A year in review

Before: Victorian stepped weir, barrier to fish passage

After: Natural fish pass on Brancepeth beck

Environment Programme 2015 to 2016

Northumberland Durham and Tees Area, now North East Area

July 2016


Environment
Agency

Foreword

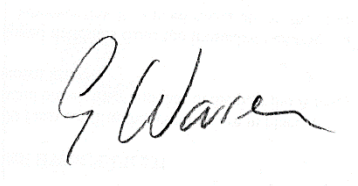
2015/16 was another successful year for the Northumberland Durham and Tees Area Environment Programme. We continue to be incredibly proud of our partners, who with their expertise and enthusiasm have supported us in delivering important outcomes for people and the environment. I'd like to acknowledge the hard work of our partners in making this a reality. Strong partnership working is key to our continued success, and enables us all to create a great place for living.

We continued to see the benefits of a number of multi-year projects, as well as new starts. These have ranged from tackling diffuse pollution on Tyne Forest Streams and the Leven Farmed Forest Fringe, to removing redundant structures and up skilling our people at Kirknewton and Middlesbrough Beacon becks, from natural fish passage at Brancepeth beck to working at a catchment scale on the Ouseburn, from continued delivery of ongoing projects such as Woodlands for Water, supporting the Pennine Peat Partnership and improving our groundwater monitoring.

The Environment Programme, and associated teams, are very special to me, they exemplify a passionate, professional and caring approach to their work to make a great place even better and I am very proud of all that they do.

Please share these successes with everyone.

I look forward to working with you all in the future.



Graeme Warren

Area Manager Northumberland, Durham and Tees now North East Area

Introduction

This review highlights the key achievements from our 2015/16 Environment Programme. With a budget of £1.5m the Environment Programme has continued to build upon the many achievements of previous years.

The key to our success is the people we work with. We have continued to establish excellent working relationships with various partners which enabled us to deliver shared objectives. We worked with 29 partners and attracted external funding in the region of £925k. We continue to strengthen relationships with our partners, increasing joint expertise and capability.

2016/17 will no doubt be another challenging and exciting year. We have a budget of £1.8m for Northumberland Durham and Tees Area, now known as North east Area. Our Environment Programme will fund high priority evidence based projects with the best outcomes and great value for money.

Summary of environmental outputs and outcomes

Project outputs (15/16)	
Number of fish passage improvements	7
Length of in channel features created/restored (m)	3,328
Length of bank side features created/restored (m)	3,083
Length of fencing installed (m)	3,717
BAP habitat created (ha)	2.05
BAP habitat restored (ha)	142
Number of interventions that have been delivered in Natura 2000 sites	3
Number of trees planted	900
Number of agricultural business that have been given advice/and or changed their way of working	45
Number of non-agricultural business that have been given advice/and or changed their way of working	0
Number of farms that have had interventions delivered to reduce diffuse pollution	12
Number of community events held	35
Number of volunteers involved	344
Number of new/improved access routes	1
Number of partners involved	29

Tyne Forest Streams

Tyne Rivers Trust and Environment Agency

What: A project to reduce the impact of commercial forestry practices on water quality. The project aims to deliver interventions on the ground to improve site conditions as well as influence forest management guides.

Quote: "This project has been as much about embedding good forest practice as it has been about delivering interventions on the ground." *Shonah Holland – Project Manager*

Where: Kielder, Tyne Catchment

NGR: NY6234793431

Wider context: The WFD assessment informed the need for the project. Many of the waterbodies are failing due to fish and phosphate which has largely been attributed to sedimentation cause by forestry. The project aimed to improve forest practices to over and above those outlined in the Forest and Water Guidelines.

Forest Streams workshop 2015

Objectives:

- To deliver capital interventions on the ground to help mitigate the impact of forestry on the watercourses.
- To influence the forest and water guidelines and forest practice guides in order to ensure project legacy.

Outputs:

- Silt traps
- Forest road drainage improvements
- Improving watercourse buffer zones
- Settling ponds
- Woody debris
- Forest streams workshop

Cost: £25,000 (2015/16)

Benefits:

Partnership working at a catchment scale, to deliver multiple benefits and achieve improvements in WFD status.

Next steps:

This project has now reached a planned end with good forest practice embedded within forest practice guides.

River Leven Farmed Forest Fringe

Tees Rivers Trust, Forestry Commission and Environment Agency

What: Farm advice and management plans to reduce rural diffuse pollution impacts, capital interventions to implement measures and targeted work with Forestry Commission to mitigate run off from forest harvesting.

Quote: "Managing sediment through small changes in land use and infrastructure improvements which also provide a cost benefit to the farm." Ben Lamb Tees Rivers Trust

Where: River Leven North Yorkshire

Objectives: Reduce impacts of increased rates of run off from forestry harvesting by intercepting flow in settlement ponds; work with five farms at edges of forestry area, give advice and fund up to 50% measures to reduce run off by project end.

Outputs/Outcomes:
2 reed bed water polishing (0.2ha reed bed habitat), 7 forestry silt traps, 2500m bankside fencing, solar drinker and 5 silt traps, 50m³ rainwater harvesting system, 50m sleeper track, 100m hardcore track, 2 hardcore gateways, 30m² concrete yard, 100m² bank stabilisation, 4 silt traps with sleeping policeman diversions, 20m² sleeper drinking area for herd.

Cost: EA £40k plus £3k in match funding.

Benefits: Showcasing cost benefit of managing water has generated much interest and cash input from farms; Forestry Commission have identified more opportunities for creating silt traps ahead of extensive felling over coming 20 years – this will help to reduce ongoing flood risk.

Tips and lessons learnt: The weather is always a limiting factor for these projects and so ensuring that agreements are worked up in good time early on in the financial year will help to reduce risk of back-ending work otherwise delayed by the weather.

Next steps: The Trust is developing a long term HLF bid for the Leven in partnership with EA, Local Authorities and others. There will be a focus on soils within this. Catchment Sensitive Farming is now active in the Leven and this will help deliver ongoing work.

A wet gateway causing sediment to enter adjacent beck is resurfaced with hardcore.

A rainwater harvesting system being installed. This harvested 30m³ within the 24hrs of installation. This has a predicted payback time of 2 years.

Kirknewton Weir removal

Environment Agency

What: Removal of a redundant gauging weir at Kirknewton, River Glen.

Where: Kirknewton, River Glen, Till and Tweed River Basin. **NGR:** NT9184531016

Wider context: The River Glen is a wandering gravel bed river currently a WFD failing waterbody and a SSSI in unfavourable (no change) condition.

Objectives:

- Allow fish easier access to spawning gravels upstream.
- Work towards improving the WFD waterbody status.
- Help to move the River Glen from unfavourable (no change), to unfavourable recovering condition.
- Manage the expectations of those stakeholders who may be affected by weir removal.
- Restore natural channel processes through the reach of sediment transport, lateral and vertical channel adjustment.

Outputs:
Reinstating the natural function of the river system by removing the impoundment and creating a natural pool riffle sequence and varying planform.

Project delivered by EA Ops overseen by Esh (for CDM specialism), therefore up skilling internal staff.

Outcomes: Successful, timely removal. Site working towards improved WFD and SSSI condition, improved fish passage.

Cost: £60,000

Benefits: Improve fish passage at low flows, allow the River Glen to adjust naturally.

Tips and lessons learnt: Not to underestimate the CDM requirements surrounding a demolition project.

Next steps:
Monitor the adjustment of the river using time lapsed imagery.

To explore a River Glen management plan.

After - Looking downstream, August 2015

After - Looking downstream, September 2015

Brancepeth Beck fish passage improvement

Wear Rivers Trust and Environment Agency

What: A 2.5m high, Victorian stone-stepped weir in the landscaped grounds of Brancepeth Castle was completely impassable to all species of fish, preventing access to good spawning grounds upstream. Two further obstructions, a stepped bridge footing and a culvert on the adjacent golf course were also problematic to fish passage.

Quotes: Paul Frear, EA Project Manager: "Working in partnership with the Wear Rivers Trust we have delivered an outstanding fish pass improvement project on Brancepeth Beck."

Steve Hudson, Project Officer Wear Rivers Trust: "We are delighted that we are finally able to begin addressing barriers to fish passage on the Brancepeth Beck. Three years ago, we asked volunteers to help us by surveying the full length of the beck and they identified 11 structures that are preventing fish from re-colonising the once heavily polluted beck. We have now been awarded Environment Agency funding to start and address these barriers."

Where: Brancepeth Castle (River Wear)

NGR: NZ2264037467, NZ2283837434, NZ2286037426

Before: Victorian stone-stepped weir before rock ramp

After: Natural fish pass at the Victorian stepped weir

Wider context: We used a tried and tested designs for the fish passes. A rock ramp was installed on the stepped Victorian weir and baffles and a pre-barrage arrangement on the two adjacent obstructions. These designs allow the passage of a range of species from minnow, bullhead, brown trout and sea trout. By allowing these species to recolonise the Brancepeth Beck we will improve the fishery status under the Water Framework Directive.

Objectives: As part of our Environment Programme we are completing a series of fish passage projects on the Brancepeth Beck in order to attain WFD good ecological status.

Outputs and Outcomes: The fish pass on the large stepped weir removed the single most important barrier to fish passage on the Brancepeth Beck system. The two other fish passes have allowed fish to easily reach the new rock ramp which opened up 1km of watercourse and access for fish to spawning habitat. The remaining 8 obstructions to fish passage require mitigation, but once complete will fully restore the Brancepeth connectivity and increase sea trout stocks in the system.

Cost: £63,000

Stepped culvert prior to improvements

Stepped culvert following improvements

Benefits: With improved connectivity for fish and the Brancepeth will once again provide an important spawning and nursery tributary to the River Wear. This in-turn will help support the recreational sea and brown trout fishery and improve WFD status.

Tips and lessons learnt: The project progressed slower than initially anticipated due to archaeological constraints and finalising the design on the large stepped weir. A pragmatic approach was taken to conserve the weir and protect it underneath the rock ramp.

Pre-post project appraisal: Fish population data has indicated the beck was failing for fish along most of its length due to obstructions to fish passage. We expect to observe an increase in fish stocks in future surveys.

Bridge footings prior to improvements

Bridge footings following improvements

Next steps: £10k is available in 2016/17 to address the next obstruction upstream.

Ouseburn River restoration

Who: Groundwork North East and EA

What: A feasibility study involving walkover surveys of the middle and upper Ouse Burn from Callerton at source to where it runs through City of Newcastle Golf Club. To identify with partners opportunities for habitat creation and river restoration projects. This will address WFD mitigation measures for this Heavily Modified Water Body.

Quote: "This multifunctional project has encompassed partnership working to enable us to deliver a project which makes the most of opportunities through development in the catchment." *Shonah Holland – Project Manager*

Where: Ouse Burn, River Tyne catchment

NGR: NZ19450 69917

Wider context: The WFD assessment informed the need for the project with other important drivers including habitat creation via our own Outcome Measure 4 and the England Biodiversity Strategy 2020. There is significant development planned in the catchment which provides an opportunity for river restoration.

Objectives:

- To gain an understanding of completed, current and planned activity as well as constraints and opportunities in the project area by December 2015.
- To develop concept designs for prioritised projects by 29 February 2016.

Outputs:

- A report and maps outlining a suite of prioritised and costed River Restoration initiatives for delivery during 2016/17 and 2017/18.

Cost: £50,000 (2015/16)

Benefits: Partnership working at a catchment scale to deliver multiple benefits and achieve improvements in WFD status.

Next steps: This project will now move in to delivery stage during 2016/17 to 2018/19, to put into place mitigation measures at a number of sites along the water body to mitigate the high levels of phosphate and fine sediments finding their way into the Ouseburn.

NW will be installing a new pipe at this location to open up a surface water drain which will then feed into a small reedbed. This will slow the rate of flow and clean the drain water before it flows into the main river.

Woodlands for Water

Who: Environment Agency and Forestry Commission

When: August 2015 to June 2016

What: The fourth year of a multi-area landscape scale partnership focussing on improving water quality and reducing flood risk. Trained advisors will engage with landowners to agree woodland creation in priority flood risk and near to waterbodies with negatively impacted WFD status.

Quote:
"Improving the environmental quality of rivers and streams whilst helping to reduce flood risk through the creation of new woodland"

Where:
Both the Northumberland, Durham & Tees and Yorkshire areas.

Wider context:
The project will contribute to improvements in WFD status elements and reduce flood risk to communities most at risk from flooding. The project will also help improve aspects of National Character Areas and increase the amount of BAP habitat created, helping to achieve a wider number of EA KPIs.

Objectives:
Creation of woodland with a greater focus by advisors on priority areas to ensure maximum future WFD and flood risk reduction outputs are achieved by 2021. To constantly seek new potential partners with shared interests and objectives.

Outputs:
Delivery of an estimated 55 hectares of woodland planting by April 2017 across Yorkshire and NDT. Improvements in various waterbodies across both the Yorkshire and Northumberland Durham and Tees Areas by 2021.

Cost: Total project cost £29k.

Benefits:
The project will continue a strong partnership between two organisations in the Defra family. Using organisational expertise, the project will contribute to improvements in the WFD element status of waterbodies. It will also lead to an increase in lag times and reduction in peak flows in areas deemed to be at flood risk using natural flood management techniques.

Tips and lessons learnt:
Delays in confirming land ownership with land registry. Alterations to the timetabling of deliverable have been undertaken to avoid this in the 2016/17 project.

Landowner take up of the scheme previously had narrow geographical focus, with low take up in priority areas. This was rectified by increasing payment to advisors in priority areas and reducing the payment in non-priority areas to increase the incentive.

Next steps:
Look for links in other funding sources where crossover exists. Re-tender for advisors to ensure the correct advisors are working in the correct locations.

Pennine Peat Partnership

Who: North Pennines AONB

What:
To restore areas of degraded upland peatland in the North Pennines Area of Outstanding Natural Beauty (AONB). This ensures the long term future of these unique and valuable habitats for future generations.

Where : North Pennines (AONB)

Objectives :

- Restoration of 140ha severely degraded blanket bog by March 2016 at Wellhope, Whitfield, Warcop, Birkdale and Stainmore.
- Reducing the release of 4,340 tonnes of peat based CO^2per year from these sites. Over 10 years 43,430 tonnes CO^2 will be saved from the atmosphere.
- Safeguarding 112,000 tonnes of CO2 stored within these sites.

Outputs:

Restoration work has occurred at 7 sites this winter including Birkdale, Valence Lodge, Stainmore, Warcop, Ousby, Wellhope and Whitfield.

A mix of restoration techniques were used including grip blocking, sphagnum spreading, gully blocking, wooden dam installations, coir roll installation and plug planting.

In total about 142 ha were restored.

Cost: £33k

Tips and lessons learnt:

A long standing established partnership, working very smoothly.

Next steps:

Multi area multi million pound EU project.

Plug planting on a degraded site in the North Pennines AONB

Middlesbrough Beacon Becks

Who: Environment Agency and Middlesbrough Council

What: Redundant gauging weir removal and removal of two smaller weirs.

Quote:
"Within days, in channel features were forming and the beck was reverting to its natural form. A few months later it was as if the weir had never been there."

Where: Marton West Beck

NGR: NZ4988416530

Wider context:
This work was a small package of works within the wider Middlesbrough Beacon Becks Project. We continue to see the benefits of this multi-year project coming through. We have worked with a range of partners to deliver important outcomes for people and the environment.

Objectives:

12 linear metres of natural bed and banks leading to more natural flow regime for approximately 60metres.

Improved water vole habitat with marginal vegetation and bankside cover.

Cost: £12,000

Benefits:
The removal of 12 metres of concrete channel with weir to natural channel bed and banks as well as improved eel and fish passage.

Tips and lessons learnt:
Concrete removal can take longer than expected especially if it is reinforced and over 600mm thick.

Redundant gauging weir

After removal of gauging weir

Replacement Groundwater Monitoring Borehole

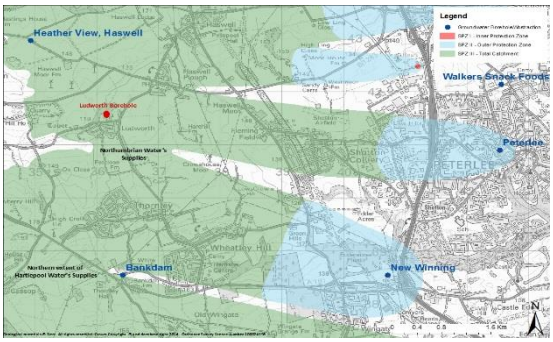
Who: Environment Agency

What: Installation of a new 58m deep borehole to monitor groundwater levels in the Magnesian Limestone principal aquifer. The monitoring data obtained is our only insight into the state and behaviour of groundwater in our area's aquifers.

Where: Ludworth, County Durham at NGR - NZ 36152 41465 within the River Wear catchment.

Why: The works involved the replacement of an existing groundwater monitoring borehole at Ricknall Lane, Co. Durham, which was no longer fit for purpose. The estimated cost for the refurbishment works was more than re-drilling a replacement borehole. The many H&S concerns with accessing the existing site would be difficult and costly to rectify. As such, it was recommended to replace rather than refurbish the existing borehole, locating the new borehole in a better location. The existing borehole has been successfully decommissioned as part of another project.

Wider Context and benefits: The Magnesian Limestone aquifer supports a number of strategic abstractions operated by Northumbrian (NW) and Hartlepool (HW) water companies. The aquifer is impacted by nitrate, mine water and saline intrusion and groundwater abstractions are thought to be impacting baseflow to rivers.
The Ludworth borehole has filled an identified gap in our monitoring networks. It is located between the designated groundwater Source Protection Zones (SPZs) for Peterlee and New Winning, two of NWs supplies and will allow us to refine the SPZs (Figure 1).



SPZs for water company abstractions

Lessons Learned: None of the framework contractors were able to undertake the works. As such, an open market competition was undertaken. This doubled the time spent on procurement and delayed the works until winter. In future, non-framework contractors need to be engaged at an earlier stage.

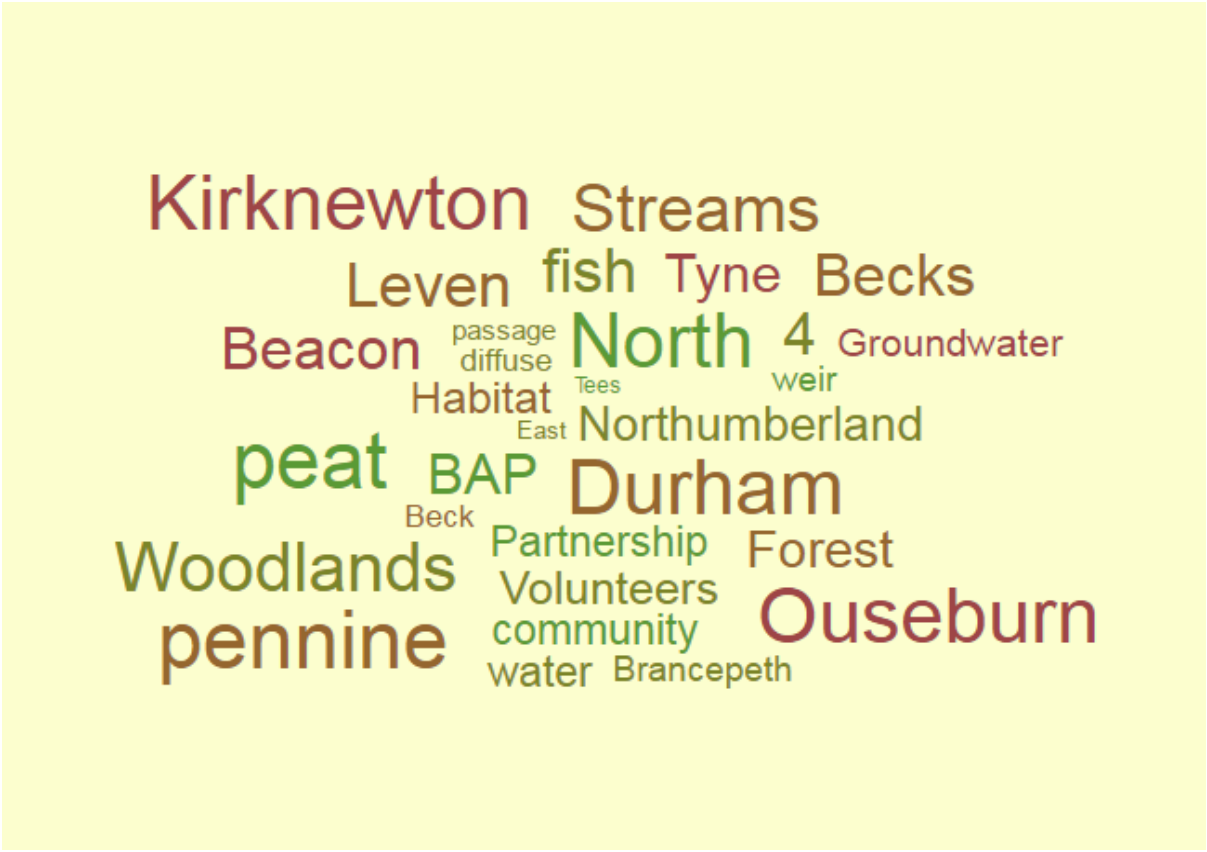
Cost: £19k.

Next Steps: Long term groundwater level monitoring will be commenced during May 2016 and initial groundwater quality monitoring will be undertaken during summer 2016 and then fed into the national groundwater programme in autumn.

Acknowledgements

Brancepeth Estates
Brancepeth Golf Club
Catchment Partnerships
- Tees
- Wear
- Tyne
- Northumberland Rivers
- Till and Tweed

Coal Authority
Darlington Borough Council
Durham University
Durham University Conservation Society
Durham County Council
Durham Heritage Coast Partnership
Durham Wildlife Trust
Forestry Commission
Groundwork NE
Hartlepool Borough Council
Heritage Lottery Fund
Natural England
North Pennines AONB
Northumberland County Council
Northumberland Rivers Trust
Northumberland National Park Authority
Northumberland Wildlife Trust
Northumbrian Water
Ribble Rivers Trust
South Tyneside Council
Stockton on Tees Borough Council
Sunderland City Council
Tees Rivers Trust
Tees Valley Wildlife Trust
The National Trust
Tweed Forum
Tyne rivers trust
Wear Rivers Trust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Tyne
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Beacon
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North
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Groundwater
Tees
weir
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