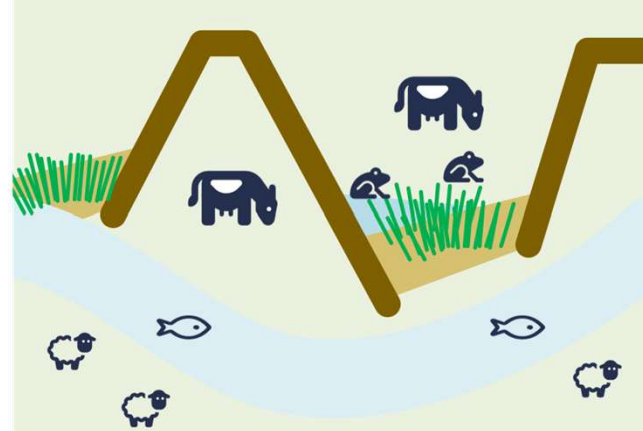


Kinetic Flood Bunds



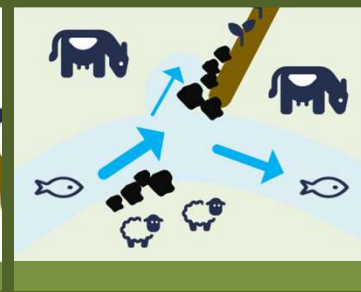
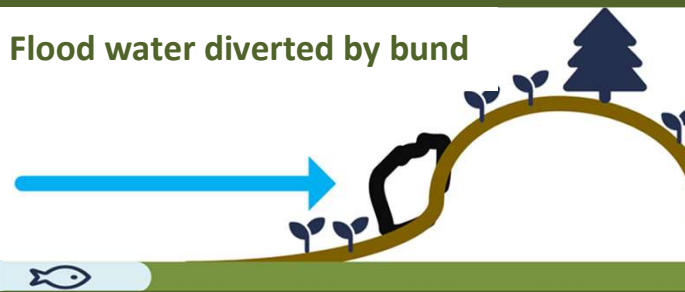
Bunds, or Berms have been used for millennia to control the flow of water. They are a very simple solution, often being built out of materials on site. Typically laid across the flow of water to retain water at higher elevations where it can soak into the ground and fill aquifers. But here we place them at an angle to the flow, using the kinetic energy of the flow to push it up the flood plain and store it as potential energy.

“A cost effective solution for flood resilience. Using the kinetic energy of floodwater to hold more water back”



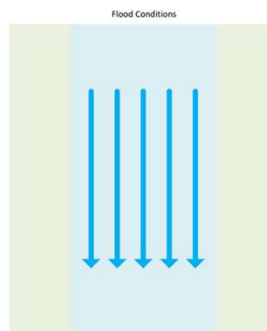
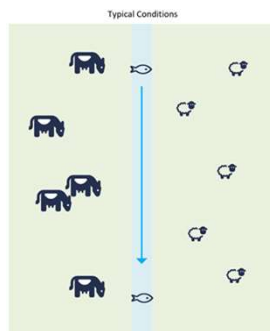
Water flowing into the bund is pushed up the valley floor, this increases the area of flood plain used and therefore stores more water, which reduces the peak flows downstream.

Flood water diverted by bund



Un-natural river

Rivers have typically be straightened with drainage channels to drain flood water downstream as quickly as possible. Which is fine unless you live downstream. As towns have been built we often get pinch points such as the town bridge in Newbury where all water must pass through a small channel with limited capacity. The only option to prevent exceeding that capacity is to hold more water back upstream.



Flooded flat meadows in valley

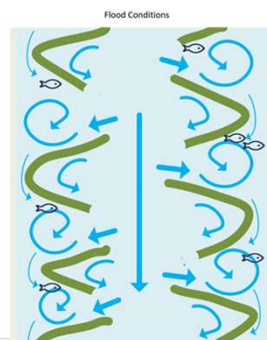
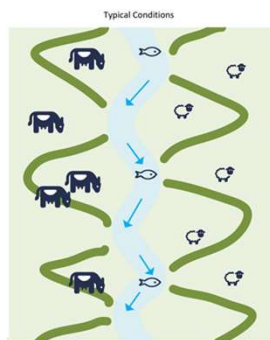
In times of flood when the river exceeds its banks on to the flood plain. The entire valley floor becomes a wide fast flowing river. Releasing all the water unimpeded.

The storage capacity of the flood plain is not fully utilized as the water is free to flow downstream. Silt, mud and debris is washed further downstream, increasing the nutrients in the river.

River restoration

The fundamental principle of river restoration is to return the river into a more natural state with wiggles & bends.

We add bunds that start at the tip of each bend, so at times of flood the water tops over into the area behind the bund. The bunds are secured with plants and rocks and fallen trees can be added in areas subject to erosion.



Flooding water pushed up the bunds

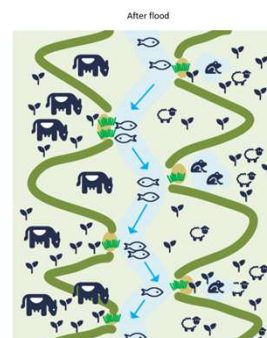
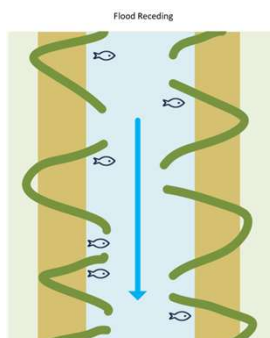
As the bunds are at a permissive angle to the flow, they divert some of the flow behind them and up the side of the valley.

The water will swirl around as it is deflected absorbing some of the kinetic energy and therefore speed of the flow. It eventually tops the end of the bund and into the next section. Fish will seek refuge in the pools during the flood.

Slow release

As the flood subsides the water drains back into the main channel, allowing fish to rejoin the river.

More silt, mud and debris is retained along the bunds removing the nutrients from the river. But also preventing it from silting up drainage channels and blocking weirs downstream



Habitat improvement

The extra nutrients will encourage plant growth and provide more fodder for grazing animals.

Reed beds will form retaining more nutrients and pollution, with ponds forming that will provide habitat for animals that are vulnerable due to habitat loss.