

Which processes are affecting the Holderness coastline?



The Holderness coast is one of the fastest eroding sections of shoreline in Europe. Many people live and work on this unstable stretch of land, so it needs to be carefully managed. In this lesson, we will use a GIS to find out what processes are threatening the Holderness coastline and how the area is being managed to deal with these hazards.



Where is the Holderness coastline?

Holderness is an area of coastline in the East Riding of Yorkshire.

The soft rocks underlying Holderness are particularly vulnerable to wave attack, making it one of the fastest eroding coastlines in Europe. As many people live and work on the land the erosion has to be carefully managed using sea defences.

Here are some sea defence strategies used along the Holderness coastline:

Strategy	How does it work?	Is it any good?
Wooden Groynes 	The wooden groynes dissipate wave energy and prevent longshore drift. Sediment builds up on the beach, protecting the coastline from wave attack.	Wooden groynes are expensive as they need foundations dug deep into the beach. They do work, but they will rot over time.
Rock Groynes 	Rock groynes work in a similar way as wooden groynes. The irregular surfaces of the rocks tend to dissipate wave energy more effectively than wooden groynes.	The rock has to be transported to the beach, which is expensive. However, rock groynes do not need foundations and they tend to last much longer than the wooden equivalent.
Sea Wall 	The sea wall absorbs the impact of the waves protecting the coastline behind. Many sea walls are curved, reflected the wave energy back out to sea.	Sea walls need very deep foundations and they can be difficult to build. They do protect the land well, but the concrete can erode over time.
Rock Armour 	Rock Armour (also known as Riprap) absorbs the impact of waves. The spaces between the large rocks slow the flow of water, reducing its ability to erode the land.	Rock Armour is an effective way to defend the coastline from erosion. However, opinion is divided about its appearance; some people like the effect whereas others consider it intrusive on the landscape.
Flood Gates 	Flood gates work in conjunction with a sea wall. During low tide the gates are left open, but during a particularly high tide they are closed to protect the land behind from flooding.	Flood gates are limited in their effectiveness as they always require a sea wall. They work well at reducing flooding but they do not generally prevent erosion. Some people think that flood gates look unattractive.
Warning signs 	Warning signs do not prevent erosion; they merely warn people of the dangers faced. They are usually found where the coastline is not fully protected.	Warning signs are a cheap way of protecting the general public, but they are not a solution to coastal erosion.