9

Name: ..... **Form:** .....

See **pages 20 and 21** of *The Settlement Book*

Hazardous settings

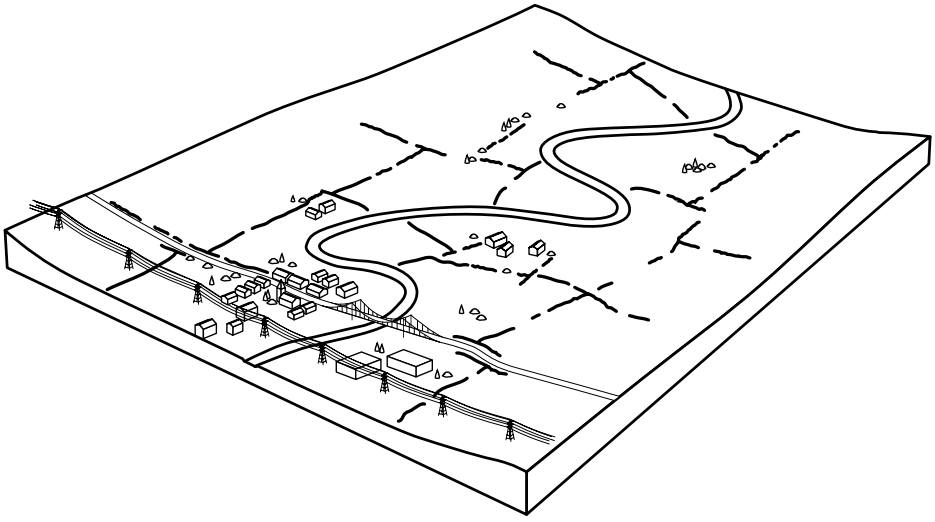
While many settlements face no problems, some places find themselves in an area where natural hazards are a danger to property and even to life.

Q1. Shade in the part of this diagram that might suffer from flooding problems.

Q2. What is a levee?

✎ .....

Draw the position of a levee on the diagram so that it will protect all the farmland.



Q3. Write the words 'falling rock' onto the diagram below in its appropriate place.

Q4. Draw on to the diagram where you think a sea wall might be useful.

Q5. A groyne is a wall built into the sea to trap sand. Explain how it helps to do the same job as a sea wall.

✎ .....

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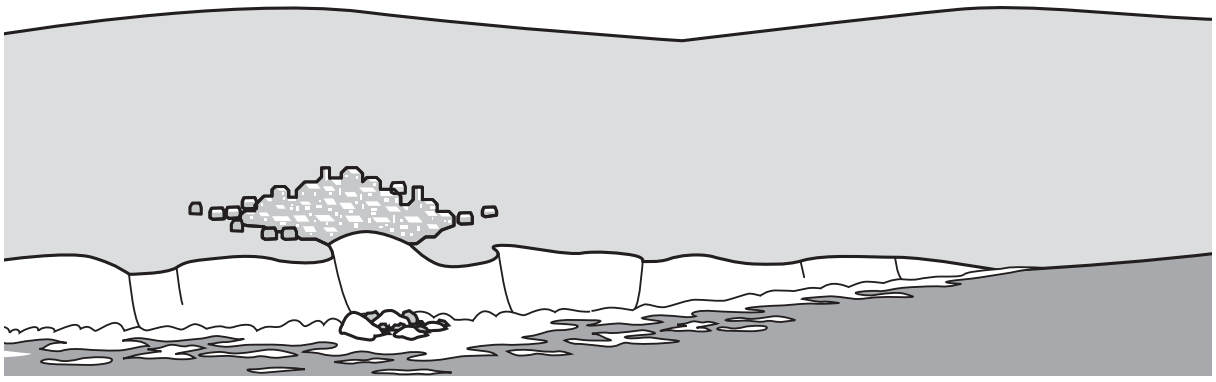


Teacher's Background

See **pages 20 and 21** of *The Settlement Book*

Background

The siting of places in hazardous settings is more common than many students might think. It comes about in several ways:

(a) Because people choose a place to settle from ignorance of the natural environment. This is most common when people move into an area as pioneers, and there are no records or other sources of information to help them understand long-term environmental problems. The 'Stories' in the *River* and *Weather Packs*, which are uniform with this *Places Pack*, are designed to illustrate this point.

A wide range of disasters have befallen people in the mid-west of the United States, for example, because they had no means of telling, at that time, whether their chosen site was at long-term risk.

The people who founded coastal villages in Lincolnshire and East Anglia, and which long ago have been lost to the sea, show more examples.

(b) Because people now use the land in ways different from those of the people who founded the settlement, and thus turn what was a safe site into one with risk. The most obvious case of this is the holiday resort, where people expand along the coast without any care as to the effects of coastal erosion. They build on sites that are inherently unsafe, such as close to a rapidly eroding cliff, and then complain because their property becomes at risk from collapse as the cliff continues to do what it has always done.

Another example is when people expand a place that, in its original form, was flood-free and yet becomes a flood risk as expansion takes place onto unsuitable land. There are many examples of this. Most early river floor settlements took place on small pieces of river terrace or on other areas of slightly raised land. These were known from experience to be perfectly safe from floods. However, many of these sites are small and so, in this century and the last, as expansion took place, the growth was onto adjacent, but lower, and so flood-prone, land.

Many new housing estates are very vulnerable, as are some Victorian estates. Tiverton in Devon is an example of a town where industrial expansion took place onto a flat, extremely flood prone floodplain of a river, the Exe, the flow of which changes dramatically after rainfall. The original textile factory used water power, but the housing built adjacent to it became very vulnerable to flooding until an embankment was built. You should be able to find many local examples of this. More examples are in the *Environment Pack*, uniform with this *Places Pack*.

(c) Coastal structures are commonplace, showing that people have often found it necessary to try to resist the natural landshaping that occurs along a coast. Sea walls and groynes absorb the energy of storm waves.

A sea wall is designed to withstand the direct impact of storm waves, a pattern of groynes is designed to trap sand and make a beach wider, thus allowing more storm wave energy to be used up on the beach, the result being that the waves have little energy for erosion when they reach the coastal cliffs. Sea walls are the most expensive and least environmentally friendly of the options now open to people. There is also the option of doing nothing and paying people for their property, so that the cliffs can retreat naturally and people can move elsewhere.

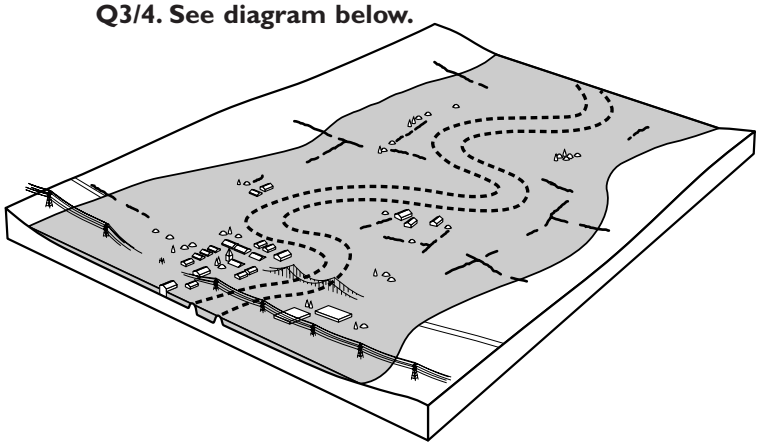
Answers

Q1. See diagram below.

Q2. A levee is a natural or artificial earth bank next to, and parallel to the river channel intended to protect the surrounding land from flooding.

Its position is shown in the diagram below.

Q3/4. See diagram below.



Q5. The groyne traps sand and so makes a wide beach (on which the energy of the waves can be used up). This stops the waves breaking on the cliff and causing it to collapse.