

River Restoration Planning on Sites of Special Scientific Interest in England

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1. Background

Physical restoration of rivers is fundamental to delivering improvements to biodiversity and multiple ecosystem benefits. Physical habitat degradation of the Site of Special Scientific Interest (SSSI) river network is a complex issue to address. Much of it is linked to large-scale historical damage, and/or on-going uses of rivers e.g. abstraction and flood defence and their floodplains e.g. for agriculture and urban development.

The SSSI river network covers 2522 km, of which 1684 km is also designated as Special Area of Conservation (SAC) – 1788 km requires some assessment of river restoration needs to achieve “favourable condition”¹. , though not all of this river length will require active restoration measures. There should be no doubt that physical restoration of river SSSIs is a major undertaking.

For many years, physical restoration of SSSI rivers was not given a high priority compared to problems on SSSI rivers that had clear mechanisms for improvement works (particularly Asset Management Planning). It was simply too difficult, and efforts were restricted to cherry-picking a few small reaches as demonstration exercises. In 2004, the Public Service Agreement target for SSSIs forced a more strategic approach to the problem – guidance was generated that took a whole-river, geomorphologically and ecologically based approach to identifying problems and solutions, and to implement measures in a coordinated and sequenced way to bring about favourable condition.

The initiative gained momentum with the creation of a national river restoration project officer post, jointly funded by Natural England and the Environment Agency. The officer was to oversee the full roll-out of Restoration Planning Guidelines (Wheeldon *et al.* 2010) across all affected SSSI rivers, with the aim of getting as many sites into ‘unfavourable recovering’¹ condition in respect of physical habitat condition by 2010.

The remedying of physical constraints on the SSSI river network will help achieve favourable condition and will also improve the hydromorphological condition of these bodies of water, which is one of the key environmental objectives of the Water Framework Directive.

2. The planning process

The river restoration planning process for SSSIs adopts a strategic, whole-river approach to the planning and delivery of restoration measures, allowing all measures necessary to achieve favourable condition to be identified on the basis of geomorphological influences operating throughout the river network. This is critical, since restoration measures that appear appropriate within a small reach can be inappropriate when considered at a larger scale (e.g. considering the influence of water and sediment control structures up and downstream).

The approach provides a challenging, long-term approach to river restoration planning, based on restoring as much natural functionality to SSSI/SAC rivers as possible to the benefit of the whole biological community characteristic of the river. As such, the restoration objectives will go further than those that may be deemed necessary to secure Good Ecological Status and Good Ecological Potential (GES/GEP). This means that plans developed to restore SSSI/SAC rivers will also meet the requirements for GES/GEP in those rivers. The local decision-making process for developing a restoration plan is summarised in Figure 1.

¹ “Unfavourable recovering” condition is when appropriate management actions are in place to restore the required conditions for the designated habitats and features. “Favourable” condition is achieved when appropriate management actions are in place and the special habitats and features are judged to be in a healthy state and conserved for the future.

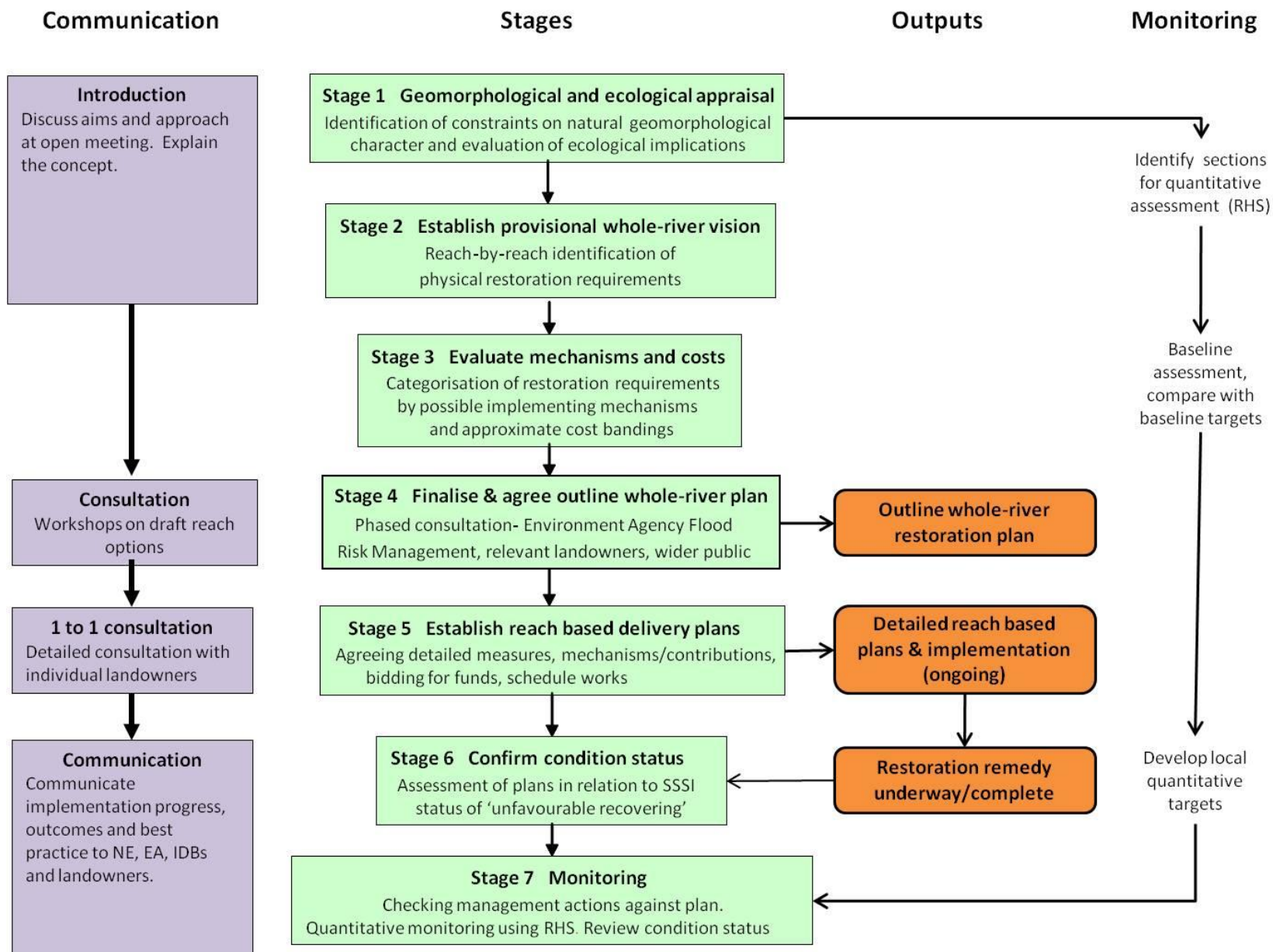
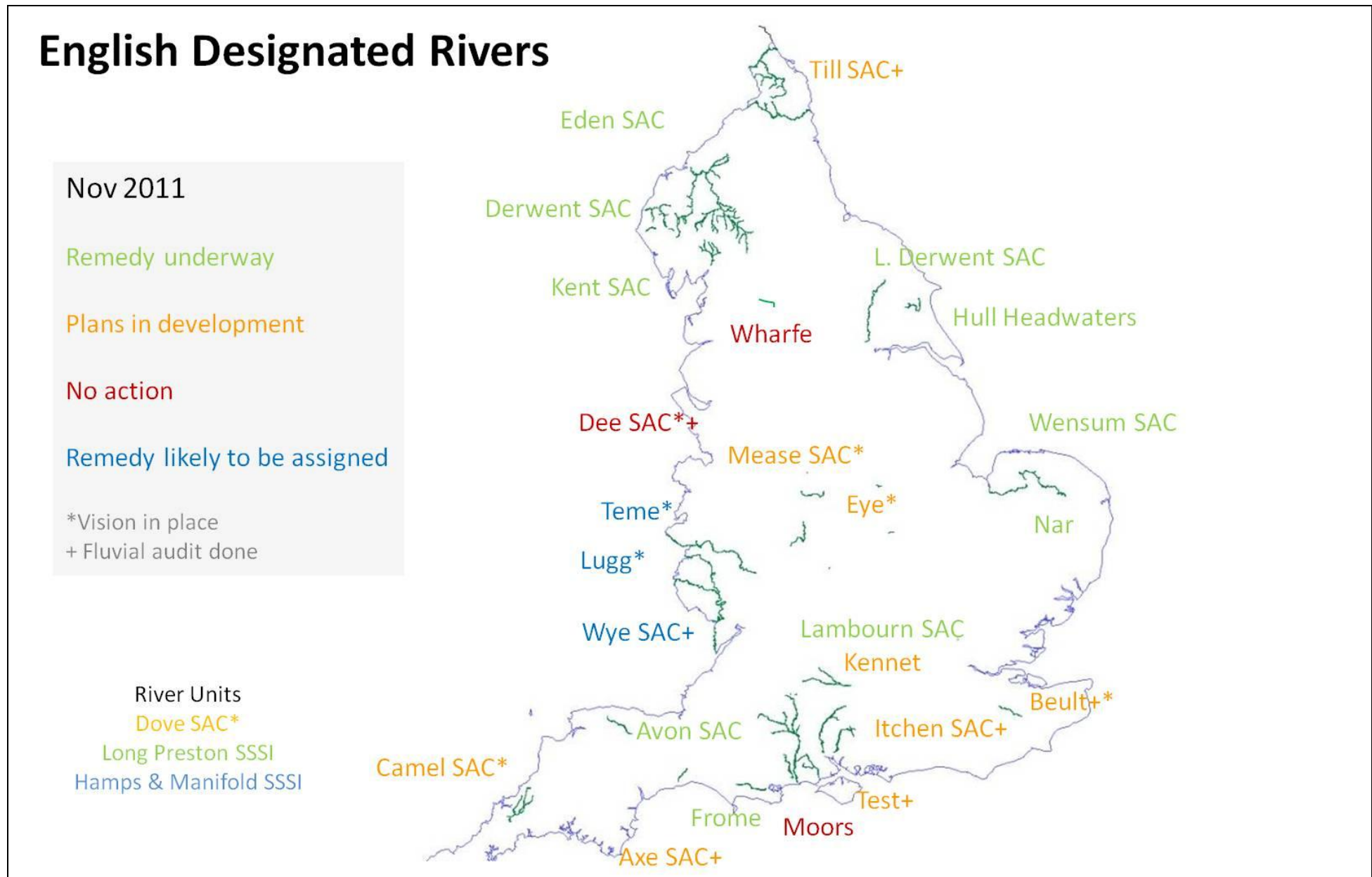


Figure 1 Key technical stages in the development of a SSSI physical restoration plan (green), communication aspects (purple) and main outputs (orange)

Table 1 Summary of progress with restoration planning and implementation on designated rivers. Bold indicates SAC rivers. If a SSSI is a component of an SAC, the SAC name is given in brackets. Annexes relate to current River Basin Management Plans.

SAC rivers	Restoration plan and implementation	River restoration related EA Flood and Coastal Risk Management measure	RBMP plan deadlines for river restoration for protected areas	
			Annex C actions	Annex D Operational
Axe (lower)	Geomorphological action plan done, plan in development	River restoration programme for Protected Areas (PAs)	2012	2012/15
Avon	Plan complete, implementation underway	River restoration programme for PAs	2012	2012/15
Camel	Restoration vision done, plan in development	River restoration programme for PAs	2012	2012/15
Derwent	Plan complete, implementation underway	River restoration programme for PAs	2010	2012/21
Eden	Plan complete, implementation underway	River restoration programme for PAs	2012*	
Itchen	Plan underway, implementation initiated	River restoration programme for PAs	2012	2012/15
Kent	Plan complete, implementation underway	River restoration programme for PAs	2010	2012/21
Lambourn	Plan complete, implementation underway	River restoration programme for PAs	2010	2012/21
Mease	Plan and implementation in development	Flood management programme	2012	2012/15
Tweed (Till)	Plan in development	River restoration programme for PAs	2012*	2012*
Wensum	Plan complete, implementation underway	River restoration programme for PAs	2012	2012/21
Yks.Derwent	Plan complete, implementation underway	River restoration programme for PAs	2012	2012/21
SSSI rivers				
Beult	Plan needs sign off and agreed implementation route.	n/a	n/a	n/a
Clun	Restoration vision done, plan in development	n/a	n/a	n/a
Dove	Restoration vision done, plan and implementation in development	n/a	n/a	n/a
Eye	Plan and implementation in development	n/a	n/a	n/a
Frome	Plan complete, implementation underway	n/a	2012	n/a
Hull Hdwaters	Plan complete, implementation underway	n/a	n/a	n/a
Kennet	Plan needs sign off, implementation underway	n/a	2010	n/a
LP Deepes	Plan complete, implementation underway	n/a	2012 –rr project	n/a
Nar	Plan complete, implementation underway	n/a	2010 project	
Test	Plan underway, implementation initiated	n/a	n/a	n/a
Rivers where restoration plan is, or is likely to be required but not yet underway				
Dee, Teme, Lugg, Moors, Wharfe, Wye				

Figure 2 Summary of progress with restoration planning and implementation on designated rivers. All rivers shown are SSSI, those that are also SAC are identified



3. Summary of progress and achievements

By the 2010 Public Service Agreement target deadline, a total of 10 river SSSIs (7 SACs), involving approximately 1236 km of river (1024 km SAC), have gone through the recommended planning process and have had strategic plans completed and signed off by both EA and NE at a senior regional level. Progress on designated rivers is summarised in Table 1 and Figure 2. Examples of existing whole-river restoration plans can be seen online as follows:

The Rivers Avon, Wensum and Frome

www.environment-agency.gov.uk/homeandleisure/wildlife/113442.aspx

Long Preston Deep

www.naturalengland.org.uk/regions/yorkshire_and_the_humber/ourwork/riverribblerestoration.aspx

The Rivers Eden, Derwent and Kent

<http://www.environment-agency.gov.uk/research/library/publications/123821.aspx>

The emphasis is increasingly on moving to implementation of restoration plans, in order to meet SSSI and WFD commitments. Works on the ground have been started on 11 SSSI rivers, as briefly explained below.

The River Wensum was the original pilot restoration strategy, and has progressed a long way with implementation of a programme of works. Restoration has been carried out by a partnership of the Environment Agency, Natural England and landowners at a number of locations including [Attlebridge](#), [Ringland](#), [Bintree](#) and [Great Ryburgh](#).

On the Hampshire Avon, the strategy implementation is being steered by a partnership between the Wessex Chalk Rivers Trust, the Wilshire and Hampshire & the Isle of Wight Wildlife Trusts, Environment Agency, Natural England and Wessex Water. Restoration has been done at a number of sites by the EA and the [Wessex Chalk Stream project](#) using external contractors, EA operations delivery staff, and volunteers.

On the River Frome, initial works have been carried at [East Stoke](#) by the Environment Agency operations delivery team to demonstrate some of the restoration techniques suggested in the Frome strategy.

Projects recently got underway on the River Nar at [Narborough, Castle Acre and West Lexham](#) through a partnership between the Environment Agency, Natural England, the Norfolk Rivers Internal Drainage Board, landowners and fishing clubs.

By March 2011, restoration plans and initial implementation measures were in place on 74% of SSSI rivers (by area) that require this action, compared to just 7% in October 2009. This is a major success, albeit that the vast majority of the task of physical restoration lies ahead. It is not only a success for the PSA target – Natural England and the Environment Agency have worked hard to show the relevance of this work to the wider UK river network, in relation to achieving Water Framework Directive (WFD) objectives.

SSSI river restoration has placed NE and EA at the forefront of catchment-scale, strategic coordination of restoration works, based on an understanding of geomorphological behaviours and dependencies within the river system. The approach is being publicised to the wider river restoration community (Mainstone and Homes 2010, Wheeldon 2010).

4. The road ahead

Progressing required programmes of river restoration on SSSIs initially requires prioritisation of actions, logical sequencing, costing, and securing delivery mechanisms. The programme will be based on multi-partner working, time horizons suited to the nature and scale of each site's problems and solutions (typically 20-50 year time horizons), a negotiated settlement to any disagreements, and a best endeavours approach to implementation. Assisted natural recovery is encouraged wherever possible, rather than implementing costly, high-intervention measures.

Detailed reach-level plans need to be produced and agreed with landowners, other users of the river such as fishing and navigation rights and the wider local community. This will not be easy owing to often inherent local concerns about changes to river management, especially in relation to perceived flood risk. Funds need to be secured to maintain best endeavours over time, including rolling bids to obvious budgets such as EA FCRM capital works, Defra WFD River Basin Management Plan (RBMP) delivery, Environmental Stewardship, and Woodland Grant Schemes, but also opportunistic bids to a range of other funding sources including European programmes. Work in-kind from third parties, including 'third sector' partners such as the River Trusts, is also a critical part of best endeavours that forms an important part of the design and implementation of plans.

Initial indications from plans produced to date are that around 1460 km of SSSI/SAC river (58% of the total SSSI/SAC network) needs to be restored. Given the nature of the work outlined above, all this adds up to a considerable body of on-going work over a considerable number of years, for NE, EA and a range of partners.

The roll out of restoration planning on SSSI rivers will greatly increase confidence in a large-scale, strategic approach to river restoration, and feed into decision-making about restoration of the wider river network under the EC Water Framework Directive.

More information

For more information about the Natural England and Environment Agency joint river restoration programme please contact jenny.wheeldon@naturalengland.org.uk

References

Mainstone, C.P. and Holmes, N.T.E (2010) Embedding a strategic approach to river restoration in operational management processes — experiences in England. *Aquatic conservation: Marine and Freshwater Ecosystems*. Published on-line, [DOI: 10.1002/aqc.1095](https://doi.org/10.1002/aqc.1095).

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