

# Evidence

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## Appraisal of river restoration effectiveness: Shopham Loop

Project summary SC070024/c/d

Royal Haskoning, in collaboration with experts from the River Restoration Centre and the Environment Agency, recently published two reports on the use of different measures to assess the effects of a river restoration scheme at Shopham Loop on the River Rother in West Sussex against site-specific environmental objectives aligned with the Water Framework Directive (WFD). Shopham Loop was a secondary case study in research carried out as part of the broader Environment Agency project, 'Managing Hydromorphological Pressures in Rivers'. Two similar reports are available for the primary site at Seven Hatches on the River Wylye in Wiltshire.

The case study report describes the measures put in place at Shopham Loop and documents the effects of the scheme on physical and biological quality elements adopted for the WFD. The other report provides further details of the monitoring performed and describes the analysis techniques and interpretation of the results.

Many years ago the River Rother was modified to create a canal cut at Shopham. Over the years, the former course of the river, a large meander loop, had become cut off and the canal cut had become the river's preferential course. The restoration scheme involved: constructing an earth bund to prevent flow into the canal cut and reconnect the former meander loop; creating a new inlet channel to the loop; inlet and exit bed control; lowering embankments; installing bankside stock fencing; and creating a wetland scrape in the floodplain. Restoration work was carried out in 2004. Monitoring took place pre-restoration in 2002 and post-restoration from 2005 to 2009.

Hydromorphological objectives relating to the width, depth and sinuosity of the channel have been met. A lack of monitoring data made it difficult to assess whether the objectives relating to sedimentation and flow velocity had been met.

The assessment against the biological objectives was inconclusive mainly because of variations in the number of samples, the season they were collected in and the shortness of the monitoring period.

Available information indicated that the macroinvertebrate community was already at 'good' or better status in parts of Shopham Loop. Results suggest that the conservation value of the species present was increasing and the habitat more favourable for the target fish species. Continued monitoring is recommended.

The case study has shown it is possible to reconnect this type of meander relatively easily and reasonably cheaply. This kind of restoration scheme is particularly effective because it restores the river back to its natural form and function, and therefore requires little or no intervention after restoration.

Lessons learnt from the case study related to scheme design and implementation, setting of objectives, monitoring approaches and sharing experiences:

- Understanding the history of a site in order to shape its future is important. Schemes should focus on restoring river processes and addressing pressures at a catchment scale.
- Good quality data are needed to help shape designs.
- It is important to establish whether other pressures affecting the ecology may mask or prevent the achievement of ecological improvements.
- Setting project and monitoring objectives that can be assessed scientifically with replicated sampling and a before–after–control–impact approach is essential.
- To ensure different people can replicate the monitoring methods, these should be written down clearly and records managed properly.
- Use of routine monitoring data from across the catchment is essential to provide context for local changes and so help distinguish between responses to measures and macroscale or longer term trends.
- Monitoring data should be collected for long enough to give the system time to re-equilibrate.
- Because each river system is different, a degree of flexibility must be built in to the monitoring strategy to make best use of resources.

The project's findings will link with other work by the Environment Agency to help understand more about the effectiveness of river restoration schemes and how this can be measured. The findings also provide examples of how to manage hydromorphological and sediment pressures in catchments to achieve WFD objectives.

This summary relates to information from project SC070024, reported in detail in the following outputs:

**Report:** SC070024/c

**Title:** Appraisal of river restoration effectiveness: Shopham Loop case study report

**Report:** SC070024/d

**Title:** Appraisal of river restoration effectiveness: Shopham Loop monitoring report

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