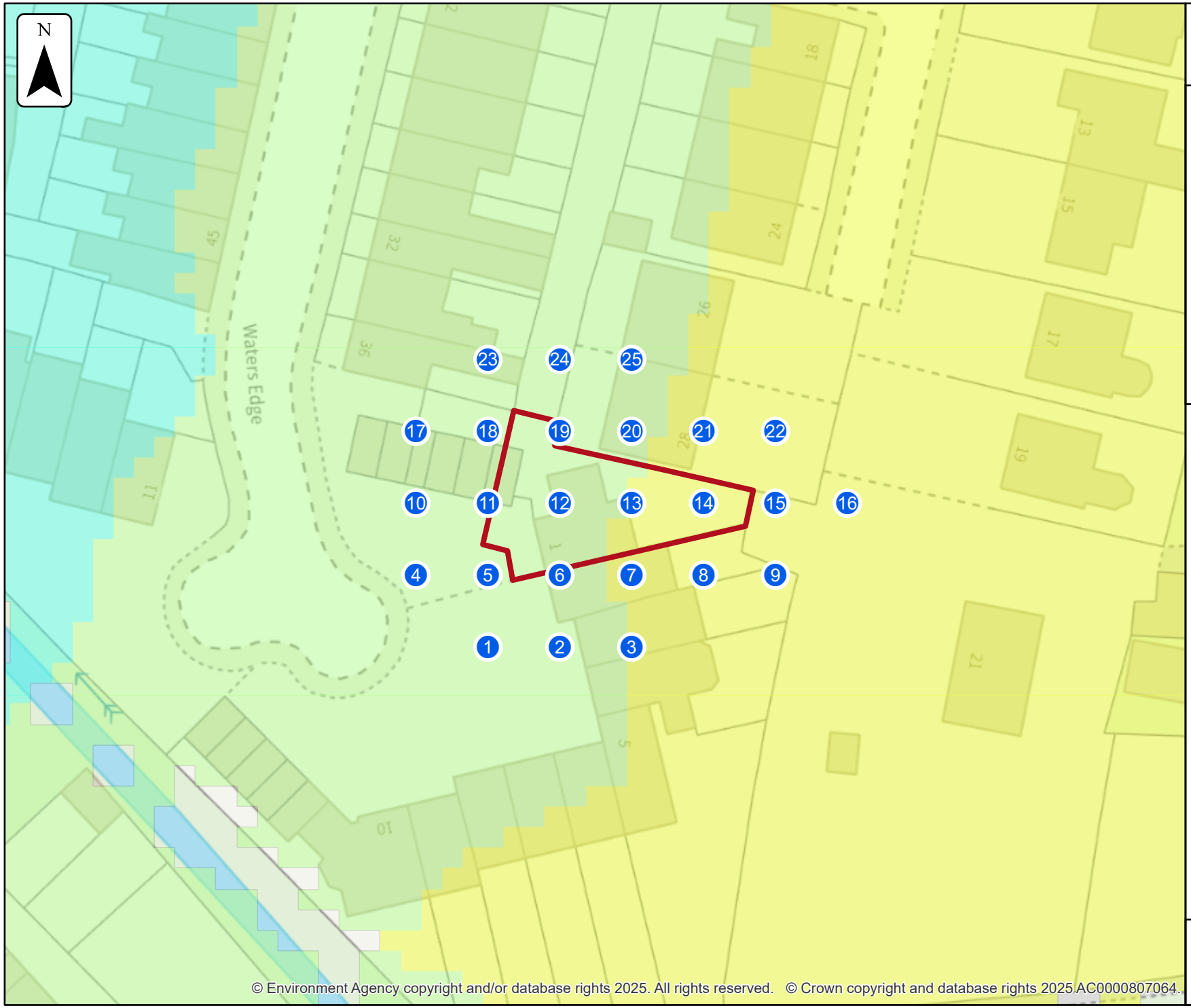
'Max value in selected area' is the deepest depth or highest height at any location within your drawn boundary.



Environment Agency

Defended climate change modelled fluvial extent and height

Location (easting/northing)
373431/435977

Scale
1:500

Created
5 Aug 2025

Model name
Whalley 2017

Selected area

Main river

Modelled 2D grid
Water level in mAOD

- 45 - 45.25
- 45.25 - 45.5
- 45.5 - 45.75
- 45.75 - 46.0
- 46.0 - 46.25
- 46.25 - 46.5
- 46.5 - 46.75
- 46.75 - 47.0
- 47.0 - 47.25

This map shows the
1% AEP +15% height data

0 5 10 15 20
metres

Sample point data

Defended climate change

Label	Easting	Northing	1% AEP (+15%)	1% AEP (+15%)
			Height	Depth
1	373420	435963	46.05	0.50
2	373427	435963	46.08	0.46
3	373434	435963	46.27	0.74
4	373413	435970	46.04	0.65
5	373420	435970	46.05	0.61
6	373427	435970	46.10	0.61
7	373434	435970	46.29	0.82
8	373441	435970	46.31	0.83
9	373448	435970	46.32	0.66
10	373413	435977	46.04	0.68
11	373420	435977	46.06	0.71
12	373427	435977	46.10	0.62

Label	Easting	Northing	1% AEP (+15%)	1% AEP (+15%)
			Height	Depth
13	373434	435977	46.28	0.79
14	373441	435977	46.31	0.75
15	373448	435977	46.32	0.64
16	373455	435977	46.32	0.65
17	373413	435984	46.02	0.70
18	373420	435984	46.06	0.59
19	373427	435984	46.13	0.54
20	373434	435984	46.21	0.50
21	373441	435984	46.30	0.58
22	373448	435984	46.31	0.59
23	373420	435991	46.11	0.49
24	373427	435991	46.16	0.59

Label	Easting	Northing	1% AEP (+15%)	1% AEP (+15%)
			Height	Depth
25	373434	435991	46.20	0.48
Max value in selected area:			46.31	0.83

Data in this table comes from the Whalley 2017 model. Height values are shown in mAOD, and depth values are shown in metres.
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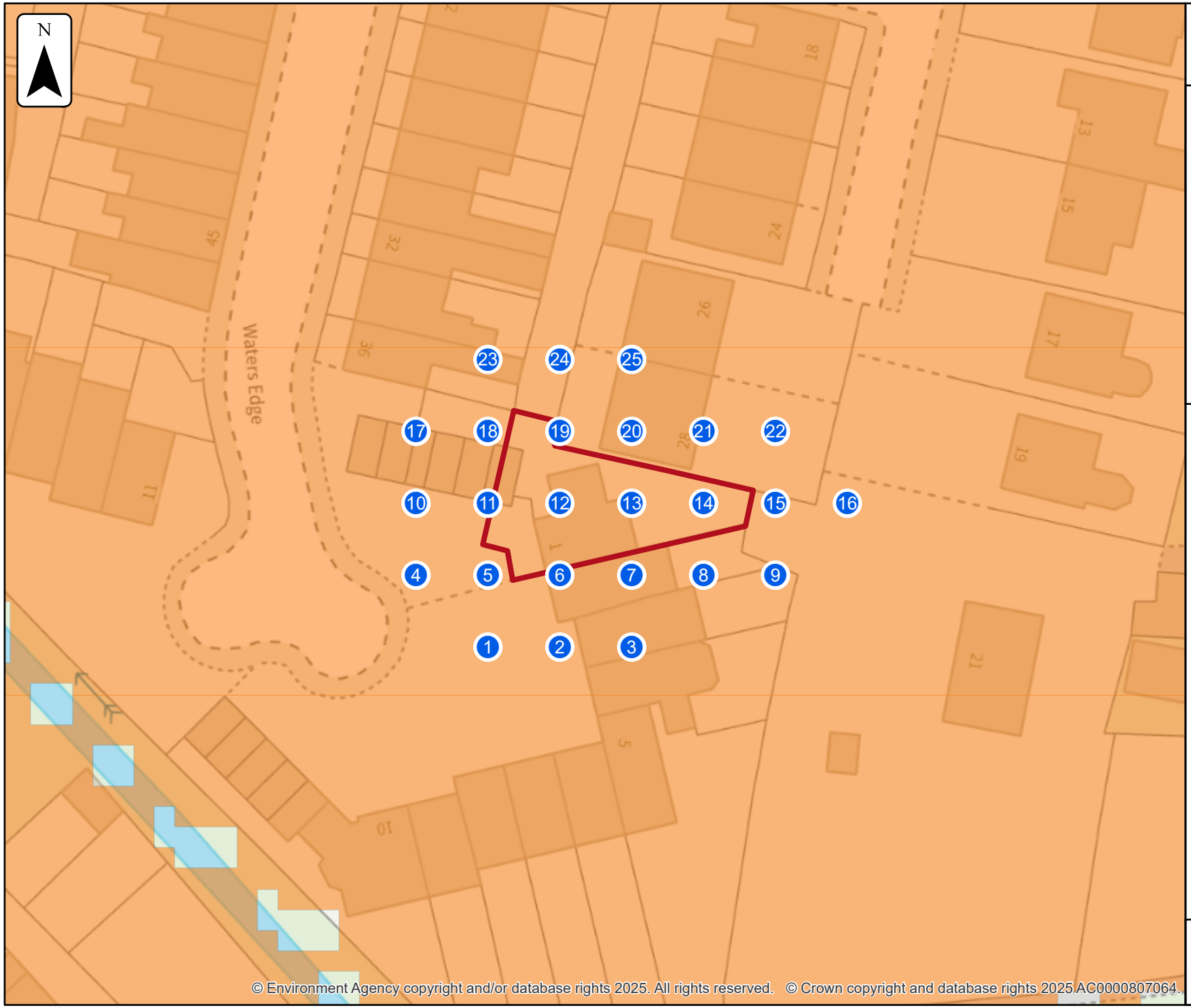
'Max value in selected area' is the deepest depth or highest height at any location within your drawn boundary.



Environment Agency

Defences removed modelled fluvial extent and height

Location (easting/northing)
373431/435977

Scale
1:500

Created
5 Aug 2025

Model name
Whalley 2017

Selected area

Main river

Modelled 2D grid
Water level in mAOD

- 0 - 6.0
- 6.0 - 12.0
- 12.0 - 18.0
- 18.0 - 24.0
- 24.0 - 30.0
- 30.0 - 36.0
- 36.0 - 42.0
- 42.0 - 48.0
- 48.0 - 54.0

This map shows the 0.1% AEP height data

0 5 10 15 20
metres

Sample point data

Defences removed

Label	Easting	Northing	50% AEP	10% AEP	4% AEP	1.33% AEP	1% AEP	0.5% AEP	0.1% AEP
			Height	Height	Height	Height	Height	Height	Height
1	373420	435963	NoData	NoData	NoData	45.68	45.72	46.12	47.17
2	373427	435963	NoData	NoData	NoData	45.77	45.81	46.14	47.17
3	373434	435963	NoData	NoData	NoData	45.91	45.98	46.32	47.22
4	373413	435970	NoData	NoData	NoData	45.54	45.64	46.10	47.16
5	373420	435970	NoData	NoData	NoData	45.63	45.69	46.11	47.16
6	373427	435970	NoData	NoData	NoData	45.73	45.77	46.16	47.17
7	373434	435970	NoData	NoData	NoData	45.91	45.98	46.35	47.23
8	373441	435970	NoData	NoData	NoData	45.92	45.99	46.37	47.24
9	373448	435970	NoData	NoData	NoData	45.92	46.00	46.37	47.25
10	373413	435977	NoData	NoData	NoData	45.55	45.65	46.10	47.15
11	373420	435977	NoData	NoData	NoData	45.62	45.69	46.12	47.16
12	373427	435977	NoData	NoData	NoData	45.70	45.75	46.15	47.17

Label	Easting	Northing	50% AEP	10% AEP	4% AEP	1.33% AEP	1% AEP	0.5% AEP	0.1% AEP
			Height	Height	Height	Height	Height	Height	Height
13	373434	435977	NoData	NoData	NoData	45.90	45.97	46.33	47.23
14	373441	435977	NoData	NoData	NoData	45.92	45.99	46.36	47.25
15	373448	435977	NoData	NoData	NoData	45.91	45.99	46.37	47.25
16	373455	435977	NoData	NoData	NoData	45.90	45.98	46.37	47.25
17	373413	435984	NoData	NoData	NoData	45.54	45.64	46.08	47.14
18	373420	435984	NoData	NoData	NoData	45.63	45.70	46.12	47.16
19	373427	435984	NoData	NoData	NoData	45.70	45.78	46.18	47.17
20	373434	435984	NoData	NoData	NoData	45.83	45.89	46.26	47.19
21	373441	435984	NoData	NoData	NoData	45.87	45.95	46.35	47.24
22	373448	435984	NoData	NoData	NoData	45.83	45.94	46.36	47.25
23	373420	435991	NoData	NoData	NoData	45.67	45.76	46.17	47.16
24	373427	435991	NoData	NoData	NoData	45.71	45.82	46.21	47.17

Label	Easting	Northing	50% AEP	10% AEP	4% AEP	1.33% AEP	1% AEP	0.5% AEP	0.1% AEP
			Height	Height	Height	Height	Height	Height	Height
25	373434	435991	NoData	NoData	NoData	45.76	45.86	46.25	47.18
Max value in selected area:			NoData	NoData	NoData	45.92	45.99	46.37	47.25

Data in this table comes from the Whalley 2017 model. Height values are shown in mAOD, and depth values are shown in metres.
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Defences removed

Label	Easting	Northing	50% AEP	10% AEP	4% AEP	1.33% AEP	1% AEP	0.5% AEP	0.1% AEP
			Depth	Depth	Depth	Depth	Depth	Depth	Depth
1	373420	435963	NoData	NoData	NoData	0.13	0.16	0.56	1.61
2	373427	435963	NoData	NoData	NoData	0.15	0.18	0.51	1.55
3	373434	435963	NoData	NoData	NoData	0.37	0.44	0.79	1.68
4	373413	435970	NoData	NoData	NoData	0.15	0.26	0.71	1.77
5	373420	435970	NoData	NoData	NoData	0.18	0.24	0.67	1.71
6	373427	435970	NoData	NoData	NoData	0.24	0.28	0.67	1.68
7	373434	435970	NoData	NoData	NoData	0.43	0.50	0.87	1.75
8	373441	435970	NoData	NoData	NoData	0.43	0.51	0.88	1.75
9	373448	435970	NoData	NoData	NoData	0.26	0.33	0.71	1.59
10	373413	435977	NoData	NoData	NoData	0.19	0.29	0.74	1.79
11	373420	435977	NoData	NoData	NoData	0.26	0.34	0.76	1.80
12	373427	435977	NoData	NoData	NoData	0.22	0.27	0.68	1.69

Label	Easting	Northing	50% AEP	10% AEP	4% AEP	1.33% AEP	1% AEP	0.5% AEP	0.1% AEP
			Depth	Depth	Depth	Depth	Depth	Depth	Depth
13	373434	435977	NoData	NoData	NoData	0.41	0.48	0.84	1.74
14	373441	435977	NoData	NoData	NoData	0.35	0.43	0.80	1.68
15	373448	435977	NoData	NoData	NoData	0.24	0.31	0.70	1.58
16	373455	435977	NoData	NoData	NoData	0.23	0.31	0.70	1.58
17	373413	435984	NoData	NoData	NoData	0.22	0.32	0.76	1.82
18	373420	435984	NoData	NoData	NoData	0.16	0.24	0.65	1.69
19	373427	435984	NoData	NoData	NoData	0.12	0.20	0.60	1.59
20	373434	435984	NoData	NoData	NoData	0.12	0.18	0.55	1.48
21	373441	435984	NoData	NoData	NoData	0.16	0.24	0.63	1.53
22	373448	435984	NoData	NoData	NoData	0.11	0.22	0.64	1.53
23	373420	435991	NoData	NoData	NoData	0.05	0.14	0.54	1.53
24	373427	435991	NoData	NoData	NoData	0.14	0.25	0.65	1.60

Label	Easting	Northing	50% AEP	10% AEP	4% AEP	1.33% AEP	1% AEP	0.5% AEP	0.1% AEP
			Depth	Depth	Depth	Depth	Depth	Depth	Depth
25	373434	435991	NoData	NoData	NoData	0.05	0.15	0.54	1.47
Max value in selected area:			NoData	NoData	NoData	0.44	0.51	0.88	1.80

Data in this table comes from the Whalley 2017 model. Height values are shown in mAOD, and depth values are shown in metres.
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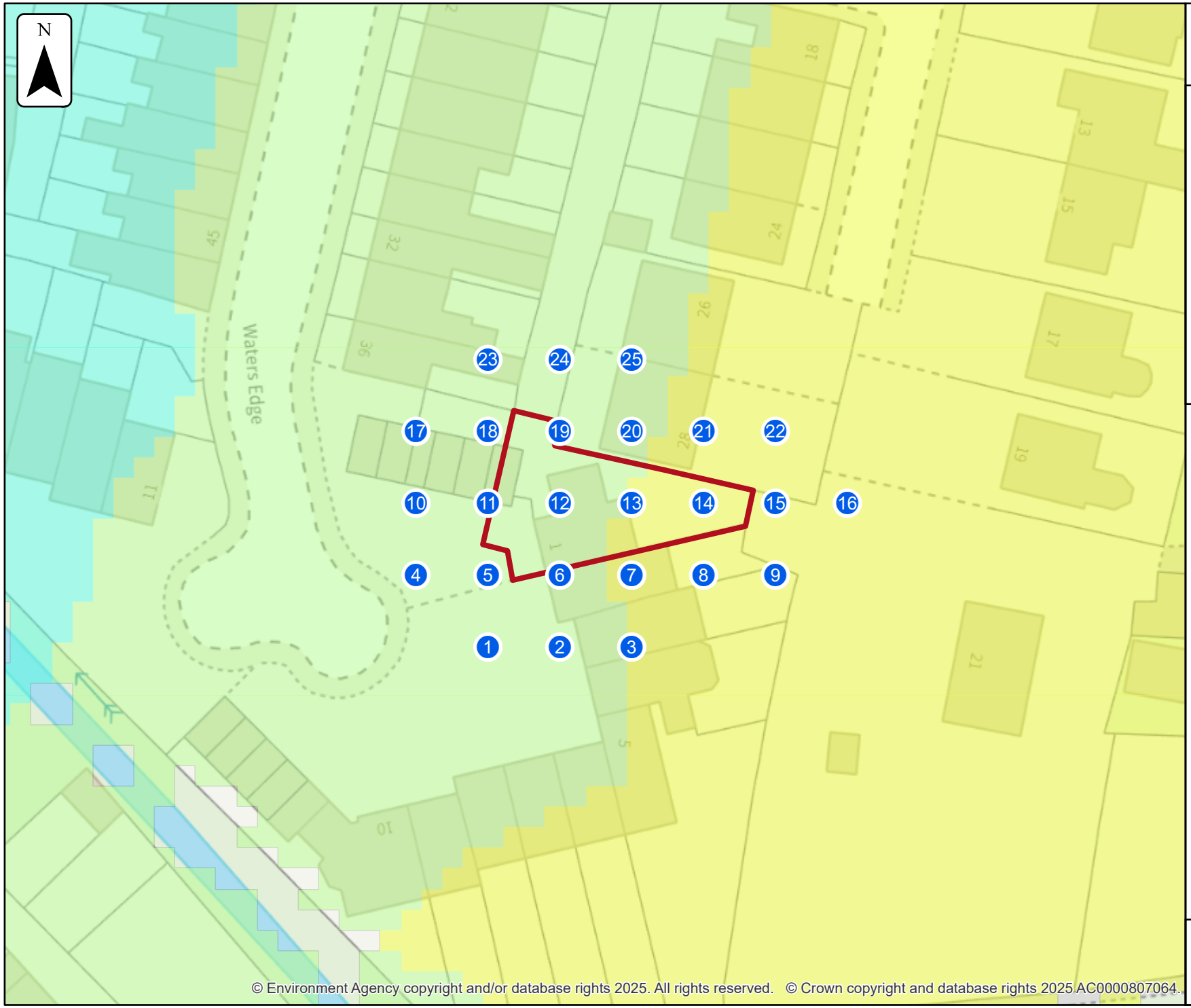
'Max value in selected area' is the deepest depth or highest height at any location within your drawn boundary.



Environment Agency

Defences removed climate change modelled fluvial extent and height

Location (easting/northing)
373431/435977

Scale
1:500

Created
5 Aug 2025

Model name
Whalley 2017

Selected area

Main river

Modelled 2D grid
Water level in mAOD

- 45 - 45.25
- 45.25 - 45.5
- 45.5 - 45.75
- 45.75 - 46.0
- 46.0 - 46.25
- 46.25 - 46.5
- 46.5 - 46.75
- 46.75 - 47.0
- 47.0 - 47.25

This map shows the
1% AEP +15% height data

0 5 10 15 20
metres

Sample point data

Defences removed climate change

Label	Easting	Northing	1% AEP (+15%)	1% AEP (+15%)
			Height	Depth
1	373420	435963	46.06	0.50
2	373427	435963	46.08	0.46
3	373434	435963	46.27	0.74
4	373413	435970	46.04	0.65
5	373420	435970	46.06	0.61
6	373427	435970	46.11	0.62
7	373434	435970	46.30	0.82
8	373441	435970	46.32	0.83
9	373448	435970	46.32	0.66
10	373413	435977	46.04	0.68
11	373420	435977	46.06	0.71
12	373427	435977	46.10	0.62

Label	Easting	Northing	1% AEP (+15%)	1% AEP (+15%)
			Height	Depth
13	373434	435977	46.28	0.79
14	373441	435977	46.31	0.75
15	373448	435977	46.32	0.64
16	373455	435977	46.32	0.65
17	373413	435984	46.03	0.70
18	373420	435984	46.06	0.60
19	373427	435984	46.13	0.55
20	373434	435984	46.21	0.50
21	373441	435984	46.30	0.58
22	373448	435984	46.31	0.59
23	373420	435991	46.12	0.49
24	373427	435991	46.16	0.59

Label	Easting	Northing	1% AEP (+15%)	1% AEP (+15%)
			Height	Depth
25	373434	435991	46.20	0.49
Max value in selected area:			46.32	0.83

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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

01686 668957 • info@krsenviro.com • www.krsenviro.com