

KI : The UK has a range of diverse landscapes

|                       |   |
|-----------------------|---|
| Key terms             | Definitions   |
| Chemical weathering   | The decomposition of rock by a chemical change within the rock  |
| Deposition            | Occurs when material transported by the sea is dropped due to the sea losing energy                                       |
| Erosion               | The wearing away and removal of material by a moving force  |
| Longshore drift       | Zig zag movement of sediment along the shore caused by swash and backwash   |
| Mass movement         | The downhill movement of weathered material under the force of gravity  |
| Mechanical weathering | Weathering process that causes physical disintegration of rock without any change in the chemical composition of the rock |
| Sliding               | Loose material becomes saturated and flows downhill   |
| Slumping              | A whole segment of the cliff moves down slope along a saturated shear-plane or line of weakness                           |
| Transportation        | The movement of eroded material   |
| Waves                 | Ripples in the sea caused by the transfer of energy from the wind blowing over the surface of the sea                     |

## GCSE Physical landscapes in the UK – Coasts Knowledge Organiser

|   |   |
|---|---|
| Key terms   | Definitions   |
| Abrasion  | The wearing away of cliffs by sediment flung by breaking waves  |
| Attrition   | Erosion caused when rocks and boulders transported by waves bump into each other and break up into smaller pieces   |
| Hydraulic power   | Waves breaking compress air in cracks in a cliff  |
| Transportation : Longshore Drift                        |   |
| Swash – the movement of material up the beach           |   |
| Backwash – the movement of material back down the beach |   |
| Deposition – the dropping of material                   | <ul style="list-style-type: none"> <li>Where flow of water slows e.g. sheltered bays</li> <li>Where there are large flat beaches</li> <li>Where there are engineered structures e.g. groynes</li> </ul> |

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|---|---|
| Concordant coastline - Dorset   | Discordant Coastline - Devon  |
| Durdle Door (arch)<br>Lulworth Cove<br>Kimmeridge (Wave Cut Platforms)<br>Seacombe (cliffs) | Durlston Head (Headland)<br>Swanage bay<br>Old Harry (stack)<br>Studland sanddunes<br>Sandnaks (beach and spit) |

KI : Different management strategies can be used to protect coastlines from the effects of physical processes

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|-------------------|---|
| Beach nourishment | The addition of new material to a beach artificially. Cheap (£500,000 per 100 metres), easy to maintain, constant maintenance, sand from seabed destroys organisms  |
| Beach reprofiling | Changing the profile or shape of the beach  |
| Dune regeneration | Action taken to build up dunes and increase vegetation to strengthen the dunes and prevent excessive coastal retreat. Maintains natural environment, cheap, time consuming, areas off limit, limited area £200 – £2000 per 100 metres |
| Gabion            | Steel wire mesh filled with boulders. £50,000 pre 100 metres. Cheap, improves cliff management, unattractive, last 5 – 10 years   |
| Groyne            | Wooden barrier built out into the sea to stop longshore drift. £150,000 each, cheap, widen beach, unattractive, causes problems down the coast  |
| Hard engineering  | Use of concrete and large artificial structures to defend the coast   |
| Managed retreat   | Allowing cliff erosion to occur as nature takes its course. Cheap, natural process, loss of land, relocation of people  |
| Rock armour       | Large boulders dumped on the beach as part of the coastal defences. £20,000 per 100 metres, quick to build, expensive to transport rock, rocks might not blend in   |
| Sea wall          | A concrete wall to reflect the energy of the sea and prevent erosion. £5000 - £10,000 a metre, effective barrier, promenade on top, expensive, high maintenance   |
| Soft engineering  | Managing erosion by working with natural processes  |

KI : The coast is shaped by a number of physical processes

|   |  |
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| Constructive waves  | Destructive waves  |
| <p>Powerful swash<br/>Weaker backwash<br/>Long wave length<br/>Low wave height<br/>Gentle beach</p> | <p>Weak swash<br/>Strong backwash<br/>Short wave length<br/>Higher wave height<br/>Steep beach</p> |
| Types of weathering   |  |
| Mechanical weathering   | Disintegration / break up of rock e.g. freeze thaw   |
| Chemical weathering   | Caused by chemical changes e.g. carbonation, oxidation   |
| Mass movement   | Downward movement of material under the influence of gravity                                       |
| Sliding   | Blocks of rock slide downhill  |
| Slumping  | Rotational slip of saturated soil and weak rock  |
| Rock falls  | Fragments of rock break away from the cliff face   |

KI : Distinctive coastal landforms are the result of rock type, structure and physical processes

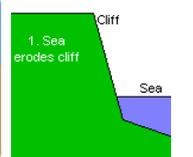
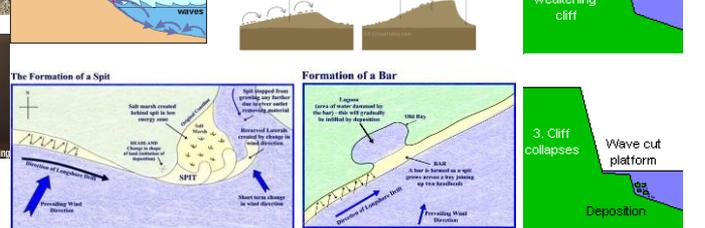
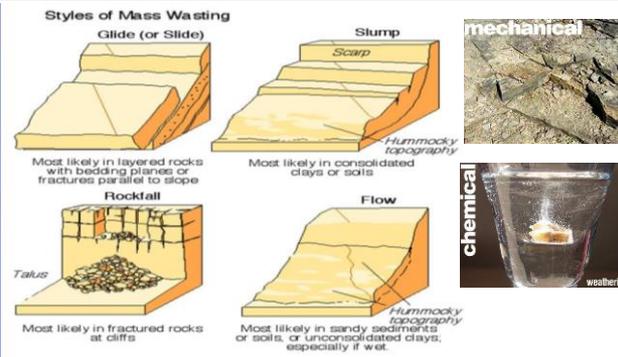
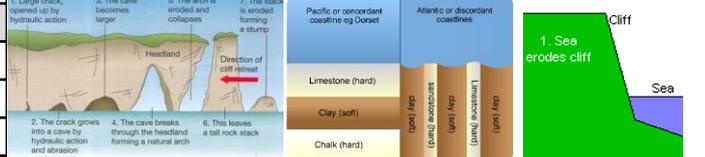
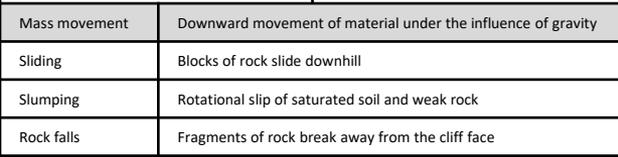
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| Key terms          | Definitions  |
| Arch               | A wave eroded passage through a headland   |
| Bar                | When a spit grows across a bay to create a lagoon  |
| Beach              | The zone of deposited material that extends from the low water line to the limit of storm waves        |
| Cave               | Large hole in the cliff caused by waves forcing their way into cracks in the cliff                     |
| Cliff              | A steep high rock face formed by weathering and erosion along the coastline                            |
| Headlands and bays | Headlands are promontories of resistant rock and bays lie in between where these have been eroded back |
| Sand dunes         | Coastal sand hill above the high tide mark   |
| Spit               | A finger of sediment extending from the shore caused by deposition                                     |
| Stack              | An isolated pillar of rock left when an arch has collapsed   |
| Wave cut platform  | A rocky level shelf representing the base of retreated cliffs  |

Example of a coastal management scheme : Medmerry coastal realignment

|                        |   |
|------------------------|---|
| Reasons for management | <ul style="list-style-type: none"> <li>Could not justify cost of new seawall</li> <li>Flat low lying land</li> <li>Role of climate change</li> <li>Shingle ridge only protection</li> <li>£20,000 a year spent on beach reprofiling</li> <li>If breached 348 properties, treatment plant and main road affected</li> <li>In 2008 there was £5 million damage</li> </ul> |
|------------------------|---|

|                     |   |
|---------------------|---|
| Management strategy | <ul style="list-style-type: none"> <li>Let sea flood low lying area</li> <li>Build new embankment 2 km in</li> <li>Channel to collect draining water</li> <li>Rock armour on embankment</li> <li>110 metre beach built</li> </ul> |
|---------------------|---|

|                                 |  |
|---------------------------------|--|
| Resulting effects and conflicts | <ul style="list-style-type: none"> <li>Creates saltmarsh as natural buffer leading to tourism</li> <li>Protected surrounding farmland and caravan parks</li> <li>£28 million embankments constructed inland</li> <li>1 in 1000 chance of a flood</li> <li>Cycle route and footpath</li> <li>Increase in tourism – 300ha nature reserve</li> <li>Recently flooded area helps fishing and salt marsh beef industry</li> <li>Expensive for area of sparse population</li> <li>Local residents and farmers resent land lost</li> </ul> |
|---------------------------------|--|



# The Jurassic Coast

For each type of feature that we have learned about in lessons, you need to annotate the map to show where it is found, and explain how it forms. This will be your case study sheet. You need to remember the names of the specific examples.

## Cove

Lulworth cove  
Water breaks through resistant Limestone.

Band of soft clay behind erodes much faster, hollowing out a cove.

The more resistant chalk slows the rate of erosion, causing a cliff and the oval shape of the cove.

The arch at Stair hole to the west has broken through the limestone there, and the process is repeating.

## Arch

There are lots of these in this area, e.g. Durdle Door  
Where Hydraulic pressure opens up crevices in the chalk and limestone headlands. These then enlarge into caves with the help of abrasion and corrosion, and eventually will cut through the headland to form an arch.

It's the stage before a stack

## Beach

Beaches are made up from eroded material that has been transported from elsewhere and then deposited by the sea. For this to occur, waves must have limited energy, so beaches often form in sheltered areas like bays

## Rotational Slumping

With rotational slumping, heavy rain is absorbed by unconsolidated material making up the cliff (often glacial till, or boulder clay). The cliff face becomes heavier and eventually it separates from the material behind at a rain-lubricated slip plane.

## Wave cut platform

Wave cut platforms are found all along this coast.

Hydraulic pressure and abrasion cut a notch in the base of the cliff.

Eventually the cliff above collapses, and the debris is carried off by the sea causing the cliff to retreat.

This leaves a flat area of rock at the base known as a wave cut platform.

## Headland

...such as Durdlestone Head

Formed where softer chalk in Swanage Bay is sandwiched between the hard limestone at Durdlestone Head, and the hard chalk of Ballard down (headland near Old Harry)

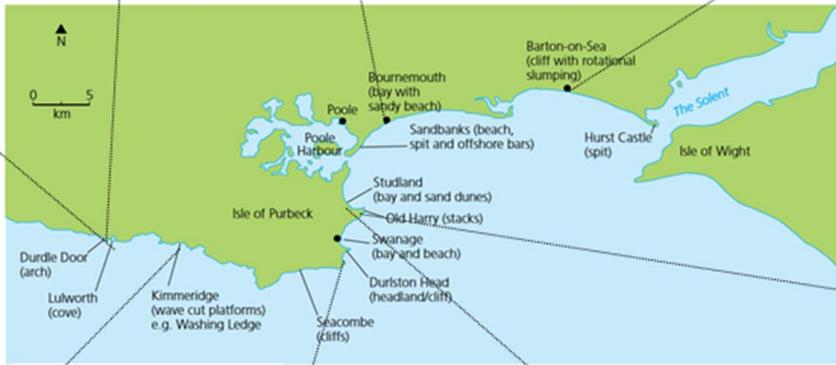
The different rates of erosion cause the hard rocks to erode slower and stick out. The softer rock erodes faster and forms a bay.

## Sand dunes

Are located in Studland Bay and form when wind blows sand from the beach into a sheltered area, where it is first stabilised by Marram grass, and later develops its own ecosystem. They are a natural defence against erosion.

## Old Harry (stacks)

Formed as the end result of an arch cutting through a headland then collapsing to leave a stack cut off from the mainland



## Example of a coastal management scheme Lyme Regis

Reasons for management

- Unstable cliffs
- Rapid erosion by powerful waves
- Many properties destroyed
- Sea walls often breached

Management strategy

Resulting effects and conflicts

- New sea walls and promenades
- Cliffs stabilised
- Wide sand and shingle beach created to absorb wave energy
- Extension of sea wall to protect beach
- Further new sea wall to the north and cliffs drained and stabilised.

- Visitor numbers have increased
- New defences are working well
- Harbour is better protected
- More visitors = more congestion and litter
- New defences are ugly? Spoil the landscape?
- The effects of the new sea walls elsewhere aren't known – they could cause problems