

Theme 2: CHANGING ENVIRONMENTS

Key Idea 2.1: Shaping the landscape - Coasts

THE COAST AS A SYSTEM

INPUTS	PROCESSES	OUTPUTS	
<p>WAVES</p> <p>Formed by wind interacting with the surface of the sea. The waves break when the base is slowed by the sea bed at the coast. The greater the fetch (the distance over which a wave has developed) the larger the waves are as the wind is able to blow over it for a greater amount of time. Determined by the prevailing wind direction (PWD, the direction from which the wind usually blows). This explains why the largest wave heights in the UK are in the SW.</p>	<p>EROSION: BREAKDOWN AND REMOVAL OF SEDIMENT.</p> <div style="display: flex; flex-wrap: wrap;"> <div style="width: 50%;"> <p>Hydraulic Action</p> </div> <div style="width: 50%;"> <p>Attrition</p> </div> <div style="width: 50%;"> <p>Abrasion</p> </div> <div style="width: 50%;"> <p>Corrosion</p> </div> </div>	<p>LANDFORMS</p> <div style="display: flex;"> <div style="width: 50%;"> <p>Headlands and bays:</p> <p>Where harder rock such as carboniferous limestone (chalk) is located adjacent to softer unconsolidated sediments (e.g clay and sand), the latter is eroded at a faster rate by the waves. The more resistant rock protrudes as a headland, and a bay forms from the softer rock. This is more sheltered from the wave energy and deposition occurs forming a sandy or shingle/peddle beach.</p> </div> <div style="width: 50%;"> <p>Wave cut notch and platform:</p> <p>Where the waves break at the base of sedimentary rock cliffs higher rates of erosion occur forming a wave cut notch.</p> </div> </div> <p>Caves, arches, stacks and stumps:</p> <p>Draw an annotated diagram to show how these form:</p>	
<p>EXTREME WEATHER EVENTS:</p> <p>Extreme low pressure weather events (depressions) cause sea levels to rise and the strong winds create very large waves that are pushed in front of the low pressure creating higher water levels known as storm surges.</p>	<p>MASS MOVEMENT:</p> <p>The sudden slumping/slip of sediment in cliffs due to water infiltration from above and erosion at the cliff base causes the cliff to collapse.</p>	<p>Draw an annotated diagram to show this:</p>	
<p>GEOLOGY</p> <p>The rock type at the coast affects rates of erosion. Cliffs on some sections of the coast are made of soft unconsolidated boulder clay (a deposit from the last glacial) which is eroded very easily. Other locations are made of rocks such as carboniferous limestone (chalk) which is much <i>more resistant</i> to erosion and explains the formation of headlands.</p>	<p>TRANSPORT: THE MOVEMENT OF SEDIMENT.</p>	<p>LONGSHORE DRIFT: THE TRANSPORT MECHANISM AT THE COAST WHEN THE WAVES APPROACH THE BEACH AT AN ANGLE.</p> <p>Beaches are dynamic environments. Where the PWD blows waves to beaches at an angle, the sediment is transported along the coastline in a process known as longshore drift (LSD). The movement of the wave up the beach is called swash (driven by the PWD) and back down again, backwash (driven by gravity).</p> <p>Draw an annotated diagram to show LSD:</p> <p>Much of the wave energy is absorbed by the beach so when they have high width and length it is a good natural defence against erosion.</p>	
<p>IMPACT OF HUMAN ACTIVITY</p> <p>Human activity also causes changes to the dynamic coastal system. Tourism that brings footfall to coastal footpaths can accelerate rates of erosion and weathering and make them unstable. Building structures for industry or coastal management also changes sediment dynamics and can have devastating knock-on effects at other parts of the coast.</p>	<p>DEPOSITION:</p> <p>The laying down of material due to loss of wave energy.</p>	<p>LANDFORMS:</p> <p>Spits:</p> <p>Estuaries:</p> <p>Form where large rivers meet the sea in relatively sheltered settings. At low tide the river deposits clay and silt forming deep mudflats and salt marshes. These represent key ecosystems supporting high biodiversity of plant and animals.</p>	