

# Fact Sheets

Please use these facts sheets to help with concepts, terms, climate science and coastal change.



## Coastal Futures

- Climate resilient places - means bolstering resilience to flooding and coastal change across the UK, both now and in the face of climate change.
- Today's growth and infrastructure creates resilience in tomorrow's climate - making the right investment and planning decisions to secure sustainable growth and environmental improvements, as well as resilient infrastructure.
- MAGE serious game responds and adapts to flooding and coastal change - MAGE aims to help local people understand their risk to flooding and coastal change, and know their responsibilities and how to take action.

The CERMS projections of erosion risk around the coast are set to the time periods defined in the Shoreline Management Plans (SMPs). SMPs aim to safeguard a coastline segment without creating issues elsewhere. Before taking any decision to protect a section of coast, local authorities will undertake a cost-benefit analysis. If the cost of protecting the land outweighs the benefit, then the land may be left for nature to take its course. The scenario projections and time periods are:

- mid-century year of 2055
- the end of century year of 2105

## The UK coastal management approaches are:

- hold the line - maintain or upgrade protection from flooding or erosion by holding the shoreline in broadly the same position.
- no active intervention - maintain or encourage a more natural coastline, which may involve discussing adaptation to the risk from flooding or erosion.
- managed realignment - change the position of the shoreline in a controlled way, such as by slowing erosion or creating areas of habitat to help manage flooding.
- advance the line - actively move shoreline defences significantly seawards.

## Notes:

The coastal areas of MAGE geographically cover 11A, 11B, 11C of SMP22.

Further Information: <https://www.gov.uk/guidance/shoreline-management-plans>

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## Uncertainty

Environmental uncertainty in climate change refers to the unpredictable nature of future climate conditions and their impacts, stemming from various scientific and socio-economic factors. This uncertainty makes it difficult to predict the precise extent and timing of climate change effects, complicating mitigation and adaptation.

## Adaptation Pathways

- An adaptation pathway is a decision-making approach, that allows decision-makers to take actions under uncertainty. It enables you to identify what actions can be taken now and in the future.

## Coastal morphology

Coastal morphology refers to the study of the shape and form of coastlines, including their landforms and the processes that shape them. It encompasses the analysis of how coastlines evolve over time due to various factors like geological structure, wave action, and sea-level changes.

## Community Resilience

Resilience actions might include:

- nature based solutions
- sustainable drainage systems
- approaches for making existing properties more flood resilient
- encouraging local businesses to improve their flood resilience
- building community and voluntary sector capacity to respond and recover

Notes:

<https://www.adeptnet.org.uk/adaptationpathways>

<https://environment.data.gov.uk/flood-planning/explorer/cycle-2/home>

<https://climate-adapt.eea.europa.eu/en/knowledge/tools/uncertainty-guidance/topic1>

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## Buffer Zones

Coastal buffer zones are strategically designated areas adjacent to shorelines, vegetated with native species, that act as natural transitions between the coast and inland areas. These zones play a crucial role in coastal management by mitigating the impacts of erosion, flooding, and storm surges, protecting both human settlements and the environment.

## Managed Retreat

Coastal communities face increasing threats from rising sea levels and coastal erosion, making relocation a necessary consideration for coastal management. This involves planned relocation, also known as managed retreat, where communities move away from areas at high risk of coastal hazards.

## Flood Risk

There are 4 flood zones as defined by the Environment Agency; Flood Zone 1, 2, and 3a, 3b. The flood zones are based on the likelihood of an area flooding from rivers or the sea. Flood zones are catchments greater than 3km<sup>2</sup> and can be found on the Environment Agency Flood Map.

- Flood zone 1: low probability
- Flood zone 2: medium probability
- Flood zone 3a: high probability
- Flood zone 3b: The Functional Floodplain

### Notes:

<https://www.gov.uk/flood-and-coastal-erosion-risk-management-research-reports/coastal-morphological-modelling-for-decision-makers>

<https://thefloodhub.co.uk/blog/understanding-flood-risk/>

<https://flood-map-for-planning.service.gov.uk/>

<https://environment.data.gov.uk/dataset/96ab4342-82c1-4095-87f1-0082e8d84ef1>

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## Coastal Erosion

Coastal erosion can be managed through a combination of ‘hard’ and ‘soft’ engineering techniques.

- Hard engineering involves building structures like seawalls, breakwaters, and groynes to directly protect the coastline.
- Soft engineering focuses on using natural processes, such as beach nourishment, dune stabilization, and planting vegetation, to mitigate erosion. In some cases, it may be necessary to relocate communities and infrastructure away from eroding area.

## Examples of Soft Engineering

- Salt marshes are valuable for coastal management due to their ability to reduce wave energy, mitigate erosion, and protect against flooding. They act as natural buffers, absorbing wave energy and storm surges, and their vegetation helps to stabilize shorelines. Additionally, salt marshes filter runoff, improve water quality, and provide habitats for diverse wildlife.
- Sand dunes provide natural protection against storms and flooding. By planting marram grass in the area, sand is trapped and large dunes form, providing a barrier between the sea and the land.

## Integrated coastal zone management

Integrated coastal zone management (ICZM) is a dynamic, multidisciplinary and iterative process to promote sustainable management of coastal zones. It covers the full cycle of information collection, planning (in its broadest sense), decision making, management and monitoring of implementation. ICZM uses the informed participation and cooperation of all stakeholders to assess the societal goals in a given coastal area, and to take actions towards meeting these objectives (EEA).

Notes:

See EEA Glossary of Terms: <https://www.eea.europa.eu/help/glossary/eea-glossary/integrated-coastal-zone-management>



# Custom Fact Sheets

Please use this facts sheet to add additional notes, findings and custom information, relating to custom cards.



## Custom Facts

Large empty rectangular area for entering custom facts.



# Gameboard Legend

Classification of Gameboard Map Data



## MAGE Gameboard Legend

### 1km\_grid\_region

1km\_grid\_region

### Spot Height

Spot Height

### Contour

master  
ordinary  
meanHighWater  
meanLowWater

### Saltmarsh

Pioneer  
Spartina  
Mid-Low  
Upper Marsh  
Reedbeds  
Unclassified

### MotorwayJunction

MotorwayJunction

### RailwayStation

Light Rapid Transit Station  
Light Rapid Transit Station And London Underground Station  
Light Rapid Transit Station And Railway Station  
London Underground Station  
Railway Station  
Railway Station And London Underground Station

### ElectricityLine

ElectricityLine

### RailwayTrack

Multi Track  
Narrow Gauge  
Single Track

### RailwayTunnel

RailwayTunnel

### RoundaboutFill

A Road  
B Road  
Local Road  
Minor Road  
Primary Road  
Restricted Local Access Road

### RoadFill

Motorway  
Motorway, Collapsed Dual Carriageway  
Primary Road  
Primary Road, Collapsed Dual Carriageway  
A Road

A Road, Collapsed Dual Carriageway

B Road

B Road, Collapsed Dual Carriageway

Minor Road

Minor Road, Collapsed Dual Carriageway

Local Road

Local Access Road

Shared Use Carriageway

Restricted Local Access Road

Guided Busway Carriageway

### RoadTunnel

RoadTunnel

### SurfaceWater\_Line

SurfaceWater\_Line

Coastal sand dunes

Coastal sand dunes, Coastal vegetated shingle

Coastal sand dunes, Deciduous woodland

Coastal sand dunes, Lowland calcareous grassland

Coastal sand dunes, Lowland dry acid grassland

Coastal sand dunes, Lowland dry acid grassland, Lowland heathland

Coastal sand dunes, Lowland dry acid grassland, Lowland heathland

Coastal sand dunes, Lowland dry acid grassland, Lowland heathland

Coastal sand dunes, Lowland dry acid grassland, Lowland heathland

Coastal sand dunes, Lowland dry acid grassland, Lowland heathland

Coastal sand dunes, Lowland dry acid grassland, Lowland heathland

### TidalBoundary

High Water Mark  
Low Water Mark

### Glasshouse

Glasshouse

### Building

Building

### SurfaceWater

SurfaceWater

### Woodland

Woodland

### DTM

600  
0

### SeaDEM.asc

10.0086

-20.2333

Coastal sand dunes, Lowland fens

Coastal sand dunes, Lowland fens, Reedbeds

Coastal sand dunes, Lowland heathland

Coastal sand dunes, Lowland heathland

Coastal sand dunes, Maritime cliff and slope

Coastal sand dunes, Reedbeds

## Grid Squares 1km Squares

### A1. Map Scale - 1:25,000

### British National Grid



### Layer Data Used:

1. National Coastal Erosion Risk Mapping (NCERM) - National (2024). Scenarios to 2055 & 2105. Shoreline Management Plans (SMP).
2. DEFRA, EA OGL Data - Spatial Flood Defences Including Standardised Attributes (AIMS).
3. DEFRA, EA OGL Data - Saltmarsh Extents 2016-2019.
4. Marine Conservation Zones - Natural England.
5. Sites of Special Scientific Interest - Natural England.
6. DEFRA, EA OGL Data - SurfZone DEM 2019 (2m).
7. Ordnance Survey, Open Data, <https://osdatahub.os.uk/downloads/open>
8. DEFRA, Natural England, The Priority Habitat Inventory.