

newsletter

Autumn 2022 – Issue 8

Groundwater Monitoring Boreholes completed

All 50 groundwater monitoring boreholes are now completed! The Groundwater Team has drilled 50 groundwater monitoring boreholes in cross border catchments. Groundwater is now being investigated via 44 monitoring boreholes in the Finn, Derg and Blackwater River catchments at 17 groundwater monitoring stations (GWMSs). We also constructed six groundwater monitoring boreholes at a further three GWMSs at the Agri-Food and Biosciences Institute lands at Hillsborough. The Project is also monitoring 23 springs in the Arney catchment.



Some of the first boreholes that we drilled have got at least two years of groundwater level records and water chemistry. The most recently drilled wells will now become part of the network that will monitor how groundwater changes over the seasons and over longer time-periods.

This network gives scientists an invaluable insight into how groundwater is moving underground, what natural and man-made substances it carries in different locations, and how groundwater interacts with the rivers flowing through the catchments. The boreholes are constructed to a very high standard and we will using them for years to come in our national monitoring networks, or in more detailed studies.

The 50th borehole drilled, in the vicinity of Emy Lough, River Blackwater Catchment, Co. Monaghan.

A Word from the Project Manager

Welcome to the latest CatchmentCARE Project's Newsletter (Winter 2022).

As the Project enters the final half year now, the focus across the partnership is on works remaining from the various work plans and the budgets available at this stage in the project. Cost increases over the last eighteen months will inevitably impact on how much is completed, particularly where construction works are involved.

The Groundwater Team had reason to celebrate in early October when they closed out on their commitment to drill and construct 50 groundwater monitoring boreholes across the region. The following reflects the locations with more on this to be reflected in their 'story boards' to follow - Finn (13 no.), Blackwater (23 no.), Derg (8 no.) and Hillsborough (6 no.).

The CatchmentCARE Project has decided to adopt ArcGIS StoryMaps to help describe various elements of the project delivery. This is a web-based storytelling tool, which incorporates geographic and supporting content to present the works undertaken by the Project into individual 'Story Boards' for easy viewing by the reader. Justyna Grzegorek, Donegal County Council, is working with the Project partners to construct these with a selection currently live and published on the project website.

A reminder once again, the date has been set for the end of Project Conference, which will take place in the excellent facilities at the Villa Rose Hotel and Spa, Main Street, Ballybofey, Co. Donegal within the Finn Catchment, on Thursday 20th April 2023.

As always, we encourage the readers to check out more on www.catchmentcare.eu.

Rainwater Harvesting Demonstration



The Gowlan Group Water Co-Op was established in 1979 to supply clean drinking water from spring and lake source to 220 member houses. It also provides water for 200 homes and businesses in Blacklion, Co. Cavan. The Co-Op is dedicated to protecting water quality and prioritising treated water for domestic use. It currently operates at maximum capacity.

To help alleviate pressure on the scheme, the group secured funding from CatchmentCARE Community Incentive Scheme (CIS) to install pilot demonstration rainwater harvesting systems on two local farms. A filtration unit, with a separate outflow, is fitted above each tank to

keep leaf litter and other contaminants from entering the storage tank. This ensures that the harvested water is fit for livestock consumption. Where necessary a pressure vessel is incorporated to protect the pump from frequent switching which could lead to rapid wear.

The first site is an organic farm with cattle and sheep. A 10,000 Litre rainwater harvesting tank was installed to supply the cattle shed and three field troughs. An overriding system where the mains water supply kicks in if there is insufficient rainwater gives the farmer peace of mind. The significant saving in his water bill is also appreciated.

The second farm, which houses and processes ducks, presented unique challenges. The processing area is compact with restricted access. A 5,000 Litre tank was installed at the rear, feeding a tap in the processing area with pressurised water. Throughout the summer drought this system did not run out of water.

(Continued) The duck house is a long and low building which was unsuitable for the standard tanks. A bespoke 9,000 Litre concrete tank was installed underground to supply the header tank in the duck house which feeds all the drinking points within it.

The demonstration farms welcome visitors to encourage rainwater harvesting as a sustainable solution to agricultural water needs.

Arney Water quality improvement measures completed.

Water quality improvement measures are now completed in the Arney Catchment. A total of 10 km of main river channel has been fenced out of 16 km of the Arney River total length. Scientific monitoring of the river has assessed the impact of the riparian works measures that have taken place. Fish numbers and diversity have started to improve in the Arney channel, however, there is plenty of room for improvement which may take a few more years. Figure 1 shows the improvement of fish Ecological Quality Ratio (EQR) scores, where green lines represent areas where works have taken place. It is anticipated that measures will have a positive impact on the entire channel.

Some novel monitoring techniques have been implemented to capture the positive impact of the riparian works. For example, a number of 30 m sections of river channel were sampled using a differential GPS (Real Time Kinetic GPS). This records xyz points with latitude, longitude and elevation and a 3D model was subsequently created using the data (Figure 2). While recording xyz points we also recorded attributes such as substrate type at each point. Figure 3 shows substrate distribution throughout the section of the channel in 2021 and 2022. There has been a notable change in substrate distribution between years. There was a cattle poaching area on the right bank (southern bank). Cattle were walking in the river and as a result there was excess fine sediment distributed across channel. After the poaching area was fenced, fine sediment was pushed to the river margins exposing more gravel pebble in the river channel. A reduction of excess fine sediment within the channel should have a positive effect on water quality.



Figure 1. EQR results from Arney main channel in 2021 and 2022. The green represents sites where work was undertaken and red represents sites where no works took place

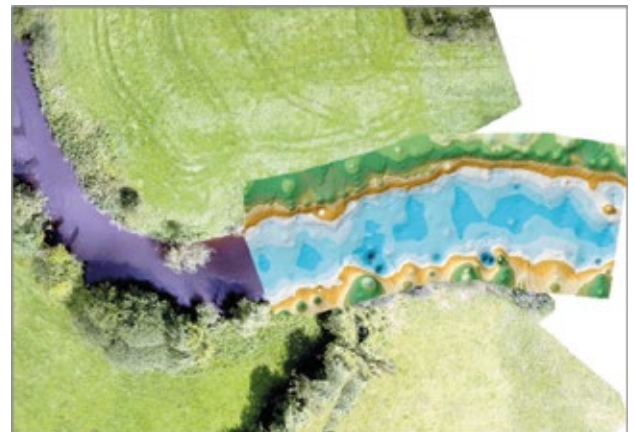
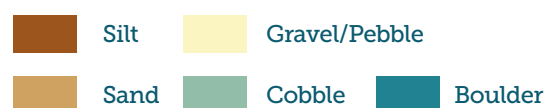
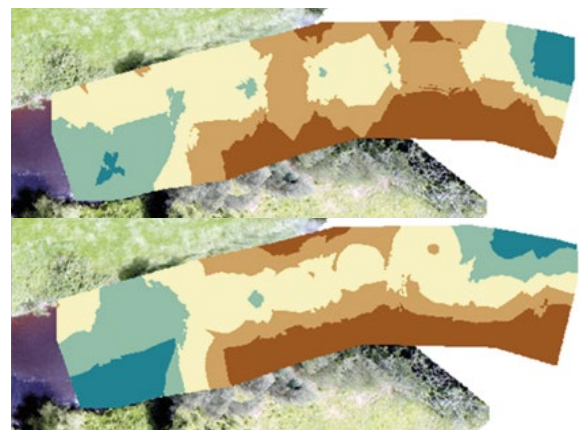


Figure 2. Modelled data using 3D points depicting instream morphology.



Blackwater Catchment River Works Update

As we move into the last six months of the CatchmentCARE project, River Works in the Blackwater Catchment are still being delivered. Catchment Officer Tom Woods has, since 2020, developed and delivered 12 different successful schemes of work across the Catchment which will see an improvement in local water quality in the coming years.

These are:

- The 'Mountain Water Phase 1' project. Completed in late 2021, a range of works took place including, installation of 5,200 metres of fencing along river banks, the planting of 1,600 native species of trees and riverside vegetation and supplying of 4 livestock drinkers for local farmers, installation of 17 access stiles and 120 metres of bank stabilisation.
- The headwater feeder streams of the Ballygawley water. A group of 12 farmers came together to address livestock accessing these small streams. They applied for grant aid through the EFS scheme and fenced off and supplied drinkers to 4km on their own land. CatchmentCARE then came in behind this scheme to provide support for the farmers to continue this initiative.
- 3km of the Callan River in Armagh, where 2700ms of buffer strips have been introduced as well as 8 cattle drinkers, 22 stiles, 1500 trees planted, 430m of bank stabilisation and 9 sites on the river subject to instream improvement works.



For more information on this and other Blackwater catchment works please contact Tom Woods on thomas.woods@armaghbanbridgecraigavon.gov.uk

Blackwater Community Projects Update

The Community Incentive Scheme (CIS) has been one of the success stories of the CatchmentCARE project. In the Blackwater Catchment alone 23 successful community projects have been supported and delivered over two phases of the scheme. In Phase 2 of the scheme, 12 projects were funded which included access works, community river trails, funding for volunteer training and supply of specialised equipment, bio-blitz events, citizen science projects and interpretation and signage.

Case Study – Edenderry Rod & Gun Club

Edenderry Rod & Gun Club are based outside of Armagh. Through the CIS, the Club proposed a series of projects for Edenderry Lough to help improve the amenity for use by the wider community and visitors. At the heart of these proposals was the improvement of water quality and the promotion of knowledge exchange with local community members and schools. The club were keen to promote the unique biodiversity and ecosystems of the Lough, whilst encouraging access and education through signage and interpretation.

Various elements were funded. These included:

- Vehicular access to the site and improved parking for visitors.
- Fencing of the new access lane and car park to prevent livestock access to the site.
- Provision of 2 new livestock drinkers for a local landowner.
- Development of new information features in the form of an Interpretive Panel.
- Development and running of a 6 week education programme in two local schools.
- Provision of a range of scientific and education equipment .
- Development and installation of a new on-site storage container for use by the group.

Once again, the project was so successful that the Chairman of the group, Michael Smith, sent the Blackwater CatchmentCARE team a letter of thanks and praise for their efforts and help delivering the project. In the letter Mr Smith stated that the work had completely transformed access to the Lough and has turned it into a top-class angling facility and amenity area for the local community. He also wrote that the education side of the project has provided the Club with a huge opportunity to promote the Lough, its surrounding wildlife and angling to local schools, and that numbers of users (including Junior members) have risen to levels that the Club has not seen before. They hope to continue working with the local schools over the coming years using the equipment received and the education programs to introduce the importance of water quality to the younger generations coming through.



Education Programme wraps up

Since 2019, CatchmentCARE has been running a successful education programme in local schools, educating pupils about the need to look after our local rivers and water bodies. In 2019 a Pilot Programme was delivered to schools across the Arney, Blackwater & Finn Catchments. However, in 2020 and 2021, due to Covid restrictions the Education Programme was redesigned and subsequently presented online together with two series of programmes entitled 'The River' were developed and distributed to schools across the catchments and wider afield. In 2022 we had an opportunity to re-engage with pupils inside the classroom and run an 'Education Roadshow' in local schools to help tie all of the education resources together.

The roadshow is now complete and involved working with children from across the three different catchments targeting a mixture of schools already on the programme along with some new schools. 26 Schools took part in the programme, involving almost 700 children and 51 Staff. Each class took part in a workshop covering the 'best bits' from the original CatchmentCARE education programme. They had a choice of: River Beasts, Mapping or The Water Cycle.

Teacher Comments

We received some fantastic feedback from the teachers and pupils throughout the work

- It was excellent. Very interactive. Super enthusiastic staff who connected really-well with lively children. Thank you.
- Excellent facilitators, great at engaging with the class and delivered clear content in an enjoyable environment. Thank You!
- Excellent workshop. Children interacted with co-ordinators. Exciting and well thought out activities. Great Show!
- Great interaction with the children and lots of activities to create fun engagement and active learning.
- Hands on activities, provider engaged very well with class. Lots of various types of activities.



Farmers give their Feedback

An integral part of any successful river improvement project is the relationship with the local stakeholders. Forty-two Arney catchment farmers agreed to the installation of measures to improve water quality through the CatchmentCARE project. Inland Fisheries Ireland (IFI) installed 20 km of fencing, 110 drinking troughs, 15 stiles as well as 61 access and welfare gates along the Roo River and three sections of the Arney River. Alternative drinking solutions included solar pumps, pasture pumps, rainwater harvesting, private well and mains connections.

Where possible both banks of the river were fenced to exclude livestock from the river and allow vegetation to regenerate. The fences were kept back from the river to create a buffer zone where excess nutrients and run off from the fields are taken up by the plants growing there. A variety of native tree species were also planted to help stabilise the bank and reduce erosion.

Once established, the trees will provide shading to keep the channel cooler during hot conditions and low water levels. Many fish species become distressed if the water temperature rises above their normal tolerance. Leaf litter also feeds the aquatic invertebrates helping to maintain a healthy food chain. This passive restoration approach creates space to allow the river habitat to re-naturalise while mitigating against pollution.

To date a sample of twenty farmers have completed a survey to help IFI gauge what affect the works have had on farm management, water quality, biodiversity and climate resilience. Initial feedback shows that all would recommend the measures to a friend, none have experienced any negative impacts and there is a greater awareness of water quality issues since engaging with CCARE. IFI will continue to scientifically monitor the river channels to document how the habitats have evolved and the range of species present. At one site a curlew has been heard for the for the first time in twenty years.

This project makes it safer for farmers doing tractor work close to the river

Less reliance on group water schemes

Good secure fence keeps animals in the field. Have lost some sheep and calves in the river in years gone past

Fence on both sides reduces risk of TB from badgers or neighbours herd

This is a great programme for Biodiversity

Very good job done as discussed

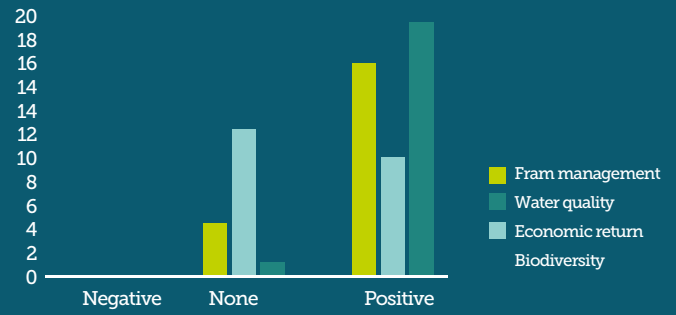
Livestock easier managed with better fences

Landowner Testimonial

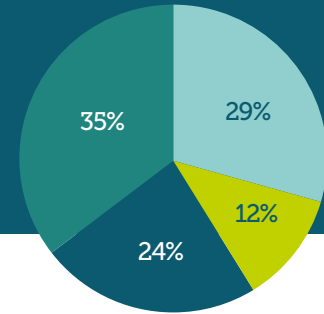
Satisfaction of work completed



Effect measures had on farmlife



Motivation to Adopt Eco Farming



Habitat improvement works on the Finn

The Loughs Agency Team have been very busy implementing habitat improvement works within the Finn Catchment this summer! Currently there are five projects running which include the Finn 003 Riparian Planting, Fencing and Instream Works, Dresnagh Riparian Planting and Fencing Works, Dresnagh Barrier Removal Works, the Rough Burn Barrier Removal Works and also The Rough Burn Riparian Fencing and Planting Works. Works are progressing well with deadlines of all projects including planting to be completed by end of 2022. There is also another stretch of Riparian Planting and Fencing works currently in the tender process for the Finn 001 stretch which will be the final stretch of habitat improvement works within the Finn Catchment as part of the CatchmentCARE project. Landowners from all of the stretches have been great throughout the process from initial contact to check ins and have been positive throughout the process, from this high level of landowner buy in and the initial priority matrix highlighting areas of concern there has been scope from other departments within the Loughs Agency to continue on with the CatchmentCARE style work as part of the legacy piece with 3 further stretches currently in tender which include the Finn 002, Corlackey Burn and the Burn Daurnett! A great follow on of the work carried out within the Finn Catchment so far!



Fig. 1 – Pinned woody material installed within the Finn 003 stretch

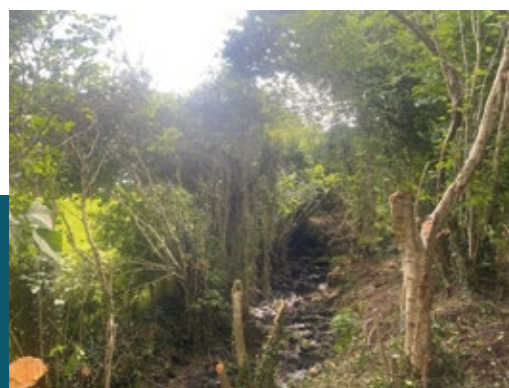


Fig. 2 – Bush trimming carried out to increase light penetration in the Dresnagh



Fig. 3 – Fencing installed along the Rough Burn Stretch.

More Videos Added to CatchmentCARE You Tube Channel

As mentioned in previous issues of the Newsletter, having an online presence through social media sites and by using You Tube are very important mediums for the project to engage with a wide variety of audiences. Over the lifetime of the project, the You Tube channel has been populated with a wide range of informative videos for people to learn about the project and to understand the actions that need to be taken to look after our important river systems. Two wonderful new videos have been added to the channel in recent months.

Kiltyclogher Voices – A Biodiversity Film

'Kiltyclogher Voices' was commissioned as part of the Kiltyclogher Heritage Centre's Crayfish Habitat Enhancement project. The film aims to raise awareness of water quality issues and celebrate the rich biodiversity of the area through local observations. The video can be found on the CatchmentCARE You Tube channel at - <https://youtu.be/axipgiS7PIE>

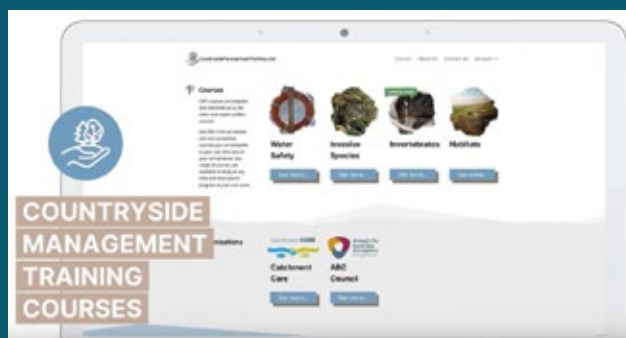


Belcoo Voices – A Biodiversity Film

The 'Belcoo Voices' film discusses biodiversity within the Belcoo area, County Fermanagh, and its rich angling potential. Contributors include members of the Belcoo Men's Shed and other locals, who reflect on the impact changes in farming practices have had on local wildlife. The video can be found on the CatchmentCARE You Tube channel at - <https://youtu.be/JB-DWvODuVP4>

CatchmentCARE Online Training Programme

The project has been busy developing a bespoke online volunteer training programme across all three catchments to help upskill community groups, farmers and other volunteers in data collation and planning for the delivery of strategic catchment-scale biodiversity focused plans. With this in mind a promotional video promoting the training was produced and can be found at <https://youtu.be/C2BGm6YCR30>



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CatchmentCARE Project Partners

Lead Partner: Donegal County Council (DCC)

Partners: Agri-Food & Biosciences Institute (AFBI)
Armagh City, Banbridge & Craigavon Borough Council (ABC)
British Geological Survey (BGS)
Geological Survey Ireland (GSI)
Inland Fisheries Ireland (IFI)
Loughs Agency (LA)
Ulster University (UU)