Coastal management at Hurst Spit and Keyhaven



Six key terms

- **Beach nourishment** – a type of ‘soft’ engineering involving the artificial dumping of sediment on a beach to replenish that which has been lost by erosion or longshore drift.
- **Rock armour** – the use of boulders to create a protective wall along the coast to absorb wave energy and reduce the risk of erosion and flooding.
- **Hold the Form** – a management approach for a fragile natural feature like a shingle spit, where the goal is to protect the landform itself and allow it to evolve naturally.
- **Hold the Line** – a management approach, which generally means maintaining the existing position of the shoreline using existing defences, e.g. sea walls/embankments.
- **Managed realignment** – a management strategy involving the controlled retreat of the coastline, often involving seawater flooding a low-lying area.
- **Coastal squeeze** – when a saltmarsh is ‘squeezed’ (reduced in size) as sea levels rise towards a fixed structure, such as an embankment.

Location of Hurst Spit and Keyhaven

Hurst Spit and Keyhaven are located on the south coast of England, south of Lymington





Hurst Spit and Keyhaven: OS 1:50,000 map and aerial photograph





Hurst Spit and Hurst Castle

- Hurst Spit, a classic hook-shaped coastal shingle spit, extends for about 2.25km from the coast at Milford-on-Sea.
- Since the 1940s, the spit has declined in volume as coastal works at Christchurch interrupted sediment flow from the west.
- At the tip is Hurst Castle, a coastal fortress constructed by Henry VIII in 1544.



Coastal management: Hurst Spit

Groynes at Milford on Sea interrupt eastward movement of sediment. This slows the movement of material to Hurst Spit.



The seawall, rock revetment and beach nourishment protects Milford on Sea and Sturt Pond nature reserve.

Regular beach recycling (beach nourishment) helps to maintain the spit, protecting it from wave attack and overtopping.

Rock armour and groynes help to protect Hurst Castle.

1 km

Protecting Hurst Castle with rock armour and beach nourishment



Keyhaven and Keyhaven marshes

- Keyhaven is a historic fishing village, now a popular tourist and sailing area.
- Keyhaven marshes form part of a local nature reserve. Its mudflats and saltmarshes are rich in wildlife, particularly birds, such as curlew and spoonbills.



Footpath on flood embankment near Keyhaven

The Curlew, is now an endangered species



Coastal management at Keyhaven

Keyhaven is protected by an embankment which is marked by the route of a footpath (shown in green on the map)





1 km

Coastline under threat: climate change

- Over the next 100 years, sea level is expected to rise by about 1m.
- Storms may become more frequent and powerful, leading to more erosion events.
- Hurst Spit may be subject to more frequent damaging over-washing by waves and breaching may occur.
- The flood risk at Keyhaven may be increased.
- Low-lying ecosystems at risk from climate change



View over saline lagoons, Source: Environment Agency

Coastline under threat: storms

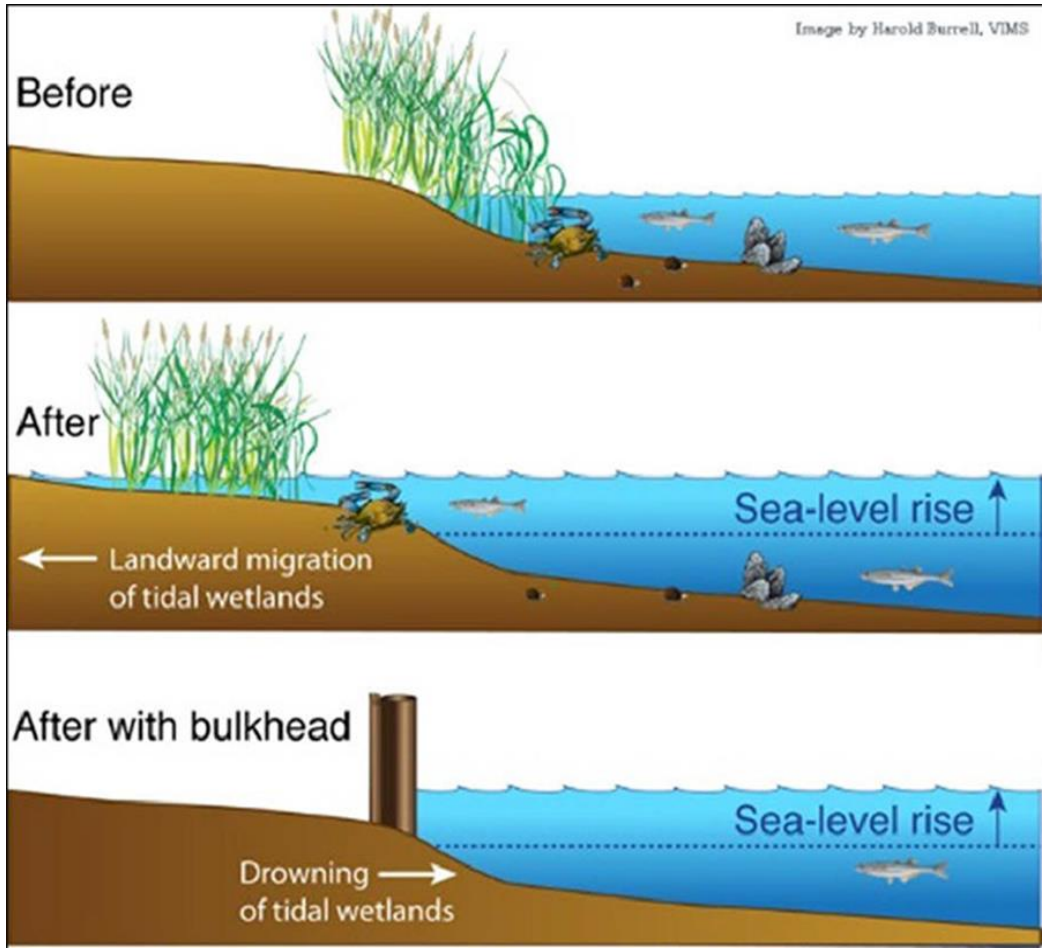
- Hurst Spit has been damaged by a succession of winter storms.
- In January 2025, storms significantly reduced the width of the spit along 400m of its length.
- Storm damage has affected vehicle access to Hurst Castle.
- In future, the spit will be more vulnerable to damaging over-washing and the land behind at higher risk of flooding.



Damage to Hurst Spit by 2025 winter storms

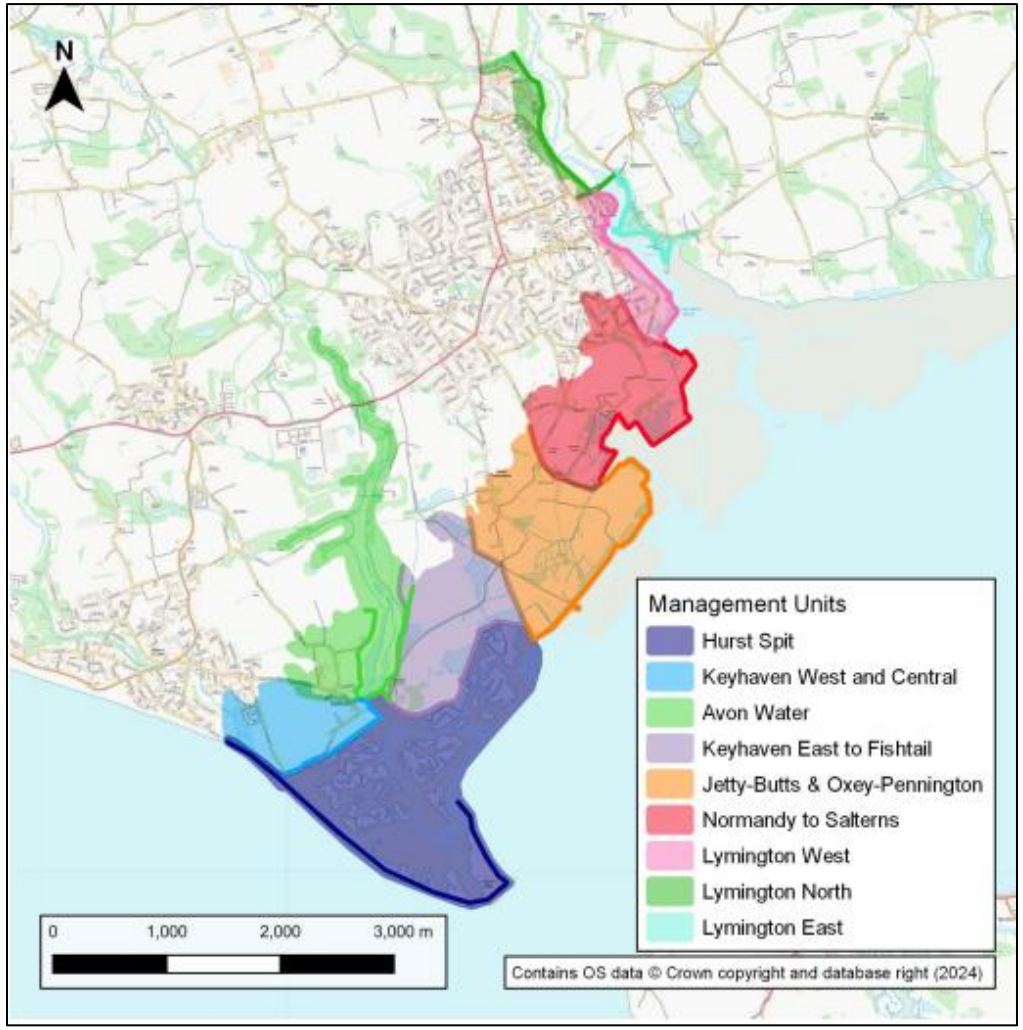
Coastline under threat: coastal squeeze

Coastal squeeze occurs when hard structures (such as seawalls and/or embankments) prevent the saltmarsh from naturally evolving and moving inland in response to sea level change.
This can have negative impacts on saltmarsh wildlife.



Hurst Spit to Lymington Strategy

- The Hurst Spit to Lymington Strategy aims to create a sustainable future for the 15km stretch of coast between Hurst Spit and Lymington for the next 100 years.
- It is a partnership between the Environment Agency, local authorities and Natural England.
- Many other organisations involved including, English Heritage, RSPB, sailing and community groups.



Strategy vision and timeline

'A sustainable future for Hurst Spit to Lymington area for the next 100 years: enabling communities, the environment, wildlife, heritage, recreation, tourism, and business to adapt to climate change and sea level rise.'



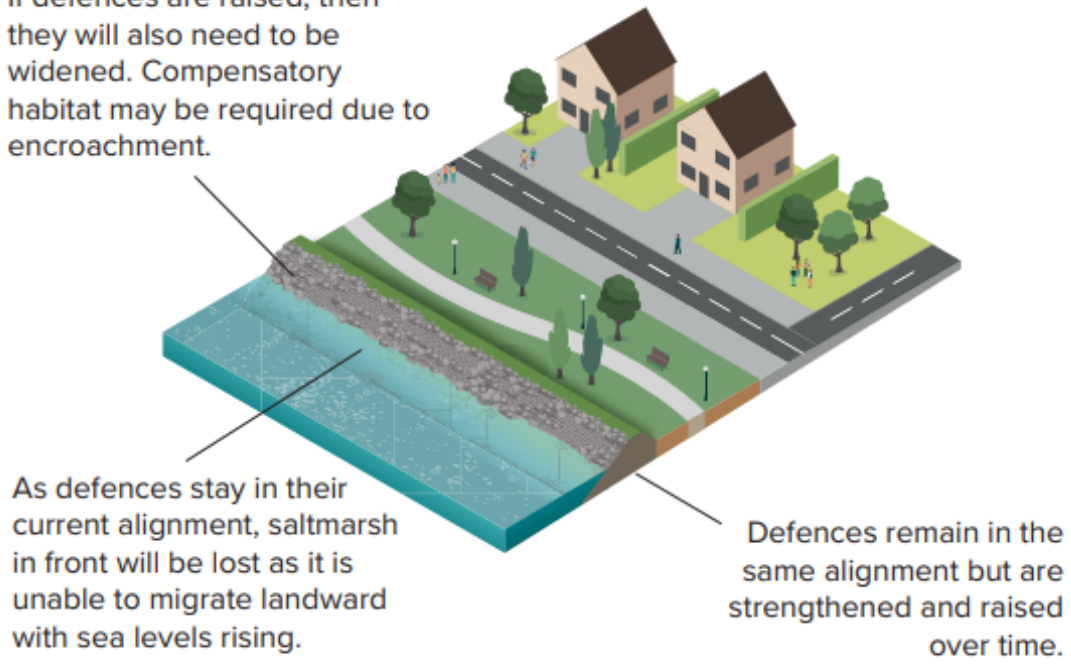
2024 – one strategic pathway identified for each Management Unit

2026 – final consultations with public and stakeholders (such as English Heritage)

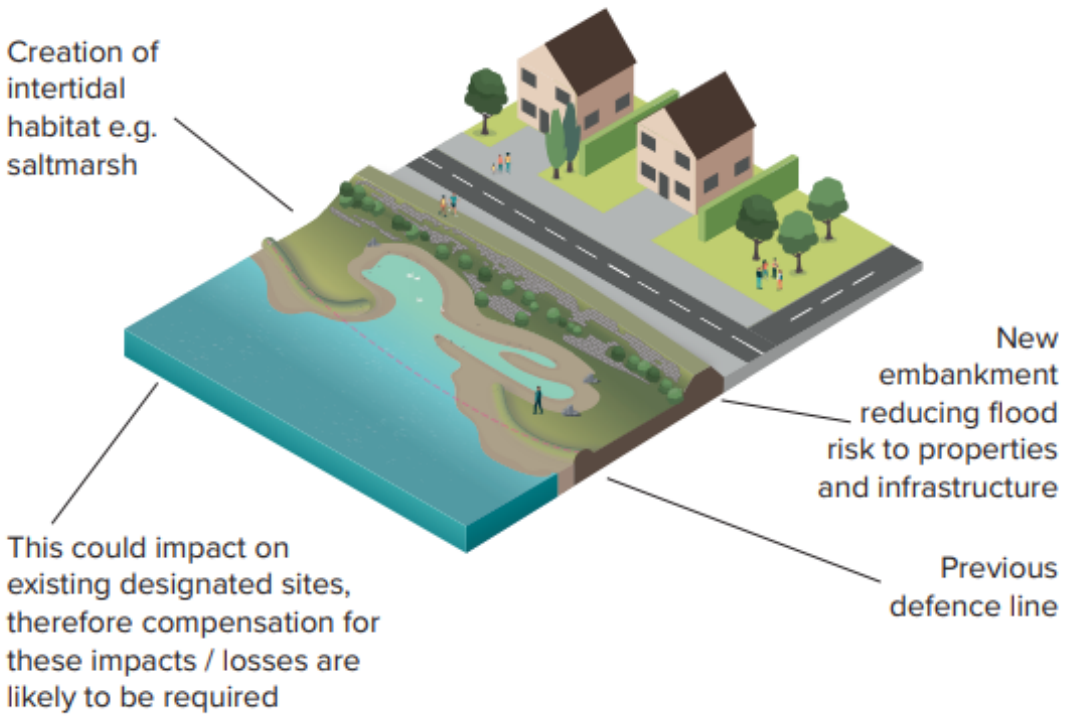
2027+ - detailed planning and implementation of initial steps of strategic pathways

Key options for coastal management

Hold the Line



Managed realignment



These are the two main options for coastal management along this coastline in response to climate change

Hurst Spit pathway: the next 100 years

The proposed pathway for managing Hurst Spit:

- 10-20 years – 'Hold the Form – Maintain', involving active management (e.g. beach nourishment).
- 20 years+ - 'Rollback – Reactive Management' and, eventually, 'Rollback – Minimal Intervention', which will be naturally sustainable.
- **Total lifetime cost = £20 million**



Hold the Form - Maintain

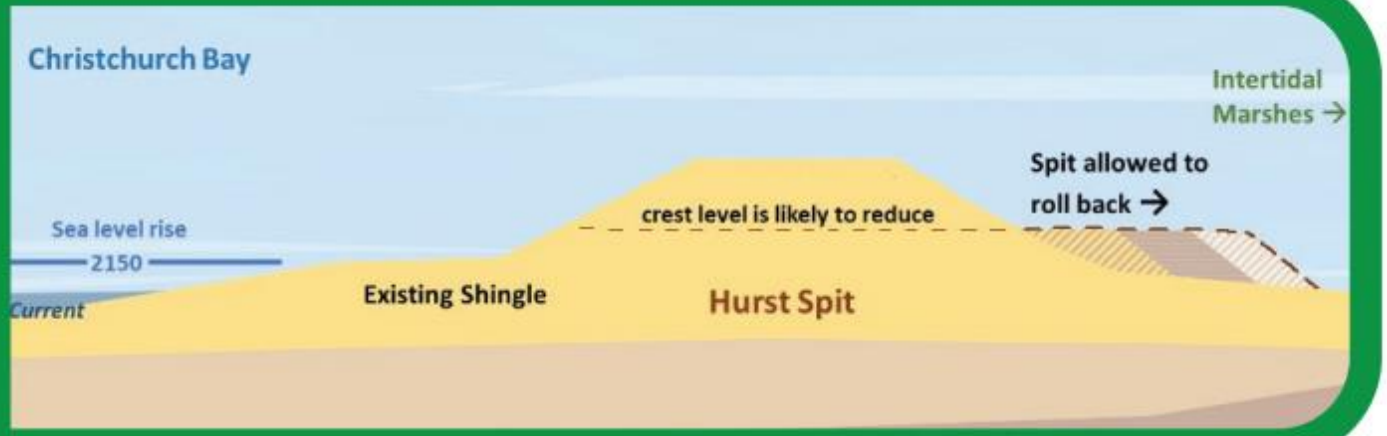
Keeps the existing shape and height of the spit, which would require shingle to be brought in initially to build up current profile



Hurst Spit pathway the next 100 years

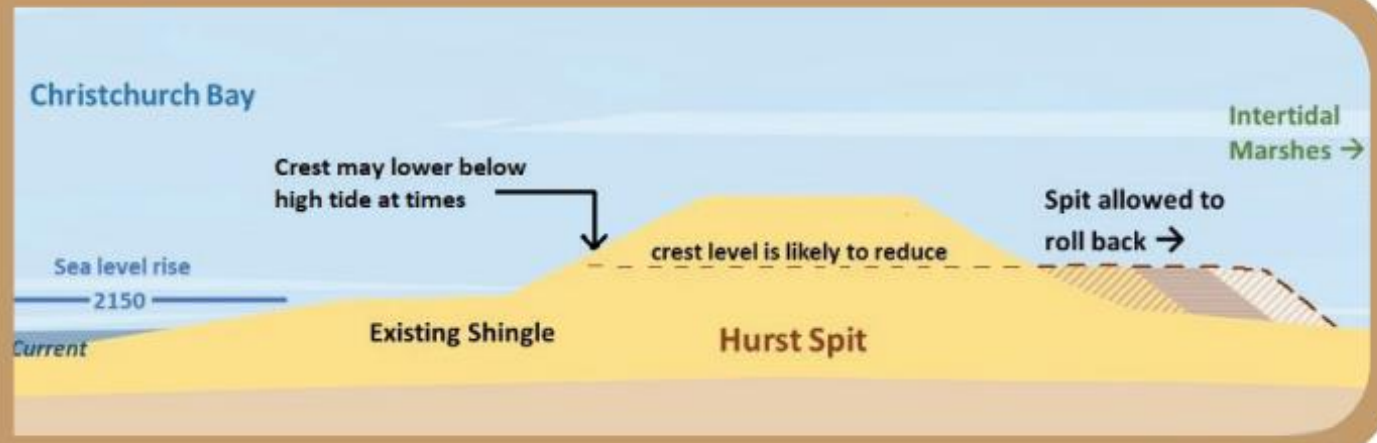
Rollback - Reactive Management

Limited maintenance to provide a continuous barrier. The spit will become lower and wider as it adapts



Rollback - Minimal Intervention

This option will allow the spit to evolve naturally, with no intervention



Reasons for the proposed pathway and impacts: Hurst Spit

Reasons

- Continued beach management unlikely to be sustainable in the future as sea level rises and erosion increases
- Works with the natural process of spit rollback
- Brings benefits to nesting birds and vegetated shingle

Impacts

- Long term loss of access, moorings (for sailing) and saltmarsh
- Increase in wave height, overtopping and flood risk, which will need managing elsewhere
- Possible changes to navigation

Keyhaven preferred pathway the next 100 years

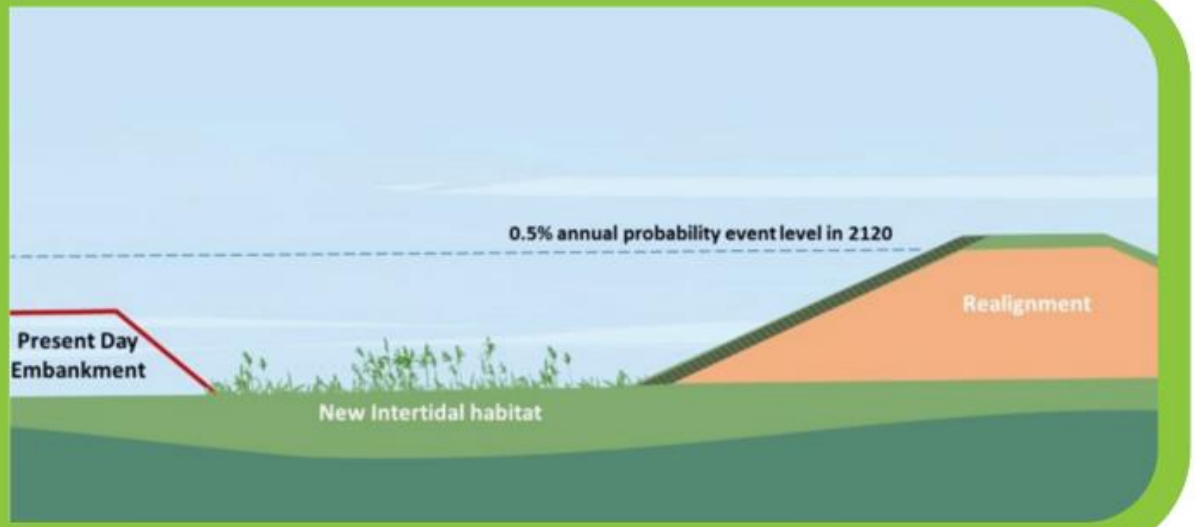
The proposed pathway for managing Keyhaven is 'Managed Realignment with Saltmarsh Creation'.

- Construction of new higher embankment further inland will protect Keyhaven from flooding.
- Old embankment will be breached to allow saltmarsh to migrate inland with sea level rise.



Managed Realignment with Saltmarsh Creation

Move embankments inland to make space for sea level rise and rollback of habitats



Total lifetime cost £28 million

Reasons for proposed pathway and impacts: Keyhaven

Reasons

- Allows intertidal habitats (saltmarsh, mudflats) to migrate inland naturally as sea level rises
- The new extensive saltmarsh will dissipate wave energy and reduce erosion
- Reduction in the flood risk at Keyhaven

Impacts

- Some loss of access (Saltgrass Lane)
- Need to re-route England Coast Path onto the new embankment
- Some visual and landscape impacts
- Changes to ground and surface water levels