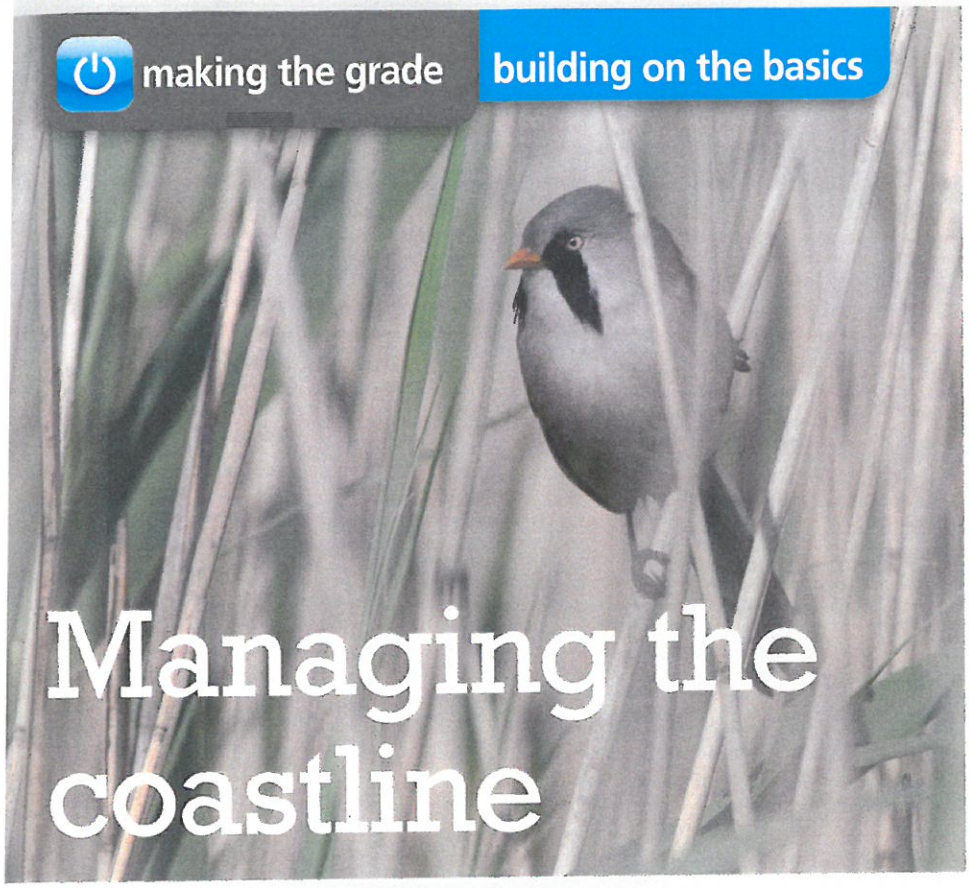
making the grade | building on the basics



Managing the coastline

Coastal studies are integral to most AS courses. This Building on the Basics looks at shoreline management plans using a case study from Suffolk, and discusses how you might use such a case study in exam answers

The coast is the zone where land meets sea. People wish to live, work and enjoy leisure time at the coast, and its landscapes and biodiversity need protection. Coastal management is not new. Plans have long been in place to balance the conflicting demands placed on our coastline, and to defend it against marine erosion and coastal flooding.

There is no shortage of excellent material available, in textbooks and online, showing how the coast is being managed. Approaches include hard and soft engineering strategies (see the article on bioprotection in this issue, pages 37–41) which each have positive and negative impacts.

The case study from Suffolk in this Building on the Basics shows an approach to integrating hard and soft engineering methods in conditions where climate change and associated sea-level rise are creating an increased level of threat to our coastline. It outlines the **shoreline management plan** (SMP) approach to managing England's coastline and provides a case study showing how the policy is being applied.

What are SMPs?

Shoreline management plans (SMPs) were established in 1995. They are an important part of the Department for Environment Food and Rural Affairs' (Defra) strategy for flood and coastal defence. In the past, coastal management was organised along administrative boundaries. Local councils were each responsible for the section of coastline falling within their boundaries. Since the coast is a dynamic system, and defences in one area impact on others further along the coast, this approach was not integrated enough.

Now the coastline of England and Wales has been divided into 11 units which cut across these districts. Figure 1 is a map showing the SMP areas. Each SMP unit consists of a self-contained **sediment cell**. This means that management can be coordinated within each zone. Each unit is further divided into sub-zones.

A shoreline management plan is

> a non-statutory document that provides a broad assessment of the long-term risks associated with coastal processes. It offers guidance to coastal engineers and managers to identify and recommend strategic and sustainable coastal defence policy options for particular lengths of coast to reduce these risks to people, the developed and natural environments.
>
> (Defra)

Figure 1 Sediment cells in England and Wales

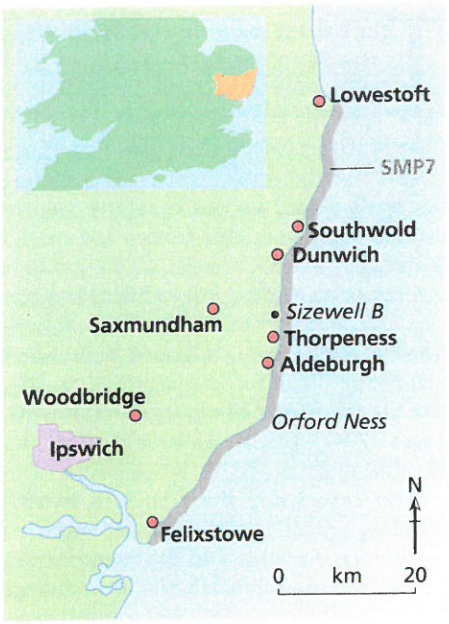


Figure 2 The location of the case-study area

The key requirements of SMPs are, according to Defra:

- To identify and implement a 'preferred plan', taking account of technical, environmental, social and economic factors over three time periods: 0–20 years, 20–50 years and 50–100 years.
- To include consultation with all interested parties (which may result in the plans being altered).
- To take account of existing planning initiatives and legislative requirements and use the best present knowledge on the possible effects of climate change and sea-level rise.

Management strategies should be taken from the following four options:

- **Hold the line (HTL)** Maintain or upgrade the level of protection provided by defences.
- **Advance the line (ATL)** Build new defences seaward of existing defences.
- **Managed realignment (MR)** Allow retreat of shoreline with management to control or limit movement.
- **No active intervention (NAI)** Make no investment in providing or maintaining defences

Case study: Dunwich to Sizewell, Suffolk

Suffolk is on the east coast of England. It is one of the areas most at risk from sea-level rise and the increased threat of storm surges due to global warming. Figure 2 shows the location of Suffolk and SMP7 which runs from Lowestoft to Felixstowe, a distance of 72 km. Recordings at Lowestoft by the Environmental Change Network indicate that average sea level has increased by 3.4 mm per year since 1956. It could rise by an additional 42 cm by the 2090s, posing a significantly greater risk of flooding to this area.

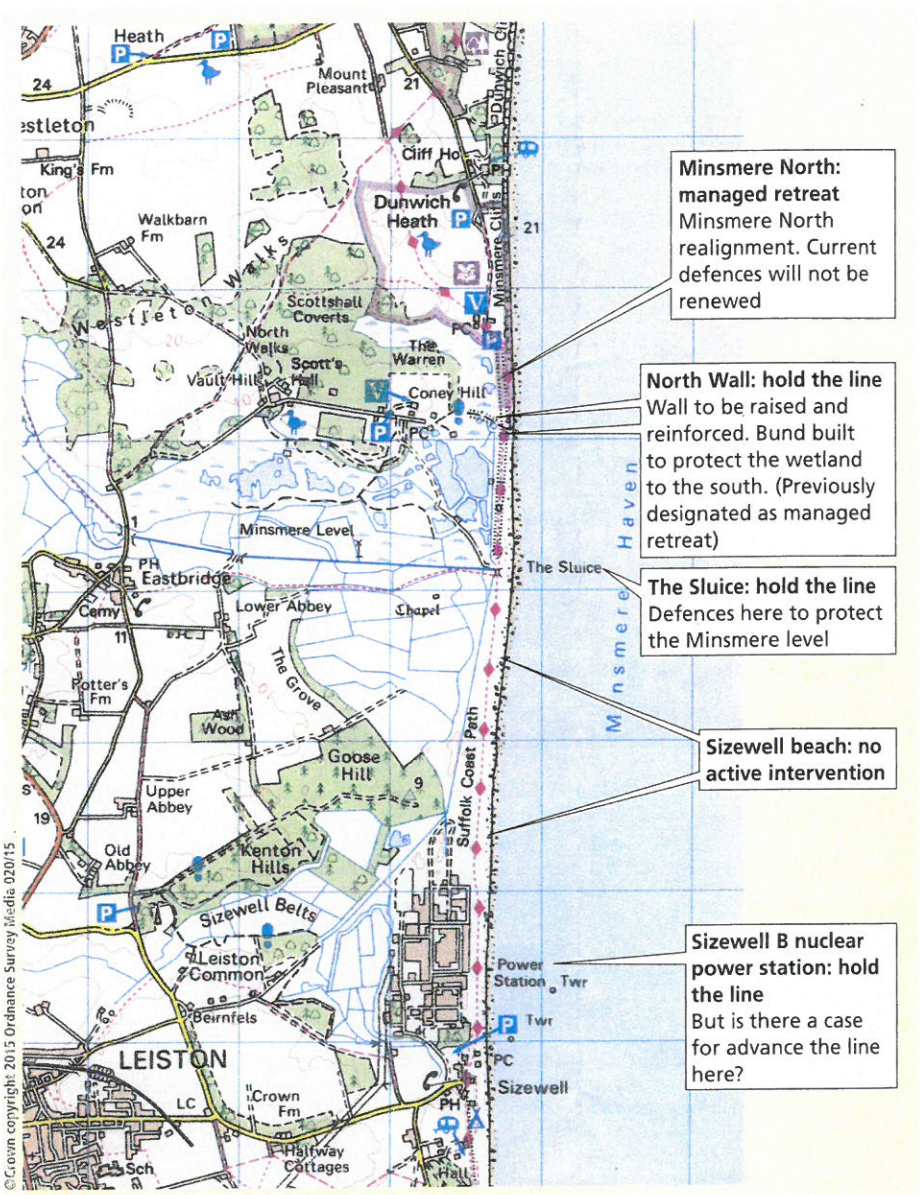


Figure 3 SMP7 in practice at Minsmere and Sizewell

SMP 7 is divided into seven subzones of which number 4 covers the zone from Dunwich to Thorpeness. In 1998 the whole stretch, apart from the defences in front of Sizewell B nuclear power station, which have to be maintained, was designated an area to be no longer actively defended. There were existing structures in places which had previously been maintained.

Figure 3 shows this location and how, by 2010, the SMP had been used to undertake more precise coastal management planning. The main reason for this was the importance of the **RSPB** reserve at Minsmere. It is one of the UK's key locations for wetland and reedbed habitats and is internationally recognised as a **Ramsar site**. Following close consultation with the RSPB, local council and a large range of interested parties, the Environment Agency agreed to fund and implement a £1 million protection strategy which was completed in February 2012.

Using this case study in exam answers

The Minsmere example can be used in a variety of ways.

Short answers

It has clear examples of 'holding the line', 'managed retreat' and 'no active intervention'. These could be used as concise examples in shorter answers about ways of managing the coast. The reinforced North Wall and bunds are also good examples of hard-engineering strategies.

Glossary

Ramsar site Wetland of international importance, designated under the Ramsar Convention of 1971. Wetlands are defined as areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including marine water less than 6 metres deep at low tide.

RSPB The Royal Society for the Protection of Birds was established in 1889 to draw attention to the use of egrets' and other exotic birds' feathers in women's hats. Today, it is the UK's biggest nature conservation charity.

Sediment cell A stretch of coastline in which sediment circulates, so that it is self contained in the input, transportation and deposition of sediment. The cell will receive inputs from inland such as sediment from rivers.

Shoreline management plan (SMP) A government document that provides a broad assessment of the long-term risks associated with coastal processes. Established in 1995, replacing earlier policies.

Top: Island Mere, part of the reed beds at Minsmere with Sizewell behind. Both are protected by the SMP, but for different reasons

Inset: The Sluice at Minsmere

Balancing demands

The area taken as a whole illustrates the complexity of managing the coastal zone. Within a length of coastline of a few kilometres there are a variety of issues to be considered, all of which need careful management. It would be a useful case study of how a stretch of coast is being managed. It would work particularly well if the question posed was about the need to balance different demands. The protection given to Minsmere highlights the way in which environmental considerations are given greater priority than perhaps they were in the past — it shows how natural environments, as well as those with centres of population, can and should be valued. It could be used as a contrast to an area where mainly economic or social interests are being protected.

Sustainable management

The case study also shows how it is not always possible to 'hold the line' along the coast but that a solution can be found by collaborating with different parties. The RSPB agreed to the managed realignment of the reed-bed area north of the North Wall in order to allow the protection of the more important wetland and reed-bed area to the south. There is an acceptance that entire areas cannot necessarily be protected.

The strategy at Minsmere is for the next 20–50 years, not just the short term. It is therefore a good example of sustainability in practice.

Controversial issues

The future management of the defences at the site of the Sizewell nuclear power station is a good example of controversy about coastal management and the need to look further ahead. The SMP in this location stipulates continued defence of the coastline in front of the power station. However, it does not at present commit to creating better defences over time. The go-ahead has been given to build Sizewell C, and better coastal defences may be needed as sea-level rise continues and the risk of storm surges increases. There is a local campaign for 'advance the line' at this point. A synoptic link to an energy topic (nuclear in this case) could be made, with a comment on energy, safety and security.

SMPs are part of the wider topic of coastal management. What they are, and how they can be put into practice, is well illustrated by the Minsmere example. It would be useful in answering a specific question on SMPs, but the material could also be well applied in answering broader questions about 'managing the coastline'. The themes of sustainability and collaboration (working together) are core to the SMP strategy and could be effectively discussed using the case-study material. The material also raises much broader questions about the difficulties of producing plans and agreement for the longer term. This is not just a 'coastal' issue.

Further reading

A government outline of SMPs is at **www.tinyurl.com/ox7zxc9**. See how your coastal area of study fits in with the SMP for that area.

An article summarising the changes at Minsmere: **www.tinyurl.com/lnwxwqw**

Campaign group against Sizewell C: **www.tinyurl.com/qexcg7r** Pressure is growing for better defences at Sizewell.

Questions for discussion

1 How do your own studies of coastal management fit in with the SMP for the location you have studied?
2 How does Minsmere compare to your own case studies?
3 What issues/conflicts arise at your particular location? How far can the SMP resolve them?
4 Is Minsmere a model for other areas or a notable exception?
5 Why is there still so much pressure to 'hold the line' at so many locations?

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