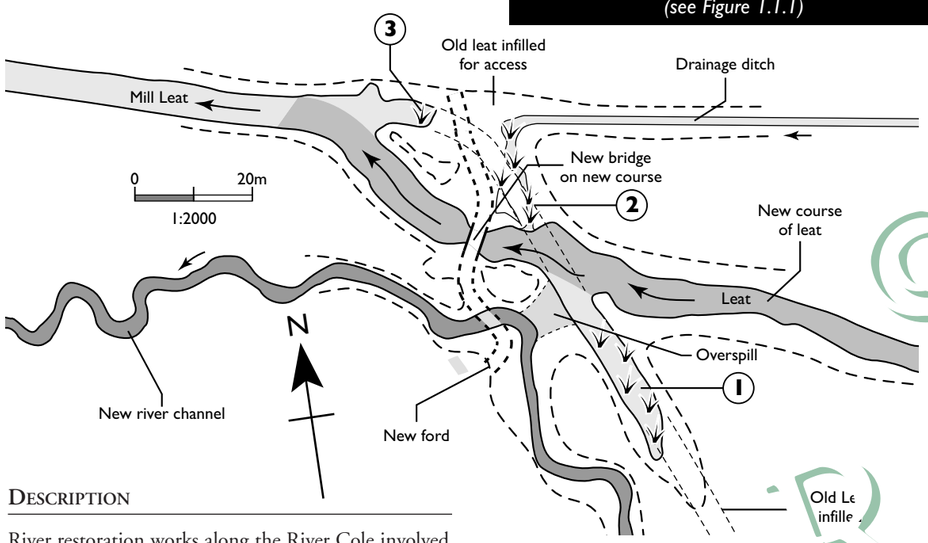
ENHANCING REDUNDANT RIVER CHANNELS

2.2 Creation of backwaters

RIVER COLE

LOCATION – Coleshill, Oxon/Wilts border, SU 234935
DATE OF CONSTRUCTION – Autumn 1995
COST – No direct costs but additional spoil carted to landform area

Figure 2.2.1
BACKWATERS AT 1, 2, 3 DELINIATE COURSE OF LEAT PRIOR TO NEW BRIDGE AND NEW MEANDER IN LEAT
(see Figure 1.1.1)



DESCRIPTION

River restoration works along the River Cole involved re-routing the river from its straight course into new meandering channels *(see 1.1 – 1.3)*. Remnants of the old river course were incorporated into the overall restoration as backwaters at 3 locations a s a b at another location.

DESIGN

Each feat re d is uniquel fferent, bu l are b on the c nm pri of only par ackf ng. This s av ds need to reve

support backfill where it d othe ise ab he new channel.

Bac aters n l leat (fig.
new ic e was in the dry' before completing e divers of the leat and backfilling the old course (8.2)*. Backfilling was limited to providing a link the new bridge, leaving the lengths denoted **2** and **3** on the figure open to the river. Backwater **2** is linked to a drainage ditch which backs up with river water when the leat rises, creating a reversal of flow into other parts of the drainage system, which in turn contributes to the seasonal flooding of fields. The bed of this backwater has been raised to just below normal water level to sustain a marshy aquatic habitat. In contrast, backwater **3** remains as open water with marginal ledges and willows.

Backwater **1** was created after excavating a new meander in the leat *(see 1.3)*. It is an unfilled length of the old leat which was enhanced by removing the embankment from the left side so that rising floodwater could overspill to merge with floodwaters in the new river channel adjacent to it.

Backwater **1**

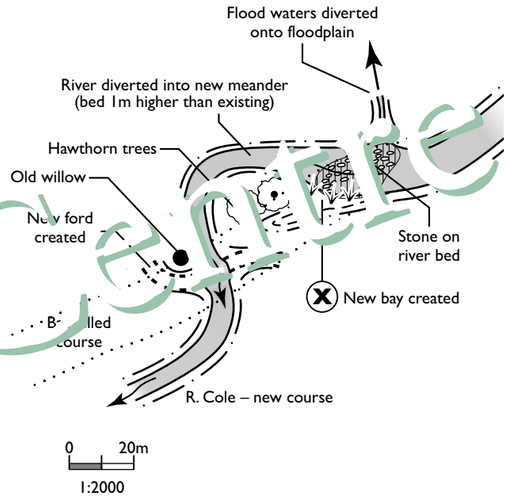
MANUAL OF RIVER RESTORATION TECHNIQUES

ENHANCING REDUNDANT RIVER CHANNELS 2

New bay at start of lower meanders (fig. 2.2.2)
The new meandering channel is smaller than the existing channel upstream and its bed is elevated c. 1m higher. As a result, water in the upstream channel is impounded and slow moving which contrasts with a marked increase in velocities within the new channel. The design of the junction of the old and new channels reflects these hydraulic conditions. The risk of downward scour of the new bed was alleviated by backfilling the existing channel bed where it abuts the new and adding a layer of stone to create a secure transition. To complete the diversion, the old channel was backfilled in a manner that created a small marshy bay within which the slower moving floodwaters approaching the new meander can eddy freely be e entering it. This was preferable to complete ba ill-ing and having to revet the fill to resist erosion

Opposite the bay, an old drainag itch entered u river. This was incorporate n en ged to enable floodwaters to pas ly fro he ri out onto the lowest par of th flood in, note the main ri ur. A furthe fee d against downward e on of ne river d, a stone ford was created 80 downs am where the new channel crosses over the e of the original *(see Part 8)*. This ford acts like small weir and therefore 'fixes' both bed and normal water levels upstream.

Figure 2.2.2
NEW BAY AT START OF LOWER MEANDERS
(For location see Figure 1.2.1)



View of shallow bay **X**

These techniques were developed to suit site specific criteria and may not apply to other locations