GCSE Lesson 2

Coastal Management at Dawlish Warren

There are four approaches to coastal management:

- Hold the Line – to maintain or upgrade existing defences to retain the coastline at its current position
- Advance the Line – build new defences to move the coastline seaward
- Managed Realignment – controlled realignment (retreat or advance) in balance with natural coastal processes
- No active intervention – leaving the coast to develop naturally

1. **The diagram below illustrates one of the four approaches.**



(a) Which approach is illustrated by the diagram? _____

(b) Explain your answer.

_____

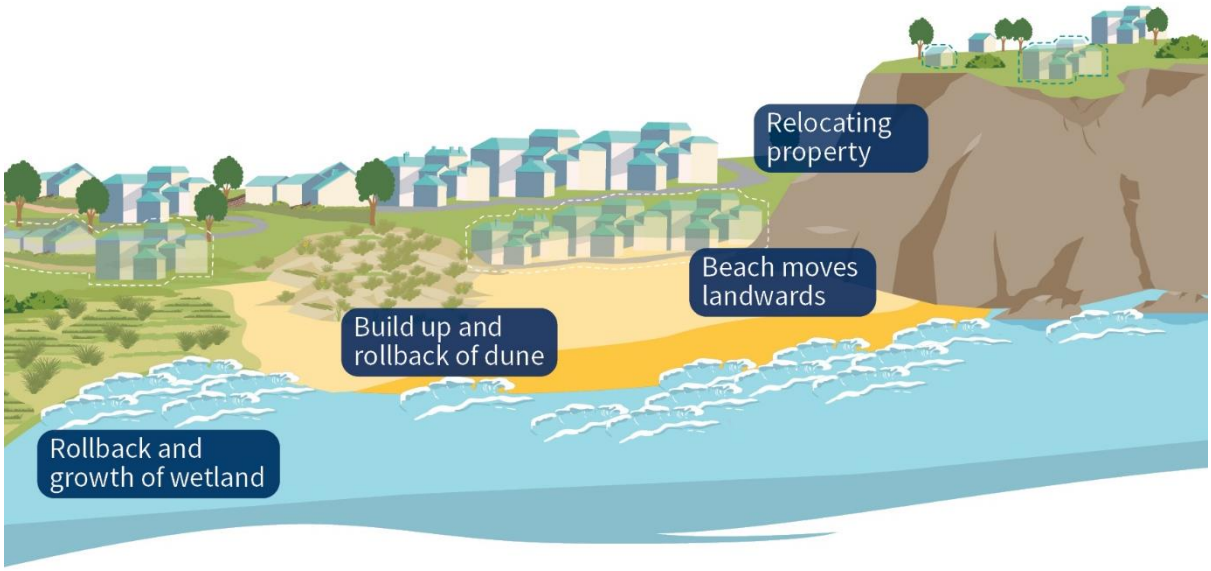
_____

(c) Suggest why this approach may not be considered as sustainable.

_____

_____

2. The diagram below illustrates a sustainable approach to coastal management.



(a) What is the name of this approach to coastal management? _____

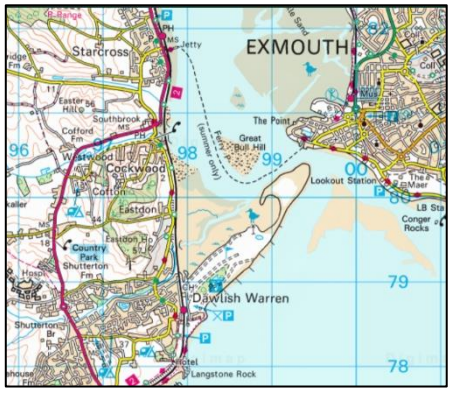
(b) Explain why it is sustainable.

_____

_____

3. The maps below show the location of the spit at Dawlish Warren.





1km

(a) Describe the location of Dawlish Warren spit.

_____

_____

(b) In what direction has the spit grown out from the land? _____

(c) Calculate the length of the spit. ____ km

(d) Is the spit made from sand or shingle? _____

(e) On the map, locate and label the salt marsh on the northern edge of the spit.

4. The aerial photo shows Dawlish Warren spit.



(a) In what direction is the photo looking? _____

(b) Locate and label the following: the River Exe; Exmouth; salt marsh and mudflats

(c) Give 3 reasons why the spit at Dawlish Warren has been protected.

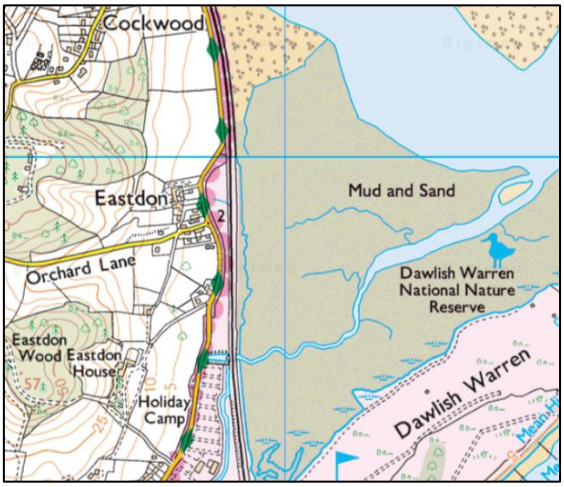
1:_____

2:_____

3:_____

The long-term policy (to 2105) for managing the spit itself is that of 'No Active Intervention'. This will enable the spit to develop naturally and sustainably. Neighbouring stretches of coastline are likely to be afforded a higher level of protection to prevent the high economic and social costs of flooding as sea levels rise.

5. **The OS 1:25,000 map below shows the coastal management unit from Cockwood to The Warren.**



Using evidence from the map, suggest why a 'Hold the Line' approach has been adopted for this stretch of coast.

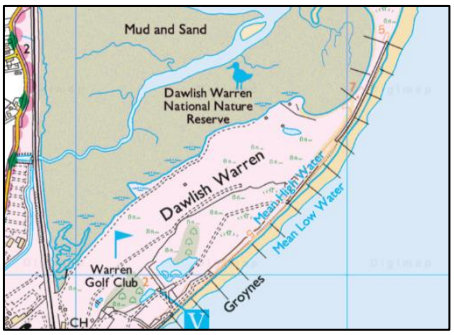
_____

_____

6. **The 1:25,000 OS map and aerial photo show the central management unit at Dawlish Warren. Use the pattern of the footpaths to locate the photo on the map.**
   (a) On the map, locate and label groynes.
   (b) What is the evidence on the map and on the photo alongside that the groynes are no longer very effective.

_____

_____





7. The photo below shows a measure of coastal protection.



(a) Name the type of coastal protection shown in the photo. _____

(b) Using evidence from the photo, describe the purpose of this type of coastal defence.

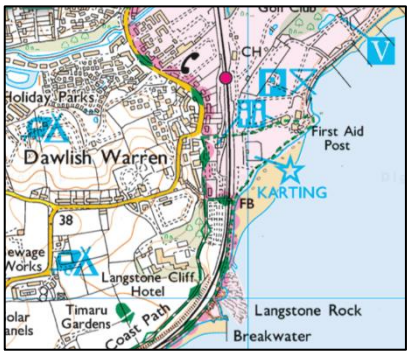
_____

_____

(c) Using evidence from the photo, suggest why this coastal defence is no longer very effective.

_____

8. The 1:50,000 OS map shows the management unit Dawlish Warren (west). The aerial photo shows coast near the go-kart circuit.





(a) On the photo, locate and label the railway and the Go-Kart circuit

(b) On the photo, locate and label the sea wall and the rock armour.

(c) Using evidence from the map and the photo, suggest why this stretch of coastline has been defended to 'Hold the Line'.

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9. In 2017, the Environment Agency and Teignbridge District Council completed a £12m scheme to protect the spit and enhance the amenity value of the beach.

- Timber groynes were replaced or modified
- Construction of a new revetment between groynes 2 and 3
- At the 'neck' of the spit - where it narrows before the recurved tip - the burial of 450m long 'geotube' filled with sand to provide extra protection during storms.
- Offshore dredging and beach nourishment pumped over 250,000 cubic metres of sand onto the beach
- Removal of gabions to enable sand dunes to develop naturally

10. Look at the photo below which summarises the management scheme (2017).



(a) Locate and draw a circle around the 'neck' of the spit.

(b) Suggest why it was decided to improve defences at the 'neck' of the spit.

(c) The photo below shows the geotube. Use annotated labels to describe the characteristics and purpose of the geotube.



(d) Using evidence from the photo above, describe how beach nourishment is being used to strengthen the defences at the 'neck' of the spit.

_____

_____

(e) Gabions have been removed from the beach. Suggest advantages and disadvantages of this management action.

Advantages	Disadvantages

(f) To what extent can the management scheme (2017) be considered a success?

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_____

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