

Sea Defences made simple!

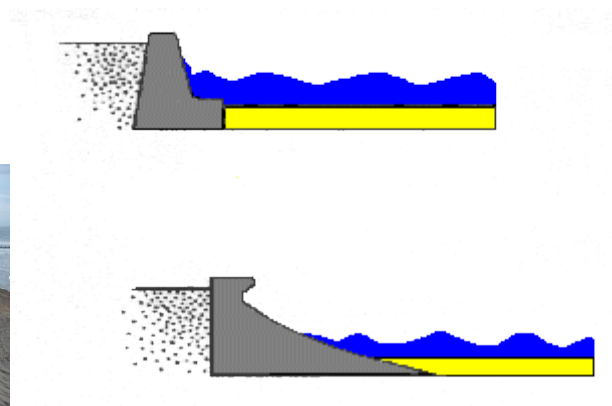
Why do we need sea defences?

1) Because the sea is **POWERFUL!**

- 2) To protect houses on the coast from falling into the sea.
- 3) To be a barrier to protect us and the land from storm waves
- 4) To hold the sand in place.

Sea Walls

Built to stop waves from breaking down (eroding) the cliffs and to protect people from storm waves). They are expensive and have to be rebuilt and repaired over time. The traditional 'hard' defence is the **sea wall**. In the past **sea walls** were vertical and deflected the energy of the waves away from the coast. In doing so, however, they suffered a lot of expensive damage in a short period of time. Modern **sea walls** have a slope and curved top which breaks up the energy of the wave and prevents water going over the top of the wall during heavy storms. **Sea walls** are very expensive (£2000-£5000 per metre) but should last 20-30 years



Beach Fences

Often called Groyne, these hold the sand in place to make the beach wider. This means that even really big waves will break up quicker and do less damage to the beach and land. Groynes are cheaper than sea walls and you see them on a lot of beaches. The best form of natural defence is a **beach** which efficiently absorbs the energy of the waves. Along many coasts, however, longshore drift causes the beach to thin out in places and erosion of the land behind becomes a problem. **Groynes** are designed to slow down longshore drift and build up the beach. They are usually made of tropical hardwoods which are more resistant to marine borers and erosion. A few are made of concrete, steel or in more recent times large rocks. They are built at right angles to the shore and spaced about 50-100 metres apart. **Groynes** may have a life of 15-20 years but often have to be replaced rather than repaired.



Problem areas:

Where longshore drift is a serious problem and the supply of beach material is poor, it may be necessary to supplement the natural system by adding lorry loads of sand and shingle to the beach. The natural processes will then spread the material along the coast to help build up the natural defences. This is called **beach nourishment**. Sometimes dredgers may be anchored offshore and the sediment sprayed on to the beach using high pressure hoses.



Cliff foot Boulders

These are put in front of cliffs for the waves to crash against, stopping their power and reducing damage to the land. They are cheap but have to be big otherwise the waves will carry them away with them!



Breakwater

A **breakwater** is often used to protect a harbour but may be used to protect a stretch of coastline. They are usually made of concrete or blocks of stone but recent cheaper alternative suggestions have included oil drums and used tyres. They have to be strong enough to take the full force of the waves. Since they have to be built in deep water they are, like **sea walls**, expensive to build.



Gabion



is short.

The **gabion** is a metal cage filled with rocks, about 1 metre by 1 metre square. They are stacked to form a simple wall. They are used to protect a cliff or area in the *short term* only, since they are easily damaged by powerful storm waves and the cages tend to rust quite quickly. **Gabions** have the advantage of ease of use and are relatively cheap but their life span