



BOYNE VISION

*A consultation on the Future of the River
Boyne*



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Glossary of Terms

Agricultural Sustainability Support and Advisory Programme (ASSAP) - A free support and advisory service to farmers and participation is voluntary. Its aim is to improve water quality through working with farmers.

Birds Directive (BD) - The Birds Directive (Directive 79/409/EEC) was adopted in 1979. It is one of the first pieces of environmental legislation to be adopted by the EU. It was amended in 2009 ([Directive 2009/147/EC](#)) and requires all Member States to protect all wild bird species and protect and restore their habitats.

Catchment - an area of land around a river, lake or other body of water.

Habitats Directive - The Habitats Directive (Council Directive 92/43/EEC) was adopted in 1992, thirteen years after the Birds Directive. Like the Birds Directive, the Habitats Directive requires all Member States to establish a strict protection regime for species listed in Annex IV, both inside and outside Natura 2000 sites. The Habitats Directive aims to protect over a thousand species, including mammals, reptiles, amphibians, fish invertebrates, and plants, and 230 characteristic habitat types.

Hydromorphology - Hydromorphology is the study of physical form, condition and processes within a surface water body, that create and maintain habitat.

LAWPRO – Local Authorities Waters Programme.

Riparian Corridor – A riparian corridor is a unique plant community consisting of the vegetation growing near a river, stream, lake, lagoon or other natural body of water.

Special Area of Conservation (SAC) – This is an area of prime wildlife conservation in a country, considered to be important on a European as well as Irish level.

Special Protection Area (SPA) - Ireland is required under the terms of the EU Birds Directive (2009/147/EC) to designate Special Protection Areas (SPAs) for the protection of:

- Listed rare and vulnerable species
- Regularly occurring migratory species
- Wetlands especially those of international importance

Water Framework Directive (WFD) - Since 2000, the WFD has been the main law for water protection in Europe. It applies to [inland, transitional and coastal surface waters](#) as well as [ground waters](#). It ensures an integrated approach to water management, respecting the integrity of whole ecosystems, including by regulating individual pollutants and setting corresponding regulatory standards.

Introduction

In Autumn 2022, Development Perspectives (DP) and the Centre for Freshwater and Environmental Studies (CFES) in Dundalk Institute of Technology (DKIT) came together to submit a proposal for the Boyne Rivers Trust (BRT) to consider in relation to the call for tenders, which they had previously released. The purpose of that tender was

“To develop a community and stakeholder led consultation process that will inform the future direction and priorities for the protection and sustainable uses of the Boyne catchment”.

The tender was successful and the work got underway in early 2023. This document is the final report of that process.

Background and context

Many tales and legends originate in the Boyne Valley and the people of the Boyne catchment often look to myth and legend to get a glimpse into the history of the Boyne Valley. What would the characters and mythical legends of yesterday and beyond, think of the Boyne catchment today? What would they think about our collective treatment of the Boyne River and the catchment that holds her? What advice would they have for us – the present generation? What will future generations think about the Boyne and the state we leave it in? There is no doubt that the Boyne will outlive the people who now call it home. As we envisage the future of the Boyne catchment, it is incumbent on us to not only think of the short term (2023 – 2030) but also the medium to long term (2030 and beyond). Aside from stories, myths and legend, it’s also important to think about the policy context, which is captured and detailed in the secondary research section of this report.

“The Boyne Rivers Trust was set up in October 2021 as a not for profit organisation. The aim of the trust is to enable and empower the communities in the Boyne catchment to develop community led activities and projects that will help make the rivers in the catchment thrive once again”. (Boyne Rivers Trust, 2023)

In 2022, the Boyne Rivers Trust applied for Leader funding through Meath Partnership to carry out the Boyne Vision project. Funding was awarded in November 2022 and a contribution to the cost of the project was also provided by the Local Authority Waters programme (LAWPRO).

At a policy level, the Boyne catchment is one of five catchments chosen to pilot a proposed Catchment Management Plan process coordinated by LAWPRO, including a community catchment fora, while we also await the 3rd river basin catchment management plan.

In a recent development, an historic announcement was made by the Government in October 2023, designating the Boyne Valley (Brú na Bóinne) as Ireland’s 7th National Park. This landmark decision will unlock a wealth of opportunities for the protection and conservation of the area's nature, rich biodiversity, and its invaluable heritage and cultural attributes.

Finally, the context this vision creation takes place in, has a contentious backdrop, which involves planning that has been provided by Meath County Council to a meat processing plant in the Boyne catchment near Stackallen.

Executive Summary

194 people took part in this community and stakeholder led process between the 10th of May and the 19th of September 2023. This number is broken down into 101 people completing the questionnaire, 82 people participating in the focus group sessions and 8 interviews were undertaken with 11 people. The primary research consisted of a mixed methods approach, which was completed in parallel to a comprehensive secondary research of existing information and data that is available and relevant.

The research team and BRT utilised traditional media, social media, public participation networks and their respective contacts and networks to help spread the word about the opportunity to participate in the Boyne Vision. Local authority waters programme (LAWPRO) and the respective County Councils were also supportive in helping encourage public engagement with the process. The public engagement and interest in the process was high, right across the catchment. Having the upper catchment included in this report makes it more inclusive and comprehensive in its findings and recommendations.

Attempts were made to involve all interested and relevant stakeholders to make the report robust, valid and reflective of the range of views and opinions that exist publicly regarding the Boyne and its catchment. The team is confident that this report is an accurate capture of the pulse of the people in the Boyne catchment. We are also aware that there are many temporal variables involved that could sway views such as flooding or prominent news coverage etc.

The main findings of the Boyne vision are

1. Engagement - In terms of quantity and quality, public engagement and interest in the Boyne catchment is high.

2. Views and values - The dominant view of the Boyne is positive with people commenting on the beauty, history and value of the Boyne. Notwithstanding this view, there are also views pointing to the decline and pollution of the Boyne.

3. Water quality is by some distance the priority theme, which people want to focus and action on. The residents of the Boyne catchment want a healthier, cleaner Boyne that meets the standards called for in the Water Framework directive (WFD, 2000/60/EC).

“Agriculture is the most significant pressure in water bodies within the Boyne Catchment that are not meeting WFD targets” (Boyne Vision, 2023: 26).

4. Multi-stakeholder and collaborative approach - It is the view of those participating in this process that stakeholders operate too much within their own sphere of activity and do not collaborate enough. Where this collaboration does happen it is often tokenistic and doesn't have the required depth.

5. Accountability, responsibility and implementation of existing legislation - Participants in the focus groups felt that duty bearers and policy makers have not taken their responsibilities seriously enough. This resonated with some of the interviewees, one of whom commented *“The watchdog needs to develop teeth” (Boyne Vision, 2023: 19).*

6. Enforcement – Polluter pays principle – It was clear from the focus groups that there was a desire to have much stronger enforcement measures in place.

7. Education – Broadly speaking, more and deeper educational opportunities are needed for all residents within the Boyne catchment in order to understand and value the river. One interviewee

captured the tone quite well when they said “**Water literacy and public participation is really important**” (*Boyne Vision, 2023: 18*).

8. Population Increase - From 1991 to 2022, the population in the 10 largest urban centres in the Boyne catchment has increased dramatically.

9. Access - “**Access to the river and countryside isn’t there**” (*Boyne Vision, 2023: 19*). Generally speaking, research participants felt that it was bizarre that there was very limited access to the river for leisure activities.

10. Overall state of the Boyne –

“The Boyne Catchment remains under pressure with 51% of water bodies at Risk of not achieving ‘good status’ and failing to meet the WFD objectives” (EPA Catchments.ie, 2022).

Based on these findings, a series of recommendations is made on pages 40-42. It is worth noting that the BRT is now in a good position to act as an exemplar to other River Trusts across the country of not only what is possible in terms of their impact on the catchment, but also the role they play in the soon to be created, Community Catchment fora. The Boyne has been selected as one of five catchments across the country that will pilot the proposed Catchment Management Plan process coordinated by LAWPRO in 2024.

Methodology

The methodology used in the Boyne Vision was set out during the tendering process and consisted of a mixed methods approach. Primary research and secondary research was conducted in parallel over the lifetime of the project. The primary research involved a questionnaire, focus group sessions and 1-1 interviews. This process of using 3 research methods helped build a more valid and rigorous picture of what people in the catchment have as their Boyne Vision.

The secondary research examined a range of documents, which explored the same themes as the primary research. The sources of this research are referenced throughout this report.

Primary Research

As mentioned previously, the primary research involved a questionnaire, five focus groups sessions and eight 1-1 interviews with selected stakeholders.

Questionnaire

The questionnaire built on the themes agreed in advance with the Boyne Rivers Trust. To begin with, a pilot questionnaire was developed and disseminated to a small number of people who then responded in order to iron out any challenges or difficulties that may emerge. This piloting stage was key as it helped the researchers identify the usability of the data returned.

The questionnaire was distributed using Google forms and was disseminated through the Boyne Rivers Trust, Development Perspectives and the Centre for Freshwater and Environmental Studies. 101 completed surveys were the final number for consideration in the Boyne Vision report.

Focus Group

Five focus group sessions were organised between the 10th of May and the 12th of June. The format for each session was repeated to allow for consistency in analysis and reporting. Each of the sessions was promoted via traditional and social media alongside efforts made by the Boyne Rivers Trust, Development Perspectives and the Centre for Freshwater and Environmental Studies in Dundalk Institute of Technology.

Interviews

Eight interviews were conducted using a semi structured approach. Seven out of the eight interviews were done on a 1-1 basis while one of the interviews involved 4 people (Save the Boyne campaign group). The interviewees were selected on the basis of their involvement in a strategic stakeholder group. Diversity and inclusion was also considered as criteria when approaching interviewees.

Primary Research

Questionnaire: An analysis

In total, 101 survey responses were taken into account for the final analyses of the study. However, although the majority of respondents completed the full survey, some did not answer all questions but were included in most of the analyses presented here. The majority of responses came from Meath (54.5%), followed by Louth (25.7%), Dublin (7.9%), Cavan (6.9%), Westmeath (1%), and Wicklow (1%). The areas visited in the Boyne Catchment most frequently by respondents are detailed in Figure 1 and include a good spread of locations with the River Boyne Drogheda (23.8%) the most frequented location.

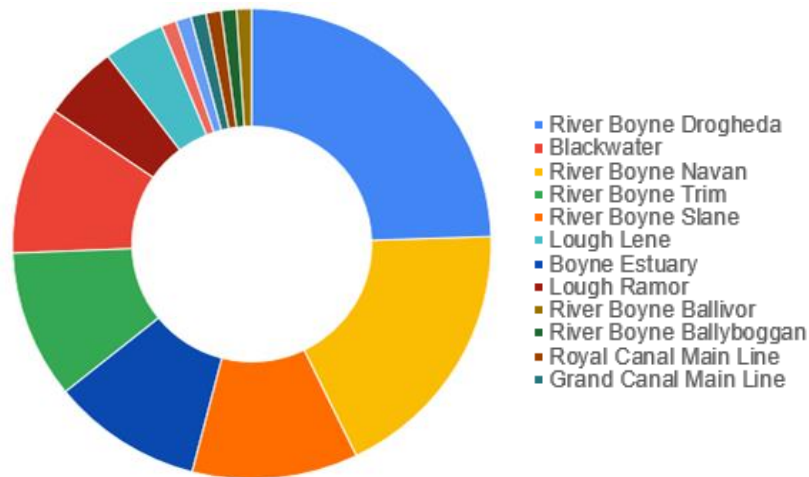


Figure 1 – Responses to survey question: Which river or lake in the Boyne Catchment do you visit most often?

Respondents were asked what their main interest in the River Boyne and surrounding catchment was. Responses are presented in Figure 2.

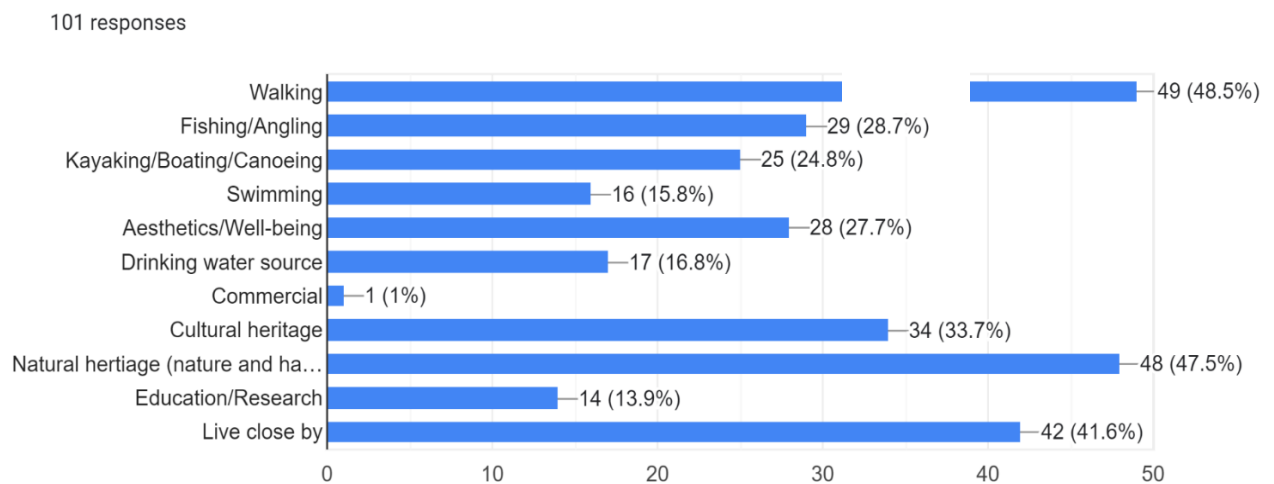


Figure 2 – Responses to survey question: What is your main interest in the River Boyne and surrounding catchment?

Respondents were asked ‘What one word comes to mind when you think of the River Boyne?’. In total, a collection of 102 words were analysed. Responses mostly fell into the positive connotations category (53%) with 16% of responses falling into the negative connotations category. The words considered ambiguous/neutral consisted of 31% of the responses (Figure 3).



Figure 3 – Most commonly listed words respondents associated with the ‘River Boyne’. The font size of the words reflects the frequency of responses.

Respondents were asked about what they personally value most about the River Boyne and surrounding catchment. Responses were categorised into 3 overarching themes as outlined in Table 1.

Table 1 - Responses to survey question: What are the things that you personally value most about the River Boyne and surrounding catchment?

Themes/Codes	Description	Evidence/Quotes	n
Theme 1: Personal gains			
Well-being	Peace Quiet	‘clear the head’ ‘great place to escape’ ‘Mindfulness, looking at the water’	16
Theme 2: Community gains			
Leisure amenity	Kayaking Canoeing Swimming Walking Fishing Accessible	‘canoeing sections of canal towpath open for exercise’ ‘few places to walk in Meath away from traffic’ ‘an amazing amenity to local people for sport and water’ ‘fishing in beautiful surroundings’	36
Resource	Source of drinking water	‘clean drinking water for Trim and Navan’	3
	Tourism	‘places to visit for people’	2
Theme 3: Wider society			
Natural Heritage	Wildlife Birds Biodiversity Nature Beauty	‘all the wildlife the river supports on a daily basis’ ‘areas of native riparian vegetation’ ‘it’s wildness, it’s habitats’ ‘It’s wintering shorebirds and wildlife’ ‘appreciation of the natural environment, the biodiversity, the wildlife’	69
Cultural Heritage	Mythology History Legends	‘the history around the river’ ‘A mythical heritage for the community’ ‘continuous human habitat for 6000 years’	17

Note: n=total number of respondents

Questions to determine the attitudes of participants towards potential threats and activities within the catchment were included. A Likert-type question was presented to participants ‘How concerned are you about the following in terms of the River Boyne and surrounding catchment?’ The results in detail are presented in Table 2. The main threats as perceived by the respondents as extremely concerning were pollution (54.5%), urban wastewater (48.5%), habitat loss (45.5%), water treatment (45.6%) and domestic wastewater (40.6%).

Table 2 - Responses to survey question: How concerned are you about the following in terms of the River Boyne and surrounding catchment?

	Unsure (n)	Not at all concerned (n)	A little concerned (n)	Very concerned (n)	Extremely concerned (n)	Overall level of concern
Water quality	4	1	13	43	40	●
Pollution	2	2	9	33	55	●
Litter	1	4	39	34	23	●
Habitat loss	1	5	12	37	46	●
Overgrowth	3	28	29	29	12	●
Dredging	7	12	33	22	27	●
Flooding	5	28	44	16	8	●
Physical barriers	11	17	34	20	19	●
Invasive species	4	9	37	32	19	●
Domestic wastewater	3	4	27	26	41	●
Urban wastewater	3	3	16	30	49	●
Biosecurity	7	11	20	29	34	●
Illegal fishing	11	15	46	16	13	●
Access	6	15	35	24	21	●
Safety	13	23	35	19	11	●
Forestry	10	19	35	18	19	●
Tourism	6	28	33	24	10	●
Agriculture	5	5	33	28	30	●
Aquaculture	12	17	25	25	22	●
Water treatment	3	3	18	34	43	●
Commercial development	4	9	24	27	37	●
Extractive industry	5	10	23	25	38	●
Historically polluted sites	6	9	19	32	35	●
Energy generation	12	21	30	17	21	●

Note: Where 85-100% of respondents (based on n=total number of respondents) were concerned to some extent, this item was deemed to be of high concern ●. Where 70-85% of respondents were concerned to some extent, this item was deemed to be of medium concern ●. Where <70% of respondents were concerned to some extent, this item was deemed to be of least concern ●.

Finally, respondents were asked to rank a number of themes in order of importance in relation to the River Boyne and surrounding catchment (see Figure 4). They were ranked in the following order, ‘water quality’ was deemed to be the most important theme receiving 31% of first preferences, followed by ‘habitats and biodiversity’ (26%), ‘resilient community and catchment’ (16%), ‘heritage, recreation and tourism’ (14%) and ‘education and awareness’ (13%).



Figure 4 – Ranking of themes by respondents.

The survey respondents believe that there are many challenges and threats facing the River Boyne. However, what is also evident are the opportunities and future actions. Figure 5 summarises the main points from the survey analysis and illustrates the overlap between answers and the obvious connection in the logic used by the respondents. The main responses to the questions relating to opportunities are outlined below as are the responses to the challenges, actions and vision.

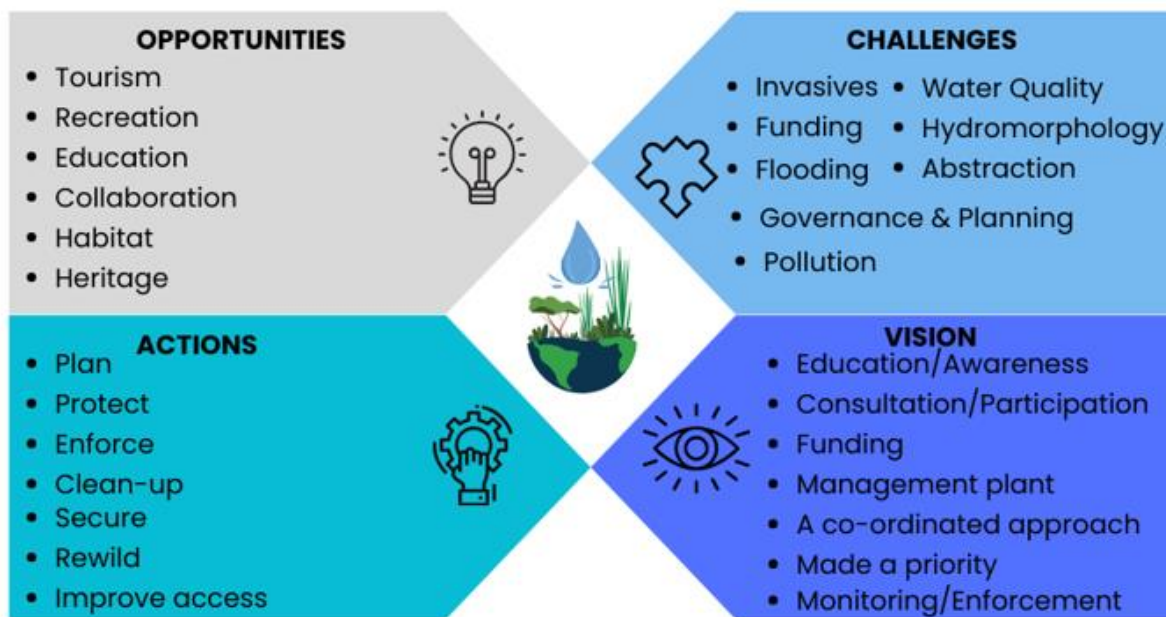


Figure 5 - Opportunities, challenges, actions and vision

The questionnaire used in the Boyne Vision can be found in Appendix 1 on page 52.

Focus Groups: An analysis

This section gives a summary analysis and findings while the detail of the focus group sessions can be found in Appendix 2 on page 56.

82 people participated in the 5 focus group events with 119 people registering. The sessions in Drogheda, Navan and Virginia were well attended with lower numbers participating in the sessions in Trim and Kells. The percentage of male participants in those 2 workshops was also relatively high.

The analysis is divided into 3 sections

1. Initial framing or values
2. Priorities for the Boyne catchment between now and 2030. “What is the biggest priority for the Boyne catchment between 2023 and 2030?”
3. Core themes

1. Initial framing or values

The dominant values in any community shape the behaviour of those living in that area. The “Boyne Vision” used a well-known tool called the Schwartz circumplex to help gauge and capture the dominant values in the Boyne catchment. Across the focus groups, *Universalism*¹ was the dominant value category illustrating a clear positioning on the self-enhancement – self-transcendence axis of the Schwartz circumplex. This means that those participating in this process value nature, justice and equality quite strongly. This positioning indicates a concern for wellbeing outside of and beyond the self. In terms of the 2nd axis of the circumplex - openness to change – conservatism axis, there was a tendency for *conformity*² and *tradition*³ indicating that the change process, which the Boyne River Trust may engage in, will be challenging in terms of potential resistance from particular stakeholders. This is because there could be a clash of values within subsets of the communities that live within the catchment.

This is not a surprise; however, it is worth noting that the broader societal values that are dominant can undermine Universalism. This is due to one of the principles of how values work (The see - saw effect). When one area of the values circumplex (see figure 6) gets stronger, the opposite value set(s) automatically weakens. In order to value the river and catchment differently, the Boyne River Trust will need to understand that values related to achievement (Influence, ambition, successful etc.) and power (wealth, social recognition, preserving public image etc.) can undermine the long term future of the Boyne catchment as envisioned by the participants in the focus group sessions.

¹ Universalism: Appreciation, tolerance, and protection for the welfare of all people and for nature (Common Cause Handbook; 2012, p 14)

² Conformity: Restraint of actions, Inclinations and impulses likely to upset or harm others and violate social expectations or norms. (Common Cause Handbook; 2012, p 14)

³ Tradition: Respect, commitment and acceptance of the customs and ideas that traditional culture or religion provide the self. (Common Cause Handbook; 2012, p 14)

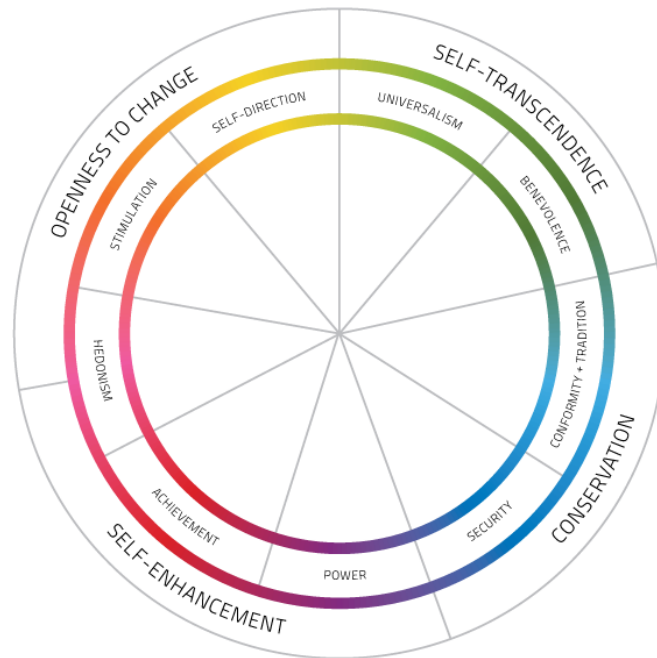


Figure 6 – Schwartz values circumplex ⁴

2. Priorities for the Boyne between now and 2030

Taken in their totality, the following priorities are ranked by the number of votes received in the focus group sessions.

- Water Quality – 93
- Biodiversity conservation / Habitat restoration – 54
- Multi-stakeholder / collaborative approach – 48
- Education and awareness – 41
- Responsibility and accountability – 26
- Reducing agricultural impact – 25
- Implement existing legislation – 24
- Voice and agency and action – 22
- Valuing an amenity/access to amenity – 13
- Rewilding river corridors - 13
- Eco tourism and economic benefits – 10
- Wastewater Treatment Plant (WWTP) upgrade – 8

Water quality is by some way the most important priority for the River Boyne between now and 2030 based on the views of the participants in the focus groups. This was clear across the groups that participated. Biodiversity conservation and habitat conservation is also a clear area of importance. Participants across the groups felt that there was little cooperation or collaboration between relevant stakeholders. Participants felt there was a scattergun approach with no one body having oversight of others. This point is also connected to a reported lack of responsibility and accountability taken by agencies and stakeholders. This view was repeated in different group sessions. There was a palpable frustration with the perception that existing legislation is not enacted and that those who raise concerns are passed on to other agencies. The importance of education and awareness raising features strongly across groups and this allied to the need to have voice and agency is closely connected. Those scores if taken in tandem would make that score figure very prominently.

⁴ Common Cause Handbook; 2012: 16

Interestingly, other priorities scored very well in individual sessions (reducing agricultural impact, valuing and access to amenity, rewilding river corridors, eco-tourism and WWTP upgrade) but these priorities didn't explicitly feature across groups.

3. Core Themes

The five core themes, outlined below were decided in advance and presented to the focus groups for comment and discussion.

- Water Quality
- Habitats and biodiversity
- Education and awareness
- Resilient community and catchment
- Heritage, recreation and tourism

It is worth noting that no one chose to participate in the Resilient Community catchment discussion in either Navan or Trim. In Kells, no one chose to participate in the Habitats and Biodiversity group or the education and awareness group.

Below is an overview of the main points made under each theme across the five sessions.

Water quality
Water quality is the pinnacle / overarching objective/desire for a high-water quality standard
Pollutants need to be addressed (Seen and unseen)
Stop selective ignoring of legislation (National and EU)
It is our collective responsibility / Accountability, centralisation of decision making and Irish water
We want joined-up thinking from regulators and local authorities
There are concerns re. Meat processing / Mining and related concerns re drinking water more generally.
Need to acknowledge that Agriculture is the largest sectoral contributor to pollution / Need for Education and awareness raising re slurry/hedgerows/riparian corridors
Independent evaluation needed / EP monitoring (Regularity and monitoring)
Dredging of rivers and Development of floodplains / Better planning needed
Lack of investment/need to pay for water / Investment in WWTPs
Need for nature based solutions

Habitats and biodiversity

Measure, survey, assess, and research the current state of habitats and biodiversity

Recognise the importance of Biodiversity and raise awareness of same through reframing generally and increased levels of education and awareness raising

Recognise and appreciate the interdependence of habitats and biodiversity and their relationships to issues such as water quality/planning.

Protection and enforcement – enact existing legislation / Be a voice for wildlife

Funding of relevant agencies including emergency response

Good environmental and sustainable planning (Which is perceived to be missing)

Conservation of species / build bird boxes - Habitat restoration and rewilding

Account for and reduce invasive species

Elimination of pesticides and herbicides

Protection of River and banks (Fence to protect from cattle)

Education and awareness

Who? Everyone – Industry – farmers – communities / multi stakeholder engagement is key

Utilise the traditional and social media / Accessibility of info – Use good visuals / Art projects

Events – Open River day

Make it clear that 1. I'm connected to the river and 2. I'm connected to everyone else

Champion local leader's / role models / Get people to share their soul stories

The need for experiential education and values based education across the education spectrum – formal and non-formal

Broaden awareness of what other stakeholders are doing / everyone else is doing

Resilient community and catchment

Need to understand resilience and how this is related to climate change / How to tackle sea level rise / address flooding / take informed action

Raise awareness of Wetlands and their role and value

Catchment-wide riparian zone - protect trees and restoration/protection

Sustainability of current policies – e.g. current abstraction policy – Is it climate proofed?

OPW practices – reducing resilience to future environmental change – i.e. removal of riparian habitats leading to increased exposure of rivers to hot weather/sediment and invasive species/removal of instream vegetation – counterproductive to their own objectives

Agriculture advisory services – better guidance and support for farmers to make their enterprise more sustainable – good for water, biodiversity and climate resilience whilst protecting farm viability

Protecting future drinking water supplies

Nature-based solutions at catchment scale – protecting wetlands which act as catchment sponges, regulating and attenuating water

Heritage, recreation and tourism

Need to have accessibility pathways, viewpoints and educational info

Explore our heritage – Rivers were the highways of the past – do some research and publish accordingly

Need to highlight the positive actions that are ongoing in the area and publish findings

Unique “product” re Tourism and the Boyne Valley / Heritage promotion

Need to raise awareness with local community of heritage and history / recreational potential

Access to tourism sites / water access

Distinct lack of activities on the water / water based activity

Game angling and coarse fishing

Lack of Infrastructure and facilities (affordable accommodation)

Development of the Greenway from Drogheda to Navan

Interviews - An analysis

When designing the Boyne Vision, it was critically important to involve 1-1 interviews to gather a more in depth sample of views and opinions of specific stakeholders. The analysis of the interviews is to be read in accompaniment to the analysis of the questionnaires and the focus groups to help build a valid and robust picture of the primary research conducted. The 1-1 interviews were carried out with a range of stakeholders between July and September 2023 using a semi structured approach. The particular interviewees were chosen for a number of reasons. They all have a specific interest in and knowledge of the Boyne catchment and between them, there is a diversity of relevant stakeholders represented. Please see below the list of those that completed interviews.

- Birdwatch Meath on the 17th of July
- Save the Boyne on the 20th of July
- Boyne Boats on the 8th of August
- Irish Farmers Association on the 17th of August
- Meath County Councillor on the 30th of August
- Local Authorities Waters Programme (LAWPRO) on the 18th and 31st of August
- Meath County Council on the 19th of September

The interviews examined the respondents interest in the Boyne catchment before going on to capture what they felt should be the priorities for the catchment between now and 2030. They were then asked about the themes for consideration before going on to actions to be taken between now and 2030.

Interest in the Boyne catchment

The majority of the interviewees live within the Boyne catchment. Some have had a lifelong proximity to the Boyne river and feel very physically connected. Others are connected more professionally or have an economic interest in the catchment through tourism or farming, while some share a connection and affinity to the Boyne that was instigated through the myths and legends of the Boyne valley. A couple of interviewees reminded the researchers of the fact that the Boyne is designated as a “*Special Areas of Conservation*” (SAC) and a “*Special Protection Areas*” (SPA)

It is fair to say that all of the interviewees share a view that the Boyne is a treasure and one that is hugely valuable and should not be neglected. Some of the interviewees reflected a view that for too long the Boyne has been hidden from sight and not fully integrated into the communities within its catchment. This view was augmented by some who felt the need to celebrate the River and its heritage, which was believed to be currently lacking. The Save the Boyne Group was unified in recognising the value of the Boyne and this was reflected in their comments, “*Water is life*”, and “*Water is bigger than us*”.

What should be the priorities from now to 2030?

It was clear from the interviews that water quality should be the priority for action in the next 6-7 years. The interviewees all felt that water quality needed to improve. Some of the interviewees felt that the status of “Good” on the water framework directive needed to be achieved while at a minimum others felt that we must not make the situation worse. More generally, it was felt that for too long, we have lived with our backs to the Boyne rather than integrated the river into our lives. The need to celebrate the Boyne and develop a shared love for the River was articulated. Attention was drawn to the Boyne River Keepers in Canada who do a lot of work to cherish and value the river they live alongside. One of the interviewees felt that the situation on the Boyne catchment in Ireland was very different to that in Canada. “*The Boyne (In Ireland) is still a dump*”.

One interviewee commented that the *“level of nutrient loading in the catchment has to come down”*. On the theme of nutrient loading, one of the interviewees stated, *“If you take agriculture as the most significant pressure, it is the diffuse loss of nutrients that is really, really hard to mop up because it's everywhere, throughout the catchment and it's trying to identify the locations where you can try and sort of mitigate what's going on and maybe reduce the inputs as well”*.

Following up on the agriculture theme, one interviewee stated, *“You can see that water quality nationally but also in the Boyne was improving from 1997/1998 right up until about 2013. We had steady improvements in water quality with reductions in nutrient loads for Nitrogen & Phosphorus. That has all reversed since 2013 with nutrients going back up..... And that pretty much coincides with all the extra nutrients and fertiliser that's been used because of the dairy expansion, which came about because of government policy, agricultural policy”*.

One of the interviewees felt that the amount of fertiliser being used throughout the catchment was having a detrimental impact on water quality and that this needed to be a priority area of action along with a lessening of livestock in the area.

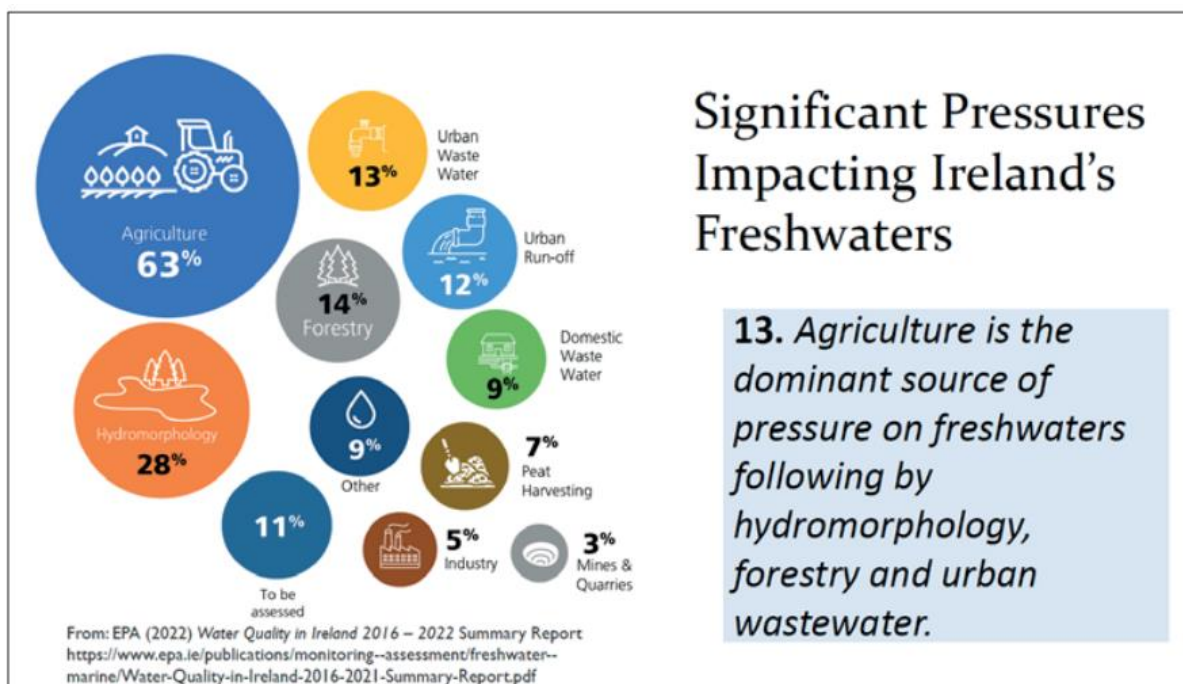


Figure 7: Water Quality and Biodiversity Pressures in Ireland’s Freshwaters, page 93, Final Report of the Citizens’ Assembly on Biodiversity

Some interviewees spoke about public wastewater treatment facilities and the need to *“Ensure that the wastewater treatment plants are working within their capacity”*.

Water extraction was also referred to by a number of interviewees especially in relation to a number of industrial uses throughout the catchment.

Another priority that were mentioned by many of the interviewees was the importance of education and awareness raising regarding the river. ***“Water literacy and public participation is really important”***.

A concern for many of the interviewees was that it was felt that too many stakeholders operate in silos and don't collaborate or co-operate effectively. It was acknowledged that there are many stakeholders with good intentions but that they too often operate separately and don't combine efforts.

Lastly, one priority that was raised by a number of interviewees was the recent application by Dawn Meats to have a wastewater pipe going into the Boyne catchment.

Ranking of Themes

The following five themes were presented to the interviewees for them to comment on in terms of prioritisation. The same themes were presented in the focus groups and questionnaires in order to gauge opinion.

- Water Quality
- Habitats and biodiversity
- Education and awareness
- Resilient community and catchment
- Heritage, recreation and tourism

In terms of themes **water quality** was clearly the priority for those interviewed. This resonated with the previous question and with the other research methods employed. This was followed closely by Habitats and biodiversity and Education and awareness. One respondent stated that ***“Heritage, recreation and tourism is a by-product of the other four themes being addressed”***.

It is worth noting that quality education was felt to be a gateway to achieving better water quality and healthier habitats and biodiversity. One interviewee said that in terms of education, ***“The more holistic, the better”***, while another said the Boyne needed ***“a band of warriors”***. The interdependence between the themes was also noted and that they were more connected than we may imagine. This connected or systemic view of the catchment was reflected upon by various interviewees. On the theme of education, one interviewee mentioned that the newly appointed climate officers and biodiversity officers in County Councils needed to work with Green schools in their catchment. Furthermore, the existing Education for Sustainable Development and Global Citizenship Education networks that exist could expand on this community of education practice.

The Agricultural Sustainability Support and Advisory Programme (ASSAP) is working with farmers in a free and confidential advisory service to help improve water quality. This programme was spoken about by one interviewee as a positive example of what is possible and that this programme if better resourced could have further benefits. One suggestion made in relation to ASSAP was that particular catchments or parts thereof could be focussed on. Another interviewee had a different view regarding ASSAP and its effectiveness and felt that ASSAP needed to be reformed. The level of anonymity and perceived lack of accountability were mentioned as key issues.

The financial considerations of addressing the five themes was also mentioned. The need and value of financial incentives to take action was suggested by one respondent. Income diversification and looking at more environmental ways of operating was spoken about in relation to farmers. There was some divergence in relation to pollution in the Boyne emanating from agricultural activity. One view was that

the polluter pays principle should be applied while another view was more of a carrot rather than a stick approach in order to incentivise a change in behaviour. All interviewees agreed that pollution needed to stop.

Generally speaking, interviewees felt that all residents in the catchment area needed to feel as if they had a say. This point regarding participation and collaboration / action has been echoed throughout this document and process.

Actions to be taken between now and 2030

Access to the river needs to improve. One respondent mentioned that **“Access to the river and countryside isn’t there”** and this needs to change. Using Drogheda as an example, there is only one public access point to the river. This excludes many people and groups from utilising the river. Many examples across Ireland and Europe were pointed to as illustrations of what is possible (Lough Boora, The Danube).

“The watchdog needs to develop teeth” - Taking responsibility and implementing existing legislation is a theme that constantly emerged. The legal and political positioning was felt by some to be very frustrating as the **“rights of nature”** didn’t seem to be considered properly. Negative perceptions of the planning process were shared by some with questions emerging regarding the level of **“independence”** of experts conducting research as part of relevant and related environmental impact statements. Far more scrutiny and accountability was asked for during planning processes repeatedly. Another interviewee spoke about accountability - **“The lack of accountability - I think it’s done deliberately”** while another stated **“local authorities must be held accountable for their actions”**.

One of the action points that was repeated was the need for citizens to not only have a say but to be included in the decision making processes and mechanisms. Some interviewees felt that it seems as if people living in the area don’t have a say but that organisations and business interests are prioritised by planners and local authorities. One interviewee added to multi stakeholder involvement by stating that **“the priority for me is inter-agency cooperation and responsibility”**.

A couple of respondents felt it was necessary to make the Boyne a focal point of communities. Suggestions included bringing back the Maritime festival in Drogheda and getting people out on the River more for leisure and recreational activities. Other suggestions included putting pontoons in the water and installing kilometre markers along the river.

It was also noted that the communities living alongside the Boyne needed to build a sense of solidarity with the river rather than continue to see it as separate or parallel to us.

Educational actions were suggested by a number of interviewees,

- **“building that knowledge base within the general population is something that is really crucial”**
- **“Let’s draw attention to catchments.ie”**
- **“Increasing water literacy and managing expectations”**

Focusing on relationships and trust building was also seen as an area for action **“we need to keep working on those relations with farmers, trying to build trust”**.

Secondary Research

Introduction

The Water Framework Directive (WFD) which was adopted by the European Union (EU) Member States in 2000 provides an overarching ecosystem approach to water management. The creation of integrated catchment management plans for the protection of inland surface waters, transitional waters, coastal waters, and ground waters is a central element of the WFD and by 2027, EU Member States must protect and restore their water bodies to “good ecological status”. The Member States are now in the third cycle of the Directive, spanning 2022-2027. Despite significant investment in Ireland in the 1st cycle (2009-2014) and 2nd cycle⁵ (2018-2021), it has been challenging to improve or simply maintain a satisfactory status in Irish water bodies in the face of escalating anthropogenic pressures, including land use pressures, coupled with climate change and a growing population.

Each EU Member State prepares their River Basin Management Plan (RBMP) every six years outlining their goals for addressing issues with water quality, such as the preservation, enhancement, and sustainable management of their water environments. The 3rd cycle of Ireland’s River Basin Management Plan (2022-2027) is currently being prepared by the Department of Housing, Local Government and Heritage (DHLGH, 2023). Ireland’s 3rd draft River Basin Management Plan’s main objectives are to safeguard our natural waters, protect freshwater resources from further depletion, and, as necessary, restore Ireland's rivers, lakes, and coastal water bodies to “good ecological status” (DHLGH, 2022).

In an effort to increase the level of ambition by offering clear strategies to protect good and high-status water bodies and improve water bodies with less than good status and operates under the guiding principle of "implementing the right measure in the right place", Ireland’s 3rd draft River Basin Management plan (DHLGH, 2022) proposes three priority thematic areas:

1. **Integrated catchment planning** whereby as part of the national plan, catchment management plans for the 46 hydrometric catchments will be implemented (Figure 8). The Local Authority Waters Programme (LAWPRO) will develop templates for these plans, which will eventually lead to fully integrated catchment management plans, in conjunction with stakeholders. Part of this process will entail the creation of county-level implementation plans to put the goals of the national and catchment plans into action. These actions and goals will make annual progress monitoring easier.
2. **Multiple benefits** which will permit the identification of numerous benefits for water, biodiversity, air quality, and climate mitigation through catchment-based planning.
3. The **role clarity and collaborative implementation** proposed for the third cycle will necessitate more collaboration and coordination among all implementing bodies at the national, regional, and catchment levels. Local governments will play a vital role in water catchment management and will need to put in place the required resources to meet protection and restoration objectives.

⁵ Ireland’s second cycle plan was due for publication in 2016 but was delayed due to reform of the water sector at the time (DHLGH, 2022)

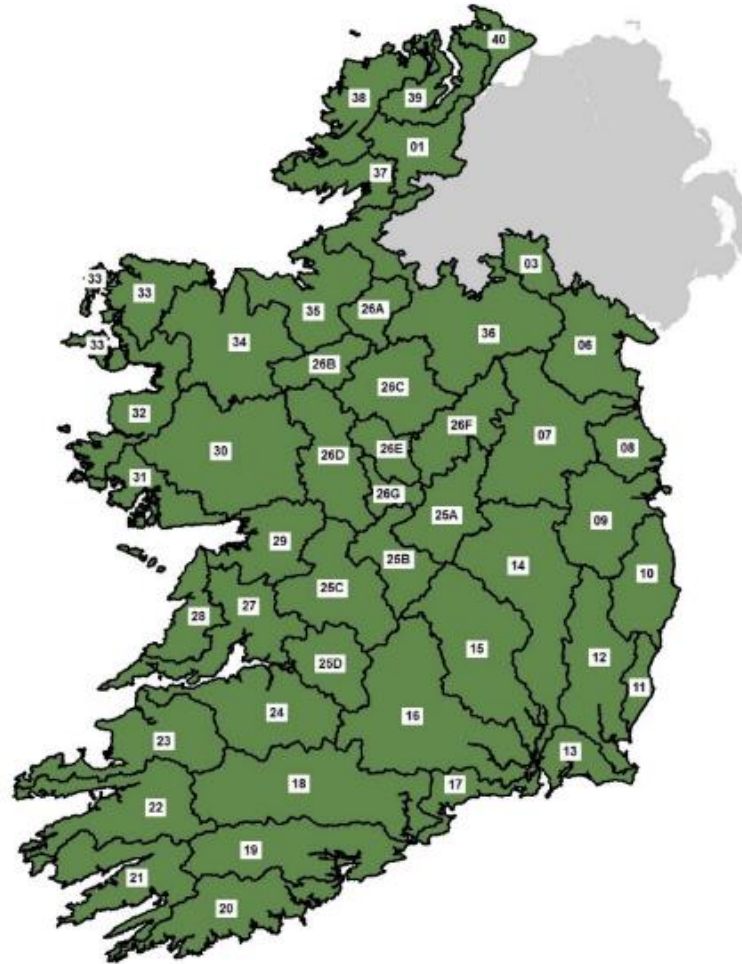


Figure 8 - Map of Ireland's 46 hydrometric catchments (Boyne Catchment is Hydrometric Area 07)

Source: LAWPRO (2023)

The Boyne Catchment

The Boyne catchment drains a total area of 2,694km² and includes the area drained by the River Boyne and by all streams entering tidal water between The Haven and Mornington Point, Co. Meath (Figure X). The largest urban centre in the catchment is Drogheda on the Boyne estuary. The other main urban centres are Navan, Trim, Edenderry, Kells, Dunshaughlin, Enfield, Virginia, Kinnegad and Bailieborough. The Boyne catchment (Hydrometric Area 07) is one of 46 river catchments in Ireland. Approximately 54% of the catchment is in Co. Meath, 18% in Co. Westmeath, 12% in Co. Cavan, 8% in Co. Kildare, 5% in Co. Offaly and 3% in Co. Louth. The Boyne catchment is divided into 20 sub catchments (Figure X) and includes 116 river waterbodies (including the Grand Canal Main Line & Royal Canal Main Line artificial water bodies), 11 lakes, 41 groundwater bodies, one transitional waterbody (Boyne Estuary) and three coastal water bodies (Boyne Estuary Plume Zone, Northwestern Irish Sea (HA 08) & Louth Coast (HA 06)).

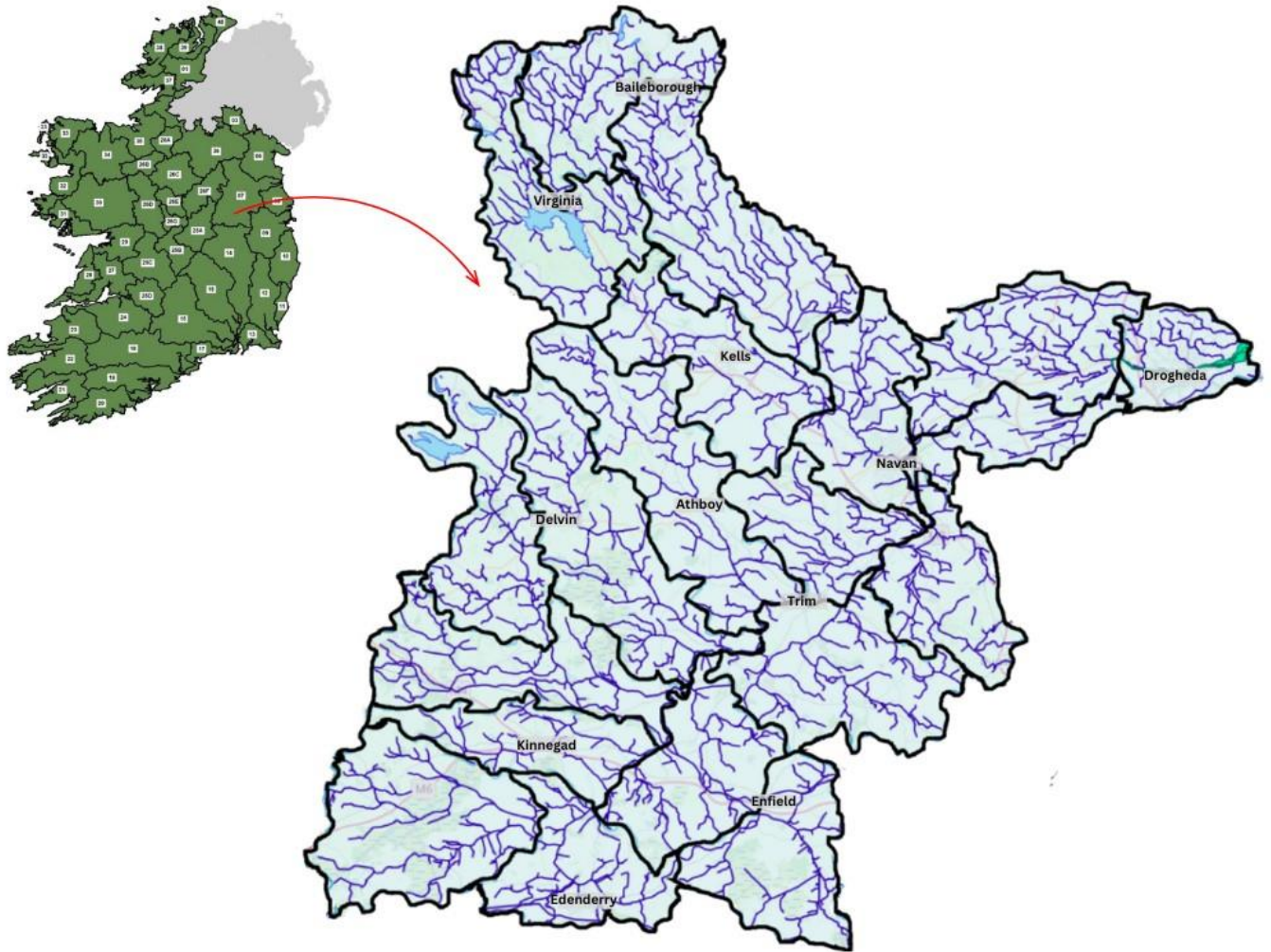


Figure 9 - Overview of Sub catchments in the Boyne Catchment

Source: adapted from EPA Catchments (2021)

The River Boyne rises to the east of Edenderry and flows through the town before heading in a north-easterly direction through the towns of Trim and Navan. The most significant tributary in the Boyne catchment is the Kells Blackwater which drains over 25% of the total catchment including part of Co. Cavan and a significant area of north Meath. The Kells Blackwater rises north of Bailieborough, Co. Cavan and together with the Chapel Lake Stream and the Nadreegeel Lough Stream form the catchment of Lough Ramor which is adjacent to the town of Virginia, Co. Cavan. The Kells Blackwater flows from Lough Ramor towards Kells. Downstream of Kells, the Blackwater is joined by the Moynalty River. The Blackwater continues until it reaches Navan where it joins the River Boyne. The Boyne then continues eastwards to the sea at Drogheda via Slane.

Significant sub-catchments include the Deel which includes Lough Bane and Lough Lene and drains the bulk of the catchment in Co. Westmeath. The Kinnegad River which drains a catchment extending into Co. Westmeath, the Yellow (Castlejordan) River in Co. Offaly west of Edenderry which includes Rhode and Castlejordan and the Longwood Blackwater draining part of Co. Kildare. The Stonyford River drains the Delvin area in Westmeath and flows in a south-easterly direction to the north of Ballivor joining the River Boyne at Scarriff bridge upstream of Trim. Knightsbrook and Boycetown tributaries drain a rural catchment north of Summerhill and join the Boyne at Trim. The Athboy River drains the Athboy area

and flows south-easterly joining the Boyne just upstream of Trim. The River Skane, which rises near Dunshaughlin joins the Boyne upstream of Navan. The Mattock River and Devlins tributary drain a small sub-catchment mostly in Co. Louth including Collon and the Monasterboice area to join the River Boyne upstream of Drogheda.

Natura 2000 Sites and Salmonid Waters

There are 10 Special Areas of Conservation (SAC) in the Boyne catchment all of which have water dependent habitats or species listed on Annex I/II of the EU Habitats Directive (NPWS, 2023). Special Areas of Conservation (SAC) and Special Protection Areas (SPA) with water dependent habitats or species in this catchment are presented on Tables 3 and 4.

Table 3 - There are 10 Special Areas of Conservation (SAC) in this catchment all of which have water dependent habitats or species (NPWS, 2010-2017).

Special Areas of Conservation (SAC) in the Boyne River Catchment	
<p>Boyne Coast and Estuary Code:001957 A coastal site, includes most of the tidal sections of the Boyne, intertidal sand- and mudflats, saltmarshes, marginal grassland, and the stretch of coast from Bettystown to Termonfeckin including the Mornington & Baltray sand dunes. Habitats protected [1130] Estuaries [1310] Salicornia Mud [1140] Tidal Mudflats and Sandflats [1210] Annual vegetation of drift lines [2110] Embryonic Shifting Dunes [1330] Atlantic Salt Meadows [2120] Marram Dunes (White Dunes) [2130] Fixed Dunes (Grey Dunes).</p>	<p>River Boyne and River Blackwater Code: 002299 This site comprises the freshwater element of the River Boyne as far as the Boyne Aqueduct, the Blackwater as far as Lough Ramor and the Boyne tributaries including the Deel, Stoneyford and Tremblestown Rivers. Habitats and species [7230] Alkaline fens [91E0] Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i>) [1099] River Lamprey [1106] Salmon [1355] Otter.</p>
<p>Lough Bane and Lough Glass Code: 002120 This site comprises of three lakes situated in a shallow valley. Lough Bane is by far the largest of the group, with the much smaller Lough Glass occurring immediately to the east and Lough Glass North to the north-west. Habitats and species [3140] Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp. [1092] White-clawed Crayfish.</p>	<p>Mount Hevey Bog Code: 002342 A raised bog that includes both areas of high bog and cutover bog. Habitats and species [7110] Raised Bog (Active)* [7120] Degraded Raised Bog [7150] Rhynchosporion Vegetation</p>
<p>Killyconny Bog (Cloghbally) Code: 000006 A raised bog underlain by Lower Palaeozoic shales and consists of two small basins which have coalesced over a low drumlin ridge. Habitats [7110] Raised Bog (Active)* [7120] Degraded Raised Bog.</p>	<p>Lough Lene Code: 002121 This lake is a deep (20 m maximum depth), clear, hard-water lake with marl deposition (especially noticeable on the margins). Habitats and species [3140] Hard Water Lakes [1092] White-clawed Crayfish.</p>
<p>Girley (Drewstown) Bog Code: 002203 The site is part of a raised bog that includes both areas of high bog and cutover bog. Habitats [7120] Degraded Raised Bog.</p>	<p>White Lough, Ben Loughs and Lough Doo Code: 001810 White Lough, Ben Loughs and Lough Doo SAC is comprised of four hard water lakes in a small, poorly-drained valley, 4 km east of Castlepollard, Co. Westmeath. Habitats and species [3140] Hard Water Lakes [1092] White-clawed Crayfish.</p>
<p>Wooddown Bog Code: 002205 Wooddown Bog SAC occurs within the larger raised bog system that is designated as Wooddown Bog NHA (000694). The underlying geology is carboniferous limestone. Habitats [7120] Degraded Raised Bog.</p>	<p>Raheenmore Bog Code: Raheenmore Bog This raised bog developed in a small basin in the catchment of two major river systems i.e. the Brosna and the Boyne. The peat is very deep, up to 15 m in places. The bog has a well-developed hummock and hollow system. Habitats [7110] Active raised bogs. [7120] Degraded raised bogs still capable of natural regeneration. [7150] Depressions on peat substrates of the Rhynchosporion.</p>

Table 4 - There are two Special Protection Areas (SPA) under the EU Birds Directive (NPWS, 2010; 2015a)

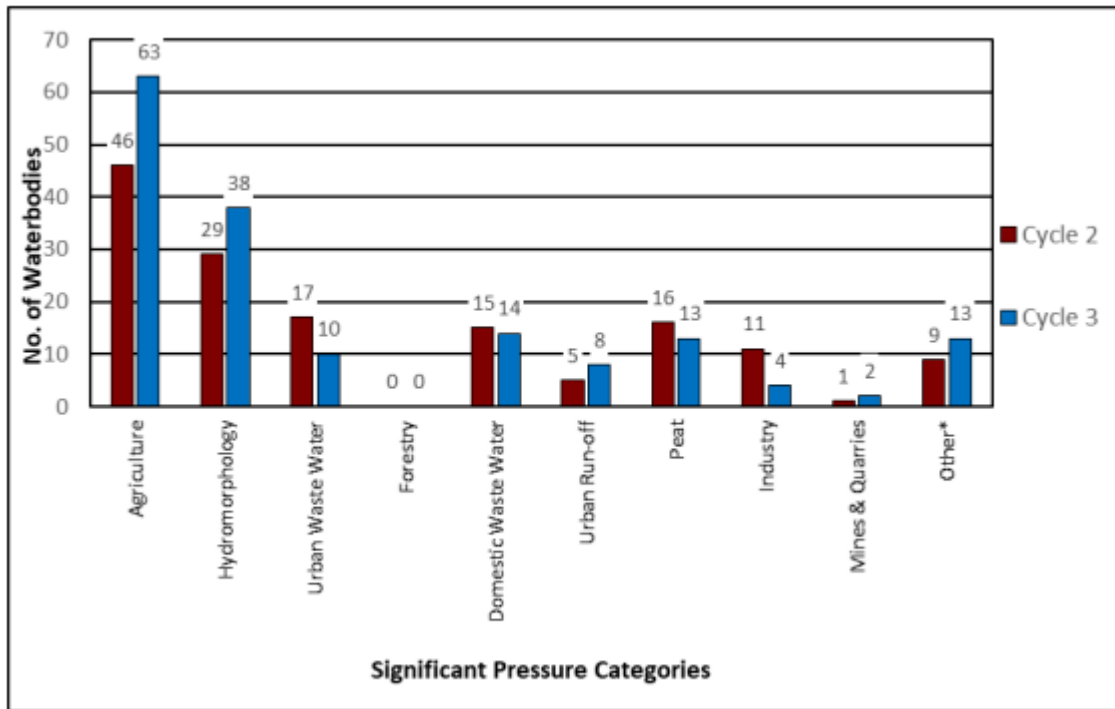
Name	Counties	This site is a Special Protection Area (SPA) under the E.U. Birds Directive of considerable interest for the following species:
<p>Boyne Estuary SPA Code: 004080</p>	<p>Louth Meath</p>	<p>Shelduck (<i>Tadorna tadorna</i>) [A048] Oystercatcher (<i>Haematopus ostralegus</i>) [A130] Golden Plover (<i>Pluvialis apricaria</i>) [A140] Grey Plover (<i>Pluvialis squatarola</i>) [A141] Lapwing (<i>Vanellus vanellus</i>) [A142] Knot (<i>Calidris canutus</i>) [A143] Sanderling (<i>Calidris alba</i>) [A144] Black-tailed Godwit (<i>Limosa limosa</i>) [A156] Redshank (<i>Tringa totanus</i>) [A162] Turnstone (<i>Arenaria interpres</i>) [A169] Little Tern (<i>Sterna albifrons</i>) [A195] Wetland and Waterbirds [A999]</p>
<p>River Boyne & River Blackwater SPA Code: 004232</p>	<p>Cavan Louth Meath Westmeath</p>	<p>Kingfisher (<i>Alcedo atthis</i>) [A229]</p>

The Boyne main channel is designated as salmonid waters (S.I. No. 293: European Communities (Quality of Salmonoid Waters) Regulations 1988). There are no Fresh Water Pearl Mussel (FWPM) habitats or designated shellfish areas present in the Boyne Catchment. There are 14 surface waterbodies in the catchment identified as Drinking Water Protected Areas (DWPA) under Article 7 Abstraction for Drinking Water Regulations, 6 lakes in the upper end of the catchment and 7 river bodies. All groundwater bodies nationally are identified as DWPA. The Boyne River waterbody is the source for the Navan-Mid Meath Kilcarn (2300PUB1051) and Trim public supply (2300PUB1009) both of which had issues in relation to Trihalomethane (THM) compliance in 2021/2022 and are on the Remedial Action List (EPA, 2023a).

There is one bathing water designated lake (The Cut, Lough Lene) in the Boyne Catchment identified under the Bathing Water Regulations 2008. This bathing water had an *Excellent* classification for 2020 (EPA, 2021).

Water quality in the Boyne catchment

The Boyne catchment has a history of water quality problems, the most prominent being eutrophication in the upper reaches of the Kells Blackwater (Courtney, 2013). The Boyne catchment remains under pressure with 51% of waterbodies *At Risk* of not achieving ‘good status’ and failing to meet the WFD objectives (EPA Catchments.ie, 2022). This represents an overall deterioration across the Boyne catchment with more waterbodies *At Risk* in Cycle 3 compared to Cycle 2 as outlined in Figure 10 (3rd Cycle Draft Boyne Catchment Report, 2021).



*Other – abstractions, aquaculture, atmospheric, anthropogenic pressures, historically polluted sites, waste, water treatment and invasive species have all been grouped into the “Other” pressure category for the purpose of this report

Figure 10 - Significant Pressure (All At Risk Waterbodies)

Source: 3rd Cycle Draft Boyne Catchment Report (2021)

The most recent data on water quality monitoring in Ireland from 2016-2021 (EPA, 2023b), shows that nationally nearly half (46%) of our surface water are in unsatisfactory condition, meaning overall, our water quality has declined. Of the 116 river waterbodies in the Boyne catchment, 68 (58%) are *At Risk* of not meeting their WFD objectives. Seven out of 11 lake waterbodies in the Boyne catchment (64%) are *At Risk* of not meeting their WFD objectives. The Boyne Estuary transitional waterbody is *At Risk* with eutrophication⁶ an impact (pressures include Agriculture and the Drogheda WWTP). Two coastal waterbodies out of the three in the catchment are *At Risk*. There are ten *At Risk* groundwater bodies out of 41 groundwater bodies (EPA Catchments.ie, 2022).

Overall, water quality in the Boyne catchment is of an unsatisfactory status and most waterbodies are *At Risk* of deterioration (EPA 2021). Therefore, reaching good ecological water quality status for all waters by 2027 in line with the requirements of the Water Framework Directive will require a coordinated effort and further mitigation measures.

⁶ Eutrophication is excessive richness of nutrients (phosphorus and nitrogen) in a lake or other water body which causes a dense growth of plant life. This process which can result in the clogging of waterways and the depletion of oxygen, also damages fish and other aquatic life

Key stressors impacting waterbodies in the Boyne Catchment

1. Agriculture

Farming is the major land use in the Boyne catchment particularly in Co. Meath where approximately 84% of the total land area is used for agriculture. Farm statistics indicate that approximately 50% of farms in Meath and 68.3% of farms in Cavan are engaged in specialist beef production while 10% are engaged in specialist dairying (CSO, 2023). Dairy farming is a major enterprise in the Boyne catchment. On average now in Ireland there are fewer farms with dairy cows (17,495) compared to 2000 (31,809). The average herd size in Ireland is now 90 dairy cows, which is 53 greater than in 2000 (CSO, 2023).

County Meath alone has 67,246 dairy cows with an average herd size of 112 which is 24% higher than the national average. This underlines both the economic importance of agriculture to the area and the intensive nature of dairy production within the catchment. Sheep rearing is also widely practised, with over 1000 farms in Co. Meath engaged in sheep farming. The average sheep flock (226) was reported to be above average (220) in Co. Meath (CSO, 2023). Co. Cavan is characterised by intensive pig and poultry production. These enterprises are also prevalent to the north and east of Slane in Co. Meath. Tillage is of importance in the catchment. Meath had the greatest area of wheat grown in Ireland in 2020 (9,336 hectares) and was a top area for production of barley (15,970 hectares) and oats (2,949 hectares) (CSO, 2023).

This intensive production is taking a serious toll on the waterbodies within the Catchment. Agriculture is the most significant pressure in water bodies within the Boyne catchment that are not meeting WFD targets. Agriculture is a significant pressure throughout the catchment in 51 river waterbodies, five lake waterbodies, one transitional waterbody (Boyne Estuary) and six groundwater bodies (3rd Cycle Draft Boyne Catchment Report, 2021).

The main problems arising from agriculture are loss of excess nutrients and sediment to water with the loss of nitrogen from agricultural sources one of the principal causes of the decline in water quality and eutrophication. These excess nutrients and sediments originate from either point sources, such as runoff from farmyards; or from diffuse sources, such as the spreading of fertilisers and manures. Elevated nitrogen concentrations are a major concern in the Boyne catchment with agriculture the main source (greater than 85%). Sediment associated with poor land management, including land drainage works, bank erosion from animal access is noted as an issue in the 3rd Cycle Draft Boyne Catchment Report (EPA, 2021). Phosphorus loss to surface waters (direct discharges, runoff from yards, roadways and compacted surfaces, or runoff from poorly draining soils) is also cited as an issue that has failed to improve since Cycle 2. Unfortunately, this is an increasing trend with agricultural pressures increasing by 37% with 63 waterbodies affected in Cycle 3 compared to 46 in Cycle 2 of the River Basin Management Plan. The EPA reports that there has been an increase in nitrate concentrations over the 12 months from 2021 to 2022 nationally (EPA, 2022). Pollutant Impact Potential (PIP) maps for Nitrogen (N) and Phosphorus (P) have been developed to show the highest risk areas in the landscape for N and P leaching. The most effective catchment scale water quality improvements can be achieved by targeting measures to reduce N and P losses into these critical source areas.

A core objective (Obj5.N2) of the Common Agricultural Policy (CAP) Strategic Plan 2023-2027 for Ireland is to 'protect and improve water quality' (DAFM, 2020). The CAP Strategic Plan (CSP) is aligned with the

Water Framework Directive, River Basin Management Plans, the National Biodiversity Action Plan, the Birds and Habitats Directives, and the Prioritised Action Framework for Natura areas. One of the key targets outlined in Ag Climatise is to reduce nutrient loss to the environment to improve water quality and biodiversity (DAFM, 2020).

Nutrient losses from rural diffuse and point sources must be addressed and land management improved, in order to meet these targets. As outlined in Figure 11 a number of measures will be key to ensuring the efficient management of our waters and in order to reduce the impact that agriculture is having on our water bodies. These include measures that support the delivery of the targets of the WFD. For example, the External Expert Assessment of the Agricultural Sustainability Support and Advisory Programme (ASSAP) recommended that ASSAP should be further developed under the 3rd River Basin Management Plan, expanding as additional Priority Areas for Action (PAAs) are selected, with appropriate scientific support (ASSAP Expert Review, 2021). ASSAP has a key role in working with farmers to improve water quality in Irish agriculture and given that agriculture is the primary pressure within the Boyne Catchment, this is particularly relevant here. Given the complexities required for the 'right action in the right place', effective engagement with farmers and other groups is essential (ASSAP Expert Review, 2021).

Principal actions with regard to agricultural pressures include;

Nitrates Action Programme:

Ireland's 5th Nitrates Action Programme (2022-2025) is given effect by the Good Agricultural Practice Regulations (also known as the 'GAP Regulations' or the 'Nitrates Regulations') – S.I. No. 113 of 2022. Tighter controls on nitrogen and phosphorus. 170/250kg N/ha limits. Introduction of a National Fertiliser Database. increased focus on improving compliance and enforcement.

1

Agri Environment Climate Measure (AECM)

Farmers participating in AECM under the National CAP Strategic Plan 2023-2027 will complete bespoke farm, landscape, and catchment measures, which will be aimed at achieving landscape-level improvements in biodiversity and water quality in the selected areas. Agri-Climate Rural Environment Scheme ('ACRES'). There will be 2 approaches ACRES Cooperation (High priority areas) and ACRES General (all farmers). Requirement for all applicants to complete a Farm Sustainability Plan (FSP).

2

Agricultural Sustainability Support and Advisory Programme (ASSAP)

ASSAP Advisors are promoting on-farm best practice and providing one-to-one advice to farmers on reducing nutrient losses at farm level, through both nitrogen and phosphorus/sediment actions in 'Areas for Action' (River Basin Management Plan) where waterbodies are deemed to be at risk of deteriorating (CAP Strategic Plan 2023-2027).

3

European Innovation Partnership (EIP)

Through a €60 million WATER EIP project, LAWPRO, Teagasc and Dairy Industry Ireland (DII) will work with farmers on an individual basis to improve water quality. This will be achieved through the adoption of innovative practices in nutrient management, the application of nature-based Natural Water Retention Measures (NWRM) and other measures at farm level following the principles of Integrated Catchment Management.

4

Eco-Scheme

The voluntary Eco-Scheme under the CAP Strategic Plan will reward farmers for using less chemical nitrogen. It incentivises for example the planting of a break crop(s) and sowing of a multi-species sward, soil sampling and appropriate liming, encourages greater use of Precision Agriculture and GPS controlled fertiliser spreaders/sprayers.

5

Local authorities and the EPA, through the **Network for Ireland's Environmental Compliance and Enforcement (NIECE)** will ensure compliance (including enforcement) actions for agricultural activities and will ensure an increased targeting of inspections by LAs based on water quality results, critical source areas and the EPA's Pollution Impact Potential (PIP) Maps.

6

Figure 11 - Principal actions with regard to Agriculture (Authors construct, 2023)

2. Hydromorphology

Hydromorphological modification means change to the physical conditions of a water bodies' natural environment and is essential for supporting aquatic ecosystems (EPA, 2023c). Hydromorphological pressures can be caused by dredging, widening and straightening of rivers (channelisation), removal of riparian vegetation, abstraction, land drainage, or hard infrastructure such as dams, weirs, barriers, locks, embankments and culverts. The arterial drainage programme for the River Boyne Catchment carried out by the Office of Public Works (OPW) commenced in 1969 and continued until 1985. These works affected virtually every part of the catchment and had a significant impact on the Boyne Fisheries. The impact of this scheme on lamprey production in the catchment, as one example, is thought to have been quite significant (O'Connor 2006). Under the Arterial Drainage Acts of 1945 and 1995 the OPW have a legal obligation to continue to provide maintenance of the channels and bridge/culvert structures that form part of the Scheme and provide drainage of the benefiting lands. Drainage maintenance has been in operation on the river since 1985. The Boyne Catchment alone accounts for 18% (119,000 acres) of total national (ADS) coverage. The Scheme consists of 1385 channels covering County Meath, County Westmeath, County Offaly, County Cavan, County Kildare and County Louth (JBA consulting, 2021).

Hydromorphology changes mainly as a result of modification caused by drainage schemes is a significant pressure in 38 river waterbodies (increase from 31 in Cycle 2) in the Boyne Catchment. In the 3rd Cycle Draft Boyne Catchment Report, 2021, channelisation was identified as an issue in five river waterbodies (Athboy_040, Blackwater (Kells)_120, Crosskeys Stream_010, Stonyford_010 & Stonyford_020). These rivers were also seen to be impacted by barriers, dams, locks and weirs. Land drainage was identified as an impact on Boyne_020 river waterbody, while the Blackwater (Kells)_020, Blackwater (Kells)_050 & Blackwater (Kells)_060 are being impacted by embankment schemes (3rd Cycle Draft Boyne Catchment Report, 2021).

The hydromorphology team at Inland Fisheries Ireland (IFI) are leading out on the National Barriers Programme to support the development of a national inventory of barriers to fish migration (IFI, 2023). They also collaborate with the OPW on the Environmental River Enhancement Programme (EREP). The EPA is leading on a national hydromorphology work programme and has developed the Morphological Quality Index (MQI) to aid with river restoration (EPA, 2023c).

3. Domestic wastewater

The domestic wastewater of approximately 26% of the population in Ireland (~487,000 dwellings) is treated on site by domestic wastewater treatment systems (DWWTS), of which approximately 90% are septic tanks (CSO, 2022; Gill et al. 2018). If not correctly installed and well maintained, septic tanks can result in leakage of untreated effluent to waters. Domestic wastewater has been identified as a significant pressure in 10 river waterbodies and three lakes (Acurry, Skeagh Upper & Drumkeery) in the Boyne Catchment. Domestic wastewater has also been identified as a significant pressure in one groundwater body (Trim) where groundwater contribution of nutrients and other impacts to surface waters were identified as issues.

The National Inspection Plan for Domestic Water Treatment Systems (2022–2026) continues to drive improvements in the performance of systems, increasing the number and focus of inspections being carried out by local authorities each year (EPA, 2021). 1,143 inspections were carried out in 2022 with half of DWWTS inspected posing a risk to human health and the environment (EPA, 2023d). Grants to repair defective systems are available from the Department of Housing, Local Government and Heritage website and from the local authorities. The uptake of DWWTS grants has increased by almost one-third since 2021 (EPA, 2023e).

4. Extractive industry

Despite the fact that Bord Na Móna is in the process of phasing out the extraction of peat for energy production by 2030, peat extraction remains a significant pressure in 13 water bodies (a reduction from 16 waterbodies in Cycle 2) (EPA, 2023b). This has resulted in increased sediment loads in these rivers. Peat extraction can also result in increased ammonia concentrations. Drainage of peatlands also results in alterations to the hydromorphological condition of rivers physically altering the habitat for aquatic species.

5. Urban wastewater

Urban wastewater significant pressures are impacting less waterbodies in Cycle 3 than Cycle 2 (3rd Cycle Draft Boyne Catchment Report, 2021). However, urban wastewater agglomerations have been identified as a significant pressure in eight *At Risk* river waterbodies, as well as Lough Ramor (Virginia Co. Cavan) and the Boyne Estuary, where discharges of elevated concentrations of phosphorus, ammonium and nitrogen are having an impact on the ecology of surface waters. Virginia and Mullagh Wastewater Treatment plants are due to be upgraded by Uisce Éireann under their 2020-2024 Investment Plan. An extensive programme of works is ongoing at the Drogheda Wastewater Treatment Plant.

6. Urban run-off

Urban Run-off is a mixture of leaking sewers, runoff from paved and unpaved areas, and misconnections where private foul connections are connected to storm sewers instead of the foul sewer network. Diffuse urban pressures have been identified as a significant pressure in 7 river waterbodies as well as Boyne Estuary Plume Zone coastal waterbody impacted by Navan, Bailieborough, Edenderry, Trim, Rochfortbridge, Summerhill, Killucan and Drogheda urban areas. Elevated concentrations of nutrients and organic pollutants are the significant issues (3rd Cycle Draft Boyne Catchment Report, 2021).

7. Industry

There is a wide range of industrial activity throughout the catchment including food processing, sand and gravel production, paint production and production of animal feed. There are a total of 41 facilities with Industrial Emissions (IE) licences and 14 activities currently regulated under IPC legislation in the Boyne Catchment all granted by the Environmental Protection Agency (EPA). The EPA grants and enforces Industrial Emissions (IE) licences and Integrated Pollution Control (IPC) licences for specified industrial and agricultural activities to ensure that operations will not cause a significant adverse environmental impact. The EPA Act, 1992 specifically prohibits the EPA from granting a licence if

emissions from the activity would cause pollution. The EPA continually monitors the activities of licenced sites, carrying out site visits, monitoring emissions, reviewing Annual Environmental Reports among other measures (EPA, 2023d).

Dawn Meats in Slane operates a slaughtering facility, where animals are received in, and carcasses are dispatched out following processing. Storm water (rainwater run-off from roof and non-process areas of a facility) from the facility is discharged adjacent to the south-western boundary of the site, which merges with the Roughgrange River, a tributary of the River Boyne (EPA IE Licence PO 516) (EPA, 2022). As outlined in the Annual Environment Report (AER) submitted to the EPA in 2022, no treated wastewater from the facility is released to a water body.

Other Industries worth noting are Kilsaran Concrete Products Limited at Kilmessan, Co. Meath (concrete and quarry products) discharges storm water to an unnamed stream which is a tributary of the Skane River (EPA Waste Licence W0296). While A.W. Ennis Limited in Virginia, Co. Cavan manufactures compound animal feeds. Storm water is discharged to Lough Ramor and treated wastewater is released to groundwater under an IE licence from the EPA (P1019).

Industry was identified as a significant pressure in two river water bodies (Knightsbrook & Moynalty). For both waterbodies, the main impact was nutrient loading (3rd Cycle Draft Boyne Catchment Report, 2021). Wellman International Limited manufactures synthetic fibres at a processing plant in Mullagh Co. Cavan discharges stormwater, process and sanitary wastewater to the Moynalty River after treatment in the on-site Wastewater Treatment Plant (WWTP) in accordance with EPA IPC Licence P0236.

Industry was also identified as a significant pressure in two groundwater bodies (3rd Cycle Draft Boyne Catchment Report, 2021). These point source discharges, causing nutrient and organic issues, arose from industrial discharges from Boylan Print Ltd. And Decotek Automotive Ltd. respectively. Boylan Print Group located in Drogheda, Co. Louth print magazines and leaflets for the Irish market. Untreated stormwater from the facility is collected on site discharged to surface water (IPC Licence P0754). Decotek Automotive in Co. Westmeath manufactures exterior trim components for the global automotive industry. Storm water and plant effluent are treated onsite and discharged to the Yellow River (EPA IE Licence P0690). Overall industry is impacting less waterbodies in Cycle 3 than Cycle 2.

8. Mines & Quarries

A number of old quarries and backfilled quarries have been identified in the 3rd Cycle Draft Boyne Catchment Report, 2021 as a significant pressure impacting the Boyne_040 river waterbody. Impacts caused by these quarries include morphological alterations to the river channel.

Among the largest industries in the catchment is Boliden Tara Mines Ltd., Europe's largest zinc mine which is located on the outskirts of Navan town. The River Blackwater passes over the orebody and forms a surface intersection feature between the 'Main orebody' and the 'Nevinstown orebody'. Effluent from the mines is discharged to the River Boyne under licence conditions (EPA Industrial Emissions (IE) Licence PO 516). There has been no reference to the mine having an impact on water quality (2nd Cycle Boyne Catchment Report, 2017; 3rd Cycle Draft Boyne Catchment Report, 2021). However, local residents raised concerns in March 2020 that water levels in their residential boreholes

were declining. In late summer 2021, this condition was reported to have worsened with reports of wells drying up. The issue at this stage was referred to the EPA, Meath County Council and the Geoscience Regulation Office (GSRO).

On the 20th November 2021, an unexpected 'inrush event' occurred at the Tara Deep exploration area of Tara Boliden's Navan mine. This incident resulted in an estimated 412,000 m³ of groundwater being discharged which flooded parts of the mine. The hole was eventually plugged on 2nd December 2021. Wardell Armstrong International (WAI) was commissioned in January 2022 to undertake an independent hydrogeological review of the Boliden Tara Deep Deposit and surrounding area. They reported that the limestone aquifer, previously thought to be relatively 'tight' had a much higher transmissivity (the ability to transmit water through rock) than expected. In July 2023, production ceased and the mine was placed under care and maintenance (Boliden, 2023).

Additional threats to the Boyne River Catchment

1. Invasive Species

A number of high-profile invasive species have become established in the Boyne River Catchment during the past two decades with varying impacts (NBDA, 2023). One of these, Giant hogweed poses a risk to public health due to its toxic sap. A number of these invasive species have posed and/or continue to pose significant risks to biodiversity and ecosystem function within the catchment. In addition, to the very concerning environmental impact of these invasive species, there is a considerable economic impact (Cuthbert et al. 2021; Diagne et al. 2020). Reduced access to river banks and barriers to navigation in water bodies can prevent recreational activities such as angling; Riparian zone damage can cause riverbank erosion and flooding; removal of Japanese knotweed are all examples of impacts with associated economic costs caused by invasive plant species present in the Boyne River Catchment (Pejchar and Mooney 2009).

Giant Hogweed *Heracleum mantegazzianum*, Japanese Knotweed *Fallopia japonica*, Giant Knotweed *Fallopia sachalinensis*, Rhododendron *Rhododendron ponticum*, and Cherry Laurel *Prunus laurocerasus* have all been identified in multiple locations along the course of the River Boyne. Himalayan Balsam *Impatiens glandulifera* has been recorded as present in high densities along the River Boyne channel west of Drogheda (JBA, 2021). These high impact invasive plant species are listed on EC (Birds and Natural Habitats) Regulations 2011 S.I. No. 477/2011. Species listed under S.I. No. 477/2011 are subject to restrictions under Regulations 49 and 50 of the 2011 Regulations (S.I. No. 477/2011 - European Communities Birds and Natural Habitats Regulations 2011). This includes a prohibition on their introduction, release and dispersal. Other species classed as medium impact identified within the catchment include Butterfly-bush *Buddleja davidii* and Sea-Buckthorn *Hippophae rhamnoides* (ISI 2023; NBDC, 2023).

Nuttall's Waterweed *Elodea nuttallii*, is a high impact aquatic plant species that has been recorded within the catchment over the past 10 years (see Figure 12). *E. nuttallii* is now widespread and in the Royal and Grand Canals it is considered that no mitigation measures will bring about its effective control or eradication (Trodd et al. 2021). This species is listed on EC (Birds and Natural Habitats) Regulations 2011 S.I. No. 477/2011. Species listed under S.I. No. 477/2011 are subject to restrictions under Regulations 49 and 50 of the 2011 Regulations (S.I. No. 477/2011 - European Communities (Birds and Natural Habitats) Regulations 2011).

High impact invasive mammalian species have also been recorded within the Boyne River Catchment, including, American Mink *Mustela vison*, Brown Rat *Rattus norvegicus* with widespread distribution of the Eastern Grey Squirrel *Sciurus carolinensis* (NBDC, 2023). These species are all listed on the EC (Birds and Natural Habitats) Regulations 2011 (Statutory Instrument (SI) 477).

The sole Crayfish species native to Ireland is the White-Clawed Crayfish, *Austropotamobius pallipes*, which is affected by the deadly water mould *Aphanomyces astaci*. A non-native North American variety of Crayfish that is Crayfish plague resistant is thought to be the first species to introduce the disease into Europe. Despite not being included in EU Council Directive 2006/88/EC, Crayfish plague is identified by the World Organization for Animal Health (OIE) as a disease that needs to be reported. The EU Habitats Directive considers the White-Clawed Crayfish to be endangered and provides protection for it. However, Crayfish plague outbreaks have recently been reported in Ireland. According to Dore et al. (2020), the first verified Crayfish plague outbreak in Ireland was noted in the Erne catchment in 2015. However, they also suggest there is evidence to imply that there was an outbreak in 1987 in both the River Boyne and River Inny.

A recent report funded by The Water Forum provides strategic guidance and recommendations on the management of Invasive Alien Species (IAS) in Ireland (Lucy et al. 2021).

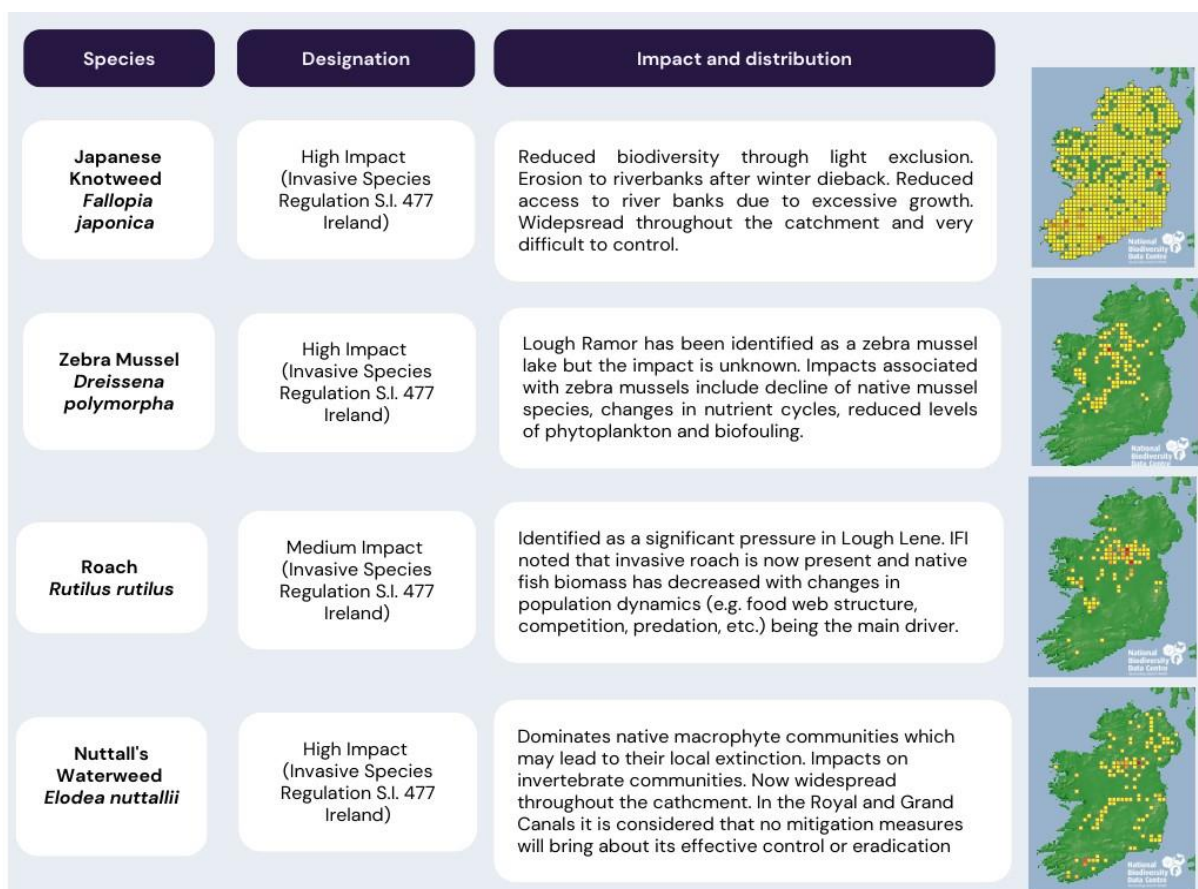


Figure 12 - Invasive species of concern within the Boyne River Catchment
Source: National Biodiversity Data Centre (2023)

2. Climate Change

The Boyne River Catchment is vulnerable to the impacts of climate change and the potential implications are wide ranging. Climate Change is fast becoming one of the most significant risks for World Heritage sites worldwide (Markham et al. 2016). As outlined in the Brú na Bóinne, World Heritage Site (WHS) Management Plan, climate change has the potential to affect the WHS in a number of different ways. Negative impacts could occur as a result of more extreme weather events resulting in storm damage and flooding. At Brú na Bóinne the river is at the lower plain stage and already subject to winter flooding (DAHRRGA 2017). Climate modelling predictions are that we can expect more frequent extreme precipitation and flooding events (Fealy et al. 2018). Adaptation measures will be required to reduce the impacts of these climate induced events (OPW 2019). The OPW flood portal provides location specific information on future scenario flood risk with maps available (www.floodinfo.ie).

Climate change, through changes in flow and temperature regimes, is often expected to worsen the risks to and effects on freshwater biodiversity (Kelly-Quinn et al. 2020; Dudgeon 2019; Reid et al. 2019). While more rainfall and more frequent flood events can cause the release of pollutants and increase physical disruption and damage to instream and channel, drier weather conditions can also impair a water body's ability to assimilate pollutants, preserve oxygen, and regulate temperature.

Inland Fisheries Ireland (IFI) identified the urgent need to address the current knowledge gap regarding how climate change will impact Ireland's different inland fisheries habitats and the resulting ecological consequences for the species they support.

In response to this, IFI and the Office of Public Works (OPW) commenced a collaborative programme in late 2020 to investigate the climate vulnerability of arterially drained catchments and to assess the capacity to build climate resilience for fishery conservation within three systems, namely the Boyne, Inny and Moy (Kelly et al. 2021). Forty-six sites were chosen across the Boyne Catchment and water temperature loggers were deployed in all index sites by September 2021. These three catchments combined comprise over one-third (35%) of the 647,000 acres of area benefiting from arterial drainage systems (ADS) throughout Ireland. This work is ongoing and outcomes will be of interest to the Boyne Rivers Trust.

The climate crisis and associated greenhouse gases (GHG) is a significant environmental concern to Irish society. Given that our water quality is not improving as required by the WFD and is actually slightly deteriorating, while our population is growing, it may become difficult to maintain reliable water sources, manage our wastes, and support a sustainable and resilient food production system. An Fórum Uisce's Framework for Integrated Land and Landscape Management (FILLM) (Figure 13) builds on and is a reframing of the Integrated Catchment Management (ICM) approach used in water resources management (AFU, 2021a). While keeping catchments as the appropriate landscape units, it expands it to incorporate the other elements of our natural environment.

FILLM can therefore be used as an overarching framework for connecting the Water Framework Directive, Urban wastewater Treatment Directive, Habitats Directive, Floods Directive, Drinking Water Directive, Climate Change Adaptation and Mitigation, Soil Conservation, Spatial Planning, and Sustainable Food and Timber Production for environmental management. Additionally, it can be a

useful framework in supporting the attainment of the 2030 UN Sustainable Development Goals at appropriate scales (AFU, 2021a)

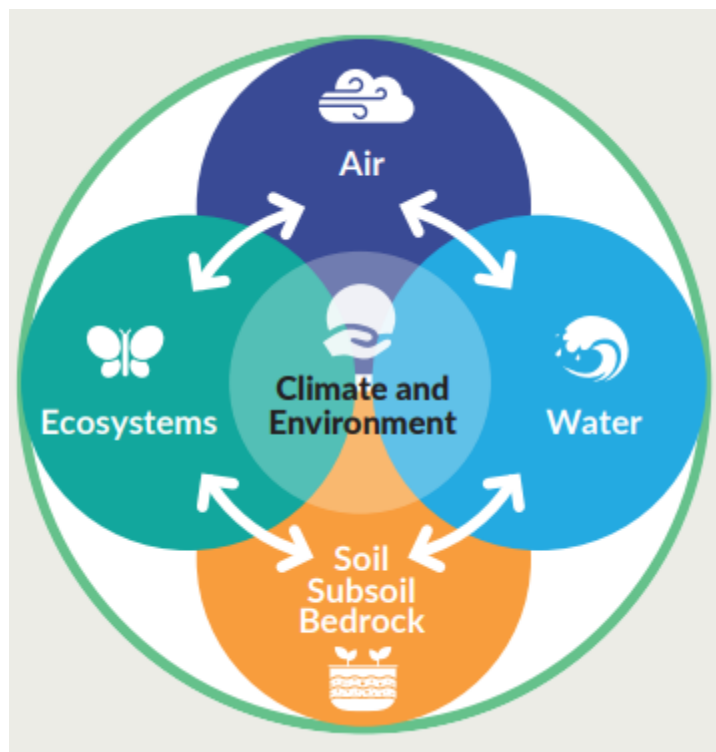


Figure 13 - Illustration of the whole of environment concept and linkages.

Source: AFU (2021)

3. Increasing population

The River Boyne Water Quality Management Plan published by Meath County Council back in 1997 stated that ‘*Systematic management of water resources is necessary to ensure the required balance between development pressures and the safeguarding of the natural and built environment for future generations*’. When that report was published 26 years ago there were serious concerns in relation to diminished water quality with the Boyne Catchment. Since that report was published the population in the 10 largest urban centres in the Boyne catchment and in other areas has increased dramatically, increasing pressure on the catchment and associated ecosystem (see Table 5).

Table 5: List of the 10 largest urban centres in the catchment Source: CSO (2022)

Town	County	Population		River/Tributary
		1991	2022	
Drogheda	Louth	24,656	44,082	Boyne Estuary
Navan	Meath	11,706	33,886	Boyne
Trim	Meath	4,185	9,523	Boyne
Edenderry	Offaly	3,742	7,888	Boyne
Kells	Meath	3,539	6,608	Blackwater
Dunshaughlin	Meath	1,275	6,531	Skane
Enfield	Meath	436	3,663	Blackwater (Longwood)
Virginia	Cavan	720	3,294	Lough Ramor
Kinnegad	Westmeath	415	3,069	Kinnegad
Baileborough	Cavan	1550	2,919	Blackwater

Uisce Éireann reports that 58% of their Water Supply Zones are in a supply-deficit even in normal conditions (AFU, 2021b). A rising population projected at 21% over the next 25 years will mean an increased demand for water resources and an increase in the amount of waste requiring treatment (DHPLG, 2021). This combined with new abstraction licensing rules might lead to further challenges in terms of increasing supply from surface and groundwater sources (AFU, 2021b).

Water Governance and Stewardship

A catchment has historically been viewed as the area formed by topography that supplies water to a river and its tributaries, with all of the water ultimately flowing to a single outlet. Although this is true hydrologically, catchments can be defined and thought of in a much larger and meaningful fashion, as defined by FILLM:

A catchment is a multi-functional, topographically based, dynamic, multiple-scale socio-biophysical system; defined by over ground and underground hydrology; connecting land, water, ecosystems, geosystems, atmospheric systems and people; and used as the basis for environmental analysis, management and governance (AFU, 2021).

By utilising this concept and understanding for the Boyne Catchment, it becomes an appropriate and effective landscape unit for environmental management and land-use planning.

Public participation is a crucial component of the River Basin Management Plans, mandated by Article 14 of the WFD which states that ‘*Member States shall encourage the active involvement of all interested parties in the implementation of the Directive, in particular in the production, review and updating of the river basin management plans*’ (EU Commission, 2000). This requires Member States to interact with stakeholders and this remit is expected to be significantly strengthened under the 3rd River Basin Management Plan (RPS, 2022) the final details of which have not yet been released.

The Boyne Catchment is one of five selected pilot locations for public participation initiatives under the Plan. As such, the Boyne Rivers Trust and this vision for its future management has the potential to play a significant role in this catchment, the establishment of the proposed Community Fora by LAWPRO and the implementation of the WFD.

During the pilot phase, LAWPRO and the EPA will collaborate with the implementing agencies to align current work programme reporting with the draft River Basin Management Plan reporting requirements. It is expected that the five pilot catchments, including the Boyne, would be used to inform the development of a template for Catchment Management Plans, which will then be rolled out across other catchments over time (LAWPRO, 2023). The five pilot catchments were selected following consultation with the LAWPRO Regional Coordinators and Community Water Officers and include:

- Midlands & East: Boyne
- Southeast: Slaney & Wexford Harbour
- Border: Newry, Fane, Glyde & Dee
- West: Galway Bay Southeast
- Southwest: Mal Bay

The Boyne Catchment in particular was selected as a pilot for the following reasons (LAWPRO, 2023):

- There are a number of local authorities within the catchment including Kildare, Offaly, Westmeath, Meath, Louth, and Cavan.
- Many noted protected areas exist in the basin, including Natura 2000 sites, designated salmonid river waterbodies, and drinking water abstraction areas.
- The Boyne Catchment had six Areas for Action (AFA) in the 2nd cycle River Basin Management Plan, i.e. a total of 23 waterbodies. The number of AFAs in the 3rd cycle River Basin Management Plan has been increased to 23, equating to 106 waterbodies.
- Fifty-eight percent (58%) of the catchment's river waterbodies are monitored for water chemistry. This is the highest proportion across the five pilot catchments, offering an opportunity for both pressure characterisation and monitoring of success.
- Thirty-six percent (36%) of the monitored river waterbodies exceed the phosphate environmental quality threshold (EQS), 27% exceed the ammonium EQS, and 27% exceed the nitrate EQS. Furthermore, the Boyne Catchment drains to the Boyne estuary, which has a Moderate status and has been identified as a catchment that requires major nitrogen reductions (EPA, 2021).
- Physical modifications affect 29% of the catchment's waterbodies.
- In the Boyne Catchment, the dominant significant pressures are agriculture, hydromorphology, the extractive industry, and to a lesser extent urban and domestic wastewater.
- There are multiple implementing bodies (OPW, IFI, local governments, NPWS, EPA, IW, NFGWS, and Bord Na Móna) with particular interest in the catchment.
- The IFI's National Climate Change Research includes five waterbodies on the Boyne main channel (BOYNE_130 to BOYNE_180) which are included in the 3rd cycle Boyne area for action.

In addition, the Boyne Catchment offers an opportunity to tackle nitrogen and phosphorus issues from both agricultural and human sources. Interestingly, the Boyne also has the highest proportion of waterbodies influenced by hydromorphology, notably artificial drainage and extractive industry, of the five pilots.

Ó Cinneide et al. (2021) suggests that as Rivers Trusts and community organisations are maturing, linkages between agencies in the Irish water sector are deepening, and the 3rd River Basin Management Plan is a significant chance to advance this topic. This should include the OECD principles of transparency more fully in Irish water governance as part of the larger transition towards open government and stakeholder involvement (Forde, 2020). The tenth of the OECD Principles on Water Governance (OECD, 2015) (Table 6) which is to '*promote stakeholder engagement for informed and outcome-oriented contributions to water policy design and implementation*' is of particular relevance to the Boyne Rivers Trust and the development of the Community Fora.

Table 6 - OECD Principle 10 on Water Governance. *Enhancing trust and engagement in water governance.*

OECD Principle 10: Promote stakeholder engagement for informed and outcome-oriented contributions to water policy design and implementation, through:	
a	Mapping public, private and non-profit actors who have a stake in the outcome or who are likely to be affected by water-related decisions, as well as their responsibilities, core motivations and interactions
b	Paying special attention to under-represented categories (youth, the poor, women, indigenous people, domestic users) newcomers (property developers, institutional investors) and other water-related stakeholders and institutions
c	Defining the line of decision-making and the expected use of stakeholders' inputs, and mitigating power imbalances and risks of consultation capture from over-represented or overly vocal categories, as well as between expert and non-expert voices
d	Encouraging capacity development of relevant stakeholders as well as accurate, timely and reliable information, as appropriate
e	Assessing the process and outcomes of stakeholder engagement to learn, adjust and improve accordingly, including the evaluation of costs and benefits of engagement processes
f	Promoting legal and institutional frameworks, organisational structures and responsible authorities that are conducive to stakeholder engagement, taking account of local circumstances, needs and capacities
g	Customising the type and level of stakeholder engagement to the needs and keeping the process flexible to adapt to changing circumstances

Findings

1. Engagement - The primary research that was conducted during this process points to a palpable interest and engagement amongst the population within the Boyne catchment not only with the Boyne itself but also with the issues and challenges it faces. The return rate on the questionnaires, the participation rate in the focus groups and the views of the interviewees all signal an engaged and motivated citizenry in the catchment. In terms of quantity and quality, engagement was high.

2. Views and values - The dominant view of the Boyne is positive with people commenting on the beauty, history and value of the Boyne. Notwithstanding this, there are also views pointing to the decline and pollution of the Boyne. These views are not contradictory. This is augmented by the realisation that “Universalism” is the value most associated or triggered when reflection on the Boyne is encouraged. The identification of “Universalism” as the dominant value within the group that participated in this research is revealing. In order to have a healthy and thriving Boyne, this value needs to be triggered and amplified further by the stakeholders that are involved in the Boyne Vision. By extension, those entities contributing to the pollution of the River would probably not share “Universalism” as their dominant value.

3. Water quality is by some distance the priority theme which people want to focus and action on. The residents of the Boyne catchment want a healthier, cleaner Boyne that meets the standards called for in the Water Framework directive.

Water quality emerges from the secondary research as the priority issue as well. The secondary research points to and examines the detail of water quality and the pressures that cause issues and challenges within the Boyne catchment.

“Agriculture is the most significant pressure in water bodies within the Boyne Catchment that are not meeting WFD targets” (Boyne Vision, 2023: 24).

The role agriculture plays in the low/poor water quality of some parts of the Boyne is a key consideration. Attempting to build trust and relationships with the Agriculture sector as a means to addressing water quality challenges is a starting point but doesn’t go far enough as evidenced in the existing water quality standards and evidence.

4. Multi stakeholder and collaborative approach – The focus groups and interviews both point to the need for far more to be done in this area. It is the view of those participating in this process that stakeholders operate too much within their own sphere of activity and do not collaborate enough. Where this collaboration does happen it is often tokenistic and doesn’t have the required depth. The questionnaire also refers to a need for a co-ordinated approach within its own findings. A collaborative, multi stakeholder approach is required but it needs to be one based on actions and evidence. Recognition of sectoral self-interest and potential conflicts of interest are crucial considerations. Power dynamics and analysis plays an important part in creating genuine collaborative, inclusive and equitable

spaces. It is clear that there is a perceived but distinct lack of leadership in relation to the management of the Boyne catchment.

The community catchment fora envisaged for the Boyne catchment may go some way to addressing this point as does the work, which the Boyne Rivers Trust is currently engaged in. However, caution is urged in this regard as community voice and involvement is required for this finding to be met.

From a policy perspective, the secondary research points to the importance of *“public participation”* on page 34 of this report.

5. Accountability, responsibility and implementation of existing legislation - In summary, participants in the focus groups felt that duty bearers and policy makers have not taken their responsibilities seriously enough. This resonated with some of the interviewees who commented *“The watchdog needs to develop teeth”* (Boyne Vision, 2023: 19).

Negative perceptions of the planning process are held by some participants who felt that far more scrutiny and accountability is required. One interviewee when talking about accountability or lack thereof said, *“The lack of accountability - I think it's done deliberately”* (Boyne Vision, 2023: 19) while another stated *“local authorities must be held accountable for their actions”* (Boyne Vision, 2023: 19).

In terms of the questionnaire, *“Governance and planning”* (Boyne Vision, 2023: 10) was identified as a challenge. This finding is visible across the three methods of primary research making it robust and triangulated.

6. Enforcement – Polluter pays principle – It was clear from the focus groups that there was a desire to have much stronger enforcement measures in place. This resonated with some of the interviewees while not with others. Some of the interviewees felt strongly that current incentives to encourage environmentally friendly action just simply weren't working anymore while others felt that this was important. The role of ASSAP and its potential serves as an illustration of the divergence of opinion within the interviewees. The questionnaire revealed that “enforcement” emerged as an important action and part of the vision that is needed in the Boyne catchment.

7. Education – This figures as an important opportunity within the questionnaire and a crucial action identified by the interviewees. Education is also the 4th highest priority requiring action in the focus groups. Broadly speaking, more and deeper educational opportunities are needed for all residents within the Boyne catchment in order to understand and value the River. One interviewee captured the tone quite well when they said *“Water literacy and public participation is really important”* (Boyne Vision, 2023: 18). This view of education is one where active learning / experiential learning is encouraged and that people and residents are involved in problem based learning. Voice, agency and action emerge as a priority in the focus groups as well. This speaks to the aforementioned active and problem based model of education that is being called for. There is a range of educational providers both in the formal and non-formal sector that provide a latent capacity, which can contribute positively to the understanding and knowledge of the Boyne catchment. This capacity can be leveraged much further though with tangible suggestions made in the recommendations section.

8. Population Increase - From 1991 to 2022, the population increases in the 10 largest urban centres in the Boyne catchment has increased dramatically. ***“The total population of the catchment has increased exponentially increasing pressure on the catchment and associated ecosystem (Boyne Vision, 2023: 35 - Table 5).***

This information is very valuable and shines a light on planning and development processes across the catchment. This information, although mentioned in the primary research, didn't figure as a substantial challenge.

When further planning and development is considered, Sustainable Development needs to be at the forefront of the calculus made when planning decisions are made by local authorities. Historically, this has not been the case. Ensuring that any future stress that the Boyne experiences is kept minimal is crucially important. The River has a carrying capacity that has physical and scientific limits. Those boundaries are not changed by wishful thinking.

9. Access - Improving access to the River featured in the actions identified in the questionnaire. It also featured as a priority in the focus groups. This was also echoed during the interviews with one interviewee stating ***“Access to the river and countryside isn't there” (Boyne Vision, 2023: 19).*** Generally speaking, research participants felt that it was bizarre that there was very limited access to the River for leisure activities.

The existing low level of public access to the River currently is not conducive to building a positive relationship between residents and the river. There may be some resistance with increasing access by particular stakeholders and vested interests however this resistance has been addressed in other catchments successfully.

10. Overall state of the Boyne – the secondary research section of this report goes into detail that is related to this finding. However, in summary

“The Boyne Catchment remains under pressure with 51% of water bodies At Risk of not achieving ‘good status’ and failing to meet the WFD objectives” (EPA Catchments.ie, 2022).

The status of the Boyne is clear and this resonates with the public opinion and view as expressed in the Boyne Vision. Informed action is now required on multiple levels by various stakeholders to improve the status in the short to medium term. This is very achievable as we know from an evidential point of view what needs to be done and we have the tools and resources to do it.

11. Congruency - The research methods employed in the Boyne Vision returned data and information that was congruent across the methods utilised. The findings of the questionnaire, focus groups and interviews largely chimed with each other. The body of the primary research was also validated by the extensive secondary research undertaken. The views and opinions of the participants engaged in the research overlap significantly with the data, information and research which already exists. Where relevant, divergences are pointed out.

Recommendations

1. Engagement - The existing engagement, interest and commitment of some stakeholders and residents in the catchment is a strong starting point for ramping up future action and implementation of water quality and biodiversity initiatives. The first recommendation is to augment the existing positive public engagement with the Boyne through celebratory activities based on the value of universalism. The Boyne River Keepers in Canada - <https://www.boynriverkeepers.ca/> is an instructive example of what can be done in this regard. Supporting the Kayakers who utilise the Boyne, having a family picnic day along the banks of the river or organising an annual “Boyne” walk(s) are all activities that could build on the existing levels of engagement.

2. Views and values - Communications (written and visual) issued by the BRT regarding the Boyne Vision should evoke “Universalism” as its dominant value and theme. This means moving away from seeing the river as a resource but as a living entity that those within the catchment have an interconnection with and dependence on. Seeing the river as something other than a living organism makes pollution more likely in the future. The “Rights of Nature” is instructive in this regard as a direction of travel for all of the stakeholders who interact with the river. Any educational activity suggested or conducted also needs to amplify and trigger the same value(s). It is very important for the BRT to deepen their own understanding of how values work and how important they are in creating future behaviour and action.

3. Dominant theme – Water quality - The recommendation on this point comes in two parts, mitigation and adaptation.

Nutrient losses from rural diffuse and point sources must be addressed and land management improved, in order to meet the WFD targets.

Mitigation - In terms of mitigation, increasing the frequency and level of monitoring is important as is the reporting of that data to relevant authorities. Citizen science can play a role here however, the body of emerging and existing data needs to be acted on. BRT could leverage or contribute resources to such efforts. The establishment of a community catchment forum might also include a peer accountability and problem solving system.

Existing relationships with the agriculture community need to be nurtured and built on and the ASSAP programme is key in that regard, however it is clear that this programme is not enough in its current form as illustrated and evidenced by the current water quality. Extra resourcing for the ASSAP programme is an option that requires further consideration. BRT could advocate for this action.

Local authorities have a clear responsibility to reduce and minimise planning that allows for pollution of the Boyne. BRT can help ensure that the local authorities carry out this function properly by ongoing communication and contribution to the creation and review of relevant development plans.

Land use policy is an area that the BRT can contribute to at a local, regional and national level. Rethinking and diversifying land use throughout the Boyne catchment is a key consideration and recommendation. BRT could convene spaces where land use policy is discussed by various stakeholders as well as joining forces with other river trusts to work on land use policy positions.

Using the Bathing Water Directive's water quality designation, the analysis shows that a one-level improvement in water quality leads to 3.13 more visits (+6.67%), whereas a one-level deterioration leads to 9.77 fewer annual visits (-20.83%). (Börger et al, 2021)

Adaptation - Riparian corridors along the Boyne could play a part in improving water quality particularly in more problematic areas. Tree planting across the catchment is also beneficial for biodiversity and habitats as well as water quality issues. BRT could play a lead role through the instigation of riparian corridors and tree planting more generally.

4. Multi stakeholder and collaborative approach –

Three recommendations have emerged for the BRT to consider

- Develop and build on relationships with the Environmental pillars of the Public Participation Networks of the local authorities that are relevant to the Boyne catchment. This is an important connection to community and voluntary groups across the catchment.
- Make contact and build relationships with the climate action and biodiversity officers of the respective local authorities.
- Play an active role in the soon-to-be-established Boyne community catchment forum.

5. Accountability, responsibility and implementation of existing legislation - This recommendation is for duty bearers and statutory stakeholders to consider, however we would urge the BRT to reflect the need for accountability, responsibility and implementation of existing legislation when working in policy spaces. Statutory stakeholders in particular need to build trust with the wider public who feel they have not met their responsibilities. Governance and planning were considerations that raised their heads repeatedly throughout the Boyne Vision. Good governance principles need to be adhered to when it comes to water management and planning.

6. Enforcement – Polluter pays principle - Reporting on pollution - Clear public reporting mechanisms regarding water quality/pollution incidents (once off or ongoing) need to be identified with results and rationale disseminated. The transparency of these processes is key from a trust perspective. Any future community catchment forum activity needs to address the scrutiny and accountability of such measures.

In simple terms, the pollution of the Boyne needs to stop. BRT could host a “See it, say it” campaign related to pollution.

7. Education – This is divided into three sections and the first one is particularly relevant for the BRT;

Educational mapping – Map the Education providers across the catchment that are active across the formal and non-formal educational sectors. This will include primary and secondary schools, further education institutes, adult and community education provision, youth work provision, local authority staff with an educational remit (Biodiversity officers / Climate Officers / Active travel officers), Education and Training Board staff (Adult education officer’s / Community education officers / Youth work officers). This mapping could also include relevant LAWPRO actions and detail NGOs that are active

within the catchment. This mapping will provide a picture of the existing capacity that can be leveraged for future action.

Educational funding - Provide a small scale funding through a bespoke scheme for NGOs / Schools / Adult Education / Community Education providers within the catchment. This could be supported by Partnership Companies, County Councils, LAWPRO and Education and Training boards.

Educational projects – BRT has already begun rolling out projects that contribute to the Boyne Vision. Future projects that have an educational remit could be considered. Intergenerational learning could provide a valuable lens to look at educational projects in the Boyne catchment.

8. Citizen Science - This needs to be incubated across the catchment and also addresses recommendation 3. The Centre for Freshwater and Environmental Studies in DkIT and the Water Institute in Dublin City University (DCU) are important knowledge and skills hubs in this regard. Building on the relationship between the BRT and these Higher Education Institutes is important. Building a publicly accessible body of evidence that people can contribute and relate to brings people closer to data and information.

9. Access - This recommendation is divided into two parts; creating access points to the river and lobbying for access points to the river, which will have implications regarding property rights and land use policies.

The BRT could build access points to the river especially in urban areas – pontoons can be easily installed in a number of urban centres. Kilometre markers (River facing) could be installed along the banks of the river. This will help build public engagement with the river. Rural access points are also required. Stackallen is one point where river access is possible, however the fencing that currently exists doesn't make physical access to the river ramp easy. Rights of way need to be made clear to ensure that there is no unnecessary conflict between private landowners and the public who view the river as a commons to be enjoyed by all.

10. Strategy – The BRT now has a strong body of evidence (The Boyne Vision) to inform their next steps. A short, medium and long term strategy can now be developed on the basis of this consultation process. This could include the position of BRT within the Rivers Trust Network and what this positionality could lead to or help leverage. This strategy can then inform operational plans and applications for future funding and support.

11. Climate Change - The Boyne Vision is a short to medium term public consultation on the future of the River Boyne. In that context, although the Climate crisis did not feature prominently, we feel it is a variable that must be considered carefully. The flux that this climate variability will bring is unknown, however modelling suggests the likelihood of catchment flooding is going to increase across the country (Fealy et al. 2018).

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Appendices

Appendix 1 – Questionnaire

Boyne Rivers Trust: A public consultation on the future of the River Boyne

This survey is being undertaken by Development Perspectives (DP) and the Centre for Freshwater and Environmental Studies (CFES) at Dundalk Institute of Technology on behalf of the Boyne Rivers Trust. The outcomes of this survey and other public consultations will be collated into a report called the "Boyne Vision".
For more information email bobby@developmentperspectives.ie

deborahmconlon@gmail.com [Switch account](#)



Not shared

* Indicates required question

Which of the following counties best describes your location? *

- Cavan
- Meath
- Louth
- Westmeath
- Offaly
- Kildare
- Other:

Which river or lake in the Boyne Catchment do you visit most often? *

- Lough Lene
- Lough Ramor
- Blackwater
- River Boyne Navan
- River Boyne Trim
- River Boyne Slane
- River Boyne Drogheda
- Boyne Estuary
- Royal Canal Main Line
- Grand Canal Main Line
- Other:

What one word comes to mind when you think of the River Boyne? *

Your answer

What are the things that you personally value most about the River Boyne and surrounding catchment?

Your answer

What is your main interest in the River Boyne and surrounding catchment?

- Walking
- Fishing/Angling
- Kayaking/Boating/Canoeing
- Swimming
- Aesthetics/Well-being
- Drinking water source
- Commercial
- Cultural heritage
- Natural hertiage (nature and habitats)
- Education/Research
- Live close by

How concerned are you about the following in terms of the River Boyne and surrounding catchment? *

	Unsure	Not concerned at all	A little concerned	Very concerned	Extremely concerned
Water quality	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pollution	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Litter	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Habitat loss	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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Overgrowth	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Flooding	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Dredging	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Physical barriers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Invasive species	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Domestic waste water (e.g. septic tanks)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Urban waste water	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Biosecurity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Illegal fishing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Access	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Safety	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Forestry	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tourism	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Agriculture	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Aquaculture	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Water treatment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Commercial development	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Extractive industry (e.g. mining)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Historically polluted sites	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Energy generation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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Please rank the following themes in order of importance in relation to the River Boyne and surrounding catchment (with 1 being the most important). *

	1	2	3	4	5
Water quality	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Habitats and biodiversity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Education and awareness	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Heritage, recreation and tourism	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Resilient community and catchment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

What opportunities can you see for the River Boyne and surrounding catchment? *

Your answer

What challenges can you see for the River Boyne and surrounding catchment? *

Your answer

Within your lifetime, what do you want to see happen to the River Boyne and surrounding catchment?

Your answer

What are the steps needed to achieve these goals (your vision)? *

Your answer

Thank you for completing this survey. Please add any other comments that you would like to make.

Your answer

Appendix 2 - Focus Group

Focus Group 1 – Drogheda (10th of May 2023)

19 people participated in the session in the Development Perspectives offices in Drogheda with another 11 people registering for the event.

The focus group session started with a round of introductions, outlining the session's purpose and the evening's agenda.

The first task for the participants was a values and frames exploration, which was based upon “Common Cause” (Public Interest Research Centre, 2011). The Schwartz values circumplex (See Figure 6) figures strongly in the text of Common Cause and the categories outlined in that text provide a useful reference point for analysis. The task involved thinking of a word or phrase that comes to mind when participants think of the River Boyne. The words offered below were presented before any material or content was addressed or discussions held to help avoid bias. These words (Outlined below) provide a snapshot or insight into the values or frames people associate with the Boyne catchment. The values or frames associated with the word are in brackets while those without brackets indicate the offering is neutral from a values perspective or too difficult to categorise in the Schwartz circumplex.

One word/phrase to describe Boyne River

- Important
- Soul (Benevolence)
- Far-side
- Potential
- Nostalgia (Security, Conformity and Tradition)
- Majestic (Universalism)
- Life (Universalism)
- Special (Benevolence)
- Quiet (Benevolence)
- Beauty (Universalism)
- Custodian (Conformity and Tradition)
- Home (Tradition)
- Boats
- Hope
- History and Heritage (Tradition)
- Fishing
- Environment (Universalism)
- Life force (Universalism)
- Boats – enjoyment (Hedonism)
- Precious (Benevolence)

For focus group number 1, **Universalism** and **Benevolence** were the dominant value categories illustrating a clear positioning on the self-enhancement – self-transcendence axis of the Schwartz circumplex. This indicates a concern for well-being outside of the self. In terms of the openness to change – conservatism axis, group 1 had a tendency for **conformity** and **tradition** indicating that the change process, which the Boyne catchment may face, could be challenging in terms of potential resistance.

The 2nd activity or task utilised the work and methodologies of Robert Chambers. The methodologies were chosen to maximise inclusion and minimise power dynamics and social influence in the group. Participatory Learning and Action (PLA) methodologies (Brainstorming and direct ranking) were employed with the group to gauge what the priorities were in relation to the Boyne catchment. This was achieved by asking the following question. “What is the biggest priority for the Boyne catchment between 2023 and 2030”?

The following is a list of the priorities that were listed within smaller subgroups.

- Business Action (4)
- Education, Awareness raising and prevention addressing pollutants (4)
- Social re-connection (3)
- Community actions (3)
- Sustainable solutions to pollutants (3)
- Water Quality (3)
- Enforcement of legislation (2)
- Economic Development (1)
- Community of Collective action (1)

There was then a 2nd round of voting across the subgroups and this was captured. The priorities below scored well in the 2nd round.

- Improving Water Quality (8) / Water Quality (5) / Clean water (2)
- Who is in charge? (10) - Accountability/responsibility and decision-making (3)
- Implementation of existing legislation (9) / Implement by-laws (3)
- Habitat restoration (10)
- Valuing an amenity (10)
- Multidisciplinary approach / Joined up thinking (5) - Collective catchment teamwork (4)
- Community Involvement and engagement (7)
- Address unseen pollution (7)
- Protection of the whole catchment area (5)
- Heritage (3)

When the categories are brought together / amalgamated then the following priorities emerge

- Multi-stakeholder / collaborative approach - 16
- Water Quality – 15
- Responsibility and accountability – 13
- Existing legislation – 12
- Habitat restoration – 10
- Valuing an amenity – 10

It is clear from the weighting that the group in Drogheda felt there was a distinct lack of partnership or organisational and institutional coherence when it came to the Boyne catchment. This was particularly raised in relation to taking responsibility for water quality and planning more generally. The lack of a multi-stakeholder approach or public engagement or involvement in the direction of the Boyne

atchment was voiced. There was also a palpable frustration regarding the perception that existing legislation is not implemented or adhered to.

The 3rd activity of the focus group session involved presenting 5 themes, which are outlined below.

- Water Quality
- Habitats and biodiversity
- Education and awareness
- Resilient community and catchment
- Heritage, recreation and tourism

Each participant then had the opportunity to join whichever group they wanted to with a view to deepening that discussion. Notes of each group discussion were taken by the group themselves and presented back to the wider group via flipchart and a 1-minute presentation.

1. Water quality

- Water quality is the pinnacle / overarching objective
- Pollutants need to be addressed (Seen and unseen)
- Desire for a high water quality standard / not a moderate
- Stop greenwashing
- Stop selective ignoring of legislation

Graphic presented which had WQ in the middle with the other four areas coming out from that theme

2. Habitats and biodiversity

- Being a voice for wildlife
- Build a connection to nature
- Raise awareness
- SPA and SAC importance
- Conservation and preservation
- Accountability and responsibility to protect
- Awareness of interrelationships between flora, fauna, general public communities, farming and business.

3. Education and awareness

- Who? Everyone – Industry – farmers – communities
- Methods of delivery – Schools – need to start early.
- Radio and associated media events
- Accessibility of information
- Events – Open River day
- Make it clear that 1. I'm connected to the river and 2. I'm connected to everyone else
- Champion local leaders and reps
- Get people to share their soul stories
- Empowerment
- School art projects

4. Resilient community and catchment

- Multiple benefits (WQ, Biodiversity and resilience)
- How to build resilience?
- Wetlands?
- Catchment-wide riparian zone - protect trees and restoration / protection
- Raising awareness – what does the future have in store?
- How to tackle sea level rise?
- Flooding – Building resilience (Reconnecting floodplains and reduce reliance on arterial drainage)

5. Heritage, recreation and tourism

- All interconnected
- Unique “product”
- Going back to the beginning of Irish culture
- Not leveraging potential
- Need to raise awareness with local community of heritage and history / recreational potential
- Who is the driver? Lack of leadership
- Tell the story of the route of the Boyne
- Need to identify who can drawdown funding.

Figure 14: Feedback from Focus Group 1 - Drogheda



Focus Group 2 – Navan (23rd of May 2023)

22 people participated in the session in the Solstice Arts Centre in Navan with another 8 people registering for the event.

The focus group session started with a round of introductions, outlining the session's purpose and the evening's agenda. The first task for the participants was a values and frames exploration, which was based upon “Common Cause” (Public Interest Research Centre, 2011). The Schwartz values circumplex figures strongly in the text of Common Cause and the categories outlined in that text provide a useful reference point for analysis. The task involved thinking of a word or phrase that comes to mind when participants think of the River Boyne. The words offered below were presented before any material or content was addressed or discussions held to help avoid bias. These words (Outlined below) provide a snapshot or insight into the values or frames people associate with the Boyne catchment. The values or frames associated with the word are in brackets while those without brackets indicate the offering is neutral from a values perspective or too difficult to categorise.

One word/phrase to describe Boyne River

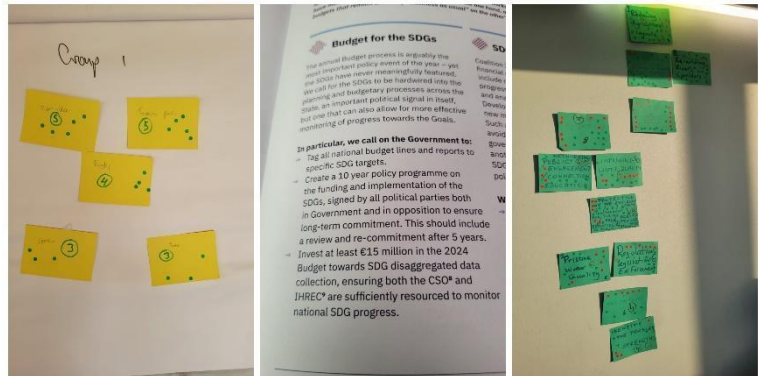
- Untapped potential
- Life x 2 (Universalism)
- Water quality (Universalism)
- Home (Tradition)
- Source of life (Universalism)
- Heritage (Tradition and Conformity)
- Inheritance (Tradition and Conformity)
- Biodiversity (Universalism)
- Wonderful resource
- Nurturing flow (Benevolence and Universalism)
- Green corridor (Universalism)
- Ancient (Tradition)
- Mighty river (Universalism)
- Custodians (Tradition and Conformity)
- SAC protection (Universalism)
- Beauty (Universalism)

Boyne Vision: A consultation on the future of the River Boyne

For focus group number 2, **Universalism** and **Benevolence** were the dominant categories illustrating a clear positioning on the self-enhancement – self-transcendence axis of the Schwartz circumplex. This indicates concern for well-being outside of the self. In terms of the openness to change – conservatism axis, group 2 revealed that **conformity** and **tradition** were the dominant categories indicating that the change process, which the Boyne may face, could be challenging.

The 2nd activity or task utilised the work of Robert Chambers. The methodologies were chosen to maximise inclusion and minimise power dynamics and social influence in the group. Participatory Learning and Action (PLA) methodologies (Brainstorming and direct ranking) were then employed with the group to gauge what the priorities were in relation to the Boyne catchment. This was achieved by asking the following question. “What is the biggest priority for the Boyne catchment between 2023 and 2030”?

Figure 15: Focus Group 2 - Navan



The following are a list of the priorities that were listed within smaller subgroups.

- Habitat enhancement (3)
- Gaining voice (3)
- Strategic development (2)
- Greenway and promote access for amenity (3)
- Biodiversity and climate action (4) / Biodiversity (2)
- Cohesion of SME bodies (4) / Interagency collaboration and cooperation (2)
- Collective of community action (3)
- Stop further damage (3)

There was then a 2nd round of voting across groups. The priorities below scored well in the 2nd round.

- Reducing agricultural impacts (15) / Agriculture (10)
- Rewilding river corridors (13)
- Water Quality (13) / Improving water quality (9) / Pristine water quality (6)
- Action (11)
- Public engagement and networking (9)
- Protection of the environment (7)
- Regulation / legislation / enforcement (6)
- Multidisciplinary approach / Joined up thinking (5) - Collective catchment teamwork (4)
- Wastewater treatment (4)
- Identify problems and strengths (2)

When the categories are brought together / amalgamated then the following priorities emerge

- Water Quality – 28
- Reducing agricultural impact – 25
- Multi stakeholder / collaborative approach - 18
- Rewilding river corridors - 13
- Responsibility and accountability – 13
- Taking action - 11
- Enacting Existing legislation – 6

Water Quality was the number one priority for the group in Navan followed closely by a desire to reduce the impact of agriculture. It is clear from the weighting that the group in Navan felt there was a distinct lack of partnership when it came to the Boyne catchment. This was particularly raised in relation to taking responsibility for water quality and planning more generally. The lack of a multi-stakeholder

approach or genuine public engagement or involvement in the direction of the Boyne catchment was voiced. There was also a palpable frustration regarding the perception that existing legislation is not implemented or adhered to. This was also seen or reflected in the desire to “take action”. It is perceived that enough talking has taken place but that action is required. Rewilding river corridors also emerged as an important priority.

The 3rd activity of the focus group session involved presenting 5 themes, which are outlined below.

- Water Quality
- Habitats and biodiversity
- Education and awareness
- Resilient community and catchment
- Heritage, recreation and tourism

Each participant then had the opportunity to join whichever group they wanted to with a view to deepening that discussion. Notes of each group discussion were taken by the group themselves and presented back to the wider group via flipchart and a 1-minute presentation.

1. Water quality

- Pristine water – we are all dependent on it – all of life
- It is our collective responsibility
- We want joined up thinking from regulators and local authorities
- There are concerns re Dawn Meats / Tara Mines and drinking water more generally.
- Need to acknowledge that Agriculture is the largest sectoral contributor to nutrients.
- Stop selective ignoring of legislation
- Independent evaluation needed
- We need to see the big picture

2. Habitats and biodiversity

- Rewilding
- Recognising existing biodiversity
- Looking for connections and interconnections
- The need for more sustainable planning
- Increased transparency and improved navigation of planning processes
- The need for education and awareness through creative and relevant ways and approaches
- Enforcement of existing legislation
- Invasive species (Cherry Laurel)
- Take actions like bird boxes
- Reframing biodiversity (Mainstreaming and normalising)

3. Education and awareness

- The need for experiential education and values-based education
- Involve multiple and diverse stakeholders
- Broaden awareness of what other stakeholders are doing / everyone else is doing
- Awareness of impact

4. Resilient community and catchment

No one chose to participate in this group.

5. Heritage, recreation and tourism

- Access to tourism sites
- Access to water
- Activities on the water
- Game angling and coarse fishing
- Infrastructure and facilities
- Operation of the navigation waterways Ire?
- Protection of the built environment
- Development of the Greenway

It is interesting to note that nobody chose to participate in the resilient community and catchment discussion.

Focus Group 3 – Trim (7th of June 2023)

8 participated in the session in the Trim Family Resource Centre with another 6 people registering for the event. It is worth noting that no women participated in the focus group session.

The focus group session started with a round of introductions, outlining the session's purpose and the evening's agenda. The first task for the participants was a values and frames exploration, which was based upon "Common Cause" (Public Interest Research Centre, 2011). The Schwartz values circumplex figures strongly in the text of Common Cause and the categories outlined in that text provide a useful reference point for analysis. The task involved thinking of a word or phrase that comes to mind when participants think of the River Boyne. The words offered below were presented before any material or content was addressed or discussions held to help avoid bias. These words (Outlined below) provide a snapshot or insight into the values or frames people associate with the Boyne catchment. The values or frames associated with the word are in brackets while those without brackets indicate the offering is neutral from a values perspective or too difficult to categorise.

One word/phrase to describe Boyne River

- Protection x 2 (Security, tradition and conformity)
- Biodiversity - Plants / Birds / Mammals / Insects – (Universalism)
- Heritage - Tourism and public amenity - Tradition
- Life (Universalism)
- Habitat restoration (Universalism)
- Water quality (Universalism)
- Angling
- Water quality (Universalism)

For focus group number 3, **Universalism** was the dominant category illustrating a clear positioning on the self enhancement – self transcendence axis. This indicates concern for wellbeing outside of the self. In terms of the openness to change – conservatism axis, group 2 revealed that **Security, conformity** and **tradition** were the dominant categories indicating that the change process, which the Boyne may face, could be challenging.

The 2nd activity or task utilised the work of Robert Chambers. The methodologies were chosen to maximise inclusion and minimise power dynamics and social influence in the group. Participatory Learning and Action (PLA) methodologies (Brainstorming and direct ranking) were then employed with

the group to gauge what the priorities were in relation to the Boyne catchment. This was achieved by asking the following question. “What is the biggest priority for the Boyne catchment between 2023 and 2030”?

The following are a list of the priorities that were listed within smaller sub groups.

- Habitat Restoration (6)
- Water Quality (5)
- Water Quality Improvement (4)
- Coordination of state bodies (5)
- Public access to amenity (4)
- Biodiversity rehab (4)
- Riparian farming practices (3)
- Protection of river banks (2)
- Elimination of herbicides and insecticides (1)

There was then a 2nd round of voting across groups. The priorities below scored well in the 2nd round.

- Water Quality (11)
- Habitat restoration (9)
- Public access to amenity (4)
- Biodiversity rehab (4)
- Coordination of state bodies (3)
- Protection of river banks (1)
- Water Quality Improvement (1)

When the categories are brought together / amalgamated then the following priorities emerge

- Habitat restoration – 13
- Water Quality – 12
- Public access to amenity - 4
- Multi stakeholder / collaborative approach - 3

Habitat restoration and Water Quality was the number one/two priority for the group in Trim. Public access to the River emerged as a priority but scored relatively lower than priority 1 and 2. It is also worth noting that the group in Trim felt there was a distinct lack of partnership when it comes to the Boyne catchment. This was particularly raised in relation to taking responsibility for water quality and planning more generally in relation to state agencies. The lack of a multi stakeholder approach or genuine public engagement or involvement in the direction of the Boyne catchment was voiced.

The 3rd activity of the focus group session involved presenting 5 themes, which are outlined below.

- Water Quality
- Habitats and biodiversity
- Education and awareness
- Resilient community and catchment
- Heritage, recreation and tourism

Each participant then had the opportunity to join whichever group they wanted to with a view to deepening that discussion. Notes of each group discussion were taken by the group themselves and presented back to the wider group via flipchart and a 1-minute presentation.

1. Water quality

- Agriculture
- Wastewater treatment plants (Investment)
- Enforcement and consequences
- Better planning
- Monitoring of water quality
- Nature-based solutions

2. Habitats and biodiversity

- Conservation of species
- Habitat restoration
- Water quality
- Rewilding
- Eliminate invasive species
- Elimination of pesticides and herbicides
- Protection of River and banks (Fence to protect from cattle)

3. Education and awareness

- Role models amongst young and old
- Utilise TV and Radio for older generation
- Educate the next generation
- Schools need to integrate the environment into their practice
- Universities need to place more value on the environment

4. Resilient community and catchment

No one chose to participate in this group

5. Heritage, recreation and tourism

- Heritage promotion
- Boating access
- OPW Involvement – river bank access
- Riparian access
- Local authority support and coordination
- Greater recognition upstream

It is interesting to note that nobody chose to participate in the resilient community and catchment discussion.

Figure 16: Focus Group 3 - Trim



Focus Group 4 – Kells (8th of June 2023)

10 participated in the session in the Headfort Arms Hotel in Kells with another 3 people registering for the event.

The focus group session started with a round of introductions, outlining the purpose of the session and the agenda for the evening. The first task for the participants was a values and frames exploration, which was based upon “Common Cause” (Public Interest Research Centre, 2011). The Schwartz values circumplex figures strongly in the text of Common Cause and the categories outlined in that text provide a useful reference point for analysis. The task involved thinking of a word or phrase that comes to mind when participants think of the River Boyne. The words offered below were presented before any material or content was addressed or discussions held to help avoid bias. These words (Outlined below) provide a snapshot or insight into the values or frames people associate with the Boyne catchment. The values or frames associated with the word are in brackets while those without brackets indicate the offering is neutral from a values perspective or too difficult to categorise.

One word/phrase to describe Boyne River

- Inspiration
- History (Tradition)
- Metal Pollution (Universalism and Security)
- Potential
- Historic – great local asset (Tradition)
- Heritage amenity (Tradition)
- Pollution (Universalism and Security)
- Degraded and abused (Security)
- Sport and recreation (Hedonism and Stimulation)
- Clean water (Universalism)
- Life giving (Universalism)
- Abused (Security)
- Capacity

For focus group number 4, **Universalism was** the dominant category illustrating a clear positioning on the self enhancement – self transcendence axis. This indicates concern for wellbeing outside of the self. In terms of the openness to change – conservatism axis, group 1 had a tendency for **Security** and **tradition** indicating that the change process, which the Boyne may face could be challenging.

The 2nd activity or task utilised the work of Robert Chambers. The methodologies were chosen to maximise inclusion and minimise power dynamics and social influence in the group.

Participatory Learning and Action (PLA) methodologies (Brainstorming and direct ranking) were then employed with the group to gauge what the priorities were in relation to the Boyne catchment. This was achieved by asking the following question. “What is the biggest priority for the Boyne catchment between 2023 and 2030”?

The following are a list of the priorities that were listed within smaller subgroups.

- Education and knowledge sharing (9)
- Environmental sustainability (7)
- WWTP Upgrade (7)
- Habitat restoration & conservation (6)
- IW asset management (6)
- OPW Work programme (6)
- SAC Management plan (3)
- Catchment scale nature based solutions (3)
- Water framework directive compliance (2)
- Mining (Tara Mines) discharge (1)
- Conservation of all species (1)

There was then a 2nd round of voting across groups. The priorities below scored well in the 2nd round.

- Education and knowledge sharing (11)
- WWTP Upgrade (8)
- Environmental sustainability (8)
- Habitat restoration and conservation (7)
- IW asset management (6)
- OPW Work programme (5)

When the categories are brought together / amalgamated then the following priorities emerge

- Education and knowledge sharing – 11
- State agencies work programme and asset management - 11
- WWTP upgrade - 8
- Environmental sustainability (8)
- Habitat restoration and conservation (7)

Education and knowledge sharing and the responsibility of state agencies were the number one/two priority for the group in Kells. WWTP upgrade emerged as a priority, as did Environmental sustainability and habitat restoration.

The 3rd activity of the focus group session involved presenting 5 themes, which are outlined below.

- Water Quality
- Habitats and biodiversity
- Education and awareness
- Resilient community and catchment
- Heritage, recreation and tourism

Each participant then had the opportunity to join whichever group they wanted to with a view to deepening that discussion. Notes of each group discussion were taken by the group themselves and presented back to the wider group via flipchart and a 1-minute presentation.

1. Water quality

- Sewage treatment
- Slurry spreading
- EPA Monitoring and testing – Regularity? Independence?
- Heavy metals and mining
- Nutrients and sewage treatment
- Pesticides and fertilisers and organic manure
- Sewage and wastewater
- WFD 2027
- Conservation – Trout / salmon / Lamprey / Otter
- Habitats and Birds directive
- SAC / SPA
- Farming education and compliance

2. Habitats and biodiversity

No one chose to participate in this group

3. Education and awareness

No one chose to participate in this group

4. Resilient community and catchment

- Sustainability of current policies – e.g. current abstraction policy – Is it climate-proofed?
- OPW practices – reducing resilience to future environmental change – i.e. removal of riparian habitats leading to increased exposure of rivers to hot weather/sediment and invasive species/removal of instream vegetation – counterproductive to their own objectives

Boyne Vision: A consultation on the future of the River Boyne

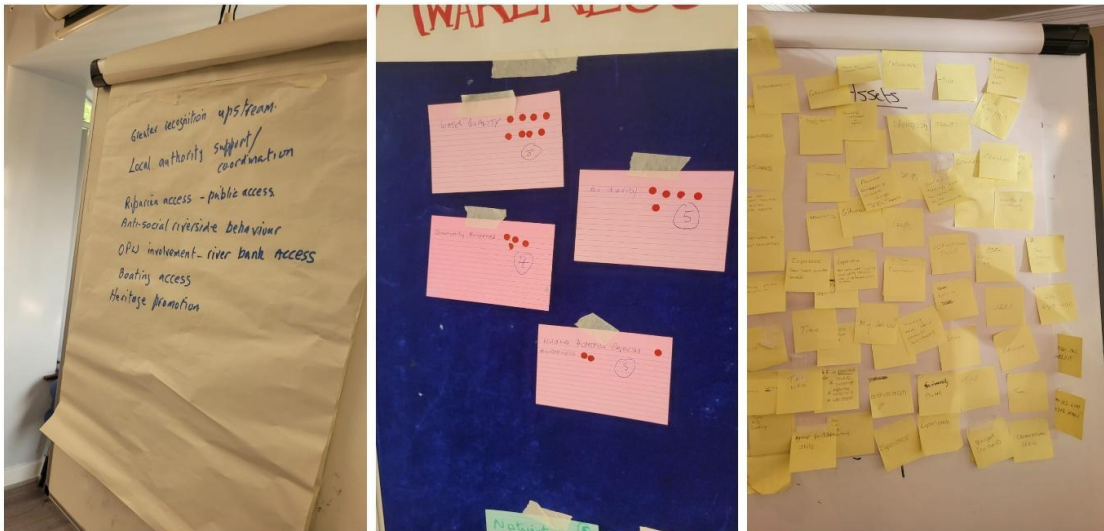
- Catchment scale riparian habitat restoration and habitat creation plan
- Agriculture advisory services – better guidance and support for farmers to make their enterprise more sustainable – good for water, biodiversity and climate resilience whilst protecting farm viability
- Protecting future drinking water supplies
- Nature-based solutions at catchment scale – protecting wetlands which act as catchment sponges, regulating and attenuating water
- Build knowledge and capacity in our communities

5. Heritage, recreation and tourism

- Awareness raising
- Accessibility
- Value – Natural capital

It is interesting to note that nobody chose to participate in the Habitats and biodiversity and Education and awareness discussion.

Figure 17: Focus Group 4 - Kells



Focus Group 5 – Virginia (12th of June 2023)

23 participated in the session in the Showcase centre in Virginia with another 9 people registering for the event.

The focus group session started with a round of introductions, outlining the session's purpose and the evening's agenda. The first task for the participants was a values and frames exploration, which was based upon "Common Cause" (Public Interest Research Centre, 2011). The Schwartz values circumplex figures strongly in the text of Common Cause and the categories outlined in that text provide a useful reference point for analysis. The task involved thinking of a word or phrase that comes to mind when participants think of the River Boyne. The words offered below were presented before any material or content was addressed or discussions held to help avoid bias. These words (Outlined below) provide a snapshot or insight into the values or frames people associate with the Boyne catchment. The values

or frames associated with the word are in brackets while those without brackets indicate the offering is neutral from a values perspective or too difficult to categorise.

One word/phrase to describe Boyne River

- Water quality (Universalism)
- Historic (Tradition and conformity)
- Life x 2 (Universalism)
- Peace (Universalism)
- Battle (Security)
- Ebb and flow (Stimulation)
- Invisible
- Distant
- William of orange (Tradition)
- Accessibility
- Together (Benevolence)
- Exploitation
- Salmon of Knowledge x 2
- Potential
- Blackwater
- Water improvement
- Bounce back ability
- Flow (Stimulation)
- Always moving (Stimulation)
- Heritage (Tradition)
- Regal and Royal (Tradition and conformity)
- Threatened lifeline

For focus group number 5, **Universalism** was the dominant value category illustrating a clear positioning on the self enhancement – self transcendence axis of the Schwartz circumplex. This indicates a concern for wellbeing outside of the self. In terms of the openness to change – conservatism axis, group 5 had a tendency for **conformity** and **tradition** indicating that the change process, which the Boyne catchment may face, could be challenging in terms of potential resistance.

The 2nd activity or task utilised the work of Robert Chambers. The methodologies were chosen to maximise inclusion and minimise power dynamics and social influence in the group. Participatory Learning and Action (PLA) methodologies (Brainstorming and direct ranking) were then employed with the group to gauge what the priorities “What is the biggest priority for the Boyne catchment between 2023 and 2030?”

The following are a list of the priorities that were listed within smaller sub groups.

- Voice and agency (11)
- Bring together science, local knowledge and awareness raising (7)
- Preservation and protection by law of the natural environment (6)
- Wildlife conservation and protection of biodiversity (5) / Biodiversity (5) / Biodiversity (4)
- National awareness campaign of all work on the Boyne catchment (5)
- Eco tourism and economic benefits (4)
- Water quality (4) / Water quality (8) / Water quality (6)
- Education and storytelling (4) / Awareness raising (4) / Education (4) / Community awareness (4)
- Inclusivity and access (6)
- Sustaining population through water supply (3)
- Communication (3)
- Protection of the river (3)
- Dealing with pollution (3)
- Water quality roadmap (3)
- Wildlife protection agencies awareness (3)
- Preserve, record and explore the history and heritage of the catchment (2)
- Everyone working as one (2)
- Mechanism to try environmental crimes at a local level (2)

There was then a 2nd round of voting across groups. The priorities below scored well in the 2nd round.

- Water quality (12) / Water quality (11) / Water quality (5)
- Voice and agency (11)
- Eco tourism and economic benefits (10)
- Education (10) / Community awareness (12)
- Preservation and protection by law of the natural environment (6)
- Inclusivity and access (5)
- National awareness campaign of all work on the Boyne catchment (4) / awareness raising (4)
- Wildlife conservation and protection of biodiversity (4) / Biodiversity (4) / Biodiversity (8)

When the categories are brought together / amalgamated then the following priorities emerge

- Water Quality – 38
- Education and awareness – 30
- Biodiversity conservation – 16
- Voice and agency - 11
- Eco tourism and economic benefits – 10
- Enacting Existing legislation – 6
- Inclusivity and access - 5

Water Quality was the number one priority for the group in Virginia followed closely by a desire to have more local and national educational opportunities and awareness raising efforts. Biodiversity conservation was a clear 3rd priority while ecotourism with 10 votes was an area that was identified as a priority in Virginia. Enacting existing legislation and providing inclusive access also emerged as priorities.

The 3rd activity of the focus group session involved presenting 5 themes, which are outlined below.

- Water Quality
- Habitats and biodiversity
- Education and awareness
- Resilient community and catchment
- Heritage, recreation and tourism

Each participant then had the opportunity to join whichever group they wanted to with a view to deepening that discussion. Notes of each group discussion were taken by the group themselves and presented back to the wider group via flipchart and a 1-minute presentation.

1. Water quality

- Dredging of rivers
- Development of floodplains
- In feeding streams central to lake, rivers not healthy
- Accountability, centralisation of decision making and Irish water
- Lack of connection between drinking water, septic tanks are all connected to river catchment
- Wastage of water/lack of appreciation
- Lack of investment/need to pay for water

2. Habitats and biodiversity

- Measure, survey, assess, research current state of H and B
- Map trends and pressure points

- What is the best-case scenario to aim for?
- Steps for management and improving biodiversity
- Bringing people on board through education and awareness
- Protection and enforcement
- Funding of relevant agencies including emergency response
- Strategy and policy
- Healthy biodiversity – healthy society –teach this principle

3. Education and awareness

- The centre of the circle was a Boyne Catchment area - Basic facts and map. Those could be built on through a variety of media / TV/radio / newspapers
- Need for a strategic story
- Education through visuals
- Agricultural community needs to be engaged
- Local business and industry needs to be engaged

4. Resilient community and catchment

- Meaningful pathways for change
- Take informed action
- Need for awareness raising

5. Heritage, recreation and tourism

- Need to have accessibility pathways, viewpoints and educational info
- Explore our heritage – Rivers were the highways of the past – do some research and publish
- Need to highlight the positive actions that are ongoing in the area and publish findings
- Make change happen – change our behaviour

Appendix 3 – Boyne River Catchment Infographic

