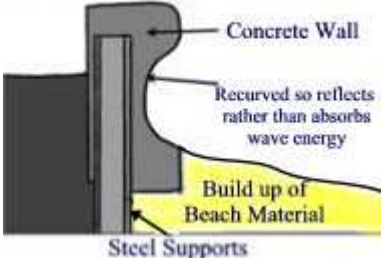
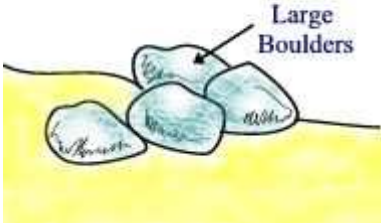

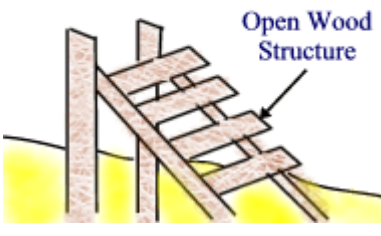
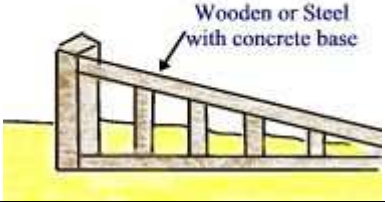



METHODS OF COASTAL MANAGEMENT

	Method of protection	How does it work?	Advantages	Disadvantages
Hard Engineering Solutions	<p>RECURVED SEA WALL</p> 	<p>Concrete Wall, curved under the side to deflect the power of the waves.</p>	<p>Sea walls reflect rather than absorb wave energy Most effective means of preventing erosion</p>	<p>Most expensive (up to £2.5 million / km) Deflected waves often scour the base, undermining the wall (may eventually collapse)</p>
	<p>ROCK ARMOUR / RIP-RAP</p> 	<p>Large boulders on the beach - lessen the force of the waves by absorbing the wave energy within the gaps between the rocks</p>	<p>Relatively Cheap Use natural materials / rocks</p>	<p>Environmentally ugly Can be undermined and removed by waves due to washing away of sand and shingle beneath.</p>
	<p>GABIONS</p> 	<p>Cages of boulders built into the cliff face - small rocks help to absorb the wave energy</p>	<p>Effective where severe erosion and cheaper than sea walls</p>	<p>Environmentally ugly (usually used in large numbers) Cost: approx £350 per metre</p>
	<p>WOODEN REVETMENT</p> 	<p>Wooden structures break the force of the waves and trap beach material behind them</p>	<p>Much cheaper than a sea wall Effective at breaking the force of the waves</p>	<p>Less durable than a sea wall – may need replacing quicker Don't give total protection to base of cliff Environmentally ugly Cost: approx £1,000 per metre</p>

	<p style="text-align: center;">GROYNES</p> 	<p>Wooden or in some cases steel structures that stop longshore drift and build up / anchor the beach, protecting the base of a cliff</p>	<p>Stops longshore drift encouraging the build up of the beach and effectively reducing erosion.</p>	<p>Can increase erosion further down coast by stopping longshore drift and starving areas further down coast of sediment.</p> <p>Cost: approx £5,000-6000 each</p>
<p>Soft Engineering</p>	<p style="text-align: center;">BEACH NOURISHMENT</p> 	<p>Build up the beach by replenishing beach material, particularly at the base of structures to provide a 'natural' solution to absorbing wave energy.</p>	<p>provides natural solution aesthetically better solution (natural looking - difficult to tell that management is taking place).</p>	<p>can be expensive to keep transporting large amount of sand - sediment moved by longshore drift so will need frequent replenishment unless used with other defences.</p>