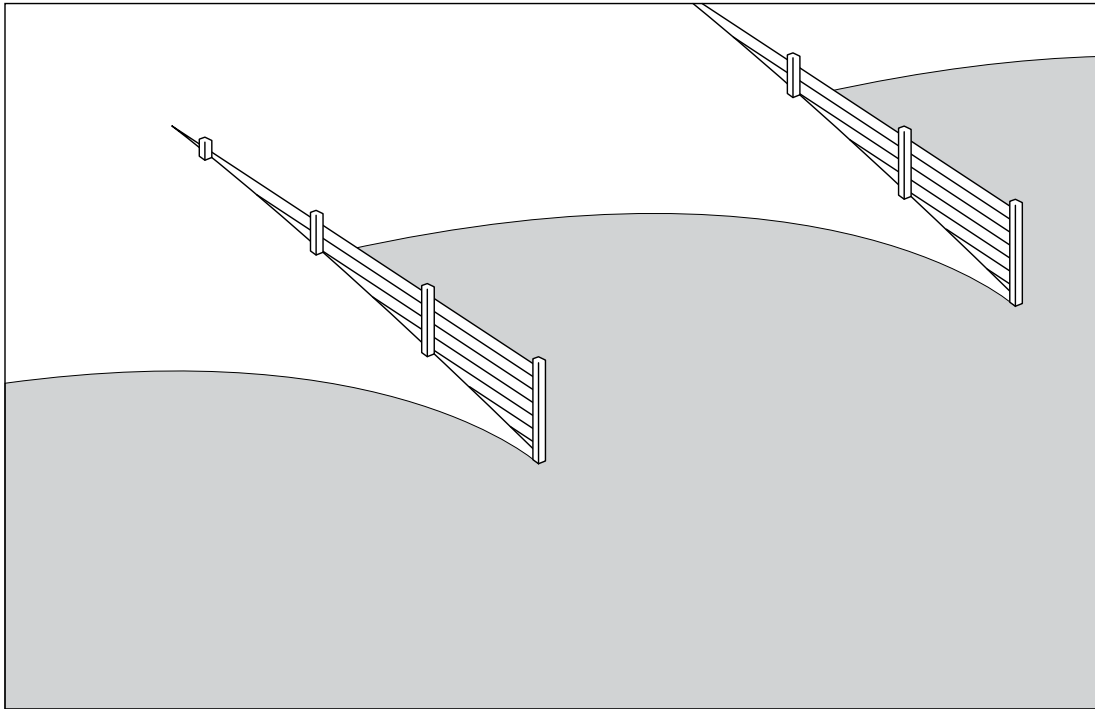


Moving sand

Waves move sand along the beach, not simply up and down it.



Q1. What is the name for the beach fences like those shown in this diagram?

.....

Q2. What tells you that sand is being moved along the beach?

.....

.....

Q3. On the diagram above, mark with an arrow, the direction that sand has been moved.

Q4. What is the name for the natural transport of sand along a beach?

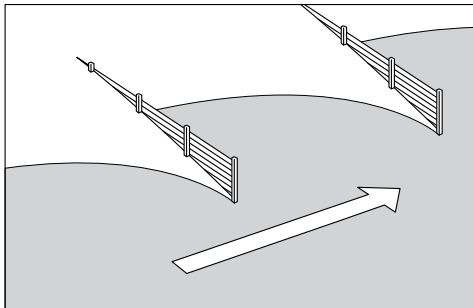
.....

Q5. Name one natural feature that is produced by longshore drift and that often nearly blocks an estuary.

.....

Answers

1. **Groynes.**
2. **The fact that sand has piled up on one side of the groyne.**
3. **As diagram below.**



4. **Longshore drift.**
5. **A sand spit.**

Notes

Longshore drift is an important process along the coast and explains how beach sand moves, why many holiday beaches have groynes, and how sandbanks build up to stop navigation. However, it is a complicated theme to deal with because the movements are small and because longshore drift is a combination of wave action and currents. Use Picture 3, page 29 to show that, if seen from above, the sea just offshore is filled with sand, making it a yellow colour. This shows that sand really is on the move.

When waves break, they plunge down and this causes sand to be put temporarily into suspension. This happens at the very edge

of the surf zone. Currents travelling along the beach then carry this material. That is the origin of the sand seen in the picture. Currents are not discussed in the student book as the topic is too complex.

At the same time, waves do break at an angle to the coast and they also carry material up the beach at an angle. You can see this when you paddle in the sea, if you are on a stretch of coast where the waves break at an angle (but you will not see it in a sheltered bay where the waves break directly onshore). On a field trip it is a good idea to look for a wide beach. Steep beaches show it much better than shallow beaches, so choose one of these if you can.

The fact that the material moves is very important. Waves carry sand from headlands and along beaches to places where the sand builds up (such as sand banks offshore). This process uses up a large amount of wave energy. If a section of headland is protected from erosion, the sea will have no sand to carry to the nearby beaches. But the waves breaking on the beaches will still move sand along them. Quite quickly there will be a visible sign of beach loss. The beach will lower and the rock below it may even be exposed.

Groynes are usually installed further along a beach from where sand is protected by a sea wall. Sea walls always cause problems further along the coast. This provides an opportunity to discuss how the coast works as a whole, and how changing one part of it (especially the part that is eroding) will cause massive (and expensive) problems elsewhere. Thus the presence of beach groynes indicates that some mistake has been made by people managing the coast. You can return to this theme later on.