Year 8 - Coastal landscapes in the UK

How do waves form

- Waves are formed by wind blowing over the sea and causing friction
- This friction causes ripples to form which leads to waves.
- The distance the wind blows across the water is called fetch
- The longer the fetch, the bigger the waves.

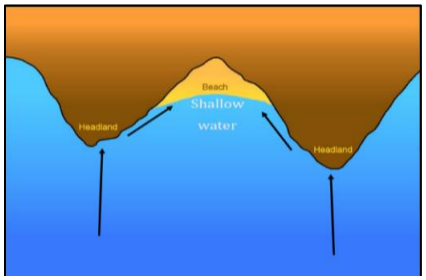
Deposition

When the sea loses energy, it drops the material it has been carrying. This is known as deposition. Deposition can occur on coastlines that have constructive waves.
Factors leading to deposition include:

- Waves starting to slow down and lose energy
- Shallow water
- Sheltered areas, E.g. bays
- Little or no wind

Beaches– *Depositional landform*

1. Destructive waves approach the coastline
2. These waves hit the headland and cause erosion
3. The eroded material is carried into the sheltered bay where the water becomes less deep.
4. This causes the waves to lose their energy and drop off any material (deposition) they are carrying. Over time this material builds up to form a beach.



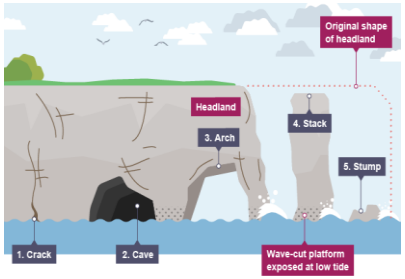
Erosion

Erosion is the wearing away of rock along the coastline caused by the power of the sea. There are 3 types of erosion:

- ***Hydraulic action*** *– air becomes trapped in the cracks in rocks causing the, to break apart.*
- ***Abrasion –*** *Pebbles grind along a rock platform as it becomes smoother*
- ***Attrition –*** *rocks knock against each other*

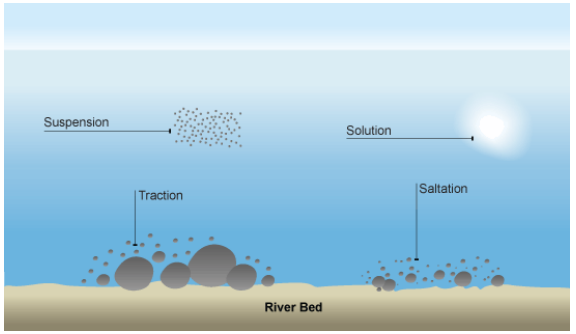
Caves, arches and stacks – ***Erosion landform***

1. Cracks are widened in the headland by erosion
2. The crack eventually opens up to form a cave.
3. The cave becomes larger and eventually breaks through the headland to form an arch.
4. The base of the arch continually becomes wider through further erosion, until its roof becomes too heavy and collapses into the sea. This leaves a stack



Transportation

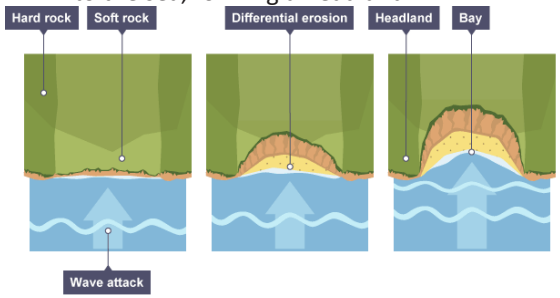
Beach material can be moved in four different ways.



Sediment is carried by the waves along the coastline. The movement of material is called longshore drift. Swash moves material onto the beach and backwash moves it out at a 90° angle.

Headlands and bays – ***Erosion landform***

1. Bands of soft rock such as clay are weaker therefore, they can be eroded quickly.
2. This process forms bays. A bay is further inland than the land surrounding it, usually with a beach.
3. Hard rock such as chalk is more resistant to the processes of erosion.
4. When the softer rock is eroded inwards, the hard rock sticks out into the sea, forming a headland.



Processes – how things work	Interconnections – how and why things change	Change – how things become different

Coastal management – Hard Engineering

Hard engineering involves building artificial structures which try to control natural processes

Sea wall - Concrete walls that are curved to reflect the energy back into the sea. (+) Creates and area that tourist can walk along (-) Very expensive (up to £2000per meter)

Rock armour - Large boulders placed at the foot of a cliff. They break the waves and absorb their energy. (+) can be used for fishing (-) The rocks can be expansive to transport

Gabions - **Rocks are held in mesh cages and placed in areas affected by erosion. (+) Cheap - £100 per meter (-) Looks unnatural**

Groynes - **Wooden or rock structures built out at right angles into the sea to trap sediment that moves via longshore drift.**
(+) Creates a bigger beach which can lead to more tourism

(-) increased erosion further down the shore

Coastal management – Soft engineering

Soft engineering does not involve building artificial structures, but takes a more sustainable and natural approach to managing the coast

Beach nourishment – **Sand is pumped onto an existing beach to build it up. (+) Larger beach means more tourism (-) Sand needs to constantly be added.**

Dune Regeneration - **Marram grass planted on sand dunes stabilises the dunes and helps to trap sand to build them up. (+) Makes additional habitats for animals (-) parts of the beach have to zoned of from the public which reduced the size of the beach.**

Managed retreat – **Controlled flooding of cheap low-lying coastal areas that reduces the power of the incoming waves and reduces erosion. (+) easy to complete (-) Farming land is often lost as the land is flooded**