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Reservoir and landscape system

Summary report

October 2022

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Reservoir and landscape system

Summary report

October 2022

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Executive summary

The South Lincolnshire Reservoir (SLR) and Fens Reservoir (FR) are two major pieces of new infrastructure proposed for the Anglian Region under the Regulators' Alliance for Progressing Infrastructure Development (RAPID) gated process.¹ This report reviews the potential for further investment in the landscapes around the reservoirs, outside of the Development Consent Order (DCO) process, to create additional benefits that would be enabled by the creation of the reservoirs.

We have identified £0.9 Bn of interventions that would create £5.7 Bn of benefits. The report discusses potential funding opportunities for these benefits. The report describes how this opportunity to invest in landscapes alongside the creation of major infrastructure provides an important opportunity to overcome some of the current barriers to widespread uptake of nature-based solutions at scale.

Interventions and benefits

For this report, we have reviewed agricultural, landscape, social and other interventions (e.g. open water transfers) and identified benefits of the following types: agricultural productivity; carbon; biodiversity; flood management; and socio-economic improvement. Our assessment considers interventions that interact with the reservoirs in the following three ways:

- Upstream catchments - habitat restoration, wetlands, washlands, natural flood management and soil health improvement. These interventions could bring benefits of flow regulation and water quality to the reservoir as well as additional local benefits.
- Interventions around the reservoir - open water transfers, reservoir conjunctive use, farm water storage, bankside storage washlands and wetlands, protected cropping, hydroponics, marinas, country parks and cycleways.
- River restoration in catchments benefitting indirectly from the reservoirs through reduced groundwater abstraction from chalk and limestone aquifers.

The provision and enhanced use of water in these landscape systems creates cascading benefits as different opportunities are enabled. Many of the interventions offer excellent potential return on investment through carbon or biodiversity offsetting but various barriers must be addressed to enable delivery of interventions at scale.

Funding and financing

We identify various funding and finance sources and map them to relevant reservoir and landscape system interventions. Typically, environmental projects have relied on either public sector funding for public goods (e.g. the Environment Agency or local government funding flood control) or private sector funding where the benefits pertain to specific private actors (e.g. water companies funding nature-based solutions (NBS) for water quality objectives). There has been little mobilisation of larger scale private finance of the type that is needed to create transformative change in landscape systems – such as widespread improvements in soil health that would bring widespread benefits to agriculture, biodiversity, carbon sequestration, flood control and water quality.

¹ <https://www.ofwat.gov.uk/regulated-companies/rapid/the-rapid-gated>

There are numerous challenges to creating larger scale investments such as:

- Scale of environmental interventions are small compared with the larger scale that would be of interest to investors. The benefits from the interventions require aggregation to become attractive to investors.
- Landscape interventions often take time to mature and become effective.
- Divergent interests regarding the detail and resolution of landscape interventions. Investors may be looking for manageable and tradeable impacts rather than an interest in the diversity and mosaic nature of landscape at the local level.
- There is limited awareness or experience in navigating the complexity and diversity of finance that could be relevant to landscapes. Debt, equity and philanthropic funds all have different perspectives on risk, return and time horizons.

Blended finance for landscape transformation will be needed. Public sector money will be important in creating the collaborative effort needed to mobilise additional funding over the longer term, bridging the gap created by the long timelines associated with landscape interventions. We see three important priorities in the effort to bridge environmental and business systems in a way that could allow major investment in landscape systems:

- A multi-system perspective and a new integrated vision.
- Governance arrangements that take a nested approach to aggregation.
- Appropriate financial instruments to realise this investment opportunity.

Recommendations

This project builds on previous discussions with partners and has been developed on the basis of engagement with a wide range of stakeholders. To realise the benefits identified in this report, we recommend that the wider community of stakeholders take forward the following actions:

1. Develop and assess feasibility and benefits of open water transfers.
2. Validate and add detail to the system analysis and monetisation of benefits.
3. Develop an integrated water management strategy for the relevant areas.
4. Create wider system synergies by developing and implementing appropriate governance arrangements.
5. Inform the national discourse on scaling up finance for landscape interventions of progress and innovations made on this project.

1 Introduction

The premise for this report is that the South Lincolnshire Reservoir and Fens Reservoir will create opportunities for additional interventions that would create value in the landscape when the reservoirs and surrounding areas are considered as a whole.

The reservoirs have been proposed by Anglian Water, Affinity Water and Cambridge Water. These water companies are looking to enable wider benefits from the new reservoirs, but they are legally constrained by their regulatory mandates to only spend revenues from customers' water bills on the provision of the public water supply. Therefore, the boundary of what can be included in the DCO procurement has important legal constraints. The decision about what would be included in the DCO is beyond the scope of this report and must be carefully considered at a later stage. By contrast, the purpose of this report is to take a broader view of work that could be done and funded by others – or in some cases, potentially co-funded by others and the reservoir project (yet to be determined).

Here we present a preliminary, indicative system concept for each reservoir, reflecting the collaborative inputs of key stakeholders, setting out one way in which the reservoirs could enable creation of additional value from interventions in the surrounding landscapes, with funding and investment from the water companies and other interested public and private sector parties.

We note that the reservoirs could be implemented without all of the interventions discussed in this report. The interventions here are tabled as opportunities to create additional value that could be enabled by the provision of the reservoirs. Maintenance and operation of interventions that benefit the reservoir and wider landscape systems (e.g. open water transfers) would require governance arrangements with an appropriate legal framework.

In developing the systems concepts for the reservoirs, we have reflected the following priorities:

- **Build on previous thinking and discussions with partners** - we reviewed previous meeting records and identified potential interventions from these records.
- **Provide a rigorous and clear system methodology** - our method uses a simplified version of the “theory of change” model described in the government Magenta book², with modifications that align with the Anglian Water “benefits dependency” mapping method.
- **Ensure that the work is grounded** - by producing real costed interventions at a high level in viable parts of the system.

The result of this analysis does not provide an exhaustive and fully costed plan for transformation of the landscapes around the reservoirs, but rather serves as an initial range-finding exercise for the overall costs and benefits of implementing a wider landscape approach for actions enabled by the reservoirs. It builds on earlier analysis by CEPA and Agilia for RAPID³ and adds perspectives from both landscape stakeholders in the region and conversations with the finance community to take a broader perspective of the reservoirs and landscape system opportunities. The costs and values are indicative and have not been independently assured. The work does not constitute a formal cost benefit analysis.

A summary of the identified potential reservoir and landscape interventions is provided in Section 2 of this report. Thereafter it provides an overview of landscape interventions and funding opportunities in Section 3. Then, Section 4 takes a broader view at the challenges of raising finance for landscape interventions at scale and sets out what could be done to

² The Magenta Book provides government guidance for the evaluation of interventions

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/879438/HMT_Magenta_Book.pdf

³ https://www.ofwat.gov.uk/wp-content/uploads/2022/06/MultiSectorReservoirSystems_Report_Final.pdf

capitalise on the unique opportunity to invest in landscapes in ways that are catalysed by the large-scale investment in the reservoirs. Recommendations are given in Section 5.

2 Reservoir system interventions

2.1 The reservoir and landscape benefits

The SLR and the FR are key Strategic Resource Options (SROs) to be delivered through the RAPID gated process. Both reservoirs will have a useable volume of 50 Mm³. The proposed site of the South Lincolnshire Reservoir is to the south of Sleaford in Lincolnshire and the Fens Reservoir preferred site is to the north of Chatteris in Cambridgeshire.

The new reservoirs could enable enhancement of the region's landscapes in various ways. We start by summarising the potential benefits to the wider system in Section 2.2. In Section 2.3 we describe the system interventions that could realise these benefits, categorised according to how they relate to the new reservoir geospatially. In Section 2.4 we present estimated benefits mapped against costed interventions, and in Section 2.5 we highlight key potential barriers to delivery of the interventions.

2.2 The system benefits

We identify five areas of benefit within the reservoir and landscape system where taking a system approach could generate significantly improved outcomes:

- **Agricultural productivity** – better use of water (such as enhanced irrigation), adopting protected cropping (e.g. polytunnels for soft fruit or salad), and smart agriculture have potential to enable a transition to a higher value model of agriculture in the region. This could also be achieved by an increase in water available for irrigation, should the reservoirs unlock this opportunity. Lessons from agriculture in the Netherlands showcase opportunities for innovation that could enhance outcomes in the Fens.
- **Carbon** – the drained wetlands of the fens are peat-rich providing very high potential for carbon sequestration and biodiversity if restored in the area. Restored wetlands, woodland and improved soil health could all significantly reduce land-based greenhouse gas emissions.
- **Biodiversity** – habitat restoration at scale will increase biodiversity. The reservoirs will also enable significant reductions in chalk and limestone groundwater abstraction, supporting recovery of sensitive ecosystems and promoting wider landscape restoration.
- **Flooding** – changing water level management to restore habitats, creating new washlands and wetlands, establishing woodland and adopting measures to improve soil health could all support enhanced flood control in the area. Rewetting some areas of land could increase drainage capacity and flood resilience of agricultural land, enabling higher value agricultural investment to occur.
- **Socio-economic improvement** - both reservoirs are located near areas of relative social deprivation associated with seasonal, low wage economies and lack of investment. Increasing agricultural productivity and resilience will support higher value agricultural and food sector jobs. Creating visitor attractions and landscape enhancements, such as wetlands and navigable waterways, will help drive a visitor and leisure economy. Enhancing local heritage assets, broadening education and cultural awareness of local landscapes and history will help increase social capital via a strengthened sense of place. Providing greater access to nature, recreation and active travel infrastructure will improve health and wellbeing.

2.3 Potential system interventions

A visualisation of the range of interventions included within the preliminary, indicative reservoir system concept is shown in Figure 2.1 for the SLR and Figure 2.2 for the FR. The locations of interventions are indicative only. To inform funding and governance of the system interventions, we group them into three categories in relation to the new reservoir, described as follows.

2.3.1 Upstream catchments

Upstream catchments are defined as areas where interventions may benefit the reservoir, but where the reservoir itself has limited direct influence. Key interventions here include all types of habitat restoration, wetlands, washlands, natural flood management and soil health improvement. All these interventions could interact hydrologically with one another and the reservoir in ways that could significantly impact successful delivery of carbon, biodiversity and flood risk benefits.

The benefits to water quality for the reservoir and environment are likely to be relatively modest, but this is uncertain. Upstream interventions could also impact water availability for the reservoir itself to a limited extent, positively or negatively. Given the value of public water deployable output, these effects could be financially notable even if small in percentage terms. These risks and opportunities are best assessed through integrated mass balance modelling, undertaken at an appropriate scale and resolution.

Engagement with local stakeholders demonstrated a very clear steer that the precise scale and location of upstream interventions should be determined as a collaborative ongoing process, with farmers, environmental non-governmental organisations (ENGOs) and other catchment stakeholders working together to identify locations and scale. If upstream interventions can be shown to improve deployable output, water companies and their customers may have an interest in participating in, and even co-funding, the design of such interventions.

2.3.2 Landscapes near reservoirs

Interventions around the reservoir and any associated open water transfers could be directly impacted by the reservoir, for example through enabling storage and transfer of water for irrigation or to mitigate flood risk. Key interventions here could include reservoir conjunctive use, farm water storage, bankside storage washlands and wetlands, protected cropping, hydroponics, marinas, country parks and cycleways.

2.3.3 Catchments benefiting indirectly from the reservoirs through reduced groundwater abstraction

Chalk and limestone streams are some of the world's iconic biomes, with remarkably high-quality water and ecological activity. Over-abstraction of groundwater has contributed to the degradation and drying of some of these watercourses. Returning chalk streams to health is a major driver in investment planning in England's water sector. The reservoirs will enable reduction of groundwater abstraction in a number of chalk and limestone catchments.

The reductions in groundwater abstraction enabled by the new reservoirs in hydrologically separate catchments offer a significant opportunity to deliver river restoration in places where without the reservoir storage, it is not presently considered cost beneficial to do so. The amenity benefits alone are potentially significant (c.£350m NPV).

Figure 2.1: Landscape interventions around the SLR (indicative locations)

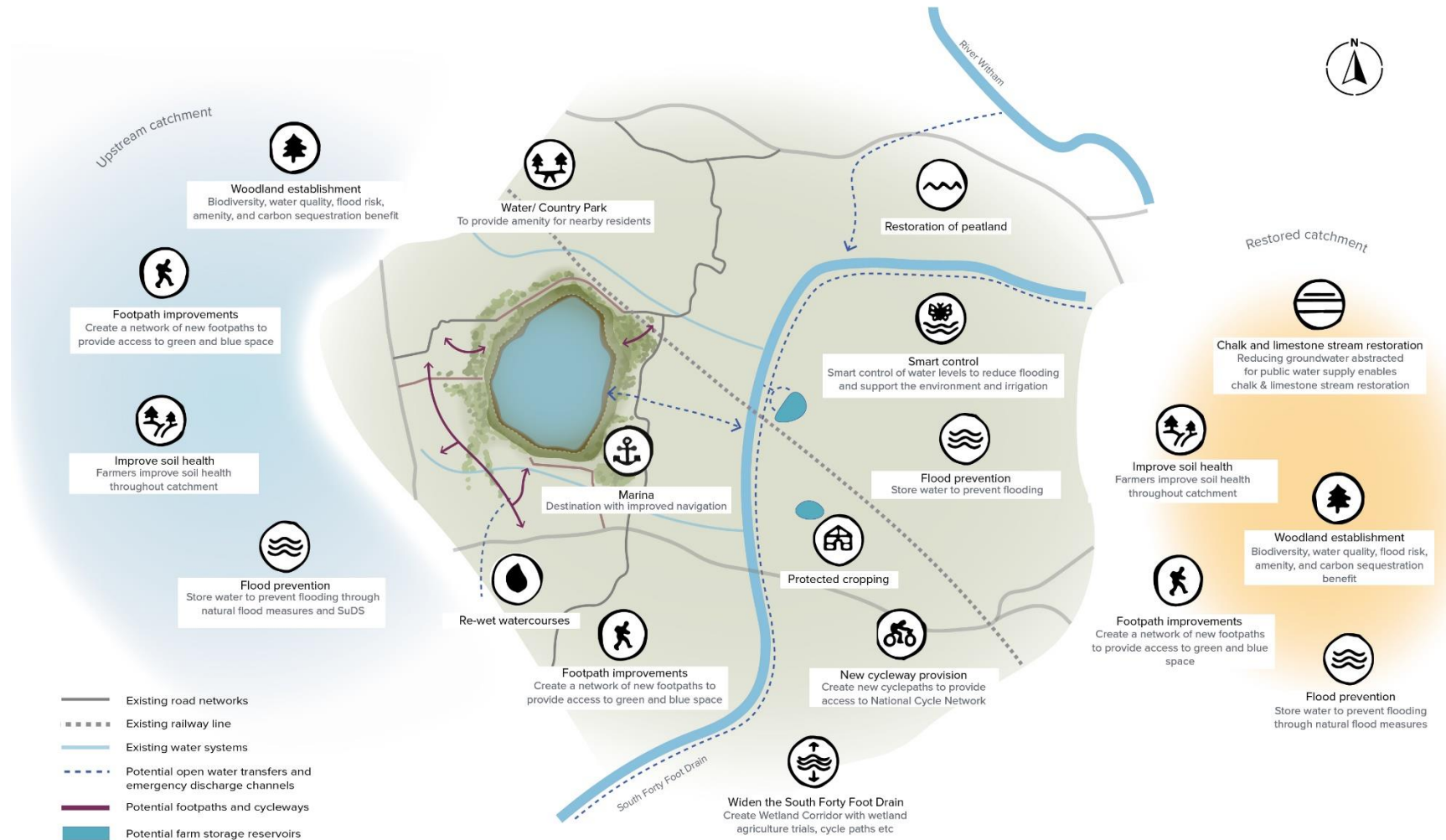
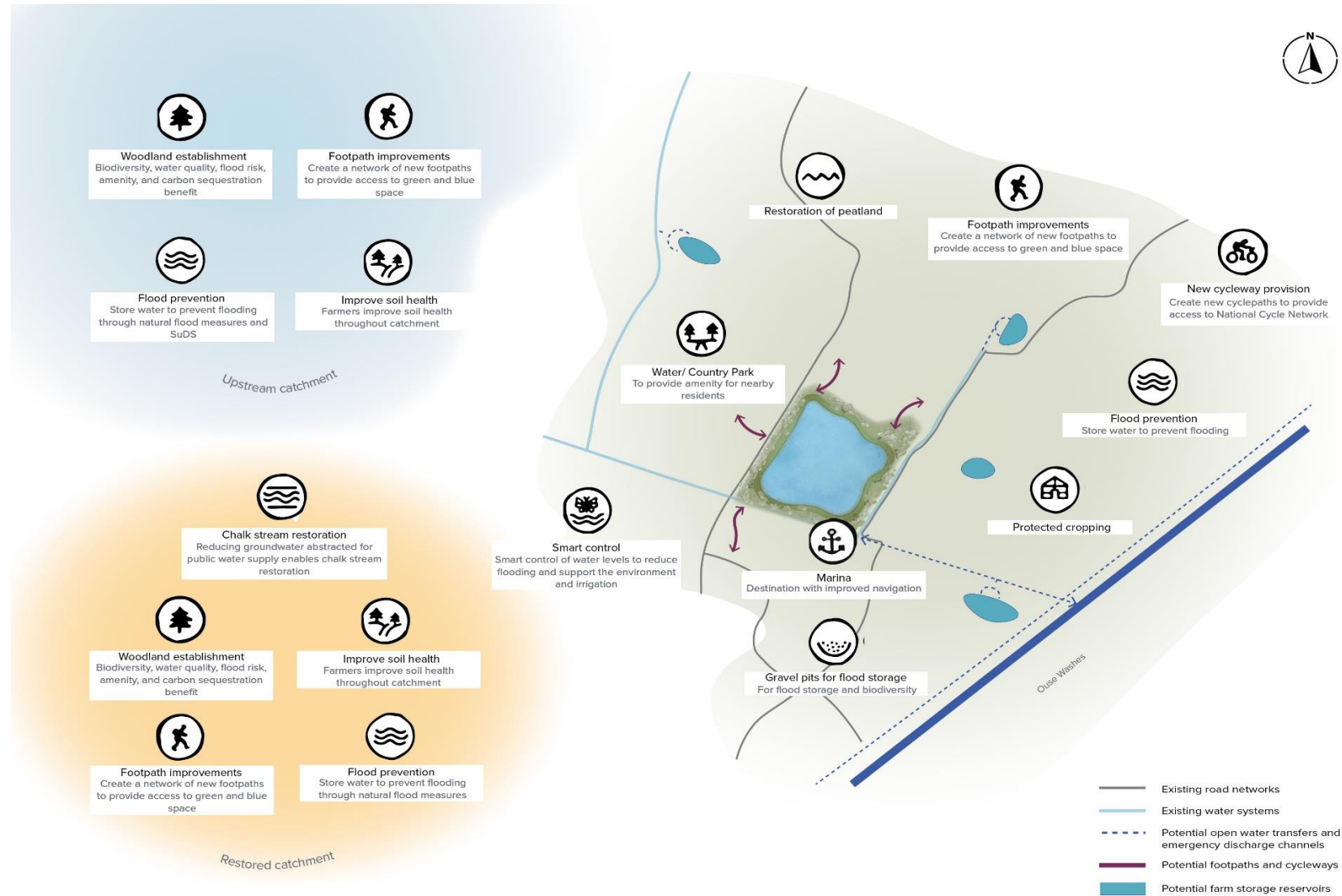


Figure 2.2: Landscape interventions around the FR (indicative locations)



2.4 System benefits and costs

Table 2.1 below shows a high-level breakdown of the net present benefits for key interventions, along with indicative net present costs. This shows which interventions offer the greatest potential for delivery, where blended finance could be important to enable delivery, or where co-benefits may exist. Note that all costs and benefits are indicative only for this initial assessment. Further work is required to cost or value specific interventions in detail for any business case or funding applications. The figures presented here do not constitute a cost benefit analysis from a legal or liability perspective.

Our analysis suggests that bankside storage washlands, fen and peatland restoration, floodplain reconnection and soil health improvement could all potentially be funded entirely through carbon offsetting. Given the potential co-benefits on offer, it is important to undertake strategic planning to maximise the delivery of these co-benefits. The cost effectiveness of agricultural water storage (farm reservoirs) is more complex, and benefits will outweigh costs only in specific situations, depending on crop type and other factors such as soils, hydrology and markets. Blended finance may be required to deliver farm water reservoirs, taking account of flood risk and wider social/economic benefits. Similarly, open water channels may require consideration of a wide range of benefits in order to cover the costs.

Table 2.1: Approximate costs and benefits of interventions (£Million NPV)⁴

Intervention type	Intervention	Total cost	Total benefit	Benefit by category				
				Agricultural	Carbon	Environment	Flood Risk Management	Social and economic
Landscape	Woodland creation	160	1,860	-	1,400	450	10	-
	Floodplain reconnection	40	940	-	640	130	80	90
	Fens - peatland restoration	40	450	-	320	80	TBC	50
	Bankside storage washland	50	300	-	140	40	70	50
	Multi-use wetland	10	200	-	10	110	-	80
	Grassland/other	10	100	-	100	-	-	-
Agricultural	Soil health improvement	6	460	30	410	20	-	-
	Agricultural water storage	330	150	150	-	-	TBC	TBC
	Public water supply (PWS) - conjunctive use	TBC	10	10	-	-	-	-
	Hydroponics	200	1,200	960	20	-	-	180
Social	Public access cycleways	10	30	-	3	-	-	30
Other	Open water ⁵ channel	TBC	TBC	-	-	1	10	30
Total		860	5,700	1,200	3,000	830	170	510

⁴ The scale of interventions was derived as follows:

- Landscape: as derived by systematic conservation planning (SCP) for the South Lincolnshire Reservoir, limited to the South Forty Foot Catchment. Fen Reservoir interventions sized in proportion to the SCP but based on the Old Bedford Ouse Middle Level catchment area
- Agriculture: based on delivering 1 Mm³ water to support moves to higher value crops and 5 Mm³ to increase drought resilience (to c. 10% of the water body); soil health improvement is based on FarmScoper modelling applied to half the local water body agricultural area; hydroponics is based on meeting c.5% of UK's demand for tomatoes.
- Cycleway length: based on the cycleway design formulated with stakeholders in project design, extended to include Bourne and spring-line villages for the South Lincolnshire Reservoir

⁵ Full costs and benefits for all open water transfer options to be appraised in subsequent work

2.5 Barriers to delivery

Table 2.2 summarises key barriers to the delivery of interventions identified in the reservoir and landscape system, which must be addressed to enable delivery at scale. The size of the SRO reservoir programme presents a unique opportunity to overcome these barriers through blended public/private finance.

Table 2.2: Summary of potential barriers to intervention delivery and mitigation

Benefits	Potential barrier or risk	Potential enabling activities
Agriculture	Conjunctive use infrastructure requirements (pumps, channels, storage, operating rules)	Agricultural conjunctive use infrastructure appraisal
	Detailed understanding of water storage economics for individual farms	Detailed agronomy cost/benefit evaluation for water storage
	Cultural barriers to environmental gain, e.g. perceived/real trade-offs with food productivity	Engage with farmers to understand local concerns. Farmers to be involved as partners throughout scoping of interventions
	The time and effort required to obtain agri-environment scheme funding	Develop tools, platforms and processes that simplify access to funding
	Reliable energy source for hydroponics	Reservoir treatment heat source appraisal
	Planning permission for glasshouses	Planning risk appraisal
	Soil risks and issues for crop type changes – e.g. drainage	Agronomy appraisal
	Uncertainty in detailed costs, benefits, risks and opportunities associated with paludiculture	Detailed economic appraisal for paludiculture in vicinity of reservoir
	High transaction costs and risks associated with water trading	Explore dynamic abstraction regulation Develop improved digital platforms
Environment	Prescriptive farm contracts which prevent farmers from delivering soil health measures	Soil health delivery appraisal, which can form part of the Environmental Land Management (ELM) Sustainable Farming Incentive (SFI)
	Inheritance tax relief conditions a potential barrier to achieving nature-based solutions or land use change at scale	Inheritance tax land use change assessment
	Water availability for large-scale peat restoration. Impacts of other interventions on water availability in-combination	Integrated mass balance modelling of habitat restoration
	Uncertainty in water quality benefits delivered by landscape and agricultural interventions for the environment and reservoir refill	Integrated landscape water quality modelling
Biodiversity funding governance, landscape availability of offset units and their locality against unit losses, as set out under guidance. Delays in the planning system.	Biodiversity code to enable offset trading (as for carbon)	
Flooding	Uncertainty in flood benefit magnitude and beneficiaries across multiple interventions – missed opportunity or unintended negative impacts	Flood impact modelling and identification of flood beneficiaries/potential risks
Carbon	Carbon sequestration governance and audit	Develop carbon code suitable for lowland peat and other landscape interventions
	Carbon price fluctuation due to market feedbacks	Develop a financial product capable of buffering market fluctuations in carbon price for investors
Social and Economic	Detailed understanding of costs, benefits and risks associated with new cycleways, bus services, etc	Detailed concept design of cycle ways Economic appraisal of improved bus services

Benefits	Potential barrier or risk	Potential enabling activities
All	Management/delivery of intervention operation and maintenance to ensure sustainable benefits and secure funding	Ensure governance codes specify precise operational requirements and responsibilities as pre-requisite for funding

3 Current funding opportunities and constraints

3.1 Summary of potential funding routes

We identify various funding sources and map them to relevant reservoir and landscape system interventions as shown below in Table 3.1. These funding sources have not yet been secured, but are set out for further assessment as the collaborative design of the wider system interventions is developed. Paler green cells show where a funding source could contribute to an intervention, but to a limited extent.

Funding sources are drawn from Appendix A: Table A.1, which outlines the current landscape of public funding and the opportunities that may exist for the system interventions and benefits we have identified.

Table 3.1: Interventions and potential funding routes

Category	Funding Source	Carbon Offsetting	ELM local nature and landscape	ELM sustainable farming incentive	England Woodland Creation Offer	Farming Investment Fund (equipment & technology)	Farming Investment Fund	Flood Defence Grant in Aid	Frequent Flooded Communities Fund	Future Farming Resilience	Local Levy	Natural Environment Investment	Nature for people, climate and wildlife	Nature for Climate Peatland Grant	Shared Prosperity Fund	Water company SRO funding	Water Environment Improvement Fund	Water Environment Grant	Water Industry National Environment Programme (WINEP)
	Intervention																		
Landscape	Woodland creation	Green	Green		Green			Green				Green	Green				Green	Green	Green
	Grassland/other	Green	Green										Green	Green				Green	
	Fens - peatland restoration	Green	Green										Green	Green				Green	Green
	Floodplain reconnection	Green	Green		Green			Green			Green	Green						Green	Green
	Bankside storage washland	Green	Green					Green	Green				Green					Green	Green
	Multi-use wetland	Green	Green					Green	Green				Green					Green	Green
	River restoration	Green	Green					Green	Green				Green		Green			Green	Green
	Natural flood management	Green	Green					Green	Green			Green		Green				Green	Green
Agriculture	Soil health improvement	Green	Green	Green		Green	Green			Green		Green							
	PWS - conjunctive use					Green	Green			Green									
	Agricultural storage					Green	Green			Green									
	Polytunnels and hydroponics					Green	Green			Green									
	Water trading							Green									Green	Green	
Social	Country parks														Green				
	Public access cycleways	Green			Green								Green		Green				
	PWS reservoir amenity														Green				
Other	Barrage							Green	Green		Green								
	Emergency drawdown area															Green			
	Open water channel							Green											

The remainder of this section discusses each benefit category in turn, identifying funding opportunities under existing frameworks/markets, and publicly funded opportunities to address the barriers to delivery outlined in the previous section.

3.2 Net Zero carbon

It could be possible to fund many interventions through private carbon offsetting alone. Government-backed tree planting schemes, such as the Woodland Carbon Code, are likely to be particularly attractive to landowners as they can offer a stable rate of carbon trading up to a 15-year term – contingent on woodland establishment and management.

A Peatland Code also exists but is based primarily on upland peat restoration and further work is needed to make it fully fit for lowland peat restoration. A UK Farm Soil Carbon Code is being developed with support from the Environment Agency's Natural Environment Investment Readiness Fund. This would provide private investors with confidence in investing in farm soil health measures to offset carbon emissions.

Given all carbon mitigation interventions have at least one other significant potential co-benefit, it is critical that other benefits are accounted for in identifying intervention locations and types. If carbon offsetting is left to the market without any strategic planning, there is a risk that associated opportunities will be missed, or of unintended consequences for the environment.

There are significant opportunities to fund carbon mitigation interventions from existing public funding streams, such as England's Woodland Creation Offer, "Nature for people, climate and wildlife", and the Nature for Climate Peatland Grant. These could provide a favourable level of future income assurance to farmers and help to scale up carbon offset interventions to enable private capital to invest at scale. Funding to support development of a lowland peat carbon code and codes for wetlands more generally, and soil health improvement, could be obtained via the Environment Agency's Water Environment Improvement Fund potentially supported by Defra's Nature for Climate Peatland Grant.

3.3 Agricultural productivity

High-level modelling is being undertaken by Anglian Water and the Water Farming Reservoir Group (WFRG) to assess whether water from the public water supply reservoir could be made available for agricultural use (when drought years are not anticipated) without impacting deployable output. To realise these benefits would require an appraisal of infrastructure requirements to increase the water available for irrigation in drought. There are notable synergies with open water transfers.

The private agricultural drought resilience benefits of investing in on-farm water storage are likely to fall short of up-front costs for water storage for many farms under current crop market prices unless they can be designed to provide significant wider co-benefits. The exception may be for farmers where the impacts of drought can extend over multiple years due to contractual obligations with suppliers or retailers. There may be a compelling case for subsidising drought storage through public agricultural subsidy to deliver food security benefits not captured in market prices.

In theory, farm water storage could help mitigate flood risks by storing water at times of high flows, generating a financial benefit to land users downstream. However, this is constrained by refill capacities and operating requirements for drought mitigation, and requires integrated mass balance modelling to appraise.

Soil health improvements are likely to be attractive to Environmental Land Management (ELM) schemes. Polytunnels and precision farming techniques could enhance the agricultural value derived from local water supplies by reducing irrigation requirements, extending growing

seasons, etc.⁶ Hydroponics could benefit from water source heat pumps linked to the reservoirs, or water treatment waste heat, and could reduce demand for irrigation.

Water trading/sharing could provide significant opportunity to increase availability of water to meet the needs of specific water users subject to different critical drought conditions, or able to accommodate different levels of service.

We identify Defra's Farming Investment Fund as the primary public source of finance to contribute to agricultural enabling activities (Table 3.1). Landowners in receipt of basic payments could also apply to the Future Farming Resilience Fund to make individual contributions to these activities.

3.4 Environment

There is a significant level of support for habitat restoration in the South Lincolnshire Reservoir and Fens Reservoir regions, and to protect the natural landscapes of the fens. Proposed ELM funding for Local Nature and Landscape Recovery projects provides a major opportunity to undertake land use change. Publicly guaranteed payment for ecosystem services (PES) principles of these schemes may help to alleviate concerns from farmers regarding the costs of converting agricultural land to habitat.

We identify cultural inertia, lack of awareness/knowledge, the tax arrangements around productive farming, and the administrative arrangements for PES as potentially significant barriers to enabling environmental benefits from landscape interventions. The "Nature for people, climate and wildlife" scheme and the Water Environment Improvement Fund (WEIF) could be used to co-fund studies to address these barriers and support projects within catchments which enhance natural capital.

Under the England Peat Action Plan⁷, there are also ambitious plans to restore at least 35,000ha of peatland by 2025, with £50m funding available through the Nature for Climate Peatland Grant Scheme. Meanwhile, £500m of this fund has been dedicated to woodland creation under the England Trees Action Plan to meet the UK's overall target of planting 30,000 ha per year by 2025.

3.5 Social and economic

Rural south Lincolnshire and north Cambridgeshire are regions which could benefit from social and economic interventions. The new reservoirs will bring >£2 billion investment to each region and provide a major opportunity to address some of the challenges, both directly through the assets created on site or nearby, and indirectly by acting as a catalyst for investment in the wider system.

There will be numerous social and economic benefits from the reservoirs even without taking the wider landscape systems perspective advocated in this report. As with Grafham water the reservoirs will provide economic and leisure opportunities on their own. In addition, there will be a multiplication of the social and economic potential benefits should the wider interventions be made.

The key funding stream is the Shared Prosperity Fund as part of the Levelling Up Agenda, which was introduced as a replacement to EU structural funding. However, as social and economic benefits are often delivered as a result of flood risk management or improvements to

⁶ The costs and benefits of protected cropping have not been evaluated in this report, but would be a priority for follow on work in relation to integrated water management and wider system benefits. The potential costs and benefits of hydroponics have been included in this report.

⁷ [England Peat Action Plan \(publishing.service.gov.uk\)](https://publishing.service.gov.uk)

the natural environment, many other funding streams (e.g. ELM and FDGiA) listed in previous sections will also be relevant.

All interventions will qualify for public funding to some extent. However, in many cases, additional contributions from other governmental departments or charitable trusts are likely to be required.

An example of how collaborative funding opportunities exist for large scale social interventions can be seen through plans for the Boston to Peterborough Wetland Corridor (B2PWC), which will consist of open water transfers, marinas, cyclepaths and wetland habitats to provide navigational, recreational and amenity benefits. Additional open water transfer opportunities could fulfil ambitions for the B2PWC or connect the three cathedral cities of Ely, Peterborough and Boston, and attract a diverse range of funding.

The B2PWC business case⁸ identifies the following potential sources of public funding: Local Government and Local Enterprise Partnerships; Environment Agency; UK Government Competitive Funding, e.g. the Town Deal or the Future High Streets Fund; Sustrans for cycle routes. It also identifies the following potential private sources of revenue: navigation registration fees, via the Environment Agency; land value uplift contributions from private landowners; tourism infrastructure revenue. The multisectoral benefits that open water transfers deliver mean that further potentially relevant mechanisms could come from flooding, agricultural or environmental streams as detailed in the sections above.

3.6 Flooding

The low-lying nature of the Fens means that effective flood risk management has always been integral to preserving agricultural land and protecting communities. Adapting to climate change and increasing flood resilience will require integration of flood interventions within the landscape. In addition to traditional hard infrastructural interventions, nature-based solutions (NBS) and natural flood management (NFM) interventions are increasingly showing their effectiveness in flood defence and their ability to deliver multiple benefits. This can increase their attractiveness for local communities and potential funders.

The primary source of funding for flood risk management interventions is Flood Defence Grant in Aid (FDGiA). The fund is administered by the Environment Agency on behalf of Defra. The Environment Agency and other Risk Management Authorities named by the Flood and Water Management Act can access FDGiA. Partnership Funding may also be available when used in combination with FDGiA.

Public funding opportunities should exist for all interventions reducing flood risk to properties, both hard infrastructure and NBS approaches. A high level of Partnership Funding is required if it is mainly agricultural land that is being protected. The high cost of large infrastructure projects such as barrages, flood storage areas or barrages also means that collaborative funding approaches with stakeholders with protected assets should be pursued.

3.7 River restoration

Determining interventions necessary to maximise in-combination river restoration benefits at affordable cost could best be done through a process of collaborative optimisation, taking account of multi-sector benefits. This is beyond the scope of this study, but we recommend high-level catchment modelling and optimisation be undertaken in follow-on work. At this stage, we have used the National Water Environment Benefit Survey (NWEBS) £/km river length

⁸ [B2PWC Business Case](#)

values to estimate the total potential amenity, recreation and non-use value for river restoration in the Anglian region. We estimate the resultant amenity potential to be £350m NPV.

Integrated mass balance modelling and economic appraisal of local interventions with local stakeholders could be used to formulate an integrated water management strategy for these catchments. Digital platforms could enhance and share local knowledge to identify needs and opportunities for specific interventions to take place. Funding options for these activities and interventions themselves include the Natural Environment Investment Readiness Fund Grant, the Water Environment Improvement Fund and Nature for people, climate and wildlife.

4 Raising finance for landscapes at scale

There is a systemic disconnect between the worlds of environment and landscape and the worlds of business and finance. Business and finance draw on natural resources but are not closely involved in environmental stewardship as a result of long and anonymous supply chains. In economic terms, the loss of biodiversity and the disruption of the climate are seen as very profound cases of market failure. Recognising this failure, there is now increasing interest from business to engage in the finance of biodiversity and carbon sequestration.

At the same time that the business and finance world is seeking to engage in the environment, environmentalists are exploring new approaches to finance nature recovery and carbon sequestration. Payments are being made for ecosystem services through initiatives such as the Landscape Enterprise Networks (LENs) programme – which pays farmers to manage landscapes to produce outcomes such as improved water quality, flow regulation for flood management and carbon sequestration in the soil profile. Initiatives such as LENs remain relatively small and are yet to achieve any major scale-up to create transformative change at the landscape level.

We see four principal challenges in the effort to bridge environmental and business systems in a way that would allow major investment in landscape systems.

1. The challenge of **scale** and the need to aggregate ecosystem services to a size that makes reasonable investment propositions to financial organisations. Current ecosystem service projects are in the order of £1m whereas investors in green finance are seeking opportunities in the order of £100m.
2. The **divergent interests** in the resolution of landscape restoration activities. Climate investors are looking for manageable and tradable results that can be reported as one item alongside the wide range of established financial indicators. Carbon sequestered and biodiversity credits meet this need. And yet, as has already been found, these indicators are blunt instruments with distorting impacts when applied to the nuanced and intricate system of a real landscape. Those who know landscapes will understand the need of a mosaic of land uses with different habitats, businesses and social associations interwoven with the social and environmental fabric. One size does not just fail to fit all – but inevitably causes disruption to all. If a bridge is to be made between the business and environmental worlds, then it needs to be in a way that has sufficient resolution where it lands well in real landscapes.
3. Different **cultures** in the business and environmental world. The respective role of markets and the potential for collaborative action around shared objectives is different within the system operation of financial markets and local landscapes. Different expectations and norms exist in the collective management of risk and reward. There is relatively little understanding of each system as perceived by the other. Environmentalists tend to talk in simple terms about sources of finance, failing to understand the nuance and constraints under which different financial sectors operate. Finance organisations likewise have limited understanding of aspects of the environment and its implications in their search for fundable opportunities.
4. There are **multiple sources of private capital** we need to consider when funding ecosystem services, including debt, equity and philanthropy. Each type of capital has its own assessment of risk, the return it needs and the horizon over which its impacts are delivered. Many of the assumptions regarding risk, return and time horizon are not compatible with expected practices in the environmental world.

Given the nature of these challenges – and the imperative of reconnecting business and the environment if we are to address the crises in climate and biodiversity – the two new reservoirs in the Anglian region provide a very significant opportunity to develop solutions. Most importantly, the construction of the reservoirs and the widespread benefits they enable across their respective landscapes means that they create an unprecedented scale at which landscape restoration and value creation could be made. This study has identified £0.9 billion of landscape interventions that could create £5.7 billion of benefits – investments and rewards of a scale that is of potential interest to financial markets, as summarised in Table 4.1:

Table 4.1: Initial portfolio of interventions and aggregated benefits across both reservoir landscapes

Intervention type	Cost (£m NPV)	Benefit category	Value (£m NPV)
Agricultural	540	Carbon	3,000
Landscape	310	Agriculture	1,200
Social (cycleways)	10	Flood Risk Management	170
Other (open water transfers)	TBC	Environment	830
		Social and economic	510
Total	860	Total	5,700

One aspect of rising to this challenge will be a mind shift among environmental actors to mobilising investment for landscapes rather than the comparatively straight forward task of seeking funding for particular environmental interventions. In simplified terms the following categories are useful.

- Funding is the provision of resources to create benefits;
- Funding would be public for public goods/benefits and private for private goods/benefits;
- Finance is a resource provided to generate a return from the investor on the basis that the system performance is enhanced and the production of benefits is increased (or made more efficient).

For this landscape scale ambition, there is a need to generate finance for the interventions listed above. Given the relatively long timeframe for these interventions there is need for public money to take a catalytic function and support the development of the wider agenda, thereby creating a platform for the wider opportunities. In this case, the public money itself has the advantage of being spent alongside the reservoirs, thereby having a multiplying effect on the impact of the enabling function of the reservoirs.

In order to realise this potential opportunity, there are a number of headline actions that would be required.

- A **multi-system perspective** and a **new integrated vision**. The systems framing of the interventions alongside the reservoir has categorised and organised insights from extensive stakeholder engagement, meaning that a wide set of inputs is presented in a way that can be taken up by others. This work is the first step and needs to be augmented with a multi-sector process of the type called for in the Future Fens Integrated Adaptation manifesto.
- Governance arrangements that take a **nested approach to aggregation** – working with social structures to create the right resolution and culture at each level but also using a digital platform that allows rigorous management and verification at all levels.
- **Appropriate financial instruments** to realise this investment opportunity will need to be developed

A first assessment of interventions and the combined benefits they could bring has been made. These interventions have been developed by stakeholder groups with larger, more integrated

transformation in mind. They are multi-benefit interventions, each one contributing more than one category of benefits. The interventions are interconnected, and often mutually enhancing, sets of activities. For example, by improving flood risk management, agricultural land would become suitable for higher value investment bringing larger returns.

While the interventions listed provide an indication of what could be done, our stakeholder consultations have emphasised the importance of “process”, as well as “outcome”. As the principal custodians of our landscapes, farmers, in particular, are concerned with how things will be done. Regional actors also have important roles to develop coherent strategies.

The schedule of interventions should not be read in isolation of the need to address the systemic issues identified above. Work will be needed to develop governance arrangements that meet the needs of financiers seeking assurance around their investment and actors operating at different scales in the landscape to ensure coherent overall planning and implementation of measures.

We propose that governance arrangements adopt a nested approach to the aggregation of benefits mindful that decision- making needs to be informed by the scale appropriate to the relevant factors and corresponding actors involved, as shown in Table 4.2. The table indicates that there is a deficit of governance at the multi-sector subregional level capable of performing the aggregation function for financial flows to landscape interventions. At smaller scales where investment may be in the order of £1m there is emerging practice in landscape and catchment schemes. At higher levels of aggregation and investment, banks, water companies and government are relevant actors. Collaborative governance is an emerging field and therefore action from other contexts will inform the development of governance arrangements: examples would include the Greater Manchester Natural Capital Investment Plan⁹ and North Star Transition’s Wales Transition Lab¹⁰ which promotes cross-sector integration and collaborative action.

Table 4.2: Governance of landscape interventions and aggregation of benefits

Aggregation Order of magnitude	Actors relevant to coordinated aggregation of funding for environmental goods	Comments
£1,000,000,000	Banks, government, water companies, regional planning	
£100,000,000	Banks, government, water companies, regional planning	Deficit of subregional multi-system coordination
£10,000,0000	Banks, government, water companies, regional planning	
£1,000,000	Catchment Based Approach (CaBA), catchment schemes, ENGOS	Emerging practice in LENs, CABA and other coordinated landscape interventions.
£100,000	Farmer groups, ENGOS	
£10,000	Farms – ENGOS	

Dialogue on the development of suitable financial arrangements will be an ongoing process, and the development of new approaches to finance will be required nationally. The convening power of the SRO reservoirs provides a unique opportunity to deliver landscape interventions alongside the major investment in the reservoirs themselves. The development of both governance and finance for landscape transformation will take time – and should be designed and established to best correspond with the timeframe for design and implementation of the reservoirs.

⁹ [Greater Manchester Natural Capital Investment Plan](#)

¹⁰ [Wales Transition Lab](#)

5 Recommendations

This project builds on previous discussions with partners and has been developed on the basis of engagement with a wide range of stakeholders. To realise the benefits identified in this report, we recommend that the wider community of stakeholders take forward the following actions:

- 1. Develop and assess feasibility and benefits of open water transfers**
 - a. Develop and cost open water transfers which meet the needs of emergency draw-down, annual draw-down tests and navigation. The transfers and emergency draw down will be the governing conditions for the sizing and assessment of open water transfers. Navigation benefits from the open water transfers will need to be assessed.
 - b. Evaluate the potential for flood management, irrigation / conjunctive use and environmental benefits of open water transfers. The scope of these activities will have implications for the operation – and hence design – of the reservoirs.
 - c. Quantify amenity benefits arising from the transfers and associated interventions such as country parks and marinas.
 - d. Evaluate all costs and benefits of alternative open water transfer options in comparison with each other and with a baseline piped water option
- 2. Validate and add detail to the system analysis and monetisation of benefits**
 - a. The system mapping of interventions and benefits needs to be validated with stakeholders across all parts of the system. We have made assumptions about co-benefits from different interventions. The attribution of these multiple benefits to system interventions requires validation by specialist stakeholders.
 - b. Site specific interventions need to be identified, costed and appraised economically across all relevant benefits.
 - c. The economic analysis should be extended to provide an initial indication of enabling and in-combination effects.
- 3. Develop an integrated water management strategy for the relevant areas**
 - a. Scope an integrated water management modelling strategy to complement the Future Fens Integrated Adaptation Strategy. Build on analysis of modelling studies and assessments undertaken to date, to include an evaluation of the effect of alternative landscape restoration strategies on the availability and quality of water for farm irrigation, carbon offsetting and biodiversity gain.
 - b. An assessment of the volumetric scale of flood management, conjunctive use and environmental water transfers should be made. The potential for Internal Drainage Boards to pump to the reservoirs should be assessed. The potential of agricultural enhancements from irrigation and protected cropping will need to be made.
 - c. The benefits derived from use of the open water channels for flood management, conjunctive use, social and environmental benefits should be assessed.
- 4. Create wider system synergies by developing and implementing appropriate governance arrangements**
 - a. Convene leaders from different sectors to create an integrated understanding of the system interconnections including economic growth, agriculture, tourism,

health, transport, energy, food and social inclusion. The example to consider in this context is North Star Transition's Wales Transition Lab.¹¹

- b. Co-design governance arrangements suitable for large scale landscape system transformation as laid out in the Future Fens Integrated Adaption Strategy.
- c. Support the development of the peatland and soil health carbon governance codes.
- d. Develop a digital platform to support identification, management and verification of landscape interventions in a manner suitably robust for large scale payment for landscape benefits derived from multiple funding sources.

5. Inform the national discourse on scaling up finance for landscape interventions of progress and innovations made on this project.

- a. Use the funding strategy for this work to inform and catalyse work on scaling up finance for landscape transformation.
- b. Collaborate with other innovative actors working on landscape systems to share knowledge and methods that are relevant to the Future Fens Integrated Adaption Strategy agenda and other areas in the country and internationally facing similar systemic challenges.

¹¹ [Wales Transition Lab](#)

A. Summary of potential public funding sources

Table A.1: Public sector funding opportunities

Benefit category	Grant/Scheme name	Relevant interventions	Source of grant/scheme	Description	Requirements	Who can apply	Scheme value (£m.)
Agriculture	Basic Payments Scheme (BPS)	Soil health improvement	Rural Payments Agency (RPA) on behalf of Defra	Biggest of the rural grants for environmental benefits. UK Government is set to phase out this scheme under legislation changes.	Follow Cross Compliance. 5ha of land with 5% of land devoted to scheme. Capital works completed within 2 years of agreement.	AW may not qualify as only some businesses carrying out certain business activities can claim	£1.8m (2022) ¹²
Agriculture, Environment	Countryside Stewardship	Orchards	RPA on behalf of Defra	Long-term income stream, or short-term capital grants or offers. Can apply for implementation plan and feasibility study grant by consulting NE. Administered on a year on year rolling basis, UK Government may phase out this scheme.	Follow Cross Compliance	Can apply if have 'management control' of land.	Not disclosed ¹³
Agriculture, Environment	Environmental Stewardship	Orchards All washlands/wetlands	RPA on behalf of Defra	Aims to deliver significant environmental benefits in high priority situations and areas. Agreements include the pre-requisite Entry Level or Higher Level for more complex, discretionary management.	Follow Cross Compliance. help achieve natural resource protection and flood management by contributing to one or more of the primary objectives of the scheme.	Freehold owners and contractual licences can apply	Not disclosed ¹⁴
Agriculture, Environment	The Future Farming Resilience Fund	Soil health improvement PWS – conjunctive use Agricultural storage Polytunnels and hydroponics	Defra	Supports organisations that are providing resilience support during early years of the agricultural transition.	Farmer in receipt of BPS direct payment. Organisation helps farmer understand changes and how to adapt their business model.	Landowner in receipt of direct payment as part of BPS are eligible to apply	£10.7m. (FY 2021/2022) ¹⁵
Agriculture, Environment	Countryside Productivity Scheme	Woodland creation	European Agricultural Fund for Rural Development (EAFRD) on behalf of Defra. RPA issues payment for the grant claims.	Small grant to help farmers/landowners purchase equipment to improve productivity.	Projects that improve productivity of farming and forestry sectors.	Landowner	Not disclosed ¹⁶
Agriculture, Environment, Carbon, Flood Risk Management, Social and Economic	Environmental Land Management Scheme: Sustainable Farming Incentive Scheme	Soil health improvement	RPA on behalf of Defra	Launches 2022. For farmers/landowners getting Basic Payment scheme (BPS) direct payments in 2020/21	Help achieve one or more natural environmental outcomes from the 25 year environment plan.	A company - Anglian Water	Not disclosed ^{17,18}
Agriculture, Environment, Carbon, Flood Risk Management, Social and Economic	Environmental Land Management Scheme: Local Nature Recovery	Fens – peatland and other restoration All washlands/wetlands Floodplain reconnection Woodland creation River restoration NFM Soil health improvement	RPA on behalf of Defra	Launches 2024. Actions that support nature recovery and meet local environment priorities	Help achieve one or more natural environmental outcomes from the 25 year environment plan.	A company - Anglian Water	Not disclosed ^{19,20}

¹² Basic Payment Scheme (BPS) 2022 - GOV.UK (www.gov.uk)

¹³ Countryside Stewardship - GOV.UK (www.gov.uk)

¹⁴ Environmental Stewardship: guidance and forms for agreement holders - GOV.UK (www.gov.uk)

¹⁵ Future Farming Resilience Fund to open in August - GOV.UK (www.gov.uk)

¹⁶ Countryside Productivity Small Grant (CPSG) scheme Round 3 - About Countryside Productivity Small Grant Scheme - Guidance - GOV.UK (www.gov.uk)

¹⁷ Sustainable Farming Incentive: full guidance - GOV.UK (www.gov.uk)

¹⁸ Get ready for our 3 new environmental land management schemes - Future Farming (blog.gov.uk)

¹⁹ Sustainable Farming Incentive: full guidance - GOV.UK (www.gov.uk)

²⁰ Get ready for our 3 new environmental land management schemes - Future Farming (blog.gov.uk)

Agriculture, Environment, Carbon, Flood Risk Management, Social and Economic	Environmental Land Management Scheme: Landscape Recovery	Fens – peatland and other restoration All washlands/wetlands Floodplain reconnection Woodland creation River restoration NFM Soil health improvement	RPA on behalf of Defra	Launches 2024. Long term projects restoring wilder landscapes and large-scale tree planting	Help achieve one or more natural environmental outcomes from the 25 year environment plan.	A company - Anglian Water	<i>Not disclosed</i> ^{21,22}
Agriculture, Environment, Carbon, Flood Risk Management, Social and Economic	Natural Environment Investment Readiness Fund Grant	Woodland creation Floodplain reconnection NFM Soil health improvement	EA on behalf of Defra	Supports the government goals in 25 year environmental plan, green finance strategy and 10 point plan for a green industrial revolution. Competitive scheme offering £10,000-£100,000.	Help achieve one or more natural environmental outcomes from the 25 year environment plan. Produce revenue from ecosystem services to attract and repay investment. Produce an investment model that can be scaled up and reproduced.	A company - Anglian Water	£10m (2021) ²³
Agriculture, Environment, Carbon, Flood Risk Mitigation, Social and Economic	Farming Investment Fund	Soil health improvement PWS – conjunctive use Agricultural storage Polytunnels and hydroponics	RPA on behalf of Defra	Provides grants to improve productivity and bring environmental benefits ²⁴ . FIF is made up of 2 separate funds: Farming Equipment and Technology Fund (for grants between £2,000 and £25,000) Farming Transformation Fund (FTF) (for grants between £25,000 and £500,000)	Help achieve one or more natural environmental outcomes from the 25 year environment plan.	Landowners	£30m for Adding Value grant of the FTF ²⁵
Agriculture, Environment, Carbon	Nature for people, climate and wildlife	All washlands/wetlands Fens – peatland and other restoration Floodplain reconnection Woodland creation River restoration	Local Authorities, National Parks (inc. Moors for the Future Partnership), Community Forest Trust, and others on behalf of Defra	Scheme launched 2021 running till the end of the Parliament. For landowners willing to plant trees and restore peatland, trees for climate will fund establishment and maintenance for 15 years.	Eligibility outside of existing agri-environmental schemes. Fully funded including design and feasibility, inspection to ensure growth and establishment is a condition for the trees.	Can apply if have 'management control' of land in England.	£640m ²⁶ .
Agriculture, Environment, Carbon, Flood Risk Management, Social and Economic	The Woodland Carbon Code scheme for buyers and sellers	Woodland creation	Forestry Commission, on behalf of Defra	The Woodland Carbon Code (WCC) is the UK's voluntary carbon standard for woodland creation projects. This government-led scheme provides reassurance about the carbon savings that woodland projects may realistically achieve.	Demonstration of woodland development and associated sequestered carbon calculation	Can apply if have 'management control' of land in England.	<i>Not disclosed</i> . ²⁷
Agriculture, Environment, Carbon, Flood Risk Mitigation, Social and Economic	England's Woodland Creation Offer (EWCO)	Woodland creation Floodplain reconnection Public access cycleways	Forestry Commission, on behalf of Defra	EWCO is one of a suite of Forestry Commission initiatives to support woodland creation and tree planting across England. You could receive over £10,000 per hectare to support your woodland creation scheme.	Demonstration of woodland development over 15 years.	Can apply if have 'management control' of land in England. Landowners, land managers and public bodies can apply to the England Woodland Creation Offer (EWCO) for support to create new woodland, including through natural colonisation, on areas as small as one hectare	<i>Not disclosed</i> . ²⁸
Environment	Water Environment Grant (WEG)	Water trading All washlands/wetlands Floodplain reconnection	European Agricultural Fund for Rural Development (EAFRD) on behalf of Defra.	This scheme closed in 2018. Aim is to improve water environment as part of the Rural Development Programme of England. Competitive scheme offering max. grant of	Help achieve River Basin Management Plans, especially by managing diffuse pollution in rural areas. Cannot fund commercial projects or those already	Charity, not for profit organisation, land manager and public body	<i>Not disclosed</i> ²⁹

²¹ [Sustainable Farming Incentive: full guidance - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/guidance/sustainable-farming-incentive)

²² [Get ready for our 3 new environmental land management schemes - Future Farming \(blog.gov.uk\)](https://www.blog.gov.uk/2023/03/get-ready-for-our-3-new-environmental-land-management-schemes/)

²³ [Innovative nature projects awarded funding to drive private investment - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/news/innovative-nature-projects-awarded-funding-to-drive-private-investment)

²⁴ [Farming Investment Fund - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/news/farming-investment-fund)

²⁵ [Farming Investment Fund: a new grant - Future Farming \(blog.gov.uk\)](https://www.blog.gov.uk/2023/03/farming-investment-fund-a-new-grant/)

²⁶ [Nature for people, climate and wildlife - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/news/nature-for-people-climate-and-wildlife)

²⁷ [The Woodland Carbon Code scheme for buyers and landowners - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/news/the-woodland-carbon-code-scheme-for-buyers-and-landowners)

²⁸ [England Woodland Creation Offer - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/news/england-woodland-creation-offer)

²⁹ [Guide for applicants: Water Environment Grant - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/guidance/water-environment-grant)

			RPA issues payment for the grant claims.	£2million. 15% can go to PM salaries and hire/rent of site offices.	being funded by other sources e.g. country stewardship		
Environment	Water Environment Improvement Fund (WEIF)	Water trading All washlands/wetlands Fens – peatland and other restoration Floodplain reconnection Woodland creation River restoration NFM	EA on behalf of Defra	The focus is on improving the aquatic environment through one off grants. Each catchment partnership host was able to apply for up to £15,000. Natural capital including tree planting and wetlands will also be funded. Each catchment partnership host was able to apply for up to £15,000	Membership of a CaBA partnership, Support grants are through the non-competitive allocation of funding to existing catchment partnerships and the CaBA National Support Group (NSG).	Charity, not for profit organisation or land manager.	£1.7m. (FY 2016/2017) ³⁰
Flood Risk Management	Flood Defence Grant in Aid (FDGIA)	Woodland creation Floodplain reconnection All washlands/wetlands NFM Barrage Water trading	Defra/central government	This is the primary source of funding available to flood risk management projects. Funding is allocated using the "Partnership Funding Calculator" with funding awarded for the delivery of "Outcomes". Projects that fail to secure adequate FDGIA can top up via "Partnership Funding"	Compliance with FCERM-TAG ³¹ Compliance with Partnership Funding rules ³² Submission of business case and passing assurance by EA's National Project Assurance Service.	EA & Risk Management Authorities	Variable.
Flood Risk Management	Local levy	All washlands/wetlands Floodplain reconnection River restoration NFM Barrage	Regional Flood and Coastal Committees /Local authorities	Projects are selected by committee. It can fund all types of flood risk management projects, both traditional and natural approaches. Funds are raised by a levy on local authorities. Committee members are appointed from Lead Local Flood Authorities and EA. Typically a percentage of FDGIA is offered.	Criteria varies. Typically funding requires compliance with FCERM-TAG. ³³	EA & Risk Management Authorities	Variable.
Flood Risk Management	Frequent Flooded Communities Fund (FFCF)	All washlands/wetlands NFM Barrage	Defra/central government	This new fund is intended to provide extra support to communities that experience chronic flooding.	Overseen by the EA as an extension of FDGIA. A community which has experienced flooding from any source, other than sewage, twice or more since 2012. The flood events must have caused internal flooding to at least 10 properties	EA & Risk Management Authorities	£100m (2022). ³⁴
Flood Risk Management	Other government departments	Barrage	Central government	This funding is available for flood risk management projects that protect government assets such as hospitals, fire stations and police stations. It tops up funds for projects that would otherwise be unaffordable.	Overseen by the EA as an extension of FDGIA. Must protect government infrastructure	EA & Risk Management Authorities	Variable.
Flood Risk Management	National Highways	Barrage	National Highways	Funding can be provided by the Highways England regional liaison committees.	Application process varies. Consult with the EA-Highways England regional liaison committee.	EA & Risk Management Authorities	Variable.
Flood Risk Management	Sustainable Drainage Systems (SuDS) for Schools	NFM (SuDS)	Department for Education	This fund has run for the last 3 years. It calls for projects to apply for funding to use SuDS to reduce flood risk to schools.	Must reduce flood risk to a state funded school. Must involve SuDS being delivered within the school grounds.	EA & Risk Management Authorities	Variable.

³⁰ [Catchment partnership support grants \(publishing.service.gov.uk\)](https://publishing.service.gov.uk)

³¹ <https://www.gov.uk/government/publications/fcerm-appraisal-technical-guidance> (accessed 2/8/22)

³² <https://www.gov.uk/government/publications/calculate-gia-funding-for-fcerm-projects-2020> (accessed 2/8/22)

³³ <https://www.gov.uk/government/news/regional-flood-and-coastal-committee-support-flood-alleviation> (accessed 2/8/22)

³⁴ [Repeatedly flooded communities to receive dedicated funding - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/news/repeatedly-flooded-communities-to-receive-dedicated-funding)

Flood Risk Management	Network Rail	Railway embankment	Network Rail	Network Rail invites the submission of risk management projects for inclusion in Network Rail's spending cycles. The next cycle starts in 2024 with the request for projects to be submitted in 2021.	Must benefit Network Rail Must be a project on Network Rails planned spending	EA & Risk Management Authorities	Variable.
Flood Risk Management, Environment	Water companies	All washlands/wetlands River restoration	Anglian Water/Ofwat	Through the WINEP, companies can put forward schemes which will deliver environmental improvements. These are submitted to the Environment Agency for review and inclusion within company business plans. Funding for each companies WINEP is then determined by Ofwat.	Must reduce sewer flooding, help protect a water company asset from flooding or align with another water company interest e.g. improve water quality – and also deliver sufficient environmental improvement	Anglian Water	Variable.
Flood Risk Management	"Partnership Funding"	All washlands/wetlands NFM Barrage	Any source of funding that is not Flood Defence Grant in Aid	This is not a true funding source. Partnership funding is the term used when topping up Flood Defence Grant in Aid. Contributions from businesses can be used to reduce tax liability. ³⁵	Varies – depends on requirements of funding source. However, the FCERM-TAG must also be complied with.	Varies	Variable.
Flood Risk Management,	Nature based solutions (NbS) for climate change at the landscape scale ³⁶	All washlands/wetlands NFM	HM Treasury's Shared Outcome Fund	Funding for creation and restoration of habitats (e.g., planting trees, establishing meadows, or reinstating natural hydrology of wetlands).	Projects should cover area broadly connected of at least between 500-5000ha. Closing date: 29 August 2022	Local partnerships, including farmers, NGOs, charities, local community groups, non-environmental organisations.	£5m
Flood Risk Management, Social and Economic	Flood and Coastal Resilience Innovation Programme (FCRIP) ³⁷	All washlands/wetlands NFM	Environmental Agency, Defra	£6 million to the flood and coastal resilience innovation programme located in Lincolnshire will demonstrate how practical innovative actions can work to improve resilience to flooding and coastal erosion.	With this funding, projects will demonstrate innovative actions can work to improve resilience to flooding and coastal erosion. <ul style="list-style-type: none"> nature based solutions sustainable drainage systems making properties more flood resilient encouraging local businesses to improve their flood resilience building community and voluntary sector capacity to respond and recover		£6m
Flood Risk Management, Social and Economic	Frequently Flooded Allowance ³⁸	Barrage	Environmental Agency	The £100 million Frequently Flooded Allowance will improve access to public funding for these communities, which are often smaller areas requiring more complex flood schemes, meaning that community-wide defences are not always viable.	Projects should include 10 or more properties have flooded twice or more in the last 10 years.	Risk Management Authorities	£100m
Agriculture, Environment, Social and Economic	Strategic regional water resource solutions ³⁹	Barrage Open water channel	Ofwat	A £469 million ring-fenced development fund for companies to investigate and develop strategic water resource solutions that benefit customers, protect and enhance the environment and benefit wider society.	Accelerate the development of solutions to be 'construction ready' for the 2025-2030 period. Gated Process includes: <ul style="list-style-type: none"> Companies are progressing strategic water resource solutions that have been allocated funding at PR19 Costs incurred in doing so are efficient Solutions merit continued investigation and development during the period 2020 to 2025	Water companies	£469m

³⁵ <https://www.gov.uk/government/publications/income-tax-and-corporation-tax-relief-for-businesses-contributing-to-a-partnership-funding-flood-defence-scheme> (accessed 2/8/22)

³⁶ Nature based solutions for climate change at the landscape scale - GOV.UK Find a grant (find-government-grants.service.gov.uk)

³⁷ Flood and coastal resilience innovation fund - GOV.UK (www.gov.uk)

³⁸ Repeatedly flooded communities to receive dedicated funding - GOV.UK (www.gov.uk)

³⁹ Strategic-regional-water-resource-solutions-guidance-for-june-2021.pdf (ofwat.gov.uk)

Social and Economic	Shared Prosperity Fund ⁴⁰	All social interventions River restoration	Central government	As part of the Levelling Up Agenda, this three year funding scheme looks to promote investment in local communities, supporting local business and boosting skills. The total scheme of £2.6 Bn will be allocated among the UK, including Lincolnshire.	Provide evidence of how interventions proposed are aligned with the main issues and opportunities in the area.	Local authorities in the UK, as part of their investment plan. The fund can be used to support interventions via grant to public or private organisations.	£4m
Environment, Carbon	Nature for Climate Peatland Grant Scheme	Fens - peatland and other restoration NFM	Defra	This scheme provides funding to restore peatlands in the uplands and lowlands of England. It will run until 2025.	One type of grant, Restoration Grant – will have further round of applications in 2023.		£640m ⁴¹ (£500m for the England trees action plan and £50m for the England Peat action plan)
Flood Risk Management, Environment, Social and Economic	The Cambridgeshire and Peterborough Fund for Nature	All washlands/wetlands Floodplain reconnection Woodland creation River restoration	Created by Cambridgeshire and Peterborough Combined Authority and overseen by Natural Cambridgeshire	Projects which will deliver enhancements in nature in line with the ambition to double the quality and quantity of rich wildlife habitats and natural green space and improve access to them in Cambridgeshire and Peterborough. There will also be a focus on increasing the benefits that projects deliver, such as climate-change mitigation and adaptation, health and wellbeing, prosperity, flood prevention, and/or water quality and retention, and learning how to put a value on these benefits.	Monies from the Fund will need to be at least matched from other sources and preference will be given to applications that have a prospect of leveraging further investments, and/or that attract revenue so as to make them long-lasting.	Landowners within the six priority landscapes identified.	<i>Not disclosed – up to £300,000 for a single project</i>

⁴⁰ [UK Shared Prosperity Fund: prospectus - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/111111/uk-shared-prosperity-fund-prospectus.pdf)

⁴¹ [Flood and coastal erosion risk management investment plan for 2021 to 2027 \(publishing.service.gov.uk\)](https://publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/111111/flood-and-coastal-erosion-risk-management-investment-plan-for-2021-to-2027.pdf)

