



**Cyfoeth
Naturiol**
Cymru
**Natural
Resources**
Wales



**Environment
Agency**

Consultation on updating the Dee River Basin Management Plan for the third cycle (2021- 2027)

December 2020

Natural Resources Wales

Natural Resources Wales' (NRW) purpose is to pursue sustainable management of natural resources in all of its work. We've produced a [booklet](#) to introduce you to our new way of working. Welsh Government has issued [statutory guidance](#) on the application of our purpose. The Environment (Wales) Act 2016 sets out our general purpose.

In the exercise of its functions NRW must:

1. pursue sustainable management of natural resources in relation to Wales, and
2. apply the principles of sustainable management of natural resources in the exercise of its functions, so far as consistent with their proper exercise.

We also have a duty under the Well-being of Future Generations (Wales) Act 2015 to maximise our contribution to the seven well-being goals, through sustainable management of natural resources. We do this by setting well-being Objectives, and ensuring our work contributes across our objectives.

Environment Agency

We are the Environment Agency. We work to create better places for people and wildlife, and support sustainable development.

We operate at the place where environmental change has its greatest impact on people's lives. We reduce the risks to people and properties from flooding; make sure there is enough water for people and wildlife; protect and improve air, land and water quality and apply the environmental standards within which industry can operate.

Acting to reduce climate change and helping people and wildlife adapt to its consequences are at the heart of all that we do.

We cannot do this alone. We work closely with a wide range of partners including Government, business, local authorities, other agencies, civil society groups and the communities we serve.

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Acronyms

Acronym	Meaning
ALS	Abstraction Licensing Strategies
AMP	Asset Management Plan
BPS	Basic Payment System
CaBA	Catchment-Based Approach
CSO	Combined Sewer Overflow
CSM	Common Standards Monitoring
CJEU	Court of Justice for the European Union
DCWW	Dŵr Cymru Welsh Water
DrWPA	Drinking Water Protected Area
EA	Environment Agency
EU	European Union
FRM	Flood Risk Management
FRMPs	Flood Risk Management Plans
GBNNS	GB Non-Native Species
GHG	Green House Gases
HMWB	Heavily Modified Water Body
HRA	Habitats Regulation Assessment
IPENS	Improvement Programme for England's Natura 2000 sites
INNS	Invasive Non-Native Species
JNCC	Joint Nature Conservancy Council
LLFA	Lead Local Flood Authority
N2K	Natura 2000 sites
NEP	National Environment Programme
NGO	Non-Governmental Organisation
NRP	Natural Resources Policy
NRW	Natural Resources Wales
NVZ	Nitrate Vulnerable Zone
PBDE	Polybrominated Diphenyl Ether
PIP	Prioritised Improvement Plans
PR19	Price Review 2019
RBD	River Basin District
RBMP	River Basin Management Plan
SAC	Special Area of Conservation
SMNR	Sustainable Management of Natural Resources
SoNaRR	State of Natural Resources Report
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest
STW	Sewage Treatment Works
SuD _s	Sustainable Drainage System
UKCIP	UK Chemicals Investigation Programme
UKCP09 or 18	UK Climate Projections 2009 or 2018
UKFS	UK Forestry Standard
UKTAG	UK Technical Advisory Group

uPBT	ubiquitous, persistent, bioaccumulative and toxic
WFD	Water Framework Directive
WFF	Wales Fisheries Forum
WGWE	Welsh Government Woodland Estate
WINEP	Water Industry National Environment Programme
WISE	Water Information System for Europe
WLMF	Wales Land Management Forum,
WMAAG	Wales Marine Advisory and Action Group
WWMF	Wales Water Management Forum

1. Planning for the future

1.1 Introduction

Natural Resources Wales (NRW) and the Environment Agency (EA) will be updating the River Basin Management Plans (RBMPs) for the third cycle under the Water Environment (Water Framework Directive (WFD) (England & Wales) Regulations 2017 (referred to as WFD Regulations 2017) for the Dee River Basin District (RBD). The plan will set objectives for rivers, lakes, estuaries, coastal and ground waters. Although we are responsible for developing the plans, the outcomes and the actions needed to achieve them are for everybody. This plan will outline the actions we believe are needed to improve the environment, the benefits they could achieve and who is best placed to deliver them. This consultation is on the third RBMP to cover the period 2021–2027. The first plan was for 2009-2015 and the second plan 2015-2021 (see Figure 1).

Figure 1: RBMPs planning cycles



According to statutory requirements under the WFD Regulations 2017, water bodies must achieve good status by 22 December 2027. Many lessons have been learnt in the planning and delivery since the WFD was introduced in 2000 and transposed into law in England and Wales in 2003, which have now been updated and replaced by the Water Environment (Water Framework Directive) Regulations 2017. These include that early engagement with our partners is crucial; environmental improvements take time and may not be noticeable in the classification within a cycle and making commitments on allocating resources on a six year cycle is difficult. Since the first cycle our understanding of good status requirements has evolved and improved monitoring techniques and standards have been reflected in the classification. In Wales the Well-being of Future Generations (Wales) Act 2015 and Environment (Wales) Act (2016) give us an opportunity to build on the foundations WFD Regulations 2017 provided in developing a place based approach and similarly in England via the Catchment-Based Approach.

1.1.1 Exit from the European Union

The United Kingdom (UK) left Europe Union (EU) on 31st January 2020 and entered a period of transition that is due to end on 31st December 2020. During the transition period the UK continues to apply EU legislation as well as the UK Regulations. The UK must transpose any EU legislative changes during transition period and remains under the jurisdiction of the Court of Justice of the European Union (CJEU). During this period our work and legislative frameworks are unchanged from before 31st January 2020. The

transition period is defined in the UK EU Withdrawal Act 2018 and the UK EU (Withdrawal Agreement) Act 2020.

At the end of the transition period the EU Withdrawal Act will roll over transposed EU law into UK domestic law. Any deficiencies in EU law retained as UK law, arising from the UK no longer being a Member State, will be corrected by statutory instruments. After 1st January 2021, the UK can make legislative changes to suit its own policies and objectives outside the EU.

1.1.2 Covid-19

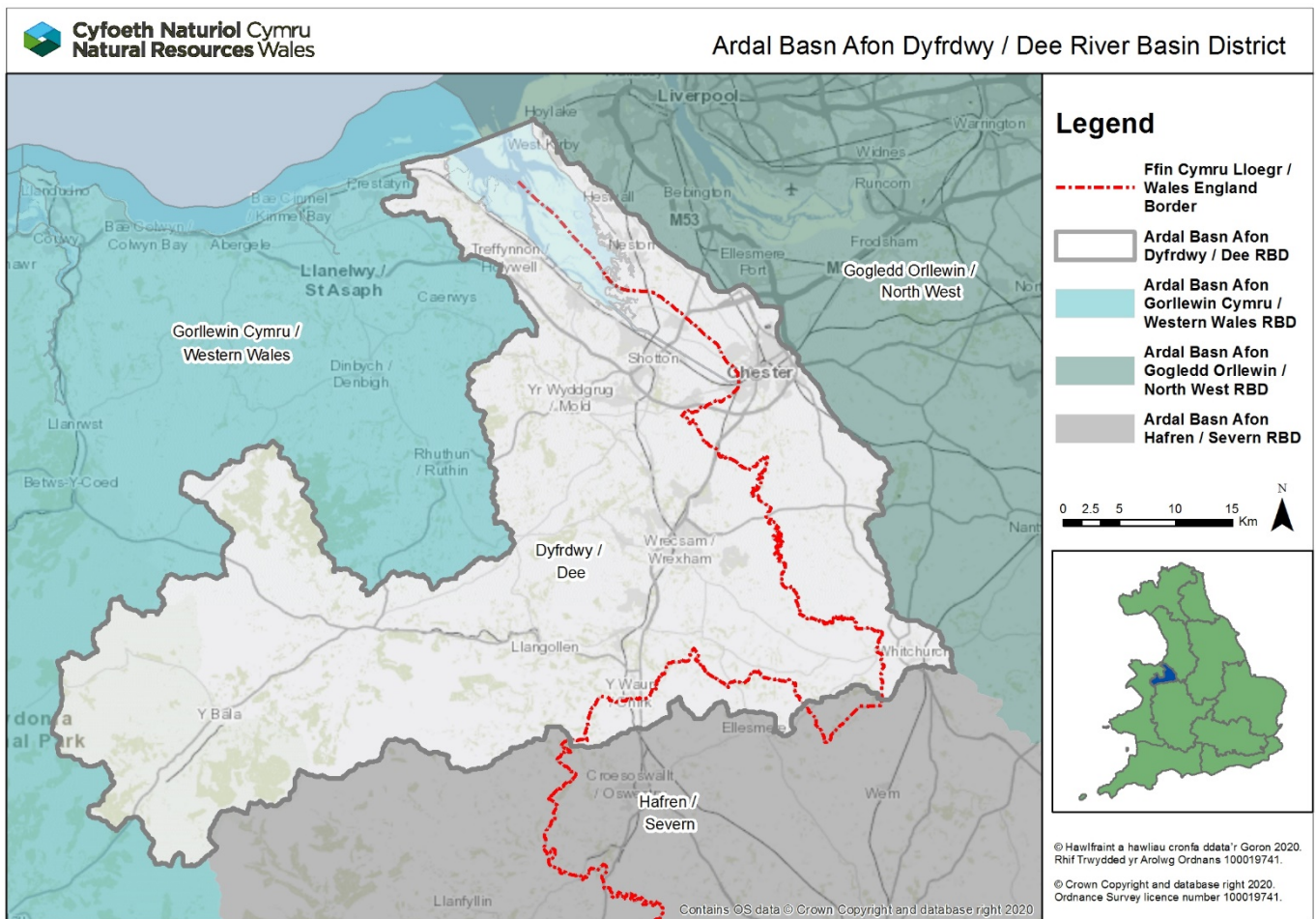
In March 2020, the UK went into lockdown due to the public health response to the virus covid-19. Welsh Government exercised its legal powers to make Regulations imposing restrictions or requirements on people with the purpose of preventing, protecting against and controlling or providing a public health response to the incidence or spread of coronavirus in Wales. Similar restrictions were also applied in England by the Government.

This impacted on all organisations in Wales and England. For NRW and the EA, this meant we had to halt our monitoring programme, postponed or cancelled some of our improvement projects and reduced the engagement with some of our stakeholders who had to furlough staff. It also impacted on the timing of this consultation which was delayed. However, we have met the statutory timescale for publishing this draft plan in these circumstances. We do not yet know the scale of impact the virus and subsequent effects on ongoing restrictions on our work programme for the third cycle.

1.2 Dee River Basin District

Figure 2 shows the boundary of the Dee RBD. Responsibility for planning the future of the Dee RBD is shared between NRW and the EA. Both organisations are committed to working together to promote the greatest benefits for the water environment. This update to the RBMP is a single view of the river basin and its future management. Where possible the same approach has been used to produce this plan. In some areas Government direction or local policy has resulted in different methods to reach the same outcome. Where this is the case, it is clearly explained.

Figure 2: The Dee River Basin District



The Dee RBMP was first published in 2009, then updated in 2015. This plan is the consultation for the third cycle for 2021-2027. The purpose of this plan is to protect and improve the water environment for the wider benefits to people and wildlife. In order to achieve this, the plan includes a summary of;

- most recent classification of water bodies. This enables us to understand the current condition of the water bodies including all the quality elements. Preventing deterioration from this baseline is a key objective of this plan, and also one of our greatest challenges in protecting the water environment.
- proposed Programme of Measures needed to achieve the objectives of the WFD Regulations 2017. These include measures for Protected Areas towards meeting their statutory objectives. The programme sets out the actions over the next planning cycle 2021-2027 with a focus on collaborative working and the delivery of multiple benefits for people and wildlife.
- proposed environmental objectives set for each quality element in all water bodies, including an objective for the water body as a whole. The default objective is to aim to achieve good status or potential by 2015. In some instances, we have extended the deadline to 2027 or beyond where this is justified on the basis of natural conditions, or technical infeasibility for a small number of chemicals, or set an objective of less than good where this is justified on the basis technical infeasibility or disproportionate cost.

Collectively, the approach and actions set out in this plan will have an effect on all types of water across the catchments that make up the management plan, this includes; rivers, lakes, groundwater, wetlands, estuaries and coastal waters. The plan aims to be integrated at the catchment scale ensuring a connection across the wider environment for people and wildlife, from source to sea.

We aim to improve the environment through more ambitious RBMPs and continued collective action. There are already many good examples of partnership working and we need to build on these. Responses to this consultation will help to set the strategic direction of the plans and prioritise the actions needed. We need to ensure that the objectives for RBMPs are integrated in other plans and policies. In particular in Wales this must involve our natural resource planning, Flood Risk Management Plans, Shoreline Management Plans and the Wales Rural Development Programme. In England, this must involve our Flood Risk Management Plans and delivering the Government's [25 Year Environment Plan](#) target of at least 75% of waters to be close to their natural state.

We recognise that a changing climate will potentially have an impact on the benefits our environment provides. Working in partnership, we aim to develop our understanding of local impacts and build climate resilience and adaptation into river basin management.

1.2.1 What has been achieved so far

The Dee RBD has benefited from investment over the past thirty years and beyond which has delivered improvements which benefit people, wildlife and the economy. Since the second RBMP was published in 2015, we have improved our understanding of the pressures on the water environment allowing us to target actions to manage them. The majority of actions proposed in the RBMP have been started or completed.

In the second plan published in 2015, we reported that 28% of water bodies were meeting good overall status and that the aim for the Dee RBD was to improve compliance with good overall status in 7 water bodies that are currently moderate/poor and also improving 1 poor water body to moderate. This corresponds to a 7% improvement in compliance to good by 2021. Since then, many improvements have been made but it can take significant time for this to be observed in the biological monitoring results. It is not yet possible to ascertain whether this aim has been met. The Welsh 2021 classification will be published alongside the third RBMPs. However, the current classification indicates that 39% achieved good or better status. See section on 'current overall status' for further information.

Many organisations have worked together across the RBD on a range of projects. Catchment partnerships are in place for the lower and middle Dee. These are groups of organisations with an interest in improving the environment in their local area. The partnerships work on a wide range of issues, including the water environment but also to address wider issues that are not directly related to river basin planning. In addition the project board and steering group for the Dee LIFE project have been established.

1.2.2 Who manages the Dee River Basin District?

There are many organisations which are responsible for managing the RBD. These organisations are often grouped in to sectors and are summarised in Table 1.

Table 1: Sector groups involved in river basin planning

Sector	Examples
Agriculture and rural land management	Includes arable, livestock, forestry and horticulture.
Angling and Conservation	Includes angling and conservation groups
Central Government	Includes UK and Welsh Government and devolved government bodies (including NRW and the EA)
Domestic/General public	Includes individuals and community groups
Energy	Includes renewables and hydropower groups
Health	Includes Public Health Wales
Industry, Manufacturing and other Business	Includes chemicals, construction, food and drink, paper, textiles and metals
Local Government	Includes Local Authorities and National Park Authorities
Mining and Quarrying	Includes coal mining, non-coal mining and quarrying
Navigation	Includes inland water ways groups, port and harbour authorities
Non-Governmental Organisations (NGOs)	Includes environmental NGOs (including wildlife and river trusts) and other NGOs
Recreation	Includes ramblers, canoeists and amenity groups
Universities	Includes evidence gathering and interpretation
Urban and Transport	Includes air, road, railways and urban
Waste treatment, transfer, storage and disposal	Includes landfill, biowaste, waste treatment and transfer

Sector	Examples
Water Industry	Includes water supply, water and sewage treatment

Examples of plans and strategies related to water management by organisations represented by the above sectors are summarised in the **Planning Overview Annex (Wales)**.

We communicate and work with these sectors through our external stakeholder forums. In Wales, the Wales Water Management Forum (WWMF) provides an opportunity for the forum's membership organisations to share evidence and explore opportunities for working together to achieve the sustainable management of water in Wales - from source to sea. It is chaired by a NRW Board Member and meets biannually, meeting dates and records of minutes are [published on our website](#). The forum also explores opportunities to develop, support and communicate shared messages and recommendations on the Sustainable Management of Natural Resources (SMNR). WWMF works with the Wales Land Management Forum (WLMF), Wales Fisheries Forum (WFF) and the Wales Marine Advisory and Action Group (WMAAG). The WLMF Agriculture Sub Group was tasked with undertaking root cause analysis to achieve a common understanding of the causes of agricultural pollution. The group looked at the ways in which these are currently addressed through investigation, agreement, reporting and delivery on potential solutions, taking an integrated approach, working across organisations. The group produced a report in April 2018 on [tackling agricultural pollution](#).

In England, there is the National Waters Leaders Group. This group comprises national organisations from a range of sectors with responsibility for, or an interest in, leading the strategic management of England's waters. It is chaired by the EA and generally meets three times a year. The aim of the group is to work together across organisations/sectors to conserve, manage and improve the water environment as a valuable resource for business, people and wildlife. The group promotes better water management for future generations by taking a whole water system approach to managing pressures such as climate change and population growth.

The Water Leaders Group objectives are to:

- influence national policies and processes, though an integrated approach, to conserve, manage and improve the water environment
- steer environmental water planning to meet the objectives in RBMPs
- lead and drive action to conserve, manage and improve the water environment, promoting partnerships and empowering others to play their part
- share knowledge, good practice and lessons learnt in water management.

1.2.3 Scale within the Dee River Basin District

This plan refers to three management units: RBDs, management catchments and water bodies. The RBD is the largest and is the entire area to which this plan relates. RBDs are divided into smaller management catchments which enable more localised decision making and water bodies are the individual or parts of rivers, lakes, estuaries, coastal

waters or groundwaters which we monitor and report on the quality. For the Dee the RBD and management catchment is the same.

Managing the water environment is not always best co-ordinated at the RBD scale. In Wales, under the Environment (Wales) Act 2016 boundaries (see Figure 4 below) covered by Area Statements have been published which will be a new way of working and rely on collaboration with partners and stakeholders. Catchments are still important and will be managed as part of working across Area Statement boundaries.

The EA also works with the individual organisations from the National Water Leaders Group and those involved in catchment partnerships, on a daily basis, both nationally and locally, either directly or through joint involvement in other groups and projects.

NRW is able to make some significant improvements through our own activities for example:

- Managing the Welsh Government Woodland Estate
- Operating flood management and hydrometry assets
- Managing National Nature Reserves

NRW and EA are regulators, ensuring that legislation to protect the environment is applied fairly in accordance with our regulatory principles. We also work with local and national partners to deliver projects and initiatives to improve the water environment. In Wales, examples of this include developing our approach to SMNR, Metal Mines Strategy for Wales and the Marine Protected Area Management Action Plan. In England, examples of this include delivering the UK Government's 25 year plan outcomes, Water Company Business plans and catchment plans developed by catchment partnerships under the Catchment Based Approach. Other strategies are at a UK level and include the UK Marine Strategy and the UK [strategic approach to tackle risks from harmful chemicals in UK waters](#).

1.3 Taking a Place-Based Approach in Wales

The Environment (Wales) Act 2016 states that NRW must prepare a report containing its assessment of the state of natural resources in relation to Wales. The [State of Natural Resources Report](#) (SoNaRR) report provided the first national evidence base for Wales with an assessment of the state of our natural resources, their headline trends and whether Wales' natural resources are being managed sustainably. The report also links the resilience of Welsh natural resources to the well-being of its people. NRW has also published the [State of Natural Resources Interim Report](#) in 2019 with a summary of the final report due to be published in Dec 2020 and final report in March 2021. This second State of Natural Resources Report (SoNaRR II) will be an assessment of whether Wales is achieving SMNR. It provides evidence to inform the identification of national risks, priorities and opportunities for sustainable management and suggests how it could be achieved in the future. Classification data is an important data source in SoNaRR I and II.

The SoNaRR report forms an important evidence base for Welsh Ministers to consider in the preparation of the [Natural Resources Policy](#) (NRP). Under the Environment (Wales) Act 2016, there is a requirement for Welsh Government to publish the NRP which sets out the national priorities, challenges and opportunities in Wales. The NRP was prepared taking into consideration the findings of the SoNaRR report that NRW published in 2016.

The Environment (Wales) Act 2016 outlines the policy framework to enable the environment to be managed in a more proactive, sustainable and joined up way. It includes a duty for NRW to produce Area Statements to help implement the priorities set out in the Welsh Government's NRP. There are seven areas or 'places' in Wales, including the marine environment. Each area has a live [Area Statement document](#) summarising the challenges and opportunities relevant to that area, which was first published in April 2020. The delivery of Area Statements requires a new way of working and rely on successful collaboration with partners and stakeholders. The [Well-being of Future Generations \(Wales\) Act 2015](#) made it a requirement for all public bodies to work towards the seven Well-being Goals and think about how their decisions will affect people living in Wales now and in the future. Water is critical for ensuring well-being as is needed for drinking, growing food, bathing, recreation etc. It can also have impacts on well-being when there is poor water quality, lack of water availability, flooding and can have significant economic impacts.

The objectives of the SMNR within the Environment (Wales) Act 2016 require Wales to 'maintain and enhance the resilience of ecosystems and the benefits they provide' now and in the future. For the third cycle of the RBMP, we aim to take a place based SMNR approach to catchment prioritisation which delivers water quality outcomes, wider benefits to the environment and people as required under the new legislation and contributes to the SMNR objectives. This would mean benefits for water and water dependant habitats and species aligned with well-being benefits and public participation over the long-term. Partnership projects such as the [Upper Conwy Catchment Project](#) aims to work with tenants, land owners and residents to improve land and water management to benefit the people and wildlife of the area. Catchments as a whole are an important factor and will help opportunities for working across Area Statement boundaries. By taking a more holistic approach to catchment management, better outcomes can be achieved for the environment and the well-being of people.

The Environment (Wales) Act 2016 introduced nine principles to help provide a method and a guide for considering SMNR, which are shown in Figure 3 below. Involvement of partners and stakeholders in the Area Statements process is an important step to support implementation of the priorities, challenges and opportunities outlined within each.

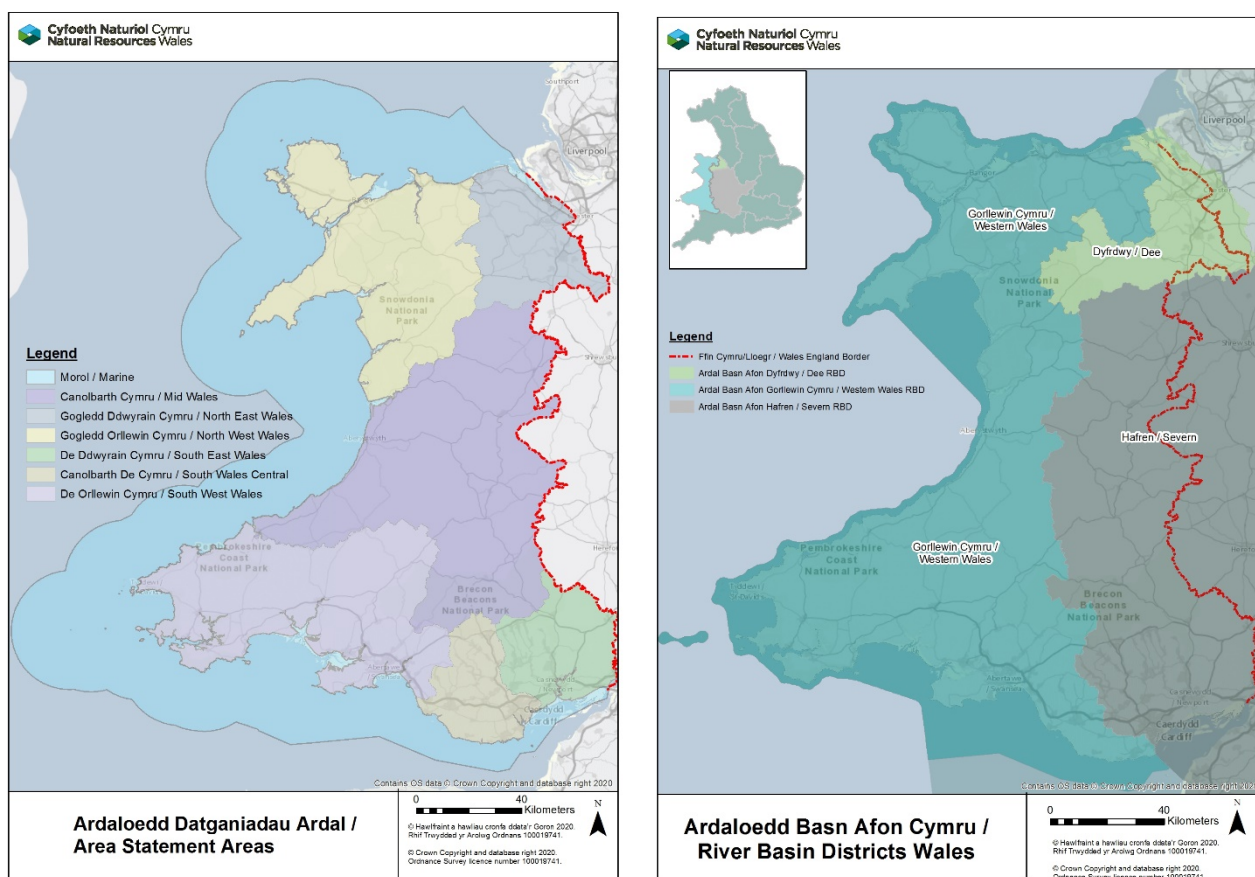
Figure 3: Nine principles of SMNR



Area Statements include information about the natural resources in that place, the benefits provided, and the priorities, risks and opportunities that need to be addressed by all to achieve sustainable management within that area. Area Statements will also be used to shape NRW's business planning and partnership working including projects linked to outcomes for our water bodies. They will be used to influence a range of public plans and policies to help integrate sustainable water management across other delivery mechanisms including land use planning, land management, flood risk and water company planning.

Area Statements are therefore both an evidence base and a prioritisation tool to help us all understand the opportunities to deliver sustainable management at an appropriate scale right across Wales. Figure 4 below shows a map of the Area Statement areas and the RBDs in Wales for comparison. The Dee RBD includes part of the North East Area Statement and North West Area Statement as well as the Wales Marine Area Statement as shown in Figure 4. NRW have now published [Area Statements](#) on its website and continues to work with partners to identify key themes and looking at opportunities to address them.

Figure 4: Maps of Area Statement Areas and RBDs in Wales



1.4 Taking a Place-Based Approach in England

In 2013, the Department for Environment, Food and Rural Affairs (Defra) launched the Catchment-Based Approach (CaBA). The catchment based approach promotes collaborative working at a river catchment scale for environmental, social and economic benefits.

The Tidal Dee and Middle Dee are two partnerships in the Dee RBD. The Middle Dee partnership is hosted by the Welsh Dee Trust and the Tidal Dee by Cheshire Wildlife Trust. Both catchments include water bodies across England and Wales, so a cross-border approach was adopted from the outset to enable joint working, optimise funding opportunities and maximise environmental benefits. Both partnerships are supported by a steering group consisting of a variety of stakeholders. Catchments pages summarising the actions in each partnership are available including for the [Tidal Dee](#) and [Middle Dee](#) catchments.

The aims of the partnerships are to maintain, enhance and protect the Dee catchment and estuary by promoting collaborative working between organisations to improve the water environment.

Defra launched the [25 Year Environment Plan in January 2018](#), setting out how to deliver an improved environment within a generation. This included exploring, through a number of 'pioneer' projects, more integrated local delivery between catchment partnerships and

other local planning initiatives such as local authority planning. The learning from these projects is being reviewed and assimilated into new ways of integrating local delivery through approaches such as 'natural capital accounting'.

The Environment Bill soon to return to the UK Parliament proposes a number of new initiatives such as Biodiversity Net Gain, Nature Recovery Network, Local Nature Recovery Strategies, and links to Local Authority spatial planning. These, coupled to the catchment based approach and a new Environmental Land Management Scheme for agriculture will strengthen local placed based delivery in England.

Case study: LIFE Dee River - Restoration of freshwater features River Dee and Bala Lake SAC

Originally funded by the European LIFE Nature and Biodiversity fund the LIFE River Dee project started in September 2019 and will run for 5 years. The total proposed cost is around £7million with match funding by NRW, EA, Dŵr Cymru/Welsh Water (DCWW) and Snowdonia National Park Authority. For more information see the [River Basin Management Plans 2021-2027: LIFE Dee River case study](#).

1.5 Evidence Needs in Wales

NRW has identified a list of opportunities for collaborative research projects and evidence needs relating to the water environment in Wales. The [water evidence needs](#) published on our website fall within the categories of Water Quality, Monitoring, Water Resources, Land Management and Ecosystems. The priorities within these themes present potential opportunities for collaborative working with partners and academic institutions to develop the evidence base required to pursue the SMNR and contribute to the well-being goals. NRW have recently formed an Evidence Portfolio, Programmes and Processes team to support our evidence needs programme.

In addition to the water evidence needs, NRW have published a [shortlist of evidence needs for the State of Natural Resources Interim report 2019](#). The shortlist is what we believe is needed to assess the SMNR.

2. The Dee River Basin District

2.1 Introduction

The Dee RBD is home to over 500,000 people and covers an area of 2,251 square kilometres of North Wales, Cheshire, Shropshire and the Wirral. The district consists of a single river basin; the River Dee, its tributaries and estuary. The district is characterised by a varied landscape. It ranges from the mountains and lakes of the Snowdonia National Park in the upper part of the basin, through the Vale of Llangollen in the middle reaches, to the open plains of Cheshire and the mudflats of the Dee Estuary in the lower basin. The Dee and its tributaries are renowned for their excellent fishing and there is an important cockle fishery in the estuary. The River Dee is popular for canoeing and the National Whitewater Centre is located on the Afon Tryweryn near Bala.

The River Dee and Bala Lake/Llyn Tegid are designated as a Special Area of Conservation (SAC) under the Habitats Regulations 2017. Bala Lake/Llyn Tegid is also a Ramsar site. The Dee Estuary is a Special Protection Area (SPA), SAC and Ramsar site. Chester and Wrexham are the two major urban centres, but the dominant land uses are agriculture and forestry, particularly in the upper part of the basin. Key economic sectors in the region include manufacturing, business services, retailing, health, banking and insurance. Llyn Tegid, Celyn and Brenig reservoirs in the upper catchment are used for water storage to regulate river flows in the Dee downstream all year round. In the drier months, typically between April and September, this is to sustain abstractions for public supply, and industry.

Nearly three million people get their drinking water from the Dee, including many in North West England. The reservoirs are used to modify flood response and reduce the flooding frequency in the Dee between Bala and Chester.

Since the 1st April 2013, NRW and the EA are jointly responsible for managing the Dee Regulation System introduced under the Dee and Clwyd River Authority Act 1973. NRW has agreed to lead on this under the terms of a “service provision agreement” with the EA. NRW and the EA are assisted in the drawing up of operational management rules by the statutory Dee Consultative Committee which comprises two members for NRW, one member for the EA, one member for the Canal and Rivers Trust, and one representative each from Hafren Dyfwy, Severn Trent Water, DCWW and United Utilities.

Operational Management rules are established for operation of the scheme under “normal” and “drought” conditions. Within these rules and within the powers given by the Dee and Clwyd River Authority Act, NRW and the EA can specify the level of residual flow to be maintained over Chester Weir, and detail specific measures to be taken to reduce demands on the system in times of drought. Regard must also be given to mitigating flooding, supplying a specific volume of water to Canals and Rivers Trust for the Shropshire Union Canal, safeguarding the fisheries and other purposes including the safeguarding of specific features and habitats designated under the Habitats Regulations 2017 that may be affected by management of flows in the River Dee. The strategic importance of the Dee as a potable water source and the risk posed to it from pollution have led to the Dee becoming one of the most protected rivers in Europe. In 1999, the lower part of the Dee was designated as the UK’s first, and to date only, Water Protection Zone.

2.2 Current state of the water environment and progress review

Throughout each cycle of the RBMPs, we collate all the evidence, historic and current, and produce a 'baseline classification'. Classification is the process by which the data collected in our water monitoring programmes is turned into the evidence we need to advise, regulate and manage the water environment. We have a statutory duty to assess and report on the status of every classified water body in Wales but its benefits are far wider. It is used to inform many other areas including water company investment plans, set permit limits, inform impact assessments of proposed projects and activities and management. It is also a key evidence source for SoNaRR and a national indicator for the Well-being and Future Generations (Wales) Act 2015.

Classification is an assessment of the quality of our surface and groundwaters undertaken at a point in time. It includes monitoring data required by the classification tools which vary from 3 to 6 years prior to the publication. It is based on operational routine monitoring points within a water body and is risk based.

This classification and information on the pressures and risks to waters is the basis for planning the next cycle. In this section, we describe the current state of the water environment compared to the baseline set in 2015. The third cycle RBMP will set a new baseline. A few of the standards we use to set that baseline and to describe the health of the water environment are expected to change in the new baseline. Those expected changes are described at the end of this section and in the **Planning Overview Annex (Wales)** and **Planning Overview Annex (Dee in England)**.

2.2.1 How we determine the current condition

We use the term water bodies to help understand and manage the water environment. A water body is part, or the whole, of a river, lake, ground water, transitional or coastal water. The legal requirements set out in the WFD Regulations 2017 applies to all water in a RBD, not just the water bodies that are shown on the maps. Water bodies are reporting units and are indicators of the health of the wider water environment. We assess the condition of these water bodies through monitoring which produces a classification. During the first RBMP cycle (2009-2015) the classification was updated annually. However, it is now updated once every 3 years for surface waters. In Wales, the most up to date classification is the 2018 interim classification for surface waters and 2015 classification for groundwater as the latter is updated every 6 years. In England, it is the 2019 classification for all water bodies. This combined dataset forms the most recent classification which is used to report in this draft plan. The number and type of water bodies is shown in Table 2 below. Note that the Llangollen canal crosses the border between Wales and England and is reported by EA as part of the Severn RBD.

Table 2: Number and type of water bodies in the Dee RBD.

Number of water bodies	Natural	Artificial	Heavily Modified	Total
River	50	-	21	71
Lake	4	-	17	21
Coastal	-	-	-	-
Estuarine	-	-	1	1
Groundwater	5	-	-	5
Total	59	-	39	98

2.2.2 Surface waters

For rivers, lakes, coastal and estuarine water bodies, the classification is based on the ecological and chemical condition of the water body. We collect biological and chemical data, which are combined to give an **overall status** of high, good, moderate, poor or bad, based on the lowest reported class from the different elements monitored.

Ecological status is determined from a combination of data for biological, physico-chemical and specific pollutants.

Chemical status is assessed by compliance with environmental standards for chemicals.

Artificial and heavily modified waters

Many of our waters have been changed by human activity for a specific use such as navigation, flood management or water storage. In some cases, this change may mean that it is impossible to achieve good ecological status. In these cases, we aim to achieve good ecological potential. This is a measure of the best the water body could achieve given the constraints required by the modification.

Current status – Surface waters

There are 93 surface water bodies in the Dee RBD, including rivers, lakes and one estuary. Tables 3 and 4 below shows the number of water bodies in each status class in the most recent ecological and chemical classification.

Table 3: Most recent ecological classification for surface waters (assessed water bodies).

No. of water bodies	Bad	Poor	Moderate	Good	High
River		7	35	29	
Lake		2	11	8	
Estuarine			1		
Total		9	47	37	

It should be noted that since 2015 an error in the biological monitoring data was detected which was reported as good but was at moderate. Using the corrected data shows that there is no change in the biological status of the Morlas water body.

Table 4: Most recent chemical classification for surface waters (assessed water bodies).

No. of water bodies	Fail	Good
River	15	56
Lake		21
Estuarine	1	
Total	16	77

There has not been a significant overall change in the number of water bodies achieving good chemical status since 2015, however there have been significant changes at a waterbody level. In Wales, there has been improvement between the 2015 and 2018 classifications because of additional monitoring data being available that shows that waterbodies that previously failed based on risk from metal mine discharges, do not fail the necessary standards. In England, because of the change in approach to ubiquitous, persistent, bioaccumulative and toxic (uPBT) classification all waterbodies now fail chemical status, because new national datasets for substances that accumulate in food chains are assessed against concentrations measured in fish. If uPBTs are omitted from chemical status in England then 1 out of 10 water bodies fail chemical status.

2.2.3 Groundwaters

For groundwater, the quantitative and chemical status are combined to provide a single final classification; good or poor status. A groundwater is at poor quantitative status if there could be adverse impacts on rivers and wetlands or it is not certain that the amount of groundwater taken will be replaced each year by rainfall. Poor chemical status occurs if there is widespread diffuse pollution within the groundwater body, the quality of the

groundwater is having an adverse impact on wetlands or surface waters, there is saline intrusion due to over abstraction, or the quality of water used for potable supply is deteriorating significantly.

Current status – Groundwater

Of the five groundwater bodies in the Dee RBD all achieve good quantitative status. Tables 5 and 6 below show the most recent classification of quantitative and chemical classification for groundwater.

Table 5: Most recent classification of quantitative classification for groundwater

No. of water bodies	Poor	Good
5		5

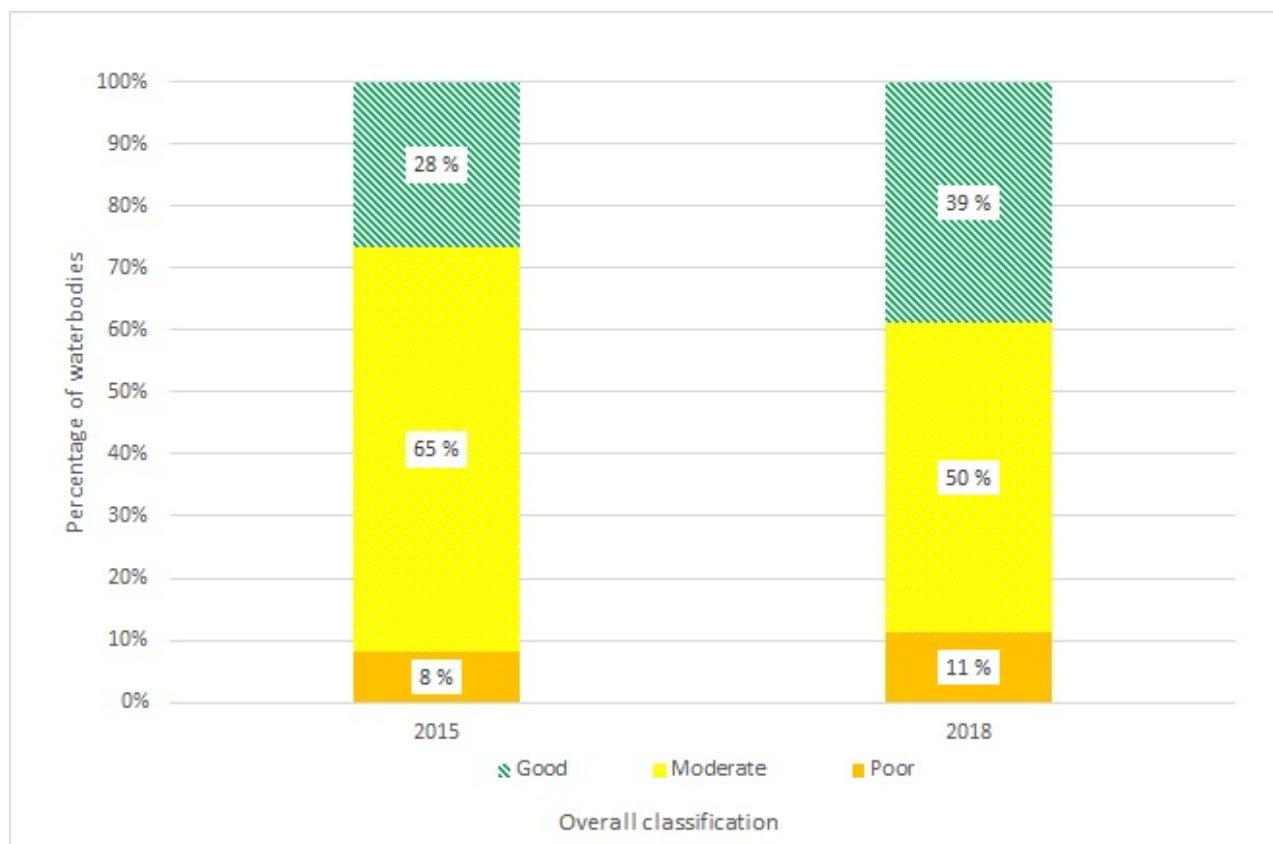
Table 6: Most recent classification of chemical classification for groundwater

No. of water bodies	Poor	Good
5	2	3

2.2.4 Current overall status

In 2015, 28% of water bodies in the Dee RBD achieved good or better overall status. We predicted that this would rise to 35% by 2021. The most recent classification results indicate that 39% of water bodies achieved good or better overall status. However, there are also three more water bodies at poor overall status than in 2015.

Figure 5. Comparison of the overall baseline classification in 2015 with the most recent classification



It is important to understand the number of water bodies implicated in the change in overall status. The Dee RBD is the smallest in Europe and contains only 98 river water bodies. Thus only a small number have to change to be reflected as a significant change in percentages. The differences in the overall status since 2015 can be attributed to completion of mitigation measures assessment work through the Restoring Sustainable Abstraction work and having data to classify rather than using expert judgement for some water bodies. In addition some improvement in status can be linked to changes in monitoring and is limited by the current understanding of pressures on the water environment, their sources, and the action required to tackle them. The Dee estuary has remained at moderate ecological potential between 2009 and 2018.

For each water body the overall water body classification (Figure 5) is made up from a number of different chemical, biological and physical elements. WFD Regulations 2017 requires that if one of these elements is not achieving good or better than the water body cannot be at good overall status. This is known as the one out all out rule.

In the Dee RBD there are 1,110 elements assessed and 952 (86%) of them individually are at good or better status. This does not include the supporting elements of morphology and hydrological regime. For rivers 788 (87%) of elements are at good or better status, for lakes 89 (73%), for transitional waters 29 (88%) and groundwater 46 (92%). As a result of the one out all out rule the overall classification for the Dee RBD presents a more pessimistic view of the current status.

We will reassess improvements and deterioration from the 2015 baseline in the third cycle RBMPs against the most recent classification data. For Wales, this will mean data from the 2021 classification and for English water bodies data from the 2019 classification. Apparent deterioration will be investigated to understand if it is due to a real change in quality of the environment or the reasons explained above.

2.3 Future updates to classification information

The data and information used in the management of the water environment is regularly reviewed and improved. We use a set of data, standards and tools that help us complete the classification. These are:

- Water body network
- Monitoring networks
- Environmental standards
- Classification tools

For the third cycle RBMPs the above are being reviewed based on improved science, better understanding of the environment, policy and directions from UK or devolved Governments. This includes:

- Minor amendments to the water body network and correction of known text errors
- Changes to classification tools based on advice from UK Technical Advice Group (UKTAG) and other technical experts.
- Revised environmental standards consulted on UKTAG.
- Change to approaches for uPBT classification in England

In Wales, the proposed changes between the second and third cycle RBMPs are not considered to be major. Although these changes will provide a better picture of the water environment, they make comparison with the data from the second plan more complex to present. In the preceding section the current condition of the water environment has been presented using the network, environmental standards and classification tools used for the second cycle. This will enable us in the third RBMP to report on progress against the objectives set in the second RBMPs including checks for any potential deterioration. The new network, environmental standards and classification tools will be used to set the baseline for the third.

2.3.1 Changes to some of the water bodies in the network

For the third cycle of RBMPs some water bodies have been amended across Wales. The main changes are;

- Correction of errors, e.g. where a water body is named incorrectly or associated with the wrong operational catchment
- Heavily Modified Water Bodies (HMWBs) - revisions made to some of the cycle 2 HMWBs designations and/or uses and new HMWB designations
- De-designation of a water body due to removal of Drinking Water Protected Area designation. However, this is not applicable for the Dee RBD

These changes will make a difference to the number of water bodies we report as being in high, good, moderate, poor and bad ecological status. The numbers of water bodies which will be used to report the classification in the third cycle RBMP are summarised in Table 7

below. The classification which will set the baseline for the third plan will be published in the third cycle RBMP.

Table 7: Number and types of water bodies in the baseline third cycle RBMP.

Number of water bodies	Natural	Heavily Modified	Total
River	50	21	71
Lake	4	17	21
Coastal	0	0	0
Estuarine	0	1	1
Groundwater	5		5
Total	59	39	98

2.3.2 Chemicals including those that are ubiquitous, persistent, bioaccumulative and toxic (uPBTs)

Chemicals can impact on the aquatic ecosystem in the following ways:

- Aquatic life (fish, plants and invertebrates) from direct exposure to chemicals in UK waters;
- Human health and higher wildlife predators from chemicals that may accumulate via the aquatic food chain; and
- Surface and groundwater sources where chemical contamination may compromise their on-going use to supply water for domestic or food production purposes.

In Wales and England chemicals are managed in the water environment within the framework of a [strategic approach to tackle risks from harmful chemicals in our waters](#). Chemicals in the environment are derived from a variety of sources. Some chemicals are ubiquitous and are best managed at a national scale whereas others are particular to an activity and their management should be focused at a local scale. Many chemicals are banned from production and/or use but are persistent in the environment for long periods and continue to be monitored to demonstrate that existing controls are adequate, and concentrations are decreasing. Managing chemicals will ensure that we minimise the impact on aquatic life and human uses of water and the flora and fauna that live in it.

As new chemicals are manufactured and used, and our assessment of chemicals improves to better manage any risks, the range of chemicals and the way they are assessed has evolved since the first river basin cycle. The WFD Regulations 2017 identifies a sub group of chemicals which are uPBT that require special consideration for monitoring and presentation of classification results. These uPBTs will be reported in full

for the first time in the third cycle RBMPs. However, as this draft plan is based on the 2018 classification for Wales which did not include these new requirements, and the 2019 classification for England that did, then it is only the third plans that will show the full impact on overall classification across the RBD. The risk assessments are explained in section 4.4.3 of the **Planning Overview Annex (Wales)** and are based on best available evidence and show a significant risk of failing the standards for Polybrominated Diphenol Ethers (PBDEs) and Mercury. The chemical fact sheets are in Appendix C of the **Planning Overview Annex (Wales)** which show that these chemicals have been phased out of use and further measures would not be practicable. However, because of the persistence of these chemicals in the environment it is likely that there will not be widespread compliance with standards in the next planning periods.

Because of the bioaccumulative nature of uPBTs we are now directed to monitor these chemicals in the tissue of fish and shellfish. We cannot sample the environment for these chemicals as widely as we do with water samples and we will only sample fish and shellfish when we are confident we are not impacting on natural populations. This limits the number of waterbodies we assess for these kinds of chemicals in Wales and so NRW is actively investigating other methods and techniques to assess the risk to higher trophic levels that uPBTs pose. In England the approach to chemical classification best represents the national picture on uPBT substances. Since the last river basin management plans were published in 2015, the EA has significantly expanded their biota monitoring programme, but it is not practicable or ethical to monitor the presence of these substances in aquatic animals in as many locations as for water samples and it is still small compared to the water monitoring network. For this reason biota monitoring sites represent much larger geographical areas than water monitoring once a robust baseline has been achieved.

It is possible that differences between classification outputs may be seen in cross border catchments for uPBTs and in particular PBDEs and Mercury because of differences in the evidence that is available to England and Wales. The UK regulators continue to work closely together on the subject of chemicals classification. We have each developed an approach that makes best use of the evidence available to us. Whilst the approaches to classification may differ, the measures applied to reduce uPBTs in the water environment are broadly comparable across the administrations and driven from national and international legislation, and monitoring the reduction of these chemicals in the environment will continue to ensure that measures are appropriate.

2.4 Protected Areas

There are a number of areas in the Dee RBD where the water environment is particularly important. Protected Areas defined by WFD Regulations 2017 and listed in our Protected Area Register have legal protection under a range of EU Directives and UK Regulations (see **Planning Overview Annex (Wales)** and **Planning Overview Annex (Dee in England)**). Protected Areas can have different objectives for compliance. Where the standards required for doing this are more stringent than those required to achieve good ecological status/potential we must endeavour to achieve those more stringent standards. The number, type and compliance of relevant Protected Areas are shown in Table 8 below. Note that in Wales where a Protected Area crosses the boundary of more than one RBD we report in the RBMP which holds the majority of the area in order to avoid duplication. In Wales, Nitrate Vulnerable Zones (NVZ) designated under the Nitrates

Pollution Prevention (Wales) Regulations 2013 (as amended) are currently under review by Welsh Government.

2.4.1 Current status – Protected Areas

Protected Areas need to meet standards that are relevant to their particular designation. Table 8 shows the type number and compliance of Protected Areas in the Dee RBD.

In Wales the condition of designated habitats and species features in SAC and SPAs are reported over 6 year cycles. This reporting approach differs between England and Wales. In England condition is reported on a unit basis and Wales on a designated habitat or species feature basis. In addition, there are slight differences to some of the categories used for reporting. For Ramsar sites there is no measure of compliance to report. In Wales NRW has undertaken [marine indicative condition assessments for all the marine SPA and SAC features](#) in 2018.

NRWs Freshwater and Terrestrial Protected Sites Baseline evaluation project is using existing evidence to derive, where possible, 'indicative' feature condition assessments across the range of freshwater and terrestrial features on protected sites in Wales. The project is due for completion at the end of 2020 and it is hoped will inform the third cycle RBMP.

Note that the Dee Estuary / Aber Dyfrdwy SAC; Fenn's, Whixall, Bettisfield, Wem and Cadney Mosses SAC and River Dee and Bala Lake / Afon Dyfrdwy a Llyn Tegid SAC are in both England and Wales. Berwyn SPA is not included in these figures as it is not linked to the Dee RBD using NRW revised methodology for the third cycle (to avoid double counting), it is linked to the Severn RBD. The extended Liverpool Bay SPA is linked to the North West RBD, the Dee RBD and Western Wales RBD and is included in the figures above.

Table 8: Protected Areas in the Dee RBD (where TBC is to be confirmed)

Protected Area	Total Number	Number in Wales	% compliant	Number in England	% compliant
Drinking Water Protected Areas – surface water	19	19	TBC	0	N/A
Drinking Water Protected Areas – groundwater	6	4	TBC	2	50
Shellfish Waters	2	1	extended deadline 2027	1	0
Bathing Waters	1	0	100	1	100
Nutrient Sensitive areas (Urban Wastewater Treatment (England and Wales) Regulations 1994)	1	1	n/a	0	n/a
Nitrate Vulnerable Zones (NVZ)	TBC	TBC	n/a	8	n/a
Water dependent SACs	9	6	TBC	3	TBC
Water dependant SPAs	4	2	TBC	2	TBC
Water dependant Ramsar sites	3	2	n/a	1	n/a

2.4.2 Changes to some of the Protected Areas between second and third cycles

There have been no changes to the designated Shellfish, Bathing water or Nutrient Sensitive Area's (Urban Wastewater Treatment (England and Wales) Regulations 1994) Protected Areas between the second and third cycle in the Dee RBD.

Drinking Water (surface and groundwater)

One additional Drinking Water Protected Area will be added to the Protected Area Register for the Dee RBD (WBID GB31147045 Mill Pond, River Alyn).

Nitrate Vulnerable Zones

The NVZs in Wales are currently under review from Welsh Government as part of the consideration to designate an all Wales NVZ. Due to a small percentage (17%) of one of the existing groundwater NVZ's (no. 135) coinciding with the Dee RBD, to avoid duplication, this has been reported in the Western Wales draft RBMP which contains the larger proportion of the NVZ.

Natura 2000 (N2K) water dependent sites

In October 2017 the Liverpool Bay / Bae Lerpwl SPA (UK9020294) was extended. This large SPA overlaps with three RBDs, the North West, Dee and Western Wales RBD's.

Shellfish Water Protected Areas

Shellfish Water Protected Areas are being reviewed and proposed changes will be consulted separately by Welsh Government.

The Protected Area Register will be updated and published as part of the third RBMP and maps updated on [Water Watch Wales for Wales](#) and on the [Catchment Data Explorer](#) for England.

2.5 Delivery of actions

Actions taken during the second cycle have collectively contributed to the protection and improvement of the water environment. The actions related to all types of water bodies; rivers, lakes, wetland, groundwater, estuaries and coastal waters including those in Protected Areas.

Preventing deterioration

All measures and many of the day to day activities of NRW, EA and many of our partners contribute to preventing deterioration of the water environment. Through our collective knowledge, we are able to identify which water bodies are specifically at risk of deterioration and set out the measures, where possible, to prevent or mitigate those risks.

Programme of Measures (See Section 3)

The majority of national measures have been started (94%, that is 91 measures out of a total of 97). In general these set the legislative, policy or strategic approach and support, or are critical to local delivery and environmental outcomes, for example, a national ban on using a particular chemical or a national strategy for prioritising and funding the remediation of abandoned mines. The remaining require further review to ensure required steps are put into place to deliver the required outcome. Progress with the national measures, including any additional new measures was also formally reported to the European Commission in December 2018 for the Water Information System for Europe (WISE) return.

The exact measures to be put in place are subject to change over time. Changes in the types of measures needed occur for a variety of reasons including, new evidence, changes in water body status, changes in pressure (e.g. cropping patterns), funding availability, Government policy changes, development impacts and climate change. Opportunities to deliver more, or test novel techniques have been acted upon as appropriate e.g. the Slurry Separator Project which was supported by the 'WFD Implementation Fund' during second cycle.

Existing management tools have been used to track delivery. In addition progress is measured through:

- A target water body programme within catchments
- Progress with the national measures
- Investigation programme to better understand reasons for not achieving good

And in Wales through;

- Interim water body classification 2018 - mid-point through the second cycle

Across Wales the Water Company DCWW allocated £65m to WFD Regulations 2017 in their 2015-20 business plan (AMP6), including:

- installing Event Duration Monitoring at all Combined Sewer Overflows (CSOs)
- monitoring as part of the UK Chemicals Investigation Programme (UKCIP)
- WFD Regulations 2017 and Drinking Water Protected Area investigations
- monitoring of flows at STWs

The evidence base is being used to inform investment decisions and to influence changes to land use policy in Wales.

In the Dee RBD specifically, DCWW delivered:

- improvements at Cerrigydrudion STW in the Nug catchment to meet WFD Regulations 2017 no deterioration requirements.
- investigations to understand the impact of their assets on Worthenbury Brook and Pulford Brook

Investigations

Since the 2015 plans were published, NRW and EA have carried out an investigations programme in the Dee RBD to find out why many water bodies are not in good status. Our knowledge and understanding of the issues affecting water bodies has increased significantly and will continue through the third cycle. As a result, we are now in a better position to work with our partners to identify where the greatest environmental improvements can be made, which will provide the most benefit to everyone.

Additional new measures

The Programme of Measures requires regular review to ensure the right actions are being delivered in the right place. During the second cycle new priorities and/or opportunities meant that some actions were reviewed to reflect the current need of the environment.

The following new approaches and measures have been introduced:

Working with other organisations to protect and improve our water quality

Since the publication of the second cycle plans, new arrangements have been put in place to work with key organisations, including Welsh Government, and across work areas to protect and enhance our water environment. These include:

Wales Land Management Forum agriculture sub group is tasked with undertaking root cause analysis to achieve a common understanding of the causes of agricultural pollution and the ways in which these are currently addressed through the investigation, agreement, reporting and delivery on potential solutions, taking an integrated approach, working across organisations.

Wales Water Management Forum purpose is to provide an opportunity for membership organisations to share evidence and explore opportunities for working together collaboratively towards the sustainable management of water in Wales.

Wales Fisheries Forum represents a range of stakeholders with an interest in the freshwater and diadromous fisheries resources of Wales and the work of NRW and others to maintain, improve and develop migratory and freshwater fisheries in Wales.

Measures for agriculture

Welsh Government, Cabinet Secretary for Energy, Planning and Rural Affairs, confirmed on the 14th November 2018 that regulations covering the whole of Wales to protect water quality from agricultural pollution will be introduced with transitional periods for some elements to allow farmers time to adapt and ensure compliance. The timetable to introduce and enact the regulations is yet to be confirmed, they will include the following measures;

- Nutrient management planning
- Sustainable fertiliser applications linked to the requirement of the crop
- Protection of water from pollution related to when, where and how fertilisers are spread
- Manure storage standards

LIFE River Dee Project (see case study under progress for the Dee RBD)

'WFD Implementation Fund'

Welsh Government provided the River Basin Liaison Panels with an opportunity to deliver actions which would 'achieve or contribute towards a measurable improvement in water quality in the respective RBDs'. The fund was a total of £220K over 2 years. Projects included the River Alyn restoration plan, Wych and Worthenbury diffuse pollution work, producing septic tanks guidance and a project starting to prioritise improvements in

physically modified rivers. It should be noted that the Liaison Panels in Wales have been replaced by the WWMF.

The Environment (Wales) Act 2016 and the Well-being of Future Generations (Wales) Act 2015

See section 1.3 on taking a place-based approach in Wales on details of the overarching aims of the Environment (Wales) Act 2016, [Natural Resources Policy](#) and Area Statements and also for the Well-being of Future Generations (Wales) Act 2015.

In England further details of some of the new approaches and measures can be found in the [Tidal Dee](#) & [Middle Dee](#) Catchment Partnerships catchment pages.

Tracking and reporting

In Wales, for the second RBMP cycle we embedded statutory objectives and timelines into corporate/business plans. We set targets for national and local measures, investigations programme and publishing public consultations with progress reported quarterly and scrutinised. This has allowed us to review achievements and challenges, and revise work plans as necessary.

In England the 75% of water bodies with an objective of achieving good status is reflected in the government's 25 year Environment Plan goal of getting three-quarters of waters to near natural condition. The EA have embedded statutory objectives into their business plans for example the EA have a corporate scorecard target for kilometres of waters enhanced, which is designed to measure progress in implementing the actions necessary to achieve the objectives set in the river basin management plans.

2.5.1 Impact of actions from the current plan

The second RBMP put in place a Programme of Measures to improve the water environment from the 2015 baseline classification. A lot of improvements have been undertaken in addition to these measures by many organisations and individuals.

In the 2015 RBMP, we set a target of improving compliance with good overall status in 7 water bodies that are currently moderate/poor, and also improving 1 poor water body to moderate. Following this target, we have identified additional actions and water body improvement taking the total to 14 targeted actions in 12 water bodies to address diffuse and point source pollution. Actions include investigations, river walks and diffuse pollution interventions on farms. Small scale capital interventions have also been completed by working with 7 farms including: 3204m fencing, 8 hard bases, 13 troughs, 1515m of water pipe and 2 solar pumps. However, although the majority of the local measures identified for targeted water bodies have been made operational there still remains some which are ongoing. New priorities are being developed for the third cycle (see section 3.6). We will continue our work for second cycle targeted water bodies where resources allow.

Many of the day to day activities of NRW, EA and several of our partners contribute to preventing deterioration of the water environment. For example the NRW and EA local staff cover a range of activities, including regulatory, enforcement, incident management and advisory, to protect water, land and air. This contributes to preventing deterioration in many water bodies across the RBD. Examples of this work include;

- targeted farm visits, which can be regulatory for cross-compliance, groundwater and NVZ work or provision of advice and guidance on best practice to protect the water environment;
- audits of hydro-electric power installations for compliance with permit conditions;
- audits of wastewater treatment installations – water company, trade or private;
- pollution prevention and control visits to permitted sites e.g. poultry units and other major industrial sites including food and drink sector;
- water related INNS management if it affects protected sites features or NRW assets
- pollution prevention – industrial estates, misconnections, house build and new road schemes;
- attending incidents to stop polluting discharges and where required follow up with a regulatory response where environmental offences have occurred. This can reduce the impacts and prevent future issues occurring;
- pre-application advice and technical input to new permits including hydro-electric power and planning applications including new agricultural storage facilities;
- monitoring land spreading deployments;
- tackling misconnections with water company and local authority.

Further, through our collective knowledge, we are able to identify which water bodies are specifically at risk of deterioration and set out targeted measures, where possible, to prevent or mitigate those risks. In addition NRW has undertaken several projects in the catchment which include;

- Llyn Tegid/Bala Lake – work is commencing to make sure Wales’ largest natural lake remains safe in the long-term. The lake’s embankments, which give vital protection from flooding to the town of Bala, are regularly inspected by NRW to make sure they remain safe. Opportunities to improve the environment and recreation opportunities will also be explored as the project develops;
- work is continuing on the Upper Dee Flow Investigations, with further salmon smolt tagging work ongoing in the Bala area;
- River Alyn Restoration Project - see case study below;
- riparian fencing, in-river habitat improvement in sub-catchments, gravel traps and removal of blockage to fish migration in sub-catchments including the Llafar, Mynach, Hirnant, Lliw and Tryweryn.

[Welsh Government Sustainable Management Scheme \(SMS\) funding](#) (2014-2020) aims to support collaborative landscape-scale projects delivering action that improves our natural resources in a way that delivers benefits to farm and rural businesses and rural communities. It will also support and facilitate co-ordination with other schemes to undertake the vital action needed to improve the resilience of farm and rural businesses and rural communities to climate impacts.

This funding brings wider benefits including for water, relevant projects for the Dee RBD include:

- **Our River Wellbeing: Nature Based Solutions in the Dee Catchment**
The focus of this project spans the entire Dee catchment in North Wales including several rivers, lakes and reservoirs. The project aims to take actions to improve the natural resources across the catchment and in doing so provide opportunities for people, including long term unemployed and disabled individuals, to learn about and

actively take part in land management improvements. The project will develop a 'River Guardian Scheme' to help achieve this.

The project has already developed a group of collaborating organisations including Dee Valley Area of Outstanding Natural Beauty, NRW, Wildlife Trusts, the Clwydian range and National Park. The main land management activities will be based around helping to improve the non-native invasive species problem across the whole catchment that is having a huge impact on the quality of the natural resources and the services these provide. Through a comprehensive baseline survey the project will then be able to focus and prioritise its activities to tackle this challenge.

- **Biodiversity Means Business**

The focus of this project is centred on the large (550ha) rurally located Wrexham Industrial Estate and its surrounding rural communities. Through a collaborative approach involving businesses, landowners, farmers and community groups the aim is to improve the resilience of the ecosystems across the landscape while making the area positively attractive to businesses and providing easily accessible areas for people to enjoy a range of leisure activities and engaging with their local environment.

- **North Wales Moorland Partnership**

This collaborative project based in the Berwyn and Migneint in North Wales is taking action on moorland enhancement through bottom-up collaborative action, driven by those living and working on and around the moors so that these uplands are able to help sustain the surrounding rural communities. The landscape has a variety of habitats and is enjoyed by a large number of visitors and communities attracting tourism and business opportunities. The area also experiences challenges such as fly-tipping, vandalism and illegal off-roading.

In addition, in Wales nearly £10M Welsh Government Capital funding has been made available for water quality improvements in 2020-21. This includes water quality improvements (such as fencing, chemical passive monitoring, river restoration etc.), our minewaters programme and fisheries habitat programme.

Case study: River Alyn Restoration Project

The River Alyn is one of the main tributaries of the Dee and is failing to meet good status for Invertebrates, Phytobenthos and Phosphates. NRW commissioned a hydromorphology study in 2019 to review and assess restoration options for the Catchment. A partnership approach for the future management of the Alyn catchment already exists with interest from NRW, local angling groups, water companies (DCWW and United Utilities), Welsh Dee Trust and other partners in the Middle Dee catchment partnership.

This study utilised existing knowledge and has provided an insight into the physical pressures affecting the River Alyn catchment. It has identified restoration techniques and how they can be applied, for example, the removal of weir structures, reconnection of flood plain features, tackling Invasive Non-Native Species (INNS). The study describes the benefits and constraints for each restoration. We intended for this study to provide the

necessary evidence for the prioritisation and funding of future restoration measures for the River Alyn.

Case study: Partnership actions - Diazinon

Routine water quality monitoring on the intake to Llangollen Canal, at Horseshoe Falls, detected raised levels of Diazinon on several occasions during 2017. Diazinon is the active ingredient permitted for use in sheep dip parasite treatment. Anecdotal evidence suggested sheep dipping within the catchment could be increasing. A workshop was arranged for farmers and vets in the catchment covering sheep ectoparasite control. The workshop highlighted the legal requirements and best practices when dipping sheep and was attended by over sixty people. A leaflet endorsed by NRW and EA on safe use of sheep dips is currently being distributed by United Utilities in the Welsh Dee and Llangollen Canal catchments. Diazinon levels have decreased, and have remained at this decreased level, on the intake to the Llangollen Canal at Horseshoe Falls since this partnership work was initiated. United Utilities continues to monitor the catchment for any trend changes in Diazinon samples.

2.5.2 Partnership actions

Table 9: Examples of partnership working

Lead	Action
Coal Authority	Ongoing work with Coal Authority at Minera mine (Clywedog catchment) and mines in Trefnant brook and Y Garth water bodies.
Farming Connect	Farming Connect Targeted Campaign to tackle diffuse pollution on the main River Dee (weir to Ceiriog), Dungrey, Pulford, Alyn and Dolfechlas. Three workshops were held to encourage farmers to seek advice on funding options.
Groundwork	Pollution prevention audits project funded by United Utilities. Provision of free confidential pollution prevention advice on storage of chemicals, drainage, emergency procedures to local industries to reduce water pollutions risks.
Hafren Dyfrdwy	Investigated pesticide issues at Broughton Water Treatment Works as part of National Environment Programme (NEP).
Middle Dee Catchment Partnership (hosted by Welsh Dee Trust)	Farm advisors from the Welsh Dee Trust and Reaseheath College work with the local farming community to improve farming practices and reduce their impact on water quality. A number of techniques were first piloted in two sub-catchments; Alwen (Upper Dee) and Alyn (Middle Dee), but farm advice has also been concentrated in the Aldford Brook, Wych and Worthenbury Brooks and Emral Brook sub-catchments. Over 100 farms have been engaged in these sub-catchments and provided with advice including Water Management Plans, soil testing and Nutrient Management Plans. This included Emral Brook Diffuse pollution project (see case study below).
Natural England	Catchment interventions in the English Dee via Natural England's Countryside Stewardship Scheme.

Lead	Action
NRW	<p>NRW funded a topographic survey in Big Pool Wood nature reserve, part of the Dee Estuary Site of Special Scientific Interest (SSSI) and SPA. Results will be used to work with the North Wales Wildlife Trust to manage the area to improve the water management.</p> <p>Since the topographic study was undertaken, an additional groundwater level investigation was undertaken to describe the water level characteristics of this small parcel within the Dee estuary SSSI/SPA/Ramsar site.</p>
North Wales Wildlife Trust	<p>Delivering Living Landscape projects including work to enhance the river Alyn through the Alun and Chwiler Living Landscape and the wider Dee catchment via “Our River Wellbeing” project which encourages people to work as Volunteer River Guardians to reduce the impact of Invasive Non-Native Species in the catchment.</p>
Reaseheath College	<p>Ongoing project funded by Water Environment Grant a scheme under the Rural Development Programme for England to fund improvements to the water environment. The project will pay farmers for the ecosystem services that they provide. To receive the payment, a water management plan must be carried out to identify any areas of potential diffuse pollution. Capital works undertaken will produce the required ecosystem service. Cheshire Wildlife Trust have carried out INNS control work.</p>
Severn Trent Water	<p>Restoring Sustainable Abstraction investigation in Aldford Brook</p>
Snowdonia National Park Authority	<p>Snowdonia National Park Authority are a key partner in the River Dee project originally funded via LIFE and also supported other projects including the new Welsh Raised Bogs project also originally funded via LIFE.</p> <p>Peatland restoration work has taken place at various locations in the Upper Dee on land managed by National Trust, NRW (Welsh Government woodland estate) and in private ownership. Work has been delivered by both Snowdonia National Park Authority and RSPB.</p>
Tidal Dee Catchment Partnership (hosted by Cheshire Wildlife Trust)	<p>Love your estuary Phase 3. Catchment walkover survey data collated during 2015-2017 was interrogated and hotspots identified. Landowners engaged to raise awareness of diffuse pollution issues emanating from their land. Small scale capital interventions undertaken to improve the classification status of the water bodies.</p>
Tidal Dee Catchment Partnership (hosted by Cheshire Wildlife Trust)	<p>Dee Coastliners is a new Tidal Dee Catchment Partnership project designed to inspire coastal communities on the Wirral and in Flintshire & Denbighshire about the natural heritage of the Dee Estuary. Led by Cheshire Wildlife Trust, the Partnership have received first round project development funding from the Heritage Lottery in December 2018 and are now developing the second round application submission during the latter part of 2020.</p>

Lead	Action
United Utilities	<p>Working in partnership, United Utilities has delivered several projects to improve water quality including:</p> <ul style="list-style-type: none"> • Industrial pollution audits and free pollution prevention advice offered to targeted businesses on Wrexham Industrial Estate. Twenty-four of these businesses accepted the audit offer, and actions were implemented to reduce their risk of pesticide pollution into watercourses • Passive monitoring was undertaken for acid herbicides and metaldehyde using Chemcatchers®. Several schemes have been running aimed at reducing the risk to water quality from these pesticides including: subsidised slug pellet switch, waste pesticide amnesty, free weed wiper and aerator hire, free National Sprayer Testing Scheme, subsidised pesticide applicator training within the English areas of the Dee catchment • United Utilities also joint funded projects delivering farm advice and Farm Water Management Plans to help farmers reduce diffuse water pollution, in an initiative that was supported by the EA. These include part funded direct interventions such as fencing out feeder streams, moving toughs and feeders, installing cow tracks and crossings to reduce runoff
Welsh Dee Trust	Delivering a range of river habitat restoration projects to benefit fisheries in the Dee catchment, including the Upper Dee.

Case Study: Emral Brook Project Update

The Emral Brook project is addressing diffuse pollution from agriculture by working with farmers and landowners to highlight issues on their farm, provide individual Water Management Plans and deliver interventions to make improvements. It was a two-year partnership project funded by NRW, United Utilities, DCWW, Woodland Trust and in partnership with Welsh Dee Trust, Dee Valley Water and Reaseheath College.

The Emral brook catchment is predominantly rural with livestock farming, especially dairy the main land use. Situated south of Wrexham, it is a tributary to the middle River Dee. Classified as moderate in 2015, it has failing to meet good status with phosphate the main issue. Twenty-eight farms received detailed plans covering approximately two thirds of the catchment. Seven key issues were noted.

Farmer engagement was extremely positive with six successful Glastir Small Grant applications submitted totalling £23,113 and partnership funding to help with key on farm improvements totalling £36,000. Planned on farm improvements include: livestock fencing, relocation of gateways and water troughs, sediment traps, cover crops, new guttering/downpipes and tree planting.

2.6 Challenges in the river basin

Since the second cycle RBMP was published in 2015, we have continued to improve our understanding of the pressures, impacts and risks that the water environment faces. We have:

- Investigated failures to achieve standards to identify the underlying reason for failure
- Assessed the risk of deterioration or of failing to achieve standards in this and future plans
- Consulted the public on our findings through the Challenges and Choices consultation

We have reviewed the list of the most important issues we believe threaten the current and potential future uses of the water environment. We have grouped the pressures under a number of issue headings (note that these are not in order of priority). We have focused on those issues where more action is needed to achieve status objectives.

- **Physical modifications.** Man-made changes to the natural habitat, for example poorly designed or redundant flood defences and weirs, and changes to the natural river channels for land drainage and navigation and shellfisheries on estuaries and in coastal waters. These modifications can cause changes to natural flow levels, excessive build up of sediment, and the loss of the habitat that wildlife needs to thrive.
- **Pollution from sewage and waste water.** Waste water can contain large amounts of nutrients (such as phosphorus and nitrates), ammonia, bacteria and other damaging substances
- **Pollution from towns, cities and transport.** Rainwater running over manmade surfaces and carrying pollutants into waters, toxic substances from contaminated land, atmospheric pollution causing acidification and sewage from houses 'misconnected' to surface water drains rather than sewers.
- **Pollution from rural areas.** Poor agricultural practice and forestry can result in nutrients and sediments affecting the water environment (also known as 'diffuse rural pollution').
- **Pollution from mines.** Contaminated water draining from mines, most of which are now abandoned.
- **Abstraction and flow.** Taking too much water from rivers lakes and underground causes problems for wildlife and reduces the water available for people to use.
- **Invasive Non-Native Species.** The presence of invasive non-native plants and animals in our watercourses poses a threat to biodiversity, increases flood risk, affects the state of our water environment and costs the economy billions per annum.

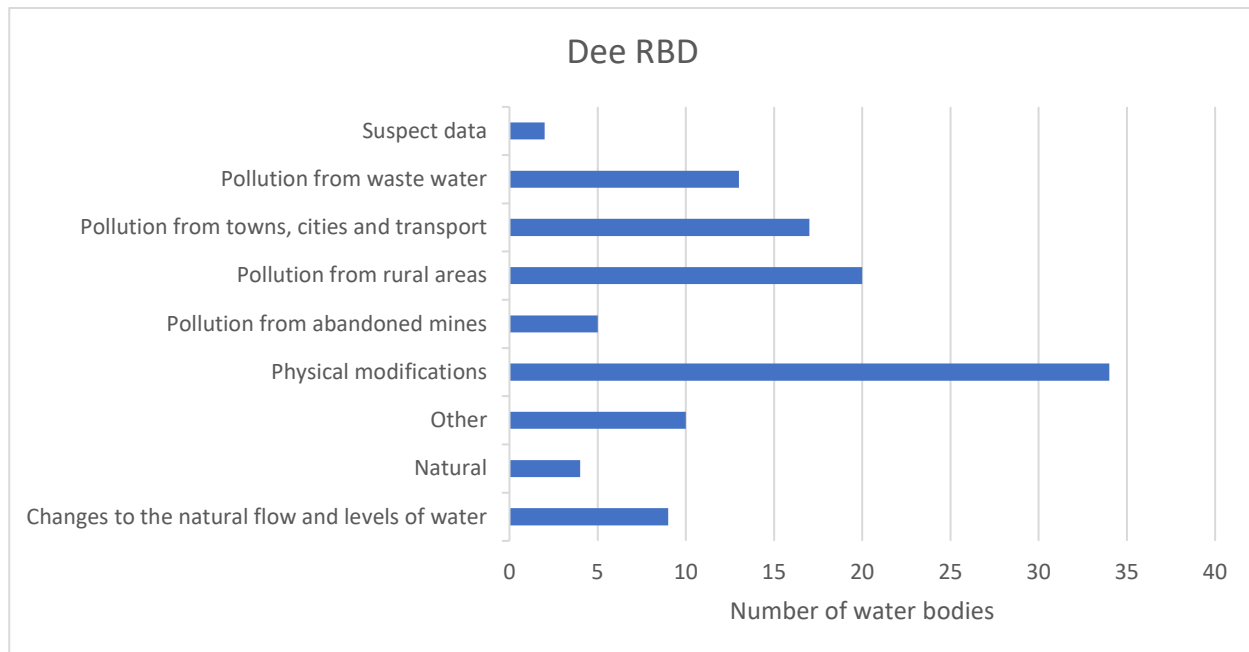
2.6.1 Reasons for not achieving good status

Since 2015, NRW and the EA have carried out several investigations in the Dee RBD to increase our understanding of the issues affecting water bodies. As a result, we are now in a better position to work with our partners to deliver sustainable improvements.

Figure 6 below provides an indication of the types of pressures acting on our water bodies, which in turn highlight the issues or challenges preventing water bodies achieving good status or potential in the Dee RBD. This shows that the main reasons for not achieving

good status in descending order are physical modifications, pollution from rural areas, pollution from towns, cities and transport, pollution from waste water and changes to the natural flows and levels of water.

Figure 6. Reasons for not achieving good status 2018



NOTE: The data above includes failures due to ‘natural circumstances/features’ for example, a natural barrier to fish movement such as waterfalls. Also there are failures due to ‘suspect data’ which we are working to resolve, and ‘other’ which can include things like time needed for the ecology to recover. There are also some ‘unknowns’ where we are unable to identify the reason for failure or the investigation was incomplete at the time of writing (these have not been included in the graphs)

2.6.2 Challenges and Choices consultation

The ‘Challenges and Choices’ consultation ran from June 2019 to December 2019. The consultation gave communities and our partners the opportunity to tell us what they thought the most significant issues were with the water environment, the best way to tackle these issues, and what the priorities should be.

Overall, the majority of respondents agreed that we had identified the main issues across Wales and in each RBD and that the measures identified to deal with those issues were reasonable and achievable, albeit at a high level. Many offered suggestions of additional ways to address the significant issues including awareness raising, general binding rules and the need for additional funding to allow for more innovative solutions.

Issues considered to be of significance were the decline of fish stocks and the lack of resource to identify the root cause of this decline. One respondent considered that more mention should have been made on the promotion of recreational activities and access to water. It was also felt that the marine environment needed to be given more focus. One respondent mentioned that more needs to be done to assess the impact of climate change, biodiversity decline and land use on water quality, particularly the impact on water quality and potential increase in salinity.

Whilst it was recognised that there is a need to reduce the impacts of agriculture upon water quality, the majority of Welsh farms are small businesses therefore the point was made that it is important this is reflected in any Government advice and future agriculture

policy. One respondent welcomed the proposed new agricultural regulations but felt that lack of funding was a major obstacle to effective compliance.

Some felt that the Area Statement process hadn't been as inclusive as it could have been and that they didn't add any more to what had been identified in the consultation. It was felt though that they would offer greater opportunities to reach a much wider stakeholder base than through the RBMP process to identify where there is common ground for tackling impacts to water, land and air environments.

You can view the closed [Challenges and Choices consultation](#) on our website. For more detail regarding the significant issues see the challenges section of the **Planning Overview Annex (Wales)** and the **Planning Overview Annex (Dee in England)**.

2.7 Risk assessments

In Wales we have reviewed water quality data and information on the types and magnitude of pressures affecting water bodies in the RBD with the objective of:

- Assessing how susceptible water bodies are to those pressures and in particular:
- Estimating the likelihood of water bodies failing to meet their environmental quality objectives in the future, or deteriorating from their current condition.

The methodology for each risk assessment was tailored to the specific pressure, but in general, it was an assessment of the scale of the pressure and the sensitivity of the water body. The risk assessments are available for the pressures presented on Table 10 below, and are valid until 2027, including those last reviewed in the second cycle in 2014 which were assessed over a longer term so did not require updating.

Table 10: List of available risk assessments per pressure type and water category

Environmental pressure	Water category	Latest review
Chemicals and metals	Rivers, lakes, groundwater, estuarine and coastal waters	2019 (2014 for chemicals and metals in groundwater)
Dissolved inorganic nitrogen	Estuarine and coastal waters	2019
Phosphates	Rivers and lakes	2019
Dissolved oxygen and ammonia	Rivers	2019
Physical modification	Rivers	2019
Faecal indicator organisms	Shellfish and Bathing Water Protected Areas	2014

Environmental pressure	Water category	Latest review
Acidification	Lakes, rivers	2014
Abstraction and flow	Rivers, groundwater	2014
Invasive non-native species	Rivers, lakes, estuarine and coastal waters	2014
Sediment	Rivers	2014

We will use the risk assessments to:

- Identify areas and pressures where more data is needed in order to develop and prioritise our monitoring strategy.
- Support the development of national programmes of measures, particularly for pressures where classification data is missing.

In England the current risk assessments have been reviewed and have been assessed as appropriate. Details can be found in the **Planning Overview Annex (Dee in England)**.

2.8 Considering climate change

To be sustainable, any action in the river basin should:

- Recognise, and where possible contribute to, the UK's greenhouse gas (GHG) emissions reduction targets.
- Be adapted, or easily adaptable, to the changes in climate that are occurring now, and those projected in the future.

Actions to address climate change should be considered right at the outset of any work, and not considered as an afterthought. In Wales by 2050 it is projected that:

- Summer average temperatures rise by an estimated 1.34°C;
- Winter precipitation increases by an estimated 5%;
- Summer precipitation decreases by an estimated 16%;
- Sea level rise of an estimated 24 cm (at Cardiff).

The UK Climate Projections 2018 (UKCP18) projections are broadly consistent with previous UK Climate Projections 2009 (UKCP09) outputs but provide a finer resolution of data down to 2.2km scale so providing better assessment of fine-scale storm convective processes and consequently rainfall patterns. It remains the case that it is expected that there will be;

- More intense rainfall events;
- More flooding of low-lying coastal areas;
- Hotter, drier summers;
- More heatwaves;

- Milder and wetter winters;
- Less snowfall and frost;
- Lower groundwater levels.

The weather will also continue to vary from year to year. The Met Office report “Too hot, too cold, too wet, too dry” (March 2014) confirmed the underlying UKCP09 trends but also stated “new analysis suggests that we should also plan to be resilient to wet summers and to cold winters throughout this century”.

In terms of GHG emission reductions, land use, land use change and forestry is the most important sector of relevance to the WFD Regulations 2017. Depending upon its use and the associated management regime, land can either be a net source of emissions or a net sink. In 2017, in Wales, they represented a net carbon sink, equivalent to almost 1% of total Welsh emissions. The Centre for Ecology and Hydrology provide full details in their report Mapping Carbon Emissions and Removals for the Land Use, Land Use Change & Forestry Sector (2014).

In terms of the agriculture sector nitrous oxide arising principally from the application of nitrogenous fertilisers and land cultivation along with methane emitted principally by livestock and by the handling of slurries are the main GHG emissions. These agricultural emissions are significant. In 2017 they contributed more than 13% of total emissions in Wales.

In April 2019, the Welsh Government declared a ‘[Climate Emergency](#)’ in Wales with the intention of prompting ‘a wave of action at home and internationally from communities, businesses and organisations in Wales to parliaments and Governments around the world.’ The declaration reiterated the ambition for the Welsh public sector to be carbon neutral by 2030 and for the next Low Carbon Delivery Plan to be published in 2021 to ‘go further and faster’.

Blue carbon offsetting

Carbon storage in woodlands and peatland habitats is well-known. However, marine habitats are also important in storing “blue carbon”. NRW has [commissioned a study that investigates these blue carbon habitats in Wales](#). The study shows that, alongside other mitigation and adaptation measures, marine habitats can play an important part in helping us to adapt to the impacts of the climate emergency.

Some blue carbon habitats in Wales have been impacted by human activities and restoring them to good condition may increase the amount of carbon they can store thus helping to increase Wales’ resilience to climate emergency impacts.

Further information on how to adapt to climate change, and how to reduce emissions, is provided in the **Planning Overview Annex (Wales) and Planning Overview Annex (Dee in England)** accompanying this draft RBMP.

3. Measures and Objectives

3.1 Summary of the Proposed Programme of Measures

This section summaries the main Programme of Measures we aim to deliver that will meet the statutory objectives which are as follows:

- **Prevent deterioration in status** - Water body status will not be allowed to deteriorate.
- **Achieve the objectives for Protected Areas** - Achieve the standards set by the relevant legislation under which they were designated. For water dependent N2K sites we will continue to work towards achieving conservation objectives and achieving good status by 2027 will contribute towards meeting those objectives.
- **Aim to achieve good overall status for surface and ground waters** - Implement measures to achieve good overall status where they are technically feasible and not disproportionately costly.

To do this will require combinations of measures which are delivered across many sectors as well as by the general public – we all have a role to play. Both actions and mechanisms are referred to as ‘measures’. The RBMP considers the measures that are necessary and the mechanisms by which they are delivered. These enable us to address the challenges that threaten current and future uses of the water environment and to maintain and enhance the water environment.

The 2015 RBMP included measures, across sectors and all water body types. These have been reviewed to meet the statutory requirements. Additional new measures were also put in place and these have formed part of this review.

This third cycle review ensures the right measures are being delivered in the right place. And that new priorities and/or opportunities reflect the current need of the RBD.

In this document, a summary of strategic measures and water body (local) actions that are planned for delivery includes:

- strategic ‘measures’ - these usually apply to the whole of Wales, England and Wales, or the United Kingdom. In general these set the legislative, policy or strategic approach and support, or are critical to local delivery and environmental outcomes. They include both mechanisms and actions and are referred to as the ‘Programme of Measures’. For example, a national ban on using a particular chemical or a national strategy for prioritising and funding the remediation of abandoned mines. Included is a summary of the types of measures for each of the significant issues which will be planned for the third cycle (2021-27). More detail is available on [Water Watch Wales](#)
- water body (local) actions – those actions that are required to take place at the local scale. Many of these will be associated with the strategic measures. For example, the removal of invasive plants along a length of designated river or changes in land management practice to address diffuse pollution. Actions for artificial and heavily modified water bodies are a specific set of mitigation measures dependent on use e.g. removal of a culvert for urbanisation use. This information is available on [Water Watch Wales](#)

These are identified as;

- Confirmed - e.g. Water Company Asset Management Plan 7 (AMP7) programme
- Likely - these will be reviewed within the third cycle and we envisage that they will evolve during 2021-2027, they include where we are;
 - confident but uncertainty over where / when the measures will be implemented e.g. Opportunity Catchments, activities within the Area Statements
 - less certain on implementation with a requirement for specific funding, partnerships or is subject to other programmes to enable the measures to be fully implemented.

The **Planning Overview Annex (Wales)** contains more detailed information on the approach taken and what is different for the third cycle.

3.2 Main Delivery programmes

The Programme of Measures and environmental outcomes they aim to achieve will be delivered through a number of existing programmes and mechanisms. The following section provides a summary of the main programmes. Further detail on all the mechanisms is within the **Planning Overview Annex (Wales) and the Planning Overview Annex (Dee in England)**, further supporting documentation will also be used for the implementation of the RBMPs to support tracking.

The main programmes in this document include:

- Welsh Governments Water Strategy for Wales
- NRW WFD Regulations 2017 driven programme
- Catchment scale improvements and River Restoration opportunities in Wales and the Catchment Based Approach in England
- Protected Areas
- Flood and coastal risk management
- Water Industry Investment Programme
- Water resources sustainability measures
- Sustainable land management - agriculture
- Sustainable land management - Woodland and forestry

3.2.1 Welsh Government Water Strategy for Wales

The Water Strategy for Wales was launched in May 2015. The vision is to ensure that Wales continues to have a thriving water environment which is sustainably managed to support healthy communities, flourishing businesses and the environment. The strategy sets out the direction for long term water policy in the context of the Environment (Wales) Act 2016 and Well-being of Future Generations (Wales) Act 2015.

The Strategy is due to be revised to take into account more recent scientific, social and political changes which affect the water environment and our water sector. The revised strategy is expected to be published in 2021. However, the overarching principles which shaped the development of the initial strategy will remain the same.

The existing strategy is accompanied by an action plan with milestones up to 2025 (and beyond). The policy priorities are:

- supporting the development of the area based approach to natural resource management.
- ensuring access to fair and affordable water and sewerage services.
- devolution of all matters relating to water and sewerage and the removal of the unilateral power of the UK Government to intervene in respect of water resources in Wales.
- a more focused approach to sewerage and drainage management and development and implementation of legislation to support sustainable drainage solutions.
- reform of the abstraction licence system in Wales to ensure sustainable management of our water resources now and in the future.
- review and where appropriate change current practices and regulatory approaches to tackle diffuse pollution.

3.2.2 NRW WFD Regulations 2017 driven programme

NRW is committed to delivering statutory objectives through an integrated approach to natural resources and catchment management across its functions. For 2021-2027, we have worked to develop an affordable Programme of Measures, based upon our current understanding of existing resources.

There will be a focus on:

- Preventing deterioration in all water bodies – through the NRW core activities, including incident response.
- Identifying where element level improvements will be achieved during the cycle, but where further measures will be required to deliver an overall ecological status change.
- Continuing to develop our approach to natural resource management by working at a local catchment level and capturing the wider benefits delivered for WFD Regulations 2017 through Opportunity Catchments.
- Targeting actions locally in an integrated way to deliver environmental improvements in water bodies and Protected Areas, including areas protected for water habitats and species through Area Statements and SMNR.

3.2.3 Catchment scale improvements, River Restoration and Sustainable Fisheries opportunities in Wales and the Catchment Based Approach in England

NRW is currently developing an integrated River Restoration Programme to bring together related work across Wales. The aim is to take a nature-based approach to restore characteristic river habitat for the benefit of hydromorphology, water quality, biodiversity, fisheries and flood regulation. The focus of this work can be defined as: the re-establishment of natural physical processes (e.g. variation of flow and sediment movement), features (e.g. sediment size and river shape) and physical habitats of a river system (including submerged, bank and floodplain areas).

There are several strands to the River Restoration Programme including prioritisation of water bodies for restoration works, production of a series of strategic river restoration plans for priority rivers including SAC rivers, collation of activity data and development of best practice case studies. There are strong links to Opportunity Catchments, Area Statements

and the Fisheries Habitat Restoration Plans which focus on physical habitat constraints to fish populations.

More information about the River Restoration Plans which we have commissioned is available in section 2.2.5 of the **Planning Overview Annex (Wales)**.

In addition to the River Restoration Programme, the Sustainable Fisheries Programme (SFP) is a theme covering several different, but related objectives for fish stocks and fisheries. These include:

- the SFP itself which is a small fund provided by Welsh Government to deliver a range of outcomes including fish habitat improvements and fishery promotion;
- a programme of 'alternative mitigation' providing river habitat improvements as an alternative to migratory salmonid artificial rearing and stocking initiatives that NRW has now ceased;
- occasional other sources of funding for delivery of fish habitat restoration.

These initiatives are supported and managed by NRW, and look to continue previous works (cycles one and two), initiating new projects across Wales to improve fish stocks and habitat. NRW works closely with Afonydd Cymru and the family of six Rivers Trusts in Wales, as described in the Memorandum of Understanding between the parties, to develop and deliver the programme.

In England, catchment partnerships play an important role in protecting and improving the local water environment. With the Dee RBD there are two partnerships, the Tidal Dee and Middle Dee. Members of partnerships pool evidence to help determine local priorities and target local action. They work together to implement a variety of actions, including tackling urban and rural diffuse water pollution and undertaking habitat restoration projects across catchments. Catchment partnerships utilise a range of funding opportunities to resource their project work, including the EAs Environment Programme. Catchment pages summarising the actions in each partnership are available for the [Tidal Dee](#) and [Middle Dee](#) catchments.

3.2.4 Protected Areas

We want to ensure that Protected Areas meet the standards and objectives that apply to them. Some of these will be met by the use of measures described in this section. Other projects and measures have been developed specifically for Protected Areas not currently meeting their objectives.

Additional information on the measures and objectives for N2K sites can be found in the [core management plans](#) and the [Regulation 37](#) marine equivalent. In England, Site Improvement Plans were also published for the N2K sites in the English part of the Dee RBMP. Whilst the RBMP aims to improve water dependent N2K sites, the draft Habitats Regulations Assessment, published alongside the plan, assesses the Programme of Measures to ensure there are no unintended consequences of its implementation, such that in benefitting some features we are not impacting on others.

The draft Programme of Measures includes a wide range of measures to protect and improve:

- Drinking water

- Shellfish water
- Bathing waters
- Nutrient sensitive areas
- NVZs
- N2K

More detail is available in the **Planning Overview Annex (Wales) and the Planning Overview Annex (Dee in England)**.

3.2.5 Flood and coastal risk management

Flood Risk Management (FRM) activity contributes to NRW's overall purpose by managing the risk of flooding to the people and communities of Wales and increasing community resilience, both for the present day and for the future.

The NRW FRM Service as a whole, includes all activity carried out by NRW in accordance with duties and responsibilities assigned by Welsh Government and legislation. At a high level FRM activities are considered to include;

- Management of flood risk assets
- Delivery of the Hydrometry and Telemetry service
- Community Engagement and Resilience
- Understanding and analysing flood risk
- Advising planners, consenting and enforcement
- Providing strategic advice and oversight

FRM activity seeks to reduce flood risk to the communities of Wales through reduction of inappropriate development within at risk areas, prevention of flooding using defences and the management of catchments and watercourses, and moving people and property to safety at times of extreme weather by making communities more aware and resilient before, during and after flooding. All of the above activities come together to deliver these outcomes and therefore none in isolation address the risk of flooding entirely for any community at risk.

Through NRW's Flood and Coastal Risk Management capital investment and routine maintenance programmes we manage flood risk in several ways:

- By building new flood defences and other structures such as sluices and pumping stations
- By maintaining defences and structures once built, keeping them in good condition, and repairing or improving them if and when required
- By maintaining main river watercourses, removing obstructions, vegetation and silt or gravel, to keep water flowing and remove significant flooding risks
- Work on habitats to mitigate and compensate for the detrimental impacts of flood defences

Each of these activities are underpinned by our efforts to understand flood risk through our flood risk mapping and modelling work. We undertake our flood risk maintenance and capital work by having regard to climate change, the Well-being of Future Generations Act 2015 and the Environment (Wales) Act 2016. We integrate SMNR, nature based solutions and natural flood management into our schemes to deliver sustainable schemes which maintain or where possible improve ecological status or potential.

The Flood Risk Regulations

The purpose of the Flood Risk Regulations is for NRW and Lead Local Flood Authorities (LLFAs) to understand what is at risk of flooding and to plan what is needed to be done to manage the risk. This involves assessing what water courses and coastlines are at risk of flooding (the Preliminary Flood Risk Assessment), map the flood extent, assets and humans at risk in these areas (Flood Hazard and Flood Risk maps) and to take adequate and coordinated measures to reduce the risk (Flood Risk Management Plans (FRMP)) on a six year cycle.

We are currently drafting the second cycle FRMPs, once complete, will sit alongside the third cycle RBMPs. Both plans will jointly include measures that aim to improve the water environment in Wales.

In England, the EA are responsible for working with LLFAs to develop FRMPs and have updated their [National Flood and Coastal Risk Management Strategy for England \(July 2020\)](#). This sets out the vision for a, 'A nation ready for, and resilient to, flooding and coastal change – today, tomorrow and to the year 2100.' It also sets out practical measures to be implemented by risk management authorities, partners and communities, which will contribute to longer term delivery objectives and realisation of the vision. The strategy promotes working with natural processes through nature based solutions to help mitigate flood risk.

These measures provide significant opportunities to deliver RBMP outcomes (e.g. improved habitat), in addition to reducing flood risk. The EA have therefore been working to align RBMP and FRMP planning to ensure engagement with stakeholders to develop both sets of plans is as streamlined as possible. However, due to the coronavirus pandemic the EA has needed to delay the consultation on the draft FRMPs for the English parts of the Dee until after that for the draft RBMPs. We are also aligning as far as possible our Environment and Flood and Coastal Erosion Risk Management (FCERM) Programmes at the local scale.

3.2.6 Water industry investment programme

In DCWW's 2020-25 business plan (AMP7) £218m has been allocated to delivering their statutory environmental requirements aiming to deliver 418km of river improvements across their operating area. The programme includes, investigations and targeted investment to reduce the impacts of high spilling CSOs, UK Chemicals Investigation Programme third phase (UKCIP3), and further investment at STWs to meet Urban Wastewater Treatment (England and Wales) Regulations 1994 requirements. Evidence from AMP7 investigations will inform investment decisions and development of the Company's new Drainage and Wastewater Management Plan which will be published in draft for consultation in 2022.

In the Dee, for the third cycle DCWW aim to deliver:

- 4 schemes to meet WFD Regulations 2017 no deterioration requirements (Cilcain Pantymwyn, Mold, Ty Gwyn and Rhosesmor STWs).
- the River Alyn SMNR pilot catchment, where DCWW will look to explore innovative approaches to addressing the impacts of their assets.
- 4 improvement schemes to meet Urban Wastewater Treatment (England and Wales) Regulations 1994 flow requirements (Mold, Ty Gwyn, Gresford, Queensferry)

A further four schemes are being assessed before confirming whether investment is required: Llanuwchllyn STW to meet Joint Nature Conservation Committee (JNCC) Common Standards Monitoring (CSM) targets; and Lavister, Mold and Ty Gwyn STW to contribute to good ecological status.

DCWW is actively exploring moving from the carbon intensive 'grey' concrete type solutions to those which involve 'carbon and biodiversity friendly' solutions such as wetlands where these can be accommodated, e.g. at small Waste Water Treatment Works which require nutrient reductions to be made. These will form part of the SMNR approach the Company is now pursuing. It is awaiting land use policy change from Welsh Government which will support the use of 'public money for public goods' such as water quality before it delivers such solutions on a wide scale.

In England, the [National Framework for Water Resources \(March 2020\)](#) explores England's long term water needs, setting out the scale of action needed to ensure resilient supplies and an improved water environment. It marks a move to strategic regional planning. It sets out the principles, expectations and challenges for 5 regional groups (made up of the 17 English water companies, DCWW and other water users). These have been developed and agreed by the regional groups, other major water abstractors, Government, regulators and stakeholders. This joined up approach is needed to address the scale of challenges we face from increasing demand driven by population change, and changes to supply driven by climate change. While the National Framework is focused on England, any proposals that may affect Wales, will have due regard to the interests of Wales, sustainable management of its natural resources and Welsh legislation and policies.

We need regional planning because the statutory water company Water Resource Management Plans alone are unlikely to provide the right strategic solutions for the whole nation. They address how the company will develop water resources for its customers' needs only. The national framework puts aside water company boundaries and considers the needs of the whole region and of other water users. It looks at how these needs fit with the national water picture and how we can provide the resilience and environmental protection needed. Cross regional management of water resources will be an increasingly important part of Programme of Measures to manage future pressures on water.

As highlighted above, the Environment Bill proposes specific initiatives to further support sustainable water resource management. The Bill proposes new requirements for Water Company planning for future water supply, wastewater and drainage networks, enabling more resilient solutions to drought and flooding.

3.2.7 Water resources sustainability measures

An abstraction licence is needed before abstraction of water of more than 20 cubic metres a day per source of supply can take place (unless exempt from licensing). An impoundment licence is needed where flow is impeded or obstructed (impounded) by the construction, alteration, repair or removal of an impoundment (unless exempt from licensing). These licences are regulated in Wales by NRW and in England by EA. NRW and EA maintain a register of all abstraction and impoundment licence applications and subsequent decisions which can be viewed externally via the public register.

Water resource availability assessments will continue to be updated and improved so that the most up to date water resource availability picture is available to customers wishing to

apply for an abstraction licence, in the form of published Abstraction Licensing Strategies (ALS). ALS will continue to underpin our abstraction and impoundment licence determination decisions.

Where older abstraction licences are found to be failing to meet statutory objectives, a review of the licence is undertaken by NRW and/or EA. Measures to mitigate, revoke or reduce that abstraction or catchment management measures are then put in place to comply with a minimum objective of no deterioration, as required by the WFD Regulations 2017.

Since 1 January 2018, most previously exempt water abstractors (if taking over 20 cubic metres a day per source of supply) require a licence to continue legally abstracting water. This affects abstractions for purposes such trickle irrigation, navigation, dewatering and also those abstractions that take place in geographically exempt areas. Between 1 January 2017 and 31 December 2019 in Wales, extended to 30 June 2020 in England, NRW and EA offered a simpler transitional application process for existing previously exempt abstractors. NRW and EA must determine all transitional applications by 31 December 2022. Some abstractions and impoundments that are considered low risk remain exempt.

NRW in Wales and EA in England are responsible for checking compliance on a risk basis with licences, providing advice and guidance and taking protective responses including issuing notices, civil sanctions or enforcement action. Compliance of abstractions will support the SMNR and enhance resilience of the environment to meet statutory objectives.

Sustainable management of water resources face challenges to flow regimes as a result of climate change, more intensive rainfall and longer drier periods, mean that some existing licences are likely to become problematic in the future as surface water courses and groundwater levels fall, [UK Climate Change Risk Assessment 2017](#).

In future, abstractions will be managed under the Environmental Permitting (England and Wales) Regulations 2016. This reform of the licensing system provides the opportunity to build in long term flexibility to deal with current and future challenges of climate change, population and economic growth, and to build water efficiency measures into water use across all sectors.

The UK Climate Change Risk Assessment projects increased frequency and intensity of extreme weather events. Existing pressures on water resources, demand due to population growth and urban development, are also likely to increase as well as the carbon footprint for treatment and supply of water. A major tool to mitigate these pressures is to improve the efficient use of water across all sectors.

The Wales Water Efficiency Group and the UK Water Efficiency Strategic Steering Group work collaboratively to promote consistent messaging and water efficiency initiatives across the UK, raising awareness of the need to conserve water.

3.2.8 Sustainable land management - agriculture

NRW continues to work with the sector to co-produce a strategic approach in line with our regulatory principles and our principles to deliver SMNR to tackle agricultural pollution. This has produced an approach which has five themes which in combination will be far more effective than if any theme is taken forward in isolation, more detail is available in the

Planning Overview Annex (Wales). These are Regulation; Voluntary actions; Advice, guidance, knowledge; Skills and experience development; Investment and Innovation. These are reflected in the approach developed by the [WLMF Sub-Group on Agricultural Pollution](#) in their progress report [Tackling Agricultural Pollution](#).

The Agriculture (Wales) Bill will form the primary, long term legislation foundation for Welsh agriculture and sustainable land management policy and regulation, replacing the Common Agricultural Policy and UK Agriculture Act 2020. The Bill and subsequent secondary legislation provide an opportunity to make provision for a number of important areas in relation to the themes.

3.2.9 Sustainable land management - Woodland and forestry

Well maintained culverts, effective silt traps, roadside drains separate from any natural watercourses, riparian zones and appropriate water management within the forest are essential for maintaining good ecological status in water bodies linked to the Welsh Government's Woodland Estate (WGWE).

NRW are committed to constantly improving the environmental quality of WGWE. We are continuing to address pressures on water quality and quantity through compliance with the UK Forestry Standard (UKFS) published in 2017 (and supporting practice guides "Managing forestry operations to protect the water environment" and "Managing forests in acid sensitive water catchments"). All harvesting, restocking and engineering work on the WGWE requires a Water Management Plan.

Forest Resource Plans set out the 25 year vision and a 10 year plan of operations for a forest. They present the opportunity to enhance the water environment through designating riparian zones which will become permanent features, identifying areas for management under Low Impact Silvicultural Systems through a progressive thinning regime, and assessing areas of deep peat to determine whether they are suitable for restoration.

Forest Resource Plans are implemented through Coupe Plans, produced to manage forest operations. This is the stage when Water Management Plans are drawn up, to ensure the work has no significant impact on water quality. All work must comply with the UKFS.

In addition, where additional funding is identified, projects provide excellent opportunities to improve the water environment, such as river restoration.

3.3. Setting Objectives for the third cycle – Welsh water bodies

This plan sets out what we intend to achieve by 2027. This is identified by setting an objective for each water body. The detailed outcomes of this information can be accessed at **Water Watch Wales** and a more detailed description of our approach is provided in the **Planning Overview Annex (Wales)**.

As required under the Regulations we aim to implement measures to achieve good overall status for surface and groundwaters by 2027. Alternatives to that objective are allowable which may result in 2 additional options:

- an objective of less than good by 2027 (less stringent objective) due to technical infeasibility (no known technical solution is available) or disproportionate cost (unfavourable balance of costs and benefits).
- or an extended deadline of good status or potential beyond 2027 for reasons of natural conditions (ecological recovery) or technical infeasibility for a small number of chemicals

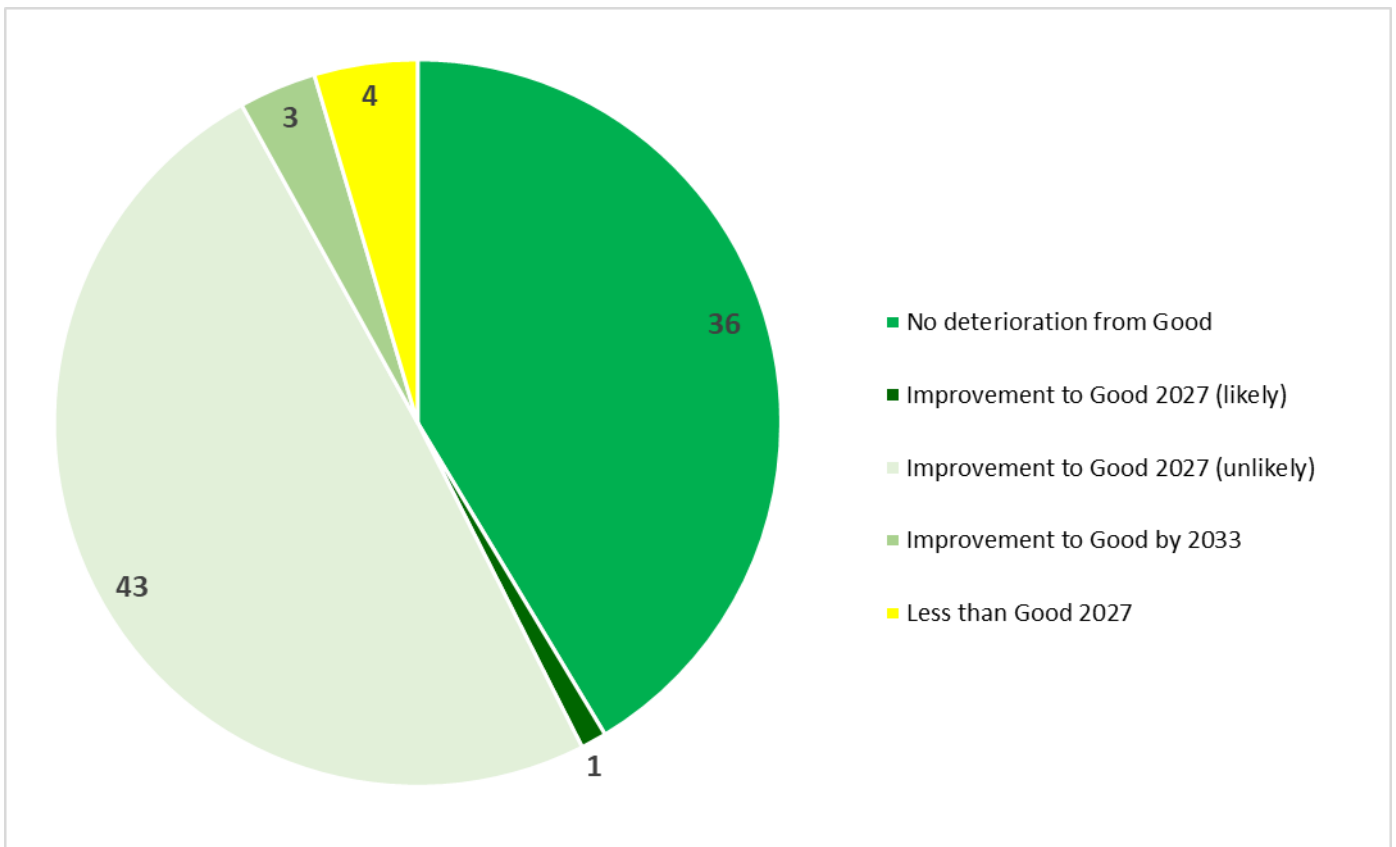
We continue to apply the same methodology for setting objectives for the third cycle that we did for the first two cycles, i.e. predict what will be achieved by the end of the cycle. However, in the third cycle there are limitations which specify that an extended deadline may only be justified for reasons of natural conditions (with the exception of a small number of priority substances).

When setting an objective for a water body that is at less than good status, it is not acceptable for objectives to undermine those of other Protected Areas such as N2K sites. Water bodies that are co-located with N2K water dependant sites cannot have objectives delayed or, set to be less stringent than good status or potential, for reasons of technical feasibility or disproportionate cost as N2K objectives do not allow for these alternative objectives. In some instances whilst the objective for a water body currently at less than good status that is co-located with an N2K site is set at good status, the underlying issues are unlikely to be resolved within a 6 year planning period. To ensure that this plan remains realistic we have identified those water bodies where we believe that achieving good status or potential is likely or unlikely. We are reviewing the relationship between water bodies and N2K sites for the third RBMPs. All objectives must be reviewed for every planning cycle as new evidence and measures to resolve environmental pressures become available.

Figure 7 shows that of the 87 water bodies in the Welsh part of the Dee RBD, 36 are at good status and therefore have an objective of no deterioration over the third cycle. One waterbody is expected to improve to good status by 2027, however this does not yet take into account the ambition and focus in opportunity catchments which we have proposed as part of this consultation. Of the water bodies that are currently at less than good status, the majority have an objective of good status but it is believed that the reasons for not achieving good are yet to be confidently identified or the measures unlikely to be in place by 2027. It is intended that the investigations programme will help provide more definitive objectives for these water bodies for the third RBMP. This results in 80 water bodies (92%) having an objective of good status by 2027, however at present we are only confident that 37 will achieve or remain at good status or potential (43%). Three water bodies have a delayed objective of Good by 2033 for reasons of acidification or for mercury where the measures to achieve good have been taken but recovery will take longer than 2027.

Finally, 4 water bodies have a less than good status or potential objective on the basis of them being disproportionately costly, or technically infeasible to improve to good status over the third cycle. In all 4 water bodies some national, local measures will be taken to improve the water quality and contribute towards SMNR values but it is unlikely that they will be sufficient to result in a classification status change and available resources may be better focused elsewhere.

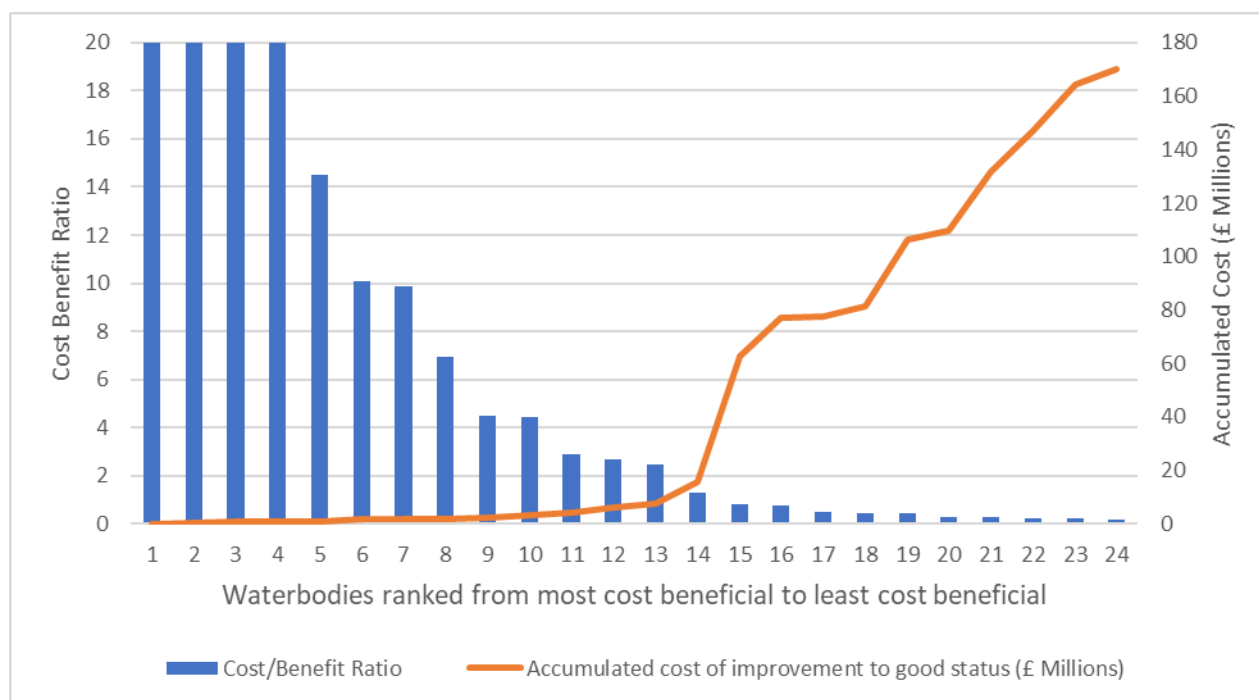
Figure 7: Number of water bodies and objective categories for Welsh part of Dee RBD.



The disproportionate cost assessment has been made on 18 water bodies which we have been able to collate costs for. There are a number of water bodies and types of pressure which we have yet to be able to cost for this draft plan but intend to update for the third RBMPs. Since publication of the second RBMP, the Environment (Wales) Act 2016 and Well-being of Future Generations (Wales) Act 2015 allows us to consider benefits of improvement in water quality that the benefits valuation for the WFD Regulations 2017 may not include such as using mine water remediation to heat local homes. For this reason, measures in water bodies that are calculated to be disproportionately costly for the WFD Regulations 2017 requirement may still be progressed if it is demonstrated that there are wider and significant SMNR values that would be accrued.

Figure 8 shows the 24 water bodies considered for economic assessment which are ranked on the x axis from the most cost beneficial to improve to the least cost beneficial to improve. There are 10 water bodies which have a cost benefit ratio of less than 1 although 8 of those are associated with N2K sites and so retain an objective of good status. The 2 water bodies considered to be disproportionately costly to improve tend to be lower in the catchment and have multiple pressures causing the water bodies to not achieve good status. The overall cost of improving the water bodies for which we have costs is £170.5 million. The actual cost of improving all water bodies is likely to be significantly larger, however the cost to improve those 14 water bodies which are not disproportionately costly is £15.7 million. To improve these water bodies also requires other factors such as access and regulatory tools to be available, and that the pressures are also technically feasible to be resolved.

Figure 8: Economic assessment of improving water bodies to good status.



3.4 Setting Objectives for the third cycle – English water bodies

Water body status objectives describe the long term aim for specific parts of the water environment. They help to define the set of benefits and uses society seeks to achieve. The objectives set in the current RBMP, published in February 2016, have been reviewed and where appropriate, updated and are included in this draft plan for consultation.

The basic requirement (default objective) is to aim to achieve good status in all waters by 2015, or by 2027 at the latest (note this differs for certain priority substances that are part of chemical status). For more details see the **Planning Overview Annex (Dee in England)**.

In certain and specific circumstances we can deviate from achieving good status by 2015 and set an alternative objective. The types of alternative objective are:

- An extended deadline, for example achieving good status by 2027
- A less stringent objective, for example achieving moderate status

Status objectives consist of two pieces of information: the target status (for example, good) and the target date by which that status is planned to be achieved (for example, by 2021).

Five out of the ten river water bodies in the English part of the RBD have an objective of good ecological status, with four of these having an extended deadline of achieving good ecological status by 2027. The remaining 5 river water bodies have less stringent objectives of poor or moderate ecological status.

The chemical status objective for all ten river water bodies has been updated to one of achieving good chemical status by 2063, driven by the time needed for the status of mercury and PBDEs to recover to good (2040 and 2063 respectively).

The single groundwater in the English part of the RBD has an objective of good by 2015 for both chemical and quantitative status.

3.5 How the Proposed Programme of Measures address the Significant Water Management Issues and deliver Objectives for 2027

This section includes a summary of the programmes and activities that are the basis for the Programme of Measures for each of the significant issues which will be planned for the third cycle (2021-27) and where we would hope to get to by 2027. In many instances, bundles of measures will be required to tackle multiple pressures within the RBD. All require collective action. The Programme of Measures are available on [Water Watch Wales](#) The **Planning Overview Annex and the Planning Overview Annex (Dee in England)** also includes more information on some of the wider pressures that sit outside of the SWMIs such as plastic pollution and climate change.

3.5.1 Physical Modifications

Key programmes and activities include:

- Flood Risk Management activities
- Shoreline Management Plan policy for coastal defence management
- National Habitat Creation Programme
- Sustainable Fisheries Programme
- The Agenda For Change for Fisheries
- Barriers to fish passage
- River Restoration Programme

Economic appraisal and objectives for water bodies not achieving good;

The remediation of physical impacts have been difficult to cost and it is hoped that an improved estimate will be made for the third RBMP. Based on the need to improve fish passage and habitat in the Clywedog – above Black Brook, Cegidog and Glyn water bodies the total cost is £1.5 Million. However the cost throughout the RBD is likely to be much greater. Sandycroft Drain has a cost of £890k to improve physical impacts. In combination with the cost of remediating other pressures, Clywedog – above Black Brook and Sandycroft Drain are considered to be disproportionately costly to improve however because they are associated with N2K water dependant features they remain a priority and they maintain an objective of Good Status by 2027.

Where do we want to be by 2027;

- Where modifications to the water environment are essential to society, for example navigation, public water supply, coastal defence or flood management, we want to mitigate harmful impacts as far as possible.
- Future modifications do not cause deterioration.

- We want to increase the extent of buffer zones and river side corridors alongside inland waters in order to make them more resilient to other pressures, including climate change.

3.5.2 Managing pollution from sewage and waste water

Key programmes and activities include:

- Water Company Programme: AMP7 and NEP: SMNR pilot: Drainage and Waste Water Management Plans: investment to meet P standards for N2K sites.
- Misconnections
- Sustainable Drainage Systems (SuDs)

Economic appraisal and objectives for water bodies not achieving good;

The economic analysis shows that to resolve the wastewater pressures to bring the status of water bodies back to good status results in a total cost of £128.5 million of which almost all is associated with upgrades to wastewater treatment discharges. In combination with other costs of improvement, 4 out of 13 water bodies considered (Alyn - Leadmill to Hope, Dolfechlas Brook, Pulford Brook and Alyn – Hope to Dee) are calculated to be disproportionately costly to improve, however Pulford Brook and Alyn – Hope to Dee are associated with N2K sites and so remain a priority to improve and have an objective of Good status by 2027. In the Dee, for the third cycle DCWW aim to deliver:

- 4 schemes to meet WFD Regulations 2017 no deterioration requirements (Cilcain Pantymwyn, Mold, Ty Gwyn and Rhosesmor STWs).
- the River Alyn SMNR pilot catchment, where DCWW will look to explore innovative approaches to addressing the impacts of their assets.
- 4 improvement schemes to meet Urban Wastewater Treatment (England and Wales) Regulations 1994 flow requirements (Mold, Ty Gwyn, Gresford, Queensferry)

Four further schemes require further assessment before confirming whether investment is required: Llanuwchllyn STW to meet CSM targets; and Lavister, Mold and Ty Gwyn STW to contribute to good ecological status.

The list of the actions that the EA have requested water companies operating in England part of the Dee, to complete between 2020 and 2025, in order to contribute towards meeting their environmental obligations can be found in the England [PR19 Water Industry National Environment Programme \(WINEP\)](#) data set.

Where do we want to be by 2027;

- All sewerage systems are maintained or improved so they operate effectively and their impacts on the water environment, from catchment to coast are minimised.
- Solutions to CSO problems that deliver multiple benefits are embedded in planning and development across Wales (e.g. water sensitive urban design, sustainable drainage schemes).

- Increase public awareness of the impacts of misconnections and disposal of harmful substances into sewerage systems (e.g. paint, oil, fats and garden chemicals).
- Maintain and improve Bathing and Shellfish Waters to promote a thriving tourism and shellfish aquaculture industry.

3.5.3 Manage pollution from rural areas

Key programmes and activities include:

- Sustainable land management themes
- Welsh Governments Woodlands for Wales Strategy
- Awareness and implementation of the UK Forestry Standard Guidelines (including “Forests and Water” Guidelines), and Practice Guides

Economic appraisal and objectives for water bodies not achieving good;

The total cost of resolving agricultural pressures according to current legislation in 15 water bodies has been calculated at £10.5 million. Many of these lowland water bodies also require improvement in wastewater discharges to allow good status to be achieved and when total costs of improvement are considered the Alyn - Leadmill to Hope and Dolfechlas Brook water bodies are considered to be disproportionately costly to improve to good status. Further consideration of the wider catchment plans and SMNR values should be taken into consideration when planning improvement to agricultural sources of pollution in these water bodies.

Where do we want to be by 2027;

- We want to strengthen regulatory, financial and operational mechanisms to support a sustainable agricultural sector that protects the water environment, from catchment to coast, and helps deliver the full range of ecosystem services that provide financial, social and ecological benefits to Wales.
- Appropriate new woodland creation and forestry management that benefits the water environment, people through outdoor recreation and delivers ecosystem services such as reduced diffuse pollution, reduced flood flows, clean drinking water, habitat for fish and wildlife, and shade in river margins to mitigate the impacts of climate change.
- For those groundwater dependent wetlands that are in a poor ecological condition as a result of high nutrient groundwater inputs we will encourage local changes in catchment management to mitigate and if possible prevent.

3.5.4 Managing pollution from mines

Key programmes and activities include:

- Metal Mine Strategy for Wales
- Coal Authority programme of work

Economic appraisal and objectives for water bodies not achieving good;

There are 2 water bodies failing as a result of metal mines in the Dee RDB. These are Y Garth and Clywedog - above Black Brook, which are impacted from the Nant Minera and

Park Day Level discharges. The total cost of improving these water bodies is estimated at ~£25M. The majority of those costs are for the metal mine remediation and treatment of discharges, however there are some costs that have not been accurately identified. Y Garth and Clywedog - above Black Brook are assessed to be disproportionately costly to improve to good status, but because the water bodies are associated with N2K sites they remain a priority to improve. Our well-being objectives may also have a bearing when considering ecosystem diversity, resilience, culture and community health. To put this cost into context, the funding made available to NRW from Welsh Government to remediate metal mines in financial year 2020 to 2021 is £4.5M across Wales. Prioritisation of metal mines remediation is made on a national basis and takes into account wider practical matters than the cost benefit assessment for WFD Regulations 2017. We will assess the prioritisation of remediation of Nant Minera and Park Day Level in due course and would welcome stakeholders providing views to support our Area Statements and prioritisation against other metal mines and pressures such as physical barriers and diffuse pollution.

Where do we want to be by 2027;

- We want to mitigate the impacts of abandoned mines on the water environment through a strategic work programme across Wales. It will take decades to address all the issues and we will prioritise actions that deliver the best ecological, social and economic outcomes for society's investment.

3.5.5 Manage pollution from towns, cities and transport including the impacts of acidification

Key programmes and activities include:

- Diffuse Water Pollution Plan including Pollution Prevention work
- Water Sensitive Urban Design
- Misconnections
- Contamination from historic industrial and waste sites
- UK Forestry Standard Guidelines (including "Forests and Water" Guidelines), and Practice Guides

Where do we want to be by 2027;

- We want to minimise the negative impact of historic and future development on the water environment via our role as a land quality consultee in the planning process or, where the planning process is not applicable, by providing advice and assistance to local authorities with their contaminated land inspection strategy.
- We want to put SMNR at the centre of urban design and planning. By using SuDs, restoring the areas around rivers and coasts including the river banks, floodplain and the intertidal area, providing public green spaces, raising awareness and changing behaviour to improve the quality of life in the urban areas of Wales.
- We want land use practices to contribute to sustainable, long term recovery to natural pH conditions in areas where ecological processes are compromised by acidification. We will continue to regulate emissions of acidifying pollutants to allow the water environment to recover.
- Upland restoration and sustainable woodland and forestry management has been identified to be required in 5 upland water bodies which will contribute to combating acidification at a cost of £5.8 Million.

An accurate economic appraisal of pollution from towns, cities and transport including the impacts of acidification has not been possible.

3.5.6 Changes to natural flow and levels of water

Key programmes and activities include:

- Welsh Government National Peatland Restoration Programme
- Flood Risk Management activities
- Multi-Sector demands project for water saving measures
- Waterwise work on reducing water consumption

Where do we want to be by 2027;

- We want to support the delivery of the Welsh Government National Peatland Restoration Programme
- We want to encourage sustainable land use patterns in urban and rural environments that reduce runoff from rainfall.
- We want to deliver interventions such as in-channel habitat improvement that mitigate the impacts of abstraction on the water environment.
- We want to better understand the water demands across sectors
- We want to improve water use efficiency to reduce the need for additional abstraction in the future.

An accurate economic appraisal of changes to natural flow and level of water has not been possible.

3.5.7 Managing INNS

Key programmes and activities include:

- Implementing the updated GB strategy on invasive species
- Working with partners and support the development of new and innovative solutions, such as AquaWales and Aquainvade led by Swansea University
- Continue using and promoting mechanisms such as online and smart phone recording systems

Where do we want to be by 2027;

- We want to prioritise actions to slow down or prevent the spread of existing invasive species and eradicate these or new introductions where possible to do so.
- We also want to minimise the risk posed by INNS generally through improved biosecurity and improved local information on INNS distribution and impact.

An accurate economic appraisal of managing INNS has not been possible.

3.6 Placed based approach for the third cycle measures in Wales

In Wales, for the third cycle RBMPs we aim to achieve a place-based approach to catchment prioritisation that also delivers WFD Regulations 2017 outcomes. We are not proposing to select targeted water bodies solely for the purpose of delivering outcomes under WFD Regulations 2017 but have identified a list of catchments that represent the

best suite of opportunities to deliver sustainable management for both water and well-being outcomes. The Area Statement engagement process was central to the selection of these 'Opportunity Catchments'. In addition the Area Statement process will continue post 2027 and therefore integration will bring WFD Regulations 2017 benefits for the longer term. Ten opportunity catchments have been identified across Wales and represent the strongest mix of opportunities for integrated catchment managed within each place.

Opportunity Catchments will focus staff resource across NRW's functions to support partners to deliver integrated catchment management solutions. It is anticipated that partners operating within the ten Opportunity Catchments will also be able to contribute towards improvements within these areas. NRW will continue to work with partners in other catchments that are not selected as an Opportunity Catchment including focussing on addressing physical modifications, fisheries restoration plans, metal mine remediation and pollution from wastewater, and rural and urban areas.

The proposed ten Opportunity Catchment areas are shown in Figure 9 and are:

- Dee (Wales only)
- Clwyd
- Conwy
- Anglesey
- Teifi
- Taff/Ely
- Cleddau/Milford Haven
- Swansea Bay
- Central Monmouthshire
- Ithon

Figure 9: Map of proposed opportunity catchments

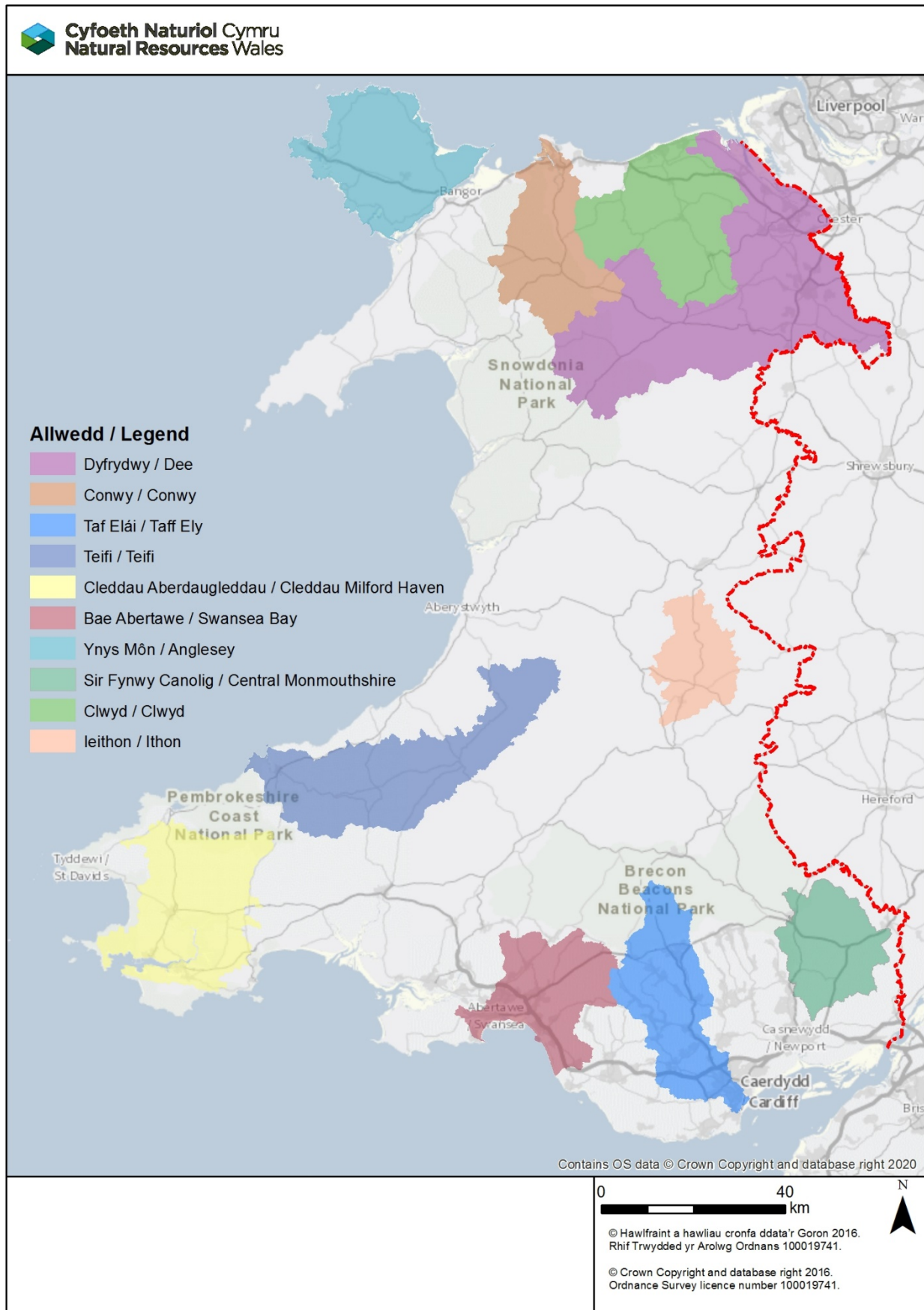


Figure 9 above displays the ten Opportunity Catchment boundaries which include small (mostly coastal) non-reportable water bodies that are connected to failing transitional and coastal water bodies. For the purpose of reporting, these small non-reportable water bodies were removed from the water body network in the second cycle due to their size, therefore there is no requirement to report on their overall status.

The number and type of water bodies meeting good overall status within the Opportunity Catchment in the RBD is shown in Table 11 below. An exercise was undertaken to decide which transitional and coastal water bodies would be included in the Opportunity Catchment relevant boundaries. Decisions were made based on;

- hydrodynamics of the water bodies in question at the seaward extent of the catchment boundary and whether they were functioning as one system
- existing classification data for these transitional and coastal water bodies to understand if they were subject to the same or similar pressures as within the catchment (e.g. catchments failing for nutrients linked to a transitional and coastal water body also failing for nutrients)

Only those transitional and coastal water bodies meeting the above requirements were included within the Opportunity Catchment boundary therefore are displayed in Table 11 below as 0% compliance. We want to improve the ecosystem resilience in these Opportunity Catchments and achieving good status is a step towards achieving resilience. An exercise was also undertaken to decide which groundwater bodies would be included within the Opportunity Catchment. Those with least 5% of the groundwater body within the Opportunity Catchment area and vice versa were included. This process also eliminated those groundwater bodies that only touch the Opportunity Catchment boundary.

Table 11: Percentage of water bodies in the Dee Opportunity Catchment meeting good overall status by water body type.

Opportunity Catchment Name	River water bodies good status (%)	Lake water bodies good status (%)	Coastal water bodies good status (%)	Transitional water bodies good status (%)	Groundwater bodies good status (%)	All water bodies good status (%)
Dee (Wales only)	44	47	n/a	0	86	48

Nutrients, chemicals and physical pressures at the coast are the most significant that result in failure to achieve good status in estuarine and coastal waters. A significant number of the measures taken in the targeted water bodies in freshwater catchments have contributed to improvements in estuarine and coastal water bodies although further measures are needed to achieve a change to good status. The wider opportunities provided through Area Statements and the wider framework of marine planning now established provides additional focus on estuarine, coastal and marine waters and the link to their freshwater catchments. The opportunity catchments chosen for the third cycle have fully applied the source to sea approach to catchment management and identified estuarine and coastal water bodies where a sustainable management approach to water

will be progressed. All catchment based actions identified for the RBMPs which contribute to progress towards Good Environmental Status of marine waters for the UK Marine Strategy are also reflected in the Marine Strategy Part 3 Programme of Measures which will be published in 2021.

3.6.1 Opportunity Catchment in the Dee RBD (Wales only)

The Welsh part of the Dee has been identified as an Opportunity Catchment due to its unique status; it is the largest river in North Wales, is highly regulated with three major drinking water supply reservoirs and drinking water abstractions, is rich in biodiversity and is a designated SAC. Water bodies in the Dee Opportunity Catchment are affected by issues including acidification, metal mine impacts, diffuse rural pollution, discharges from wastewater treatment works and physical modifications. We want to pursue opportunities that benefit people and wildlife within in the Dee and provide WFD Regulations 2017 improvements.

The principal theme for the Dee Opportunity Catchment is to operate on a large catchment scale to deliver against the five themes of the [North West Wales Area Statement](#) and [North East Wales Area Statement](#) to deliver benefits to water quality and water dependant habitats and species. These include promoting resilient ecosystems, protecting water and soil through sustainable land management, reconnecting people with nature developing green infrastructure and climate change resilience and adaption. Work will aim to remove the constraints to fish migration and restore ecological connectivity, restore natural riverine processes, features and physical habitats, improve land management and forestry practises and build long-term stakeholder relationships.

Identified opportunities for the Dee Opportunity Catchment include river restoration, access to water, nature based solutions and catchment management. The [Marine Area Statement](#) also highlights actions to improve the quality of estuarine and coastal waters.

3.7 Third cycle ambition in Wales

The ambition in Wales for the third RBMP will be to continue to protect and improve the quality of water in Wales, including Protected Areas. This will depend on a number of factors including funding levels from both public and private finances, commitment to delivery and availability of delivery mechanisms. The proposed Programme of Measures will address multiple issues across Wales which will progressively reduce the number of elements failing in water bodies and will improve the overall condition of water bodies over time. The ambition across Wales by 2027 is to improve overall condition of water bodies where possible, prevent deterioration and, where resources allow, ensure that even those water bodies that do not achieve good status will be under the least pressure possible.

During this consultation we will continue to develop a realistic but ambitious priorities for the third cycle across Wales. By 2027 we propose to;

- Complete local actions across Wales which is expected to result in water bodies having made progress towards improving status and/or not deteriorating. Actions may include tackling physical constraints, continuing undertaking farm visits to advise on nutrient management, reducing enrichment impacts on groundwater dependent terrestrial ecosystems and/or marine ecosystems. We may prioritise

water bodies with fewer failing elements, those in urban areas, those which have not improved from the first cycle, those at poor or bad status etc.

- Deliver the planned investigations programme for third cycle which inform our understanding of the problem so that appropriate actions can be taken
- Finalise mitigation measures assessments in some of the Heavily Modified Water Bodies
- Target nature based solutions for physical modifications at some areas on the coast
- Further develop the NRW River Restoration Programme, publish additional restoration plans and undertake feasibility work
- Deliver projects funded via the Welsh Government capital funding programmes, including Water Quality (including minewaters and fisheries), and N2K Network - marine, terrestrial and freshwater
- Deliver the outcomes of the water related LIFE projects in Wales
- Work collaboratively with water companies to support the delivery of sustainable improvements to the water environment, through both the delivery of their statutory environmental requirements (i.e. NEP) and the development of innovative solutions (e.g. SMNR pilot catchments)
- We will manage our Welsh Government Woodland Estate to meet the UK Forest Standard Forest & Water Guideline as a minimum and tackle metal mine pollution with innovative approaches to remediate the toxic discharges associated with these sites that are on the estate. We are also identifying and acquiring land to expand the estate as a response to Wales' woodland creation targets, the nature and climate emergencies and the need for compensatory planting for woodland lost from the WGWE. We have an initial target of 1700ha of woodland creation over the next five years.

Where appropriate these measures will be taken in all surface water bodies including estuarine and coastal waters and will contribute to an improvement in marine waters. In Wales we will focus our efforts for the above within the ten Opportunity Catchments and support partnerships to deliver multiple benefits. We will also continue with high priority work in other areas where appropriate, e.g. priority metal mine remediation sites. We will take an SMNR approach for the third cycle plans to deliver more integrated catchment benefits in line with the priorities for water identified within Area Statements. NRW cannot deliver on the ambition within Wales alone and therefore we need to build on existing partnerships to deliver solutions to the environmental pressures. NRW proposes to commit to key actions for the Welsh section of the Dee RBD in the third RBMP and will continue to work with existing partners, and identify new partners to deliver benefits to the water environment.

The priorities will be agreed and reflected in the third RBMP presented to Welsh Government Ministers and Secretary of State. To realistically achieve our ambition requires further funding and resource which has not been identified or committed at this stage. Ministers and Secretary of State will make a decision on affordability and overall ambition which will be published in the third RBMP.

4. Practical actions that we can all take

There are **several steps and practical actions we can all take in our daily lives and at home to collectively protect and potentially improve the quality of our water bodies. Some of these are summarised below.**

Prevent pollution to our rivers, lakes, groundwater and sea

- Check that household appliances are connected to the foul sewer, not the surface water drain.
- Adopt-a-beach to help keep beaches clean and stop litter at source.
- Ensure household oil storage is in good condition, with an up-to-date inspection record.
- Ensure septic tanks or private sewage treatment plants are well maintained and working effectively.
- Put cotton buds, wipes and other litter in the bin, not down the toilet. It may end up in the sea or on your local beach where it can harm wildlife.
- Take waste oil and chemicals such as white spirit to a municipal recycling facility: don't pour them down the sink or outside drains.
- Use kitchen, bathroom and car cleaning products that don't harm the environment, such as phosphate-free laundry detergents, and use as little as possible. This helps prevent pollution at source.
- When you see pollution or fly-tipping, report it on 0800 807060.

Protect our marine environment

- Eat fish from sustainable sources, caught using fishing methods that don't cause damage to marine wildlife and habitats.

Save water in your garden

- Choose plants that tolerate dry conditions. To help lawns through dry periods, don't cut them too short.
- To save water in gardens, collect rain in a water-butt, water at the beginning or end of the day, mulch plants, and use watering cans where possible instead of sprinklers or hosepipes

Save water in your house or office

- Purchase low energy and low water use appliances
- Ask water companies to fit a meter. On average, this can reduce household water consumption.
- Fix dripping taps, and lag pipes to avoid them bursting in freezing weather.
- Hand wash cars
- Consider installing rainwater harvesting systems in your home, block or workplace. This can save one third of domestic mains water usage.
- Install a 'hippo' or 'save-a-flush' in toilet cisterns.
- Install a low-flush toilet, put flow regulators on your taps and showers, and install waterless urinals at work.

- Run dishwashers or washing machines with a full load on economy setting, and boil the minimum amount of water needed in kettles or saucepans.
- Turn off the tap when brushing teeth, and take short showers rather than baths.
- Wash fruit and vegetables in a bowl rather than under the running tap - and use the remainder on plants.
- Ensure extensions or conservatories have their roof water draining into a soakaway or sustainable drainage system and are not connected to the combined sewer.
- Ensure that any off-road parking or patio around the house use permeable materials so rain can soak into the soil.

Help tackle the threat of INNS

- Find out how you can get involved in national campaigns ([Check, Clean, Dry](#) and [Be Plant Wise](#)) to help to reduce the spread of INNS, by checking out the [GB Non Native Species secretariat \(GBNNSS\) website](#).
- Do not buy, plant or release INNS, access the most up to date advice about how to control INNS and dispose of them responsibly through the [GBNNSS Website](#).
- You can find out about the location of INNS in Wales through the National Biodiversity Network Atlas Wales [INNS Portal](#).
- If you spot an INNS then please record it either online ([iRecord](#) or your Local Records Centre), by downloading a recording app ([iRecord](#) and [LERC Wales](#)) or by contacting your [local records centre](#).
- Join an environmental group or organisation in your area that takes action to tackle INNS (e.g. wildlife organisations or rivers trusts), also check out the [GBNNSS website](#) for the contact details of specific INNS local action groups in your area.