

REPORT

Golf Course Coastal Change Management Plan (CCMP)

Final Guidance

Client: The R&A

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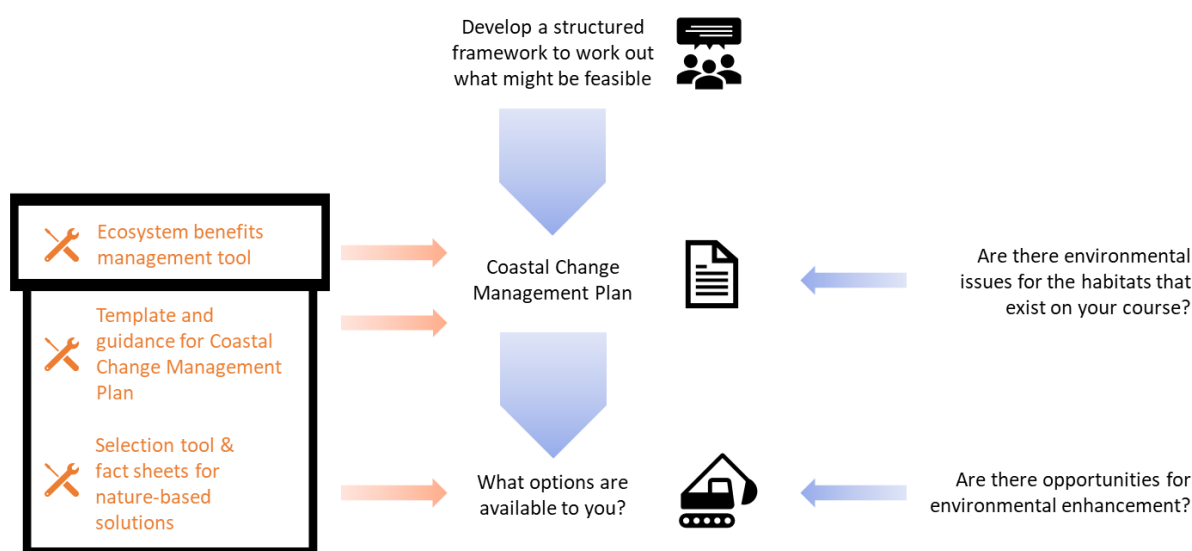
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The Coastal Change Management Toolbox for Golf Clubs

In many areas, golf courses are at the forefront of coastal management and adaptation to climate change, as a result of their location and through their recreational, environmental and landscape value. Golf courses can and must engage with the broader societal process of managing coastal change that is coordinated by public bodies in each of the nations of Great Britain and Ireland.

There is a critical balance to achieve between the need for management and the need to maintain the ability of the natural shoreline to adjust to change. This requires a long-term perspective: how may the golf course adapt within its naturally dynamic environment while sustaining its essential function as an exhilarating opportunity for playing the sport? For many courses, this includes a strong historical connection and the desire to sustain particular holes in their historic state.

Golf courses cannot do this on their own. The R&A's Golf Course 2030 initiative aims to establish a sound framework for taking forward future management of golf courses. This document is part of a toolbox of templates, tools and guidance documents which aim to help clubs get ahead of the game in terms of planning for change and addressing concerns in relation to coastal change.



Even with this toolbox in place, clubs will need support. Support is available from the people and organisations that were involved in the development of this toolbox; see section 1 of the Coastal Change Management Plan guidance.

Although the documentation has been written in a language appropriate for the golfing community, it is recognised that golf clubs will not necessarily have the technical expertise to fully complete the Coastal Change Management Plan, and are likely to need support to take chosen solutions through to implementation. In these cases, The R&A can provide contact details for trusted consultants who could provide that support.

Table of Contents

1	Preface	1
1.1	Introduction and approach	1
1.2	Aim and outcome of the CCMP	2
1.2.1	A golf course's role in integrated coastal management	2
1.2.2	What are the aims of the Coastal Change Management Plan?	3
1.2.3	Relationship to other plans	4
1.3	Who should develop the plan?	5
1.4	Who should you consult with?	5
1.4.1	England	5
1.4.2	Wales	7
1.4.3	Scotland	7
1.4.4	Northern Ireland	8
1.4.5	Republic of Ireland	8
1.5	Who should see this document?	8
1.6	Where can you find supporting information and resources?	8
1.6.1	Supporting information	8
1.6.2	Pilot plans	12
1.6.3	Peer support	12
1.7	Is there any funding to support this process?	12
2	Introduction	14
3	Understanding the context	15
3.1	Description and function	15
3.1.1	Course specific	15
3.1.2	Surrounding area	15
3.2	Coastal management framework	16
3.2.1	Baseline	16
3.2.2	Relevance	17
3.3	Coastal processes	18
3.3.1	How the coast works	18
3.3.2	How is the course influenced by the coast?	19
3.3.3	How does the course influence the coast?	19
3.4	Environmental and socio-economic features and opportunities	20
3.4.1	Key features	20
3.4.2	Opportunities	20
3.5	Golf course aspirations	20
4	Management requirements and options	22
4.1	Is there a problem (need for change)?	22
4.2	Management objectives	22

4.3	Appraisal criteria	22
4.4	Identify potential management approaches	24
4.4.1	Long list of approaches	24
4.4.2	Long list to short list	24
5	The coast's response to the management approaches	25
6	Appraisal of management approaches	26
6.1	Appraisal methodology	26
6.2	Appraisal results	26
6.2.1	Shortlisted approach 1	26
6.2.2	Shortlisted approach 2	27
6.2.3	Shortlisted approach 3	27
6.3	Compare and consider different approaches to develop a preferred management approach	27
7	The preferred approach	28
7.1	Detailed description	28
7.2	Action plan	28

Table of Tables

Table 1.1 Coastal Groups in England and Wales	6
Table 1.2 Supporting information	9
Table 1.3 GC2030 Coastal Change Reference Group	12
Table 3.1 Management framework	17
Table 4.1 Appraisal criteria	23
Table 6.1 Shortlisted approach 1 (worked example taken from the Aberdovey pilot plan)	26
Table 7.1 Action plan	29

Table of Figures

Figure 1.1 The relationship of the Coastal Change Management Plan to other plans	5
Figure 1.2 Coastal Group of England (taken from Coastal Groups of England • The Southern Coastal Group and SCOPAC (southerncoastalgroup-scopac.org.uk))	7

Appendices

A – Supporting information
Flood and coastal erosion risk management governance



England

Wales

Scotland

Northern Ireland

Republic of Ireland

1 Preface

1.1 Introduction and approach

This guidance has been developed as part of The R&A's Golf Course 2030 initiative to establish a sound framework for taking forward future management of golf courses. It provides guidance on the development of a **Coastal Change Management Plan (CCMP)** and is accompanied by a template for golf courses to use to develop their own CCMP. Development of these plans is seen as a way of getting ahead of the game in terms of planning for change and addressing concerns in relation to coastal change.

Once drafted, the CCMP is intended to be a living document, which should be reviewed on a regular basis and updated to take account of new knowledge, data, guidance, legislation and initiatives.

This CCMP guidance and template is part of a toolbox for guiding golf courses through the thought process and producing a plan for their course. It provides the main entry point to this process and is supported by the following:

- The R&A's **Golf Course 2030 Coastal Change Action Plan** provides an overview of current approaches and governance, and its sources (<https://www.randa.org/en/golf-course-2030-projects-climate>).
- A practical **Golf Course Coastal Solutions Catalogue** which presents innovative and nature-based solutions for coastal management. This aims to help coastal golf courses select intervention options. It links closely to the CCMP, in both directions. The information collated in the CCMP forms input for a Solutions Tool to identify potential options. In reverse, the solutions from the Catalogue can inform the approaches to be appraised in the CCMP. The Catalogue sets out each option's main characteristics, such as conditions where it is applicable, pros and cons, ecosystem benefit considerations and ballpark costs, illustrated with case studies. See sections 4.4, 5 and 6 of this Plan.
- An **Ecosystems Benefits Management Tool** which enables course managers to establish what habitat types are present on their site, determine the conservation interests on the site, identify potential issues and solutions for the relevant habitat types. It can be used to build a picture of the potential opportunities in terms of ecosystem benefits which feeds into section 3.4 of this Plan and forms another input into the selection tool of the Golf Course Coastal Solutions Catalogue (see sections 4.4, 5 and 6 of this Plan).

This guidance aims to lead you as the prospective author of the **Coastal Change Management Plan** through the process of considering your context, how management of your golf course fits within broader coastal management, what aspects need to be considered and how; and what the issues actually are. The aim is to provide a framework for a tailored Plan. Inevitably, in taking this approach, some aspects will be more and some will be less relevant to your specific Plan. This guidance therefore provides a 'longlist' of aspects to consider.

The subsequent sections of this Preface consider the broader context of coastal management, intended to support you in completing the subsequent sections which form your CCMP. These are:

- The main Introduction (section 2) describes the overview and introduction to your Plan, and this document provides guidance on what should be included there.
- Section 3 allows you to describe the context of your course, and this document guides you through this by way of a series of questions. The aim of this guidance is to encourage you to think about the broader context, developing the necessary understanding of these broader issues (with signposting to any support that you may need).

- Section 4 aims to encourage thought about the issues and concerns, defining areas that the Plan needs to address, and examining potential solutions. This guidance refers to the [Golf Course Coastal Solutions Catalogue](#) and [Ecosystems Benefits Management Tool](#) for support.
- Section 5 considers what is likely to happen over time if the options from section 4 were implemented or a certain approach is taken.
- Section 6 takes you through what needs to be considered in comparing and appraising different approaches: the benefits and potential disadvantages, alongside potential limitations.

Through this structured format, the aim is to arrive at a preferred management approach (section 7). Section 7 also provides a template for an Action Plan which will be an important tool for keeping this document live.

Throughout the guidance, links are presented to further useful information, alongside highlighting where more detailed studies may be required or where there may be a need to discuss matters with other organisations.

1.2 Aim and outcome of the CCMP

1.2.1 A golf course's role in integrated coastal management

The coast is where many different interests come together and overlap, and this is reflected in its governance. Management approaches are progressing towards a more integrated approach that aims to balance all values and features on the coast. Another area of progress concerns adaptation to coastal change, recognising that holding the line in its current location is not possible everywhere forever, and it is important to plan early for any future transition. Finally, there is a move toward adaptive planning: precise future trends are uncertain, even if the direction of travel is known, so it is important to prevent high-regret solutions, and to ensure that management can be adapted over time.

In many areas, golf courses are at the forefront of coastal management as a result of their position and through their recreational, environmental and landscape value. Golf courses can and must engage with this process of change and way of thinking. This can pose significant challenges: important features of a course often interact with the dynamic zone of the shoreline and are therefore under pressure. In some areas, golf courses are already at risk of erosion and/or flooding, or will become at risk in the future as a result of climate change. They often rely on natural features such as beaches, dunes, and saltmarshes for their defence against coastal erosion and/or flooding.

There is a critical balance to be achieved between the need for management and the need to maintain the ability of the natural shoreline to adjust to change. This requires a long-term perspective: how may the golf course adapt within its naturally dynamic environment while sustaining its essential function as an exhilarating opportunity for playing the sport? For many courses, this includes a strong historical connection and the desire to sustain particular holes in their historic state.

Golf courses cannot do this on their own. The process of developing a [Coastal Change Management Plan](#) will help to identify opportunities for partnering with other organisations, businesses and stakeholders. This can bring opportunities for co-funding whilst also facilitating an integrated approach to managing the features and values of the coast.

Finally, the local knowledge, understanding and experience of the local-scale coastal processes and specific challenges for coastal management that each golf course holds is valuable for wider coastal management. When combined with existing evidence, there is real opportunity to realise win-win and proactive solutions for a golf course's future and the sustainable management of the wider coast.

1.2.2 What are the aims of the Coastal Change Management Plan?

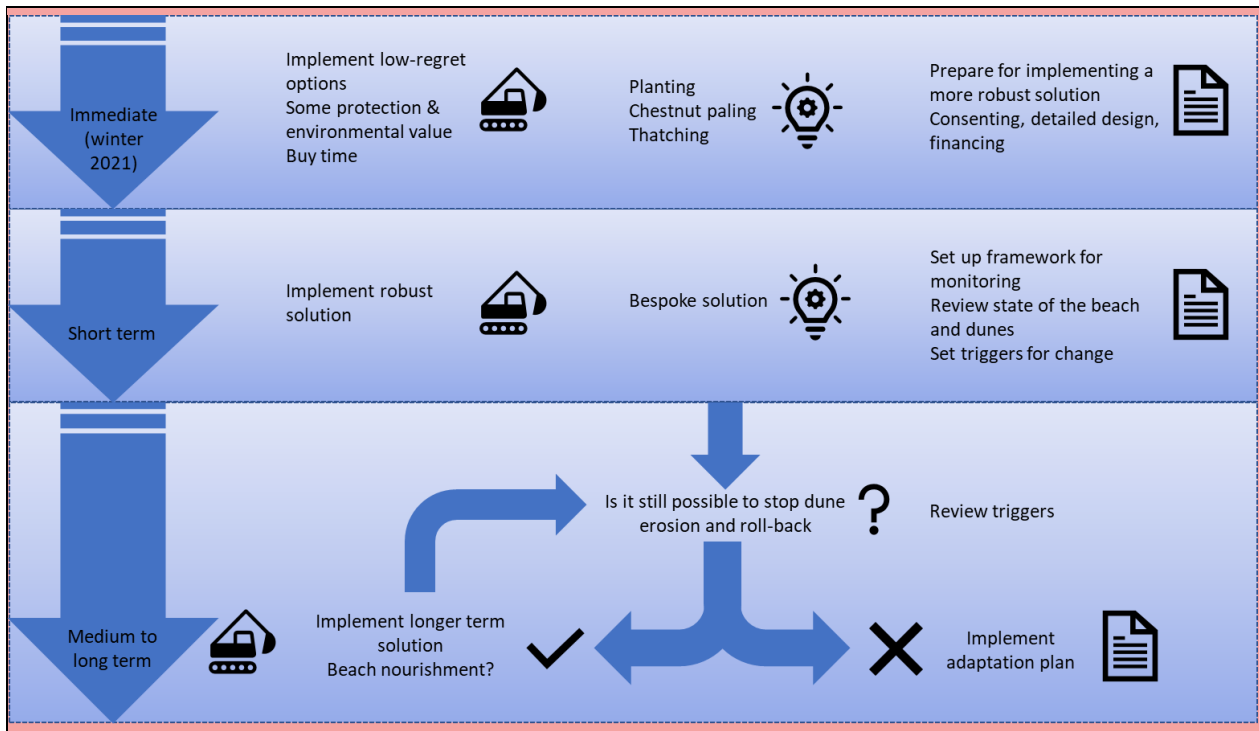
The Coastal Change Management Plan (CCMP) aims to provide a structured framework to allow you to gain an understanding of what might be feasible. It will help you to determine realistic opportunities, highlighting how this could enable collaboration with other stakeholders and providing a platform for meaningful engagement. By going through the process of preparing the Plan, you will establish practical routes for engagement with the wider coastal management community, as discussed further in section 1.4.

You have an opportunity to contribute to and lead a process towards more integrated, progressive and sustainable management of the coastal zone, while sustaining your own values – an opportunity to be in the driver's seat; proactive rather than reactive to coastal processes, events and wider coastal management. Your Plan is likely to highlight uncertainties around certain aspects into the future. This might include uncertainties about how the coast will respond to future changes in climate (which are also uncertain in their magnitude) or whether certain options/solutions will obtain the necessary permissions or consents, but also uncertainties around the future plans for the course itself. Management decisions to address these uncertainties can either be developed following a 'precautionary approach' i.e. assuming the worst (in terms of coastal change), investing in measures to ensure a high level of protection, while accepting the other negative impacts of potentially overdesigned measures. Usually, the preferred alternative is to follow a 'managed adaptive' approach. This involves investing in low-regret measures whilst undertaking monitoring or further studies/assessments to provide clarity around the uncertainties and based on pre-defined triggers.

Example of a managed adaptive approach for a golf course

This example is of a golf course which has experienced erosion during the winter 2020 storms. There is concern that dune erosion could threaten the integrity of the golf course in the short term. The club are looking to implement remedial measures in the short to medium term to help safeguard the dunes in front of one tee. The designated areas and environmental sensitivity of the site means that hard engineering options are very unlikely to achieve the necessary approvals. This aligns with the intent of the SMP policy of No Active Intervention; intervention is acceptable but not if there are negative impacts on the estuary or local features. The shortlisted options are therefore mostly local interventions at the toe and face of the dunes, ranging from low impact / low cost to more robust options. In addition, beach nourishment was shortlisted, noting that there is a need to confirm various uncertainties.

The appraisal shows that there is no suitable solution that covers the short, medium and long term: the only options that have a chance of being implemented before winter 20/21 are not robust enough; the more robust solutions that do have a chance of achieving consent and are affordable could have a functional life that is limited to around 10 years (depending on occurrence of storms and beach / dune development which can't be predicted with precision). The recommended option comprises a staged 'adaptive planning' approach, addressing the more immediate erosion issues with low-key no-regret management measures that could be implemented this winter, followed by a more robust solution as soon as possible in the near future. This is schematised in the graphic below.



1.2.3 Relationship to other plans

Figure 1.1 provides an overview of how the Coastal Change Management Plan relates to other plans; focusing on those plans associated with coastal management, environmental management and management of the courses/clubs themselves. These plans are all developed within an overarching framework of guidance and policy set by the relevant governing or responsible body, such as the Environment Agency for coastal management in England or The R&A for golf in the United Kingdom and Republic of Ireland.

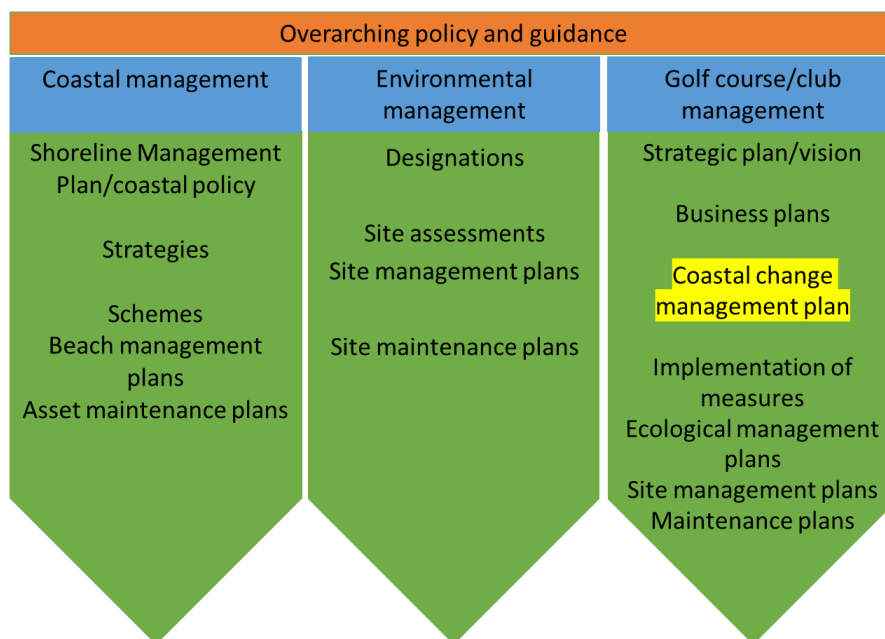


Figure 1.1 The relationship of the Coastal Change Management Plan to other plans

1.3 Who should develop the plan?

It is recommended that a core group or committee is formed to lead on the development of the CCMP and ensure continuity into the future. This group or committee should include the course manager and head greenkeeper. It would also benefit from the inclusion of a club member; someone who has been with the club for more than ~3 years. It would then be expected that this core group/committee develop the necessary expertise to develop the CCMP and play the lead role in engaging and consulting with others (section 1.4).



It is recognised that golf clubs will not necessarily have the technical expertise to fully complete the Coastal Change Management Plan. They are likely to need support to take chosen solutions through to implementation. In these cases, The R&A can provide contact details of trusted specialist consultants and experts who could provide that support. This section is provided in sections where expert consultancy advice may be needed.

1.4 Who should you consult with?

This section provides one single organisation contact per country for consulting in the development of the CCMP. This contact will then pass on information to relevant levels within its organisation or partner organisations.

An overview of the governance of flood and erosion risk management is provided in **Appendix A**. These specific roles, responsibilities and contacts for each nation should be used for discussing coastal flood and erosion issues.

1.4.1 England

In England the Coastal Group will be your first point of contact, as listed in Table 1.1 and Figure 1.2. The Coastal Group brings together a region's key partners in flood defence and coastal management -

principally the coastal managers from District Councils, Port Authorities and the Environment Agency, in addition to other interested organisations, such as Natural England, Historic England, landowners and Defra.

Table 1.1 Coastal Groups in England and Wales

Coastal Group (coastline coverage)	Website
North East (St Abb's Head to Gibraltar Point)	https://northeastcoastalgroup.wordpress.com/
East Anglia (Gibraltar Point to Thames Barrier)	https://www.eastangliacoastalgroup.org/
South East (Thames Barrier to Selsey Bill)	https://se-coastalgroup.org.uk/
Southern (Selsey Bill to Portland Bill)	https://southerncoastalgroup-scopac.org.uk/
South West (Portland Bill to Anchor Head)	http://onlineartandcrafts.org/
Severn Estuary Coastal Group (Anchor Head to Lavernock Point)	https://severnestuarycoastalgroup.org.uk/
Swansea and Carmarthen Bay Coastal Engineering Group (Lavernock Point to St Anne's Head)	https://www.southwalescoastalgroup.cymru
West of Wales Coastal Group (St Anne's Head to Great Orme)	https://www.grwparfordirolgorllewincymru.cymru/page/home-page
North West England and North Wales Coastal Group (Great Ormes to Solway Firth)	https://www.mycoastline.org.uk/

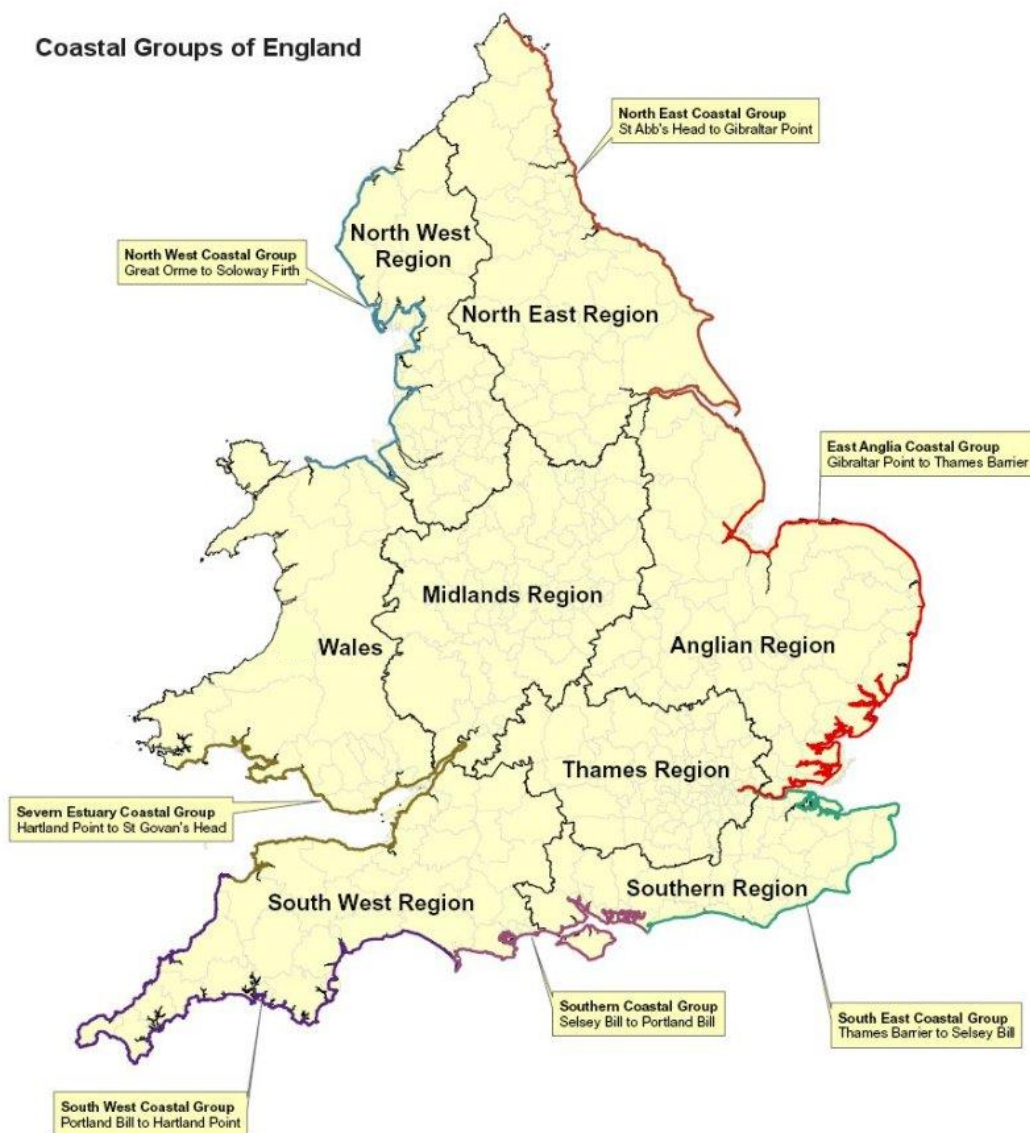


Figure 1.2 Coastal Group of England (taken from *Coastal Groups of England • The Southern Coastal Group and SCOPAC* (southerncoastalgroup-scopac.org.uk))

1.4.2 Wales

In Wales the relevant Coastal Group will be your first point of contact as listed in Table 1.1. As with England, the Coastal Group brings together a region's key partners in flood defence and coastal management and can provide local-based advice. The Chairs of the Coastal Groups will keep the Wales Coastal Group Forum informed of any consultations to identify and/or troubleshoot potential issues and to ensure a consistency of approach.

1.4.3 Scotland

In Scotland, Dynamic Coast (DynamicCoast@nature.scot) is your first point of contact alongside the relevant Local Authority.

1.4.4 Northern Ireland

In Northern Ireland, the Marine and Fisheries division of the Department of Agriculture, Environment and Rural Affairs (DAERA) (<https://www.daera-ni.gov.uk/articles/marine-environment-division>) is your first point of contact. They can be contacted at NI CoastalObservatory@daera-ni.gov.uk

1.4.5 Republic of Ireland

The first contact point in the Republic of Ireland, is the relevant Local Authority (either County Council, City Council or City and County Council, depending on course location). As set out in the Report on the Coastal Change Management Strategy (<https://www.gov.ie/en/press-release/d66b5-report-on-national-coastal-change-management-strategy-sets-out-long-term-blueprint-to-deal-with-future-coastal-change/>), the Department of Housing, Local Government and Heritage is assigned the lead coordination role and will therefore be the national contact for setting policy, and the Office of Public Works takes the lead only for technical assessments and is therefore the contact point for information on coastal erosion hazard and risks.

1.5 Who should see this document?

The circulation and approvals within each golf course will be specific to that club. This might include course management teams and other boards of management. This needs to be developed through internal consultation. The Plan sets the long-term intent as to how the course functions within the context of coastal change, which can influence investment and future playability, and therefore it requires signing off.

This process should be considered at the outset: who is tasked with developing the Plan, who needs to be involved or consulted and who needs to sign off the Plan. This document aims to guide future management, but it is also likely to be an outward facing document, setting a framework for discussion and agreement with other parties.

Once you have a document which has been signed off within your club (in agreed draft form), it should be circulated externally for information, in line with the consultation described in section 1.4.

1.6 Where can you find supporting information and resources?

1.6.1 Supporting information

Table 1.2 provides links to supporting information which will assist you with development of the CCMP. Signposting of this information for specific sections of the Plan is provided in section 3.

Table 1.2 Supporting information

Description	England	Wales	Scotland	Northern Ireland	Republic of Ireland
Management framework (Plans, Strategies, planning policy)	SMP Explorer (https://environment.data.gov.uk/shoreline-planning), or alternatively Environment Agency's website, by Local Authority or Environment Agency office leading on the plan (https://www.gov.uk/government/publications/shoreline-management-plans-smpps/shoreline-management-plans-smpps)	Natural Resources Wales's Shoreline Management Plans website explains the approach and provides links to the plans: https://naturalresources.wales/flooding/managing-flood-risk/shoreline-management-plans	Shoreline Management Plans have only been developed for the following areas: Angus (https://www.angus.gov.uk/the-environment/flooding-and-coastal-erosion/angus-shoreline-management-plan), Dumfries and Galloway (https://www.dumgal.gov.uk/SMP), Ayrshire (https://www.north-ayrshire.gov.uk/environment-sustainability/flooding/ayrshire-shoreline-management-plan), Fife (https://www.fife.gov.uk/data/assets/pdf_file/0020/270461/Fife-SMP-2011-Summary2.pdf) Coastal Change Adaptation Plans are the next generation plan and are being developed by Local Authorities (https://www.dynamiccoast.com/cca).	Relevant information could be provided by DAERA's (Marine and Fisheries Division) coastal change assessments. This information can be requested through the email address NICoastalObservatory@daera-ni.gov.uk .	OPW's national flood information portal (www.floodinfo.ie) provides a Publications section containing location specific flood risk management plans and associated documents. Refer to your individual Coastal Local Authority for any schemes relating to flood and coastal erosion risk management.
Monitoring data	National Network of Regional Coastal Monitoring Programmes of England (https://coastalmonitoring.org/)	Wales Coastal Monitoring Centre data hosted on England's national network website (https://coastalmonitoring.org/)	Dynamic Coast (http://www.dynamiccoast.com/) provides a wealth of information on coastal change, together with interactive GIS maps and supporting reports	Northern Ireland Coastal Observatory (https://experience.arcgis.com/experience/b8454f3d62164518817e4c581b5555c8/page/Home/?views=Explore-2D)	OPW's national flood information portal provides an interactive map to view Pilot Coastal Monitoring Survey Programme information (www.floodinfo.ie)

Project related

Description	England	Wales	Scotland	Northern Ireland	Republic of Ireland
Locations at risk of coastal erosion and flooding	Environment Agency's flood maps (https://flood-map-for-planning.service.gov.uk/). National Coastal Erosion Risk Mapping (NCERM) (https://www.arcgis.com/apps/webappviewer/index.html?id=9cef4a084bbb4954b970cd35b099d94c) noting that a revision to the NCERM data set is due for publication early 2025 and will be hosted on the SMP Explorer, (https://environment.data.gov.uk/shoreline-planning) Shoreline Management Plans (see above).	Natural Resources Wales Flood Maps (https://naturalresources.wales/evidence-and-data/maps/long-term-flood-risk/?lang=en). National Coastal Erosion Risk Mapping (NCERM) (https://naturalresources.wales/flooding/check-your-coastal-erosion-risk-national-coastal-erosion-risk-management-map/?lang=en). Shoreline Management Plans (see above)	SEPA's Flood Maps (https://www.sepa.org.uk/environment/water/flooding/flood-maps/) Dynamic Coast's Web Maps (http://www.dynamiccoast.com/index.html)	Department for Infrastructure's Flood Maps (https://www.infrastructure-ni.gov.uk/topics/rivers-and-flooding/flood-maps-ni) Coastal Erosion High Level Risk Appraisal (https://www.opendatani.gov.uk/dataset/ni-coastal-erosion-high-level-risk-appraisal). Northern Ireland Coastal Observatory (https://experience.arcgis.com/experience/b8454f3d62164518817e4c581b5555c8/page/Home/?views=Explore-2D)	OPW's Coastal Map (https://www.floodinfo.ie/map/coastal_map/) provides coastal flood risk information, including predictions of future flooding and erosion.
Coastal processes	Shoreline Management Plans (see above).	Shoreline Management Plans (see above).	NatureScot's guide to managing coastal erosion in beach dune systems (https://www.nature.scot/doc/archive/guide-managing-coastal-erosion-beachdune-systems). Dynamic Coast (see above).	DAERA's National Assessment of Coastal Change in the form of the Coastal Change Information Tool (https://experience.arcgis.com/experience/b8454f3d62164518817e4c581b5555c8/page/Coastal-Change-Information-Tool/?views=Map-Viewer) when available.	OPW's Coastal Map (https://www.floodinfo.ie/map/coastal_map/) provides coastal flood risk information, including predictions of future flooding and erosion.

Project related

Description	England	Wales	Scotland	Northern Ireland	Republic of Ireland
Environmental designations	Defra's MAGIC website (https://magic.defra.gov.uk/). National Marine Plan (https://www.gov.uk/government/collections/marine-planning-in-england).	Defra's MAGIC website (https://magic.defra.gov.uk/). NRW's website (https://naturalresources.wales/guidance-and-advice/environmental-topics/wildlife-and-biodiversity/protected-areas-of-land-and-seas/find-protected-areas-of-land-and-sea/?lang=en). National Marine Plan (https://gov.wales/marine-planning).	Defra's MAGIC website (https://magic.defra.gov.uk/). National Marine Plan (https://www.gov.scot/publications/scotlands-national-marine-plan-9781784128555/).	Northern Ireland Environment Agency Natural Environment Map Viewer (https://www.daera-ni.gov.uk/services/natural-environment-map-viewer). Marine Map Viewer (https://www.daera-ni.gov.uk/services/marine-mapviewer) National Marine Plan (https://www.daera-ni.gov.uk/articles/marine-plan-northern-ireland).	National Parks and Wildlife Service's viewer (https://dahg.maps.arcgis.com/apps/webappviewer/index.html?id=8f7060450de3485fa1c1085536d477ba). National Marine Plan (https://www.gov.ie/en/publication/a4a9a-national-marine-planning-framework/?referrer=http://www.housing.gov.ie/planning/maritime-spatial-planning/maritime-spatial-planning-directive/maritime-spatial-planning).
Soil type and geology	British Geological Survey Geology of Britain Viewer (www.bgs.ac.uk/map-viewers/geology-of-britain-viewer/) UK Soil Observatory Map Viewer (http://www.ukso.org/) Cranfield university Soilscales Map (England and Wales only) (www.landis.org.uk/soilscales/)				Geological Survey Ireland data and maps (https://www.gsi.ie/en-ie/data-and-maps/Pages/default.aspx)

1.6.2 Pilot plans

Two Pilot plans have been produced for Aberdyfi and Formby golf clubs. They provide useful worked examples of this guidance, illustrating the level of detail and providing steer on the content for each section.

1.6.3 Peer support

The development of this guidance and accompanying template was supported and guided by a Reference Group, consisting of representatives from both the coastal management and golfing communities. The Reference Group members are willing to provide peer support and advice to clubs who are looking to develop or are developing their CCMP. The details of the Reference Group members are provided in Table 1.3.

For consultation on the content of the Plan itself, please refer to section 1.4.

Table 1.3 GC2030 Coastal Change Reference Group

Representatives from the Coastal Management community	Representatives from the Golfing community
• Dr Alistair Rennie – Dynamic Coast and NatureScot, Scotland • Stewart Rowe – Coastal Groups, England • Ceri Seaton – Natural Resources Wales • Dr Joanne Hanna – Department of Agriculture, Environment and Rural Affairs, Northern Ireland • Jim Casey – Office of Public Works, Republic of Ireland	• Sandy Reid – St Andrews Links Trust (Scotland) • Stuart Leech – Secretary/Manager of Formby Golf Club (England) • David Tomkinson – Chair of Greens of Aberdovey Golf Course (Wales) • David O'Donovan – County Sligo Golf Club, Rosses Point (Ireland) • David Hopkins – Formby Golf Club (England)

1.7 Is there any funding to support this process?

A key issue will be funding, sometimes to develop this Plan but certainly to implement the resulting management approach and recommendations. Early discussion with Local Authorities, identifying the Golf Course's intent to develop a Plan, is likely to gain collaborative support and may trigger the opportunity for partial funding, especially if there are shared issues with potential for joint solutions. There may be potential to work alongside wider studies such as preparation for Coastal Change Management Areas (CCMAs) in England, Coastal Change Adaptation Plans in Scotland or similar projects in the other nations, longer term coastal strategies or ongoing shoreline management planning.

Top takeaways for clubs embarking on this process (David Tomkinson, Greens Chairman, Aberdovey Golf Club, April 2021)

- Stress the economic benefits to the community of the golf course – Chamber of Commerce, Community Council, local and national tourism boards, raise issues with your local MP and Ministers (e.g. Minister for Tourism).
- Work closely with environmental agencies – identify a personal contact to explain the challenges and the effects on the course.
- Be prepared to relinquish some areas of land in order to realign holes – make the most of any ecological advantages e.g. bats, newts, lizards, rare plants.
- Be proactive and employ consultants to develop an Ecological Management Plan – demonstrate to the environmental agencies that the golf course is a valuable ecological site and that it is being managed to increase habitat diversity.

- Employ golf course architects who are familiar with working with environmental agencies – experience of what has worked well in other situations is invaluable.
- Be involved with your local community – send articles to the local paper and online community groups – show that the Golf Club is working for the benefit of local ecology – win support for what you are doing.
- Inform your national golf union and The R&A of what your Club is doing.

2 Introduction

This section aims to provide guidance on what should be included within the overview and introduction to the Plan. Some parts of this introduction may be revisited after the main body of the report has been completed. However, it is useful to start with initially perceived concerns as a way of focusing subsequent examination.

- Why is there a need for a Plan?
- How might external bodies see this problem?
- Who do you need to talk to?
- How will the development of the Plan be managed internally?

Golf Course Coastal Change Management Plans

Development of these plans is seen as a way of getting ahead of the game in terms of planning for change and addressing concerns in relation to coastal change.

This document is part of a toolbox for golf courses, supported by the following:

- The R&A's Golf Course 2030 Coastal Change Action Plan provides an overview of current approaches and governance, and its sources (<https://www.randa.org/en/golf-course-2030-projects-climate>).
- A practical Golf Course Coastal Solutions Catalogue which presents innovative and nature-based solutions for coastal management. This aims to help coastal golf courses select intervention options. It links closely to the CCMP: the information collated in the CCMP forms input for a Tool to identify potential options. The Catalogue sets out each option's main characteristics, such as conditions where they are applicable, pros and cons, ecosystem benefit considerations and ballpark costs, illustrated with case studies. See sections 4.4 and 5, and 6 of this Plan.
- An Ecosystems Benefits Management Tool which enables course managers to establish what habitat types are present on their site, determine the conservation interests on the site, identify potential issues and solutions for the relevant habitat types. This will provide practical advice on what options are available and how they could affect the ecosystem. It forms another input into the selection tool of the Golf Course Coastal Solutions Catalogue (sections 4.4 and 5, and 6 of this Plan).

3 Understanding the context

This section aims to set the scene and help develop a full understanding of the context for decisions. Under each section there are links to relevant guidance and documentation to focus on the key information that should be pulled into this document. This section should be written in line with the following overall aims and context:

- Golf courses can and must engage with the overall move in coastal management towards taking a more integrated approach to all values and features, looking at realistic approaches for adaptation and developing better ways of managing a dynamic system that recognise uncertainty.
- Taking a long-term perspective: the critical balance of how the golf course can adapt within its naturally dynamic environment while sustaining its essential function as an exhilarating opportunity for playing the sport.
- You will need to recognise the different behaviours of coastal systems in order to get this balance right.
- You will also need to consider this balance over different timescales and consider wider economic, social and environmental aspects, including affordability.

3.1 Description and function

3.1.1 Course specific

The aim here is to establish a clear picture and description of the Golf Course area, all of which will be examined later in the document.

- Provide an overview of the current course layout, including a figure showing the course and any key areas identified within this Plan as above.
- Identify and distinguish (where relevant) variability in current topography at and around the golf course: level of the course compared to sea level; location and level of nearby dunes and high ground).
- Identify and distinguish the nature of the area in terms of soil type or geology, where known, from anecdotal evidence (see resources in Table 1.2).
- Define flood / erosion extent (see resources in Table 1.2).
- Identify key pieces of infrastructure (buildings, utilities, access), especially near the coast, within the erosion and flood extent.
- Describe any coastal management measures that you have implemented (if applicable).
- Provide an overview of the nature conservation features and designations – this can be a summary of the content from section 3.4).

Your club may already hold this information in a Geographical Information System (GIS). If it doesn't, it is recommended that the information above is transferred into a GIS if you have that capability.

The pilot Plans provide examples of the content and level of detailed required for this section.

3.1.2 Surrounding area

- List features/assets that that run through the course and into the neighbouring areas, for example footpaths, drainage, roads etc (note that designated sites and other habitat considerations should be listed in section 3.4).
- Outline relevant land use planning information (land use, ownership, planning designations, constraints).

3.2 Coastal management framework

3.2.1 Baseline

Establish **intended management approach** (so not just looking at the Shoreline Management Plan's policy label of Hold the Line, Managed Realignment, No Active Intervention or Advance the Line). If the available documentation isn't clear on this, consult with your nation's first point of contact as listed in section 1.4. It is important to understand the precise drivers for a policy. For example, if the policy label is No Active Intervention: in some cases this means that intervention is very unlikely to get consent (because it would have negative local or wider impacts); while in other cases intervention is not intended by the SMP partners, typically because public funding is not available, but other landowners may be allowed to intervene.



For England:

- Use the SMP Explorer website and navigate to your SMP and then Policy Unit.
- Review the 'Summary management approach', 'Generic approach assigned to this unit' and further text for each of the plan epochs.
- The original SMP document (available from SMP Explorer via 'Downloads' tab) often provides richer information. This can typically be found in Section 4 (Policy Statements) of the document.
- Review the Shoreline Management Plan's Action Plan, also available from SMP Explorer via 'Downloads' tab, to establish if/when a joint ownership and/or collaborative working is required.

For Wales and parts of Scotland that have SMPs:

- Navigate to Section 4 (Policy Statements) of the Shoreline Management Plan.
- Review the Shoreline Management Plan's Action Plan to establish if/when a joint ownership and/or collaborative working is required.

The Local Authorities of Scotland are currently developing their Coastal Change Adaptation Plans (CCAPs). Their format will be relatively flexible, reflecting the Scottish Coast's diversity, but in general terms the CCAPs will consist of two parts: an SMP-like document that focuses on management of the shoreline, and a second part that describes plans for adaptation of communities, infrastructure and other features to coastal change. Once available, the CCAPs will become the source for information about the intent of coastal management. Until then, Dynamic Coast provides the available evidence base on coastal change, including a range of information for specific parts of the coasts with decadal anticipated positions of the coast under different climate change scenarios, but does not include management approaches/options. You should therefore review national policies within Scottish Planning Policy, the latest National Planning Framework (i.e. NPF4, <https://www.gov.scot/publications/scotlands-fourth-national-planning-framework-position-statement/>) and Scotland's National Marine Plan (<https://www.gov.scot/publications/scotlands-national-marine-plan/>).

For Northern Ireland, Shoreline Management Plans or Climate Change Adaptation Plans are not yet available (although this may change in the future). Relevant information for this section could be provided by the coastal change assessments which are being undertaken by DAERA's Marine and Fisheries Division. The Coastal Change Information Tool, soon to be published on the Coastal Observatory (<https://experience.arcgis.com/experience/b8454f3d62164518817e4c581b5555c8/page/Home/?views=Map-Viewer>) makes use of the findings from the Northern Ireland Historical Shoreline Analysis Project, along with the additional coastal datasets collected by DAERA to contextualise how the NI coastline is changing. Further information can be requested through the email address NI Coastal Observatory@daera-ni.gov.uk.

For the Republic of Ireland, Government's October 2023 publication of the Coastal Change Management Strategy Report has initiated a process toward risk assessment, monitoring and planning related to

coastal change. While this is being developed, OPW's national flood information portal (www.floodinfo.ie) provides a Publications section containing location specific flood risk management plans and associated documents. refer to your individual Coastal Local Authority for any schemes relating to flood and coastal erosion risk management.

3.2.2 Relevance

Think about and discuss what the overall management framework and intended management approach means for the course itself. Here are a few examples:

- The overarching policy is No Active Intervention, but to provide time for adaptation, local and temporary defences may be acceptable, subject to obtaining any necessary licenses and consents.
- The overarching policy is Hold The Line and the golf course is an important part of this.
- The overarching policy is Managed Realignment, but this is based on a number of defined triggers which relate to the golf course.

The table below provides a summary of information that can be taken from a Shoreline Management Plan in England, Wales and Scotland (where available). The table can be adapted so that it is in line with documentation from the other nations. It is recommended that the table also includes the basic information for the adjacent policy units so that potential interactions between management/policy units in terms of policy, processes and impacts is highlighted.

This section should conclude with a sentence or paragraph to conclude whether coastal processes and wider coastal management are likely to influence management and use of the golf course.

Table 3.1 Management framework

Name of Shoreline Management Plan	
Name of adjacent policy unit and name	
What is the management intent?	Typically a paragraph taken from the Policy Statement. Highlight any triggers for policy change mentioned in the PS.
What is the SMP Policy?	Short term - label plus any narrative (often a sentence or some key words)
	Medium term - label plus any narrative (often a sentence or some key words)
	Long term - label plus any narrative (often a sentence or some key words)
Name of policy unit and name within which the golf course sits	
What is the management intent?	Typically a paragraph taken from the Policy Statement. Highlight any triggers for policy change mentioned in the PS.
What is the SMP Policy?	Short term - label plus any narrative (often a sentence or some key words)
	Medium term - label plus any narrative (often a sentence or some key words)
	Long term - label plus any narrative (often a sentence or some key words)
Has there been a change to the SMP Policy? If yes, what has changed?	

Name of Shoreline Management Plan	
Have there been any Strategies or Plans completed subsequent to the SMP?	Navigate to the Action Plan of the SMP to determine if any evidence collation or strategies were suggested and to check whether any new information is available.
Name of adjacent policy unit and name	
What is the management intent?	Typically a paragraph taken from the Policy Statement. Highlight any triggers for policy change mentioned in the PS.
What is the SMP Policy?	Short term - label plus any narrative (often a sentence or some key words)
	Medium term - label plus any narrative (often a sentence or some key words)
	Long term - label plus any narrative (often a sentence or some key words)

3.3 Coastal processes

3.3.1 How the coast works

Local anecdotal evidence:

- Describe any evidence of coastal change observed at your course – for example, areas of erosion and amount of land lost during certain events (storms), changes in coastal position over time, timelines of change, frequency of events.
- For your course, provide a history of coastal erosion or flood events and any impacts. Collate pictures to tell the story visually.
- Has your course had to change because of coastal erosion or flooding? For example, have holes had to be moved, have protection measures been implemented?



Technical evidence for England, Wales and Scotland:

- Navigate to Section 4 (Basis for Plan Development) and/or Appendix C (Baseline Understanding) of the relevant Shoreline Management Plan and collate relevant information on coastal processes and flood and erosion risk management for relevant Policy Units.
- For Scotland, consult NatureScot's guide to managing coastal erosion in beach dune systems (<https://www.nature.scot/doc/archive/guide-managing-coastal-erosion-beachdune-systems>) or the Dynamic Coast website (<http://www.dynamiccoast.com/>).

Technical evidence for Northern Ireland:

For Northern Ireland, Shoreline Management Plans or Climate Change Adaptation Plans are not yet available (although this may change in the future). Relevant information for this section could be provided by the coastal change assessments which are being undertaken by DAERA's Marine and Fisheries Division. The Coastal Change Information Tool, soon to be published on the Coastal Observatory (<https://experience.arcgis.com/experience/b8454f3d62164518817e4c581b5555c8/page/Home/?views=Map-Viewer>) makes use of the findings from the Northern Ireland Historical Shoreline Analysis Project, along with the additional coastal datasets collected by DAERA to contextualise how the NI coastline is changing. Further information can be requested through the email address NIcoastalobservatory@daera-ni.gov.uk.

For the Republic of Ireland, OPW's Coastal Map (https://www.floodinfo.ie/map/coastal_map/) provides coastal flood risk information, including predictions of future flooding and erosion, extreme water level estimates under from Phase 1 of the Irish Coastal Wave and Water Level Modelling Study (2018). The Irish Coastal Protection Strategy Study (<https://www.gov.ie/en/publication/eed0fb-irish-coastal-protection-strategy-study-icpss/>) provides information to support decision making about how best to manage risks

associated with coastal flooding and coastal erosion. The Study was completed in 2013 and provides strategic current scenario and future scenario (up to 2100) coastal flood hazard maps and strategic coastal erosion maps for the national coastline. Also refer to your individual Coastal Local Authority for any schemes relating to flood and coastal erosion risk management and for the outputs of the Coastal Change Monitoring from selected sites.

Technical evidence for all nations:

- Refer to the references relating to flooding and erosion risk from section 3.1.1 and section 1.6 for other supporting information and resources.
- Use any local studies which are readily available and accessible to insert additional information (*optional*).

It is important to provide any observations on how your local understanding matches with the collated technical evidence.

3.3.2 How is the course influenced by the coast?

Based on the evidence in section 3.1.1, consider how the coast and coastal change may influence the golf course.



- The erosion and flood risk information from section 3.1.1 will be the starting point here. In this section this evidence will be applied to the course itself.
- Check if the Shoreline Management Plan (or equivalent) says anything about how the coast and coastal change may influence the course. Look at future scenarios of change (in particular the With Present Management scenario).
- Are there specific physical features (cliffs, an estuary mouth, breakwaters) which influence the course?
- Are there specific coastal management activities which influence the course?
- Are there any other activities (e.g. dredging) which may influence the course?
- For the Republic of Ireland, OPW's information on present day and future risks can provide a general indication on how flood risk to courses may change due to sea level rise (although it's not intended to be a detailed site specific risk assessment).

3.3.3 How does the course influence the coast?

This needs to consider the adjacent stretches of coastline, not just the coastline in front of your course. Start by checking if the Shoreline Management Plan (or equivalent), and/or any other detailed assessments (Strategies or local studies) discusses this. For example, for the Brancaster Golf Course (North Norfolk), the Shoreline Management Plan explains that the course itself is a hard point that supports the two bay features which have formed on either side.



If this information is not readily available, use the following prompts to provide a brief assessment:

- Are there coastal defence structures/measures at the course which could be holding a section of the coast in an unnatural position?
- Can you see increased erosion or accretion in other parts of the coast, which seem to be linked to coastal defence structures/measures that have been put in place?
- Do you have unprotected dunes which are likely to provide sediment to neighbouring sections of coast or protect the land behind (and outside of the course boundaries) from flooding?

3.4 Environmental and socio-economic features and opportunities

3.4.1 Key features

Collate designation and habitat information for your course and neighbouring land (see “Environmental designations” in Table 1.2). How do these features influence the course? How are these features influenced by the course (e.g. golf course management can promote a static/mature geography which has a significant influence on dune dynamics and therefore the natural response to coastal change).

Summarise known information, either documented or anecdotal, using the following sub-headings as prompts:

- Recreational use.
- Fishing activity.
- Terrestrial and coastal ecology.
- Heritage.
- Local community.
- Public rights of way.
- Navigation.
- Access.

3.4.2 Opportunities

As a starting point, refer to the Ecosystems Benefits Management Tool Step 4b. The Tool is designed to aid the decision-making process (see sections 4, 5 and 6) but 4b focuses on potential opportunities associated with the habitats that exist at your course.

Plus refer to any case studies and examples (habitat creation, habitat restoration, habitat banking) and potential opportunities in terms of creation of compensatory habitat which could be relevant to your course. The following links may be useful:



- For England, refer to the Regional Habitat Creation Programme for your region.
- For Wales, refer to the National Habitat Creation Programme.
- Greening the Grey (<http://eprints.gla.ac.uk/150672/>) Appendixes 3 and 4.
- The Environment Agency’s Working with Natural Processes Evidence Directory, especially chapter 5 (https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/681411/Working_with_natural_processes_evidence_directory.pdf).
- The Environment Agency’s Estuary Edges (<https://www.estuaryedges.co.uk/>).
- Natural and Nature-Based Features guidelines (<https://ewn.el.erdc.dren.mil/nnbf-guidelines.html>), particularly the chapter on dunes.
- The Interreg North Sea Region Building with Nature project (<https://northsearegion.eu/building-with-nature/>).
- Business Case for Flood Risk Funding (Wales) - “green” components to traditional “grey” built structures to provide wider social, environmental and economic benefits https://gov.wales/sites/default/files/publications/2019-06/flood-and-coastal-erosion-risk-management-fcrm-business-case-guidance_0.pdf

3.5 Golf course aspirations

Provide a summary of any strategic planning/business planning that the golf course has undertaken (include short-, medium- and long-term aspirations with associated time horizons) as far as relevant to the

coast. Note any aspiration for expansion, changes to the course layout, improvements to the nature and quality of the sporting experience, requirement for additional infrastructure, etc.

To what extent has coastal change already been a factor in influencing these plans?

How are these plans being, or will be, funded?

4 Management requirements and options

4.1 Is there a problem (need for change)?

This section brings together the information collated throughout section 3, thinking about how and where interaction with coastal change will influence the function of the course. Erosion, for example, may be occurring but does not have to present a problem; it may in fact be essential for allowing other areas of the coast to function naturally. It is only where erosion threatens key features of the course that it may now, or in the future, pose a concern.

Therefore, relating to sustaining the functionality of the golf course and using the evidence and information gathered in section 3, conclude whether there are problems that need to be managed, identify any areas of concern, and outline the timescales of the problems. This is effectively setting out your intent for management.

Looking forward

If it is concluded that there isn't a problem at the moment, could there be a situation where there is a problem in the future (medium to long term, 50 to 100 years)? For example, the course might not be currently protected, and the overarching policy is No Active Intervention, but into the long term continued coastal erosion or increased flooding could impact parts of the course. If this is the case, document this finding here and skip straight to section 7 where the focus should be on defining triggers which will prompt you to revisit this Plan in the future and complete the remaining sections. Examples of triggers could include:

- Coastal erosion reaches a certain point in the course.
- Coastal flooding causes a certain level of impact and starts to happen at an unacceptable frequency.

4.2 Management objectives

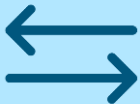
Using the defined need for change from section 4.1, define the overarching objectives to manage the problem. These should be set within the overarching framework for management set by the Shoreline Management Plan (or similar) as documented in section 3.2. It is tempting to define the objectives in terms of solutions, but it is important they are 'function-based', as shown by the following examples:

- To secure the future of the course for XX years (rather than defining the objective as the need to just "hold the line").
- To secure the function of the XX tee for XX years (what are the specifics of that tee which need to be maintained? i.e. technical credentials, links with other tees etc.).

4.3 Appraisal criteria

Using the criteria headings in Table 4.1, determine how you can decide between approaches by adding your description, linked to the objectives that you have defined in section 4.2. Note that not all criteria will be relevant, and those that are not can be deleted. In addition, there might be a criterion that is not part of this list, but which is very specific to your course and should therefore be added. Some examples are provided and can be included or deleted as required.

Table 4.1 Appraisal criteria

Criteria		Description
	Cost	- Cash cost profile: initial investment and planned future costs. - Whole life cash cost and Present Value costs. - Cost certainty.
	Standard of protection, robustness	- Relating to the chance of impact over, say, 10 or 20 years. - Certainty of design standard. - Behaviour under excess loading. - Permanent/ongoing/interim approach?
	Design life, adaptability	- Certainty of design life. - Costs and impacts if the approach needs to be adapted in case of faster than expected sea level rise, changes to strategic plans for the club etc. - Implementation timescales.
	Health and safety	- Risks to operatives during construction and maintenance. - Risks to the public during use.
	Potential negative impacts	- Through the consenting process there are likely to be requirements for mitigation for expected negative impacts of an option or approach. This criterion deals with the risk that these mitigation requirements are not achieved. - Any residual impacts that aren't required to be mitigated?
	Potential additional benefits	- Benefits to the golf course. - Benefits to the local community.
	Funding	- How likely is it that funding can be secured, both short- and long-term? - What are the potential funding sources?
	Consentability	- Likelihood of achieving planning permissions and the necessary consents? This will include assessing impacts to the course and to others. - What permissions and/or assessments would be required to achieve consent?
	Golf course profile	Focusing on attractiveness of the course, translated to aspects such as membership profile, history and tradition of the course.

4.4 Identify potential management approaches

4.4.1 Long list of approaches

Using the management objectives you have defined in section 4.2, identify a long list of practical approaches, structured using the following high-level approaches:



- Do Nothing – although potentially unrealistic, the Do Nothing scenario is a useful baseline and is consistent with the Shoreline Management Plan's No Active Intervention baseline scenario.
- Do Minimum – this could be maintaining the current approach, doing a bit less, or doing a bit more.
- Do Something – something more than Do Minimum in terms of management, and could again be doing a bit more, or even doing a bit less in a planned way.

Use the Golf Course Coastal Solutions Catalogue and the Ecosystem Benefits Management Tool to identify the approaches appropriate to your problem and setting (referring back to section 3).

As the approaches are identified, think about the timescales over which they might apply, and how they might be sequenced, focusing on the short term (5 to 10 years), medium term (10 to 20 years) and long term (20 to 50 years). This should also be linked back to any timescales outlined within the course's business plan (section 3.5) and should consider the longer timescales outlined within the Shoreline Management Plan or other strategic plan for the coast.

Also consider whether there is anything which could trigger the need for an approach to be implemented – for example erosion reaching a defined point in the course or the frequency of flooding increasing to a certain level. These triggers would need to provide enough time to implement an approach (i.e. time for planning, obtaining consents, mobilisation and finally implementation). The Shoreline Management Plan or other strategic plan for the coast may also discuss triggers relating to change in the overall management approach.

4.4.2 Long list to short list

Use this section to rule out any approaches which do not need to be taken forward to full appraisal because of their likely significant impacts (coastal processes, environmental, golf course function etc.) or because they are unlikely to work. For example, sand fencing on a rapidly eroding shoreline will not work unless the more fundamental problem is addressed; similarly, a large breakwater will not be acceptable in some environmentally sensitive areas. The Solutions Tool and Ecosystem Benefits Management Tool aims to guide you through this assessment.



Once this section is complete, re-engagement with your single country organisation contact (see section 1.4) is strongly recommended before starting to complete section 5.

5 The coast's response to the management approaches

This section should provide an evidence-based description of what is likely to happen over time if the management approach were implemented, broken down into the sequences (short, medium and long term) from section 4. Using the information collated in section 3 (in particular the future scenarios predictions provided by the Shoreline Management Plans and other strategic documents the coast) and details provided in the Solutions Catalogue and Ecosystem Benefits Management Tool, consider the following questions for each 'type':



- How would the approaches change how the coast influences the golf course (section 3.3.2)? For example, could it reduce/limit the frequency and/extent of flooding? Could it stop a section of the coast eroding for a number of years?
- How would the approach change how the golf course influences the coast (section 3.3.3)? For example, could it create a non-erodible hard point which changes how the rates of erosion in neighbouring sections of the coast?
- Are there any links to the identified environmental features (section 3.4)? For example, are there environmentally sensitive features which could be impacted, does the approach change how the coast is used for recreational purposes?
- Does the approach deliver on any of the identified environmental opportunities (section 3.4.2)?
- Are there any impacts on adjacent sections of coast, assuming the strategic management approach for these sections of coast is followed (Table 3.1)?

6 Appraisal of management approaches

This section is where you appraise the pros and cons of each shortlisted approach considered in section 4.4.2 against the defined criteria from 4.3 using the consequences described in section 5.

A suggested appraisal methodology is provided below, but this is not mandatory and can be adapted to suit your course.

For each approach, the appraisal table provides the agreed appraisal criteria and a column where the results of the appraisal can be summarised (supported by more detail in Appendices if needed). The appraisal should be discussed over the short, medium and long term. The table also allows you to summarise the results in a visual way. This example uses a traffic light-based approach. The colours can be changed using the “fill cell” function. An example of the definition of the three colours is provided below. These can be adjusted as required.

- Red shading – approach does not meet defined criterion;
- Amber shading – approach does meet defined criterion in some aspects, but there are aspects which are negative or undesirable; and
- Green shading – approach fully meets defined criterion.

6.1 Appraisal methodology

Using the guidance above for reference, briefly outline your appraisal methodology, including any scoring or weighting that has been applied.

6.2 Appraisal results

6.2.1 Shortlisted approach 1

Table 6.1 Shortlisted approach 1 (worked example taken from the Aberdovey pilot plan)

Criteria	Appraisal results	Appraisal results		
		Short term	Medium term	Long term
Cost	• The cost of the approaches under the Do Minimum category are relatively small and spread across a number of years. • If a trigger-based plan is developed, the cost will also be relatively predictable. • There is uncertainty about the cost in the medium and long term as this is dependent upon the development of the coastline and the decision taken once the measures are no longer effective.			
Potential additional benefits	• There are no additional benefits. The nature of the works is relatively short term.			
Funding	• There is no possibility of co-funding for the remedial works.			

Criteria	Appraisal results	Appraisal results		
		Short term	Medium term	Long term
Consentability	This approach is consistent with the Shoreline Management Plan's intent of management in the short term, but there is uncertainty about which measures would be acceptable which would need to be resolved.			
Golf course profile	- There would be no impact on player and visitor numbers in the short to medium term. - There is uncertainty about the impact in the medium and long term as this is dependent upon the development of the coastline and the decision taken once the measures are no longer effective.			

6.2.2 Shortlisted approach 2

Table to be copied from approach 1 and populated.

6.2.3 Shortlisted approach 3

Table to be copied from approach 1 and populated.

6.3 Compare and consider different approaches to develop a preferred management approach

The aim of this section is to compare different approaches set out in section 6.2. This is not necessarily a selection process but is rather drawing together a preferred approach to management in an integrated manner, using the results from section 6.2 to compare outcomes and considering the 'managed adaptive approach' outlined in section 1.2.2 to take account of, and start to plan for, any future uncertainties that you will have highlighted in previous sections of your Plan. Document your reasoning.



Note that the preferred approaches as outlined in the pilot plans for the Formby and Aberdovey golf courses (section 1.6.2) both follow this managed adaptive pathway.

	criteria				
Option 1					
Option 2					

7 The preferred approach

7.1 Detailed description

Provide a detailed description of your selected preferred approach from section 6.3. It could be useful to write this section as a standalone piece of text which could then be copied out of the Plan and used in, for example, communication with your membership.

- Summarise the aim of the CCMP.
- Summarise your overall intent of management, i.e. the problem you're trying to solve (from section 4.1) and how your approach will solve that problem.
- Describe your approach for the short, medium and long term, highlighting any triggers for a change in your approach.
- Describe changes compared to present management and the key implications for the club (cost, timescales, course changes etc.).
- Insert the visual summary of the policy appraisal results from section 6.2 (if applicable).
- Any key actions/groups of actions and next steps.

7.2 Action plan

The action plan summarises all the specific actions that are needed to implement the preferred approach. This should include:

- Actions relating to consenting and planning applications that are needed before the approach is implemented. If your golf course is within a protected site (such as a SSSI or SAC) there may be a need to secure consents for management interventions. Consultation with the appropriate statutory nature conservation body (SNCB) is therefore likely to be required.
- The following table provides an overview of the potential consents that might be needed before an approach is implemented.



Table 7.1 Action plan

Main unique reference (parent no.) ¹	Reference numbers		Location		Action description	Primary action objective	Action theme	Action owner	Linked organisations	Timings and progress tracking			
	Sub-action reference (child no.)	Overall unique reference no. (parent + child)	Name	Coordinates						When should it be started?	Completion date	Action progress status	Action status commentary
1	01	1.01						@Name of a person or committee who are responsible for this action	@Organisations that might need to be consulted in order to complete the action				@E.g. why it hasn't started, why it has stalled etc.
1	01	1.02											
2	01	2.01											

¹ This is the overarching action number. There are likely to be a number of sub-actions linked to one overarching action. The overarching action number is also known as the “parent number” and the sub-actions are known as the “child numbers”. This allows for easier grouping and filtering of actions.

Glossary

Adaptation	A change in the way that an individual, community or feature such as a habitat, functions to fit a changed environment.
Biodiversity	The diversity of plant and animal life.
Climate change	Long-term change in the patterns of average weather. It is relevant to shoreline management because of its effect on sea levels, current patterns and storminess. The Climate Change (Scotland) Act 2008 places duties on the public sector climate mitigation (cutting carbon emissions) and adaptation (measures to increase resilience to the impacts of climate change). The Act requires the development of a national adaptation programme to address the risks identified by the UK Climate Change Risk Assessment (UKCCRA) for Scotland. The National Summary for Scotland notes that existing adaptation efforts remain insufficient and that adaptation planning through a pathways approach is required to address future coastal erosion and flood risks. The development and implementation of CCAPs works towards achieving the outcomes set out in the Scottish Climate Change Adaptation Programme (SCCAP2): strengthening communities and placemaking and the resilience of the coastal and marine environment. The Scottish Government has provided interim guidance to support local authorities and their partners across Scotland in their statutory functions in planning for future climate at the coast and to support long term adaptation and resilience of our coastal communities. The guidance is not prescriptive but outlines what they should seek to achieve and how it might be delivered.
Coastal Change Adaptation Plan (CCAP)	
Coastal Change Management Area (CCMA)	Identification by Local Planning Authorities of an area where the shoreline is likely to change significantly over the next 100 years as required by the National Planning Policy Framework.
Coastal margin	Broadly defined as the interface between the land and sea.
Coastal squeeze	A situation where the coastal margin is squeezed between a fixed inland boundary (for example a sea wall or higher ground) and the rising sea level.

Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019	The 2019 Regulations make the necessary changes to the Conservation of Habitats and Species Regulations 2017 to make them operable from 1 st January 2021. The 2017 Regulations are one of the pieces of domestic law that transposed the land and marine aspects of the Habitats Directive (Council Directive 92/43/EEC) and certain elements of the Wild Birds Directive (Directive 2009/147/EC) (known as the Nature Directives).
Control point	Geographical feature, either natural or artificial, that determines the shape of the shoreline.
Downdrift	In the direction of longshore movement of beach materials.
Ecosystem	Organisation of the biological community and the physical environment in a specific geographical area.
Environmental impact assessment	Detailed studies that predict the effects of a development project on the environment.
Erosion	The natural process of removal of material from a feature / system by weathering, solution, corrosion or transportation. The affected feature or system tends to reduce in size either horizontally or vertically, as a result of the material remove from it."
Feature	Something tangible that provides a service to society in one form or another, or, more simply, benefits certain aspects of society by its very existence.
Foreshore	Zone between the high water and low water marks.
Geomorphology/morphology	The branch of physical geography/geology that deals with the form of the Earth, the general configuration of its surface, the distribution of the land, water etc.
Heritage assets	Property, plant and equipment of historical, cultural, artistic or educational significance.
Hinterland	Area inland of the shoreline.
Historic environment	All aspects of the environment resulting from the interaction between people and places through time, including all surviving physical remains of past human activity, whether visible, buried or submerged and deliberately planted or managed flora.

Integrated	An approach that tries to take all issues and interests into account. In taking this approach, managing one issue adds value to the way another is dealt with.
Intent of management	The effect on land use and environment that the SMP aims to achieve.
Intertidal zone	The part of the shore that lies between the highest and lowest tides.
Longshore	Along or parallel to the shore.
Mean high water	Average of all high waters observed over a sufficiently long period.
Mean low water	Average of all low waters observed over a sufficiently long period.
Mean sea level	Average height of the sea surface over a 19-year period.
Mitigation	Practical measures taken to offset the effect of a policy on physical assets. The term mitigation has a specific meaning for particular types of physical asset: • For wildlife, mitigation may be any process or activity designed to avoid, reduce or remedy adverse environmental effects of the plan. • For the historic environment, mitigation may be ‘preservation by investigation’ for archaeological features or ‘preservation by recording’ followed by abandonment, demolition or re-location for listed buildings. There is no effective mitigation for the loss of historic landscapes.
National site network	Sites designated as a Special Area of Conservation (SAC) or Special Protection Area (SPA) in the UK no longer form part of the European Union’s Natura 2000 ecological network. The 2019 Regulation (see “Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019” above) have created a national site network on land and at sea, including both the inshore and offshore marine areas in the UK. This includes existing SACs and SPAs and new SACs and SPAs designated under the 2019 Regulations.
Objective	A desired state to be achieved in the future. An objective is set, through consultation with key parties, to encourage the resolution of an issue or range of issues.
Present Value (PV)	The value of a stream of benefits or costs when discounted back to the present day.

Residual life

Period of time until a defence has deteriorated to a state in which it no longer performs its function.

Shoreline Management Plan (SMP)

Shoreline Management Plans are non-statutory plans developed in England, Wales and (to a lesser extent) Scotland. They set out a planned approach to managing flood and coastal erosion risk around the coast to 2105. SMPs are developed by Coastal Groups as living plans to guide coastal management investment decisions such as building and maintaining sea defences, implementing adaptation plans and creating coastal habitats. They are adopted by local authorities and used as part of the town and country planning system to designate Coastal Change Management Areas (CCMAs) and inform local plans and development decisions.

Sustain

Refers to some function of a feature. A feature may change, but the function is not allowed to fail.

Topography

Configuration of a surface including its relief and the position of its natural and man-made features.

Appendix

A – Supporting information

Flood and coastal erosion risk management governance

England

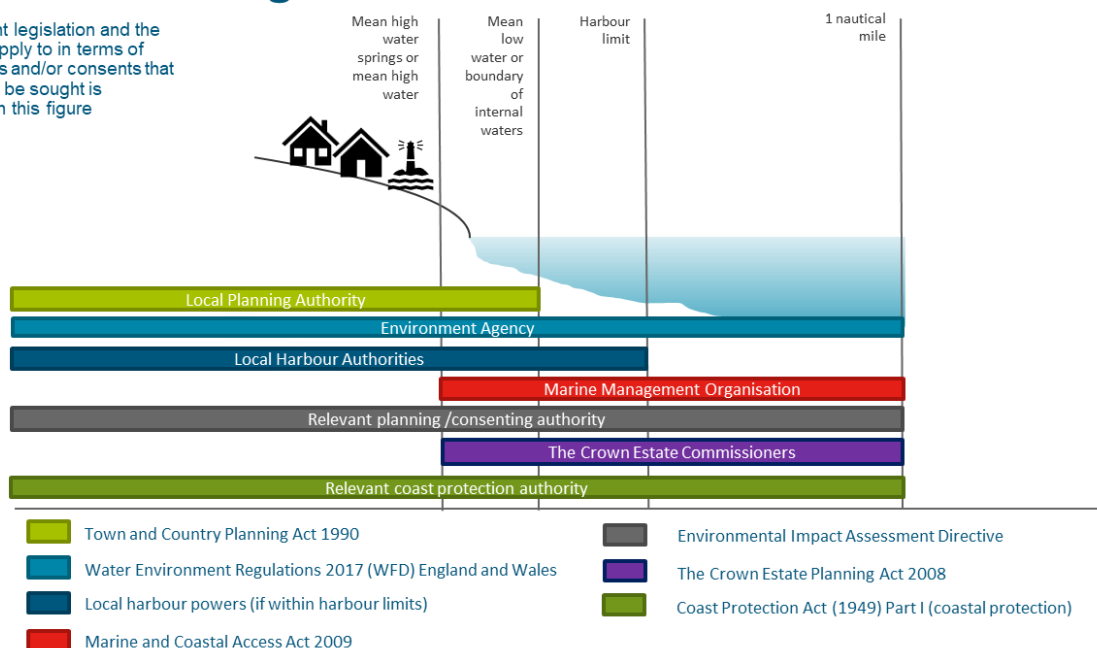
In England the Environment Agency directly manage flood risk from the sea and carry out coastal flood protection works. District and Unitary Councils operate and maintain existing sea defences and carry out other work to manage flood risk from the sea, with the consent of the Environment Agency. District and Unitary Councils act both as the Coastal Protection Authority (CPA) and as one of the coastal erosion risk management authorities, by carrying out coast protection work. These powers to undertake coast and flood protection works is a permissive power rather than a duty to intervene.

The Coastal Groups are responsible for the overarching policy for shoreline management in their region. A Coastal Group brings together a region's key partners in flood defence and coastal management - principally the coastal managers from District Councils, Port Authorities and the Environment Agency, in addition to other interested organisations, such as Natural England, English Heritage, landowners and Defra.

The relevant legislation and the area they apply to in terms of permissions and/or consents that will need to be sought if undertaking coastal protection works is summarised in the figure below.

Legislation - England

The relevant legislation and the area they apply to in terms of permissions and/or consents that will need to be sought is visualised in this figure



Wales

The roles and responsibilities for flood and coastal erosion risk management are outlined in section 17 of the National Strategy for Flood and Coastal Erosion Risk Management FCERM in Wales (<https://gov.wales/sites/default/files/publications/2021-03/the-national-strategy-for-flood-and-coastal-erosion-risk-management-in-wales.pdf>).

Natural Resources Wales (NRW) directly manage flooding from the sea and undertake coast protection works as a coastal erosion Risk Management Authority. These powers to undertake coast and flood protection works is a permissive power rather than a duty to intervene.

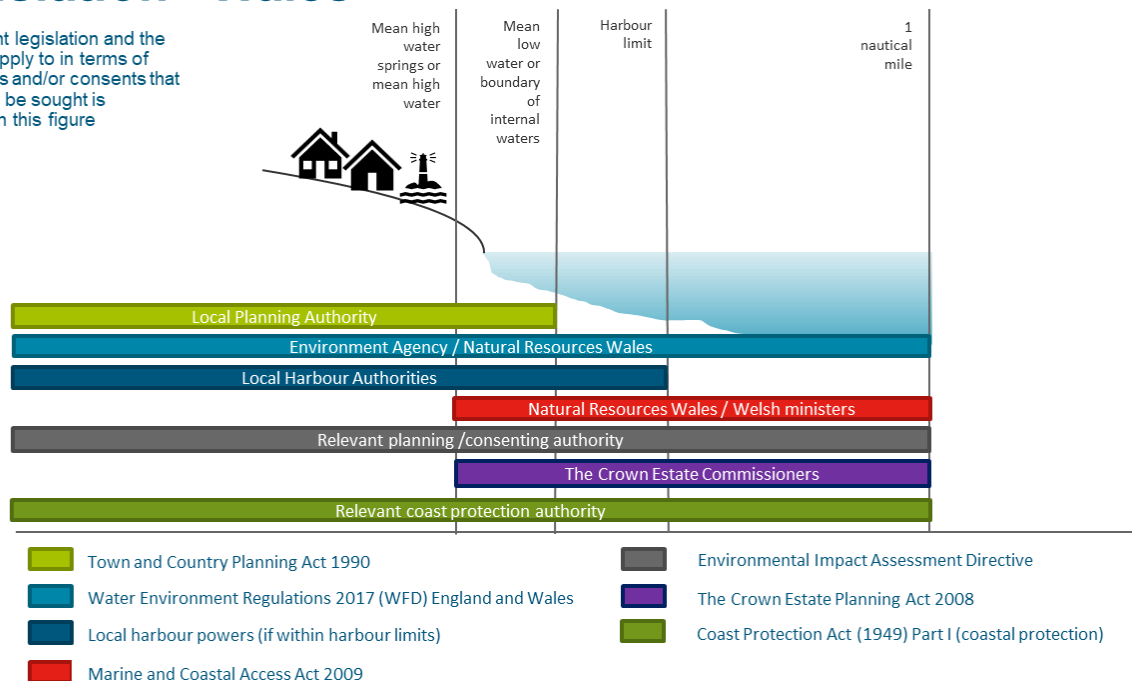
A Local Authority can carry out coastal protection works through their combined role with NRW as a coastal erosion Risk Management Authority.

As in England, the Coastal Groups are responsible for the overarching policy for shoreline management in their region. In Wales, a Coastal Group brings together a region's key partners in flood defence and coastal management – principally the coastal managers from the Local Authorities, Port Authorities and NRW, in addition to other bodies with coastal responsibilities such as Network Rail and Welsh Government.

The relevant legislation and the area they apply to in terms of permissions and/or consents that will need to be sought if undertaking coastal protection works is summarised in the figure below.

Legislation - Wales

The relevant legislation and the area they apply to in terms of permissions and/or consents that will need to be sought is visualised in this figure



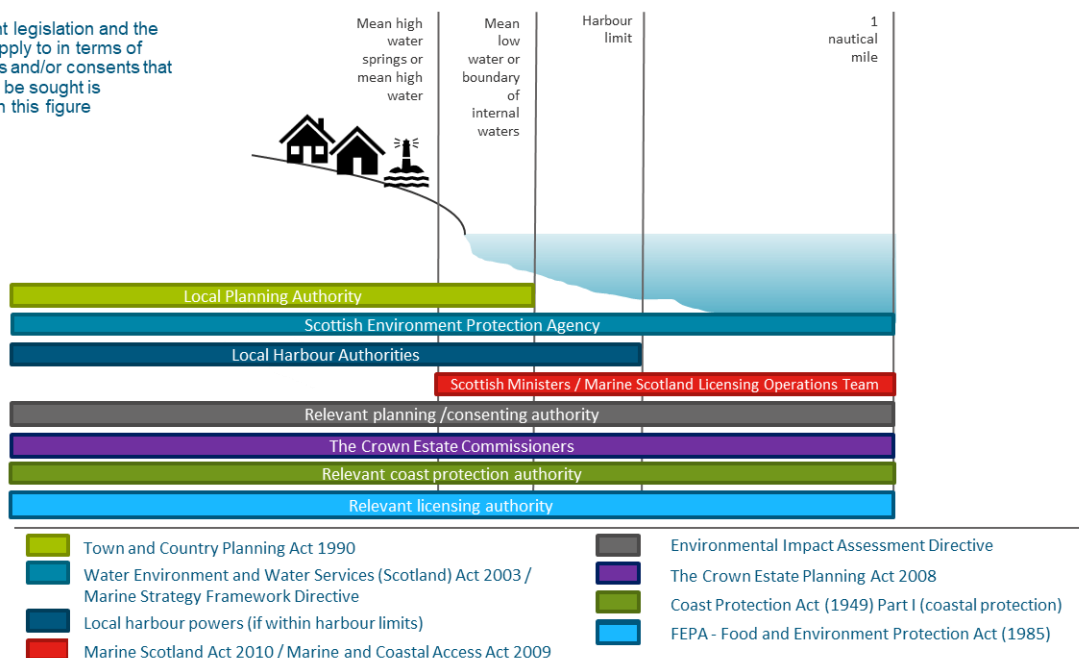
Scotland

The Scottish Environmental Protection Agency (SEPA) has an overarching responsibility for flood issues. Coastal local authorities in Scotland have a statutory duty to manage flood risk from the sea, operate and maintain existing sea defences and undertake work to manage flood risk and coastal erosion.

The relevant legislation and the area they apply to in terms of permissions and/or consents that will need to be sought if undertaking coastal protection works is summarised in the figure below.

Legislation - Scotland

The relevant legislation and the area they apply to in terms of permissions and/or consents that will need to be sought is visualised in this figure



Northern Ireland

Unlike in England, Scotland and Wales, where coastal change management was first identified as an issue under the Coast Protection Act 1949, and more recently under the Flood and Water Management Act 2010, Northern Ireland has no specific legislation to make a Department and/or local Councils responsible for coastal change management. Consequently, no Department is designated as a coastal management authority.

At present in Northern Ireland issues of coastal management principally fall to the Department of Agriculture, Environment and Rural Affairs (DAERA) and the Department for Infrastructure (DfI):

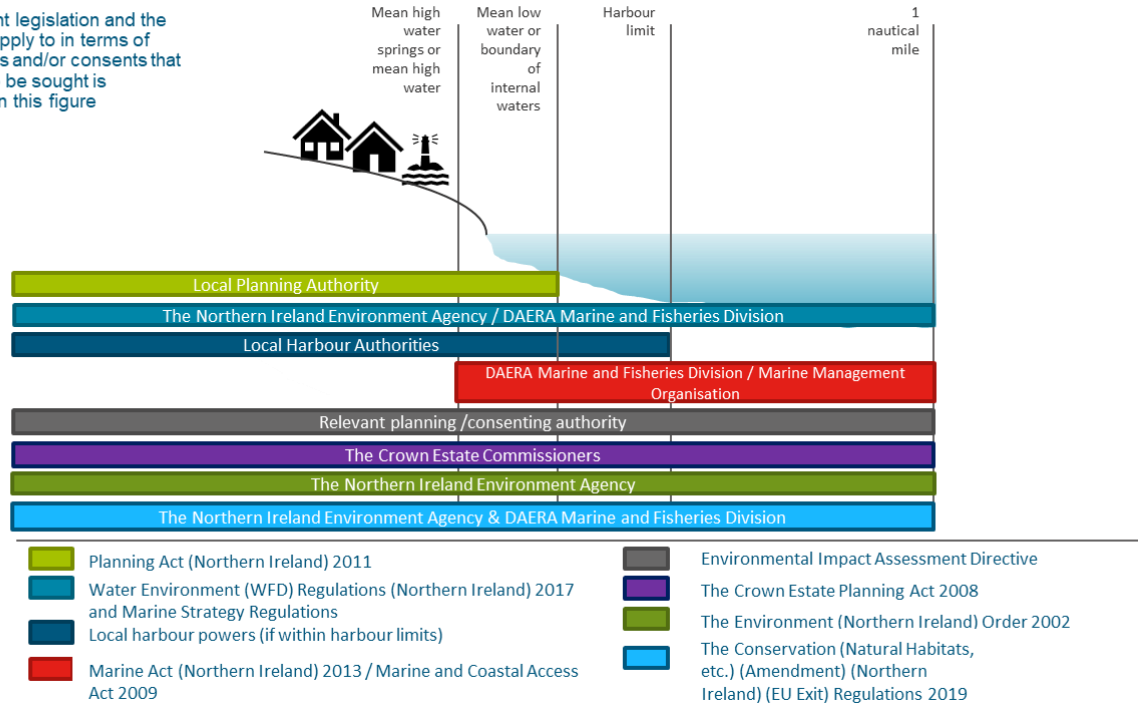
- DAERA is responsible for marine licensing and management of the marine environment and coastal habitats.
- DfI has responsibility for strategic planning, planning policy and the management of coastal infrastructure such as flood defences and sea walls to protect the road and rail network.

Both Departments have set up the Northern Ireland Coastal Forum to bring together the relevant government departments, local Councils and other interested parties to discuss coastal change issues and seek to adopt a more strategic approach to addressing those issues.

The relevant legislation and the area they apply to in terms of permissions and/or consents that will need to be sought if undertaking coastal protection works is summarised in the figure below.

Legislation – Northern Ireland

The relevant legislation and the area they apply to in terms of permissions and/or consents that will need to be sought is visualised in this figure



Republic of Ireland

In the Republic of Ireland, County Councils have the role of coastal zone managers, identifying the areas in need of protection and applying to the national government for funding. They also prepare development plans for their areas and develop and execute plans for coastal protection.

The Office of Public Works may fund Coastal Local Authorities, under their Minor Works and Coastal Protection Scheme, to undertake more detailed studies in relation to coastal erosion risk management or coastal erosion and flood risk management.

The relevant legislation and the area they apply to in terms of permissions and/or consents that will need to be sought if undertaking coastal protection works is summarised in the figure below.

Legislation – Republic of Ireland

The relevant legislation and the area they apply to in terms of permissions and/or consents that will need to be sought is visualised in this figure

