Isles of Scilly

Capital Delivery Programme

Flood Risk Assessment and Drainage Strategy

Bishop and Wolf Pumping Station and Screening Plant

Report Ref.		**107780-PEF-ZZ-602-TRP-EN-0004**				
Rev	**Suit**	**Description**	**Date**	**Originator**	**Checker**	**Approver**
P01	S4	First Submission	27/08/2024	E Stone	N Starkey	M Duquemin
P02	S4	For acceptance	03/12/2024	E Stone	N Starkey	N Starkey
P03	S4	For acceptance – updated based on client comments	06/01/2025	E Stone	N Starkey	N Starkey

Ref. reference. Rev revision. Suit suitability.

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1 Introduction

1.1 Overview

Pell Frischmann have been commissioned to develop a flood risk assessment and drainage strategy to support the planning application for upgrades to the existing SWWL Bishop and Wolf sewage pumping station (SPS) located off Little Porth Road, Hugh Town, St Mary's, Isles of Scilly, TR21 0JG at Grid Reference: SV 90241 10502 (Easting 090241; Northing 010502).

1.2 Scope of Works

The following scope of work has been undertaken to provide a surface water drainage strategy to meet the requirements set out in the National Planning Policy Framework (NPPF) and the associated Planning Practice Guidance (PPG):

- Collate and undertake a desk based review of publicly available flood risk information, such as Environment Agency (EA) mapping, Strategic Flood Risk Assessments (SFRAs) and local guidance;
- Desktop review of the local geology and any available ground investigation data in order to make an assumption about the infiltration potential at the site;
- Undertake surface water runoff calculations for pre- and post-development, using Micro Drainage simulations, an appropriate climate change allowance has been applied (see section 5.1); and
- Provide a surface water management strategy including attenuation volume requirements appropriate for the site.

1.3 Sources of Information

A review of the relevant information from a range of sources has been undertaken and includes the following:

- National Planning Policy Framework, December 2024;
- Technical Guidance to the National Planning Policy Framework;
- Defra MAGIC Application [last accessed July 2024];
- BGS Geology of Britain Viewer [last accessed July 2024]; and
- Isles of Scilly Local Flood Management Strategy, March 2017.

1.4 Environment Agency Data

The following information has been gathered from Defra's Spatial Data Catalogue, data.gov.uk (accessed July 2024):

- Flood Map for Planning (Rivers and Sea) – Flood Zone 2;
- Flood Map for Planning (Rivers and Sea) – Flood Zone 3;
- Flood Map for Planning (Rivers and Sea) – Areas Benefiting from Flood Defences;
- Flood Map for Planning (Rivers and Sea) – Spatial Flood Defences (without Standardised Attributes);
- Spatial Flood Defences (including Standardised Attributes);
- Risk of Flooding from Reservoirs – Maximum Flood Extent;
- Risk of Flooding from Surface Water Extent (3.3%, 1% and 0.1% AEP);
- Risk of Flooding from Rivers and Sea;
- Statutory Main River Map; and
- LiDAR Composite DTM (1m).

2 The Site

2.1 Site Location

The site is located at the existing South West Water Limited (SWWL) Bishop and Wolf sewage pumping station (SPS) located off Little Porth Road, Hugh Town, St Mary's, Isles of Scilly, TR21 0JG at Grid Reference: SV 90241 10502 (Easting 090241; Northing 010502) (see Figure 1 below).

Figure 1 Red Line Boundary Plan

The existing SPS is located behind retail, leisure, and residential properties along Garrison Lane, in the middle of Hugh Town, and is accessed from Little Porth Road via a shared access point.

The site consists of concrete hardstanding and the existing site. A wall separates the existing Bishop and Wolf pumping station from the Bishop and Wolf pub beer garden. Due to the increase in footprint of the building, a small section of the Bishop & Wolf Pub's outside space will be required.

The redline boundary includes an approximate 162m length of Carriageway extending from 14 Silver Street, along Little Porth up to 10 Parsons Field. The redline boundary has been produced to incorporate all land necessary to carry out the proposed development this including the land required for access to the site from the public highway, visibility splays, car parking associated with construction site workers and those local areas it is expected will require temporary parking suspensions put in place during the construction sites operational hours, a snipped of this boundary plan is shown in Figure 1 (delineated by the red line boundary). A more detailed boundary plan can be seen in Appendix A.

The permanent works boundary is shown in Figure 2 (delineated by the green line boundary). Only the permanent works boundary has been considered in this FRA, in line with best practice.

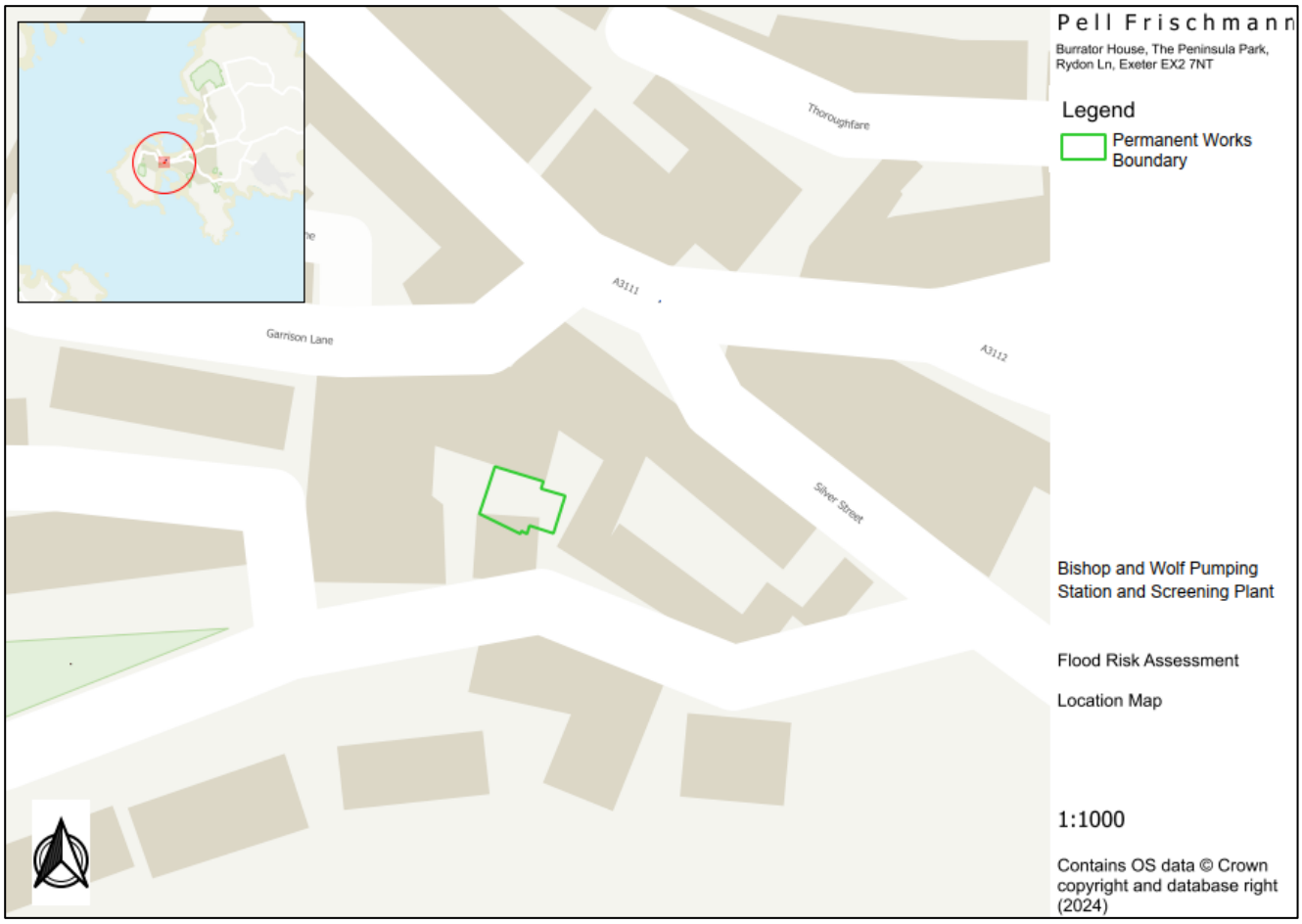

Figure 2 Location Map

2.2 Topography

Figure 3 below shows the local topography around the site. The ground levels across the site range from 3.6mAOD to 4.1mAOD. The site is located in a topographic depression. The site is in a slight hallow with elevations surrounding the site to greater than 4mAOD.

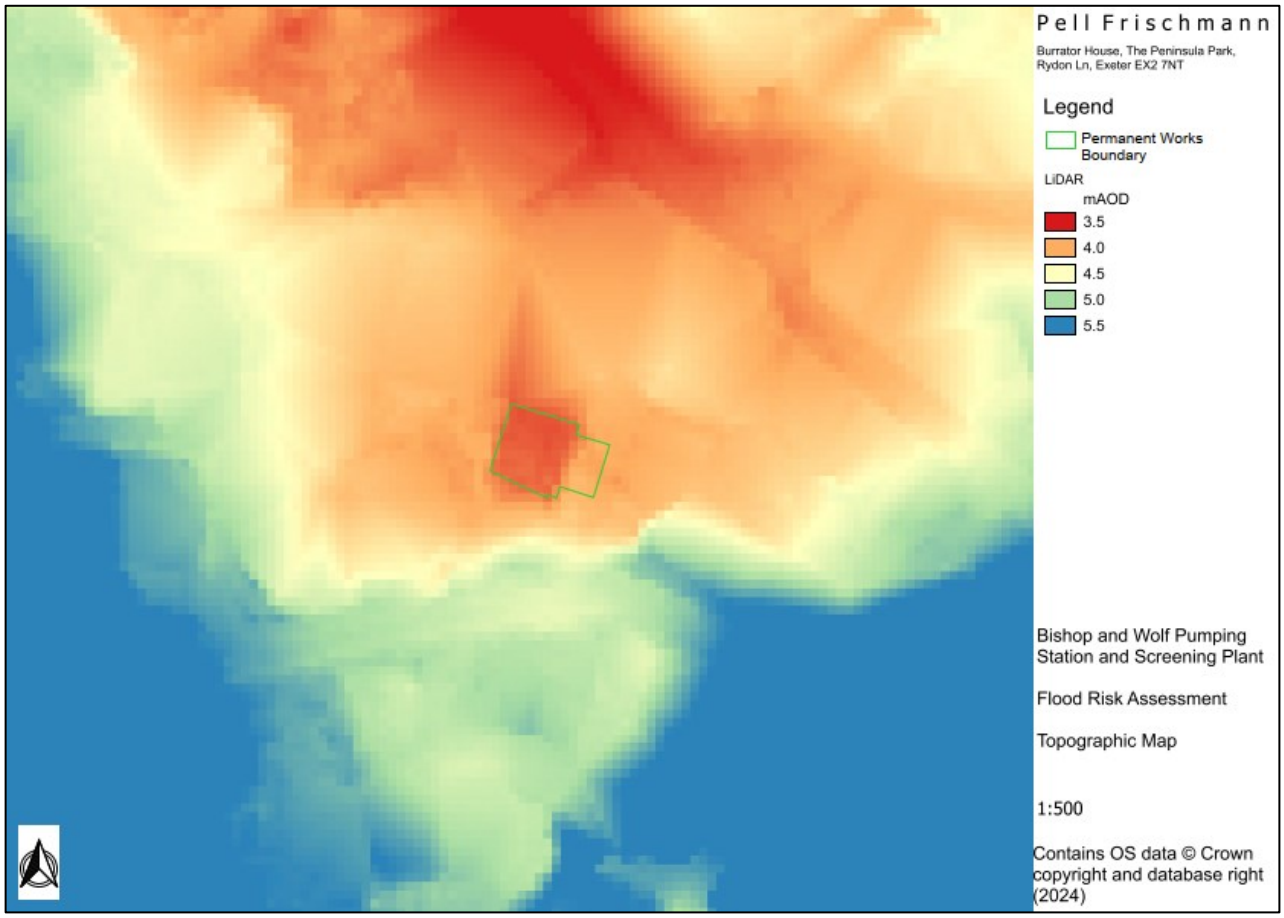

Figure 3 Topographic Map

2.3 Watercourses

No main rivers are located within c.1km of the proposed scheme. The Celtic Sea is located 145m to the north and 120m to the south of the proposed development. The site is protected from flooding from formal flood defences in the form of a sea wall, which is located to the north and south of the site and protect the site from sea flooding from the Celtic Sea (see Figure 3 below).

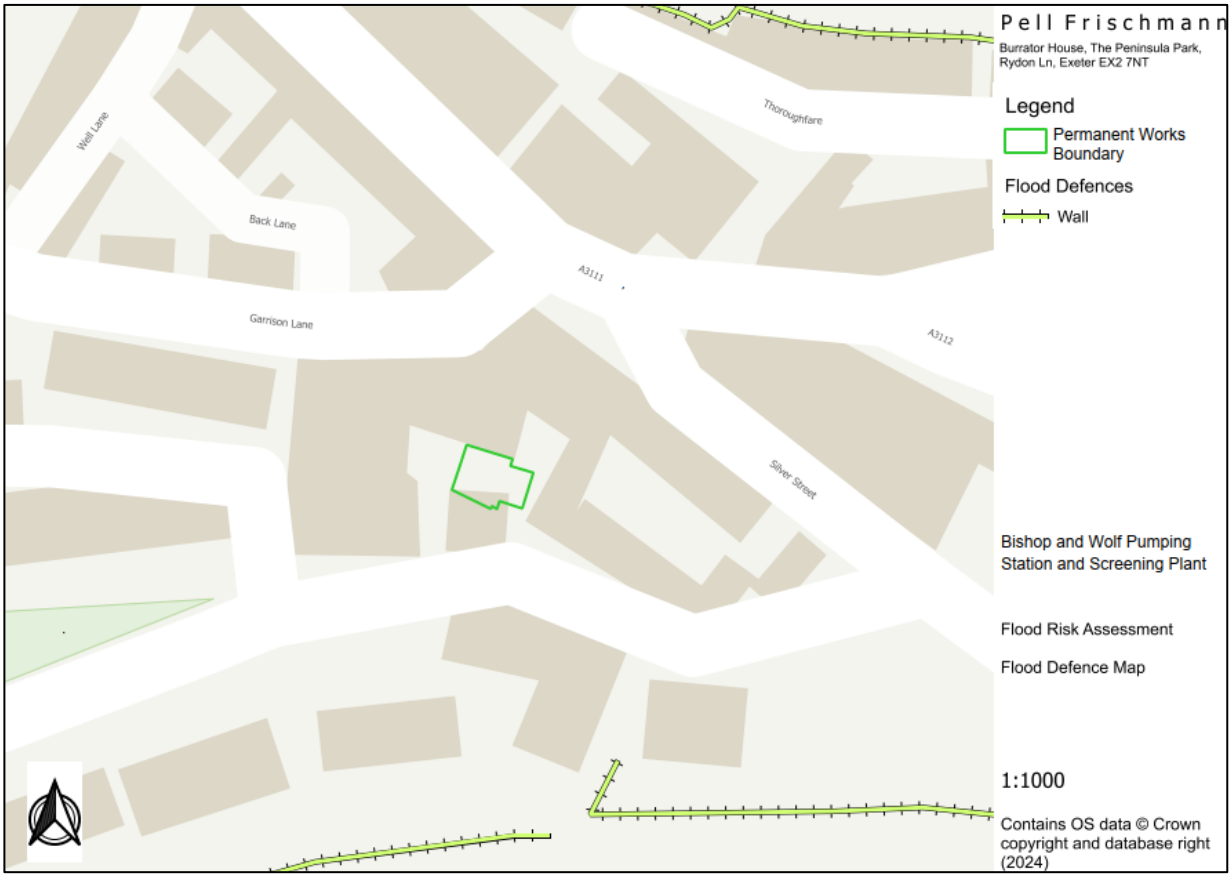

Figure 4 Flood Defence Map

2.4 Geology

The online BGS Geology viewer published by the British Geological Society (BGS) shows that the bedrock at a scale of 1:50km to be Isles of Scilly Intrusion. The superficial deposits at a scale of 1:50km are Head, poorly sorted and poorly stratified, angular rock debris and / or clayey hillwash and soil creep.

Figure 5 below presents the geological conditions of the site.

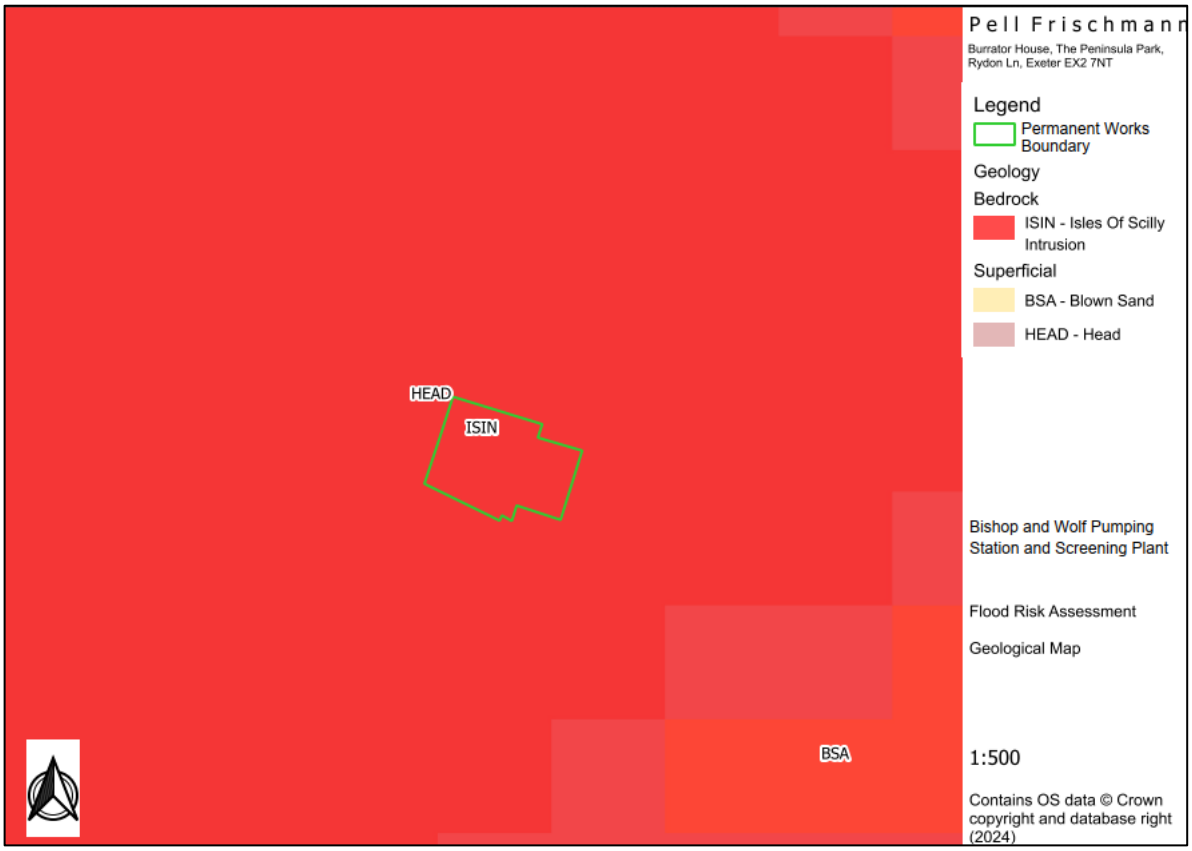

Figure 5 Geological Map

2.5 Proposed Development

The proposed scheme consists of the construction of an enlarged wastewater infrastructure building, which will replace the existing Bishop and Wolf SPS building. The new building will house new variable-speed pumps and a new screening plant. The screening plant will remove objects such as rags, paper, plastics, and metals to prevent damage and clogging of downstream equipment, piping, and appurtenances as well as ensuring they do not enter the marine environment. The proposed scheme layout is shown in Appendix A.

The plant will operate intermittently as required on a 24/7 basis, operation could occur at any time.

The proposed scheme will improve the resilience of the wastewater system, bringing benefit to all residents and visitors to St Mary's. Residents in close proximity will further benefit from the replacement of the existing infrastructure with modern plant, incorporating improved noise attenuation and odour control facilities.

The replacement pumps will be sized to ensure the conditions of the Atlantic CSO permit are met. Screens will be fitted with 3mm mesh to comply with the discharge permit conditions. Screens will have a 30 l/s flow rate.

3 Existing Flood Risk

3.1 Fluvial Flood Risk (Rivers and Sea)

The Environment Agency's flood risk data indicates that the entirety of the site is located within Flood Zone 3, which is land categorised as having a 1 in 100 (1%) or greater chance of flooding each year from rivers, or 1 in 200 (0.5%) or greater chance of flooding from the sea. In this instance the risk of flooding is associated with the Celtic Sea.

The site is located on identified as 'flood prone land' the Isles of Scilly Local Plan.

Flood Zone mapping for the site can be seen in Figure 5 below.

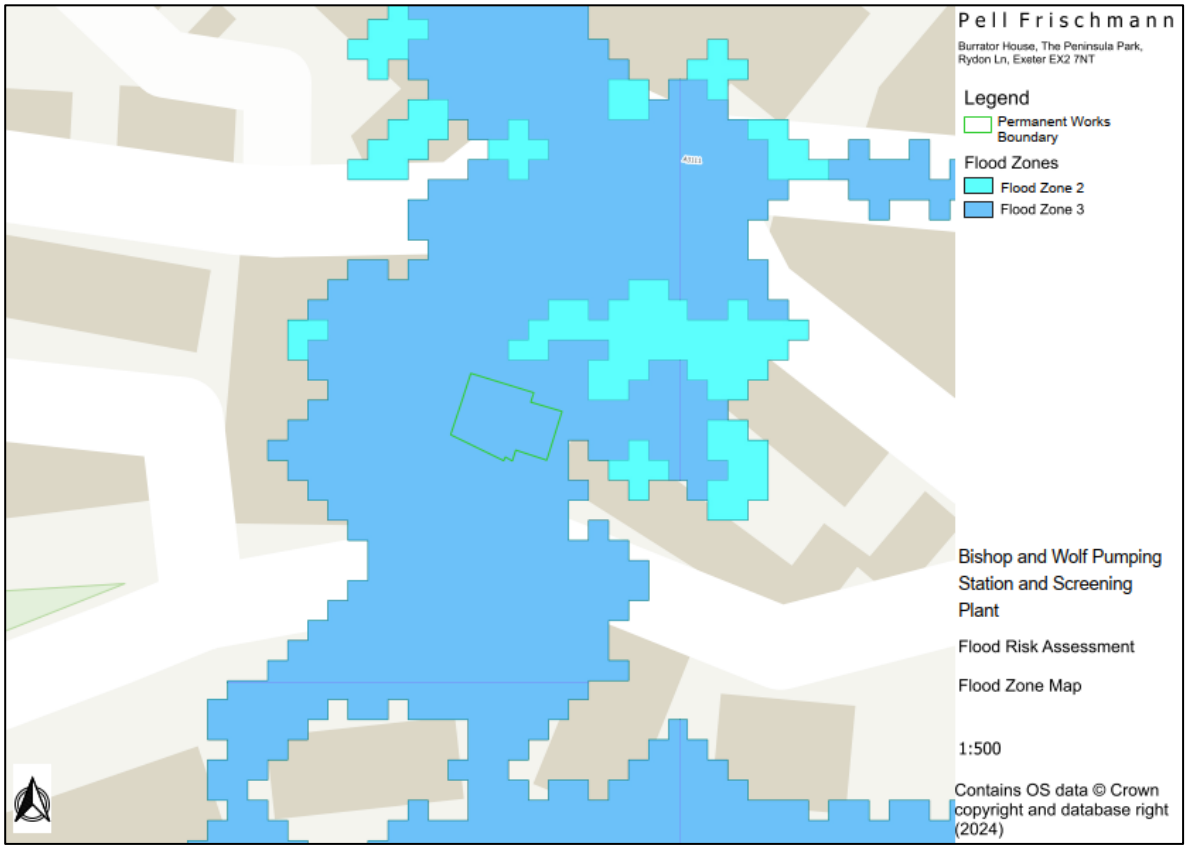

Figure 6 Flood Zone Map

3.2 Flood Risk from Surface Water

The purpose of the existing Bishop and Wolf Pumping Station is to screen wastewater from surrounding properties in St. Mary's. The Pumping Station is located in a topographic depression to provide the most direct route for wastewater.

The risk of surface water flooding has been assessed by viewing the Environment Agency's Flood Risk from Surface Water Map. Mapping indicates the majority of the site is located at a medium risk of surface water flooding, meaning the site has a chance of flooding between 1% and 3.3% each year.

Surface water flood risk is illustrated in Figure 6 below.

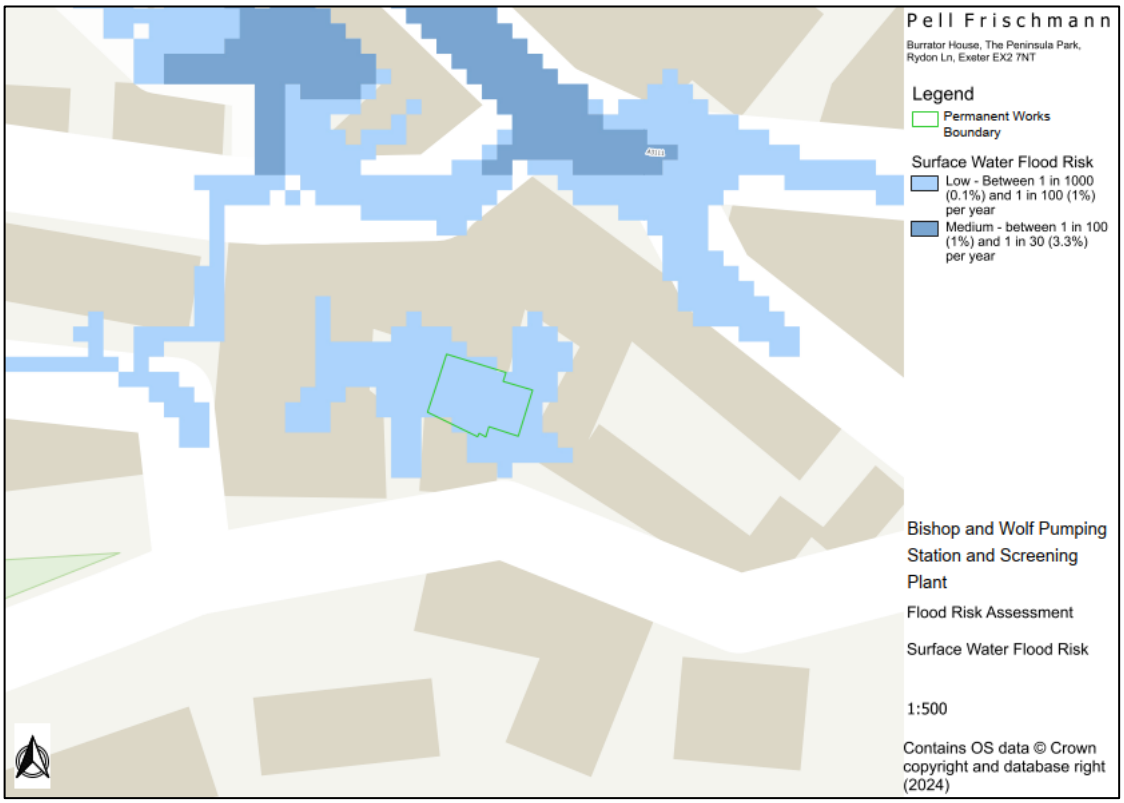

Figure 7 Surface Water Flood Risk Map

3.3 Historic Flood Risk

EA Data shows that the latest source of flooding at Hugh Town (St. Mary's) occurred in November 2020 from coastal flooding from spring tides and high winds leading to waves overtopping defences resulting in flooding to a small section of coastal roads in front of public house. No properties were flooded as a result of the flooding.

3.4 Groundwater Flooding

Isles of Scilly Council Preliminary Flood Risk Assessment states that there have been no past local events from groundwater flooding. Therefore, the risk of groundwater flooding is considered to be very low.

3.5 Sewer Flooding

Isles of Scilly Council Preliminary Flood Risk Assessment does not state that there has been any past events from sewer flooding. Therefore, the risk of sewer flooding is considered to be very low.

3.6 Artificial Sources

There are no reservoirs within proximity to the site, therefore the risk of flooding from artificial sources is considered to be very low.

3.7 Summary

The table below provides a summary of the five sources of flood risk for the development site. Overall, the site can be considered to have a medium flood risk.

Table 1 Existing flood risk summary

Flood Sources	Flood Risk		
	Low	Medium	High
Fluvial	✓		
Tidal			✓
Pluvial		✓	
Groundwater	✓		
Sewers	✓		
Artificial	✓		

4 Planning Policy and Guidance

4.1 National Planning Policy Framework

The NPPF provides the planning framework on which this FRA has been based. The NPPF states that inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk. Where development is necessary, the development should be made safe and not increase flood risk elsewhere.

4.2 Flood Risk Vulnerability Classification

Table 2 of the NPPF PPG is shown in Table 2 below. This outlines what classification of development is acceptable within each flood zone, what requires further testing and what is not deemed acceptable.

Table 2 Flood risk vulnerability classification

Flood Zones	Flood Risk Vulnerability Classification				
	Essential infrastructure	Highly vulnerable	More vulnerable	Less vulnerable	Water compatible
Zone 1	✓	✓	✓	✓	✓
Zone 2	✓	Exception Test required	✓	✓	✓
Zone 3a	Exception Test required	✗	Exception Test required	✓	✓
Zone 3b	Exception Test required	✗	✗	✗	✓

Buildings are classified depending on their uses and are placed in vulnerability classes depending on flood risk sensitivity. The proposal is classified as '*Water compatible*. *'Water compatible'* assets are appropriate developments in Flood Zones 1, 2 or 3.

Sequential Test

The aim of the Sequential Test is to steer new development to areas with the lowest probability of flooding. Development should not be permitted if there are reasonably available sites appropriate for development in areas at a lower risk of flooding.

It is necessary to undertake a Sequential Test for a planning application if both of the following apply:

- The proposed development is in Flood Zone 2 or 3; and
- A Sequential Test hasn't already been completed for a development of the type you plan to carry out on your proposed site.

The development area is entirely within Flood Zone 3. The proposed development will refurbish and replace the existing sewage pumping station; therefore a more suitable location is not viable.

Based on the above the Sequential Test is deemed to have passed.

Exception Test

The proposed development is *'water compatible'*. Based on Table 2 (see section 4.2) an Exception Test is not required for the site.

4.3 Local Guidance

4.3.1 Isles of Scilly Local Plan (2015 to 2030)

Isles of Scilly Local Plan sets out a vision, objectives and planning strategy for development, including policies on the type and scale of development which will be supported. The local plan is used to determine decisions on planning applications to provide an indication of where and what type of new development will be permitted.

Flooding is considered within the Local Plan.

Policy SS7: Flood Avoidance and Coastal Erosion:

1. Development proposals to build below the 5 metre contour (5 metres above Ordnance Datum, Newlyn) or in other areas shown to be at risk of flooding or coastal erosion, as set out in the policies map, will not be permitted unless an appropriate and proportionate Flood Risk Assessment (FRA) demonstrates how the flood risk will be managed, and that:
    a) the development, taking climate change into account, does not create a flood risk over its lifetime to existing or proposed properties and/or surrounding land;
    b) appropriate acceptable mitigation and recovery measures can be undertaken to ensure no significant adverse impact on human health or the natural and built environment as well as cultural heritage; and c) if there is any doubt, the precautionary principle37F will apply.
2. All major developments, regardless of location, should also be accompanied by a proportionate Flood Risk Assessment and appropriate sustainable drainage system.
3. Natural dune restoration and works connected with flood resilience and coastal defence will be supported where any natural and historic environment designations, that may be affected, have been adequately addressed in accordance with Policy OE2 (Biodiversity and Geodiversity) and OE7 (Historic Environment).

5 Managing Flood Risk

5.1 Designing for Flood Risk

We are considering drainage for the permanent works, temporary works in relation to construction have not been assessed in this FRA, in line with best practice. Surface water mitigation measures for the temporary works will be included in the Construction Environmental Management Plan.

According to the Environment Agency data (see Appendix B), under the defended scenario water levels are expected to reach 4.43mAOD. With an allowance for climate change, water levels are expected to reach 4.49mAOD. Under the undefended scenario during a 100-year (1% Annual Exceedance Probability (AEP) event, water levels are expected to reach 4.32mAOD. Data has not been provided for the undefended scenario with a climate change allowance.

Table 3 Water Level in AOD for the defended and undefended scenarios

Scenario	Water level (mAOD) for 1% AEP	Water level (mAOD) for 1% AEP with climate change allowance
Defended	4.43	4.49
Undefended	4.32	-

Given this information, it is recommended that all critical infrastructure be relocated above 4.49mAOD which is based on the defenced scenario for 1% AEP with climate change allowance.

The building has been designed to be able to flood during flood events, with the Structural Slab Level (SSL) will be set at 4.00mAOD. The MCC unit is proposed to sit on a mountain frame set at 4.60mAOD, providing over 100mm freeboard above the defended water scenario with climate change.

In a severe flood event, the Pumping Station and Screening Plant would be allowed to flood unrestricted. The building is not staffed and would continue to operate under flood conditions.

5.2 Surface Water Management

The proposed development will not increase the impermeable area of the site, as the proposed development will remain as hardstanding, therefore surface water runoff from the site will be unaffected post development.

The existing surface water management for the site allows surface water to run from the roof of the existing sewage pumping station and into the existing wetwell through gullies. Surface water around the site is also directing into the existing wetwell through gullies and overland flow.

Post development surface water runoff will be allowed to discharge in the same way as the current arrangement. The site will be designed to provide gullies allowing surface water to run into the wetwell following the existing regime.

Investigations will continue to determine if the site can drain into the surface water sewer network to reduce pumping operation costs.

6 Conclusion

This drainage strategy has been based upon information obtained in July, August and November 2024 with the aim to ensure that plans for the development will not increase flood risk elsewhere as a result of the development. The main conclusions from this report are:

- The site is located within Flood Zone 3;
- The site is protected by flood defences;
- The site is at a medium risk of surface water flooding;
- The site is at a very low risk of artificial flooding;
- The site is at a very low risk of groundwater flooding;
- Critical Infrastructure will be located at or above 4.6mAOD; and
- Surface water will drain into the wetwell following the existing regime.

7 Uncertainties and Limitations

This report has been prepared by Pell Frischmann with reasonable skill, care and diligence, and taking account of the manpower and resources devoted to it by agreement with the client in accordance with the agreed scope of services.

This report has been prepared solely for the use of the Client. The report may not be relied upon by other parties without written consent from Pell Frischmann. Pell Frischmann disclaims any responsibility to the client and others in respect of any matters outside the agreed scope of the work.

The report details the findings of work carried out by Pell Frischmann during a study period in July to December 2024 and January 2025. The report has been prepared on the basis of available information obtained during that study period. Information provided by the referenced third parties has been used in good faith and is taken at face value; however, Pell Frischmann cannot guarantee its accuracy or completeness.

Although every reasonable effort has been made to gather all relevant information within the context of the agreed scope of work, all potential flood risk constraints or liabilities associated with the Site may not have been revealed. Should additional Information become available (including new legislation and changed practices), after the date of the report submission, Pell Frischmann reserves the right to reconsider the recommendations and alter the report accordingly.

Appendix A Proposed Site Plan

NOTES

1. APPROXIMATE BOUNDARIES ARE SHOWN AND WILL NEED TO BE CONFIRMED IN DESIGN DEVELOPMENT.

LEGEND

DEVELOPMENT SUBJECT TO A PLANNING APPLICATION (1700 m²)

GARRISON HILL

PROPOSED SITE BOUNDARY

HUGH ST.

CHURCH ST.

LITTLE PORTH

0m 25m 50m 75m 100m 125m

SCALE 1:1250 @ A1

REV	DESCRIPTION	DRN	DSN	CHK	APP	DATE
P02	BOUNDARY LINE UPDATED	IC	IC	LMC	LJW	20.11.24
P01	INITIAL PLANNING DRAWING	IC	IC	LJW	LJW	21.08.24

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Project Status

OUTLINE DESIGN

Project

ISLES OF SCILLY CAPITAL DELIVERY PROGRAMME

Drawing Title

BISHOP AND WOLF PS & SCREENING PLANT SITE LOCATION PLAN

Drawing Status

FOR REVIEW AND COMMENT

	Name	Date	Status Code	S3
Drawn	I. Cerdan	20.11.24	Scale	1:1250
Designed	I. Cerdan	20.11.24		
Eng Chk	L. Chinnock	20.11.24	Revision	P02
Approved	L. Wardell	20.11.24		

Drawing No.

107780-PEF-WW-602-DDR-T-0001

LOCATION MAP

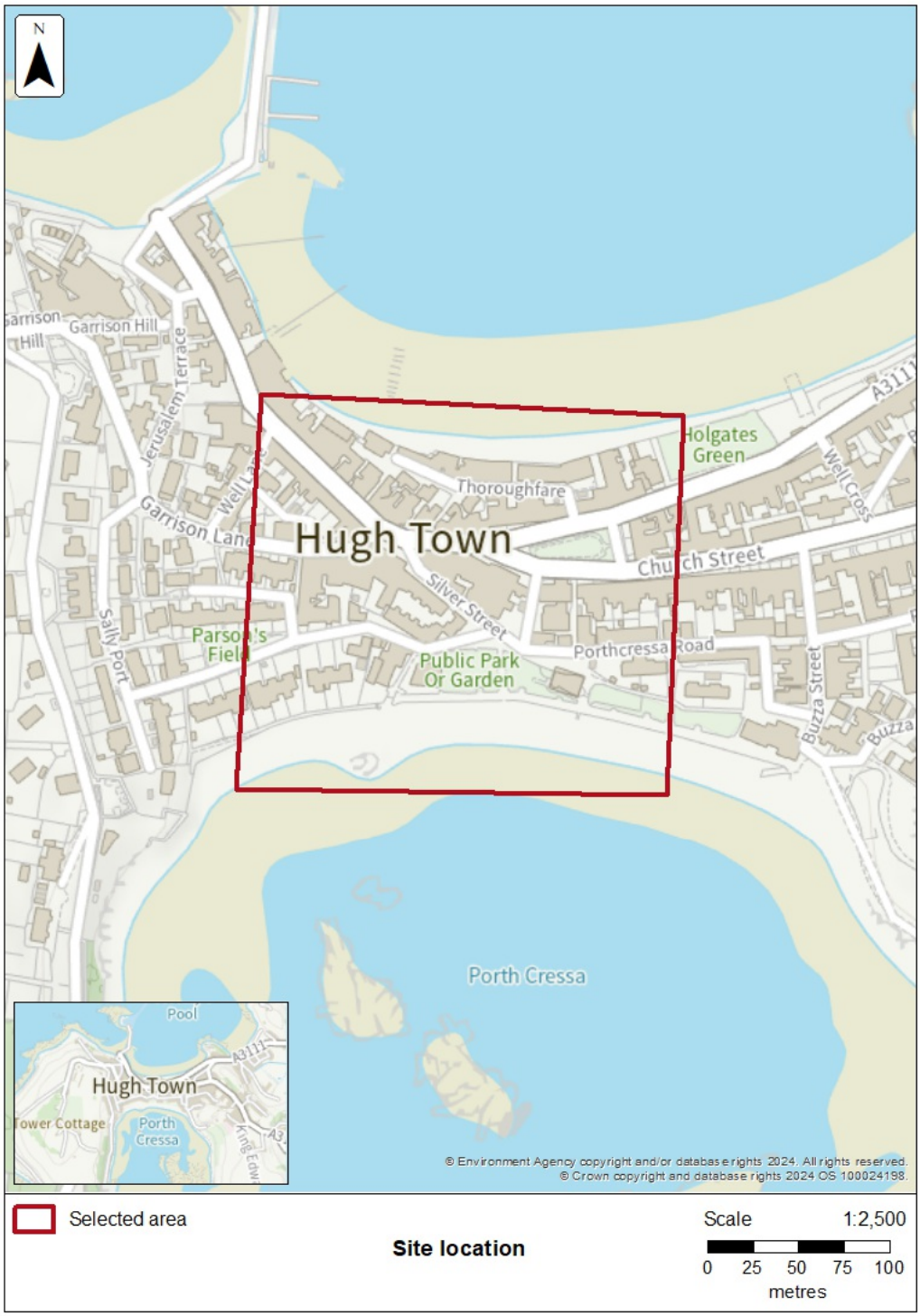
1 : 1250

Appendix B EA Data

Flood risk assessment data

Location of site: 90302 / 10501 (shown as easting and northing coordinates)
Document created on: 3 July 2024
This information was previously known as a product 4.
Customer reference number: 18UNJREJHJ6K

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



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

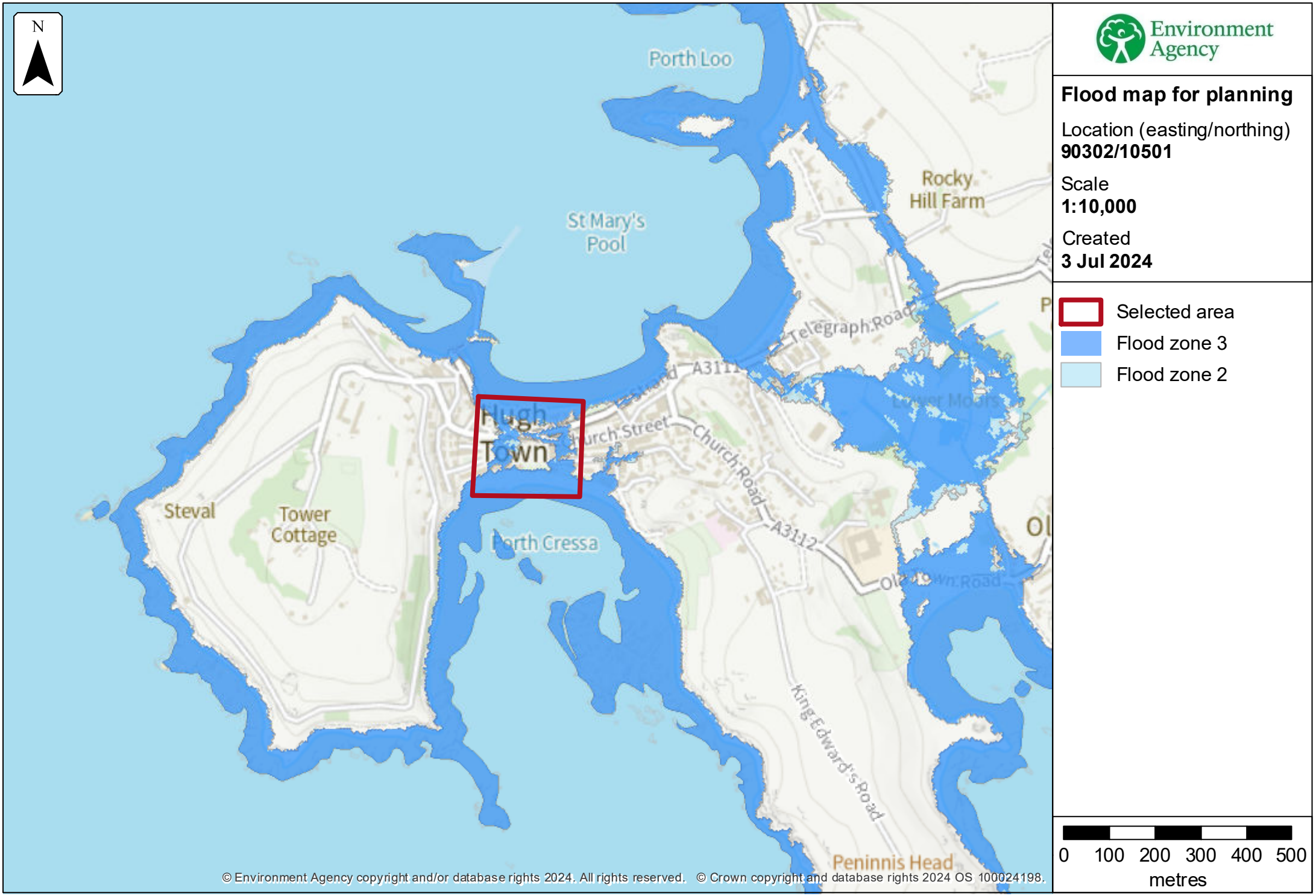
Flood zone 2 shows the area at risk of flooding for an undefended flood event with:

- 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

The flood zones are not currently being updated. The last update was in November 2023. Some of the flood zones may have changed, however all source data is included in the models below.



Historic Information

The map below is an indicative outline of areas that have previously flooded.

Historic outlines may not be visible where they overlap. You can download the outlines separately via the link below.

Download recorded flood outlines in GIS format

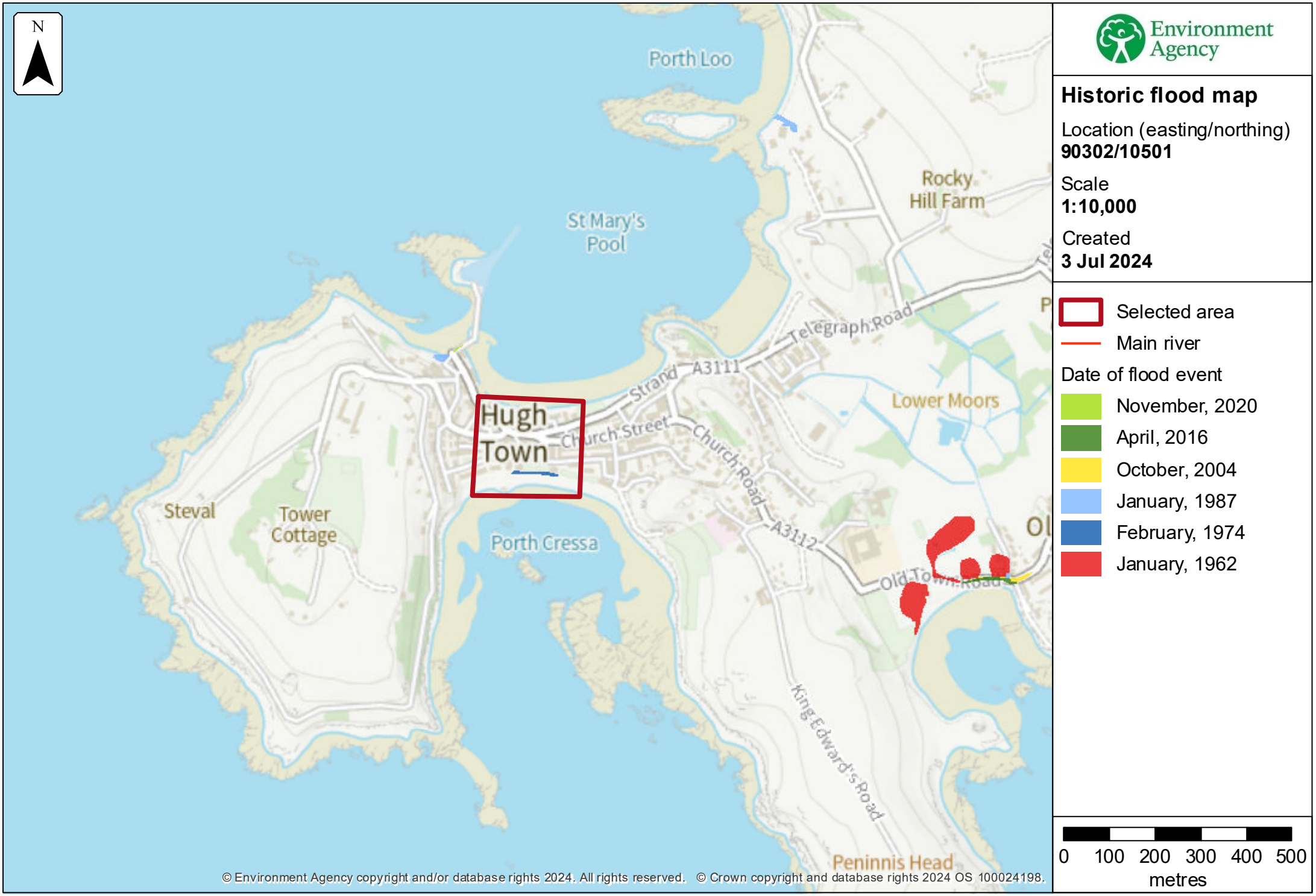
Our historic flood event outlines:

- are an indication of the geographical extent of an observed flood event. We map flooding to land, not individual properties.
- not give any indication of flood levels for individual properties. They also do not imply that any property within the outline has flooded internally.
- are based on a combination of anecdotal evidence, Environment Agency staff observations and survey.
- do not provide a definitive record of flooding.

It is ossi le t at t e e ill e a a se ce of data i laces e e e a e ot ee a le to eco d t e e te t of floodi It is also ossi le fo e o s to occ i t e di itisatio of isto ic eco ds of floodi

Remember that: other flooding may have occurred that we do not have records for

Please note that our records are not comprehensive. We would therefore advise that you make further enquiries locally with specific reference to flooding at this location. You should consider contacting the relevant Local Planning Authority and/or water/sewerage undertaker for the area.



Records of flooding in the St Mary's area.

Date	Location	Detail	Cause	Estimated Number of Properties Flooded	Flood Source
15/11/2020	Hugh town	Coastal Flooding, spring tides, high winds leading to waves overtopping defences and flooding small section of coastal roads in front of public house.	Wave overtopping defences		Coastal
30/09/2019	Isles of Scilly	High tides lead to some minor pooling on the main street as water came up the drains due to surcharge.	Surface water caused by tidal water coming up drains		Surface Water Runoff
03/01/2018	IoS - St Mary's	Flooding along Throughfare due to overtopping	Wave overtopping	0	Coastal
03/01/2018	IoS - St Mary's	Flooding of lower bar area	Wave overtopping	0	Coastal

Date	Location	Detail	Cause	Estimated Number of Properties Flooded	Flood Source
10/04/2016	IoS:St Mary's - Old Town	Storm waves overtopping onto Old Town Road	Storm waves overtopping	0	Coastal
03/01/2014	Isles of Scilly	Isles of Scilly. Hugh Street was partially flooded by a few inches, mainly caused by poor drainage. Surface water flooding also affected Trench Lane, Old Town. The main set of pontoons were also damaged.	High tides, wave action and surface water run off.	1	Surface Water Runoff
03/01/2014	IoS: St Mary's	Storm conditions led to flooding in Porthcressa area	Storm conditions		Coastal
03/01/2014	IoS: St Mary's	Storm conditions led to flooding in Hugh Town	Storm conditions		Coastal
03/01/2014	IoS: St Mary's	Storm conditions led to flooding in the Old Town area	Storm condtions and wave overtopping		Coastal

Date	Location	Detail	Cause	Estimated Number of Properties Flooded	Flood Source
03/01/2014	IoS: St Mary's	Storm conditions resulting in damage to St Mary's Quay	Storm Conditions		Coastal
18/10/2012	IoS: St Mary's - High Street and Thoroughfare	Flooding from Paper shop to TIC offices. Small ingress of seawater into Schooners Bar. No RFOs and exact extent unknown.	Storm surge accompanied with high spring tides		Tidal
18/10/2012	IoS: St Mary's - Porthmellon Industrial Park	Electricity substation and offices were very close to flooding but water was pumped out in time. No RFOs and exact extent unknown.	Storm causing heavy rain	0	Surface Water Runoff
18/10/2012	IoS: St Mary's - Mermaid Inn sea wall	Sea wall damage caused by wave action – no records / photos of flooding occurring. No RFOs and exact extent unknown.	Storm surge accompanied with high spring tides	0	Tidal
28/10/2004	IoS: St Mary's - Old Town	Large waves due to storm event overtopping walls along Old Town coastline, resulting in flooding along the A3112 on the seafront and flowing down into the street.	Waves overtopping defences and sea levels high		Coastal

Date	Location	Detail	Cause	Estimated Number of Properties Flooded	Flood Source
01/01/1987	IoS: St Mary's - Mermaid Inn car park	Wrack and seaweed leaving outline of waves / sea inundation due to storm waves and overtopping. Also some damage to the wall from powerful waves.	Overtopping and damage of sea wall		Coastal
01/01/1987	IoS: St Mary's - Old Town	Large waves overtopping walls onto road at Old Town Bay	Overtopping of walls		Coastal
01/02/1974	IoS: St Mary's - Porthcressa	Large waves due to a storm event overtopping walls along Porthcressa bay	Storm waves overtopping walls		Coastal
01/01/1962	Isles of Scilly: St Mary's - Old Town	Storm damage and seawater inundation at multiple areas along the coast, likely due to wave overtopping, wave strength and lack of or poor defences.	Storm conditions: big strong waves		Coastal

This list contains all the records of flooding we hold, in a 1km radius of the specified location. Although this information is compiled to the best of our knowledge, the absence of flooding does not mean that an area has not flooded in the past, nor guarantee it will not flood in the future. Our records are updated as more information comes to light, and as flood incidents occur.

Correct as of 11 / 07 / 2024

Modelled data

About the models used

Model name: Isles of Scilly Coastal Model

Date: 2019

This model contains the most relevant data for your area of interest.

You will need to consider the latest flood risk assessment climate change allowances and factor in the new allowances to demonstrate the development will be safe from flooding.

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.

Isles of Scilly Coastal Model (2019)

We have provided data from the Isles of Scilly Coastal Model, 2019. Please consider the following information when using this model data:

- This is coastal model, and does not consider the risk of flooding from other source, including fluvial or surface water flooding.

- We have supplied the results and data from both the defended (flood defences included) and undefended (flood defences removed) scenarios. You will need to review the data provided, and select the scenario which provides the maximum flood extent and level (or the worst case) for the site. The most appropriate scenario will depend on the location of the specific site in question.

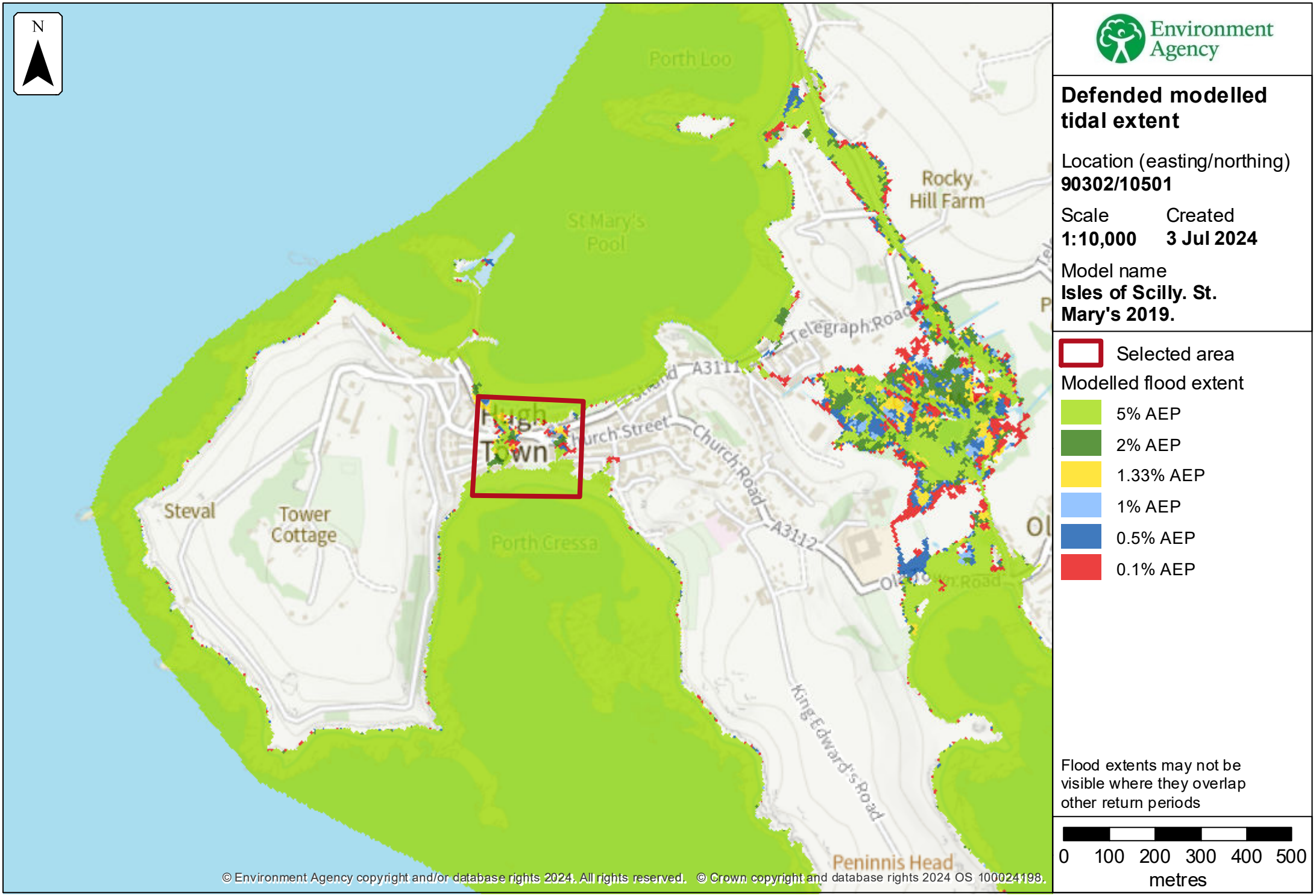
- Climate change: Model scenarios were completed with increases to the still water levels, wind speeds and wave heights to represent the impacts of climate change. This model was produced following the guidance that was available at the time of the model build (UKCP09). For Flood Risk Assessments, this should be updated using the latest guidance available. For more information and advice, please see: https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances

- The maps and digital data supplied should be considered only a summary of the conclusions of the study. It may be necessary to collect more detailed topographic information for particular sites where development is proposed and undertake a more detailed site-specific hydrological and hydraulic analysis for the location using guidance from the National Planning Policy Framework (NPPF)

- In this commission the focus has been on flooding from the sea rather than from fluvial sources. It is important that consideration is given to fluvial flooding for any development sites if appropriate. The impact of combined fluvial and tidal events should be examined to understand the impact that this has upon flood depth extent and the duration of inundation

- Any assessment of Flood Risk undertaken must be appropriate for the decisions that need to be based upon it, consider the risks and also take into account any limitations of the data used.

- Please be aware that the Environment Agency does not guarantee that this data is suitable for your purposes.



Environment Agency

Defended modelled tidal extent

Location (easting/northing)
90302/10501

Scale
1:10,000

Created
3 Jul 2024

Model name
Isles of Scilly. St. Mary's 2019.

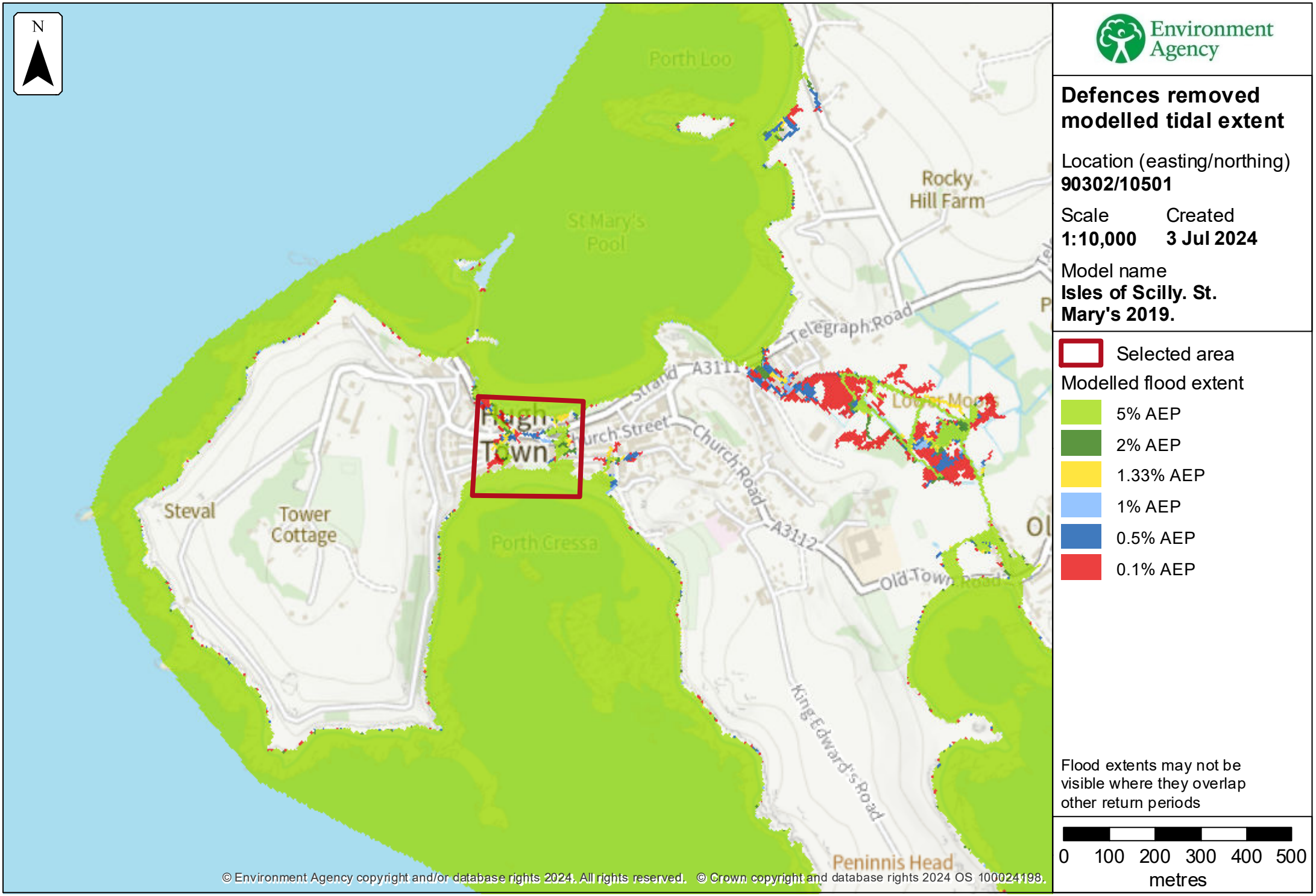
Selected area

Modelled flood extent

- 5% AEP
- 2% AEP
- 1.33% AEP
- 1% AEP
- 0.5% AEP
- 0.1% AEP

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

0 100 200 300 400 500
metres



Environment Agency

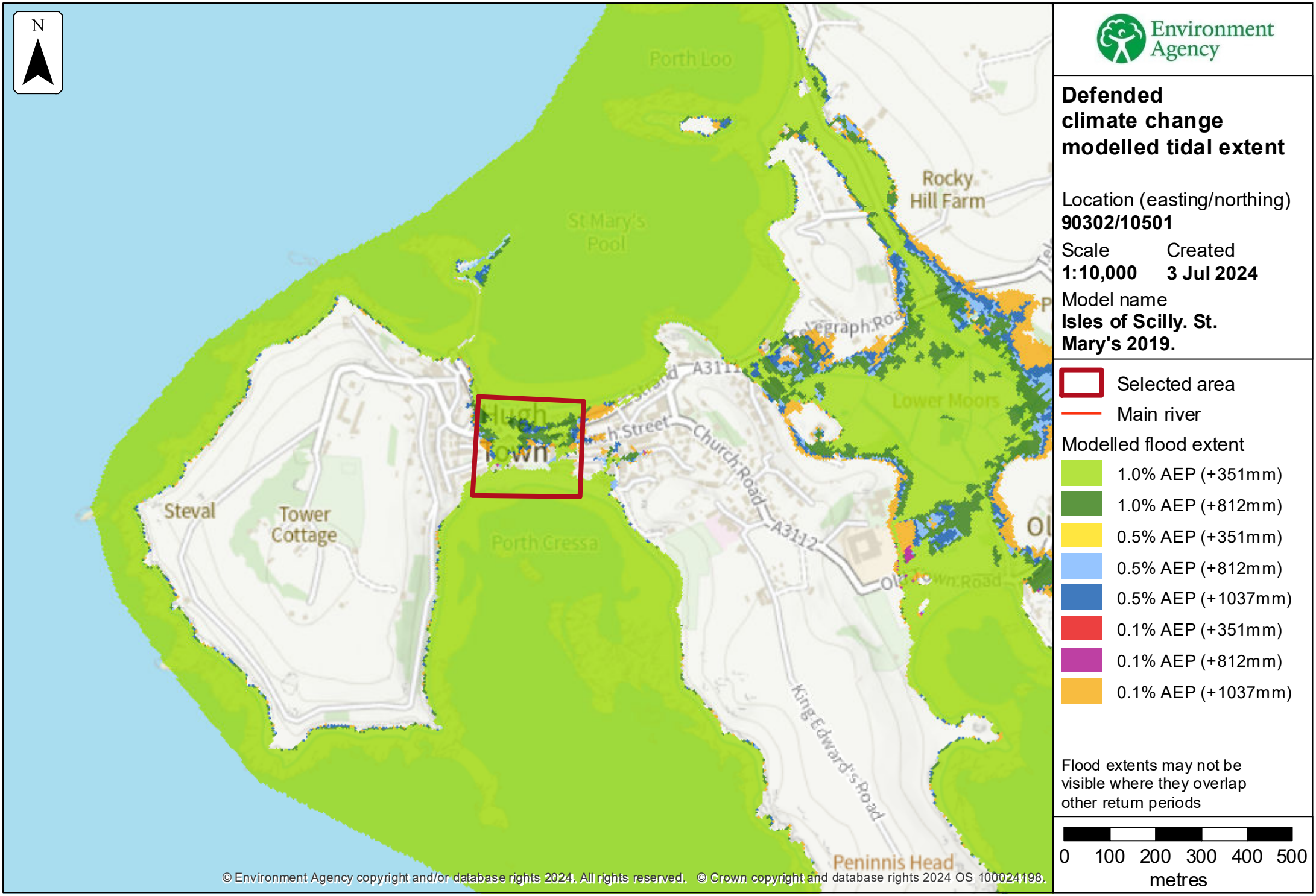
Defences removed modelled tidal extent

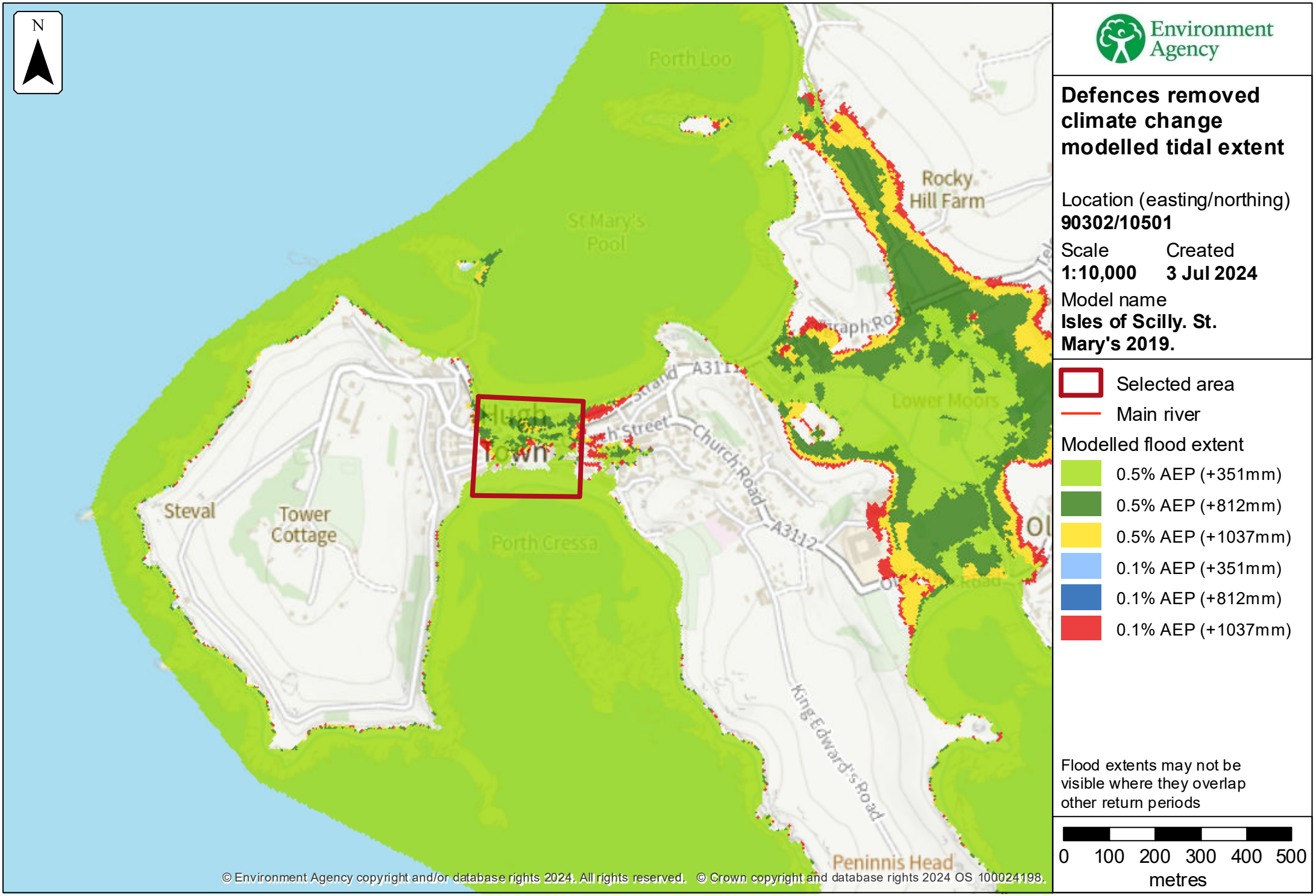
Location (easting/northing)
90302/10501

Scale
1:10,000

Created
3 Jul 2024

Model name
Isles of Scilly. St. Mary's 2019.




N
Porth Loo
St Mary's Pool
Rocky Hill Farm
Lower Moors
Hugh Town
Steval
Tower Cottage
Porth Cressa
Church Road
A3112
King Edward's Road
Peninnis Head
Environment Agency
Defences removed climate change modelled tidal extent
Location (easting/northing)
90302/10501
Scale
1:10,000
Created
3 Jul 2024
Model name
Isles of Scilly. St. Mary's 2019.
Selected area
Main river
Modelled flood extent
0.5% AEP (+351mm)
0.5% AEP (+812mm)
0.5% AEP (+1037mm)
0.1% AEP (+351mm)
0.1% AEP (+812mm)
0.1% AEP (+1037mm)
Flood extents may not be visible where they overlap other return periods
0 100 200 300 400 500
metres
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Environment Agency

Defended modelled tidal extent and height

Location (easting/northing)
90302/10501

Scale
1:2,500

Created
3 Jul 2024

Model name
Isles of Scilly. St. Mary's 2019.

Selected area

Main river

Modelled 2D grid
Water level in mAOD

- 0 - 3.0
- 3.0 - 3.75
- 3.75 - 4.5
- 4.5 - 5.25
- 5.25 - 6.0
- 6.0 - 6.75
- 6.75 - 7.5
- 7.5 - 8.25
- 8.25 - 9.0

This map shows the 0.1% AEP height data

0 25 50 75 100
metres

Sample point data

Defended

Label	Easting	Northing	5% AEP		2% AEP		1.33% AEP		1% AEP		0.5% AEP		0.1% AEP	
			Depth	Height	Depth	Height	Depth	Height	Depth	Height	Depth	Height	Depth	Height
1	90181	10396	1.72	3.72	1.78	3.77	1.81	3.80	1.83	3.82	1.86	3.85	1.97	3.96
2	90235	10396	3.17	3.72	3.23	3.77	3.25	3.80	3.27	3.82	3.31	3.85	3.41	3.96
3	90289	10396	4.49	3.72	4.54	3.77	4.57	3.80	4.59	3.82	4.62	3.85	4.73	3.96
4	90343	10396	4.38	3.72	4.43	3.77	4.46	3.80	4.48	3.82	4.51	3.85	4.62	3.96
5	90397	10396	3.25	3.72	3.30	3.77	3.33	3.80	3.35	3.82	3.38	3.86	3.49	3.96
6	90181	10450	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
7	90235	10450	0.03	5.22	0.04	5.25	0.05	5.27	0.06	5.27	0.08	5.30	0.13	5.35
8	90289	10450	0.05	6.66	0.05	6.66	0.05	6.66	0.05	6.66	0.05	6.66	0.06	6.67
9	90343	10450	0.00	6.58	0.00	6.58	0.00	6.58	0.00	6.58	0.00	6.58	0.00	6.58
10	90397	10450	0.02	6.23	0.02	6.23	0.02	6.23	0.02	6.23	0.02	6.23	0.02	6.23
11	90181	10504	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
12	90235	10504	0.28	4.33	0.31	4.36	0.37	4.42	0.38	4.43	0.40	4.45	0.45	4.50
13	90289	10504	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
14	90343	10504	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
15	90397	10504	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
16	90181	10558	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData

Label	Easting	Northing	5% AEP		2% AEP		1.33% AEP		1% AEP		0.5% AEP		0.1% AEP	
			Depth	Height	Depth	Height	Depth	Height	Depth	Height	Depth	Height	Depth	Height
17	90235	10558	0.10	3.60	0.16	3.70	0.32	3.94	0.32	3.94	0.35	3.97	0.42	4.05
18	90289	10558	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
19	90343	10558	0.01	4.36	0.02	4.37	0.02	4.37	0.02	4.37	0.02	4.37	0.02	4.41
20	90397	10558	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
21	90181	10612	NoData	NoData	NoData	NoData	0.05	3.94	0.05	3.94	0.05	3.97	0.07	4.05
22	90235	10612	1.96	3.71	2.02	3.77	2.05	3.80	2.07	3.82	2.11	3.86	2.23	3.98
23	90289	10612	2.80	3.71	2.86	3.77	2.89	3.80	2.91	3.82	2.95	3.86	3.07	3.98
24	90343	10612	3.16	3.71	3.22	3.77	3.25	3.80	3.27	3.82	3.31	3.86	3.43	3.98
25	90397	10612	2.86	3.71	2.92	3.77	2.95	3.80	2.97	3.82	3.01	3.86	3.13	3.98

Data in this table comes from the Isles of Scilly. St. Mary's 2019. 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.

Environment Agency

Defences removed modelled tidal extent and height

Location (easting/northing)
90302/10501

Scale
1:2,500

Created
3 Jul 2024

Model name
Isles of Scilly. St. Mary's 2019.

Selected area

Main river

Modelled 2D grid
Water level in mAOD

- 0 - 3.0
- 3.0 - 3.75
- 3.75 - 4.5
- 4.5 - 5.25
- 5.25 - 6.0
- 6.0 - 6.75
- 6.75 - 7.5
- 7.5 - 8.25
- 8.25 - 9.0

This map shows the 0.1% AEP height data

0 25 50 75 100
metres

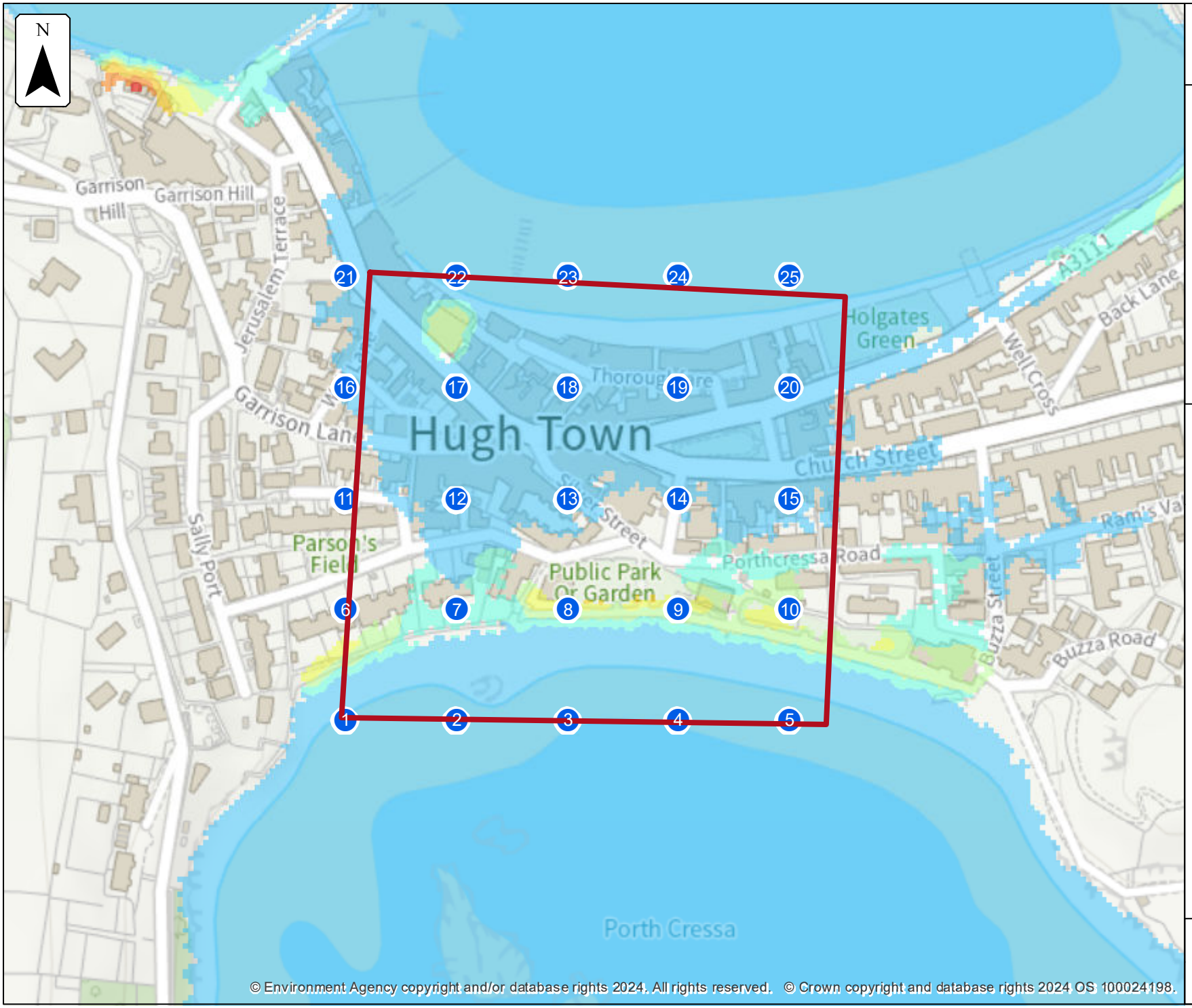
Sample point data

Defences removed

Label	Easting	Northing	5% AEP		2% AEP		1.33% AEP		1% AEP		0.5% AEP		0.1% AEP	
			Depth	Height	Depth	Height	Depth	Height	Depth	Height	Depth	Height	Depth	Height
1	90181	10396	1.72	3.72	1.78	3.77	1.81	3.80	1.83	3.82	1.86	3.85	1.97	3.96
2	90235	10396	3.17	3.72	3.23	3.77	3.25	3.80	3.27	3.82	3.31	3.85	3.41	3.96
3	90289	10396	4.49	3.72	4.54	3.77	4.57	3.80	4.59	3.82	4.62	3.85	4.73	3.96
4	90343	10396	4.38	3.72	4.43	3.77	4.46	3.80	4.48	3.82	4.51	3.85	4.62	3.96
5	90397	10396	3.25	3.72	3.30	3.77	3.33	3.80	3.35	3.82	3.38	3.85	3.49	3.96
6	90181	10450	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
7	90235	10450	0.02	5.20	0.02	5.21	0.02	5.21	0.03	5.22	0.03	5.24	0.04	5.26
8	90289	10450	0.04	6.65	0.05	6.66	0.05	6.66	0.05	6.66	0.06	6.67	0.07	6.68
9	90343	10450	0.00	6.58	0.00	6.58	0.00	6.58	0.00	6.58	0.00	6.59	0.00	6.60
10	90397	10450	0.02	6.23	0.02	6.23	0.02	6.23	0.02	6.23	0.02	6.23	0.02	6.24
11	90181	10504	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
12	90235	10504	NoData	NoData	NoData	NoData	0.26	4.31	0.26	4.32	0.30	4.36	0.36	4.41
13	90289	10504	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
14	90343	10504	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
15	90397	10504	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
16	90181	10558	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData

Label	Easting	Northing	5% AEP		2% AEP		1.33% AEP		1% AEP		0.5% AEP		0.1% AEP	
			Depth	Height	Depth	Height	Depth	Height	Depth	Height	Depth	Height	Depth	Height
17	90235	10558	0.07	3.55	0.17	3.73	0.20	3.79	0.22	3.81	0.24	3.85	0.35	3.97
18	90289	10558	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
19	90343	10558	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
20	90397	10558	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
21	90181	10612	NoData	NoData	0.01	3.77	0.02	3.79	0.02	3.82	0.03	3.86	0.05	3.97
22	90235	10612	1.96	3.71	2.02	3.77	2.05	3.79	2.07	3.81	2.11	3.86	2.22	3.97
23	90289	10612	2.80	3.71	2.86	3.77	2.88	3.79	2.91	3.81	2.95	3.86	3.06	3.97
24	90343	10612	3.16	3.71	3.22	3.77	3.24	3.79	3.26	3.81	3.31	3.86	3.42	3.97
25	90397	10612	2.86	3.71	2.92	3.77	2.94	3.79	2.97	3.81	3.01	3.86	3.12	3.97

Data in this table comes from the Isles of Scilly. St. Mary's 2019. 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.



Environment Agency

Defended climate change modelled tidal extent and height

Location (easting/northing)
90302/10501

Scale
1:2,500

Created
3 Jul 2024

Model name
Isles of Scilly. St. Mary's 2019.

- Selected area
- Main river

Modelled 2D grid
Water level in mAOD

- 0 - 4.0
- 4.0 - 4.625
- 4.625 - 5.25
- 5.25 - 5.875
- 5.875 - 6.5
- 6.5 - 7.125
- 7.125 - 7.75
- 7.75 - 8.375
- 8.375 - 9.0

This map shows the 0.1% AEP +1037mm height data

0 25 50 75 100
metres

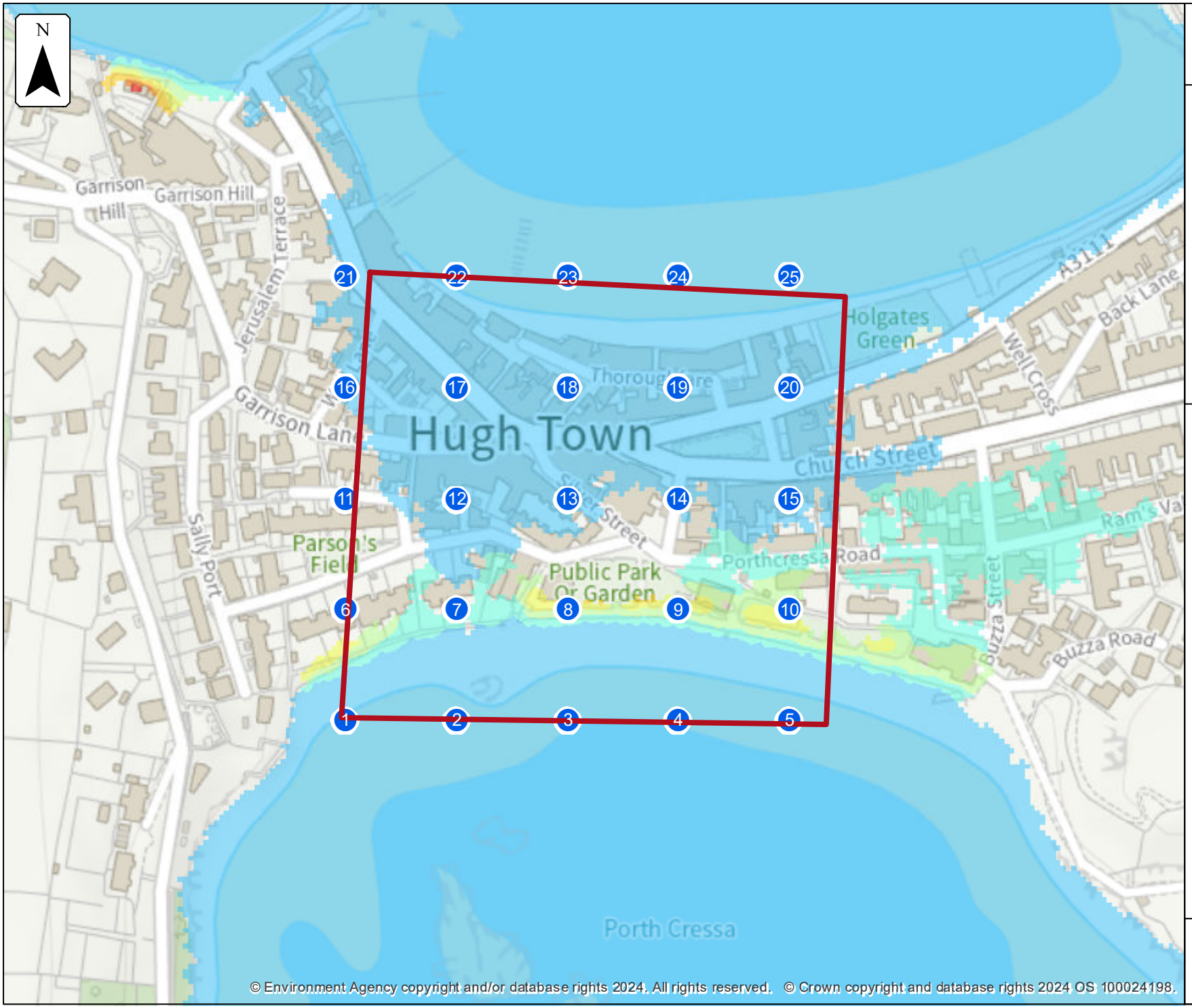
Sample point data

Defended climate change

Label	Easting	Northing	1% AEP (+351mm)		1% AEP (+812mm)		0.5% AEP (+351mm)		0.5% AEP (+812mm)		0.5% AEP (+1037mm)		0.1% AEP (+351mm)		0.1% AEP (+812mm)		0.1% AEP (+1037mm)	
			Depth	Height	Depth	Height	Depth	Height	Depth	Height	Depth	Height	Depth	Height	Depth	Height	Depth	Height
1	90181	10396	2.17	4.16	2.63	4.62	2.21	4.20	2.66	4.66	2.90	4.89	2.32	4.31	2.79	4.78	3.14	5.14
2	90235	10396	3.61	4.16	4.07	4.62	3.65	4.20	4.11	4.66	4.34	4.89	3.76	4.31	4.23	4.78	4.59	5.13
3	90289	10396	4.93	4.16	5.39	4.62	4.97	4.20	5.43	4.66	5.66	4.89	5.08	4.31	5.55	4.78	5.90	5.13
4	90343	10396	4.82	4.16	5.28	4.62	4.86	4.20	5.32	4.66	5.55	4.89	4.97	4.31	5.44	4.78	5.79	5.13
5	90397	10396	3.69	4.16	4.15	4.62	3.73	4.20	4.19	4.66	4.42	4.89	3.84	4.31	4.31	4.78	4.66	5.13
6	90181	10450	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
7	90235	10450	0.12	5.34	0.22	5.43	0.15	5.37	0.24	5.45	0.27	5.49	0.20	5.42	0.29	5.51	0.32	5.53
8	90289	10450	0.06	6.67	0.07	6.68	0.06	6.67	0.07	6.68	0.08	6.69	0.07	6.68	0.08	6.69	0.09	6.70
9	90343	10450	0.00	6.58	0.00	6.59	0.00	6.58	0.00	6.59	0.00	6.60	0.00	6.59	0.00	6.60	0.00	6.60
10	90397	10450	0.02	6.23	0.02	6.23	0.02	6.23	0.02	6.23	0.02	6.24	0.02	6.23	0.02	6.24	0.07	6.32
11	90181	10504	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
12	90235	10504	0.44	4.49	0.58	4.63	0.46	4.51	0.61	4.67	0.83	4.89	0.49	4.55	0.72	4.78	1.08	5.13
13	90289	10504	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	0.34	4.89	NoData	NoData	0.22	4.77	0.59	5.13
14	90343	10504	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	0.01	4.88	NoData	NoData	NoData	NoData	0.25	5.13
15	90397	10504	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
16	90181	10558	NoData	NoData	0.02	4.62	NoData	NoData	0.02	4.66	0.06	4.88	NoData	NoData	0.04	4.77	0.18	5.13
17	90235	10558	0.54	4.17	1.00	4.62	0.59	4.21	1.03	4.65	1.26	4.88	0.70	4.32	1.14	4.77	1.51	5.13
18	90289	10558	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	0.39	5.13
19	90343	10558	0.04	4.44	0.19	4.62	0.05	4.45	0.23	4.66	0.45	4.88	0.06	4.46	0.34	4.77	0.70	5.13
20	90397	10558	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	0.30	5.13

Label	Easting	Northing	1% AEP (+351mm)		1% AEP (+812mm)		0.5% AEP (+351mm)		0.5% AEP (+812mm)		0.5% AEP (+1037mm)		0.1% AEP (+351mm)		0.1% AEP (+812mm)		0.1% AEP (+1037mm)	
			Depth	Height	Depth	Height	Depth	Height	Depth	Height	Depth	Height	Depth	Height	Depth	Height	Depth	Height
21	90181	10612	0.09	4.17	0.19	4.62	0.10	4.20	0.19	4.66	0.34	4.88	0.12	4.31	0.23	4.77	0.59	5.13
22	90235	10612	2.43	4.18	2.87	4.62	2.46	4.21	2.91	4.65	3.13	4.88	2.57	4.32	3.02	4.77	3.38	5.13
23	90289	10612	3.27	4.18	3.71	4.62	3.30	4.21	3.75	4.65	3.97	4.88	3.41	4.32	3.86	4.77	4.22	5.13
24	90343	10612	3.63	4.18	4.07	4.62	3.65	4.21	4.10	4.65	4.33	4.88	3.76	4.31	4.22	4.77	4.58	5.13
25	90397	10612	3.33	4.18	3.77	4.62	3.36	4.20	3.81	4.66	4.03	4.88	3.47	4.31	3.92	4.77	4.28	5.13

Data in this table comes from the Isles of Scilly. St. Mary's 2019. 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.



Environment Agency

Defences removed climate change modelled tidal extent and height

Location (easting/northing)
90302/10501

Scale
1:2,500

Created
3 Jul 2024

Model name
Isles of Scilly. St. Mary's 2019.

Selected area

Main river

Modelled 2D grid
Water level in mAOD

- 0 - 4.0
- 4.0 - 4.625
- 4.625 - 5.25
- 5.25 - 5.875
- 5.875 - 6.5
- 6.5 - 7.125
- 7.125 - 7.75
- 7.75 - 8.375
- 8.375 - 9.0

This map shows the 0.1% AEP +1037mm height data

0 25 50 75 100
metres

Sample point data

Defences removed climate change

Label	Easting	Northing	0.5% AEP (+351mm)		0.5% AEP (+812mm)		0.5% AEP (+1037mm)		0.1% AEP (+351mm)		0.1% AEP (+812mm)		0.1% AEP (+1037mm)	
			Depth	Height	Depth	Height	Depth	Height	Depth	Height	Depth	Height	Depth	Height
1	90181	10396	2.21	4.20	2.66	4.66	2.90	4.89	2.32	4.31	2.79	4.78	3.14	5.14
2	90235	10396	3.65	4.20	4.11	4.66	4.34	4.89	3.76	4.31	4.23	4.78	4.59	5.14
3	90289	10396	4.97	4.20	5.43	4.66	5.66	4.89	5.08	4.31	5.55	4.78	5.90	5.13
4	90343	10396	4.86	4.20	5.32	4.66	5.55	4.89	4.97	4.31	5.44	4.78	5.79	5.13
5	90397	10396	3.73	4.20	4.19	4.66	4.42	4.89	3.84	4.31	4.31	4.78	4.66	5.13
6	90181	10450	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
7	90235	10450	0.05	5.26	0.07	5.29	0.08	5.30	0.06	5.28	0.09	5.31	0.10	5.32
8	90289	10450	0.07	6.68	0.10	6.71	0.11	6.72	0.08	6.70	0.11	6.72	0.12	6.73
9	90343	10450	0.00	6.60	0.00	6.62	0.00	6.63	0.00	6.61	0.00	6.63	0.00	6.63
10	90397	10450	0.07	6.32	0.07	6.33	0.08	6.33	0.07	6.32	0.08	6.33	0.08	6.34
11	90181	10504	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
12	90235	10504	0.37	4.43	0.61	4.66	0.83	4.89	0.38	4.44	0.72	4.77	1.08	5.13
13	90289	10504	NoData	NoData	NoData	NoData	0.34	4.89	NoData	NoData	0.22	4.77	0.59	5.13
14	90343	10504	NoData	NoData	NoData	NoData	0.02	4.89	NoData	NoData	NoData	NoData	0.25	5.13
15	90397	10504	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
16	90181	10558	NoData	NoData	0.03	4.66	0.06	4.88	NoData	NoData	0.04	4.77	0.18	5.13

Label	Easting	Northing	0.5% AEP (+351mm)		0.5% AEP (+812mm)		0.5% AEP (+1037mm)		0.1% AEP (+351mm)		0.1% AEP (+812mm)		0.1% AEP (+1037mm)	
			Depth	Height	Depth	Height	Depth	Height	Depth	Height	Depth	Height	Depth	Height
17	90235	10558	0.58	4.20	1.04	4.66	1.26	4.88	0.69	4.31	1.15	4.77	1.51	5.13
18	90289	10558	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	0.39	5.13
19	90343	10558	NoData	NoData	0.23	4.66	0.45	4.88	NoData	NoData	0.34	4.77	0.70	5.13
20	90397	10558	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	0.30	5.13
21	90181	10612	0.10	4.20	0.20	4.66	0.34	4.88	0.12	4.31	0.23	4.77	0.59	5.13
22	90235	10612	2.45	4.20	2.91	4.66	3.14	4.88	2.56	4.31	3.02	4.77	3.39	5.13
23	90289	10612	3.29	4.20	3.75	4.66	3.98	4.88	3.40	4.31	3.86	4.77	4.22	5.13
24	90343	10612	3.65	4.20	4.11	4.66	4.33	4.88	3.76	4.31	4.22	4.77	4.58	5.13
25	90397	10612	3.35	4.20	3.81	4.66	4.04	4.88	3.46	4.31	3.92	4.77	4.29	5.13

Data in this table comes from the Isles of Scilly. St. Mary's 2019. 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.

Strategic flood risk assessments

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

This should give you information about:

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

About this data

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

Flood risk activity permits

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

Find out more about flood risk activity permits

Help and advice

Contact the Devon Cornwall and the Isles of Scilly Environment Agency team at dcisenquiries@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