Create a fact file on the Holderness coast: Select key information in bullet points
The Holderness coastline runs from Flamborough Head to Spurn Point on the east coast of England. It is 61 kilometres in length, and is the fastest-eroding coastline in Europe. On parts of the Holderness Coast, the rate of erosion is as much as 8mm each day. This soon mounts up - it is almost 3 metres every year.

It is estimated that the coastline has retreated by over 400 metres during the last 2000 years. In the last 1000 years, 30 coastal villages have been swept into the sea. These villages disappeared before there were any coastal defence measures.

An article in the Yorkshire Post on 1st March 2007 claimed that nearly 70 houses were currently under threat on the Yorkshire coast. Their total worth was approximately £5 million.
Figure 3: The Holderness coast, showing its retreat since Roman times.

From: Geofile Online; September 2000. Coastal Erosion - back to nature, by Neil Punnett
The Holderness Coastline is made up of soft material called BOULDER CLAY (sand and clay deposited during the last glacial period - it is very easily eroded.

Most of the eroded material is carried out to sea.

Rest of the material is carried south by Longshore Drift.
The prevailing wind is from the north-east. Most of the cliffs along this coastline are soft so they erode very easily. They are made from boulder clay - material that was eroded by glaciers during the last Ice Age and dumped on top of underlying rocks. Boulder clay has a texture that is more like soil than rock. It is very easily eroded by the incoming waves.

The cliffs are especially vulnerable after heavy or prolonged rainfall - as we already know from Holbeck Hall Hotel in Scarborough (just a few kilometres further north). Most of the eroded material is carried out to sea as fine mud, but a lot is carried south by longshore drift.
Hornsea:
The small town of Hornsea is between the towns of Bridlington and Withernsea. It is a high-density urban area with many tourist attractions. The economy is based largely on tourism. Hornsea has been protected by building wooden groynes and a concrete sea wall. These defences were first built in the early 1900s and they have been well-maintained over the years, so the location of the coastline here has changed very little over time. Recently, a rock revetment has been built to the south of Hornsea. This helps protect the caravan park.
**Mappleton:**
Mappleton is a small village of about 50 properties 4 kilometres to the south-east of the town of Hornsea. It has experienced very rapid erosion over the years. As a result, the main coastal road is only 50 metres from the cliff edge at its closest point. A rock groyne and some rock armour was built in Mappleton in 1992. Granite was shipped in from Sweden and unloaded onto the beach to build the armour and groyne at a cost of almost £2 million.

The groyne aims to keep material on the beach in front of the cliffs by stopping longshore drift. It has been quite an effective defence (look at the how to see how much wider and deeper the updrift side of the beach is), but there have been knock-on effects further along the coast where the beaches are being starved of material that they used to receive through longshore drift. The rock armour aims to stop the waves from crashing onto the cliffs, protecting the B1242 coastal road.
Withernsea:
The town of Withernsea is about 16 kilometres north of Spurn Point. It is where the B1242 meets the A1033. The beach is made up of sand and shingle and it is protected by a series of wooden groynes. The cliffs are protected by a concrete sea wall, rock revetments and rock armour. The central section of the Withernsea seafront is protected by the concrete seawall, rock armour and a rock groyne. At the north and south ends, there are concrete revetments and a small amount of rock armour. There is a lot of rock armour to the south of the town.
Annotate three locations with: what has been done and how effective is it?

The Holderness Coastline is made up of soft material called BOULDER CLAY (sand and clay deposited during the last glacial period - it is very easily eroded.

Most of the eroded material is carried out to sea.