



Restoring Meanders to Straightened Rivers

1.3 New meander in an impounded river channel

RIVER COLE

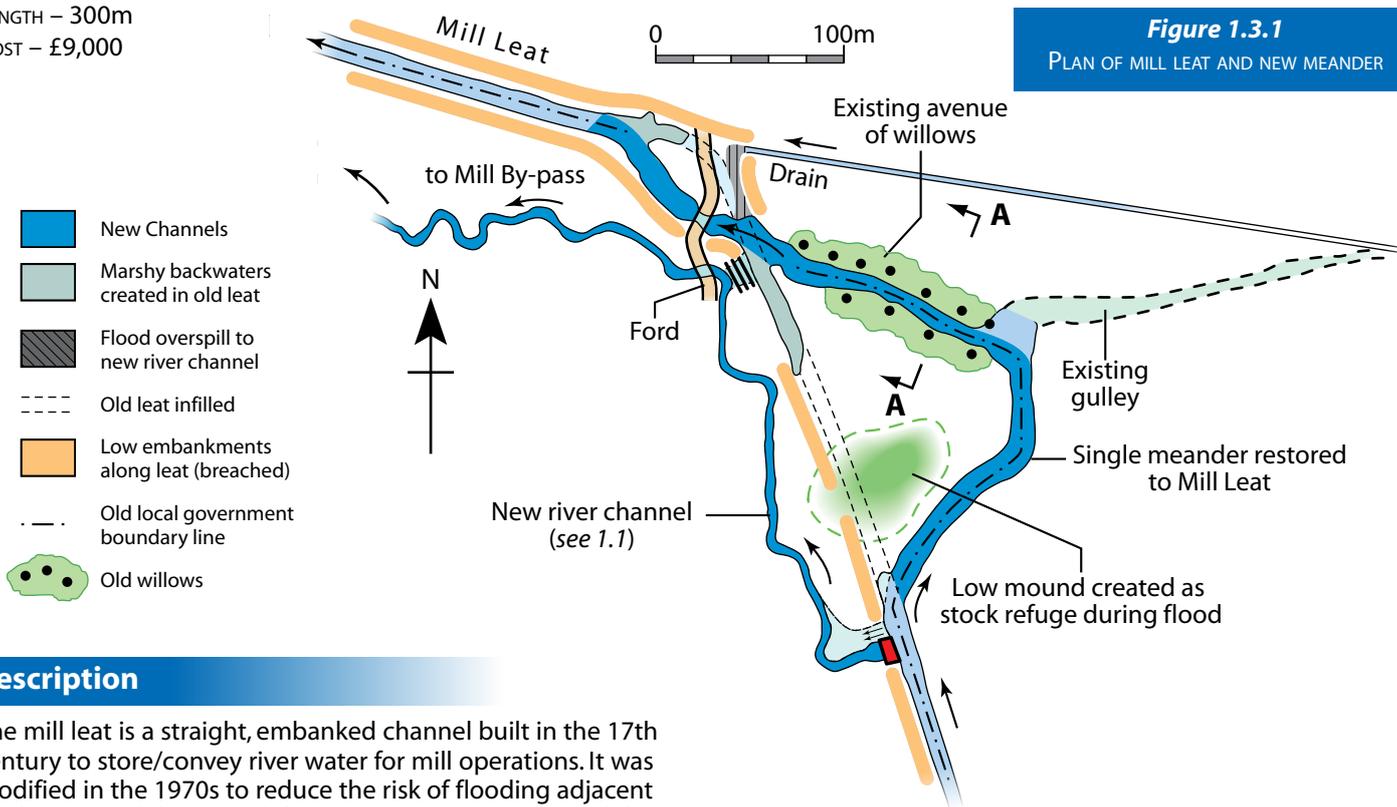
LOCATION - COLESHILL, OXON/WILTS BORDER, SU234935

DATE OF CONSTRUCTION - AUTUMN 1996

LENGTH - 300m

COST - £9,000

Figure 1.3.1
PLAN OF MILL LEAT AND NEW MEANDER



Description

The mill leat is a straight, embanked channel built in the 17th century to store/convey river water for mill operations. It was modified in the 1970s to reduce the risk of flooding adjacent land. As part of the River Cole restoration project most of the river flow now by-passes the mill (and the leat) in a new meandering channel (see *Technique 1.1*). The leat was subsequently enhanced by restoring a single meander to its course.

Design

Longitudinal profile

The existing river bed levels were retained throughout the new meander in order to maintain the historic depths of impounded water. Normal water levels were raised by c. 300mm to achieve this, involving replacing/repairing sluices at the mill in accordance with archived drawings retained by the owner, the National Trust. No embankments were reinstated on the new meander; water is free to spill into adjacent fields consistent with the overall river restoration objectives for this site.

Alignment (Figure 1.3.1)

The pre-existence of the meander was evident in two ways. A shallow, muddy depression between a short avenue of old willow pollards, branching off the leat, delineated part of an old river channel. A study of old maps indicated that an historic local government boundary line passes between the willows, continuing in a clear meander line that rejoined the leat further upstream. This line was adopted as the centre line of the new meander because of the strong precedence.

Cross-section (Figure 1.3.2)

The width of channel between bank tops was selected to retain the willows. The resulting dimensions closely matched the top width of the remaining mill leat, so was confirmed as suitable. The existing leat cross-section displayed wide ledges at, or about, normal water level that were cattle trodden either side of a deep, relatively clear, central channel. The new cross-section mirrors this configuration.

Profiles within the meander

The way in which flooding of surrounding land had been designed to occur makes livestock escape or rescue difficult. In mitigation, land levels within the new meander were raised locally in a gentle mound creating a refuge in times of flood.

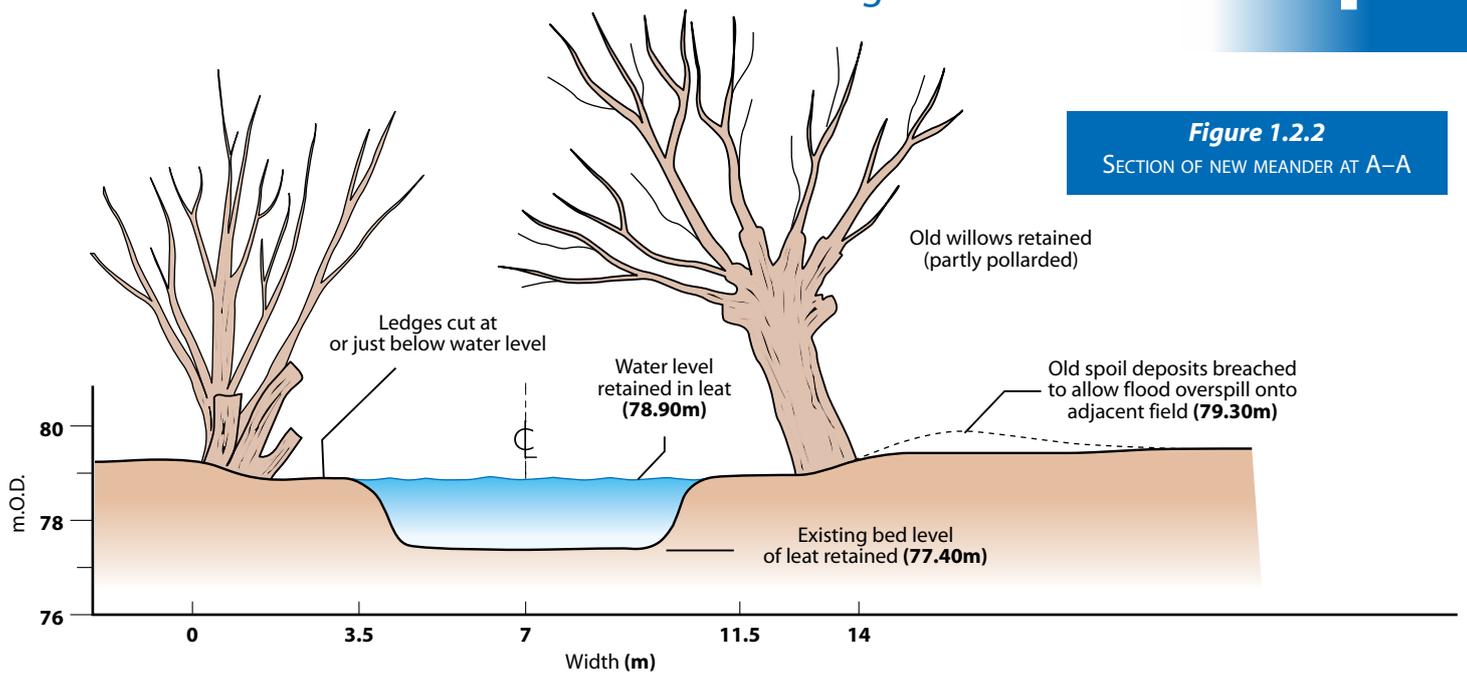
Subsequent performance 1995 – 2001

The new meander is visually striking between the willows; swans nested on the spit of land between the new and old channel where a quiet backwater has been created. Sheep are seen to favour the mound, being the 'highest and driest' ground in the area regardless of flooding. Marginal plants are satisfactorily establishing on the ledges each side of the newly created channel.

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Figure 1.2.2
SECTION OF NEW MEANDER AT A-A



Remnant of meander
– pre-works – January 1996
(shallow water held temporarily after heavy rain/flooding).



Re-excavated meander
– Autumn 1997

