

Year 7 Geography

Topic 3 - What happens where the land meets the sea?



ISLE OF WIGHT COASTLINE

The **Isle of Wight** is made up of many layers of **sedimentary rock**, originally deposited in rivers, lakes and the sea over many millions of years. The **layers** are formed of fine grained minerals, sands and fossils to form rocks like mudstones, shales, sandstones, siltstones and limestone all help to create our unique coastline.

COASTAL PROCESSES

Waves are a significant factor in coastal processes. The intensity of the waves is dependent on the amount of energy it carries. Increased energy in waves allows for significantly higher waves, and allows for more frequent coastal erosion events.

Types of erosion



Hydraulic Action – As waves as they smash against the cliff, air becomes trapped in the cracks in the rock and causes the rock to break apart.

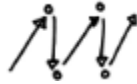


Abrasion - this is when rocks rub against each other to become smaller and more rounded.



Attrition - Rocks and pebbles and thrown at a cliff by the waves as they break causing more parts to break off

Longshore Drift - The transportation of beach material along the beach, according to the direction of the waves due to **prevailing wind** (the usual wind direction) **Swash** carries material up the beach. **Backwash** carries sediment down the beach due to gravity, at a 90° angle to the beach. This process repeats over and over transporting material along a beach until it meets a barrier.



HARD ENGINEERING

These forms of coastal management protect the coastline by building structures to reduce erosion.



Gabions - Rocks are placed in mesh cages placed in areas affected by erosion.



Rip Rap/Rock armour - Large boulders placed in areas vulnerable to erosion that break waves and absorb their energy



Groynes - Wooden or rock structures to trap sediment from longshore drift.



Sea Wall - placed at the foot of a cliff to prevent erosion

KEY VOCABULARY

Constructive waves help build and develop coastal areas. These waves are characterized by a strong swash and deposits sediments on to these coastlines.

Destructive waves destroy beaches. The waves are usually very high, have a short wavelength and are very frequent.

Fetch – the distance a wave travels

Fault – an area of weakness in the rock

Transportation - The movement of eroded material along and away from beaches and cliffs by waves.

Erosion - When rock is worn away over time

Deposition - When the sea loses energy, it drops the sand, rock particles and pebbles that it has been carrying.

COASTAL LANDFORMS



Cliff



Caves, arches
stacks and stumps



Headland
and bay



Wave cut
platform

These coastal landforms are formed by erosion, however different geology can also influence rates of erosion.

These coastal landforms are formed by deposition and will develop over time.



Spit



Bar

SOFT ENGINEERING

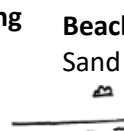
Protecting the coast by working with the nature, using sustainable methods.



Managed retreat - Removing any existing defences and allowing the land to flood.



Beach reprofiling
Sediment is redistributed build up the beach.



Beach Replenishment
Sand is pumped onto an existing beach to build it up