

NEW COASTAL STRATEGY

Introduction

In Autumn 2020, BCP Council successfully secured £450,000 of government funding to produce the new Strategy on behalf of Bournemouth, Christchurch and Poole Council (BCP), New Forest District Council (NFDC) and the Environment Agency (EA). It will guide how the frontage from Hengistbury Head Long Groyne to Hurst Spit, encompassing Christchurch Harbour, may be sustainably managed for the next 100 years. As well as identifying where, when and broadly what type of works are needed to manage the risks of coastal flooding and erosion and what they may cost, it will also consider the effects of predicted climate change on coastal communities, including sea level rise and increased storminess.

As Coast Protection Authorities, BCP and NFDC have permissive powers* to manage coastal erosion risk where it is appropriate and feasible to do so. In addition, along with the EA, BCP has statutory responsibilities for managing flood risk as the Lead Local Flood Authority (LLFA). Hampshire County Council is the LLFA covering the New Forest District Council area. In partnership with the EA, both Councils are working to develop the Strategy and we have appointed specialist technical consultants AECOM to help support this work.

* Local Authorities *may* carry out, but do not have a statutory duty to undertake coast protection work.

Baseline - what if we do nothing?

The following information panels show our findings to help establish the baseline for the Strategy, i.e. what would happen if we do nothing to manage coastal flood and erosion risk? A do nothing scenario represents a hypothetical situation whereby all existing defences are abandoned in terms of maintenance or repair, and no remedial or additional protection works are carried out. The required adaptation to sea level rise and other climate change responses would also not be addressed.

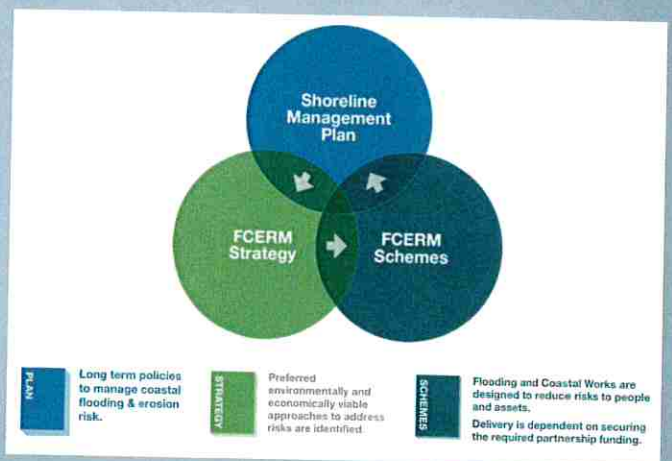
Developing the baseline allows us to consider the relevant issues and constraints to do something to address current and future flood and erosion risk. As we develop the new Strategy, options will be developed, assessed, and prioritised and there will be more opportunities for you to give your views. Let us know if we have missed anything by having your say today. You can also complete our survey online at:

www.bpcouncil.gov.uk/christchurchstrategyphase2



Shoreline Management Plan

Until the 1990s, coastal defences were constructed on an ad-hoc basis over relatively short lengths of coastline, but this approach failed to consider the impact on adjacent coastlines. The adoption of Shoreline Management Plans was encouraged to provide a more strategic and sustainable approach to providing coastal defence, by considering existing defences, the natural and built environments, and compatibility with neighbouring coastal areas. The Poole and Christchurch Bays SMP (adopted in 2011) covers 118 miles of open coast, harbours, estuaries and headlands between Durlston Head in the west and Hurst Spit to the east. It promotes the management policies for our coastline, helping us move from the present to the future.



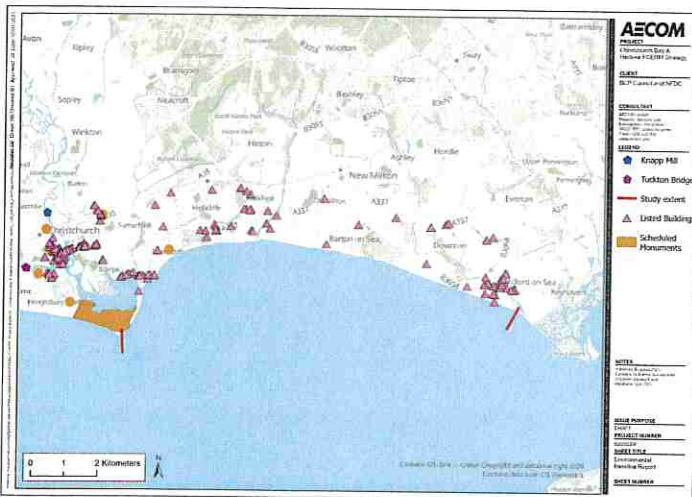
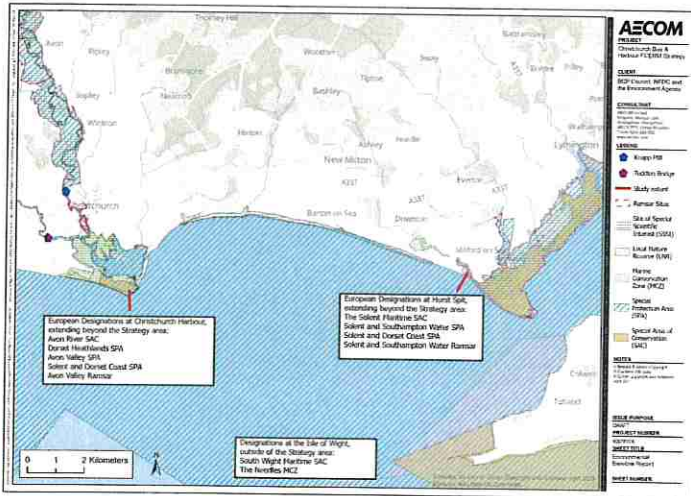
A DIVERSE ENVIRONMENT

Baseline Environmental Studies

To support the development of the Strategy, an Environmental Baseline Report has been produced. It highlights the diverse nature along the Strategy frontage which has many local, national and international environmental designations, including:

- Sites of Special Scientific Interest
- Special Areas of Conservation
- Special Protection Areas
- Ramsar Sites
- Nature Reserves

In addition, listed buildings, scheduled monuments, and conservation areas are also present and need to be considered too.



Environmental Objectives

Given the importance of the local environment, we will ensure that it is embedded within the Strategy and in the options that will be identified for protecting the coastline from coastal flooding and erosion risk. We have identified the following environmental objectives that will be considered and achieved where possible:

- Biodiversity and Geodiversity – to protect and enhance these habitats and species, achieving biodiversity net gain and improved habitat connectivity in the Strategy area.
- Climate change – to support the resilience of the Strategy area to the potential effects of climate change, including coastal flooding and erosion.
- Landscape - to protect and enhance the character and quality of the Strategy area landscape and seascape.
- Historic environment - to protect, conserve and enhance the historic environment in the Strategy area.
- Land, soil and water resources - to ensure the efficient and effective use of land in the Strategy area. To protect and enhance water quality, and manage water resources within the Strategy area in a sustainable manner.
- Population and communities - to protect and enhance the health and wellbeing of the community including coastal tourism and recreation within the Strategy area.
- Transport and movement - to protect and enhance the transport infrastructure in the Strategy area.



Christchurch Harbour has many special European Designations including the scheduled monument of Hengistbury Head



Hurst Spit protects important designated habitats. Image courtesy of A.Colanutt

EXISTING COASTAL DEFENCES

Defence Condition Assessment

To support the development of the Strategy, a Coastal Defence Condition Report has been produced. It has helped to identify potential areas for priority works in the shorter term and summarises the latest available information on the coastal defences along the Strategy frontage, including:

- Defence locations and length
- Current defence condition and their residual life
- Defence types (e.g. seawall, embankment, groyne etc.)
- Defence ownership and maintenance responsibility (e.g. private landowners, Councils or Environment Agency)



Timber groynes to the east of the new beach huts at Milford on Sea are damaged, suffering loss of planks. Storm Eunice, February 2022

Defence condition grades by council frontage

Defence grade	BCP length (m)	BCP length (%)	NFDC length (m)	NFDC length (%)
Very good	0	0	230	4
Good	6,620	45	3,010	54
Fair	7,505	51	2,140	38
Poor	700	4	240	4
Very poor	0	0	0	0

Defence residual life (without maintenance)

Residual life	Length (%)
< 10 years	15%
10-15 years	27%
Up to 20 years	26%
Unknown	32%

Baseline – what if we do nothing?

If all maintenance to existing coastal defences is withdrawn, over time the defences will become increasingly less effective, with failure likely in many cases. Timescales of failure vary depending on the current condition and estimated residual life of the defences. With a do nothing approach, any intervention would be limited to responding to health and safety matters that arise as the defences deteriorate. At present there are council maintained coastal defences in poor condition. These are:

- Hengistbury Head - gabions, rock armour and concrete revetment
- Mudeford and Friars Cliff - groynes, seawall and promenade
- Milford on Sea - concrete seawall, rock revetment and groynes

Defences are not always owned and maintained by the local authority, and so it is not the responsibility of the local authority to undertake maintenance works on private assets. We aim to work with private landowners to help them understand their responsibilities and ensure that any risks from their frontages to the wider area are managed in a co-ordinated way.

Beach Volumes

Many of the coastal defences in the Strategy area rely on beach material to provide the first level of defence against flooding and erosion. The height and width of the beaches change with the seasons and the energy of summer/winter waves, as well as the ongoing natural processes of long-shore drift.

The impact of the coastal processes have resulted in some beach levels becoming depleted. In the west of the Bay the beaches are topped up as and when required by recycling sediment from areas of accumulation. From Christchurch Harbour entrance to Chewton Bunny the beach levels have generally remained stable or have seen an overall net increase since 2003. Further to the east there has been a long-term decline in beach levels from Becton to Milford on Sea. This has attributed to the recent failure at Westover. Additionally, despite regular recharging of material further along at Milford on Sea, beach levels continue to decrease at that location.

COASTAL FLOOD RISK

Coastal Processes Assessment

To support the development of the Strategy, a Coastal Processes Report has been produced. It summarises the vast amount of relevant research and data within Christchurch Bay and Harbour and includes analysis of a range of topics, including:

- Hydrodynamics – tide conditions, extreme water levels, sea level rise, wave conditions and river levels
- Geology and sediment dynamics – regional geology, geomorphology and intertidal mudflats
- Coastal flood and erosion risk

The tides in Christchurch Bay are complex, mainly due to its location within the English Channel, its proximity to the Isle of Wight, the shape of the coastline and the shallow water effects. The water flow from the two rivers (Stour and Avon) within Christchurch Harbour also has an impact. Most of the frontage from Christchurch, past Barton on Sea to Milford on Sea generally has a steep landscape with a high cliff-line, ensuring the risk from tidal flooding is low. However, tidal flood risk is concentrated around the low-lying Christchurch Harbour that is vulnerable to flooding during periods of high tides combined with storm surges. The eastern end of the frontage at Milford on Sea also has flood risk, mainly from the Keyhaven direction but also from wave overtopping along the coastal frontage.

Hurst Spit is an important coastal feature and landmark and we are working collaboratively with the Environment Agency to ensure it is fully integrated into both the Christchurch Bay and Harbour Strategy and the adjacent Hurst Spit to Lymington Strategy that is also currently under development.

What is meant by flood risk?

Flood risk is expressed in terms of an average return period in years, calculated using the frequency and intensity of past events. It is a way of describing the severity of a storm event and sometimes these can occur more than once in the same year. For example, a large storm event that occurs on average once every century is referred to as a 1 in 100-year event.

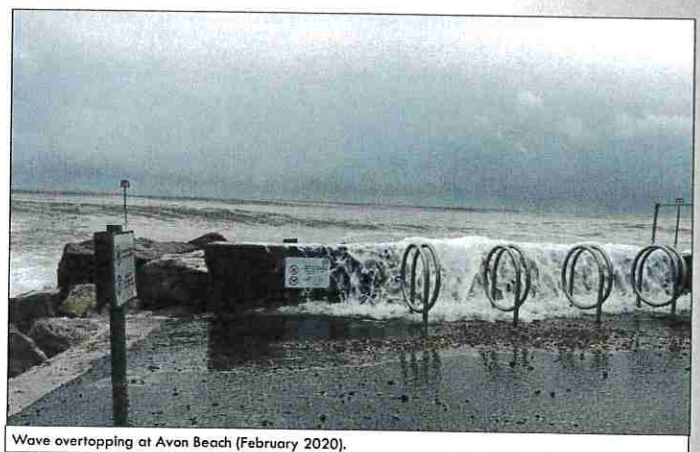
Sea Level Rise and Increasing Flood Risk

Due to climate change, sea levels are predicted to rise by 1.03m across the Strategy frontage over the next 100 years. This will increase the risk of coastal flooding by making extreme coastal water levels higher and more frequent.

Baseline – what if we do nothing?

The table below indicates the number of properties at risk around Christchurch Harbour if we do nothing. The numbers shown are for a 1 in 200-year extreme event for the present day, for 20 year's time (2042), 50 year's time (2072) and 100 year's time (2122). The number of properties at risk from coastal flooding increases over time due to climate change and projected sea level rise.

Number of properties at risk from flooding around Christchurch Harbour				
Return period event	Time period	Residential	Non-residential	Total
1 in 75 year	2022	25	51	76
	2042	255	177	432
	2072	750	266	1016
	2122	1679	420	2099
1 in 200 year	2022	75	81	156
	2042	369	210	579
	2072	894	296	1190
	2122	1769	438	2207



Wave overtopping at Avon Beach (February 2020).

COASTAL EROSION RISK

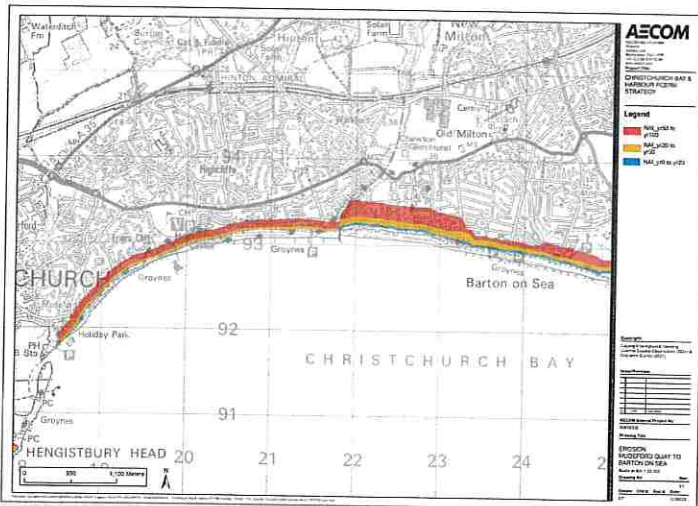
Coastal Processes Assessment

To support the development of the Strategy, a Coastal Processes Report has been produced. It summarises the vast amount of relevant research and includes analysis of a range of topics, including:

- Hydrodynamics – tide conditions, extreme water levels, sea level rise, wave conditions and river levels
- Geology and sediment dynamics – regional geology, geomorphology and intertidal mudflats
- Coastal flood and erosion risk

The coastal erosion risk is significant along the open coast frontage between Christchurch and Hurst Spit. The cliffs are complex and instability is induced through both groundwater and toe erosion. Despite the presence of rock revetments and control structures (for example at Barton on Sea), the ageing cliff drainage system has failed in some places, causing erosion and cliff recession to ensue.

The area predicted to erode fastest over the next century is at Naish Cliffs, immediately to the east of Chewton Bunny. At Chewton Bunny the coast transitions from a defended area at Highcliffe to the west, to an undefended, eroding cliff line to the east. The management of erosion and this transition at Chewton Bunny is an important aspect for the Strategy to consider. If we did nothing in this area, the defences at Highcliffe would be outflanked, leading to their ultimate failure as the natural level of erosion continued. Elsewhere the erosion risk along the Strategy frontage is relatively uniform, with erosion generally expected to increase over time. Any works proposed by the Strategy will need to be acceptable in respect to the Site of Special Scientific Interest designation.



What is meant by coastal erosion?

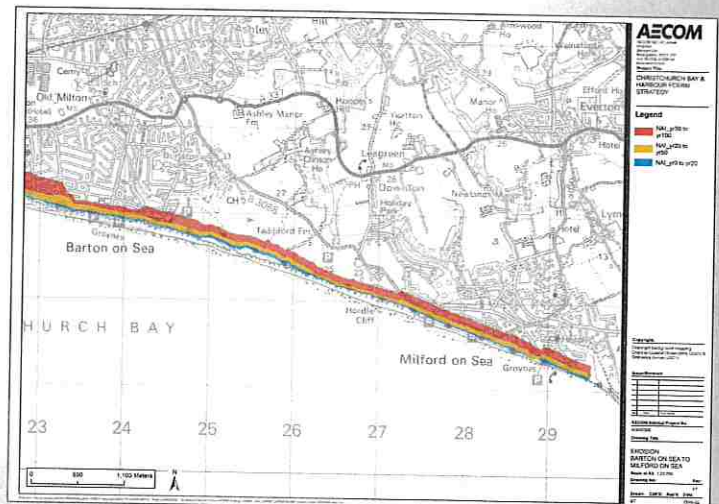
Residential, public and commercial properties, along with assets and infrastructure, are all at risk of coastal erosion i.e. potentially being lost to the sea through shoreline retreat or land sliding. Shoreline retreat is where coastline boundaries change because of waves and tides, sediment supply and precipitation levels and the effect on groundwater. Sea level rise alone will also significantly increase the risk of coastal erosion.

Baseline – what if we do nothing?

The table below indicates the number of properties at risk from coastal erosion along the Strategy frontage. In the short term between the present day and 2042, 5 non-residential properties are expected to be at risk from erosion. In the medium term between 2042 and 2072, 176 residential properties and 1 non-residential property are expected to be at risk. And in long term between 2072 and 2122, 1143 residential and 227 non-residential properties are expected to be at risk if we do nothing.

Number of properties at risk from erosion along Strategy frontage*			
Time period	Residential	Non-residential	Total
2022-2042	0	5	5
2042-2072	176	1	177
2072-2122	1143	227	1370

*draft numbers that will be refined as the Strategy is developed



SEDIMENT TRANSPORT

Sediment Transport

To support the development of the Strategy, a Coastal Processes Report has been produced. It summarises the vast amount of relevant research and data within Christchurch Bay and Harbour and includes analysis of a range of topics.

The beach material or sediment in Christchurch Bay is widely regarded to be a self-contained sediment circulation system as shown in the diagram below. The sediment grain size generally increases from west to east along the shoreline (SCOPAC 2012). Longshore drift, where sediment moves along the shoreline, also moves from west to east because of the predominant wave direction and tides. These currents move the lighter / finer sediments offshore leaving the heavier / coarser material onshore.

Baseline – what if we do nothing?

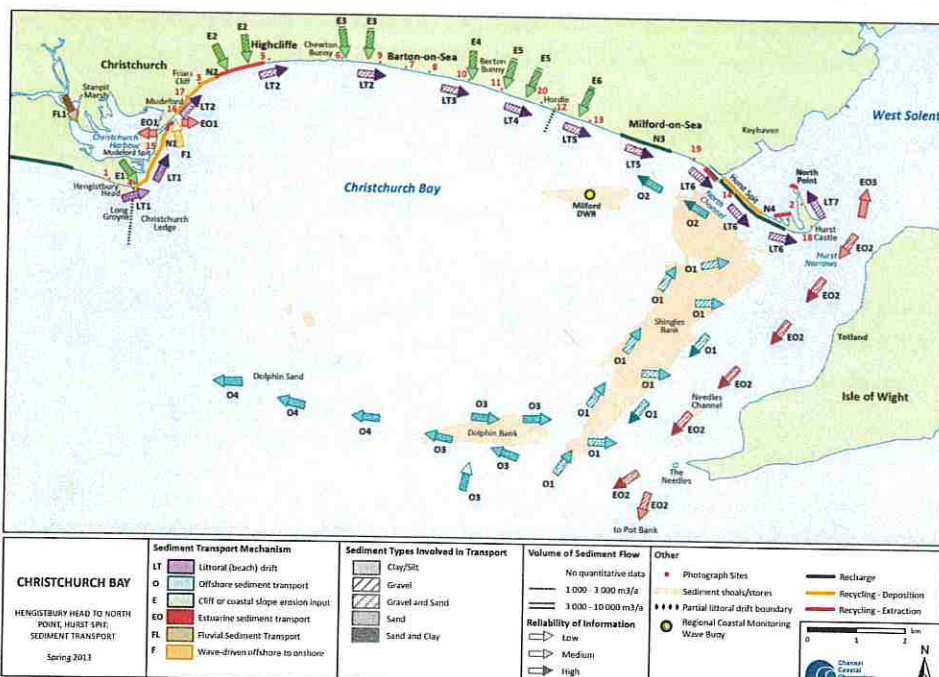
If we do nothing, the following would be more likely to occur:

- Defence structures such as groynes may be more prone to failure if a high and wide beach is not retained. Beach material reduces the impact of wave energy
- Cliffs would be more prone to erosion if beach material is not retained i.e. by renourishment or recycling
- Wave energy is likely to increase at the cliff toe if there is not enough beach material to reduce the energy

Human interventions

In addition to the natural processes, human intervention also plays a part in sediment dynamics. The hard coastal defences, such as seawalls, groynes and revetments have been used in combination with softer solutions such as beach recycling and renourishments. Together they ensure the beaches are protected from erosion by the sea whilst maintaining a good level of coastal defence. A summary of recent beach management activity is provided in the table below.

Recent beach management activities		
Location	Year	Intervention
Mudford Sandbank	Eight occasions 2002-2017	Moving sediment from spit tip to eroded groyne bays along the bank. On average approximately 1,000m ³ of material on each occasion.
Avon Beach & Friars Cliff	Six occasions 2011-2018	Movement of 57,000m ³ of material eastwards from harbour entrance onto the upper beach between Avon and Highcliffe.
Highcliffe & Chewton Bunny	1985-1991	Filled 73,000m ³ of imported shingle which has been largely retained by the rock groynes in this location.
Milford on Sea	Annually since 2008	Total volume of material approximately 40,000m ³ since 2004.
Hurst Spit	Annually	Major recharge in 1996. Annual recycling



Beach material is mobile along the coastal frontage. Beach profiles change between seasons and long term erosive / accretive trends can also develop. The photos above show the changing beach profiles over time at Gundimore, looking east to Friars Cliff. The top photo was taken in February 2012 and the bottom photo was taken in May 2022. As can be seen, this area has seen a natural accumulation of material.

HAVE YOUR SAY

Stakeholder engagement

Our first phase of public engagement took place in Summer 2021. Over 3,000 people visited our web-based information, and 147 respondents completed an on-line survey. Comments have been considered and have been included along with all our baseline information to understand what the risks are if we do nothing to address tidal flood and coastal erosion risk. This also enables us to identify the issues and constraints to do something and prioritise where and when we need to take action.



What you told us

- 93% agreed with the aim to adopt a Strategy to help manage and protect the coastline from flooding and erosion over the next 100 years.
- Between 73-89% of people have concerns about at least one of the following aspects of climate change; sea level rise, flooding from the sea and rivers, cliff slips, retaining beach material and maintenance of coastal defences.
- Between 65-80% of people agreed that appropriate hard and soft engineering solutions should be used to reduce coastal flood and erosion risk.
- 89% of people agreed that, where practicable, coast protection options should be cost effective and have a low environmental impact.

Comments, ideas and concerns relating to the five key geographical areas were also provided. We have considered these, and you can read our responses at www.bpcouncil.gov.uk/christchurchstrategyphase1

Stay involved in the Strategy development

The feedback we receive from all stakeholders (including members of the public and the statutory consultees such as the Environment Agency, Historic England, and Natural England) is vital in helping us to consider realistic options for doing something to manage the risk of coastal flooding and erosion. As we develop the Strategy, there will be more opportunities for you to Have Your Say:

- **Spring 2022** - Phase 2: Tell us if you think we have missed something in our initial findings. We will be using this information to start developing the new coastal Strategy.
- **Summer 2022** - Phase 3: We will be presenting the risks of doing nothing with the addition of climate change impacts to workshop groups to help identify a long list of options to do something to manage the coastal flood and erosion risks in a sustainable manner across the Strategy area.
- **Winter 2022** - Phase 4: Once we have the long list of options, we will evaluate them and present them to stakeholders for more feedback to short list all potential viable options.
- **Summer 2023** - Phase 5: We will hold a formal public consultation to listen to views on the draft short-list option appraisal findings to manage the risk of coastal flooding and erosion.
- **Early 2024** - Phase 6: We will present the findings of the final Strategy once it has been adopted by all partners and anticipate that this will be in early 2024.

Keep up to date on the
Christchurch Bay and Harbour Strategy at:
www.twobays.net



NEXT STEPS

Developing Strategic Options

The next development stage of the Strategy is to work with stakeholders to identify a long list of options to manage the coastal flood and erosion risk. We will then need to evaluate these options to see if they are feasible and in doing so, we will reduce the long list to a short list.

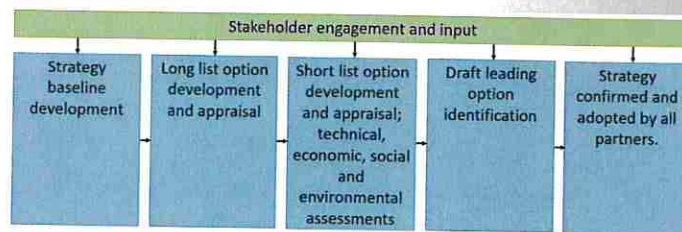
Each of the short list options will then go through a rigorous appraisal process to ensure they meet Strategy objectives, are economically viable, technically deliverable, socially acceptable and environmentally sustainable. With Stakeholder input throughout the process, we will be able to select the preferred management options for each area of the Strategy frontage.

We have already identified five geographical areas across the coastal frontage, but these may be further divided into smaller Option Development Units. This will ensure that the flood and coastal risk management options considered are appropriate at a local level, and fit with the wider policy approaches set out in the Shoreline Management Plan.

The appraisal process

The appraisal process includes several different aspects, including:

- Economic - the costs of the proposed options are weighed-up against the benefits provided. The cost of damages avoided is also compared to the baseline do nothing scenario. Funding sources for the options then need to be identified.
- Technical - to understand whether proposed options are appropriate for the section of frontage and in combination with options for the wider Strategy area, and whether it can be delivered on the ground.
- Social - to consider the views of all stakeholders during the development of the options to see if the proposed options are deemed appropriate and acceptable.
- Environmental - the proposed options are assessed against environmental objectives to ensure there would be no detriment. If there is, the impacts and mitigation measures would be identified.



Funding and affordability

The Strategy will update our understanding of the properties and assets at risk along the coastline frontage and examine how much it will cost to defend them (where appropriate). It will also identify the areas where adaptation to coastal risks will be required. Funding sources for all potential schemes will be assessed using the government's **Partnership Funding** mechanism for flood and coastal erosion risk management schemes.

With **Partnership Funding**, the merits of flood and coastal defence schemes are not judged purely on economic terms; the wider outcomes that a scheme delivers are also considered.

Some schemes recommended by the Strategy may qualify for a full contribution of government grant funding, whereas others may not. The partnership mechanism encourages those benefiting from schemes to contribute to their cost to supplement government grants. By working together, schemes which are still viable but have less economic benefits would still be able to unlock national funding to boost and prioritise schemes to implement the Strategy. Raising funds will allow us to:

- Increase the standard of protection of defences
- Improve the quality of materials used (e.g. to better fit the character of a location)
- Increase certainty and accelerate the delivery of schemes
- Deliver wider benefits to communities associated with schemes, such as improved landscaping, access and public realm
- Deliver environmental enhancements to increase biodiversity

If you can contribute or offer our support to help deliver the Strategy, please email coastal@bcpcouncil.gov.uk or complete the on-line survey to provide your details. You could:

- Work in partnership to deliver combined outcomes
- Provide financial contributions or sponsorship
- Offer access through private land or site setup