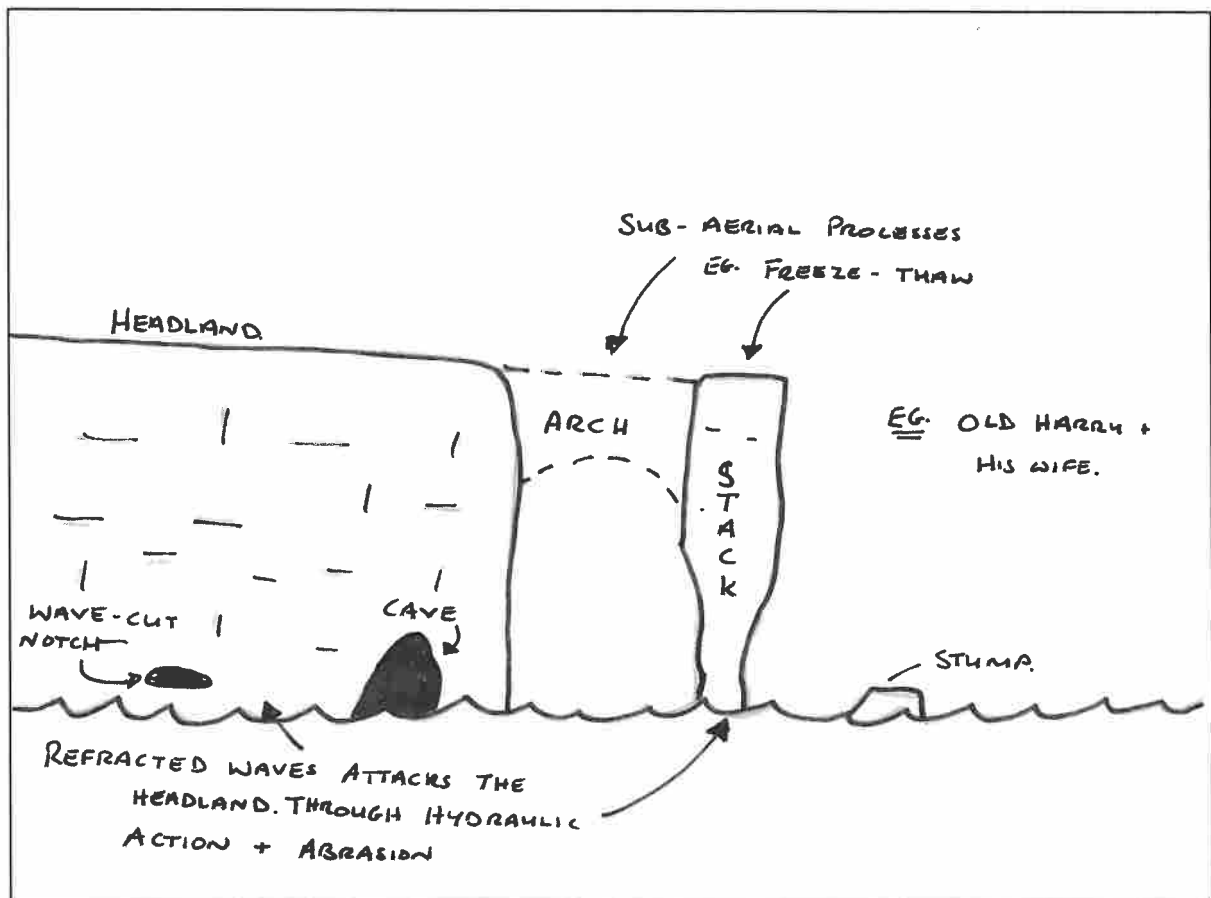


A2 Revision

The following are annotated diagrams and notes for explanations for both Coastal Systems and Volcanoes. It is important that places are known for reference to illustrate answers.

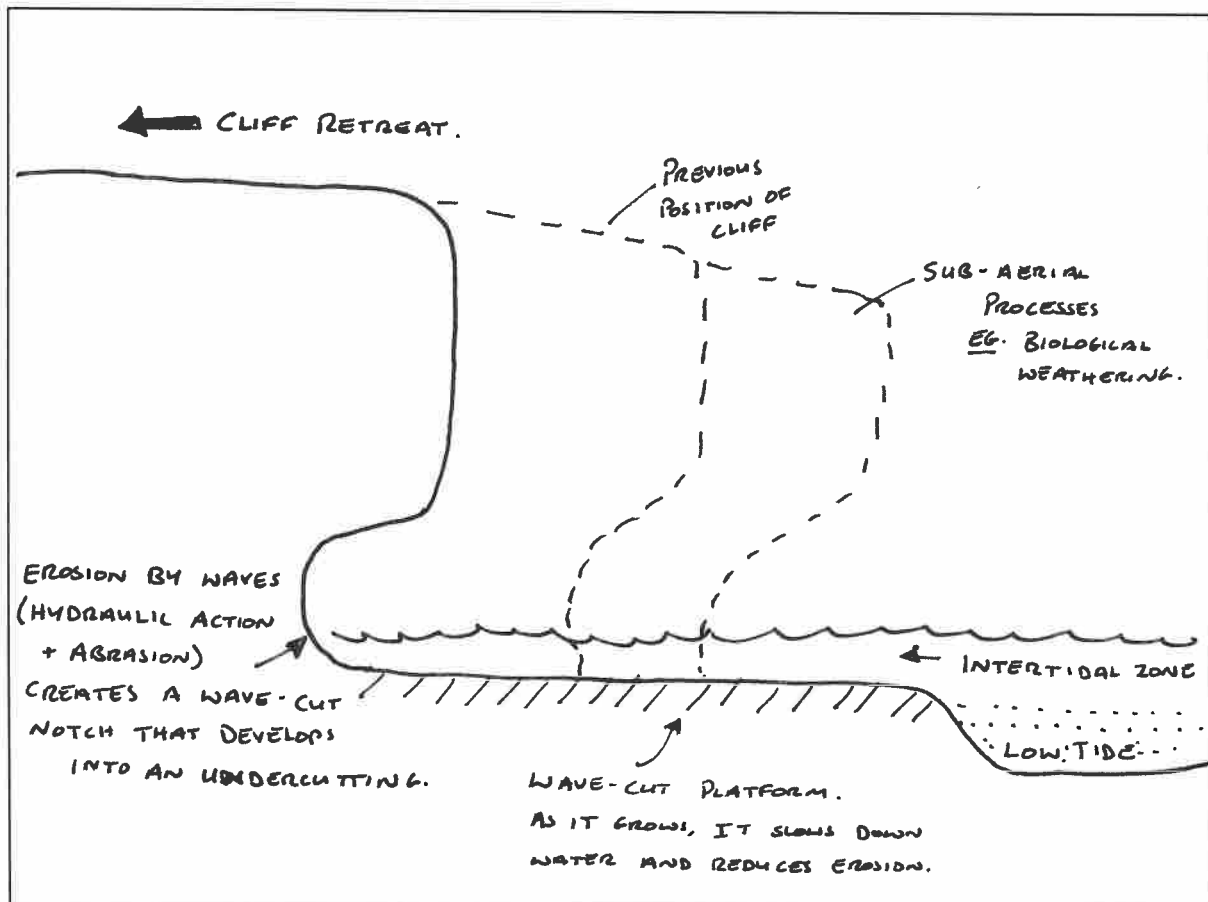
Erosional Landforms:

Cave, Arch, Stack:



- **Refracted waves** attack weakness in the headland through processes of erosion such as **hydraulic action** and **abrasion**. A **wave-cut notch** is formed.
- This wave action continues, enlarging the notch into a **cave**. The erosion continues to widen and deepen the cave until it erodes through the headland or it backs onto another cave coming from the other side.
- Here an **arch** is formed. Wave processes have less impact here, but **sub-aerial processes**, such as **freeze-thaw**, work on the arch, until it can no longer support its weight and collapses into the sea.
- A **stack** has now been formed, isolated and separate from the headland. Over time, sub-aerial and wave erosion cause the stack to collapse and form a **stump**. An example of this is **Old Harry and his wife** on the Dorset coast.

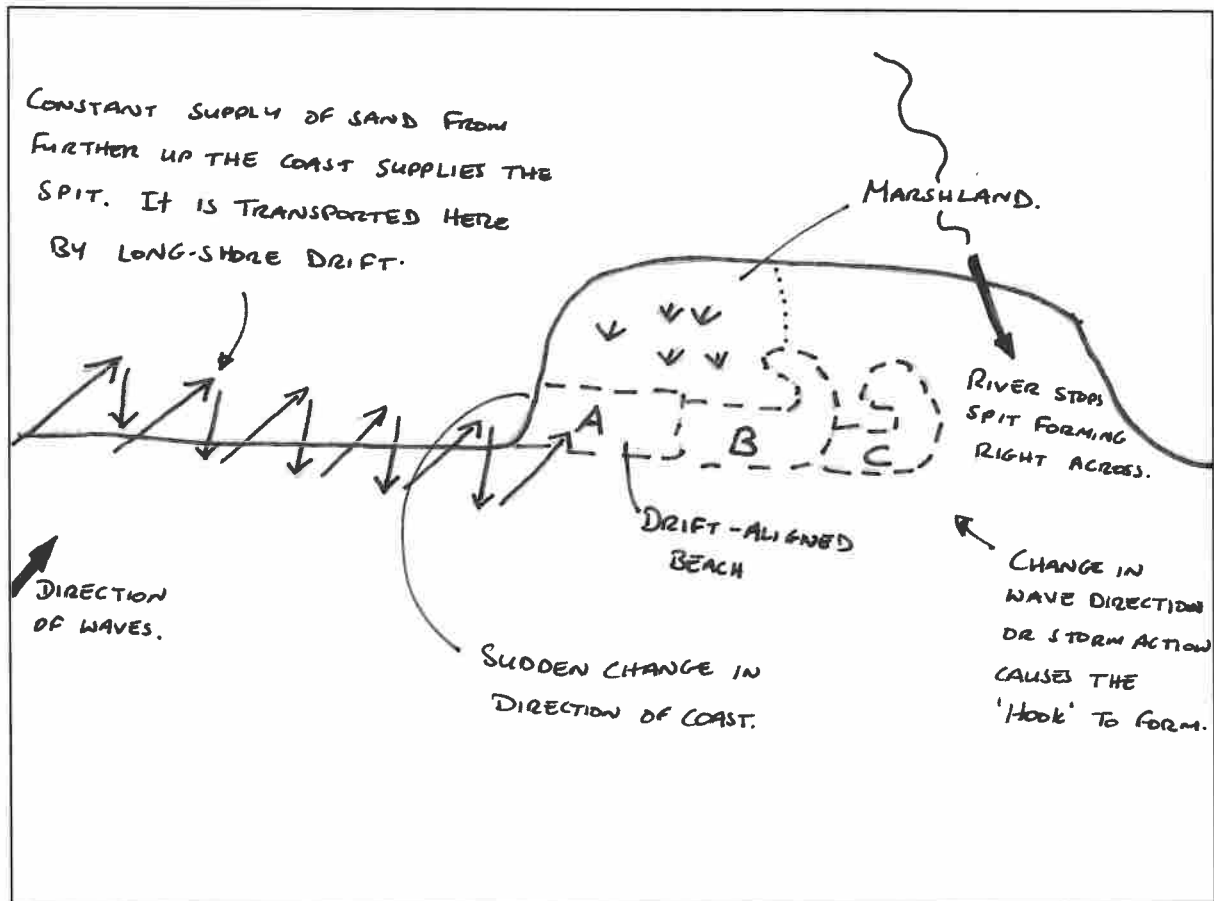
Wave-cut Platform:



- Waves attack the base of a cliff by **hydraulic action** and **abrasion** having the most impact. Most erosion takes place at the **intertidal zone**.
- A **wave-cut notch** is formed. The processes of erosion continue to deepen the notch to form an **undercutting**.
- As the undercutting deepens, the cliff can no longer support its weight and it collapses into the sea, giving temporary protection to the cliff from further wave erosion.
- Long-shore drift and erosion remove this material the erosion of the cliff is repeated. As the cliff retreats back, a wave-cut platform is left behind and is revealed at low tide.
- The erosion of the cliff will start to slow down with a greater length of platform as the water loses energy travelling over it and reduces the erosive power. An example of a wave-cut platform can be seen at Ballintoy in Co Antrim.

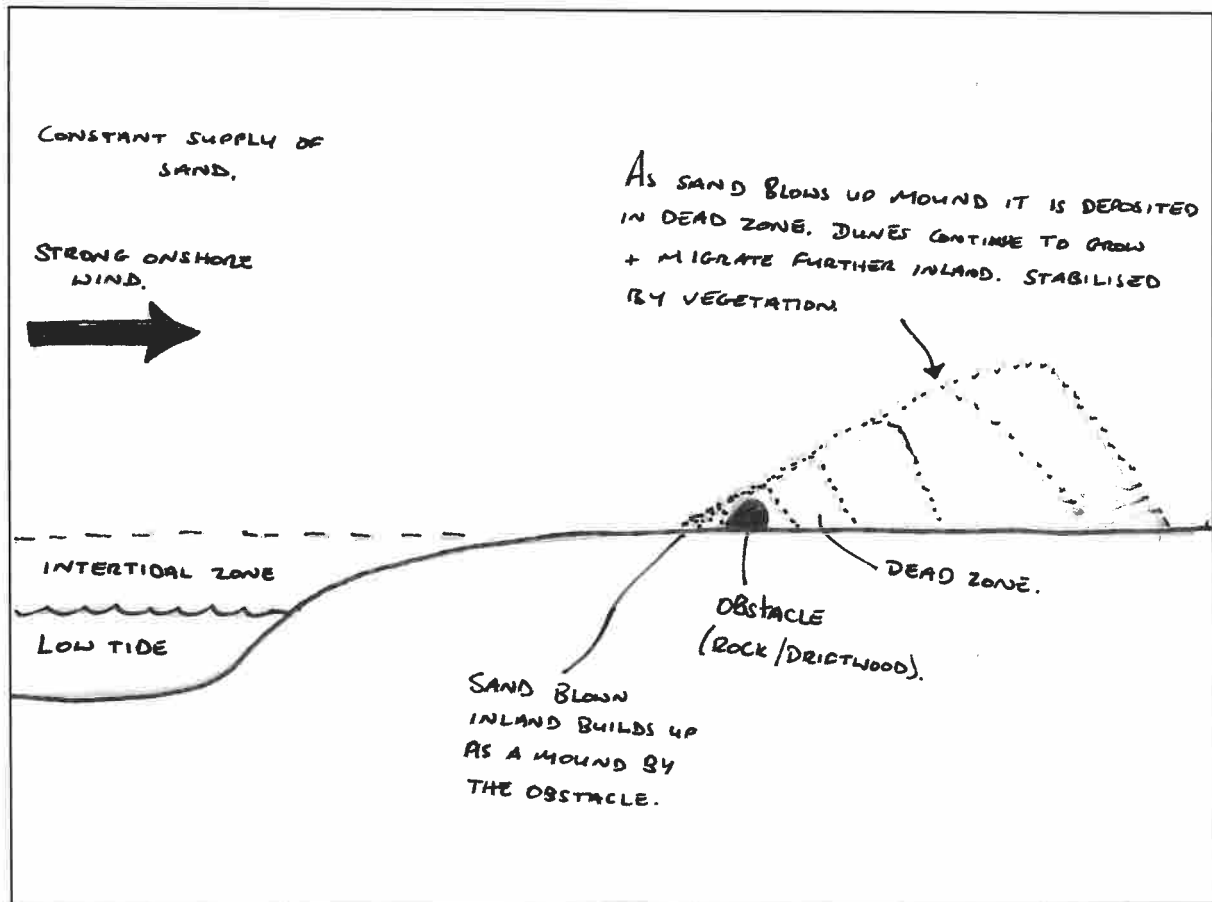
Depositional Landforms:

Spit:



- A **constant supply of sand**, from coastline eroded further back up the coast, is transported in a saw-tooth motion up the beach at an angle in the swash and back down again. This is known as **long-shore drift**.
- When the **direction of the coast changes** by an angle of greater than 30° (for example, at an estuary), long-shore drift can no longer continue. This sheltered part of the coast, sees waves lose energy and **deposition** occurs.
- The deposition builds up on the bed and eventually breaks through the water level to create a **drift-aligned beach** (A), which is an extension, straight out from the coast. Long-shore drift is allowed to continue and the spit will continue to extend outwards across the estuary. The end of the spit can become **hooked** due to the action of storms or because there is a sudden change in direction of the waves (B). Spits can have multiple hooks (C). An example of a **spit** can be found on the west coast of England at the Humber estuary, along the Holderness coastline at **Spurn Head**.
- Behind the spit the river can deposit material and it can build up and become colonised by plants and form **marshland**. This can continue to silt up and new land can be formed.

Sand Dunes:



- Sand dunes area depositional feature caused by sand being thrown up onto the beach by waves at the intertidal zone.
- Strong onshore winds blow this sand inland, until it comes to an obstacle (rock or driftwood) and the sand is deposited and starts to form a mound.
- More sand is blown up and the mound grows into an embryo dune. As the dune grows, sand is blown up the mound, but at the top the other side of the mound has a 'dead zone' with no wind and material drops down the other side.
- From the diagram we can see that as the dune grows in size, it continues to migrate further inland.
- Specially adapted plant life, such as marram grass and red fescue can take root in the harsh conditions. Their root systems bind the sand together and stabilises the dunes. Multiple dunes form and a dune system is formed with embryo dunes closest to the water and through the foredunes, yellow dunes into the oldest grey dunes. An example of such a dune system can be seen at Murlough Bay, outside Newcastle, Co Down.