

DS1



Restoring meanders to straightened rivers

Re-meandering is a technique employed on straightened and realigned rivers to restore sinuosity. In some cases, where there is enough energy, assisted natural recovery can restore sinuosity over time through hydromorphological processes (erosion and deposition) and influence of vegetation growth. However, in many cases a river does not have the energy to recover its form rapidly, and an intervention is therefore required.












In the floodplain of a modified river, there are sometimes visible **relic channels or paleochannels** which show the historic location and form of the river. Assuming that the hydromorphological drivers (energy, flow, sediment) have not changed significantly, re-connecting a relic channel is less subjective, less complex and cheaper than designing a new channel.

Relic channels are not always visible in the landscape. This can be because of sediment accretion over time, or because human activities have removed traces of the old channel. In this case, **historic maps, photos**, digital elevation models (DEMs) and historic land boundaries (which often followed rivers) can be used.

This evidence can help to identify the historic location and planform of the river to inform channel design. Historic information needs to be used alongside hydromorphological principles (energy, sediment, channel form) to design a channel which is appropriate for the site.

Sometimes there is no visible or documentary evidence of a relic channel. In this case, **hydromorphological principles** should be used to design a channel which is appropriate for the site. This requires in-depth modelling of energy and sediment transport. For example, where a channel is being diverted into a newly formed course.

Meandering channels can be either **actively meandering** or **passively meandering**. An actively meandering channel will exhibit natural processes and features such as erosion and deposition. Whilst a passively meandering channel will show the form of a meandering river, but none of the processes and forms of an active river. An actively meandering channel works with natural processes. However, in some cases this is not possible. Where there is a lack of energy or urban constraints, a passively meandering channel might be the only option.

	Actively meandering channel	Passively meandering channel
Re-connect a relic channel	 River Little Ouse 1.7	 River Cole 1.3
Using historic maps and photos	 River Cole 1.1  River Rother 1.9	 Rottal Burn 1.8  Highland Water 1.11
Applying hydromorph principles	 River Cole 1.2  River Skerne 1.4	 River Ravensbourne 1.6  River Marden 1.5  Braid Burn 1.10