It has been estimated that 2,300 km of the 17,000 km of the UK coastline is, or has been defended against the sea. However, despite these defences, nearly 5,000 kms, or more than a quarter of the coast line is being eroded.

In December 2014, the Department of Environment, Food and Rural Affairs (Defra) reported that more than 200 homes are at risk of being lost to coastal erosion in the next 20 years. It also forecasts that nearly 7,000 properties, worth more than £1 billion, in England and Wales will be allowed to fall into the sea this century!

Student task

Using the template on page 2, place the following bullet points into the cause, effect or response:

- Beaches are narrow, providing little protection for the cliffs
- Coastal defences e.g. groynes, seawalls, riprap/rock armour, revetments and gabions etc.
- Council purchase of cliff top land
- Demolition of cliff top properties
- Erosion of coastline
- Hold the line / retreat the line (do nothing)
- Integrated coastal zone management
- Lack of insurance for buildings
- Land slips/slides/slumps
- Large waves undermine the cliffs through abrasion, hydraulic action, freeze thaw weathering and solution etc.
- Longshore drift carries eroded material southwards
- Loss of communications
- Loss of farms, caravan parks and other businesses (economic impact)
- Loss of habitat (environmental impact)
- Loss of housing (social impact)
- Migration
- Mud flows
- Rock fall and cliff collapse
- The coastal bedrock is an unconsolidated weak glacial boulder clays (tills) easily weathered and eroded
- The prevailing north easterly waves attack the coast

The Holderness coastline of Yorkshire, one of Europe's fastest eroding coastlines with an average annual rate of erosion of approximately one to two metres per year. In places today's coastline is now up to four kilometres inland from where it was in Roman times.

Causes	
Effects	
Primary effects	Secondary effects
Responses N.B. There are different responses at different locations dependent on different advantages, disadvantages and costs. Some responses will involve hard rather than soft engineering.	
Short term responses	Long term responses

Suggested answers

The Holderness coastline of Yorkshire, one of Europe's fastest eroding coastlines with an average annual rate of erosion of approximately one to two metres per year. In places today's coastline is now up to four kilometres inland from where it was in Roman times

Causes

- The coastal bedrock is an unconsolidated weak glacial boulder clays (tills) easily weathered and eroded.
- Beaches are narrow, providing little protection for the cliffs.
- The prevailing north easterly waves attack the coast.
- Large waves undermine the cliffs through abrasion, hydraulic action, freeze thaw weathering and solution etc.
- Longshore drift carries eroded material southwards.

Effects

Primary effects

- Land slips/slides/slumps
- Mud flows
- Rock fall and cliff collapse
- Erosion of coastline

Secondary effects

- Loss of housing (social impact)
- Loss of farms, caravan parks and other businesses (economic impact)
- Loss of habitat (environmental impact)
- Loss of communications

Responses

N.B. There are different responses at different locations dependent on different advantages, disadvantages and costs. Some responses will involve hard rather than soft engineering.

Short term responses

- Council purchase of cliff top land
- Demolition of cliff top properties
- Lack of insurance for buildings

Long term responses

- Integrated coastal zone management
- Coastal defences e.g. groynes, seawalls, riprap/rock armour, revetments and gabions etc.
- Migration
- Hold the line / retreat the line (do nothing)

Extension task: Students could be asked to provide named examples for each effect and response.