The Holderness Coast

Learning Objective:

-**Investigate** hard engineering strategies along the Holderness Coast

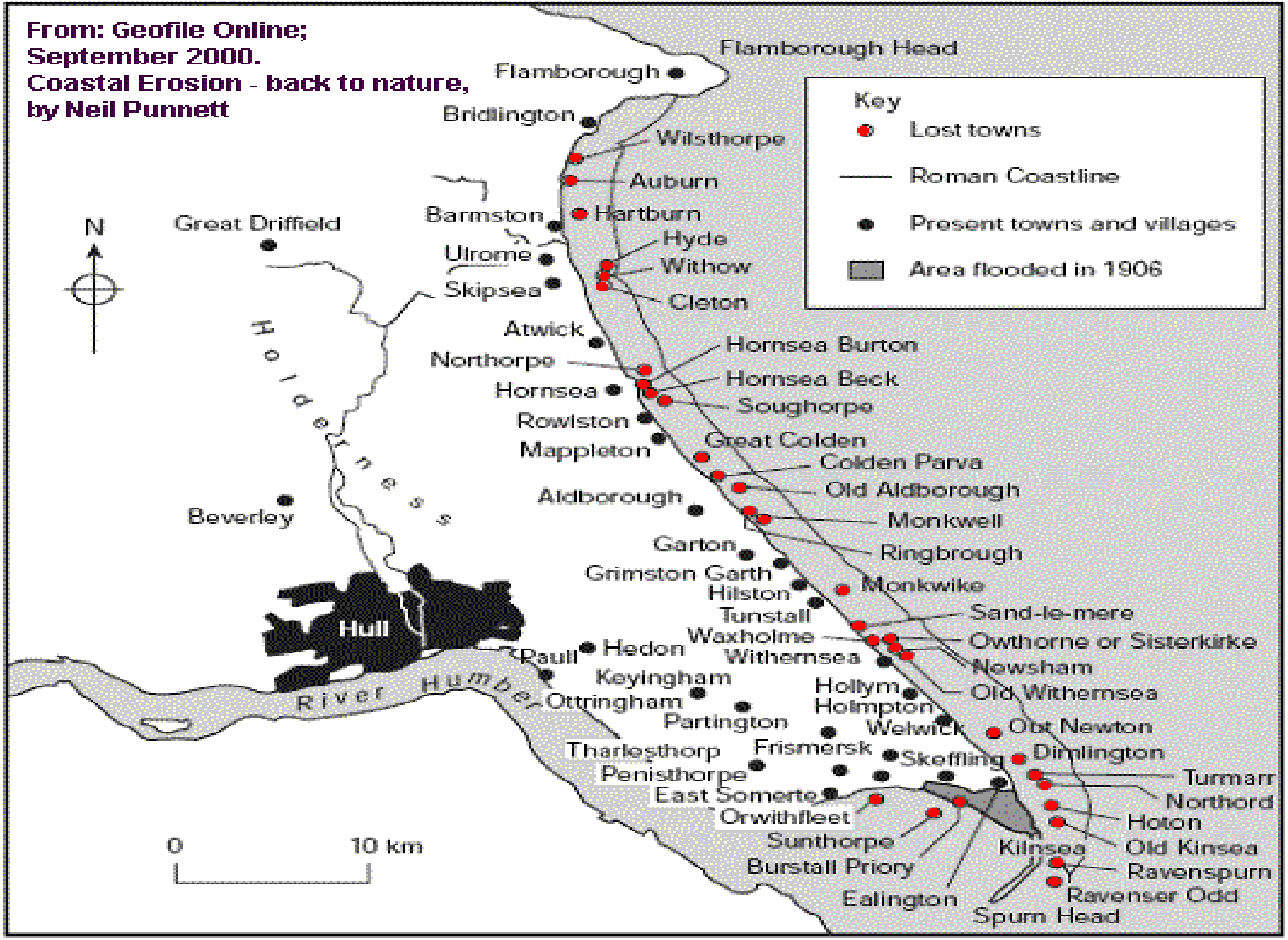
Learning Outcomes:

-**Explain** why stretches of the coastline are eroded

-**Analyse** the management strategies used along the Holderness coastline

-**Judge** the success of the management

Figure 3: The Holderness coast, showing its retreat since Roman times



- The **Holderness coastline** runs from **Flamborough Head** to **Spurn Point** on the east coast of England.

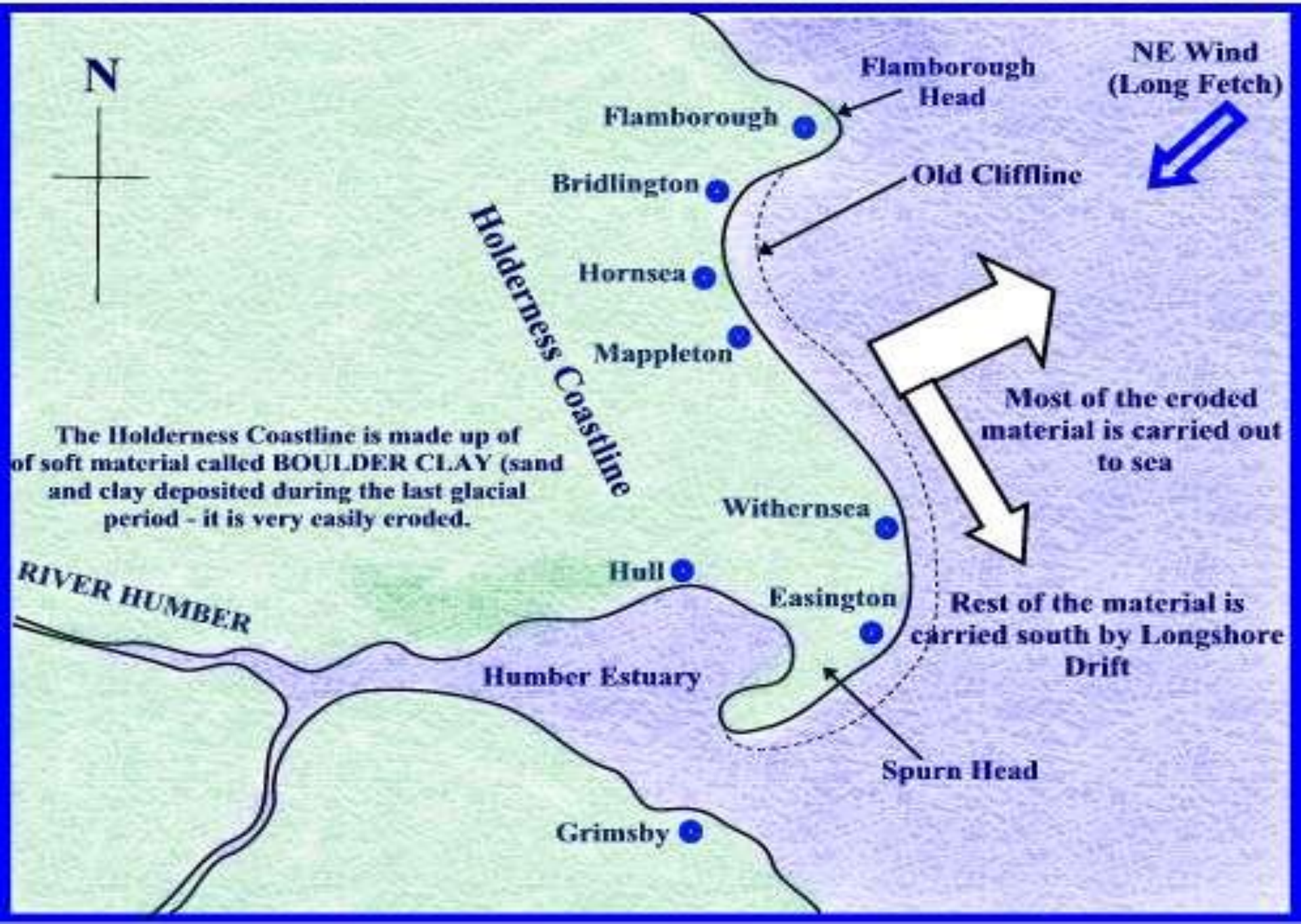
- It is **61 km** in length, and is the fastest-eroding coastline in **Europe**.

- On parts of the Holderness Coast about **1.8m** of land is lost each year. In **Great Cowden**, it is over **10m** each 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.

- Over 11km of this coastline is managed using hard engineering. This is because there are **towns** and **villages** where people live, important **infrastructure** like the **B1242** road and the **gas terminal** at **Easington** supplies **25%** of the UK's gas and is right on the edge of the cliff.

The Holderness Coastline: Coastal Erosion and Defence



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**. This 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.

Link to Withernsea defences

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.

Mappleton:

Mappleton is a small village to the SE of Hornsea. It has experienced rapid erosion over the years. As a result, the main coastal road is only 50 metres from the cliff edge. In 1991 £2 million was spent to protect 450m of coastline. Hard engineering was used successfully in two ways:

- **Rock armour** along the base of the cliff absorbs wave power and protects the B1242 coastal road.
- Two **rock groynes** keeps material on the beach in front of the cliffs by stopping longshore drift. This has protected the village of 50 properties.

However, the strategies have led to **conflict**. There have been knock-on effects further south down the coast:

- Beaches are **starved** of material that they used to receive through longshore drift, leading to erosion. This is worst at Great Cowden.
- Loss of **habitat** for wildlife at Spurn Head.
- Rock armour was necessary by the **gas terminal** at Easington.
- Bays are changing into headlands – sand is **disappearing**.

To what extent can the coastal management strategies on the Holderness coast be considered a ***success***? (6 marks)