

Section 9 Rehabilitation

(Attributes relevant to rehabilitation are as shown in Table 13, in Section 6)

The River Avon and its floodplain have been subject to modifications over centuries. Historically, this included modification to the channel for mills and water meadows, and in the last century for flood defence, land drainage and agricultural purposes, resulting in alterations to the shape and plan form of the river by widening, straightening and deepening channels. A summary of information relevant to the physical habitat in the cSAC can be found in Appendix H. In addition to changes to river form, the floodplain has been affected by changes in water level management with resulting impacts on the Avon Valley SPA.

Natural recovery of channel geomorphology (river form) is dependent on the ability of the river to rework sediments. Because the River Avon is a low-energy system, it is highly sensitive to modifications, and lost geomorphology can generally not be regained through natural processes (Geodata 2002).

In order to try and improve the physical habitat of the river system, various organisations and individuals, including fishing organisations, riparian owners, the Environment Agency and Wildlife Trusts, undertake habitat enhancement works. These enhancement schemes can have several different aims, including improving fishing, habitat, amenity/aesthetic value, flood management and erosion control to protect land and infrastructure. In the absence of sound information on the current geomorphological status of the river, the schemes are designed in response to a specific need in a short stretch of river.

Rehabilitation of the floodplain aims to manage water levels for the designated interests of the Avon Valley SPA, improve flood management, preserve landscape and archaeology and bring wider biodiversity benefits. It is relevant to this strategy because it has implications for the cSAC. Floodplain rehabilitation has the potential to expand the range of suitable habitat for the cSAC features. However, there are also some potential negative effects that must be considered.

Water Level Management Plans (WLMPs) are being developed to establish appropriate water-level management in the SPA, reversing the decline in grazing marsh habitat, breeding waders and wintering



Both photos by Rob Cathcart/English Nature



Rehabilitation projects such as erosion control on the River Wylfe (above) and bank restoration in Salisbury (top), are an important tool in managing the catchment for habitat enhancement.

wildfowl. There will also be a WLMP for the cSAC, which will consider factors such as the impact of water-level management structures. The main mechanism for implementing the plans at farm scale will be through the Environmentally Sensitive Area scheme and Countryside Stewardship. Bigger schemes at the water-level management unit scale will require wider partnership funding.

9.1 Strategic Approach to Rehabilitation on a Catchment Scale

There is a need to develop a strategic approach to rehabilitation in order to maximise ecological gain for the cSAC. A strategic approach must comprise clear objectives and a framework within which to identify sites that would benefit most from rehabilitation, and consider any constraints at those sites.

The difference between rehabilitation and restoration is important when considering a target condition for the cSAC. Restoration implies complete structural and functional return to a pre-disturbance state, while rehabilitation is any structural or functional improvement to ecological or habitat quality. In a system such as the Avon, which is almost entirely semi natural, rehabilitation seems a realistic description of what might be undertaken to achieve favourable condition. The scale on which rehabilitation is required in order to contribute to achieving favourable condition must be determined as the starting point of a strategic approach.

9.1.1 Framework for Strategic Approach

A flexible system that can be applied to all in-channel rehabilitation projects and floodplain works has been developed to determine what rehabilitation is required, where it should take place in the future and to ensure maximum benefit to the cSAC. The proposed framework shown in Figure 17 applies to both in-channel and floodplain works, and may also be applied to proposed rehabilitation outside the SAC that will benefit the site – for example, the opening up of old channels or carrier ditches.

A consistent way of identifying and prioritising sites is required to underpin this framework. The essential elements required are as follows:

- Definition of a target condition.
- Determination of whether rehabilitation is required to achieve favourable condition, or if it is an enhancement.
- Quantitative evaluation of the physical and ecological impact of rehabilitation techniques.
- Identification and mapping of the best reaches (physical and ecological habitat).
- Identification and prioritisation of sites for rehabilitation.
- Relationship to floodplain (including benefits to archaeological sites, such as water meadows).
- Delivery of rehabilitation projects.
- Pre- and post-project monitoring and evaluation.

As part of **Life in UK Rivers**, a full geomorphological audit of the River Wylfe has been undertaken. The main objectives of the project are to map the physical alterations to the river, develop an understanding of physical processes, and examine the impact of existing rehabilitation projects and the link between geomorphology, salmon and *Ranunculus* communities.

A combination of geomorphological and ecological data, complemented by RHS (if suitable) and the knowledge of river users should be developed to identify and prioritise sites that would benefit from rehabilitation. This approach would take account of physical processes and could be applied consistently across the catchment.

The work on the River Wylfe provides a basis for further development of a strategic approach and should allow some assessment of the level of geomorphological audit required, the usefulness of RHS data, and what extra analysis is required to support application of the method. Depending on the outcome, the technique should be modified and applied across the catchment. In order to be successful, the strategic

approach must be adopted by all organisations involved in rehabilitation, particularly those bodies that fund rehabilitation projects.

Action required	Delivery		
	By whom	Mechanism	Date
Use condition assessment criteria to determine whether and where rehabilitation is required to achieve favourable condition.	EA, EN	Condition assessment	2003
Consider whether major investment in a programme of larger-scale rehabilitation is needed to achieve favourable condition. If so, establish the necessary partnership and seek funding.	Strategy Working Group partnership RRC	n/a	2003
Refine the proposed strategic approach to rehabilitation, using the River Wylye as a pilot catchment.	EN, EA	Investigation	2003
Undertake a detailed geomorphological assessment of the remainder of the cSAC, using the refined Wylye approach.			2003/4
Evaluate the physical and ecological impact of existing rehabilitation schemes in the cSAC to help identify the most appropriate techniques.	EN, EA	Research	2004
Adopt the strategic approach as a framework for targeting rehabilitation projects that bring maximum ecological gain to the cSAC and preserve/enhance important archaeological features.	EA, EN, WTs, fisheries interests	Policy	2004/5

9.1.2 Objectives for Rehabilitation in the cSAC and Surrounding Floodplain

Objectives for identifying and prioritising potential rehabilitation projects have been developed by a group comprising representatives from English Nature, the Environment Agency, Wiltshire Fishery Association, the Wildlife Trusts, DEFRA, Game Conservancy Trust, and a landowner. These objectives are as follows:

- Rehabilitation should result in structural or functional improvements to the ecological or habitat quality of the cSAC, contributing to favourable condition.
- Sites should be targeted and prioritised in a way that maximises benefit to the cSAC's interests, wider biodiversity and archaeology.
- Rehabilitation projects should provide sustainable solutions that are adaptable to future scenarios (such as climate change), and require minimum management.
- Rehabilitation projects should be considered in the context of the river (reach or whole river, including the floodplain, depending on scale of the project) rather than in isolation.

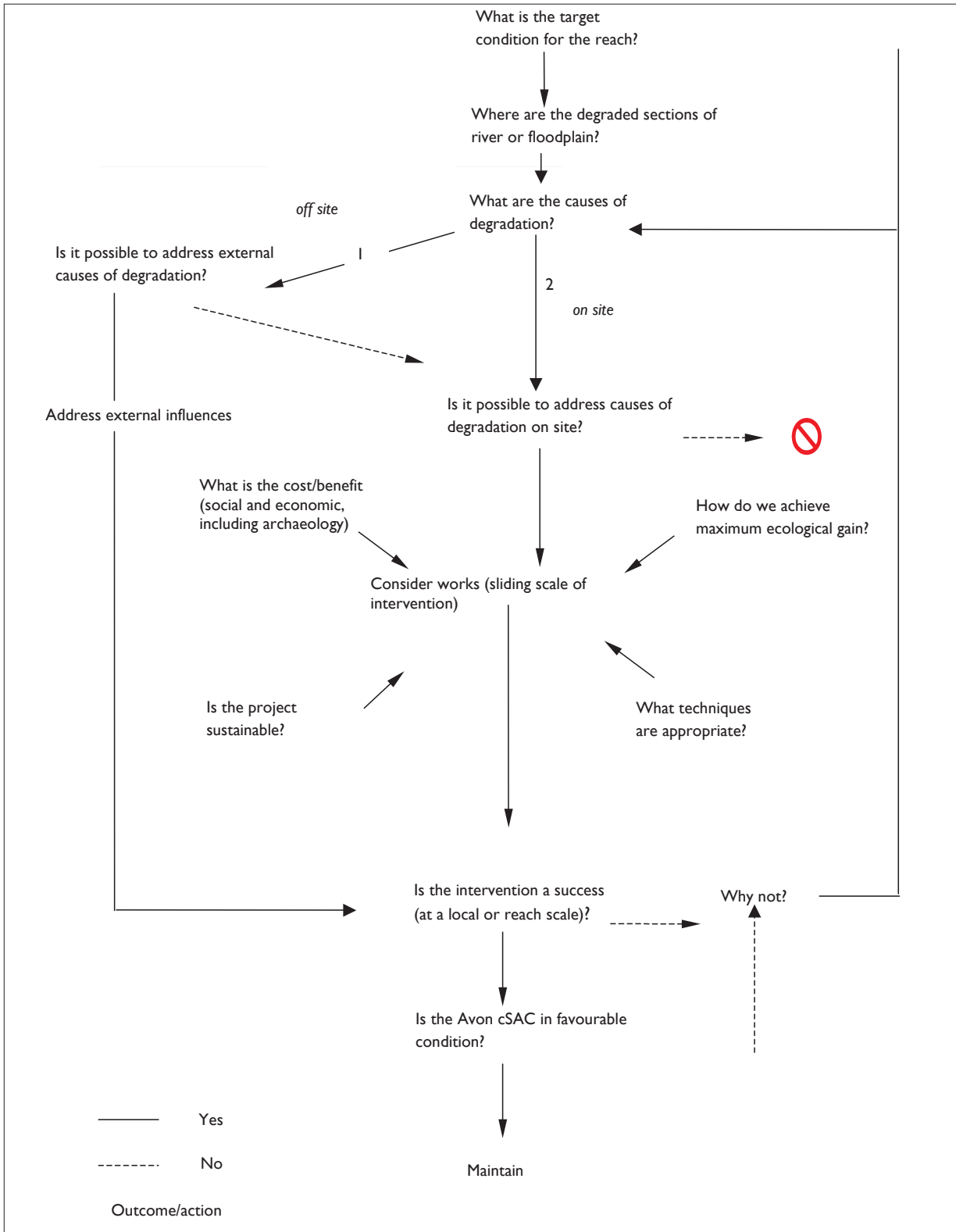
The implication of these objectives is that rehabilitation schemes aiming for maximum ecological gain to the cSAC and biodiversity will be high priority.

Where it is thought that rehabilitation within the floodplain may benefit the cSAC, the following objectives apply:

- Floodplain rehabilitation that primarily maintains or enhances the available habitat for the cSAC features must not compromise the SPA/Ramsar site.
- Sites should be targeted and prioritised in a way that maximises benefit to the cSAC, SPA, Ramsar, SSSI, wider biodiversity and archaeology.

- Rehabilitation projects should provide sustainable solutions that are adaptable to future scenarios (such as climate change), and require minimum management.
- Rehabilitation projects should be considered in the context of the surrounding floodplain, rather than in isolation.

Figure 17. Framework for strategic approach to rehabilitation projects



9.2 Guidance on Rehabilitation

In order to ensure consistency, there is a need to provide best-practice guidance for people carrying out and advising on rehabilitation schemes. The suggested scope of the guidance is as follows:

- How to determine if a project is needed
- Objectives for rehabilitation including target species and habitats
- Using river processes
- Evaluate options, utilise design and construction best practice
- Necessary authorisations
- Feasibility (cost/benefit, constraints)
- Funding options
- Implementation and project management
- Post-project appraisal.

It should be noted that any guidance could only cover appropriate techniques based on current knowledge, which is limited; future research is needed to evaluate techniques.

Similarly guidance is needed on floodplain rehabilitation, most urgently for the agencies and landowners involved in the implementation of the Water Level Management Plans. The suggested scope of the guidance is as follows:

- How to determine if a project is required
- Objectives for rehabilitation including target species and habitats
- Identification/resolution of conflicts to accommodate the needs of the cSAC
- Evaluate options, utilise design and construction best practice
- Feasibility (cost/benefit, constraints and consents)
- Funding options
- Implementation and project management
- Post-project appraisal,

Ditching works and new structures will be part of implementing the Water Level Management Plans and have been identified as having a potential positive as well as negative impacts on the cSAC. Advice tailored to the particular interest features of the cSAC and SPA is required as mentioned in Section 3 (water quality). The Water Level Management Plan and ESA scheme must be able to give clear practical advice on issues related to floodplain rehabilitation, including the potential benefits and conflicts with the cSAC.

Action required	Delivery		
	By whom	Mechanism	Date
Undertake research to evaluate the physical and ecological impact of rehabilitation techniques, including type of materials used.	EA, EN	Research	2003+
Develop, evaluate and disseminate best-practice guidance to ensure that in-channel rehabilitation projects have maximum ecological gain for the cSAC and preserve/enhance important archaeological features.	EA, EN, DEFRA, fisheries and landowner interests, WTs, RRC, LA	Research	2003/4
Develop, evaluate and disseminate best-practice guidance to ensure that floodplain rehabilitation has maximum ecological gain for the cSAC and archaeological features.		Research	2003/4