



## Connected by Water

A South Yorkshire alliance, working  
together to build flood resilience and  
respond to the climate emergency

## Action Plan January 2022





# Along with the key partners of the South Yorkshire alliance, a number of supporting organisations are crucial to the delivery of this plan.

Anglian Water	Sheffield Lakeland Landscape Partnership
Bradfield Parish Council	Sheffield & Rotherham Wildlife Trust
Canal and Rivers Trust	Sheffield United Football Club Community Foundation
Chesterfield Borough Council	South Yorkshire Archaeology Service
Coal Authority	South Yorkshire Flood Risk Partnership
Derbyshire County Council	South Yorkshire Local Nature Partnership
Don Catchment Rivers Trust	South Yorkshire Local Resilience Forum
Don Dearne Rother Catchment Network	Steel Valley Project
Doncaster East Internal Drainage Board	Stocksbridge Town Council
Met Office	University of Leeds
Moors for the Future	University of Sheffield
Natural England	Wild Trout Trust
National Highways	Woodland Trust
National Trust	Yorkshire & Humber Climate Commission
Network Rail	Yorkshire & Humber Drainage Boards
North East Lincolnshire Council	Yorkshire Regional Flood & Coastal Committee
Northern Powergrid	Yorkshire Wildlife Trust
Peak District National Park Authority	
River Stewardship Company	
Royal Society for the Protection of Birds	
Sheaf & Porter Rivers Trust	
Sheffield Hallam University	

This is only the beginning. The list of organisations supporting this plan will continue to grow as the plan develops.

# A South Yorkshire alliance, working together to build flood resilience and respond to the climate emergency



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## Why is this Connected by Water Plan needed? →

The flooding in November 2019 provided the catalyst for the creation of this Connected by Water Plan. One of the wettest autumns on record led to unprecedented river levels, and widespread flooding across South Yorkshire.

Communities were evacuated from their homes, precious belongings ruined, businesses devastated, infrastructure severely disrupted and people unable to return to their homes for many months. As the flood water subsided, communities, businesses and senior leaders asked how can we reduce the risk and impact of flooding across the region?



Picture Location: River Don,  
Sheffield, Yorkshire



# Climate change impact

— The stark reality is that climate change is leading to rising sea levels  
— and wetter winters with more intense rainfall. All factors that will  
— increase the risk of flooding from the rivers, surface water and the  
— public sewer network across South Yorkshire.

— If we're to meet this challenge and reduce both the risk and impact  
— of flooding in the future, we cannot stand still. Unless we do more,  
— our communities will struggle to cope with the increasingly  
— catastrophic impacts of more frequent and severe floods.

—  Picture Location:  
— Rotherham Town Centre



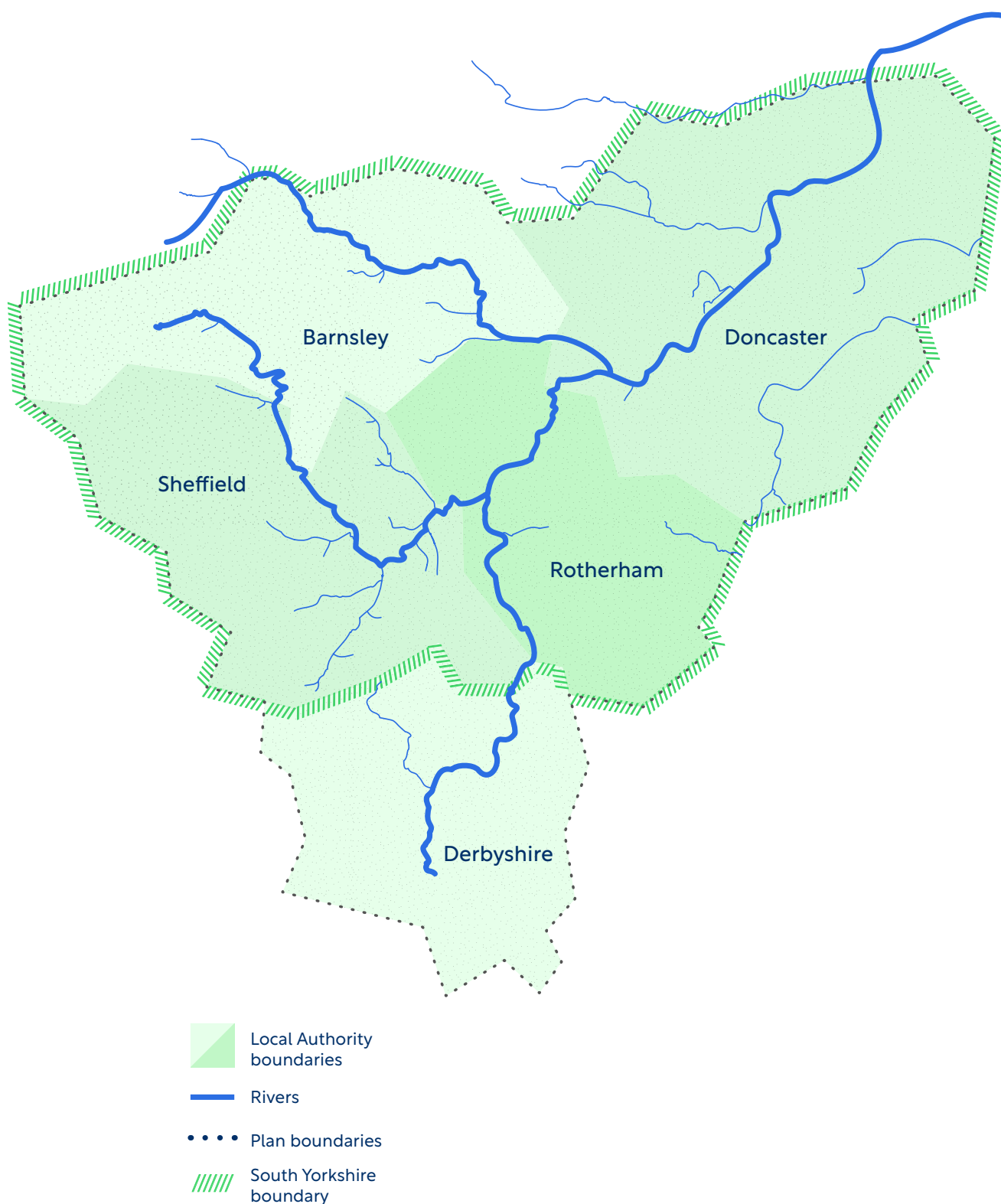
# If we're to meet this challenge and reduce both the risk and impact of flooding in the future, we cannot stand still.

A lot of work has been done to better protect communities across South Yorkshire since the previous major flood event in 2007. However, the shock of the 2019 floods linked to the reality of climate change, has led to the formation of the South Yorkshire alliance. This alliance is determined to explore all measures to both adapt to and mitigate climate change in the South Yorkshire region. Since November 2019, we've been working together, not only to deliver flood risk management schemes on the ground, but also to plan catchment-wide measures for the future to help meet the challenges of climate change.

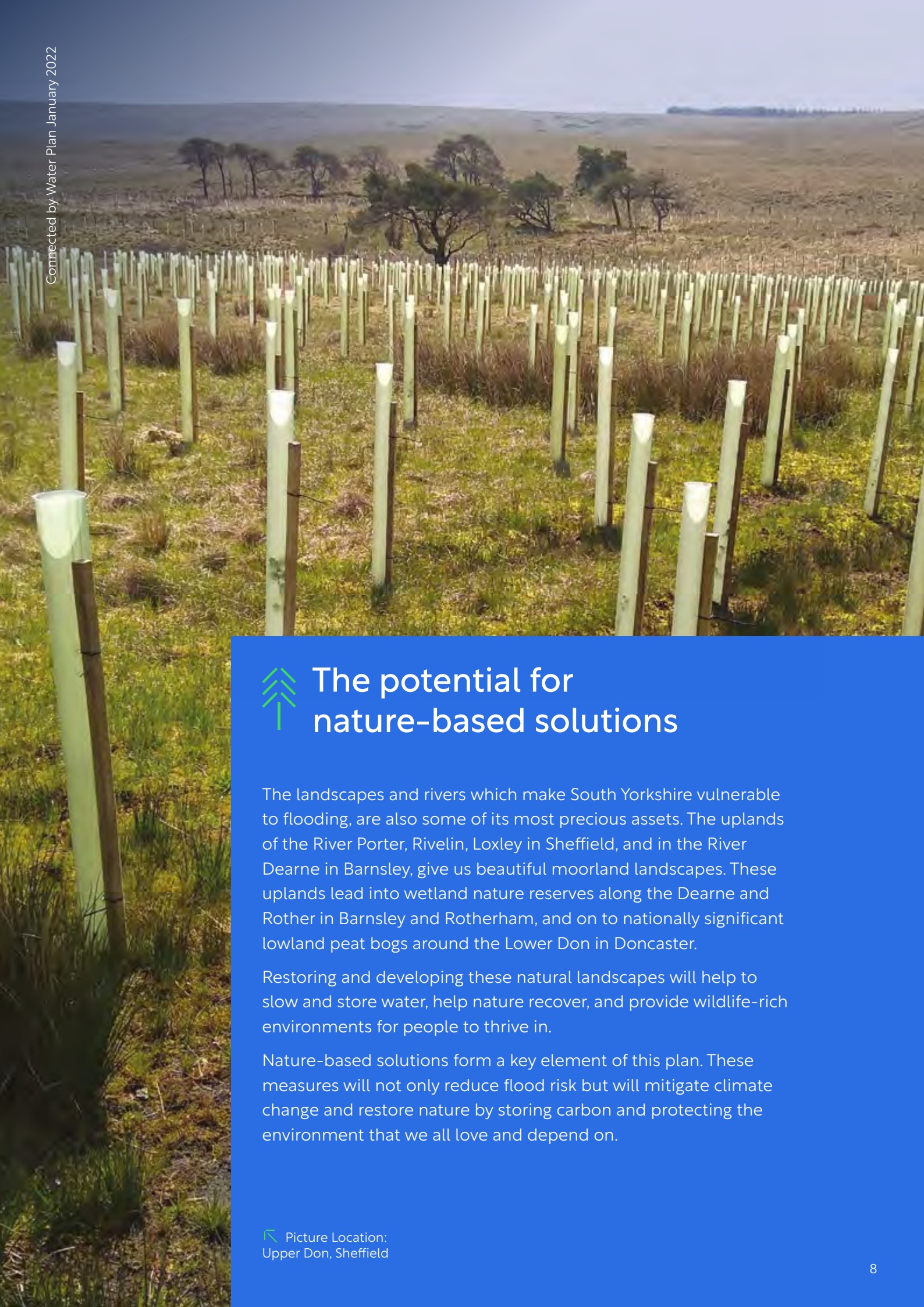
The South Yorkshire alliance will work with communities and partners to deliver this Connected by Water Plan. This plan outlines the actions the South Yorkshire alliance will take to reduce the risk of flooding and develop more resilient communities who can adapt to the future impacts of climate change.



South Yorkshire covers largely the same geographical area as the catchment of the River Don. This plan covers the whole of the Don catchment, extending into Derbyshire which falls outside South Yorkshire.







## The potential for nature-based solutions

The landscapes and rivers which make South Yorkshire vulnerable to flooding, are also some of its most precious assets. The uplands of the River Porter, Rivelin, Loxley in Sheffield, and in the River Dearne in Barnsley, give us beautiful moorland landscapes. These uplands lead into wetland nature reserves along the Dearne and Rother in Barnsley and Rotherham, and on to nationally significant lowland peat bogs around the Lower Don in Doncaster.

Restoring and developing these natural landscapes will help to slow and store water, help nature recover, and provide wildlife-rich environments for people to thrive in.

Nature-based solutions form a key element of this plan. These measures will not only reduce flood risk but will mitigate climate change and restore nature by storing carbon and protecting the environment that we all love and depend on.






## Learning by doing

This is intended to be a 'living plan' because we don't yet have all the answers. We'll build and shape this plan based on emerging data, knowledge and opportunities over the coming months and years. It will evolve and change as we learn more and develop actions together.

This plan is a showcase for the actions we're currently taking to reduce flood risk and build climate resilience across South Yorkshire, providing visibility of the projects already underway to support better collaboration. It's a compelling programme that will attract potential investors, whilst also giving communities confidence that work is happening in their area.

 Picture Location and Credit:  
Newfield Spring Wood, North East Derbyshire.  
Debbie Coldwell, Upper Rother NFM officer  
with Don Catchment Rivers Trust.







## Investing in reducing flood risk is vitally important

The impact of flooding is far reaching. It can cause serious injury and loss of life. It leads to long term misery for those whose homes have flooded, severely affecting mental health and wellbeing.

Flooding disrupts businesses, transport infrastructure, utilities, workplaces and public services (including health care, emergency services, social care and schools). The risk of flooding can also prevent economic regeneration, stop new housing being built and cause businesses to close with resulting job losses.

Picture Location:  
Fishlake, Doncaster 2019 Floods





1

For every single person whose home is flooded, sixteen further people are impacted.

16

Investing in flood risk management is vitally important. If you're an investor looking to support economic growth, business resilience, transport infrastructure, housing development, mental health, job creation and protection, then investing in flood risk management supports all these benefits and more.

Moreover, by using nature-based solutions as part of our approach to reduce flood risk, investment can also unlock further benefits in terms of carbon reduction, environmental improvements, and a re-connection with nature.

**For every £1 spent on protecting communities, we avoid around £5 in property damages.**

An overview of the South Yorkshire Flood Risk Management Investment Programme is provided in Appendix 1.

# Successful project delivery case studies

The alliance leading South Yorkshire's response to flood risk are experienced in delivering successful flood risk management schemes. In response to the 2019 floods, we collectively delivered over £20 million of flood repair works, from clearing drains to rebuilding flood embankments across South Yorkshire. Overleaf are further examples of the projects which have recently been completed.



 Picture Location:  
Broomhead Reservoir







# Case Study 1.A: Post 2019 South Yorkshire Flooding: Recovery and Investment

## 1.A Fishlake, Doncaster: Investment to better protect 300 homes

Following the devastating impact of the 2019 flood, the flood defences in Fishlake were subject to a £3 million programme of recovery works. These works were completed in June 2021 and included strengthening embankments and improving the condition of existing defences. With much of the work being carried out during the COVID 19 pandemic, a key part of the successful delivery of the works was the proactive use of different methods of communication between the Environment Agency, Doncaster Council, local community groups and other partners. Examples include regular attendance at the online Fishlake Parish Council and Flood Action Group meetings and the sending out of regular newsletters, which enabled key information and any issues to be shared and dealt with on a timely basis. Overall, this investment will help to improve and sustain the future performance and condition of critical flood defences for the area.





## Case Study 1.B: Post 2019 South Yorkshire Flooding: Recovery and Investment

### 1.B Bentley Ings Pumping Station, Doncaster: Investment to better protect 1,669 homes

Bentley Ings Pumping Station was built in the early 1940s to manage surface water because of mining subsidence. It is a key flood defence which protects 1,669 local properties from surface water flooding. Following the completion of a £12 million refurbishment scheme in 2021, it has been totally transformed. Capacity has been increased by 20%, achieving a carbon saving of 24%. The site has now become significantly more flood resilient, allowing access to the site and the pumps to continue operating during flood events.







## Case Study 2: Rotherham Renaissance Flood Alleviation Scheme

When complete, the Rotherham Renaissance Flood Alleviation Scheme will extend along 5km of the River Don through Templeborough, Rotherham Town Centre and Parkgate. The Templeborough phase of the scheme was completed in 2008, at a cost of £15.7million. Between 2009 and 2011, £1.3 million was spent on the Rotherham Town Centre phase. Work is continuing on this phase, with construction ongoing at several sites. The initial phases of the scheme provided the catalyst for this ongoing work and the future Parkgate phase.

To date, the scheme has reduced the risk of flooding to key roads, the rail network and over 100 businesses. It has improved key employment areas in Rotherham through securing existing jobs and creating new ones.





## Case Study 3: Sheffield Lower Don Valley Flood Alleviation Scheme

Completed in 2017, this £20 million scheme on the River Don in Sheffield better protects over 300 businesses, securing approximately 5,000 jobs.

The scheme was innovative both in its use of a Business Improvement District and in the use of a social enterprise, the River Stewardship Company, to provide channel maintenance and engage with volunteers to support river maintenance and riverside enhancement. Environmental enhancements delivered by the scheme include the installation of a fish pass at Sanderson's Weir on the River Don. The scheme has been designed to allow for the provision of further climate adaptation in the future.







## Case Study 4: Blackburn Meadows Waste Water treatment works upgrade

Yorkshire Water has invested £78 million into Blackburn Meadows waste water treatment works to meet future challenges of predicted population increase and more extreme weather caused by climate change. This investment delivered an improved ability to operate during times of heavy rainfall, a significant improvement in the quality of the water discharged into the river and enhanced treatment capabilities in preparation for the predicted increase in South Yorkshire's population.

By reducing the level of ammonia discharged into the River Don from the site down to a quarter of its previous level, Yorkshire's freshwater wildlife is able to thrive downstream of the works.

Improvements to the storm overflow system, which holds additional volumes of waste water during periods of heavy rainfall, reduces the risk of flooding and pollution incidents in the vicinity of the works.

Further environmental benefits were delivered through a new Sludge Digestion Plant, which disposes of sludge by breaking it down to generate bio-gas and a compost product which can be recycled back to land. The bio-gas can be used further to produce electricity to power the site and make our operations more sustainable in the long term.





# New project case studies

The partners at the forefront of the South Yorkshire alliance have developed new and innovative actions as part of the plan. These are a couple of examples of the joint proposals which have emerged from this collaborative approach.



 Picture Location:  
Matilda Street, Sheffield







## Case Study 5: River Don, Source to Sea – Nature Based Solutions Programme

We're collaboratively developing a multimillion-pound Source to Sea nature-based solutions programme in the Don Catchment. This programme is split into three projects: the Upper Don (Peak District National Park and Sheffield), Middle Don (North East Derbyshire, Rotherham and Barnsley) and the Lower Don (Doncaster). Each of these will build upon existing projects, partnerships, local strategies and initiatives to implement a variety of nature-based solutions to slow the flow and create more space for water.

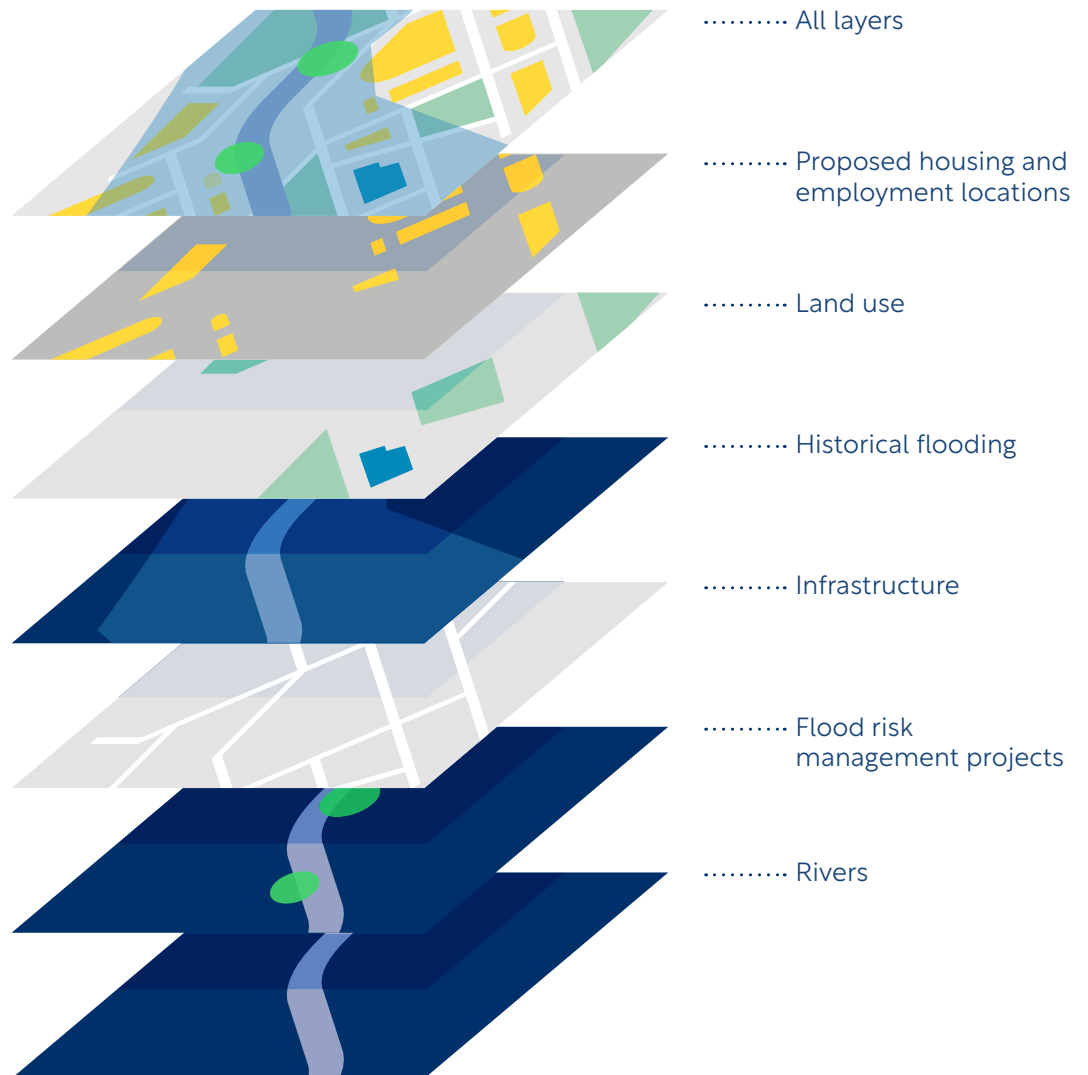
The Upper Don project is the first of the three to be developed, primarily focusing on slowing the flow and storing water in Sheffield's hills. We're currently developing a series of demonstrator sites in the Limb Valley, Upper Don Valley and the Peak District, considering measures such as restoring upland peatlands, creating ponds and wetlands, and soil management. These demonstrator sites will test, trial and monitor different ways of delivering nature-based solutions, which will in turn inform the development of the wider Source to Sea programme.





## Case Study 6: South Yorkshire Flood Risk Investment Tool

We're working collaboratively to develop the concept of the South Yorkshire Flood Risk Investment Tool. This tool will bring together flood risk data and evidence from across the region, to inform future investment in flood risk management, ensuring investment is targeted to maximise flood risk benefits in South Yorkshire. This tool will also bring together information on wider investment and funding opportunities, to enable us to proactively identify additional sources of funding to enable further flood risk management schemes.





## How is the plan going to be delivered?

Each action in the plan has a lead organisation or organisations, who are responsible for completing that action, with an indicative timescale for when it will be completed. The lead organisation will report on progress on an annual basis to both the South Yorkshire Mayoral Combined Authority and the South Yorkshire Flood Risk Partnership. The South Yorkshire alliance steering group will continue to meet on a monthly basis to review progress, address blockers and ensure support for delivery partners.

Some actions will lead on to other actions – for instance when some investigative or planning work is needed to determine the best course of action. When the plan is reviewed each year, these actions will be updated so there is always a current summary of the activity across the plan at any one time. This will also enable new information, technology or funding sources to be explored and integrated to ensure new opportunities and innovations are maximised.

To deliver the plan, an alliance has been formed between:



It's also supported by a wide range of other partners and organisations, which will increase further as the plan develops.

## Plan themes



The remainder of this plan is split into four themes, which we've collectively identified as our key priorities to reduce flood risk, mitigate climate change and support climate adaptation and resilience across South Yorkshire. These four themes are as follows:

- 1: Responding to the Climate Emergency
- 2: SMART Investment
- 3: Technology and Operational Management
- 4: Communication, Engagement and Building Resilience

An introduction to each theme is provided in the following four sections of the plan, with each section containing an action table. These action tables are split into new, innovative actions that have been developed as part of the plan and actions we're already undertaking and developing.





## Theme 1: Responding to the Climate Emergency

Urgent action is needed to  
mitigate further climate change  
and reverse biodiversity loss  
and environmental destruction.





## Theme 1: Responding to the Climate Emergency

**We are facing the unprecedented and interdependent crises of climate change and biodiversity loss. These two challenges together are the most pressing issues of our time and an existential threat to human welfare, prosperity and life on earth.**

Globally, nationally and regionally, biodiversity is declining faster than at any time in human history, and the world is still heading for a temperature rise in excess of 2°C this century – far beyond the Paris Agreement goals of limiting this increase to 1.5°C.

Around one million species already face extinction unless urgent action is taken to address the key drivers of biodiversity loss. More than three quarters of the Earth's land surface has been significantly impacted by human activity and just 16% of our natural ecosystems remain relatively intact. Climate change is both a direct driver of biodiversity loss and is itself exacerbated by it.

Urgent action is needed to mitigate further climate change, and halt and reverse biodiversity loss and environmental destruction.

↓ Picture Location:  
Broomhead Reservoir





# A changing climate in South Yorkshire

## Based on the 2018 UK Climate Projections (2018):

The UK is expected to experience drier summers and wetter winters, with increases in the intensity of summer and autumn rainfall events.

Sea levels around the UK will continue to rise. In Yorkshire if temperatures were to increase by 4°C, based on planning for the worst case, we would expect to see a 0.83 to 1.1m rise in sea level by 2100. This will increase flows on tidal rivers, including the Lower Don.

Due to the projected increase in rainfall and sea level rise, flooding in South Yorkshire will become more frequent and severe in the future.

↓ Picture Location:  
Darfield Bridge, Barnsley







To become a region more resilient to a changing climate we need to take action to adapt, now. This means we need to embrace the uncertainties around the likely impacts and adopt flexible approaches to building resilience. The alarm call of extinction is sounding loudly across our region with many species being pushed to the brink – it's not just something happening overseas but on our doorstep.

This theme seeks to reduce flood risk whilst delivering multiple benefits in terms of our response to the climate emergency in South Yorkshire. We will integrate policy, best practice and the latest research into our approach to this theme. This includes the UK's third Climate Change Risk Assessment 2021, Ciria guidance on natural flood management practice, National Planning Policy and working with the University of Sheffield, the Institute for Climate and Atmospheric Science at the University of Leeds and the Yorkshire and Humber Climate Commission. This theme will also align and complement existing and emerging national, regional and local level plans and strategies. These include the Humber Flood Risk Management Plan, Humber Strategy, South Yorkshire Local Nature Recovery Strategy, individual organisations' carbon strategies and each Council's Local Flood Risk Management Strategy and Local Plans.

↑ Picture Location and Credit: Newfield Spring Wood, North East Derbyshire. Debbie Coldwell, Upper Rother NFM officer with Don Catchment Rivers Trust.





The actions in the following table reflect our ambitions for this theme and how, by working collaboratively across our organisations, these will be achieved. Actions we're already undertaking and developing as a partnership to support this theme are also listed.

## Responding to the climate emergency action table

■ New, innovative actions we've developed as part of this plan

■ Actions we're already developing and undertaking

Action Ref	Action – What we are going to do	When will we do it by	Who's leading	Who's supporting
1.1	Undertake high level, regional, analysis of the UK's third Climate Change Risk Assessment 2021 (CCRA3). This analysis will consider how flood risk interacts and links with the other risks identified in this assessment. To identify threats and opportunities that need to be considered as part of this plan going forward.	2022	Environment Agency	Yorkshire Water Sheffield City Council
1.2	To establish how we can interact with regional climate groups, to provide a regional structure and enable collaborative and streamlined ways of working. Step 1: To identify all regional climate plans and groups and map out the relationships between these groups.	Step 1: 2022	Environment Agency	Yorkshire Water Sheffield City Council
1.3	Following completion of the South Yorkshire Natural Capital Mapping exercise, review this data in relation to flood risk benefits and future flood risk management activities. This review will identify any additional economic assessment work required.	2022	Environment Agency	South Yorkshire Mayoral Combined Authority Yorkshire Water
1.4	To create a collection of case studies to share with external audiences to showcase best practice and support the delivery of actions to respond to the climate emergency. Step 1: To scope the topics we want these case studies to cover and identify what already exists. E.g. case studies of partnership approaches, multiple objectives, sustainable drainage and innovative ways of assessing benefits.	Step 1: 2022	Environment Agency	Yorkshire Water Rotherham Metropolitan Borough Council Doncaster Metropolitan Borough Council Barnsley Metropolitan Borough Council Sheffield City Council South Yorkshire Mayoral Combined Authority Yorkshire and Humber Climate Commission
1.5	As part of the Yorkshire Adaptation Pathways project undertake flood modelling to assess how climate change scenarios will affect the South Yorkshire region. This will in turn inform how we respond and manage the affects. Step 1: Scope the modelling work required, by undertaking gap analysis and identifying stakeholders to co-design the delivery of this work.	Step 1: 2022	Environment Agency	
1.6	To develop and deliver flood risk benefits through the planning system. Step 1: To establish whether undertaking a water cycle study for South Yorkshire would be valuable in terms of flood risk opportunities and constraints in relation to new housing proposals.	Step 1: 2022	Environment Agency	
1.7	Develop a roadmap to set out how we want to decarbonise our multi-agency flood risk activities in South Yorkshire, aligning with our respective carbon targets. Step 1: To initially consider in Sheffield, to inform this roadmap / approach on a regional scale.	Step 1: 2023	Environment Agency	Sheffield City Council Yorkshire Water South Yorkshire Mayoral Combined Authority



## Responding to the climate emergency action table

■ New, innovative actions we've developed as part of this plan

■ Actions we're already developing and undertaking

Action Ref	Action – What we are going to do	When will we do it by	Who's leading	Who's supporting
1.8	Following completion of the South Yorkshire Natural Capital Mapping exercise, consider what future land use changes mean for flood risk interventions in relation to Local Plans, the Local Nature Recovery Strategy, the Environmental Land Management Scheme and Biodiversity Net Gain. The overall aim of this action is to represent how we are going to deliver nature based solutions across South Yorkshire spatially on a map.  Step 1: Initially consider two areas within Sheffield (one in the upper catchment and one in the lower catchment) to inform how to approach this on a regional scale.	Step 1: 2024	Environment Agency Sheffield City Council	South Yorkshire Local Nature Partnership South Yorkshire Mayoral Combined Authority Yorkshire Water
1.9	Create a South Yorkshire wide strategy to inform to how flood risk investment can enable Biodiversity Net Gain, aligning with our collective targets, considering individual projects and the impact of management and maintenance on biodiversity.  Step 1: Initially consider two areas within Sheffield (one in the upper catchment and one in the lower catchment) to inform the development of a strategic approach on a regional scale.	Step 1: 2024	Environment Agency Sheffield City Council	Yorkshire Water
1.10	To develop a South Yorkshire Monitoring Plan, to monitor progress and impact in terms of actions in relation to the climate emergency across the region.  Step 1: To determine what we want to know, how we start to bring this together and propose potential methods of monitoring this.	Step 1: 2024	Environment Agency	Yorkshire Water Rotherham Metropolitan Borough Council Doncaster Metropolitan Borough Council Barnsley Metropolitan Borough Council Sheffield City Council South Yorkshire Mayoral Combined Authority
1.11	Develop and deliver the Houghton River Restoration and Fish/Eel Pass scheme to improve migratory fish populations in the River Dearne.	2027	Environment Agency	Royal Society for the Protection of Birds
1.12	Develop and deliver project works with the Dearne Valley Green Heart Partnership to improve river habitats and deliver nature-based solutions to reduce flood risk.  Step 1: Deliver work on the Dearne at Smithies, Barnsley to reconnect the flood plain, create wetland habitat and improve in-channel habitat.  Step 2: Deliver work on the Dearne at the Fleets, Barnsley to reconnect the flood plain, create wetland habitat and improve in-channel habitat.	Step 1: 2022 Step 2: 2023	Environment Agency	Yorkshire Wildlife Trust Royal Society for the Protection of Birds Don Catchment Rivers Trust Natural England Rotherham Metropolitan Borough Council Doncaster Metropolitan Borough Council Barnsley Metropolitan Borough Council Derbyshire County Council
1.13	Continue to develop and deliver Sheffield city retrofit green blue infrastructure.	Ongoing	Sheffield City Council	Yorkshire Water





## Responding to the climate emergency action table

■ New, innovative actions we've developed as part of this plan

■ Actions we're already developing and undertaking

Action Ref	Action – What we are going to do	When will we do it by	Who's leading	Who's supporting
1.14	Develop and deliver the Hidden Rivers Secret Streams project, to improve river habitat and reconnect local communities with the river Rother in Chesterfield.	2022	Don Catchment Rivers Trust	Environment Agency Chesterfield Borough Council Derbyshire County Council
1.15	Investigate the Dale Dike catchment on the River Loxley, Sheffield, to identify the scope of peatland restoration works required for Yorkshire Water's seventh Asset Management Plan (AMP7) to meet the obligations of the Water Industry National Environment Programme (WINEP).	2022	Yorkshire Water	Moors for the Future
1.16	Develop and deliver the Putting the Sheaf Back into Sheffield project, to improve river habitat and reconnect local communities with the River Sheaf in Sheffield City Centre.	2023	Sheffield City Council	Environment Agency Sheaf and Porter Rivers Trust
1.17	Develop and deliver the Sheffield Lakeland Landscape Partnership Project work, to improve biodiversity, create habitats, reduce flood risk and diffuse pollution in the valleys to the west of Sheffield.	2023	Sheffield and Rotherham Wildlife Trust	Sheffield City Council Environment Agency Natural England Yorkshire Water Bradfield Parish Council Sheffield United Football Club Community Foundation Hallam University Stocksbridge Town Council South Yorkshire Archaeology Service Steel Valley Project
1.18	Develop and deliver the Wilder Waterways partnership project, a series of nature-based solutions in the Doncaster area (initial focus is the Bentley and Conisbrough) which includes wetland creation, tree planting and flood plain reconnection.	2023	Don Catchment Rivers Trust	Environment Agency Doncaster Metropolitan Borough Council Yorkshire Wildlife Trust
1.19	Underbank reservoir tree planting to slow the flow, enhance water quality and increase biodiversity in Stocksbridge, Sheffield.	2023	Yorkshire Water	Sheffield City Council Sheffield Lakeland Landscape Partnership
1.20	Peatland Restoration in the catchments of Langsett, Ewden and Loxley Water Treatment Works.	2024	Yorkshire Water	Moors for the Future
1.21	Develop and deliver the Sprotbrough Ings project to create and restore habitats, raise flood awareness and reconnect people in the Hexthorpe area with the River Don.	2025	Don Catchment Rivers Trust	Environment Agency Doncaster Metropolitan Borough Council Yorkshire Wildlife Trust
1.22	Develop and deliver a Natural Flood Management scheme in Conisbrough, Doncaster.	2025	Doncaster Metropolitan Borough Council	Environment Agency



## Responding to the climate emergency action table

■ New, innovative actions we've developed as part of this plan

■ Actions we're already developing and undertaking

Action Ref	Action – What we are going to do	When will we do it by	Who's leading	Who's supporting
1.23	Develop and deliver a Natural Flood Management Scheme in Tickhill, Doncaster.	2025	Doncaster Metropolitan Borough Council	Environment Agency
1.24	Develop and deliver the Rotherham River 3 Programme of environmental enhancement works to improve flood plain connectivity, create wetland habitat and address fish passage on the Lower River Rother.	2025	Environment Agency	Sheffield and Rotherham Wildlife Trust National Highways
1.25	Align and support the catchment-based approach through the Don, Dearne and Rother catchment network. This catchment based approach, focusing on the Water Framework Directive and biodiversity, is outlined in the Catchment Plan for the Don and Rother Catchment 2021.	2026	Environment Agency Don Dearne Rother Catchment Network (co-hosts)	Yorkshire Water
1.26	Continue to develop and deliver the Source to Sea nature-based solutions programme on the Upper River Don (Sheffield) in collaboration with partners, landowners and communities.	2026	Environment Agency	Sheffield City Council Sheffield and Rotherham Wildlife Trust
1.27	Develop and deliver the Source to Sea nature-based solutions programme on the Middle River Don (Barnsley, Derbyshire and Chesterfield) in collaboration with partners, landowners and communities.	2027	Environment Agency	Barnsley Metropolitan Borough Council Rotherham Metropolitan Borough Council Derbyshire County Council Chesterfield Borough Council
1.28	Develop and deliver the Blackburn Brook Restoration and Natural Flood Management project to improve biodiversity, connectivity and nature based solutions that will complement the Blackburn Brook FAS. (Linked to the Blackburn Brook Flood Alleviation Scheme Action reference 2.30 in Smart Investment).	2027	Environment Agency	Sheffield City Council Sheffield and Rotherham Wildlife Trust
1.29	Develop and deliver the Doncaster, Immingham and Grimsby Surface Water Resilience Project.	2027	Yorkshire Water	Anglian Water Doncaster Metropolitan Borough Council North East Lincolnshire Council
1.30	Develop and deliver the Sheaf and Porter River Restoration Project, to improve biodiversity and connectivity along the Porter and Sheaf in Sheffield. (Linked to the Sheaf Flood Alleviation Scheme Action reference 2.38 in Smart Investment theme).	2028	Environment Agency	Sheaf and Porter Rivers Trust Wild Trout Trust Sheffield City Council
1.31	Develop and deliver the Source to Sea nature-based solutions programme on the Lower River Don (Doncaster) in collaboration with partners, landowners and communities.	2031	Environment Agency	Doncaster Metropolitan Borough Council





## Theme 2: SMART Investment

This theme is the foundation of this plan, ensuring investment is prioritised, SMART (Specific, Measurable, Attainable, Relevant, Time-based) and based on evidence.



## Theme 2: SMART Investment

**We'll be working collaboratively to bring together flood risk data and evidence on all sources of flooding (river, sea, surface water, groundwater and sewers) that impact communities and businesses across the region.**

This data and evidence will be used to inform future investment in flood risk management to ensure it is targeted to maximise flood risk benefits in South Yorkshire. This collective resource will enable us to prove to potential investors how the funding of flood risk reduction contributes towards the successful delivery of regional and national priorities. Examples of these priorities include the South Yorkshire Mayoral Combined Authority's Strategic Economic Plan which seeks to 'pave the way to a stronger, greener and fairer economy' and the Government's 2020 National Infrastructure Strategy with its aim of 'transforming the UK infrastructure in order to level up the country and achieve net zero emissions by 2050'.

Our approach to SMART investment will consider and apply best practice from across the UK, including the Humber 2100+ Strategy, the River Severn Partnership and Citizen Science. In turn, we will be sharing our collaborative learning with other organisations to ensure we're able to respond and develop our own ideas by sharing our experiences.

↓ Picture Location: Grey to Green, West Bar, Sheffield







The actions in the following table reflect our ambitions for this theme and how, by working collaboratively across our organisations, these will be achieved. Actions we're already undertaking and developing as a partnership to support this theme are also listed. The latter includes flood risk management schemes we are currently developing or delivering.

#### Smart investment action table

■ New, innovative actions we've  
developed as part of this plan

■ Actions we're already  
developing and undertaking

Action Ref	Action – What we are going to do	When will we do it by	Who's leading	Who's supporting
2.1	Develop business cases to secure resources and funding to deliver the actions in this plan in future years.	2022	Environment Agency	Rotherham Metropolitan Borough Council Doncaster Metropolitan Borough Council Barnsley Metropolitan Borough Council Sheffield City Council Yorkshire Water South Yorkshire Mayoral Combined Authority
2.2	Develop a web based South Yorkshire Flood Risk Investment Tool to bring together flood risk data and evidence with wider information on investment opportunities across the region. Step 1: To consider what mapping systems and data already exist across South Yorkshire, so we can utilise and adapt existing best practice. (Linked to the multi agency data sharing protocol for operational data Action reference 3.4 in Technology and Operational Management)	Step 1: 2022	Environment Agency Barnsley Metropolitan Borough Council	Yorkshire Water
2.3	Produce a paper on new and emerging green sources of funding, including biodiversity net gain, carbon reduction and Green Finance initiative.	2022	Environment Agency South Yorkshire Mayoral Combined Authority	Yorkshire Water
2.4	Create a portfolio of flood risk management scheme case studies to support conversations with potential investors.	2022	Environment Agency	Rotherham Metropolitan Council Barnsley Metropolitan Borough Council Doncaster Metropolitan Borough Council Sheffield City Council Yorkshire Water Regional Flood and Coastal Committee
2.5	Develop a proposal to address our collective funding pressures. This will include considering shared resources to co-ordinate flood risk funding bids and securing sufficient resources to deliver our flood risk management schemes.	2022	Environment Agency Barnsley Metropolitan Borough Council	Yorkshire Water South Yorkshire Mayoral Combined Authority Doncaster Metropolitan Borough Council Sheffield City Council Rotherham Metropolitan Council



## Smart investment action table

■ New, innovative actions we've  
developed as part of this plan

■ Actions we're already  
developing and undertaking

Action Ref	Action – What we are going to do	When will we do it by	Who's leading	Who's supporting
2.6	To develop a prioritised list of partnership projects for Yorkshire Water's proposed Business Plan 2025 – 2030 (Price Review 2024). Step 1: Bring together the South Yorkshire Flood Risk Investment Programme (Appendix 1) and Yorkshire Water Drainage and Wastewater Management Plans to identify partnership investment opportunities.	Step 1: 2022	Yorkshire Water	Environment Agency Rotherham Metropolitan Council Barnsley Metropolitan Borough Council Doncaster Metropolitan Borough Council Sheffield City Council
2.7	Further develop the South Yorkshire shovel ready programme (as listed in Appendix 1) to enable the South Yorkshire Local Authorities to capitalise on future funding opportunities.	2024	Rotherham Metropolitan Borough Council Barnsley Metropolitan Borough Council Sheffield City Council Doncaster Metropolitan Borough Council	Environment Agency Yorkshire Water South Yorkshire Mayoral Combined Authority
2.8	Deliver a project to reduce flood risk to the railway in Rotherham. The project is centred on the Greasborough Dyke, close to where it joins the River Don.	2022	Network Rail	Rotherham Metropolitan Borough Council
2.9	Develop and deliver the Three Brooks Scheme to reduce flood risk to Car Brook and Kirk Bridge Dike in Darnall, Sheffield.	2022	Sheffield City Council	Environment Agency
2.10	Develop and deliver the Sheffield Upper Don Flood Alleviation Scheme, Phase 1, Loxley.	2022	Sheffield City Council	Environment Agency
2.11	Develop and deliver the Stocksbridge sewer flood alleviation scheme.	2022	Yorkshire Water	
2.12	Develop and deliver the Crookesmoor sewer flood alleviation scheme.	2022	Yorkshire Water	
2.13	Develop and deliver the Chapeltown sewer flood alleviation scheme, Sheffield.	2022	Yorkshire Water	
2.14	Develop and deliver the Barnsley sewer flood alleviation scheme in Great Houghton.	2022	Yorkshire Water	
2.15	Develop and deliver the Ingbirchworth sewer flood alleviation scheme.	2022	Yorkshire Water	
2.16	Develop and deliver the Inkersall Green sewer flood alleviation scheme, Chesterfield.	2022	Yorkshire Water	
2.17	Develop and deliver Philadelphia sewer flood alleviation scheme, Sheffield.	2023	Yorkshire Water	





## Smart investment action table

■ New, innovative actions we've  
developed as part of this plan

■ Actions we're already  
developing and undertaking

Action Ref	Action – What we are going to do	When will we do it by	Who's leading	Who's supporting
2.18	Undertake an initial feasibility study for Duftons Close, Conisbrough to assess flood risk alleviation options and inform any future works.	2023	Doncaster Metropolitan Borough Council	Environment Agency
2.19	Develop and deliver a Flood Alleviation Scheme for Lang Avenue in Lundwood, Barnsley.	2023	Barnsley Metropolitan Borough Council	Environment Agency Yorkshire Water
2.20	Sheffield Upper Don Reservoir Storage Step 1: Initial feasibility study to investigate potential to use of reservoirs for flood risk purposes.	Step 1: 2023	Environment Agency	Sheffield City Council Yorkshire Water
2.21	Develop and deliver a scheme to reduce flood risk to Frank Road in Bentley, Doncaster.	2024	Doncaster Metropolitan Borough Council	Environment Agency
2.22	Develop Eel Mires Dike Flood Alleviation Scheme (including Laughton Common), Rotherham to "shovel ready".	2024	Rotherham Metropolitan Borough Council	Environment Agency
2.23	Develop and deliver a Doncaster Borough Wide Surface Water Alleviation Scheme.	2025	Doncaster Metropolitan Borough Council	Environment Agency
2.24	Develop and deliver a Fishlake Risk Management Scheme, Doncaster.	2025	Doncaster Metropolitan Borough Council	Environment Agency
2.25	Develop Whiston Flood Alleviation Scheme, Rotherham to "shovel ready".	2026	Rotherham Metropolitan Borough Council	Environment Agency
2.26	Develop and deliver a surface water Flood Alleviation Scheme for Scawthorpe, Doncaster.	2027	Doncaster Metropolitan Borough Council	Environment Agency
2.27	Develop and deliver a Flood Alleviation Scheme for Pastures Road in Denaby, Doncaster.	2027	Doncaster Metropolitan Borough Council	Environment Agency
2.28	Develop and deliver a Bentley Risk Management Scheme, Doncaster.	2027	Doncaster Metropolitan Borough Council	Environment Agency
2.29	Develop and deliver a Flood Alleviation Scheme for Low Valley, Barnsley.	2027	Barnsley Metropolitan Borough Council	Environment Agency



## Smart investment action table

■ New, innovative actions we've  
developed as part of this plan

■ Actions we're already  
developing and undertaking

Action Ref	Action – What we are going to do	When will we do it by	Who's leading	Who's supporting
2.30	Develop and deliver a Flood Alleviation Scheme on Blackburn Brook, Sheffield. (Linked to the Blackburn Brook Restoration Action reference 1.28 in Responding to the Climate Emergency).	2027	Sheffield City Council	Environment Agency
2.31	Develop and deliver the Sheffield Upper Don Flood Alleviation Scheme, Phase 2, Neepsend.	2027	Sheffield City Council	Environment Agency
2.32	Develop Parkgate and Rawmarsh Flood Alleviation Scheme, on Greasborough Dike and Old Sough/ Boundary Dike, Rotherham to "shovel ready".	2027	Rotherham Metropolitan Borough Council	Environment Agency
2.33	Develop Rotherham to Kilnhurst Flood Alleviation Scheme – Phase 2 to "shovel ready".	2027	Rotherham Metropolitan Borough Council	Environment Agency
2.34	Develop the feasibility phase of the Broom and Clifton Flood Alleviation Scheme, Rotherham.	2027	Rotherham Metropolitan Borough Council	Environment Agency
2.35	Develop the feasibility phase of the Swinton Flood Alleviation Scheme, Rotherham.	2027	Rotherham Metropolitan Borough Council	Environment Agency
2.36	Develop the feasibility phase of the Todwick Flood Alleviation Scheme, Rotherham.	2027	Rotherham Metropolitan Borough Council	Environment Agency
2.37	Develop and deliver the Sheffield Upper Don Flood Alleviation Scheme, Phase 3, Hillsborough to Stocksbridge.	2028	Sheffield City Council	Environment Agency
2.38	Develop and deliver the Sheaf Catchment Flood Alleviation Scheme, Sheffield. (Linked to the Sheaf and Porter River Restoration Action reference 1.30 in Responding to the Climate Emergency).	2028	Sheffield City Council	Environment Agency





## Theme 3: Technology and Operational Management

Aligning operational resources and technology is key in providing an agile and robust response to flood risk across South Yorkshire.



## Theme 3: Technology and Operational Management

This theme will bring together our collective, catchment wide information to shape and inform the future use of technology and operational resources. It will also build on all our ongoing flood risk maintenance and management activities.

We'll work collaboratively to better understand each partner's existing operational procedures (including incident management), individual priorities, existing data sets, roles and responsibilities, communication processes and available resources. In turn, this will allow us to work more efficiently and collaboratively on a day-to-day basis and during flood incidents.

Establishing data sharing opportunities will allow us to explore innovative ideas, new technology and networks for operational use. This includes telemetry systems, to create simple and readily accessible ways of displaying how the Don catchment responds to rainfall. This also includes operational procedures in terms of our maintenance programmes, to identify opportunities to streamline these activities across all our organisations.

↓ Picture Location:  
Sykehouse Barrier, Doncaster







The actions in the following table reflect our ambitions for this theme and how, by working collaboratively across our organisations, these will be achieved. Actions we're already undertaking and developing as a partnership to support this theme are also listed. The latter includes flood risk maintenance and management activities, such as flood defence refurbishment works, that we are currently delivering or have planned in future.

## Technology and operational management action table

■ New, innovative actions we've developed as part of this plan

■ Actions we're already developing and undertaking

Action Ref	Action – What we are going to do	When will we do it by	Who's leading	Who's supporting
3.1	To streamline maintenance activities across South Yorkshire. Step 1: Capture our collective maintenance activities and requirements across Doncaster initially (e.g. gully maintenance, culvert inspection and grass cutting).	Step 1: 2022	Doncaster Metropolitan Borough Council Environment Agency	Yorkshire and Humber Drainage Boards Doncaster East Internal Drainage Board
3.2	To collectively agree key flood risk infrastructure across South Yorkshire, to inform emergency response procedures and develop a shared understanding of how this infrastructure work.	2022	Environment Agency	Doncaster Metropolitan Borough Council Rotherham Metropolitan Borough Council Barnsley Metropolitan Borough Council Sheffield City Council Yorkshire and Humber Drainage Boards Doncaster East Internal Drainage Board
3.3	To create a simple and readily accessible way of displaying how the Don catchment responds to rainfall. Step 1: To pilot in Doncaster initially and then consider data sharing protocols across South Yorkshire.	Step 1: 2022	Doncaster Metropolitan Borough Council	Environment Agency
3.4	To create a multi- agency data sharing protocol for operational data can be shared and displayed across South Yorkshire. Step 1: To trial in Doncaster initially to inform the development of sharing protocols across South Yorkshire. (Linked to the South Yorkshire Flood Risk Investment Tool Action reference 2.2 in Smart Investment.)	2022	Doncaster Metropolitan Borough Council Environment Agency	Yorkshire and Humber Drainage Boards Doncaster East Internal Drainage Board
3.5	To understand the potential for reservoirs to support flood risk management across South Yorkshire. Step 1: Spatially map all reservoirs in relation to flood risk across South Yorkshire.	Step 1: 2022	Environment Agency	Yorkshire Water
3.6	Develop and deliver the Humber Head Level Capital Maintenance Strategy, which involves hydraulic and economic modelling of the Humber Head Levels to better understand investment and rationalisation opportunities of flood risk infrastructure (e.g. pumping stations).	2022	Yorkshire and Humber Drainage Boards	Environment Agency, Coal Authority
3.7	To develop a plan that sets out how we will consider whether historical water infrastructure (e.g. old mill ponds, water tanks, dams and land drains) could be used to store water and reduce flood risk. Step 1: Initially consider in Doncaster. (Linked to the Source to Sea nature based solutions programme on the Lower River Don Action reference 1.31 in Responding to the Climate Emergency).	2023	Doncaster Metropolitan Borough Council	Yorkshire and Humber Drainage Boards Doncaster East Internal Drainage Board



## Technology and operational management action table

■ New, innovative actions we've developed as part of this plan

■ Actions we're already developing and undertaking

Action Ref	Action – What we are going to do	When will we do it by	Who's leading	Who's supporting
3.8	Develop an approach to better understand surface water flood risk and the links between surface water and the sewer network. With an aspiration for surface water separation and managing at surface water source.  Step 1: To trial in Doncaster initially with Yorkshire Water, to develop best practice recommendations for the region.	Step 1: 2023	Doncaster Metropolitan Borough Council Yorkshire Water	
3.9	Improve the serviceability (maintainability) of engineered river and watercourse channels in the Humber Head Levels to ensure they can be better maintained on a planned and cost-effective basis.	2023	Yorkshire and Humber Drainage Boards	Environment Agency
3.10	Map water levels in the Humber Head Levels and install real time monitoring systems (linked to telemetry) to better manage pumping station operations and give real time warnings of flood risk (rising water levels).	2025	Yorkshire and Humber Drainage Boards	Environment Agency
3.11	Refurbish Dikes Marsh pumping station (inlet pumping station), Moorends, Doncaster.	2022	Yorkshire and Humber Drainage Boards	Environment Agency
3.12	Pumping Station Telemetry System Installation across the Don catchment.	2022	Yorkshire and Humber Drainage Boards	Environment Agency
3.13	Culvert replacement works on the A637 at Birthwaite Hill in Darton, Barnsley.	2022	Barnsley Metropolitan Borough Council	Environment Agency
3.14	Culvert removal at Staindrop View, Chapeltown, Sheffield.	2022	Environment Agency	Sheffield City Council
3.15	Poolsbrook Reservoir decommissioning, Staveley, North Derbyshire. Including weir removal to improve fish passage and habitat improvements.	2022	Environment Agency	Derbyshire County Council
3.16	Broad Oaks Culvert refurbishment scheme, Sheffield.	2022	Yorkshire Water	Network Rail
3.17	To work with partners to better understand the flood risk in the Mexborough and Denaby areas of the Lower Don Valley, specifically in relation to Network Rail infrastructure to inform the future management of this risk.	2022	Network Rail	Environment Agency Rotherham Metropolitan Borough Council
3.18	Combined sewer overflow refurbishment programme to reduce pollution and sewer flooding risk in 7 locations across Barnsley and Sheffield.	2023	Yorkshire Water	
3.19	Bank strengthening and desilting at Netherwood Road in Wombwell, Barnsley.	2023	Barnsley Metropolitan Borough Council	Environment Agency





## Technology and operational management action table

■ New, innovative actions we've developed as part of this plan

■ Actions we're already developing and undertaking

Action Ref	Action – What we are going to do	When will we do it by	Who's leading	Who's supporting
3.20	Dearne Washlands Optimisation Study. Any future works will be informed by the initial study, based on an improved understanding of how these washlands operate. This will inform whether they can be altered to provide any flood risk and / or environmental benefits.	Study: 2023	Environment Agency	Barnsley Metropolitan Borough Council
3.21	Culvert Replacement and Channel Regrading Works on Bulling Dyke at Low Valley, Barnsley.	2023	Barnsley Metropolitan Borough Council	Environment Agency
3.22	Refurbish St Mary's Bridge Wall, North Bridge Road, Doncaster.	2024	Environment Agency	
3.23	River clearance on the River Dearne between Church Street and Darton Business Park Bridge, Darton, Barnsley.	2024	Barnsley Metropolitan Borough Council	Environment Agency
3.24	Barnsley Wide Culvert Condition Investigation and Improvement Programme.	2024	Barnsley Metropolitan Borough Council	Environment Agency
3.25	Yorkshire sewer inspection chamber repair programme to proactively identify and repair defects, to reduce the risk of external flooding and pollution.	2025	Yorkshire Water	
3.26	Sewer Repair Programme, to proactively inspect 355km of the public sewer network in high-risk flooding areas to carry out surveying, clear any blockages and identifying defects to be repaired to reduce internal and external flooding.	2025	Yorkshire Water	
3.27	Sewer Maintenance Programme - proactively visiting 71,330 properties in high-risk flooding areas to carry out surveying, clear any blockages and identifying defects to be repaired to reduce internal and external flooding.	2025	Yorkshire Water	
3.28	Refurbish Went Outfall (doors, penstock, and telemetry) on the River Went, Lower Don, Doncaster.	2025	Environment Agency	
3.29	Refurbish Kirk Sandall Pumping Station, Kirk Sandall, Doncaster.	2025	Environment Agency	
3.30	Refurbish the three Don Catchment Regulators. Woodhouse Regulator in Sheffield and Canklow and Meadowgate Mill Regulators in Rotherham.	2025	Environment Agency	
3.31	Rother Washlands Optimisation Study and Works. Any future works will be informed by the initial study, based on an improved understanding of how these washlands operate. To inform whether they can be altered to provide any flood risk and / or environmental benefits.	2025	Environment Agency	
3.32	Develop the provision of a new Permanent Pumping Station, Catcliffe Village (change from mobile pumps), Rotherham to "shovel ready".	2026	Rotherham Metropolitan Borough Council	Environment Agency



## Technology and operational management action table

■ New, innovative actions we've developed as part of this plan

■ Actions we're already developing and undertaking

Action Ref	Action – What we are going to do	When will we do it by	Who's leading	Who's supporting
3.33	Rotherham Culvert Renewal Programme.	2026	Rotherham Metropolitan Borough Council	Environment Agency
3.34	Refurbish Cheswold Culvert in Doncaster town centre.	2026	Doncaster Metropolitan Borough Council	Environment Agency
3.35	Future refurbishment of flood defences on the Lower Don as identified and required.	2027 onwards	Environment Agency	
3.36	Spillway Repairs on Worsborough Reservoir, near Worsborough Country Park, Barnsley.	2027	Barnsley Metropolitan Borough Council	Environment Agency
3.37	Refurbish culvert on Clough Dike at Deepcar, Sheffield.	2027	Environment Agency	Sheffield City Council
3.38	Culvert removal on Ochre Dike, Beighton, Sheffield.	2027	Environment Agency	Sheffield City Council
3.39	Doncaster Culvert Replacement Programme.	2028	Doncaster Metropolitan Borough Council	Environment Agency





## Theme 4: Communication, Engagement and Building Resilience

The aim of this theme is to build resilience across South Yorkshire, by working with all our stakeholders to ensure they're at the heart of our decision making.





## Theme 4: Communication, Engagement and Building Resilience

Together, with partner organisations, we'll develop a communication and engagement strategy that all partners are responsible for delivering. We will work collaboratively, ensuring we have 'one joined up voice' for providing key messages.

This will allow us to be more streamlined in the way we work, ensuring there is a consistent approach to the delivery of our communication, engagement and resilience measures.

We'll continue to work with existing stakeholder groups, including but not limited to, flood action groups, landowners, farmers, flood wardens, parish councils and businesses whilst also developing new relationships with other key stakeholders. We'll work with all these stakeholders to help and support them understand their own flood risk and how the Don catchment works.

Whilst we can work collectively to reduce the risk of flooding and the impacts of flooding, we can never prevent all flooding. Therefore, preparing and responding to flood incidents is an essential component of achieving greater resilience to flooding. We'll work collaboratively to better prepare for and respond to flood incidents through timely and effective forecasting, warning and implementing property level resilience measures. This includes working with the South Yorkshire Local Resilience Forum and the Yorkshire and Humber Climate Commission to build resilience through improved emergency and recovery planning.

↓ Picture Location:  
Rotherham Town Centre







The actions in the following table reflect our ambitions for this theme and how, by working collaboratively across our organisations, these will be achieved. Actions we're already undertaking and developing as a partnership to support this theme are also listed.

#### Communication, engagement and building resilience action table

■ New, innovative actions we've developed as part of this plan

■ Actions we're already developing and undertaking

Action Ref	Action – What we are going to do	When will we do it by	Who's leading	Who's supporting
4.1	Produce a South Yorkshire wide communication and engagement plan. Step 1: To understand who all our stakeholders are and engage with these stakeholders on this Connected by Water plan. Stakeholders will include communities, businesses, political figures and landowners. Step 1 will also include starting to build on shared information/ material e.g. photos, key messages etc. to inform the development of the communication and engagement plan.	Step 1: 2022	Rotherham Metropolitan Borough Council Environment Agency	Doncaster Metropolitan Borough Council Barnsley Metropolitan Borough Council Sheffield City Council Yorkshire Water South Yorkshire Mayoral Combined Authority
4.2	Develop a specific landowner and farmer engagement plan, considering future climate change risks, commercial risks and food production risks to establish positive partnership working.	2022	Environment Agency	National Farmers Union Doncaster Metropolitan Borough Council
4.3	Develop a stakeholder engagement plan to help partners understand Yorkshire Water's funding processes.	2022	Yorkshire Water	
4.4	Review the Humber modelling study to inform any updates to existing flood warnings in Doncaster.	2023	Environment Agency	
4.5	Develop a strategy for public facing engagement on what climate change means for flood risk across South Yorkshire. (Linked to the Flood Modelling action reference 1.5 in Responding to the Climate Emergency).	2023	South Yorkshire Mayoral Combined Authority	Sheffield City Council Environment Agency
4.6	Create engagement material to support the understanding of flood risk in South Yorkshire: <ul style="list-style-type: none"> <li>- How the River Don Catchment works</li> <li>- How the funding process works for flood risk projects</li> <li>- How flood defence schemes are developed and implemented (including flood modelling)</li> <li>- How reservoirs work</li> <li>- Flood risk roles and responsibilities across organisations</li> </ul>	2024	Environment Agency Yorkshire Water	
4.7	Review the Chesterfield modelling study and implement actions to improve flood warnings along the Rivers Upper Rother, Hipper, Drone and Doe Lea.	2025	Environment Agency	
4.8	Working in partnership with key stakeholders we will increase community resilience and preparedness by engaging with communities to raise flood awareness. We will prioritise communities recently affected by river flooding and other identified high-risk communities.	2030	Environment Agency	Rotherham Metropolitan Borough Council Barnsley Metropolitan Borough Council Doncaster Metropolitan Borough Council Sheffield City Council



## Communication, engagement and building resilience action table

■ New, innovative actions we've  
developed as part of this plan

■ Actions we're already  
developing and undertaking

Action Ref	Action – What we are going to do	When will we do it by	Who's leading	Who's supporting
4.9	Working in partnership with key stakeholders we will increase community resilience and preparedness by increasing flood groups, where wanted. We will prioritise communities recently affected by river flooding and other identified high-risk communities.	2030	Environment Agency	Rotherham Metropolitan Borough Council Barnsley Metropolitan Borough Council Doncaster Metropolitan Borough Council Sheffield City Council
4.10	Increase community resilience and preparedness by increasing full registration to the Flood Warning Service. We will prioritise communities recently affected by river flooding and other identified high-risk communities.	2030	Environment Agency	Rotherham Metropolitan Borough Council Barnsley Metropolitan Borough Council Doncaster Metropolitan Borough Council Sheffield City Council
4.11	Working in partnership with key stakeholders we will increase community resilience and preparedness by registering Flood Wardens, where appropriate and wanted. We will prioritise communities recently affected by river flooding and other identified high-risk communities.	2030	Environment Agency	Rotherham Metropolitan Borough Council Barnsley Metropolitan Borough Council Doncaster Metropolitan Borough Council Sheffield City Council
4.12	Working in partnership with key stakeholders we will increase community resilience and preparedness by training and supporting volunteers and communities to be better prepared. We will prioritise communities recently affected by river flooding and other identified high-risk communities.	2030	Environment Agency	Rotherham Metropolitan Borough Council Barnsley Metropolitan Borough Council Doncaster Metropolitan Borough Council Sheffield City Council





## Communication, engagement and building resilience action table

■ New, innovative actions we've developed as part of this plan

■ Actions we're already developing and undertaking

Action Ref	Action – What we are going to do	When will we do it by	Who's leading	Who's supporting
4.13	Introducing more 'impact thresholds' for our Flood Alerts. This involves having a greater understanding at what levels there are impacts across a Flood Alert area, e.g flooding to roads, farmland. We will use these levels to better inform our decision making on when Alerts are issued, to help give better information and preparation lead time to customers.	Ongoing	Environment Agency	Yorkshire and Humber Drainage Board Doncaster East Internal Drainage Board Doncaster Metropolitan Borough Council Barnsley Metropolitan Borough Council Sheffield City Council Rotherham Metropolitan Borough Council
4.14	Working in partnership with stakeholders deliver annual training to existing Flood Warden's.	Ongoing	Environment Agency	Doncaster Metropolitan Borough Council Barnsley Metropolitan Borough Council Sheffield City Council Rotherham Metropolitan Borough Council
4.15	Working in partnership with stakeholders to deliver induction training for new Flood Wardens.	Ongoing	Environment Agency	Doncaster Metropolitan Borough Council Barnsley Metropolitan Borough Council Sheffield City Council Rotherham Metropolitan Borough Council
4.16	Implement Flood Warning updates along the Middle and Lower Don, in Rotherham, Barnsley and Doncaster, based on the modelling review completed in 2021.	2022	Environment Agency	Yorkshire and Humber Drainage Board East Doncaster Internal Drainage Board Doncaster Metropolitan Borough Council Barnsley Metropolitan Borough Council Rotherham Metropolitan Borough Council



## Communication, engagement and building resilience action table

■ New, innovative actions we've developed as part of this plan

■ Actions we're already developing and undertaking

Action Ref	Action – What we are going to do	When will we do it by	Who's leading	Who's supporting
4.17	Review the Blackburn Brook Flood Warnings in Sheffield to establish if any updates are required and implement as required.	2022	Environment Agency	Sheffield City Council
4.18	Working in partnership with professional partners we will deliver training to help increase understanding of how at-risk communities can be better supported and prepared. Step 1 – This will be initially be with Rotherham and Doncaster Councils.	Step 1: 2022	Environment Agency	Rotherham Metropolitan Borough Council Doncaster Metropolitan Borough Council
4.19	Create 6 action plans for priority areas across Rotherham to engage with Parish Councils, community groups and businesses on Flood Risk, Resilience, and the council's future plans and commitment to reducing flood risk. The 6 priority areas are: Rotherham Town Centre Rawmarsh and Parkgate Kilnhurst Village Laughton Common Catcliffe Village Whiston Village Step 1 will be piloted with Laughton Common.	Step 1: 2022	Rotherham Metropolitan Borough Council	Environment Agency
4.20	Develop and deliver Property Flood Resilience schemes at Riviera Parade, Willow Cottages, Fishlake Nab and Daw Lane in Doncaster.	2022	Doncaster Metropolitan Borough Council	Environment Agency
4.21	Develop and deliver Property Level Protection measures at Emmett Carr Lane, Renishaw, Derbyshire.	2022	Derbyshire County Council	Environment Agency
4.22	Community engagement pilot in Sheffield S5, looking at testing a new engagement model to understand customers' needs of us as an organisation and then work with community to build relationships.	2022	Yorkshire Water	
4.23	Refurbish existing Property Level Protection measures in Denaby, Doncaster.	2030	Doncaster Metropolitan Borough Council	Environment Agency
4.24	Develop a Recreational infrastructure improvement strategy surrounding Langsett Reservoir to enhance community connection to nature and water.	2030	Yorkshire Water	Barnsley Metropolitan Borough Council Sheffield City Council National Highways



# Appendix 1: Overview of the South Yorkshire Flood Risk Management Investment Programme

The South Yorkshire programme comprises of three levels:



## **The Overall Programme:**

Approximately 100 projects, with a total value of nearly £400 million.

To better protect over 17,000 homes and businesses, plus regionally significant infrastructure.



## **The Priority Programme (subset of the Overall Programme):**

27 priority projects, with an original total value of £271 million (now revised to £257 million).

To better protect over 10,000 homes and businesses, plus regionally significant infrastructure.

These 27 projects were collectively identified as regional priorities following the November 2019 floods.



## **The Shovel Ready Programme (subset of the Priority Programme):**

9 projects, with an original total value of £66 million (now revised to £63 million).

To better protect over 1,400 homes and businesses, plus regionally significant infrastructure.

These 9 projects were collectively identified as projects from the Priority Programme that could be delivered quickly with additional support.



# The Three Levels of the South Yorkshire Programme

Summary tables on the overall programme, the priority programme and the shovel ready programme are provided on the following pages. A list of the 27 priority projects and the 9 shovel ready projects, broken down by location, is also provided.

## Overall Programme

Area	Number of Projects	Projects by Lead Organisation	Total Project Costs (£million)	UK Government Funding (£million)	Partnership Funding (£million)	Funding Gap (£million)	Homes better protected	Businesses better protected
Barnsley	12	7 Council 5 Environment Agency	17.2	4.9	1.2	11.1	1,986	29
Doncaster	47	14 Council 30 Environment Agency 8 Yorkshire and Humber Drainage Boards	210.6	42.7	4.3	167.9	4,590	674
Sheffield	17	9 Council 8 Environment Agency	97.1	71.9	17.1	8.1	4,275	1,785
Rotherham	19	9 Council 10 Environment Agency	67.9	33.9	12.0	22.0	3,785	399
Catchment Wide	1	1 Environment Agency	2.0	0	0	2.0	0	0
<b>Totals</b>	<b>96</b>		<b>394.8</b>	<b>153.4</b>	<b>34.6</b>	<b>211.1</b>	<b>14,636</b>	<b>2,887</b>



## Priority Programme: Updated Picture

Area	Number of Projects	Projects by Lead Organisation	Total Project Costs (£million)	UK Government Funding (£million)	Partnership Funding (£million)	Funding Gap (£million)	Homes better protected	Businesses better protected
Barnsley	5*	4 Council 1 Environment Agency*	13.2	1.4	1.1	10.7	177	29
Doncaster	9	5 Council 4 Environment Agency	96.0	31.4	2.0	62.6	3,326	505
Sheffield	5	3 Council 2 Environment Agency	85.2	63.9	13.3	8	2,359	1,724
Rotherham	8*	6 Council 2 Environment Agency*	60.7	28.6	11.6	20.5	1,693	399
Catchment Wide	1	1 Environment Agency	2.0	0	0	2.0	0	0
<b>Totals</b>	<b>27*</b>	<b>27*</b>	<b>257.1</b>	<b>125.3</b>	<b>28.0</b>	<b>103.8</b>	<b>7,555</b>	<b>2,657</b>

\* The Source to Sea nature-based solutions programme on the Middle River Don, covers both Barnsley and Rotherham. This project has been counted in both areas, but the costs and funding have been split. This project has only been counted once in the total number of projects (27 total projects).

## Shovel Ready Programme: Updated Picture

Area	Number of Projects	Projects by Lead Organisation	Total Project Costs (£million)	UK Government Funding (£million)	Partnership Funding (£million)	Funding Gap (£million)	Homes better protected	Businesses better protected
Barnsley	2	2 Council	6.0	0.2	1.1	4.7	104	0
Doncaster	5	4 Council 1 Environment Agency	11.4	4.7	1.9	4.8	423	71
Sheffield	1	1 Council	25.0	20.3	1.6	3.1	370	253
Rotherham	1	1 Council	21.0	12.2	7.7	1.1	20	245
<b>Totals</b>	<b>9</b>	<b>9</b>	<b>63.4</b>	<b>37.4</b>	<b>12.3</b>	<b>13.7</b>	<b>917</b>	<b>569</b>



# List of the Priority Projects and Shovel Ready Projects

**Blue** text denotes a Shovel Ready Project

## Barnsley

Barnsley led projects:

- 1. Lundwood Flood Alleviation Scheme**
- 2. Barnsley Culvert Programme**
3. Worsborough Reservoir
4. Church Street, Darton

Environment Agency led projects:

5. Nature Based Solutions Programme in Mid Don (Barnsley and Rotherham)

## Doncaster

Doncaster led projects:

- 6. Bentley Flood Alleviation Scheme**
- 7. Conisbrough Natural Flood Management**
- 8. Tickhill Natural Flood Management**
- 9. Doncaster Borough Wide Surface Water Alleviation Scheme**
10. Fishlake Flood Alleviation Scheme

Environment Agency led projects:

11. Nature Based Solutions Programme in Lower Don
12. Refurbishment and Replacement of Lower Don Embankment
13. Wheatley Park Embankment Refurbishment
- 14. St Mary's Bridge Wall Refurbishment**

## Rotherham

Rotherham led projects:

- 15. Rotherham To Kilnhurst Flood Alleviation Scheme**
16. Parkgate Flood Alleviation Scheme
17. Catcliffe Pumping Station
18. Eel Mires Dike Flood Alleviation Scheme Flood Alleviation Scheme
19. Rotherham Culvert Renewal Programme

Environment Agency led projects:

20. Don Catchment Regulators
21. Whiston Brook Flood Alleviation and Storage (Partnership project with Rotherham) - Nature Based Solutions Programme in Mid Don (Rotherham and Barnsley) (Repeat of no 5)

## Sheffield

Sheffield led projects:

22. Blackburn Brook Flood Alleviation Scheme
- 23. Sheaf Catchment Flood Alleviation Scheme**
24. Upper Don Flood Alleviation Scheme

Environment Agency led projects:

25. Upper Don Reservoir Storage
26. Nature Based Solutions Programme in Upper Don

## South Yorkshire Wide

Environment Agency led:

27. Connected by Water Plan (Barnsley, Rotherham, Sheffield and Doncaster)





Connected  
by Water

If you would like to know more about the  
Connected by Water plan please contact:

→ [sypso@environment-agency.gov.uk](mailto:sypso@environment-agency.gov.uk)