

How can I restore the rivers on my land?

What is River Restoration?

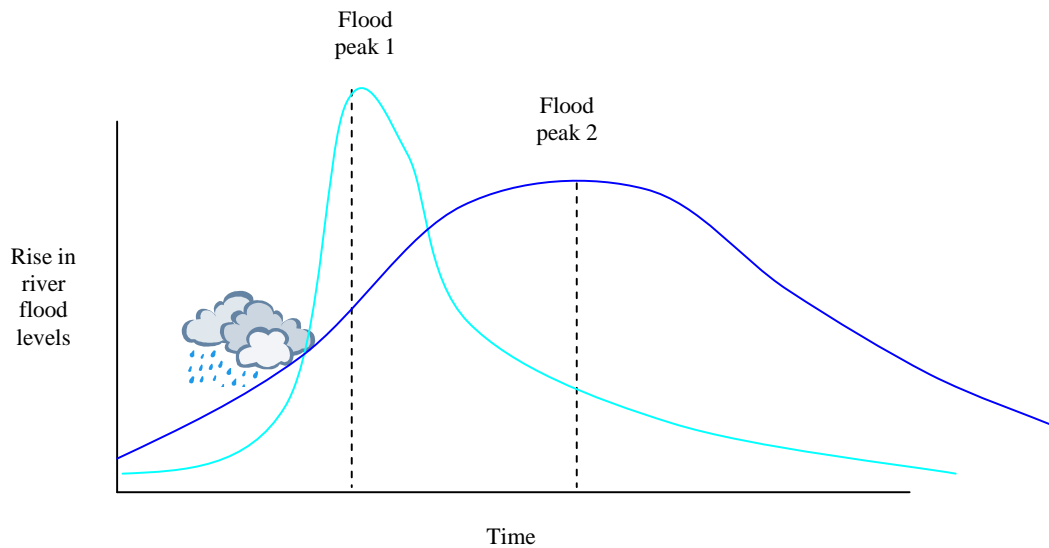
River restoration (or rehabilitation) is exactly as it sounds. Over the years, most rivers in Sussex have been straightened, deepened, re-aligned, re-enforced and embanked. A river will naturally sit in the lowest point (usually the middle) of a floodplain, however it is quite common to see rivers in Sussex pushed to one side of the floodplain, with the old river channel cut off from the floodplain. River restoration aims to restore some of the old, natural features of a river back to before it was engineered. These may include features such as pools, riffles, meanders, vegetated side bars, woody debris dams etc. River restoration also helps the river to interact with its floodplain more naturally.



Aerial photo showing old river channel running through the middle of a floodplain, with a modern ditch or 'cut' draining water left). Restoring old river channels can help create better habitats for wildlife and more floodwater storage for people.

Why would I want to restore my river?

Over the years, in an effort to protect important agricultural and urban areas, we have tried to drain all rainwater falling in a river catchment into rivers as quickly as possible, and send the water as quickly as possible into the sea. This doesn't sound too bad if it stops people's land and houses flooding. However, it has been shown more recently, that in some cases this can actually be the cause of flooding, and that it has had a severe impact on wildlife, fisheries and drinking water availability and quality. But restoring rivers can help us too.



Rain falls and drains naturally through a river catchment. In a highly drained and managed river catchment, the water from the rain reaches the river and creates a flood peak (Flood peak 1) much more quickly than it would naturally. In this case, a large amount of water reaches the river all at once. If it has nowhere to go once it gets there (e.g. a high tide is stopping the water from flowing into the sea, or a narrow bridge means only a small amount of water can get through it at a time) then the water gets 'stuck' and catastrophic floods can occur – such as those which happened in Lewes in 2000.

In a river catchment where water is drained less quickly, the river is allowed to meander and flow more slowly, water is allowed to filter through the ground and be slowed down overground by natural vegetation. When flood water is able to flow onto the floodplain, the volumes of water and the force of any flood water is released over a longer period of time (Flood Peak 2).



The River Ouse above Lewes suffered catastrophic flooding in winter 2000. The embanked river burst its banks when a high tide converged with high rainfall and not enough water could get through Cliffe High Street Bridge.

By using the natural storage capacity of river floodplains, removing river embankments in places where people won't be affected, and allowing rivers to meander, slow down and be slowed down by wetland vegetation, we can help nature help us decrease damaging floods, increase water quality and increase water supplies.



A river which has been straightened and confined between a road and a large embankment. When the river floods, water gets 'stuck' in the river channel and can't go anywhere. It backs upstream and can cause flooding.

Between 1960 and 1980 we lost around 70% of our wetlands in Sussex (Wildlife Trusts). A large part of this was due to drainage and the 'engineering' of river channels. By restoring rivers, you create the potential to:-

- restore large areas of nationally rare and threatened wetland such as reedbed and floodplain woodland;
- restore natural features to rivers which are good for rare and useful species such as fish and otters;
- help floodwater flow more slowly over floodplains and through wetlands, filtering out soil and pollution and allowing water to filter through the ground into drinking water aquifers;
- create an area which can store floodwater away from peoples houses at the same time.

How can I tell if the river on my land needs restoring?

Take a look at old maps of your farm (see www.old-maps.co.uk for free maps if you don't have any), and then place them next to a new map (e.g. an OS Explorer map), you can often see how the landscape has changed on your farm. Due to historical management, river channels have often been straightened, deepened, widened, and drained. Agricultural grants paid for extensive areas of field drainage between the 1960's and 1980's. You may also have older relatives or farm records which can tell you about the drainage work and river alterations that have taken place on your land.



Old OS Map showing old sections of the River Adur. There is an obviously straightened section of river even this far back in time.

Is there anything I can look for which shows me that my river might be able to be restored?

Consider the following questions. If you can answer yes to any of the questions then it is likely that your river has been altered or engineered at some point:-

- Does the river flow in a straight line or at a right angle?
- Does the river channel flow along the side of the floodplain rather than in the middle?
- Does the main watercourse have an embankment (or raised mound of earth) alongside it?
- Does the river have concrete, steel sheet piling, gabions or other man made materials along its edges?
- Do your historic farm records document any management of the river or drainage of the floodplain?
- Are there any large water control structures e.g. weirs stopping the flow of water?
- Is there a lack of any mature trees growing along the banks of the river (100 years old or more)
- Are there any culverts or bridges which create a barrier to the flow of the river?
- Is the bottom of the watercourse always too deep to see?
- Are there few or no plants growing in the channel or on the banks?
- Is there a lack of any natural features along river e.g. silt or gravel deposits, vegetated or unvegetated silt or sand bars, pools and riffles, islands, large woody debris dams, naturally slumping banks etc.

You can also take a look at historical maps and information about your farm to find out what it used to be like. Visit <http://maps.live.com> or <http://earth.google.com>, and find an aerial photo of your land. These often show you where the old creeks and channels in the floodplain were before it was managed.



Picture showing relict river meanders in fields © Microsoft Virtual Earth - Microsoft corporation. © Getmapping plc © 2007 Intermap



Old meanders clearly visible (right) with straightened river channel on left. Map © Microsoft Virtual Earth – Microsoft corporation. © Getmapping plc © 2007 Intermap

Can I get any help to do River restoration on my land?

If you as the landowner decide that you would like to help restore your river, often the Sussex Otters and Rivers Project (SORP) or a representative from the Environment Agency, can visit your land and provide an initial, free assessment of some of the potential for river and wetland restoration. Where time allows, SORP is happy to liaise with other organisations to discuss opportunities for river restoration and for the funding of river restoration feasibility studies.

If you wish to take the idea of river restoration forward yourself, then the recommended consultant (approved by the Environment Agency) is the River Restoration Centre (RRC) UK. Other approved river restoration consultants can also be contracted to produce a report on how feasible river restoration may be. The EA, SORP or the RRC can also advise landowners on recommended consultants. Applications for Higher Level Stewardship may be helped by the production of a report by the RRC.



A blockage of large woody debris (LWD) can help the river re-create its own natural features

Are there any simple things I can do which will help my river to become more natural?

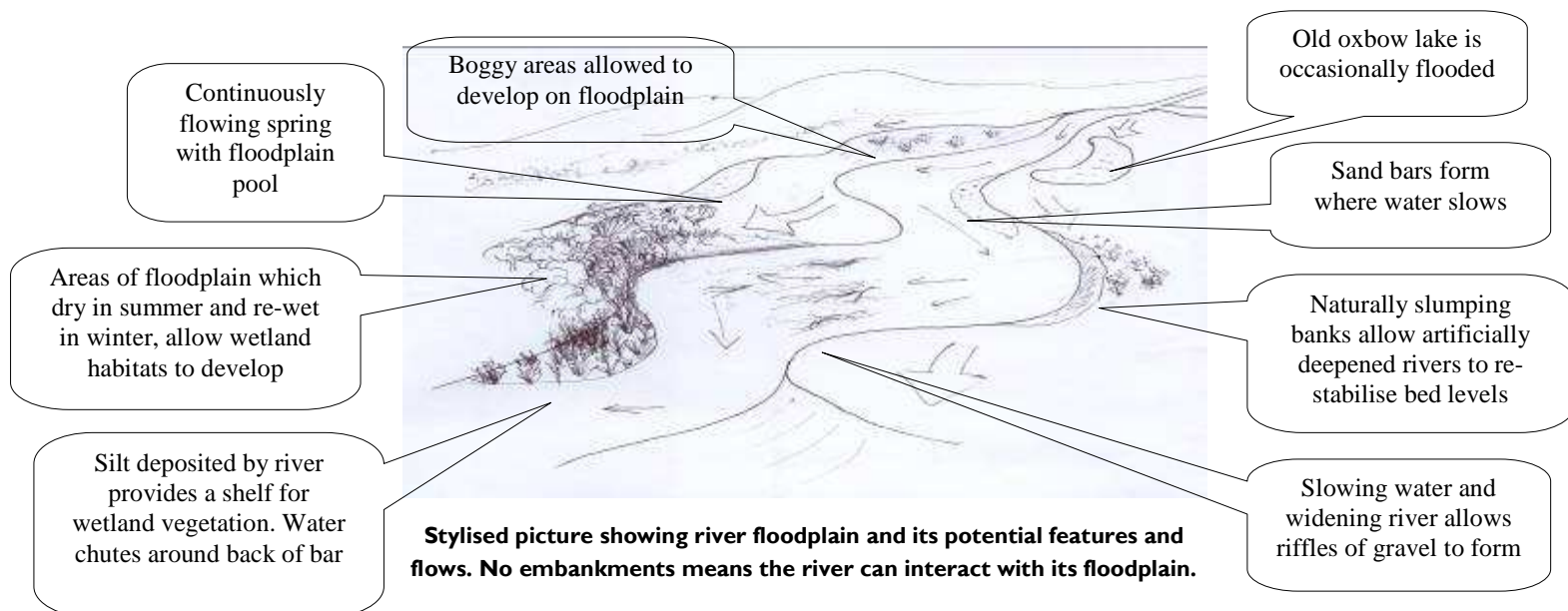
Yes. Here are some ideas:-

- **Be adaptable.** Banks of rivers and streams often erode and collapse as the river de-stabilises and re-stabilises itself naturally. If you can accept erosion and changes in the boundaries of your riverine fields rather than reinforcing banks and permanent fencing then your river will develop more natural features.
- **Allow occasional trees and other large woody debris** to remain in your rivers. These help create natural features (see SORP website for Managing Woody Debris in Rivers and Stream leaflet)
- **Create a stock watering point.** Reducing the impact of grazing animals on the river bank can help reduce erosion (grazing animals eat and trample plants along the river bank and trample or 'poach' the soil). Trampling can have positive as well as negative benefits but if you create a stock watering point, the impact of grazing is limited, natural erosion can take place, and natural vegetation can develop.
- **Put buffer strips around arable fields.** The silt that erodes off the land gets into our waterways and can smother natural gravels and vegetation which provide essential habitat features for fish and wildlife. Excess loads of silt in rivers also affect water flows.
- **Don't de-slub or cut as often.** If you can afford to let some areas of your land become wetter then think about not clearing vegetation and silt from them as often. Every time a stream or ditch is cleared, the natural features are removed along with much of the existing wildlife.
- **Reduce your land drainage.** Do you know where your land drains are and can you afford to let them block or break? In the right place, this can help re-wet the floodplain and restore some natural marshy areas and natural processes.



A wader scrape may help create more varied land levels in your floodplain

- **Put back some natural features.** Low lying areas in floodplains should occur naturally, but if the floodplain has been drained and managed (and particularly ploughed), then these features are removed. Creating a scrape, or microprofiling the soil can create valuable niches for wildlife and water.
- **Don't put soil or spoil in the floodplain.** When you clear out ditches etc, the usual place to put spoil is next to your watercourse. Over long periods of time this builds up and creates mini 'embankments' which stop rivers and streams interacting with the floodplain. If you do need to de-slub, try and spread slubbings as thinly as possible on the floodplain, or even use the nutrient rich silt to spread on your arable fields. Permissions should be obtained where necessary for moving soil.
- **Go soft!** If you still need to stop your river banks from eroding then 'soft' engineering techniques can be used. Try using willow hurdles and spilling to protect river banks. Bankside trees and vegetation naturally bind soil together with their roots.
- **Go with the flow.** If there are lots of culverts on your land, consider converting them to clear span bridges, or larger culverts so water can flow through them unrestricted. Weirs and structures may no longer be of use – talk to your local Environment Agency officer about whether you can remove them.



Things to consider

- You don't always have to do anything. Sometimes doing nothing and waiting patiently for nature to do its own thing is the best way to restore rivers and streams. Water is a powerful force and, if allowed e.g. in a flood, it can completely re-landscape its environment.
- Large river rehabilitation projects are likely to be a long term commitment and may take a number of years to complete.
- Any major works to a main watercourse, or within 8 metres of one, requires land drainage consent from the Environment Agency.
- Smaller streams are easier to restore and generally take less time, money and paperwork!
- Major river works require an Environmental Impact Assessment and a Planning application.
- If there are areas of floodplain locally, which appear more natural than your land, note the plants, scrub and tree species and river features which have developed and try and mimic these features on your land.



The Environment Agency restoring a river channel which had silted up entirely.

Contacts and further information:-

Sussex Otters and Rivers Project

(01273) 497555

www.sussexotters.org

River Restoration Centre - www.therrc.co.uk

Free advice manual on River Restoration

techniques from www.therrc.co.uk/manual.php

Environment Agency (ask for your local FRB or Development control team)

08708 506506

www.environment-agency.gov.uk

SORP promotes the sustainable management of Sussex rivers and the restoration of wetlands for people and wildlife, and in particular the Otter, Water vole and Black Poplar. The Sussex Otter and Rivers Project (SORP) is a partnership between Sussex Wildlife Trust, South East Water, Environment Agency and Southern Water Services.

