



3 Understanding your site

Use of any technique must be considered in the context of your site and its catchment, including:

- Natural environmental processes (e.g. hydrological, geomorphological, ecological);
- Existing development, land ownership and future development plans;
- Functional use (e.g. conservation, amenity, flood risk management, angling);
- Local site conditions (e.g. existing flora and fauna, river flows and levels, sediment movement, geotechnical);
- Operational window of opportunity (e.g. weather, budget and time); and
- Relevant policies, strategies, designations and regulations.

The objectives for river restoration or the management of a site must sit logically within the policies and plans for the catchment. These include, in particular, the plans for the relevant WFD catchments, development plans, flood risk management policies, and plans of established local groups seeking to implement a catchment-based approach.

Catchments can be rural, urban or a mixture of both. The river flow regime, which is characterised by river slope and dominant catchment geology (as reflected in the generic classification for case example sites), impacts on the sediment movement and habitats at the site. Urban development and land management practices in the catchment can further significantly affect the flow and water level regime, the water quality, the riparian zone, and the sediment movement at the site. These in turn affect the potential for improving habitat and ecological quality at the site.

The mechanisms of river sediment movement are complex. Overall, sediment movement depends on the stream power generated by the river and the sources of sediment. However, channel shape and flow patterns also influence sediment erosion and deposition locally. For example, the outside of a meander bend is a zone of erosion, whereas the inside of the bend is a zone of deposition. Also, zones of high turbulence – for example downstream of a weir or other structure – will tend to result in localised scouring, while areas of slack water – for example behind a flow deflector – will tend to result in localised deposition. This is a simplistic explanation for a very complex process and the geomorphology of the river where techniques are to be used needs to be fully understood (see the [Environment Agency Sediment Matters Handbook](#)).

In many places, existing development and associated modification of natural river features may preclude comprehensive river restoration. For example, river banks may have hard revetment or the river itself may have been engineered to the detriment of the biological continuity and habitat. A key part of achieving ecological improvements in such locations will be to introduce features and modifications to the channel so as to create new habitats, improved biological continuity and more 'natural' flow conditions. Several case examples in the Manual illustrate such techniques.



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