



Porthmadog Flood Risk Management Project | 1

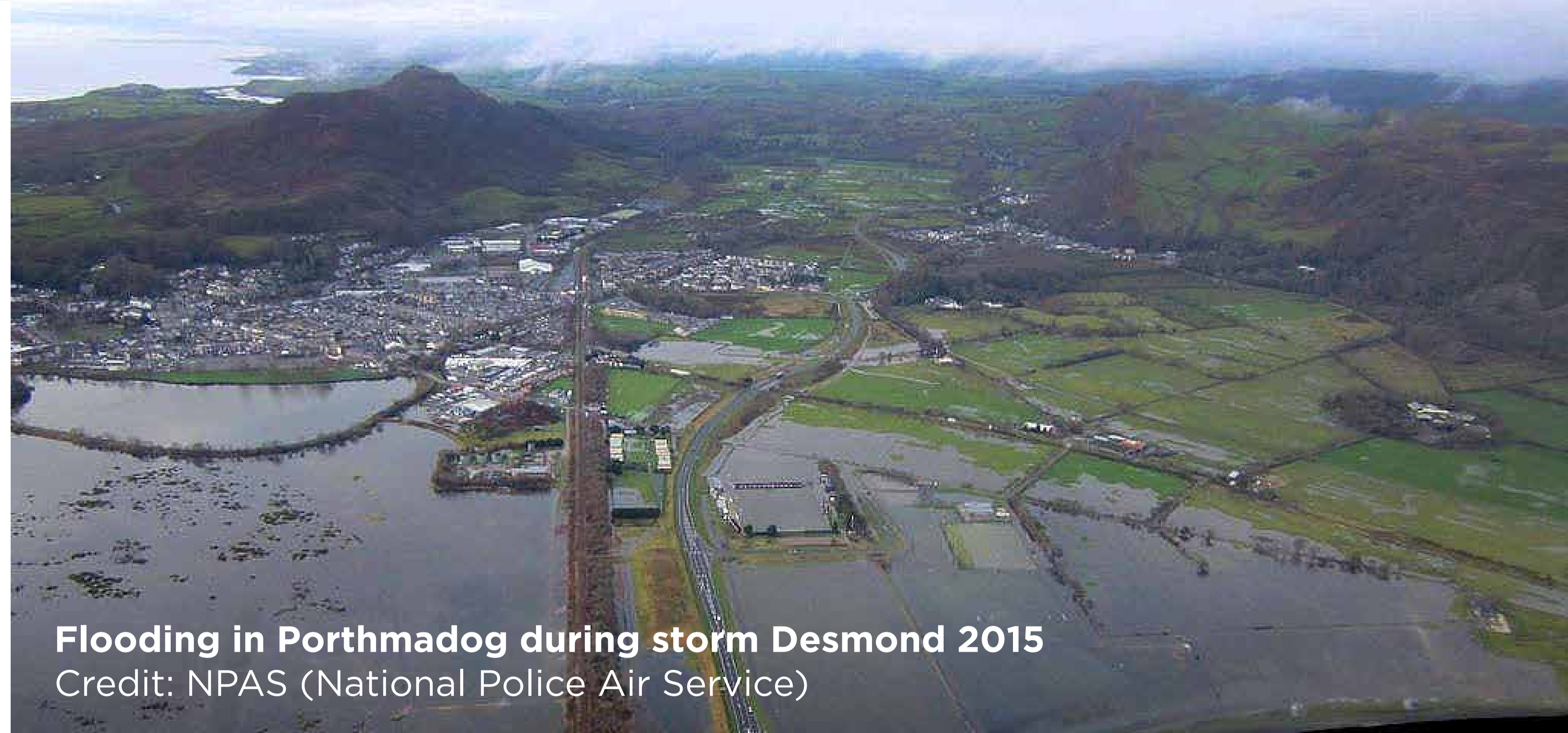
Introduction

Natural Resources Wales is working to find long-term flood risk management solutions for the community of Porthmadog and Tremadog, alongside delivering wider environmental, social and economic opportunities.

Throughout 2022, we have been updating our flood model to better understand the risk of flooding in the study area. Using the latest guidance, available river flow records and photographs taken during the winter 2015 event, we can predict flood risk now, and in the future, with the effects of climate change.

The model shows a greater number of homes and businesses at risk from the Afon Glaslyn, Y Cyt and from the sea. This concerns us all, and that is why NRW is focused on finding sustainable solutions to manage the risk.

In 2023, we are keen to discuss the findings from our flood model and assess a long list of options to reduce flood risk. We will be refining these options down into a Short List and then a Preferred Option, which will then form the Business Case for funding and delivery.



Flooding in Porthmadog during storm Desmond 2015
Credit: NPAS (National Police Air Service)

Porthmadog is at flood risk from both rivers and the sea as well as rain and groundwater. During high tides the rivers are unable to flow out to sea and so a combination of extreme rainfall and high tides puts many residential and commercial properties at risk of flooding. This is expected to worsen with climate change.

As our climate changes, we will face more frequent storms, heavy rainfall and rising sea levels. This will mean that severe flooding events will become more frequent. This will put increased pressure on the current flood defences in the town and will impact how they will perform.

We're here to listen to your feedback and answer any questions you have.

Come and have a chat with the team!



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Our work in the study area

Natural Resources Wales is Wales's largest environmental body. As well as managing flood risk, we have many legal duties and responsibilities to ensure we protect the outstanding environment we live in both now and in the future. To achieve this, we have started carrying out a number of specialist surveys to help us understand the current state of nature.

We call this our baseline. Environment assessments will be used to ensure that all necessary approvals are in place for any work we carry out. We must: protect the natural and historic environment, use natural resources in a sustainable way, seek ways to avert the Climate and Ecological Emergencies.

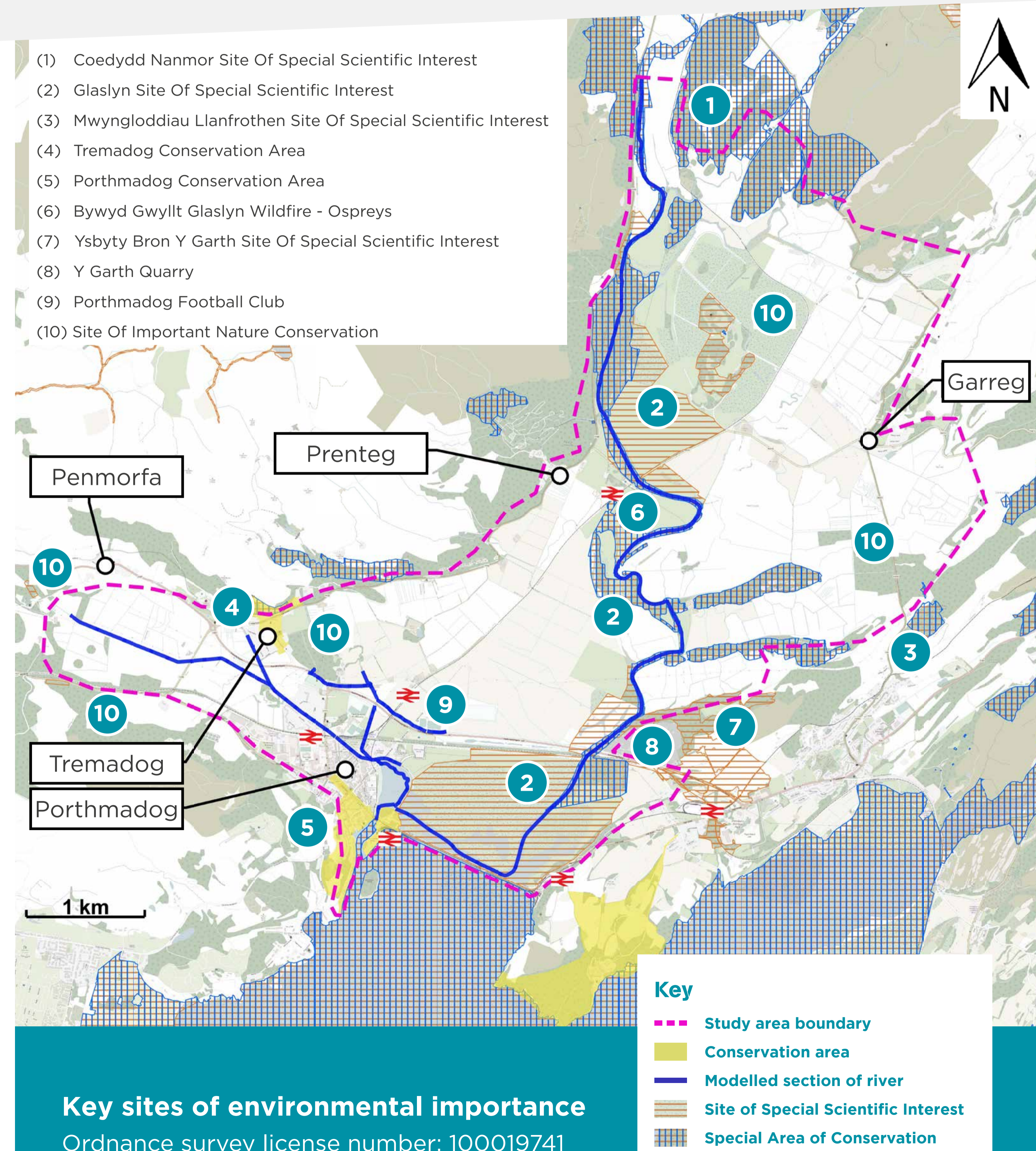
The project

- We have updated the flood model and carried out new environmental surveys as part of evidence gathering.
- We are assessing Long List options to reach a Short List and Preferred Option, prioritising flood risk reduction to people and homes.
- We are listening and have taken on board the 2021 letter drop responses.

Outside the scope of this project, but ongoing:

- We inspect, operate and maintain flood defences working with asset owners and other organisations.
- We fulfil conservation and regulatory duties to protect the environment.
- We are responsible for maintaining ditches within the Glaslyn and Pencyflog, and Llanfrothen Internal Drainage Districts.
- We issue flood alerts for the coast and flood warnings for the harbour.
- We will continue to perform our ongoing functions including our out of hours emergency response during a flood.

We have printed out maps to show more detail – please ask to see these





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Porthmadog – the wider context

Shoreline Management Plans (SMPs) set out a shared strategic approach for managing the coastline from coastal flooding and erosion risks. Porthmadog is within the West of Wales Shoreline Management Plan 2 (SMP2). This document states a preferred policy at this location of “Hold the Line” (HTL) up to 2105. This means the aim is to maintain or change the existing standard of coastal defence protection.



Natural Environment

The study area forms an important blend of coastal, wetland and woodland habitats that act as green corridors into surrounding countryside. The environmental importance of this area is reflected in the large number of protected habitats and species that are shown on board 2.

Many of these are of National and International importance and these too are being threatened by the effects of flooding and climate change.

Landscape

The outstanding natural beauty of the area with its close association with the Snowdonia National Park needs careful consideration when project planning.

Recreation

This study area offers many opportunities for diverse recreational pastimes. These too will be carefully considered, as they are of vital importance for people’s health and wellbeing, and also bring income to the community.

Livelihoods

Landowners and farmers may have noticed that the environment is changing and we want to hear your adaptation concerns and ideas.

Historic Environment

The area surrounding Porthmadog has a long and fascinating history and is one where humans have chosen to settle since the earliest of times. The coastline here has changed frequently over time, indeed much of the area we are looking at today was only reclaimed from the sea in 1811 when William Maddocks built the cob across the estuary mouth.

Importantly, this means that many of the current water management features, such as banks, sluices and flood gates have historical importance and approvals may be required to work on them.

Many of the existing structures are also linked to the slate industry, the importance of which has been recently recognised by granting the new World Heritage sites of the Slate Landscape of Northwest Wales.

We have commissioned a specialist archaeological study to help us design future changes while making sure we respect the past.

Coastal Squeeze

Where man-made structures have been built to protect communities and land from coastal flooding and erosion, such as sea walls or rock revetments, the habitat may be prevented from moving landward as sea levels rise whilst it continues to be lost from the lower shore. This is known as ‘coastal squeeze’.

Coastal squeeze means that the saltmarsh size and function is reducing over time, along with the habitats and species that it supports. A lot of saltmarsh habitat is legally protected therefore we are required to create new saltmarsh to offset losses in the future with sea level rise.

If you have any ideas or suggestions for environmental improvements that we can help to deliver through our work, please do let us know on the feedback forms.






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Flood risk from rivers

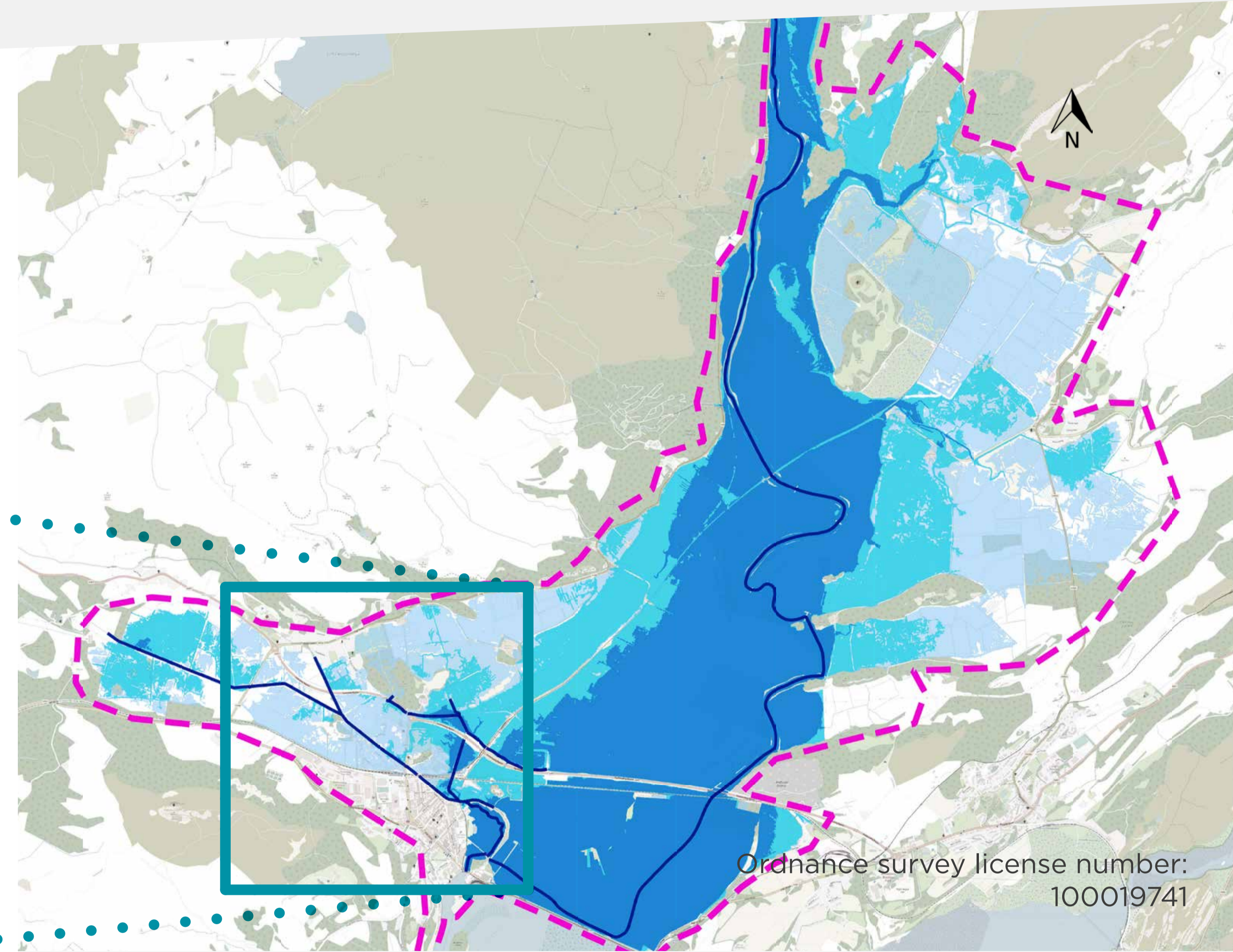
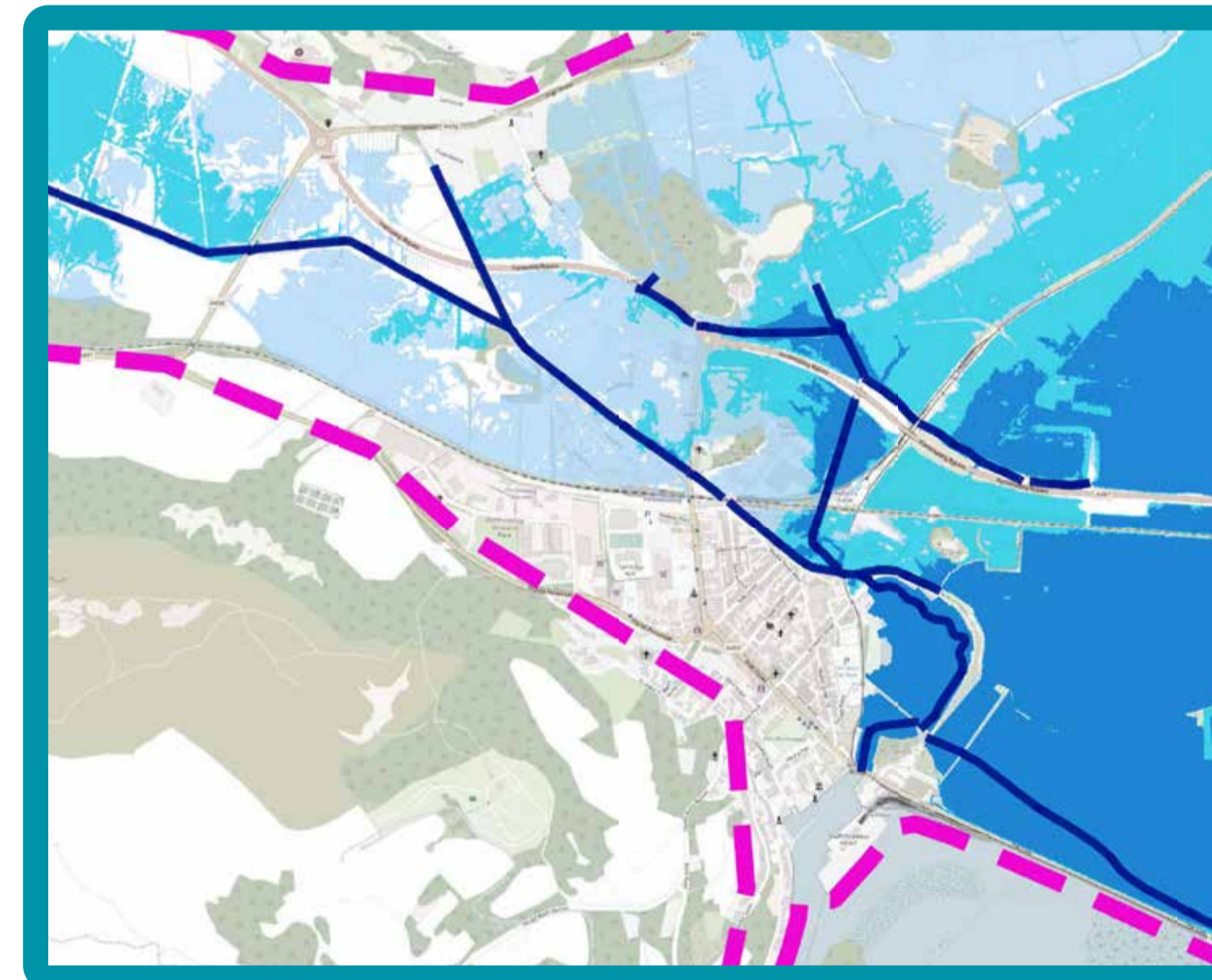
Most of Porthmadog sits on low lying land which is at risk of flooding from the Afon Glaslyn, Y Cyt and from the sea. The land was reclaimed from the sea in 1811 when the Cob was constructed across Traeth Mawr by William Maddocks.

The Cob prevents the natural inward movement of tidal water from reaching Pont Aberglaslyn. This bridge is located eight kilometres (five miles) inland to the north, near Beddgelert.

Maintaining today's level of flood protection is a challenge with existing defences being put under increased pressure from more frequent weather events.

-  Modelled section of main river
-  Flood Risk Extent (50% AEP)
-  Flood Risk Extent (3.33% AEP)
-  Flood Risk Extent (1.0% AEP)
-  Study area boundary

*% AEP - Annual Exceedance Probability
(% Chance of flooding in any given year)



Ordnance survey license number:
100019741

The flood model predicts the following flood risk is at the 1.0% AEP Event

Time Scale	Homes	Businesses
Present day	345	105
2080	825	220

The information shown on this map is to be used for the purpose of the Porthmadog Flood Risk Management Project Consultation only. These outputs are not final and remain under review. These maps do not replace the flood risk information available on the Natural Resources for Wales Website.

For information on 'Preparing for a flood', visit our webpage:
www.naturalresources.wales/flooding/preparing-for-a-flood

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Flood defence structures

Several flood defences exist in the Porthmadog study area. These include embankments, harbour walls and mechanical gates at key locations.

Some were built at the start of the 1800s and are maintained today by different flood risk management authorities.

Through this study, we are developing our understanding of the flood risk and the function of the defences so we can continue to protect homes and businesses in the long-term.



Afon Glaslyn Tidal Gates



Main Cob



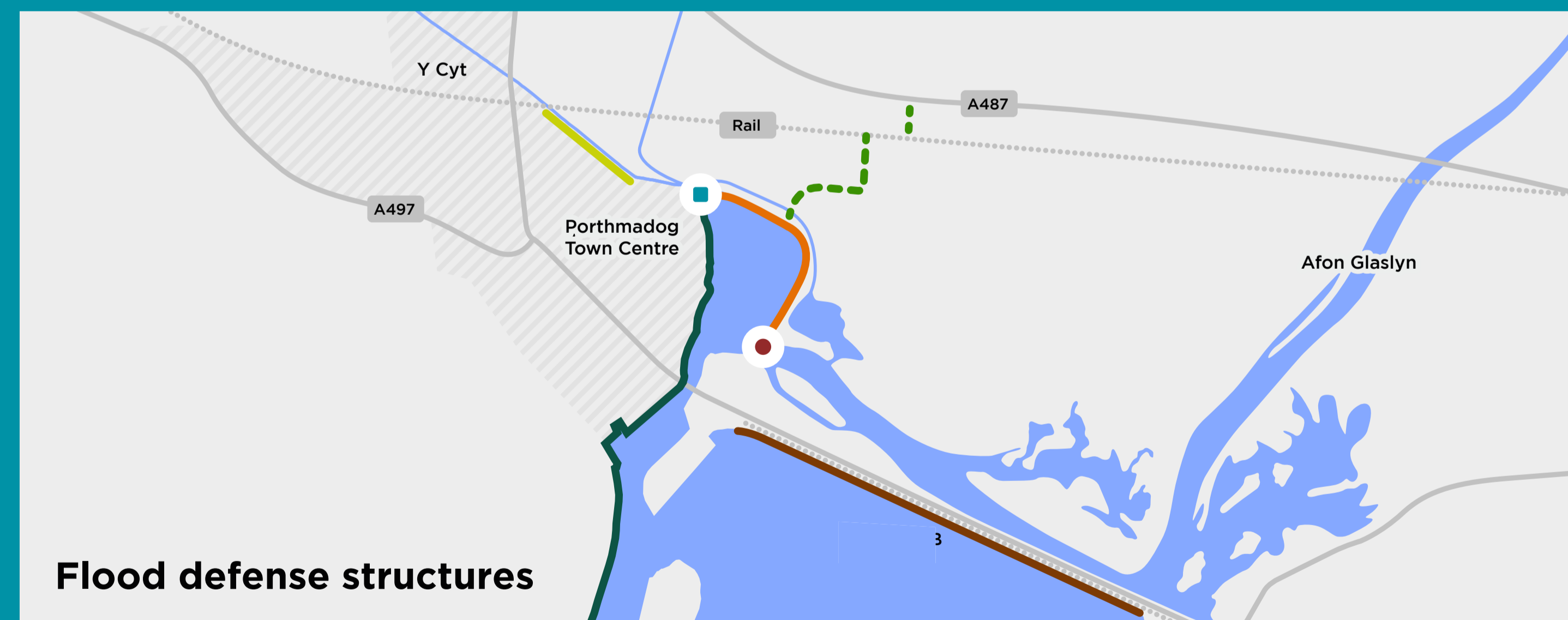
Y Cyt Tidal Doors



Y Cyt Embankment



Cob Crwn



Flood defense structures

Key

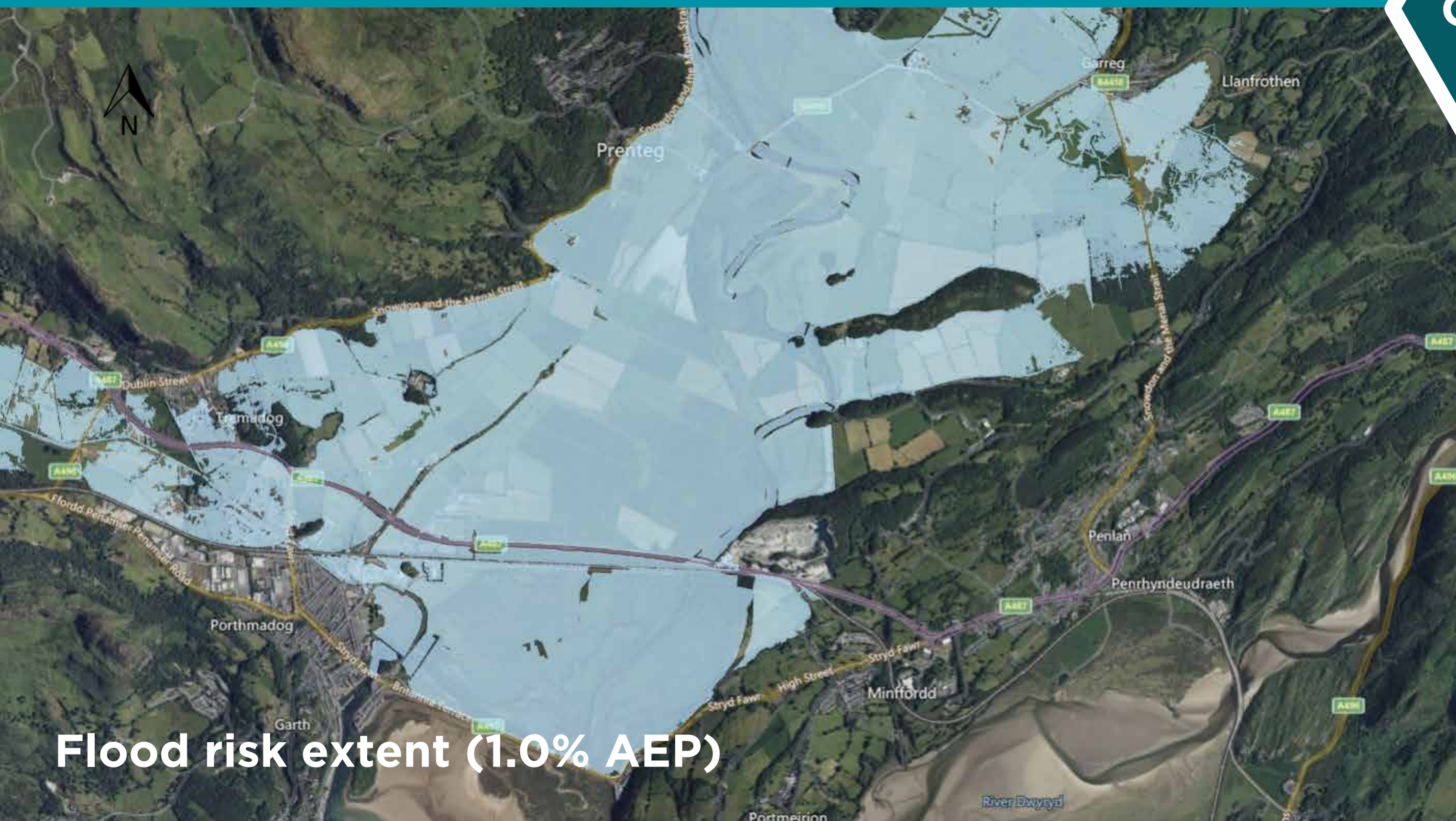
- Afon Glaslyn Tidal Gates
- Y Cyt Tidal Doors
- Main Cob
- Cob Crwn
- Y Cyt Embankment
- Quay structure
- - - Other embankments
- Watercourses
- ▨ Built-up areas

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Long list of options

We are exploring options to more effectively manage the long-term flood risk to people and homes in Porthmadog, Tremadog and surrounding communities, and to maximise the sustainable management of natural resources. We welcome your input on any of these or other options, as well any wider environmental, social, and economic opportunities available.

A combination of options will likely be needed to manage flood risk from rivers and the coast. This may change over time (short/medium/long term) as we try to manage the effects of sea level rise and climate change.



Flood risk extent (1.0% AEP)

Sustainable Management of Natural Resources

Through this project we will explore and adopt, where possible, principles of sustainable management of natural resources.

This will include natural flood management options, and we will assess catchment wide environmental opportunities, aimed at maintaining and enhancing biodiversity and ecosystem resilience.

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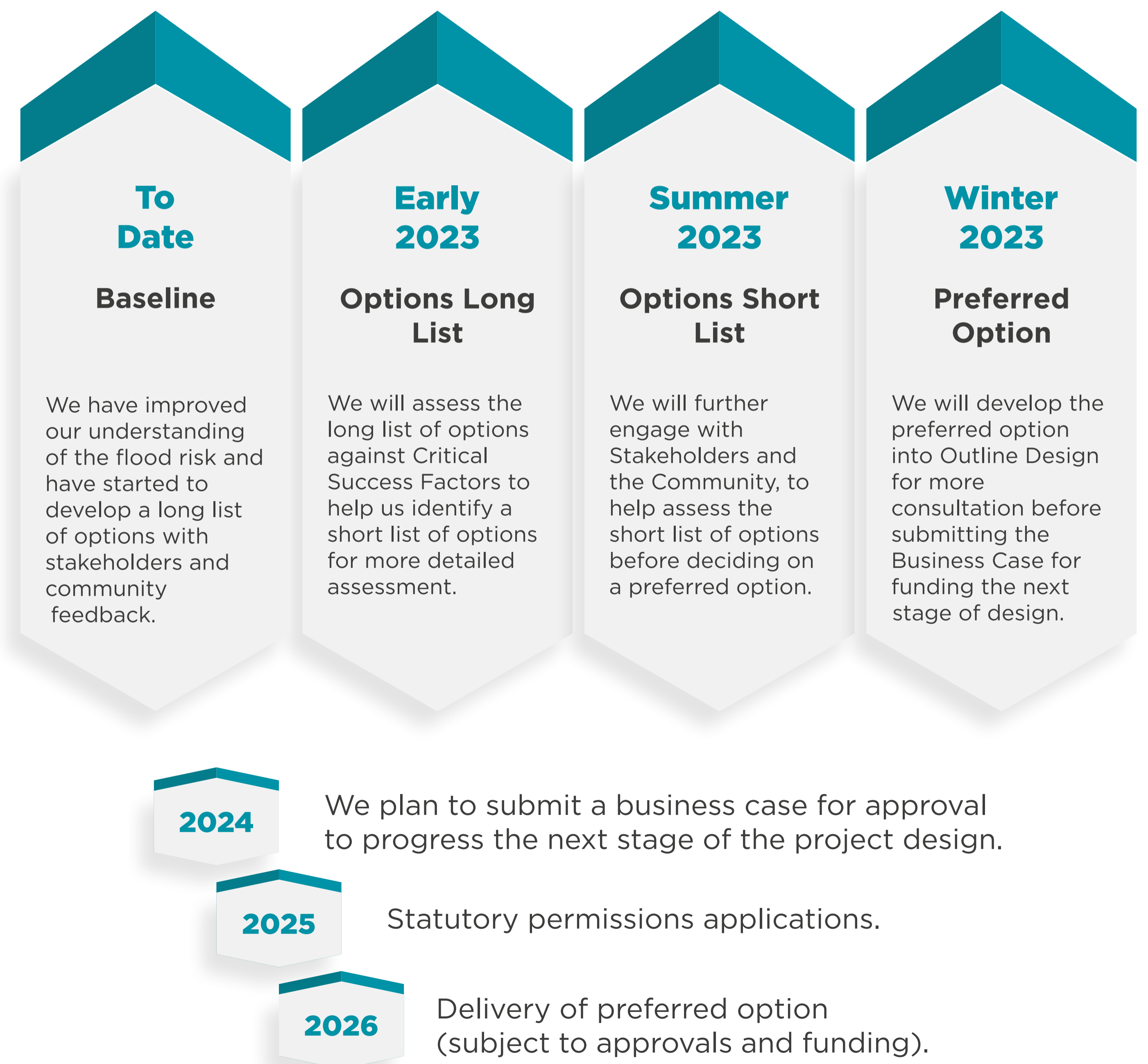
Assessing the options for Porthmadog

We are using the latest guidance and evidence, including the updated flood model, and onsite surveys, to produce and assess options. As we progress through the project stages, your feedback will help inform the assessments at longlist, shortlist and preferred option stages. We are using five Critical Success Factors, specifically tailored to meet the objectives of this project, to assess each option.



Project stages (developing the Business Case)

Stakeholders and community members will be engaged at each stage of this long-term project:



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Keeping in touch - how you can feedback

We will be providing regular project updates, as well as the chance to feedback online

We want to hear from you so we can further understand the impact of flooding in Porthmadog, Tremadog and the wider community and to consider and develop options that best manage flood risk into the future.

The project aims to deliver a sustainable solution that ultimately reduces flood risk to as many people and homes as possible, both now and in the future. We also want to explore wider environmental and social opportunities that can be developed as part of any preferred option going forward.

Even if you have done so previously, please get in touch if you'd like to find out more, and to share your views and comments with us.



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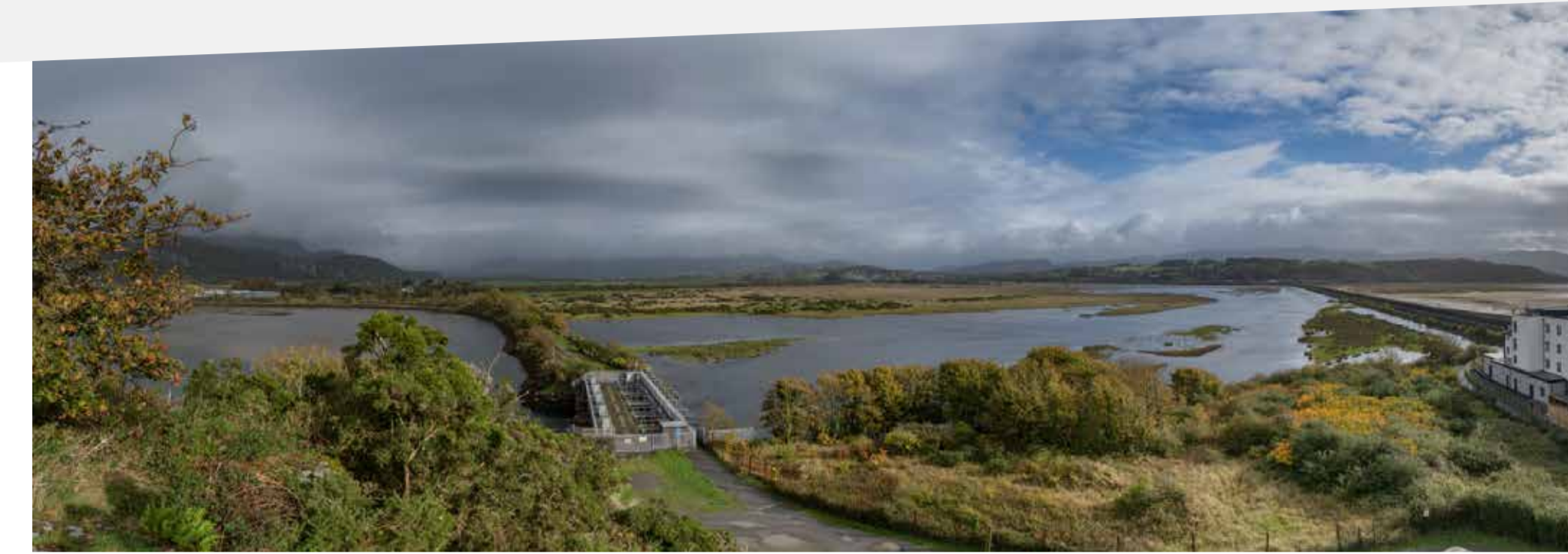
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Further information about the project is available at:
www.naturalresources.wales/porthmadogfloodrisk

