Report Title	# Flood Risk Assessment
Property Address	The Mill, The Flaxworks, Cleator, CA23 3DU
Client	Genr8 North
Our Reference	25-176r001B
Date	May 2025
Prepared by	Colin Aimers BEng Hons CEng MICE CEnv Kingmoor Consulting

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CONTENTS

INTRODUCTION

BACKGROUND

This Flood Risk Assessment (FRA) has been prepared by Kingmoor Consulting Ltd to support a planning application to be submitted on behalf of Genr8 North ('the Applicant') in respect to the development of the former mill complex at The Mill, The Flaxworks, Cleator, CA23 3DU ['the Site'].

The proposed development is works associated with the mill complex to become an office (B2 Planning Class).

SITE DESCRIPTION

The proposed development site is located on the banks of River Ehen which flows southward on the eastern edge of the site.

The site is the former flax, the Kangol Factory and car parking areas.

EXISTING FLOOD DEFENCES

The site is not protected by flood defenses however defenses are present upstream of the site which would in part protect the property from overground flows.

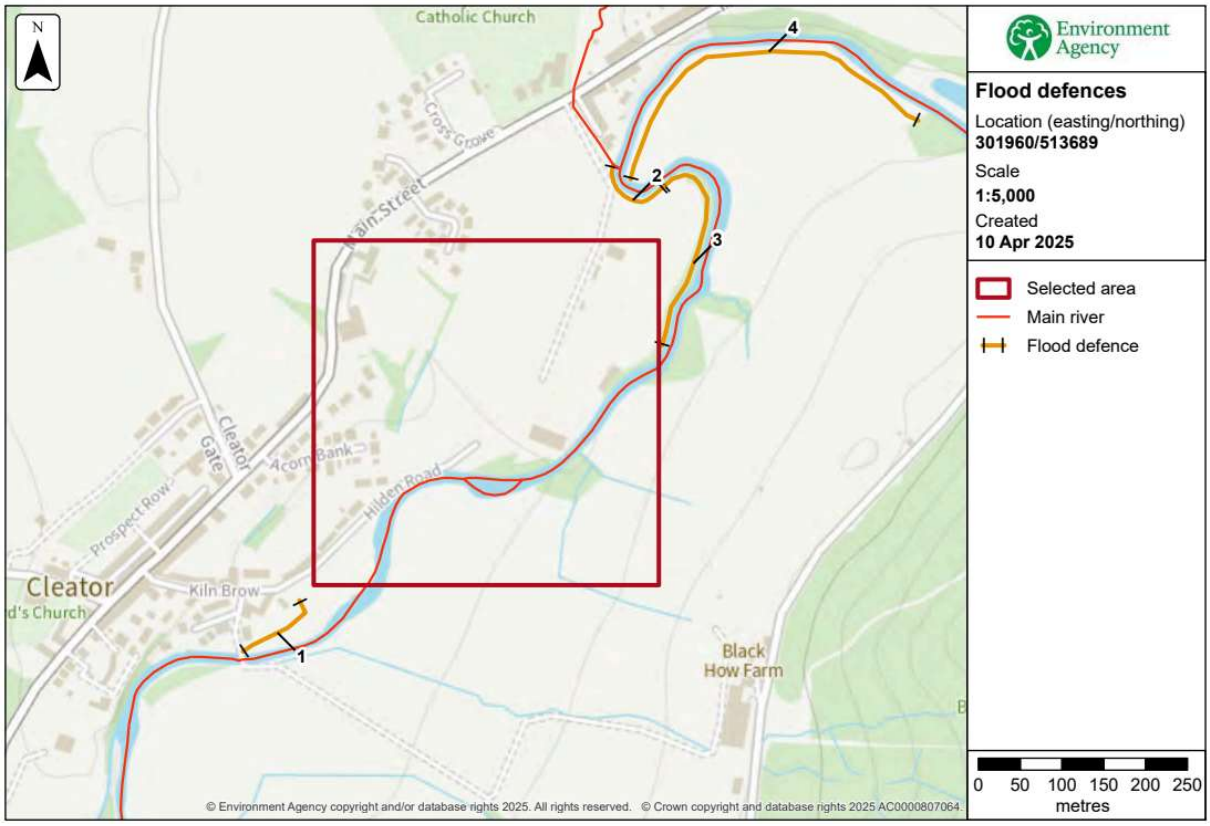


Figure 1 - Map indicating the flood defences

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	37886	Embankment	100	Fair	57.15	57.15	57.15
2	37628	Embankment	100	Fair	64.52	64.52	64.52
3	37627	Embankment	100	Fair	62.49	63.40	62.49
4	80487	Embankment	5	Poor	63.84	65.35	63.84

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

Figure 2 - Table indicating the flood defences

PROPOSED DEVELOPMENT

The proposed development is for the refurbishment of the existing mill and minor works to the property to accommodate its use as an office.

PLANNING CONTEXT

POLICIES AND GUIDELINES

This Flood Risk Assessment (FRA) has been prepared in accordance with the policies and guidance applicable to the proposed leisure facilities outlined within the following publications:

- National Planning Policy Framework (NPPF) (December 2024).
- NPPF Planning Practice Guidance - Flood Risk and Coastal Change (March 2014).

NATIONAL POLICY

National Planning Policy Framework

The National Planning Policy Framework (NPPF) aims to prevent inappropriate development in areas at highest risk of flooding. The Planning Practice Guidance to the NPPF contains a series of tables that help identify the risk of flooding to a development.

The Flood Zones defined in the NPPF are as follows:

Flood Zone	Annual Exceedance Probability of Flooding from Rivers or the Sea	Probability
1	< 1 in 1000 annual probability of river or sea flooding in any given year (< 0.1% Annual Exceedance Probability (AEP).	Low
2	Between 1 in 100 and 1 in 1000 annual probability of river flooding in any year (1% - 0.1% AEP), or Between 1 in 200 and 1 in 1000 annual probability of sea flooding in any year (0.5% - 0.1% AEP).	Medium
3a	> 1 in 100 annual probability of river flooding in any year (> 1% AEP), or > 1 in 200 annual probability of sea flooding in any year (> 0.5% AEP).	High
3b	> 1 in 20 annual probability of flooding in any year (5% AEP).	Functional Floodplain

Table 1 - Flood Zones

The site is within a Flood Zone 3a and In accordance with the NPPF, residential development is considered as '*More Vulnerable*'.

CONSULTATION

Environment Agency

A Environment Agency (EA) has provided Kingmoor Consulting with information which was used to inform the assessment of flood risk to the proposed development. A summary of the data received is summarised in Table 3.

Item	Information received
Pre Application Product 4 Information	• Flood Zone maps, confirming that the site lies in Flood Zone 3; • Historic flood maps; • Undefended and defended modelled fluvial flood levels and flood depths (without climate change); and • Existing flood defence information.

Table 3 Summary of Information received from the EA

A copy of the information provided by the EA supplied information is appended to this report.

In summary, the EA confirmed the following:

- The site is not protected by flood defences.
- The development could be classified as *'less vulnerable'*
- Climate change must be considered within the FRA in accordance with the 2016 guidance. The EA advised that the Higher Central allowance of 45% should be applied based on the South West Lakes Management Catchment with a lifespan of 100 years;

United Utilities Water plc (UUW)

UUW were consulted and confirmed that they hold no record of historical sewer flooding in the vicinity of the site.

It was also confirmed that there are no known drainage network capacity issues in the area.

APPRAISAL AND MANAGEMENT OF FLOOD RISK

FLUVIAL AND TIDAL FLOODING

Fluvial flooding occurs when sustained or intense rainfall events increase the flow in rivers causing water levels to rise above the level of the banks and into surrounding areas. The primary course of flood risk to the site is fluvial flooding from the River Ehen due to rising waters.

The high volumes of runoff from the catchment and the narrow nature of the water channel however the engineered nature of the water channel results in flows passing adjacent to the site with limited risk of site flooding from the fluvial channel.

Tidal flooding is not considered appropriate for this site.

FLOOD ZONE ASSESSMENT

The Flood Zone map, provided by the Environment Agency in April 2025, shows that the site is located within the Flood Zone 3 and is considered at high risk of flooding. The site is shown as an area benefiting from defences. Fluvial Flood Zones are categorised according to flood risk as shown below in Table 4 :

Flood Zone	Definition
Zone 1: Low Probability	Land having a less than 1 in 1000 (0.1% AEP) annual probability of river or sea flooding. (Shown as 'clear' on the Flood Map - all land outside Zones 2 and 3)
Zone 2: Medium Probability	Land having between 1 in 100 (1% AEP) and 1 in 1000 annual probability of river flooding; or land having between 1 in 200 and 1 in 1000 annual probability of sea flooding. (Land shown in light blue on the Flood Map)
Zone 3a: High Probability	Land having 1 in 100 or greater annual probability of river flooding; or land having 1 in 200 (0.5% AEP) or greater annual probability of sea flooding. (Land shown in dark blue on the Flood Map)
Zone 3b: The Functional Flood Plain	This comprises land where water has to flow or to be stored in times of flood. Local planning authorities should identify in their Strategic Flood Risk Assessment areas of functional floodplain and its boundaries accordingly, in agreement with the Environment Agency. (Not separately distinguished from Zone 3a on the Flood Map)

Table 4 Flood Zone Descriptions

Historical Fluvial Flooding

The site has experienced fluvial flooding and has flooded on several occasions and the EA indicates the following flood events which affected nearby areas include;

- November 2009
- October 2017

The following figure was provided by the Environment Agency associated with the historic flooding.

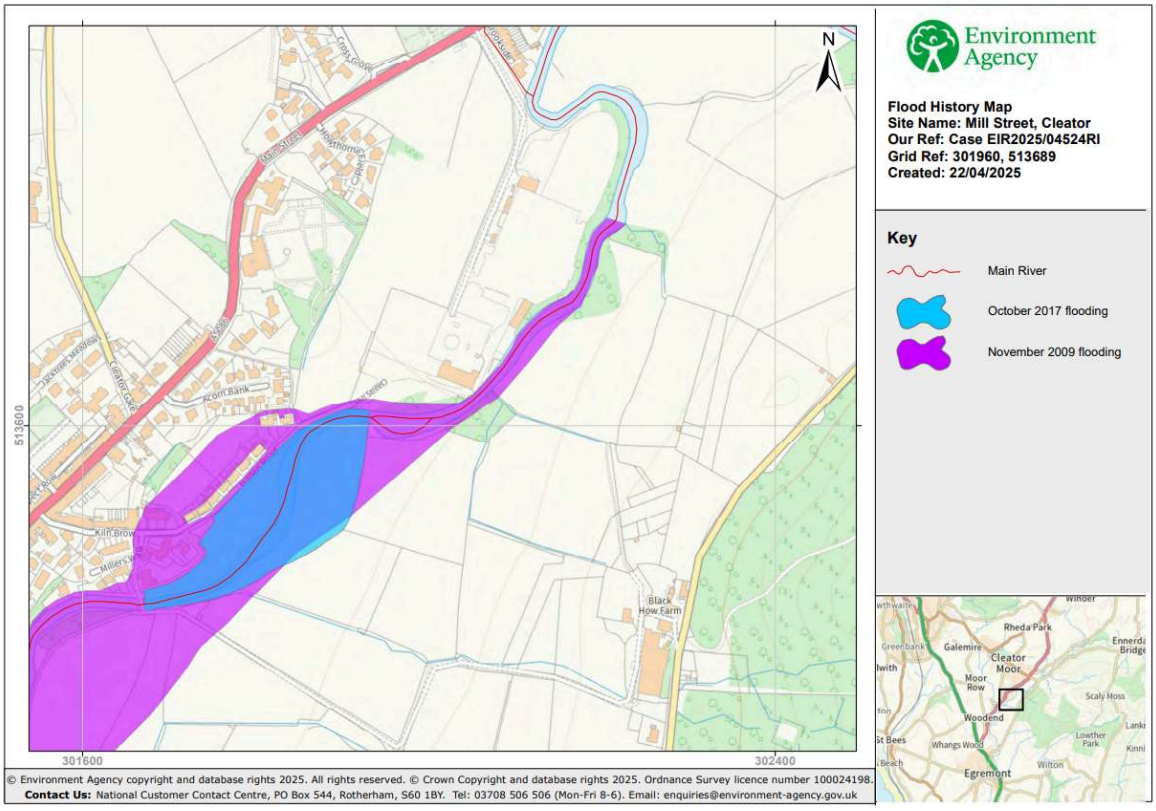


Figure 2 - Flood History

Climate Change Allowances

Allowances for the predicted effects of climate change must be taken into account when preparing site-specific flood risk assessments. This guidance published by the EA to support the NPPF contains sensitivity ranges that are recommended to be applied to peak rainfall intensities, peak river flows,

offshore wind speeds and wave heights. The general trend is for each parameter to increase in the future, which in turn will increase the risk of flooding to any site.

The climate change allowances for peak river flow are provided in Table 5 showing anticipated changes to peak flows according to river basin districts. In order to determine the appropriate climate change allowance, the allowance category is identified based on percentiles which describe the proportion of potential scenarios that fall below and allowance level. In this instance, the EA have recommended that the HIgher Central allowance (based on the 70th percentile) is applied.

River Basin District	Allowance Category	2050's	2070's
Ehen [Upper incl Liza]	Upper End	45%	50%
	Central	30%	45%

Table 5 Peak River flow climate change allowances 1% AEP

In consultation with the Environment Agency, it is confirmed that the 47% climate change allowance should be applied to the development. This is on the basis that the proposed development has a design life of 100 years and a '*Less Vulnerable*' use. The Design Flood Event for the development is therefore the defended 1% AEP including 50% climate change allowance event.

Flood Levels

The EA has provided hydraulic modelling for the defended and undefended flood events.

The figures appended below provide an extract of this information used within this assessment.

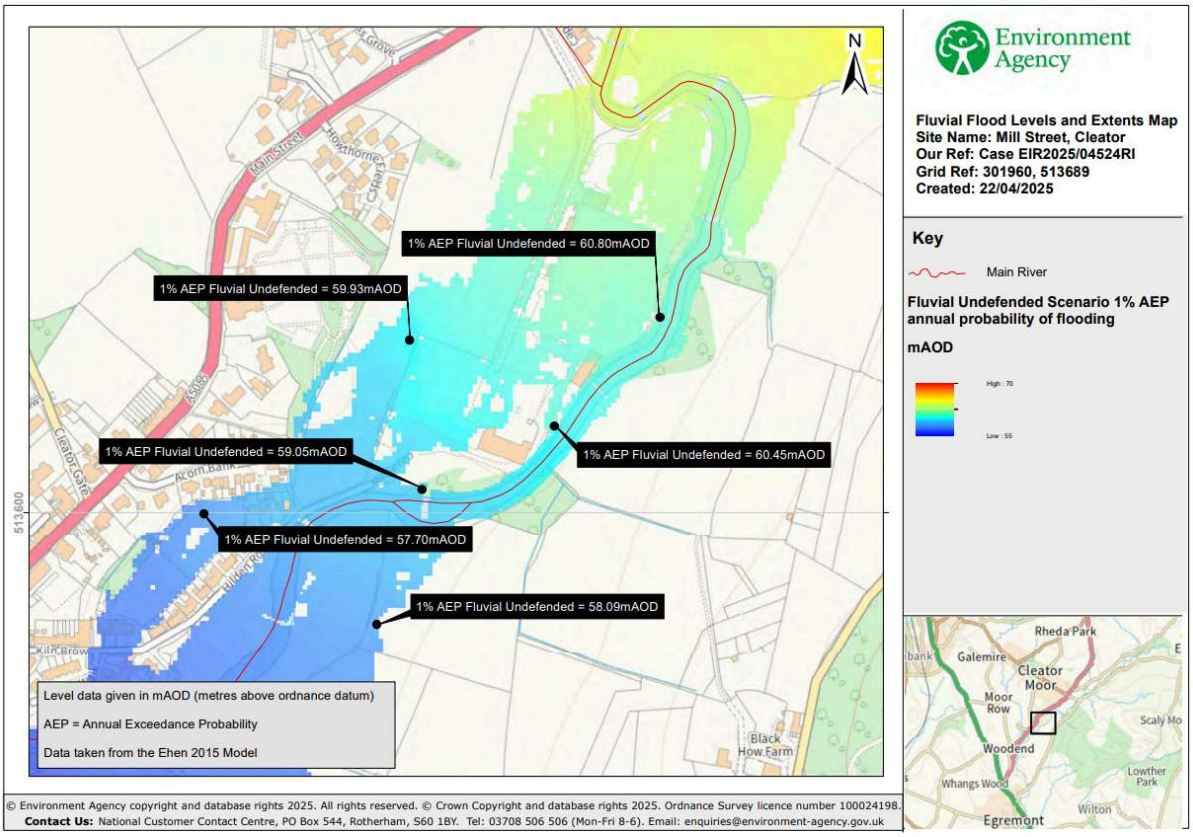


Figure 3 - Un Defended 1% AEP - Ehen 2015 Model

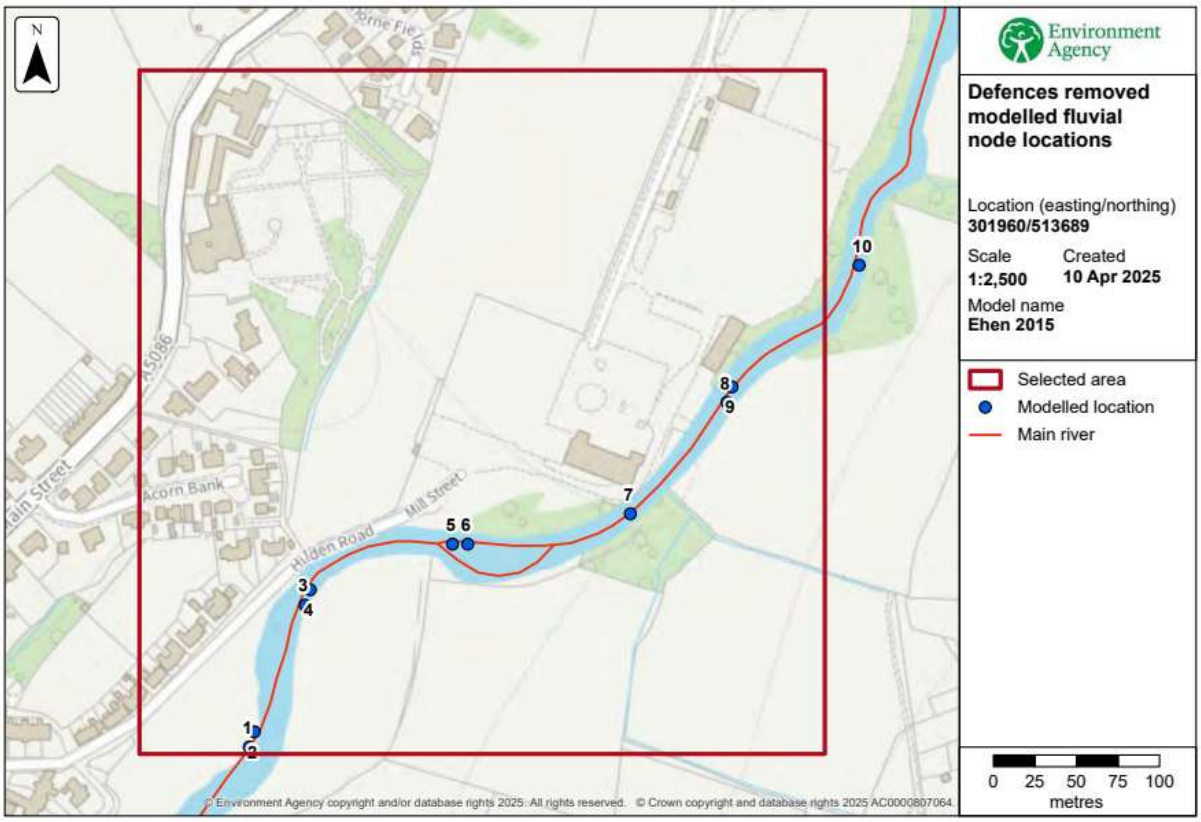


Figure 4 - Un Defended 1% AEP - Ehen 2015 Model

Modelled node locations data

Defences removed

Label	Modelled location ID	Easting	Northing	20% AEP	10% AEP	5% AEP	4% AEP	3.33% AEP	2% AEP	1.33% AEP	1% AEP	0.5% AEP	0.1% AEP
				Level	Level	Level	Level	Level	Level	Level	Level	Level	Level
1	1204830	301820	513487	57.38	57.46	57.53	57.55	57.57	57.60	57.65	57.68	57.76	57.97
2	1203952	301823	513496	57.38	57.46	57.53	57.55	57.57	57.60	57.65	57.68	57.76	57.97
3	1204241	301853	513572	58.05	58.18	58.27	58.30	58.32	58.36	58.42	58.45	58.52	58.74
4	1203911	301856	513581	58.30	58.41	58.49	58.52	58.55	58.59	58.65	58.68	58.77	59.07
5	1204614	301942	513609	58.73	58.83	58.91	58.94	58.96	58.99	59.04	59.06	59.08	59.22
6	1204324	301951	513609	58.73	58.83	58.91	58.94	58.96	58.99	59.04	59.06	59.08	59.22
7	1204006	302049	513627	59.24	59.39	59.51	59.55	59.58	59.63	59.73	59.77	59.85	60.16
8	1204731	302107	513695	59.72	59.91	60.06	60.12	60.16	60.24	60.37	60.43	60.55	61.0
9	1204362	302110	513704	59.72	59.91	60.06	60.12	60.16	60.24	60.37	60.43	60.55	61.0
10	1204604	302187	513777	60.10	60.29	60.45	60.51	60.55	60.63	60.75	60.81	60.95	61.32

Data in this table comes from the Ehen 2015 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.

Table 7 - Levels associated with the flood events -River Ehen 2015 Model

A stage-discharge relationship has been developed for the site using flow data for the River Ehen. The percentage uplift for the 2050s and 2070s have been applied to the 1% AEP flow rates at Node 7 adjacent to the site.

Climate change influenced flood levels have been calculated from the stage-discharge relationship.

Details of the calculations are provided in Appendix A.

Climate Change Allowance	Peak Flow [cumecs]	Water Level [m AOD]
30.00%	165.82	59.99
45.00%	184.95	60.12
50.00%	191.33	60.17

SUMMARY

In summary :

- The site is in a flood zone 3 and considered Less Vulnerable associated with the B2 Commercial development.
- Flood levels and data provided by the Environment Agency have been used to calculate flood levels on site of 60.170m AOD [Based on 1% AEP + 50% CC, River Ehen 2015 Undefended model].

PROPOSED DEVELOPMENT

Site Levels

A topographic survey has been carried out on the property and levels across the development are summarised as follows:

Property	Floor	Level [m AOD]
Existing Commercial	Ground Level	60.970

In relation to a replacement structure on the site of the existing commercial property, and the proposed residential nature of this development, we would consider that the floor level should be a minimum of 600mm above the calculated flood level associated with the 1% AEP + 50% CC, flood event, producing a floor level of 60.170m AOD. We consider that the floor level of 60.970m AOD is above this requirement.

ASSESSMENT OF THE PROPOSED DEVELOPMENT

IMPACT ON FLUVIAL CHANNEL

The present site arrangement does not offer any restriction in the fluvial channel associated with River Ehen. The proposals will not alter the fluvial channel nor restrict it and any rising waters would impact the channel above or below the site before impacting the structures on the site.

We consider that the proposed development would have a **LOW** risk associated with flooding.

IMPACT OF INCREASED FOOTPRINT

The proposed site is not considered part of the established footprint of the effective flood plain and therefore any increases in footprint would not impact on the existing flood storage available in the wider catchment nor increase the impact of flooding elsewhere.

We consider the impact of the footprint would have a **LOW** risk on flooding.

IMPACT OF FLOOD DEFENCES

There are no flood defences impacted by the development.

FUTURE FLOOD DEFENCES

There are no planned future flood defences for the site by the Environment Agency.

We consider the impact of the above would have a **LOW** risk on flooding.

SURFACE WATER FLOODING

Surface water flooding occurs when intense rainfall is unable to naturally soak into the ground due to impermeable ground covering such as concrete or tarmac, or low permeability ground conditions preventing infiltration. This excess surface water can flow through built-up areas and open space and pond in lower-lying areas causing localised flooding.

Flooding from surface water can be difficult to predict, and local features can influence the likelihood

and extent of flooding. The EA has predicted that flood risk to the majority of the site from surface water is very low, defined by the EA as less than 0.1% probability of surface water flooding in any year.

We consider that the risk of flooding from surface water to be **LOW**.

SEWER FLOODING

United Utilities has advised that there are no recorded historical sewer flooding in the vicinity of the site which have been reported to them.

We consider the risk of flooding from sewers to be **LOW**.

GROUNDWATER FLOODING

Groundwater flooding occurs when the water table in permeable ground, such as granular river alluvium, rises to enter underground spaces, such as basements and cellars, or reaches a sufficient level to emanate from the ground surface.

This kind of flooding is not necessarily directly linked to a specific rainfall event and is generally more long-term than other causes of flooding (could last weeks or months).

We consider the risk of flooding from groundwater to be **LOW**.

FLOODING FROM ARTIFICIAL SOURCES

Artificial sources of flooding can refer to flooding due to ponds, canals and small reservoirs. Flooding from reservoirs can occur when water retaining structures fail. In the instance of a breach of a reservoir or dam, high volumes of water can escape with high velocity causing extensive flooding.

Reservoir Flooding

Considered not applicable.

Flooding from Canals, Ponds and Small Reservoirs

Considered not applicable.

MITIGATION MEASURES

We consider that the development should consider the following mitigation measures associated with the management of the residual flood risk on the site.

- Safe Access and Egress

SAFE ACCESS AND EGRESS

A safe access and egress route for the site for vehicles and pedestrians has been considered and a safe evacuation route is available to the north of the site using North Road to gain access to higher ground.

Currently, there is a community flood warning plan and the area around the site is well managed in respect to the evacuation of residents at times when there is an increased flood risk.

SUMMARY AND CONCLUSION

Kingmoor Consulting has prepared this Flood Risk Assessment (FRA) on behalf of the Applicant to support the Planning Application for works at The Mill, The Flaxworks, Cleator, CA23 3DU. This FRA has been undertaken in accordance with the National Planning Policy Framework (NPPF).

The Application Site is an existing dwelling and commercial property located adjacent to River Ehen. The proposed development includes minor works to the existing mill building associated with its refurbishment..

An assessment of the risk associated with flooding from the following sources has been carried out:

- Rivers (Fluvial);
- Sea (Tidal);
- Surface Water and Sewers;
- Groundwater, and
- Artificial Sources.

The primary risk of flooding to the site is fluvial from the River Ehen. The site is situated within Flood Zone 3a and is considered at higher risk of flooding.

The risks associated with surface water and sewer flooding have been assessed and it is considered overall to be low.

The groundwater flood risk is considered Low due to the groundwater being in hydraulic connectivity with the adjacent River. This is due to the permeable nature of the material under the site and location of the site against the River.

There is a residual risk of flooding to the site from the following:

- Overtopping or breach of the existing walls

The works on the site would include raised floors within the mill to accommodate the 1% AEP + 50% CC a flood level of 60.170m AOD. Such measures would include :

- Raising new floor levels to 60.970m AOD
- One way valves to internal drainage systems [foul] within the properties

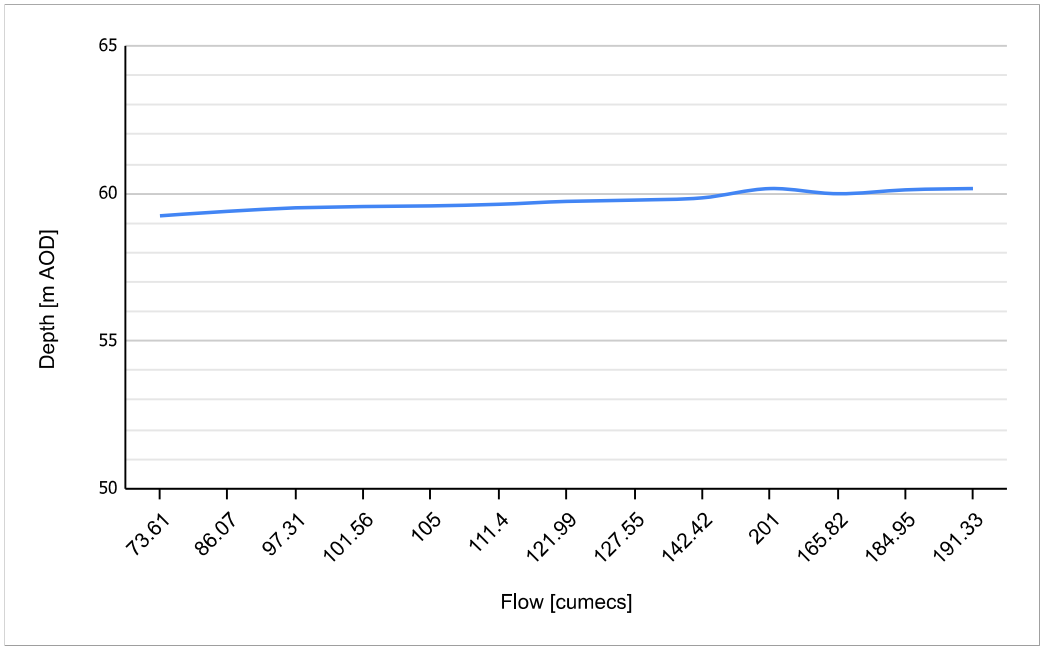
APPENDICES

APPENDIX A - CLIMATE CHANGE FLOOD LEVEL CALCULATIONS

THE MILL, FLAX WORKS, CLEATOR

NODE 7

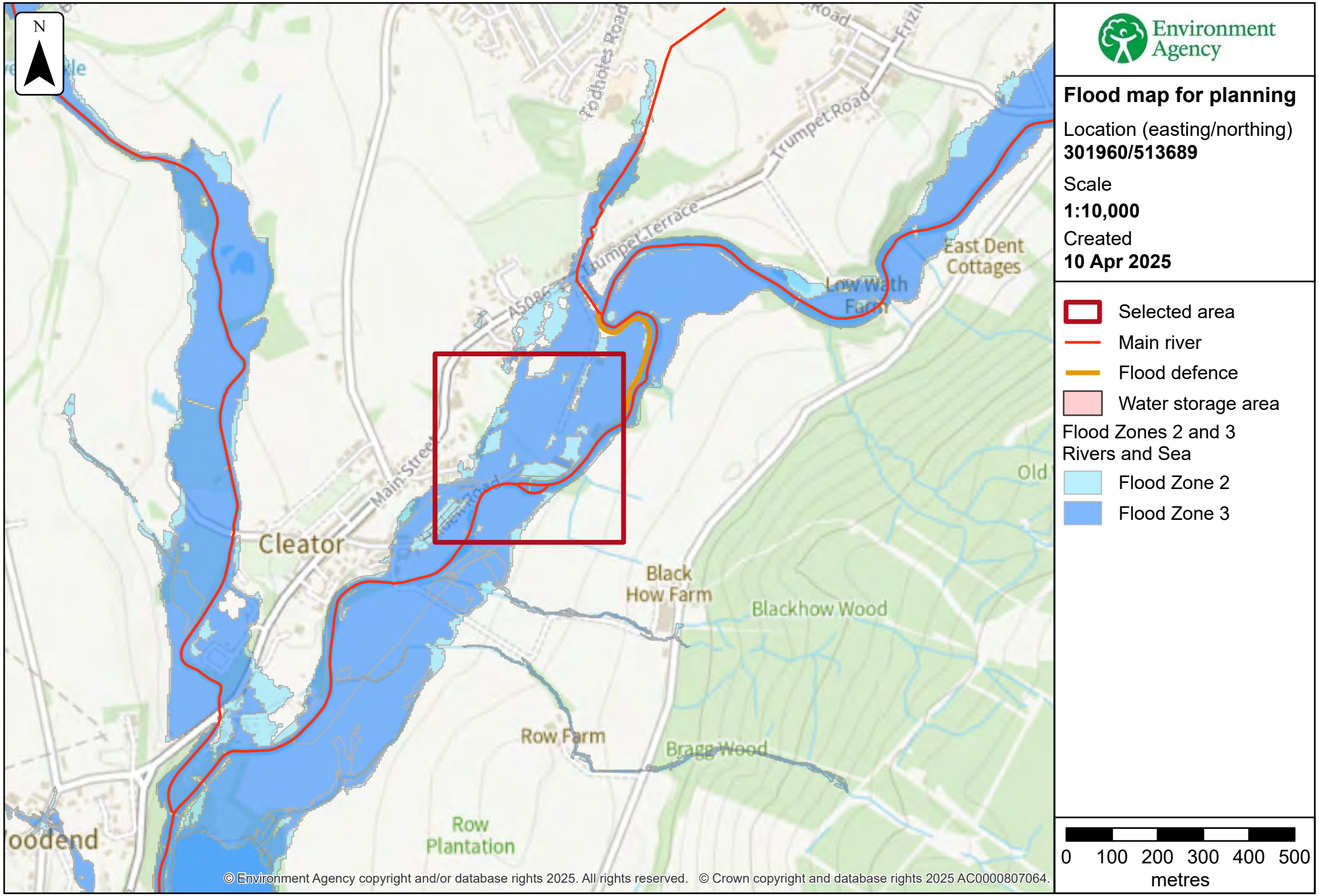
	FLOW	DEPTH m AOD
20% AEP	*73.61*	59.24
10% AEP	*86.07*	59.39
5% AEP	*97.31*	59.51
4% AEP	*101.56*	59.55
3.33 AEP	*105*	59.58
2% AEP	*111.4*	59.63
1.33% AEP	*121.99*	59.73
1% AEP	*127.55*	59.77
0.5% AEP	*142.42*	59.85
0.1% AEP	*201*	60.16
Predicted	*165.82*	59.99
Predicted	*184.95*	60.12
Predicted	*191.33*	60.17



1% AEP Defended

Climate Change Allowance	Peak Flow [cumecs]	Water Level [m AOD]
30.00%	165.82	59.99
45.00%	184.95	60.12
50.00%	191.33	60.17

APPENDIX B - ENVIRONMENT AGENCY INFORMATION


N
Environment Agency
Flood map for planning
Location (easting/northing)
301960/513689
Scale
1:10,000
Created
10 Apr 2025
Selected area
Main river
Flood defence
Water storage area
Flood Zones 2 and 3
Rivers and Sea
Flood Zone 2
Flood Zone 3
Cleator
Black How Farm
Blackhow Wood
Row Farm
Row Plantation
Brage Wood
East Dent Cottages
Low Wath Farm
Trumpet Road
Trumpet Terrace
Main Street
A5086
Todholes Road
0 100 200 300 400 500
metres
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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:

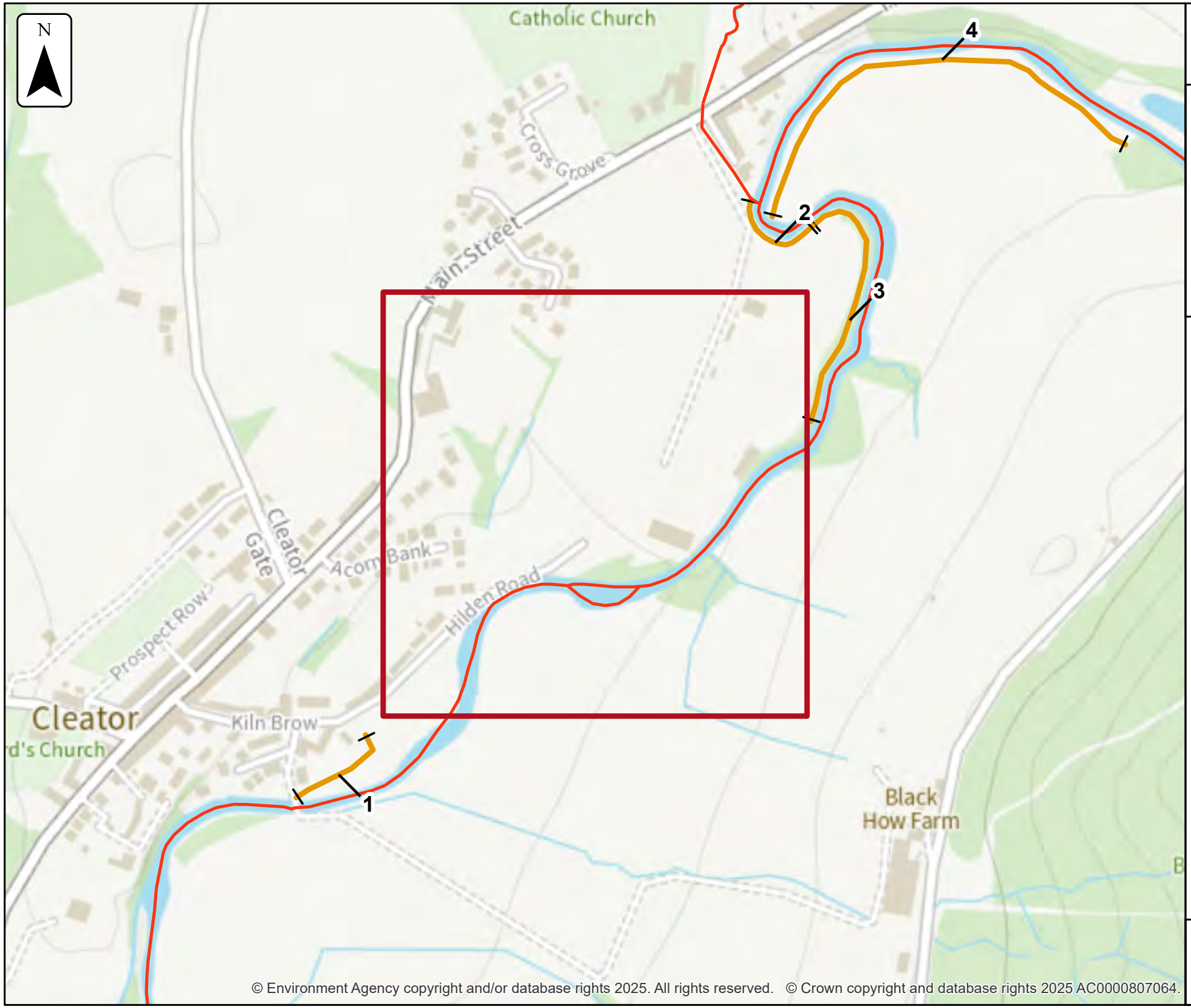
- 0.5% or greater probability of occurring in any year for flooding from the sea
- 1% or greater probability of occurring in any year for fluvial (river) flooding

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 defences

Location (easting/northing)
301960/513689

Scale
1:5,000

Created
10 Apr 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	37886	Embankment	100	Fair	57.15	57.15	57.15
2	37628	Embankment	100	Fair	64.52	64.52	64.52
3	37627	Embankment	100	Fair	62.49	63.40	62.49
4	80487	Embankment	5	Poor	63.84	65.35	63.84

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

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

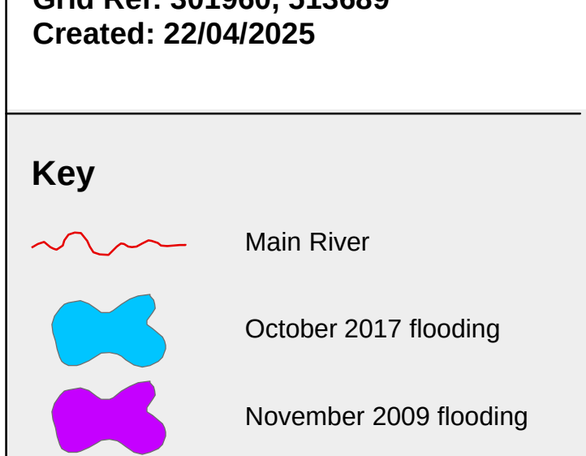
Flood History Map
Site Name: Mill Street, Cleator
Our Ref: Case EIR2025/04524RI
Grid Ref: 301960, 513689
Created: 22/04/2025

Key

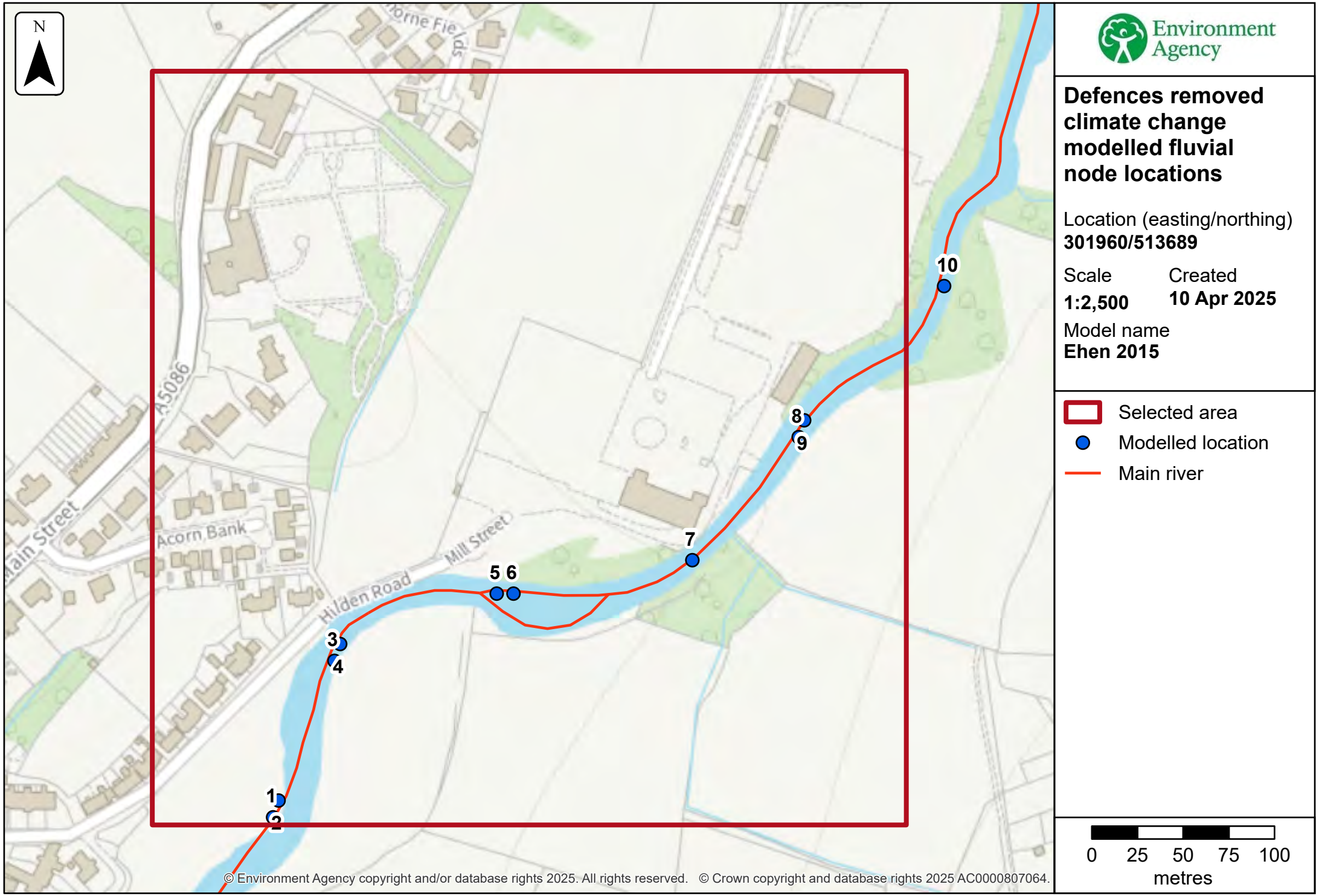
Main River

October 2017 flooding

November 2009 flooding



Contact Us: National Customer Contact Centre, PO Box 544, Rotherham, S60 1BY. Tel: 03708 506 506 (Mon-Fri 8-6). Email: enquiries@environment-agency.gov.uk



Environment Agency

Defences removed climate change modelled fluvial node locations

Location (easting/northing)
301960/513689

Scale
1:2,500

Created
10 Apr 2025

Model name
Ehen 2015

Selected area
Modelled location
Main river

0 25 50 75 100
metres

Modelled node locations data

Defences removed climate change

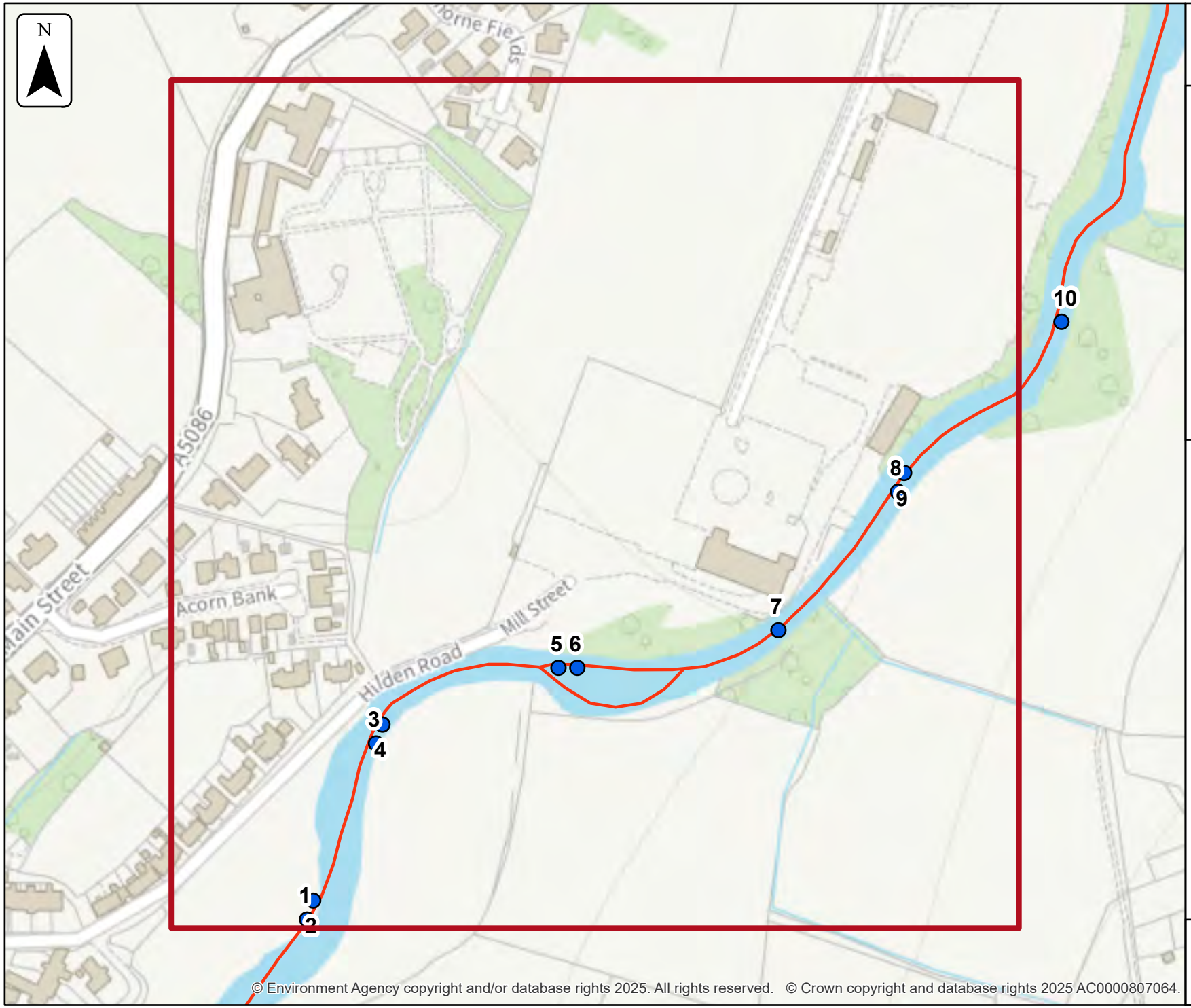
Label	Modelled location ID	Easting	Northing	1% AEP (+20%)	1% AEP (+30%)	1% AEP (+35%)	1% AEP (+70%)
				Level	Level	Level	Level
1	1204830	301820	513487	57.77	57.83	57.85	57.98
2	1203952	301823	513496	57.77	57.83	57.85	57.98
3	1204241	301853	513572	58.54	58.60	58.63	58.75
4	1203911	301856	513581	58.80	58.88	58.91	59.10
5	1204614	301942	513609	59.09	59.10	59.12	59.23
6	1204324	301951	513609	59.09	59.10	59.12	59.23
7	1204006	302049	513627	59.88	59.98	60.01	60.21
8	1204731	302107	513695	60.56	60.69	60.84	61.05
9	1204362	302110	513704	60.56	60.69	60.84	61.05
10	1204604	302187	513777	60.98	61.11	61.16	61.40

Data in this table comes from the Ehen 2015 model.
Level values are shown in mAOD, and flow values are shown in cubic metres per second.
Any blank cells show where a particular scenario has not been modelled for this location.

Defences removed climate change

Label	Modelled location ID	Easting	Northing	1% AEP (+20%)	1% AEP (+30%)	1% AEP (+35%)	1% AEP (+70%)
				Flow	Flow	Flow	Flow
1	1204830	301820	513487	112.53	120.91	123.99	143.08
2	1203952	301823	513496	112.53	120.91	123.99	143.08
3	1204241	301853	513572	110.41	120.69	124.06	146.16
4	1203911	301856	513581	110.41	120.69	124.06	146.16
5	1204614	301942	513609	144.55	162.12	167.84	203.31
6	1204324	301951	513609	144.55	162.12	167.84	203.31
7	1204006	302049	513627	146.85	164.96	171.17	210.34
8	1204731	302107	513695	144.74	161.56	166.19	201.99
9	1204362	302110	513704	144.74	161.56	166.19	201.99
10	1204604	302187	513777	143.26	162.28	167.47	197.91

Data in this table comes from the Ehen 2015 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 modelled fluvial node locations

Location (easting/northing)
301960/513689

Scale
1:2,500

Created
10 Apr 2025

Model name
Ehen 2015

- Selected area
- Modelled location
- Main river

0 25 50 75 100
metres

Modelled node locations data

Defences removed

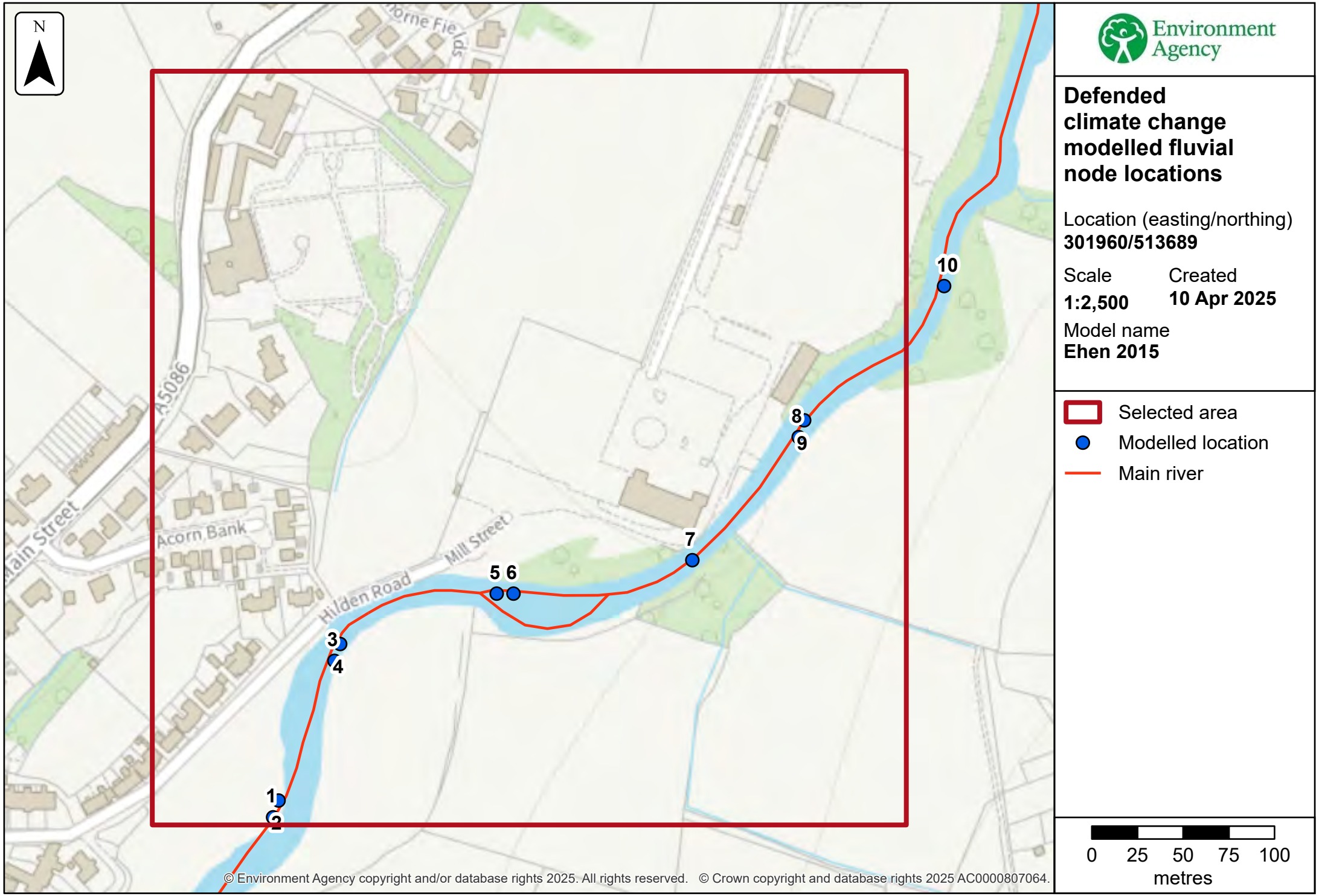
Label	Modelled location ID	Easting	Northing	20% AEP	10% AEP	5% AEP	4% AEP	3.33% AEP	2% AEP	1.33% AEP	1% AEP	0.5% AEP	0.1% AEP
				Level	Level	Level	Level	Level	Level	Level	Level	Level	Level
1	1204830	301820	513487	57.38	57.46	57.53	57.55	57.57	57.60	57.65	57.68	57.76	57.97
2	1203952	301823	513496	57.38	57.46	57.53	57.55	57.57	57.60	57.65	57.68	57.76	57.97
3	1204241	301853	513572	58.05	58.18	58.27	58.30	58.32	58.36	58.42	58.45	58.52	58.74
4	1203911	301856	513581	58.30	58.41	58.49	58.52	58.55	58.59	58.65	58.68	58.77	59.07
5	1204614	301942	513609	58.73	58.83	58.91	58.94	58.96	58.99	59.04	59.06	59.08	59.22
6	1204324	301951	513609	58.73	58.83	58.91	58.94	58.96	58.99	59.04	59.06	59.08	59.22
7	1204006	302049	513627	59.24	59.39	59.51	59.55	59.58	59.63	59.73	59.77	59.85	60.16
8	1204731	302107	513695	59.72	59.91	60.06	60.12	60.16	60.24	60.37	60.43	60.55	61.0
9	1204362	302110	513704	59.72	59.91	60.06	60.12	60.16	60.24	60.37	60.43	60.55	61.0
10	1204604	302187	513777	60.10	60.29	60.45	60.51	60.55	60.63	60.75	60.81	60.95	61.32

Data in this table comes from the Ehen 2015 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	20% AEP	10% AEP	5% AEP	4% AEP	3.33% AEP	2% AEP	1.33% AEP	1% AEP	0.5% AEP	0.1% AEP
				Flow	Flow	Flow	Flow	Flow	Flow	Flow	Flow	Flow	Flow
1	1204830	301820	513487	70.81	79.16	85.69	88.07	89.88	93.15	98.39	101.36	109.92	140.77
2	1203952	301823	513496	70.81	79.16	85.69	88.07	89.88	93.15	98.39	101.36	109.92	140.77
3	1204241	301853	513572	69.14	76.50	82.59	84.91	86.73	90.04	95.58	98.62	107.69	142.23
4	1203911	301856	513581	69.14	76.50	82.59	84.91	86.73	90.04	95.58	98.62	107.69	142.23
5	1204614	301942	513609	73.63	86.09	97.19	101.31	104.61	110.76	120.69	125.92	140.34	194.81
6	1204324	301951	513609	73.63	86.09	97.19	101.31	104.61	110.76	120.69	125.92	140.34	194.81
7	1204006	302049	513627	73.61	86.07	97.31	101.56	105.0	111.40	121.99	127.55	142.42	201.0
8	1204731	302107	513695	73.59	86.04	97.23	101.39	104.74	110.98	121.06	126.27	140.36	193.56
9	1204362	302110	513704	73.59	86.04	97.23	101.39	104.74	110.98	121.06	126.27	140.36	193.56
10	1204604	302187	513777	73.57	85.85	96.51	100.51	103.76	109.95	120.01	125.21	139.14	192.85

Data in this table comes from the Ehen 2015 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.


N
A5086
Main Street
Acorn Bank
Hilden Road
Mill Street
1
2
3
4
5
6
7
8
9
10
Environment Agency
Defended climate change modelled fluvial node locations
Location (easting/northing)
301960/513689
Scale
1:2,500
Created
10 Apr 2025
Model name
Ehen 2015
Selected area
Modelled location
Main river
0 25 50 75 100
metres
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Modelled node locations data

Defended climate change

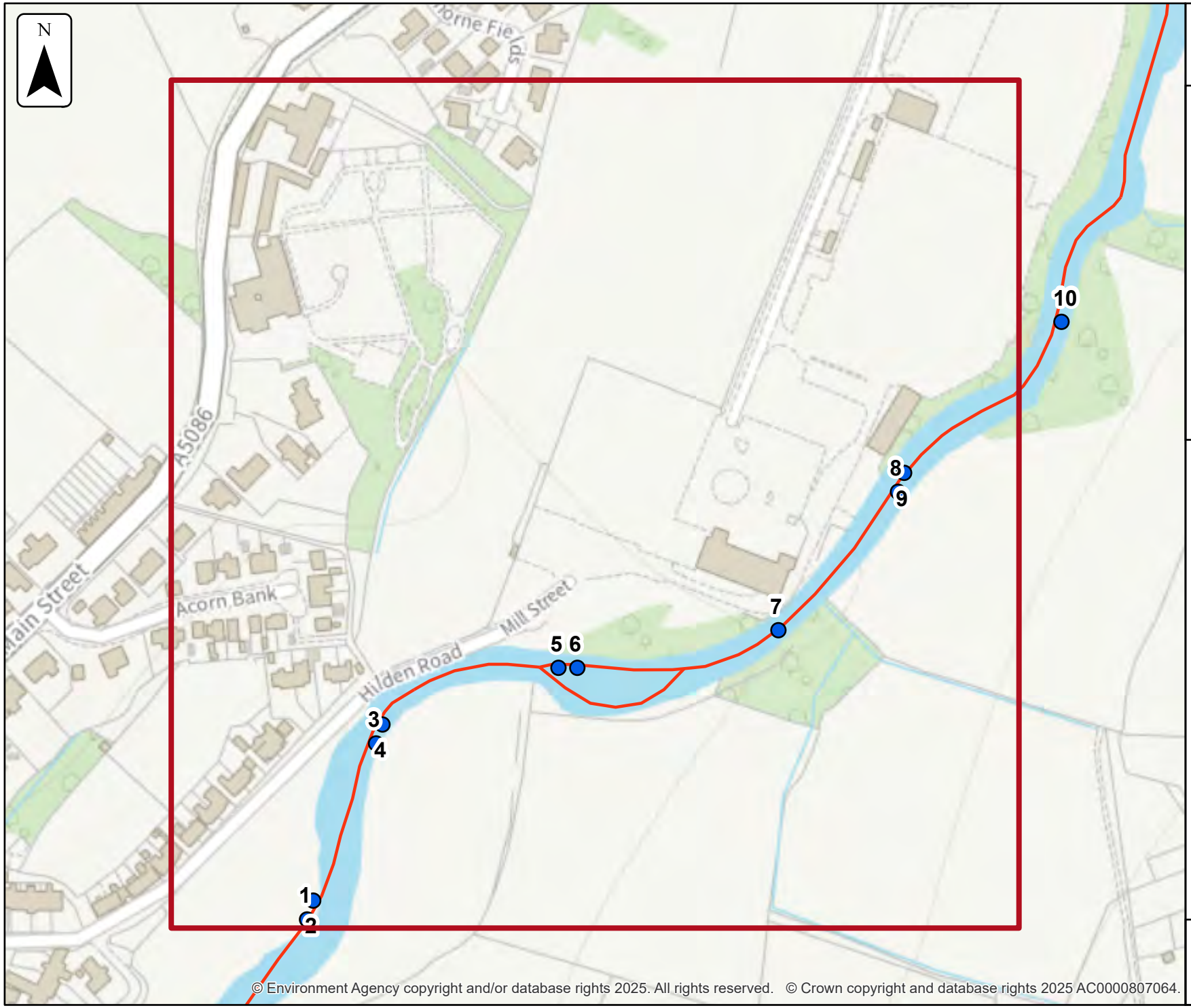
Label	Modelled location ID	Easting	Northing	1% AEP (+20%)	1% AEP (+30%)	1% AEP (+35%)	1% AEP (+70%)
				Level	Level	Level	Level
1	1204830	301820	513487	57.78	57.83	57.85	57.98
2	1203952	301823	513496	57.78	57.83	57.85	57.98
3	1204241	301853	513572	58.55	58.60	58.63	58.75
4	1203911	301856	513581	58.81	58.88	58.91	59.10
5	1204614	301942	513609	59.08	59.10	59.12	59.23
6	1204324	301951	513609	59.08	59.10	59.12	59.23
7	1204006	302049	513627	59.91	59.98	60.01	60.21
8	1204731	302107	513695	60.60	60.69	60.84	61.05
9	1204362	302110	513704	60.60	60.69	60.84	61.05
10	1204604	302187	513777	61.0	61.11	61.16	61.40

Data in this table comes from the Ehen 2015 model.
Level values are shown in mAOD, and flow values are shown in cubic metres per second.
Any blank cells show where a particular scenario has not been modelled for this location.

Defended climate change

Label	Modelled location ID	Easting	Northing	1% AEP (+20%)	1% AEP (+30%)	1% AEP (+35%)	1% AEP (+70%)
				Flow	Flow	Flow	Flow
1	1204830	301820	513487	114.28	120.91	123.99	143.08
2	1203952	301823	513496	114.28	120.91	123.99	143.08
3	1204241	301853	513572	113.29	120.69	124.06	146.16
4	1203911	301856	513581	113.29	120.69	124.06	146.16
5	1204614	301942	513609	150.01	162.12	167.84	203.31
6	1204324	301951	513609	150.01	162.12	167.84	203.31
7	1204006	302049	513627	152.21	164.96	171.17	210.34
8	1204731	302107	513695	149.93	161.56	166.19	201.99
9	1204362	302110	513704	149.93	161.56	166.19	201.99
10	1204604	302187	513777	151.25	162.28	167.47	197.91

Data in this table comes from the Ehen 2015 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)
301960/513689

Scale
1:2,500

Created
10 Apr 2025

Model name
Ehen 2015

- Selected area
- Modelled location
- Main river

0 25 50 75 100
metres

Modelled node locations data

Defended

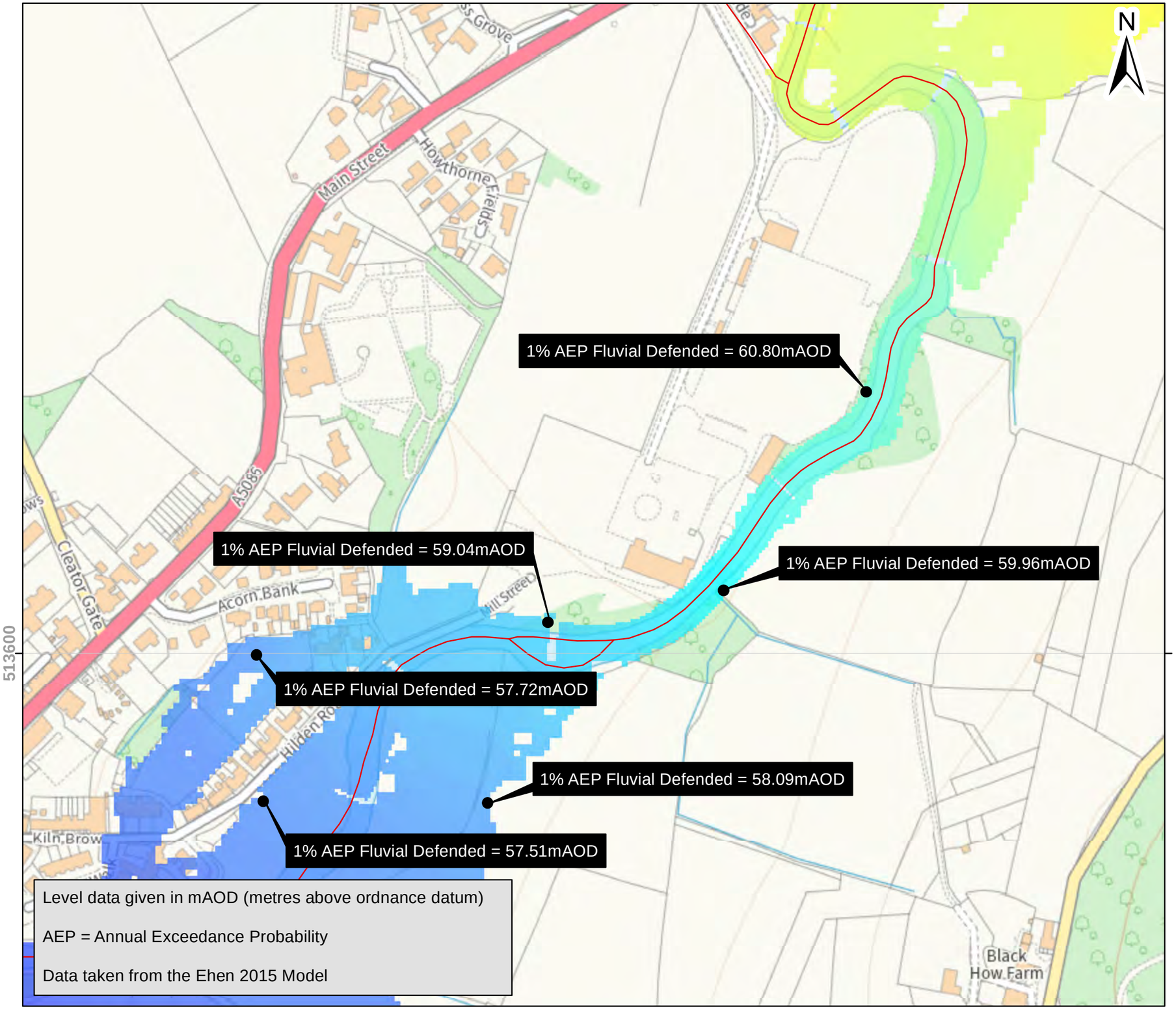
Label	Modelled location ID	Easting	Northing	1% AEP	0.5% AEP	0.1% AEP
				Level	Level	Level
1	1204830	301820	513487	57.69	57.76	57.98
2	1203952	301823	513496	57.69	57.76	57.98
3	1204241	301853	513572	58.45	58.53	58.75
4	1203911	301856	513581	58.69	58.78	59.10
5	1204614	301942	513609	59.06	59.07	59.23
6	1204324	301951	513609	59.06	59.07	59.23
7	1204006	302049	513627	59.77	59.88	60.20
8	1204731	302107	513695	60.45	60.56	61.04
9	1204362	302110	513704	60.45	60.56	61.04
10	1204604	302187	513777	60.81	60.95	61.39

Data in this table comes from the Ehen 2015 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	1% AEP	0.5% AEP	0.1% AEP
				Flow	Flow	Flow
1	1204830	301820	513487	101.99	111.16	142.38
2	1203952	301823	513496	101.99	111.16	142.38
3	1204241	301853	513572	99.52	109.80	145.36
4	1203911	301856	513581	99.52	109.80	145.36
5	1204614	301942	513609	127.64	144.44	202.06
6	1204324	301951	513609	127.64	144.44	202.06
7	1204006	302049	513627	129.25	146.48	208.94
8	1204731	302107	513695	128.10	144.66	200.69
9	1204362	302110	513704	128.10	144.66	200.69
10	1204604	302187	513777	129.14	146.02	196.74

Data in this table comes from the Ehen 2015 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.



Level data given in mAOD (metres above ordnance datum)

AEP = Annual Exceedance Probability

Data taken from the Ehen 2015 Model

Environment Agency

Fluvial Flood Levels and Extents Map
Site Name: Mill Street, Cleator
Our Ref: Case EIR2025/04524RI
Grid Ref: 301960, 513689
Created: 22/04/2025

Key

Main River

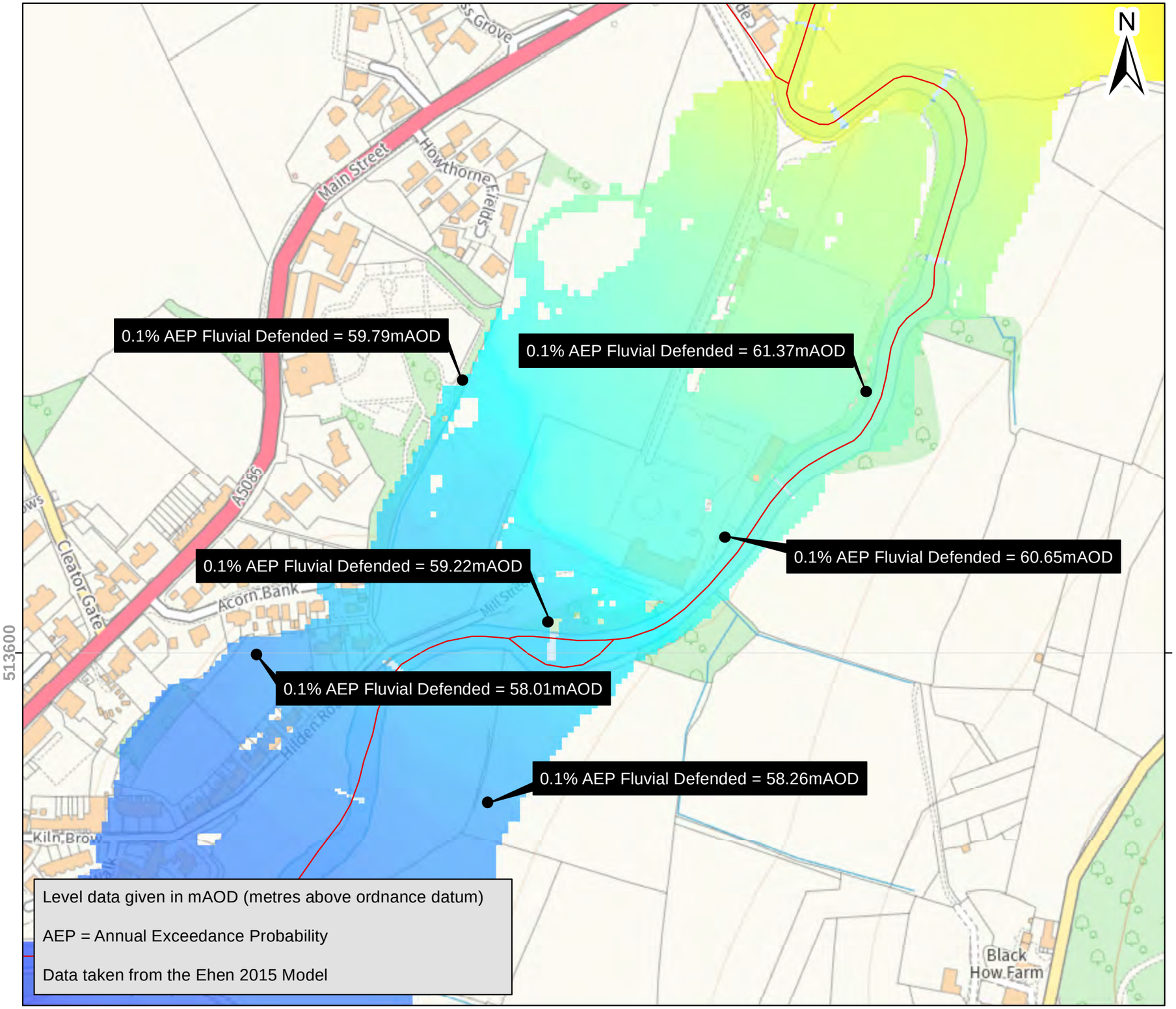
Fluvial Defended Scenario 1% AEP annual probability of flooding

mAOD

High : 70

Low : 55

Contact Us: National Customer Contact Centre, PO Box 544, Rotherham, S60 1BY. Tel: 03708 506 506 (Mon-Fri 8-6). Email: enquiries@environment-agency.gov.uk



Environment Agency

Fluvial Flood Levels and Extents Map
Site Name: Mill Street, Cleator
Our Ref: Case EIR2025/04524RI
Grid Ref: 301960, 513689
Created: 22/04/2025

Key

Main River

Fluvial Defended Scenario 0.1% AEP annual probability of flooding

mAOD

High : 70

Low : 55

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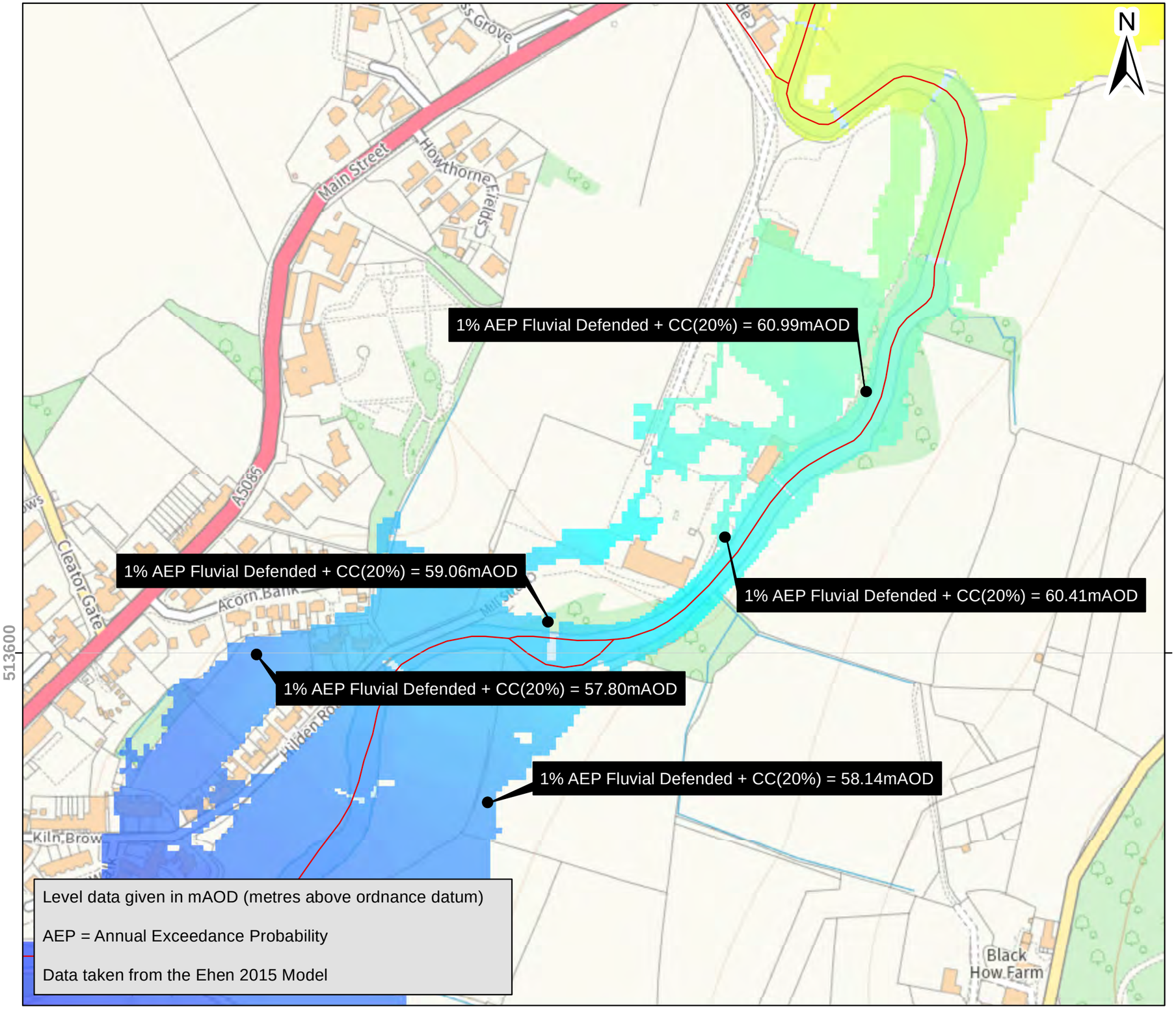

Environment Agency

Fluvial Flood Levels and Extents Map
Site Name: Mill Street, Cleator
Our Ref: Case EIR2025/04524RI
Grid Ref: 301960, 513689
Created: 22/04/2025

Key

Main River

Fluvial Defended Scenario 1% AEP annual probability of flooding + Climate Change (20%)

mAOD

High : 70

Low : 55

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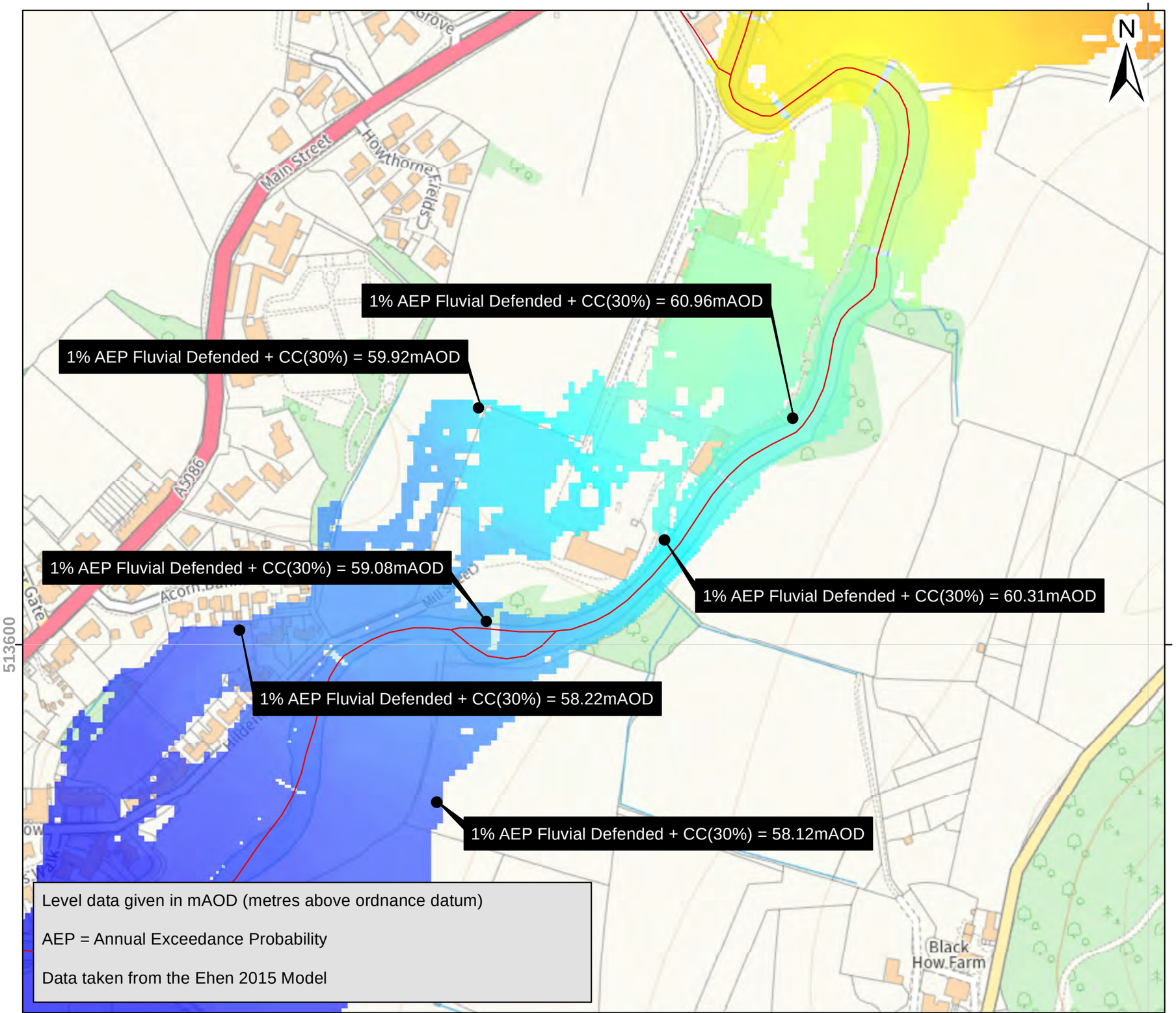

Level data given in mAOD (metres above ordnance datum)

AEP = Annual Exceedance Probability

Data taken from the Ehen 2015 Model

Environment Agency

Fluvial Flood Levels and Extents Map
Site Name: Mill Street, Cleator
Our Ref: Case EIR2025/04524RI
Grid Ref: 301960, 513689
Created: 22/04/2025

Key

Main River

Fluvial Defended Scenario 1% AEP annual probability of flooding + Climate Change (30%)

mAOD

High : 67

Low : 57

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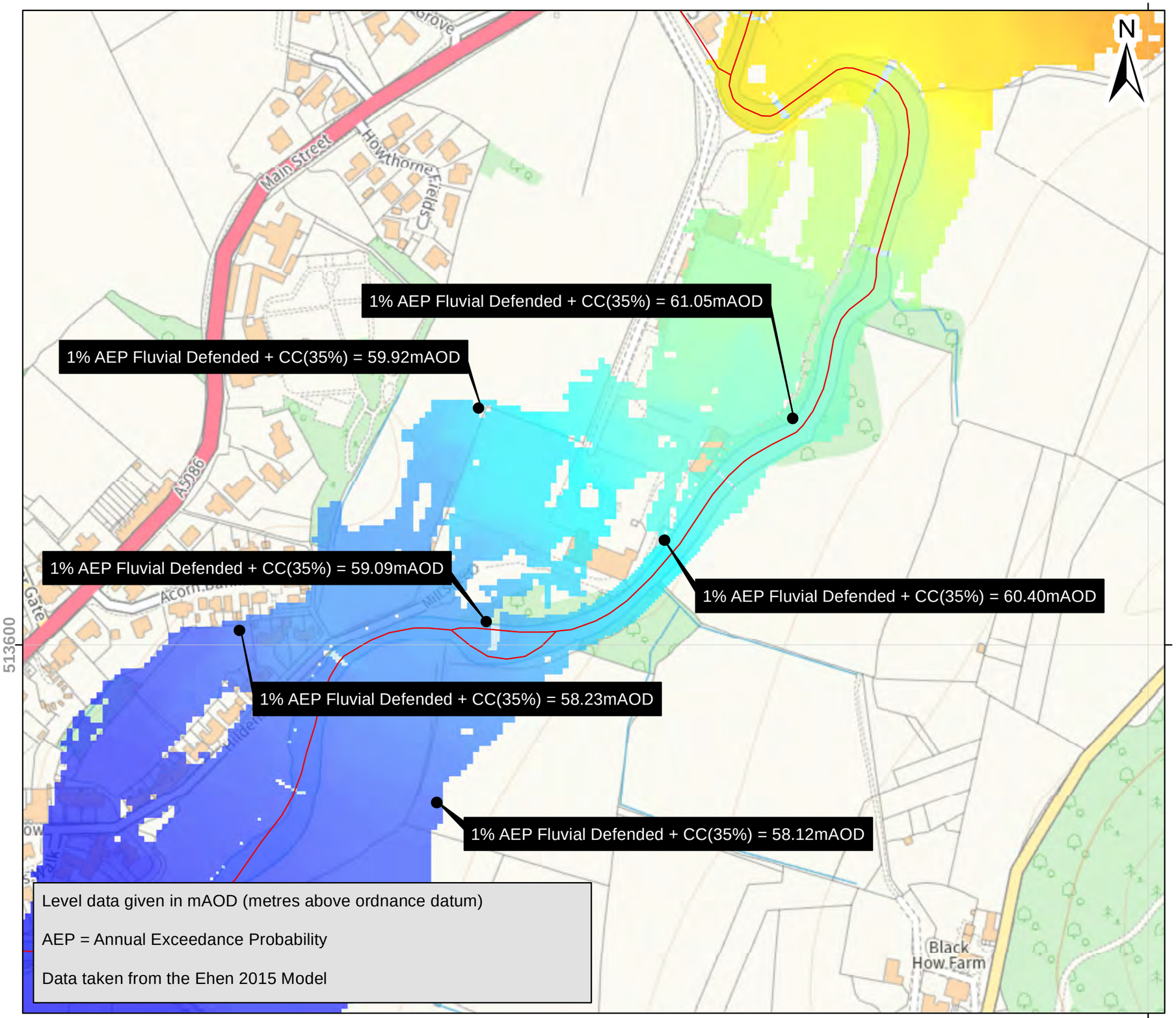


Level data given in mAOD (metres above ordnance datum)

AEP = Annual Exceedance Probability

Data taken from the Ehen 2015 Model

Environment Agency

Fluvial Flood Levels and Extents Map
Site Name: Mill Street, Cleator
Our Ref: Case EIR2025/04524RI
Grid Ref: 301960, 513689
Created: 22/04/2025

Key

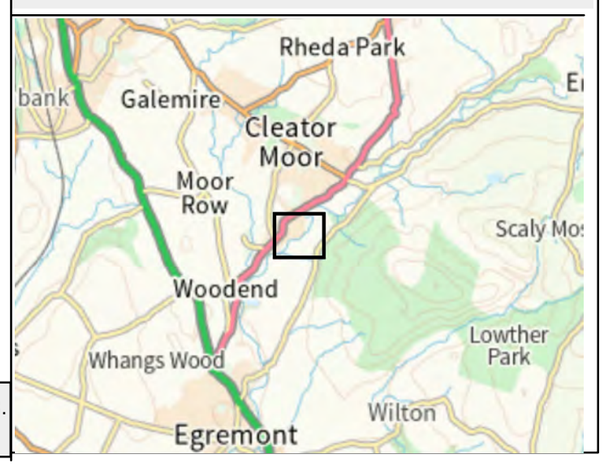
Main River

Fluvial Defended Scenario 1% AEP annual probability of flooding + Climate Change (35%)

mAOD

High : 67

Low : 57



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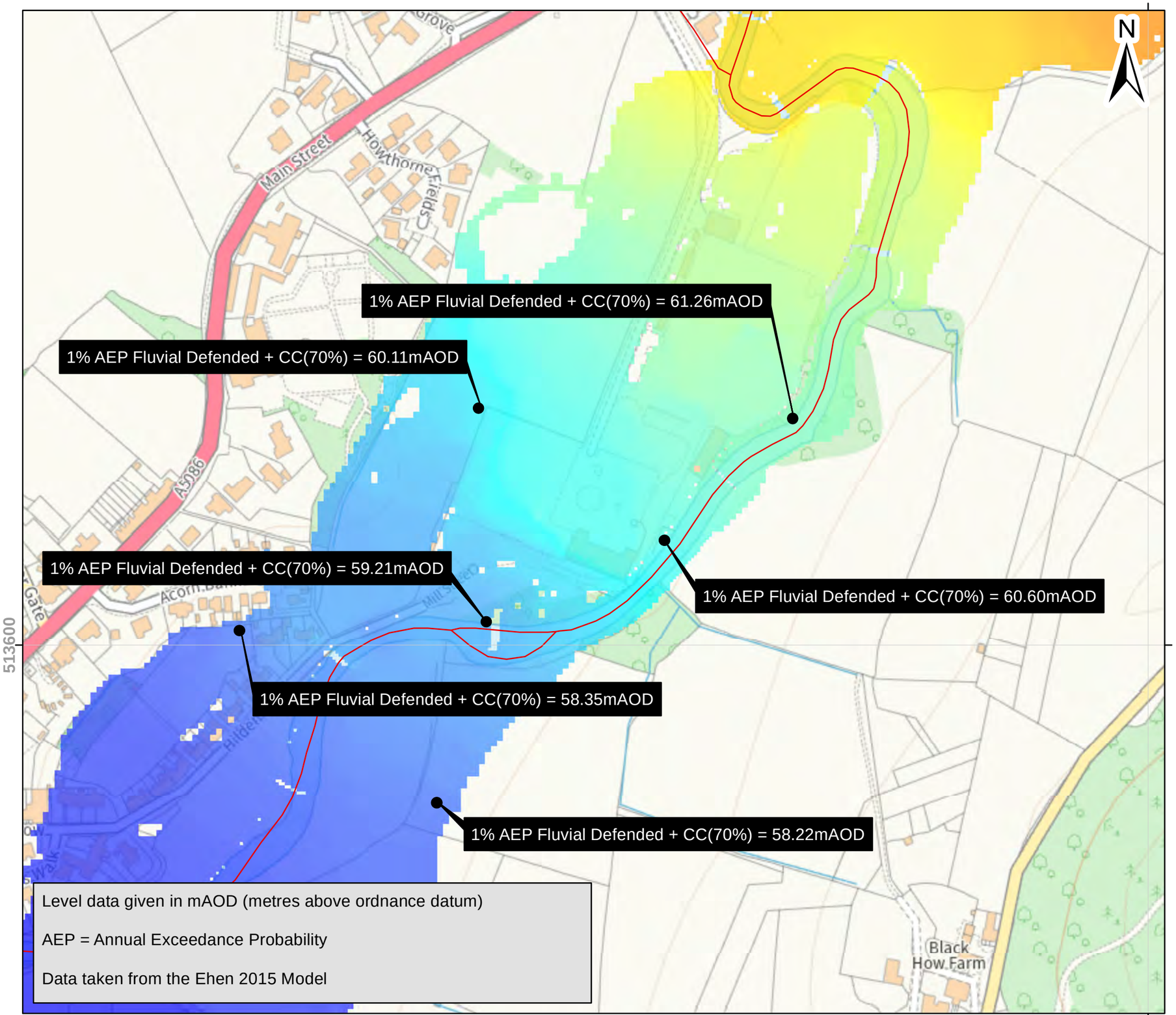


Level data given in mAOD (metres above ordnance datum)

AEP = Annual Exceedance Probability

Data taken from the Ehen 2015 Model

Environment Agency

Fluvial Flood Levels and Extents Map
Site Name: Mill Street, Cleator
Our Ref: Case EIR2025/04524RI
Grid Ref: 301960, 513689
Created: 22/04/2025

Key

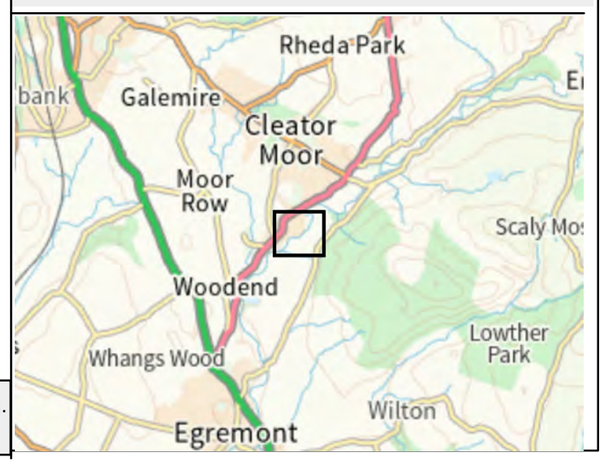
Main River

Fluvial Defended Scenario 1% AEP annual probability of flooding + Climate Change (70%)

mAOD

High : 67

Low : 57



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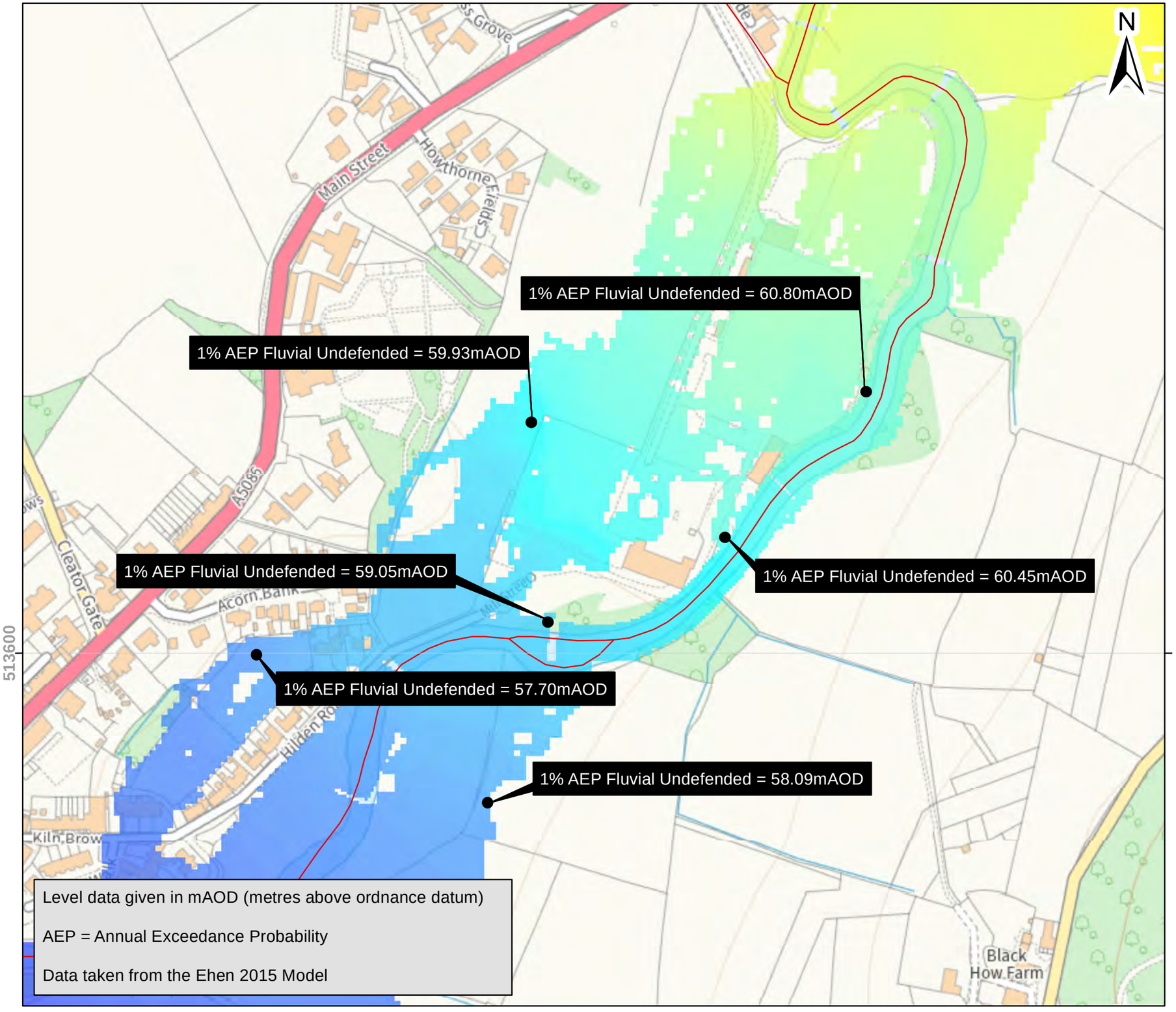


Environment Agency

Fluvial Flood Levels and Extents Map
Site Name: Mill Street, Cleator
Our Ref: Case EIR2025/04524RI
Grid Ref: 301960, 513689
Created: 22/04/2025

Key

Main River

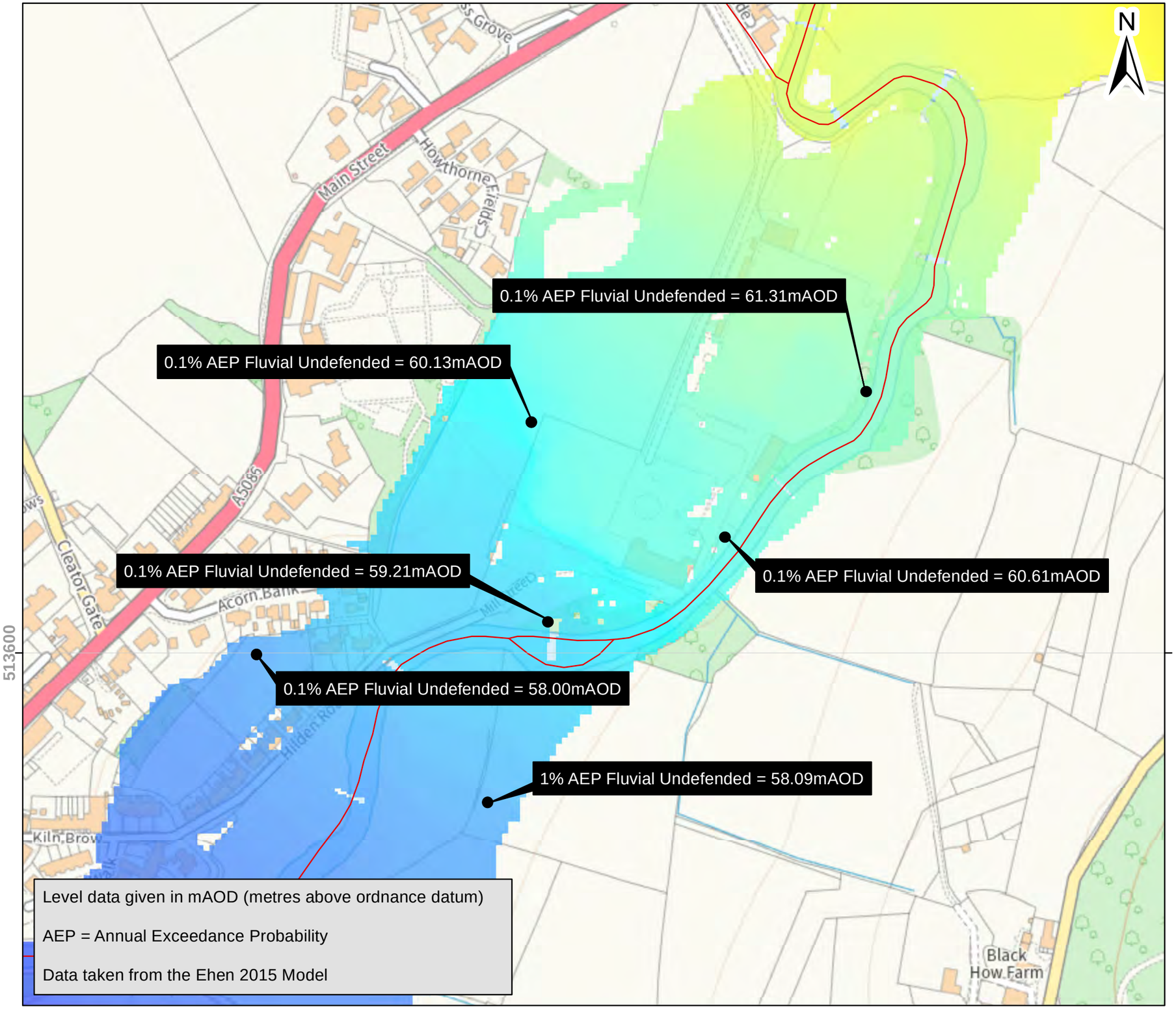
Fluvial Undefended Scenario 1% AEP annual probability of flooding

mAOD

High : 70

Low : 55

Contact Us: National Customer Contact Centre, PO Box 544, Rotherham, S60 1BY. Tel: 03708 506 506 (Mon-Fri 8-6). Email: enquiries@environment-agency.gov.uk



Level data given in mAOD (metres above ordnance datum)

AEP = Annual Exceedance Probability

Data taken from the Ehen 2015 Model

Environment Agency

Fluvial Flood Levels and Extents Map
Site Name: Mill Street, Cleator
Our Ref: Case EIR2025/04524RI
Grid Ref: 301960, 513689
Created: 22/04/2025

Key

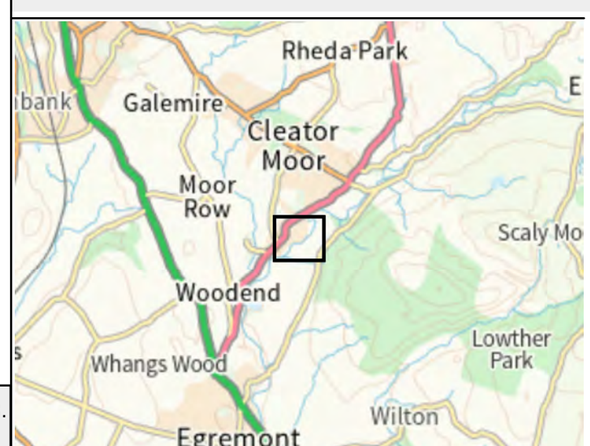
Main River

Fluvial Undefended Scenario 0.1% AEP annual probability of flooding

mAOD

High : 70

Low : 55



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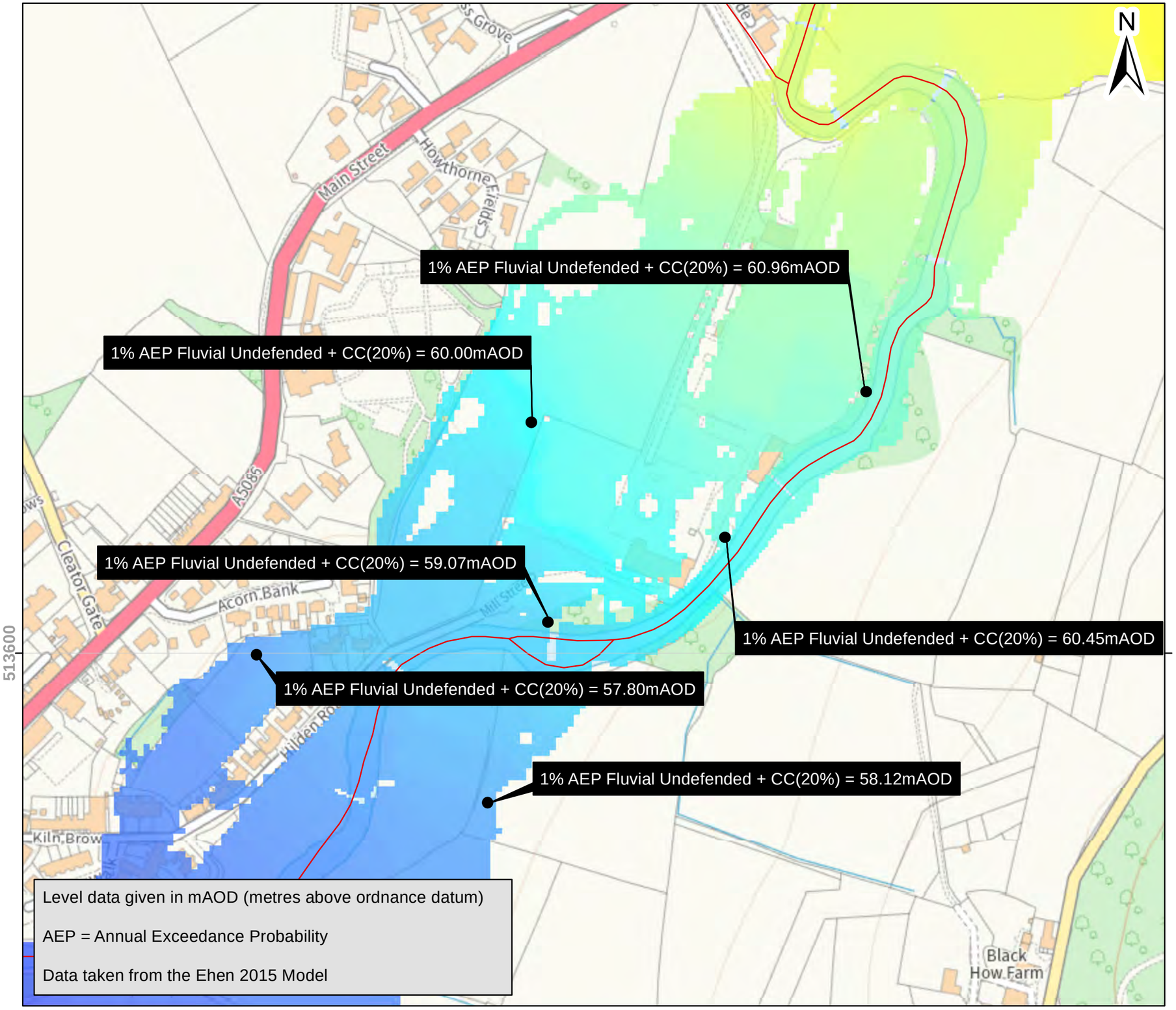


Environment Agency

Fluvial Flood Levels and Extents Map
Site Name: Mill Street, Cleator
Our Ref: Case EIR2025/04524RI
Grid Ref: 301960, 513689
Created: 22/04/2025

Key

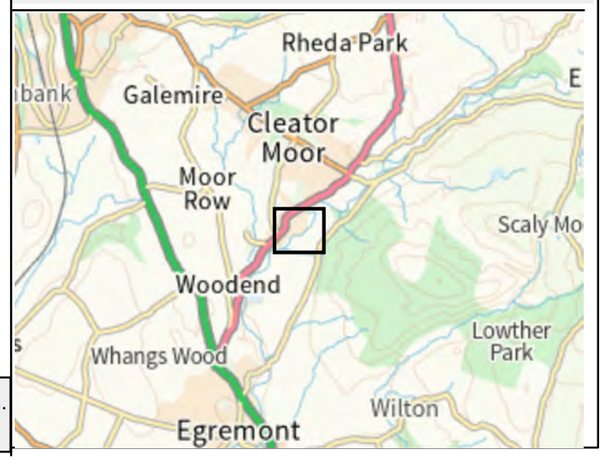
Main River

Fluvial Undefended Scenario 1% AEP annual probability of flooding + Climate Change (20%)

mAOD

High : 70

Low : 55



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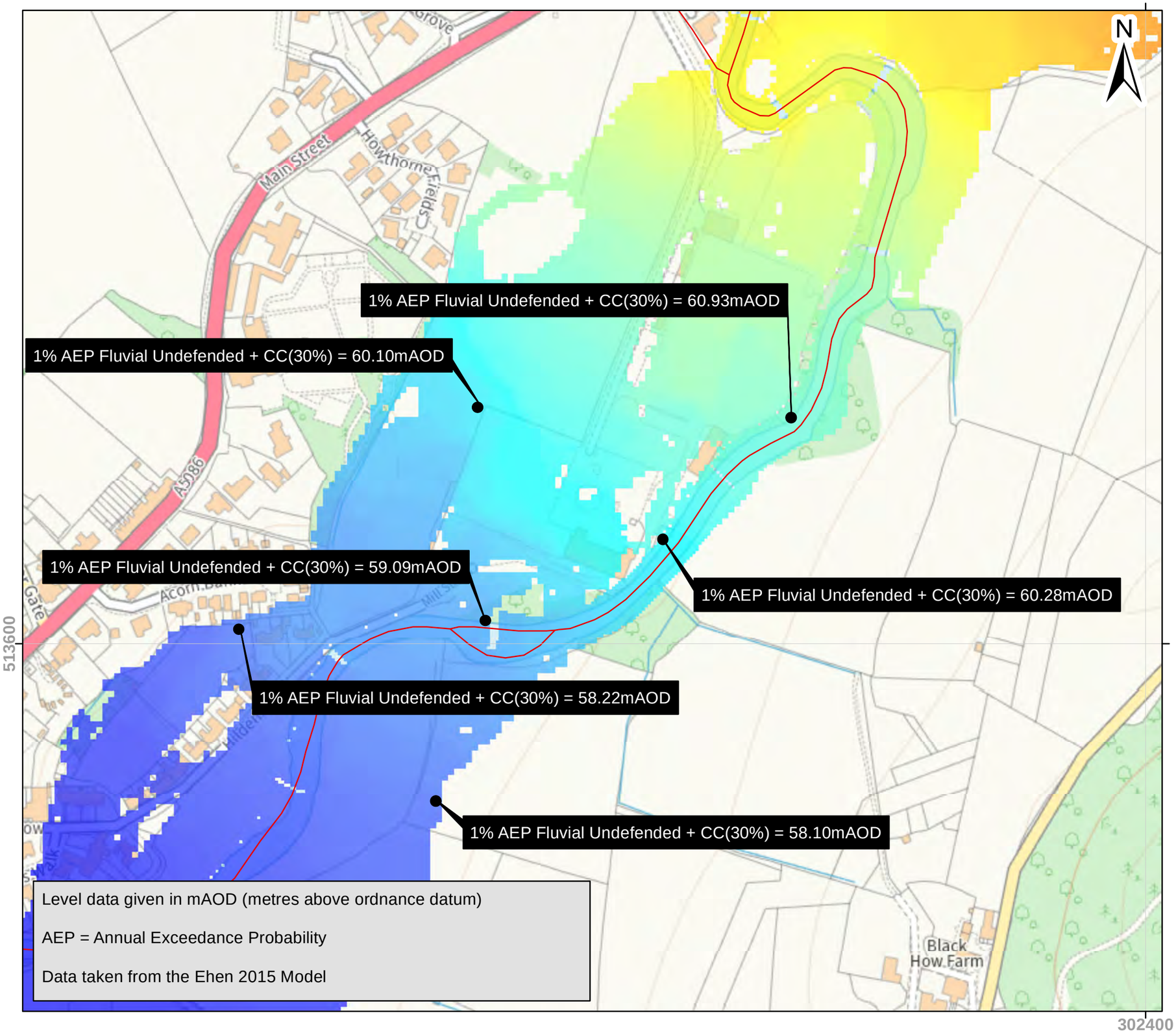


Environment Agency

Fluvial Flood Levels and Extents Map
Site Name: Mill Street, Cleator
Our Ref: Case EIR2025/04524RI
Grid Ref: 301960, 513689
Created: 22/04/2025

Key

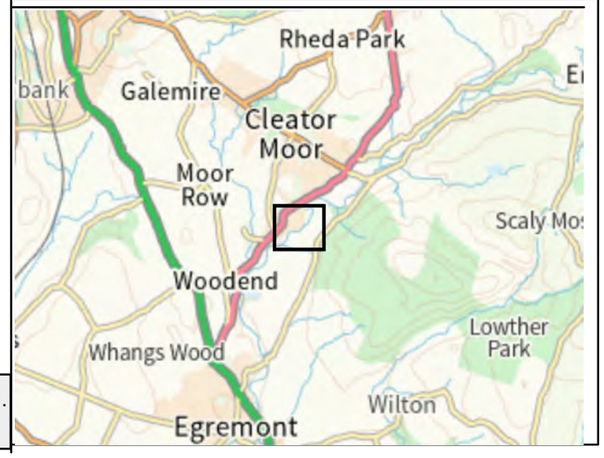
Main River

Fluvial Undefended Scenario 1% AEP annual probability of flooding + Climate Change (30%)

mAOD

High : 67

Low : 57



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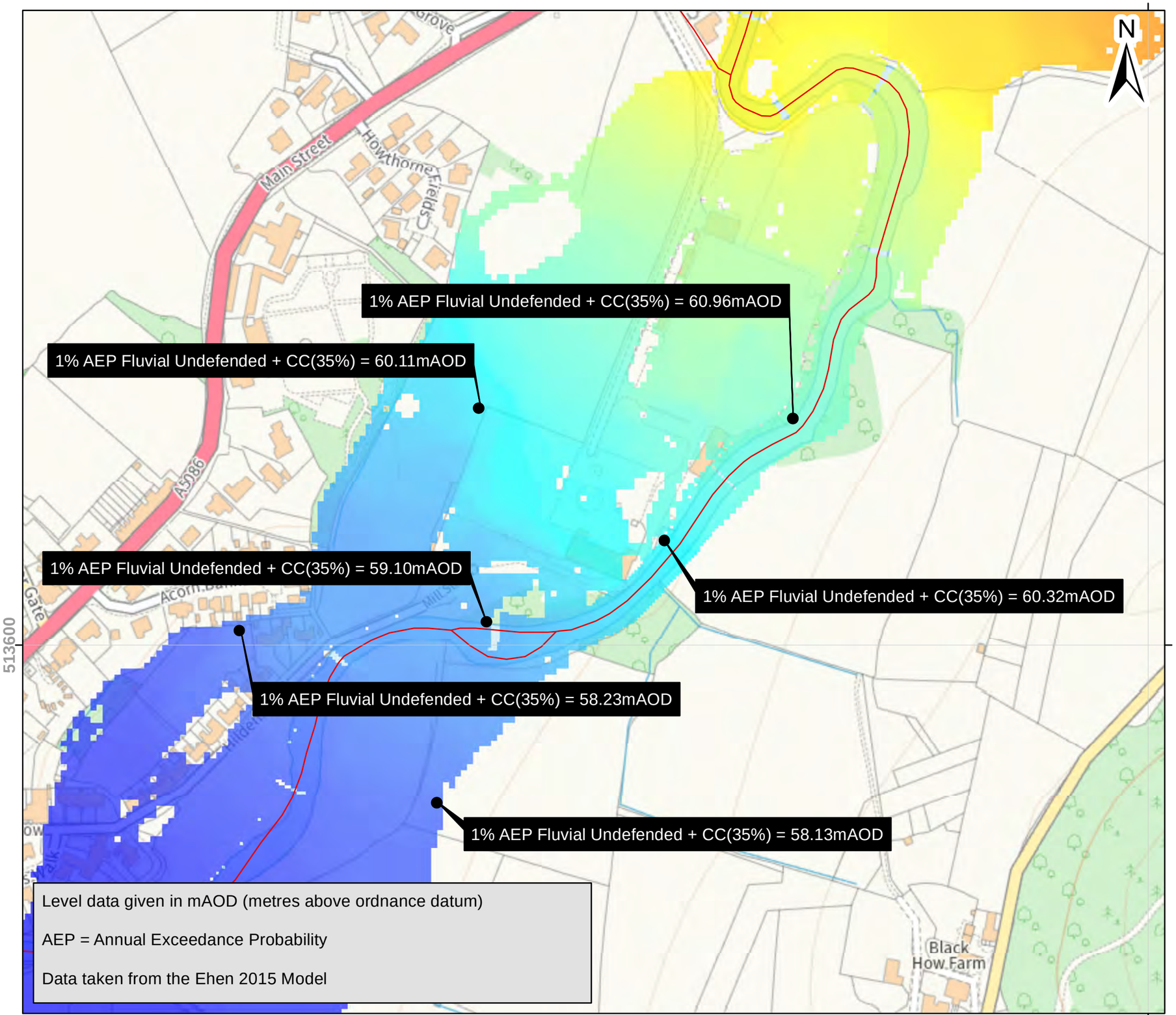


Environment Agency

Fluvial Flood Levels and Extents Map
Site Name: Mill Street, Cleator
Our Ref: Case EIR2025/04524RI
Grid Ref: 301960, 513689
Created: 22/04/2025

Key

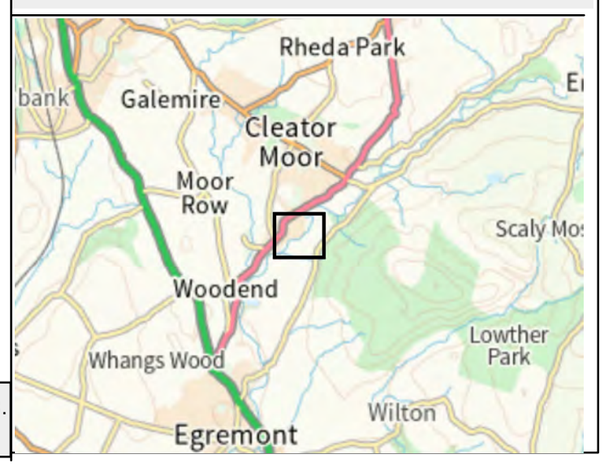
Main River

Fluvial Undefended Scenario 1% AEP annual probability of flooding + Climate Change (35%)

mAOD

High : 67

Low : 57



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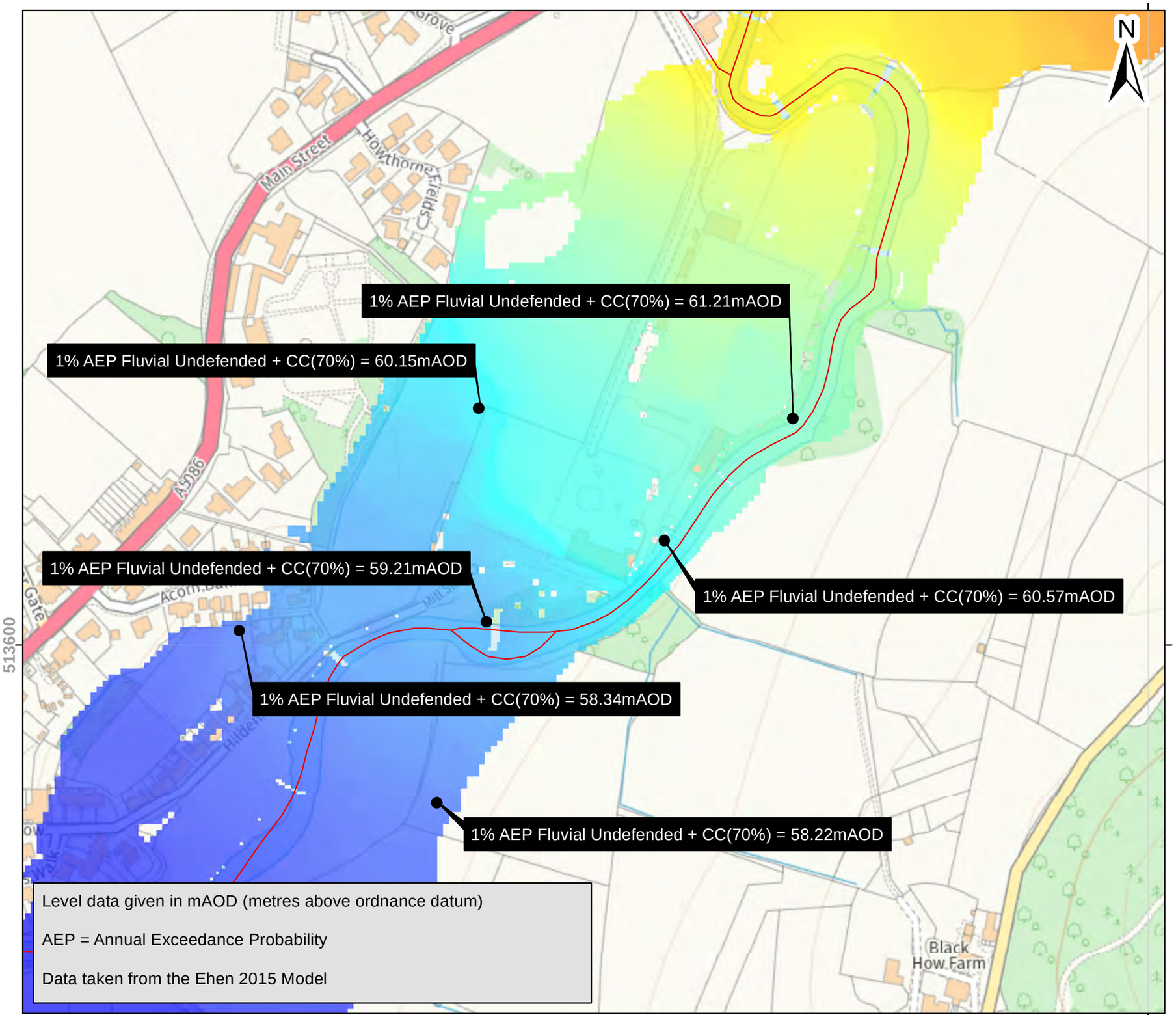


Level data given in mAOD (metres above ordnance datum)

AEP = Annual Exceedance Probability

Data taken from the Ehen 2015 Model

Environment Agency

Fluvial Flood Levels and Extents Map
Site Name: Mill Street, Cleator
Our Ref: Case EIR2025/04524RI
Grid Ref: 301960, 513689
Created: 22/04/2025

Key

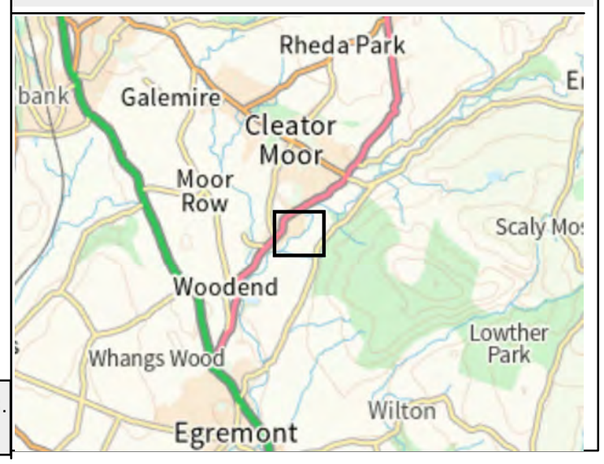
Main River

Fluvial Undefended Scenario 1% AEP annual probability of flooding + Climate Change (70%)

mAOD

High : 67

Low : 57



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Kingmoor Consulting Ltd

Suite 4 Atlantic House

Parkhouse, Carlisle

Cumbria, CA3 0LJ

T: 01228 915900

E: hello@kingmoorconsulting.co.uk