SVE4.06

Water WINEP Biodiversity

Draft Determination representations

28 August 2024

WONDERFUL ON TAP

SEVERN TRENT

Contents

1. Executive Summary

1.1 Background

Severn Trent's PR24 business plan proposed a total of £45.5m for biodiversity-related activities as part of its Water Industry National Environment Programme (WINEP). Interventions included biodiversity enhancements on Severn Trent land, species recovery projects, peatland restoration, condition improvement on designated sites and wider biodiversity work across the Severn Trent operating area.

1.2 The challenge: Insufficient evidence

Section 3.3.6 of the Draft Determination Expenditure Allowances document sets out the decisions related to WINEP and Ofwat's model "water – Biodiversity conservation: enhancement expenditure model" set out its decisions and the reasons for them.

The draft determination included £22.77m, 50% lower than our plan as a result of Ofwat's deep dive commentary highlighting concerns covering:

a) Need – partial pass (10% reduction): "The company does not provide sufficient and convincing evidence that there are no overlaps with base or previously funded enhancement schemes."

b) Best option – some concerns (20% reduction): "The company does not provide sufficient and convincing evidence that alternative options have been considered or that a robust options development process has been followed in some cases."

c) Cost efficiency – some concerns (20% reduction): "We have some concerns whether the investment is efficient. The company does not provide sufficient and convincing evidence that the proposed costs are efficient in comparison to benchmarks."

1.3 Why it matters

It will not be possible to deliver our statutory obligations for 50% less funding. Without this investment, it is likely that all conservation work we delivered in AMP7 will effectively go into stasis. This would be in contradiction with what our customers want, and what Ofwat has said it wants water companies to focus on:

- 2019: "Ofwat is committed to playing its part in ensuring that the water sector enhances the natural environment, and we are committed to addressing long-term challenges such as those posed by the climate crisis and population growth."[1]
- April 2024: "The findings also underscore the importance of the need for a transformative change in the water sector, so that it delivers better outcomes for customers and the environment. This is why Ofwat is focused on transforming the sectors performance."[2]
- In December 2022, Ofwat's expectations of a water company's PR24 submission was outlined in a news release: "The methodology set out today will see water companies need to meet new environmental commitments and improve service to customers."

[1] Biodiversity-and-the-resilience-of-ecosystems-–-Ofwat's-report-ENG.pdf
[2] Customer trust and satisfaction in water companies falling in latest Ofwat and CCW research - Ofwat

- In his foreword to PN 41/22 Price Review 2024, David Black, Chief Executive, says: “The sector needs to act now – in advance of PR24. Significant improvements are needed to drive down water demand, improve customer service and reduce pollution incidents. We are looking to companies to respond to urgent need for change and set out ambitious plans to improve outcomes for customers and the environment.”

1.4 How to fix it

In this representation, we have provided additional evidence to demonstrate the need for the enhancement investment, and that there are no overlaps with base expenditure or work already funded.

For each WINEP line, we explain where our new obligations mean further investment is required over and above AMP7, the benefits from each scheme, alternative solutions, further information on costs, and (where applicable) how the work builds upon AMP7 activity.

We provide more evidence to explain the process by which biodiversity needs are defined and how it does not follow a more traditional optioneering approach but instead the solutions follow directly from investigations.

It is also important that the final determination allowance is based on a view of the efficient cost of delivering the statutory obligations and does not revert back to an arbitrary top-down adjustment which bears no significance on the likely efficient cost.

Once this evidence has been considered, we believe the challenge should be removed for the final determination.

2. The need for enhancement investment

2.1 New statutory obligations

The biodiversity enhancement expenditure outlined in our PR24 submission all relates to new statutory obligations that were not in place at the time of PR19 WINEP.

The 2021 Environment Act now requires public authorities to not only conserve, but also enhance, biodiversity. Water companies' statutory obligations have therefore been expanded through the 2021 Environment Act, including targets for improving biodiversity and the water environment. These new obligations build on the PR19 WINEP and are considered new enhancement expenditure. The investment under driver codes NERC_IMP and SSSI_IMP is to further enhance the environment in AMP8, and the Environment Agency (EA) and Natural England (NE) are supportive of Severn Trent's proposed approach under our new obligations. The costs reflect only what is needed to provide additional enhancements.

2.2 Benefits valued by regulators and customers

Our environmental regulators recognise the importance and value of our biodiversity WINEP to our region. What's good for nature is good for water, and so by virtue of undertaking these WINEP obligations we are delivering activities that benefit our customers' best interests in water treatment/protection, as well as benefiting biodiversity.

Our customers identify the environment a key area of focus. In 2021, they told us that their concern for the environment is high, with most customers in the research wanting us to go beyond legal requirements (see SVE07 "Annex 3a Customer and Stakeholder Engagement" of our PR24 submission for further information). The environment is spontaneously identified as a priority, alongside water quality, affordability and the importance of water efficiency.

Our stakeholders have also provided feedback on the new Biodiversity ODI that has been published and have highlighted that this new approach, compared with our AMP7 method of working is going to prohibit working collaborative and will therefore provide reduced environmental benefits without these specific WINEP benefits. There are several types of projects that stakeholders have expressed concerns about potentially being excluded from AMP8 due to the strict alignment with the Biodiversity Net Gain (BNG) metric. Here are some examples:

- **Water Vole Recovery**: Projects focused on the recovery of specific species, such as water voles, may not align well with the BNG metric, which tends to prioritize habitat-based improvements over species-specific interventions.
- **Wetlands and Ponds**: The BNG metric is known to represent wetland habitats poorly. Projects focused on restoring wetlands and ponds, which are often expensive and complex, may struggle to meet the metric's requirements and thus be excluded.
- **Hedges and Small Ponds**: The hectare-based measure used in AMP7 allowed for the inclusion of small-scale but ecologically valuable habitats like hedges and small ponds. These may be undervalued or excluded under the BNG metric, which may not fully capture their ecological importance.

- **Short-Term Interventions**: Projects that involve short-term interventions or do not require long-term management commitments may be excluded under AMP8, which emphasizes long-term biodiversity gains and management.
- **Third-Party Land Projects**: The focus on Severn Trent-owned land under AMP8 may exclude projects on third-party land, which were previously supported under AMP7. This shift could limit the geographical and ecological scope of biodiversity projects.

Our WINEP biodiversity projects look to overcome the above challenges and shortcomings by providing environmental benefits that have been recognised by environmental organisations throughout our region as well as our environmental regulators.

2.3 Best option for customers

We are confident that this is the best option for customers. Research from AMP6 shows that every £1 we spend on biodiversity benefits delivers £2-20 in water treatment benefits, plus an additional £4 of wider environmental benefits. Our robust cost-benefit analysis is based on the work we have delivered in AMP7, as well as work delivered independently through partnership organisations.

There is no one single delivery route for this diverse programme of work, so our plan covers several approaches:

- Strategic partnerships with non-governmental organisations (NGOs), small community groups and stakeholder organisations. Over AMP7 we have successfully worked with 124 partners to deliver over 11,500 hectares of biodiversity improvements and over 200 projects. Many of our partners have helped in the development of this enhancement case.
- Direct delivery from our Biodiversity & Ecology team, Visitor Experience team or Rural Estates team for land management and habitat improvement on Severn Trent sites and our tenanted rural estate.
- Contractors and consultants for specialist delivery, who played a key role in delivering our grassland, woodland and hedgerow programmes in AMP7. Our consultants have a proven track record in biodiversity action plans, and are well placed to support the next phase of work.
- Volunteers through our Community Champions programme.

We have engaged with our key delivery partners and contractors in advance and have co-designed the programme with them, so we understand the capacity needed to deliver the AMP8 programme.

2.4 Cost efficiency and robustness

Costs were developed from the bottom up, based on evidence of past delivery costs in AMP7 or AMP6. These were then tested through delivery partners' outline quotes to evaluate a competitive price. We have ensured that, for activities requiring specialist contractors, the unit rates used on the quotes are compared to similar works delivered by our framework contractors, allowing us to challenge unit cost assumptions. Wherever possible, quotes have been sought from at least three specialists to inform the basis of our cost estimation. A good example of this is the tendering process we went through for our grassland, woodland and ground maintenance work. The tendering process placed our woodland work at £1,646/ha, which is significantly lower when compared to the Forestry Commission English Woodland Creation Offer cap of £10,200/ha.

Partnership delivery is our preferred way of working with NGOs and Wildlife Trusts. These organisations generally offer better value compared to contractors and bring match funding, which can extend the amount of work being delivered through our funding. Therefore, for a significant amount of our proposed work programme, we have utilised costs derived from our work with NGOs. Most NGOs we work with have charitable status, meaning that their ledgers are under strict scrutiny and challenged by a board of trustees to ensure the work they deliver is at the best value to their customers and stakeholders. Therefore, this external benchmarking also supports the activities they deliver on our behalf.

Based on learnings from AMP7, cost efficiencies have been built into our biodiversity programme. Where possible, we have set a £2,000/ha average cost to our biodiversity enhancement activities. This ensures our costs are on average 83% lower than quotes we have received from other organisations such as the Rivers Trusts.

Biodiversity net gain (BNG) assessments have been used to underpin the optioneering process for a number of sites. These provide the BNG scores and assessment used to forecast the predicted likely improvements and thus the forecasted benefits based on habitat types. The assumptions for these calculations have then been expanded over the proportional type of habitats we expect to work on in AMP8.

2.5 No overlap

There is no overlap with the base expenditure for existing projects. Where land that has been enhanced as part of PR19 programme/activity, the work being carried out in AMP8 will be an incremental enhancement to this.

3. NERC_IMP Driver

3.1 08ST100267a NERC_IMP

Deliver Biodiversity Improvements across ST Sites where Biodiversity Audits have been completed through a Biodiversity Action Plan across various ST Sites.

Relatable AMP7 obligations: EMD00134; EMD00136

Our AMP7 obligation to develop a biodiversity action plan (EMD00134) was to create a strategy and action plan that outlines our ambitions and direction of travel as environmental leaders, but did not include any physical interventions. Included in our AMP7 WINEP was also the obligation to create 60 biodiversity action plans; by 2025, we will have significantly outperformed this requirement, completing biodiversity audits on 262 sites. These audits will inform the AMP8 programme for delivery.

The AMP7 obligation to take action to protect, restore and enhance any NERC section 41 species and habitats that are present on land owned or managed by the water company (EMD00136) was delivered on discrete land parcels at specific sites, or attributed to Capital Projects delivered in AMP7. Under the AMP8 obligations, the work that is identified through the site action plans will be carried out on land that has not undergone AMP7 enhancement. Where there is additional enhancement possible on parcels of land that were improved in AMP7, these additional enhancements will be to deliver additional environmental benefits and will be delivered as part of the wider management plan.

Figure 1 shows a summarised example of a biodiversity action plan and work undertaken in AMP7 and proposed additional work in AMP8. An original biodiversity action plan was undertaken in 2019, but the site was re-assessed in 2022 as the original targets were no longer appropriate. This shows that sites can be very dynamic in terms of biodiversity; flexible management, additional work, or changes to planned work are almost always needed.

Figure 1: High-level summary of a biodiversity action plan for Wolston STW

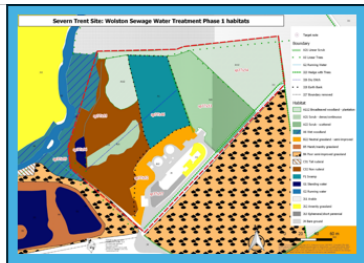
Classification: UNMARKED

Wolston Sewage Treatment Biodiversity Action Plan

Site Description

The site is located alongside the River Avon at Wolston, across from the Warwickshire Wildlife Trust's Brandon Marsh SSSI Nature Reserve. The site consists of a series of mixed habitats including a combination of short perennial, mown grass and bare ground, semi-natural grassland merging into tall herb and open scrub, with areas of woodland of varying stages from recent broad-leaved plantation to mature semi-natural woodland along the River Avon.

Biodiversity improvement area: 20.252m²
BNG potential uplift: 54.41%



Phase 1 Survey from BAP (2019)

Implementation Options BAP (2022)

AMP7 Biodiversity Activities	AMP8 Additional Activities
1. Scrub enhancement & planting (220 plants to be planted) 2. Woodland creation planting (20 plants to be planted) 3. Pond margins and marshy scrape planting 4. Hedgerow creation (200 plants planted) 5. Orchard creation 6. Grassland creation	1. Woodland enhancement planting (224 plants plus wildflower wooded mix sown) 2. Grassland enhancement (wildflower meadow mix sown) 3. Swamp creation (plug planting)

The requirements under EMD00136 are that the activity will be initially undertaken on sites identified in the measure specification form, and agreed with the EA and NE. Where the form mentions specific sites, the requirements of the mid- to long-term actions refer to actions to be implemented in years 2-5 of the AMP, with a re-survey in year 5. The ongoing monitoring work required as part of the AMP7 work is considered base expenditure, as it will be tracking the efficacy of the interventions undertaken between 2020-2025. Any additional interventions from 2025 onwards will be supplementary to the work, and are therefore additional enhancement.

A competitive tendering process was undertaken for our grassland, woodland and grounds maintenance work. In addition, benchmarking was undertaken against other organisations and payment rates. Our rate is based on £185,000 to improve 36 ha of grassland. This equates to £5,139/ha. Countryside stewardship is £646/ha for 10 years equating to £6,460/ha. Therefore, our costs are 20% more efficient than those from third-party delivery.

3.2 08ST100267b NERC_IMP: Industry Species Project

This is a country-wide scheme with multiple water companies (12) committed and including in their WINEPs.

The aim of this scheme is to provide habitat enhancement for migratory species e.g. swifts, swallows, house martins (who use waterbodies for feeding). This scheme requires funding for a monitoring survey for migratory species, bird boxes on all sites, and the development of best-practice guidance for construction industry.

Each individual site assessment will produce its own bespoke habitat management recommendation. The cost of the site assessments has been based on the 197 site audits we have undertaken to date. These have been conducted by the Wildlife Trusts and consultant ecologists, who were subject to a competitive tendering process.

An example of the type of activity which could take place on a site once an assessment is completed is given in Figure 2. This activity was delivered by West Midlands Ringing Group. The costs for these two schemes were below our average £2,000/ha cost limit and has been built into our costings for this programme of work. Much of the work (e.g. installation of bird boxes on all sites) will be carried out by volunteers.

We have absorbed the cost of this specific project into our wider WINEP commitment, which is why this is a sub-project. Other water companies have submitted a specific cost for this contribution (circa. £25,000). Consequently, our proposal is more efficient, as it applies a practical approach to the wider habitat interventions - i.e. the habitat enhancements we are proposing under 08ST100267a would naturally feed into this project, and the project itself simply steers the interventions we deliver.

Figure 2: Examples of habitat enhancement for migratory species

Strensham WTWs	Minworth STW – Sand Martin Bank
 A non-natural wetland system in the form of 14 man-made lagoons. This undisturbed section of the site supports a diverse array of birds, mammals and invertebrates. • The site has been identified as a particularly good site for birds (as proven by a bird ringing session last October - 55 birds were caught, including 35 Redwings that had just arrived in the UK and several Blackcaps and Chiffchaffs that were just leaving) • Management recommendations have been made with birds in mind and include; dredging programs, partial clearing of lagoons, removal of Himalayan Balsam, erection of bird boxes and improvements to the grassland on site	 The Sand Martins were burying themselves in the sand along the banks of the river, but every time there was a heavy downpour their chicks were getting washed away • To help the chicks survive we have created a building with 169 boxes equipped with sand so the birds can bury themselves and their chicks • Estimates show we should be seeing 2000 chicks a year • Cameras have been installed to send photo's automatically to the teams phones so they can see who is coming and going and monitor the site • Eventually the birds will also be ringed

In March 2022, alongside Anglian Water and Hafren Dyfrdwy, we launched Get River Positive, our five-point plan to improve the health of rivers in our region. Pledge Four is to enhance our rivers and create new habitats so wildlife can thrive. Our planned AMP8 work to enhance habitats for migratory species will therefore support the delivery of our Get River Positive ambitions.

3.3 08ST100273a NERC_IMP: Moors for The Future

Deliver improvements to uplands above reservoirs to enhance biodiversity and encourage improved water retention and therefore climate change resilience.

Relatable AMP7 obligations: EMD00137

The Levelling-up and Regeneration Act (2023) establishes a strengthened statutory duty on 'relevant authorities', in exercising or performing any functions in relation to, or so as to affect, land in any National Park in England. This duty on water companies was not in place at the time of writing our PR19 WINEP.

08ST100273a NERC_IMP work is in the Peak District National Park. The work for AMP8 will be on adjacent land, and therefore in addition to the work undertaken in AMP7. This investment does not include work to maintain interventions in areas where we have previously worked: for example, there are areas of peatland where we have previously funded dam/gully blocking, but we have now identified additional improvements in the same area, such as Sphagnum planting. The planting of Sphagnum was not included in the original scheme, as peatland needs time to stabilise and start to re-wet before planting the Sphagnum. The Sphagnum gives ground cover to the bare peat and mitigates run-off. This not only enhances biodiversity, but also reduces colour and taste/odour issues at our downstream WTWs. This is therefore a further enhancement over and above the improvements made in AMP7. In the UK, restoring peatlands could save an estimated £191 million per year by preventing water shortages and reducing the need for drought mitigation measures[3].

By working with Moors for the Future and the MoorLIFE 2020 project, the priority habitat under the Habitats Directive (active blanket bog) will be improved in condition, moving towards Favourable condition. The work to date has resulted in a 70% reduction of peat erosion in the catchment. It is anticipated that the reduction in peat erosion will save Severn Tent around £18m, to as we will no longer need to remove sediment from the Derwent Valley reservoirs.

[3] Act now for economic benefits from peatland restoration | Faculty of Environment | University of Leeds

In addition, the extent of the habitat has increased as land which was dominated by single species has become more active. This has also benefited the wading bird assemblage, and the area has since been classified as a Special Protection Area (SPA) under the Birds Directive.

Surface Water Safeguard Zones, priority areas under the Water Framework Directive, are now starting to provide improved water quality water to Bamford WTW. Table 1 shows the comparison between pre and post MoorLIFE 2020 colour data at the three Bamford inlets. On average, the MoorLIFE 2020 project has decreased peak colour concentrations by 50%, and average concentrations by 12%.

Table 1: Improvement in raw water colour concentrations at Bamford WTWs as a result of MoorLIFE 2020

Location	Pre MoorLIFE 2020		Post MoorLIFE 2020	
	Max. Colour (mg/l Pt/Co)	Average Colour (mg/l Pt/Co)	Max. Colour (mg/l Pt/Co)	Average Colour (mg/l Pt/Co)
Derwent reservoir & Ladybower reservoir	130	57	73	49
Derwent reservoir	213	69	105	62
Derwent reservoir & Howden reservoir	229	72	103	65

The decrease in colour concentrations has also improved the long-term forecast for Bamford WTW. It was originally anticipated that the works would need to be upgraded in 2023, as the design standard threshold of 150 hazens would be breached and the works would be unable to cope with the increased colour challenge (Figure 3. However, the new forecast (Figure 4) now indicates that the trend has almost plateaued, and the design standard threshold will not be breached until at least 2047, if at all.

Figure 3: Pre MoorLIFE 2020 colour trend

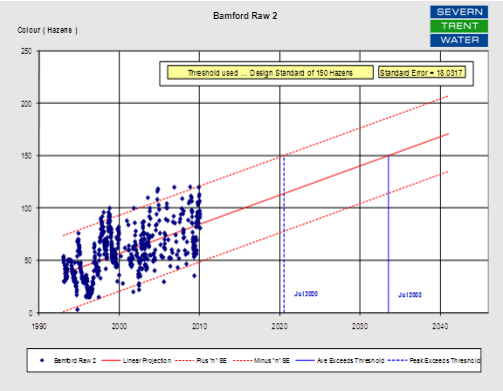
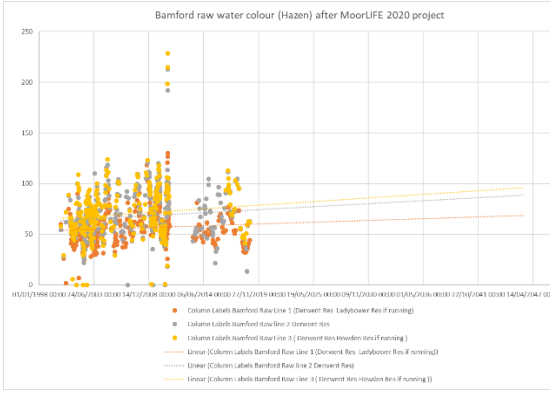


Figure 4: Post MoorLIFE 2020 colour trend



This has meant that Severn Trent will potentially avoid the need for additional treatment at Bamford WTW, which would have cost £890,337 (Extruded Activated Carbon), with annual chemical costs of £694–743k. Our AMP8 work will ensure additional treatment is not needed, and that the restored peat is stable into the future. In the long-term it is anticipated that there will be an improvement in the ecological and chemical status of the relevant river catchment water bodies.

The costs for this scheme have been based on AMP7 costs and proposals from Moors for the Future. Cost comparisons between this work and other peatland restoration work we are undertaking with the RSPB have ensured that cost assumptions have been challenged and discussed.

3.4 08ST100274a NERC_IMP: Clough Woodlands

Deliver improvements to Clough Woodlands around our reservoirs to enhance biodiversity, encourage improved water retention and filtration and therefore climate change resilience.

Relatable AMP7 obligations: EMD00154

The Upper Derwent Valley is of exceptional landscape, wildlife and cultural significance within the Peak District National Park and the Dark Peak Natural Area. The area is designated as a Special Protection Area (Peak District Moors – South Pennine Moors), a Special Area for Conservation (South Pennine Moors) and also a Site of Special Scientific Interest (the Dark Peak). These designations have been put in place in order to protect the variety of semi-natural upland habitats, its assemblage of breeding birds, and its features of geological and geomorphological interest.

Woodlands are very important on the steep-sided cloughs in the Upper Derwent Valley and around our reservoirs to enhance biodiversity and encourage improved water retention and filtration and therefore climate change resilience.

The work for AMP8 will be an expansion of the AMP7 project type but will focus on land adjacent to areas already improved. This work builds on our existing partnership with Moors for the Future and the National Trust, complimenting the work we have undertaken in AMP7, but not on the same areas – there are only so many ways that trees can be planted and so the type of work is similar, the specific sites/locations will be different. In partnership, the project will develop on existing plans and visions and implement new woodlands in cloughs (~122ha's) where work that has not yet been possible and seek further suitable locations for delivery. This implementation is requested by NE and is supported by the Forestry Commission and the EA.

As this is a partnership project between ourselves, Moors for the Future and the National Trust, a proposal for AMP8 activity was provided by the National Trust. This included a 50% increase in costs from AMP7 due to:

- The use of an innovative guarding method for the trees which enable small enclosures in open group and are made from biodegradable material.
- Increased cost in trees.
- Higher planting density of trees due to site characteristics.

3.5 08ST100276a NERC_IMP: Catchment Wide

Extended support for ongoing active management of biodiversity projects delivered in AMP7 to enhance the level of biodiversity and water quality improvement that have been delivered.

Relatable AMP7 obligations: EMD00137

To ensure we not only conserve the biodiversity improvements delivered in AMP7, but also enhance them as required by the new duties under the 2021 Environment Act, we will continue to work in partnership across the Severn Trent region on the projects established in AMP7. The BNG metric will be applied (where appropriate) to identify further biodiversity net gain opportunities on the sites.

By continuing to work on these sites and deliver further biodiversity enhancements, we will also ensure that previous work does not deteriorate and revert the sites back to their previous conditions. Table 2 shows some examples of where the BNG metric has been used to identify AMP8 activity on a site which builds upon AMP7 work.

Table 2: Utilising BNG metric to enhance AMP7 biodiversity activity

Site	Baseline BNG & condition	Predicted BNG & condition	AMP7 Activity	AMP8 Activity
Carsington Water (218.4 acres), woodland enhancement	730.48 Moderate	1005.78 Good	Thinning to allow more sunlight to penetrate through the woodlands, allowing natural regeneration and the development of ground flora.	Understorey tree planting may be undertaken to meet the scoring category criteria. INNS removal to eradicate Rhododendron.
Strensham WTW (5.43 acres), Grassland enhancement of G3C	7.12 poor	20.16 -27.12 Good	Change in cutting regime - cut once in the late summer and once in the autumn to allow species to flower and set seeds. Cuttings are collected to reduce nutrient input.	Overseeding to be undertaken to achieve the desired species mix.
Strensham WTW Lagoon (7.36 acres), Reedbed management	47.46 Moderate	52.56 Good	Removal of undesirable species. Use of innovative equipment (e.g. Truxor) to cut reeds safely.	Plug planting of desired reedbed species.

Like some other water companies, we are working with AiDash to compile baseline biodiversity audits and enable the tracking of enhancements and impacts across the whole of the Severn Trent estate. This method uses satellite imagery and artificial intelligence, and is more cost effective than traditional habitat assessment methodologies.

Cost efficiencies have been built into this work by setting an average £2,000/ha limit on activity. This limit is set for not only work delivered directly by Severn Trent, but also work being delivered by our partnership organisations. Table 3 shows how this has driven efficiencies across our AMP8 programme of work by comparing our delivery costs for varying activities compared to another organisation.

Table 3: Comparison of River Trust consultancy costs for biodiversity work and Severn Trent costs/payment

Intervention type	Unit	River Trust consultancy Value (£/unit)	ST Biodiversity Payment for Delivery by Third Party (£/unit)	Efficiency of ST costs compared to Rivers Trust Proposal (%)
Riparian woodland creation	Ha	£16,800.	£3,364	80%
Floodplain meadow creation	Ha	£9,700	£2,590	73%
Wetland creation on floodplain	Ha	£15,900	£2,262	86%
Riparian buffers	Km	£22,400	£2,099	91%
Installation of woody debris	Km	£9,150	£1,219	87%

The wider benefits of enhancing the work started in AMP7 are numerous. To date, our biodiversity activity with farmers has reduced the nitrate load to our water treatment works by 35,774.2 kg per

year, and pesticides by 127.7 units per year. Over AMP7, we worked with landowners to deliver 71 km of new hedgerow. A recent study[4] found that increasing hedgerows on arable land can increase crop yields by 10%, and reduce the need for pesticides by 30%. Defra confirms that the benefits of hedgerows include improving water quality by trapping sediments, nutrients and pollutants before they reach the watercourse.

This work was delivered more cost-effectively then Government stewardship payments for landowners planting new hedgerows: for example, our hedgerow delivery rate is £2,211/km, whereas the Government stewardship grant is £22.97 per metre (£22,970/km).

Our AMP8 programme looks to further develop engagement with third parties and ensure there are ongoing mechanisms in place to support the enhancement of projects beyond AMP7. These projects ensure we have a resilient and less polluted upstream environment for our assets, which makes our job of abstracting, cleaning and returning water to the environment more efficient. We will support additional enhancement of the existing habitat interventions so that they can continue to provide biodiversity benefits.

[4] Nature-friendly hedgerow management | Nature Friendly Farming Network, NFFN. Accessed 21st August 2024

4. SSSI_IMP Driver lines

4.1 08ST100268a SSSI_IMP

Implementation of Management Plans across ST SSSI Estate.

Relatable AMP7 obligations: None

The Government's Environment Improvement Plan (2023) sets out the requirement for 50% of Sites of Special Scientific Interest (SSSIs) to have actions on track to achieve Favourable condition by 31 January 2028. This target goes beyond the PR19 SSSI_IMP requirements.

Severn Trent owns over 500 hectares of SSSI-designated land, which is well documented and protected through the delivery of management plans and liaison with NE. In total, 14% (70.27 hectares) of our SSSI-designated land is in Favourable condition. Current management plans concentrate on conserving the current status of the SSSI, ensuring there is no deterioration rather than enhancing the status of the SSSI.

Under this driver, in AMP8 we are expanding the ambition of the SSSI management activity to enhance the status of the protected sites within our ownership. This will take sites from Unfavourable condition to Recovering or Favourable status, enabling us to meet the 2028 target. This will enhance the sites rather than simply maintain or conserve the status of the SSSI estate.

A great example of this is the bespoke management plan we have designed, in partnership with NE, for Cropston Reservoir SSSI (see Figure 5). In AMP8, work at this site will further enhance the SSSI and will include the following new activity:

- In areas along the shore where the willow is coppiced back, trees such as oak, field maple and birch will be planted to encourage these species to grow and re-establish along the woodland edge. Over time, they will help shade out the willow species, but maintain light to the drawdown area of the shore line and encourage the rare ground flora to re-establish and flourish.
- Management of non-native species such as Himalayan balsam will be undertaken throughout the woodlands.
- Small amounts of regeneration felling will be undertaken around the puddle-dike pond and the wildflower grassland to keep light into the pond and manage the willow encroachment.

Figure 5: Case study – Bespoke management plan at Cropston Reservoir SSSI

Cropston SSSI is a large site which for a long time followed a basic maintenance programme to ensure no deterioration in the site. As a result, there was a significant amount of willow tree growth along the reservoir banks, which needed to be managed in order to return the SSSI to Favourable state. Work has been led by one of our Senior Ecologists, including traditional forestry and some innovative techniques to reduce willow encroachment. As a result, there is now more space and better conditions for biodiversity to flourish on the reservoir banks.

Recent surveys found all the key species noted in the 'SSSI features' living in the SSSI, meaning we are well on our way to achieving Favourable status. This has been corroborated by NE, who are in the process of reviewing the status of the site to update some SSSI units officially from "Unfavourable – declining" (assessed August 2016), to "Unfavourable – Recovering".

Costs have been based on our current annual management costs for 87% of our existing SSSI portfolio (see Table 4). Our proposal is therefore based on us enhancing the sites that we currently manage, but for the same costs that we have been delivering the conservation for in AMP7, essentially delivering greater value for nature, water, and our customers in our AMP8 proposal.

Table 4: Conservation costs for Severn Trent SSSI sites

SSSI	Severn Trent site name	Size (ha's)	SSSI condition	Annual conservation cost
Buddon Wood and Swithland Reservoir	Swithland Reservoir	98.22	Unfavourable	£43,750
Ogston Reservoir	Ogston Reservoir	95.59	Unfavourable - Recovering	£50,000
Bradgate Park and Cropston Reservoir	Cropston Reservoir	64.66	Unfavourable - Declining	£56,250
Blackbrook Reservoir	Blackbrook Reservoir	39.04	Unfavourable - Declining	£43,750
Eastern Peak District Moors	Ramsley and Barbrook Reservoirs	37.42	Unfavourable - Recovering	£18,750
Dimminsdale	Staunton Harold Reservoir	36.61	Destroyed (due to protected vegetation covering geological feature)	£81,496.09
Eastern Peak District Moors	Ladybower, Derwent and Howden Reservoirs	17.19	Unfavourable - Recovering	-
Carver's Rocks	Foremark Reservoir	16.66	Unfavourable - Recovering	£37,097.53

SSSI	Severn Trent site name	Size (ha's)	SSSI condition	Annual conservation cost
Dark Peak	Ladybower, Derwent and Howden Reservoirs	12.94	Unfavourable - Recovering	-
Crich Chase	Ambergate Service Reservoir	6.66	Unfavourable - Recovering	-
River Dee (England)	Huntington	4.27	Unfavourable	-
Calke Park	Staunton Harold Reservoir	2.88	Unfavourable - Recovering	£6,406.38
Wyre Forest	Trimpley Reservoir	2.77	Favourable	-
River Wye	Lydbrook WTW	1.20	Unfavourable - Recovering	-
Crich Chase	Ambergate Intake	1.04	Unfavourable - Recovering	-

Due to the specialism of working on protected sites, quality of workmanship has been prioritised over financial efficiency. We identified through earlier AMP cycles that the reliance on generic grounds maintenance contractors was not giving the optimum protection to these sites. This resulted in us receiving regulatory warning letters from NE. Therefore, to deliver this programme of work we are relying on specialist NGOs or third parties. An example of this is our recently tendered management of Carvers Rock SSSI to the National Trust in 2021. The National Trust conservation and land management specalism supports their mission of preserving and protecting natural spaces. This is in keeping with our Biodiversity and SSSI strategies and supports our work. This selection of workforce and contractors has been factored into efficiencies, however priority has been given to ensure effective workmanship in AMP8 to reach the higher standards of habitat we expect and need.

To demonstrate the financial considerations compared to our framework contract costs, Wildwood, which has undertaken conservation work on our protected sites (SSSIs), quoted £20,000 for activities to be completed at Cropston Reservoir SSSI. Our grounds maintenance framework contractor quote was £70,000, and another forestry expert contractor, TillHill were £30,000.

Wildwood was recommended to us by NE for its understanding of working on nature reserves. This was after Severn Trent was sent a regulatory letter for damage to a SSSI through work undertaken by our grounds maintenance contractor. The use of organisations such as Wildwood not only provides a high level of expertise, but is also £50,000 cheaper, providing an efficiency of over 70% on costs. We have received positive feedback from NE for the work Wildwood has been undertaking with great care and attention to the SSSI. Access through Bradgate Park to Cropston SSSI has been refused for other contractors after the damage they caused, once more proving that the workmanship and using appropriate contractors is a key element of these activities.

Costs that have not been included at this stage but will be incurred by Severn Trent include increasing the size of our in-house Ecology team to oversee these projects and ensure the work is effectively reported to NE and re-assessed where necessary.

4.2 08ST100269a NERC_INV

Investigate ST Assets Acting as Fish Barriers.

Relatable AMP8 obligations: 08ST100091; 08ST100104

This investigation is aimed at undertaking a comprehensive desk and catchment walkover survey to identify and assess all Severn Trent assets crossing watercourses. The objective is to identify those

that are causing impassable fish barriers. This has not been completed previously by Severn Trent, and financial values have been assessed and considered based on relatable AMP8 projects that we have submitted (08ST100091 - £207k looking at feasibility and partnership opportunities for fish passage on the River Leam; 08ST100104 - £511k looking to remove a barrier or improve fish passage at Bradwell Brook, including detailed feasibility).

Further to these costs and comparisons, a desktop study was completed in AMP7 using in-house staff, looking at Hafren Dyfrdwy. Within this study, a desktop exercise looking at assets acting as fish barriers took approximately one month for three members of staff, plus an additional four field trip days. However, Severn Trent's catchment is more complex and built-up, and the number of assets is greater, than for Hafren Dyfrdwy. There is also likely to be a considerable amount of our infrastructure included in other structures, and so legal ownership and consultancy fees will need to be included and considered, e.g. EA weirs with Severn Trent assets running through them.

The costs for this investigation have therefore factored in the above parameters, but also considered similar catchment investigations that have been undertaken in AMP7. These catchment investigations all went through appropriate cost efficiencies as part of PR19. As this is expected to be largely undertaken by in-house staff and use efficiencies of technology and remote sensing. The costs proposed have therefore already been through a cost efficiency challenge.

The purpose of this investigation will also inform AMP9 projects, and as such can be considered an efficiency on the basis that undertaking the investigation in AMP8 will reduce the cost implications from AMP9, further reinforcing the commitments emphasised by David Black, Chief Executive, that companies need to "act now to deliver improvements ahead of the next price review taking effect".

4.3 08ST100270a SSSI_INV: British Camp SSSI

Investigation on the options available for landscape-scale nature recovery. This project fits in with Natural England Headwaters scheme potential for 57 ha and link to black poplars species.

Relatable AMP7 obligations: None

This site was not included in the PR19 SSSI_IMP obligations, and so is a new requirement for AMP8. An investigation on the options available for landscape-scale nature recovery at British Camp SSSI is proposed. A comprehensive survey will identify the most appropriate use of the site from both Severn Trent and other stakeholders with a vested interest in the natural environment, notably the protected site status. This would include site assessments, and consultation with relevant stakeholders such as NE, EA, Malvern Hills conservators (AONB), Malvern Council and Severn Trent's Dams & Reservoirs, Operations, Biodiversity & Ecology, Capital Projects, Estates, Legal, and Regulation teams.

The output of the investigation will be to develop an agreed solution which all stakeholders can support. This may include but is not limited to sale of the land to interested parties, or agreed tenancies to ensure a mutually managed site can be achieved. Attempts have been made in the recent past to move forward with the site; however, due to the large number of stakeholders, it has proved challenging. Without the funding to focus and support this project, the site will likely remain in stasis. The longer this is prolonged, the less benefit will be realised for the environment, our customers, and our water supply. As such, a comprehensive survey and investigation of the appropriate use of the site will enhance the protected site status.

Costs have been based on AMP7 investigation costs and previous work with our framework consultants which have been through a competitive tendering process.

4.4 08ST100272a SSSI_IMP: Doley Common SSSI

Project opportunity to reconnect the watercourse and restore hydrology on SSSI. AMP7 investigation SSSI_INV completed March 22.

Relatable AMP7 obligations: None

This site was not included in the PR19 SSSI_IMP obligations, and so is a new requirement for AMP8. Conclusions from the from the AMP7 investigation stated that, although Severn Trent assets are not adversely affecting water levels on the SSSI, Severn Trent should support the achievement of the sites' SSSI objectives in AMP8 through the WINEP. This would support investment in solutions, working with the landowner, the EA and NE, and contribute to maintaining biodiversity and the natural environment, and/or help tackle diffuse water pollution.

As Severn Trent has no management role on the site, it is expected that we would be able to offer suitable grant schemes to support the recovery of the site through our Severn Trent Environmental Protection scheme (STEPs) to enhance biodiversity on their sites, and the scheme will be delivered through our in-house agricultural advisor team.

This approach would encourage the landowner to introduce appropriate grazing or allow us to undertake grazing on their behalf through our existing contacts. Through engagement activities with the landowner and neighbouring landowners, we would also look to engage with funding activities to support installation of weir/flood structures to encourage more of the flow from the watercourse in high winter flows to flood the land and encourage more of the wet, fen-like features expected from such a site.

Alternative delivery method through our partnership organisations was considered; however, over the last five years, the costs of our agricultural delivery partnerships have increased. It is now 22% more expensive to deliver our STEPs programme through partnership NGOs, Therefore, costs have been based on the 10 years of internal delivery of our Farming4Water programme and STEPs grant scheme. Grant option funding is based on 50% of actual costs, and the landowner/farmer is expected to contribute the remaining 50%. Further information and benchmarking on our STEPs funding can be found in Appendix SVE 4.04 '*UME04a Water WINEP DWPA*'.

We know from our Farming4Water programme that, without an incentive, a landowner is unlikely to change management practices or carry out any capital work. Without enhanced funding for this project, we would need to work with the landowner on a voluntary, advice-only basis, and the success of this project and environmental enhancement will be severely compromised.

4.5 08ST100275a SSSI_IMP: Sutton Park SSSI

Support Sutton Park Staff to enhance SSSI condition and habitats following completion of enforcement undertaking.

Relatable AMP7 obligations: 07ST200791

The PR19 WINEP SSSI_IMP obligations related to SSSI improvements at sites affected by the sewerage network upstream of Sutton Park, whereas the new PR24 obligations are linked to enhancements within Sutton Park itself.

50% of the units within Sutton Park SSSI are currently assessed as Unfavourable Declining. This is, in part, due to legacy pollution issues associated with Severn Trent. A significant enforcement undertaking and upgrade to the sewerage infrastructure around the park has been underway, with positive impacts being assessed to the point that the enforcement undertaking has been deemed completed; however, there is more that could be done to make the site more resilient to adverse impacts in the future. Supporting tree planting will help manage some of the nutrient-enriched water issues that are occurring and preventing some of the units from improving from Unfavourable Declining.

This work will support the Sutton Park SSSI Rangers in creating an in-house seed nursery to ensure a robust supply of flora with local/known provenance to improve the overall condition of the SSSI. This provision will allow for future resilience and recovery if any other incidents occur on the site. Funding includes set-up only, with the ongoing running costs the responsibility of Sutton Park.

The value of having a seed nursery on a site such as Sutton Park provides the local provenance, security of supply and customer engagement from a relatively urban protected site. This will also enable us, as co-contributor to the nursery, to ensure any stock of flora we may require in adjacent areas can be sourced from a local, reputable site. There is also synergy between this project and the Purple Horizons Nature Recovery Project – connecting Sutton Park National Nature Reserve (NNR) and Cannock Chase SAC, together with local Wildlife Trust nature reserves. A local seed source will provide connectivity between these sites from a genetic level, and will increase diversity within the plant species.

A number of other options were discussed with NE:

- A programme of fencing works to replace missing or broken fences along the Green Lane.
- Retrofit the Green Lane to make it a true green lane, and reduce its current use as a dumping ground and rat run. This could include traffic calming measures, cycle lanes and pavements.
- Future-proof road drainage to minimise road flooding. All run-off to be intercepted by sediment traps (which are easy to access and clean out when needed) before water gets into SSSI.
- Relocate roadside ditches to behind other more impermeable habitat so rubbish cannot be thrown into them. A suitable transect could be: road-pavement-grass-scrub-ditch-woodland.

However, many of these are beyond our remit as a water company, and are costly infrastructure changes to third party assets. These options were therefore not taken forward.

Costs for the scheme are based on prices given by Fulbrook Plants Nursery (see Table 5). As this is a partnership opportunity, the cost implication for Severn Trent would be 50% of this total. This is comparable with the Governments Tree Production Capital Grant[5], which offers up to £176,000, making our proposal 60% better value than the Government's existing grant programme.

Table 5: Fulbrook Plants Nursery example setup costs

Equipment Required	Quantity	Size	Cost	Comments/considerations
Fruit tunnel structure	1	50m x 9m	£10,000	No planning required for these structures
Irrigation set up	1		£38,000	Parts and labour
Creating roads	1		£27,500	Materials and labour
Creating beds	1		£22,000	Materials and labour

[5] Tree Production Capital Grant - GOV.UK (www.gov.uk)

Equipment Required	Quantity	Size	Cost	Comments/considerations
Seeding machine	1		£24,000	
Compressor	1		£1,000	
Electrics	1		£3,500	
Welfare facilities	1		£12,000	

Our existing tree supplier, Alba & Maelor, has been experiencing extreme issues with seed germination in the past. This option would therefore improve the local provenance, resilience and protection of the protected site status, as well as providing a potential source of trees for future Seven Trent projects.

4.6 08ST100290a NERC_INV: Species Recovery

Investigation to support species recovery projects for water vole, white claw crayfish, water crowfoot, black poplar, etc., looking at ST sites and landholdings to identify special protection 'Ark' site potential.

Relatable AMP7 obligations: EMD00134; EMD00136

This investigation will involve undertaking a comprehensive desk and site walkover survey to identify and assess Severn Trent sites that have not been surveyed in AMP7, where the total site area is greater than three hectares and where species recovery projects could be considered. It is anticipated that, with data already collated from AMP7 biodiversity audits, there will be sufficient information for these sites to be considered as part of the assessment and suitability criteria.

In some instances, this investigation will include undertaking trial projects to monitor and assess the viability of species recovery. The specifics of these trials will be discussed with stakeholders and regulators to ensure their suitability and viability, and to ensure that appropriate data and monitoring are considered. This will help to increase the effectiveness of wider rollout in subsequent AMP cycles.

Typical values for species recovery/reintroduction projects are listed below:

- Water Vole: A Water Vole programme we have funded with Nottinghamshire Wildlife Trust is delivering habitat creation and enhancement and mink control over 25ha/km at a cost of £60,000. This is slightly higher than our £2,000/ha cost limit; however, the efficiencies that will be realised by undertaking the activity on our own land is factored into the costs applied to this investigation.
- Crayfish: The cost of establishing a white-clawed crayfish ark site can vary widely depending on factors such as location, size, and specific habitat requirements. On average, the cost can range from £5,000 to £10,0006. This includes expenses for site surveys, habitat preparation, and ongoing maintenance7.
- Beaver: We have funded multiple beaver re-introductions with NGOs with varying costs depending on complexity/sized of the area being recovered. For example, Derbyshire Wildlife

[6] https://www.fernhill-farm.co.uk/crayfish-ark-establishment

[7] For an example of such a project, see Crayfish Ark Establishment — Fernhill Farm (fernhill-farm.co.uk); wild-planet-trust-itt-devon-crayfish-project.pdf (blackdownhillsaonb.org.uk)

Trust where four beavers were released into a 40ha wetland habitat cost £178,614 (£426k total)8; Shropshire Wildlife Trust released 2 beavers into a 12ha site costing £83,365.

The purpose of this investigation will also inform AMP9 projects, and as such can be considered an efficiency on the basis that undertaking the investigation in AMP8 will reduce the cost implications for AMP9.

[8] All about beavers | Derbyshire Wildlife Trust