



TECHNICAL NOTE – Southern Water Services Biodiversity AMP8 Assistance

DATE:	15 August 2024	CONFIDENTIALITY:	Restricted
SUBJECT:	Southern Water Services Biodiversity AMP8 Assistance		
PROJECT:	TBC code	AUTHOR:	[REDACTED]
CHECKED:	[REDACTED]	APPROVED:	[REDACTED]

PURPOSE OF THIS NOTE

WSP was commissioned by Southern Water to provide a third-party assessment of cost estimates that inform the AMP8 Water WINEP programme and WINEP biodiversity schemes.

This is in response to the following feedback received by Southern Water from Ofwat:

“Water WINEP: Biodiversity & conservation – our assessment of the company’s evidence identified insufficient evidence for cost efficiency. The company did not provide a cost breakdown or cost estimation approach, nor any evidence of cost benchmarking or third-party assurance of costs. We allow £10 million of the £14 million expenditure proposed by the company”¹.

Additional feedback as follows:

“Some concerns: We have some concerns whether the investment is efficient. The company does not provide sufficient and convincing evidence that the proposed costs are efficient. The company also does not provide evidence that its cost estimates for WINEP or biodiversity schemes have been assured by a third-party.”²

This note is therefore intended to provide a high-level assessment of how reasonable the costs submitted to Ofwat are, based on additional information and cost breakdowns shared with WSP. It does not assess the likelihood of project deliverability and does not constitute legal or financial advice.

APPROACH

WSP understand that Southern Water submitted costs to Ofwat regarding:

- The Three Harbours project (Chichester, Pagham and Langston Harbours);
- Biodiversity Performance Commitment Projects; and
- Weir Wood Reservoir Biodiversity Projects (mainly relating to invasive non-native species and habitat improvements).

To review each set of costs, WSP held an interview with Southern Water contacts who had prior knowledge of each set of costs. During each interview, WSP sought to understand the methodology used to develop the costs and the rationale which informs them. These interviews included Southern Water presenting a summary of their cost estimation approach, sharing cost break downs, assumptions and evidence of benchmarking where available.

¹ PR24-draft-determinations-Total-expenditure-allowences-by-company.pdf

² PR24-DD-W-Biodiversity excel workbook; SRN Deep Dive tab



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The following additional documents, not initially submitted to Ofwat, were provided by Southern Water and reviewed by WSP:

The Three Harbours project

- WINEP Costings_harbours.xlsx (see Appendix 1)
- Harbours scheme costs overview.pdf
- Harbours eligible area new.jpeg

Biodiversity Performance Commitment Projects

- Book 1 – Biodiversity Performance Commitment.xlsx (see Appendix 2)
- Additional information regarding benchmarking costs based on previous work – client confidential

Weir Wood Reservoir Biodiversity Projects

- Book 2 – Weir Wood SSSI Resilience.xlsx (see Appendix 3)
- Weirwood_28.04.23.docx

These costings were developed in 2022, as part of the WINEP programme. Costs have not been adjusted for inflation however it has been significant since then and could have further implications over the AMP8 period.

The interviews undertaken to inform this assessment were held on 12th and 13th of August. Below is a summary of the personnel from Southern Water and WSP present at each interview.

The Three Harbours project

- Southern Water: [REDACTED] (Catchment Delivery Manager)
- WSP: [REDACTED]

Biodiversity Performance Commitment Projects

- Southern Water: [REDACTED] (Senior Environment Strategy Specialist)
- WSP: [REDACTED]

Weir Wood Reservoir Biodiversity Projects

- Southern Water: [REDACTED] (Senior Environment Strategy Specialist)
- WSP: [REDACTED]



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Based on the interviews and supporting information, WSP then made an assessment of whether each set of costs were reasonable and efficient. This was based on WSPs consultancy experience and focuses on the rationale for cost development rather than assessing potential outcomes of the spend. For the purposes of this technical note, WSP have reviewed the costs for evidence of only certain aspects of efficiency within the documents provided. Specifically, avoidance of duplicate, excessive or unjustified costs, drawing on expert, stakeholder and benchmark experience.

CONCLUSION

Having undertaken the interviews and reviewed the information provided, we confirm that the costs provided are supported by a cost breakdown and cost estimation approach. There are examples of benchmarking by obtaining third party quotes. Southern Water have provided evidence in support of the reasonable and efficient nature of their costings, including the use of internal and external subject matter experts, stakeholder engagement and coordination of activities across multiple areas of work.

Subject to WSP’s approach and the limitations noted in Tables 1 – 3 below, overall it is considered that the costs presented are reasonable and efficient.

FINDINGS

For projects developed in 2022/23 under the WINEP programme, Southern Water have provided the following information:

Approach to costing and benchmarking:

- Internal cost benchmarking: Use of in-house subject matter experts supported by consultants working on AMP7 WINEP investigations to cost tasks based on prior experience.
- External cost benchmarking: Use of specialist advice from industry experts, particularly agricultural specialists and advisors to support the development of grant schemes to ensure they are appropriate for the agricultural sector.
- AMP7 investigations: AMP8 preferred options developed through AMP7 best-value options assessment and WINEP guidance.
- Wider environmental benefits have been considered for multiple costings. The original WINEP submission provides monetised valuations for several ecosystem services. It is anticipated that the use of nature based solutions within design programmes could mitigate future costs (as opposed to hard engineering programmes which often require replacement and maintenance fees).



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The key findings from each interview and document review are presented in Tables 1, 2 and 3.

Table 1 – Three Harbours Project

Topic	Notes
Three Harbours Study	Southern Water Services (SWS) Aim: Driver to conserve and enhance biodiversity under Environment Act 2021 - Biodiversity Duty. Project aims to undertake land management and habitat creation measures, to reduce nitrate leaching delivered, by providing an incentive scheme aimed at the agricultural sector. Scope covers around 5000ha of land within the catchment of Chichester, Pagham and Langstone Harbours.
Rationale informing cost development	SWS Costing Rationale: Project costs developed via cost modelling using the 'Farmscoper' model tool. Also used published data from Wildfowl & Wetlands Trust (WWT) and Environment Agency, along with Southern Water Services project experience of costs from comparable schemes. This included contract data about the costs of three projects (Shadoxhurst wetland Nature-based Solutions (NbS) delivery, Town Meadows wetland creation and Marina Farm Restoration). Costs were informed by quotes from ██████████, a cost model developed by Atkins and a natural capital study. The costs presented have been informed by ongoing projects which have been delivered through existing relationships with landowners. This includes projects on the West Wittering Estate and a project with the Marine Farm Trust. Delivery of these projects has involved grant award to local nature conservation organisations – therefore knowledge of the monetary value of grants awarded has helped inform the cost estimates.
WSP Conclusion	Costs appear to have been collated following a clear and well-developed rationale. The costs have been informed by input from both third parties, cost modelling and external consultation.

Table 2 – Biodiversity Performance Commitment

Topic	Notes
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<p>1 Biodiversity Baselineing</p>	<p>Southern Water Services (SWS) Aim: Site surveys to be carried out by trained subject matter experts (SMEs) to establish the biodiversity value of Southern Water Services’ landholdings. Survey information to be uploaded to a central GIS system to allow for ongoing monitoring and annual reporting in line with new PR24 Biodiversity Performance Commitment Requirements.</p> <p>SWS Costing Rationale: Staff day rate for site surveys and report-writing by number of sites requiring baselining, multiplied for a four-year programme in line with Biodiversity Performance Commitment. Includes an independent review cost, based on previous fees for similar work which SWS had commissioned.</p> <p>WSP Conclusion: The costs presented follow a clear rationale. The number of days for site surveys and report-writing are slightly lower than could be expected. The anticipated 330 sites for survey were chosen on the basis that they are large and could be enhanced to create significant biodiversity uplift on Southern Water Services’ landholdings. The day rates were also slightly lower than our expectations but should be subject to wider market testing.</p>
<p>2 Integrated Biodiversity Monitoring</p>	<p>SWS Aim: Development of the relevant digital tools needed to manage and monitor the natural capital value of the Southern Water Services estate. Trialling of innovative approaches to remotely carry out biodiversity baselining and monitoring (for example, by working with technology and data consultants such as ██████████).</p> <p>SWS Costing Rationale: Estimation of a one-off cost to a data consultant, with a view to updating the database every 10 years.</p> <p>WSP Conclusion: Insufficient information provided to support the estimated costs of employing a data consultant to complete biodiversity monitoring work. No quote has been sought from potential suppliers, but the cost was made based on quotes received for other projects using similar remote sensing technologies.</p>
<p>3 Management Plans</p>	<p>SWS Aim: Develop management plans for each of the 330 sites in scope, based on the newly established biodiversity baselines from (1) and (2). This option would allow Southern Water Services to draw on an in-house team to deliver this work at a lower cost. The plans would be monitored and updated every 10 years to ensure habitats are managed to maximise biodiversity. Management activities</p>



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	<p>are to be aligned with the approach taken for INNS management plans and those for designated sites within Southern Water Services’ ownership (e.g. Sites of Special Scientific Interest (SSSIs)).</p> <p>SWS Costing Rationale: Based on previous work, a cost per site for the development of a site management plan and ongoing management was multiplied by the total number of sites (i.e. 330). This cost was then halved to reflect the 50% contribution from an inhouse team for the INNS management and Biodiversity Net Gain (BNG) work. Ongoing programme to be repeated every 10 years.</p> <p>WSP Conclusion: The costs associated with the development of a management and monitoring plan are reasonable and in line with expectations. The 50% cost reduction due to inhouse team contributions demonstrates coordination of costs across projects to avoid double counting and achieve cost efficiencies.</p>
4 Delivering of biodiversity enhancement onsite	<p>SWS Aim: An investigation in AMP7 done by Kent Wildlife Trust highlighted the potential for biodiversity enhancements on 330 sites in Southern Water Services’ estate. This includes the potential to create 4,507 biodiversity units via site enhancements and habitat creation. The baselining activities set out in (1) will ground-truth the investigation findings by Kent Wildlife Trust. Southern Water Services would select 12 flagship sites to enhance in line with management plans developed in (3). This task would aim to deliver biodiversity enhancement on site.</p> <p>SWS Costing Rationale: Based on the AMP7 investigation done by Kent Wildlife Trust, the median market value at the time for the creation of the biodiversity units was multiplied by the number of units. It was assumed that 20% of these uplift projects would be attainable in the AMP8 period, and the total sum was multiplied by 0.2 to reflect this.</p> <p>WSP Conclusion: While the market value for the creation of biodiversity units was made while the market was less developed and less well understood, the methodology of cost estimations follows a clear rationale.</p>
5 Collaboration with stakeholders	<p>SWS Aim: Southern Water Services aims to develop partnerships with the Wildlife Trusts further and build on the recently launched ‘Wilder Carbon’ methodology. Southern Water Services intends to trial the deployment of this</p>



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	<p>tool across the Estate during the ground-truthing of the aforementioned Kent Wildlife Trust investigation. SWS is seeking opportunities to work with environmental non-governmental organisation (eNGO) partners to deliver on-site habitat enhancements on viable sites and continue to work with stakeholders to co-develop solutions and share best-practice.</p> <p>SWS Costing Rationale: An assumption was made on cost-per region based on prior experience of stakeholder engagement, specifically work with Wildlife Trusts. Costs were then summed across the three specified regions of West (Hampshire and the Isle of Wight), Central (Sussex) and East (Kent).</p> <p>WSP Conclusion: Southern Water Services have prior experience of working with these stakeholders and similar stakeholders. The methodology of the cost estimations is based on a clear rationale and the costs are within expectations to fund additional staff roles.</p>
6 Increasing access & recreation	<p>SWS Aim: Southern Water Services aim to increase access to their sites and encourage recreation where possible. A number of sites have been identified with the potential to increase access and recreation services.</p> <p>SWS Costing Rationale: One pilot scheme to be completed per AMP for access and increased recreation on Southern Water Services' land/estate.</p> <p>WSP Conclusion: No direct provider quotes were obtained. Cost assumptions made based on quotes received for projects delivering similar aims. For example, costs for removing or installing new pedestrian gates, fencing, building new visitor infrastructure such as paths, bridges and viewing platforms, and tree inspection and safety work is summarised. Costings would depend on the scale and scope of interventions being undertaken, such as path creation, fence-building or gate-installation. The total cost presented is reasonable based on the information provided.</p>
7 In-house training & engagement	<p>SWS Aim: Southern Water Services would like to educate staff about their new and increasing biodiversity duties. This would involve some field training for relevant technical staff, and online training for all staff. They have recently launched an internal Environmental Champions Network to help drive engagement across the business and would like to continue to expand this</p>



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	<p>network and ensure the relevant training is in place to create advocates for nature across the business.</p> <p>SWS Costing Rationale: Costs provided for an internal training personnel to deliver training as a one-off cost per AMP. Details of course titles or numbers not provided.</p> <p>WSP Conclusion: The costs associated with developing internal training for both technical staff and online training for all staff are reasonable.</p>
8 Mechanisms & markets	<p>SWS Aim: To prepare the business for the growth of the biodiversity offsetting industry, Southern Water Services are seeking to work with expert stakeholders to inform the evolving approaches and trial biodiversity credit creation within the emerging market. The scheme will help to inform any future approach to biodiversity offsetting/insetting and inform future business planning.</p> <p>SWS Costing Rationale: The cost presented accounts for a dedicated inhouse expert and consultancy support as a one-off cost per AMP.</p> <p>WSP Conclusion: The proposed cost is expected to enable Southern Water Services to develop a reasonable understanding of the biodiversity offset market in order to inform SWS's approach and trials.</p>

Table 3 – Weir Wood

Topic	Notes
INNS Control	<p>Southern Water (SWS) Aim: Deliver New Zealand pigmyweed control via a review of CABI (CAB International, formerly Commonwealth Agricultural Bureaux) mite trial results, identification of suitable areas of the reservoir for further mite introduction, transplant of the mites to suitable areas of the reservoir and the mechanical or manual removal of New Zealand pigmyweed (if deemed appropriate following surveys). Deliver signal crayfish control by exploring opportunities to support research into the genetic modification of signal crayfish and a review of novel and emerging signal crayfish techniques.</p> <p>SWS Costing Rationale: Days required per task (for mite trial review, suitable area identification, and review of novel crayfish control techniques), multiplied by</p>



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	<p>daily rate of personnel intended to carry out the task, to give the total cost. The transplant of the mite to suitable areas of the reservoir, the removal of New Zealand pigmyweed and the exploration of opportunities to support research into the genetic modifications of signal crayfish are given as lump sum values.</p> <p>WSP Conclusion: The rationale, days and date rates are clearly laid out and seem reasonable based on prior experience of INNS survey and control. The day rates are slightly lower than our expectations but should be subject to wider market testing. The lump sum amount for mite translocation is informed by a SWS CABI trial in AMP7. The remaining lump sum amounts for New Zealand pigmyweed removal and crayfish genetic modification research costs are slightly lower than our expectations but may be possible with in house delivery.</p>
Biosecurity Management	<p>Biosecurity management measures comprise internal and external tasks that are to be delivered via independent sources of funding and are not included in the total cost. They are included as they are relevant to the overall outcomes and represent efficiency of costing through avoidance of duplication.</p> <p>Internal tasks include online training for all staff and contractors, onsite training for INNS Champions, development and display of visual reference material, setting up an internal INNS reporting system, and a review of the CDD protocol.</p> <p>External tasks include the installation of washdown stations, an appointment of a Biosecurity Officer and the set-up of an INNS risk assessment by reservoir user groups, and an annual stakeholder workshop to review catchment-scale biosecurity.</p>
Awareness Raising Plan	<p>Southern Water Services (SWS) Aim: Raising awareness of INNS risks and biosecurity measures externally. This will be done by updating reservoir user group websites to include links to Great Britain Non-native Species Secretariat biosecurity pages, outline the ‘Check Clean Dry’ protocol and include links to group-specific invasive non-native species guidance websites. The Southern Water Weir Wood INNS Champion is to meet with the reservoir groups annually.</p> <p>The following tasks were listed but not costed as part of this section as they are being delivered independently of Ofwat funding, but are relevant to the driver:</p>



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	<ul style="list-style-type: none">• Signage audit and installation of new permanent biosecurity information signs.• Update of Southern Water Services’ website to include links to the Great Britain Non-native Species Secretariat biosecurity pages and outline the ‘Check Clean Dry’ protocol. <p>SWS Costing Rationale: The website update and user group management costs are presented as a lump sum. For the Southern Water Weir Wood Champion to meet with the reservoir groups annually, days required are multiplied by daily rate of personnel intended to carry out the task, to give the total cost (which will be required once per year during the AMP).</p> <p>WSP Conclusion: The rationale, days and date rates are clearly laid out for the Southern Water Weir Wood INNS Champion to meet with reservoir groups and seem reasonable. The day rates were slightly lower than our expectations but should be subject to wider market testing. The website updates and user group management processes presented as a lump sum are reasonable estimates of small, one-off digital-management tasks taking up to a day.</p>
Habitat Improvement	<p>Southern Water Services (SWS) Aim: The Water Level Management Plan (WLMP) is to be finalised and updated prior to the reservoir operations re-starting. Fisheries management tasks include a review of current fisheries management practices and current fish community structure and the development of a Fish Management Plan (for both INNS control and overall habitat improvement). Bank reprofiling tasks include an identification of suitable areas of habitat modification and/or bank reprofiling, reviewing the potential risks associated with bank reprofiling and development of mitigation options, and if deemed appropriate, habitat modification.</p> <p>The following tasks were listed but not costed as part of this section as they are being delivered by an in-house team, but are relevant to the driver and demonstrate efficiency:</p> <ul style="list-style-type: none">• Identification of nutrient sources to the reservoir and assessment of their relative importance in driving poor water quality.



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	<ul style="list-style-type: none">An assessment of water quality management options (both catchment-based and in-reservoir) and stakeholder workshops to review both options. <p>SWS Costing Rationale: Days required per task (laid out above), multiplied by daily rate of personnel intended to carry out the task, to give the total cost.</p> <p>WSP Conclusion: The rationale for building up the costing is reasonable and does not highlight any inefficiencies. The day rates were slightly lower than our expectations but should be subject to wider market testing.</p>
Monitoring and Assessment	<p>Southern Water Services (SWS) Aim: Carry out baseline ecological surveys including fish surveys, macrophyte surveys, crayfish trapping, and reservoir bank profiles, structure and habitats surveys. Routine monitoring programmes of monthly reservoir inflow water quality sample and annual INNS survey. Development of a management plan for 2027-2031, including a review of monitoring data to determine the success of management actions, identification of further opportunities for habitat restoration and any new INNS to the reservoir that require management action, identification of any ongoing and emerging ecological issues in the reservoir. A review of new reservoir and INNS management measures and a review of management objectives to ensure it is tackling key issues such as eutrophication, climate change, ecosystem services and INNS.</p> <p>The following tasks were listed but not costed as part of this section as they are being delivered independently to Ofwat funding, but are relevant to the driver:</p> <ul style="list-style-type: none">Updated SSSI condition assessment (to be done by Natural England)Macrophyte survey (this is to be delivered at the same time as the identification of suitable areas for the mite trial, demonstrating efficient costing)Monthly reservoir and inflow water sampling (different funding source)Annual INNS survey (potentially using eDNA biomonitoring)



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SWS Costing Rationale: Days required per task (laid out above), multiplied by daily rate of personnel intended to carry out the task, to give the total cost. The fish survey and crayfish trapping survey are presented as lump sums.

WSP Conclusion: The rationale, days and day rates are clearly laid out and seem reasonable, based on our understanding of developing Management Plans. The day rates and lump sum costs for ecological surveys are slightly lower than our expectations but should be subject to wider market testing.



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APPENDIX 1 - WINEP COSTINGS_HARBOURS.XLSX

Estimated total costs at pr						
AMP8						
2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	

Preferred Option / Best Value summary

TO S'Sheet structure:	Budget category	Item	Clarification of category if required	Annual costs							
<i>Regulatory monitoring & Investigations</i>	N/A										
<i>Measures trials, monitoring, review & investigation</i>	Trials, monitoring, tech support			█	█	█	█	█	█	█	
<i>Farmer Cluster Facilitation and Events</i>	Capacity building & knowledge exchange			£	-	£	-	£	-	£	-
<i>Measures delivery</i>	implementation	(measures, PES, FCGS, innovation		█	█	█	█	█	█	█	
<i>Contingency</i>	Specialists			█	█	█	█	█	█	█	
<i>Project total</i>	Project total			█	█	█	█	█	█	█	
	Wetland			█	█	█	█	█	█	█	

Relevant WINEP wider environmental outcome(s)	Benefit category (ecosystem service)	Item	Clarification of category if required	Annual costs							
Natural Environment	Air Quality		Parallel	£	79,514						
Natural environment; Catchment resilience	Water Quality		Parallel	£	157,296						
Net zero; catchment resilience	sequestration		WINEP	£	742,955						
Net zero; catchment resilience	Climate Regulation - emissions		Parallel	£	-						
Catchment resilience	Flood Regulation		WINEP : Hazard regulation - flood	£	80,942						
Amenity, access, and engagement	Recreation		Parallel	£	106						
	Measures Total			£	1,060,813						

Assume uptake of measures is main

Natural Environment	value	WINEP : Air quality - pollutant removal
Net zero; catchment resilience	sequestered	WINEP : Climate Regulation
Amenity, access, and engagement	Visitor spend	Parallel
Amenity, access, and engagement	Health benefits	Parallel
Natural environment; Catchment resilience	economic N damage costs	Parallel
Amenity, access, and engagement	value of wetlands	Parallel
Natural Environment	units	Parallel
	Wetland Total	

Least cost option summary

<i>TO S'Sheet structure:</i>	Budget category	Item	Clarification of category if required	Annual costs						
<i>Regulatory monitoring & Investigations</i>	N/A									
<i>Measures trials, monitoring, review & investigation</i>	Trials, monitoring, tech support			█	█	█	█	█	█	█
<i>Farmer Cluster Facilitation and Events</i>	Capacity building & knowledge exchange			£	- £	- £	- £	- £	- £	-
			not inc soil health (Implementation (measures, PES, FCGS, innovation fund))							
<i>Measures delivery</i>	Best Value measures implementation			█	█	█	█	█	█	█
<i>Contingency</i>	Specialists			█	█	█	█	█	█	█
<i>Project total</i>	Project total			£	598,862 £	601,337 £	603,812 £	606,287 £	608,762 £	611,237

Relevant WINEP wider environmental outcome(s)

Benefit category (ecosystem service)	Item	Clarification of category if required	Annual costs							
Natural Environment	Air Quality		£	79,514						
Natural environment; Catchment resilience	Water Quality		£	157,296						
Net zero; catchment resilience	Climate Regulation - sequestration		£	742,955						
Net zero; catchment resilience	Climate Regulation - emissions		£	-						Assume uptake of measures is main
Catchment resilience	Flood Regulation		£	80,942						
Amenity, access, and engagement	Recreation		£	106						
	Total		£	1,060,813						

Project area level				
AMP9				AMP 10 and onwards
2031/32	2032/33	2033/34	2034/35	2035 onward

						Average annualised 30 yr cost (£/yr)	Total cost - 30 yr PV (£)	Corresponding total benefits - 30 yr PV (£)	BCR
█	█	█	█	█	█	£ 83,633	£ 2,508,997		
£	- £	- £	- £	- £	- £	- £	-		
█	█	█	█	█	█	£ 228,166	£ 6,844,968	£ 19,510,528	2.85
█	█	█	█	█	█	£ 31,180	£ 935,396		
█	█	█	█	█	█	£ 342,979	£ 10,289,361	£ 20,865,984	2.03
█	█	█	█	█	█	£ 44,077	£ 1,322,308	£ 1,355,455	1.03

						Average annualised 30 yr benefit (£/yr)	Total benefits - 30 yr PV (£)
						£ 48,748	£ 1,462,428
						£ 96,433	£ 2,892,992
						£ 455,482	£ 13,664,465
						£ -	-
						£ 49,623	£ 1,488,687
						£ 65	£ 1,956
						£ 650,351	£ 19,510,528

maintained either through farmer incentives or PES.

£	17,654
£	615,938
£	235,463
£	18,268
£	83,606
£	44,777
£	339,750
£	-
£	20,865,984

						Average annualised 30 yr cost (£/yr)	Total cost - 30 yr PV (£)	Corresponding total benefits - 30 yr PV (£)	BCR
--	--	--	--	--	--	---	---------------------------	---	-----

█	█	█	█	█	█	£	77,503	£	2,325,076	
£	-	£	-	£	-	£	-	£	-	
█	█	█	█	█	█	£	222,035	£	6,661,047	
█	█	█	█	█	█	£	29,954	£	898,612	
█	█	█	█	█	█	£	329,491	£	9,884,736	£
									19,510,528	1.97

						Average annualised 30 yr benefit (£/yr)	Total benefits - 30 yr PV (£)
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						£	48,748	£	1,462,428
						£	96,433	£	2,892,992
						£	455,482	£	13,664,465
						£	-	£	-
						£	49,623	£	1,488,687
						£	65	£	1,956
						£	650,351	£	19,510,528
						£	-	£	-
						£	-	£	-

tainained either through farmer incentives or PES.

MONETISED INFORMATION				
<i>Note: See guidance in Section 7.4.5 of Options Development guidance .</i>	Preferred option (£K)	Least cost option (£K)	Alternative option 1 (£K)	Alternative option 2 (£K)
Costs				
Cost Estimate	£ 10,289,361	£ 9,884,736	N/A	N/A
Partner Co-funding	N/A	N/A	N/A	N/A
Total % Partner Contribution (e.g. for 50% type '50')	0	0	N/A	N/A
Net Cost Estimate (defined as gross costs minus partner contributions)	£ 10,289,361	£ 9,884,736	N/A	N/A
Benefit assessment: calculated using recommended metrics for the 4 WINEP wider environmental outcomes				
Benefit Estimate	£ 15,786,744	£ 15,153,153	N/A	N/A
Benefit Estimate – natural environment	£ 17,654	£ -	N/A	N/A
Benefit Estimate – net zero	£ 14,280,403	£ 13,664,465	N/A	N/A
Benefit Estimate – catchment resilience	£ 15,153,153	£ 15,153,153	N/A	N/A
Benefit Estimate - access, amenity and engagement only	0	0	N/A	N/A
Dis-benefit Estimate	0	0	N/A	N/A
Net cost-benefit	£ 5,497,384	£ 5,268,417	N/A	N/A
Benefit-cost Ratio	1.53	1.53	N/A	N/A
Optional Parallel Benefit Assessment: calculated using:				
- the recommended metrics for the 4 WINEP wider environmental outcomes, or a justified alternative metric to the recommended metric				
- supplementary metric(s)				
Benefit Estimate	£ 20,865,984	£ 19,510,528	N/A	N/A
Benefit Estimate – natural environment	£ 357,404	£ 4,355,420	N/A	N/A
Benefit Estimate – net zero	£ 14,280,403	£ 13,664,465	N/A	N/A
Benefit Estimate – catchment resilience	£ 15,236,759	£ 18,046,145	N/A	N/A
Benefit Estimate - access, amenity and engagement only	£ 300,463	£ 1,956	N/A	N/A
Dis-benefit Estimate	0	0	N/A	N/A
Cost-benefit assessment: using the recommended metrics for the 4 WINEP wider environmental outcomes or alternative metric, and/or supplementary metrics				
Net cost-benefit	£ 10,576,623	£ 9,625,793	N/A	N/A
Benefit-cost Ratio	2.03	1.97	N/A	N/A

hazard



TECHNICAL NOTE – Southern Water Services Biodiversity AMP8 Assistance

DATE:	15 August 2024	CONFIDENTIALITY:	Restricted
SUBJECT:	Southern Water Services Biodiversity AMP8 Assistance		
PROJECT:	TBC code	AUTHOR:	████████████████████
CHECKED:	████████	APPROVED:	████████

APPENDIX 2 - BOOK 1 – BIODIVERSITY PERFORMANCE COMMITMENT.XLSX

Biodiversity Performance Commitment		NERC_IMP/O8SO100024/S+						
Option Description	Biodiversity baseling - UK Hab site surveys	Integrated Biodiversity Monitoring (AMP 8 pilot remote sensing technology - feeding into GIS)	Development of Site Management Plans & ongoing monitoring	Delivery of biodiversity enhancement onsite	Collaboration with stakeholders	Increasing access & recreation	In-house Training & engagement	Mechanisms & Markets
Option No.	Option 1	Option 2	Option 3	Option 4	Option 5	Option 6	Option 7	option 8
Timeline	Ongoing programme - Repeat every 4 years (in line with BNG PC)	one off cost with update every 10 years	ongoing programme over 10 years - repeat every 10 years	cost of delivering option spread over 6 AMPs	repeat every AMP	repeat every AMP	repeat every AMP	repeat every AMP
Cost of option	430,000	150,000	825,000	13,521,000	120,000	120,000	25,000	100,000
cost assumption	above cost for 4 year programme	above cost is repeated every 2 AMPs	above cost is for 10 year programme (additional funding is from the INNS scheme)	above cost is for 30 year programme	above cost is repeated every AMP	above cost is repeated every AMP	above cost is repeated every AMP	above cost is repeated every AMP
Assumptions:	independent review - ball park figure of £100k	We don't have direct provider quote, we have made cost assumption based on quotes received by projects using similar remote sensing technology	assume £5k per site and 330 sites = £1.65m total	from AMP7 report 4507 potential BDU on our land at median BDU market value of £15k. Assume we can get to 20% of these.	Assume £40k in West, Central and East per AMP, INNS budget will also be used to top this up to fund headcount in Trusts	Pilot scheme for access & increased recreation on our land/estate - 1 x scheme per AMP.	costs of internal trainer - one off cost then repeat each AMP	Dedicated inhouse expert plus consultancy support
	330 sites x £500 a day survey = £165k		proposed inhouse team to cover INNS and BNG so only require 50% of the £1.65m = £825k every 10 years	4507 x £15k = £67.605m (total budget for all potential units)		We don't have direct provider quote, we have made cost assumption based on quotes received for projects installing similar visitor infrastructure.		
	330 sites x £500 day, write up =£165k			Assume 20% is achievable £67.605m x 0.2 = £13.521m		Remove old and/or install new: pedestrian gates £10k, fencing £15k, interpretation £10k, paths, bridges, viewing platforms £65k, tree inspection and safety works £20k		

Best Value

	profile per year				
Option 1	£107,500	£107,500	£107,500	£107,500	£107,500
Option 2	£150,000				
Option 3	£82,500	£82,500	£82,500	£82,500	£82,500
Option 4	£450,700	£450,700	£450,700	£450,700	£450,700
Option 5	£24,000	£24,000	£24,000	£24,000	£24,000
Option 6	£24,000	£24,000	£24,000	£24,000	£24,000
Option 7	£5,000	£5,000	£5,000	£5,000	£5,000
Option 8	£20,000	£20,000	£20,000	£20,000	£20,000
	£863,700	£713,700	£713,700	£713,700	£713,700

£107,500	£107,500	£107,500	£107,500	£107,500
£82,500	£82,500	£82,500	£82,500	£82,500
£450,700	£450,700	£450,700	£450,700	£450,700
£24,000	£24,000	£24,000	£24,000	£24,000
£24,000	£24,000	£24,000	£24,000	£24,000
£5,000	£5,000	£5,000	£5,000	£5,000
£20,000	£20,000	£20,000	£20,000	£20,000
£713,700	£713,700	£713,700	£713,700	£713,700



TECHNICAL NOTE – Southern Water Services Biodiversity AMP8 Assistance

DATE:	15 August 2024	CONFIDENTIALITY:	Restricted
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CHECKED:	████████	APPROVED:	████████

APPENDIX 3 - BOOK 2 – WEIR WOOD SSSI RESILIENCE.XLSX

Weir Wood SSSI Resilience

		Activity	Days	Daily Rate	Direct Cost	Cost	Assumptions	
INNS Control	New Zealand pigmyweed	Review of CABI mite trial results	3	█		█	Assumptions	
		Identification of suitable areas of the reservoir for further mite introduction	14	█	█	█	Assume requires boat. 3	
		Transplant of the mite to suitable areas of the reservoir (if deemed appropriate following further investigation)				█	█	AMP7 CABI trial was 15000
		Identification of areas suitable for mechanical/manual control techniques	5	█			█	Assume would be covered at same time as identification
		Mechanical or manual removal of New Zealand pigmyweed(if deemed appropriate following review of macrophyte survey results)				█	█	
	Signal crayfish control	Explore opportunities to support research into genetic modification of signal crayfish				█	█	
		Review of novel and emerging signal crayfish control techniques	5	█			█	
	Removal of Zander						Covered in INNS_ND?	
Biosecurity Management	Internal	Online training for all staff and contractors					█	
		Onsite training for INNS Champion					█	
		Develop and display visual reference material					█	
		Set-up internal INNS reporting system					█	
		Review of CCD protocol					█	
	External	Installation of washdown stations					█	
		Appointment of Biosecurity Officer by reservoir user groups					█	
		Production of INNS risk assessment by reservoir user groups					█	
		Set-up external INNS reporting system					█	
	Annual stakeholder workshop to review catchment-scale biosecurity					█		
Awareness raising plan	Raising awareness of INNS risks and biosecurity measuresexternally	Signage audit and installation of new permanent biosecurity information signs.					█	Currently included under INNS_ND
		Update of SW website to include links to GB NNS biosecurity pages and to outline CCD protocol					█	Currently included under
		Update of reservoir user group websites to include links to GB NNS biosecurity pages, outline CCD protocol and include links to group-specific INNS guidance websites				█	█	
		User groups to include biosecurity awareness and CCD protocol reminders in newsletters to members				█	█	
		SW Weir Wood INNS Champion to meet with reservoir user groups annually	5	█			█	Once per year for AMP

Habitat improvement	Water Level Management Plan(WLMP)	Finalisation of WLMP for the period that the reservoir is out of operation (2022 to 2024)	5	■		■		
		Update WLMP prior to reservoir operations re-starting (predicted 2024)	20	■		■		
	Water quality improvement measures	Identification of nutrient sources to the reservoir and assessment of their relative importance in driving poor water quality					■	in house team, no additional cost
		Assessment of water quality management options (catchment-based and in-reservoir)					■	
		Stakeholder workshops to review proposed options					■	
	Fisheries management	Review of current fisheries management practices and current fish community structure	5	■			■	
		Development of a Fish Management Plan(for INNS control and overall habitat improvement)	5	■			■	
	Bank re-profiling	Identification of suitable areas for habitat modification/bank re-profiling	9	■		■	■	3 people plus boat
Review of the potential risks associated with bank re-profiling and development of mitigation options		3	■			■		
Habitat modification (if deemed appropriate following review of crayfish trappingsurveyresults and assessment of bank suitability)		5	■			■		
Monitoring and assessment	Baseline ecology surveys	Updated SSSI condition assessment (both units)				■	Natural England to do this	
		Fish survey			■	■	Yearly throughout AMP	
		Macrophyte survey (including New Zealand pigmyweed mapping)				■	Assume covered at same	
		Crayfish trapping survey			■	■		
	Routine monitoring programme	Survey of reservoir bank profiles, structure and habitats	15	■		■	■	Team of 3 for 1 week. Boat
		Monthly reservoir and inflow water quality sampling					■	Covered in INNS_MON
	Management Plan for 2027 to 2031	Annual INNS survey (potentially using eDNA biomonitoring)					■	Covered in INNS_MON
		Review of monitoring data to determine success of management actions,identify further opportunities for habitat restorationand identify any new INNS to the reservoir that require management action.	6	■			■	
		Identification of ongoing and emergent ecological issues in the reservoir	5	■			■	
		Review of new reservoir/INNS management measures and development of a Management Plan programmefor 2027 to 2031.	20	■			■	
		Review management objectives to ensure the management plan is meeting these and it is tackling key stressors/issues such as eutrophication, climate change, ecosystem service (natural capital) and INNS.	5	■		■		

223000

20000

Best Value

£ 243,000