Issue 14: Spring 2021

Online Edition: ISSN 2009-8928 Print Edition: ISSN 2009-891X

Catchments Newsletter

Integrated Catchment Management: sharing science and stories

Ireland's water quality needs to be better protected:

EPA Water Quality Indicators report – see page 20.

Inside this issue

Main photo: River Caragh, County Kerry. Top, L-R: Nature based drainage solutions (p.26), Inishowen River Guardians (p. 13), The Caha project (p.8).

More

CONTENTS

Inside this issue

Spring 2021 Editorial – Ireland's Environment: an integrated assessment

Late last year, the EPA published *Ireland's Environment – an integrated assessment*. This State of the Environment Report is published by the EPA every 4 years. This editorial includes extracts from *Ireland's Environment*. You can read more about this report on page 29.

The Environmental Protection Agency (EPA) is required by statute to undertake and report – at four-year intervals – on an integrated assessment of Ireland's natural environment. What do we mean by an 'integrated assessment'? It means seeing the environment in its totality so that we can understand our impact, both positive and negative. In our human, ecological and physical systems everything is connected.

The environmental challenges that Ireland faces are giving rise to complex and systemic issues. They cut across different environmental topics, such as climate, air, soil, water, biodiversity, and waste, and across organisations and sectors, business, and all levels of society. They are taxing economically, sociologically, technically, and administratively.

Every dimension of how we live – our homes, our workplaces, how we move, eat, play, commune and create – has the potential to impact on, or be impacted by, our environment. As a nation we rely on our natural environment – our rivers, seas, air, and land – to accept, assimilate, cleanse, or store our public, industrial, and private effluents and wastes. Our natural environment provides such essential services, but its bearing capacity must be understood and regulated in environmental planning, consumption, and production processes.

Water – an assessment

Water is a hugely important national resource that provides a multitude of benefits to the people of Ireland. This resource needs to be protected to ensure that the benefits that currently arise can be enjoyed by future generations. Our waters need to be protected against a range of human activities that cause water pollution and affect the physical integrity of water bodies and habitats. These human activities, together with climate change, continue to threaten the quality and availability of water. Protecting our freshwater resources also protects the marine waters that our rivers flow into.

The aim of European Union (EU) and national water policy is to protect clean waters and to restore polluted waters. However, water quality in Ireland is now getting worse after a period of relative stability and improvement. Not only are we seeing a persistent decline in the highest quality waters, but we are also seeing an increase in the number of most polluted rivers. Many of Ireland's protected water habitats also have unfavourable conservation status as a result of declining water quality (see Chapter 6 of *Ireland's Environment – an integrated assessment*).

While there are many examples of local measures and projects that are working well to make a difference, overall, the evidence shows that at a national level measures have not been successful to date in addressing several environmental issues; the trends in indicators for water quality, biodiversity, greenhouse gases and air quality are all going in the wrong direction and Ireland is a long way from meeting the targets that have been set. Rescue plans are now needed for our remaining Blue Dot high-status water bodies to halt their decline. Only half of our monitored rivers and lakes are in a satisfactory condition. Estuaries now have the lowest water quality overall with only 38% of monitored waters in good condition. Detailed information on the condition of your local waters and the pressures impacting on them is available on www.catchments.ie

The outlook is mixed, and significant challenges remain. Progress is slow in addressing the two biggest pressures - improving urban wastewater treatment and eliminating untreated sewage discharges, and reducing nutrient loss from agriculture. It is also becoming apparent that drainage of lands and rivers, which give rise to increases in fine sediment in waters and changes to the physical habitat condition and function, is a more important factor than was previously recognised. A review of the measures and controls on these types of works is urgently needed.

On the positive side however, there are early signs that the targeted approach of working to address all the pressures together in the 190 Areas for Action identified in the 2nd cycle River Basin Management Plan for 2018-2021 is bearing fruit. Although the approach is still in its infancy, the available data suggest that water quality may be improving overall inside the Areas for Action, in contrast to the continuing net declines nationally.

River Basin Management Plan 2022-2027

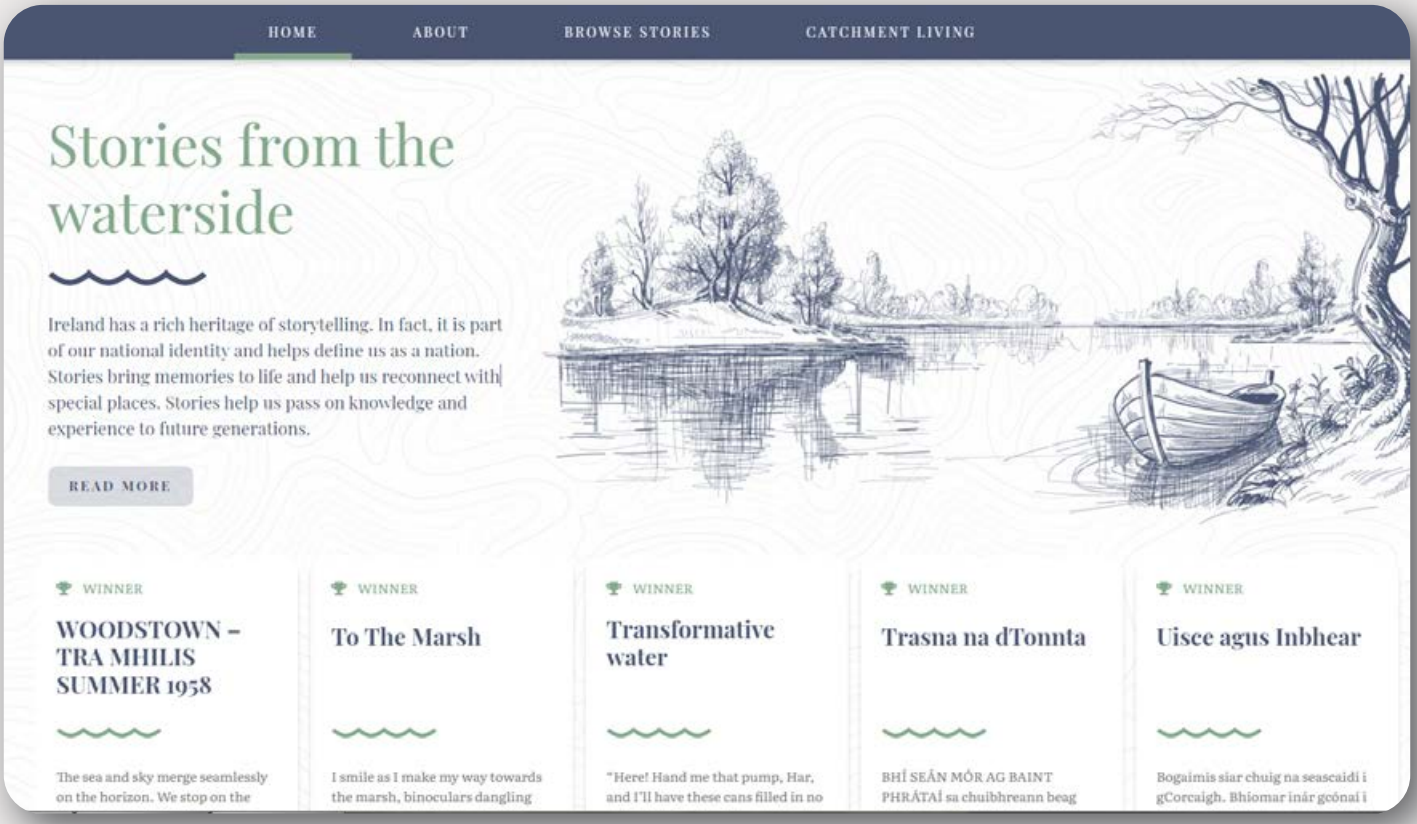
Ireland's third river basin management plan for the period 2022-27 is currently in development, led by the Department of Housing, Local Government and Heritage. The plan will build on the previous plan and will set out the programme of measures that needs to be implemented to achieve our water quality objectives. The draft plan will be published later this year, and there will be a 6-month public consultation on it which will be coordinated by the Local Authority Waters Programme. Details on how to take part in this consultation will be shared on www.catchments.ie

Ireland's Environment – an integrated assessment is available to download at www.epa.ie/irelandsenvironment/stateoftheenvironmentreport

Stories from the Waterside: new website launched

A new website has been launched to share *Stories from the Waterside*, a collection of stories about people and their connections to water from all around Ireland. As an island nation the sea surrounds us, and our landscape holds an intricate network of natural waters. Our rivers, lakes and coasts are some of our most beautiful places, forever changing with the seasons.

The launch of Stories from the Waterside in Kilkenny with Minister Malcolm Noonan TD on 18 August 2020. L-R: Sean Keating and Anne Phelan (LAWPRO), Malcolm Noonan T.D. Minister of State at the Department of Housing, Local Government and Heritage, Fran Igoe (LAWPRO) and Colette Byrne, Chief Executive, Kilkenny County Council.



The new website - www.storiesfromthewaterside.ie

The Local Authority Waters Programme (LAWPRO) launched the Stories from the Waterside competition during Lockdown in May 2020 in partnership with The Heritage Council and The Heritage Officer Programme, Inland Fisheries Ireland and Waterways Ireland.

The launch of Stories from the Waterside took place in Kilkenny with Minister Malcolm Noonan TD on 18 August 2020. L-R: Sean Keating and Anne Phelan (LAWPRO), Malcolm Noonan T.D. Minister of State at the Department of Housing, Local Government and Heritage, Fran Igoe (LAWPRO) and Colette Byrne, Chief Executive, Kilkenny County Council.

It seemed to tap into public mood at the time as people reflected on fond memories of places near water and how things used to be. These stories are deep-rooted in Irish mythology, legends, and folklore, having inspired countless stories through the ages.

Undoubtedly, nature is at its best where there is water, and these places relate to countless memories and stories. As we continue to change our landscape, many of these stories risk being lost.

Stories from the waterside seeks to capture these stories and record them for posterity. COVID-19 restrictions have affected all our lives, forcing us to curtail many of the things we used to take for granted. In dealing with these challenges, many people have reconnected with nature and natural places, especially around water.

LAWPRO received over 470 stories from people right across the island of Ireland, and even further afield from Irish diaspora. They included water themes involving wildlife, fishing, heritage, traditions, crafts, and ways in which nature can inspire the imagination and replenish one's sense of wellbeing.

This new website is a celebration of these stories and we hope that you, the reader, enjoy them. A special thanks to all those who took the time to share their wonderful stories, for you have truly captured the value and magic of Ireland's natural waters. This website will be a valuable resource for future generations to access these stories into the future.

Learn more:

www.storiesfromthewaterside.ie

Local community tackle invasive species and protect Lough Gill in County Kerry

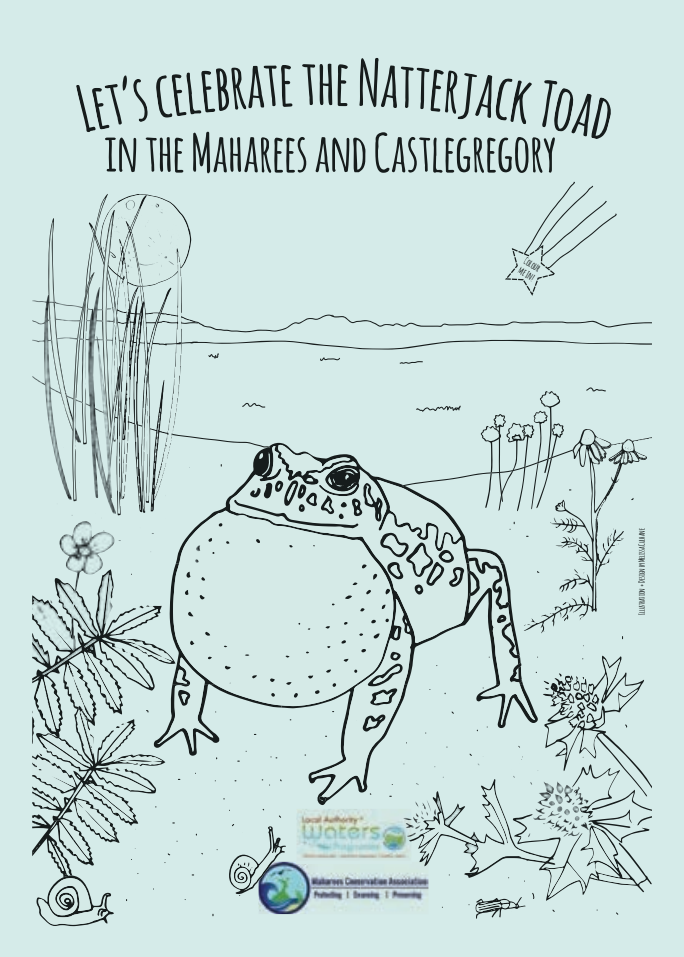
An entire ecosystem was under threat in Lough Gill, Co. Kerry. New Zealand Pygmyweed, an aquatic invasive species, could have affected the water quality, fish habitat, and bird life in the lake. A group of concerned anglers and local community groups got together and took action to tackle the problem through a community-led project.

Lough Gill is an important coastal lagoon, it is part of the Tralee Bay and Maharees Peninsula, West to Cloghane Special Area of Conservation (SAC). The lake supports a variety of wildlife species including flounder, the critically endangered European eel, and wintering birds such as the whopper swan. It is also an important breeding site for the natterjack toad, which is protected under the EU Habitats Directive.

The natterjack toad is on Ireland's Red Data list of endangered species and is in decline because of habitat loss. This iconic toad is Ireland's only toad species, and it lives in the sand dunes around Castlegregory, with 70% of the population in that area alone. This increased the urgency for action to tackle the invasive species because it also threatened ponds next to Lough Gill and the biodiversity in the entire area.

The Pygmyweed is native in both Australia and New Zealand and it was introduced to Ireland via the horticultural and aquarium sectors for sale to the public in garden centres and pet shops. Invasive Species Ireland lists New Zealand Pygmyweed, also known as Australian Swamp Stonecrop, as a high-risk invasive alien species. This plant is often found in the margins and shallow waters of freshwater lakes and ponds. It out-competes many native plant species by forming dense, smothering mats of vegetation. These dense mats shade out other aquatic vegetation, which then has a negative impact on fish and invertebrate communities in the waterbody. The plant reproduces vegetatively, meaning a new plant grows from a fragment of the parent plant. Small fragments can spread to other locations on clothing, equipment, and by animals, thus making it extremely difficult to control and eradicate this invasive plant. Aquatic invasive species are difficult to control once they enter a waterbody, so it is essential that they are addressed as a matter of urgency.

The identification of New Zealand Pygmyweed in ponds next to Lough Gill was a call to action by the local community, who have been working with the Local Authority Waters Programme (LAWPRO) to conserve the water quality in Lough Gill through the Lough Gill Water Quality Group. It took an enormous effort by the local community, with support from LAWPRO, to get their project underway to tackle the New Zealand Pygmyweed.



Firstly, a site-specific Site Management Plan was prepared for the project with support from Castlegregory Golf and Fishing Club, as the ponds are on their lands. This detailed the steps needed to combat the widespread growth of the plant and to remove it safely. The cost of this was funded by the community, with match funding from LAWPRO. With the plan in hand, the next step was to secure funding for a specialist consultant to undertake the works.

1. The ponds with New Zealand Pygmyweed in them.
2. Ponds, with Lough Gill SAC in background and disposal pit in foreground.
3. The ponds after the New Zealand Pygmyweed is removed.

Implementation of the plan on the ground was funded by a combination of LEADER (North East West Kerry Development), the Community Water Development Fund from LAWPRO, and Clann Credo, a community loan group who help with bridge financing for communities. With funding secured, Envirico, invasive species specialists were awarded the contract to carry out the works, commencing in October 2020. LAWPRO facilitated engagement with the relevant competent authorities and the National Parks and Wildlife Service (NPWS) to ensure that necessary project timelines were met and that any concerns for the SAC were addressed early within the plan. Only by all relevant stakeholders working collectively at all appropriate levels could a project like this be a success.

A novel approach was used, whereby the ponds were dried out and the plant material excavated and then buried. Each bucket of excavated material was checked by the on-site ecologist and stringent biosecurity measures were in place for the duration, which took three weeks to complete. Poor weather and a high-water table created challenging site conditions. A 5-year ecological monitoring programme is now in place to ensure this highly invasive plant has been fully eradicated. This is an important step in the project - should the species return that it will be dealt with. This will safeguard the SAC in future and will prevent a deterioration in the site's objectives in terms of the EU Habitats Directive and Water Framework Directive.

Alfie Hughes, a member of the local community group commented, "The community groups involved are delighted to see this project finally taking place. If the pygmyweed had entered the lake, the entire ecosystem of this huge area would have been destroyed or at least vastly changed forever. Two years of planning and consultation are now bearing fruits and I would like to thank all the community members who have supported this project."

If this project had not happened, New Zealand Pygmyweed could have had a negative long-term effect on the entire ecosystem of Lough Gill and the wider picturesque landscape. This would have been devasting for the local community and biodiversity, and severally affected the amenity value of the catchment for locals and visitors alike. Local community groups have vowed to continue their work on water related projects in a bid to protect and improve water quality across the entire catchment.

Breda Moriarty, Community Water Officer, Local Authority waters Programme

Learn more:

www.castlegregory.ie/Environment/natterjack-toad

The Caha Project: a farming community protecting its natural heritage

The Caha is a Priority Area for Action (PAA) under the River Basin Management Plan 2018-2021. Teams from the Local Authority Waters Programme (LAWPRO) and the Agricultural Sustainability Support and Advice Programme (ASSAP) started working together with locals to improve the water quality in 2019. This article telling the story of the Caha catchment and how its community are working to protect water quality was originally published in Teagasc's Today's Farm.

Since COVID-19 arrived, we have been encouraged to do our bit for the common good. Caring for Ireland's waters, a shared resource, is also for the common good and the beef, sheep and dairy farmers of the Caha valley in west Cork have been doing so for generations.

The Caha Priority Area for Action (PAA), was one of the first areas that the LAWPRO and ASSAP teams worked in during early 2019.

The Caha is the headwater to the Bandon River and has a 'High Water Status' objective. Much of the lower section of the sub-catchment is also located within a Special Area of Conservation (SAC), primarily due to the presence of the critically endangered Freshwater Pearl Mussel.

The region is home to a diverse mix of land types and land use,

Tim O'Donovan and the River Caha. Photo: Valerie O'Sullivan.

Tim fencing Poul an t-saggart a deep area in the river where a Priest used to swim, pictured with Lane Giles and Clare Donovan. Photo: Valerie O'Sullivan

including forestry, low intensity sheep and beef farming and pockets of intensive dairy farming. ASSAP advisors have been met with open minds and genuine interest during farm assessment visits. The farmers' desire to protect 'their river' was evident from the start.

One outcome of the ASSAP visits was the setting up of a group including the most interested beef, sheep and dairy farmers, which applied for and received a grant from the Community Waters Development Fund. The application was made in conjunction with the Bandon Rivers Trust to help them to protect the river.

This group, consisting of nine farmers, are now well underway, fencing off almost three and a half kilometres of previously unfenced sections of the most sensitive lengths of the river. The group will also install piped water troughs or mechanical nose pumps to those now fenced off fields. Tim O'Donovan and Jerry and John McCarthy are three of the nine participants in the Caha Project.

Tim O'Donovan

Tim O'Donovan of Waterfall house is a local historian and a suckler farmer whose family has been farming in the locality since the 14th century. Tim's family has kept a record of the many flood events including the great flood of 1903. Tim tells us the story that this flood caused a local family to retreat upstairs. To their amazement a loaf of bread that they had been baking on the bastible earlier, floated up the stairs to them during the event! The 1903 flood also washed a bayonet dated from the 1790's onto the riverbank which Tim proudly still has to this day.

As a result of that same flood the river changed its course on Tim's land creating islands. The dry riverbed was later filled in and converted to farmland. Within this same section of river, in 1972 Tim recalls being called home from Agricultural College as a cow and a sheep had been swept away in a flood while grazing one of these islands.

Tim recalls the land improvements during the 1960s, when stepping stones across the main channel, the main access to a deserted famine village of twelve houses called Bothy, which had been there for hundreds of years, were bulldozed to improve drainage.

As well as the tradition of fishing and shooting, the river was also well known as a poaching river. "It was a very famous river for the amount of salmon that came out of it" Tim recalls with a smile. Many local stories are still laughingly told of narrow escapes with the law, and of how the salmon covertly found their way to the table. Tim explains "the gaff (a kind of a pike used by poachers to catch salmon) , and the net, once used to feed families and fondly remembered as tools of the poachers trade, has now been replaced by the fencing post and the roll of wire.....my word how times have changed!"

In the past when pearls were rare and valuable, the Pearl Mussel was sought by many a treasure seeker throughout the Caha River. Tim explains that 'it is said that the pearl used in the broach which tied the cloak of King Henry the 8th came from the Caha river'. It is also said that limestone flags quarried nearby were transported and used in the floor of the House of Commons in London.

The river as Tim says is "Steeped in history. People who come to stay do so as a result of the history and the natural beauty of the area."

John and Jerry McGrath with Lane Giles and Clare Donovan. Water troughs have been installed to supply water to these plots through the Caha Project. Photo: Valerie O'Sullivan.

Tim is one of a number of farmers who are taking steps to protect the life of their precious natural resource of the Caha River, recognising how it was key to their community's survival throughout history and particularly during the potato Famine, providing both Salmon and mussels when the potato crop failed. He explains that he is participating in the Caha Project so that "the river will there for the benefit of generations to come"

John and Jerry McCarthy

John and Jerry McCarthy, brothers and twins, farm in partnership within the Caha catchment. They are one of only seven dairy farmers located within the boundaries of the PAA. Their land bounds a section of the main river along their 'out farm', an organic sheep farm, and their main dairy enterprise, is located along a main tributary into the Caha PAA.

Prior to their farm visit through the ASSAP project, much work had already been carried out to both protect water quality and to enhance the biodiversity on their lands. On the day of the ASSAP farm assessment, John pointed out numerous areas of land within the 105-acre home block which had been planted with a mixture of deciduous trees almost 20 years ago. Much of this planted area was along the banks of the Caha stream and is acting as a buffer helping to prevent any nutrient loss from the grazing platform. John and Jerry's father always had an interest in trees and clearly passed along this interest to his sons. In total over fifteen acres of non-commercial deciduous trees had been planted.

The boundary along the main Caha River (within the SAC), stocked only with sheep, had been completely fenced off and only three small, well managed cattle access points still existed within the home block. These three drinking points have now been fenced off and water troughs have been installed to supply water to these plots through the Caha Project.

Another eye-catching feature on this farm was the relatively large fen wetland area that is located just under the highest peak of the farm. This wetland, known fondly to the McCarthy brothers as 'the lake', now almost filled in with vegetation since it has been fenced off and left completely untouched for many years. This habitat is an important sink and natural flood relief mechanism, slowing the movement of water during flood events. It also acts as a carbon sink, locking in carbon dioxide from the atmosphere and massively increases the biodiversity on the farm.

When asked why they wanted to get involved in the Caha project John's answer was that "water is such an important amenity that we need to do as much as we can to protect it". Jerry then listed some of his neighbours whose income is dependent on tourism and explained that tourists are here to visit our pristine waters. Whether looking into the past or examining the present, the Caha River is intrinsically linked to the livelihoods and lives of those who live here, and the local community is determined to protect it for future generations to come.

Lane Giles, Teagasc ASSAP Programme and Clare Donovan, Dairygold

Learn more:

YouTube: search for 'The Caha Project'
www.teagasc.ie/publications/todays-farm
Special thanks to Teagasc for allowing us to republish this article.

NoreVision – become a guardian of the Nore River

NOREVISION

Norevision is working with citizens and stakeholders in the Nore catchment. Projects include citizen science, visits to uplands farms, litter picks, collecting stories, educaional outreach and working on bottom-up action with top-down oversight.

Gathering waters from springs and upland farm drains in three counties, the Nore River catchment drains 2595km² in dramatically different landscapes. This great stretch of the South-east, from the Devil's Bit to where it joins its sisters, the Suir and the Barrow, near Waterford is rich in geography and culture. It poses complex challenges to the many people who are concerned about deteriorating water quality but see the enormous positive potential of a network of waterways that supports a population of 110,000 people.

Learning by the banks of the Nore.

The NoreVision Project, initiated by the Kilkenny Leader Partnership in conjunction with their Leader colleagues in North and South Tipperary and Laois, is taking a wide and deep view of the challenges and opportunities that need to be addressed.

Born out of a comprehensive consultation process in 2017-18, NoreVision is engaging with a wide range of stakeholders, from local individuals and communities throughout the catchment to the varied authorities with a role in river management, to construct a model that can achieve genuine improvements for the waters themselves and for the people depending on them.

The engagement begins in the village of Clonakenny and its national school in Lismackin in Co. Tipp. The Nore is a modest stream just beginning to gather waters, including a Famine era engineered channel that drains a lake uphill (the locals swear it!) into the river. Picking up speed, it comes through Castletown, one of the scenic villages of Co. Laois, a point where a weir, an old mill and a bridge create a focus for local activists who are working to establish a BlueWay for paddlers and ramblers.

NoreVision citizen scientists learning about water quality testing.

Further on, Ballingarry in Co. Tipp and Castlecomer, upland mining communities on the King's river and the Dinan respectively, bring a different character to river considerations. And Kilkenny City, with it's strong Keep Kilkennty Beautiful group along with a number of paddling clubs that are active as the river gets larger, brings a more urban feel to the whole effort. But even tiny villages --- Attanagh in Laois or Windgap and Dunnamaggin in Kilkenny – are involved even when a stream may be just an overflow of an ancient well, or many miles from the Nore itself.

The NoreVision programme

All of these places and their people are a part of the NoreVision programme which is driving a number of interdependent strands:

- **Citizen Science** – focusing on Alien Invasive Species and most particularly learning the methods of water quality monitoring, beginning with kick sampling and moving on to more sophisticated methods of testing for water quality. Balsam bashing has been carried out by local groups at many locations throughout the catchment, with recording of other invasive plants that require more cautious approaches. The water quality project, led by professionals and an enthusiastic gang of citizen volunteers who have been given substantial training, is aiming to have samples taken at every bridge in the region with data being uploaded to the national database coordinated by LAWPRO
- **Upland Farming** – farm visits were organised at a number of locations, bringing together farmers of all ages to share experiences and ideas. There is a strong sense that the farming community is well aware of the problems of healthy water and is more than ready to join in with positive new approaches
- **Litter** – drawing on the commitment of many local Tidy Towns and environmental groups, with a special nod to the paddling and watersports activists, litter has been gathered, recorded and disposed of with good cooperation with the local authorities' Environment sections
- **Oral History** – working with particular themes such as mining, water sports, milling and energy, farming and the all-important angling, people have been recorded in telling the story of their intimate attachments to their local river. And a larger story of a transforming of attitudes to water quality, climate change and biodiversity is emerging
- **Education: the Acorn Project** – a creative and hands-on learning with nature programme in selected primary schools, this Forest Schools and Biodiversity project is a unique feature of NoreVision
- **Governance** – a strategic focus on development of a forward-looking dialogue among participants in all the on-the-ground activities, together with community groups, local authorities, key business players and the relevant statutory bodies has been a constant priority for NoreVision. A very well attended online Forum in October was a first step toward a major Conference being prepared for the week of 19 April. Concrete proposals for governance structures will follow from the strategy of coordinating bottom-up action with top-down oversight

NoreVision volunteers litter pick.

In spite of the on-going restrictions demanded by the pandemic, response has been strongly encouraging. NoreVision has enlisted 1375 Friends of the Nore, well beyond its original target. Kilkenny's local paper features a fortnightly NoreVision Diary and the local radio, KCLR, will run a series of nine monthly programmes on all the work that has been achieved. Junior Minister Malcolm Noonan, with responsbility for Heritage including Biodiversity – who grew up playing on the banks of the Nore – has taken note of NoreVision's approach and successes and hopes to make it a model for other catchments.

So, in spite of many complicating factors, NoreVision Programme 2020 (delivered by Veri) has made good use of the initiative provided by the Leader groups, has worked closely with many community activists and is cooperating with many overlapping government agencies.

One of the few silver linings of the pandemic, an increased appreciation of the natural world, seems to be helping, too. Let's hope that active citizenship informed by international science and linked to responsible government can deliver the changes that we and our waters need.

Patrick J Lydon, NoreVision

Learn more:

www.norevision.ie

Inishowen Rivers Trust launch their *Riverview* newsletter

The Inishowen Rivers Trust are delighted to announce the publication of our new digital newsletter *Riverview*. This will feature short news items from the Trust as well as information on how to get involved, upcoming events, training and any other items that we feel might be of interest to our supporters. The first issue was published in January 2021, and has some great stories, including:

Inishowen River Guardians wins major funding for 2021

The IRT are delighted to be one of the recipients of Rethink Ireland's Innovate Together Fund, securing €59,471 to deliver a new training programme for 2021. This funding has allowed the Trust to employ Bren Whelan, a training co-ordinator who will be responsible for liaising with expert facilitators, developing a schedule and creating new ways of learning as we adapt to our Covid world.

As part of this new blended learning approach, we are also engaging the services of a film maker to create instructional videos.

If you are interested in taking part in any of the courses, please contact us by sending an email to inishowenriverstrust@gmail.com. Courses are likely to start in April, but courses booked out very quickly the last time so it's a good idea to get your name in early! This will ensure you are sent the list of modules before they go live on social media.

Through the courses we hope to offer as much practical experience as we can through projects like the one we completed on the Glennagannon River in September 2020.

Inishowen Rivers Trust announce the new River Guardians programme with Innovate Together funding, 9 December 2020. Photo: Clive Wasson.

Natural bank revetment as part of the Glennagannon river restoration project.

Glennagannon River Restoration Project

This project involved building a natural revetment on the riverbanks to prevent erosion and make the banks more resilient to flooding, installing baffles to improve fish passage, tree planting, fencing and pasture pumps. It was a rewarding experience and has worked a treat! Thank you to all the landowners and volunteers who engaged on this project that was funded by LAWPRO.

Natural Flood Management in Clonmany

We're very excited to announce another great project that the Trust will be involved with in 2021. The project entitled '*On the Ground - Natural Flood Management - Inishowen*' aims to identify and install natural measures that could alleviate flooding in the Clonmany area. This project follows on from our work with Trinity College and University of Newcastle that looked at the opportunities for NFM in Inishowen.

We hope to work closely with the community on this to co-design and co-produce the measures and engage with flooding experts and ecologists. We have appointed McCloy Consulting as the flooding consultants and a Landowner Liaison Officer will be in place as a central point of contact for both community and the statutory agencies that are engaging in the project. If you wish to find out more about the project and get involved as a landowner or volunteer, please contact us by email or phone Mark on 083 812 3218.

ON THE GROUND
NATURAL FLOOD MANAGEMENT
INISHOWEN

The Current Status & History of Eels in Inishowen

Back in November 2020, we were awarded funding under Change Makers Seeds of Change Grant Scheme for a project entitled '*The Current Status & History of Eels in Inishowen*'. This project aims to raise awareness around this critically endangered species, and we have commissioned dedicated Trust volunteer Tomás Lawrence to write a report that brings together the current knowledge on eels in Inishowen. Dr Liam Campbell from the Lough Neagh Partnership will also be joining Tomás to discuss eel fisheries on Lough Neagh and the River Bann. Inishowen Rivers Trust will be holding a webinar on the eels of Inishowen on Thursday 1 April 2021 - see their website for details.

Inishowen Rivers Trust volunteers tree planting in 2020.

Tree Planting Season

At this time of year trees are dormant and this makes it easier to transplant them. November to March is the best time of year to plant bare-rooted trees. Planting young, bare-rooted trees is easy and gives the trees a chance to settle into their new environment. These trees rarely need support, although you may need to mark them, so you don't forget where they are! The IRT have recently produced a guide to tree planting which we are distributing to various outlets around Inishowen (post offices). You can download it from our website too (check out the Downloads page). Many thanks to Donegal County Council for supporting the publication of the booklet.

In the coming weeks, some of our collaborating landowners will be planting trees we have secured from All Ireland charity Trees on the Land. If restrictions lift, we may be able to gather volunteers for a tree planting day. Get those spades cleaned up and ready to go!

Trish Murphy, Project Officer, Inishowen Rivers Trust

Learn more:

www.inishowenriverstrust.com

Camac Connections: the River Camac in Clondalkin – new booklet published by Friends of the Camac

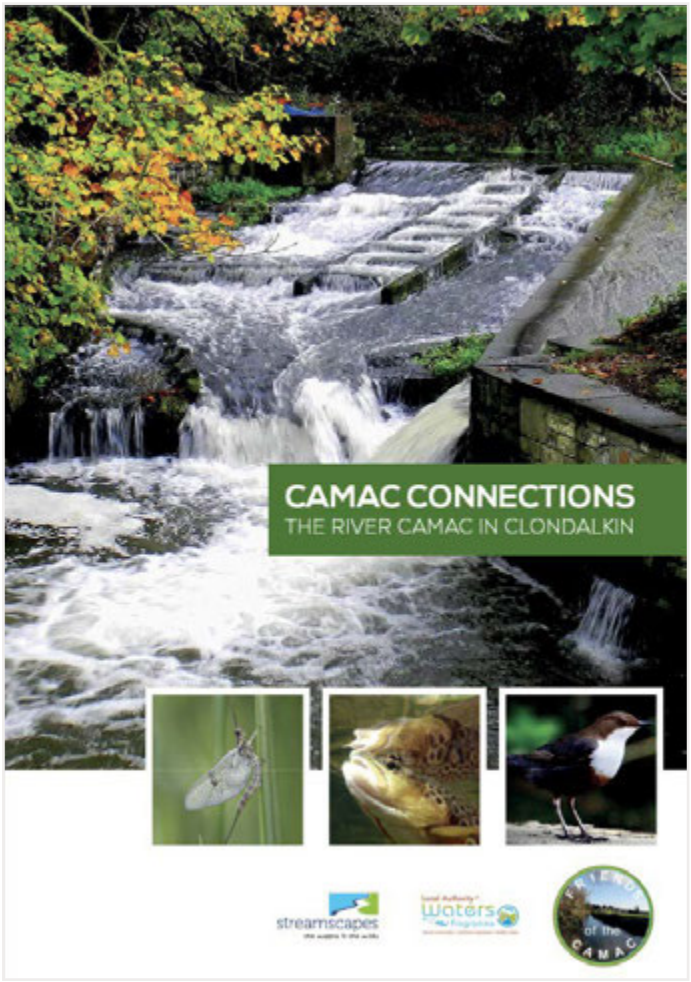
The Camac River is a living, breathing, organism that flows through the heart of Clondalkin. Rising near Mount Seskin in the Wicklow Mountains, the Camac is 25.6 miles long and is one of the most important rivers in Dublin. Friends of the Camac was set up in 2017 to continue the work of preserving the River Camac for the people of Clondalkin.

Camac Wetlands, Cabragh Park (Photo: Tommy Keogh).

The river passes through Saggart, Clondalkin, Inchicore, Drimnagh, Crumlin and Kilmainham, finally entering the Liffey near Heuston Station. On the way, it supports life for millions of creatures, and waters the plants and trees that beautify our green spaces. It is a haven for wildlife, a quiet place to escape to, a way to feel connected with the natural world. For generations of Clondalkin people, the Camac has been the place they worked, socialized, and learned to fish or swim. It is part of our history and our heritage.

The amazing thing about nature is how forgiving it is. Community cleanup days have restored the riverbanks to something of their former glory. Seed bombing of native wildflowers, funded by South Dublin County Council, and planted by our volunteers, provides a glorious array of wildflowers along the river – a gift for bees and other pollinators.

Thanks to the work of local groups like Clondalkin Tidy Towns, Clondalkin Anglers' Association, Clondalkin Mens' Shed, Clondalkin Chamber of Commerce, Local Civil Defence – to name but a few – Friends of the Camac believe the town and its river has a promising future. We are all working to make sure the Camac; its heritage, wildlife and ecosystem will be there to benefit future generations for many years to come.



Introduction to *Camac Connections* from Friends of the Camac Chair, Tommy Keogh

Friends of the Camac Mission Statement: Protecting, preserving and enhancing the Camac River in Clondalkin; its heritage, wildlife and ecosystem; for present and future generations.

Friends of the Camac (FOTC) started as a result of an initiative by South Dublin County Council (SDCC) and the Local Authority Waters and Communities Office (LAWCO, now LAWPRO), at an information meeting in Clondalkin in July 2017.

The meeting was attended by interested local groups including members of Clondalkin Tidy Towns (CTT), and as a result of that meeting our group was formed. The Camac is very important to a lot of people and is an integral part of the life and history of Clondalkin. It has meant a lot to me and my family and has played a big part in the lives of many Clondalkin people.

Since founding Friends of the Camac, I have heard from many Clondalkin people who now live abroad, saying how happy they are to see the river coming back to life. The work is ongoing, and we have many people to thank, just some of whom are listed in this book, but we would not have room to thank them all!

It has been a pleasure to work with everyone who has participated in the work towards rejuvenating the Camac river. We look forward to working with local people, volunteers, community groups, schools, public representatives, and stakeholders into the future, as we try to make our vision a reality.

Tommy Keogh, Founder and Chair, Friends of the Camac

Introduction to *Camac Connections* from Thomas Carolan, Local Authority Waters Programme

LAWPRO (the Local Authority Waters Programme) was established in 2016 in order to improve Ireland's diminishing water quality and to meet our requirements under the EU Water Framework Directive (WFD), which requires EU states to improve water quality.

A key part of the Water Framework Directive is Article 14, which requires all member states to engage with the people who live, work and play in a catchment. It is essential for communities to be involved in managing our water resources in order to protect, enhance and improve them.

In 2017, LAWPRO in partnership with SDCC (South Dublin County Council) held a community meeting in Clondalkin to discuss how the community could become more involved in protecting and improving their local river – the Camac. Since then FOTC and LAWPRO have worked closely together to develop objectives for the group and implement projects and initiatives that benefit the Camac.

In a few short years, FOTC have progressed to become a well-established and excellently run community group. They maintain regular clean-ups of the river, host events based around the heritage and wildlife of the river, have commissioned studies on the river, and are sharing all this information with the wider community. FOTC have been, and continue to be, an exemplar community group; in their governance, implementation of projects and overall progress to date. This has provided LAWPRO with an abundance of best practice examples to draw from for water-based community groups. On a personal note, in my role as Community Water Officer, I would like to thank FOTC for being so welcoming to me, so receptive to ideas and generally a pleasure to work with. I wish FOTC continued success and judging by their progress to date, I expect it!

Thomas Carolan, Community Water Officer, Local Authority Waters Programme

Learn more:

Friends of the Camac website – www.fotc.ie

Communities Caring for Water: a landmark moment for the Rivers Trust movement in Ireland

In November 2020, The Rivers Trust and the Local Authority Waters Programme (LAWPRO) co-hosted *Communities Caring for Water,* a landmark virtual event bringing together representatives from local rivers trusts and catchment community groups working across the Republic of Ireland.

This event was supported by Ireland's Department for Housing, Local Government and Heritage. Throughout the morning, nearly 250 participants tuned in to hear from speakers representing a diverse range of local rivers trusts and community groups.

Maigue, Inishowen, and Bandon Rivers Trusts all featured, presenting on topics such as Citizen Science and growing as a new Rivers Trust. Groups, including Keep Kilkenny Beautiful and Dúchas na Sionna (Heritage of Shannon), gave talks on water quality and on wetlands as a nature-based solution.

Community engagement was a key theme, with a session by The Rivers Trust and An Fóram Uisce (The Water Forum) presenting on communications and cutting through the noise of COVID. In a first for events hosted by The Rivers Trust in Ireland, a panel discussion was held on equality, diversity, and inclusion. It was extremely thought provoking and we were delighted to be joined by speakers from Monaghan County Council, Teach na Daoine Family Resource Centre, and LINC for their valued perspectives.

A series of lightning talks looking to the future of rivers and watercourses in Ireland, including strategic priorities for LAWPRO and The Rivers Trust, then concluded the event.

Mark Horton, All Ireland Director at The Rivers Trust, said:

"In what was a challenging year for everyone, this event was an opportunity to recognise and celebrate the amazing work that groups across all parts of Ireland have been doing to protect, improve and enjoy our rivers and loughs. It was encouraging to see so many people both take part in and attend this event and we hope to be able to support as many groups as possible in 2021 to develop the community's capacity to deliver projects that help protect our freshwater environment."

Sean Keating, Director of LAWPRO, said:

"It was a pleasure to co-host this event with The Rivers Trust and to see the enthusiastic response of the virtual attendees to the range of speakers and topics. There is a healthy appetite across Ireland for community involvement in caring for our rivers and lakes. We in LAWPRO will continue to support our communities and look forward to working with The Rivers Trust into the next cycle of the River Basin Management Plan."

Learn More:

Watch the event and browse additional resources here:
www.crowdcomms.com/communitiescfw

Community Water Development Fund Open Call 2021

The 2021 Community Water Development Fund applications are now being assessed. There were 195 applications for a total of €1,080,000 in grants, Total funding of only €360,000 is available, and the scheme is again oversubscribed, showing the appetite in communities to do the kinds of projects that are being funded. This year's successful applicants should be notified around Easter.

The Local Authority Waters Programme launched the Community Water Development Fund for 2021 at the Communities Caring for Water Irish Rivers Trusts and Catchment Community Groups Annual Seminar held virtually on the 28 November 2020. The Fund is now in its fourth year of operation and was set up specifically to encourage greater community engagement in water related projects and initiatives, delivering benefits locally whilst also helping to meet the objectives of the River Basin Management Plan for Ireland and the wider EU Water Framework Directive.

The Fund is intended to assist in the protection and management of water quality, both locally and in the wider catchment. This can include the development of a catchment partnership or River/Lake Trust, and delivery of local projects to protect and improve water quality in a local waterbody. The Fund enables communities to get more involved in the management of their local water environment, delivering multiple benefits for present and future generations. The Fund is administered by the Local Authority Waters Programme on behalf of the Department of Housing, Planning, and Local Government.

For the 2021 Open Call, applications were submitted via an online portal on the website of the Local Authority Waters Programme at www.lawaters.ie

The deadline for the Open Call was 9 February 2021. As with previous years, there was a massive interest in the Fund with 195 applications received, almost reaching €2m in total project costs and €1.08m in grant aid sought. A sum of €360,000 is available to be awarded. Applicants should be notified of decisions by Easter 2021.

Sheevaun Thompson, Funding Lead, Local Authority Waters Programme

Learn more:

www.watersandcommunities.ie/community-water-development-fund

EPA publishes *Water Quality in 2019 - an indicators report*: Ireland's water quality needs to be better protected

This report published in December 2020 provides an update on the quality of water in Ireland's rivers, lakes, transitional and coastal waters and groundwater using information collected in 2019. Just over half of Ireland's waters are in a satisfactory condition and the trends are going in the wrong direction.

The main threat to water quality is the presence of too much nutrients, such as phosphorus and nitrogen, which come primarily from agriculture and wastewater. Over one third of rivers, and a quarter of lakes are failing to meet their environmental quality standards for nutrients. Over one fifth of our groundwater, estuarine and coastal water bodies have high nitrogen concentrations.

Just over half of rivers and lakes are in high or good biological quality. The rivers surveyed in 2019 have shown more improvements than declines overall, which is welcome, however further action is needed to return waters to a satisfactory condition.

- Just over half of Irish surface waters are in a satisfactory condition
- Nutrient concentrations in waters are too high and the trends are going in the wrong direction
- Nitrate concentrations are now increasing in nearly half of our river and groundwater sites
- Phosphate levels are increasing in a quarter of river sites
- Concentrations of nitrate are highest in the south and south east of the country where the main source is agriculture
- Delivering on the key objectives of Ireland's River Basin Management Plan and targeted action at local water catchment level is key to improving water quality

"Clean, healthy water is essential for our economy, our aquatic wildlife and for our health and well-being. However, this assessment shows that our water environment remains under considerable pressure from human activities. Of most concern is the continued upward trend of nitrate concentrations. The problem is particularly evident in the south and southeast of the country where the main source is agriculture. We need urgent and effective action to ensure that the decline in water quality is halted and to restore those water bodies that have declined in quality."

– EPA Office of Evidence and Assessment Director Dr Micheál Lehane

"Elevated nutrient concentrations are contributing to pollution in our freshwaters and estuaries and causing difficulties with drinking water standards in some areas. Urgent action is now needed to reduce nutrient inputs from agriculture. Measures need to be targeted at the critical source areas where nitrogen and phosphate problems occur. There is a lot of good work happening at a local level to improve water quality and this needs to be scaled up to deliver the improvements needed. The River Basin Management Plan, the new Common Agricultural Policy Strategic Plan and the full implementation of the EU Farm to Fork Strategy offer significant opportunities to achieve improvements in water quality, while delivering multiple benefits for the environment including for climate, air quality and biodiversity."

- EPA Water Programme Manager Mary Gurrie

Water quality monitoring in Ireland is carried out under the Water Framework Directive (WFD).

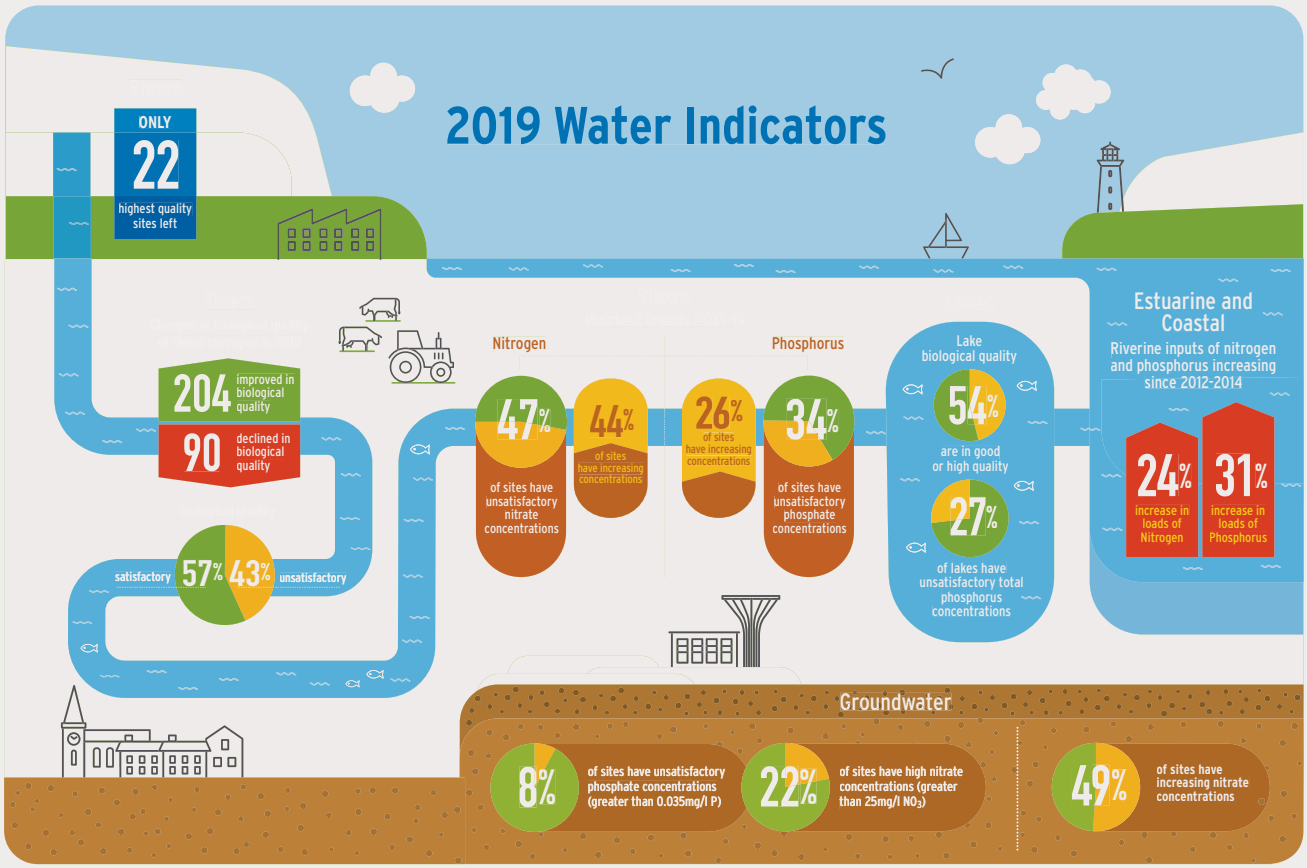
The EPA undertakes a full assessment of water quality in Ireland every three years and we report on the indicators of water quality in the intervening years. These indicators provide an update on the biological quality of our rivers and lakes and the nutrient concentrations in all the water categories. We also include information on the input of nutrients to our marine environment.

Each indicator presents the current situation and where possible details of any recent changes or trends. The indicators are:

1. River biological quality
2. Nitrate in rivers
3. Phosphate in rivers
4. Lake biological quality
5. Total phosphorus in lakes
6. Nitrogen in estuaries and coastal waters
7. Phosphate in estuaries and coastal waters
8. Nutrient inputs to the marine environment
9. Nitrate in groundwater
10. Phosphate in groundwater

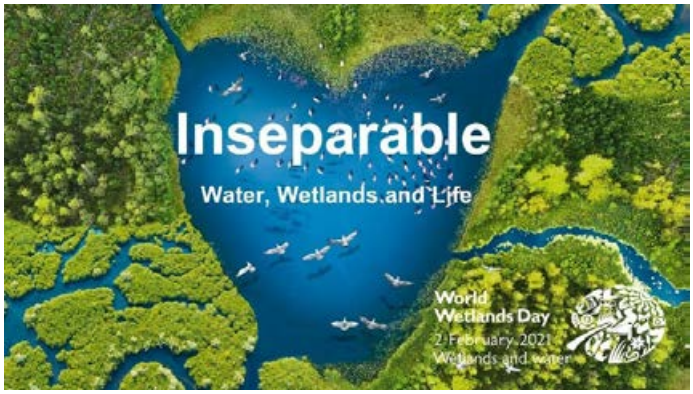
Learn more:

EPA Water Quality reports:
www.epa.ie/pubs/reports/water/waterqua
Data on water quality at catchment, subcatchment and water body scale are available on www.catchments.ie



World Wetlands Day 2021 – water, wetlands and life

World Wetlands Day marks the date of the adoption of the Convention on Wetlands on 2 February 1971, in the Iranian city of Ramsar on the shores of the Caspian Sea. This year's theme for World Wetlands Day is Wetlands and Water. Events to celebrate took place all round the world and Ireland, and The Irish Ramsar Wetlands Committee launched a new video on Clara Bog.



Water and wetlands are connected in an inseparable co-existence that is vital to life, our wellbeing and the health of our planet.

This year, World Wetlands Day shines a spotlight on wetlands as a source of freshwater and encourages actions to restore them and stop their loss. We are facing a growing global freshwater crisis that threatens people and our planet. We use more freshwater than nature can replenish, and we are destroying the ecosystem that water and all life depend on most – wetlands.

World Wetlands Day 2021 is highlighting the contribution of wetlands to the quantity and quality of freshwater on our planet. Worldwide, up to 87% of our wetlands have been lost since 1700. Wetlands are being lost three times faster than natural forests. Species that depend on wetlands are in serious decline. Since 1970, global declines have affected 81% of inland wetland species and 36% of coastal and marine wetland species.

Reed and large sedge swamp, East Burren, County Clare.

Turlough, Ballinacourty, County Tipperary.

The wonder of wetlands

- Wildlife needs wetlands to survive and thrive; 40% of all species live or breed in wetlands
- Wetlands absorb and store water, which can help provide protection from flooding and storms
- Wetlands can help remove pollution from water
- 30% of all the carbon stored on land is stored in wetlands; protecting our wetlands mean this carbon isn't released into the atmosphere as greenhouse gases which cause climate change
- Wetlands are places for recreation, culture and leisure and provide employment, food and energy

Wetlands and Ireland

A combination of geology and abundant rain means Ireland has an extraordinary array of wetlands covering about 20% of the country. There are many types of wetlands, from lakes, rivers, turloughs, bogs and estuaries to fens, marshes, wet woodlands, heaths and machair.

Machair is a Gaelic word meaning fertile, low-lying grassy plain; 'machair' refers to a unique habitat that is one of the rarest in Europe, only occurring on the exposed west-facing shores of Scotland and Ireland. Reed and large sedge swamp, East Burren, County Clare.

The many wonders of Clara Bog

To celebrate World Wetlands Day 2021, The Irish Ramsar Wetlands Committee has launched the first in a series of seven new videos telling the story of Irish wetlands, which have been produced with support from the OPW, the EPA and NPWS. The first video is all about Clara Bog, and can be watched on www.irishwetlands.ie.

Paddy Morris, EPA Catchments Unit

Learn more:

www.catchments.ie/celebrate-world-wetlands-day-2021/
www.irishwetlands.ie

New video from the Irish Ramsar Wetlands Committee on Clara Bog. Watch online at www.irishwetlands.ie

Sliabh Beagh: 2,200 acres of uplands now under the stewardship of An Taisce

In the Spring of 2020, a large area of the Sliabh Beagh uplands in County Monaghan came into the ownership of An Taisce – The National Trust for Ireland, and a further area in County Tyrone is in the process of being transferred. This land was formerly owned and managed by the Rossmore estate and Lord "Paddy" Rossmore. For generations this part of Sliabh Beagh has been managed for hunting and wildlife by the Rossmore family. In a far sighted and extremely generous gesture, Paddy Rossmore has gifted this land to An Taisce.

Sliabh Beagh is an upland site, with a highpoint of over 400 meters and spans counties Monaghan, Tyrone and Fermanagh. As an environmental and heritage charity An Taisce are well positioned to safeguard this land for future generations and continue on the environmental legacy.

The unique and protected habitats on Sliabh Beagh are an extremely valuable asset to the people of this island. Sliabh Beagh is part of the largest coordinated network of protected land in the world, the Natura2000 network with a SAC in Northern Ireland and an NHA in the Republic of Ireland and a SPA both sides of the border. There are a range of landowners on the site. An Taisce and the Forest Service Northern Ireland are the largest landowners, along with a number of private individuals. It is the third largest blanket bog in Northern Ireland, storing a vast amount of carbon in its peat. An Taisce is keenly aware of the importance of keeping this carbon locked up in the ground.

Blue Dot Waters

Some of Irelands highest quality rivers wind their way down the slopes of Sliabh Beagh. The site feeds into two separate catchments, with the west of the hill draining into the Erne, and the east into the Neagh-Bann. Just 20 pristine rivers are left in Ireland and Sliabh Beagh is a very significant site with 2 of these waterbodies coming from here, the Mountain Water 010 and the Scotstown 010.

Sliabh Beagh is an important water abstraction point for the population in North County Monaghan who get their drinking water from a supply that originates on the An Taisce land holding. Maintaining a healthy bog is a priority for keeping this water source is top condition. This water supply was established as a group water scheme while the land was owned by the Rossmores.

The Sliabh Beagh uplands.

Above: Local farmer Pat McKenna has reintroduced low intensity grazing with the Dexter, one of Ireland's oldest native cattle breeds.

Ensuring that the bogs are healthy and their carbon is kept locked safely in the ground is a key focus of An Taisce, the CANN Project, Monaghan County Council and their partners in the area.

Low intensity grazing with Dexter cattle

An Taisce are keen to foster sensitive, non-car-based ecotourism on the site which allows people to experience the Irish uplands in a low impact manner and have a deep understanding of Irelands upland habitats and the steps required to manage them. An Taisce and a farmer came together with an ambitious idea to reintroduce low intensity cattle grazing to the Sliabh Beagh uplands.

Local farmer, Pat McKenna, has a herd of one of Irelands oldest native breeds of cattle, the Dexter. Once a common site in Irelands uplands, the Dexter is now making a bit of a comeback. These animals are famed for their high quality fine flavored meat. It is hoped that low density grazing can be continued over the coming years to improve the quality of the habitat on areas on Sliabh Beagh. Grazing can break up areas of dense sward, reducing fuel load and fire risk and opening up habitat for ground nesting birds.

Collaborative Action for the Natura Network (CANN) project

Across the border, on the NI Forestry Service land, the Collaborative Action for the Natura Network, or CANN project for short, has been working to rehabilitate a large area of drained bog. A number of years back, an area of the blanket bog was drained and readied for planting forestry. Pine seedlings never made it into the ground here and as a result close to 120 hectares of drained and degraded blanket bog was created.

The CANN project approached this landowner with a plan to rehabilitate this area of drained bog and the NI forest service came on board to facilitate this area becoming to healthy functioning blanket bog once again.

This area of bog feeds into the Colebrooke River, then the Erne and ultimately out to sea at Ballyshannon. CANN project partners, Monaghan County Council, commissioned specialist contractors to install over 1200 peat dams into these historic drains. The aim of this work is to restore the hydrology of this area of the bog, making it wet again and allowing it to heal. The site borders right onto the An Taisce landholding.

Rory Sheehan, Sliabh Beagh Site Coordinator, Collaborative Action for the Natura Network (CANN) and Ian Lumley, An Taisce

Learn more:

www.antaisce.org/sliabh-beagh-co-monaghan-and-tyrone

The Collaborative Action for the Natura Network (CANN) project is supported by the European Union's INTERREG VA Programme, managed by the Special EU Programmes Body.

ARTICLES

Nature-based sustainable urban drainage systems: coming a long way, from Tipperary to national policy

Nature-based Sustainable Urban Drainage Systems (SuDS) provide a realistic solution for addressing flooding and increased surface water flow. Nature-based SuDS include green roofs, swales, buffer and filter strips, and rain gardens. A nature-based SuDS workshop took place in January 2020, organised by the Local Authority Waters Programme (LAWPRO) and featuring case studies form Dublin and Tipperary, and this led to an event in November 2020 to share knowledge and practice that was attended by almost 500 local authority staff. This article was originally published in Tipperary County Council's monthly newsletter.

Filter strip on N24 provides not only extra surface run off soakage but also biodiversity and amenity benefits.

Making space for water. Dennis Burke park in Clonmel floods in February 2021. By working with nature, the park serves multiple functions including supporting amenity, biodiversity, alleviating flood risk and providing essential services in Clonmel with greater climate resilience.

Tipperary, like other counties, is no stranger to flooding after heavy rainfall events. Dealing with flood events requires action from a range of actors, including local authorities and private landowners. As we know, climate change is resulting in more frequent heavy rainfall events, leading to increased surface water flow. The effects of this are increased in urban areas because there is less absorption of surface water on hard surfaces compared to greenfield sites. Increased surface water flow presents challenges for traditional engineering solutions (gullies, pipes, manholes, etc), often leading to localised flooding and overflows.

Sustainable Urban Drainage Systems (SuDS) provide a realistic solution for addressing flooding and increased surface water flow. These are nature-based systems that work with the surrounding natural landscape to attenuate and soak up excess surface water, and they are being adopted widely in other countries.

Adopting a nature-based approach has many benefits, these include flood risk management, filtration of contaminants (leading to better water quality in rivers), biodiversity (habitat for various species); and climate action (local resilience, micro-climate cooling, carbon sequestration).

A SuDS focussed workshop took place in January 2020, organised by the Local Authority Waters Programme (LAWPRO). This brought together staff from Dublin City Council and Tipperary County Council to share experiences and knowledge. This included management and staff from Roads, Planning, Environment, and C&E Sections.

That meeting led to a national event online last November with almost 500 Local Authority staff in attendance. The focus was Nature Based SuDS: policy, techniques, and maintenance. Eoin Powell, Senior Executive Engineer, Clonmel Borough District gave a presentation on the typical challenges faced by rural Local Authorities to address increased surface water and flooding. A report from that event was sent by LAWPRO to the Department of Housing Local Government and Heritage (DHLGH) that highlighted recommendations from the speakers and participants.

A survey of attendees at the webinar points to supports for wider adoption of Nature-based SuDS to help achieve objectives for

N24 Roundabout Clonmel. Planted with wildflowers, the roundabout not only provides for increased surface water filtration but also provides for pollinators. A flock of goldfinch took up residence on this roundabout.

water quality, climate change adaptation, biodiversity and human health and well-being.

However, 81% of respondents believe that Nature Based SuDS are not being adequately implemented across Ireland. Improvements in key factors such as policy, legislation, leadership, governance, technical guidance, training, local government capacity and funding were identified as necessary for progress in this area. The DHLGH is now acting on the recommendations and is developing a SuDS integration plan which will coincide with the next River Basin Management Plan for Ireland (2022-2027).

As the COVID-19 Pandemic has brought people closer to nature, it offers an opportunity for Local Authorities to promote Nature Based SuDS in a world where the effects of climate change are already clear. Let us not waste this opportunity.

Fran Igoe, Regional Coordinator, Local Authority Waters Programme

Learn more:

If you would like more information, please email info@lawaters.ie

EPA publishes Ireland's Environment - An Integrated Assessment 2020

The EPA has published *Ireland's Environment - An Integrated Assessment 2020*. This assessment is done every four years and highlights the overall quality of Ireland's environment, the pressures being placed on it and the societal responses to current and emerging environmental issues.

Ireland's Environment: An Integrated Assessment 2020 reveals that enduring and systemic challenges are putting pressure on the environment and remain to be solved. These cut across different environmental topics such as climate, air, soil, water, biodiversity and waste, and across organisations and sectors, business and all levels of society.

"The overall quality of Ireland's environment is not what it should be, and the outlook is not optimistic unless we accelerate the implementation of solutions across all sectors and society." – EPA Director General Laura Burke

Key messages include:

- The outlook for Ireland's environment is not optimistic unless we accelerate the implementation of solutions across all sectors and society
- Climate and biodiversity are two of the key challenges we need to address
- An investment in the environment is also an investment in our health
- Environmental indicators are going in the wrong direction across many areas
- A national Environmental Policy Position will provide clarity on our ambition and commitment to live up to the image of a Clean Green Island.

Specific examples include:

- Almost ninety per cent of our energy is generated from fossil fuels giving rise to greenhouse gases
- air quality in some urban areas doesn't meet WHO standards
- nature and habitats are being damaged (85% of EU listed habitats are in unfavourable condition)
- wetland bird species, such as curlew, are under threat as a breeding species
- raw sewage is being discharged to water from 35 towns and villages
- even more stark is the dramatic reduction in the number of Ireland's most pristine rivers, which have fallen from over 500 sites to only 20 sites in 30 years
- nutrient concentrations in rivers and nutrient inputs to the marine environment are increasing
- more than one million tonnes of food waste is generated each year in Ireland
- littering remains a problem, resulting in thousands of complaints annually to local authorities

A key message from Ireland's Environment: An Integrated Assessment 2020 is that the absence of an overarching national environmental policy position is negatively impacting on success across multiple environment-related plans and policies: the sum of the parts does not make up a coherent whole.

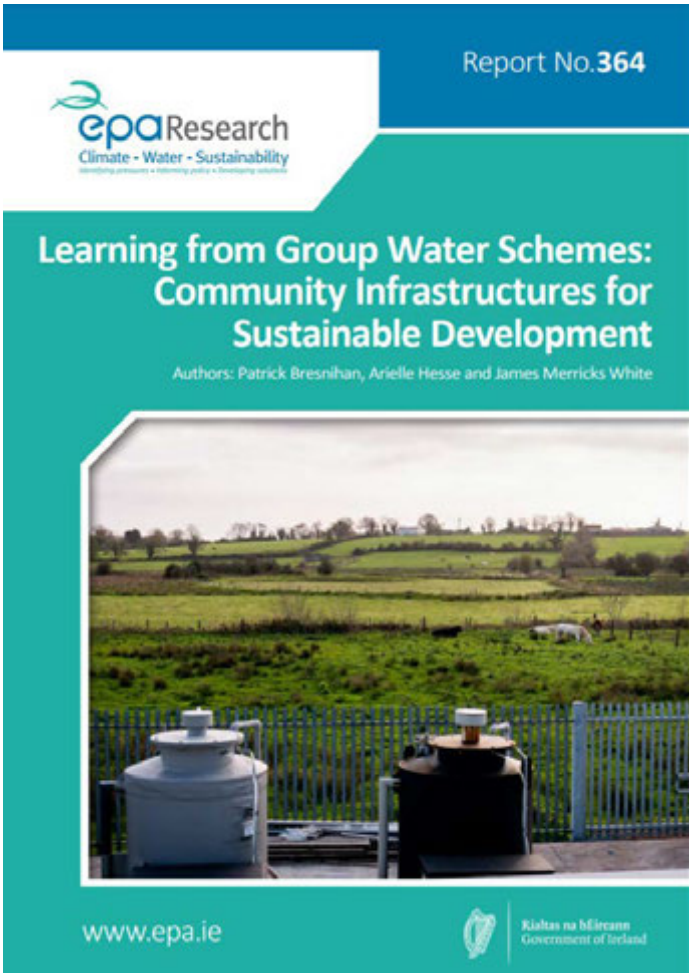
Learn more:

www.epa.ie/irelandsenvironment/stateoftheenvironmentreport

EPA Research 364:

Learning from Group Water Schemes: Community Infrastructures for Sustainable Development

The EPA has published the *EPA Research 364: Learning from Group Water Schemes: Community Infrastructures for Sustainable Development*. The quality of many of Ireland's freshwater sources is declining, impacting in turn the quality and affordability of Ireland's drinking water services. This project examines the history and development of the group water scheme sector, identifying how and why it has been successful in providing essential water services to rural Ireland, and providing several key findings that have implications beyond the rural water sector.



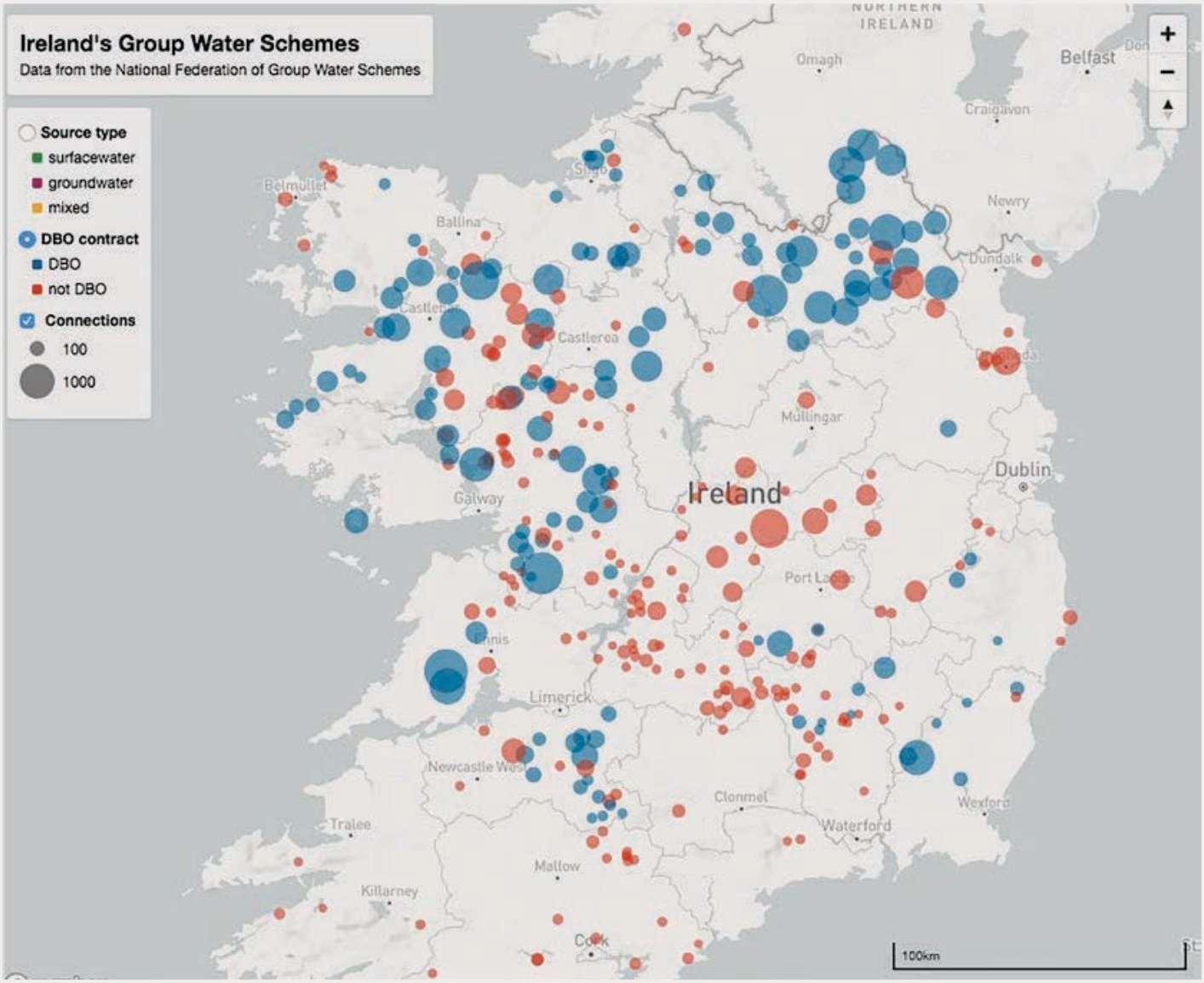
EPA-funded research generates a scientific base to support environmental protection. Projects are carefully targeted to deliver on three key areas: Identifying pressures; Informing policy; and Developing solutions.

Identify Pressures

The quality of many of Ireland's freshwater sources is declining. The decline in water quality impacts in turn the quality and affordability of Ireland's drinking water services. Ireland's water infrastructure requires significant upgrades and extensions if it is to continue to provide safe, affordable drinking water to the population and avoid direct and indirect financial penalties from the European Commission. The recent reform of the public Irish water sector has sought to address this through the establishment of a single, national water utility and the introduction of domestic metering and charges. However, in the face of public opposition, water charges have been suspended, and the future challenges for Irish Water are significant.

Inform Policy

In the context of national and international debates around the future of water resources and provisioning, the experience and performance of Ireland's group water scheme sector provides valuable insights and lessons. Over the past 20 years, the group water scheme sector has transformed itself by successfully addressing problems with water quality and leakage, in many respects outperforming the public sector, as well as being active in the protection of freshwater sources. This project examines the history and development of the group water scheme sector, identifying how and why it has been successful in providing essential water services to rural Ireland.



Map of the distribution of GWSs, with DBO schemes in blue and non-DBO schemes in red.

Develop Solutions

This project has several key findings that have implications beyond the rural water sector. First, in an era of infrastructural failure, when innovation is usually taken to mean disruption, group water schemes demonstrate the value of often overlooked but essential work required to sustain environments, infrastructure, and community. Second, group water schemes are adaptive, responsive and community-focused institutions, able to tailor standardised regulations and technologies to local needs, environments and social differences. Third, through its focus on three source water protection projects in Counties Mayo, Monaghan and Roscommon, the project demonstrates that local expertise is both extensive and valuable in understanding the connections between local environmental change, national and European policy, land use change, farming practice and economic pressures. This expertise needs to be better combined with established scientific methods to generate more rigorous and critical insights into water-related issues. Finally, the project shows that source water protection is a complex and contentious area of water governance as the protection of common goods can come into conflict with private interests relating to land use and farming.

Patrick Bresnihan, Arielle Hesse and James Merricks White

Learn more:

www.catchments.ie/epa-research-364-learning-from-group-water-schemes-community-infrastructures-for-sustainable-development/

What's SUP? A paddleboarder explores the Liffey.

DCU Water Institute's River Liffey Backdrop citizen science project relaunched

DCU Water Institute has relaunched its Backdrop citizen science project which aims to monitor water quality in the Liffey for nitrates and phosphorus. Citizen science data is collected and uploaded by volunteers with testing kits using a mobile app. This data is then shared with the global Freshwater Watch Project. Citizen scientists are also encouraged to report any pollution they see using the EPA's *See It? Say it!* app.

The Water Institute's Backdrop project which monitors water quality along the River Liffey is being relaunched. The project began in May 2019 as a Dublin-based initiative of the global programme FreshWater Watch, the freshwater monitoring division of Earthwatch.

The programme is co-funded by Royal Bank of Canada whose employees are part of a European-wide effort in Dublin, Paris and Luxembourg. Working alongside local communities, they help to manage and conserve the freshwater resources within their increasingly built-up cities, where land-use change has impacted on recreational use and ecosystem biodiversity. Due to the global pandemic of Covid-19, the project was paused, but it is returning, tapping into the public's renewed appreciation of their locality discovered during lockdown.

The Backdop project, like FreshWater Watch, relies on citizen scientists i.e. members of the public, to sample water along the River Liffey on a monthly basis. They carry out simple water tests using kits provided by FreshWater Watch so that regular data on the water quality can be collected and uploaded to a mobile app.

Citizen science data can complement water quality data that is collected by agencies such as the Environmental Protection Agency (EPA) who monitor water quality nationwide.

The River Liffey which has a total catchment area of 1624km² and a population of 1.26 million people, is an important waterway in the greater Dublin area. It is a significant recreational source for many Dubliners who use the river itself for water sports. The adjacent riverbanks and parks are ideal for strolls while enjoying a diversity of flora and fauna.

Backdrop hopes to encourage citizen scientists from Lucan to the Docklands to sample the river water. This will help to build up a bank of scientific data to assess, monitor and improve the water quality. Citizen scientists are also asked to observe their surroundings and take note of any visible signs of pollution or littering.

The *See It? Say it!* app developed by the EPA can also be used to report pollution as entries feed directly back to local authorities.

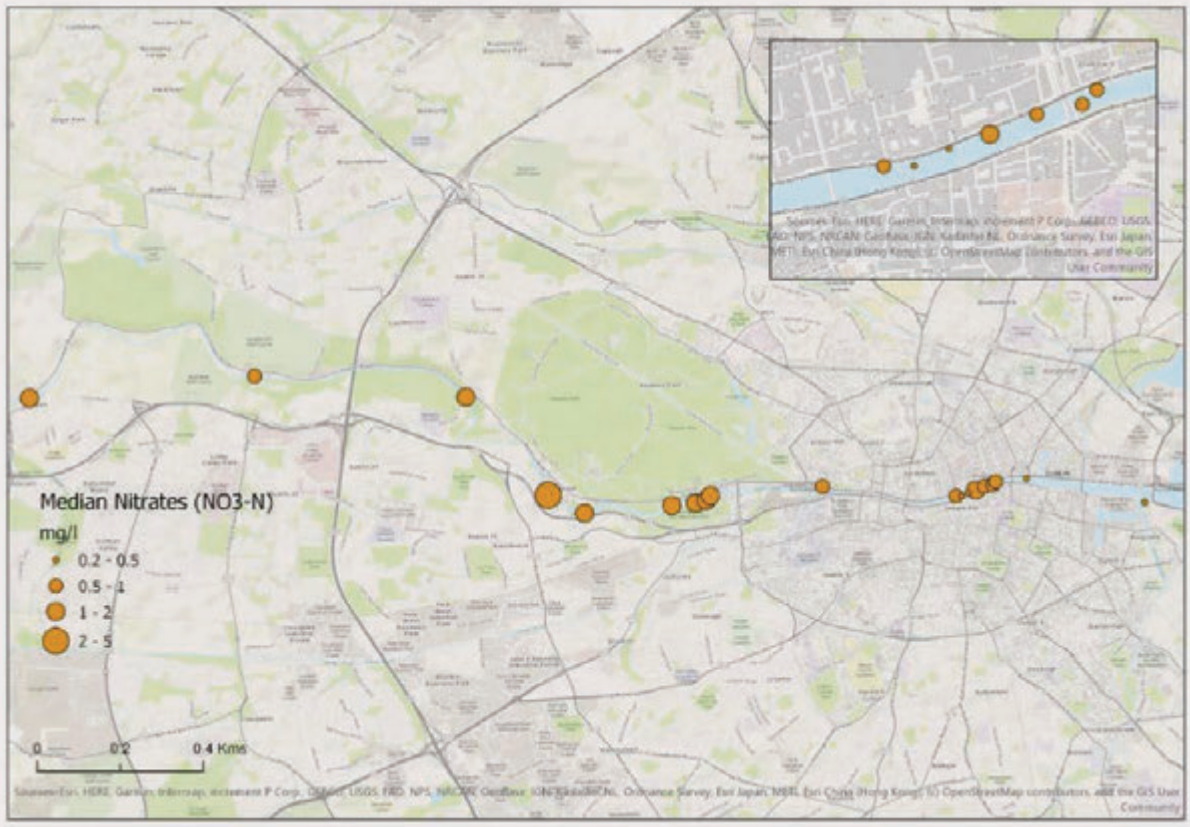


Figure 1: Median Nitrate values (as NO3-N) between July 2019 and May 2020.

Citizen scientists will test for nitrates and phosphates. These two nutrients can be indicators of contamination through wastewater discharge or agricultural fertilisers. The result of the colorimetric test can be checked against a range of values on a colour card, to determine the amount of each parameter in the river water. From the five parameters recommended by the United Nations to monitor for good ambient water quality towards Sustainable Development Goal (SDG) 6, these two tests were found to be the most compatible with laboratory results in a recent validation study of citizen science data by Quinlivan et al (2019). SDG 6 strives to ensure availability and sustainable management of water resources.

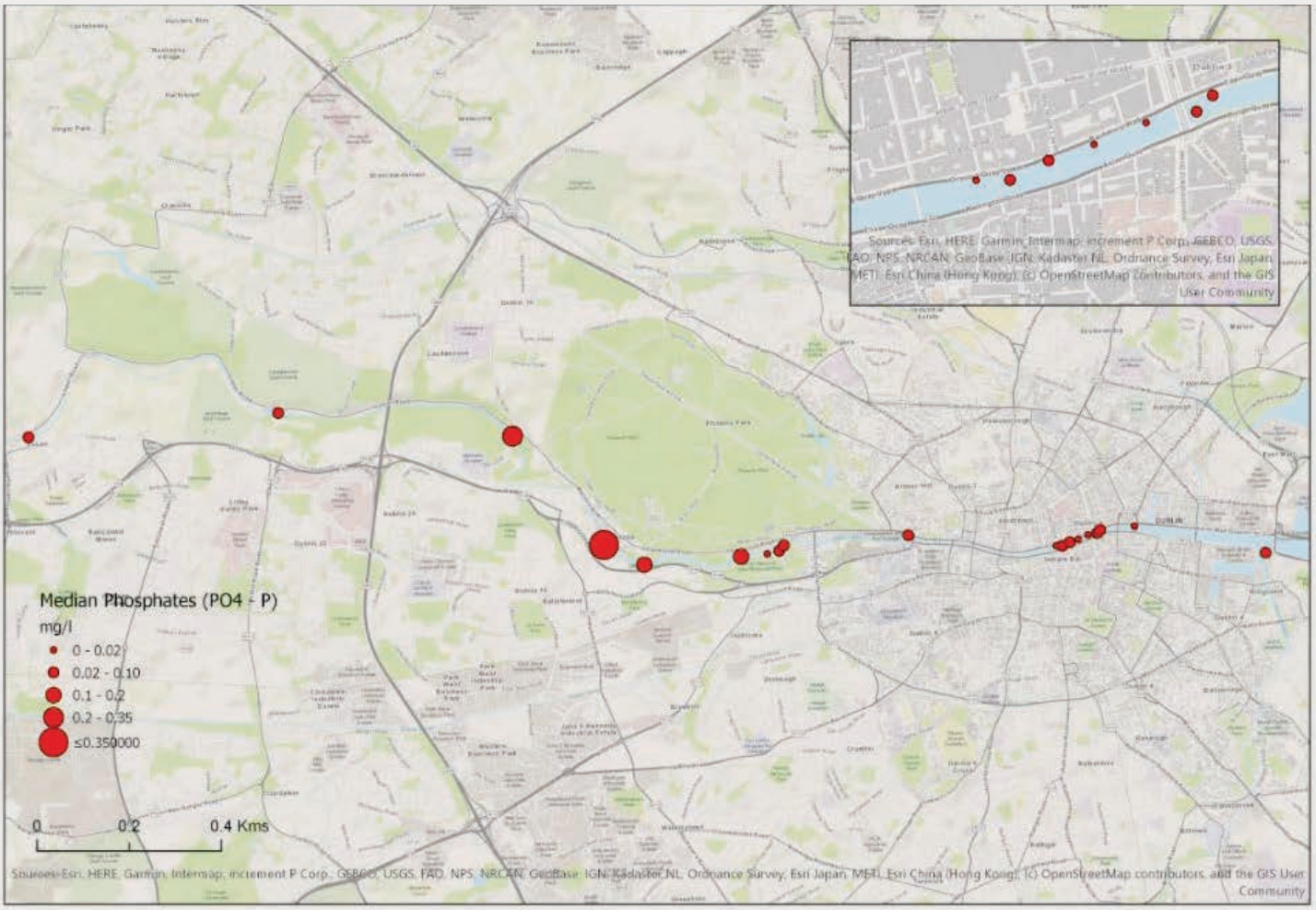
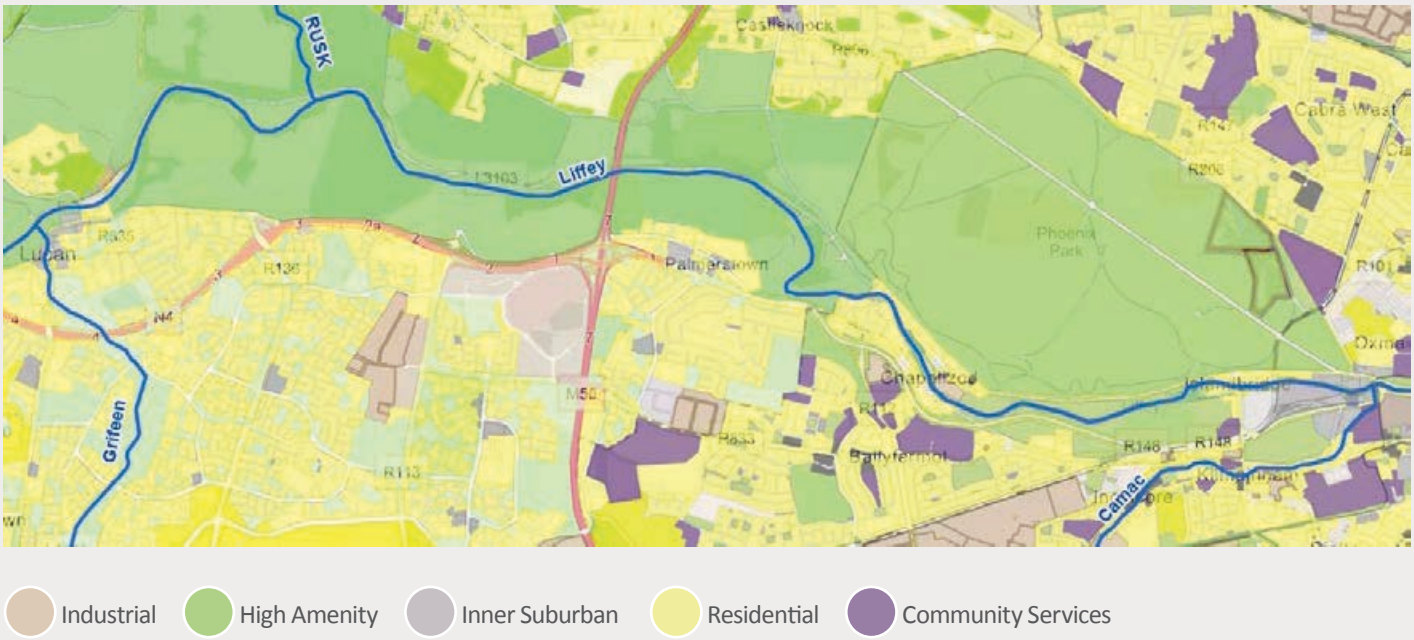


Figure 2: Median Phosphate values (as PO4-P) between July 2019 and May 2020.

Artist's impression of the new pedestrian/cyclist bridge at Islandbridge (Source: RTE 2020)



Above: Figure 3: Land zoning along River Liffey – Lucan to Islandbridge – showing Chapelizod residential area. Source: Development Plan Generalised Zoning, MyPlan, Ireland, (REST Feature Service) Current Development Plans – GZT, using ArcGIS Pro 2020.

The above maps provide the results of data collected for the first year of the project to date. Figure 1 shows median nitrate values at the sample collection points along the river while Figure 2 shows median phosphate values.

Citizen scientists' notes from areas in the upper Liffey such as Chapelizod Bridge indicate visible residential discharge into the river; this may explain the higher than normal levels of nutrients shown on the maps represented by values greater than 2 mg/l for nitrates (NO_3 as N) and greater than 0.3 mg/l for phosphates (PO_4 as P). Fig.3 indicates land zoning along the course of the Liffey as it traverses a mainly high amenity green belt, apart from Chapelizod where it passes through a residential area. The River Liffey is tidal up to Islandbridge therefore nutrients may be diluted by incoming seawater up to this point, resulting in lower nutrient levels downstream from here.

The River Liffey has been the lifeblood of Dublin city for centuries. In an increasingly urban landscape rivers are of vital importance, and the conservation of their biodiversity will benefit all, especially local communities. There is a proposed pedestrian/cyclist bridge over the river linking Islandbridge War Memorial Gardens with the Phoenix Park which had been shelved since the 1930s, therefore the need for improved water quality to revitalise the Liffey and its environs has become a priority. We are asking citizen scientists to contribute by joining the Backdrop project to ensure the river is an amenity we can all enjoy. As Backdrop data feeds into the global FreshWater Watch database, participants are joining a global effort to improve and sustain water quality worldwide.

Susan Hegarty, Project Coordinator, Ruth Clinton, Water Innovation Officer, Anna Hayes, Citizen Science Officer, DCU Water Institute

Learn more:

www.dcuwater.ie/backdrop
www.freshwaterwatch.thewaterhub.org

If you would like to sign up to Backdrop, please contact us at waterinstitute@dcu.ie

Geological Survey of Ireland: Regional assessment of groundwater resources

The Geological Survey of Ireland (GSI) has recently started using the latest data to assess the groundwater resources available in eastern Ireland. Using surface water catchments as the unit of assessment will allow more comprehensive water balance assessments to be undertaken as additional catchment-based quantitative data – surface water flows in particular – are based on the same study area.

Introduction

It was only in the 1960s that laws affording some level of protection to the rights of persons or companies abstracting groundwater came into being across the developed world (Younger, 2007). These regulations generally involved some form of permit, whereby an onus was placed on a new abstractor to satisfy a public authority that the new pumping operation would not adversely affect the continued availability of water to those abstracting in the vicinity.

The challenge of having good ecological status in our waterbodies has been taken up in Ireland's endeavour to fulfil the requirements of the Water Framework Directive (European Union, 2000). An important component of this Directive is the assessment of the quantitative or volumetric status of our water bodies, which has been a significant driver in developing the water abstractions register (Government of Ireland, 2018) and the upcoming Water Environment (Abstractions) Bill which will outline how abstractions will be licenced.

It is within this developing regulatory framework that we can now better consider not only the role of groundwater, but also the details and logistics involved in how groundwater resources must be managed to meet both present day as well as future demands, without having a detrimental effect on ecosystems. In many respects the main objective of quantitative groundwater resource assessment can be summed up by the term "Safe Yield of an aquifer" (Wright, 1987; Zhou, 2009). The term 'Safe Yield' is the acceptable limit of annual abstraction from an aquifer. Originally it was taken as being equal to the annual recharge to the aquifer, but nowadays it is defined in a more subtle way as "the maximum annual yield from the aquifer which can be abstracted without adverse consequences" (Alley and Leake, 2004). Depletion of the resource is only one of the possible adverse consequences.

GSI's current groundwater resource potential assessment

Geological Survey Ireland (GSI)'s Groundwater Section has recently started to re-visit the regional assessment of potential groundwater resources in eastern Ireland. GSI is building upon previous regional assessments in the east of the country (e.g. EDA, 2008; An Foras Forbartha and GSI, 1981) and taking them a stage further by incorporating data that has become available since the above studies were completed. GSI is also using surface water catchments as the unit of assessment, which not only follows the principles of integrated catchment management but also enables more comprehensive water balance assessments to be undertaken as additional catchment-based quantitative data – surface water flows in particular – are based on the same study area. Such an assessment also allows a more thorough understanding of Irish groundwater and its contribution to surface water to be achieved, which will become increasingly important when considering the effects of climate change.

The initial project was developed from discussions with Irish Water regarding its water supply needs – including the emergency issues faced during the 2018 drought – and in considering their information gaps. The work is being conducted to identify potential areas for new groundwater supplies. Public water supplies are a specific focus of the project to provide scientifically-robust information to support Irish Water. One of the key elements to this holistic approach has been close co-operation with the EPA, as providers of data and input into analyses.

The ultimate aim of this assessment will be to formulate a consistent and objective methodology to further assess groundwater resources on a regional basis in Ireland. Although there is already a good general understanding of regional resources in eastern Ireland from previous studies, this work will further develop and refine that knowledge and guide the relevant stakeholders to optimise groundwater resource management.

Data and methods employed in resource potential assessment

Within each catchment studied, surface water catchment boundaries are used to delimit the assessment unit (see Figure 1).

Within each assessment unit, the catchment is assessed in terms of its natural and anthropogenic setting, to form a conceptual model of the main drivers of hydrological and / or hydrogeological characteristics, flows and properties therein. Site specific data are then examined to ascertain if this matches the regional mapping concept. For example, the Dunshaughlin groundwater monitoring point at the southeastern end of the Boyne Catchment is located in Dinantian Upper Impure ('Calp') limestone bedrock, classified as a Locally Important, moderately productive, 'Lm' bedrock aquifer. Groundwater levels in the borehole have a relatively wide range (approximately 9 m, see Figure 2).

Data from the regional and site-specific assessments are then collated to develop conceptual models for sub-zones within the larger catchment region, with associated water balance calculations derived. The water balance calculations are holistic

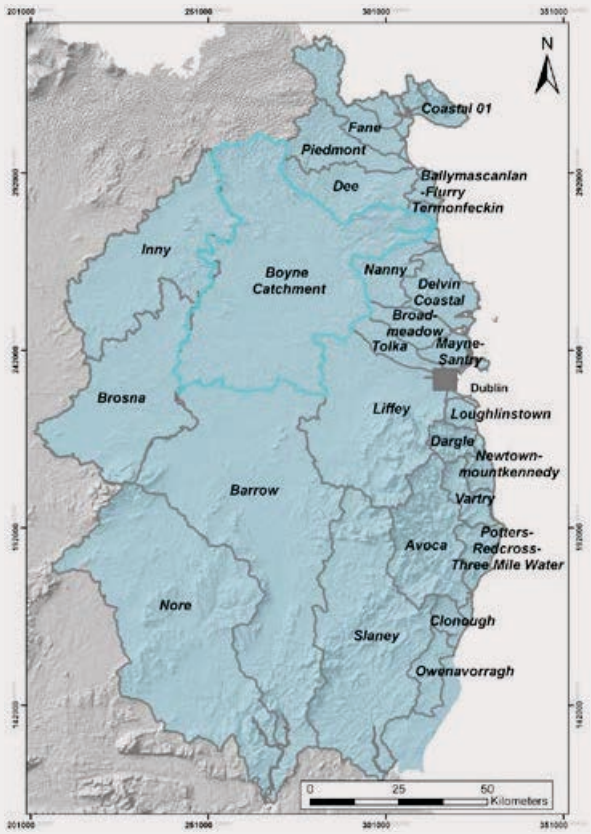


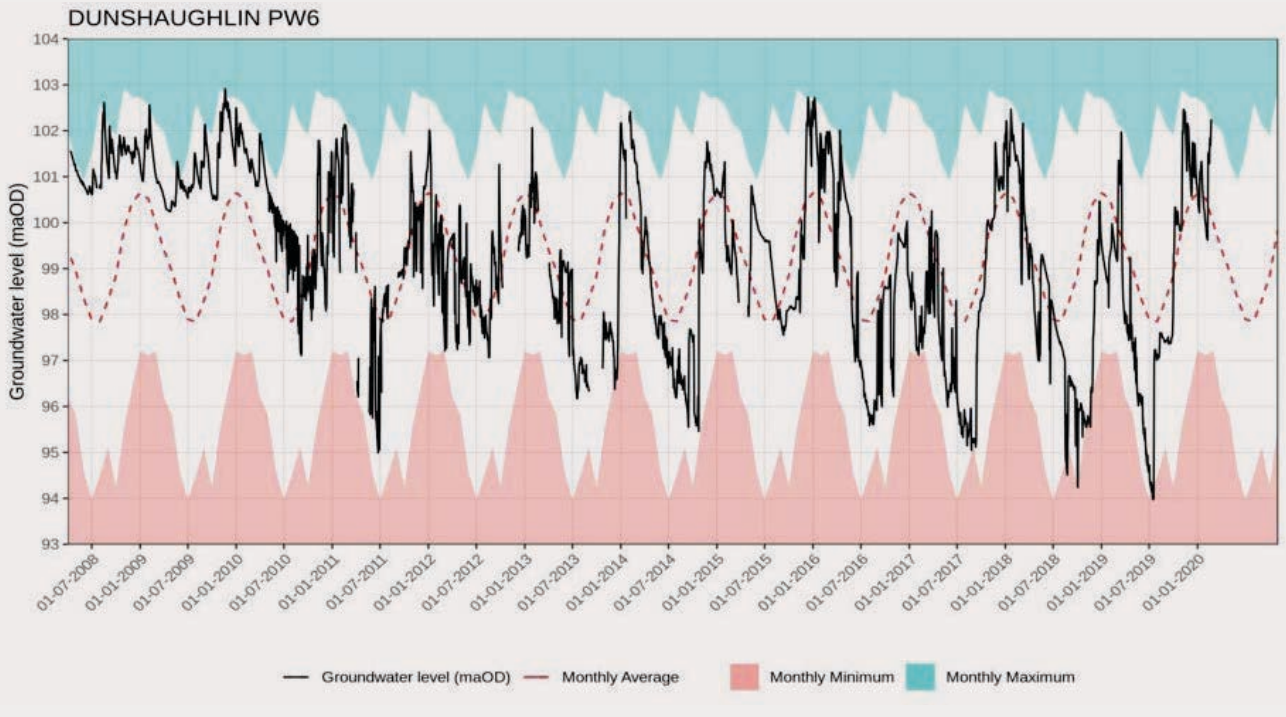
Figure 1: Catchments included in the east of Ireland study area, illustrating the situation of the Boyne as an example.

and consider groundwater as part of the entire catchment system. The sub-region conceptual models are then used to split the catchment up into similar hydrogeological zones. These zonations and the conceptual understanding of the catchment is then used to rank the different areas in the catchment in terms of groundwater resource potential. The water balance assessment is completed on the entire catchment to understand how water travels through it and how significant groundwater is within the catchment. The water balance consists of a calculation that accounts for all significant inputs and outputs of water to and from both surface water and groundwater systems in the catchment, and any interactions between these two systems.

The final portion of the study assesses potential constraints on future abstractions. An abstraction impact assessment is carried out, based on the Water Framework Directive's groundwater quantitative assessment, and a surface water capacity test is completed, based on EPA QUBE[1] outputs. Other considerations taken into account include the presence and situation of protected areas within each catchment, aspects related to groundwater vulnerability therein, and potential impacts on groundwater quality. An overview appraisal of the potential impacts of climate change is also incorporated.

As well as identifying areas with good groundwater resource potential for further, local scale investigation, these catchment-

Figure 2: Median Phosphate values (as PO4-P) between July 2019 and May 2020.



1. QUBE refers to Wallingford Hydrosolutions 'Qube' application, which is a successor to the EPA HydroTool, and which enables accurate assessment of the impacts of surface water and groundwater abstractions and discharges on river flows into the future.

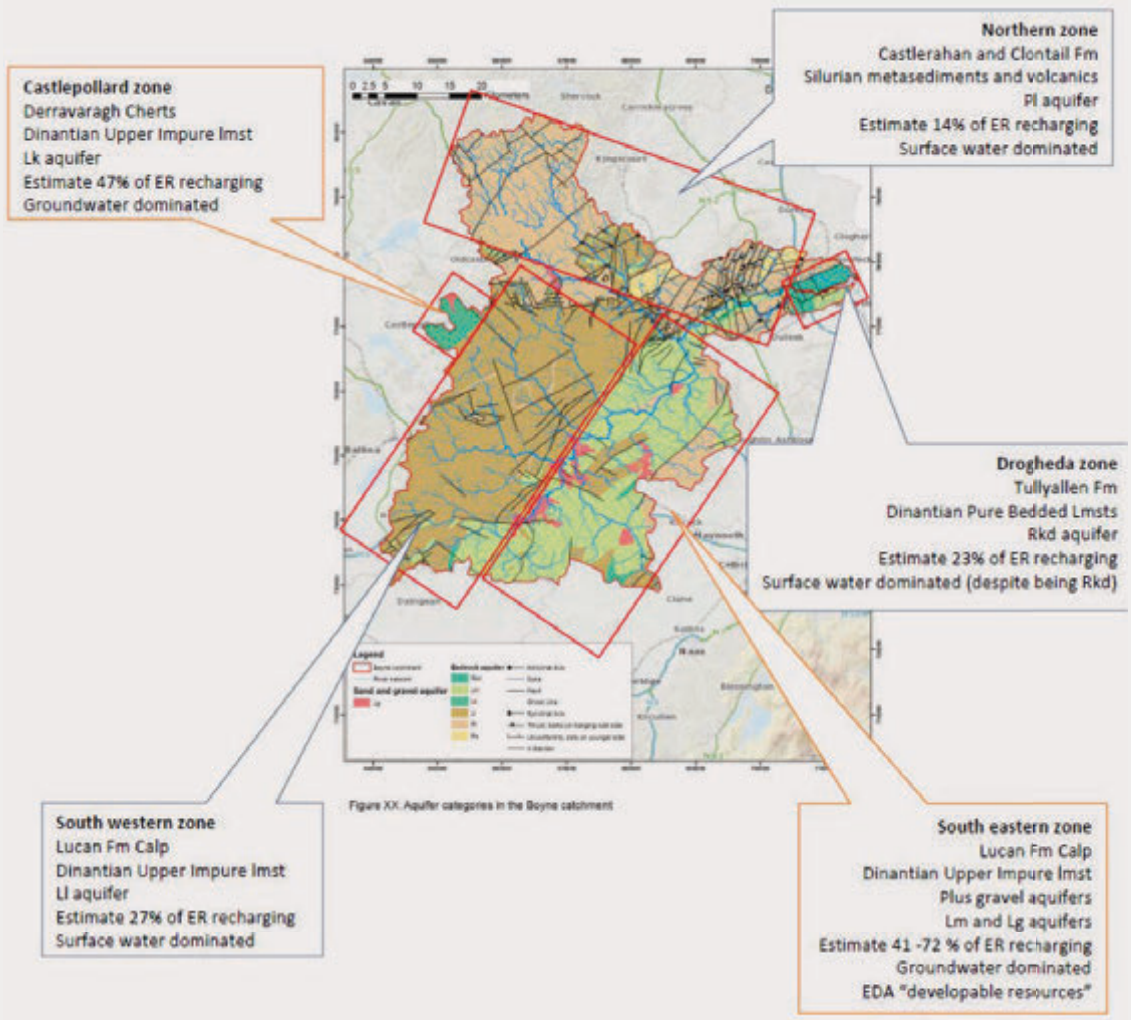


Figure 3: Hydrogeological conceptual model and resultant groundwater resource zonations for the Boyne catchment.

scale assessments also compile all data relevant to groundwater resources within that catchment into one place, develop hydrogeological conceptual models and water balances which will be of use to many separate and disparate stakeholders in the future, and, given that the studies are data-driven, identify obvious data gaps and areas for potential future research, assessment and monitoring.

The current groundwater resources assessment work of Groundwater Section in GSI builds upon existing regional work and expertise but now also provides a consistent and objective methodology to assess groundwater resources on a regional and catchment basis. As well as this, the work identifies areas with good potential groundwater resources for further, local scale investigative study. Furthermore, though the 'top-down' study is at a regional scale, the methodology is quite powerful in terms of illustrating where there might be issues, even at a much more detailed, and local, scale.

As at start 2021, the project is about to conclude its desk study phase, which will inform hydrogeological field investigations at key sites, such as those expected to have good potential, or have shown conflicting sets of information at desk study stage. These site-scale investigations will be undertaken over the next year and are aimed at quantifying resource characteristics. Once this has been completed and the catchment reports published, a project review will be undertaken to assess the prudence of rolling out the studies nationally.

Robbie Meehan[1], Katie Tedd[2] and Coran Kelly[3]

[1] Consultant Geologist, here representing Groundwater Section, Geological Survey Ireland

[2] Groundwater Section, Geological Survey Ireland, Beggars Bush, Haddington Road, Dublin 4

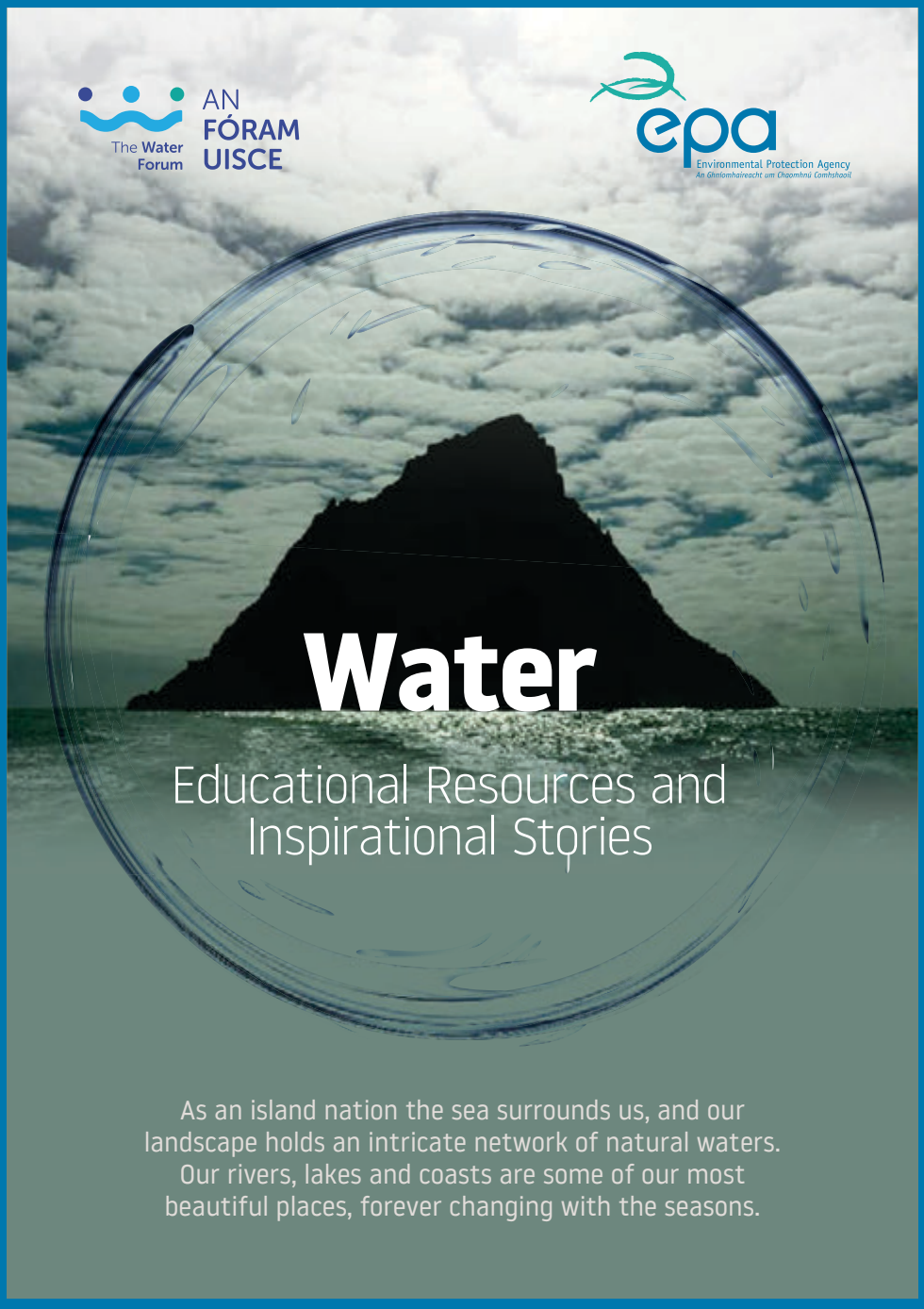
[3] Tobin Consulting Engineers, Block 10-4, Blanchardstown Corporate Park, Dublin 15

Learn more:

www.gsi.ie/en-ie/programmes-and-projects/groundwater/projects/gw3d/groundwater-resources-assessment/Pages/default.aspx

Acknowledgements

Thanks are owing to the GSI project team (Monica Lee, Damien Doherty, Natalie Duncan, Joe Greene, Monika Kabza, Ellen Mullarkey, Melissa O'Keeffe, Alasdair Pilmer, Sara Raymond, Philip Schuler and Shane Carey), for help in the preparation of this article.



If you would like to learn more about Ireland's waters, some of our greatest natural treasures, there are now links to over 30 educational resources from organisations all around Ireland at www.catchments.ie/education

epa Catchments

Healthy • Resilient • Productive

Valued water resources supporting vibrant communities

For further information

www.catchments.ie

EPA Catchments
McCumiskey House, Clonskeagh, Dublin 14

053 916 0600

hello@catchments.ie

@EPACatchments

YouTube.com/EPAIreland

SlideShare.net/EPAIreland