



the River Restoration Centre

Working to restore and enhance our rivers

Technical Advice

Maidenhead Ditch, East Sussex *Hydromorphological assessment*

KEY INFO

Date: April 2021

Client: South East Water

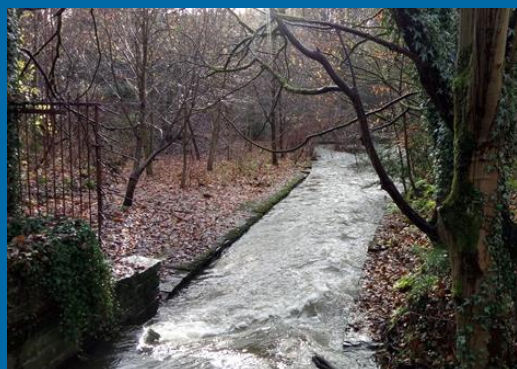
Type: Hydromorphological assessment



The Maidenhead ditch is a tributary of the River Thames originating near Cookham and flowing through Maidenhead to rejoin the Thames south of the M4 through a channel called 'The Cut'. The Maidenhead ditch catchment is relatively small (23 km²) and nested within a meander of the main river Thames. The river is slow flowing, heavily managed and regularly runs dry during the summer months. It has complex hydrology influenced by groundwater abstraction, an artificial intake of water from the main river Thames, and a tributary whose flow has changed direction over time and is now the main source of water for the river system.

The hydrology of the Maidenhead ditch is complex. According to a study by the consultants, Jacobs, most of the flow of the river comes from the White Brook and a small intake put in place by the National Rivers Authority in 1993 near Cookham to add water from the river Thames. The river naturally runs on chalk geology so influence from chalk aquifer should be expected on baseflow but groundwater abstraction resulted in the lowering of the water table below the level of the river bed. Previous investigations further identified water seepage from the river bed to the groundwater on one reach, with up to 40% of the water flow being lost (Jacobs, 2013). Altogether, groundwater contributes to baseflow less than 20% of the time and it was estimated that about 90% of the water in the channel originated from the river Thames during the monitoring period.

As part of the Jacobs study, a series of options were investigated to improve flow conditions in the Maidenhead Ditch so as to avoid periods of no flow as experienced previously. The objective of the options considered was to reach a minimum flow objective defined using the minimum flow experienced during the monitoring period (2011/12) plus the mean loss from the channel. For the Maidenhead Ditch, the target was set to a total flow of 55 l/s. This value represents a minimum acceptable flow under design conditions (or Minimal Flow Objective - MFO) to assist in the option screening process.



The options retained broadly involve five types of interventions: river restoration, lining of the channel to prevent groundwater seepage, channel maintenance, intake improvement and flow augmentation (e.g. through abstraction reduction).