

**Kring**  
of Coastal Engineers

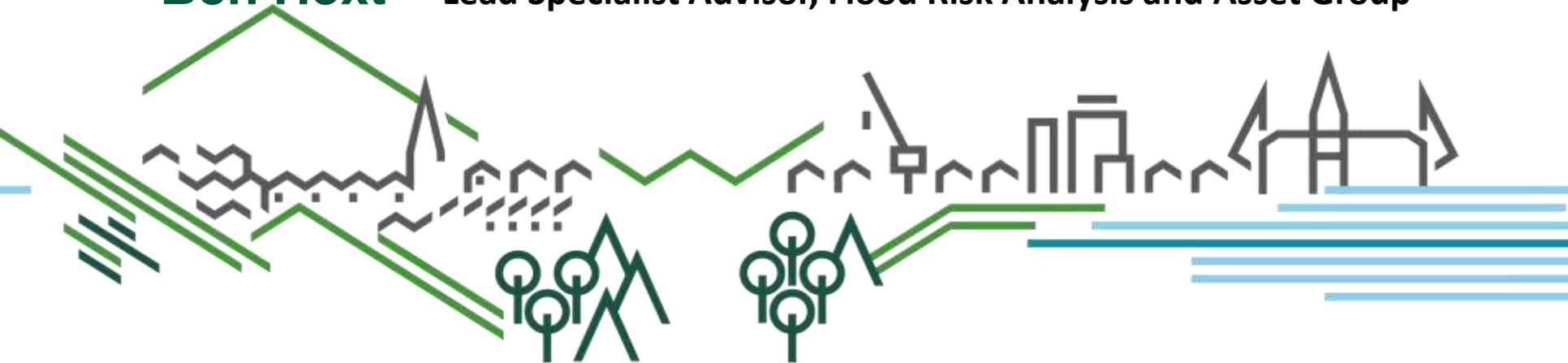


**Cyfoeth  
Naturiol  
Cymru  
Natural  
Resources  
Wales**

# Coastal Adaptation – Wales

## Kring-FAIR webinar 23<sup>rd</sup> May 2022 Communication of adaptation challenges

**Ben Hext** - Lead Specialist Advisor, Flood Risk Analysis and Asset Group



# INTRODUCTION





# Our Coastline



77 % of the coastline is designated SSSI, SPA, Ramsar, MPA, Heritage Coast



supports recreation, tourism, well-being and local economies



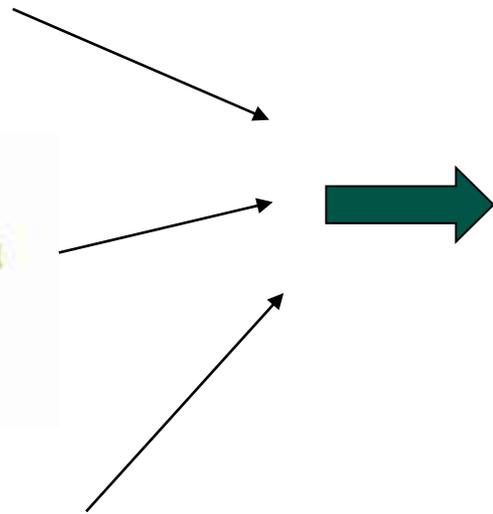
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Support 60% of population & 93,000 jobs

<https://freevectormaps.com/united-kingdom/wales/G-B-WL-EPS-02-6001?ref=atr>

# Who are we?



This brings strengths and also weaknesses

# What do we do?



**Our purpose:** to ensure the natural resources of Wales are sustainably maintained, used and enhanced, now and in the future.



# Environmental challenges for us



**Tree Disease**



**Pollution**



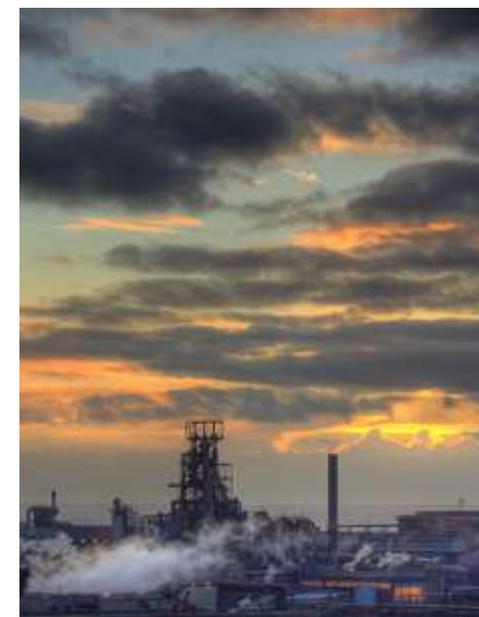
**Flood risk**



**Competing demands**



**Degraded habitat and  
biodiversity loss**



**Air quality issues**

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# Flood Risk Remit

- **Manage risk from “Main Rivers” and the Sea (Local Auth. For surface water/pluvial or “None Main Rivers)**
- **Oversight (Umbrella) role across Wales for all Risk Management Authorities**
- **Issue Flood Warnings and response to flooding**
- **Manage Flood Defences and their change, now and into the future....**



# CHALLENGES AT THE COAST



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# Towyn-North Coast- March 1990



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# 2013/14 people property and infrastructure



Network Rail Damage



# Wider Effects of 2013/14 Winter Storms



**Erosion of soft cliffs**



**Litter smothering saltmarsh**



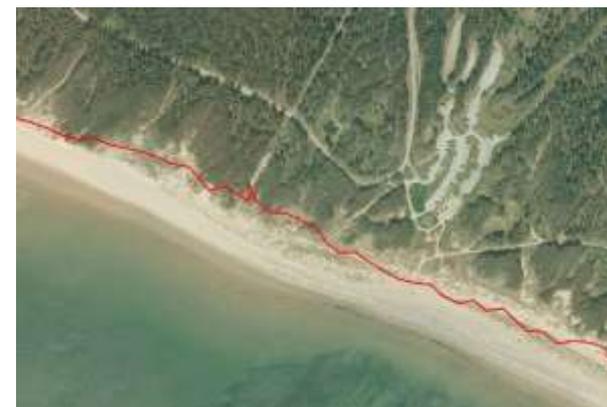
**Erosion of saltmarsh**



**Extensive peat exposures**

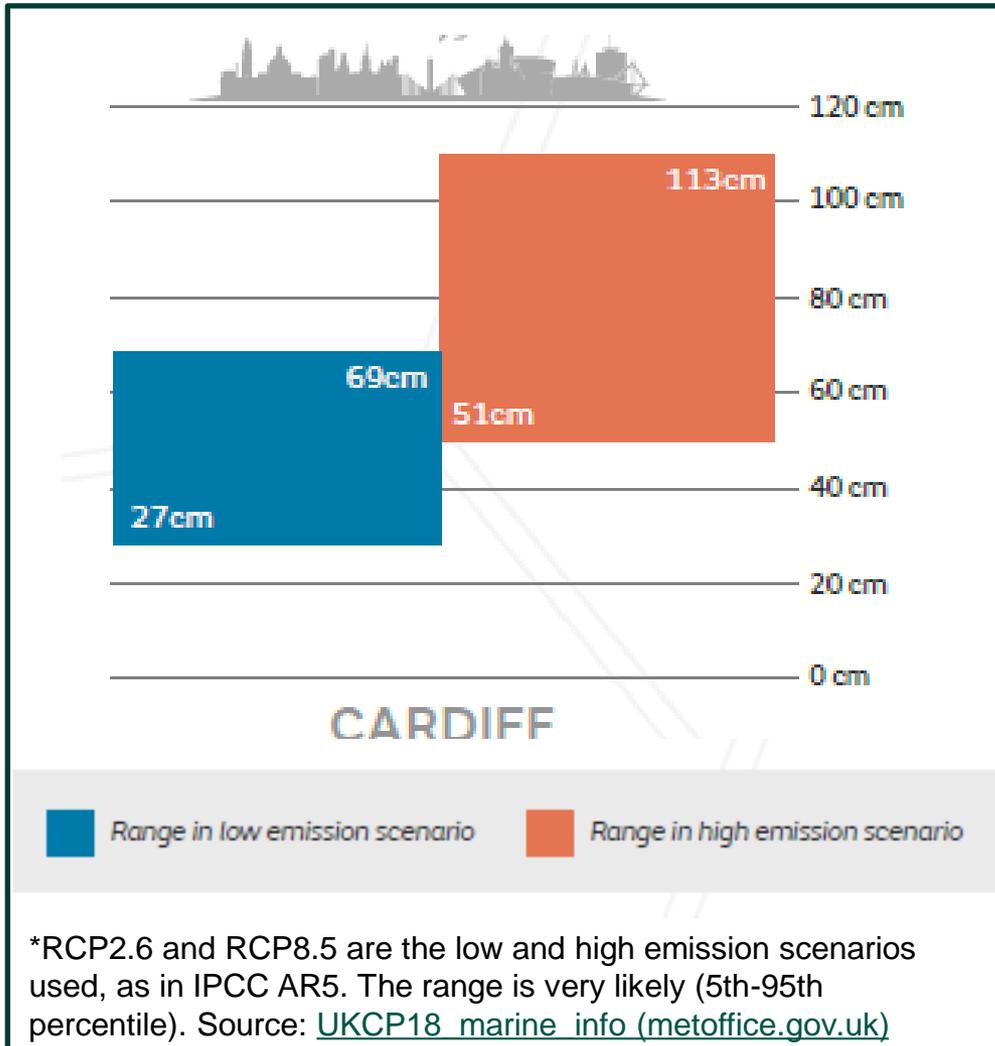


**Breaches and inundation of coastal grazing marsh**



**Erosion of sand dunes**

# Climate change risks at the coast



Source: [Natural Resources Wales / Nature-based solutions and adaptation at the coast](https://www.naturalresources.wales/)

# Coastal flood and erosion risks

71,042 properties are at risk of tidal flooding across Wales (Flood Risk Assessment Wales, 2021)

Almost 400 properties are at risk from coastal erosion (National Coastal Erosion Risk Map, 2012)



Flood risk description	Residential properties at risk of flooding	Non-Residential properties at risk of flooding	Key Services at risk of flooding	Total at risk of flooding
Tidal High	42,229	4,424	808	47,461
Tidal Medium	11,764	1,835	318	13,917
Tidal Low	8,288	1,154	222	9,664
Tidal Total	62,281	7,413	1,348	71,042

Source: April 2021 FRAW data. Note: undefended property count.

# ADAPTATION INTO THE FUTURE



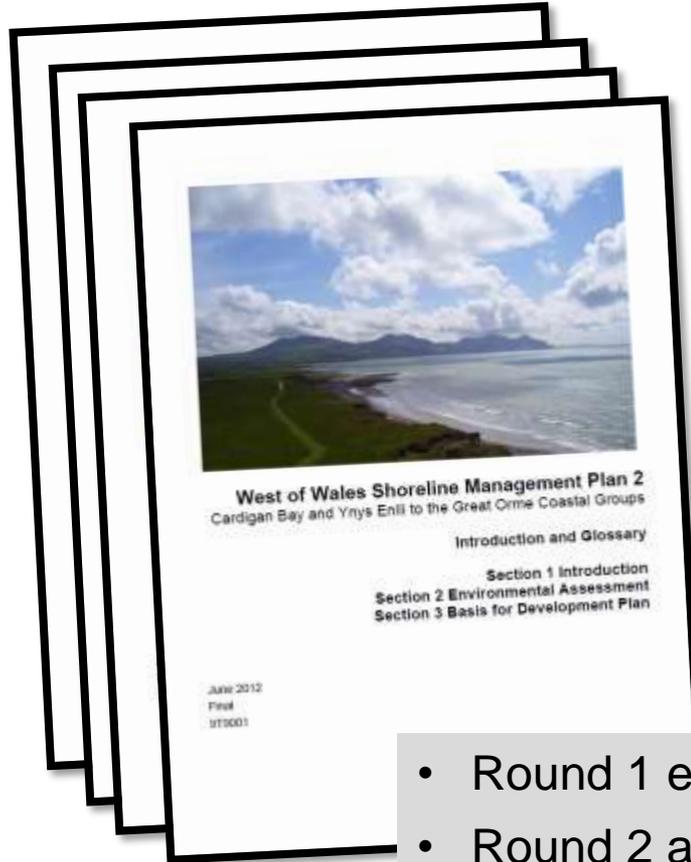
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What is in our toolbox?



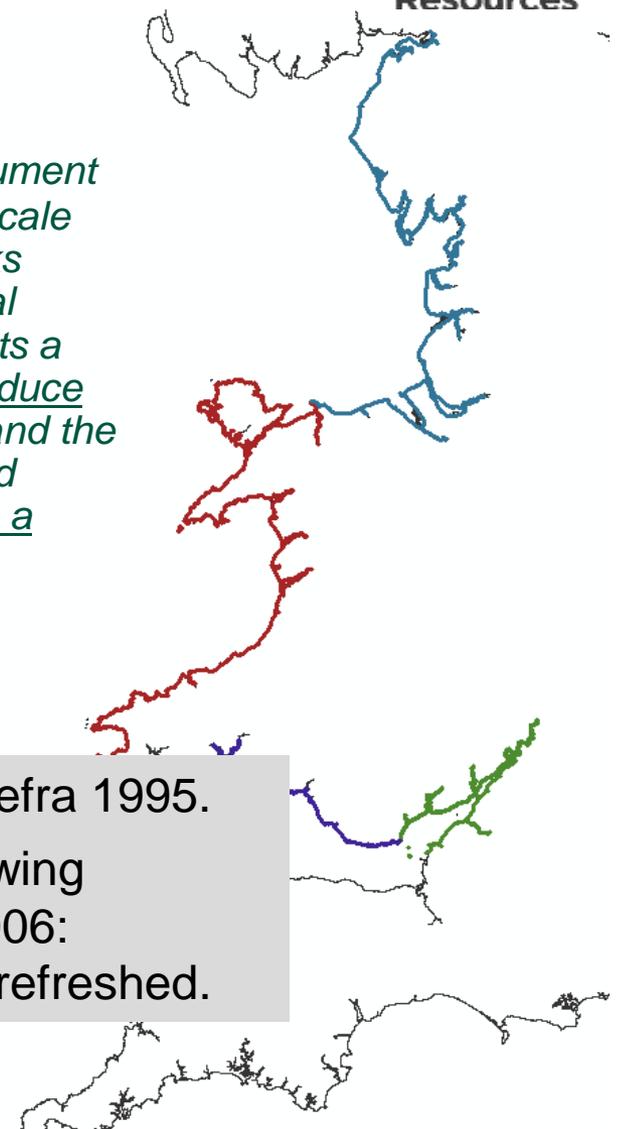
# -Strategic Plans

## Shoreline Management Plans



*'a (non-statutory) document that provides a large scale assessment of the risks associated with coastal processes and presents a policy framework to reduce these risks to people and the developed, historic and natural environment in a sustainable manner'*

- Round 1 early 2000s following Defra 1995.
- Round 2 approved 2014/15 following updated Defra Guidance from 2006:
- 2021/22 round 2 currently being refreshed.



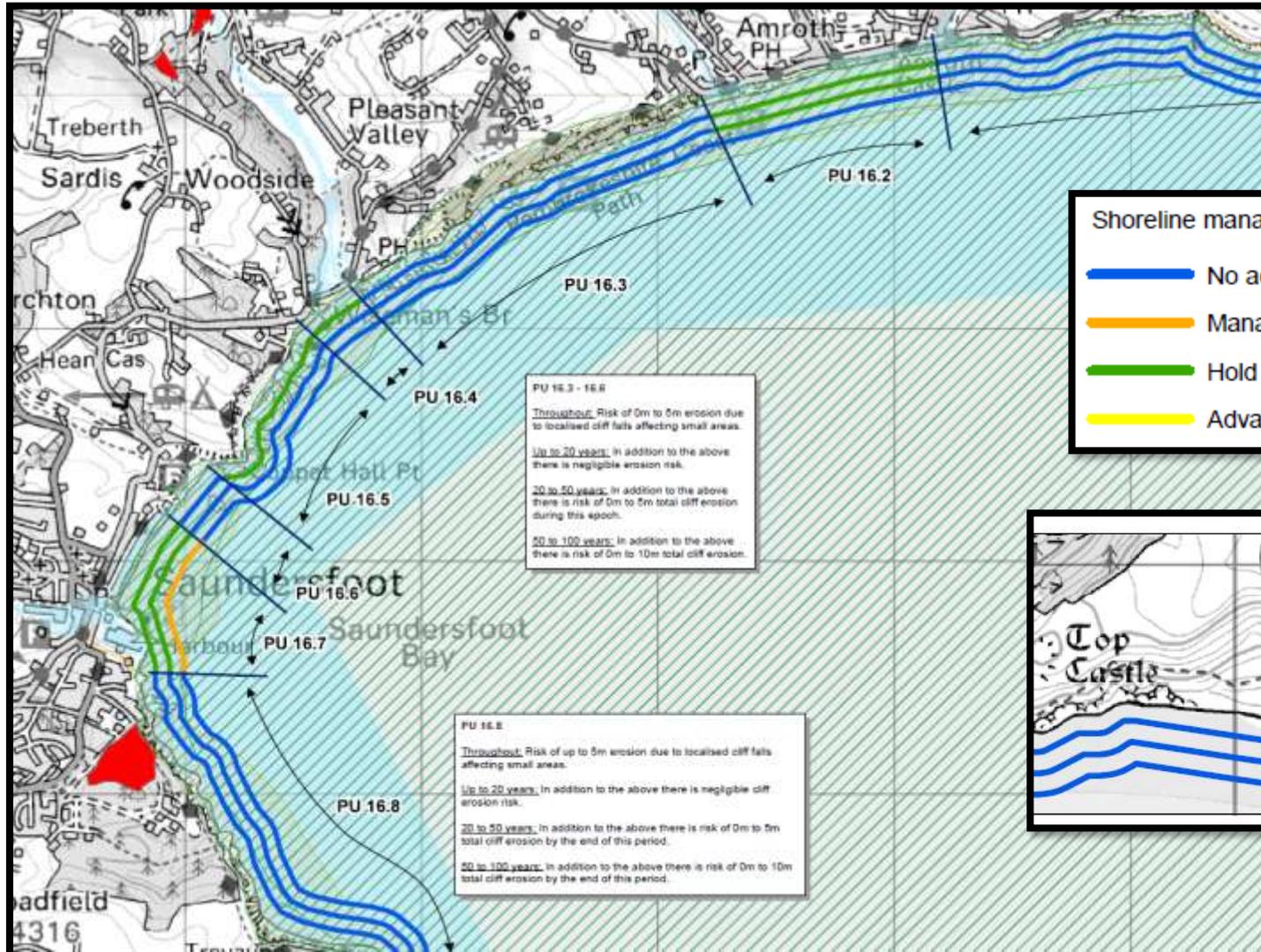
# SMP General principles

“The plan must guide and support the planning system in discouraging inappropriate development in areas at risk from flooding and coastal erosion”, (Defra, 2006).



# What are Shoreline Management Plans (SMPs)?

Source: preferred-policy-16-dolwenpt\_giltarpt.pdf (southwalescoastalgroup.cymru)

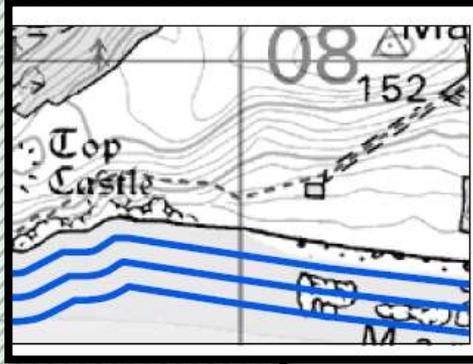


**Shoreline management policies**

- No active intervention
- Managed realignment
- Hold the line
- Advance the line

**PU 16.3 - 16.8**  
**Throughout:** Risk of 0m to 5m erosion due to localised cliff falls affecting small areas.  
**Up to 20 years:** In addition to the above there is negligible erosion risk.  
**20 to 50 years:** In addition to the above there is risk of 0m to 5m total cliff erosion during this epoch.  
**50 to 100 years:** In addition to the above there is risk of 0m to 10m total cliff erosion.

**PU 16.8**  
**Throughout:** Risk of up to 5m erosion due to localised cliff falls affecting small areas.  
**Up to 20 years:** In addition to the above there is negligible cliff erosion risk.  
**20 to 50 years:** In addition to the above there is risk of 0m to 5m total cliff erosion by the end of this period.  
**50 to 100 years:** In addition to the above there is risk of 0m to 10m total cliff erosion by the end of this period.



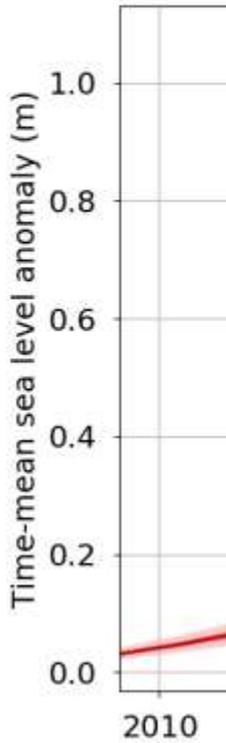
Policy lines are not indicative of current shoreline position.  
 Lines represent the preferred shoreline management policy for each location (most landward line is the first epoch)

Up to 20 years  
 20 to 50 years  
 50 to 100 years

# Evidence Base

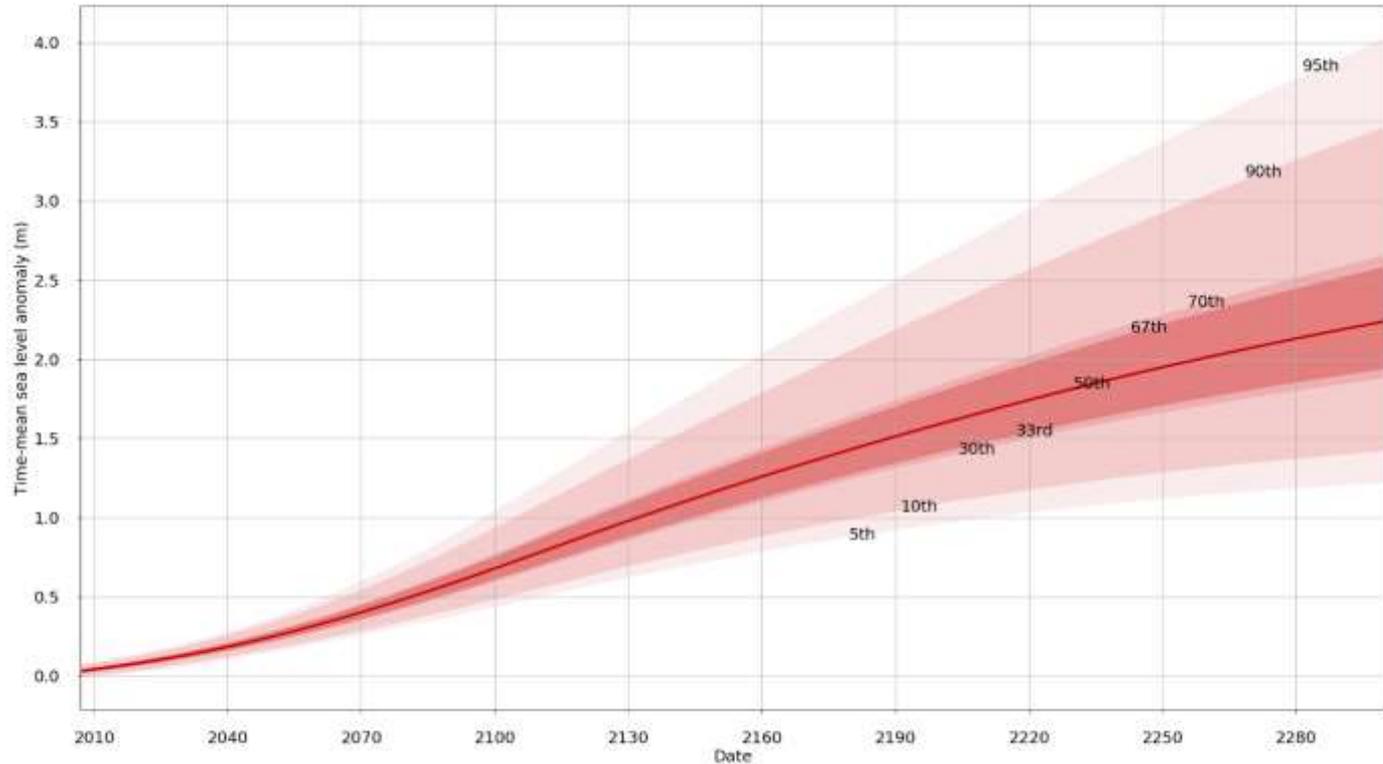
Met Office  
Hadley Centre

Time-mean sea level anomaly (m) for years 2007 up to and including 2100, for grid square 52.5°, -4.08°, using baseline



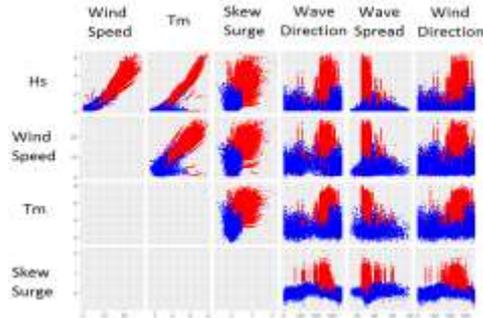
Met Office  
Hadley Centre

Time-mean sea level anomaly (m) for years 2007 up to and including 2300, for grid square 52.5°, -4.08°, using baseline 1981-2000, and scenario RCP 8.5, showing the 5th, 10th, 30th, 33rd, 50th, 67th, 70th, 90th and 95th percentiles



Funded by BEIS and Defra

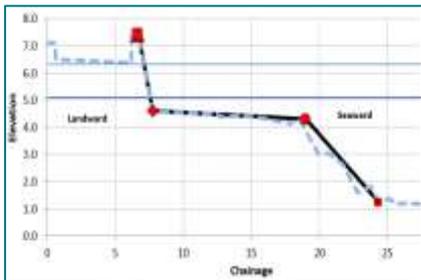
# Risk Modelling



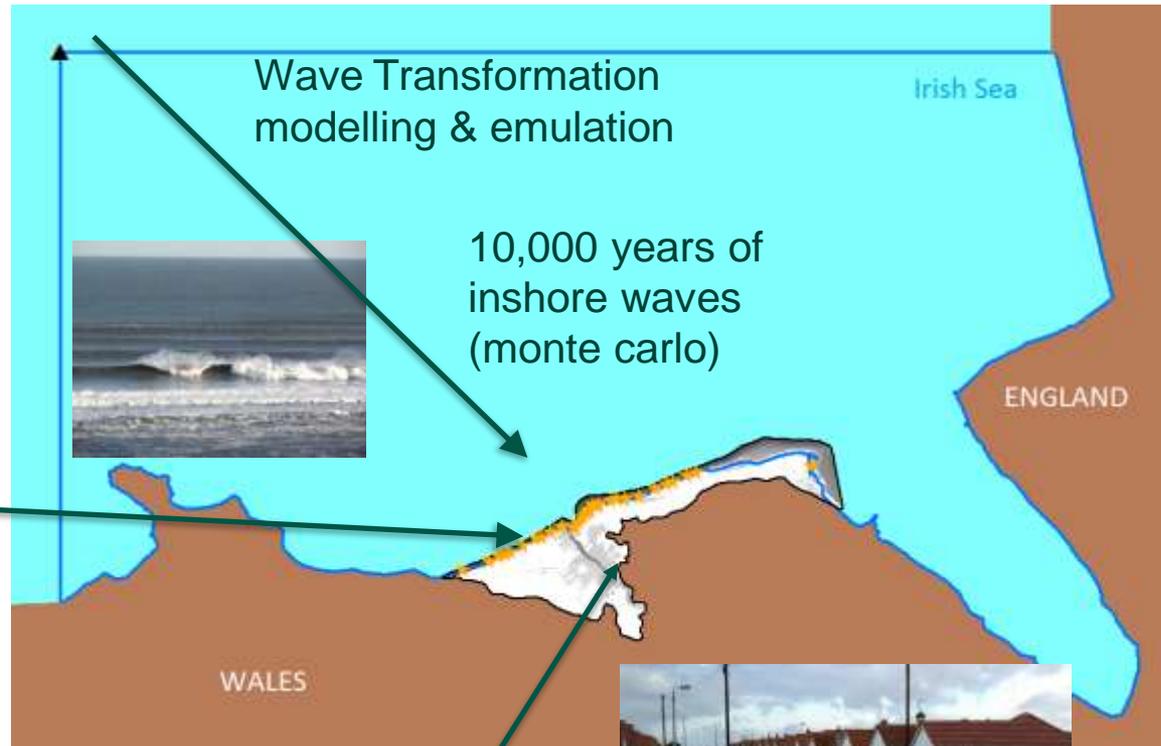
Multi-variate statistical analysis of water levels and offshore wave and wind conditions now and future



## Overtopping



Calculate return periods

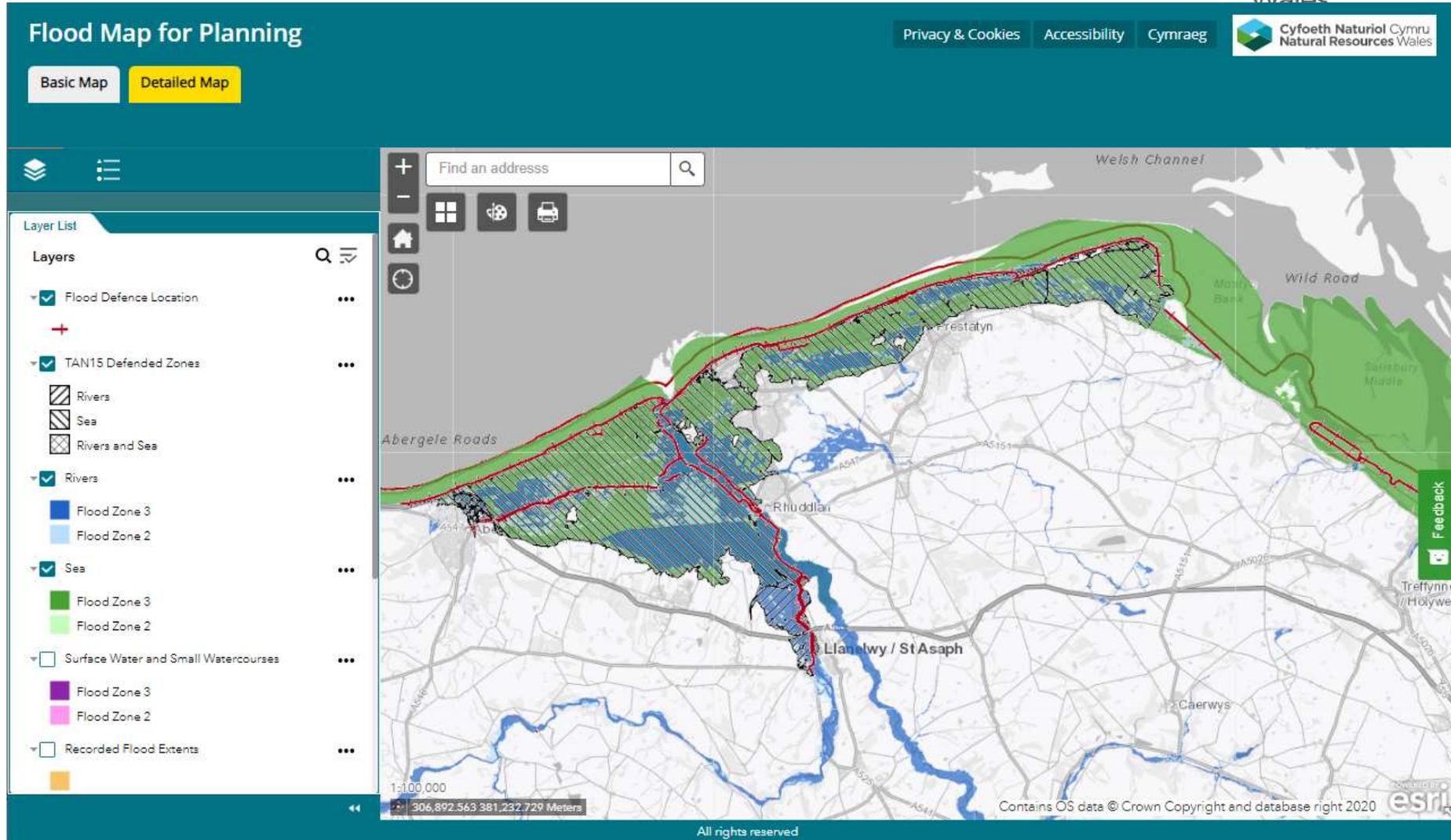


Inundation Modelling

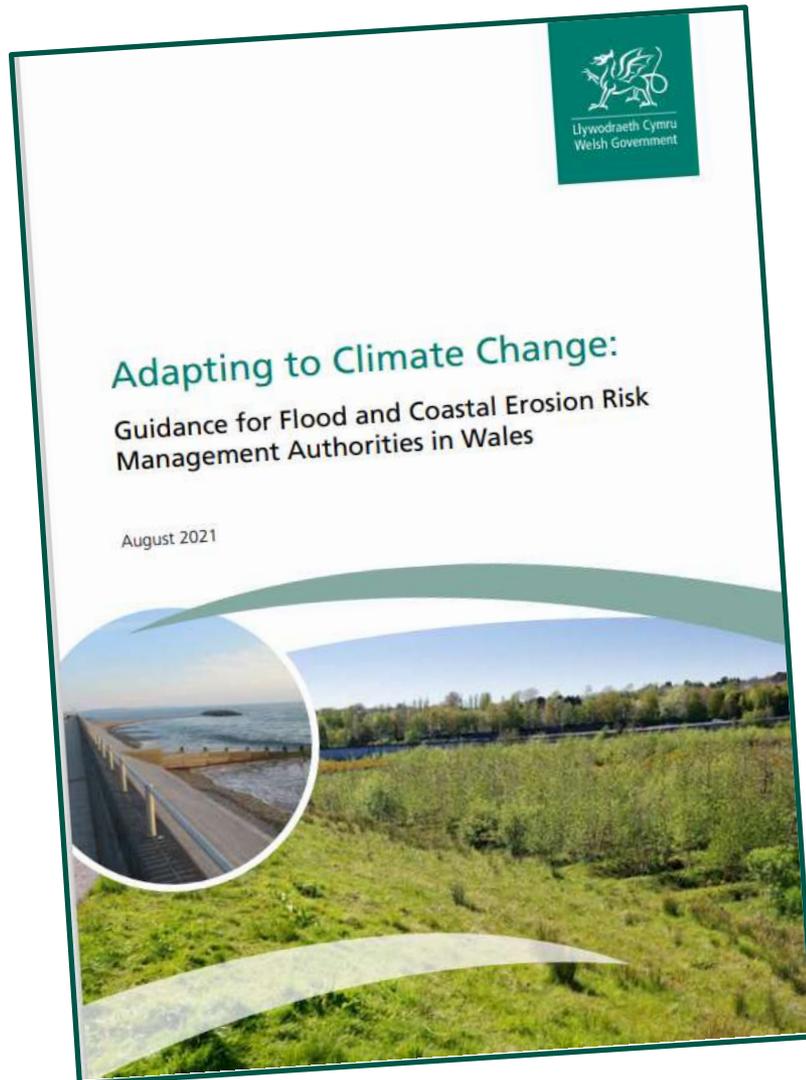


www.bbc.co.uk

# Land Use Planning & Policy looking to 100year cc



# Design Criteria and Policy



# Legislation

## Wellbeing and future generations act



A Public body must act in a manner which seeks to ensure that the needs of the present are met without compromising the ability of future generations to meet their own needs.

# Coastal adaptation - Example

“Coastal adaptation is the process of adjustment, to manage the increasing risks to coastal areas associated with climate change”

Source: [National Strategy for Flood and Coastal Erosion Risk Management in Wales | GOV.WALES](#)



Helps with

- Areas with MR or NAI SMP policy
- Unsustainable assets
- Coastal Squeeze offset
- Managing flood risk in a different way
- Increase in bio-diversity

But, Lots of challenges

- Perception
- Change to the status quo
- Legal

# Nature-based solutions for coastal defence



Image by Ceri Seaton



Source: [Natural Resources Wales / Nature-based solutions and adaptation at the coast](#)

# Improving access to information and readiness to engage



 **Cyfoeth Naturiol Cymru**  
**Natural Resources Wales**

[Flooding](#) [Permits and permissions](#) [Evidence and data](#) [Guidance and adv](#)

**Coronavirus (COVID-19)**  
Updates on changes to our services

[Home](#) > [Evidence and data](#) > [Research and reports](#)

## Flooding reports, evidence and data



# CHALLENGES AND LESSONS



# Stakeholder Timescales and planning horizons?

- Landowners
- Communities
- Business
- Community Councils
- Farming Unions
- Public Service Boards



# Collaboration and Co-Production



Community Level



Regional Level



Co-production Network for Wales



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# Summary



- **We've just started and we are still learning**
- **It's going to be a bumpy ride down this long road**
- **We can't do it on our own**
- **It's going to be expensive (even doing nothing)**
- **There will be difficult and unpopular decisions**
  
- **But:**
- **There's great opportunities to do something different**
- **Improve the environment, bio-diversity and carbon sequestration**

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# Thank you for listening



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**Lead Specialist Advisor, Flood Risk Analysis and Asset Group**

**Evidence, Policy and Permitting Directorate**

**Natural Resources Wales**

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**Now over to Steve McFarland**

