

# Oxford Revise | Geography | Answers

## Chapter 21 Coastal change and conflict

All exemplar answers given are worth full marks.

1.

a) Tourist facilities; port and harbour developments

*Accept suitable alternative answers.*

b)

i) Beach nourishment is the addition of sand or pebbles which has been dredged from offshore to an existing beach.

Dune stabilisation involves the planting of marram grass, the long roots of which hold the dunes together.

*Accept suitable alternative answers.*

ii) Beach nourishment is relatively cheap and easy to maintain but it needs constant maintenance or restoration because of the natural processes of erosion and longshore drift.

c) Rock armour is comprised of large rocks placed at the foot of a cliff or at the top of a beach. They break up the waves and absorb their energy, so protecting the coast behind.

2.

a)

i) 2046

ii) Sports centre

iii) 204 482

iv) Hotel 207483; Tourist information centre; 202476 Caravan parks 2146

b)

i) SW

ii) D

iii) NNW to SSE

iv) The people owning the properties on the top of the cliff are likely to be in favour of the hard engineering erosion measures. This is because without the protection the cliffs will be eroded, and their properties will fall into the sea.

v) The groyne is stopping the natural movement of sediments along the coast and is maintaining the beach at Hornsea. Sand is a natural form of protection to the cliffs, reducing the effects of erosion by the sea. Beyond the last groyne the shape of the coast shows the coast has been eroded further back compared with the coast further north next to Hornsea. This southern area is not receiving the sand

as it is stopped by the groynes. When waves cross a beach, they lose their energy due to friction. This means that they can attack the base of the cliff causing cliff recession.

- c) Urban development – Housing is popular near the coast for people who commute into large cities but prefer to live in more attractive areas. Coastal areas have the reputation of being healthier due to the sea air. Older people often wish to retire to coastal areas. With the growth of coastal housing, other developments are required, which will take up space and will need an infrastructure to be built to support population growth.
- d) Coastal management will have positive and negative impacts, so a cost-benefit analysis is necessary to judge whether the strategy adopted is the most appropriate. Attempts to reduce coastal erosion can be beneficial for the development of tourism if groynes maintain the existence of a beach. On the other hand, locations further along the coast may be deprived of sand, with negative effects on the tourism industry and an increase in coastal erosion. Some hard engineering strategies, such as sea walls, may help protect an area from the sea, but they will have a negative visual impact. All coastal management strategies will cost money, but if the land away from the coast is not particularly valuable or productive it may not be economically viable to undertake the work. There may be different opinions regarding the appropriateness of the management plan. A plan that satisfies the needs of tourists may not be acceptable for the residents of a coastal town. Increased tourism may bring congestion, pollution, and an over reliance on tourist-related shops. Any management plan proposed will need to consider its social, economic, and environmental impacts. These may mean that the least expensive plan that appears to be the most cost effective may not necessarily be the one that is the most appropriate.
- e) An ICZM plan looks at a whole stretch of coastline rather than individual small stretches covering a particular beach or bay. This allows all social, economic, and environmental costs and benefits to be considered. This may reduce the possibility of a strategy put in place in one part of the coast having a negative impact on another. Where there is longshore drift, placing groynes on one part of the coast will deprive an area further along of a supply of sand, which could affect tourism and increase the rate of erosion. An ICZM may suggest that simpler, environmentally friendly soft engineering strategies may prove as effective as a more expensive hard engineering approach. A larger overall plan may mean that there may be a range of different approaches to each section of the whole coast. This means that it recognises there may be stretches of coast within the zone being considered where a do-nothing approach would be appropriate. If the land inland is of limited economic value, then the sea could be left to change the coast without any human influence, apart from adopting a managed retreat approach. An ICZM approach is becoming more popular because it can consider the viewpoints of different users of the coast and gives the opportunity of reducing the possibility of conflict between them.

3.

- a) C
- b) Several factors will influence the rate of erosion along a particular stretch of coast. The type of wave will be important. If they have a high wave height, short wavelength, and a strong backwash they will be destructive in nature. Erosion will be effective especially if the offshore gradient is steep and there are stormy weather conditions. Waves which have a long fetch and have travelled a considerable distance will be more likely to be erosive when reaching land. The geology and structure of the coastline is also important. Resistant rocks parallel to the coast on a concordant shoreline will protect any less resistant

rock further land and so the rate of erosion will be relatively slow. Where different types of rock strata are at an angle to the coast then the less resistant rock have no protection and so will more easily eroded.