



Year 7: The Coastal Zone - Knowledge Organiser



What Powers Waves?

All waves on planet Earth are powered by the wind, unless they are a tsunami or tidal wave. 3 factors determine the size of a wave



Strength of the wind blowing the water.



Duration of time in which the wind has been blowing the water.

A → B



The Fetch – Over what distance has the wind been blowing over the water uninterrupted by land.

When a Wave Meets the Land

As a wave approaches the shore, friction with the seabed causes the wave to slow down. The wave's height will increase too as the shallower water force water upwards.

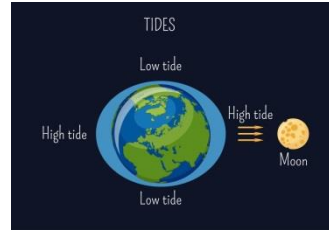
WAVE ANATOMY



Swash and Backwash

As shown in the diagram above, the swash and the backwash occur as a wave meets the shoreline. The swash is the movement of water (and the sediment it carries) up the beach. The backwash is the backwards movement of that wave back into the sea, pulled by the force of gravity.

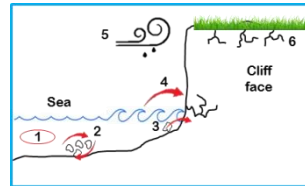
What are Tides?



High tides and low tides are caused by the moon. The moon's gravitational pull generates something called the tidal force. The tidal force causes Earth (and its water) to bulge out on the side closest to the moon and the side farthest from the moon. These bulges of water are high tides.

Coastal Processes

There are 3 main processes taking place on the coastlines around the world. Erosion, Transport and Deposition

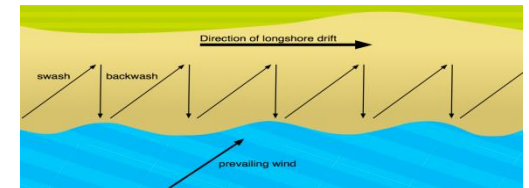


Erosion – This is the gradual wearing away of the coastline due to the action of waves and sediment

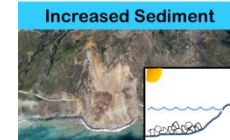
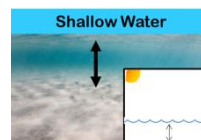
Check out the definitions for each using the numbers on this diagram and the 1-6 below!

- 6** Plant roots and burrowing animals can weaken a cliff face as they widen spaces and cracks within it. This is weathering.
- 2** Attrition is when sediment within the sea bumps and collides into other sediment, eroding it into smaller more rounded rocks.
- 4** Hydraulic action is the sheer force of large waves eroding the cliff face away.
- 5** The cliff face can be weakened by weathering from wind and rain. The rain may be acidic and could chemically weather the cliff face away
- 1** The sea water can be slightly acidic and this can erode the cliff face chemically. This process is completely invisible to the human eye.
- 3** Abrasion is when the movement of the sea causes sediment to collide with the cliff face, wearing it away like sandpaper to wood.

Transport– This is the movement of sediment along the coastline, mainly through a process called Longshore Drift. Here is a diagram to explain the process



Deposition – This is the process in which sediment is no longer being carried by the energy of the waves. 4 things can cause deposition to occur...

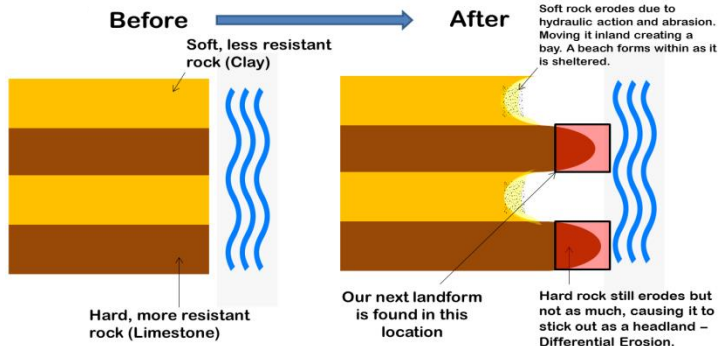




Year 7: The Coastal Zone - Knowledge Organiser

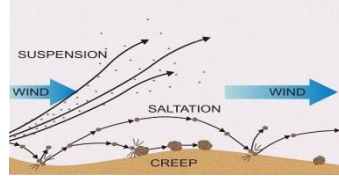


Headlands and Bays



On coastlines where the rock type alternates at a 90 degree angle to the sea, headlands and bays will form. This is because soft rock will erode faster than hard rock.

Aeolian Transport



Suspension is the movement of sediment in the air



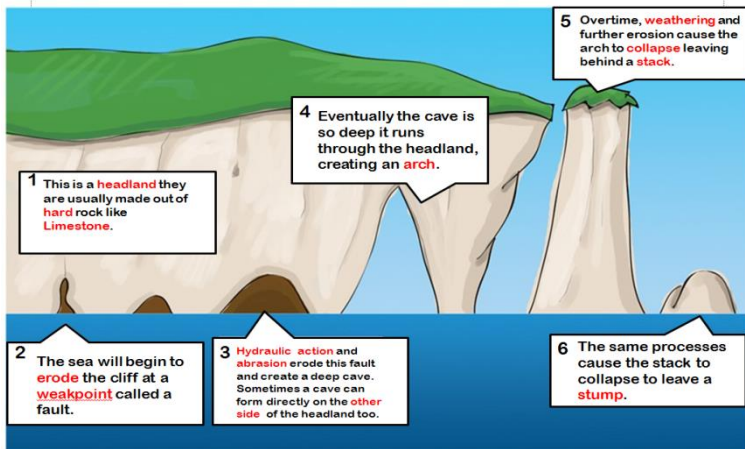
Saltation is the bouncing movement of sediment along the ground



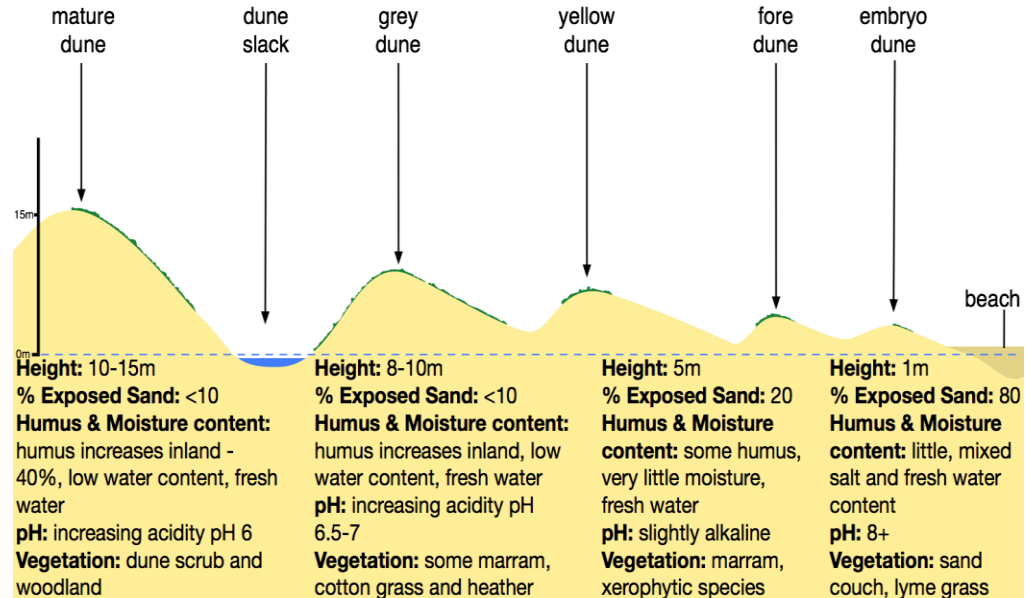
Traction is the rolling movement of heavier sediment that only strong winds will be able to move.



Formation of Caves, Arches Stack and Stumps



Anatomy of Sand Dunes





Year 7: The Coastal Zone - Knowledge Organiser



How do we use the Coast?

Land use - is the function of land - what it is used for. Land use varies from area to area. In rural areas (countryside) land use can include forestry and farming. In urban areas (towns and cities) land use could be housing or industry.

In Merseyside we use the coast in many ways...



Agriculture



Army shooting ranges and Naval bases



Wind Turbines



Tourism



Trading Ports



Who is Involved With the Coast?

People who play an active role in the management/use of the coast are known as stakeholders. For the Sefton coastline this would be...

Local residents, Environmental Groups, Sefton Council, Tourism Boards, The National Trust, The National Government (just to name a few!)

Applying your Knowledge to an OS Map

A lot of the topics you have studied in this module can be found on this map.

1. Headlands and Bays
2. Tourist/Uses for the coastline – Car parks, hotels, golf courses
3. Sea Stacks and Stumps
4. Sand Dunes