Improvement Programme for England's Natura 2000 Sites (IPENS)

Planning for the Future

Site Improvement Plan

River Clun

Site Improvement Plans (SIPs) have been developed for each Natura 2000 site in England as part of the Improvement Programme for England's Natura 2000 sites (IPENS). Natura 2000 sites is the combined term for sites designated as Special Areas of Conservation (SAC) and Special Protected Areas (SPA). This work has been financially supported by LIFE, a financial instrument of the European Community.

The plan provides a high level overview of the issues (both current and predicted) affecting the condition of the Natura 2000 features on the site(s) and outlines the priority measures required to improve the condition of the features. It does not cover issues where remedial actions are already in place or ongoing management activities which are required for maintenance.

The SIP consists of three parts: a Summary table, which sets out the priority Issues and Measures; a detailed Actions table, which sets out who needs to do what, when and how much it is estimated to cost; and a set of tables containing contextual information and links.

Once this current programme ends, it is anticipated that Natural England and others, working with landowners and managers, will all play a role in delivering the priority measures to improve the condition of the features on these sites.

The SIPs are based on Natural England's current evidence and knowledge. The SIPs are not legal documents, they are live documents that will be updated to reflect changes in our evidence/knowledge and as actions get underway. The information in the SIPs will be used to update England's contribution to the UK's Prioritised Action Framework (PAF).

The SIPs are not formal consultation documents, but if you have any comments about the SIP or would like more information please email us at IPENSLIFEProject@naturalengland.org.uk, or contact Natural England's Responsible Officer for the site via our enquiry service 0300 060 3900, or enquiries@naturalengland.org.uk

This Site Improvement Plan covers the following Natura 2000 site(s)

UK0030250 River Clun SAC

Site description

The River Clun SAC is important for its population of Freshwater Mussel (FWPM) *Margaritifera margaritifera* which has a very high water quality requirement. It is the southern most of only three SAC sites designated for Freshwater Mussel in England.

Plan Summary

This table shows the prioritised issues for the site(s), the features they affect, the proposed measures to address the issues and the delivery bodies whose involvement is required to deliver the measures. The list of delivery bodies will include those who have agreed to the actions as well as those where discussions over their role in delivering the actions is on-going.

Priority & Issue	Pressure or Threat	Feature(s) affected	Measure	Delivery Bodies
1 Siltation	Pressure	S1029 Freshwater mussel	Reduce siltation using voluntary measures and where this is not possible consider regulatory options	Defra, Environment Agency, Natural England, Rural Payments Agency (RPA), Severn Trent Water Ltd, Shropshire Hills AONB, Shropshire Wildlife Trust, National Farmers' Union (NFU)
2 Water Pollution	Pressure	S1029 Freshwater mussel	Improve water quality by reducing river nutrient levels of nitrogen (N) and phosphorus (P)	Defra, Environment Agency, Natural England, Rural Payments Agency (RPA), Severn Trent Water Ltd, Shropshire Hills AONB, Shropshire Wildlife Trust, National Farmers' Union (NFU)
3 Low breeding success/ poor recruitment	Pressure	S1029 Freshwater mussel	Intensive programme to safeguard and increase through breeding the vulnerable mussel population	Environment Agency, Natural England, Shropshire Hills AONB, Shropshire Wildlife Trust, Freshwater Biological Association, Severn Rivers Trust
4 Disease	Pressure	S1029 Freshwater mussel	Manage the impacts caused as the result of Alder phytophthora disease	Environment Agency, Natural England, Shropshire Hills AONB, Shropshire Wildlife Trust, Woodland Trust, Freshwater Biological Association, Severn Rivers Trust

5 Physical modification	Pressure	S1029 Freshwater mussel	Remove or modify inappropriate weirs	Environment Agency, Natural England, Shropshire Hills AONB, Shropshire Wildlife Trust, Freshwater Biological Association, Severn Rivers Trust
6 Invasive species	Pressure	S1029 Freshwater mussel	Reduce the impact of Himalayan balsam	Environment Agency, Natural England, Shropshire Hills AONB, Shropshire Wildlife Trust, Freshwater Biological Association, Severn Rivers Trust
7 Change in land management	Pressure	S1029 Freshwater mussel	Investigate and promote opportunities for more sustainable agricultural land use	Defra, Environment Agency, Natural England

Issues and Actions

This table outlines the prioritised issues that are currently impacting or threatening the condition of the features, and the outstanding actions required to address them. It also shows, where possible, the estimated cost of the action and the delivery bodies whose involvement will be required to implement the action. Lead delivery bodies will be responsible for coordinating the implementation of the action, but not necessarily funding it. Delivery partners will need to support the lead delivery body in implementing the action. In the process of developing the SIPs Natural England has approached the delivery bodies to seek agreement on the actions and their roles in delivering them, although in some cases these discussions have not yet been concluded. Other interested parties, including landowners and managers, will be involved as the detailed actions are agreed and delivered. Funding options are indicated as potential (but not necessarily agreed or secured) sources to fund the actions.

1 Siltation

Siltation is a major issue affecting the health of Freshwater Mussel, both by acting directly on the adult mussels but also by preventing juvenile recruitment. Excessive delivery of fine sediment, from the catchment or artificially enhanced bank erosion, may lead to a range of problems relating to surface siltation, the compaction or concretion of river beds and to the in-filling of substrate interstices. This affects oxygen supply and exchange between the river water and the substrate as well as the ability of juvenile and adult mussels to burrow. Infiltration by fine sediments is one of the main causes of decline in juvenile recruitment for mussel populations. Fine sediments also subsequently provide a medium for macrophyte growth and further silt trapping, which makes the river bed habitat unsuitable for mussels. It should be noted that host salmonids also require clean gravels for spawning and are particularly sensitive to siltation of gravel beds.

The River Clun Restoration Plan and Nutrient Management Plan highlight the issues around increased sediment loads and siltation affecting the remaining freshwater mussels. The scientific and local stakeholder consensus is that agriculture is responsible for the majority of sediment loads in the River Clun.

Action	*Action description*	*Cost estimate*	*Timescale*	*Mechanism*	*Funding option*	*Delivery lead body*	*Delivery partner(s)*
1A	Refer to actions under Water Pollution.	See costs for Water Pollution	2014-27	See Water Pollution	see Water Pollution	see Water Pollution	see Water Pollution

Action	*Action description*	*Cost estimate*	*Timescale*	*Mechanism*	*Funding option*	*Delivery lead body*	*Delivery partner(s)*
1B	Highways and associated drainage are key sediment and nutrient pathways to the River Clun. Agri-environment schemes and Local authorities could deliver a Rural Sustainable Drainage system.	Not yet determined	2014-27	Existing Local Project	Not yet determined	Shropshire County Council	Environment Agency, Natural England, Shropshire Hills AONB

2 Water Pollution

Water quality is important for all life stages of Freshwater Mussel. Juvenile mussels, after they drop off the host fish and live within the river gravels, are most vulnerable to pollution events.

Phosphorus, together with nitrogen, is important in enhancing productivity and elevated levels from point and diffuse sources are an important factor in eutrophication. As with siltation, nutrient enrichment can have serious and ongoing impacts on juvenile and adult mussels. Increased inputs of dissolved nutrients tend to lead to filamentous algal and macrophyte growth. The respiration of artificially large growths of benthic or floating algae may generate large diurnal sags in dissolved oxygen and poor substrate conditions (increased siltation) for fish and invertebrate species. Macrophytes can also smother the mussel habitat even further, and trap more sediment, exacerbating the problem in the long term.

The River Clun Nutrient Management Plan identified agriculture as a significant contributor of P, N (also sediment). Agriculture (livestock and arable) are shown to contribute 61% of P and 92% of N. In addition Sewage treatment plants contribute 35% of P, at current levels. As there is pressure for more development this will only increase unless it is tackled.

Action	*Action description*	*Cost estimate*	*Timescale*	*Mechanism*	*Funding option*	*Delivery lead body*	*Delivery partner(s)*
2A	Deliver capital works through extant agri-environment agreements and undertake fine-tuning of existing agreements where necessary.	£250,000	2014-19	Rural Development Programme for England (RDPE): Environmental Stewardship Higher Level Scheme (HLS)	Rural Development Programme (RDPE)	Natural England	Shropshire Hills AONB

Action	*Action description*	*Cost estimate*	*Timescale*	*Mechanism*	*Funding option*	*Delivery lead body*	*Delivery partner(s)*
2B	Implement land management measures from the Nutrient Management Plan (NMP).	£23,000,000	2016-27	Rural Development Programme for England (RDPE): Common Agricultural Policy 2014-20 (New Environmental Land Management Scheme)	Rural Development Programme (RDPE)	Natural England	Shropshire Hills AONB

Action	*Action description*	*Cost estimate*	*Timescale*	*Mechanism*	*Funding option*	*Delivery lead body*	*Delivery partner(s)*
2C	Manage farm-based diffuse pollution.	£5,000,000	2014-27	England Catchment Sensitive Farming (CSF)	Rural Development Programme (RDPE), Catchment Sensitive Farming (CSF)	Natural England	Environment Agency

Action	*Action description*	*Cost estimate*	*Timescale*	*Mechanism*	*Funding option*	*Delivery lead body*	*Delivery partner(s)*
2D	Investigate amendments to the SSSI boundary, to include headwaters and/or to improve floodplain connectivity.	Not yet determined	2014-27	Designation strategy (SSSI)	Natural England	Natural England	Shropshire Hills AONB, Shropshire Wildlife Trust, National Farmers' Union (NFU)

Action	*Action description*	*Cost estimate*	*Timescale*	*Mechanism*	*Funding option*	*Delivery lead body*	*Delivery partner(s)*
2E	Investigate whether there is a need to make more effective use of regulatory tools.	Not yet determined	2014-27	Enforcement	Not yet determined	Defra	Environment Agency, Natural England, Rural Payments Agency (RPA)

Action	*Action description*	*Cost estimate*	*Timescale*	*Mechanism*	*Funding option*	*Delivery lead body*	*Delivery partner(s)*
2F	Investigate the potential for introducing a Water Protection Zone.	Not yet determined	2017-19	Integrated Nutrient Management Plan: Nutrient Reduction Management Plan	Not yet determined	Defra	n/a

Action	Action description	Cost estimate	Timescale	Mechanism	Funding option	Delivery lead body	Delivery partner(s)
2G	Implement measures from the Nutrient Management Plan 2014 to reduce point source pollution.	£2,700,000	2014-18	Integrated Nutrient Management Plan: Nutrient Reduction Management Plan	AMP6, Water company	Severn Trent Water Ltd	n/a

Action	Action description	Cost estimate	Timescale	Mechanism	Funding option	Delivery lead body	Delivery partner(s)
2H	Implement the Nutrient Management Plan.	Not yet determined	2014-27	Integrated Nutrient Management Plan: Nutrient Reduction Management Plan	Not yet determined	Natural England	Environment Agency

3 Low breeding success/ poor recruitment

The stressed and aging population of Freshwater Mussel is very vulnerable to one off events (floods, drought, pollution). Surveys since 1995 show there has been no juvenile recruitment and there has been an overall loss of 60% of mussels between 1995 and 2013. Most of the remaining mussels are in very poor condition and although they are long lived, the remaining population may only survive for another 20 years without major intervention. This is an aging population which is very stressed, the remaining mussels have been found covered in silt and algae and sitting on the surface of the gravel rather than buried amongst it. The numbers of mussels may reach a point where there is insufficient genetic diversity to maintain a healthy population. Studies have shown that translocation of mussels from river to river is relatively unsuccessful with mortalities of over 50% in the first three years. There may be physiological accommodation or genetic adaptation to particular rivers. Therefore it is crucial to maintain the existing population in situ.

Action	Action description	Cost estimate	Timescale	Mechanism	Funding option	Delivery lead body	Delivery partner(s)
3A	Implement the River Restoration Plan.	Not yet determined	2014-27	River Restoration Plan: Restoration Project	LIFE, Heritage Lottery Fund (HLF)	Local partnership	Environment Agency, Natural England, Shropshire Hills AONB, Shropshire Wildlife Trust, Severn Rivers Trust

Action	*Action description*	*Cost estimate*	*Timescale*	*Mechanism*	*Funding option*	*Delivery lead body*	*Delivery partner(s)*
3B	Maintain the existing Freshwater mussel 'ark' site in Cumbria.	Not yet determined	2014-27	Existing Local Project	LIFE, Heritage Lottery Fund (HLF), Landfill tax	Natural England	Freshwater Biological Association

Action	*Action description*	*Cost estimate*	*Timescale*	*Mechanism*	*Funding option*	*Delivery lead body*	*Delivery partner(s)*
3C	Implement the River Clun conservation plan for the freshwater mussel population (March 2014).	£6,400,000	2014-27	Habitat creation / restoration strategy: Creation of new habitat	LIFE, Heritage Lottery Fund (HLF)	Local partnership	Environment Agency, Natural England, Shropshire Hills AONB, Shropshire Wildlife Trust, Severn Rivers Trust

4 Disease

Tree death is compounding other problems such as siltation and and nutrient enrichment. Alder *phytophthora* is killing numerous trees in the Clun catchment. Dead trees are leading to less stable banksides and contributing directly to bankside erosion/increased siltation. Occasional trees are falling into river and pulling out whole bank side. As well as adding silt to the river, over time this will effectively widen the river, causing slower and shallower water which will compound the other issues of siltation and pollution. Tree shade also helps to keep the river cool, cold water holds more oxygen and shade can help prevent the growth of plants and algae.

Action	*Action description*	*Cost estimate*	*Timescale*	*Mechanism*	*Funding option*	*Delivery lead body*	*Delivery partner(s)*
4A	Coppicing of *Phytophthora* infected alder trees, and planting with alternative species.	Not yet determined	2014-27	River Restoration Plan: Restoration Project	LIFE, Heritage Lottery Fund (HLF)	Local partnership	Environment Agency, Natural England, Shropshire Hills AONB, Shropshire Wildlife Trust, Woodland Trust, Severn Rivers Trust

5 Physical modification

The Freshwater mussel has a commensal relationship with migratory salmonids (salmon and trout), as the glochidia (larval stage) attach themselves to the gills of the fish before dropping off to bury themselves in clean gravels. Weirs and dams (not all of which are in the SAC itself, some are downstream in River Teme SSSI) affect the movement of migratory salmonids on which the mussels depend. Although salmonids are arriving in the headwaters they are likely to be less healthy than if progress upstream was unimpeded.

Action	*Action description*	*Cost estimate*	*Timescale*	*Mechanism*	*Funding option*	*Delivery lead body*	*Delivery partner(s)*
5A	Remove (or modify) weirs.	Not yet determined	2014-27	River Restoration Plan: Restoration Project	EU Life, Heritage Lottery Fund (HLF)	Environment Agency	Natural England, Shropshire Hills AONB, Shropshire Wildlife Trust, Severn Rivers Trust

6 Invasive species

Himalayan balsam in the main problem spcies in the catchment at the moment. Work has begun to map and tackle the spread of this species. As Himalayan balsam dies back in winter, it often leaves bare banks during the winter season making them more vulnerable to erosion. This will add to the siltation problems faced by the Freshwater musselalthough this has not actually been quantified. It is important to tackle this in conjunction with other issues in the catchment to prevent it undoing work that is happening elsewhere.

Action	*Action description*	*Cost estimate*	*Timescale*	*Mechanism*	*Funding option*	*Delivery lead body*	*Delivery partner(s)*
6A	Control Himalayan balsam.	£50,000	2014-20	Invasive Control Plan: Invasive Species Control Programme	LIFE, Heritage Lottery Fund (HLF)	Local partnership	Environment Agency, Natural England, Shropshire Hills AONB, Shropshire Wildlife Trust, Severn Rivers Trust

7 Change in land management

Current and future changes in land management in the catchment, particularly intensification of farming practices are a concern. There is a general trend of arable farming replacing grazed grasslands. Changes in land use are a feature across the catchment. Arable, including potato growing has increased in the last decade, including on the steeper slopes higher up in the catchment. The soil types are vulnerable to erosion. Increased sediment loads are evident in the river and have impacted on the riverbed habitat affecting the Freshwater mussel population (siltation).

Action	*Action description*	*Cost estimate*	*Timescale*	*Mechanism*	*Funding option*	*Delivery lead body*	*Delivery partner(s)*
7A	Investigate options to reduce agricultural land intensification through incentives, advice and regulation.	Not yet determined	2014-27	Mechanism not identified / develop mechanism	Natural England	Natural England	Defra, Environment Agency

Site details

The tables in this section contain site-relevant contextual information and links

Qualifying features

#UK Special responsibility

River Clun SAC	S1029 *Margaritifera margaritifera*: Freshwater mussel

Site location and links

River Clun SAC

Area (ha) **14.93** *Grid reference* **SO393754** Map link

Local Authorities	Herefordshire; Shropshire
Site Conservation Objectives	European Site Conservation Objectives for River Clun SAC
European Marine Site conservation advice	n/a
Regulation 33/35 Package	n/a
Marine Management Organisation site plan	n/a

Water Framework Directive (WFD)

The Water Framework Directive (WFD) provides the main framework for managing the water environment throughout Europe. Under the WFD a management plan must be developed for each river basin district. The River Basin Management Plans (RMBP) include a summary of the measures needed for water dependent Natura 2000 sites to meet their conservation objectives. For the second round of RBMPs, SIPs are being used to capture the priorities and new measures required for water dependent habitats on Natura 2000 sites. SIP actions for non-water dependent sites/habitats do not form part of the RBMPs and associated consultation.

Additional information is provided on targets for flow and some water quality parameters, in order to meet the conservation objectives for certain Natura 2000 sites. The relevant targets are identified in the revised conservation objectives document (see link to PDF below).

These targets have been revised for a number of Natura 2000 rivers and lakes, following a review by the conservation agencies of Common Standards Monitoring Guidance. For rivers, this is done through local discussions between Natural England and Environment Agency staff. For lake sites, the only parameter where alignment of standards was reviewed was phosphorus and so this work was undertaken jointly at a national level.

The linked PDF documents include the proposed target values, and also set out an 'interim progress goal', that will need to be achieved by 2021. Where sufficient information is available the document also identifies a timescale for achievement of the longer-term target. For any sites where it has not been possible to agree specific targets, usually because further technical work is required, these will be indicated in the documents by an asterisk. For further information please see Part 2 of the River Basin Plan

River Clun SAC

River basin	Severn	Severn RBMP
WFD Management catchment	Teme	
WFD Waterbody ID (Cycle 2 draft)	GB109054043950, GB109054043990	
Locally revised Conservation Objectives	Moving towards common standards monitoring guidance targets for SAC rivers	
Additional information on locally revised Conservation Objectives	n/a	
EA/ NE agreed RBMP lake SAC targets	n/a	

River Restoration Plan

Source of information on river restoration plans for SAC rivers where these are in place or planned, with links to documentation where this is available.

Webpage link: Restoring Designated Rivers	n/a
River Restoration Plan document	n/a

Overlapping or adjacent protected sites

Site(s) of Special Scientific Interest (SSSI)	
River Clun SAC	River Teme SSSI

National Nature Reserve (NNR)	
River Clun SAC	n/a

Ramsar	
River Clun SAC	n/a

Special Areas of Conservation (SAC) and Special Protection Areas (SPA)	
River Clun SAC	n/a

Version	*Date*	*Comment*
1.0	07/10/2014	