Coasts, West Wittering beach and East Head

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What is the coast like at West Wittering beach and East Head?

- West Wittering beach is on the South coast of England.
- The sea along this coast is called The Solent and is part of the English Channel.
- Over 500,000 people visit every year, which makes this beach one of the most popular on the South Coast.
- West Wittering beach is made of sand and shingle (small pebbles) and gently slopes into the sea.
- East Head is a narrow strip of beach that projects out into the sea. We call this geographical feature a sand and shingle spit.
- East Head has sand dunes, which form a rare habitat for endangered plants and animals.

West Wittering beach and East Head are on the South East side of the Harbour.

Looking at the map to the right. Can you find East Head and West Wittering beach on the Harbour map?

Changing Coastline, Waves, Wind and Longshore drift

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The coastline is constantly changing. It is a dynamic landscape, shaped by the sea, tides, ocean currents and the weather.

Erosion is the wearing away of the land by the sea. It occurs on this coastline when powerful destructive **waves**, caused by storms and gales, erode the beach and dunes.

Sand and shingle can also be deposited (dropped) on beaches by the waves and currents. We call this this process **deposition**. At West Wittering beach we can see evidence of both erosion and deposition.

Beaches are formed and changed by the action of waves and the wind. Waves contain energy which can move the **sediment (sand and shingle)** on beaches.

Think of the waves moving back and forth on a beach. We call the movement of the wave up the beach the '**swash**'. The movement down towards the sea the '**backwash**'.

When waves travel up the beach at **an angle**, they can carry sediment along the beach. We call this process **longshore drift**. The incoming wave, the swash, moves sediment up the beach at an angle. The weaker backwash travels straight back down the beach and only takes some of the sediment with it. This continues over time in a zigzag pattern. The sediment is gradually moved along the length of the beach.

Along this coastline longshore drift has led to the formation of the sand spit, called East Head. This is a simple explanation of a very complicated process. The Isle of Wight and strong currents in the Solent also affect longshore drift on this coastline.

For more information look at our secondary student pages.

Destructive wave

Longshore drift diagram

Sea defences at West Wittering beach and East Head

We use sea defences to protect the land from being **flooded** or **eroded** (worn away) by the sea.

3 sea defences at West Wittering beach:

Groynes are wooden walls built at 90° to the beach. They help to prevent beach erosion by trapping **sand and shingle.** Wooden **seawalls** at the top of the beach were built to protect the land behind them from erosion by the sea.These are both examples of hard sea defences.

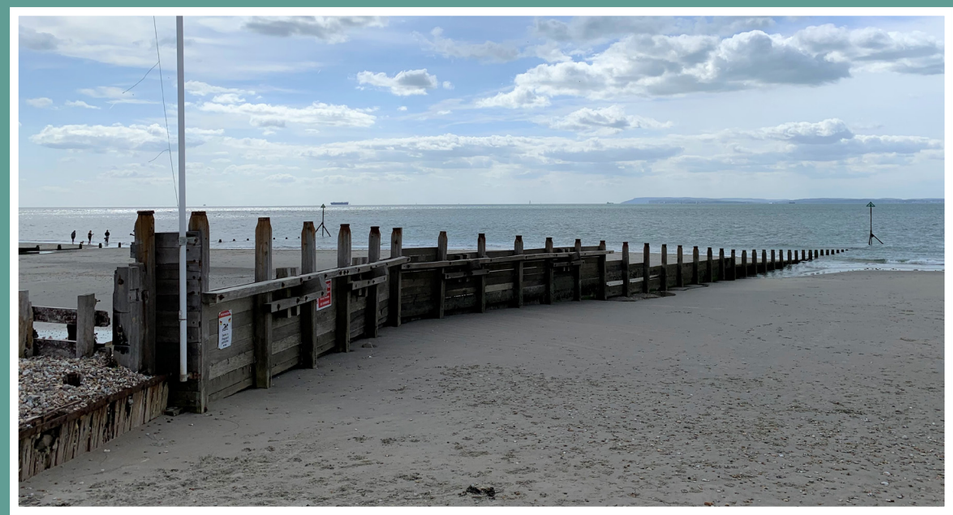
What do we call the process which moves sediment along the beach?

Rip-rap or rock armour is a sloping wall of large rocks. This type of sea defence is used at Snowhill Creek to protect the houses and land nearby. We call this method a hard sea defence.

Beach nourishment is a method using the natural materials of sand and shingle to build up the beach. At East Head these are strengthened by planting marram grass. The roots of the grass grow and help to hold the sand in place. We call this a soft sea defence.

What are the Tides?

The tide is the regular rise and fall of the sea. This happens twice a day and is caused by the gravitational pull of the moon and sun against the earth. There are two high tides and two low tides each day.



A groyne

Rip-Rap

Beach Nourishment

EAST HEAD

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The sand dunes at East Head are a very rare habitat and home to endangered animals like the ringed plover and skylark, and the elusive sand lizard.

Plants which are specially adapted for their environment grow on the sand dunes and the saltmarsh at East Head.

The dune plants can cope with a wide range of temperatures and very little water. The spiky marram grass has matted roots which hold the dunes together.

Saltmarsh plants grow on the mudflats and can grow in the salty water, which is very unusual as most plants can only grow in freshwater. The Saltmarsh area at East Head is called Snowhill Creek.

To find out more about the plants and animals of East Head look on our website.

Aerial photo of East Head and West Wittering Beach - Matt Simonds


Sand lizard


Sand dunes at East Head


Ringed plover