A year in review

Wetland creation delivered by the Northumberland Rivers Trust on the Med Burn, Northumberland

Environment Programme 2018 to 2019

North East Area

May 2019

Foreword

2018/19 has been another outstanding year for the Environment Programme. Working with 39 partners we have helped to deliver key outcomes for the Environment to ensure the north east continues to be a great place to live.

The strength of our partnership working in 18/19 has helped us deliver some fantastic results for the north east. Our goal is to create a better place for people and wildlife, working with our communities to achieve great outcomes.

Our programme has supported over 161 volunteer days and 16 community events helping to deliver 49 km of enhanced waterbodies, over 20 ha of tree planting, 7 fish passage improvements and restored 64.5 ha of BAP habitat.

Our local choices have delivered improvements in both rural and urban areas, creating new catchment partnerships, such as the Tyne estuary Catchment Partnership, and advising agricultural businesses to help reduce diffuse pollution.

Looking ahead investment in the environment continues to be a challenge and we will be working with our partners, communities and businesses to help secure new and innovative forms of funding to deliver more for our Environment.

We should all be incredibly proud of the hard work that has been put into the Environment Programme this year and we hope you will enjoy reading about our highlights and key achievements. Here's to continued success in the coming year with great outcomes for the stunning Environment of the north east.

The Environment Programme Team

Summary of environmental outputs

Project outputs (18/19)	
Number of fish passage improvements	7
Length of in channel features created/restored (m)	2,725
Length of bank side features created/restored (m)	1,985
Length of fencing installed (m)	5,755
BAP habitat created (ha)	6.3
BAP habitat restored (ha)	64.5
Hectares of trees planted	20.2
Number of agricultural business that have been given advice/and or changed their way of working	16
Number of farms that have had interventions delivered to reduce diffuse pollution	11
Number of community events held	16
Number of volunteers days	161
Number of new/improved access routes	3
Number of partners involved	39
Length of delculverting (m)	60
Kilometres 'enhanced'	52

Durham Wildlife Trust, Tees Rivers Trust, Bright Water Landscape Partnership and Environment Agency

Where: The Skerne catchment
NGR: NZ3003926066

What: Create / improve water dependent habitat and enhance watercourses in the Skerne catchment as part of a wider set of Bright Water Partnership projects.

Wider context: The Skerne catchment has been heavily modified, with rivers being moved to the edge of their floodplains into widened straightened channels, with the aim of draining and reducing flooding of agricultural land. River biodiversity has suffered and 'carr' grassland lost.

The Catchment Sensitive Farming project is reducing diffuse agricultural sources of phosphate and silt in the upper Skerne.

The land is experiencing changes through the combination of a reduction in the previously intensive public maintenance of such channels, groundwater returning to pre-1850's levels, and more extreme rainfall events.

Quote: "The Bright Water Landscape Partnership is a fantastic opportunity to shine a light on this forgotten catchment that was instrumental in shaping the industrial and agriculture revolutions."
Jim Cokill
Durham Wildlife Trust

Objectives: Create or improve at least 41 ha of water dependent habitat and enhance 2.5km of river through engagement with land owners, managers and Defra colleagues, ensuring incorporation of Working with Natural Processes and Natural Flood Management into design and practice. Improve resilience to climate change and future land use with an aspiration to create The Great North Fen legacy, a patchwork of wetlands within a working agricultural landscape. Explore with Northumbrian Water integrated constructed wetlands to meet nutrient reduction standards while providing biodiversity benefit.

Outputs: Concept Designs produced and staged permissions secured. Year 1 Skerne improvement programme complete.

Outcomes: Enhanced river habitats that improve fish populations. A regionally significant nature reserve at Bishops Fen. Exemplar land management schemes that demonstrate water related higher tier stewardship options in practice.

Cost: EA £200k £420k partner match (whole project)

Tips and lessons learnt: Landowner, agent and tenant relations require significant investment of time and benefit from a staged approach to agreements.

Next steps:
2019: Detailed designs, permissions and construction of Bishops Fen. Complete Year 2 programme of River Skerne habitat improvements between Darlington and Newton Aycliffe. Secure agreements to construct Woodham Fen in 2020.
This bid is seen as a catalyst to further 'legacy' work through the Skerne Facilitated Group of farmers and the Tees Catchment Sensitive Farming project.

Cocker Beck reconnection

Environment Agency, Darlington Borough Council & Tees Rivers Trust

What: Feasibility and design for a project to reconnect the Cocker Beck which was disconnected many years ago to prevent flooding. The project will also see the creation of wetlands and flood attenuation ponds.

Wider Context:
The Cocker Beck was rerouted from its original route in the 1950s and was connected to the Baydale Beck instead. The reason for this was to prevent flood risk in Darlington. As a result the Cocker Beck now suffers very low flows, and increased pollution on its route through an area of amenity grassland.

This project aims to reconnect Cocker Beck, allowing water to flow, ecology to thrive (particularly Water Vole), and make the beck central to the public greenspace once again. Wetland and flood attenuation ponds will be installed to remove any risk of increased flooding in Darlington.

This project has involved detailed design and an application for a Flood Risk Activity Permit, to prove there will be no increase in risk of flooding.

The delivery of the project will be funded by Darlington Borough Council and managed in partnership with the Tees Rivers Trust.

Quote: Shonah Holland, EA Project Manager said "it is fantastic to see a project which is relatively easy to implement yet will have so many benefits from improved ecology, geomorphology, water quality as well as improved recreation. Even the flood attenuation ponds will have multiple benefits".

Objectives:
- Completion of engineering drawings for flood attenuation ponds.
- Full proposal and costings for additional wetlands

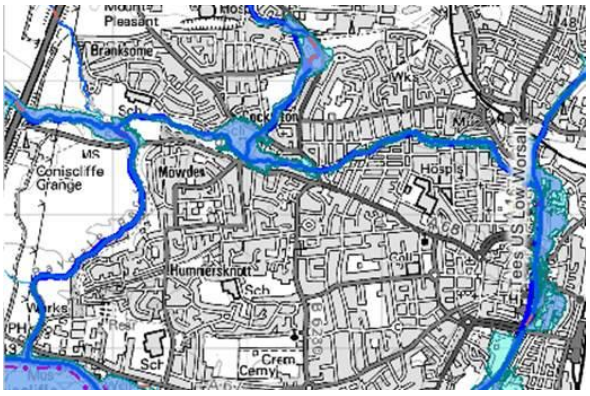
Outputs/Outcomes:
- Engineering drawings approved by EA PSO Team.
- Project summary report

Cost: £10k EA plus £4k partner in kind

Benefits: Improved water quality, improved ecology, improved recreational space and reduced flood risk for residential property.

Lessons Learned:
Engage with PSO team at early stage so they can input into designs from the outset, making the process more efficient.

Next Steps:
Darlington Borough Council, along with Tees Rivers Trust will oversee the delivery of the reconnection during 2019.



Flood zones around Cocker Beck

Cong Burn Restoration

Environment Agency, Durham County Council, Wild Trout Trust & Wear Rivers Trust

What: A river restoration project to deliver Water Framework Directive (WFD) mitigation measures on the 'Cong Burn from Source to Twizell Burn' and the 'Cong Burn from Twizell Burn to Wear' Water Bodies.

Wider Context:
This project complements the 'Twizell Burn River Restoration project' which has been an Environment Programme Project for a number of years. The project will also compliment the Durham County Council £5.2m Chester –le- Street Flood Alleviation Scheme which commenced in November 2018, and will also open a culvert which currently restricts flow as well as the movement of fish.
During 2018/19 the project delivered 2 fish passes and worked with CBEC consultants to develop detailed designs for River Restoration work on the lower Cong Burn.

Quote: Shonah Holland, EA Project Manager said "One of the best parts of this project has been the huge amount of community engagement in the river restoration designs for the Lower Cong Burn. The area is expected to be used by the whole community so it is only right they have had an opportunity to feed in their ideas. The Wear Rivers Trust led an excellent consultation campaign".

Objectives:
- Completion of engineering drawings for flood attenuation ponds.
- Full proposal and costings for additional wetlands

Outputs:
- Culvert fish easement at Holmside Weir.
- Culvert fish easement at Waldridge Weir
- Cong Burn culvert channel investigation & redesign

Outcomes:
- Opening up 11km of river for fish passage
- Stakeholder agreement for proposals
- Improved community awareness and usage of urban green space

Cost: £50k EA, £26.2k in kind

Benefits: Improved fish populations. Reduced flood risk for residential property.

Lessons Learned:
Engagement with the local community and key stakeholders has underpinned the success of this project.

Next Steps:
Sourcing of funding for delivery of the River Restoration work and further engagement as well as competitive tendering process (2019/20), followed by scheme delivery in 2020/21).

Before and after visualisation produced by CBEC eco-engineering UK Ltd

Coquet Estuary Habitat Enhancement

Environment Agency & Hull University

What: This project working with Hull Universities 'Institute of Estuaries and Coastal Studies' to scope the opportunities for quick and long term biodiversity gains, and help improve the Water Framework Directive status of the Coquet estuary.

Wider Context:
There is a lot of investment in the lower reaches of the River Coquet, Northumbrian Water Group are conducting feasibility work into the possible removal the half-tide weir within the estuary. The Northumberland Rivers Trust have recently being successful in securing funding from the Water Environment Grant to deliver works to improve water quality in three of the lower Coquet Side Streams and a fisheries project is currently improving fish passage and habitat on a number of the River Coquets tributaries. A water quality monitoring project is also working with Newcastle University to better understand both diffuse and point sources of nitrogen throughout the catchment and its impacts on the estuary.

Quote: "Involving the expertise of Hull University and other partners has provided an exciting set of opportunities to put before the local communities" Heather Harrison, EA Project Manager.

Objectives:
Identify potential enhancement opportunities for quick, and for long term, biodiversity gains. Improve the Water Framework Directive status of the Coquet Estuary Water Body

Outputs/Outcomes:

- Detailed site visits, Arc GIS Mapping, produce Final Report detailing habitat enhancement options and presentation of findings to Steering Group

Cost: £20k EA, £2.7k partner cash

Benefits: Improved water quality. Improved biodiversity.

Lessons Learned:
Added value from working with marine academics at Hull University.

Next Steps: Work closely with Northumberland Water Group throughout their weir removal feasibility study. Review all existing evidence and information from previous projects in and around the Coquet Estuary, using this information to feed into detailed design for habitat enhancement opportunities. Engage with the local community regarding their preferred option/s. Work with the AONB on a future National Lottery Heritage project for the AONB, which the Coquet Estuary is part of.

The Coquet Estuary

Coquet Estuary Vision

Environment Agency & Northumberland Wildlife Trust

What: This year the project will build on the previous vision, supporting the development of options for interventions to improve estuarine processes and habitat. This will involve ongoing stakeholder engagement and landowner involvement, and the formation of a Coquet Estuary steering group to ensure options are supported and viable.

Wider Context:
Northumbrian Water Group are currently exploring options for removal of the half tide weir. Projects with Newcastle and Hull Universities are implementing water quality monitoring throughout the lower Coquet catchment and identifying opportunities for habitat enhancement and Water Framework Directive improvements.

Quote: **"**This project was critical in supporting the other Coquet projects. It established a single point of contact to ensure all partners were brought together and kept well informed" Heather Harrison, EA Project Manager.

Objectives:
Engage with and gain the support of partners and landowners. Work closely with Hull University to insure the appropriate partners and landowners are being consulted and kept informed.

Outputs/Outcomes:

- Form and develop 'The Coquet Estuary Partnership Steering Group'.
- Undertake landowner liaison and meetings with key partners.

Cost: £10k EA

Benefits: Better engagement with partners and landowners.

Lessons Learned: Having a dedicated partner allowed much more effective engagement, which will improve the outcomes of all of the Coquet projects

Next Steps: Consultation, engagement, and delivery of the habitat enhancement opportunities identified by Hull University. Endure all partners are kept informed and involved.

Photo: The old course of the Coquet Estuary

Coquet Water Quality

Environment Agency, Newcastle University & Northumberland Rivers Trust

What: The start of a phased project to improve the Water Framework Directive (WFD) status of the Coquet transitional Waterbody. Phase 1 (Nov 18 – Mar 19) involved targeted spot sampling, to narrow down sources of nutrients within the lower Coquet catchment. Phase 2 (Apr 2019 +) will be the implementation of water quality 'sensor pods' supplied by Newcastle University based on phase 1 findings. The 'sensor pods', designed for the monitoring of aquatic environments, consist of a module that can be fitted with a range of sensors and the data accessed remotely.

Wider Context:
The Coquet Estuary is located within Northumberland Coastal area which is listed as a Priority Area in the North East Area Integrated Plan. Warkworth Dunes and Saltmarsh SSSI and Northumberland Dunes SAC are within the Coquet transitional waterbody boundary.

Objectives:
- Collect good range of spatial data from Coquet catchment over 5 months.
- Use monitoring data to identify sources of nutrients
- Data comparison of water spot samples collected with remote electrical 'sensor pod' data
- Share data with Coquet Estuary Partnership to drive habitat enhancement projects and water quality improvements within the catchment.
- Identify point sources of pollution.

Outputs/Outcomes:
- Three tributaries have been identified as consistently having high nutrient load, suggesting diffuse issues in these sub-catchments.
- Pollution incident identified at Shilbottle Colliery settlement ponds

Quote: "A significant amount can be learned from a relatively short investigation with a catchment based approach and targeted sampling, which shows how important it is to have boots on the ground" Anthony Crook, EA Marine Monitoring Officer.

Cost: £10k EA £17k partner match

Benefits: Areas have been identified where water quality improvements can be made.

Lessons Learned: Different EA teams can work efficiently together to achieve fortnightly spot samples despite staff turnover and resource pressures.

Next Steps:
- Compare results with remote water quality sensors supplied by Newcastle University. This novel technique has huge potential for monitoring how pollutants move down a catchment in real time.
- Engage with NRT to discuss target areas for WEG funded projects.

Shilbottle Colliery settlement pond overtopping into Tyelaw Burn, Coquet Catchment.

Cullercoats Investigation

Environment Agency, North Tyneside Council, & Northumbrian Water Group

What: An investigation to understand the cause of deterioration and enable future partnership working with Northumbrian water and North Tyneside Council. Northumbrian water are keen to let this investigation guide them as to what interventions they need to make. Without this investigation we would be forced to wait until 2021 for the PR19 investigation to take place. Further deterioration to "poor" would have considerable implications to the local economy which is reliant on visitors to the bathing water

Wider Context:
Cullercoats Bay is a busy bathing water popular with locals and visitors alike. 2017 sampling saw a decline in water quality leading to a deterioration in classification from "good" to "sufficient"

Quote: **"**This project has facilitated working relationships with Northumbrian Water and North Tyneside Council, to date Northumbrian Water have spent approximately £60k investigating and improving the sewer network in the area based on the results from this monitoring" Gordon Reid, EA Project Manager.

Objectives:
Reduce time scales for improvement and meet bathing water objective.

Outputs/Outcomes:

- Comprehensive sampling program along the beach and at sea undertaken
- Identify the source of the bacteria using DNA

Cost: £10k EA

Benefits: Improved water quality. Improved bathing water classification. Higher visitor numbers

Lessons Learned: Our lab analysis of the DNA is unable to give a definitive source apportionment of the bacteria. Future analysis will remedy this.

Next Steps: We are continuing the monitoring into the 2019 bathing water season. Additional DNA analysis to more accurately explain the source apportionment will be carried out in 2019.

Photo: Cullercoats Bay

Delf Burn Steng Moss project

Environment Agency, Natural England and NLHF Revitalising Redesdale Project Team

What: Damage to these peatlands through past practices including inappropriate grazing, drainage and burning has resulted in degraded areas of peat. This project aims to prevent sediment loss, and to reduce and delay the loss of water from the peat, specifically by reducing water through-flow.

Wider Context:
The Steng Moss Peatland Restoration forms part of a larger element of the Revitalising Redesdale National Lottery Heritage Fund Landscape Partnership Programme. Steng Moss sits at the top of two river catchments and is an important contributor to both – these being the Rede Catchment (Tyne) and the Wansbeck (Northumberland). The site is at the head of the Delf Burn which is classed as moderate under WFD.

Quote: "The ditch-blocking and re-profiling work on this site is an excellent example of best practice in peatland restoration, which will enhance the wetland vegetation and help restore a hydrologically functioning bog system. Removal of self-seeding conifers from the site using volunteers is an important effort which will also help maintain the integrity of the peatland" Katharine Birdsall, EA Project Manager.

Objectives:

- Prevent sediment loss
- Reduce and delay the loss of water from the system

Outputs:

- Ditches blocked or re-profiled - ditches draw down water levels on peatland sites, affecting vegetation and reducing the effectiveness of the bog to control flows
- Conifers removed – conifers damage peatlands through transpiration, drying out the bog, and through shading, killing the underlying vegetation

Outcomes:

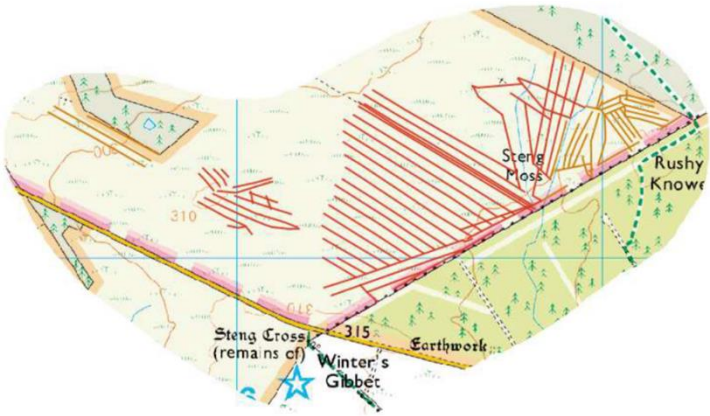
- 64 Ha of peat habitat stabilised and restored

Cost: £18k EA, £62k partner cash

Benefits: Improved water quality. BAP habitat stabilised and restored. Improved biodiversity.

Lessons Learned:
The project ran smoothly, on a tight timescale with an effective project team lead. EA should seek further opportunities to support peatland restoration in Northumberland.

Next Steps:
EA to continue to provide support for the wider NLHF Revitalising Redesdale landscape partnership project, as agreed.



Map of grips (drains) on one site East Tod Holes (Steng Moss) that will be blocked as part of the project

Don erosion project

Environment Agency & Tyne Rivers Trust

What: Work with and contribute funding to the Tyne Rivers Trust to deliver a suite of interventions to address WFD mitigation measures.

Wider Context:
We are committed to improving the waterbody to Good by 2027. In particular, this project will contribute to improving the failing element 'Mitigation Measures Assessment'. Previous projects, delivered by numerous partners under the wider Catchment Partnership and River Don Vision, have provided the feasibility and outline designs to inform development of this project and assure delivery of its identified outcomes

Objectives:

- To work with landowners to adjust land management practices to reduce sediments and other pollutants entering the river
- Removal or modification of obstructions to fish passage

Outputs:

- 450m of fencing
- 65m of bankside features restored

Outcomes:
Cost: £20k EA, £5k partner contribution

Benefits: Improved water quality. Improved biodiversity. Improved fish passage.

Don River Restoration

Environment Agency & Tyne Rivers Trust

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Wider Context:
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Quote: "Tyne Rivers Trust have been very active in developing a great relationship with riverside land owners and users. Successful delivery of the project has been due to their work with the landowners to help them recognise the benefits of working together." Terry Robson, EA Project Manager.

Objectives:

- To work with landowners to adjust land management practices to reduce sediments and other pollutants entering the river
- Removal or modification of obstructions to fish passage

Outputs/Outcomes:

- Feasibility for fish passage at two barriers
- Reduce diffuse pollution at 2 sites
- Reduce erosion and cattle poaching

Cost: £80k EA, £4k partner cash, £15k in kind.

Benefits: Improved water quality. Improved biodiversity. Improved fish populations.

Lessons Learned: Early engagement and commitment from land owner is essential in successful delivery of interventions.

Next Steps: Deliver fish passes at two or three barriers. Further engagement with land owners to identify future opportunity for improvement in land management techniques.

Before and after improvements to muck storage facilities

North East Mining and Groundwater Constraints Screening Tool

Environment Agency & Coal Authority

What: Roll out of the North East Mining and Groundwater Constraints Screening Tool, enhanced stakeholder engagement and reviewing and amending the supporting guidance.

Wider Context:
Since coal mining and mine pumping ceased, mine water levels have been rebounding (by up to 100m). As water levels recover, groundwater flooding and pollution risks increase. New drainage systems with a component of infiltration should consider whether the ground has the capacity to take more water, as mine water levels continue to recover.

Where: North East Coal Field; from Berwick-Upon-Tweed to Darlington

Objectives:
- Launch the screening tool on the Coal Authority's Interactive Viewer with supporting information on dedicated gov.uk pages
- Empower key stakeholders to use the tool through engagement workshops
- Review and amend the screening tool supporting guidance following feedback

Cost: £11.5k EA, £9.5k Coal Authority

Outcomes:
- Increased awareness of mining and groundwater constraints across the North East and nationally.
- Empowered Local Authorities – building the information into their strategic and local development plans.
- Northumbrian Water have flagged potential network capacity issues with their directors to prioritise spending.

Quote: Following the launch of the screening tool online we received correspondence recognising the importance of the work and desiring to build on it: *"It would be useful to integrate these layers into the BGS SuDS tool. The Geospatial Commission is trying to align BGS and CA work, this [the constraints screening tool] is a classic case where we could do."* Holger Kessler (Geospatial Commission – Cabinet Office)

Benefits: The publication of the outputs necessitates a change to how we manage mining and groundwater risks. A multi-disciplinary virtual team within the North East area has been established to join up mine water management and regulation.

Next Steps:
- A review of the Constraints Screening Tool methodology and data in 2020-21.
- Potential extension of the Screening Tool to include metal mines in Saltburn.
- Review of control levels and risks for each mining block.
- Review of Coal Authority MOU to include mine water level management in addition to quality.
- Incorporation of mine water into ISLs.
- Inclusion of the Constraints information into Northumbrian Water's planning.
- Joining up Flood Risk Assessment pages on gov.uk with the new Constraints information.

Durham Weirs Project

Environment Agency

What: Develop options for improved fish passes on the Framwellgate and the Museum weirs in the centre of Durham on the River Wear. An options appraisal will provide costings and design to progress repairs to an existing fish pass, while providing expert advice for improved fish passage on museum weir.

Wider Context:
Framwellgate weir is an Agency owned weir. Parts of the fish pass associated with the weir are in danger of collapse. Museum weir is an important listed structure in a world heritage site, with an existing fish pass that requires improvements.

Quote: "The outcome of the study will provide a much needed way forward to address a number of issues with fish passage for all species" Phil Rippon, EA Project Manager

Objectives:

- Assess impacts of all structures on fish passage
- Evaluate options, and develop preferred options for both sites to concept design stage

Outputs:

- Costed preferred fish pass concept designs for the two weirs, that are acceptable to all stakeholders

Outcomes:

- Improved understanding of the impact of these complex structure on fish.
- A report with initial designs and recommendations that can be used to secure funding for delivery

Cost: £5k EA

Benefits: Framwellgate weir stabilised. Improved fish populations

Lessons Learned: A good options appraisal report can be produced at low cost.

Next Steps: Secure £25k in 20/21 to build the fish passes. Liaise with Durham County Council who own other parts of Framwellgate. Should museum weir progress; involve the Dean and Chapter of Durham and other partners in delivering a solution.

Visualisation of a low cost baffles fish pass for Framwellgate upper weir

Groundwater Geology Study

Environment Agency & British Geological Survey

What: This project will use the British Geological Society's (BGS) expertise to confirm and refine our understanding of the geology of the Fell Sandstone. Understanding the geology of this aquifer is critical to understanding how water and contaminants, such as nitrate, move within the aquifer and also to ensure abstractions are sustainable.

Wider Context:
The Groundwater Body currently fails WFD water resource standards. Understanding the complex geology that 'feeds' the abstraction points is critical to being able to understand the sustainability. Northumbrian Water Group (NW) are separately funding a concurrent project with the BGS to develop a numerical model for the Fell Sandstone, valued at £40k.
Quote: "Having the BGS review and update our geological understanding has been incredibly helpful. Their expertise has improved our understanding and will allow us to better manage the water resources of this aquifer." Melissa Swartz, EA Project Manager.
Objectives:

- Synthesise a combination of surface and subsurface data into a set of cross sections
- Produce a map and report outlining the geology of the aquifer

Outputs:

- Six cross-sections of the Formation in the Berwick-upon-Tweed area
- 1:50K scale bedrock linework (map) for the Formation

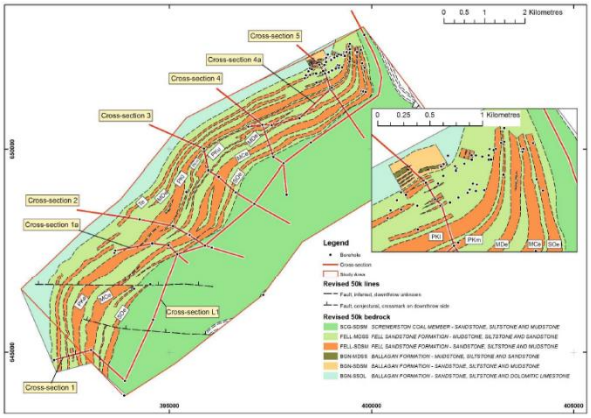
Outcomes: Reduced pollution risk. Sustainable abstraction. Improved understanding of recharge and groundwater movement within the aquifer. Complements NWs groundwater model, as information from our project provided input data to set up NWs numerical model.
Cost: £28k EA, £45k partner match (in kind and on complementary project)

Benefits:

- An evidence basis to focus future investment on areas where it is most needed
- Improved management of water resources leading to improved WFD status
- Public water supplies protected from continued inputs of nitrogen

Lessons Learned: The BGS confirmed and improved upon our knowledge of the location of the water-bearing sandstones within this aquifer. Having an improved geological map means the public, and others are working in this area, will have access to this updated information.

Next Steps: NW have incorporated the improved geological understanding into their new numerical model, which will be used to assess the available water resources under different abstraction scenarios. We will continue to work closely with NW on this, and will consider updating the model for use as a regulatory tool.



Haugh Head project

Environment Agency, Tweed Commission, Tweed Forum, Northumberland County Council, Highways England and private contributions

What: Over the past 12 months we have been working to develop a preferred option acceptable to all stakeholders for a major restoration scheme at Haugh Head on the River Wooler.

Wider Context: The weir and footbridge

Quote: "This has been challenging and technically demanding project that has faced high profile review by land owners and the community. We are continuing to work with these stakeholders to bring significant benefits to the ecology and community of the Water Water" Dorian Latham, EA Project Manager.

Objectives:
The preferred option comprises the removal of the concrete ford and check weirs, creation of large inset floodplain, installing a new community footbridge and upgrade of the approach to the Coldgate Mill Ford to improve agricultural access. Following removal of the ford and creation of the inset floodplain, we would aim to achieve the following:

- To open-up 22km of prime spawning habitat for migratory fish;
- To resolve 17.5km of 'Unfavourable declining' SSSI watercourse and positively contribute to favourable condition;
- To support the WFD waterbody to achieve Good Ecological Potential.

Outputs:
- Confirmation of a preferred option
- 2 stakeholder meetings involving landowners and community

Outcomes:
Partner's agreement to proceed with the preferred option

Cost: £81.7 EA, £40K in kind

Benefits:

- Re-establishment of a naturalised 'wader-river' system.
- Restoration of a heavily modified reach of an SSSI.
- Opening up of 22km of river system for fish.

Lessons Learned:
- Importance of involving the community at an early stage and maintaining a positive relationship.
- Identifying key individuals in the community to help deliver the scheme.
- Look for innovative means to deliver the works (through Partnership Agreement, Contributions, etc.).

Next Steps:
- Preparation of the Environmental Statement
- Submission of Full Planning Application
- Submission of Full Business Case

The existing major weir and footbridge at Haugh Head

Holy Island and Budle Bay Project

Environment Agency & Natural England

What: The third year of a phased project to improve the Water Framework Directive (WFD) status of the coastal Water Body Holy Island and Budle Bay (HIBB). Phase 2 (2019-21) will be implementation of measures to improve the WFD status of this coastal Water Body.

Wider Context:
Holy Island and Budle Bay coastal waters are failing to meet WFD standards for Dissolved Inorganic Nitrogen, and Opportunistic macro-algae. It is also described as unfavourable-declining by Natural England. A number of inland WFD failures may also be contributing to the coastal failure.

Quote: "The evidence we have collected has given us a clearer understanding of the complex issues at this iconic site. However there is plenty more work to do in what is a very dynamic coastal system." Anthony Crook, EA Marine Monitoring Officer.

Objectives:

- Gain understanding of coastal & freshwater nitrate loading.
- Gain understanding of groundwater nitrates and surface water/groundwater interaction.
- Put in place measures to reduce nutrient load into the waterbody.
- Increase landowner and stakeholder awareness of sensitive land management to benefit the waterbodies within the catchment.

Outputs/Outcomes:

- Engagement event with land owners and partners
- Sewage misconnections identified at Belford and rectified (photo 2).

Cost: £40k EA

Benefits: Improved land & water management practices > Improved water quality > Improved biodiversity in the coastal Water Body.

Lessons learned: Working together in partnership is vital to the ongoing success of the project to enable environmental improvements to be put in place.

Next Steps: Carry out additional walkovers of catchments with more complex issues. Calculate seasonal apportionment of North and South Low nutrients. Continue land owner/stakeholder engagement to raise awareness of 'Farming Rules for water'.

Engagement event at Belford

Misconnected surface water outfall identified at Belford,

Lustrum Beck project

Environment Agency & Tees Rivers Trust

What: The first of two years of delivery following the 2017/18 feasibility studies to find cost effective ways to reduce rural diffuse pollution in the Lustrum Beck.

Wider Context: This is the latest phase of the North East area-wide Rural Diffuse Pollution Partnership project (NRDPP) that began in 2011. The project works with Rivers Trusts to deliver advice to farmers on land management and farming activities to prevent rural diffuse pollution, along with river corridor and farmyard interventions in catchments that impact on Water Framework Directive (WFD) failing waterbodies. This project runs alongside the Lustrum Beck Flood Alleviation scheme

Quote: **"**Tees Rivers Trust has done a fantastic job in engaging with the local land owners and farmers to deliver a range of improvements that will deliver benefits for water quality" Dorian Latham EA Project Manager.

Objectives:

- Target a minimum of five high risk farms as a priority to ensure greatest outcome from interventions
- Improve WFD river waterbody elements through a reduction in silt

Outputs:

- 3 detailed farm reports
- Improvements including stock fencing, drinking bays, silt traps, rainwater separation and harvesting
- Three events displaying various techniques held at demonstration farms
- 3000m of fencing

Outcomes:

- Landowners/managers more aware and permanently improve practices
- Improved riparian and riverine habitat on target waterbodies

Cost: £50k EA, £55k partner match

Benefits:

- Improved water quality
- Increased awareness of surface water and sediment control to landowners/tenants

Lessons Learned:

- Importance of a partner who works with the land owners and understands their view points.

Next Steps:

Monitor to measure the benefits.

Rainwater harvesting on farm to reduce surface water runoff and diffuse pollution

Stock fencing with wide buffer strip to prevent bankside poaching

Med Burn project

Environment Agency & Northumberland Rivers Trust

What: The area surrounding the Med Burn is predominantly arable farm land with clay soils, resulting in run-off from farm land impacting the health of the Med Burn. Septic tank and other point source issues are also suspected as being in an issue along the 9km long water-body. This project prioritised and delivered those works which would have greatest benefit to the water quality of the Med Burn.

Wider Context: The Med Burn flows into the River Pont to the west of Ponteland. It's currently classified as BAD under Water Framework Directive (WFD); the lowest possible classification.

Quote: "Northumberland River Trust have successfully delivered and exceeded all expectations for this project." Terry Robson EA Project Manager.

Objectives:

- Improve the WFD status of 1 WFD water body, the Med Burn
- Up to 9km of the Med Burn enhanced

Outputs:

- 1 fish easement
- 500m in-channel features created
- 500m fence installed
- 1.7Ha BAP habitat created
- 1500 trees planted
- 300m hedge planted
- 47 days of volunteer time

Outcomes:

- Reduced amount of diffuse and point source pollution entering the watercourse
- Enhanced water-dependent habitat; four reinstated ponds, wetlands and oxbow lakes
- Enhanced community engagement and awareness of the Med Burn through volunteer tasks and events
- 8km of watercourse opened up for fish and eels

Cost: £30k EA, £21.6k partner contribution
Benefits: Improved ecology and fish populations, reduced diffuse pollution

Lessons Learned: This project began late in the year when 'underspend' funds became available – it was a success because Northumberland Rivers Trust had established good relations, and had project elements worked up, which were ready to deliver at short notice.

New wetland created on 1.7Ha of farmland donated by a farmer. The farmer also gave 3 days of his time to help move materials around the site. Volunteers planted reed and hedging around the site.

Larch baffle fish easement has increased water depth from 2cm to 10cm at summer flow levels, allowing trout, eels, and crayfish to access 8km of habitat upstream.

Metro Green

Environment Agency, Natural England, & Groundwork North East

What: A feasibility project looking at bio-engineering solutions along the 3km edge of a brownfield site undergoing redevelopment. This will lead to designed ecological enhancements along the Tyne estuary and tidal tributaries which will, over time, support individual element improvement under the Water Framework Directive.

Where: Metrogreen, nr Gateshead
NGR: NZ0852451631

Wider Context:
Gateshead Council are preparing an Area Action Plan (AAP) for the Metrogreen area. The AAP will set out which land uses should go where, what infrastructure will be required, and how it will be delivered. To date, Gateshead Council has appointed consultants to help prepare the evidence base for the Metrogreen AAP with respect to flood risk. The Metrogreen AAP and planning applications for development present an opportunity to improve the waterbody in terms of river restoration. Thus, the measures identified in the feasibility study will be fed directly into the planning process, where appropriate.

Objectives:

- Use information gathered, Hull University's work and consultation with key stakeholders, we will identify the constraints and WFD opportunities at Metro Green.
- Bring in specialists to inform how the project opportunities can be delivered and constraints addressed
- Produce maps and tables on the opportunities

Outputs:

- Ecological assessment of the area
- 14 opportunities for enhancements identified
- Two year pilot scheme proposed

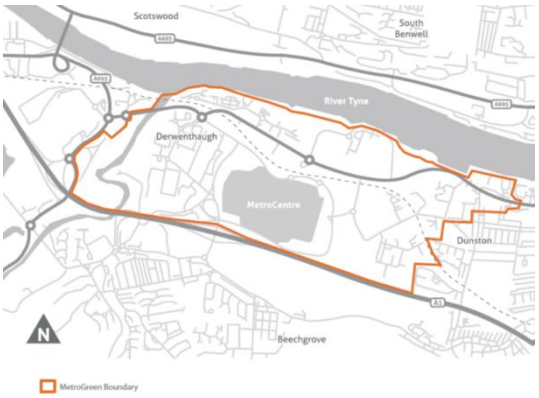
Cost: £55k EA, £8.8k partner match funding

Benefits: Improved ecology in the estuary

Lessons Learned: Site constraints have delayed progress of the Area Action Plan, engagement should begin at the earliest possible stage in urban projects

Next Steps:
Align delivery of improvements with Gateshead council's timeframes for regeneration of the site, likely to begin in 2021.

Quote: "working with Gateshead Council on the Metrogreen AAP will ensure the development is sustainable, comprises of well-designed spaces for people and involves the creation of quality watersides and green spaces for a range of users"
Lucy Mo EA Project Manager



Nitrates in Groundwater

Environment Agency, Northumbrian Water, Newcastle University

What: Second year of a 4 year collaborative partnership to identify and test the most appropriate mitigation measures farmers can take to reduce the amount of nitrogen lost to groundwater. A PhD student within Newcastle University's Department of Agriculture, Food and Rural Development is undertaking the necessary research.

Wider Context:
Diffuse agricultural pollution is the major source of nitrate in the Till Fell Sandstone, a groundwater body (aquifer) that is the sole supply of drinking water for 25,000 people in northern Northumberland. Elevated nitrate concentrations are causing this groundwater body to fail Water Framework Directive standards, and putting public water supplies at risk.

Objectives:

- Investigate links between soil variability and land management on nitrate leaching
- Identify appropriate mitigation measures to reduce nitrate leaching

Cost: £32k EA, £45k partner match funding

Outputs:

- Soil moisture probes installed
- Install soil porous cups
- Field trials of mitigation measures

Benefits:

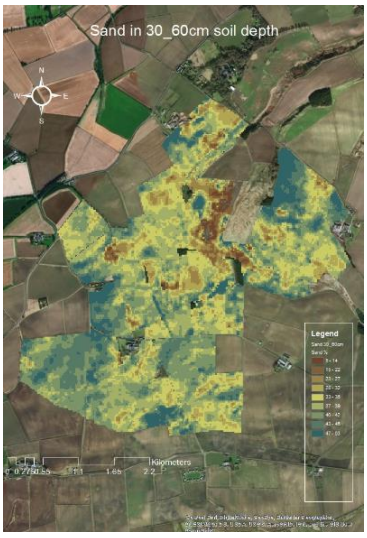
- An evidence basis to focus future investment on areas where it is most needed
- Improved management of water resources leading to improved WFD status
- Public water supplies protected from continued inputs of nitrogen

Lessons Learned: Increased understanding of how the soil characteristics and agricultural practices combine to create an area very vulnerable to nitrate leaching, and how to reduce the amount of nitrate leaching.

Next Steps: The PhD student will continue her research, looking to test mitigation measures with a numerical model, and to run further field trials with farmers in the third year of her research.

Quote: "There is great energy with this project, as it links into WINEP work planned by NW, as well as the Safeguard Zone action plan." Melissa Swartz, EA Project Manager.

Photo:



Pennine Peat Partnership

North Pennines AONB, EA Yorkshire, Cumbria & Lancashire and North East areas

What: The fourth year of a five year multi-partner project restoring and creating upland blanket bog habitat in the North Pennines AONB. The habitat was degraded by over-grazing and drainage (to improve 'productivity') in the 1950's and 60's.

Objectives:
• Restoration of degraded blanket bog
• Reducing the release of peat based CO2
• The trialling of the UK Peatland Code as a new payment for ecosystem services system to determine if it can be a viable source of income for peatland restoration

Outputs:

- 80Ha restored at Tynehead Fell, Tyne catchment
- 32Ha restored at Langden Fell, Tees Catchment

Cost: EA £75k plus £134k match from partners in 18/19**.**

Benefits: Carbon storage, reduced flood risk, biodiversity gains, and recreation opportunities.

Quote: "With the industrial revolution the UK began what Greta Thunberg refers to as a 'mind-blowing historical carbon debt.' We think that we should be leading a new industrial revolution, one that reduces emissions and addresses climate change as the biggest challenge humanity has ever faced. Healthy peatlands are central to this climate change revolution, and we must continue to invest in their conservation." Rob Stoneman, Chair of Pennine PeatLIFE

Next steps:
Restore 177Ha of peatland at Langden Head in 2019/20.

Revitalising Redesdale

Natural England, Woodland Trust, Tyne Rivers Trust, Ministry of Defence, & Environment Agency

What: A project to restore river habitat and help prevent the local extinction of Freshwater Pearl mussels. Engagement work with landowners, and prioritised works delivered on the ground.

Background: The first year of delivery in a five year project, largely funded by the Heritage Lottery Fund. The project will implement interventions outlined in the River Tyne Catchment Plan 2012 which stated a requirement for 'Identifying and preparing habitat for the return of captive bred mussels'. Further work by ecological consultants AECOM, and the Tyne Rivers Trust in 2017/18 developed and prioritised specific site plans, and encouraged land owners to participate.

Where: River Rede, Northumberland.

Objectives:

- Engage landowners and gain support
- Deliver habitat improvements

Outputs:

- 145m in channel improvements
- 1425m fencing
- 920m bankside features restored
- 5.63Ha buffer strip created
- 4.12Ha BAP habitat created
- 400 trees plants
- 7 Agricultural businesses advised

Outcomes:

- Reduction of erosion pressures and sediment input.
- Improved ecology

Cost: EA £66.5k plus £45k match

Benefits:

Freshwater Pearl Mussel habitat improved.

Quote: "The most important action to save freshwater pearl mussels, and support associated river life, is a catchment-wide change to land management to address the amount of nutrient and fine sediment entering the rivers. Revitalising Redesdale is working with land managers and farmers on projects to re-establish natural river processes, slow flows and capture sediment, build rapid and riffle features, create new wetland areas, plant trees along the riverbanks and manage grazing" Maria Hardy, NE Project Manager

A series of high flow deflectors will reduce sediment

New ponds will capture sediment

Rowletch Burn Improvement, River Team

Groundwork NE & Environment Agency

What: A project to design and deliver works which are mitigation measures for the River Team from Source to Tyne WFD waterbody, as well as opportunities for riparian habitat creation.

Background: The first year of delivery in a five year project.

Where: River Team, Gateshead.

Objectives:
• Deliver interventions which will measurably improve the ecological status of the Rowletch Burn
• Ensure businesses are using best practice to minimise the input of pollution into the Rowletch Burn

Outputs/Outcomes:

- 0.5Ha new wetland created
- Mitigate against diffuse pollution
- 60m of bankside stabilised and restored

Cost: EA £70k plus £18k match from partners in 18/19**.**

Benefits: biodiversity gains, and recreation opportunities.

Quote: "This project was absolutely dependant on developing a successful relationship with the land owner. Groundworks have exceeded any expectation and despite difficulty due to major changes in ground condition have delivered an excellent product. " Terry Robson Project Manager, Environment Agency

Before and after erosion repairs

Shotley Grove Fish Pass

Tyne Rivers Trust, Marine Management Organisation & Environment Agency

What: Detailed design and delivery of a large rock-ramp fish pass at Shotley Grove Weir. Following public consultation, a rock ramp fish pass was carefully designed to be both functional, and aesthetically acceptable at this sensitive historic site. The pass was built from natural stone anchored to the river bed.

Where: River Derwent, nr Shotley Bridge
NGR: NZ 08519 51636

Wider Context:
This weir has been a complete barrier to important species like lamprey, eels, grayling, and salmon for more than 300 years. This weir was also the fifth and final major obstruction to receive a fish pass on the River Derwent since 2009.

Objectives:

- Appoint designer and obtain design approval from the National EA Fish Pass approval board
- Maintains good relations with all stakeholders
- Deliver a measure required under the Water Framework Directive.

Cost: £113k EA, £234k partner match funding

Outcomes:

More than 12km of important spawning and nursery habitat opened

Benefits:

- A 'close to nature' fish pass built using natural stone, has created resting habitat, and allows passage for all sizes and species of fish
- Enhanced affordable and accessible game angling opportunities on the River Derwent, within an area of high social and economic deprivation
- An enriched ecosystem and improved natural function within the River Derwent catchment

Lessons Learned:
This style of fish pass requires continual assessment and design manipulation during construction to achieve a good result. Establishing land ownership and rights of access is critical to success – neighbour relations and access required significant unplanned investment in this project.

Next Steps:
Seek funding to prioritise fish passage improvements on minor obstructions upstream, and deliver habitat improvement works.

Quote: "This work ensures that all fish populations within the River Derwent will be connected to one another, increasing the gene pool. It will also give access to Horsleyhope Burn and Burnhope Burn, which are two major tributaries upstream of the weir, providing even greater benefits. In time, this will improve the density and diversity of fish populations in the River Derwent and the Tyne system as a whole." Jack Bloomer, TRT Project Manager

Skerne Magnesian Limestone Project

British Geological Survey, Coal Authority, Northumbrian Water, Anglian Water Services and Environment Agency

What: Year 3 of a 4 year collaborative partnership to understand groundwater-surface water connectivity in the Skerne Magnesian Limestone; to better protect the groundwater resource and improve the status of the River Skerne and its tributaries.
Quote: "The project is an excellent example of multi-disciplinary partnership working." (EA National Water Resources)
Where: Skerne catchment between Trimdon and Darlington

Background
Since mining and mine pumping ceased, groundwater levels in the Coal Measures recovered and in some areas now exceed those in the overlying Magnesian Limestone aquifer. This has resulted in poor quality mine water, contaminated with sulphate, to migrate into the aquifer and overlying surface waters in the Newton Aycliffe and Sedgefield areas. This has put the aquifer 'at risk' of failing WFD standards. In addition, groundwater abstractions are understood to be reducing baseflow to the River Skerne, contributing to ecological failures.

Objectives:
- Understand the biogeochemical interactions taking place within the Skerne catchment.
- Determine the influence of the hyporheic zone in areas of groundwater-surface water interactions, focusing on Woodham Burn
- Identify anthropogenic impacts

Outputs/outcomes:
- Targeted research of the influence of hyporheic zone (river bed) on flows and chemical interactions in the Woodham Burn
- Full catchment ecological survey – macrophytes and macro invertebrate sampling
- Spot gauging up and downstream of major discharges to determine flow and chemical inputs
- Isotope analysis – identifying different sulphate sources in order to determine mine water impact
- Highlight catchment problems to external parties via organised technical conference

Cost: £35,000 EA, £45,000 partner match

Benefits:
- Better understanding of the risks to groundwater from pollution sources (existing and future), allowing greater protection of the resource
- Better understanding of flow mechanisms and connectivity should enable targeted work to prevent deterioration of GW status and improve SW status.
- Able to better distinguish between natural quality impacts and different pollution sources via sulphate typing
- Determine and apportion the reason(s) for not achieving good status of overlying surface waters.

Next steps:
- Determine whether alterations to flows in/out of Hurworth Burn Reservoir need to be revised.
- Better understand the chemical signature of mine water
- Quantify and determine impact (quality and flow) of large surface water discharges.
- Continuing discharge spot gauging and targeted ecological surveys.

Stanhope Fish Pass

Environment Agency

What: Structural repairs and a new Larinier technical fish pass installed on an EA gauging weir. Work on site began in September 2017 but severe flooding damaged the temporary dams. Works could not begin again until after the salmon spawning season had ended, and the project was finally completed in September 2018.

Where: Upper River Wear, upstream of Wolsingham

NGR: NY9835839047

Wider Context:
Prior to the improvement works, the weir was impassable to fish at low flows. The weir was contributing to Water Framework Directive failures for fish in upstream Water Bodies, and the improvements were also necessary under the Salmon 5 Point Plan.

Objectives:

- Stabilise the gauging weir
- Maintains good relations with all stakeholders
- Deliver a measure required under the EU Water Framework Directive
- Contribute to 5 Point Salmon Plan for the River Wear

Cost: £263k EA

Outcome:

15km of important spawning and nursery habitat for fish opened on the River Wear

Benefits:

- Complete rebuilding of weir avoided
- Enhanced affordable and accessible game angling opportunities on the River Wear, within an area of high social and economic deprivation
- Improved fish populations and an enriched ecosystem within the River Wear catchment

Lessons Learned:
Working on a high energy spate river must be considered during the design stage of temporary works.

Quote: "This pass opens up good spawning ground for a variety of fish, which will improve biodiversity in the area. The work done to create the fish pass also allowed us to improve the accuracy of the weir and gauging station, and provide safe access for maintenance" Daniel Magee, EA Project Manager

Storymaps (Topsoil) project

Environment Agency, Wear Rivers Trust, Northumbrian Water, Durham University, Durham Heritage Coast

By further developing a web-based platform and using simple language, existing data is now more accessible to a wider variety of audiences. Links to more detailed data sets in the Twizzel and Cut Throat Dene sub-catchments have been incorporated.

Wider Context:
Using lessons learned during the pilot phase undertaken by the WRT in 2017-18, the project's second phase extends the number of sub-catchments which display data accessible to a wider audience by using the CaBA promoted "Storymap" interactive platform. The focus on the Twizell and Cut Throat Dene sub-catchments, reflects ongoing work has been undertaken as part of the wider EU funded Topsoil project, which looks at how more effective landowner engagement may reduce diffuse pollution sources affecting groundwater bodies, specifically the Wear Magnesian Limestone GW Body.

"It has been an interesting process working with partners to achieve an appropriate level of detail for different audiences. We now have a robust, sustainable product which hold information suitable for partners to use and add to" Martin Colling, WRT Project Manager.

Objectives:

- Improve partner and public understanding of water quality and land management issues in the Wear Catchment
- To raise the profile of groundwater/surface water interactions in the Wear Catchment

Outputs:

- Detailed web-based interface for 3 sub-catchments
- Successful programme of training to partners in use of Storymaps

Outcomes:

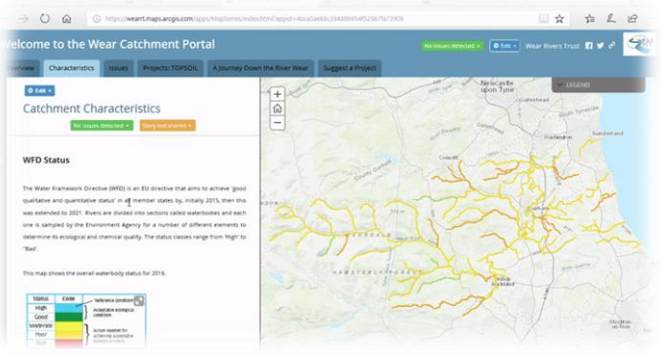
- Greater understanding of pressures and by a more diverse and wider number of partners will enable more effective access to funding opportunities relating to environmental outcomes in the Wear Catchment for all those working in the catchment.

Cost: £5k EA, £10k partner cash

Benefits: Improved water quality. BAP habitat stabilised and restored. Improved biodiversity.

Lessons Learned:
Early input from end user audiences helps to streamline the development of this type of work. Topsoil Board member input was invaluable to the project steer.

Next Steps:
With the support of the EA and the Topsoil Board, ownership of the document is being sought from the Wear Catchment Partnership to ensure a usable and sustainable product into the future.



Swinburn Fish Passage

Environment Agency, Tyne Rivers Trust

What: Fish passage improvements at two obstructions on the Swinburn near the confluence with the North Tyne. An obsolete weir was removed, and baulks installed within a 90m long historic railway culvert.

Where: Tributary of the River North Tyne, upstream of Chollerford
NGR: NY9194273362

Wider Context:
The weir was contributing to Water Framework Directive failure for fish.

Objectives:

- Remove weir
- Design and install baulks
- Deliver a measure required under the Water Framework Directive

Cost: £10.5k EA

Outcome:

6km of important spawning and nursery habitat for fish opened

Benefits:

- An enriched ecosystem and improved natural function within the River Wear catchment

Lessons Learned: Each baulk needed to be individually shaped to fit the curved contour of the culvert – this proved to be more time consuming than anticipated

Quote: "This work is a great example of how the Environment Agency and its' partners are using fishing licence money to improve fisheries, fish stocks and fishing. Removing these obstacles not only makes it easier for fish to access important spawning and nursery habitat in the burn but helps reinstate its' natural flow regime and sediment transport processes. " Niall Cook, EA Project Manager

Next steps

- Monitoring of fish populations to measure the impact of this work
- Intense poaching has been observed immediately upstream of the culvert. Fencing off livestock at this point could mitigate this.

Weir after partial removal. Partial removal was necessary to prevent destabilisation of a large amount of sediment upstream.

Railway culvert with baulks fitted to the curved base to increase water depth allowing fish to swim through

IMMERSE - Tees Estuary Habitat Vision

Environment Agency, Tees Rivers Trust

What: IMplementing MEasures to Restore Sustainable Estuaries (IMMERSE) is a three year project led by TRT with funding through the EU Inter Reg programme. The project will pilot the retrofitting of estuary edge enhancement options aiming to improve the ecological condition of the Tees Estuary as mitigation for heavy physical modifications. 2018/19 focused on Concept Design and engagement work.

Where: Tees Estuary, nr Middlesbrough

NGR: NZ4991221449

Wider Context:
The natural Tees estuary has been largely in filled with little or no ecological design consideration for the majority of the Tees estuary banks.
There is no overarching ecological habitat vision for the Tees estuary that applies the Lawton principles of more, bigger, better, connected to landscape biodiversity protection and enhancement. This project is viewed as a facilitator for wider adoption of estuary edge enhancements on the Tees estuary whether that be through best practice design of new development, externally funded partnership projects, or enhancements delivered through any emerging habitat banking mechanism.

Objectives:

- Carry out engagement
- Feasibility studies completed
- Concept Design completed

Cost: £40k EA, £20k partner

Outcomes:

- Important estuarine habitat improved for wildlife
- WFD required measures delivered

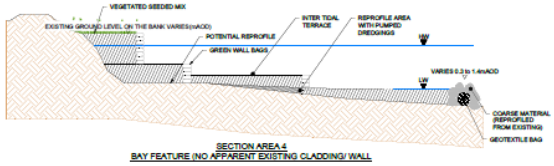
Benefits:

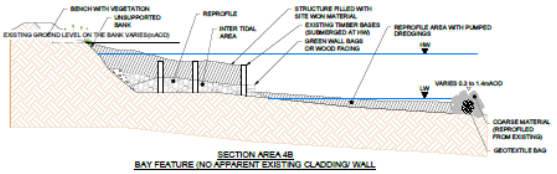
- An enriched ecosystem and improved natural function within the Tees Estuary

Lessons Learned: Early engagement essential to maximise outcomes

Quote: "This project seeks to turn the tide on thinking around the edges of estuaries." Graeme Hull, EA Project Manager

Photo





River Till Restoration Strategy

Tweed Forum, Natural England, and the Environment Agency

What: Year five of a six year catchment restoration plan for the English Tweed Catchment Rivers. The focus this year has shifted to working with Natural Processes.

Wider Context:
One of the key roles of the Strategy is to balance the interests of the designated site and its natural processes with the needs of land owners and managers, particularly agricultural management of the riparian and floodplain land adjacent to the watercourses.

Quote: "As far as possible, the aim of the Till Restoration Strategy is to assist the river to recover by allowing natural processes to return in areas where these are constrained by human intervention. The technical knowledge of how and why the river responds to a given set of parameters, combined with the knowledge and experience of the local landowners has allowed us to tailor and target our interventions to address a specific set of issues. After highlighting a problem at New Bewick, we worked with the landowner to develop a suite of interventions that will reduce soil lose by trapping sediment and slowing down floodplain flows" Al Laverty, EA Project manager

Where: River Till, Lilburn, Glen and Wooler Water.

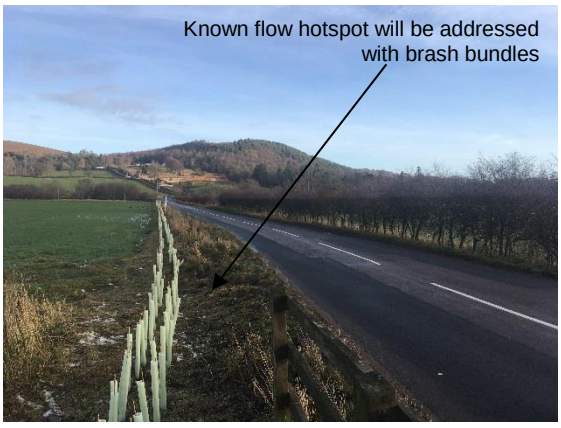
Objectives: Work at a Catchment scale to restore as much functionality and characteristic river habitat as possible, whilst taking into account the need to protect people and critical infrastructure.

Outputs:

- 380m fencing installed
- 6220 trees planted
- Bank stabilisation scheme designed for d/s Ingram
- Modelling and design completed for R Glen floodplain reconnection
- Options appraisal complete for R Breamish reconnection
- Lower Wooler Water flood bank removal liaison begun

Cost: £50k FCRM

Benefits: Priority habitat improvement and creation. Improved catchment management leading to improved conservation status. Greater resilience to climate events; reduced soil erosion, and lower flood risk.



Flood water flows across the road (from right to left) before racing over the arable fields, sweeping up soil. A series of intercepting hedges have been planted, while known flow hotspots will be protected with brash bundles.

Tyne Estuary Partnership and Mitigation Measures

Environment Agency, Hull University, Groundwork North East,

What: Two projects to develop a strategy for implementing environmental improvements on the Tyne Estuary. This will deliver a strong framework for sustainable management, to improve water quality, ecology and the condition of habitats.
Work this year will include feasibility, landownership and engagement explore enhancement opportunities along the estuary.

Where: Tyne Estuary
NGR: NZ0852451631

Wider Context:
Although the water quality in the estuary has improved greatly over the last 15 years, urban pressures, such as point source sewage inputs and diffuse source pollution from road run off, old industrial sites, mine waters and contaminated land are resulting in WFD failures. The pressures on the estuary continue to grow through increased development.

Objectives:

- Establishing the Working Group
- Evidence Gathering
- Consultation
- Develop a Vision and strategic objectives
- Identify opportunities to implement mitigation measures

Outputs:

- A Tyne Estuary Partnership study and Estuary enhancement report
- The Tyne Estuary Partnership is developing a healthy vibrant river estuary

Cost: Partnership - £75k EA, £16.5k match

Mitigation Measures - £10k EA

Benefits: Improved ecology in the estuary. Building a strong and effective partnership. Improving the environment for communities along the river.

Lessons Learned:
Priority areas can change due to timeframes for future developments – there is a need to be flexible with plans

Next Steps:
Use the Tyne Estuary feasibility study and technical reports to focus on priority areas with the aim of:

- Developing a strong partnership
- Identify estuary enhancements
- Focus on wider benefits

Quote: "The support for this project was almost overwhelming, and it was exciting to see the number of potential sites increase to 70 over the course of the year" Zahra Ravenscroft, EA Project Manager

Woodlands for Water

Forestry Commission & Environment Agency

What: Year 6 of an 8 year project enabling farmers and other land managers to benefit from the services of skilled professionals working on contract for the project. Advice is provided in areas of land where woodland planting will most effectively reduce flood risk and/or improve water quality by reducing sediment and pollutants reaching rivers and streams.
Landowners can work with a professional advisor who can walk them through the full process from developing a planting plan to submission of the grant application.

Where: Year 6 schemes will be reported when they progress to planting from 19/20. Five Year 5 schemes are going ahead in NE area – Kirkwhelpington (15Ha), Wolsingham (1.2Ha), Rothbury (6Ha), West Woodburn (6.3Ha), Halton Lea Gate (3Ha)

Outputs:

- 1 woodland creation site at Middleton North (19.6Ha) identified in NE area in 18/19
- 17/18 schemes delivered 30Ha of new woodland

Outcomes:

- Reduced nitrate and pesticide pollution,
- reduced sediment pollution,
- reduced flood risk,
- stabilised river banks,
- lowered water temperature

Cost: £3k EA, £3.1k partner funding

Benefits:

- Increased biodiversity
- Mitigation of climate change.
- Reduced risk of flooding

Lessons Learned:
Uncertainty around Brexit greatly impacted the uptake this year.

Quotes: "*It's great to be working in partnership with the Environment Agency and the wider sector as part of the Woodlands for Water project. This will help meet the government's 11 million tree target as well as delivering against key areas within the 25 Year Environment Plan*" Crispin Thorn, Area Director of the Forestry Commission

"*Woodland creation is an important part of natural flood management and helps deliver on our mission to improve water quality. This project is a marvellous example of the Forestry Commission and the Environment Agency pooling their skills and resources to great effect*." Oliver Harmer, Area Director of the Environment Agency

Acknowledgements

Anglian Water
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- Tees
- Wear
- Tyne
- Northumberland Rivers
- Till and Tweed

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Durham County Council
Durham Heritage Coast
Durham University
Durham Wildlife Trust
Forestry Commission
Groundwork NE
Highways England
Heritage Lottery Fund
Hull University
Marine Management Organisation
Ministry of Defence
Natural England
Newcastle University
North Pennines AONB
North Tyneside Council
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Northumberland Rivers Trust
Northumberland Wildlife Trust
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