OAKSHIRE
ENVIRONMENTAL

Quantum Intelligent Trading Ltd
Company No: 06537088
VAT No: 369 2662 60
Tel: 0800 433 2906
oakshireenvironmental.co.uk

Preliminary Flood Risk Assessment

28 January 2026

Architecture Unknown on behalf of Vlatko Mahovic
Tangier Buildings, Whitehaven, CA28 7UZ

Report by Mr Will Dixon BSc (Hons) MSc AMIEnvSc GMICE
Supervised by Mr Louis Turner BSc (Hons)

CONTENTS

1. Introduction

The following document is a Preliminary Flood Risk Assessment carried out by Oakshire Environmental, and includes details of the site, vulnerability classification, flood linkages and an evaluation of risk.

1.1 Project Overview

The client's proposed project involves the conversion of first and second floors to residential units at Tangier Buildings, Whitehaven, CA28 7UZ. Oakshire Environmental have carried out a Flood Risk Assessment as described below.

1.2 Purpose of Investigation

The objectives of the Preliminary Flood Risk Assessment were to:

- Develop a detailed assessment of the site.
- Identify potential flood sources, receptors and pathways at the site.
- Assess the level of potential flood risk.
- Determine the requirement or scope of further investigations or mitigation measures.

1.3 Scope of Work

- Brief introductory information has been noted to provide context to the report and include an Introduction, Project Overview, Scope of Work and Limitations.
- To develop a detailed assessment of the site, desk studies have been carried out to collate information obtained from sources including the Environment Agency, Local & National Authorities, Strategic Flood Risk Assessments and Digital Terrain Model (DTM) LiDAR topographical surveys.
- This information has been used to identify potential flood sources, receptors and pathways at the site, as part of an initial Conceptual Site Model.
- To assess the level of potential flood risk, a Conceptual Site Model has been produced to categorise the potential severity of the impact of the flood linkage on the receptor and the probability of the flood linkage being present.
- Following the assessment of flood linkages, an evaluation of flood risk, mitigation measures, surface water management and safe access and egress has been conducted to determine the requirement or scope of further investigations.
- Supporting appendix include photographs, maps, and plans of the site.

1.4 Limitations

Quantum Intelligent Trading Ltd is previously and hereafter referred to as “Oakshire Environmental” or “the company”. Oakshire Environmental has exercised such professional skill, care and diligence as may reasonably be expected of a properly qualified and competent consultant when undertaking works of this nature. This report is only valid when used in its entirety and any information or advice contained within the report should not be relied upon until considered in the context of the whole report. Oakshire Environmental disclaims any responsibility to the client, as named on the front of this report (“the client”), and others in respect of any matters outside the scope of this work. Any comments made on the basis of information obtained from the client or other third parties are given in good faith on the assumption that the information is accurate. This report has been prepared solely for the benefit of the client and any other party using or placing reliance upon any information contained in this report does so at their own risk. Oakshire Environmental accepts no responsibility or liability for the contents of this report being used for any purpose or project for which it was not commissioned. Oakshire Environmental accepts no liability whatsoever for any loss or damage arising from the interpretation or use of this report and in no event shall the company be liable for any punitive, exemplary or other special damages, or for any indirect, incidental or consequential damages, including with respect to the performance or non-performance of any services, whether arising under breach of contract, tort or any other legal theory, and regardless of whether the company has been advised of, knew of, or should have known of the possibility of such damages. Furthermore, Oakshire Environmental does not accept any liability for the consequences of any legislative changes or the release of subsequent guidance documentation and following delivery of the report has no obligation to advise the client or any other party of such changes or their repercussions.

This report excludes consideration of potential hazards arising from any activities at the site other than normal use and occupancy for the intended land uses. Hazards associated with any other activities have not been assessed and must be subject to a specific risk assessment by the parties responsible for those activities. Oakshire Environmental does not warrant or guarantee that the site is free of hazardous or potentially hazardous materials or conditions. It should be noted that this report has been produced for environmental purposes only.

2. Site

The following section provides a description of the site, location, proposed development and vulnerability classification, utilising information obtained from the client and publicly available sources.

2.1 Site Description and Location

The site is located at Tangier Buildings, Whitehaven, CA28 7UZ off George Street, Tangier Street and Gregg's Lane and is approximately 445m^2 or 0.0445ha.

The site is comprised of a three-storey commercial building currently used as a bar and two shops on the ground floor and offices and workshops on the first and second floors.

Ground levels are approx. 6.7m-6.8mAOD on Tangier Street, 6.8m-9.7mAOD on George Street and 6.7m-8.6mAOD on Gregg's Lane both with the higher levels to the southeast.

The site is accessed via various entrances off George Street, Tangier Street and Gregg's Lane.

The site is bordered by commercial use in all directions apart from residential use to the east.

National Grid Reference: 297433E, 518410N

2.2 Proposed Development

The proposed development involves the conversion of first and second floors to residential use.

2.3 Vulnerability Classification

The NPPF technical guidance determines the suitability of a proposed development in a particular location based on its flood risk vulnerability. Based on Annex 3 of the NPPF, the proposed residential conversion of the upper floors falls within the category of 'more vulnerable'. No change is proposed to the ground floor which remains 'less vulnerable'.

The flood map for planning indicates that the site falls on the edge of Flood Zone 3, however, the Copeland Strategic Flood Risk Assessment (SFRA) shows that this area of Flood Zone 3 is not designated as functional flood plain (Flood Zone 3b).

The Sequential Test is not required for a change of use application. Additionally, less vulnerable developments are permitted in Flood Zone 3a. A Sequential Test is not necessary.

It should be noted that these Flood Zones do not take into account the impact of any flood defences or site-specific mitigation measures.

Table 1: Flood Risk Vulnerability Classification table from National Planning Policy Framework Technical Guidance

Flood Risk Vulnerability Classification					
Flood Zones	Essential Infrastructure	Highly Vulnerable	More Vulnerable	Less Vulnerable	Water Compatible
Zone 1	●	●	●	●	●
Zone 2	●	Exception Test required	●	●	●
Zone 3a	Exception Test required	x	Exception Test required	●	●
Zone 3b	Exception Test required	x	x	x	●

Key: ● Development is appropriate
X Development should not be permitted

3. Flood Risk Assessment

The following section outlines potential flood sources, pathways and receptors, utilising information gathered in the previous sections, to develop an initial conceptual site model.

3.1 Potential Flood Sources

Rivers & Seas

The site is situated less than 70m east of Whitehaven Marina and 360m east of the Irish Sea. The Midgey Gill is present 105m SSW where it is culverted along Duke Street and discharges into the marina.

There are no flood defences present in the area.

Environment Agency data shows that the site has not been affected by recorded historic flooding.

The Environment Agency has provided Product 4 data, this shows that the site is in an area covered by the Whitehaven Tidal Modelling Study, 2012, and the Pow Beck Modelling Study, 2023.

Climate change projections show an increased chance of warmer, wetter winters and hotter, drier summers with a higher likelihood of more frequent and intense rainfall. This is likely to make severe flooding happen more often. It is necessary to ensure that a development will be safe from flooding for its lifetime, which is generally considered to be 100 years for a residential development. Environment Agency guidance recommends that the impacts of climate change on peak river flow are assessed based on management catchments and recommends the use of the 'central' allowances for more vulnerable developments in Flood Zone 3a. The central climate change allowance for the 2080s in the South West Lakes management catchment is 30% when considering the design life of the site.

Environment Agency guidance recommends that the impacts of climate change on sea level rise are assessed based on management catchments and recommends the use of both 'higher-central' and 'upper end' allowances for flood risk assessments. The site is within the Northwest management catchment.

Table 2 – Table 2 of the NPPF-PPG. Sea level allowances by river basin district for each epoch in mm for each year (using 1981 to 2000 baseline)

Area of England	Allowance	2000 to 2035 (mm)	2036 to 2065 (mm)	2066 to 2095 (mm)	2096 to 2125 (mm)	Cumulative rise 2000 to 2125 (metres)
Northwest	Higher central	4.5 (158)	7.3 (219)	10 (300)	11.2 (336)	1.01
	Upper end	5.7 (200)	9.9 (297)	14.2 (426)	16.3 (489)	1.41

The Environment Agency have provided modelled tidal flood risk with a 600mm uplift on sea levels over baseline conditions. Considering that this flood risk assessment is being written for conversion of first and second floor units, an exact calculation of appropriate sea level rise uplift to cover the design life of the site is not considered necessary.

Environment Agency data indicates the site is not at risk of flooding in a 0.1% AEP (1 in 1000 year) event from fluvial sources, this being the Midgey Gill (included in the Pow Beck Modelling Study). Additionally, the site is not indicated to be at risk of flooding in a 1% AEP (1 in 100 year) event from fluvial sources with an allowance for climate change.

Environment Agency data indicates the site is not at risk of flooding in a 0.1% AEP (1 in 1000 year) event from tidal sources. The site is indicated to be at risk of flooding in a 0.5% AEP (1 in 200 year) event from tidal sources with an allowance for climate change, this being a 600mm uplift.

Modelled levels have been provided for the site based on a 2D grid of node points based on tidal flooding in the Whitehaven Tidal Modelling Study:

- 1 in 200-year + 600mm CC flood level – 7.39mAOD.

This flood depth equates to a maximum depth in the vicinity of the site of 0.69m along Tangier Street but due to levels rising towards the south-eastern side of the building the flooding will not affect the entire building at ground level.

Surface Water

Surface water runoff is caused by heavy rainfall that can overwhelm the drainage network. The Environment Agency Risk of Flooding from Surface Water mapping can be used to identify areas at risk of surface water flooding. Map data shows that surface water predominantly follows topographical flow paths of existing watercourses or dry valleys and can pond in low-lying areas. The risk is most often confined to roads with some run-off flow routes around properties.

Environment Agency maps show that there is a high likelihood of surface water flooding at the site and surface water flooding would occur at the site in a 3.3% AEP flood event. Surface water flood depths are expected to reach 0.90m in a 0.1% AEP event.

Surface water modelling, taking into account climate change, shows an increased risk to the site in that it will flood to similar maximum depths in a 1% AEP event between the years 2040 and 2060.

It is considered that surface water flood risk to the site is high.

Groundwater

Flooding from groundwater can occur when the water table rises and reaches ground level allowing water to seep through to the surface. This means that water may rise up through floors or underground rooms such as cellars or basements. Groundwater flooding is much slower to occur than river flooding and will usually happen days, weeks or even months after heavy or prolonged rainfall. And it may last weeks or even months.

The underlying mudstone, siltstone and sandstone bedrock of the Pennine Middle Coal Measures Formation is a Secondary A aquifer, suggesting a low risk of flooding from groundwater. The Copeland SFRA refers to the Environment Agency's Areas Susceptible to Groundwater Flooding map and suggests that several groundwater flood events have occurred in the surrounding area including Whitehaven, these were reportedly all within a similar time in 2018.

The topography suggests that if any groundwater flooding were to occur in the area it would be able to pond around and nearby to the site when considering the surface water risk, however there are lower areas when ponding would first occur.

It is considered that groundwater flood risk to the site is low.

Sewers

Sewer flooding occurs when heavy rainfall and flooding overloads sewer capacity or when sewers cannot discharge to watercourses due to high water levels. Sewer flooding can also be caused by blockages, collapses, equipment failure or groundwater leaking into sewer pipes. Sewer flooding is often synonymous with other sources of flooding such as river, surface water and groundwater flooding.

The Copeland SFRA and the Cumbria Surface Water Management Plan, 2013, detail that there are two culverted Ordinary Watercourses flowing beneath streets of Whitehaven and sewer flooding can occur from backing up of sewers which discharge to these watercourses. It is noted that the site lies within a Critical Drainage Area relating to the combined risk of surface water and sewer flooding.

It is considered that sewer flood risk to the site is high.

Reservoirs

The level and standard of inspection and maintenance required for reservoirs means that the risk of flooding from reservoirs is generally very low.

There are no reservoirs close to the site, Environment Agency mapping shows that the site is not at risk of flooding in the event of a reservoir failure.

3.2 Potential Flood Receptors

This flood risk assessment is intended to cover the proposed change of use of the first and second floors to residential use only, not the existing commercial use of the ground floor.

Given the proposed use of the site, the following receptors are considered:

- Residential end users
- Proposed residential building (first and second floors and ground floor entrances)

3.3 Potential Flood Pathways

Based on the expected on-site receptors, relevant pathways for the above receptors include:

- Tidal when considering climate change
- The culverted Midgey Gill
- Surface water along topographical flow paths and low points
- Underlying bedrock
- Local sewers

Pathways between off-site sources and off-site receptors is beyond the scope of this assessment.

3.4 Risk Assessment Methodology

The potential level of risk posed by a particular source is determined by assessing the potential severity of the impact of the flood linkage on the receptor, if it is assumed to be present, and the probability of the flood linkage being present.

Severities are categorised from Minor to Severe and probabilities are categorised from Unlikely to High Likelihood to give a potential level of risk output.

Table 3: Risk Matrix

Probability	**Severity of Consequence**			
	Severe	Medium	Mild	Minor
High Likelihood	Very High Risk	High Risk	Moderate Risk	Low / Moderate Risk
Likely	High Risk	Moderate Risk	Low / Moderate Risk	Low Risk
Low Likelihood	Moderate Risk	Low / Moderate Risk	Low Risk	Very Low Risk
Unlikely	Low / Moderate Risk	Low Risk	Very Low Risk	Very Low Risk

Very High Risk

There is a high probability that severe harm could arise to a designated receptor from an identified source; or there is evidence that severe harm to a designated receptor is currently happening.

High Risk

Harm is likely to arise to a designated receptor from an identified source.

Moderate Risk

It is possible that harm could arise to a designated receptor from an identified source. It is relatively unlikely that any such harm would be severe or if any harm were to occur it is more likely that the harm would be relatively mild.

Low Risk

It is possible that harm could arise to a designated receptor from an identified source, however, it is likely that this harm, if realised, would normally be mild.

Very Low Risk

There is a low possibility that harm could arise to a receptor. In the event of such harm being realised it is not likely to be severe.

4. Conclusions

4.1 Risk Evaluation

- There is a **low risk** to residential end users and the existing building from tidal flooding when accounting for climate change.
- There is a **very low risk** to residential end users and the existing building from fluvial flooding from the culverted Midgey Gill.
- There is a **high risk** to residential end users and the existing building from surface water flooding from surface water runoff exceeding the capacity of the local drainage system.
- There is a **low risk** to residential end users and the existing building from groundwater flooding through the underlying bedrock.
- There is a **high risk** to residential end users and the existing building from sewer flooding in local sewers.
- There is a **very low residual risk** to residential end users and the existing building from reservoir failure flooding coinciding with river flooding.

4.2 Proposed Flood Mitigation Measures

Based on the identified tidal, sewer and surface water flood risk, flood mitigation measures would be considered necessary to mitigate these risks. However, the proposed development involves the change of use of the first and second floor units into residential use, so risk must be considered in relation to these units only, excluding the ground floor where no works are proposed.

The proposed residential units would be accessed as existing by doorways from the ground floor, between the commercial units. In terms of residential use, the only points of access are on the ground floor. These points of access are at risk of flooding which will be covered in terms of access and egress.

Should any refit works be carried out to the residential doorways, appropriate mitigation measures would comprise minimising damage and disruption resulting from a flood, such as having raised and ceiling-fed electrics, having removable and water-resistant fittings to enable efficient cleaning, having impermeable floor and wall surfaces.

4.3 Surface Water Management

The proposed development will result in no change to the impermeable surface cover across the site or to the drainage system, therefore, the rate and volume of runoff will be unchanged, floodplain storage capacity will be maintained and the flood risk off-site will not be increased.

4.4 Safe Access and Egress

The risk of flooding at the site is high in terms of surface water flooding and the onset of flooding would be quite sudden.

Access into the upper floors of the building will remain unchanged, but the change of use will mean residential safe access and egress will need consideration. There are three entrances to the proposed flats on the upper floors from points around the building on the ground floor, access is via staircases.

External ground levels from publicly available LiDAR data have been compiled relating approximately to the entrances, these have been compared against flood levels for tidal flooding in a 0.5% AEP event with 600mm of sea level rise and surface water flooding in a 1% AEP event for the years 2040-2060 with depths estimated.

Table 4. Flood risk at residential access points

Residential Entrance	Ground Level	Tidal Flood Depth (7.39mAOD for 0.5% AEP CC event)	Surface Water Flood Depth Estimation (including CC in a 1% AEP event)
George Street (central)	8.40mAOD	Not affected	Not affected
George Street (east)	9.40mAOD	Not affected	Not affected
Gregg's Lane	7.10mAOD	0.29m	0.50m

Data suggests that the two residential entrances on George Street are not at risk of flooding and are considered to have safe dry access and egress. The entrance on Gregg's Lane may be affected by 0.29m of tidal flooding and 0.50m of surface water flooding in the respective design events and accounting for climate change. The entrance on Gregg's Lane is at higher risk of flooding, pedestrian access is possible to the southeast to Senhouse Street which is outside of the flood zone, through an alley.

All proposed residential units have safe refuge and it is advisable that all site users avoid travel to and from the site during times of flooding or high flood risk.

The site is not within an Environment Agency Flood Alert Area or Warning Area, however these designations cover land nearby. It is advised residents or a responsible person sign-up to receive and disseminate these warnings.

4.5 Conclusions

The site falls on the edge of Flood Zone 3, based on the Environment Agency's Flood Map for Planning. Assessment of the risk to the site from all sources of flooding, including consultation of the Whitehaven Tidal Modelling Study, the Pow Beck Modelling Study, the Copeland SFRA and the Cumbria Surface Water Management Plan, shows that the site is considered to be at low risk from tidal flooding when accounting for climate change, very low risk from river flooding, high risk from surface water and sewer flooding, low risk from groundwater flooding and very low risk from residual reservoir-failure flooding. However, these flood risks affect the building as a whole and the residential accesses, not the proposed residential units on the first and second floors.

The proposed development will not alter any drainage or impermeable areas.

In the event of a flood there is considered to be safe access and egress to the two residential accesses on George Street, with building users able to safely enter and exit the building without the intervention of emergency services or others during design flood conditions. The entrance on Gregg's Lane is affected by deep surface water flooding which could be sudden in onset, should dry access not be possible, all residential units have safe refuge on the first or second floors.

It should be noted that these conclusions are based on the currently proposed development plan which involves the change of use of first and second floor units to residential only, therefore, flood risk at the site should be re-assessed if material changes are made to the proposed development.

5. References

British Geological Survey. *British Geological Survey (BGS)* [online] Available at: <bgs.ac.uk/>.

Cumbria County Council, 2012. Surface Water Management Plan. Phase 3 Report. Available at: https://www.cumbria.gov.uk/eLibrary/Content/Internet/538/755/1929/17716/17717/42117104122.pdf

Environment Agency, 2026. *Flood map for planning.* [online] Available at: <flood-map-for-planning.service.gov.uk>.

Environment Agency, 2026. *Flood risk and coastal change.* [online] Available at: <gov.uk/guidance/flood-risk and-coastal-change>.

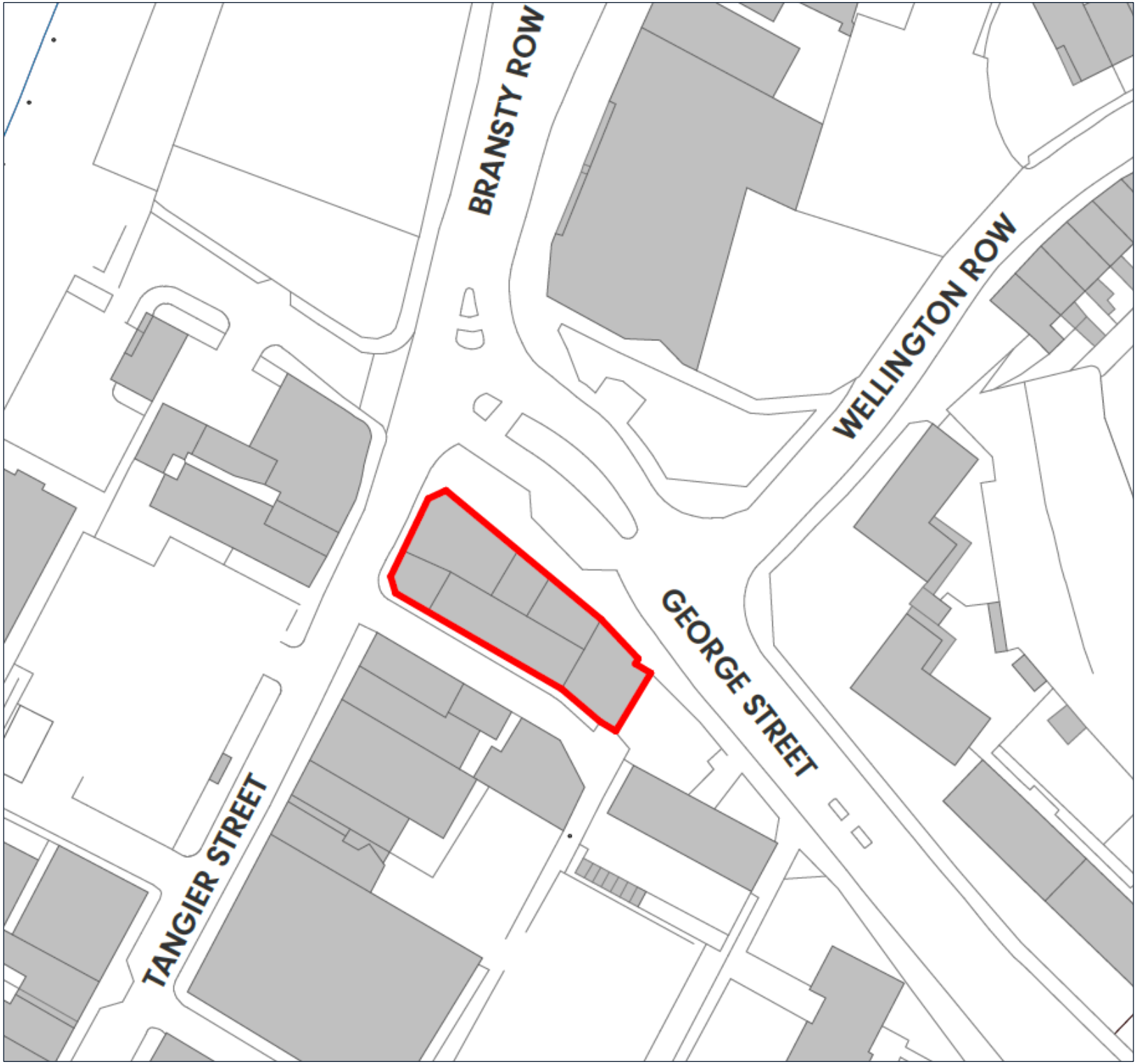
Environment Agency, 2022. *Flood risk assessments: climate change allowances.* [online] Available at: <gov.uk/guidance/flood-risk-assessments-climate-change-allowances>.

Environment Agency, 2025. *Product 4: Flood Risk Data Package for Tangier Buildings, Whitehaven.* GD34NG1TJJJW.

JBA Consulting, 2021. *Copeland Borough Council Level 1 Strategic Flood Risk Assessment.* [online] Available at: < https://www.copeland.gov.uk/content/strategic-flood-risk-assessment-0 >.

Ordnance Survey. [online] Available at: <ordnancesurvey.co.uk/>.

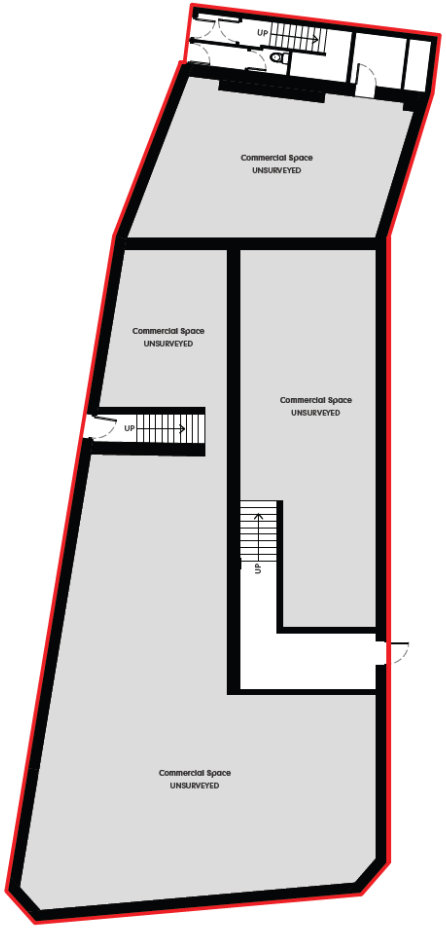
Oakshire Environmental. Available at: <oakshireenvironmental.co.uk>



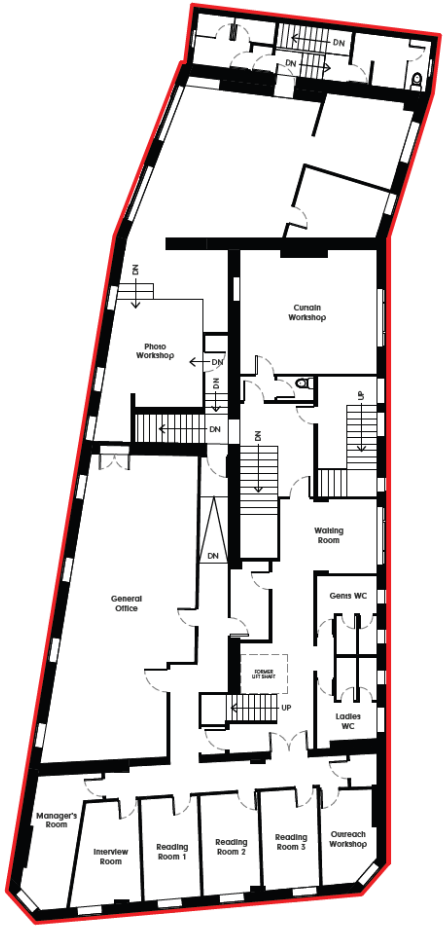
Appendix - Site Maps & Plans	
Description	
Site location plan	
Sources	
Contains OS data © Crown copyright and database rights Architecture Unknown	
Key	
	Site boundary
◄	North

Appendix - Site Maps & Plans
Description
Existing / proposed site plan
Sources
Architecture Unknown
Key
Site boundary

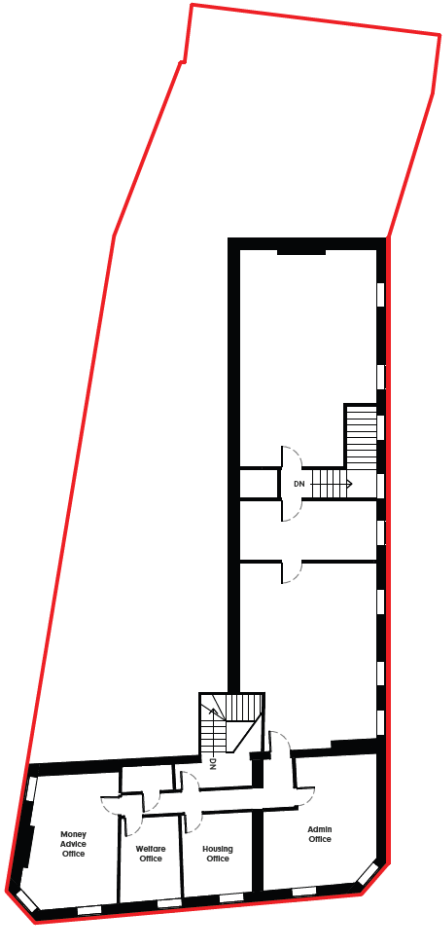
Appendix - Site Maps & Plans
Description
Existing Floor Plans
Sources
Architecture Unknown



Existing Ground Floor Plan
1 : 100

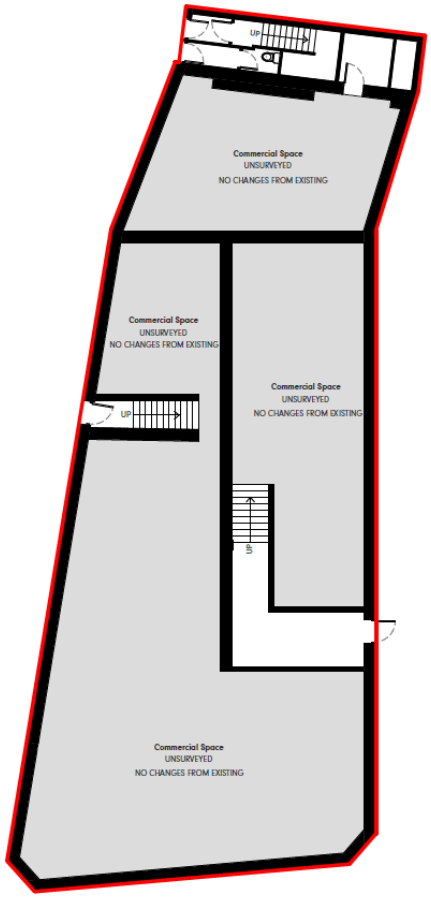


Existing First Floor Plan
1 : 100



Existing Second Floor Plan
1 : 100

Appendix - Site Maps & Plans
Description
Proposed Floor Plans
Sources
Architecture Unknown

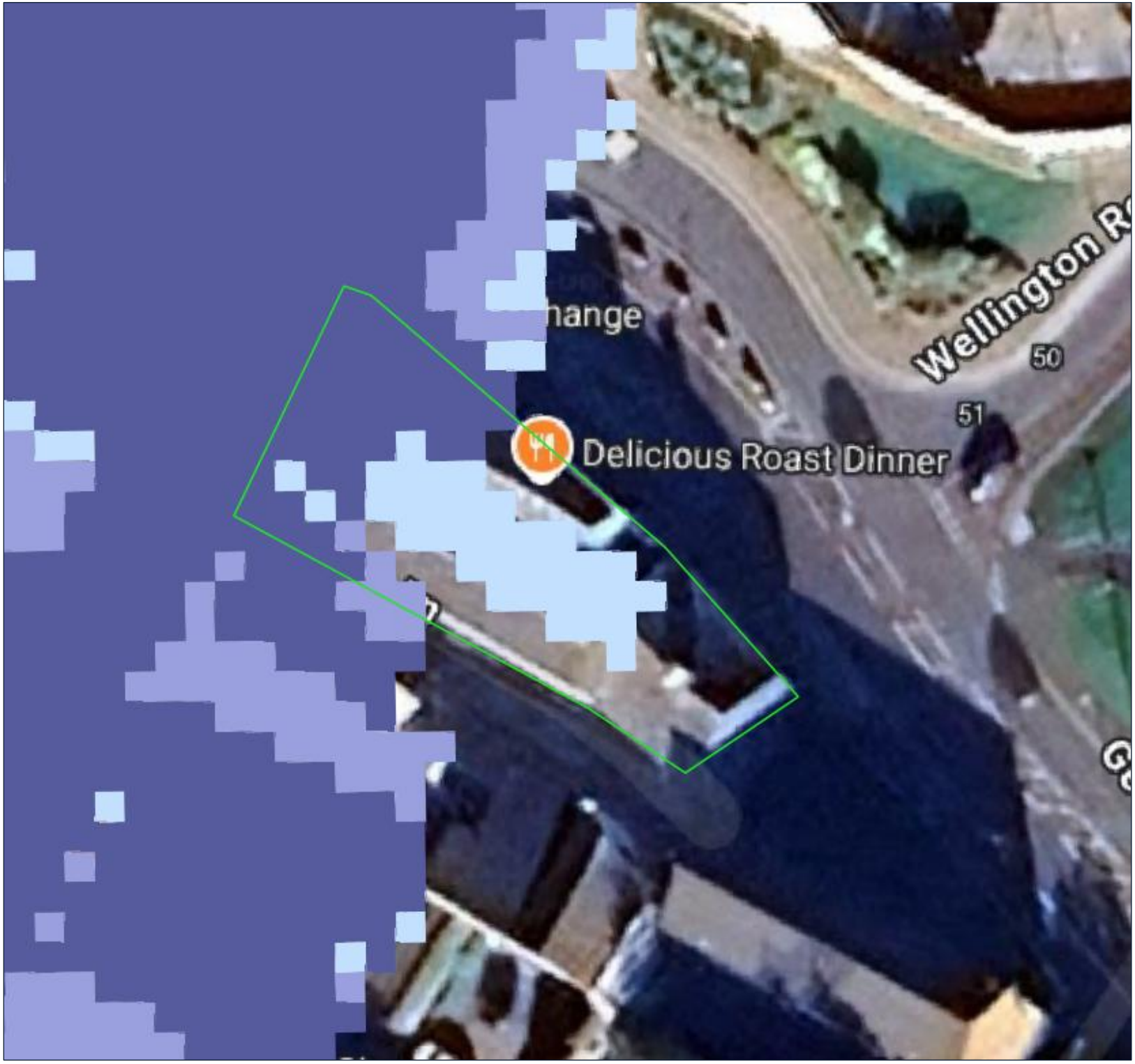


Proposed Ground Floor Plan

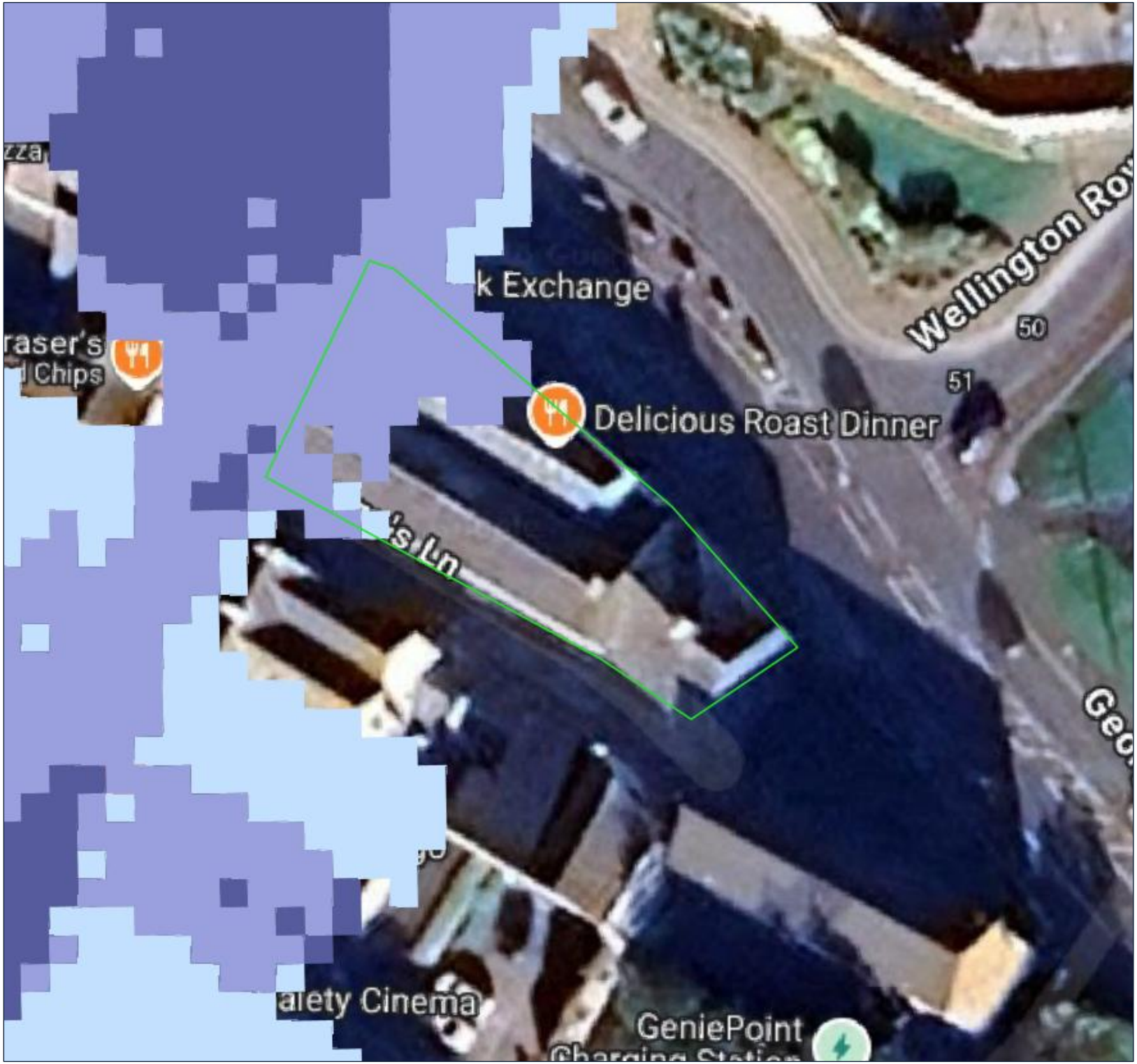
Proposed First Floor Plan

Proposed Second Floor Plan

Appendix – Flood Risk Maps	
Description	
Flood map for planning	
Sources	
Environment Agency OS data © Crown copyright and database rights	
Key	
	Site boundary
	Flood Zone 1
	Flood Zone 2
	Flood Zone 3
	Main river
	Flood defence
▲	North



Appendix - Flood Risk Maps	
Description	
Environment Agency map showing the extent of flooding from surface water for a range of flood events for between 2040 and 2060 for depths exceeding 300mm	
Sources	
Environment Agency OS data © Crown copyright and database rights	
Key	
	Site boundary
	0.1% AEP (Low)
	1% AEP (Medium)
	3.33% AEP (High)
▲	North



Appendix - Flood Risk Maps	
Description	
Environment Agency map showing the extent of flooding from surface water for a range of flood events for between 2040 and 2060 for depths exceeding 600mm	
Sources	
Environment Agency OS data © Crown copyright and database rights	
Key	
	Site boundary
	0.1% AEP (Low)
	1% AEP (Medium)
	3.33% AEP (High)
▲	North

Appendix - Flood Risk Maps	
Description	
Environment Agency map showing the extent of flooding from surface water for a range of flood events for between 2040 and 2060 for depths exceeding 900mm	
Sources	
Environment Agency OS data © Crown copyright and database rights	
Key	
	Site boundary
	0.1% AEP (Low)
	1% AEP (Medium)
	3.33% AEP (High)
▲	North

Flood risk assessment data

Location of site: 297432 / 518407 (shown as easting and northing coordinates)
Document created on: 19 December 2025
This information was previously known as a product 4.
Customer reference number: GD34NG1TJJJW

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 Cumberland.

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

About the models used

Model name: Pow Beck 2023
Scenario(s): Defended fluvial, defences removed fluvial, defended climate change fluvial
Date: 19 December 2023

Model name: Whitehaven_Tidal 2012
Scenario(s): Defended tidal, defences removed tidal, defended climate change tidal, defences removed climate change tidal
Date: 1 July 2013

These models contain the most relevant data for your area of interest.

Terminology used

Annual exceedance probability (AEP)

This refers to the probability of a flood event occurring in any year. The probability is expressed as a percentage. For example, a large flood which is calculated to have a 1% chance of occuring in any one year, is described as 1% AEP.

Metres above ordnance datum (mAOD)

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

Flood map for planning (rivers and the sea)

Your selected location is in flood zone 3.

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

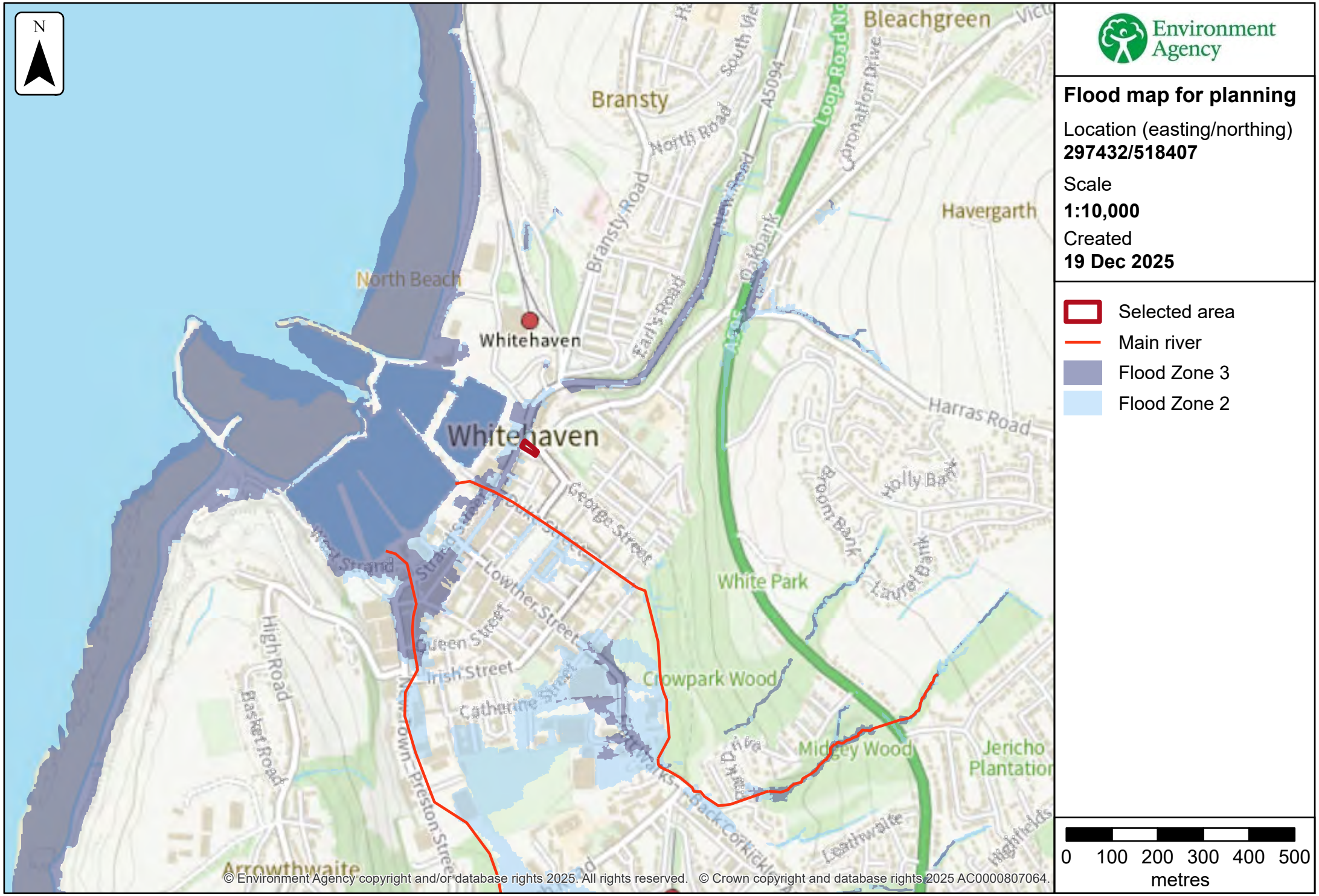
- 0.5% or greater probability of occurring in any year for flooding from the sea
- 1% or greater probability of occurring in any year for fluvial (river) flooding

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 copyright and/or database rights 2025. All rights reserved. © Crown copyright and database rights 2025 AC0000807064.

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

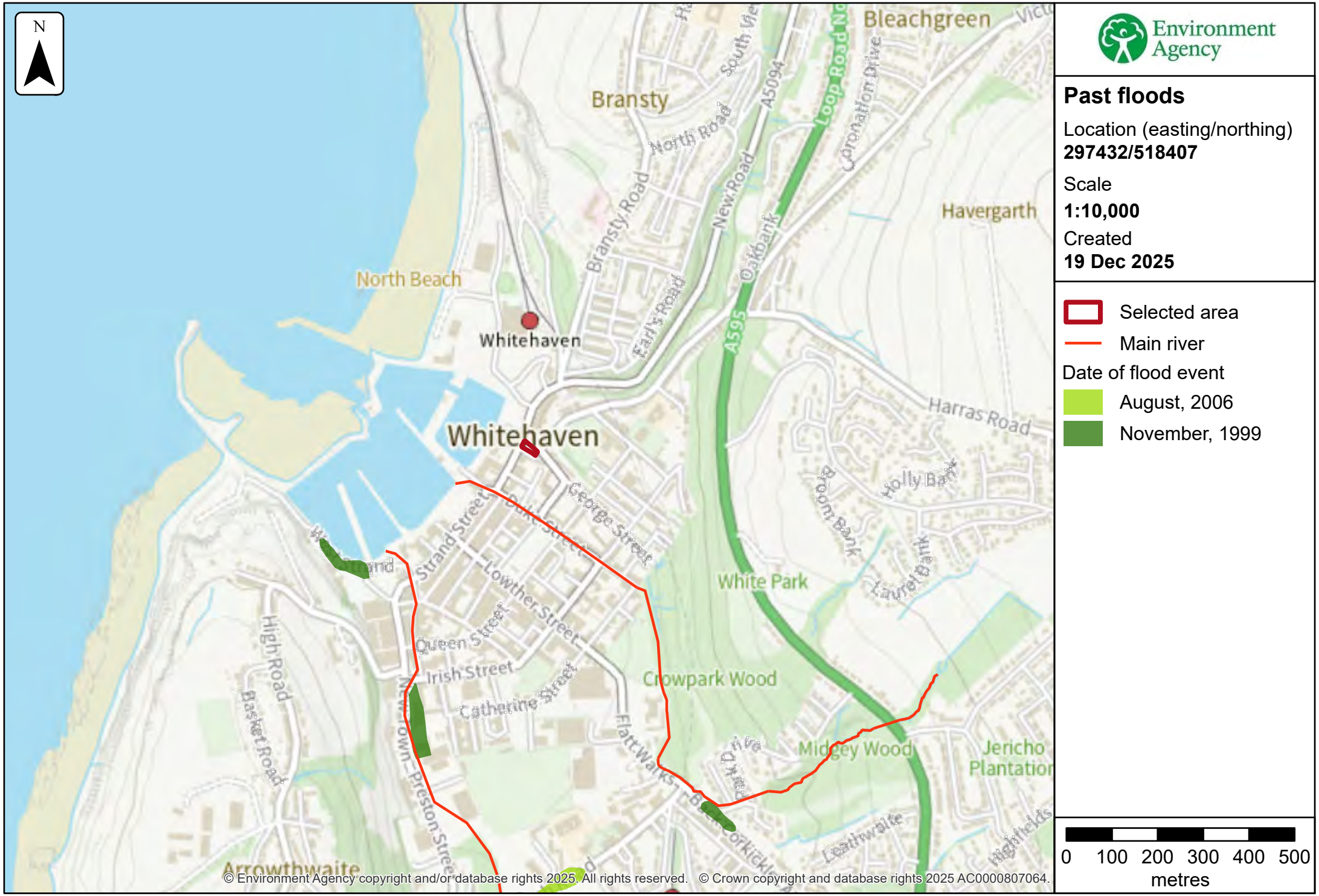
The recorded flood outlines are a geographical information system (GIS) data layer that show our verified records of areas that have flooded in the past from:

- 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 Cumberland Lead Local Flood Authority (LLFA) and your drainage board to get information about past flooding caused by surface water or drainage systems.



© Environment Agency copyright and/or database rights 2025. All rights reserved. © Crown copyright and database rights 2025 AC0000807064.

Data on past flood events

Start date	End date	Source of flood	Cause of flood	Affects location
11 August 2006	11 August 2006	main river	unknown	No
5 November 1999	5 November 1999	main river	channel capacity exceeded (no raised defences)	No

Flood defences and attributes

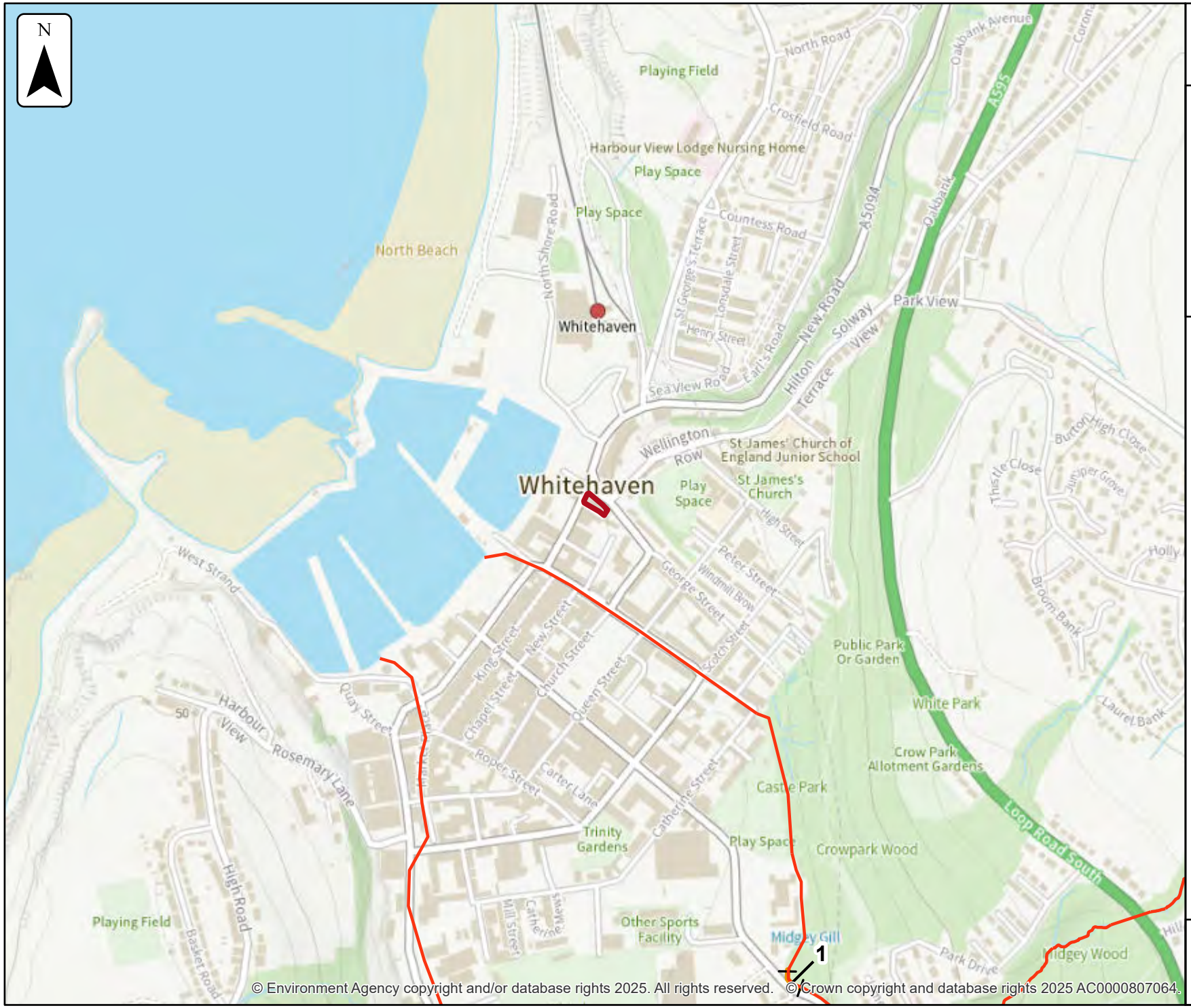
The flood defences map shows the location of the flood defences present.

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)
297432/518407

Scale
1:7,500

Created
19 Dec 2025

- Selected area
- Main river
- Flood defence

0 100 200 300
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	94578	Wall	20	Fair	17.58	18.54	17.58

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

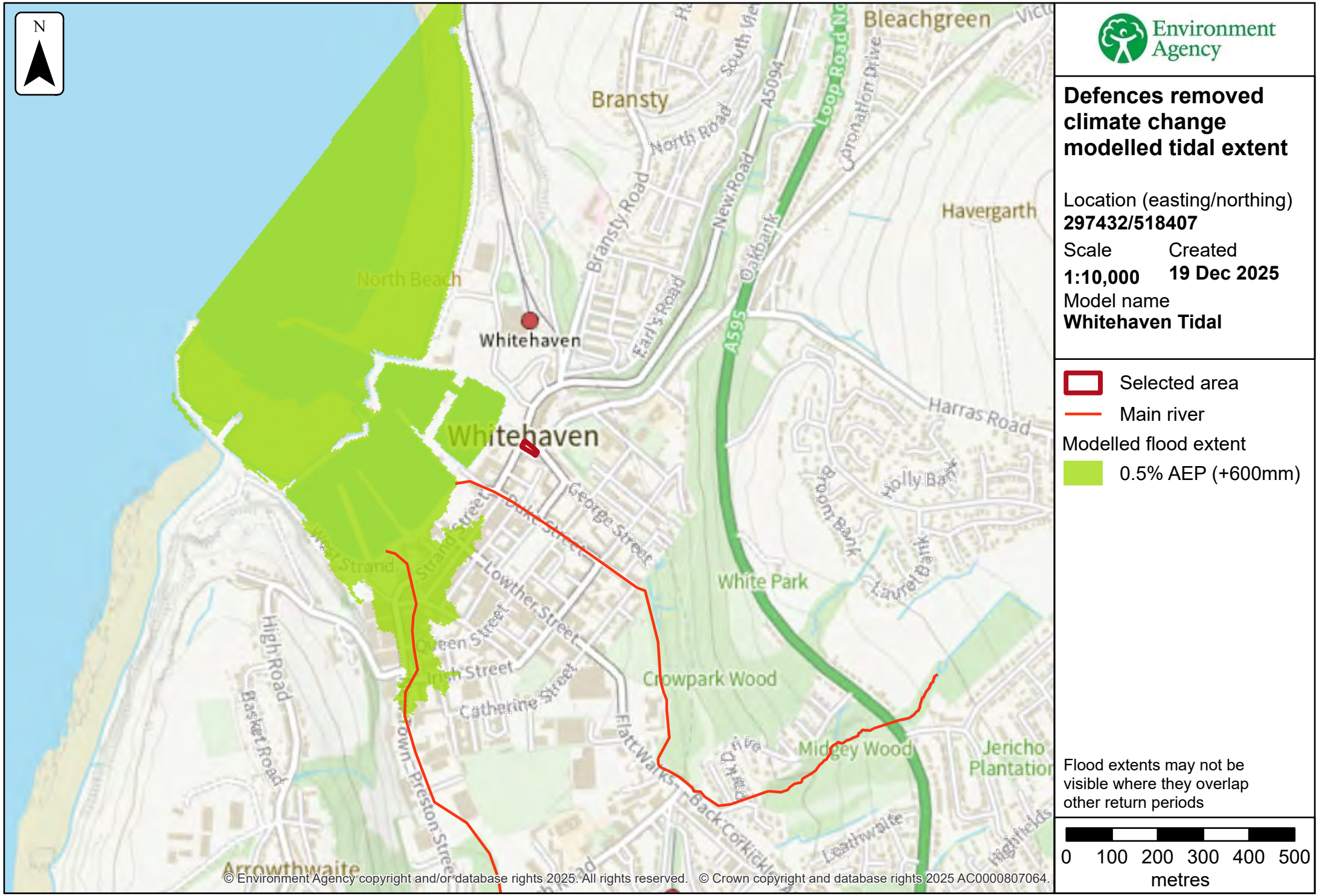
The climate change data included in the models may not include the latest flood risk assessment climate change allowances. Where the new allowances are not available you will need to consider this data and factor in the new allowances to demonstrate the development will be safe from flooding.

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 modelled tidal: risk of flooding from the sea where there are flood defences
- Defences removed modelled tidal: risk of flooding from the sea 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
- Defended climate change modelled tidal: risk of flooding from the sea where there are flood defences, including estimated impact of climate change
- Defences removed climate change modelled tidal: risk of flooding from the sea where flood defences have been removed, including estimated impact of climate change



© Environment Agency copyright and/or database rights 2025. All rights reserved. © Crown copyright and database rights 2025 AC0000807064.

Environment Agency

Defences removed climate change modelled tidal extent

Location (easting/northing)
297432/518407

Scale
1:10,000

Created
19 Dec 2025

Model name
Whitehaven Tidal

Selected area

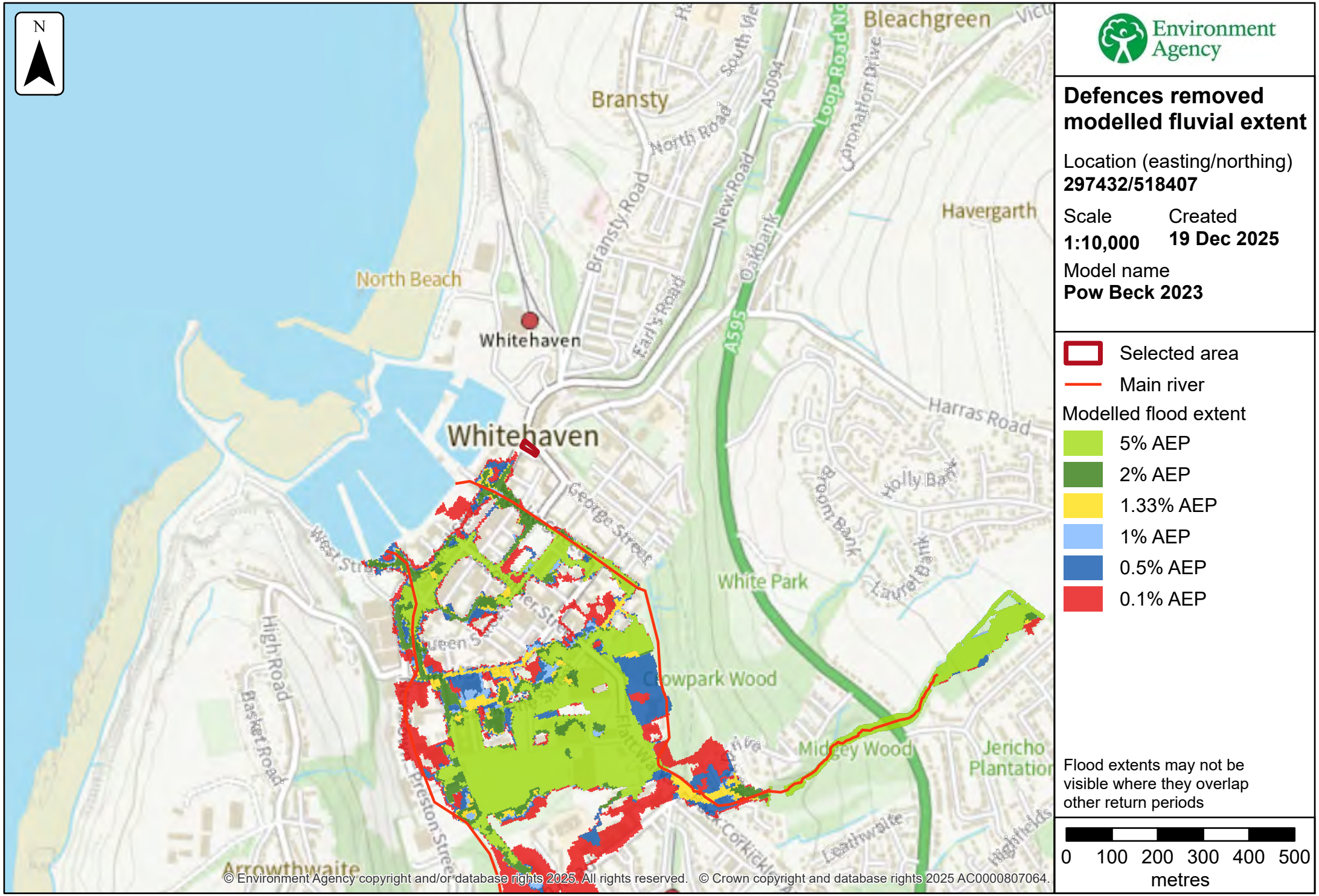
Main river

Modelled flood extent

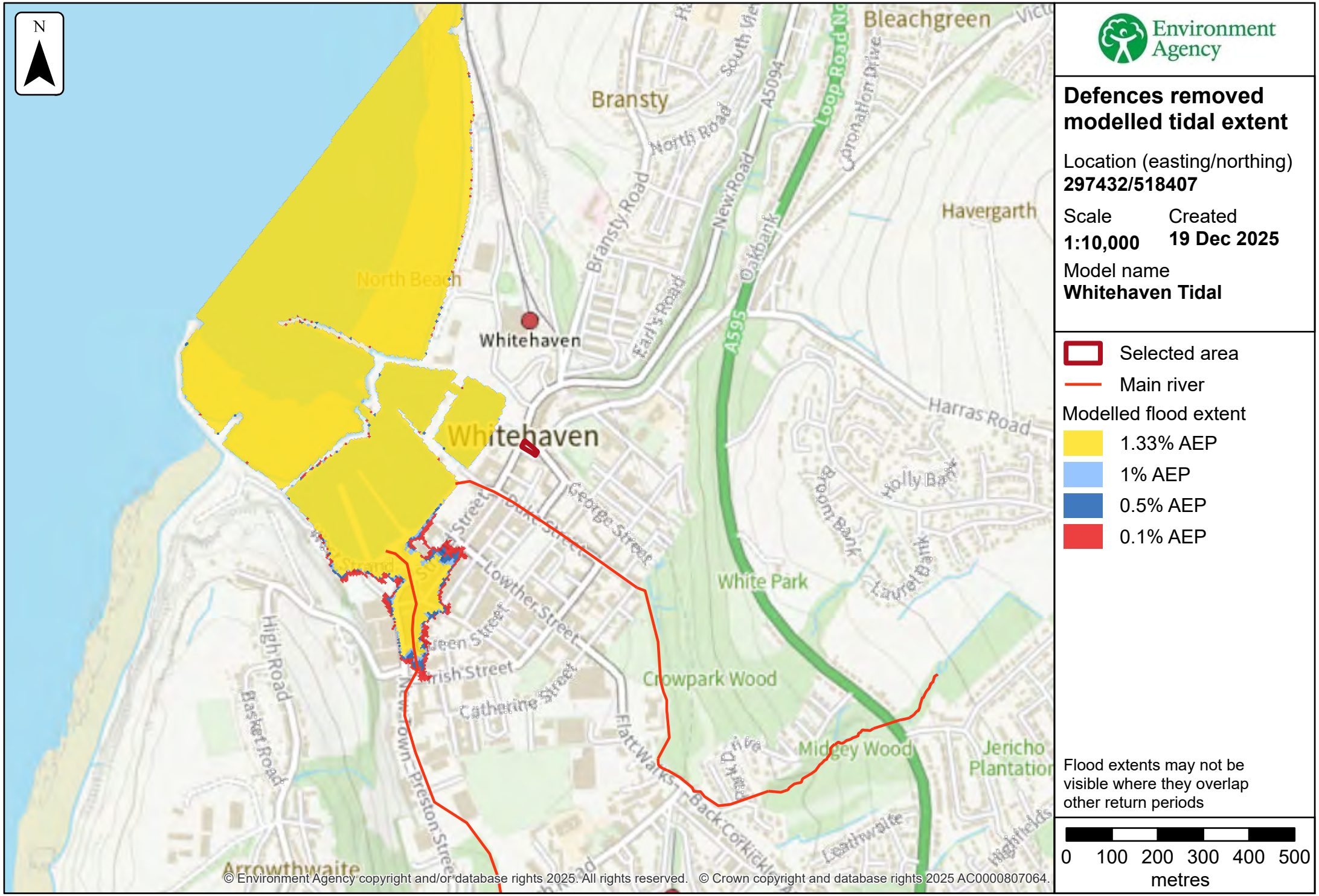
0.5% AEP (+600mm)

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

0 100 200 300 400 500
metres



© Environment Agency copyright and/or database rights 2025. All rights reserved. © Crown copyright and database rights 2025 AC0000807064.



Environment Agency

Defences removed modelled tidal extent

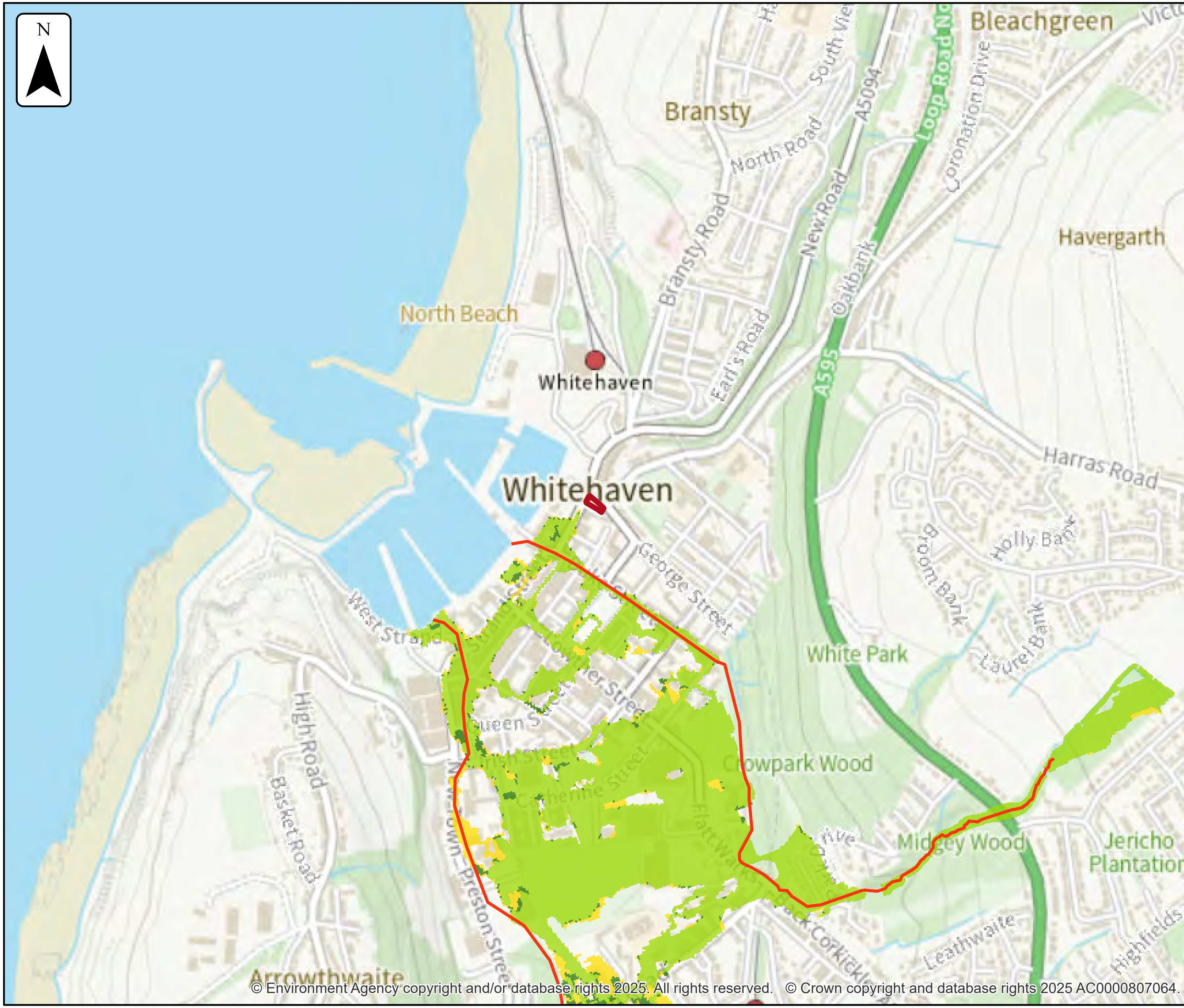
Location (easting/northing)
297432/518407

Scale
1:10,000

Created
19 Dec 2025

Model name
Whitehaven Tidal

© Environment Agency copyright and/or database rights 2025. All rights reserved. © Crown copyright and database rights 2025 AC0000807064.



© Environment Agency copyright and/or database rights 2025. All rights reserved. © Crown copyright and database rights 2025 AC0000807064.

Environment Agency

Defended climate change modelled fluvial extent

Location (easting/northing)
297432/518407

Scale
1:10,000

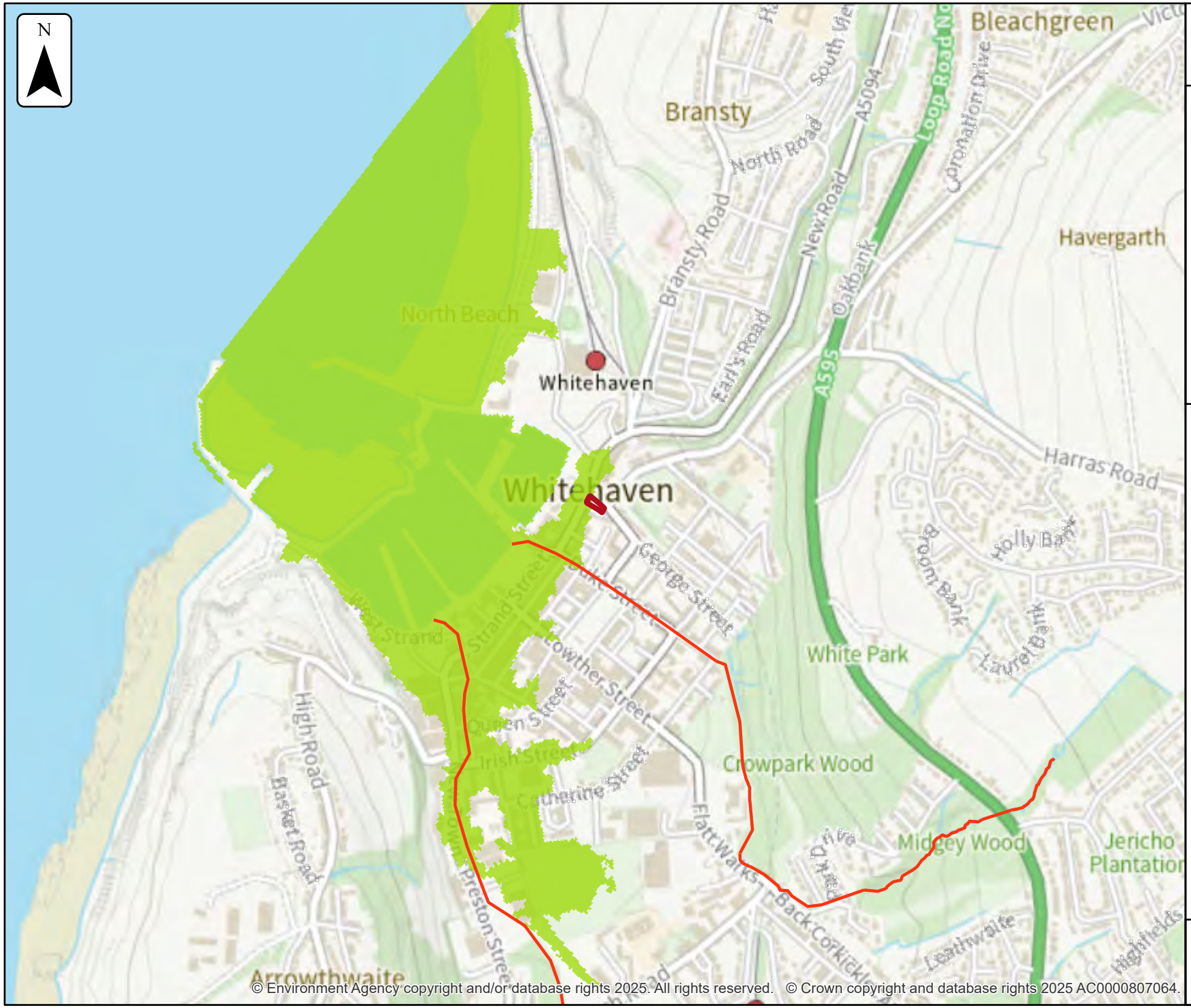
Created
19 Dec 2025

Model name
Pow Beck 2023

Selected area
Main river
Modelled flood extent
1% AEP (+30%)
1% AEP (+39%)
1% AEP (+63%)

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

0 100 200 300 400 500
metres



© Environment Agency copyright and/or database rights 2025. All rights reserved. © Crown copyright and database rights 2025 AC0000807064.

Environment Agency

Defended climate change modelled tidal extent

Location (easting/northing)
297432/518407

Scale
1:10,000

Created
19 Dec 2025

Model name
Whitehaven Tidal

Selected area

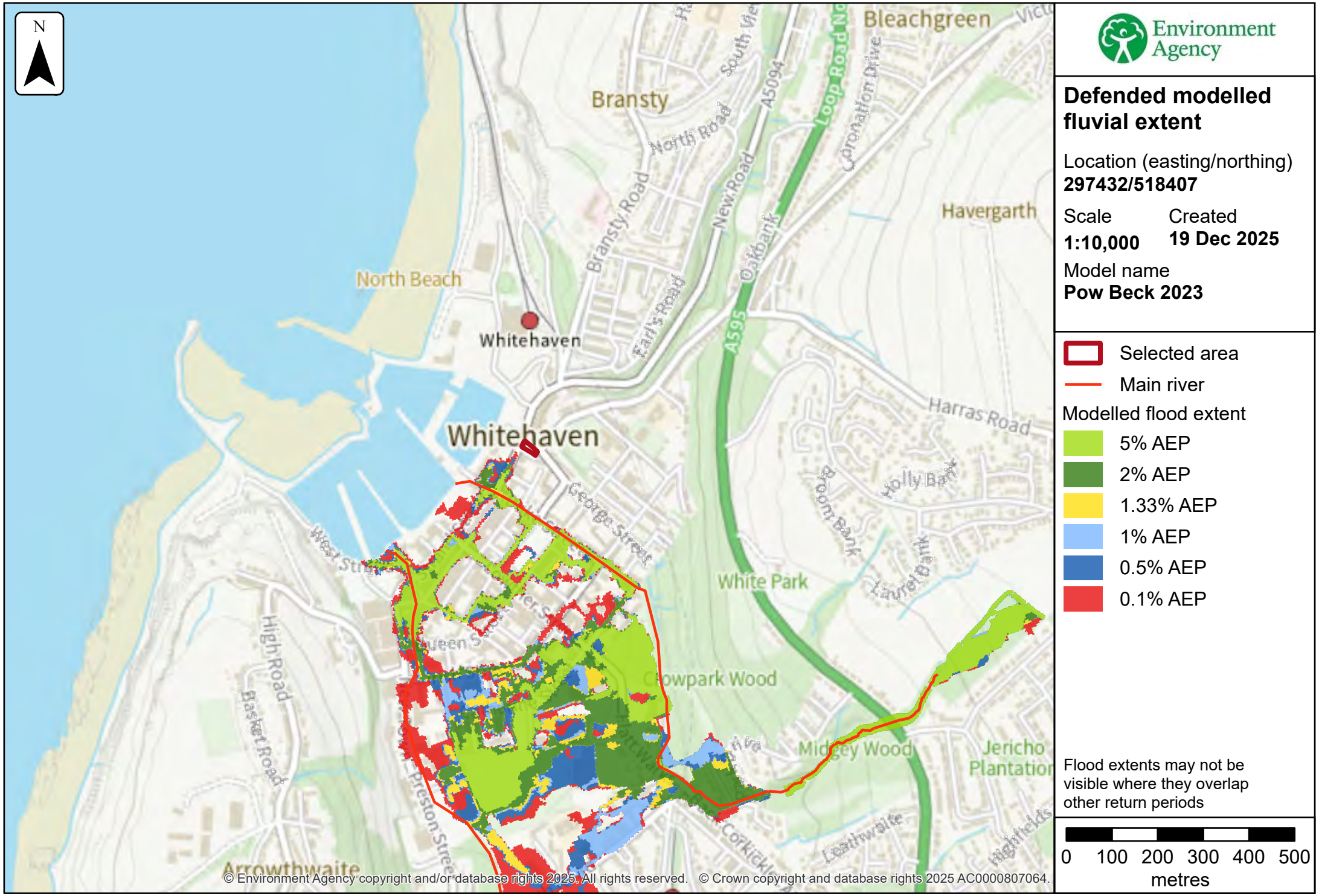
Main river

Modelled flood extent

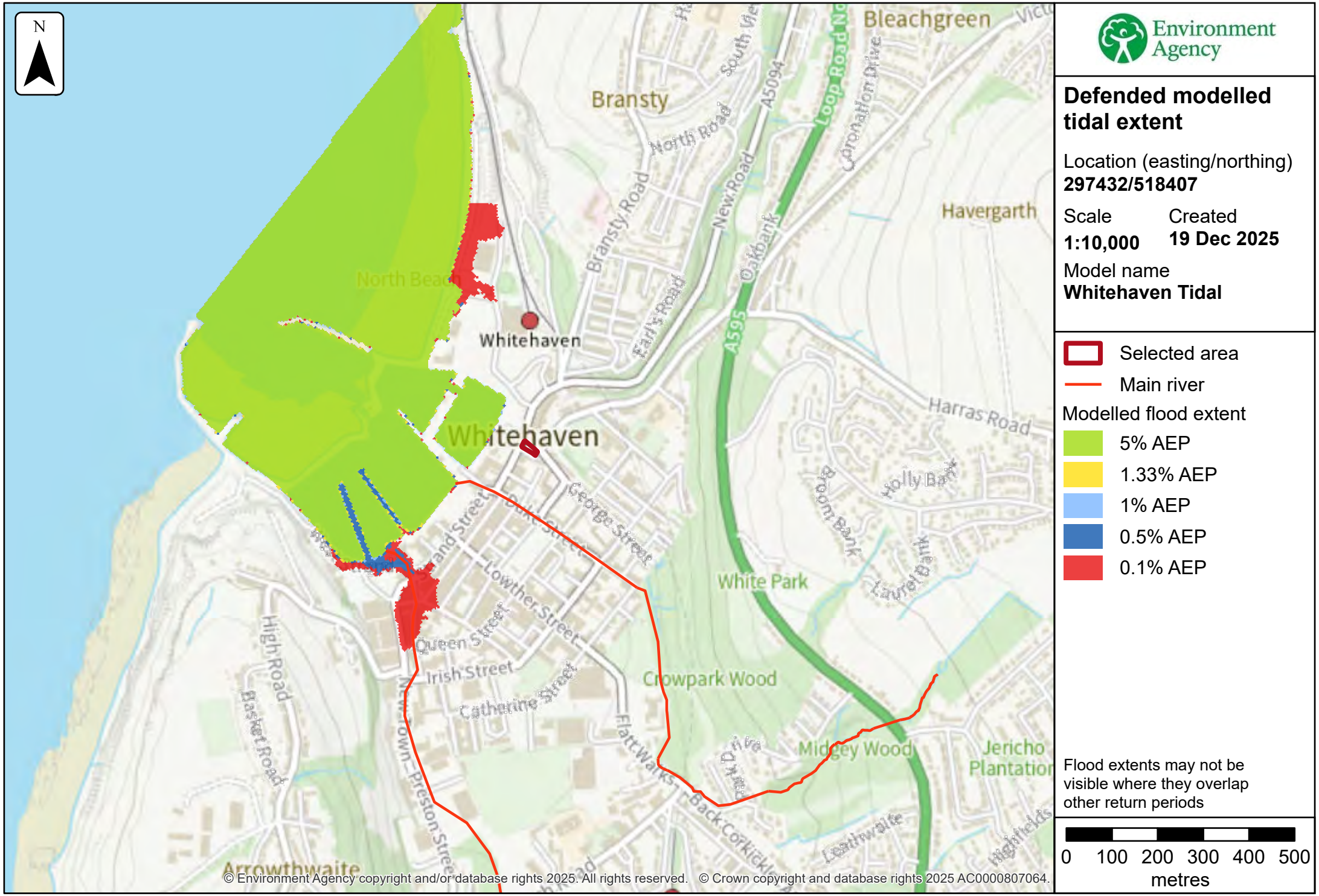
0.5% AEP (+600mm)

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

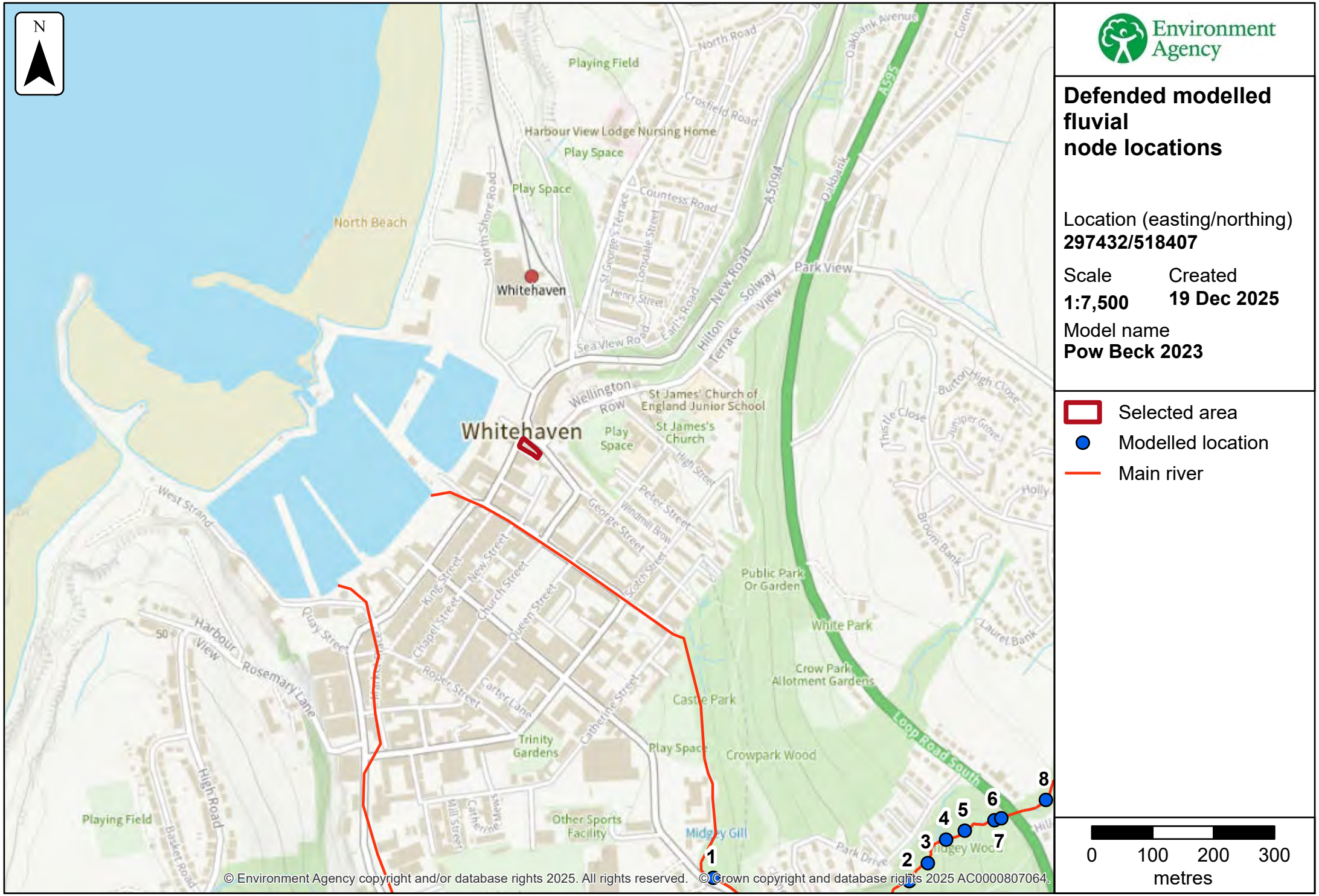
0 100 200 300 400 500
metres



© Environment Agency copyright and/or database rights 2025. All rights reserved. © Crown copyright and database rights 2025 AC0000807064.



© Environment Agency copyright and/or database rights 2025. All rights reserved. © Crown copyright and database rights 2025 AC0000807064.


N
Environment Agency
Defended modelled fluvial node locations
Location (easting/northing)
297432/518407
Scale
1:7,500
Created
19 Dec 2025
Model name
Pow Beck 2023
Selected area
Modelled location
Main river
0
100
200
300
metres
Whitehaven
North Beach
Playing Field
Harbour View Lodge Nursing Home
Play Space
Countess Road
North Road
Crosfield Road
Oakbank Avenue
A595
A5094
Oakbank
North Shore Road
St George's Terrace
Lonsdale Street
Henry Street
Earl's Road
New Road
Solway View
Park View
Hilton Terrace
Sea View Road
Wellington Row
St James' Church of England Junior School
St James's Church
High Street
Peter Street
George Street
Windmill Brow
Scotch Street
West Strand
King Street
New Street
Church Street
Chapel Street
Queen Street
Quay Street
Roper Street
Carter Lane
Catherine Street
Harbour View
Rosemary Lane
50
Trinity Gardens
Play Space
Crowpark Wood
Castle Park
Crow Park Allotment Gardens
Public Park Or Garden
White Park
Laurel Bank
Broom Bank
Holly
Thistle Close
Burton High Close
Juniper Grove
Loop Road South
Midgey Gill
Park Drive
Other Sports Facility
Mill Street
Catherine Mews
High Road
Basket Road
Playing Field
1
2
3
4
5
6
7
8
© Environment Agency copyright and/or database rights 2025. All rights reserved. © Crown copyright and database rights 2025 AC0000807064.

Modelled node locations data

Defended

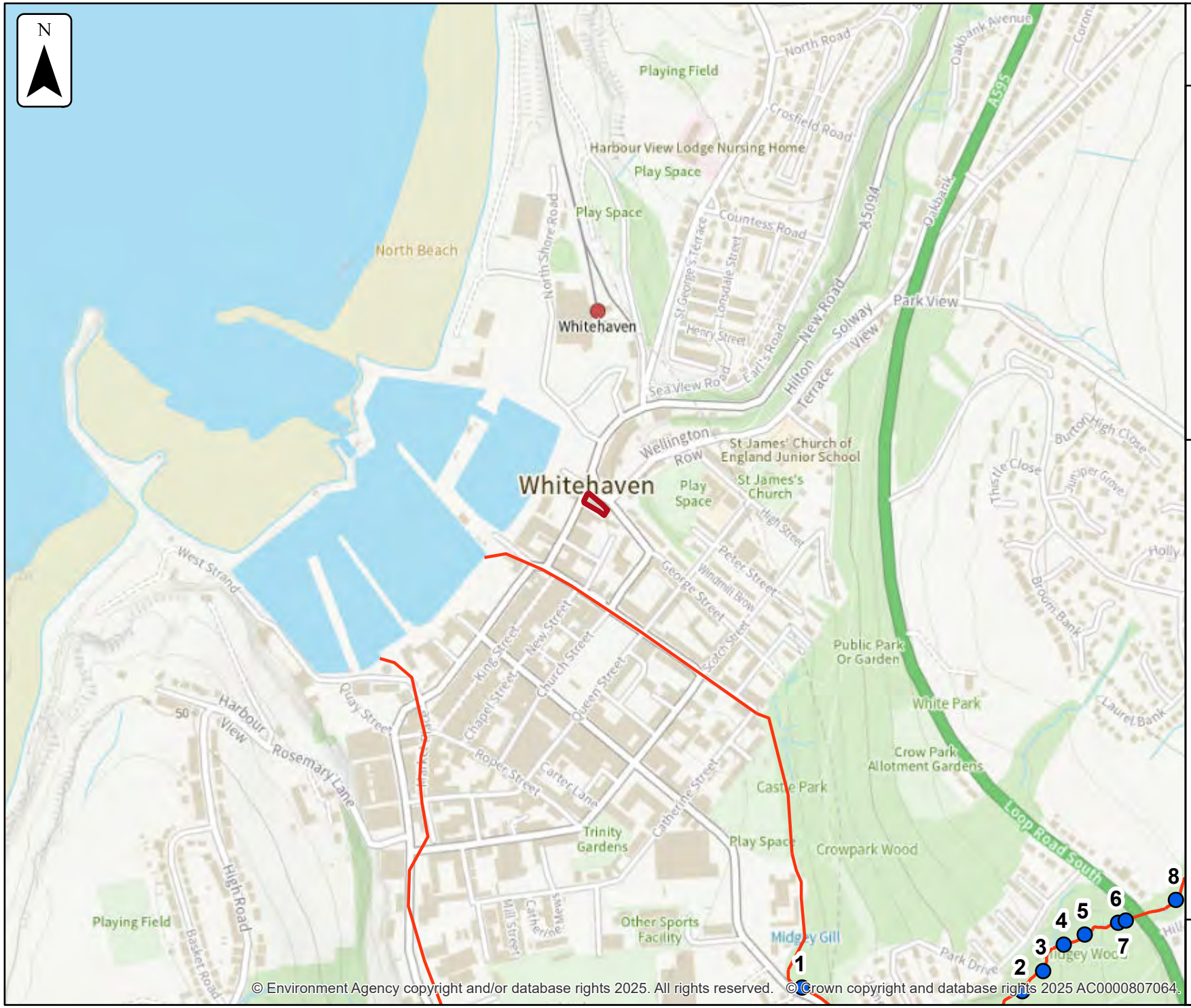
Label	Modelled location ID	Easting	Northing	50% AEP	20% AEP	10% AEP	5% AEP	3.33% AEP	2% AEP	1.33% AEP	1% AEP	0.5% AEP	0.1% AEP
				Level	Level	Level	Level	Level	Level	Level	Level	Level	Level
1	1598608	297734	517701	17.51	17.57	17.61	17.66	17.73	17.76	17.78	17.79	17.82	17.86
2	1598620	298056	517695	42.52	42.55	42.58	42.61	42.62	42.64	42.66	42.67	42.71	42.78
3	1598656	298087	517725	47.76	47.79	47.80	47.83	47.84	47.85	47.87	47.88	47.91	47.98
4	1598648	298117	517763	53.03	53.05	53.07	53.09	53.09	53.10	53.12	53.12	53.15	53.21
5	1598501	298147	517778	58.31	58.32	58.34	58.36	58.37	58.38	58.39	58.39	58.41	58.47
6	1598630	298196	517795	66.52	66.54	66.55	66.57	66.57	66.58	66.58	66.59	66.61	66.66
7	1598635	298207	517798	69.51	69.53	69.54	69.56	69.57	69.57	69.58	69.59	69.62	69.67
8	1598554	298280	517829	77.33	77.35	77.36	77.39	77.39	77.40	77.42	77.43	77.46	77.52

Data in this table comes from the Pow Beck 2023 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	20% AEP	10% AEP	5% 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	1598608	297734	517701	0.37	0.48	0.56	0.65	0.71	0.78	0.82	0.85	0.92	1.03
2	1598620	298056	517695	0.40	0.51	0.60	0.74	0.78	0.87	0.96	1.03	1.25	1.90
3	1598656	298087	517725	0.40	0.51	0.60	0.75	0.78	0.87	0.96	1.03	1.25	1.90
4	1598648	298117	517763	0.40	0.51	0.60	0.75	0.78	0.87	0.96	1.03	1.25	1.90
5	1598501	298147	517778	0.40	0.51	0.60	0.76	0.79	0.87	0.96	1.03	1.25	1.90
6	1598630	298196	517795	0.40	0.51	0.60	0.78	0.81	0.87	0.96	1.04	1.25	1.90
7	1598635	298207	517798	0.40	0.52	0.60	0.78	0.81	0.87	0.96	1.04	1.25	1.90
8	1598554	298280	517829	0.40	0.52	0.60	0.79	0.82	0.87	0.96	1.04	1.25	1.90

Data in this table comes from the Pow Beck 2023 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)
297432/518407

Scale
1:7,500

Created
19 Dec 2025

Model name
Pow Beck 2023

- Selected area
- Modelled location
- Main river

0 100 200 300
metres

Modelled node locations data

Defences removed

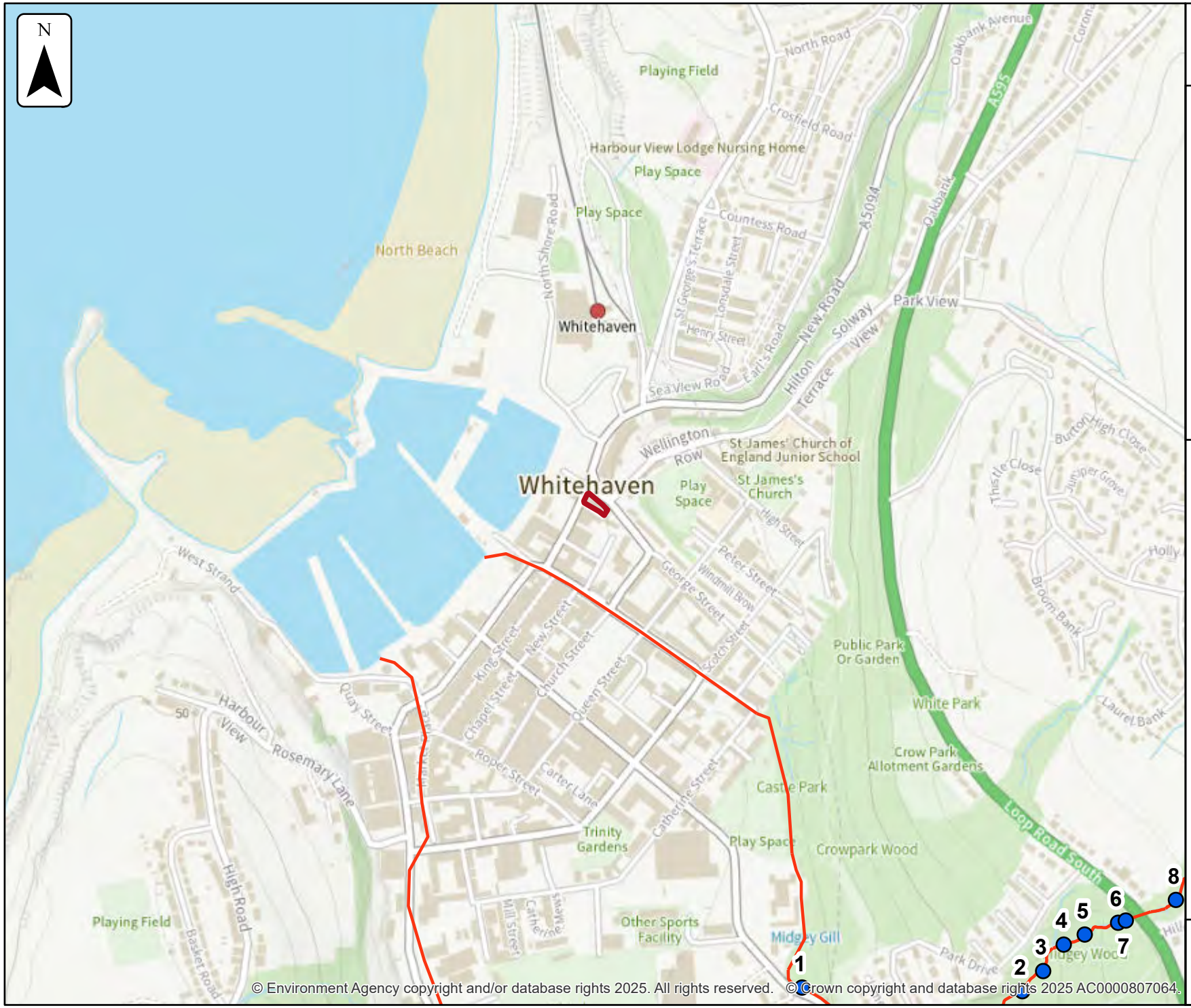
Label	Modelled location ID	Easting	Northing	50% AEP	20% AEP	10% AEP	5% AEP	3.33% AEP	2% AEP	1.33% AEP	1% AEP	0.5% AEP	0.1% AEP
				Level	Level	Level	Level	Level	Level	Level	Level	Level	Level
1	1598608	297734	517701	17.50	17.55	17.58	17.61	17.64	17.66	17.69	17.71	17.75	17.78
2	1598620	298056	517695	42.52	42.55	42.58	42.60	42.62	42.64	42.66	42.67	42.71	42.78
3	1598656	298087	517725	47.76	47.79	47.80	47.82	47.84	47.85	47.87	47.88	47.91	47.98
4	1598648	298117	517763	53.03	53.05	53.07	53.08	53.09	53.10	53.12	53.12	53.15	53.21
5	1598501	298147	517778	58.31	58.32	58.34	58.35	58.37	58.38	58.39	58.39	58.41	58.47
6	1598630	298196	517795	66.52	66.54	66.55	66.56	66.57	66.58	66.58	66.59	66.61	66.66
7	1598635	298207	517798	69.51	69.53	69.54	69.55	69.57	69.57	69.58	69.59	69.62	69.67
8	1598554	298280	517829	77.33	77.35	77.36	77.38	77.40	77.40	77.42	77.43	77.46	77.52

Data in this table comes from the Pow Beck 2023 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	20% AEP	10% AEP	5% 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	1598608	297734	517701	0.36	0.47	0.55	0.64	0.71	0.80	0.88	0.95	1.09	1.19
2	1598620	298056	517695	0.40	0.51	0.60	0.70	0.78	0.87	0.96	1.03	1.25	1.90
3	1598656	298087	517725	0.40	0.51	0.60	0.70	0.78	0.87	0.96	1.03	1.25	1.90
4	1598648	298117	517763	0.40	0.51	0.60	0.70	0.79	0.87	0.96	1.04	1.25	1.90
5	1598501	298147	517778	0.40	0.51	0.60	0.70	0.79	0.87	0.96	1.04	1.25	1.90
6	1598630	298196	517795	0.40	0.52	0.60	0.70	0.82	0.87	0.96	1.04	1.25	1.90
7	1598635	298207	517798	0.40	0.52	0.60	0.70	0.82	0.87	0.96	1.04	1.25	1.90
8	1598554	298280	517829	0.40	0.52	0.60	0.70	0.83	0.87	0.96	1.04	1.25	1.90

Data in this table comes from the Pow Beck 2023 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)
297432/518407

Scale
1:7,500

Created
19 Dec 2025

Model name
Pow Beck 2023

- Selected area
- Modelled location
- Main river

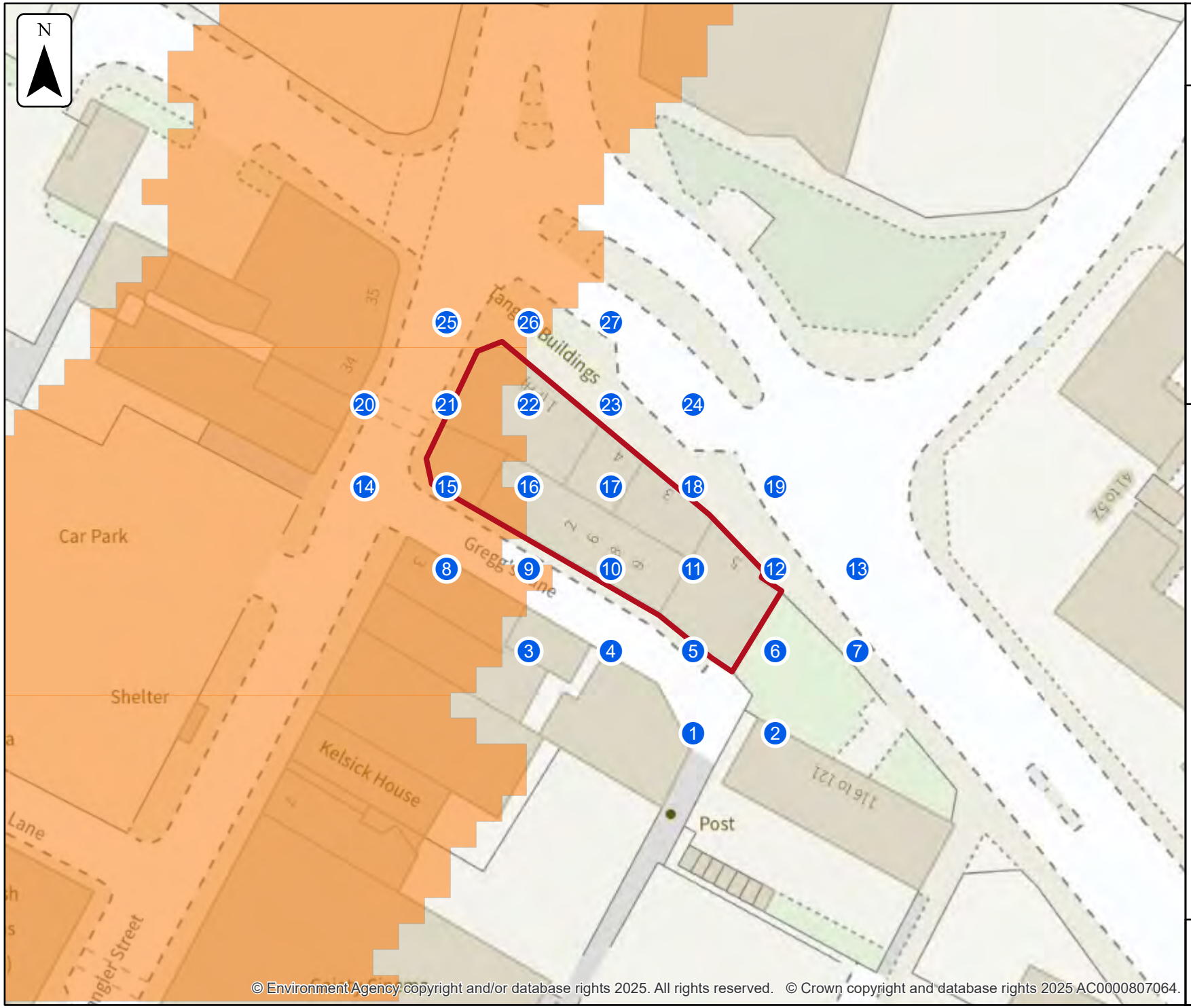
0 100 200 300
metres

Modelled node locations data

Defended climate change

Label	Modelled location ID	Easting	Northing	1% AEP (+30%)	1% AEP (+39%)	1% AEP (+63%)	1% AEP (+30%)	1% AEP (+39%)	1% AEP (+63%)
				Level	Level	Level	Flow	Flow	Flow
1	1598608	297734	517701	17.83	17.84	17.85	0.94	0.96	1.0
2	1598620	298056	517695	42.72	42.73	42.76	1.35	1.45	1.70
3	1598656	298087	517725	47.92	47.93	47.96	1.35	1.45	1.70
4	1598648	298117	517763	53.16	53.17	53.20	1.35	1.45	1.70
5	1598501	298147	517778	58.42	58.43	58.45	1.35	1.46	1.70
6	1598630	298196	517795	66.61	66.62	66.64	1.35	1.46	1.70
7	1598635	298207	517798	69.63	69.64	69.65	1.35	1.46	1.70
8	1598554	298280	517829	77.46	77.48	77.50	1.35	1.46	1.70

Data in this table comes from the Pow Beck 2023 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 copyright and/or database rights 2025. All rights reserved. © Crown copyright and database rights 2025 AC0000807064.

Environment Agency

Defended climate change modelled tidal extent and height

Location (easting/northing)
297432/518407

Scale
1:500

Created
19 Dec 2025

Model name
Whitehaven Tidal

Selected area

Main river

Modelled 2D grid
Water level in mAOD

- 0 - 1.0
- 1.0 - 2.0
- 2.0 - 3.0
- 3.0 - 4.0
- 4.0 - 5.0
- 5.0 - 6.0
- 6.0 - 7.0
- 7.0 - 8.0
- 8.0 - 9.0

This map shows the 0.5% AEP +600mm height data

0 5 10 15 20
metres

Sample point data

Defended climate change

Label	Easting	Northing	0.5% AEP (+600mm)	0.5% AEP (+600mm)
			Height	Depth
1	297442	518384	NoData	NoData
2	297450	518384	NoData	NoData
3	297426	518392	NoData	NoData
4	297434	518392	NoData	NoData
5	297442	518392	NoData	NoData
6	297450	518392	NoData	NoData
7	297458	518392	NoData	NoData
8	297418	518400	7.39	0.38
9	297426	518400	7.39	0.04
10	297434	518400	NoData	NoData
11	297442	518400	NoData	NoData
12	297450	518400	NoData	NoData

Label	Easting	Northing	0.5% AEP (+600mm)	0.5% AEP (+600mm)
			Height	Depth
13	297458	518400	NoData	NoData
14	297410	518408	7.39	0.69
15	297418	518408	7.39	0.53
16	297426	518408	NoData	NoData
17	297434	518408	NoData	NoData
18	297442	518408	NoData	NoData
19	297450	518408	NoData	NoData
20	297410	518416	7.39	0.56
21	297418	518416	7.39	0.58
22	297426	518416	NoData	NoData
23	297434	518416	NoData	NoData
24	297442	518416	NoData	NoData

Label	Easting	Northing	0.5% AEP (+600mm)	0.5% AEP (+600mm)
			Height	Depth
25	297418	518424	7.39	0.54
26	297426	518424	7.39	0.12
27	297434	518424	NoData	NoData
Max value in selected area:			7.39	0.53

Data in this table comes from the Whitehaven Tidal 2012 model. Height values are shown in mAOD, and depth values are shown in metres.
Any blank cells show where a particular scenario has not been modelled for this location.
Cells which contain text 'NoData' for a scenario show that return period has been modelled but there is no flood risk for that return period for that location.
'Max value in selected area' is the deepest depth or highest height at any location within your drawn boundary.

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 Cumberland.

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