



How can the National Coastal Change Assessment help you implement National Marine Plan?



Many organizations have an obligation to incorporate coastal erosion within their statutory advice.

Yet there is no centralized national dataset on coastal erosion
– no single organization has responsibility.

Part of this is due to the devolved nature of erosion. ... where it is the responsibility of the landowner and the LA gets involved when it leads to flooding. Whilst this means LA may be aware of issues, there is no national oversight.

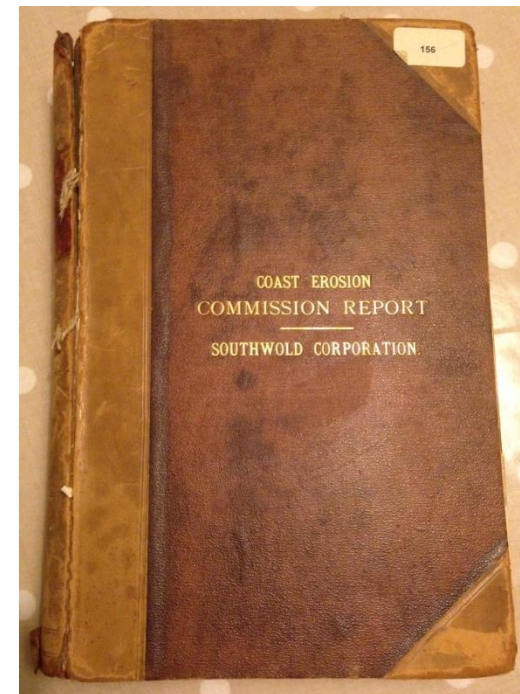
So any one organization will struggle to objectively appraise the risk coastal erosion poses to it's interests, let alone collaborate with others.

Whenever we hear presentations about coasts, the speaker stresses **‘coasts are dynamic’** and that dynamism is somehow **‘important’**.

Yet the datasets we would use to appreciate this dynamism are updated less frequently (and less systematically) than many of us appreciate.

Some of these issues were explored in the UK Parliament Commission Report on Coastal Erosion (1906).


What are we supposed to do and how?





The Climate Change (Scotland) Act 2009 requires Scottish Ministers to develop a Scottish Climate Change Adaptation Programme which addresses the risks identified for Scotland in the UK Climate Change Risk Assessment.

Climate Change (Scotland) Act 2009 (asp 12)



Climate Change (Scotland) Act 2009
2009 asp 12

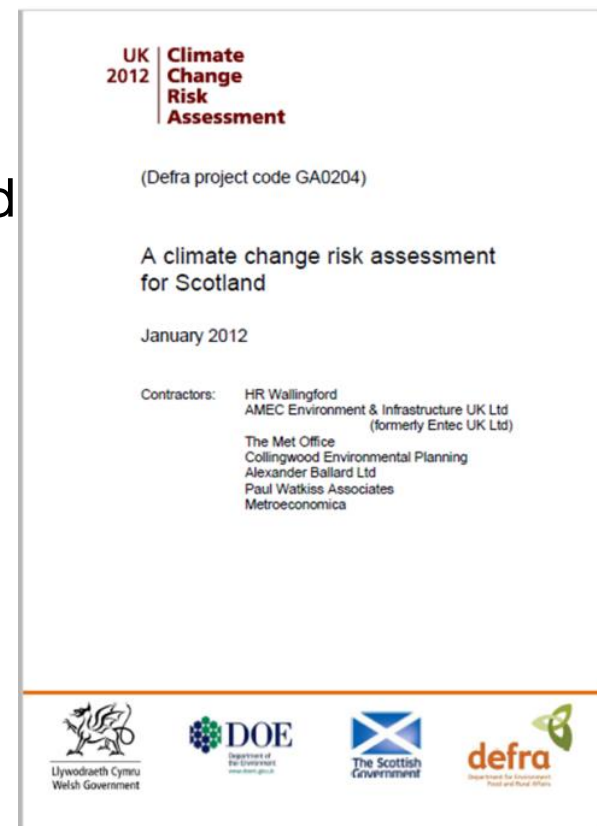
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UK Climate Change Risk Assessment (Scotland)

anticipates rising sea level, more coastal erosion and associated increases in coastal flooding to increasingly affect Scotland's soft coastlines, its assets and its communities.

It states that maps of past erosion, current state and future erosion conditions are required, along with ecosystem service impacts to be assessed.



The Scottish Climate Change Adaptation Programme requires:

‘...manage coasts, promoting adaptive coastal management that works with natural processes.’

No.	Policy Description	How will this deliver objectives	Who will deliver?
N2-20	Assess and manage coasts, promoting adaptive coastal management that works with natural processes.	<ul style="list-style-type: none"> National MP & Regional MP will set out policies to ensure marine environment activity doesn't have an unacceptable effect on coastal processes and flooding. Use the Coastal Erosion Susceptibility Model for Scotland to inform Flood Risk Management Plans and other regional and local plans. Identify locations where habitats are most vulnerable to coastal erosion and sea level rise. 	SG SNH, SEPA, Local Authorities

The Scottish Climate Change Adaptation Programme requires:

‘.. map anticipated coastal erosion / flood risk to cultural heritage.’

➤ NCCA delivers this for Society’s assets (FHM data set)

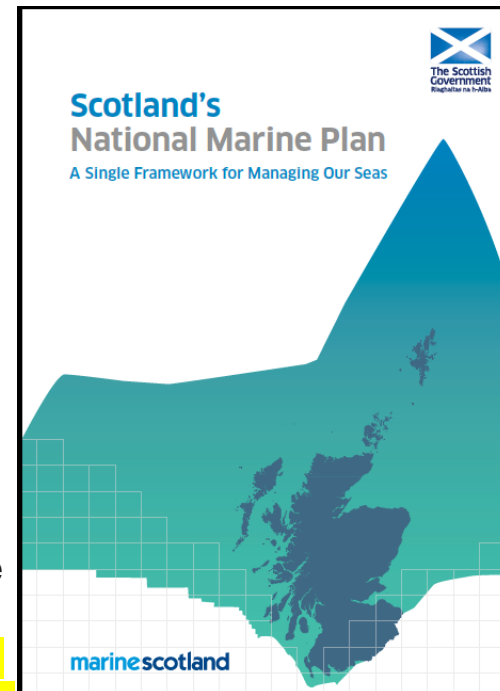
No.	Policy Description	How will this deliver objectives	Who will deliver?
B1-2	Collate action on understanding and mapping anticipated coastal erosion / flood risk to cultural heritage.	<ul style="list-style-type: none"> Progress on mapping anticipated coastal erosion/flood risk 	SG HES

National Marine Plan's

GEN 5 Climate change: Marine planners and decision makers must act in the way best calculated to mitigate, and adapt to, climate change.

4.18 Developers and users of the marine environment should seek to address climate change through:

- Mitigation: ...
- **Adaptation:** Marine planners and decision makers should be satisfied that developers and users have sufficient regard to the impacts of a changing climate and, where appropriate, provide effective adaptation to its predicted effects. Offshore and coastal developments should be appropriately sited and designed, and use technologies and equipment appropriate for local conditions, now and in the future giving particular consideration to vulnerability, scale and longevity of operation. The Scottish Climate Change Adaption Programme should be complied with. Where appropriate, marine planning authorities should be satisfied that adequate risk management and contingency plans are in place, particularly in relation to potential changes in sea temperatures, sea level rise, storminess and extreme water levels, using the best scientific evidence available at the time.



National Marine Plan's

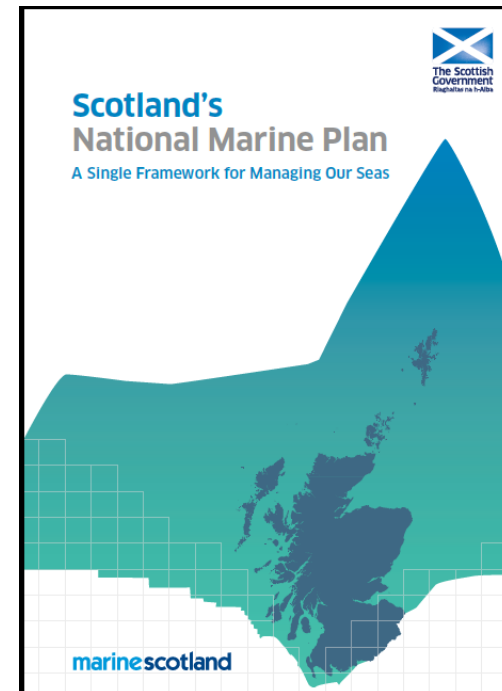
GEN 5 Climate change: Marine planners and decision makers must act in the way best calculated to mitigate, and adapt to, climate change.

4.19 Reducing human pressure and safeguarding ecosystem services such as natural coastal protection and natural carbon sinks (e.g. seagrass beds, kelp and saltmarsh) should be considered. In some cases, compensatory habitat creation or enhancement may be possible and should be considered as a last resort if significant harm cannot be avoided. Appropriate proactive opportunities for enhancing natural carbon sinks and allowing natural coastal change where possible should also be considered.

General direction for regional planning

3.21regional planners should consider the need for:

- Deriving general and specific policies which align with those in this Plan and the Marine Policy Statement, but are sensitive to local circumstances.
- Further research to understand the local ecosystem and the impacts and pressures upon it.
- Consistency with local and strategic development plans and other relevant local plans.
- Explain how they have taken into account future climate change in terms of climate change adaptation.

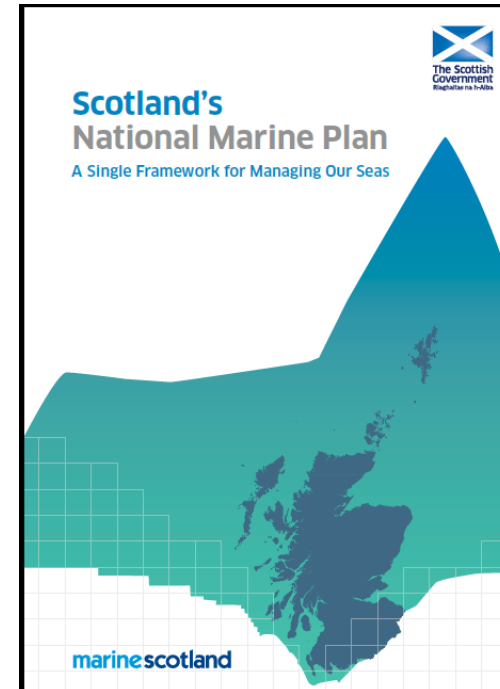




National Marine Plan's

GEN 8 Coastal process and flooding: Developments and activities in the marine environment should be resilient to coastal change and flooding, and not have unacceptable adverse impact on coastal processes or contribute to coastal flooding.

Regional policy: Regional marine plans should be aligned with terrestrial development plans and reflect coastal areas likely to be suitable for development, taking into account the most recent flood risk and flood hazard maps, and forthcoming coastal erosion vulnerability mapping. Where relevant, regional marine plans should also reflect areas where managed realignment of coast may be appropriate, setting out the potential benefits such as habitat creation and new recreation opportunities. <applies to inshore waters only>



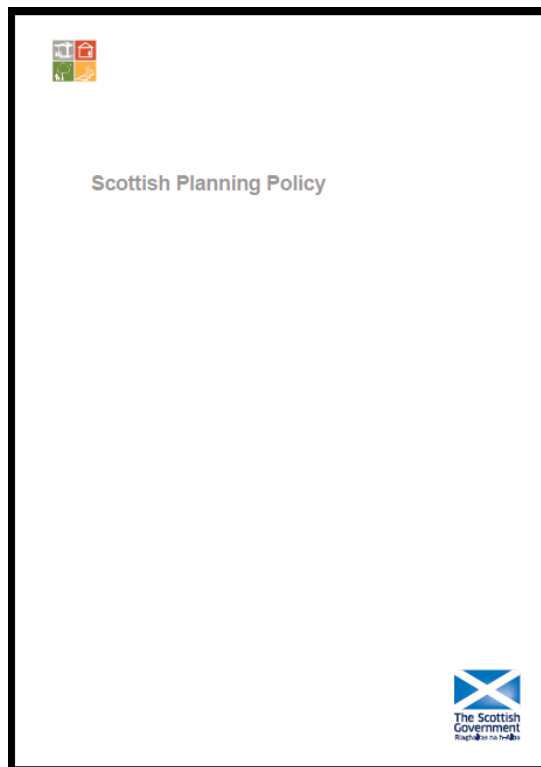
Scottish Planning Policy

88. Development Plans should recognise rising sea level and extreme weather will potentially have a significant impact and a precautionary approach to flood risk should be taken.

New development should avoid areas of coastal erosion or coastal flooding

Development plans should identify areas at risk and areas where a managed realignment of the coast would be beneficial.

89. Plans should identify .. areas with significant constraints



So ...

- Climate Change Adaptation Programme policies
- National Marine Plans, and
- Scottish Planning Policy

... all need to take account of the resilience and vulnerability of our shoreline to coastal flooding and erosion. This then needs to be translated into detailed actions to be implemented on the ground.

- Regional Marine Plans
- Local Development Plans

The National Coastal Change Assessment is a major policy-driven inter-agency research project collating information on coastal change, resilience and susceptibility to future coastal erosion.

Started in December 2014 it will end Sep 2016.

Steering committee....



Research team



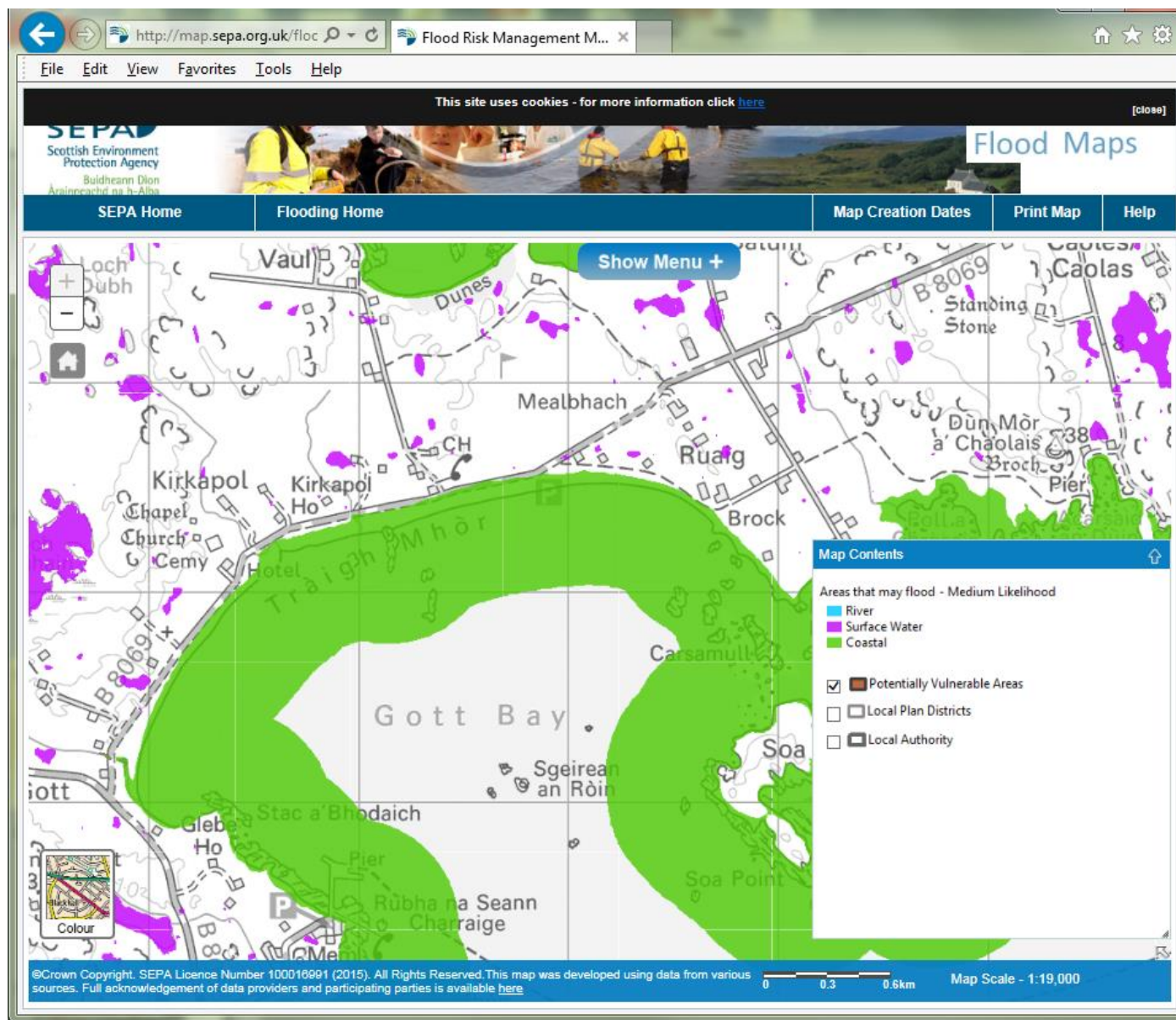
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The screenshot shows the Dynamic Coast website interface. At the top, the browser address bar displays <http://www.dynamiccoast.com/v>. The website header includes navigation links: View, Favorites, Tools, Help. The main content area is titled "Dynamic Coast" and features two columns. The left column, titled "Web Map", describes the "Basic Web Map" as including a small number of datasets for user interaction and overall CCA messages, with a green button labeled "See the Basic Web Map". The right column, titled "Complete Web Map", describes the "Complete Web Map" as including additional datasets for a more comprehensive view, with a blue button labeled "See the Complete Web Map". Below these columns is a section titled "How to use the webmap..." which includes a text link to download a video and a video player. The video player is titled "National Coastal Change Assessment (NCCA) Webmap Tutorial" and shows a map of Scotland with a play button overlay. The video player interface also includes a search bar and a home button.

http://www.dynamiccoast.com/v

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Dynamic Coast

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Web Map

Basic Web Map includes a small number of datasets that allows the user to interact with the overall messages of the CCA.

See the Basic Web Map

Complete Web Map

The Complete Web Map includes the datasets and additional datasets that allow the user to a more comprehensive view of the CCA.

See the Complete Web Map

How to use the webmap...

This video is also available to [download](#) if you have problems accessing the YouTube video below.

National Coastal Change Assessment (NCCA) Webmap Tutorial

Dynamic Coast - Scotland's NCCA

Not suitable for property level assessments

Find address or place

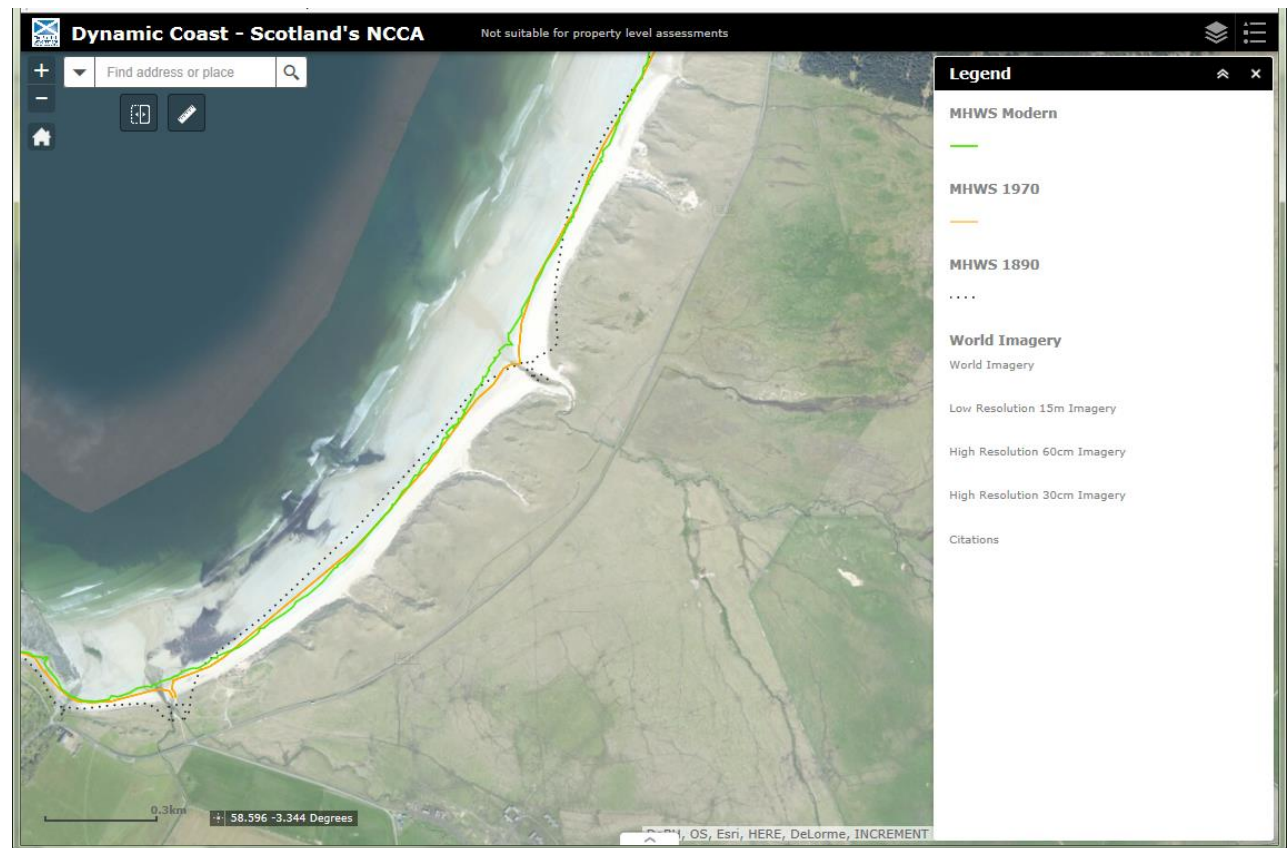
16



Society's assets (via Flood Hazard Maps) will be overlaid against the continued past erosion rates for 2050 & 2100.



- 1) Familiarize yourself with the webmap
- 2) Find a range of locations where coastal changes (and/or flood risk) are an issue
- 3) Use the maps to help draft policies for a RMP that would support delivery of the national policies.





- 3) Use the maps to help draft policies for a RMP that would support delivery of the national policies. In doing this:
 - a. discuss the types of developments/activities that could impact upon coastal processes
 - b. discuss different sorts of measures that could be adopted in policy - e.g. zoning Vs technical solutions

As well identifying risky or resilient areas for developments, how might the NCCA info be used to identify potential positive synergies (win:wins) between economic development and coastal processes?

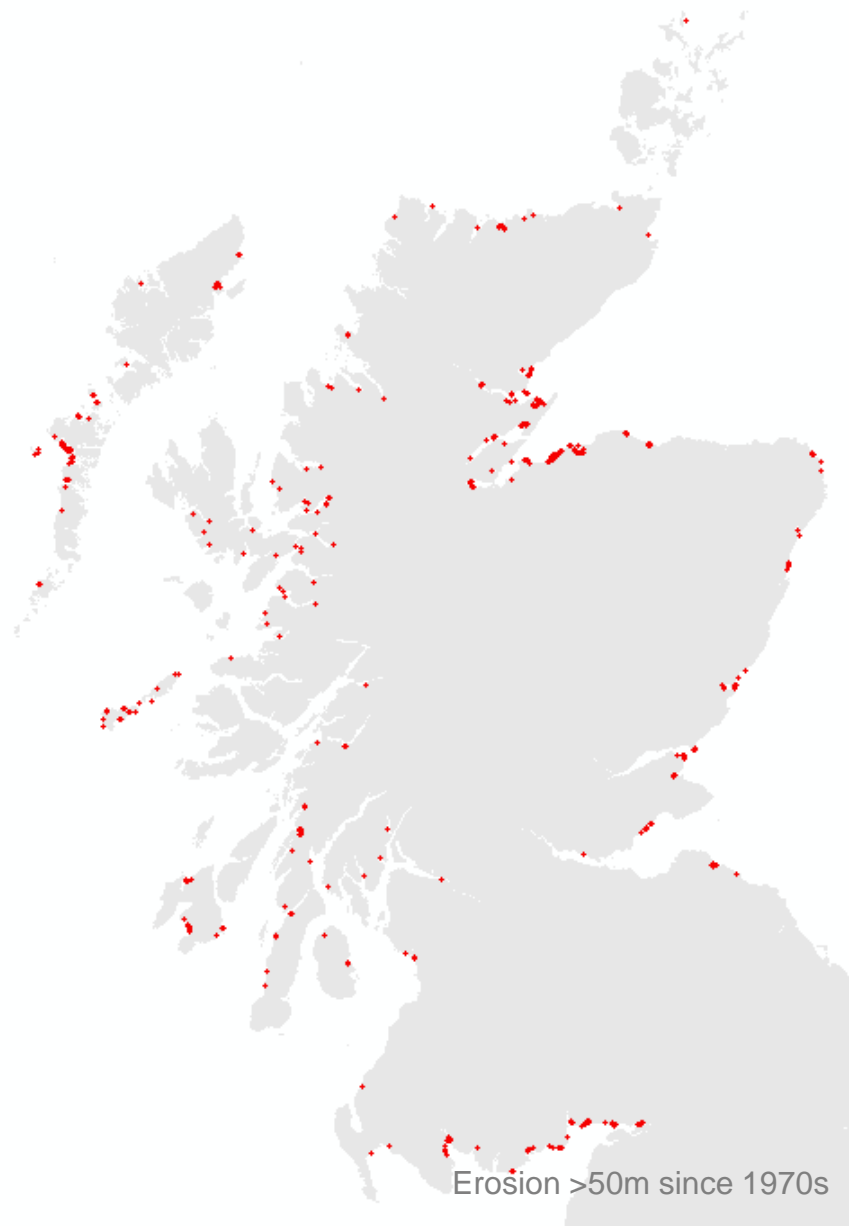
Think about marine developments/activities that would alter physical forces with potential benefits to other interests

What sort of policies could this lead to?



A quick wiz about the webmap:

- 1) JMCP @ Dunbar
- 2) Wemys (Fife)
- 3) Eden / Tentsmuir
- 4) Montrose Bay
- 5) Aberdeen Bay
- 6) Spey, Culbin, Whiteness (Moray F)
- 7) Golspie (Sutherland)
- 8) Dunnet Links
- 9) (Orkney)
- 10) Benbecula
- 11) Tiree
- 12) Stevenson/Irvine (Ayr)
- 13) Southernness (D&G)



Erosion >50m since 1970s



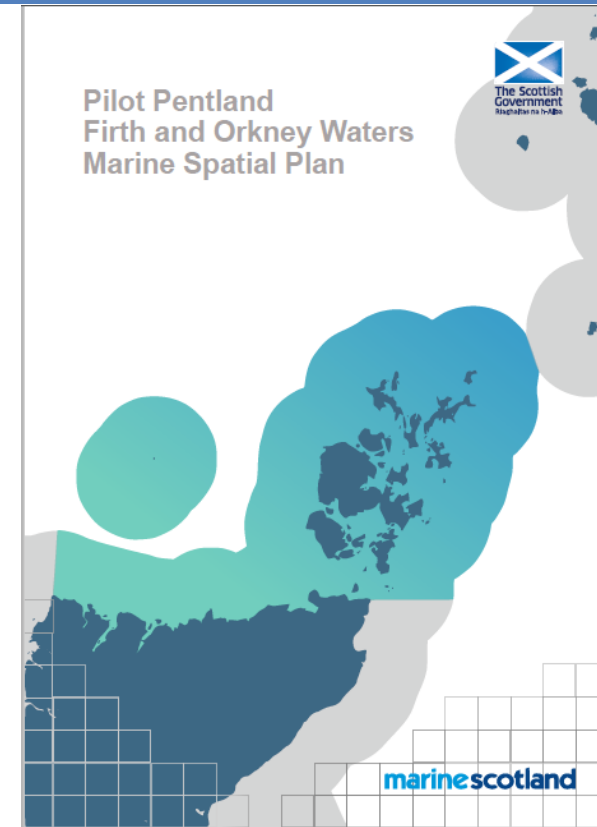
Example Policies

General Policy 3: Climate change

Development(s) and/or activities will be supported by the Plan where the proposal can demonstrate appropriate:

- measures to mitigate the effects of climate change
- measures taken to adapt to climate change
- resilience has been built into the project over its lifetime

All proposals for development(s) and/or activities must minimise, as far as practicable, emissions of greenhouse gases and clearly demonstrate mitigation measures taken.



239 Whilst acknowledging the link to erosion-induced flooding, areas which experienced coastal erosion in the past, and are expected to be susceptible to future erosion, are being investigated within the National Coastal Change Assessment (NCCA) (see below). The NCCA uses a similar approach as Shoreline Management Plans which will support this Plan and linked terrestrial plans (e.g. Local Development Plans) to consider management policies and approaches to encourage adaptation and enhance resilience.



General Policy 5B: Coastal processes and flooding

The Plan will support proposals for development and/or activities, including any linked shore-base requirements, that demonstrate, potentially by way of a flood risk assessment:

- compliance with Scottish Planning Policy
- that they will not exacerbate present or future risks of flooding or erosion
- that sensitive uses, such as accommodation, should generally not be located in areas shown to be at risk of flooding unless appropriate measures are in place
- how resilience and adaptation strategies have been incorporated within proposed developments over their lifetime to adapt to the effects of climate change, coastal erosion and coastal flooding

Any development must not compromise the objectives of the Flood Risk Management Act.



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Developments which may influence the coastal processes.

Pier or harbor construction (Land claim @ Nigg)

Jetty or sailing club expansion (Kirkwall)

Renewables – wave energy extraction (+) (Bay of Skail)

Renewables – cable landfalls and associated defences (-) (Dunnet Links)

Electricity – cable landfalls and associated defences (-)



The Scottish Climate Change Adaptation Programme requires:

No.	Policy Description	How will this deliver objectives	Who will deliver?
N2-4	Manage designated sites for land based biodiversity.	<ul style="list-style-type: none">Identify the consequences of CC for protected places and the Natura network and put in place adaptive measures.	SNH & partners
N2-15	Manage designated sites for the marine environment	<ul style="list-style-type: none">Protection of the marine environment helps maintain a healthy ecosystem that in turn supports the natural services that help mitigate climate change.Identifying the consequences of climate change for the Natura network and put in place adaptive measures.	SNH SG Mar. Scot. SEPA
N2-20	Assess and manage coasts, promoting adaptive coastal management that works with natural processes.	<ul style="list-style-type: none">National MP & Regional MP will set out policies to ensure marine environment activity doesn't have an unacceptable effect on coastal processes and flooding.Use the Coastal Erosion Susceptibility Model for Scotland to inform Flood Risk Management Plans and other regional and local plans.Identify locations where habitats are most vulnerable to coastal erosion and sea level rise.	SG SNH, SEPA, Local Authorities



The Scottish Climate Change Adaptation Programme requires:

No.	Policy Description	How will this deliver objectives	Who will deliver?
B1-2	Collate action on understanding and mapping anticipated coastal erosion / flood risk to cultural heritage.	<ul style="list-style-type: none">Progress on mapping anticipated coastal erosion/flood risk	SG HES
B2-4	Implement Historic Scotland's Climate Change Action Plan (2012-2017)	<ul style="list-style-type: none">Risk assessment will be undertaken to evaluate which sites managed by Historic Scotland are most at threat from coastal erosion	HES
B2-5	Joint agency climate action programme	<ul style="list-style-type: none">Provision of advice on the management of historic sites, including archaeological sites, and property exposed to flooding, coastal erosion and other impacts. Reduction in flood risk through the use of natural flood management.	SEPA HES SNH FCS