Tyne Catchment Plan

A plan to improve the Tyne and its tributaries

A collaboration led by Tyne Rivers Trust

Why create another plan for the Tyne?

There have been **lots of plans** to improve the Tyne before this one. They haven't always **engaged people** very well, so they haven't always delivered what they intended.

Our water environment is important to our quality of life. We need to protect and enhance rivers as **systems** which means thinking about them **source to estuary**, and all the places in between. In other words, we need to think at a **catchment** scale.

There are lots of great things about the Tyne catchment which we want to keep. That takes **conservation** and planning for **future impacts** and **extreme weather** events. And there are some things we want to make better. That takes **change**.

That's what this Plan is all about.

Tyne Rivers Trust could never have created a plan this ambitious on its own. Our grateful thanks to:

- **Defra** for funding this project
- the Strategy Group organisations that have given their time to guide and develop this Plan: the **Country Land & Business Association**, the **Environment Agency**, the **Forestry Commission**, **Gateshead Council**, **Groundwork North East**, **Natural England**, **Newcastle City Council**, the **National Farmers Union**, the **Northern Farmers and Landowners Group**, **Northumberland County Council**, **Northumberland National Park**, **Northumbrian Water** and **Port of Tyne**
- the **218 people who responded to our survey** in May and June 2012 – your knowledge of your local rivers is invaluable
- the **54 community groups, agencies and organisations that attended our drop-in session** in October 2012 and proposed projects for this Plan
- the people who commented on the draft of this Plan and helped us make it better.

Tyne Rivers Trust website: www.tyneriverstrust.org
Tyne catchment project website: www.tynecatchment.org

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Cover photos by David Ord and Susan Mackirdy

First words

It is a well-worn cliché that planning is a process, not a document.

As a small environmental charity, entrusted by government to produce a plan for a catchment 3,000km^2 in size, I would have to add that it is a ***perpetual, partnership*** *process! Despite holding a significant body of technical evidence for the Tyne, Tyne Rivers Trust could never have done this alone!*

I have long held the view that people hold the key to water management. They are affected by the decisions made about water – how it is allocated during drought, how polluted it is, who it affects in times of flood. And yet authorities often overlook one of the biggest sources of information when making water management decisions – the people themselves. The everyday knowledge of ordinary folk is vast and remarkably powerful, and they are bound to hold some vital evidence, though it can sometimes be hard to access.

In developing this Plan we have tried to capture that local knowledge and opinion. We started with a survey, energetically targeted and honestly interpreted. We then asked what actions could improve our rivers. This Plan is the result of that knowledge and opinion.

To the credit of Defra, the catchment project which led to this Plan was not bound by the usual rules in river management: learn, understand and make improvements in line with legislation. Whilst the 'pilot' plans will be a serious consideration as the Environment Agency prepares its second round of River Basin Management Plans under the Water Framework Directive, this Plan goes much wider than is required by the WFD. It includes, for example, the many requests we received for engagement and education in river management issues and access for recreation.

We do not claim any authority or right to move forward with the issues and projects described in this Plan – they simply reflect the opinions of those engaged in the process. We did not engage everyone: a 12 month project is not long enough for that. We hope this Catchment Plan will develop and change as knowledge and opinion develop and change. It would have looked very different if 2012 had been a summer of drought instead of one of the wettest on record!

It is now time to get to actions. One absolutely fundamental necessity during a period of rapid change (in both nature and society) is that we make our actions adaptive: we learn by doing and acting on our mistakes, not sticking 'bravely' to a pre-set route or remedy. A favourite book of mine is To Engineer is Human: the Role of Failure in Successful Design. *We need the confidence to try new approaches by collaboration and carry others with us when a change of route is needed. Environmentalists increasingly picture humans* ***in*** *the ecosystem and so the ecosystem health of the river benefits everyone.*

We are all 'upon Tyne' in this catchment.

Malcolm Newson
Director, Tyne Rivers Trust

David Ord

Contents

Susan Mackirdy

Glossary

AONB	Area of Outstanding Natural Beauty (see *Protected Areas* below).
Biodiversity Action Plans (BAP)	Plans designed to protect the diverse range of organisms and functions which make up ecosystems, including protecting species and reducing pressures.
Catchment	An area of land where surface water converges to a single point, such as an estuary, sea or ocean.
Catchment Sensitive Farming	A programme delivering practical solutions and support to enable farmers and land managers to reduce diffuse water pollution from agriculture. Delivered by Natural England and the Environment Agency. Not currently being delivered in the Tyne catchment.
Core Strategy	A document, or series of documents, setting out the vision and objectives for planning in an area.

Defra	Department for the Environment Food and Rural Affairs – Government department responsible for the interests of farmers, the countryside, the environment, the rural economy, food, air and water.
Ecosystem	A community of living organisms (plants, animals and microbes) and the non-living components of their environment (air, water and soil), interacting as a system.
Environment Agency	Public body responsible for protecting and improving the environment in England and Wales. Responsible for a wide range of issues including river and coastal flood risk management, pollution control, water resources management, water quality, waste regulation and inland fisheries. Part of the Defra group.
Environmental Stewardship	Funded schemes managed by Natural England to enable land managers to make sure land is well managed and keeps its traditional character, protect historic features and natural resources, look after wildlife, species and their habitats, ensure traditional livestock and crops are conserved.
Forestry Commission	Public body responsible for the protection and expansion of Britain's forests and woodlands. Part of the Defra group.
Green Infrastructure Strategy	Usually forming part of planning policy documents, green infrastructure strategies focus on the importance of the natural environment in decisions about land use planning, including ecosystem functions, connectivity, and the importance of access to green spaces.
Habitats Directive	European legislation which establishes protected habitats and species (Special Areas of Conservation and Special Protected Areas). The highest level of protected area in current law.
Impoundment	In relation to rivers, an impoundment is a weir, dam or other structure which causes ponding of water upstream. They usually affect flows downstream of the structure and can be complete or partial barriers to fish migration/movement.
Natural England	Public body responsible for protecting and improving England's natural environment, particularly protected areas and species. Part of the Defra group.
Protected areas	Areas with some level of protection (eg. from development or exploitation), usually due to an important natural feature. Includes National Parks, Areas of Outstanding Natural Beauty, Special Areas of Conservation, Special Protected Areas, National Nature Reserves and Sites of Special Scientific Interest.
Riparian	On or related to riverbanks.
River Basin Management Plans	Plans produced under the Water Framework Directive to protect/improve the water environment.
Runoff flooding	See 'surface water flooding'.
Site of Special Scientific Interest (SSSI)	A site identified under legislation as an area of special interest by reasons of its plants, animals, geology and/or natural features.
Surface water flooding	Flooding from sewers, drains, groundwater and runoff from land, small watercourses and ditches as a result of heavy rainfall.
Sustainable Drainage Systems (SuDS)	Systems designed to drain surface water in an environmentally-friendly or sustainable way, for example porous paving or filtration ponds which store excess water and remove pollutants.
Water Framework Directive	European legislation which requires the quality of rivers, lakes, estuaries, coasts and groundwater to be monitored and classified, and actions put in place to improve them.

Setting the scene

This Plan is about action.

Action to improve our rivers, and action to raise awareness and educate people about the importance of rivers.

David Ord

The catchment-based approach

Defra's catchment-based approach was announced in 2011 by Richard Benyon, Minister for Natural Environment and Fisheries. His vision was a process that would

> *"…provide a clear understanding of the issues in the catchment, involve local communities in decision-making by sharing evidence, listening to their ideas, working out priorities for action and seeking to deliver integrated actions that address local issues in a cost effective way and protect local resources*".

In early 2012 Tyne Rivers Trust was successful in its bid to host one of 25 'pilot' catchments in a Defra funded project. All pilot catchments were give one main task: to produce a plan to improve their catchment's water environment by December 2012. A key aim was the engagement and involvement of a wide range of organisations, individuals and the public.

The Tyne catchment project

We asked people in the Tyne catchment to tell us about the biggest issues for their rivers and to suggest projects to tackle those issues. This Plan is the result of that process. It is not perfect, it is not complete, and it doesn't tackle all of the issues or cover all of the catchment. But it is a good start. There is much more we could do if funding is made available to further develop and deliver this Plan.

If you want to know more about how we developed this Plan see Appendix 3 (p95).

This Plan is not going to tell you what the Tyne catchment is like – how many people live here, how we use our land, the current condition of our rivers. This information is of course relevant, but it is available elsewhere - for a list of useful additional resources see Appendix 5 (p101).

This Plan is best summarised as a 'wish list' of proposed projects that will

- deliver better rivers for people to enjoy and value
- increase community involvement in local decision-making about river issues
- engage and educate those who don't know the value and importance of rivers
- create robust and resilient environments which will cope with weather extremes and climate change
- make best use of the available resources, research and evidence in supporting work across the catchment
- help deliver the targets set out in European legislation like the Water Framework Directive and the Habitats Directive.

We have tried to make this Plan easily updatable, as projects are started and others are proposed. We hope that this Tyne catchment project will continue and this will be the start of more action to conserve and enhance our river environments. This may be the first of many more plans to come.

What is the Tyne catchment?

To understand catchments you need to think big. A simple explanation of a catchment (or drainage basin) would be

an area of land where surface water converges to a single point, such as an estuary, sea or ocean.

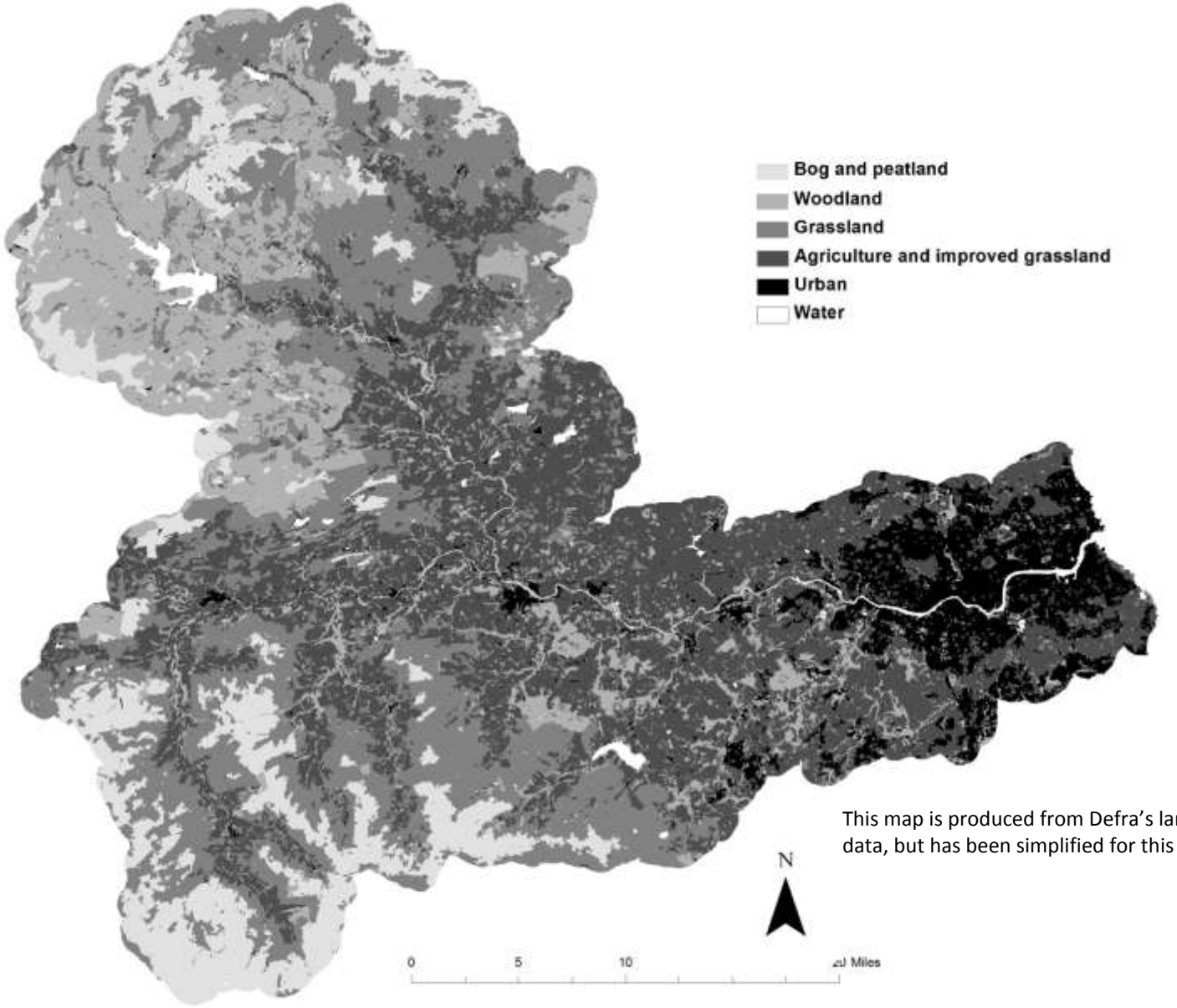
So the Tyne catchment is all of the land which runs downhill into burns, streams, rivers, drainage systems (including road drains and sewers) and ends up flowing into the sea at Tynemouth.

The important thing to remember is that **catchments are as much about land as they are about water**. 98% of the rain falling on the Tyne catchment hits land before making its way into lakes, reservoirs, streams, rivers, groundwater, and eventually to the estuary and the sea. The way we manage land significantly affects the quality of our rivers. That is why many of the goals and projects in this Plan relate to land use and riverside management.

Stephen Hogg

Map of the Tyne Catchment showing principal rivers and urban areas

Land use map of the Tyne Catchment



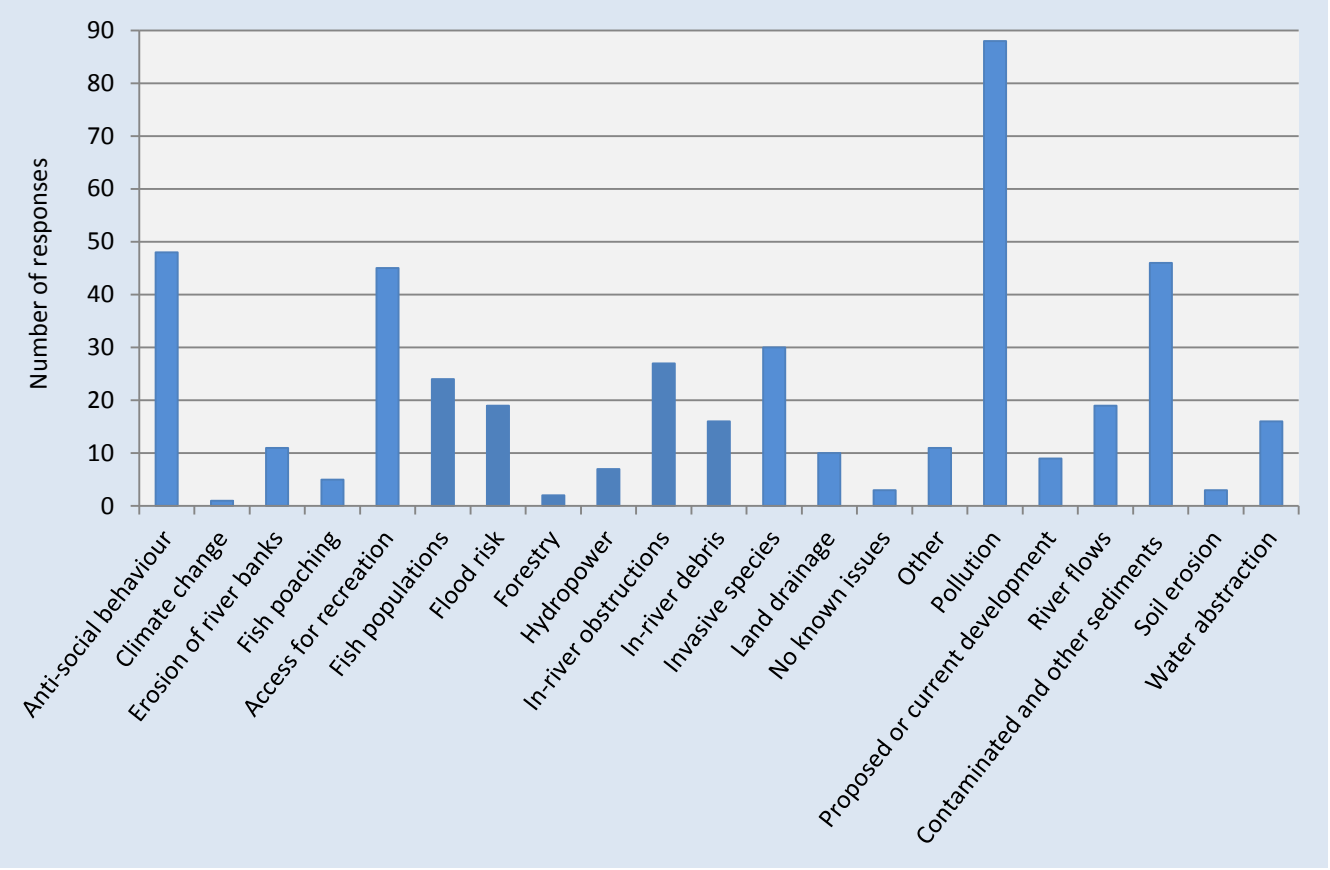
This map is produced from Defra's land use data, but has been simplified for this Plan

The issues for the Tyne catchment

In May and June 2012 we carried out a survey across the Tyne catchment. 218 people told us about more than 340 issues affecting our rivers. A wide range of issues was raised, from access to rivers for recreation to concerns about localised pollution, from the impacts of abandoned metal mines to anti-social behaviour. The results are summarised in the chart below.

Issues raised in the survey responses, grouped into broad categories

An issue may fall into more than one category



For detailed information about the survey results, a detailed Survey Report is available on the project website (www.tynecatchment.org).

We used these results to help focus the issues tackled in this Plan. But the Strategy Group also pointed out that one of the key missing issues is engagement and education of people about river issues. We had surveyed people already aware and concerned – what about those we had missed or who just don't care about rivers?

Engagement has been seen as a particular problem with river management. Rivers are complex and dynamic and people think about them in different ways. Some are concerned about flooding. Some are concerned about pollution and whether it's safe to use rivers for recreation. Some do not appreciate how rivers affect them and vice versa. It can be challenging to get people to think in a joined-up way about how rivers are connected to landscape and land use.

The Strategy Group was also concerned that **climate change and weather extremes** should have a greater priority than the survey results suggested. Whether you believe climate change is real or not, it is a fact that weather extremes affect people and our river environments. This summer of

flooding has brought disruption and cost for people and businesses in the Tyne catchment, stripped precious soil and fertilisers from our fields, and polluted our rivers.

Tackling runoff flooding can and should have a community focus and almost a 'mini-catchment' scale. This scale is also relevant to some of the **land use and land management** issues raised, and this is reflected in the actions already being delivered and the projects put forward for this Plan. For example, the current stewardship framework for agriculture attempts to control diffuse pollution today but also considers the future benefits of flood controls. The emphasis placed by individuals, community groups and the Forestry Commission on tree planting for river protection, habitat creation and slowing of flood waters is another good example.

We summarised the big issues into 2 Themes, both of which consider climate change and weather extremes.

Theme A: **Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change.**

Theme B: **Improve people's understanding of rivers, catchments, weather extremes and climate change. Increase community participation in monitoring change and taking action to improve and protect water environments.**

Susan Mackirdy

What is not in this Plan?

This Plan assumes that the authorities with responsibility for the Tyne catchment will continue to carry out their duties as best they can in these times of shrinking budgets. The Environment Agency will carry out its flood risk management and pollution prevention functions. Natural England will continue to care for protected sites and manage environmental stewardship schemes. The Forestry Commission will carry out its forestry felling and planting in accordance with guidelines related to protecting the water environment. Local authorities will develop and implement planning strategies that balance protecting what we already have with growth for the future and considerations of human and environmental health.

This Plan builds on this 'business as usual' assumption to identify wider improvements to our water environment and bigger benefits for its people.

Evidence-based policy

The regulation of environmental impacts is always under scrutiny because the environment and the economy are seen to compete in the conventional political model of 'growth', never more than at the time of writing this Plan! Regulation is only accepted as a reasonable precaution when accompanied by the best evidence.

A popular qualifier to the term 'evidence' is 'uncertainty' – the more certain the data, information or knowledge applied to a problem the stronger the evidence is for action. But what counts as evidence – who collects it? – and what qualifies evidence as strong? This is especially relevant to stakeholder engagement in river catchment planning. Broad brush policies frequently fail local-scale problems, and leave disillusioned and disengaged people in their wake.

In developing this Plan we have not gathered evidence – we have not had enough time to do so. Instead we have taken on faith the concerns that people, groups and organisations have raised. The Strategy Group has, however, applied its extensive knowledge and expertise to the projects proposed for this Plan. Some did not 'make the cut'. For more information see Appendix 3 (p 95).

Most cases of evidence beyond reasonable doubt are already the basis of policy or regulation. For the moment, this Plan can be described as tackling

- issues with enough 'balance of probability' evidence (where Proposed Projects confirm, refute or localise existing evidence) and
- issues where more or better evidence is needed, both to strengthen the case for action and to empower those gathering it.

The most daunting challenge is adaptive management. We need constant updates on the development or understanding of a problem and the impacts of any remedy. The key to effective adaptive management is continually monitoring and reviewing data, including new indicators of catchment condition and project performance. Among the environmental variables not well covered at the present time are

- the distribution and extent of non-native (invasive) species
- siltation of river bed habitats
- water temperature
- changes in the diversity and abundance of significant ecosystem elements
- the location, timing and impact of runoff flood events.

In each of these topics there is a vital role for the citizen scientist. Indeed existing agencies may find it hard to cope with change without this vital stakeholder input.

David Ord

Goals for the Tyne catchment

In October 2012 we held a drop-in event at the Hancock Museum in Newcastle-upon-Tyne. More than 50 organisations, agencies and community groups attended. We asked them to suggest goals and projects for this Plan.

The Themes, Goals and Sub-goals are set out below. They are not intended to be limiting, but provide a framework for the actions we believe are necessary and hope will happen as a result of our engagement work and this Plan.

Theme A:	**Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change.**
Goal A1	**Reduce pollution to the water environment.**
A1a	Reduce point-source pollution to the water environment.
A1b	Reduce diffuse pollution to the water environment.
A1c	Clean-up pollution in or affecting the water environment.
Goal A2	**Retain or restore biodiversity, taking account of weather extremes and climate change.**
A2a	Improve habitat and protect biodiversity in the tidal zone.
A2b	Remove or manage problem non-native species, and prevent the introduction of new invasive species where possible.
A2c	Create new woodlands and better manage existing woodlands along watercourses and in the wider catchment where it will benefit rivers.
A2d	Create better, and improve existing, in-river and riverside habitat.
A2e	Engage with landowners and managers to promote habitat and biodiversity improvements, catchment-sensitive land management, and resilience to weather extremes and climate change.
A2f	Use research and demonstration sites to illustrate best practice.
Goal A3	**Reduce risk from or control flooding.**
A3a	Reduce risk from or control flooding from rivers.
A3b	Reduce risk from or control surface water (runoff) floods.
Goal A4	**Optimise the fishery resource of the Tyne.**
A4a	Ensure suitable environmental flows below structures affecting river flow regimes.
A4b	Remove or adapt obstructions to permit up- and down-stream fish migration.
Goal A5	**Mitigate for the future impacts of climate change and future-proof relevant projects.**

Theme B:	**Improve people's understanding of rivers, catchments, weather extremes and climate change. Increase community participation in monitoring change and taking action to improve and protect water environments.**
Goal B1	**Increase awareness of the impacts and risks of weather extremes and climate change.**
Goal B2	**Improve access to river-based recreation to engage more people in river issues.**
B2a	Improve river-based access and activities in urban areas with a focus on health, wellbeing and physical activity.
Goal B3	**Engage widely to educate about river issues and encourage positive behavioural change.**
Goal B4	**Raise awareness and demonstrate the economic benefits of improving water quality, tackling pollution, and planning for weather extremes and climate change.**
Goal B5	**Carry out research and monitoring, and collect and make available relevant data.**
B5a	Better understand complex or poorly-understood issues.
B5b	Adopt evidence-based solutions and management techniques.

Actions to improve our water environments

A focus on projects


Gordon Carlton

We want **this Plan** to achieve something.

We want the **process** of producing this Plan to achieve something.

We want the **people** and **organisations** who gave their time to contribute to this project to gain something from their participation.

So we focused on developing a Plan based around projects which would

- improve our water environments
- allow the people, groups and organisations who deliver environmental improvements to learn from each other and identify opportunities to work together
- give individuals, communities and small organisations an equal voice in identifying what changes they would like to see in their local area
- put everyone 'on Tyne' in the best position to bid for the limited funding currently available for environmental projects.

The Proposed Projects in this Plan reflect the priorities of the people, agencies and organisations who attended the drop-in event at the Hancock Museum. As a result, the number of projects to tackle a particular issue, and their geographical range, do not necessarily reflect the catchment's needs or the priorities for action. Some projects are very location-specific and the costs and timeframes shown are very rough estimates.

In essence the Proposed Projects are a wish list. None are particularly promoted or endorsed by Tyne Rivers Trust. Their success will depend on their ability to attract deliverers and funding, and the enthusiasm and energy of their proposers to deliver them.

The tables below list the Current Projects and Proposed Projects for the Tyne Catchment, their approximate location and the sectors and issues they are relevant to.

Below those tables the Current Projects and Proposed Projects are listed by the Themes and Goals. The Theme A tables start on page 19 and the Theme B tables start on page 22. Many projects work towards more than one Goal.

Also in this section are maps, which show the general location of the Current and Proposed Projects. The Map of Theme A Projects is on page 21 and the Map of Theme B Projects is on page 23.

Current Projects in the Tyne catchment

Key to symbols

Issues	Habitats/species	Businesses	People	Recreation
Flooding	Pearl mussel	Industry	Education	Hiking
Pollution	Birds	Weirs/dams	Research/Monitoring	Walking
Climate	River(side)	Forest/woodland	Communities	Cycling
Invasives	Biodiversity	Water company		Fishing
	Fish	Agriculture		Water-sports

Full Current Project details are in Appendix 1 starting on page 25.

	Project title	Approximate location	Sector(s) / Issue(s)
C1 (p25)	In-situ minewater treatment	West and East Allen	
C2 (p25)	Minewater and sewage treatment	River Team	
C3 (p26)	Minewater monitoring and treatment	River Team	
C4 (p26)	Carr Shield abandoned mine	West and East Allen	
C5 (p27)	Minewater Investigations	West and East Allen	
C6 (p27)	Living Waterways	Multiple urban locations	
C7 (p28)	Ouseburn - Great Park	Ouseburn	
C8 (p28)	North East Lakes Project	South Tyne	
C9 (p29)	Clean Tyne	Tidal reaches	
C10 (p29)	National Park farm advice	Northumberland National Park	
C11 (p30)	Silt Reduction Partnership	Multiple rural locations	
C12 (p31)	Peatland Programme	North Pennines AONB	
C13 (p32)	Haltwhistle Burn project	South Tyne	
C14 (p33)	Woodlands for Water	Catchment-wide	
C15 (p34)	Ouseburn Integrated Drainage	Ouseburn	
C16 (p34)	Forestry improvements	Forest and woodland	
C17 (p35)	Forest Streams	Forest and woodland	
C18 (p35)	Border Uplands Partnership	North Tyne & River Rede	
C19 (p36)	River Tyne Freshwater Pearl Mussels	North Tyne & River Rede	
C20 (p36)	Volunteer & Farmer Alliance	Multiple rural locations	
C21 (p37)	Farmland Bird Advice	Northumberland National Park	

	Project title	Approximate location	Sector(s) / Issue(s)
C22 (p37)	Northern Uplands Chain LNP	Multiple rural locations	
C23 (p38)	Kielder Water Voles	Forest and woodland	
C24 (p38)	Northumbrian Loughs	Northumberland National Park	
C25 (p38)	Protecting designated bird sites	Catchment-wide	
C26 (p39)	Flood alleviation on Shibdon Meadow	River Team	
C27 (p39)	Fish passage works	Catchment-wide	
C28 (p40)	River Watch	Multiple rural locations	
C29 (p41)	River Team improvements	River Team	
C30 (p41)	Pollution from industrial estates	Urban Newcastle / Gateshead	
C31 (p42)	Freshwater Pearl Mussel breeding	North Tyne & River Rede	
C32 (p42)	Cheviot Futures	Northumberland National Park	
C33 (p43)	Flood Modelling	Urban Newcastle / Gateshead	
C34 (p43)	N'land Community Flood Partnership	Catchment-wide	
C35 (p44)	Tyne Catchment Pilot	Catchment-wide	All sectors and issues
C36 (p44)	Green Infrastructure Opportunity Areas	Urban Newcastle / Gateshead	
C37 (p45)	National Park Rangers	Northumberland National Park	
C38 (p45)	Local engagement on mining issues	West and East Allen	
C39 (p45)	Salmonid and diatom research	Catchment-wide	
C40 (p46)	WFD Investigations	Catchment-wide	
C41 (p46)	Impacts of mines on marine species	Tidal reaches	
C42 (p47)	Nenthead spoil stabilisation trials	South Tyne	
C43 (p47)	Agricultural research	Middle Tyne	
C44 (p48)	Diffuse urban pollution	Urban Newcastle / Gateshead	
C45 (p48)	Monitoring	Catchment-wide	
C46 (p49)	Wild Watch	Catchment-wide	
C47 (p49)	Monthly wetland birds surveys	Catchment-wide	
C48 (p50)	Big Sea Survey	Catchment-wide	
C49 (p50)	ERIC North East	Catchment-wide	
C50 (p50)	Bird population data	Catchment-wide	
C51 (p51)	Wildlife Surveys	Multiple rural locations	

Proposed Projects for the Tyne catchment

Key to symbols

Issues	Habitats/species	Businesses	People	Recreation
Flooding	Pearl mussel	Industry	Education	Hiking
Pollution	Birds	Weirs/dams	Research/Monitoring	Walking
Climate	River(side)	Forest/woodland	Communities	Cycling
Invasives	Biodiversity	Water company		Fishing
	Fish	Agriculture		Water-sports

Full Proposed Project details are in Appendix 2 starting on page 52.

	Project title	Approximate location	Sector(s) / Issue(s)
P1 (p52)	Monitoring Sewer Overflows	Multiple rural locations	
P2 (p53)	Remediate Tar Works site	Tidal reaches	
P3 (p53)	Friars Goose chemical works	Tidal reaches	
P4 (p54)	River Don water quality & flood risk	River Don	
P5 (p54)	Tackling minewater pollution	West and East Allen	
P6 (p55)	Tackling pollution	Catchment-wide	
P7 (p56)	Flooding and sewage contamination	Ouseburn	
P8 (p56)	Bankside willow planting	Catchment-wide	
P9 (p57)	Media campaign - wrong connections	Urban Newcastle / Gateshead	
P10 (p57)	Waterways for Wildlife	West and East Allen	
P11 (p58)	Rural climate change adaptation	Catchment-wide	
P12 (p59)	Green Infrastructure Programme	Multiple urban locations	
P13 (p60)	Woodlands storm overflows	Multiple rural locations	
P14 (p61)	Invasive species co-ordinator	Catchment-wide	
P15 (p62)	Mink monitoring and control	Multiple rural locations	
P16 (p63)	Woodland business awareness	Forest and woodland	
P17 (p64)	Woodlands for Water	Forest and woodland	
P18 (p65)	Freshwater biodiversity	Catchment-wide	
P19 (p65)	Fish migration and spawning	North Tyne & River Rede	
P20 (p66)	Opening up culverted watercourses	Urban Newcastle / Gateshead	
P21 (p67)	Assess and improve fish passage	Catchment-wide	

	Project title	Approximate location	Sector(s) / Issue(s)
P22 (p68)	Peat and People	North Pennines AONB	
P23 (p69)	Blanchland flood control / protection	River Derwent	
P24 (p69)	Flood storage solutions	Multiple rural locations	
P25 (p70)	Langley Burn flood alleviation	Middle Tyne	
P26 (p71)	Slow the Flow	Forest and woodland	
P27 (p72)	Local knowledge for flood modelling	Catchment-wide	
P28 (p72)	Community flood resilience	Catchment-wide	
P29 (p73)	Ouseburn drainage infrastructure	Ouseburn	
P30 (p73)	Ouseburn tree planting	Ouseburn	
P31 (p74)	Ovingham flood risk assessment	Middle Tyne	
P32 (p74)	Prudhoe drainage/runoff assessment	Middle Tyne	
P33 (p75)	Derwent Reservoir releases	Derwent reservoir	
P34 (p76)	Team Valley improvements	River Team	
P35 (p77)	Diffuse pollution from agriculture	Multiple rural locations	
P36 (p78)	From research to delivery	Multiple rural locations	
P37 (p79)	Derwent Valley Landscape	River Derwent	
P38 (p80)	Wading birds and Tyne kittiwakes	Tidal reaches	
P39 (p81)	Sustainable Drainage Systems	Urban Newcastle / Gateshead	
P40 (p82)	Ebchester hydropower / engagement	River Derwent	
P41 (p83)	Tyne Catchment Pilot	Catchment-wide	All sectors and issues
P42 (p84)	Access for Canoeing	Catchment-wide	
P43 (p85)	Watersports Centre of Excellence	Tidal reaches	
P44 (p86)	Access for Recreation	Catchment-wide	
P45 (p87)	Tyne recreational opportunities	Catchment-wide	
P46 (p87)	Stream Team/Stream Champions	Multiple urban locations	
P47 (p88)	Access for health and wellbeing	Catchment-wide	
P48 (p89)	Community engagement/volunteers	Multiple urban locations	
P49 (p89)	Schools river ecology education	Multiple urban locations	
P50 (p90)	Education on river issues	Catchment-wide	
P51 (p90)	John Muir Discovery Award	Middle Tyne	

	Project title	Approximate location	Sector(s) / Issue(s)
P52 (p91)	Sage Riverlink	Catchment-wide	
P53 (p91)	Tree education and improvements	Forest and woodland	
P54 (p92)	Wet, Wild & Wiggly	Multiple urban locations	
P55 (p93)	Tyne engagement & education	Catchment-wide	
P56 (p93)	Awareness and improvements	River Derwent	
P57 (p94)	Public recording of river issues	Catchment-wide	
P58 (p94)	Tyne visualisation tools	Catchment-wide	

Gordon Carlton

Current and Proposed Projects sorted by Themes and Goals

The tables in this section show how the Current Projects and Proposed Projects fit within the Themes and Goals of this Plan. Maps showing the approximate location of the projects are set out below the tables.

Full project details are in Appendix 1 (Current Projects) starting on page 25 and Appendix 2 (Proposed Projects) starting on page 52.

Theme A: Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change.

Goal A1 Projects	**Reduce pollution to the water environment**
Current Projects:	C1 C2 C3 C4 C5 C6 C7 C8 C9 C10 C11 C12 C13 C14 C15 C28 C29 C30 C35
Proposed Projects:	P1 P2 P3 P4 P5 P6 P7 P9 P10 P11 P12 P13 P34 P35 P36 P41
A1a: Reduce point-source pollution to the water environment.	
Current Projects:	C1 C2 C3 C4 C5 C35
Proposed Projects:	P1 P2 P3 P4 P5 P6 P10 P12 P41
A1b: Reduce diffuse pollution to the water environment.	
Current Projects:	C2 C3 C4 C5 C6 C7 C8 C10 C11 C12 C13 C14 C15 C29 C30 C35
Proposed Projects:	P4 P5 P6 P7 P9 P10 P11 P13 P35 P36 P41
A1c: Clean up pollution in or affecting the water environment.	
Current Projects:	C5 C8 C9 C28 C35
Proposed Projects:	P6 P41

Goal A2 Projects	**Retain or restore biodiversity, taking account of weather extremes and climate change**
Current Projects:	C6 C10 C11 C12 C13 C14 C16 C17 C18 C19 C20 C21 C22 C23 C24 C25 C26 C28 C31 C35
Proposed Projects:	P8 P10 P11 P12 P14 P15 P16 P17 P18 P19 P20 P21 P22 P34 P35 P36 P37 P38 P41
A2a: Improve habitat and protect biodiversity in the tidal zone.	
Current Projects:	C35
Proposed Projects:	P38 P41
A2b: Remove or manage problem non-native species, and prevent the introduction of new invasive species where possible.	
Current Projects:	C35
Proposed Projects:	P14 P15 P41
A2c: Create new woodlands and better manage existing woodlands along watercourses and in the wider catchment where it will benefit rivers.	
Current Projects:	C10 C11 C13 C14 C16 C17 C18 C35
Proposed Projects:	P12 P16 P17 P41
A2d: Create better, and improve existing, in-river and riverside habitat.	
Current Projects:	C6 C18 C19 C26 C35
Proposed Projects:	P8 P10 P12 P18 P19 P20 P21 P34 P37 P38 P41

A2e: Engage with landowners and managers to promote habitat and biodiversity improvements, catchment-sensitive land management, and resilience to weather extremes and climate change.

Current Projects: C10 C11 C20 C21 C35

Proposed Projects: P11 P35 P36 P41

A2f: Use research and demonstration sites to illustrate best practice.

Current Projects: C35

Proposed Projects: P11 P35 P36 P41

Goal A3 Projects	**Reduce risk from or control flooding**
Current Projects:	C12 C13 C14 C15 C26 C29 C32 C33 C34 C35
Proposed Projects:	P12 P13 P20 P23 P24 P25 P26 P27 P28 P29 P30 P31 P32 P39 P41

A3a: Reduce risk from or control flooding from rivers.

Current Projects: C13 C26 C29 C34 C35

Proposed Projects: P12 P20 P23 P24 P25 P26 P27 P28 P41

A3b: Reduce risk from or control surface water (runoff) floods.

Current Projects: C14 C15 C34 C35

Proposed Projects: P12 P13 P27 P28 P29 P30 P31 P32 P39 P41

Goal A4 Projects	**Optimise the fishery resource of the Tyne**
Current Projects:	C27 C35
Proposed Projects:	P21 P33 P41

A4a: Ensure suitable environmental flows below structures affecting river flow regimes.

Current Projects: C35

Proposed Projects: P33 P41

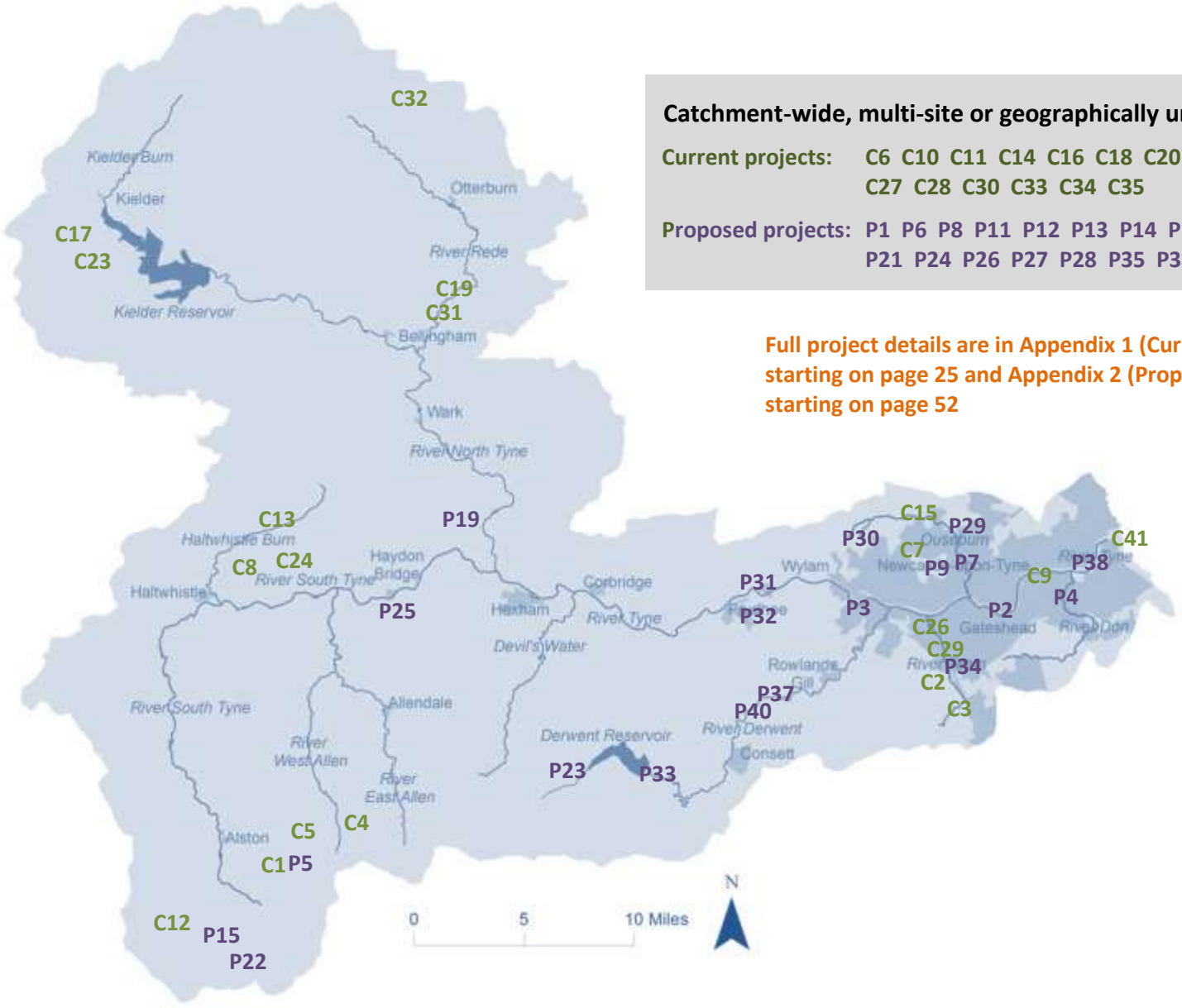
A4b: Remove or adapt obstructions to permit up- and down-stream fish migration.

Current Projects: C27 C35

Proposed Projects: P21 P41

Goal A5 Projects	**Mitigate for the future impacts of climate change and future proof relevant projects**
Current Projects:	C35
Proposed Projects:	P22 P40 P41

Map of Theme A Projects (locations are approximate)



Catchment-wide, multi-site or geographically unspecific projects

Current projects: C6 C10 C11 C14 C16 C18 C20 C21 C22 C25 C27 C28 C30 C33 C34 C35

Proposed projects: P1 P6 P8 P11 P12 P13 P14 P16 P17 P18 P20 P21 P24 P26 P27 P28 P35 P36 P39 P41

Full project details are in Appendix 1 (Current Projects) starting on page 25 and Appendix 2 (Proposed Projects) starting on page 52

Theme B: Improve people's understanding of rivers, catchments, weather extremes and climate change. Increase community participation in monitoring change and taking action to improve and protect water environments.

Goal B1 Projects	**Increase awareness of the impacts and risks of weather extremes and climate change**
Current Projects:	C34 C35
Proposed Projects:	P39 P41

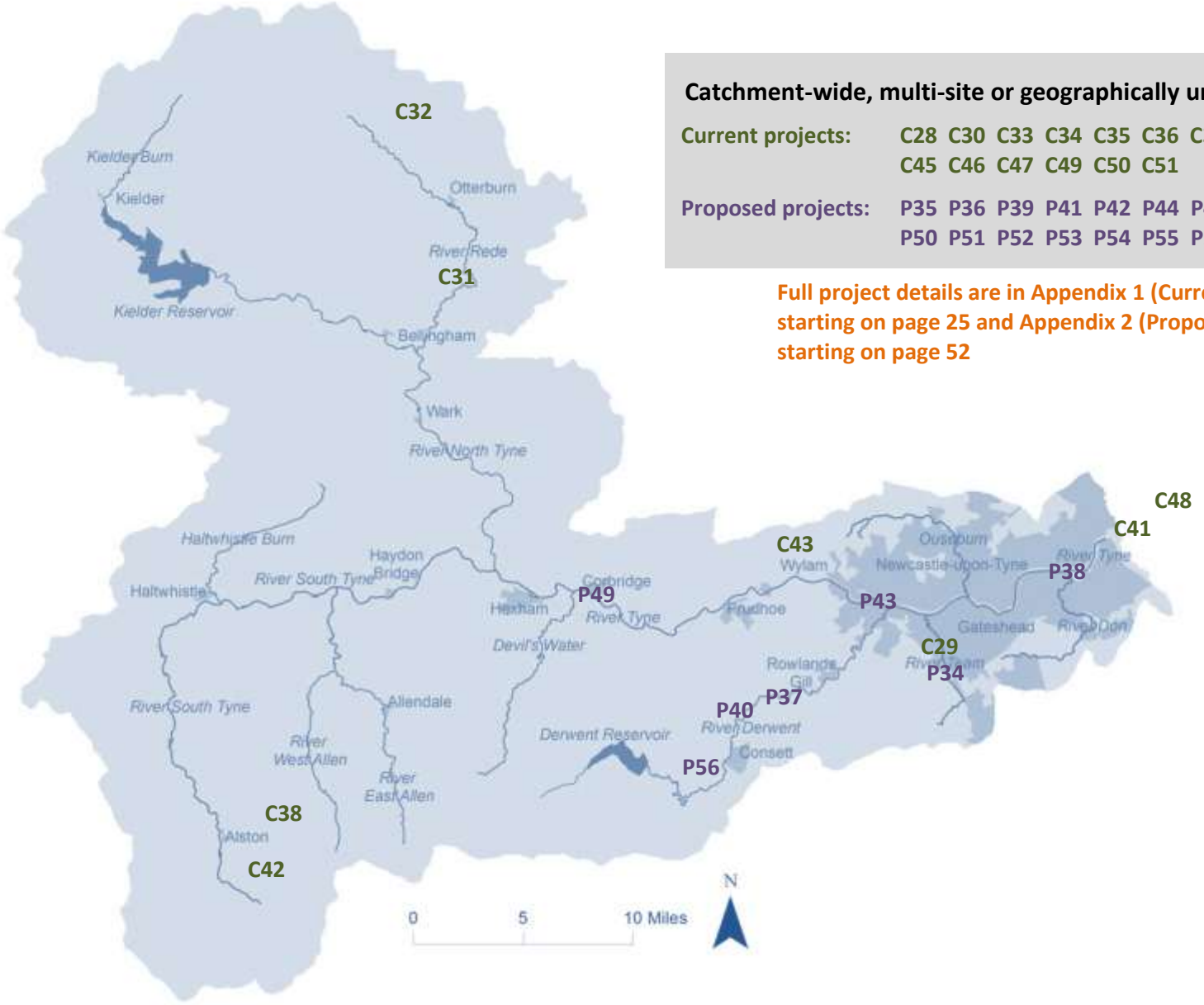
Goal B2 Projects	**Improve access to river-based recreation to engage more people in river issues**
Current Projects:	C29 C35
Proposed Projects:	P34 P37 P41 P42 P43 P44 P45 P46 P47
B2a: Improve river-based access and activities in urban areas with a focus on health, wellbeing and physical activity.	
Current Projects:	C35 C36 C37
Proposed Projects:	P41 P46

Goal B3 Projects	**Engage widely to educate about river issues and encourage positive behavioural change**
Current Projects:	C35 C37 C38
Proposed Projects:	P38 P40 P41 P46 P47 P48 P49 P50 P51 P52 P53 P54 P55 P56

Goal B4 Projects	**Raise awareness and demonstrate the economic benefits of improving water quality, tackling pollution, and planning for weather extremes and climate change**
Current Projects:	C30 C32 C35
Proposed Projects:	P36 P41 P55

Goal B5 Projects	**Carry out research and monitoring, and collect and make available relevant data**
Current Projects:	C28 C31 C33 C35 C39 C40 C41 C42 C43 C44 C45 C46 C47 C48 C49 C50 C51
Proposed Projects:	P35 P41 P56 P57 P58
B5a: Better understand complex or poorly-understood issues.	
Current Projects:	C35 C39 C40 C41 C42 C43
Proposed Projects:	P41 P57 P58
B5b: Adopt evidence-based solutions and management techniques.	
Current Projects:	C35 C40 C41 C42 C43
Proposed Projects:	P35 P41 P56 P57 P58

Map of Theme B Projects (locations are approximate)



Catchment-wide, multi-site or geographically unspecific projects

Current projects:	C28 C30 C33 C34 C35 C36 C37 C39 C40 C44 C45 C46 C47 C49 C50 C51
Proposed projects:	P35 P36 P39 P41 P42 P44 P45 P46 P47 P48 P50 P51 P52 P53 P54 P55 P57 P58

Full project details are in Appendix 1 (Current Projects) starting on page 25 and Appendix 2 (Proposed Projects) starting on page 52

What happens next?

Delivery of Proposed Projects

The Catchment Pilot project is funded until mid-April 2013. After this Plan is published we will focus on further developing the Proposed Projects, bringing together suitable partners for delivery, and putting together funding bids. We would also like to do some targeted engagement with certain sectors (eg. agriculture, business and communities) to promote and further develop this Plan.

Proposed Project **P41** is a proposal to continue the work that has gone into producing this Plan, and would include updating the Catchment Plan at appropriate regular intervals. A key task would be prioritising the catchment issues and the projects to tackle them. It would also be helpful to gain a better understanding of current scientific research, both locally and nationally, which could inform decisions and ensure the most up-to-date thinking and solutions are used.

At the time of publishing this Plan, Defra is considering how to roll out the catchment-based approach across England, and it is not yet clear whether Government funding will be available to continue into a delivery phase.

Water Framework Directive (WFD)

Defra's pilot catchment plans (like this one) will be integrated into the development of the larger scale River Basin Management Plans (which are due to be updated by the Environment Agency in 2015 under the Water Framework Directive). Those of us, both authors and stakeholders, concerned with this Plan are very keen to play an ongoing role in this process, assisting and advising our Environment Agency partners. The catchment scale sits between the local compliance unit of the waterbody and the statutory River Basin District planning unit. While some of the issues we have identified and some of the Proposed Projects are not obviously part of WFD requirements (eg. engagement and education), they carry a vastly improved process for both planning and implementing improvements for our water environment.

New development

It is also important to consider strategic spatial planning. Nationally we are in the midst of vital decisions on development. The outcomes will impact on the water environment and how it is managed by water companies and local authorities applying development controls in relation to water resources and flooding. These rapid developments are further evidence that catchment planning must be an ongoing, iterative process. More information about current and future strategies and plans relevant to this Plan are set out in Appendix 4 (p98).

Appendix 1 Current Projects

C1 In-situ minewater treatment

Theme(s):	A: Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change.
Goal(s):	A1: Reduce pollution to the water environment.
Sub-goal(s):	A1a: Reduce point-source pollution to the water environment.

Trial of biological minewater treatment plant at Nenthead.

Project Status:	Current
Deliverer(s):	Newcastle University, Environment Agency
Water Framework Directive link:	Zinc and cadmium failures on the East and West Allen
Protected area link:	Calaminarian grassland SSSIs

C2 Minewater and sewage treatment at Birtley/Lamesley

Theme(s):	A: Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change.
Goal(s):	A1: Reduce pollution to the water environment.
Sub-goal(s):	A1a: Reduce point-source pollution to the water environment. A1b: Reduce diffuse pollution to the water environment.

Reed bed system installed at Birtley/Lamesley to remediate mine and sewage contaminated water.

Project Status:	Current
Deliverer(s):	Gateshead Council, Coal Authority, Northumbrian Water
Timeframe:	Ongoing
Water Framework Directive link:	Invertebrate, ammonia and phosphate failures on the River Team
Protected area link:	Wlidlife and biodiversity site

C3 Minewater monitoring and treatment

Theme(s):	A: Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change.
Goal(s):	A1: Reduce pollution to the water environment.
Sub-goal(s):	A1a: Reduce point-source pollution to the water environment. A1b: Reduce diffuse pollution to the water environment.

Monitoring, pumping and treating rising minewater in abandoned coal mines, including reed bed treatment in the Team valley.

Project Status:	Current
Deliverer(s):	Coal Authority, Environment Agency
Timeframe:	Ongoing
Water Framework Directive link:	Invertebrate, ammonia and phosphate failures on the River Team

C4 Carr Shield abandoned mine

Theme(s):	A: Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change.
Goal(s):	A1: Reduce pollution to the water environment.
Sub-goal(s):	A1a: Reduce point-source pollution to the water environment. A1b: Reduce diffuse pollution to the water environment.

Reducing / preventing spoil heap collapse in the River West Allen and tackling pollution from minewater overflows.

Project Status:	Current
Deliverer(s):	Environment Agency, Coal Authority, North Pennines AONB Partnership
Additional benefits & considerations:	Protection of heritage site
Water Framework Directive link:	Zinc and cadmium failures on the South Tyne and West Allen
Protected area link:	Calaminarian grassland SSSIs

C5 Minewater Investigations

Theme(s):	A: Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change.
Goal(s):	A1: Reduce pollution to the water environment.
Sub-goal(s):	A1a: Reduce point-source pollution to the water environment. A1b: Reduce diffuse pollution to the water environment. A1c: Clean up pollution in or affecting the water environment.

Investigating and monitoring minewater discharges on the East and West Allen and Bolts Burn, and carrying out remediation feasibility studies at Nenthead on the River Nent, and Barney Crag mine on the River West Allen.

Project Status:	Current
Deliverer(s):	Environment Agency, Coal Authority
Additional benefits & considerations:	Protection of heritage site
Timeframe:	Ongoing
Water Framework Directive link:	Zinc and cadmium failures on the South Tyne and West Allen
Protected area link:	Calaminarian grassland SSSIs

C6 Living Waterways

Theme(s):	A: Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change.
Goal(s):	A1: Reduce pollution to the water environment. A2: Retain or restore biodiversity, taking account of weather extremes and climate change.
Sub-goal(s):	A1b: Reduce diffuse pollution to the water environment. A2d: Create better, and improve existing, in-river and riverside habitat.

3 year project focusing on diffuse pollution of rivers from urban sources: restoring ponds and revegetating part of the River Don, pond restoration and alleviating flood impacts on Black Dene Burn (River Team), pond and river restoration on the Ouseburn including overspill reed beds and ponds and willow spilling.

Project Status:	Current
Deliverer(s):	Durham Wildlife Trust, Northumberland Wildlife Trust, Environment Agency
Timeframe:	2010-2013
Funding Source(s):	Environment Agency
Water Framework Directive link:	Fish, invertebrate and phosphate failures on the Ouseburn; invertebrate failures on the River Don; invertebrate, ammonia and phosphate failures on the River Team

C7 Ouseburn - Great Park

Theme(s):	A: Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change.
Goal(s):	A1: Reduce pollution to the water environment.
Sub-goal(s):	A1b: Reduce diffuse pollution to the water environment.

Working with the Great Park Consortium to help maintain the Sustainable Drainage System and overspill islands on the river.

Project Status:	Proposed (project development in progress)
Deliverer(s):	Northumberland Wildlife Trust
Water Framework Directive link:	Fish, invertebrate and phosphate failures on the Ouseburn

C8 North East Lakes

Theme(s):	A: Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change.
Goal(s):	A1: Reduce pollution to the water environment.
Sub-goal(s):	A1b: Reduce diffuse pollution to the water environment. A1c: Clean-up pollution in or affecting the water environment.

Investigating Water Framework Directive failures at the 3 Loughs near Once Brewed and identifying interventions to slow decline and improve status where possible.

Project Status:	Current
Deliverer(s):	Environment Agency, Stirling University
Additional benefits & considerations:	Being developed into a Heritage Lottery Fund bid for delivery of interventions
Water Framework Directive link:	Phosphate failures on the Loughs
Protected area link:	The Loughs are all SSSIs

C9 Clean Tyne

Theme(s):	A: Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change.
Goal(s):	A1: Reduce pollution to the water environment.
Sub-goal(s):	A1c: Clean up pollution in or affecting the water environment.

Removing rubbish and floating objects from the banks of the tidal Tyne using a boat and volunteer groups.

Project Status:	Current
Deliverer(s):	Gateshead Council, Newcastle City Council, North Tyneside Council, South Tyneside Council, Port of Tyne
Timeframe:	Ongoing
Funding Source(s):	Gateshead Council, Newcastle City Council, North Tyneside Council, South Tyneside Council, Port of Tyne

C10 National Park farm advice

Theme(s):	A: Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change.
Goal(s):	A1: Reduce pollution to the water environment. A2: Retain or restore biodiversity, taking account of weather extremes and climate change.
Sub-goal(s):	A1b: Reduce diffuse pollution to the water environment. A2c: Create new woodlands and better manage existing woodlands along watercourses and in the wider catchment where it will benefit rivers. A2e: Engage with landowners and managers to promote habitat and biodiversity improvements, catchment-sensitive land management, and resilience to weather extremes and climate change.

Farm advisers working on 240 farms in the National Park (50% in the Tyne catchment) to bring farms within environmental stewardship and woodland grant schemes.

Project Status:	Current
Deliverer(s):	Northumberland National Park Authority
Additional benefits & considerations:	Opportunities to create more woodland
Water Framework Directive link:	Diffuse pollution failures caused or contributed to from the agricultural sector
Protected area link:	Northumberland National Park

C11 Silt Reduction Partnership

Theme(s):	A: Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change.
Goal(s):	A1: Reduce pollution to the water environment. A2: Retain or restore biodiversity, taking account of weather extremes and climate change.
Sub-goal(s):	A1b: Reduce diffuse pollution to the water environment. A2c: Create new woodlands and better manage existing woodlands along watercourses and in the wider catchment where it will benefit rivers. A2e: Engage with landowners and managers to promote habitat and biodiversity improvements, catchment-sensitive land management, and resilience to weather extremes and climate change.

Working with riparian landowners to minimise sediment inputs into rivers, including fencing riverbanks, creating drinking points and crossing points to stop livestock entering rivers, managing and planting riparian woodland and green bank stabilisation and engineering, and farmyard drainage improvements.

Project Status:	Current
Deliverer(s):	Tyne Rivers Trust, Environment Agency
Additional benefits & considerations:	Opportunities to create more woodland
Water Framework Directive link:	Diffuse pollution failures caused or contributed to from the agricultural sector
Biodiversity Action Plan / species link:	Habitat creation for BAP species

C12 Peatland Programme

Theme(s):	A: Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change.
Goal(s):	A1: Reduce pollution to the water environment. A2: Retain or restore biodiversity, taking account of weather extremes and climate change. A3: Reduce risk from or control flooding.
Sub-goal(s):	A1b: Reduce diffuse pollution to the water environment.

Re-vegetating bare peat and blocking moorland grips to retain and restore blanket bog habitat, store carbon and retain water/reduce run-off speed and flood risk.

Project Status:	Current
Deliverer(s):	North Pennines AONB Partnership
Additional benefits & considerations:	Carbon storage
Biodiversity Action Plan / species link:	Habitat conservation for BAP species
Protected area link:	North Pennines Area of Outstanding Natural Beauty

C13 Haltwhistle Burn improvements

Theme(s):	A: Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change.
Goal(s):	A1: Reduce pollution to the water environment. A2: Retain or restore biodiversity, taking account of weather extremes and climate change. A3: Reduce risk from or control flooding.
Sub-goal(s):	A1b: Reduce diffuse pollution to the water environment. A2c: Create new woodlands and better manage existing woodlands along watercourses and in the wider catchment where it will benefit rivers. A3a: Reduce risk from or control flooding from rivers.

Addressing river quantity/quality/habitat issues from source to mouth including inputs into Greenlee Lough, siltation, woodland management, river and runoff flooding, and sedimentation from sewage treatment works outflow.

Project Status:	Current
Deliverer(s):	Tyne Rivers Trust
Timeframe:	Sept 2012 to August 2014
Funding Source(s):	Environment Agency Catchment Restoration Fund
Water Framework Directive link:	Fish failure on Haltwhistle Burn
Protected area link:	The upper burn lies within the Northumberland National Park

C14 Woodlands for Water

Theme(s):	A: Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change.
Goal(s):	A1: Reduce pollution to the water environment. A2: Retain or restore biodiversity, taking account of weather extremes and climate change. A3: Reduce risk from or control flooding.
Sub-goal(s):	A1b: Reduce diffuse pollution to the water environment. A2c: Create new woodlands and better manage existing woodlands along watercourses and in the wider catchment where it will benefit rivers. A3b: Reduce risk from or control surface water (runoff) floods.

Mapping the opportunities for woodland creation to address Water Framework Directive/flooding issues. Phase 1 is mapping, phase 2 is targeted woodland creation. Revised woodland creation rates for woodlands that support Woodlands for Water objectives. The Environment Agency and Forestry Commission have commissioned Forest Research to create digital maps of Yorkshire and NE England to show where new woodland could be created to maximise benefits in terms of helping to achieve good ecological status under the Water Framework Directive and to reduce flood risk. This work is at a finer resolution (going down to field level) than the similar work that has been done for England as a whole.

Project Status:	Current
Deliverer(s):	Forestry Commission, Environment Agency
Timeframe:	Phase 1 August 2012 – January 2013
Funding Source(s):	Forestry Commission, Environment Agency
Additional benefits & considerations:	Woodland creation, carbon storage, biodiversity improvements
Water Framework Directive link:	Linked to WFD failures in forested areas - sediment management, water temperature control
Biodiversity Action Plan / species link:	Habitat creation for BAP species
Protected area link:	Some areas likely to fall within protected areas, particularly Northumberland National Park and North Pennines AONB
Green Infrastructure link:	Can act as green infrastructure in urban fringe areas

C15 Ouseburn Integrated Drainage Strategy

Theme(s):	A: Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change.
Goal(s):	A1: Reduce pollution to the water environment. A3: Reduce risk from or control flooding.
Sub-goal(s):	A1b: Reduce diffuse pollution to the water environment. A3b: Reduce risk from or control surface water (runoff) floods.

Developing a strategy for the Ouseburn and Newcastle City Centre to provide integrated drainage solutions in flood prone areas.

Project Status:	Current
Deliverer(s):	Newcastle City Council, Environment Agency, Northumbrian Water

C16 Forestry improvements

Theme(s):	A: Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change.
Goal(s):	A2: Retain or restore biodiversity, taking account of weather extremes and climate change.
Sub-goal(s):	A2c: Create new woodlands and better manage existing woodlands along watercourses and in the wider catchment where it will benefit rivers.

Restructuring and improving riparian zones through forest management, pulling crop back and introducing more diverse planting, and carrying out forestry operations in line with the UK Forest Standard and the Forest & Water Guidelines.

Project Status:	Current
Deliverer(s):	Forestry Commission, forestry owners
Timeframe:	As forest rotation forests reach rotation age - mostly by 2030
Funding Source(s):	Part of normal modern forest management
Additional benefits & considerations:	Improves biodiversity of forest and landscape
Water Framework Directive link:	Addresses causes of failure - sediment and fish in particular
Biodiversity Action Plan / species link:	Otters, freshwater pearl mussels
Protected area link:	Some forests are within the Northumberland National Park and the North Pennines AONB

C17 Forest Streams

Theme(s):	A: Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change.
Goal(s):	A2: Retain or restore biodiversity, taking account of weather extremes and climate change.
Sub-goal(s):	A2c: Create new woodlands and better manage existing woodlands along watercourses and in the wider catchment where it will benefit rivers.

Assessing individual streams in Kielder Forest to design and carry out improvements to increase ecological quality.

Project Status:	Current
Deliverer(s):	Tyne Rivers Trust
Timeframe:	2011-2014
Funding Source(s):	Tyne Rivers Trust, Forestry Commission, Environment Agency
Additional benefits & considerations:	Improves biodiversity of forest
Water Framework Directive link:	Focusing on waterbodies failing WFD targets
Biodiversity Action Plan / species link:	Otters, freshwater pearl mussels
Protected area link:	Partly within the Northumberland National Park

C18 Border Uplands Partnership

Theme(s):	A: Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change.
Goal(s):	A2: Retain or restore biodiversity, taking account of weather extremes and climate change.
Sub-goal(s):	A2c: Create new woodlands and better manage existing woodlands along watercourses and in the wider catchment where it will benefit rivers. A2d: Create better, and improve existing, in-river and riverside habitat.

Creating small wetlands, developing woodland grant scheme applications, restoring native woodland, peatland and heathland. Focusing on the confluence of the North Tyne and Rede and the upper River Coquet.

Project Status:	Current
Deliverer(s):	Northumberland National Park Authority, Environment Agency, Natural England, Forestry Commission, Tyne Rivers Trust, RSPB, Northumberland Wildlife Trust
Additional benefits & considerations:	Woodland creation

C19 River Tyne Freshwater Pearl Mussels

Theme(s):	A: Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change.
Goal(s):	A2: Retain or restore biodiversity, taking account of weather extremes and climate change.
Sub-goal(s):	A2d: Create better, and improve existing, in-river and riverside habitat.

Identifying and preparing habitat for the return of captive bred mussels to the River Rede and North Tyne, including channel capacity management to repair modified river stretches and trialling the use of jetted air to clear riverbeds of silt and create suitable micro-habitats for mussels.

Project Status:	Current
Deliverer(s):	Tyne Rivers Trust
Funding Source(s):	SITA Trust
Biodiversity Action Plan / species link:	Freshwater pearl mussels

C20 Volunteer & Farmer Alliance

Theme(s):	A: Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change.
Goal(s):	A2: Retain or restore biodiversity, taking account of weather extremes and climate change.
Sub-goal(s):	A2e: Engage with landowners and managers to promote habitat and biodiversity improvements, catchment-sensitive land management, and resilience to weather extremes and climate change.

Carrying out surveys to help landowners manage areas for priority bird species and where appropriate support applications to environmental stewardship schemes.

Project Status:	Current
Deliverer(s):	RSPB
Biodiversity Action Plan / species link:	Priority bird species

C21 Farmland Bird Advice

Theme(s):	A: Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change.
Goal(s):	A2: Retain or restore biodiversity, taking account of weather extremes and climate change.
Sub-goal(s):	A2e: Engage with landowners and managers to promote habitat and biodiversity improvements, catchment-sensitive land management, and resilience to weather extremes and climate change.

Land management advice and training, with a focus on birds, within the National Park.

Project Status:	Current
Deliverer(s):	RSPB
Protected area link:	Northumberland National Park

C22 Northern Uplands Chain Local Nature Partnership

Theme(s):	A: Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change.
Goal(s):	A2: Retain or restore biodiversity, taking account of weather extremes and climate change.

Recently successful bid for Local Nature Partnership Status which will facilitate collaborative working and knowledge sharing across geographically similar protected areas.

Project Status:	Current
Deliverer(s):	National Park Authority, North Pennines AONB Partnership, Yorkshire Dales National Park, Nidderdale AONB, Forestry Commission
Protected area link:	Northumberland National Park, North Pennines AONB, SSSIs

C23 Kielder Water Voles

Theme(s):	A: Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change.
Goal(s):	A2: Retain or restore biodiversity, taking account of weather extremes and climate change.

Establishing the suitability of rivers in Kielder Forest for future water vole reintroduction.

Project Status:	Current
Deliverer(s):	Tyne Rivers Trust, Northumberland Wildlife Trust, Forestry Commission
Biodiversity Action Plan / species link:	Water vole

C24 Northumbrian Loughs

Theme(s):	A: Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change.
Goal(s):	A2: Retain or restore biodiversity, taking account of weather extremes and climate change.

Managing and improving the Northumbrian Loughs, particularly Greenlee Lough.

Project Status:	Proposed (project development in progress)
Deliverer(s):	Northumberland National Park Authority
Water Framework Directive link:	The 3 Loughs are failing for phosphate
Protected area link:	Greenlee Lough is a National Nature Reserve and all 3 loughs are SSSIs

C25 Protecting designated bird sites

Theme(s):	A: Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change.
Goal(s):	A2: Retain or restore biodiversity, taking account of weather extremes and climate change.

Responding to planning applications where development may affect protected bird sites.

Project Status:	Current
Deliverer(s):	RSPB
Protected area link:	Designated bird protection sites

C26 Flood alleviation on Shibdon Meadow

Theme(s):	A: Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change.
Goal(s):	A2: Retain or restore biodiversity, taking account of weather extremes and climate change. A3: Reduce risk from or control flooding.
Sub-goal(s):	A2d: Create better, and improve existing, in-river and riverside habitat. A3a: Reduce risk from or control flooding from rivers.

Biodiversity-driven flood alleviation scheme to retain water, create shallow wetlands, provide feeding grounds and high tide roosts for river waders, and conduits for otter.

Project Status:	Current
Deliverer(s):	Gateshead Council, Environment Agency
Biodiversity Action Plan / species link:	Otter

C27 Fish passage works

Theme(s):	A: Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change.
Goal(s):	A4: Optimise the fishery resource of the Tyne.
Sub-goal(s):	A4b: Remove or adapt obstructions to permit up- and down-stream fish migration.

Making in-river obstacles passable to fish and other species by building fish passes and easements. Riding Mill and Stocksfield completed 2012. Environment Agency mini fish pass programme is funding 3 fish easements and a feasibility study in the Devil's Water catchment, and a further feasibility study on the lower Derwent at Derwenthaugh.

Project Status:	Current
Deliverer(s):	Tyne Rivers Trust, Environment Agency
Funding Source(s):	Environment Agency
Water Framework Directive link:	Multiple fish failures throughout the Tyne catchment

C28 River Watch

Theme(s):	A: Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change. B: Improve people's understanding of rivers, catchments, weather extremes and climate change. Increase community participation in monitoring change and taking action to improve and protect water environments.
Goal(s):	A1: Reduce pollution to the water environment. A2: Retain or restore biodiversity, taking account of weather extremes and climate change. B5: Carry out research and monitoring, and collect and make available relevant data.
Sub-goal(s):	A1c: Clean up pollution in or affecting the water environment.

Community-based groups at various locations in the Tyne catchment carrying out river clean-ups, tackling invasive species, reporting pollutions events, tackling bankside erosion, and monitoring temperature, water quality and fly life.

Project Status:	Current
Deliverer(s):	Tyne Rivers Trust
Timeframe:	Ongoing

C29 River Team improvements

Theme(s):	A: Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change. B: Improve people's understanding of rivers, catchments, weather extremes and climate change. Increase community participation in monitoring change and taking action to improve and protect water environments.
Goal(s):	A1: Reduce pollution to the water environment. A3: Reduce risk from or control flooding. B2: Improve access to river-based recreation to engage more people in river issues.
Sub-goal(s):	A1b: Reduce diffuse pollution to the water environment. A3a: Reduce risk from or control flooding from rivers.

A 15 year project to restore and enhance ecological value, landscape and green infrastructure, tackle the issues of industrial pollution, storm sewerage, misconnections, tidal and river flood risk on the River Team. A substantial expansion of the existing Lamesley Pastures project.

Project Status:	Current
Deliverer(s):	Gateshead Council, Environment Agency
Water Framework Directive link:	Invertebrates, ammonia and phosphate failures on the River Team
Green Infrastructure link:	Newcastle Gateshead Green Infrastructure Strategy

C30 Tackling urban diffuse pollution from industrial estates

Theme(s):	A: Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change. B: Improve people's understanding of rivers, catchments, weather extremes and climate change. Increase community participation in monitoring change and taking action to improve and protect water environments.
Goal(s):	A1: Reduce pollution to the water environment. B4: Raise awareness and demonstrate the economic benefits of improving water quality, tackling pollution, and planning for weather extremes and climate change.
Sub-goal(s):	A1b: Reduce diffuse pollution to the water environment.

Focusing on preventing pollution to the Ouseburn, Seaton Burn and River Don. Visiting industrial estates, creating an action plan for on-site improvements, training sessions to raise awareness of local catchment issues, follow up visits to see if improvements have been made and the opportunity for further education. Sustainable Drainage Systems where possible. Pollution prevention packs for new tenants.

Project Status:	Proposed (in progress - bidding for funding)
Deliverer(s):	Groundwork North East, Environment Agency
Timeframe:	2 years
Water Framework Directive link:	Fish, invertebrate and phosphate failures on the Ouseburn; invertebrate failures on the River Don

C31 Freshwater Pearl Mussel breeding programme

Theme(s):	A: Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change. B: Improve people's understanding of rivers, catchments, weather extremes and climate change. Increase community participation in monitoring change and taking action to improve and protect water environments.
Goal(s):	A2: Retain or restore biodiversity, taking account of weather extremes and climate change. B5: Carry out research and monitoring, and collect and make available relevant data.

Captive breeding programme to conserve and protect endangered Freshwater Pearl Mussels from a range of rivers in England (including the River Rede and North Tyne).

Project Status:	Current
Deliverer(s):	Freshwater Biological Association
Funding Source(s):	Environment Agency
Biodiversity Action Plan / species link:	Freshwater pearl mussel

C32 Cheviot Futures

Theme(s):	A: Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change. B: Improve people's understanding of rivers, catchments, weather extremes and climate change. Increase community participation in monitoring change and taking action to improve and protect water environments.
Goal(s):	A3: Reduce risk from or control flooding. B4: Raise awareness and demonstrate the economic benefits of improving water quality, tackling pollution, and planning for weather extremes and climate change.

Climate change adaptation and resilience project, currently focusing on natural flood management and wildfire management; to develop into livestock management, bracken control and management and forestry projects.

Project Status:	Current
Deliverer(s):	Tweed Forum, Northumberland National Park
Protected area link:	Northumberland National Park

C33 Flood Modelling

Theme(s):	A: Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change. B: Improve people's understanding of rivers, catchments, weather extremes and climate change. Increase community participation in monitoring change and taking action to improve and protect water environments.
Goal(s):	A3: Reduce risk from or control flooding. B5: Carry out research and monitoring, and collect and make available relevant data.

Rebuilding and using former hydrological models of the Tyne catchment; 2D surface water flood models capturing public information about urban flooding (including the June 2012 flood in Newcastle).

Project Status:	Current
Deliverer(s):	Newcastle University

C34 Community action on flooding

Theme(s):	A: Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change. B: Improve people's understanding of rivers, catchments, weather extremes and climate change. Increase community participation in monitoring change and taking action to improve and protect water environments.
Goal(s):	A3: Reduce risk from or control flooding. B1: Increase awareness of the impacts and risks of weather extremes and climate change.
Sub-goal(s):	A3a: Reduce risk from or control flooding from rivers. A3b: Reduce risk from or control surface water (runoff) floods.

Taking a partnership approach by engaging with communities that flood to resolve issues where possible, produce community flood plans and generally build community understanding of, and resilience to, flooding.

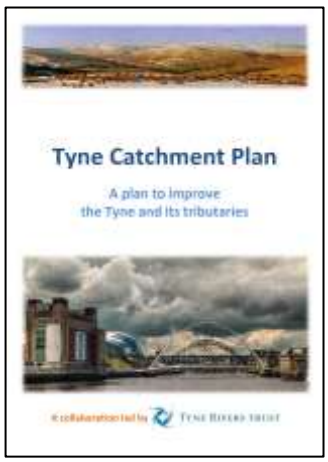
Project Status:	Current
Deliverer(s):	Northumberland Community Flood Partnership
Timeframe:	Currently funded to March 2013
Funding Source(s):	Environment Agency, Northumberland County Council

C35 Tyne Catchment Pilot

Theme(s):	A: Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change. B: Improve people's understanding of rivers, catchments, weather extremes and climate change. Increase community participation in monitoring change and taking action to improve and protect water environments.
Goal(s):	Covers all goals and sub-goals.

The project to produce this Catchment Plan and start delivering its projects and goals.

Project Status:	Current
Deliverer(s):	Tyne Rivers Trust
Timeframe:	Jan 2012 to April 2013
Funding Source(s):	Defra



C36 Green Infrastructure opportunity areas

Theme(s):	B: Improve people's understanding of rivers, catchments, weather extremes and climate change. Increase community participation in monitoring change and taking action to improve and protect water environments.
Goal(s):	B2: Improve access to river-based recreation to engage more people in river issues.

Sites identified in current green infrastructure plans, including Lamesley Pastures (flood storage and biodiversity site), Norwood Nature Park, Dunston Staiths and the Saltmarsh garden (lower Team valley), Metrogreen, Felling Shore, and the lower River Derwent in the Gateshead Council area.

Project Status:	Current
Deliverer(s):	Gateshead Council, Newcastle City Council
Green Infrastructure link:	Newcastle Gateshead Green Infrastructure Strategy

C37 National Park Rangers

Theme(s):	B: Improve people's understanding of rivers, catchments, weather extremes and climate change. Increase community participation in monitoring change and taking action to improve and protect water environments.
Goal(s):	B2: Improve access to river-based recreation to engage more people in river issues. B3: Engage widely to educate about river issues and encourage positive behavioural change.

Rangers working on the Rights of Way network, education and interpretation, and management of sites at Hareshaw Linn, Greenlee Lough, Cawfields Quarry and Thirlwall Castle.

Project Status:	Current
Deliverer(s):	Northumberland National Park Authority
Protected area link:	Northumberland National Park

C38 Local engagement on mining issues

Theme(s):	B: Improve people's understanding of rivers, catchments, weather extremes and climate change. Increase community participation in monitoring change and taking action to improve and protect water environments.
Goal(s):	B3: Engage widely to educate about river issues and encourage positive behavioural change.

Engaging with stakeholders on issues arising from abandoned mines in the uplands.

Project Status:	Current
Deliverer(s):	North Pennines AONB Partnership, Environment Agency

C39 Salmonid and diatom research

Theme(s):	B: Improve people's understanding of rivers, catchments, weather extremes and climate change. Increase community participation in monitoring change and taking action to improve and protect water environments.
Goal(s):	B5: Carry out research and monitoring, and collect and make available relevant data.
Sub-goal(s):	B5a: Better understand complex or poorly-understood issues.

Research into the effects of contaminants on fish and diatoms and better understanding of diatoms in sediments.

Project Status:	Current
Deliverer(s):	Newcastle University

C40 Water Framework Directive Investigations

Theme(s):	B: Improve people's understanding of rivers, catchments, weather extremes and climate change. Increase community participation in monitoring change and taking action to improve and protect water environments.
Goal(s):	B5: Carry out research and monitoring, and collect and make available relevant data.
Sub-goal(s):	B5a: Better understand complex or poorly-understood issues. B5b: Adopt evidence-based solutions and management techniques.

Investigating the reasons for failures under the Water Framework Directive where the certainty around current classification is low.

Project Status:	Current
Deliverer(s):	Environment Agency
Water Framework Directive link:	Investigations are triggered by WFD failures

C41 Impacts of abandoned mines on marine organisms

Theme(s):	B: Improve people's understanding of rivers, catchments, weather extremes and climate change. Increase community participation in monitoring change and taking action to improve and protect water environments.
Goal(s):	B5: Carry out research and monitoring, and collect and make available relevant data.
Sub-goal(s):	B5a: Better understand complex or poorly-understood issues. B5b: Adopt evidence-based solutions and management techniques.

Research into the impacts of metal-rich sediments on marine organisms in estuaries, and management techniques to prevent contaminated sediment movement.

Project Status:	Current
Deliverer(s):	Newcastle University
Additional benefits & considerations:	Will inform actions to reduce heavy metal contamination in the estuary

C42 Nenthead spoil stabilisation trials

Theme(s):	B: Improve people's understanding of rivers, catchments, weather extremes and climate change. Increase community participation in monitoring change and taking action to improve and protect water environments.
Goal(s):	B5: Carry out research and monitoring, and collect and make available relevant data.
Sub-goal(s):	B5a: Better understand complex or poorly-understood issues. B5b: Adopt evidence-based solutions and management techniques.

Research trial on stabilising lead mine spoil heaps at Nenthead.

Project Status:	Current
Deliverer(s):	North Pennines AONB Partnership, Tyne Rivers Trust
Timeframe:	2010 - 2020
Additional benefits & considerations:	Will inform actions to reduce heavy metal contamination in the estuary
Water Framework Directive link:	Zinc and cadmium failures on the South Tyne and West Allen

C43 Agricultural research at Nafferton Farm

Theme(s):	B: Improve people's understanding of rivers, catchments, weather extremes and climate change. Increase community participation in monitoring change and taking action to improve and protect water environments.
Goal(s):	B5: Carry out research and monitoring, and collect and make available relevant data.
Sub-goal(s):	B5a: Better understand complex or poorly-understood issues. B5b: Adopt evidence-based solutions and management techniques.

Research into techniques to reduce nitrate and phosphate sediment loss, development of Nafferton Farm as a test site for visits, research into techniques to ameliorate the impacts of water, sediments and nutrients after they have left the field.

Project Status:	Current
Deliverer(s):	Newcastle University
Water Framework Directive link:	Diffuse pollution failures caused or contributed to from the agricultural sector

C44 Diffuse Urban Pollution monitoring and remediation

Theme(s):	B: Improve people's understanding of rivers, catchments, weather extremes and climate change. Increase community participation in monitoring change and taking action to improve and protect water environments.
Goal(s):	B5: Carry out research and monitoring, and collect and make available relevant data.

Water quality and invertebrate sampling with general physical assessment of urban rivers including the Don, Team and Ouseburn.

Project Status:	Current
Deliverer(s):	Durham Wildlife Trust
Water Framework Directive link:	Fish, invertebrate and phosphate failures on the Ouseburn; invertebrate failures on the River Don; invertebrates, ammonia and phosphate failures on the River Team

C45 Monitoring

Theme(s):	B: Improve people's understanding of rivers, catchments, weather extremes and climate change. Increase community participation in monitoring change and taking action to improve and protect water environments.
Goal(s):	B5: Carry out research and monitoring, and collect and make available relevant data.

Temperature, invasive species and fisheries monitoring at key sites throughout the Tyne catchment.

Project Status:	Current
Deliverer(s):	Tyne Rivers Trust

C46 Wild Watch

Theme(s):	B: Improve people's understanding of rivers, catchments, weather extremes and climate change. Increase community participation in monitoring change and taking action to improve and protect water environments.
Goal(s):	B5: Carry out research and monitoring, and collect and make available relevant data.

Recording the public's sightings of wildlife, including invasive non-native species.

Project Status: Current

Deliverer(s): North Pennines AONB Partnership

C47 Monthly wetland birds surveys

Theme(s):	B: Improve people's understanding of rivers, catchments, weather extremes and climate change. Increase community participation in monitoring change and taking action to improve and protect water environments.
Goal(s):	B5: Carry out research and monitoring, and collect and make available relevant data.

Monthly surveys of wetland birds from the North Tyne, including inland coastal birds and waders.

Project Status: Current

Deliverer(s): Northumberland & Tyneside Bird Club, British Trust for Ornithology

Biodiversity Action Plan / species link: Protected birds

C48 Big Sea Survey

Theme(s):	B: Improve people's understanding of rivers, catchments, weather extremes and climate change. Increase community participation in monitoring change and taking action to improve and protect water environments.
Goal(s):	B5: Carry out research and monitoring, and collect and make available relevant data.

Collecting data on inshore species.

Project Status:	Current
Deliverer(s):	Dove Marine, Newcastle University

C49 ERIC North East

Theme(s):	B: Improve people's understanding of rivers, catchments, weather extremes and climate change. Increase community participation in monitoring change and taking action to improve and protect water environments.
Goal(s):	B5: Carry out research and monitoring, and collect and make available relevant data.

Working with wildlife groups, organisations and individuals to collate species and habitat data, which is used to inform nature conservation, development planning and academic research.

Project Status:	Current
Deliverer(s):	Environmental Records Information Centre

C50 Bird population data

Theme(s):	B: Improve people's understanding of rivers, catchments, weather extremes and climate change. Increase community participation in monitoring change and taking action to improve and protect water environments.
Goal(s):	B5: Carry out research and monitoring, and collect and make available relevant data.

Collecting and collating data on breeding seasons and winter visiting birds, including a range of species-specific historical data. Production of annual report 'Birds in Northumbria'.

Project Status:	Current
Deliverer(s):	Northumberland & Tyneside Bird Club, British Trust for Ornithology
Biodiversity Action Plan / species link:	Protected birds

C51 Wildlife Surveys

Theme(s):	B: Improve people's understanding of rivers, catchments, weather extremes and climate change. Increase community participation in monitoring change and taking action to improve and protect water environments.
Goal(s):	B5: Carry out research and monitoring, and collect and make available relevant data.

Surveying local wildlife sites for flora, pearl mussels, white-clawed crayfish, otter and other protected species.

Project Status:	Current
Deliverer(s):	Northumberland Wildlife Trust
Timeframe:	Ongoing (current project)
Biodiversity Action Plan / species link:	Protected flora, freshwater pearl mussels, otter, white-clawed crayfish and others
Protected area link:	Local wildlife sites

Appendix 2 Proposed Projects

P1 Monitoring the impacts of Combined Sewer Overflows

Theme(s):	A: Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change.
Goal(s):	A1: Reduce pollution to the water environment.
Sub-goal(s):	A1a: Reduce point-source pollution to the water environment.

In theory, Combined Sewer Overflows (CSOs) are triggered during high river flows which dilutes discharges, however this is not always true in local areas. In the majority of cases there is some form of deterioration in river health, and in some cases an ecological and aesthetic 'dead zone' around overflows. The project would identify problem sites and monitor for impacts (eg. through riverfly surveys), and encourage reporting of incidents to the Environment Agency. With evidence in place, pressure can then be brought to improve problem sites.

A known site is the North bank of the South Tyne at Haydon Bridge where the CSO releases after heavy rain on the Whin Sill when there is often insufficient flow in the river which rises in the North Pennines. Similar problems occur with the CSO at Corbridge.

Project Status:	Proposed
Potential Deliverer(s):	River Watch community groups, other community-based environmental groups like Groundwork, research projects for undergraduate/Masters students, Northumbrian Water for changes to sewer network
Estimated Timeframe:	5 to 10 years
Estimated Project Cost:	£5,000 to £25,000
Potential Funding Source(s):	Northumbrian Water, Environment Agency, angling groups, charitable trusts where ecosystem or community damage proven

P2 Remediate the former St Anthony's Tar Works site

Theme(s):	A: Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change.
Goal(s):	A1: Reduce pollution to the water environment.
Sub-goal(s):	A1a: Reduce point-source pollution to the water environment.

Remediation of the former St Anthony's Tar Works at Walker riverside, Newcastle. The site currently causes serious water pollution to the Tyne Estuary through the leaching of coal tar hydrocarbons into the river and creates an unpleasant environment for riverside path users. Remediation of the site would be through an impermeable barrier with groundwater drainage. Site is a determined 'contaminated land' site on the basis of significant possibility of harm to human health and serious water pollution. Project has a fully designed remediation scheme and planning approval.

Project Status:	Proposed
Potential Deliverer(s):	Newcastle City Council
Estimated Timeframe:	1 to 5 years
Estimated Project Cost:	more than £500,000
Potential Funding Source(s):	Defra/Environment Agency contaminated land capital projects fund

P3 Friars Goose chemical works investigation

Theme(s):	A: Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change.
Goal(s):	A1: Reduce pollution to the water environment.
Sub-goal(s):	A1a: Reduce point-source pollution to the water environment.

Check compliance data and, if appropriate, investigate the impacts of the outfall from the abandoned chemical works next to the Friars Goose slipway and identify appropriate remedial action

Project Status:	Proposed
Potential Deliverer(s):	Environment Agency, local authority contaminated land experts
Estimated Timeframe:	1 to 5 years
Estimated Project Cost:	£1,000 to £5,000
Potential Funding Source(s):	Statutory requirement of appropriate responsible body

P4 River Don and tributaries water quality and flood risk improvements

Theme(s):	A: Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change.
Goal(s):	A1: Reduce pollution to the water environment.
Sub-goal(s):	A1a: Reduce point-source pollution to the water environment. A1b: Reduce diffuse pollution to the water environment.

Identify integrated measures to improve the water quality and reduce flood risk along the River Don and its tributaries, especially where the river is influenced by historical land uses. Improvements to the river and immediate areas may be required to make required improvements in water quality. Associated benefits would be habitat creation.

Project Status:	Proposed
Potential Deliverer(s):	Environment Agency, South Tyneside Council, Gateshead Council, Northumbrian Water, community groups
Estimated Project Cost:	£50,000 to £100,000
Potential Funding Source(s):	Defra / Environment Agency / Natural England (Water Framework Directive funding), Northumbrian Water National Environment Programme for sewerage infrastructure
Additional benefits & considerations:	South Tyneside Council has a River Don Management Plan; Gateshead Council is investigating the potential for floodplain connectivity improvements linked with the potential expansion of Follingsby Park industrial estate
Water Framework Directive link:	The River Don fails for invertebrates

P5 Tackling minewater pollution

Theme(s):	A: Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change.
Goal(s):	A1: Reduce pollution to the water environment.
Sub-goal(s):	A1a: Reduce point-source pollution to the water environment. A1b: Reduce diffuse pollution to the water environment.

Remediation of point and diffuse sources of minewater pollution to improve water quality and protection of heritage features in the West Allen (Carr Shield) and Nent. Environment Agency and the Coal Authority working in partnership to target, develop and deliver minewater remediation; AONB Partnership is involved with stakeholder engagement.

Project Status:	Proposed extension to current project
Potential Deliverer(s):	Environment Agency, Coal Authority, AONB Partnership
Estimated Timeframe:	5 to 10 years
Estimated Project Cost:	more than £500,000
Potential Funding Source(s):	Funded until 2015 (through the Environment Agency) with potential funding beyond this from Water Framework Directive sources
Additional benefits & considerations:	Would help to tackle the issue of contaminated sediments in the Tyne estuary; protection of heritage site
Water Framework Directive link:	Zinc and cadmium failures on the South Tyne and West Allen

P6 Tackling pollution

Theme(s):	A: Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change.
Goal(s):	A1: Reduce pollution to the water environment.
Sub-goal(s):	A1a: Reduce point-source pollution to the water environment. A1b: Reduce diffuse pollution to the water environment. A1c: Clean-up pollution in or affecting the water environment.

Tackle the 3 main sources of river pollution in the Tyne system: metal-contaminated sediments (in the South Tyne and East and West Allen), nutrient-contaminated sediments (diverse agriculture/forestry sources), and urban contaminated sediments (road sources). Two main tools make this project achievable - identification of 'hot-spot' sources eg. from remote sensing and walkovers, and source control techniques like buffers, bunding, Sustainable Drainage Systems and ponding. The project should also include a 'silt campaign', raising awareness of the impacts of poor riverside management practices on in-river health and ecosystems.

This is an 'umbrella' project for the many sub-projects that would be needed to tackle the varied and numerous pollution sources in the Tyne catchment.

Project Status:	Proposed
Potential Deliverer(s):	Rivers trusts experienced in this sort of work. Catchment Sensitive Farming (if it can be applied to the Tyne catchment). Landowner and farm management organisations and campaigns. Essential co-ordination with Natural England, Forestry Commission and Highways funders. Northumbrian Water for sewerage network. Community groups and recreational users.
Estimated Timeframe:	More than 10 years
Estimated Project Cost:	£50,000 to £100,000
Potential Funding Source(s):	Mostly public sources which, for the foreseeable future, will be driven by Water Framework Directive compliance; for metals there may be financial advantages to working with the Coal Authority/Environment Agency; Northumbrian Water National Environment Programme for sewerage infrastructure
Additional benefits & considerations:	Would help to tackle the issue of contaminated sediments in the Tyne estuary
Water Framework Directive link:	Zinc and cadmium failures on the South Tyne and East and West Allen; failures linked to diffuse pollution throughout the catchment

P7 Address flooding and sewage contamination on the lower Ouseburn

Theme(s):	A: Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change.
Goal(s):	A1: Reduce pollution to the water environment.
Sub-goal(s):	A1b: Reduce diffuse pollution to the water environment.

Develop an integrated scheme to prevent stormwater runoff from Heaton and Armstrong Parks entering the sewer under Ouseburn Road and causing back-up through road gullies and on to allotments. Control water flow across allotments. Increase capacity on Ouseburn and install measures to slow runoff in its catchment to reduce incidences of flooding.

Project Status:	Proposed
Potential Deliverer(s):	Newcastle City Council, Environment Agency, Northumbrian Water, Highways Authority, developers
Estimated Timeframe:	1 to 5 years
Estimated Project Cost:	£50,000 to £100,000
Potential Funding Source(s):	Highways budget, Environment Agency flood management, Northumbrian Water National Environment Programme for sewerage infrastructure, Local Infrastructure Plan, community volunteers for labour
Additional benefits & considerations:	Would reduce the risk to human health from raw sewage; link with the Tyneside Sustainable Sewerage Strategy
Water Framework Directive link:	Fish, invertebrate and phosphate failures on the Ouseburn

P8 Bankside willow planting

Theme(s):	A: Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change.
Goal(s):	A2: Retain or restore biodiversity, taking account of weather extremes and climate change.
Sub-goal(s):	A2d: Create better, and improve existing, in-river and riverside habitat.

Willow planting and ongoing maintenance to reduce bankside erosion. There is scope for further extension of this work at many sites throughout the Tyne system, which will improve the appearance of the riverbank as well as protecting it from erosion.

Project Status:	Proposed extension to current project
Potential Deliverer(s):	Tyne Rivers Trust, community volunteers
Additional benefits & considerations:	Work should include consideration of access for recreation

P9 Media campaign - wrong connections

Theme(s):	A: Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change.
Goal(s):	A1: Reduce pollution to the water environment.
Sub-goal(s):	A1b: Reduce diffuse pollution to the water environment.

A city-wide campaign through press/radio/TV to highlight and correct the issues of wrong connections across the drainage area. Focusing on the Ouseburn initially as this is known to be a problem area. Project should include a survey of the drainage area to identify wrong connections, though this would add significantly to the cost.

Project Status:	Proposed
Potential Deliverer(s):	Environment Agency, local authorities, Northumbrian Water, community groups, Friends of Jesmond Dene, Tyne Rivers Trust, trade associations, DIY companies
Estimated Timeframe:	1 to 5 years
Estimated Project Cost:	£50,000 to £100,000
Potential Funding Source(s):	Catchment Restoration Fund (Environment Agency), Northumbrian Water National Environment Programme for sewerage infrastructure
Water Framework Directive link:	Fish, invertebrate and phosphate failures on the Ouseburn

P10 Waterways for Wildlife

Theme(s):	A: Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change.
Goal(s):	A1: Reduce pollution to the water environment. A2: Retain or restore biodiversity, taking account of weather extremes and climate change.
Sub-goal(s):	A1a: Reduce point-source pollution to the water environment. A1b: Reduce diffuse pollution to the water environment. A2d: Create better, and improve existing, in-river and riverside habitat.

Extend the 'Waterways for Wildlife' project within the proposed Allen Valleys Heritage Assets scheme to improve the quality of East and West Allen rivers by enhancing in-stream and riparian habitat, including measures to tackle point and diffuse source pollution from metal mines.

Project Status:	Proposed extension to existing Heritage Lottery Fund bid
Potential Deliverer(s):	AONB Partnership, Tyne Rivers Trust
Estimated Timeframe:	1 to 5 years
Estimated Project Cost:	£25,000 to £50,000
Potential Funding Source(s):	Heritage Lottery Funding
Additional benefits & considerations:	Would help to tackle the issue of contaminated sediments in the Tyne estuary; work should include consideration of access for recreation
Water Framework Directive link:	Zinc and cadmium failures on the East and West Allen

P11 Rural climate change adaptation

Theme(s):	A: Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change.
Goal(s):	A1: Reduce pollution to the water environment. A2: Retain or restore biodiversity, taking account of weather extremes and climate change.
Sub-goal(s):	A1b: Reduce diffuse pollution to the water environment. A2e: Engage with landowners and managers to promote habitat and biodiversity improvements, catchment-sensitive land management, and resilience to weather extremes and climate change. A2f: Use research and demonstration sites to illustrate best practice.

Use talks, demonstration sites and farm walks to engage farmers and landowners in best practice, habitat management and climate change adaptation based on the work of the Cheviot Futures project. Ideally to be delivered through Catchment Sensitive Farming, though the Tyne is not currently a CSF target area.

Project Status:	Proposed
Potential Deliverer(s):	All organisations currently providing farm advice - Natural England, Environment Agency, RSPB, Tyne Rivers Trust
Estimated Timeframe:	1 to 5 years
Estimated Project Cost:	£50,000 to £100,000
Potential Funding Source(s):	Environment Agency Catchment Restoration Fund, Newcastle Uni (link to Nafferton Farm), Natural England WFD funding, Catchment Sensitive Farming initiative
Water Framework Directive link:	Failures linked to diffuse pollution from agriculture throughout the catchment

P12 Urban Green Infrastructure Programme

Theme(s):	A: Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change.
Goal(s):	A1: Reduce pollution to the water environment. A2: Retain or restore biodiversity, taking account of weather extremes and climate change. A3: Reduce risk from or control flooding.
Sub-goal(s):	A1a: Reduce point-source pollution to the water environment. A2c: Create new woodlands and better manage existing woodlands along watercourses and in the wider catchment where it will benefit rivers. A2d: Create better, and improve existing, in-river and riverside habitat. A3a: Reduce risk from or control flooding from rivers. A3b: Reduce risk or control flooding from surface water (runoff) floods.

Identify Green Infrastructure measures that could be retrofitted to improve riparian habitats, or reduce urban pollution from roads/business etc. The project would focus on the urban fringes of Newcastle and Gateshead, from Woolsington through to Throckley, Ryton, Blaydon, Sunniside and Birtley, or it could focus on a specific Tyne tributary or river corridor. The project would:

- take a broad approach across land ownership in urban areas/urban fringe to facilitate land to provide additional 'functions' such as water retention/wetland and retrofitted SuDS where possible
- identify primarily local authority land but also other opportunities, look at current land cover and management adjacent to riparian zones, with opportunities identified to control diffuse pollution entering watercourses in the form of larger scale wetland creation/improvements (including some Sustainable Drainage System measures), wet woodland and biodiversity.

Project Status:	Proposed
Potential Deliverer(s):	Groundwork North East, Groundwork STAN, local authorities, Northumberland Wildlife Trust, Durham Wildlife Trust, Northumbrian Water
Estimated Timeframe:	1 to 5 years
Estimated Project Cost:	£50,000 to £100,000
Potential Funding Source(s):	Natural England, Forestry Commission, Woodland Trust, Northumbrian Water (Branch Out fund), landfill tax trusts
Water Framework Directive link:	Failures linked to diffuse pollution sources on urban fringe tributaries
Biodiversity Action Plan / species link:	Creation of habitat
Green Infrastructure link:	Would contribute to priorities in relevant local authority Green Infrastructure Strategies

P13 Storm overflow assessment and mitigation in woodlands

Theme(s):	A: Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change.
Goal(s):	A1: Reduce pollution to the water environment. A3: Reduce risk from or control flooding.
Sub-goal(s):	A1b: Reduce diffuse pollution to the water environment. A3b: Reduce risk from or control surface water (runoff) floods.

Determine the impact and possible mitigation of stormwater overflow in woodlands, starting with Chopwell Woods and the woodlands around Prudhoe. Identify point and diffuse sources of sediment (from footpaths, bank erosion, sewage overflow etc.) and determine what could be done to address these issues, in conjunction with concerned and engaged community groups and taking account of guidence from the Forestry Commission.

Project Status:	Proposed
Potential Deliverer(s):	The Friends of Prudhoe Woods, Prudhoe Pathforce and Prudhoe Groundforce (at Prudhoe) and Friends of Chopwell Woods (at Chopwell) could act as local sources of knowledge and possible manpower to deliver the project. Potential MSc projects. Could also be delivered using expertise from wildlife trusts, Environment Agency, Forestry Commission, local authorities, Groundwork NE and Tyne Rivers Trust. Northumbrian Water link to sewerage infrastructure.
Estimated Timeframe:	1 to 5 years
Estimated Project Cost:	£1,000 to £5,000
Potential Funding Source(s):	Northumbrian Water National Environment Programme for sewerage infrastructure
Green Infrastructure link:	Work should include consideration of access for recreation.

P14 Catchment invasive species co-ordinator

Theme(s):	A: Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change.
Goal(s):	A2: Retain or restore biodiversity, taking account of weather extremes and climate change.
Sub-goal(s):	A2b: Remove or manage problem non-native species, and prevent the introduction of new invasive species where possible.

The Tyne could be the first large catchment to comprehensively tackle the issue of invasive plants. Appoint a full time co-ordinator to:

- link up action taken by landowners, volunteers and councils to create a co-ordinated targeted effort (with an initial focus on depletion of seed banks for plant invasives from upstream to downstream)
- raise awareness about the problems caused by invasive species and educate about biosecurity to prevent the introduction of new invasive species
- inspire more people (recreational river users, volunteers, parish councils and land managers) to become involved in mapping and removal
- provide advice (including for accessing steep banks, boggy areas, islands and standing in-stream)
- map the scale of the problem and
- report on success and further work needed.

The project would need commitment for a minimum of 5 years to see substantial change, but could be limited to the summer growing season each year.

Project Status:	Proposed
Potential Deliverer(s):	The co-ordinator could be 'hosted' by any number of local environmental organisations
Estimated Timeframe:	1 to 5 years
Estimated Project Cost:	£100,000 to £250,000
Potential Funding Source(s):	Nature conservation trusts & sponsors, Environment Agency Catchment Restoration Fund, Defra, local authorities

P15 Mink monitoring and control

Theme(s):	A: Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change.
Goal(s):	A2: Retain or restore biodiversity, taking account of weather extremes and climate change.
Sub-goal(s):	A2b: Remove or manage problem non-native species, and prevent the introduction of new invasive species where possible.

Co-ordination of mink monitoring work across (and beyond) the Tyne catchment , dissemination of monitoring information to interested parties and follow-up mink control in sensitive areas. The North Pennines AONB Partnership is particularly interested in protecting the important water vole populations in the North Pennines (particularly the South Tyne, East and West Allen and Derwent) and allowing the re-colonisation of the lower parts of these sub-catchments, however most of the control needed would have to be undertaken outside of the AONB boundary. Monitoring of water voles in response to control and other factors would also be a key element of the project. The main expenditure would be a co-ordinator post with associated travel, office and other costs, and some budget for mink rafts, traps and training events. One of the aims of the project would be to secure long-term monitoring and control of mink through the landowning/gamekeeping community.

Project Status:	Proposed
Potential Deliverer(s):	Game & Wildlife Conservation Trust, Tyne Rivers Trust, Northern Gamekeepers Association, Country Land & Business Association, National Farmers Union, Environment Agency, Northumberland Wildlife Trust, AONB, Northumberland National Park
Estimated Timeframe:	1 to 5 years
Estimated Project Cost:	£100,000 to £250,000
Protected area link:	North Pennines Area of Outstanding Natural Beauty

P16 Woodland business awareness

Theme(s):	A: Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change.
Goal(s):	A2: Retain or restore biodiversity, taking account of weather extremes and climate change.
Sub-goal(s):	A2c: Create new woodlands and better manage existing woodlands along watercourses and in the wider catchment where it will benefit rivers.

Raise general awareness amongst landowners/managers about the potential for woodland as a commercial business option and a way of adapting for climate change impacts as well as a means of protecting rivers. Could be developed into a bigger project to provide targeted advice to interested landowners, though this would significantly increase project costs and delivery timeframe.

Project Status:	Proposed
Potential Deliverer(s):	Forestry Commission, Woodland Trust, Natural England (in protected areas), National Park, Environment Agency, AONB
Estimated Timeframe:	Less than 1 year
Estimated Project Cost:	£5,000 to £25,000
Potential Funding Source(s):	Woodland Trust, Forestry Commission, Northwoods, Natural England, Environment Agency
Additional benefits & considerations:	Link to Government reponse to the Independent Panel Report on Foresry (due early 2013)

P17 Woodlands for Water - woodland creation, management and best practice guidance

Theme(s):	A: Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change.
Goal(s):	A2: Retain or restore biodiversity, taking account of weather extremes and climate change.
Sub-goal(s):	A2c: Create new woodlands and better manage existing woodlands along watercourses and in the wider catchment where it will benefit rivers.

Following on from current mapping work (due to be completed early 2013), continue to encourage appropriate, biodiverse and productive woodlands in the Tyne catchment through working with local communities and forest owners. Promote the Forest & Water Guidelines to ensure best practice is followed in riparian woodland management and in the catchment as a whole. Targeted woodland creation and management to address Water Framework Directive and flooding issues.

Project Status:	Proposed extension to current project
Potential Deliverer(s):	Forestry Commission, local communities, NGOs
Estimated Timeframe:	1 to 5 years
Estimated Project Cost:	£50,000 to £100,000
Potential Funding Source(s):	Forestry Commission, Environment Agency, Natural England (WFD funding)
Additional benefits & considerations:	Carbon off-setting
Water Framework Directive link:	Sediment, fish and water temperature failures in forested waterbodies
Biodiversity Action Plan / species link:	Otters, freshwater pearl mussel, woodland bird index
Protected area link:	Northumberland National Park and North Pennines Area of Outstanding Natural Beauty
Green Infrastructure link:	Can act as access routes

P18 Freshwater biodiversity: what's next after salmon?

Theme(s):	A: Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change.
Goal(s):	A2: Retain or restore biodiversity, taking account of weather extremes and climate change.
Sub-goal(s):	A2d: Create better, and improve existing, in-river and riverside habitat.

Habitat improvements for freshwater pearl mussel, water vole, Calaminarian grasslands and European eel with a focus on river physical habitat quality and delivering habitat specifications and remedial tools. The project would start with the assessment of sub-catchment specific solutions and feasibility studies.

Project Status:	Proposed
Potential Deliverer(s):	Northumberland Wildlife Trust (expertise in Calaminarian grasslands), Natural England and National Park (pearl mussels), Forestry Commission (water voles), Tyne Rivers Trust (eels), AONB (surveys in South Tyne tributaries), Border Uplands Group
Estimated Timeframe:	5 to 10 years
Estimated Project Cost:	£250,000 to £500,000
Potential Funding Source(s):	Environment Agency, charitable trusts, Natural England through CAP stewardship
Biodiversity Action Plan / species link:	Freshwater pearl mussel, water vole, European eel, protected habitats
Protected area link:	Calaminarian Grassland SSSIs

P19 Humshaugh Burn fish migration and spawning improvements

Theme(s):	A: Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change.
Goal(s):	A2: Retain or restore biodiversity, taking account of weather extremes and climate change.
Sub-goal(s):	A2d: Create better, and improve existing, in-river and riverside habitat.

Assess the Humshaugh Burn for improvements needed to improve sea trout migration and spawning.

Project Status:	Proposed
Potential Deliverer(s):	Landowners (already engaged), Tyne Rivers Trust

P20 Opening up culverted watercourses

Theme(s):	A: Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change.
Goal(s):	A2: Retain or restore biodiversity, taking account of weather extremes and climate change. A3: Reduce risk from or control flooding.
Sub-goal(s):	A2d: Create better, and improve existing, in-river and riverside habitat. A3a: Reduce risk from or control flooding from rivers.

Review culverted watercourses and assess potential for removal to reduce flood risk and create habitat corridors for wildlife across the Tyne's urban areas, taking a united approach to techniques and contractors to save money. Assessment already carried out by Newcastle City Council: culverted watercourses at Craghall Dene and Newlands Avenue should be opened as per feasibility study. Investigate further culvert and underpass removal on the Ouseburn, Lower Team, Blaydon Burn, Wallsend Burn and tributaries of the River Don to reduce flood risk and create habitat corridors for wildlife.

Project Status:	Proposed
Potential Deliverer(s):	Newcastle City Council, Gateshead Council, North Tyneside Council, South Tyneside Council, Environment Agency
Additional benefits & considerations:	Link to relevant flood assessments (eg. the Team Valley Integrated Flood Risk Study); link to Tyneside Sustainable Sewerage Study; link to South Tyneside Council/Environment Agency/Northumbrian Water study in Monkton Village Area
Green Infrastructure link:	Several sites are within the Strategic GI Network in the NewcastleGateshead Green Infrastructure Strategy.

P21 Assess and improve fish passage throughout the Tyne

Theme(s):	A: Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change.
Goal(s):	A2: Retain or restore biodiversity, taking account of weather extremes and climate change. A4: Optimise the fishery resource of the Tyne.
Sub-goal(s):	A2d: Create better, and improve existing, in-river and riverside habitat. A4b: Remove or adapt obstructions to permit up- and down-stream fish migration.

Ensure effective migration routes for the full range of Tyne fish species, with associated physical habitat improvements and monitoring of performance/outcomes. Of immediate concern are the fish pass on the Devil's Water at Dilston, Hexham Bridge, and the weir at Whitfield (West Allen). Also clearing obstructions from spawning burns in the valley at Dilston. The removal of obstacles on the Bradley and Chinley Burns would allow migratory fish to access Crag Lough and create a wild fishery.

Project Status:	Proposed
Potential Deliverer(s):	Tyne Rivers Trust with contractors and volunteers , National Trust (at Crag Lough)
Estimated Timeframe:	1 to 5 years
Estimated Project Cost:	£50,000 to £100,000
Potential Funding Source(s):	Environment Agency, Tyne & Wear Integrated Transport Authority, owners/developers of river structures
Additional benefits & considerations:	Work should include consideration of access for recreation
Water Framework Directive link:	Multiple waterbodies fail for fish throughout the catchment

P22 Peat and People

Theme(s):	A: Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change.
Goal(s):	A2: Retain or restore biodiversity, taking account of weather extremes and climate change. A5: Mitigate for the future impacts of climate change and future-proof relevant projects.

Blanket peat has been damaged in the past through inappropriate drainage and overgrazing and although much of this damage is being repaired through Environmental Stewardship and the North Pennines AONB Partnership's Peatland Programme, there are some areas of eroded peat in the Allen Valleys which are seriously affected by increased rainfall and which are particularly vulnerable. Restoring these eroded peat areas would safeguard the habitats, provide improved wetland sites (in accordance with Wetland Vision, a joint vision for new wetlands for England) and stop the peat itself from oxidising and contributing to climate change.

This proposal has been submitted as part of the Allen Valleys Landscape Partnership bid for HLF funding.

Project Status:	Proposed extension to current project
Potential Deliverer(s):	North Pennines AONB Partnership
Estimated Timeframe:	1 to 5 years
Estimated Project Cost:	£100,000 to £250,000
Potential Funding Source(s):	HLF Landscape Partnerships
Additional benefits & considerations:	Carbon storage; work should include consideration of access for recreation

P23 Flood control and protection at Blanchland

Theme(s):	A: Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change.
Goal(s):	A3: Reduce risk from or control flooding.
Sub-goal(s):	A3a: Reduce risk from or control flooding from rivers.

Flood control measures at Blanchland, to include floodgates on houses, upstream leaky dams and strategic woodland planting. This is a long-term ambition with no funding attached to it yet, but the Environment Agency has funded the AONB Partnership to provide flood gates on houses in the Wear catchment.

Project Status:	Proposed
Potential Deliverer(s):	AONB Partnership, Tyne Rivers Trust, Environment Agency
Estimated Project Cost:	£50,000 to £100,000
Potential Funding Source(s):	NGOs, Environment Agency
Additional benefits & considerations:	Link to Northumbrian Water integrated drainage network

P24 Flood storage solutions for former gravel extraction sites

Theme(s):	A: Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change.
Goal(s):	A3: Reduce risk from or control flooding.
Sub-goal(s):	A3a: Reduce risk from or control flooding from rivers.

There are many places on the Tyne (for example Corbridge) where properties are at risk from flooding because the channel is no longer dredged of gravel and natural islands have built up. Gravel removal moves the problem further downstream - better long-term solutions such as upstream storage need to be found. An assessment for potential flood storage sites should be the first action.

Project Status:	Proposed
Potential Deliverer(s):	Environment Agency flooding function
Estimated Timeframe:	Less than 1 year
Potential Funding Source(s):	Environment Agency

P25 Langley Burn flood alleviation

Theme(s):	A: Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change.
Goal(s):	A3: Reduce risk from or control flooding.
Sub-goal(s):	A3a: Reduce risk from or control flooding from rivers.

Assess the potential for flood alleviation by damming Langley Burn under the bypass flyover where there is a natural basin. It would be easy to dam and the resultant boggy area would benefit wildlife. The benefit to residences downstream (eg. Temple Houses) would be to reduce the flood risk, which at present is quite high and silt build-up would be reduced.

Project Status:	Proposed
Potential Deliverer(s):	Environment Agency for assessment. Actual work by contractors recommended by Tyne Rivers Trust, local community volunteers
Estimated Timeframe:	Less than 1 year
Estimated Project Cost:	£5,000 to £25,000
Potential Funding Source(s):	Environment Agency through flood group? Forestry Commission derelict walls? Shaftoe Trust?

P26 Slow the Flow

Theme(s):	A: Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change.
Goal(s):	A3: Reduce risk from or control flooding.
Sub-goal(s):	A3a: Reduce risk from or control flooding from rivers.

Assess the potential to extend the Forestry Commission's 'Slow the Flow' flood alleviation project (trialled near Pickering) to suitable woodlands in the Tyne catchment as part of the current Woodlands for Water mapping exercise.

Project Status:	Proposed extension to current project
Potential Deliverer(s):	Forestry Commission
Estimated Timeframe:	Less than 1 year
Estimated Project Cost:	£1,000 to £5,000
Potential Funding Source(s):	Forestry Commission, Woodland Trust (for non-FC owned woodlands)
Additional benefits & considerations:	Biodiversity, carbon off-setting and recreational value of new woodland; reduces the need for hard engineering downstream (less physical modification)
Protected area link:	Some areas within Northumberland National Park and North Pennines Area of Outstanding Natural Beauty
Green Infrastructure link:	Opportunity for access routes

P27 Capturing local knowledge to improve flood modelling

Theme(s):	A: Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change.
Goal(s):	A3: Reduce risk from or control flooding.
Sub-goal(s):	A3a: Reduce risk from or control flooding from rivers. A3b: Reduce risk from or control surface water (runoff) floods.

The scale of origin and impacts of runoff floods is often local and stakeholders quickly identify the 'mini' or 'micro' catchments responsible. This knowledge should be captured and compared with existing runoff models to identify opportunities for natural flood control (including Sustainable Drainage Systems). Clarification is needed on how flood levy funding can be accessed for delivery of physical works.

Project Status:	Proposed
Potential Deliverer(s):	Tyne Rivers Trust, Newcastle University (NiRES), Parish Councils
Estimated Timeframe:	1 to 5 years
Estimated Project Cost:	£250,000 to £500,000
Potential Funding Source(s):	Environment Agency flood levy, Defra/Environment Agency Catchment Restoration Fund, Highways maintenance budget

P28 Community flood resilience workshops

Theme(s):	A: Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change.
Goal(s):	A3: Reduce risk from or control flooding.
Sub-goal(s):	A3a: Reduce risk from or control flooding from rivers. A3b: Reduce risk from or control surface water (runoff) floods.

Most homes are at some risk from flooding, but this project will focus on those with significantly greater risk due to their proximity to rivers or reservoirs. Communities will be identified through the Environment Agency's flood map and targeting those in the 'high risk' category.

This project will run a series of Flood Resilience workshops within each community. Participants will be given advice about clearing drains, flood-proofing supplies to have in the home, installing non-returnable valves, temporary airbrick and vent covers, barriers, wet-proofing, dry-proofing, where to put plug sockets and wiring, protecting belongings and establishing a flood event drill.

Project Status:	Proposed
Potential Deliverer(s):	Groundwork North East, Environment Agency
Estimated Timeframe:	Less than 1 year
Estimated Project Cost:	£25,000 to £50,000
Potential Funding Source(s):	Environment Agency, Groundwork North East, Local Authorities

P29 Ouseburn drainage infrastructure

Theme(s):	A: Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change.
Goal(s):	A3: Reduce risk from or control flooding.
Sub-goal(s):	A3b: Reduce risk from or control surface water (runoff) floods.

Investigate and assess the need for greater investment in infrastructure (drainage and sewage) to the North and West of Newcastle within the Ouseburn catchment, particularly the separation of flood water and sewage. To assess the impact that 'natural' Sustainable Drainage Systems might make to flood mitigation and avoidance. The research brief should be non-determinate and free from vested interest. Future proposed housing will also have an impact on the water levels through South Gosforth, Jesmond Vale etc. which will have implications on wildlife.

Project Status:	Proposed
Potential Deliverer(s):	Northumbrian Water, local authorities, universities for research
Estimated Timeframe:	Less than 1 year
Estimated Project Cost:	£50,000 to £100,000
Potential Funding Source(s):	Northumbrian Water National Environment Programme (for sewerage infrastructure), developer contributions
Additional benefits & considerations:	Link to Tyneside Sustainable Sewerage Study
Water Framework Directive link:	Fish, invertebrate and phosphate failures on the Ouseburn

P30 Ouseburn tree planting

Theme(s):	A: Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change.
Goal(s):	A3: Reduce risk from or control flooding.
Sub-goal(s):	A3b: Reduce risk from or control surface water (runoff) floods.

Tree planting (including potentially fruit trees) along the upper Ouseburn to soak up excess rainfall and reduce flood risk. Could also be linked to skills improvement opportunities.

Project Status:	Proposed
Potential Deliverer(s):	Woodland Trust, Save Gosforth Wildlife, local community volunteers
Estimated Timeframe:	1 to 5 years
Estimated Project Cost:	£5,000 to £25,000
Potential Funding Source(s):	Big Lottery Fund: Reaching Communities fund, Woodland Grant scheme
Additional benefits & considerations:	Woodland creation; work should include consideration of access for recreation

P31 Ovingham flood risk assessment

Theme(s):	A: Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change.
Goal(s):	A3: Reduce risk from or control flooding.
Sub-goal(s):	A3b: Reduce risk from or control surface water (runoff) floods.

Assess drainage and run-off impacts in Ovingham related to heavy rainfall events and identify appropriate solutions. [It is acknowledged that similar assessments are needed in a number of places throughout the Tyne catchment - this one was raised by Ovingham Parish Council]

Project Status:	Proposed
Potential Deliverer(s):	Tyne Rivers Trust, Ovingham Parish Council, Northumberland County Council, Northumbrian Water, Environment Agency
Estimated Timeframe:	Less than 1 year
Estimated Project Cost:	£1,000 to £5,000
Potential Funding Source(s):	Tyne Rivers Trust, Ovingham Parish Council, Environment Agency, Defra, Northumberland County Council

P32 Prudhoe drainage/runoff assessment

Theme(s):	A: Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change.
Goal(s):	A3: Reduce risk from or control flooding.
Sub-goal(s):	A3b: Reduce risk from or control surface water (runoff) floods.

Assess the status of drainage systems from Prudhoe and the impacts of new developments in the town on future flood risk. Prudhoe has witnessed periodic flash floods in recent years. There is a perception among the public that this is due to insufficient capacity of existing drains; there is also concern that future developments in the town will lead to increased problems with flooding. The outcome would be public education on the project and outcomes and a plan for integrated water management approach for the town.

Project Status:	Proposed
Potential Deliverer(s):	Newcastle University, Northumbrian Water, private consultants, Tyne Rivers Trust for public engagement, Prudhoe Community Partnership
Estimated Timeframe:	Less than 1 year
Estimated Project Cost:	£5,000 to £25,000
Potential Funding Source(s):	Northumbrian Water, developers

P33 Derwent Reservoir releases

Theme(s):	A: Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change.
Goal(s):	A4: Optimise the fishery resource of the Tyne.
Sub-goal(s):	A4a: Ensure suitable environmental flows below structures affecting river flow regimes.

Assess the potential to change the flow regime from Derwent Reservoir to benefit migratory fish, eg. increased releases to coincide with spring tides from June onwards.

Project Status:	Proposed
Potential Deliverer(s):	Tyne Rivers Trust, Environment Agency, Northumbrian Water, University MSc researcher
Estimated Timeframe:	1 to 5 years
Potential Funding Source(s):	Northumbrian Water (or their Branch Out fund), Environment Agency
Water Framework Directive link:	The Derwent fails for fish below Derwent reservoir

P34 Team Valley improvements

Theme(s):	A: Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change. B: Improve people's understanding of rivers, catchments, weather extremes and climate change. Increase community participation in monitoring change and taking action to improve and protect water environments.
Goal(s):	A1: Reduce pollution to the water environment. A2: Retain or restore biodiversity, taking account of weather extremes and climate change. B2: Improve access to river-based recreation to engage more people in river issues.
Sub-goal(s):	A2d: Create better, and improve existing, in-river and riverside habitat.

Building on previous work done through the Team Valley Interreg (EU) project (which was only partially delivered) partners (including Gateshead Council, Tyne Rivers Trust, the Environment Agency and Team Valley businesses) would be engaged to draw up plans to improve the quality of the environment and river catchment in the Team Valley. Benefits would be increased access to open green spaces for people working in and visiting the Team Valley, provision of a more continuous wildlife corridor through this industrial and retail area and water quality improvement.

Project Status:	Proposed extension to the existing Gateshead Council-led Lamesley Pastures Project
Potential Deliverer(s):	Heart Land Design, Tyne Rivers Trust, Gateshead Council, Northumbrian Water, Team Valley partners
Estimated Timeframe:	1 to 5 years
Estimated Project Cost:	more than £500,000
Potential Funding Source(s):	Environment Agency Catchment Restoration Fund , Northumbrian Water National Environment Programme for sewerage infrastructure
Additional benefits & considerations:	Team Valley Integrated Flood Risk Study by Gateshead Council; link to current project 29 (River Team improvements)
Water Framework Directive link:	The River Team fails for invertebrates, ammonia and phosphate
Green Infrastructure link:	Identified as an Opportunity Area in the NewcastleGateshead Green Infrastructure Strategy.

P35 Continued research into and demonstration of measures to reduce diffuse pollution from agriculture

Theme(s):	A: Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change. B: Improve people's understanding of rivers, catchments, weather extremes and climate change. Increase community participation in monitoring change and taking action to improve and protect water environments.
Goal(s):	A1: Reduce pollution to the water environment. A2: Retain or restore biodiversity, taking account of weather extremes and climate change. B4: Raise awareness and demonstrate the economic benefits of improving water quality, tackling pollution, and planning for weather extremes and climate change. B5: Carry out research and monitoring, and collect and make available relevant data.
Sub-goal(s):	A1b: Reduce diffuse pollution to the water environment. A2e: Engage with landowners and managers to promote habitat and biodiversity improvements, catchment-sensitive land management, and resilience to weather extremes and climate change. A2f: Use research and demonstration sites to illustrate best practice. B5b: Adopt evidence-based solutions and management techniques.

Multi-disciplinary monitoring, understanding and intervention initially at a small catchment scale on the Whittle Burn. Ultimately aiming to deliver a suite of in-situ demonstration interventions (eg. buffer strips, wetlands, field management practices, storage ponds) and guidelines for multi-functional landscape management. Use Nafferton Farm where relevant and applicable in the context of the Whittle Dene catchment, the Tyne and Northumberland. Initial instrumentation for monitoring and modelling followed by design and implementation of targeted, multi-functional interventions, further monitoring and reporting.

Project Status:	Proposed extension to current project
Potential Deliverer(s):	Delivered with student projects in the short term (MSc, PhD) and building up to larger scale project or suite of projects in the longer term through the Newcastle Institute for Research on Sustainability (NiRES) at Newcastle University. Should be guided by Natural England.
Estimated Timeframe:	5 to 10 years
Estimated Project Cost:	Different costs at different stages of project
Potential Funding Source(s):	Studentships from NiRES, university, schools, Research Councils. Project funding from Defra (through Natural England, Environment Agency), Research Councils
Water Framework Directive link:	Diffuse pollution failures caused or contributed to from the agricultural sector

P36 From research to delivery

Theme(s):	A: Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change. B: Improve people's understanding of rivers, catchments, weather extremes and climate change. Increase community participation in monitoring change and taking action to improve and protect water environments.
Goal(s):	A1: Reduce pollution to the water environment. A2: Retain or restore biodiversity, taking account of weather extremes and climate change. B4: Raise awareness and demonstrate the economic benefits of improving water quality, tackling pollution, and planning for weather extremes and climate change.
Sub-goal(s):	A1b: Reduce diffuse pollution to the water environment. A2e: Engage with landowners and managers to promote habitat and biodiversity improvements, catchment-sensitive land management, and resilience to weather extremes and climate change. A2f: Use research and demonstration sites to illustrate best practice.

Build on the land management interventions research carried out at Nafferton Farm and identify sites for delivering appropriate intervention techniques.

Project Status:	Proposed extension to current project
Potential Deliverer(s):	All organisations currently providing farm advice - Natural England, Environment Agency, RSPB, Tyne Rivers Trust in conjunction with the Newcastle University Nafferton Farm staff
Estimated Timeframe:	5 to 10 years
Potential Funding Source(s):	Currently funded farm visits
Water Framework Directive link:	Diffuse pollution failures caused or contributed to from the agricultural sector

P37 Derwent Valley Landscape Partnership

Theme(s):	A: Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change. B: Improve people's understanding of rivers, catchments, weather extremes and climate change. Increase community participation in monitoring change and taking action to improve and protect water environments.
Goal(s):	A2: Retain or restore biodiversity, taking account of weather extremes and climate change. B2: Improve access to river-based recreation to engage more people in river issues.
Sub-goal(s):	A2d: Create better, and improve existing, in-river and riverside habitat.

The Derwent Valley is a landscape that has been influenced and moulded by centuries of industry. To recognise the inter-relationships between built heritage, landscape and nature, access and participation and the area's economy, the Partnership is committed to taking forward projects that create multiple benefits. For example, woodland restoration can incorporate new green infrastructure provision, which enhances access to a restored heritage site thereby increasing tourist income.

The partners are seeking to deliver a package of work that leaves a legacy of a more environmentally and economically sustainable Derwent Valley, which could include actions directly linked to improving river quality and people's access to rivers.

Project Status:	Proposed and being developed
Potential Deliverer(s):	Gateshead, Durham and Northumberland Councils, Groundwork, Tyne Rivers Trust, Forestry Commission, Woodland Trust, Environment Agency, North Pennines AONB Partnership
Estimated Timeframe:	5 to 10 years
Estimated Project Cost:	more than £500,000
Potential Funding Source(s):	Heritage Lottery Fund - Landscape Partnership Fund
Green Infrastructure link:	Part of the NewcastleGateshead Green Infrastructure Strategy; the lower Derwent is afforded particularly high priority as an Opportunity Area

P38 Habitat improvements for wading birds and Tyne kittiwakes

Theme(s):	A: Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change. B: Improve people's understanding of rivers, catchments, weather extremes and climate change. Increase community participation in monitoring change and taking action to improve and protect water environments.
Goal(s):	A2: Retain or restore biodiversity, taking account of weather extremes and climate change. B3: Engage widely to educate about river issues and encourage positive behavioural change.
Sub-goal(s):	A2a: Improve habitat and protect biodiversity in the tidal zone. A2d: Create better, and improve existing, in-river and riverside habitat.

Protection, enhancement and interpretation of intertidal habitats including the management of conflicts and issues. To specifically include wintering wading bird habitats, including high tide roosts, and breeding habitat improvements on agricultural land. Would require research to identify current high tide roosts and monitoring of populations. Also includes the creation of artificial kittiwake breeding sites in central Newcastle and Gateshead. To include a design competition with high levels of community engagement to help safeguard the inland Kittiwake population and reduce adverse impacts on riverside buildings.

Install information boards about the birds using the mud flat habitat in the tidal Tyne area, particularly on walking/cycling routes, and could include information about fish and other river flora and fauna.

Project Status:	Proposed
Potential Deliverer(s):	RSPB, Newcastle City Council, Gateshead Council, wildlife trusts and bird groups
Estimated Timeframe:	1 to 5 years
Estimated Project Cost:	£100,000 to £250,000
Potential Funding Source(s):	Esmee Fairburn trust, Sir James Knott trust, Heritage Lottery Funding, developer contributions, landfill trusts
Green Infrastructure link:	The Tyne estuary is identified as a series of Opportunity Areas in the Gateshead & Newcastle Green Infrastructure Strategy.

P39 Sustainable Drainage Systems awareness and education

Theme(s):	A: Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change. B: Improve people's understanding of rivers, catchments, weather extremes and climate change. Increase community participation in monitoring change and taking action to improve and protect water environments.
Goal(s):	A3: Reduce risk from or control flooding. B1: Increase awareness of the impacts and risks of weather extremes and climate change.
Sub-goal(s):	A3b: Reduce risk from or control surface water (runoff) floods.

Media campaign to raise awareness about Sustainable Drainage Systems (SuDS) including types, benefits (including addressing safety concerns about dangers of SuDS ponds), their use in domestic properties (driveways etc.) and retro-fitting. To include awareness-raising among Parish Councils. Aiming to increase the amount of SuDS in new developments and retro-fitting, and improve understanding/address misunderstandings about them and encourage people to think about the wider impacts of their actions.

Project Status:	Proposed
Potential Deliverer(s):	Local authorities, Parish Councils, Northumbrian Water
Estimated Timeframe:	Less than 1 year
Estimated Project Cost:	£1,000 to £5,000
Potential Funding Source(s):	Local authorities, Northumbrian Water

P40 Ebchester hydropower and engagement/education programme

Theme(s):	A: Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change. B: Improve people's understanding of rivers, catchments, weather extremes and climate change. Increase community participation in monitoring change and taking action to improve and protect water environments.
Goal(s):	A5: Mitigate for the future impacts of climate change and future-proof relevant projects. B3: Engage widely to educate about river issues and encourage positive behavioural change.

A hydro-power generator would be built into the existing bank/weir at Ebchester, in close liaison with the Environment Agency and Tyne Rivers Trust to ensure no detrimental impacts to the river system. The project would be delivered alongside the redevelopment of the boathouse. The project would be delivered in conjunction with a community education and engagement programme focusing on river ecology and conservation, and sustainable use of environmental resources. Climate change impacts would be explored and potential measures identified to mitigate the impacts of climate change in the local area. A 'How to…' course would be run for local people to find out how to make their own homes more energy efficient, how to reduce their carbon footprint and how to interact with their local river ecosystem as a leisure resource without undermining its quality or sustainability for future generations.

Project Status:	Proposed
Potential Deliverer(s):	Ebchester Boathouse Development Partnership, Environment Agency, Tyne Rivers Trust, National Trust
Estimated Timeframe:	1 to 5 years
Estimated Project Cost:	£100,000 to £250,000
Potential Funding Source(s):	Landscape partnerships, Esmee Fairburn Foundation, Conservation & Enhancement Scheme

P41 Tyne Catchment Pilot - from plan to action

Theme(s):	A: Conserve and restore river habitat, and adapt to / mitigate for the physical impacts of weather extremes and climate change. B: Improve people's understanding of rivers, catchments, weather extremes and climate change. Increase community participation in monitoring change and taking action to improve and protect water environments.
Goal(s):	Covers all goals and sub-goals.
Sub-goal(s):	Covers all sub-goals.

Build on the impetus created by the Tyne Catchment Pilot project and appoint a co-ordinator to continue the planning process into delivery for a further year. To include revisiting the plan to keep it live/current, liaising with funders, acting as an independent broker to get partnership projects off the ground and bid for funding, and arranging meetings of a Steering Group.

Project Status:	Proposed
Potential Deliverer(s):	Could be hosted by any number of organisations
Estimated Timeframe:	1 to 5 years
Estimated Project Cost:	£100,000 to £250,000
Potential Funding Source(s):	Defra, local environmental trusts, contributions from organisations which will benefit?
Additional benefits & considerations:	Encompasses all goals and sub-goals

P42 Access for Canoeing

Theme(s):	B: Improve people's understanding of rivers, catchments, weather extremes and climate change. Increase community participation in monitoring change and taking action to improve and protect water environments.
Goal(s):	B2: Improve access to river-based recreation to engage more people in river issues.

Enable better and safer access to the Tyne for canoeists, including:

- launch/landing facilities at appropriate weirs, with facilities for disabled paddlers where possible
- information boards on access conditions and restrictions and safety/water level guidance at launch sites
- improve access to the river and use of the river by agreement with landowners
- create a mechanism to allow canoeists to easily report pollution, bank erosion and siltation, invasive species, litter etc. they see while paddling
- organise regular clean up days using canoes to access otherwise hard to reach parts of the river.

Project Status:	Proposed
Potential Deliverer(s):	Canoe England and Sport England (for access and signage), Tyne Rivers Trust (for collating information about habitat, erosion issues)
Estimated Timeframe:	1 to 5 years
Estimated Project Cost:	£5,000 to £25,000
Potential Funding Source(s):	Sport England capital projects
Additional benefits & considerations:	Could help considerably in the mapping and tackling or invasive species and bank erosion in hard to access places

P43 Watersports Centre of Excellence

Theme(s):	B: Improve people's understanding of rivers, catchments, weather extremes and climate change. Increase community participation in monitoring change and taking action to improve and protect water environments.
Goal(s):	B2: Improve access to river-based recreation to engage more people in river issues.

Develop the tidal reaches of the Tyne as a Centre of Excellence for a broad range of watersports (including canoes, kayaks, rowing, gigs and surf boats and dragon boats). Promote family and community-based involvement in these sports and provide safe access to the river at appropriate points through steps, slipways, paths and roads. Enforce speed limits for motorised craft.

Ideally the project would include an assessment of the future impacts of siltation at key access points (particularly Newburn).

Project Status:	Proposed
Potential Deliverer(s):	Sports clubs and leisure centres, NHS Trust, Sport England
Estimated Timeframe:	1 to 5 years
Estimated Project Cost:	£25,000 to £50,000
Potential Funding Source(s):	Sport England capital projects

P44 Access for Recreation

Theme(s):	B: Improve people's understanding of rivers, catchments, weather extremes and climate change. Increase community participation in monitoring change and taking action to improve and protect water environments.
Goal(s):	B2: Improve access to river-based recreation to engage more people in river issues.

Deliver better access and understanding around parts of the Tyne and its tributaries with a focus on maintenance and improvements for recreational access (footpaths, walking routes, cycling etc.) and using the river as a source for improving health and wellbeing and education, with a strong emphasis on community engagement and activities for everyone. Assess the potential to open up new access areas where agreement with landowners can be reached.

Encourage communities to adopt their local area – raise awareness, encourage clean ups and maintenance of footpaths (particularly next to river banks) and erosion control measures to prevent the loss of paths on eroding banks.

Project Status:	Proposed
Potential Deliverer(s):	Local authorities (highways, access and leisure teams), Sustrans, Groundwork, wildlife trusts, Tyne Rivers Trust, Sport England, community volunteers, sports clubs
Estimated Timeframe:	5 to 10 years
Estimated Project Cost:	£50,000 to £100,000
Potential Funding Source(s):	Sport England capital projects, local authorities' recreation/access budgets
Green Infrastructure link:	Links to green infrastructure plans in urban areas

P45 Publicising the Tyne's recreational opportunities

Theme(s):	B: Improve people's understanding of rivers, catchments, weather extremes and climate change. Increase community participation in monitoring change and taking action to improve and protect water environments.
Goal(s):	B2: Improve access to river-based recreation to engage more people in river issues.

Publicise the river-related recreation opportunities in the Tyne catchment, including walking, cycling, horse riding and watersports through website and print publications. To include information about access points, restrictions, safety, suggested routes, history, environment etc., with a focus on the Tyne and its tributaries.

Project Status:	Proposed
Potential Deliverer(s):	Sports clubs, Ramblers Association, Sustrans, Canoe England, Tyne Rivers Trust, North Pennines AONB Partnership, Northumberland National Park, local authorities
Estimated Timeframe:	1 to 5 years
Estimated Project Cost:	£5,000 to £25,000
Potential Funding Source(s):	Sport England capital projects, local authorities, local environmental project funders
Green Infrastructure link:	Links to green infrastructure plans in urban areas

P46 Stream Team/Stream Champions

Theme(s):	B: Improve people's understanding of rivers, catchments, weather extremes and climate change. Increase community participation in monitoring change and taking action to improve and protect water environments.
Goal(s):	B2: Improve access to river-based recreation to engage more people in river issues. B3: Engage widely to educate about river issues and encourage positive behavioural change.
Sub-goal(s):	B2a: Improve river-based access and activities in urban areas with a focus on health, wellbeing and physical activity.

Riverside community engagement championing the value of streams and burns in urban settings to all people of all ages. Rivers and streams enrich local communities with a diverse and inspiring landscape for quiet recreation. Wildlife and local people benefit from a clean and attractive stream-scape. Local watercourses need local friends to maintain them in good conditions so that they become the community assets they have the potential to be. At selected river sites Groundwork would engage the community in community clean up days, family fun days, and guided walks to recruit stream champions/stream teams to champion these streams and keep them clean. Local schools and groups would be invited to come and get involved in river explorer visits and clean-up days.

Project Status:	Proposed
Potential Deliverer(s):	Groundwork
Estimated Timeframe:	1 to 5 years
Estimated Project Cost:	£5,000 to £25,000
Potential Funding Source(s):	Awards for all, Branching Out, Landfill Trusts, Tudor Trust, CDENT

P47 Access for health and wellbeing

Theme(s):	B: Improve people's understanding of rivers, catchments, weather extremes and climate change. Increase community participation in monitoring change and taking action to improve and protect water environments.
Goal(s):	B2: Improve access to river-based recreation to engage more people in river issues. B3: Engage widely to educate about river issues and encourage positive behavioural change.

Deliver better awareness of access and understanding of river issues around parts of the River Tyne and its tributaries with a focus on:

- access improvements (footpaths, walking routes, cycling etc.)
- using the river as a source for improving health and wellbeing
- carrying out conservation work and
- education so that people understand the importance of healthy rivers.

There would be a strong emphasis on community engagement and activities for everyone to get involved with, including interpretation, events and walk programmes.

Project Status:	Proposed
Potential Deliverer(s):	Primary Care Trusts, Groundwork, Local Authorities, Wildlife Trusts, Tyne Rivers Trust, Sustrans
Estimated Timeframe:	1 to 5 years
Estimated Project Cost:	£50,000 to £100,000
Potential Funding Source(s):	Environment Agency, Reaching Communities, Sport England, Primary Care Trusts

P48 Community engagement/volunteer days on Tyne tributaries

Theme(s):	B: Improve people's understanding of rivers, catchments, weather extremes and climate change. Increase community participation in monitoring change and taking action to improve and protect water environments.
Goal(s):	B3: Engage widely to educate about river issues and encourage positive behavioural change.

Communities will be encouraged to take part in volunteer days to help clear problem sites and learn about the importance of keeping their local watercourses healthy. The sessions to focus on:

- the importance of keeping water clean and tidy
- raising ownership and awareness
- what the community can do about fly tipping
- what not to put down drains
- wildlife awareness (what to look out for, habitat creation to encourage mammals, amphibians and invertebrates, otter holts, habitat mosaic, reed beds, mixes of scrub and trees, grassland, different types of habitat to encourage biodiversity).

Project Status:	Proposed
Potential Deliverer(s):	Groundwork North East
Estimated Timeframe:	1 to 5 years
Estimated Project Cost:	£25,000 to £50,000
Potential Funding Source(s):	Awards for All, Northumbrian Water, Landfill Trusts, Community Foundation

P49 Corbridge schools river ecology education

Theme(s):	B: Improve people's understanding of rivers, catchments, weather extremes and climate change. Increase community participation in monitoring change and taking action to improve and protect water environments.
Goal(s):	B3: Engage widely to educate about river issues and encourage positive behavioural change.

Building on the project run two years ago by Corbridge First School which examined the life cycle of salmon and culminated in salmon being released into the Tyne, this project would work with both the First School and Corbridge Middle School to explore wider water cycle and catchment issues, how urban environments and human interventions affect water systems and how the river environment in Corbridge can be improved. Potential to roll out to other Tyne Valley schools.

Project Status:	Proposed
Potential Deliverer(s):	Heart Land Design, Corbridge First School, Corbridge Middle School, Northumberland County Council, Tyne Rivers Trust
Estimated Timeframe:	1 to 5 years
Estimated Project Cost:	£50,000 to £100,000
Potential Funding Source(s):	Awards for All, Esmee Fairburn Foundation

P50 Education on river issues

Theme(s):	B: Improve people's understanding of rivers, catchments, weather extremes and climate change. Increase community participation in monitoring change and taking action to improve and protect water environments.
Goal(s):	B3: Engage widely to educate about river issues and encourage positive behavioural change.

Empowerment through knowledge on the basis that communities can bring about change - give them the knowledge to do so. The skills/knowledge gap between school and universities needs addressing. Evening and day classes aligned to catchment areas would give individuals and businesses understanding of climate change, land management, adaptation, mitigation and inspire innovation from grass root sources and created educated community champions or spokespersons.

Project Status:	Proposed
Potential Deliverer(s):	Council education providers/private deliverers if self-sustainable - a partnership of specialists, someone who can give some accreditation
Estimated Timeframe:	1 to 5 years
Estimated Project Cost:	£5,000 to £25,000
Potential Funding Source(s):	Heritage Lottery Fun, BIG Lottery Fund, Community Foundation

P51 John Muir Discovery Award

Theme(s):	B: Improve people's understanding of rivers, catchments, weather extremes and climate change. Increase community participation in monitoring change and taking action to improve and protect water environments.
Goal(s):	B3: Engage widely to educate about river issues and encourage positive behavioural change.

Work with two local high/middle/secondary schools in the Prudhoe, Corbridge and Hexham area to deliver the John Muir Discover award to young people along local rivers for them to engage, learn and understand the river environment and their impacts on it. The award would be run over 8 weeks, 2 hour sessions with groups of around 8 young people per award. The project would run with different groups of young people over a year. At the end of the award the young people would arrange an event for their families and local community to share their findings and show them what they had learnt.

Project Status:	Proposed
Potential Deliverer(s):	Groundwork Northumberland
Estimated Project Cost:	£5,000 to £25,000
Potential Funding Source(s):	Northumberland County Council community chest

P52 Sage Riverlink

Theme(s):	B: Improve people's understanding of rivers, catchments, weather extremes and climate change. Increase community participation in monitoring change and taking action to improve and protect water environments.
Goal(s):	B3: Engage widely to educate about river issues and encourage positive behavioural change.

Link local communities and schools to the river through the Sage Gateshead's Learning & Participation team. The Sage Gateshead outreach team could be approached to develop a project with a link to the National Park's Sill project and its outreach/engagement team.

Project Status:	Proposed
Potential Deliverer(s):	Sage Gateshead, Northumberland National Park Authority
Estimated Timeframe:	1 to 5 years
Estimated Project Cost:	£5,000 to £25,000

P53 Tree based education and improvements

Theme(s):	B: Improve people's understanding of rivers, catchments, weather extremes and climate change. Increase community participation in monitoring change and taking action to improve and protect water environments.
Goal(s):	B3: Engage widely to educate about river issues and encourage positive behavioural change.

Groundwork would like to deliver a project that combines local environmental improvement, tree growing and education in the catchment. The Woodland Classroom in Chopwell Wood gives easy access right across the Tyne system. It's a popular venue for a range of education and access services and would provide a base for the practical work and learning that this project would deliver. Trees will be grown with nursery-aged children and community groups and followed throughout the trees' initial growth by dedicated 'tree adopters'. This engagement will keep the community involved in a range of medium-term environmental education activities include learning, volunteering and training across the catchment. The culmination will be planting the young trees in the catchment, with specific trees being used to complement the environmental issues being faced in that area.

Project Status:	Proposed
Potential Deliverer(s):	The project would be delivered by Groundwork Community Project Officers and Education Team with support from our dedicated nursery managers and green team, in partnership with the Forestry Commission, Local Authorities, the Environment Agency and a wide range of community partners
Estimated Timeframe:	1 to 5 years
Estimated Project Cost:	£5,000 to £25,000
Potential Funding Source(s):	Heritage Lottery Find, Forestry Commission, local authorities

P54 Wet, Wild & Wiggly

Theme(s):	B: Improve people's understanding of rivers, catchments, weather extremes and climate change. Increase community participation in monitoring change and taking action to improve and protect water environments.
Goal(s):	B3: Engage widely to educate about river issues and encourage positive behavioural change.

Project aimed at early years looking at the very basics of river ecology. Working with Western Area Children's Centres - Albemarle, Bellingham, Haltwhistle, Hexham, Ponteland and Prudhoe - the project would look to take children on a visit to an appropriate watercourse, preferably where children could do some toe wiggling in the water and a watery minibeast hunt. This could be followed up with 2 sessions of craft and games focusing on water quality/conservation and ecology. Aiming to do 3 visits plus a trip with each Children's Centre. This could be rolled out to all Children's Centres in the catchment, depending on links to curriculum.

Project Status:	Proposed
Potential Deliverer(s):	Groundwork North East
Estimated Timeframe:	1 to 5 years
Estimated Project Cost:	£50,000 to £100,000
Potential Funding Source(s):	Northumbrian Water (or their Branch Out fund)

P55 Tyne engagement & education programme

Theme(s):	B: Improve people's understanding of rivers, catchments, weather extremes and climate change. Increase community participation in monitoring change and taking action to improve and protect water environments.
Goal(s):	B3: Engage widely to educate about river issues and encourage positive behavioural change. B4: Raise awareness and demonstrate the economic benefits of improving water quality, tackling pollution, and planning for weather extremes and climate change.

Engagement and education covering the full scope of freshwater environmental issues but focusing on: how rivers flow, runoff, extremes and how society currently manages these resources; river 'health', definitions of unhealthy and sources, how the citizen is involved and a can passively and actively improve river health; river enjoyment - knowledge leads to appreciation, access, safety, river 'sense', enjoyment for differently-abled stakeholders.

Project Status:	Proposed
Potential Deliverer(s):	An 'engagement officer' working with local groups on the model of Tyne Rivers Trust's River Watch. Partners would include AONB Partnership, National Park, Groundwork. Possible integration with angling development.
Estimated Timeframe:	5 to 10 years
Estimated Project Cost:	£250,000 to £500,000
Potential Funding Source(s):	Charitable trusts and concerned local corporates. Funds available to specific partners.

P56 River Derwent awareness and improvements

Theme(s):	B: Improve people's understanding of rivers, catchments, weather extremes and climate change. Increase community participation in monitoring change and taking action to improve and protect water environments.
Goal(s):	B3: Engage widely to educate about river issues and encourage positive behavioural change. B5: Carry out research and monitoring, and collect and make available relevant data.
Sub-goal(s):	B5b: Adopt evidence-based solutions and management techniques.

Work with local Brownie and Guide groups to raise awareness of water catchment issues and environmental quality at the River Derwent between Allensford and Shotley Bridge. Explore potential actions to improve water quality and to improve the area for amenity and recreational use. Educate local residents in water catchment issues and ways of using water more efficiently, reducing littering and examining the impacts of flooding. Delivery via a series of engagement/education events with Brownies/Guides and the local community and via a range of site-based activities to improve the area.

Project Status:	Proposed
Potential Deliverer(s):	Brownies/Guides, Durham County Council, Local Community Partnership, Heart Land Design, residents
Estimated Timeframe:	1 to 5 years
Estimated Project Cost:	£5,000 to £25,000
Potential Funding Source(s):	Awards for All, Catchment Restoration Fund
Water Framework Directive link:	Multiple failures on the Derwent including fish, macrophytes, phytobenthos and chemical failures

P57 Public/community recording of river issues

Theme(s):	B: Improve people's understanding of rivers, catchments, weather extremes and climate change. Increase community participation in monitoring change and taking action to improve and protect water environments.
Goal(s):	B5: Carry out research and monitoring, and collect and make available relevant data.
Sub-goal(s):	B5a: Better understand complex or poorly-understood issues. B5b: Adopt evidence-based solutions and management techniques.

Recording knowledge/change/observations within communities (possibly using digital technology). This would allow members of the public/communities to record changes they see. Data could then be used for research recording change/problem areas and climate change impacts.

Project Status:	Proposed
Potential Deliverer(s):	Tyne Rivers Trust, Newcastle University
Estimated Timeframe:	Less than 1 year
Estimated Project Cost:	£1,000 to £5,000

P58 Tyne visualisation tools

Theme(s):	B: Improve people's understanding of rivers, catchments, weather extremes and climate change. Increase community participation in monitoring change and taking action to improve and protect water environments.
Goal(s):	B5: Carry out research and monitoring, and collect and make available relevant data.
Sub-goal(s):	B5a: Better understand complex or poorly-understood issues. B5b: Adopt evidence-based solutions and management techniques.

Visualisation of the catchment - GIS, 3D, fly through etc., that collects and displays data and information. Leading to a 'decision theatre' application which allows different stakeholder groups to consider problems and evaluate solutions in a collective environment. Linked to Newcastle's Science Central site.

Project Status:	Proposed
Potential Deliverer(s):	Researchers, students
Estimated Timeframe:	1 to 5 years
Estimated Project Cost:	£5,000 to £25,000
Potential Funding Source(s):	Engineering & Physical Science Research Council, University, educational outreach bodies, Google?

Appendix 3 How we got here

The Tyne Catchment Pilot

The Tyne Catchment Pilot project is one of 25 'pilot catchments' in a government initiative to improve the water environment.

Tyne Rivers Trust has been working with key organisations throughout the River Tyne catchment area over the past year to understand how best to improve the River Tyne and the rivers that flow into it. This Plan is a key part of that process. It will become a key part of wider plans and policies to improve rivers throughout England.

The project scope

We recognised very early on that delivering a plan to improve an area the size of the River Tyne catchment is no small task. Doing it in under a year was a very big challenge!

It wasn't possible, in the short time available, to develop a fully comprehensive plan to tackle all the issues within the Tyne catchment. But we tried our best to consult widely to identify the big issues – the ones that affect people and the environment the most, and the ones that concern people the most.

Project management and governance

The project is governed by a Project Board which consists of 3 Trustees of Tyne Rivers Trust and the Trust's Director. A Project Manager was appointed in April 2012 to deliver the pilot project.

In May 2012 key organisations in the Tyne catchment were invited to form a Strategy Group for the pilot project. The Strategy Group has helped guide the development of this Tyne Catchment Plan at key stages through the project. Its expert advice and knowledge have been invaluable in producing this document. It is made up of representatives of:

- the Country Land & Business Association
- the Environment Agency
- the Forestry Commission
- Gateshead Council
- Groundwork North East
- the National Farmers Union
- Natural England
- Newcastle City Council
- Northern Farmers & Landowners Group
- Northumberland County Council
- Northumberland National Park
- Northumbrian Water
- Port of Tyne
- Tyne Rivers Trust

The Terms of Reference for the Project Board and the Strategy Group are included in the *Engagement and Communication Plan* which can be found on the project's website www.tynecatchment.org.

Catchment survey

Local detailed knowledge about the issues in the Tyne catchment is a huge resource. Exploiting this resource was an important part of the project, and we particularly wanted to gather information

from people and groups that might not have had a voice in plans to improve their local rivers before. They helped us understand what to target for action in this Plan.

We were delighted with the wide response we received to our survey in May/June 2012. Over 200 people responded, telling us about 342 different issues across the Tyne catchment. The results gave us a real understanding about what people think is important for the future of the Tyne and its tributaries. A detailed *Survey Report* can be found on the project's website www.tynecatchment.org.

Information about Current Projects

A huge amount of work is already going on in the Tyne catchment, and a key part of developing a plan for the whole catchment was to gather together that information. This allowed us to identify areas and issues for future action. Many organisations helped us by telling us about their work, and that information forms a key part of this Plan - see Appendix 1 (p25) and Map of Theme A Projects (p21) and Map of Theme B Projects (p23).

Identifying Proposed Projects and Goals

We held a drop-in event at the Hancock Museum in Newcastle-upon-Tyne on 4, 5 and 6 October 2012. Over 100 people contributed, representing 54 organisations and community groups.

Around 100 projects were suggested for this Plan. They ranged from relatively small projects to tackle localised problems to proposals for landscape-wide projects to improve the natural environment, improve awareness about river issues and benefit communities by providing natural spaces for recreation.

The Strategy Group reviewed the Goals and Proposed Projects after the Hancock event. They assessed the projects on the criteria that each must:

- provide a benefit to a river in the Tyne catchment (directly or indirectly)
- work toward achieving one or more of the Goals
- be realistically deliverable
- preferably be evidence/science based.

Some projects were combined because they had very similar aims and objectives and method of delivery. In the end we were left with 58 projects - see Appendix 2 (p52) and Map of Theme A Projects (p21) and Map of Theme B Projects (p23).

Draft version of this Plan

In early November 2012 we produced a draft version of this Plan. We asked the people who attended the Hancock drop-in event to tell us what they thought. Their constructive criticism of the draft has helped us improve this Plan.

The main change between the draft and this final Plan is the inclusion of projects based around access to rivers for recreation. Some access projects had been suggested at the Hancock event, but were not included in the draft. A number of comments from a variety of sources suggested that access for recreation is important, and should form a part of this Plan. So we put access for recreation projects back in (see proposed projects 42, 43, 44 and 45).

This Catchment Plan

And that's how we got here. Now we must try to deliver the projects in this Plan. See What happens next? (p24) for more information on this.

Appendix 4 Links to other plans and strategies

As part of the catchment pilot project we have tried to learn from the virtues and vices of plans for the Tyne dating from the mid-1990s onwards.

This appendix is designed to provide background supporting information to this Plan. It includes a review of previous plans to improve the Tyne's water environment, and also a brief review of relevant current strategies and plans.

David Ord

The Tyne Catchment Management Plan (1994)

This plan, produced by the National Rivers Authority, constituted more of a general geography than a river management plan. It showed very little specific site information, lacking grids and most river names. Its component policies were naive and not joined up. It made use of the accumulated NRA 'experts' rather than being based on consultation (although it appeared in draft before publication and was accompanied by a slimmer Action Plan and an Annual Update). Whilst a list of issues is presented at the end, they are for in-house action and notably lacked overlap with local authority development control on issues like flooding.

Local Environment Agency Plans (LEAPS): the Tyne example (1997)

With the arrival of GIS technologies, it is not surprising to find that in the Tyne LEAP you can locate where you live! Possibly because of its much wider regulatory remit, the partnership message is now implicit on the plans. Instead of 'general geography', policy is placed first, followed by geographies as context. Only regulatory agencies are mentioned, however there are sections on 'environmental awareness' and 'education' as delivery vehicles. The Third Sector is, by 1997, 'big' in the environment but is seldom mentioned as capable of delivering measures.

Tyne Catchment Abstraction Management Strategy (2005)

Whilst rolled out nationally in response to serious political questions of water allocation in water-stressed areas of the country, the Catchment Abstraction Management Strategy (CAMS) for the Tyne, whilst valuable as providing openness in policy management, has few contentious issues to test its evidence-based technical approach. The Environment Agency formed a stakeholder group to steer the CAMS report. The 7 Water Resource Management Units were all given the status of 'water available', thanks largely to climate and the presence of Kielder Reservoir. The use of the Tyne as a natural pipeline, and the environmental impacts of distributing the Kielder surplus, was excluded. The exercise was repeated in 2011 and is still current.

The Tyne Catchment Flood Management Plan (2006)

Although flood management is a key function in the management of economic resources and hazards in England, its protected capital and maintenance funding would eventually have to open up. The Tyne Catchment Flood Management Plan (CFMP) produced by the Environment Agency also divides the catchment into 7 assessment units. As in the case of CAMS, the exposure of the Tyne to flood hazard is restricted compared to other areas of England: the location of most people out of the floodplain means that only local hot spots like Haltwhistle and Corbridge attract

attention. Only three are targeted for 'take further action'. One positive reaction to the national 2007 floods is that awareness and resilience are now themes for 'emergency plans'. The rising role of local authorities as both Lead Partners and the transfer to them of regulatory actions for ordinary watercourses in recent times bodes well for greater awareness of both river and runoff flooding. Natural flood management and sustainable drainage systems (SuDS) had a high profile as mitigation for this problem but are not identified in the CFMP.

Team Catchment Plan (2005)

This plan emerged from a project funded by EU Interreg, called PURE North East, comprising 4 catchments in the region. Participation by stakeholder representatives was encouraged from the start, but local government machinations often led to a lack of ambition in the plan. Again 'local geographies' prevail, although important pollution point sources are identified but not treated (eg. in the Team Valley Trading Estate). A minor triumph for this plan was the opportunistic identification of a significant floodplain conservation plan (now in place) and the management of mining, landfill and wastewater treatment works discharges through innovative treatment systems like reed beds.

Ouseburn Catchment Plan (2006)

The PURE North East initiative also applied to the Ouseburn, which has an existing and influential set of walkers and conservationists ready to participate. A clear result of this is that the Plan exhibits big stakeholder participation, with processes reaching far beyond questionnaires and public meetings. The Plan contains an 'issues' map, putting it well beyond the rest of the Tyne plans.

Northumbrian Water Ltd: Water Resources Management Plan (2009)

Water suppliers are required to produce updates of a water resources management plan every 5 years. (NWL are now working on their 2014 Plan.) These plans make reference to supply areas rather than catchments but, in the case of NWL, the 'long view' of the state of supplies is relevant to the operation of Catcleugh and Kielder Reservoirs. NWL is naturally confident about the huge headroom of supply available in the region, also available for transfer to areas south of its boundary which face long-term or temporary shortages. The Water Bill 2012 appears to encourage an internal market between water suppliers during drought but also appears to place environmental precautions on transfers using river channels as pipelines (eg. Kielder to Riding Mill).

1st Cycle Northumbrian River Basin Management Plan (2009)

This weighty and comprehensive set of documents is much better targeted and focussed than its predecessors but only touches the surface of stakeholder engagement and co-delivery. It provides geographical detail via the waterbody geographical unit (although some of these are too big to be locally meaningful). It also provides current, often provisional, assessments of Ecological Status or Potential and available monitoring results or investigations. For key stakeholders a more detailed database is available. The targeting comes from the achievement of improvements (prevention of deterioration) in Water Framework Directive cycles ending 2015, 2021 and 2027, and a new plan will be produced for each of those deadlines. The Environment Agency is consulting now for the 2nd round of River Basin Management Plans.

Local Development Frameworks

The Local Development Framework requires Core Strategy documents (currently completing consultation for Northumberland), followed by more site-specific allocations and an adopted

proposals map. One of the core strategy issues is water. The emphasis on water varies with the degree to which, for example, the Planning Authority concerned is also the Lead Local Flood Authority, but all are now responsible for the regulation of Ordinary Watercourses.

Remaining with the Northumberland Core Strategy as an example, two significant pieces of evidence gathering were commissioned to accompany Issue 18: Water Environment. These were a strategic Flood Risk Assessment and the Water Cycle Study. The former document makes limited reference to the Tyne but identifies Hexham as at risk from both river and sewer sources of floods. The latter document identifies future deficiencies in the water supply and wastewater treatment, the former being of little significance in the Tyne, whilst 'headroom' for sewage treatment is a problem at Allendale, Hexham and Haydon Bridge.

Significantly for the lower Tyne's urban tributaries, Newcastle and Gateshead Councils have joined forces in their Core Strategy to commission a Surface Water Management Plan, as well a Strategic Flood Risk Assessment and a Water Cycle Study. The Green Infrastructure Strategies of these two Councils are also of significance to Tyne planning, dealing with the degree to which river corridors can be open to human access and also act as wildlife corridors.

Following on from the NewcastleGateshead Surface Water Management Plan, a more detailed surface water management plan is being prepared for the Metrogreen area. It will provide a strategic approach for surface water management, and will recommend where new infrastructure investment will be required. A flood management plan is also being prepared by Gateshead Council for the Metrogreen area.

Newcastle City Council is currently developing a Flood Risk Management Strategy which will set out the City's position on managing future flood risk.

This Plan cannot usurp the role of public bodies in strategies guiding development controls but we emphasise the need to continue to link land planning with river planning and management.

Future Sewerage Plans and Strategies

Northumbrian Water Limited (NWL) recently carried out a Tyneside Sustainable Sewerage Strategy project, working together with the Environment Agency and local authorities. We are told that the pilot project has identified a number of integrated opportunities for sustainable drainage that will provide multiple benefits to a range of stakeholders, however the details have not been published.

Funding for individual interventions has not yet been identified - the relevant organisations need to plan appropriate resources to develop and implement prioritised opportunities, which may or may not be led by NWL. The study outputs will inform NWL's business plans for 2015 and beyond, and will also be used by other partners to inform and support their business plans. More information can be found by following the link to the Tyneside Sustainable Sewerage Study on NWL's website – see http://www.nwl.co.uk/your-home/for-the-environment.aspx.

This Tyne Catchment Plan

We are confident that this Plan is different to other plans in terms of its approach and choice of issues, derived from an energetic stakeholder consultation. It is lodged in a time slot which has potential to inform two very active and current parallel processes – the Northumberland Core Strategy deliberations within the Local Development Framework (and what leads from them) and the 2nd round of River Basin Management Plans. Northumbrian Water's forthcoming Water Resources Plan is also relevant but in a region of plentiful supply it is unlikely to show big changes; NWL's efforts in calibrating the impacts of climate change in its supply zones is, however, very relevant to this Plan.

Appendix 5 Additional resources

Title	Author/Publisher	Published	Source
Contrasting UK experiences with participatory approaches to integrated river basin management	M.D. Newson	2007	In J Warner (ed), Multi-Stakeholder Platforms for Integrated Water Management. Ashgate, Aldershot, 69-94
Gateshead Green Infrastructure Delivery Plans	Gateshead Council	2012	http://www.gateshead.gov.uk/Building%20and%20Development/PlanningpolicyandLDF/LocalDevelopmentFramework/EvidenceLibrary/GreenInfrastructureStudy.aspx
Land use planning and the water sector. A review of development plans and catchment management plans	S. Slater, S. Marvin & M.D. Newson	1994	Town Planning Review, 65(4), 375-397
NewcastleGateshead Green Infrastructure Strategy	Newcastle City Council & Gateshead Council	2011	http://www.gateshead.gov.uk/DocumentLibrary/Building/PlanningPolicy/Evidence/GI/GreenInfrastructureStudy-EvidenceBaseJanuary2011.pdf
North Tyneside Core Strategy and Area Action Plans	North Tyneside Council	Ongoing	http://www.northtyneside.gov.uk/browse-display.shtml?p_ID=224128&p_subjectCategory=811
Northumbrian River Basin Management Plan	Environment Agency	2009	http://www.environment-agency.gov.uk/research/planning/124807.aspx
South Tyneside Core Strategy and Area Action Plans	South Tyneside Council	2007-2012	http://www.southtyneside.info/article/14871/ldf-development-plan-documents-dpd
South Tyneside Green Infrastructure Strategy	South Tyneside Council	2012	http://www.southtyneside.info/CHttpHandler.ashx?id=14484&p=0
To Engineer is Human: the Role of Failure in Successful Design	H. Petrowski	1985	St. Martin's Press, New York
Tyne Catchment Pilot Survey Report	Tyne Rivers Trust	June 2012	http://www.tynecatchment.org/the-project/catchment-survey/

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