



**TOPPING  
ENGINEERS**

CONSULTING CIVIL &  
STRUCTURAL ENGINEERS

## FLOOD RISK ASSESSMENT

**LOCATION:**

**The Cruck Barn  
Penistone**

**CLIENT: Donaldson's Vets**

**DOCUMENT REF:**  
21642-FRA-001

**REVISION/DATE:**  
Revision A

|                                                          |           |
|----------------------------------------------------------|-----------|
| <b>1.0 INTRODUCTION .....</b>                            | <b>3</b>  |
| 1.1 SOURCES OF DATA .....                                | 3         |
| 1.2 EXISTING SITE .....                                  | 3         |
| 1.3 PROPOSED DEVELOPMENT .....                           | 4         |
| 1.4 FLOOD RISK PLANNING POLICY .....                     | 4         |
| <b>2.0 POTENTIAL SOURCES OF FLOOD RISK.....</b>          | <b>6</b>  |
| 2.1 FLUVIAL FLOOD RISK .....                             | 6         |
| 2.2 GROUNDWATER FLOOD RISK .....                         | 7         |
| 2.3 FLOOD RISK FROM RESERVOIRS & LARGE WATERBODIES ..... | 7         |
| 2.4 FLOOD RISK FROM SEWERS.....                          | 7         |
| 2.5 PLUVIAL FLOOD RISK .....                             | 8         |
| 2.6 EFFECT OF DEVELOPMENT ON WIDER CATCHMENT .....       | 8         |
| 2.6.1 Development Drainage .....                         | 8         |
| <b>3.0 FLOOD RISK MITIGATION .....</b>                   | <b>9</b>  |
| 3.1 SITE ARRANGEMENTS .....                              | 9         |
| <b>4.0 CONCLUSIONS AND RECOMMENDATIONS .....</b>         | <b>10</b> |
| Appendix A – Topographical Survey .....                  | 11        |
| Appendix B – Proposed Site Layout .....                  | 11        |
| Appendix C – Environmental Agency Product 4 Data.....    | 11        |

| Revision | Description | Date       | Author    | Checked |
|----------|-------------|------------|-----------|---------|
| A        | First Issue | March 2022 | T Andrews | A Dyson |
|          |             |            |           |         |

## 1.0 INTRODUCTION

This Flood Risk Assessment (FRA) is compliant with the requirements set out in the National Planning Policy Framework (NPPF) and the associated Planning Practice Guidance. The FRA has been produced on behalf of Donaldson's Vet in respect of a planning application at The Cruck Barn, Penistone.

|                                   |                                |
|-----------------------------------|--------------------------------|
| <b>Site Name</b>                  | The Cruck Barn                 |
| <b>Location</b>                   | Bridge End, Penistone, S36 8AQ |
| <b>NGR (approx.)</b>              | 424554, 403870                 |
| <b>Application Site Area (ha)</b> | 0.130 ha                       |
| <b>Development Type</b>           | Veterinarian                   |
| <b>NPPF Vulnerability</b>         | More                           |
| <b>EA Flood Zone</b>              | Flood Zone 2 & 3               |
| <b>EA Office</b>                  | Yorkshire                      |
| <b>Local Planning Authority</b>   | Penistone Town Council         |

**Table 1.1** - Site Summary

## 1.1 SOURCES OF DATA

The report is based on the following information:

- i. Environment Agency information
- ii. Topographical Survey by MT Surveys
- iii. Proposed Site Layout by Donald Williamson Architects
- iv. Barnsley Strategic Flood Risk Assessment

## 1.2 EXISTING SITE

The site in question lies within the South Yorkshire settlement of Penistone. The development area in question is bounded to the south by the A628, to the east by Scout Dike and to the north and west by further rural buildings.

From the topographical survey it is clear that the site falls towards Scout Bike. The highest region of the site is on the western boundary with an approximate level 195.30 AOD. Contrastingly, the eastern boundary has an approximate level of 192.27 AOD.



**Figure 1.1 - Site Location**

## 1.3 PROPOSED DEVELOPMENT

The proposed development is set to consist of the refurbishment of Nether Hill Barn to form a new Veterinary Surgery, along with associated infrastructure.

## 1.4 FLOOD RISK PLANNING POLICY

### National Planning Policy Framework

The NPPF sets out the Government's national policies on different aspects of land use planning in England in relation to flood risk. Planning Practice Guidance is also available online.

The Planning Practice Guidance sets out the vulnerability to flooding of different land uses. It encourages development to be located in areas of lower flood risk where possible and stresses the importance of preventing increases in flood risk off site to the wider catchment area.

The Planning Practice Guidance also states that alternative sources of flooding, other than fluvial (river flooding), should also be considered when preparing a Flood Risk Assessment.

This Flood Risk Assessment is written in accordance with the NPPF and the Planning Practice Guidance.

As the development is a minor change of use it is therefore not subject to any sequential or exception testing.

## **Flood Zones**

The Flood Zone Map for Planning has been prepared by the Environment Agency. This identifies areas potentially at risk of flooding from fluvial or tidal sources. An extract from the mapping is included as Figure 1.2.

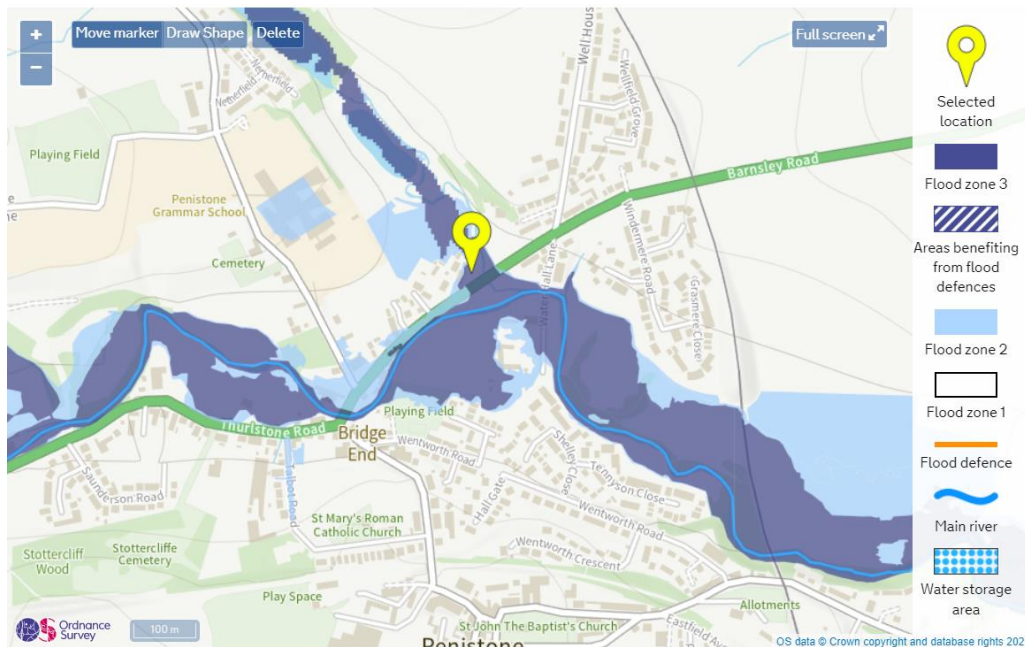


**Figure 1.2 - Environment Agency Flood Zone Mapping**

The site is shown to be located within Flood Zone 3 (High Probability) and Flood Zone 2 (Medium Probability). Therefore, the site is considered to be high risk of flooding. Flood Zone 3 is defined as land assessed as having an annual probability of flooding from fluvial and tidal sources greater than 1%. Flood Zone 2 is defined as land assessed as having an annual probability of flooding from fluvial and tidal sources between 0.1% and 1%.

Table 2 of the Planning Practice Guidance classifies land use. Under these classifications the proposed refurbishment is considered to be 'More Vulnerable' to the potential impacts of flooding.

## **Strategic Flood Risk Assessment**

The Barnsley Flood Risk Assessment (SFRA) was prepared to review flood risks on a much wider scale to assess the potential for new development within the study area. The SFRA was used as an evidence base for Local Development Frameworks for each Local Planning Authority.

The SFRA therefore aims to bring together all available flood risk information for a variety of sources to provide a robust assessment. The SFRA therefore is useful for this site-specific FRA by highlighting available data and instances of known flooding in the area. Although written under the guidance of Planning Policy Statement 25, the SFRA is still considered to include relevant information.

## 2.0 POTENTIAL SOURCES OF FLOOD RISK

The table below identifies the potential sources of flood risk to the site, and the impacts which the development could have in the wider catchment prior to mitigation. These are discussed in greater detail in the forthcoming section. The mitigation measures proposed to address flood risk issues and ensure the development is appropriate for its location are discussed within Section 3.0.

| Flood Source                             | Potential Risk |        |     |      | Description                                                                                    |
|------------------------------------------|----------------|--------|-----|------|------------------------------------------------------------------------------------------------|
|                                          | High           | Medium | Low | None |                                                                                                |
| Fluvial                                  | X              |        |     |      | The site is located in flood zone 3.                                                           |
| Tidal                                    |                |        |     | X    | Due to the location of the site, there are no potential impacts of tidal flooding.             |
| Canals                                   |                |        |     | X    | None present.                                                                                  |
| Groundwater                              |                |        | X   |      | Ground conditions are not conducive to fluctuating groundwater levels.                         |
| Reservoirs and waterbodies               |                | X      |     |      | The site is shown to fall inside of the catchment for reservoir and waterbodies flooding.      |
| Sewers                                   |                |        | X   |      | The site in question is higher than the surrounding sewers therefore there is a very low risk. |
| Pluvial runoff                           |                | X      |     |      | The site is shown to fall in the medium-risk area of pluvial flooding.                         |
| Effect of Development on Wider Catchment |                |        |     | X    | The impermeable area of the site is not being altered.                                         |

**Table 2.1** - Pre-Mitigation Sources of Flood Risk

### 2.1 FLUVIAL FLOOD RISK

As previously mentioned, the site is shown to be within Flood Zone 3 and therefore poses a high risk to the proposed development.

Mitigation measures to address the residual risk posed by the watercourses surrounding the site are discussed within **Section 3.0** of this report.

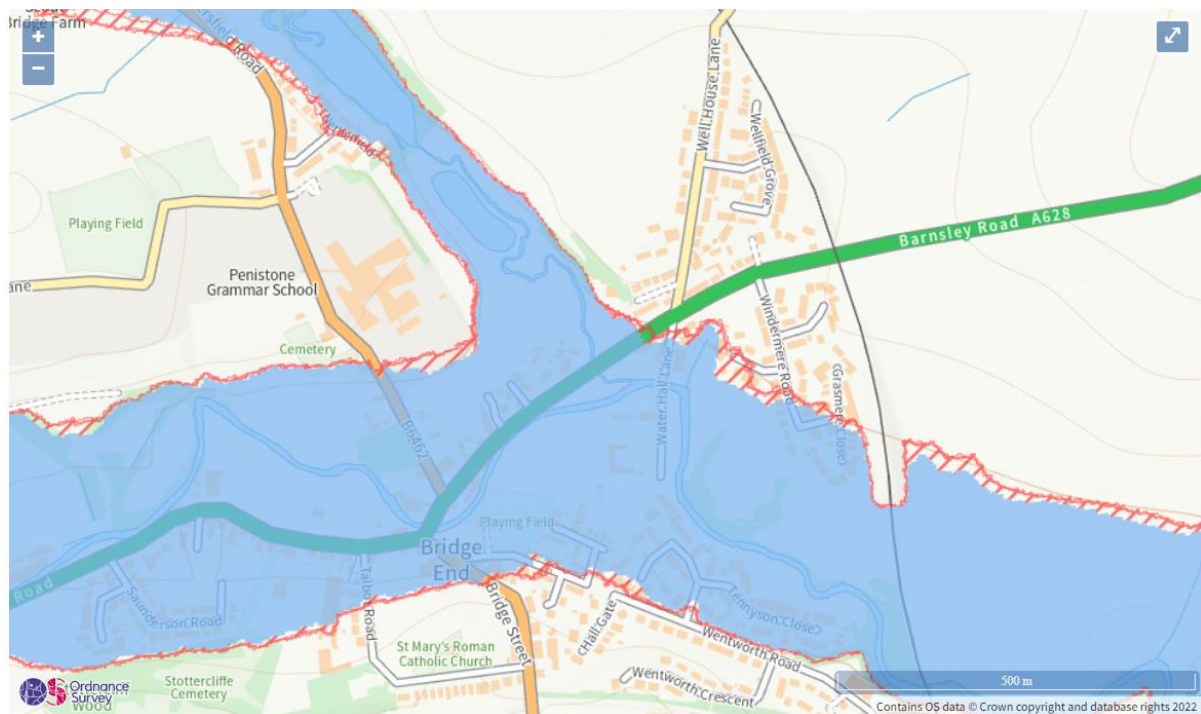
## 2.2 GROUNDWATER FLOOD RISK

Subject to completion of site investigation to confirm we would assume that natural ground water level is located well below the site surface and the nature of the strata means it is unlikely that there will be perched water above this level.

We therefore do not consider there is a risk of groundwater flooding affecting the development subject to final confirmation upon completion of suitable site investigation.

## 2.3 FLOOD RISK FROM RESERVOIRS & LARGE WATERBODIES

Reservoir failure flood risk mapping has been prepared by the Environment Agency, this shows the largest area that might be flooded if a reservoir were to fail and release the water it holds. The map displays a worst-case scenario and is only intended as a guide. An extract from the mapping is included as **Figure 2.1**.



Maximum extent of flooding from reservoirs:

● when river levels are normal    ▨ when there is also flooding from rivers

**Figure 2.1** - Environment Agency Reservoir Failure Flood Risk Map

Mapping demonstrates the site and possible access routes are within the proposed area of reservoir flooding.

As such, there is considered to be a risk of flooding from this source.

## 2.4 FLOOD RISK FROM SEWERS

The site in question is within an urban area. Therefore, it is likely that any existing sewers are at considerable depth.

As such, it is considered that there is no risk of flooding from sewers.

## 2.5 PLUVIAL FLOOD RISK

Risk of flooding from surface water mapping has been prepared by the Environment Agency, this shows the potential flooding which could occur when rainwater does not drain away through the normal drainage systems or soak into the ground but lies on or flows over the ground instead. An extract from the mapping is included as Figure 2.22



**Figure 2.2** - Risk of Flooding from Surface Water Mapping

The mapping produced by the Environment Agency shows that the entire site is at risk of surface flooding.

Therefore, it is concluded that the pluvial flooding will be addressed within the surface water drainage of this site.

## 2.6 EFFECT OF DEVELOPMENT ON WIDER CATCHMENT

### 2.6.1 Development Drainage

The current site is considered to be brownfield. The amount of impermeable area will not be altered.

## 3.0 FLOOD RISK MITIGATION

Section 2.0 has identified the sources of flooding which could potentially pose a risk to the site and the proposed development. This section of the FRA sets out the mitigation measures which are to be considered within the proposed development detail design to address and reduce the risk of flooding to within acceptable levels.

### 3.1 SITE ARRANGEMENTS

#### *Sequential Arrangement*

The Flood Zone mapping shows the site to be located within Flood Zone 3.

#### *Mitigation*

Given the site's location within Flood Zone 3 measures are required to mitigate the risk of flooding. As the proposals for the site is to convert an existing building the ability to raise floor levels has been removed.

However, from Appendix A it can be seen that there is a wall the follows route of Scout Dike. The top of the wall has a varying level from 194.260 AOD to 194.200 AOD. Given the 1in100 year flood level, from the product 4 data, is 193.750 AOD there will be some level of defence provided.

It is proposed that flood resilient building techniques will be implemented for this building, flood proofing to the ground floor up to 800mm. The new building will incorporate some of the following, details of which will be finalised by the Architect at detailed design stage:

- Electricity supply cables to enter building from roof level and wired downwards; electric sockets to be positioned at least 800mm above floor level.
- Anti-flood valves on internal building drainage.
- Watertight external door construction to minimum of 800mm above proposed floor level.
- Ceramic tiles or lime-based plaster should be used on the internal face of the external walls at ground floor level.
- Water resilient ground floor coverings should be considered, such as clay tiles.

In addition to the flood resilient techniques above a safe place of refuge should be provided for the building, the site is situated within an Environment Agency Flood Alert Area. It is recommended that the resident registers with this service. In the event of an extreme storm notification on the alert service the following Flood Management Plan should be put in place:

- Advise all occupiers on the site that a Flood Alert has been issued and they should prepare to vacate.
- Maintain contact with the Environment Agency and Local Authority.
- Monitor flood levels of the nearby watercourse, if water levels rise up top of the bank level, retreat to a safe place of refuge which will be outside of the Flood Zone 3.

#### 4.0 CONCLUSIONS AND RECOMMENDATIONS

This Flood Risk Assessment (FRA) is compliant with the requirements set out in the National Planning Policy Framework (NPPF) and the associated Planning Practice Guidance. The FRA has been produced on behalf of Donaldson's Vet.

This report demonstrates that the proposed development is a significant flood risk. Therefore, the proposed mitigation measures addressed in section 3.0 aim to remove the risk to the occupants of the building as best possible.

| Flood Source              | Proposed Mitigation Measure                                                                                                              |
|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| Fluvial                   | Site is shown to be in Flood Zone 3.                                                                                                     |
| Impact of the Development | Strategic surface water drainage strategy prepared for wider development will ensure a sustainable approach to surface water management. |

**Table 4.1** - Summary of Flood Risk Assessment

In compliance with the requirements of National Planning Policy Framework, and subject to the mitigation measures proposed, the development could proceed whilst being at risk of flooding as suitable mitigation has been provided. Moreover, the development will not increase flood risk to the wider catchment area as a result of suitable management of surface water runoff discharging from the site.

---

Appendix A – Topographical Survey

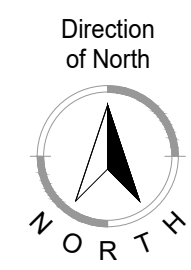
Appendix B – Proposed Site Layout

Appendix C – Environmental Agency Product 4 Data



## Notes

This drawing and the information contained therein is issued in confidence and is the copyright of MT Surveys Ltd. Disclosure of this information to Third Parties and unauthorised copying or replication of this data without approval is forbidden.



## GRID

OS NATIONAL GRID.  
Using the OS GPS Network and applying  
OSTN15 transformation and then removing the  
scale factor for true distances.

## DATUM

OS LEVEL DATUM.  
Using the OS GPS Network and applying  
OSGM15 National Geoid Model to obtain local  
area corrections.

## STATION LISTING

| Station | Easting    | Northing   | Level   |
|---------|------------|------------|---------|
| S1      | 424554.015 | 403870.412 | 193.904 |
| S2      | 424577.319 | 403894.025 | 193.156 |
| S3      | 424577.220 | 403919.952 | 193.446 |

TOPOGRAPHICAL SURVEY KEY

| DRAINAGE & WATER SERVICES |                    | STREET FURNITURE & GEOTECH |               |
|---------------------------|--------------------|----------------------------|---------------|
| DS                        | Drain/Gully        | MAIL                       | Post Box      |
| KO                        | Kerb Outlet        | BUS                        | Bus Stop      |
| CM                        | Circular Manhole   | BOL                        | Bollard       |
| MH                        | Manhole            | SIGN                       | Sign          |
| TM                        | Triangular Manhole | TL                         | Traffic Light |
| RE                        | Rodding Eye        | CCTV                       | Camera        |
| FW                        | Fire Hydrant       | LP                         | Lamp Post     |
| ST                        | Stop Tap           | LIGHT                      | Light         |
| SV                        | Stop Valve         | COL                        | Column        |
| TP                        | Tap                | V                          | Vent          |
| WO                        | Wash Out           | BM                         | Bench Mark    |
| WM                        | Water Meter        | M                          | Marker Post   |
| WV                        | Water Valve        | +                          | Tri Pit       |
| AV                        | Air Valve          | BH                         | Borehole      |

| SERVICES |                  | ABBREVIATIONS |                   |
|----------|------------------|---------------|-------------------|
| G        | Gas Valve        | CL            | Cover Level       |
| I        | Inspection Cover | IL            | Invert Level      |
| C        | Cable TV Cover   | NR            | Unable To Raise   |
| C        | Cable TV Supply  | THR           | Threshold Level   |
| E        | Electric Cover   | TOF           | Top Of Fence      |
| EP       | Electricity Pole | TOH           | Top Of Hedge      |
| ER       | Earth Rod        | TOW           | Top Of Wall       |
| T        | Telecoms Cover   | US            | Underside         |
| TP       | Telegraph Pole   | WC            | Window Cill Level |
| GR       | Gas Riser Pipe   | WH            | Window Head Level |
| RWP      | Rainwater Pipe   | DH            | Door Head Level   |
| SV       | Soil Vent Pipe   |               |                   |

(w) [www.mtsurveys.com](http://www.mtsurveys.com)  
(e) [admin@mtsurveys.com](mailto:admin@mtsurveys.com)  
(t) (0)1274 408352

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Parkview Court  
Shipley  
BD18 3DZ



CLIENT

Dawson Williamson Architects

SITE

Cruck Barn,  
Barnsley Road, Penistone.

DRAWING TITLE

### 3D Topographical Survey

|                          |    |       |                |
|--------------------------|----|-------|----------------|
| DRAWING REF (LAYOUT TAB) |    |       | SCALE@A1       |
| 1001-170_3D (A1)         |    |       | 1/125          |
| PROJECT REF              |    |       | REV            |
| 1001-170                 |    |       | Ø              |
| SURVEYED                 | WS | DRAWN | AT             |
| CHECKED                  | KW | DATE  | 23 / 08 / 2021 |

[illegible]

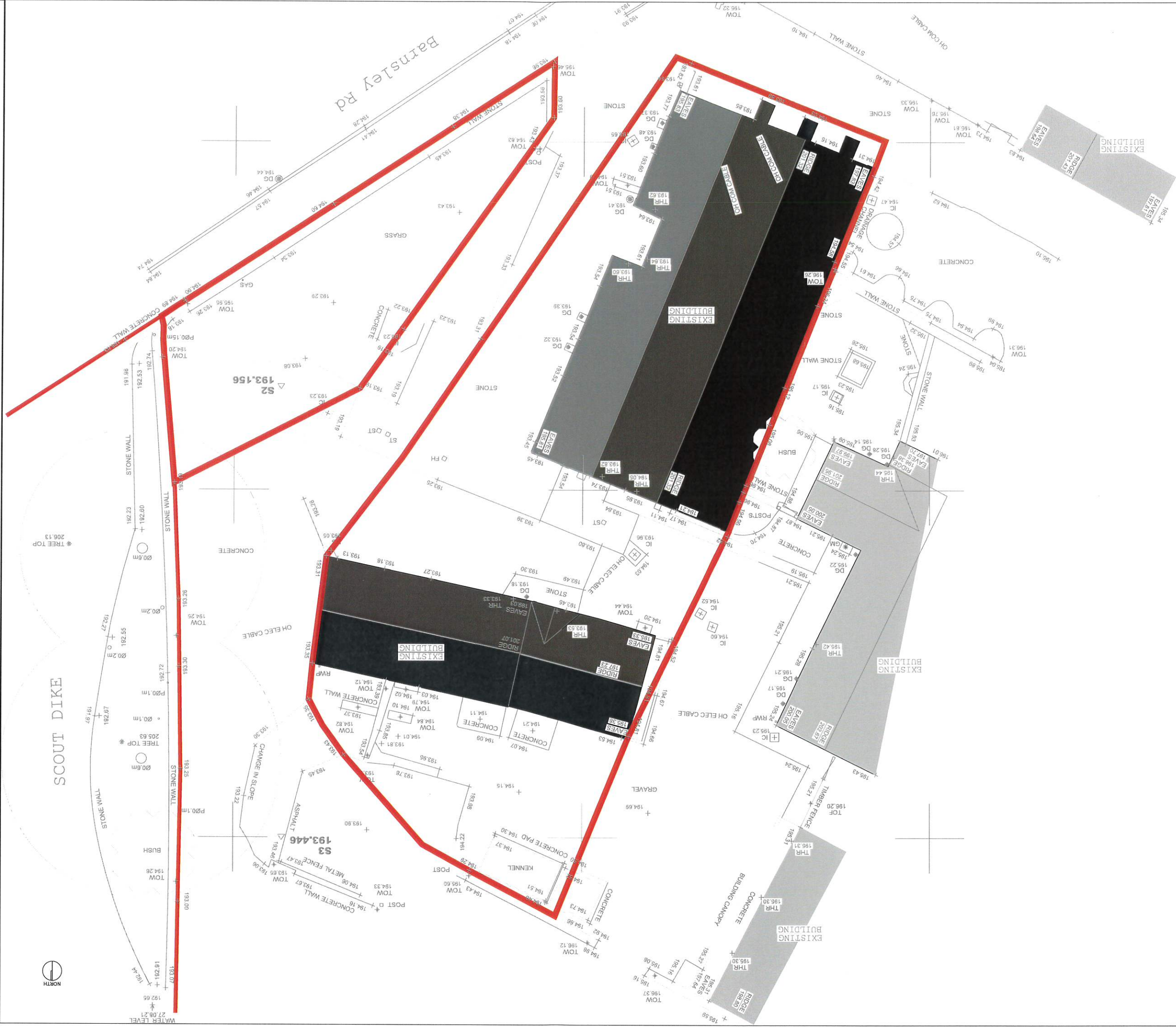
DO NOT SCALE FROM THIS DRAWING

Notes  
All dimensions to be checked on site  
Any discrepancies to be reported immediately to the Architect  
Drawing to be read in conjunction with all relevant design information, including Architects, Services, Civil and Structural Engineers drawings, from different sources, including information supplied by third parties  
NOT FOR CONSTRUCTION

Drawing Notes:

This drawing has been produced utilising survey data from information supplied by a Third Party:  
MT Surveys Ltd Drawing Ref: 1001-170-20-(A1)

Red line indicates the extent of land which is within the ownership of Dawsons Vets Ltd based on information supplied by the Client and its accuracy is not restricted



C1096 001 Rev 0

TITLE EXISTING DRAWING

SITE PLAN

SCALE 1:100 @ A1 / 1:200 @ A3

PRELIMINARY

PROJECT REFURBISHMENT OF NETHER HILL BARN TO FORM NEW VETERINARY SURGERY (GRADE II LISTED BUILDING)

CLIENT DONALDSONS VETS LTD

ARCHITECTS

DAWSON WILLIAMSON

Edinburgh

01274 551 300

info@dawsonwilliamson.co.uk

CIAT

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THE DETAILS SHOWN ON THIS DRAWING ARE CONSIDERED TO BE THE FINAL DESIGN AND NO FURTHER REVISIONS WILL BE MADE WITHOUT THE WRITTEN PERMISSION OF THE ARCHITECT. THE CLIENT ACCEPTS RESPONSIBILITY FOR THE ACCURACY OF THE INFORMATION PROVIDED AND THE ARCHITECT ACCEPTS RESPONSIBILITY FOR THE ACCURACY OF THE INFORMATION PROVIDED.

# Flood risk assessment data

**Location of site:** 424555 / 403893 (shown as easting and northing coordinates)

**Document created on:** 18 February 2022

**This information was previously known as a product 4.**

**Customer reference number:** 51W231FN49TV

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



## How to use this information

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

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

## Included in this document

In this document you'll find:

- how to find information about surface water and other sources of flooding
- information on the models used
- definitions for the terminology used throughout
- flood map for planning (rivers and the sea)
- historic flooding
- modelled data
- information about strategic flood risk assessments
- information about this data
- information about flood risk activity permits
- help and advice

## Information that's unavailable

This document **does not** contain:

- flood defences and attributes
- climate change modelled data

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

There is not any modelled climate change data for this location. This is because detailed modelling hasn't been carried out in this area. You will need to consider the [latest flood risk assessment climate change allowances](#) and factor in the new allowances to demonstrate the development will be safe from flooding.

## Surface water and other sources of flooding

Use the [long term flood risk service](#) to find out about the risk of flooding from:

- surface water
- ordinary watercourses
- reservoirs

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

## About the models used

Model name: 2012 Sheffield Comprehensive Flood Review

Scenario(s): Defended fluvial, defences removed fluvial

Date: 1 June 2012

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 occurring in any one year, is described as 1% AEP.

### Metres above ordnance datum (mAOD)

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

## **Flood map for planning (rivers and the sea)**

Your development is in flood zone 3.

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

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

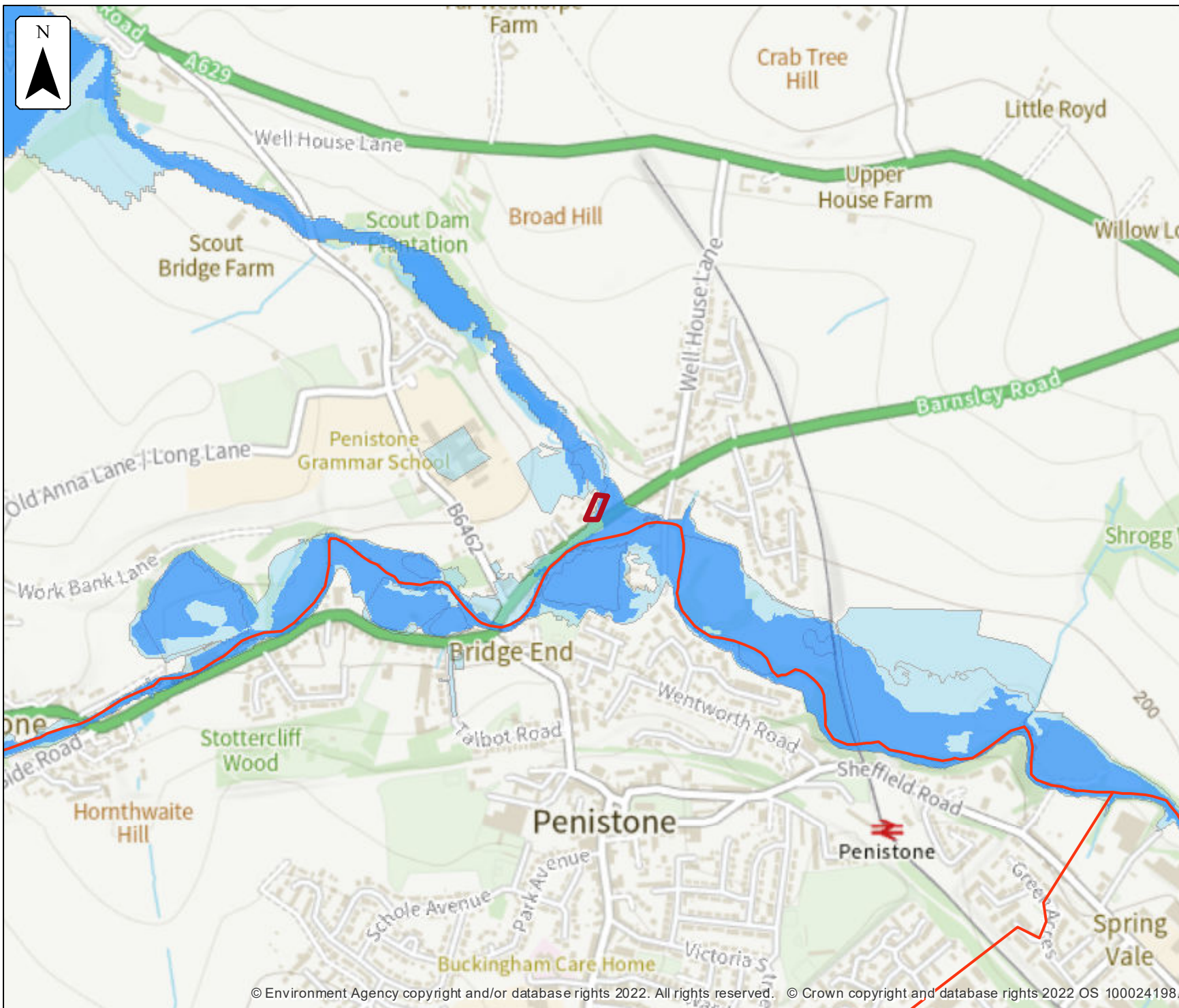
Flood zone 2 shows the area at risk of flooding for an undefended flood event with:

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

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

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

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



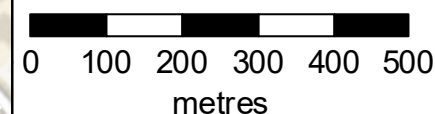
## Flood map for planning

Location (easting/northing)  
**424555/403893**

Scale  
**1:10,000**

Created  
**18 Feb 2022**

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



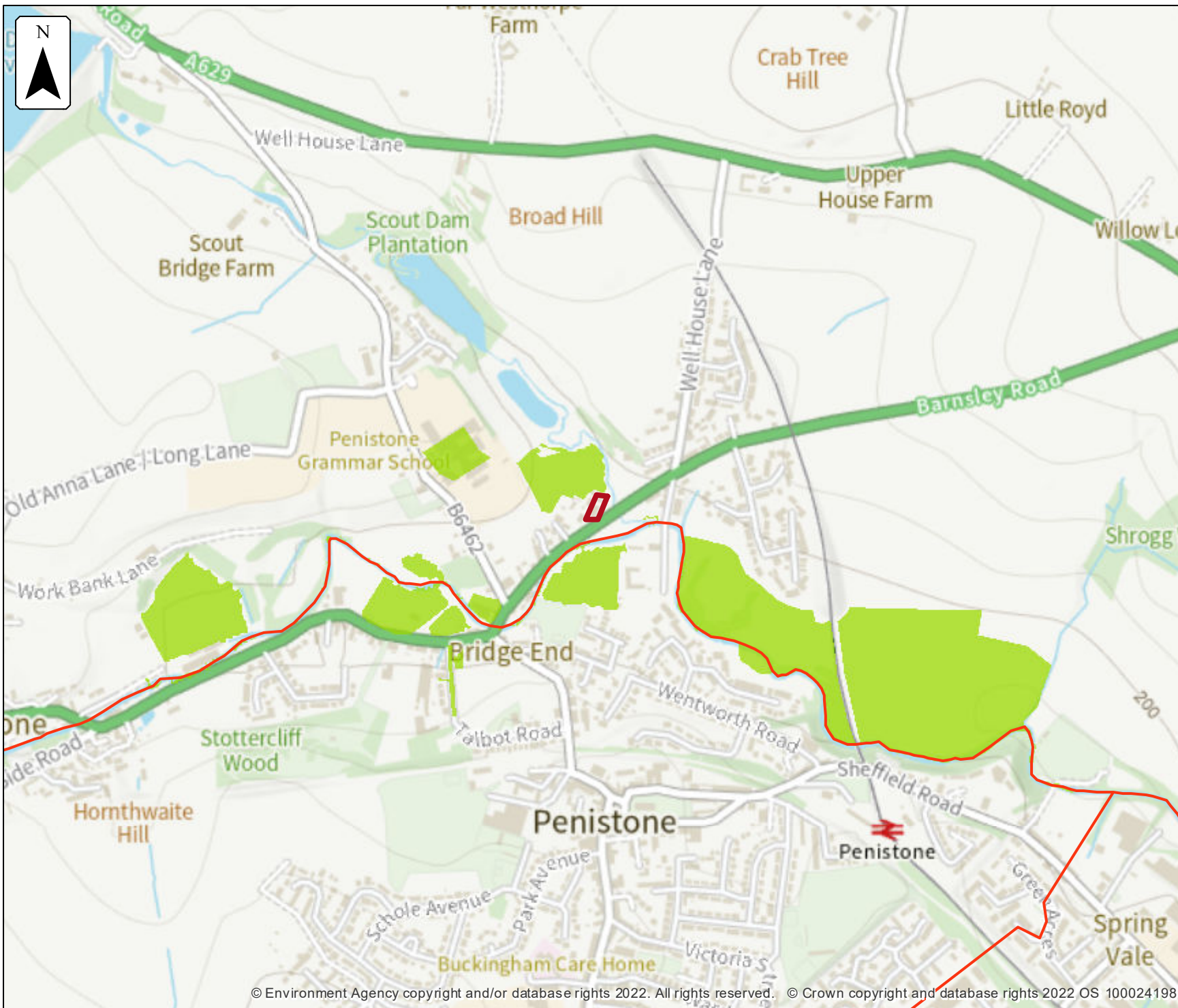
## Historic flooding

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

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

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

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



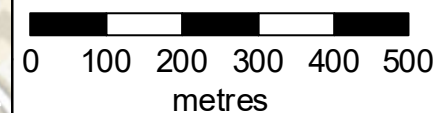
## Historic flood map

Location (easting/northing)  
**424555/403893**

Scale  
**1:10,000**

Created  
**18 Feb 2022**

-  Selected area
-  Main river
- Date of flood event
  -  June, 2007
  -  November, 2000



## Historic flood event data

| Start date      | End date        | Source of flood | Cause of flood                                 | Affects location |
|-----------------|-----------------|-----------------|------------------------------------------------|------------------|
| 15 June 2007    | 30 June 2007    | main river      | channel capacity exceeded (no raised defences) | No               |
| 7 November 2000 | 4 December 2000 | main river      | unknown                                        | No               |

## **Modelled data**

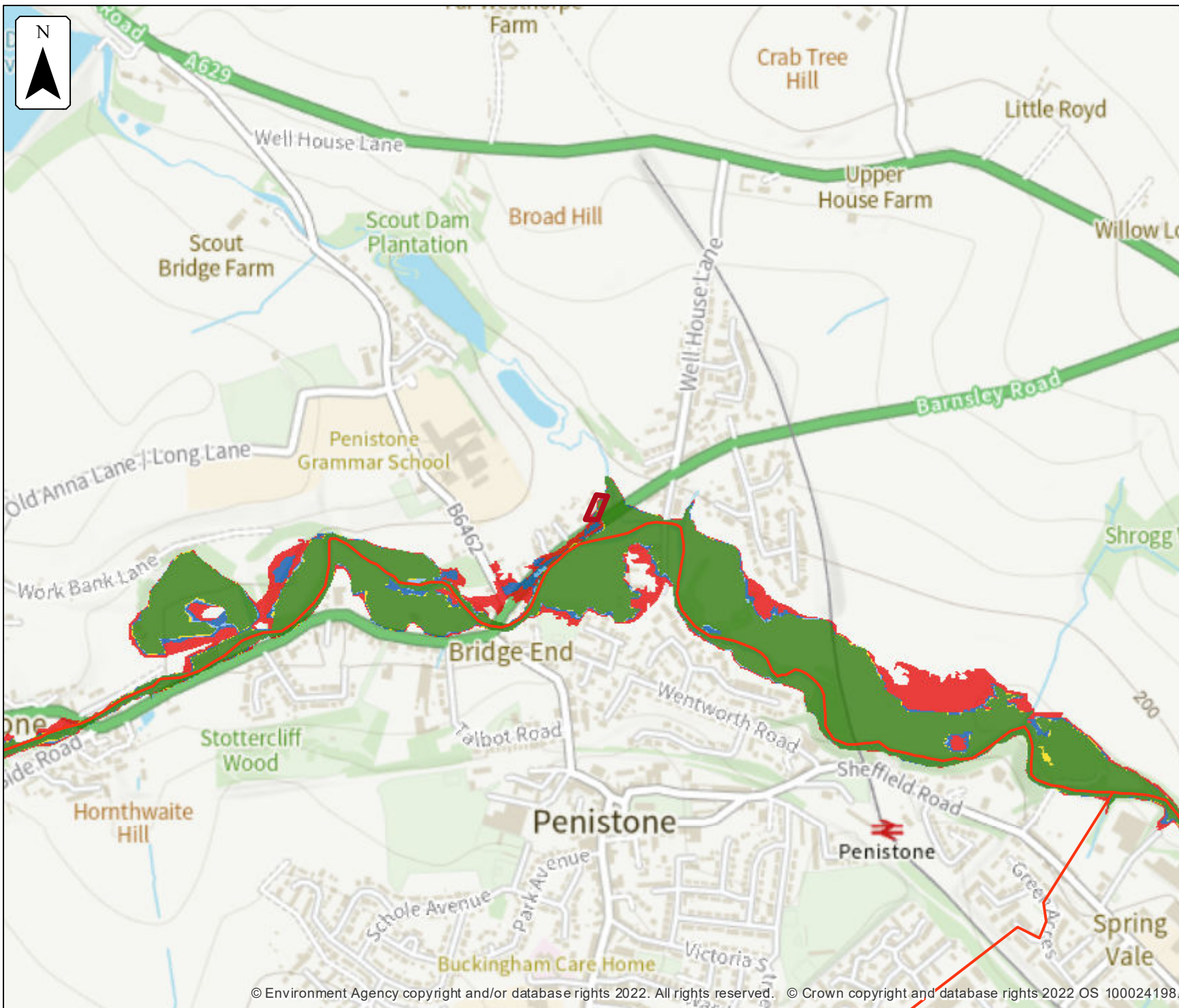
This section provides details of different scenarios we have modelled and includes the following (where available):

- 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

## **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 modelled fluvial extent

Location (easting/northing)  
**424555/403893**

Scale      Created  
**1:10,000      18 Feb 2022**

Model name  
**2012 Sheffield  
Comprehensive Flood**

 Selected area

 Main river

Modelled flood extent

 0.1% AEP

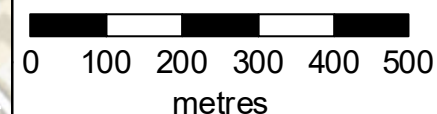
 0.5% AEP

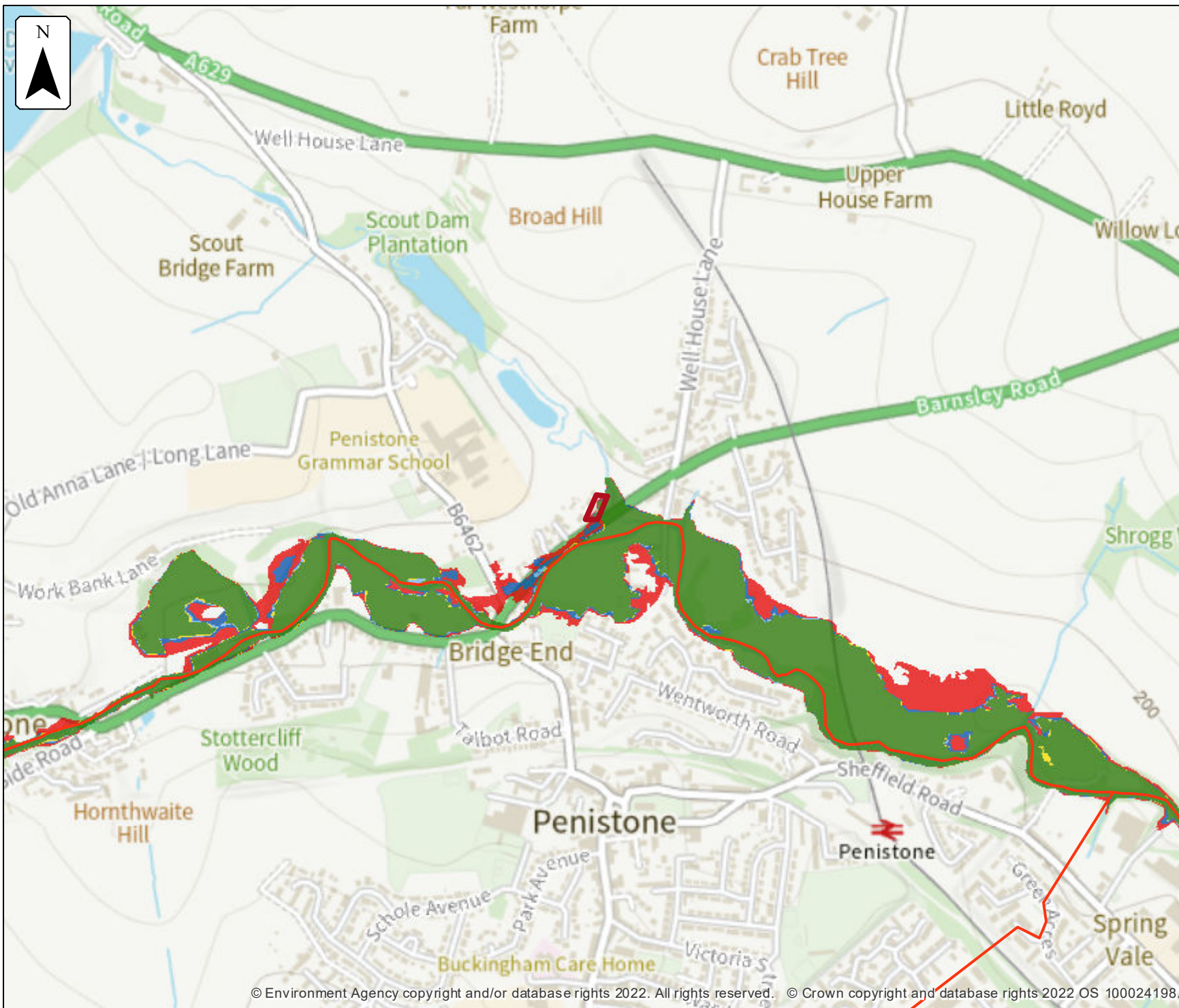
 1% AEP

 1.33% AEP

 2% AEP

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





## Defences removed modelled fluvial extent

Location (easting/northing)  
**424555/403893**

Scale Created  
**1:10,000 18 Feb 2022**

Model name  
**2012 Sheffield  
Comprehensive Flood**

 Selected area

 Main river

Modelled flood extent

 0.1% AEP

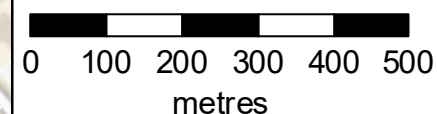
 0.5% AEP

 1% AEP

 1.33% AEP

 2% AEP

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





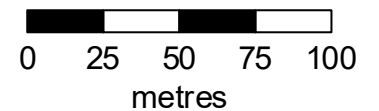
## Defended modelled fluvial node locations

Location (easting/northing)  
**424555/403893**

Scale      Created  
**1:2,500      18 Feb 2022**

Model name  
**2012 Sheffield  
Comprehensive Flood**

-  Selected area
-  Modelled location
-  Main river



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## Modelled node locations data

### Defended

| Label | Modelled location ID | Easting | Northing | 4% AEP |       | 2% AEP |       | 1.33% AEP |       | 1% AEP |       | 0.5% AEP |       | 0.1% AEP |       |
|-------|----------------------|---------|----------|--------|-------|--------|-------|-----------|-------|--------|-------|----------|-------|----------|-------|
|       |                      |         |          | Level  | Flow  | Level  | Flow  | Level     | Flow  | Level  | Flow  | Level    | Flow  | Level    | Flow  |
| 1     | 1021516              | 424353  | 403663   | 194.92 | 38.13 | 195.04 | 42.98 | 195.07    | 44.16 | 195.11 | 45.93 | 195.30   | 55.37 | 195.98   | 91.16 |
| 2     | 1021155              | 424367  | 403659   | 194.84 | 38.13 | 194.92 | 42.98 | 194.94    | 44.16 | 194.97 | 45.93 | 195.10   | 55.37 | 195.44   | 91.16 |
| 3     | 1021523              | 424380  | 403662   | 194.64 | 38.13 | 194.71 | 42.98 | 194.73    | 44.16 | 194.76 | 45.93 | 194.87   | 55.37 | 195.20   | 91.15 |
| 4     | 1020852              | 424386  | 403664   | 194.47 | 38.13 | 194.54 | 42.98 | 194.55    | 44.16 | 194.57 | 45.94 | 194.68   | 55.37 | 194.99   | 91.15 |
| 5     | 1021210              | 424392  | 403667   | 194.17 | 38.14 | 194.23 | 42.99 | 194.24    | 44.16 | 194.27 | 45.94 | 194.36   | 55.36 | 194.67   | 91.15 |
| 6     | 1021211              | 424503  | 403813   | 193.90 | 38.13 | 193.97 | 42.98 | 193.98    | 44.16 | 194.01 | 45.93 | 194.12   | 55.35 | 194.46   | 91.15 |
| 7     | 1021322              | 424557  | 403829   | 193.62 | 38.13 | 193.71 | 43.11 | 193.72    | 44.15 | 193.75 | 45.93 | 193.89   | 55.35 | 194.25   | 91.14 |
| 8     | 1021649              | 424712  | 403734   | 192.59 | 40.89 | 192.67 | 47.22 | 192.68    | 47.50 | 192.70 | 49.62 | 192.82   | 59.82 | 193.14   | 97.18 |
| 9     | 1021017              | 424687  | 403866   | 193.49 | 38.12 | 193.58 | 42.96 | 193.59    | 44.14 | 193.62 | 45.92 | 193.76   | 55.34 | 194.12   | 91.13 |

Data in this table comes from the 2012 Sheffield Comprehensive Flood Review model.  
 Level values are shown in mAOD, and flow values are shown in cubic metres per second.  
 Any blank cells show where a particular scenario has not been modelled for this location.



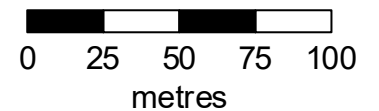
## Defences removed modelled fluvial node locations

Location (easting/northing)  
**424555/403893**

Scale      Created  
**1:2,500      18 Feb 2022**

Model name  
**2012 Sheffield  
Comprehensive Flood**

-  Selected area
-  Modelled location
-  Main river



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## Modelled node locations data

### Defences removed

| Label | Modelled location ID | Easting | Northing | 4% AEP |       | 2% AEP |       | 1.33% AEP |       | 1% AEP |       | 0.5% AEP |       | 0.1% AEP |       |
|-------|----------------------|---------|----------|--------|-------|--------|-------|-----------|-------|--------|-------|----------|-------|----------|-------|
|       |                      |         |          | Level  | Flow  | Level  | Flow  | Level     | Flow  | Level  | Flow  | Level    | Flow  | Level    | Flow  |
| 1     | 1021516              | 424353  | 403663   | 194.92 | 38.13 | 195.04 | 42.98 | 195.07    | 44.17 | 195.11 | 45.93 | 195.30   | 55.36 | 195.98   | 91.14 |
| 2     | 1021155              | 424367  | 403659   | 194.84 | 38.13 | 194.92 | 42.98 | 194.94    | 44.17 | 194.97 | 45.93 | 195.10   | 55.36 | 195.45   | 91.14 |
| 3     | 1021523              | 424380  | 403662   | 194.64 | 38.13 | 194.71 | 42.98 | 194.73    | 44.17 | 194.75 | 45.93 | 194.87   | 55.37 | 195.21   | 91.13 |
| 4     | 1020852              | 424386  | 403664   | 194.47 | 38.13 | 194.54 | 42.98 | 194.55    | 44.18 | 194.57 | 45.94 | 194.68   | 55.36 | 195.0    | 91.14 |
| 5     | 1021210              | 424392  | 403667   | 194.17 | 38.14 | 194.23 | 42.99 | 194.24    | 44.17 | 194.27 | 45.93 | 194.36   | 55.37 | 194.67   | 91.15 |
| 6     | 1021211              | 424503  | 403813   | 193.90 | 38.13 | 193.97 | 42.98 | 193.98    | 44.17 | 194.01 | 45.93 | 194.12   | 55.36 | 194.46   | 91.14 |
| 7     | 1021322              | 424557  | 403829   | 193.62 | 38.13 | 193.71 | 43.11 | 193.72    | 44.17 | 193.75 | 45.93 | 193.89   | 55.37 | 194.25   | 91.13 |
| 8     | 1021649              | 424712  | 403734   | 192.59 | 40.89 | 192.67 | 47.22 | 192.68    | 47.52 | 192.70 | 49.61 | 192.82   | 59.83 | 193.14   | 97.18 |
| 9     | 1021017              | 424687  | 403866   | 193.49 | 38.12 | 193.58 | 42.96 | 193.59    | 44.16 | 193.62 | 45.92 | 193.76   | 55.35 | 194.12   | 91.12 |

Data in this table comes from the 2012 Sheffield Comprehensive Flood Review 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.

## Strategic flood risk assessments

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

This should give you information about:

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

## About this data

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

## Flood risk activity permits

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

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

## Help and advice

Contact the Yorkshire Environment Agency team at [neyorkshire@environment-agency.gov.uk](mailto:neyorkshire@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

## **Assets**

We have no record of formal flood defences (other than high ground) helping to reduce flood risk in your area of interest.

**Please note that information about high ground, structures (such as weirs, control gates or screens) and channels (culverts) is no longer given out in Product 4, unless specifically requested. If you'd like to see this data, please let us know.**

## **Modelling**

### **2012 Sheffield Comprehensive Flood Review Model**

Please see enclosed:

- Table of results for peak water levels for the 0.1% (1 in 1000), 0.5% (1 in 200) 1% (1 in 100), 1.3% (1 in 75), 2% (1 in 50) and 4% (1 in 25) Annual Exceedance Probabilities (AEP)
- and a map showing the location of the model node points
- modelled flood outlines

Please note that the climate change scenario for this model is not available. *If this information will be used to produce a flood risk assessment you will be expected to generate climate change levels for setting finished floor levels etc.*

Please note that the defended levels have not been verified and may change following an update.

If modelled flood outlines in GIS format from the model are required these can be provided as product 6.

### **2004 National Generalised Modelling**

No detailed modelling has been undertaken for Scout Dike.

The Flood Zones along Scout Dike (outside of 2012 Sheffield CFR model outlines) are based on the 2004 **National Generalised Modelling** undertaken on a large regional scale. Neither water depths nor water levels outputs were specified when we commissioned this generalised modelling for Flood Zones. Whilst the modelling may provide some information on depth of water in some locations, these are not typically issued in our products as are not deemed suitable for use in Flood Risk Assessments or Strategic Flood Risk Assessments, as we have no information on the accuracy of this data. The JFLOW modelling method was developed, tested and reviewed for production of the Flood Zone extents only.

If you require advice on supporting your Flood Risk Assessment where no detailed modelling is available this may be requested via pre-application advice (see below guidance).

## **Climate Change**

Updated guidance on how climate change could affect flood risk to new development - '[Flood risk assessments: climate change allowances](#)' is published on gov.uk. You should confirm the flood risk vulnerability classification and lifetime of your proposed development in line with NPPF and apply the appropriate climate change allowances.

### **Bespoke Flood Risk Assessment (FRA) advice:**

If the pre-application advice is required with regards the preparation of a site-specific Flood Risk Assessment, this can be requested via the Yorkshire Sustainable Places team (email: [sp-yorkshire@environment-agency.gov.uk](mailto:sp-yorkshire@environment-agency.gov.uk)). Charges may apply for any advice that is provided, this currently stands at £100 per hour per person. The [.gov.uk](#) pages provide a good starting point on what to include within a site-specific Flood Risk Assessment and can be accessed via <https://www.gov.uk/guidance/flood-risk-assessment-for-planning-applications>. A site-specific Flood Risk Assessment will need to consider flood risks from all sources, including those associated with defence failure (e.g. breach) and accounting for the predicted impacts as a result of climate

change. Please contact the Sustainable Places team if you require advice on how to include these within a Flood Risk Assessment.

### **Non Main River**

The watercourse at this location (Scout Dike) is not designated as Main River. It is classed as an Ordinary Watercourse. The local authority is the flood risk management authority for this river. The Environment Agency does not have any more information available in regard to past flooding issues or current flood risk. For any information on any past flooding and for any record of the impact of local drainage on that watercourse we suggest you speak to Barnsley District Council's Drainage Section and to Yorkshire Water.

### **Surface Water Map**

Lead Local Flood Authorities (LLFA) are responsible for managing local flood risk from surface water flooding and groundwater flooding. You should check with the LLFA as they may have more up to date information regarding this type of flooding.

The Risk of Flooding from Surface Water Flood Map (including extents, depths and velocities) can be viewed and downloaded as a PDF file on GOV.UK by following this link: <https://flood-warning-information.service.gov.uk/long-term-flood-risk>

Risk of Flooding from Surface dataset is also available in GIS format from Defra Data Services Platform <https://environment.data.gov.uk/>

### **Surface Water Drainage**

The Lead Local Flood Authority is the statutory consultee for planning matters relating to surface water drainage, therefore it is recommended they should be consulted separately regarding this.

Surface water discharge from new development should ideally 'mimic' the pre-development situation using a sustainable drainage system so that the flow and volume of water in watercourses is not increased.

A permit may be required, under the Environmental Permitting Regulations 2016 from the Environment Agency for any proposed works or structures in, under, over or within eight metres of a 'main river' (e.g. a new outfall). A permit is separate to and in addition to any planning permission granted. Further details and guidance are available on the GOV.UK website: <https://www.gov.uk/guidance/flood-risk-activities-environmental-permits>

### **Risk of Flooding from Reservoirs Map**

Outlines and simplified depth and velocity maps can be viewed on our website: <https://flood-warning-information.service.gov.uk/long-term-flood-risk/#x=438988&y=406600&scale=2>

Please, zoom into the location of interest, and then click on the inundated location for details. As a result a list of reservoirs will be provided with supporting information and a links to other data, such as estimated depths and speed of flooding, at the bottom of the result page.

A map of showing the outlines can also be provided on request.

### **Flood Warning**

The site is covered by a Flood Warning. To register to receive this service, you can call Floodline 24 hours a day on 0845 988 1188.

### **LIDAR Data**

Please note that our LiDAR data is now available free of charge (Open Data) from

<https://environment.data.gov.uk/DefraDataDownload/?Mode=survey> (once zoomed to the relevant location the available LiDAR products as listed below will be available to choose from in the Layer List icon – top right).

Two LIDAR products are available:

1. Tiled LIDAR data - The full tiled dataset consists of historic LIDAR data which has been gathered since 1998. For some areas we have carried out repeat surveys and data is available in a range of resolutions.
2. Composite LIDAR data - The composite dataset is derived from a combination of our full tiled dataset which has been merged and re-sampled to give the best possible spatial coverage.

Light Detection and Ranging (LIDAR) is an airborne mapping technique, which uses a laser to measure the distance between the aircraft and the ground. This technique results in the production of an accurate, cost-effective terrain model suitable for assessing flood risk and other environmental applications.

The Environment Agency owns two LIDAR systems, which are installed in a survey aircraft along with its other operational remote sensing instruments.

The aircraft is positioned and navigated using Global Positioning System (GPS) corrected to known ground reference points. The aircraft typically flies at a height of about 800 metres above ground level and a scanning mirror allows a swath width of about 600 metres to be surveyed during a flight.

### **The Rights & Responsibilities of a Riverside Owner**

The owner of property adjacent to a watercourse is usually deemed to be the riparian owner and, as such, has both riparian rights and responsibilities with regard to the watercourse within their ownership.

For more information on Rights and Responsibilities of a riverside owner, you can visit our website at:

<https://www.gov.uk/guidance/owning-a-watercourse>

### **Ordnance Survey Data**

Under the terms of our licence agreement with the Ordnance Survey, we are unable to supply the OS data. Under this agreement we can only supply OS data to consultants/contractors carrying out work on our behalf.