Cyfoeth Naturiol Cymru
Natural Resources Wales

Environment Agency

Water for life and livelihoods

Dee River Basin District: Challenges and choices

Summary of significant water management issues

A consultation

On 1 April Natural Resources Wales brought together the work of the Countryside Council for Wales, Environment Agency Wales and Forestry Commission Wales, as well as some functions of Welsh Government.

Our purpose is to ensure that the natural resources of Wales are sustainably maintained, used and enhanced, now and in the future

We will work for the communities of Wales to protect people and their homes as much as possible from environmental incidents like flooding and pollution. We will provide opportunities for them to learn, use and benefit from Wales' natural resources

We will work for Wales' economy and enable the sustainable use of natural resources to support jobs & enterprise. We will help businesses and developers to understand and consider environmental limits when they make important decisions.

We will work to maintain and improve the quality of the environment for everyone. We will work towards making the environment and natural resources more resilient to climate change and other pressures.

This consultation has been produced to comply with the requirements of The Water Environment (Water Framework Directive) (England and Wales) Regulations 2003, Regulation 12(1)(b) to "…not less than two years before the beginning of the plan period, publish a summary of the significant water management matters … for consideration in relation to the river basin district".

Front page photo credit – Dwr Cymru Welsh Water

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Foreword

The Dee River Basin District is the smallest river basin district in Europe. It ranges from the mountains of Snowdonia to the Dee Estuary, and is one of the most important in the UK for its wildfowl and wading birds. It supplies nearly three million people with drinking water. It has excellent fishing and supports an important cockle fishery in the estuary.

Since the first river basin management plan was published in 2009, much progress has been made to protect and improve the water environment in the river basin district. For example, three new fish passes on the River Alyn have helped restore 22km of the catchment. Individuals, communities and organisations continue to work with us to protect and improve this water environment.

There are still many challenges to overcome; population growth, climate change and challenging economic times mean that the natural environment remains under constant pressure. We will continue to work with individuals, communities and organisations to make sure that we protect and improve this water environment.

This consultation is an opportunity for everyone to have their say on what the biggest challenges are for the Dee and work together to make the right choices on how to tackle these challenges. This will not only benefit the environment, but will also benefit the economy and society.

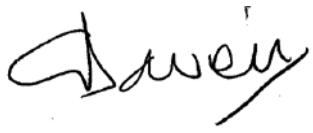
The Dee River Basin District crosses the border between Wales and England and consequently this document is jointly produced by Natural Resources Wales and the Environment Agency.

Over the next six months we are consulting a wide range of groups and organisations interested in the water environment.

We'd like to find out **your** views on:

- The biggest challenges facing waters in the Dee River Basin District.
- The best way to tackle these issues and what should be done first.
- Who we should work with to achieve the environmental outcomes

I hope you will join the discussion and help map out a future to protect and improve the water environment to benefit people and wildlife, now and in the future.



Ceri Davies

Executive Director
Natural Resources Wales

Steve Moore

North West Regional Director
Environment Agency

Contents

1 Your views count

The best way to protect and improve the water environment is by everyone becoming actively involved. This consultation is an important step in managing the water environment issues in the Dee River Basin District and gives you the chance to influence the approach in your local area.

This is a public consultation and we - Natural Resources Wales and the Environment Agency - welcome everyone's views.

We'd like to find out your views on:

- The biggest challenges facing waters in the Dee River Basin District.
- The best way to tackle these issues and what should be done first.
- Who we should work with to achieve the environmental outcomes

This consultation describes the significant water issues in the Dee River Basin District and gives you the opportunity to respond at the level most appropriate to your interest.

If you want to respond to this consultation on a specific issue, such as pollution from rural or urban areas, then you may wish to just answer the questions for the issues section. If your focus is more on your local area, you may prefer to respond to the questions relating to your geographic area and apply them to the area of your interest and expertise. You are, of course, welcome to do both.

Consultation questions

The significant issues (pages 12 – 18)

1 What do **you** consider to be the biggest challenges facing waters in the Dee River Basin District?

2 Do you agree with our description of how the significant issues are affecting the water environment and the local community? *Please specify which issue(s) your response refers to and provide relevant information to help explain your answer.*

3 How do you think these issues should be tackled, and what would you choose to do first? *Please specify which issue(s) your response refers to. Please consider any resource limitations.*

4. Who we should work with to achieve the environmental outcomes?

The catchment (pages 19 – 21)

5 How are the significant issues in the Dee catchment affecting the water environment and the local community? *Please provide relevant information to help explain your answer*

6 How do you think the challenges affecting the catchment should be tackled and what would you do first? *Please consider any resource limitations.*

Corwen Anglers strimming Himalayan Balsam from the river bank (Welsh Dee Rivers Trust)

There are many ways to respond to this consultation (see page 23 for more details), but if you have any difficulties please call 0300 065 3000, or email ardalbasnafondyfrdwy@cyfoethnaturiolcymru.gov.uk / deerbd@naturalresourceswales.gov.uk

This consultation runs from 22 June to 22 December 2013.

We will issue a response document by March 2014. This will summarise the comments we received and what will happen as a result.

2 Supporting information

This consultation document is a summary of the information Natural Resources Wales, the Environment Agency and others have collected and analysed. Throughout this document you will be directed to other, more detailed sources of information.

To help you respond to this consultation you might like to read the *Dee River Basin District: Facts and Statistics* document. To view this, please visit our information page

To find out further information about river basin districts, catchments, water bodies and the river basin management planning process, please see the Environment Agency website at: http://www.environment-agency.gov.uk/research/planning/33106.aspx

In Wales, there is also a supporting document 'Living Waters for Wales' which sets out the top ten issues across Wales. To view this, please visit our information page.

In England, there is also a consultation on the nationally significant water management issues called *England's Waters: Challenges and Choices,* which is referred to throughout this document. Please note the consultation on this document closes on 22 September 2013.

3 Water – a vital resource

Water is essential for life and livelihoods. The average person in the UK uses 150 litres of water every day in their home. If you include all the water used in growing and manufacturing the things used or consumed, each of us uses on average around 4,600 litres (over 1,000 gallons) of water per day, over 60% from sources in the UK.

Water allows the natural environment to flourish, and businesses, agriculture and the economy to grow and prosper. Rivers, lakes, estuaries, coastal areas, wetlands and ground water provide many different benefits to society – from supplying drinking water and supporting fisheries to providing an essential resource for business and agriculture, transport routes and a source of recreation that promotes wellbeing.

Healthy water environments also help protect the nation from floods and droughts and regulate the quality of the air and the climate. Everyone benefits from using water and enjoying the water environment, but it is essential that both are used and managed in a sustainable way. By doing this, the natural environment, business and economic growth will be protected and the long-term benefits to health and wellbeing improved.

Assessing the state of the water environment is now done in a comparable way across Europe, taking account of different natural conditions in each country's local geography. A target of good status is the long-term aim, which is defined as a slight deviation from natural conditions associated with limited impacts from human activity. In Wales, more than a third of surface waters currently have a good ecology, either as good status, or the slightly modified target of good potential, which applies to waters that have been extensively engineered

4 River basin management planning – the benefits

In December 2009, Environment Agency Wales (now Natural Resources Wales) published the first Dee River Basin Management Plan. With the Environment Agency and our partners, we are now working to review and update it. We will publish the revised plan in December 2015, following approval by Welsh Ministers and the Secretary of State.

Understanding the benefits society gets from protecting and improving the water environment is at the heart of river basin management planning. If we can improve our understanding of the water environment and the benefits it brings, we will be better placed to decide how best to target investment.

The updated plan will explain how decisions affecting the water environment have been made. It will show businesses, water users and other organisations what they need to do. It will take into account the wider water issues such as flooding, climate change and drought.

5 The catchment based approach

Natural Resources Wales and the Environment Agency are constantly exploring better ways of involving people and organisations to make a difference to the health of all waters and habitats.

Following your feedback through the Working Together consultation we understand that involving people at a catchment scale is often the most effective way of working.

A catchment is an area with several, often interconnected bodies of water, such as rivers, lakes, ground waters or coastal waters.

By working together at the catchment scale we aim to:

- Understand the issues in the catchment and how they interact.
- Understand how the issues are affecting the current local benefits and future uses of water.
- Involve local communities in making decisions by sharing evidence.
- Decide which issues to tackle as a priority.
- Build towards a ‘catchment plan’, a simple statement of how to manage the catchment. This will include the long-term aims for protecting and improving the environment.

To find out further information about river basin districts, catchments, water bodies and the river basin management planning process please see the Environment Agency website at http://www.environment-agency.gov.uk/research/planning/33106.aspx

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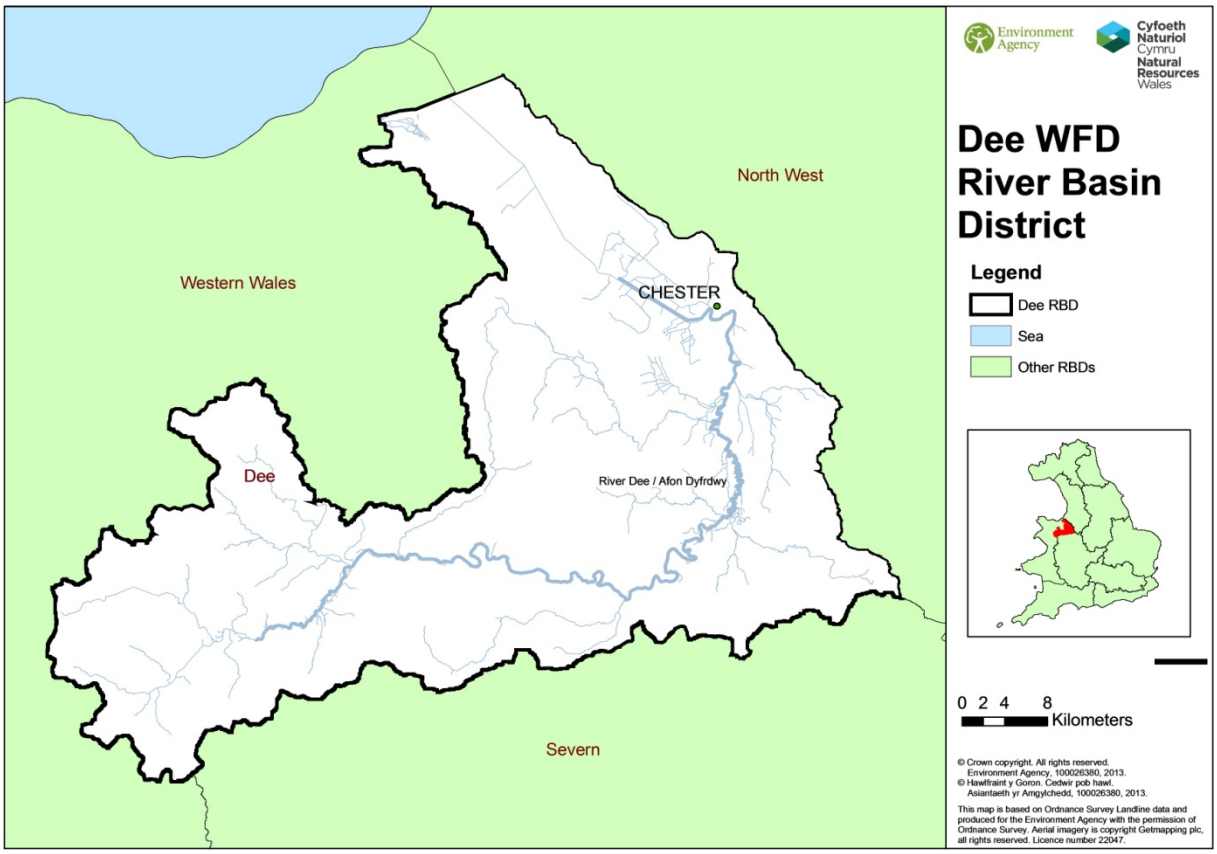
6 The Dee River Basin District

Overview

The Dee River Basin District (Fig 1) covers an area of 2,251 square kilometres, mainly in Wales but including a small area in England. Its source is in the mountains and lakes of the Snowdonia National Park and it runs to the internationally significant intertidal and wading bird habitat of the Dee Estuary. Chester and Wrexham are the major urban centres, but the land is mainly rural with rough grazing and forestry in the upper catchment and arable and dairy farming on the Cheshire Plain.

Figure 1. The Dee River Basin District



Reservoirs in the upper part of the catchment store water and regulate flow in the Dee. They sustain abstractions for public and industrial water supply and modify flood response in the river, reducing the frequency of flooding in the Dee between Bala and Chester.

The Dee and its estuary has a high conservation value, it is designated as two Special Areas of Conservation (SAC), and notified as three separate Sites of Special Scientific Interest (SSSIs). Interest features contributing to the SSSI and SAC designations of the freshwater sections of the river include floating water plantain, Atlantic salmon, lamprey, otter, and structural changes in the meandering section of the main river. The intertidal habitats of the Dee Estuary support significant populations of wading birds.

The River Dee is an important source of drinking water for nearly three million people, in Wales and North West England. Risks from pollution have led to it 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. The Dee and its tributaries are also renowned for their excellent fishing and there is an important cockle fishery in the estuary.

Current condition

Natural Resources Wales and the Environment Agency 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, underground water or coastal water. We assess the condition of these water bodies through a monitoring process, which produces an annual ‘classification’ or healthy water rating. The classification is based on the biological and chemical condition of the water body and assesses how close it is to its natural state. We aim to bring water bodies in the Dee catchment up to good status by 2027.

There are many pressures that can affect the condition of a water body. Controlling these pressures to make sure that there is no deterioration from the water body’s current condition, and is the first priority of river basin management planning.

There are 115 water bodies across the Dee; this includes rivers, lakes, ground water and its estuary. The health of the water bodies in the Dee River Basin District has improved since the first river basin management plan was published in 2009. 28% of water bodies were at ‘good’ status then and this has risen to 30% in 2013. Our ambition is achieve 50% by 2015.

Natural Resources Wales and Natural England are actively assessing the condition of qualifying Special Areas of Conservation habitats and species features of the River Dee and its Estuary. This work is undertaken as part of the Habitats Directive Article 17 reporting requirement by Joint Nature Conservancy Council for the UK Government."

For information on the latest classification results and other key statistics for the Dee River Basin District, see the Facts and statistics document. To view, please visit our information page.

Protected areas

There are many areas in the Dee River Basin District where the water environment is particularly important. These areas include rare wildlife habitats, bathing waters and areas where drinking water is abstracted. Known as ‘protected areas’, these areas are given particular legal protection. Protected areas are a priority for action to make sure they meet their statutory conditions and can continue to provide their special uses. Almost all of the Dee’s waters are designated under the EU Habitats and Birds Directives, or require management that is consistent with those directives

The Special Areas of Conservation within the Dee are currently not achieving their desired favourable condition, though it is expected that the Dee Estuary will do so by 2015. The table below shows the number and breakdown of protected areas in the Dee River Basin District.

Protected areas in the Dee River Basin District

Protected area	**Number /area coverage**
Drinking Water Protected Areas	25
Freshwater Fish Waters *	84
Shellfish Waters*	2
Bathing Waters	1
UWWTD Sensitive Areas	1
Water dependent Special Areas of Conservation (SACs)	7
Water dependent Special Protection Areas (SPAs)	3
Nitrate Vulnerable Zones (NVZs)	18%

* The Freshwater Fish Directive and Shellfish Waters Directive will be repealed at the end of 2013 and after that it will be protected by the requirements of the Water Framework Directive.

More information about the protected areas is available in the *Dee River Basin District: Facts and Statistics* document. To view, please visit our information page.

7 The significant water issues

The Dee River Basin District liaison panel (a group of key partners), Natural Resources Wales and the Environment Agency have developed a list of the most important issues we believe threaten the current and potential future uses of the water environment.

We assessed the pressures or potential issues caused by people **now** (for example, rivers polluted by rural or urban activities); **in the past** (rivers contaminated by mining or over engineered); or **in the future** (abstracting more water to meet rising demand). We have focused on those issues where more action is needed to bring water bodies up to good condition.

We developed a number of issue headings and have grouped the issues/pressures under these. (Please note that these are not in order of priority).

- **Physical modifications** – man-made changes to the natural habitat, for example flood defences and weirs, and changes to the natural river channels for land drainage, navigation and shellfisheries on estuaries and in coastal waters. These modifications can cause changes to natural flow levels, excessive cutting of river beds and consequent 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 rural areas** – the negative effects of 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.
- **Invasive Non-Native Species** – The presence of invasive non-native species (plants, aquatic life forms and animals) in our watercourses pose threats to biodiversity, increase flood risk, affect the state of our water environment and cost the economy billions per annum.

This section describes each significant issue in turn; explaining what it is, what's causing it and share what is currently being done, what more could be done and the priorities for action. In the Dee there are still some water bodies where the cause of the failure is not known, we are investigating them to find out why.

We will work with interested parties to look at the costs of possible action and the benefits of improving the condition of the water environment. In June 2014, we will consult on the results of this work and what it will mean for the long-term objective (or condition) for each water body.

As well as considering the current state of the water environment, it is also important to look at the future risks (potential impacts). Natural resources Wales and the Environment Agency have produced risk assessments for each pressure affecting the water environment. These risk assessments can be accessed from the ‘Further information on the significant issues’ section of this document. To view, please visit section 9.

We would like you to respond to the following questions on the significant issues in the Dee River Basin District:

Consultation questions

1 What do **you** consider to be the biggest challenges facing waters in the Dee River Basin District?

2 Do you agree with our description of how the significant issues are affecting the water environment and the local community? *Please specify which issue(s) your response refers to and provide relevant information to help explain your answer.*

3 How do you think these issues should be tackled, and what would you choose to do first? *Please specify which issue(s) your response refers to. Please consider any resource limitations.*

4. Who we should work with to achieve the environmental outcomes?

Physical modifications

People have always made changes to the natural form of rivers, estuaries and the coast for economic benefit or to protect people and property. The needs of industry, agriculture flood protection, urban development, transport links and land drainage have all had an impact on the water environment and its physical and ecological processes:

- Impoundments affect the natural flow of waters, the distribution of sediment and movement of fish. Many of the natural lakes in the catchment have been modified to increase the amount of water they can store for public water supply.
- Flood protection and land drainage works can reduce bank side diversity or result in a significant reduction in biodiversity in culverted rivers.
- Embankments sever the natural connection of the river to its floodplain
- Flow control on the river means that it does not react naturally to storms and the lack of 'freshets' (rapid rises in freshwater flow) exacerbates the build up of silt in the brackish waters, affecting the passage of migratory fish into the river system and the wildlife habitats of the estuary
- Weirs and tidal sluices on the coast prevent fish from moving freely, encourage the build up of silt and stop fresh and salt waters mixing naturally.
- Shellfisheries on estuaries and in coastal waters can impact local ecology.
- Shoreline reinforcements, sea defences and rock protection change the landscape and create 'coastal squeeze', preventing the natural migration of the shoreline, which is made worse by rises in sea levels.

The Dee is one of the most modified catchments in the UK with extensive regulation of flows in the upper catchment, changes to the channel cross section, flood protection structures and pump drainage of some sections of the floodplain for agriculture. Saltmarsh erosion is extensive on the Welsh side of the Dee estuary as the estuary continues to adjust to historic intervention. Land reclamation has also caused localised loss of intertidal habitats.

There are many potential sites for small-scale hydropower schemes in Wales. Most of these will need new impoundments, often on unspoilt upland streams. We will work with the developers to avoid unacceptable impacts on the water environment.

Some water bodies are designated as "heavily modified" where the modifications are such that they cannot be removed, for example for flood management or water supply. There are thirteen such water bodies in the Dee. We are investigating how the local ecology can be improved in these water bodies to achieve as near to good condition as possible by 2027. We are taking action to remove, mitigate or reduce the negative aspects of modifications and we will work in partnership with a range of organisations to achieve this

Pollution from sewage and waste water

The day to day activities of society and industry rely on an effective sewerage network and sewage treatment facilities. This includes large scale treatment and small private systems. Huge investment has been made to ensure that collection and treatment of wastewater meets today's standards, but more remains to be done.

Sewage treatment works and the many properties outside of the main sewer catchments (which are likely to have private sewage treatment systems) all contribute to the discharge of waste water in the river basin district. There are nearly 4000 registrations of private sewage treatment systems, located outside of the main sewer catchments that discharge treated effluent into the ground or surface waters. Where sewage treatment plants are not operated appropriately, they can cause pollution and create a risk to water quality and drinking water supplies. Intermittent discharges from combined sewer overflows and storm overflows operate during heavy rain and are designed to protect sewage works from being overloaded and domestic properties from sewer flooding.

Increased nutrients caused by the discharge of sewage can lead to changes in water quality and the ecology of lakes, rivers and estuaries. The consequences of this can be severe, including excessive growth of algae, which can be poisonous; weeds choking navigable waterways; changes in fish populations, and a deterioration in the look of the area for those living close to, or visiting watercourses. Phosphorus is accepted as the main risk to river Water bodies from sewage discharges. In the Dee River Basin District, eleven Water bodies are reported as failing for phosphorous due to significant contributions from Water Company final sewage effluent discharges.

Environment Agency led modelling identifies a catchment non compliance load (i.e. load to be removed by the relevant Water Company to realise Good status) of circa 45 tons per annum. Improvements will initially be targeted at the 19 Sewage Treatment works that actually discharge into the failing Water bodies, though catchment solutions may address the compliance load at other works contributing significant loads upstream of the failing Water bodies where the Water Framework Directive targets are exceeded. The transition from Environment Agency Wales to Natural Resources Wales sees a movement from regulation based on catchment boundaries to political boundaries. Of these eleven failing Water bodies, five are within political Wales and six are in England.

Cockle gathering in the Dee estuary is worth £2 million each year to the local economy. It is susceptible to contamination from wastewater treatment discharges and we are committed to maintaining its quality

The water companies produce five-year plans for improvement and investment to meet water quality targets. These programmes are paid for by customers through their water bills. Local water companies work closely with Natural Resources Wales to decide which environmental schemes should be included in future programmes, while trying to ensure that water bills are kept affordable for customers.

This investment complements other local initiatives and campaigns such as river walks, pollution prevention visits and registrations of private sewage treatment works. Having registered private sewage treatment systems in Wales, we will develop guidance for owners so that they manage their existing systems better. In some places, communities have asked for a public sewer to be provided to replace existing private systems.

Having registered private sewage treatment systems in Wales, we will develop guidance for owners so that they manage their existing systems better. In some places, communities have asked for a public sewer to be provided to replace existing private systems.

Pollution from rural areas

Most of the Dee River Basin District is rural. As well as food and timber production, the landscape provides wider economic and cultural benefits to residents and visitors. However, rural land use associated with farming and forestry can pollute the water environment, harming its ecology and reducing the benefits it provides for wildlife and society. Agricultural activity is the source of a range of pollutants including nutrients, sediments, faecal bacteria, chemicals and fuels. Forest operations can have an impact through sediment runoff and exacerbating the effects of acidification. Surface water runoff from roads can also add to the problem.

Excessive nutrients, especially phosphate, are a particular problem in the lower tributaries such as the Pulford, Worthenbury and Dolechfas brooks.

Agriculture and forestry feature prominently in the Welsh Government's Rural Development Plan, and in the Rural development Plan for England, which aims to support sustainable rural economies that provide valuable ecosystem services such as food and timber production, recreation opportunities and drinking water. Improving agriculture and forestry practices will reduce the impacts of rural pollution, improve the water environment, and benefit society.

It is a complex challenge to make sure that rural economies and communities are sustainable and vibrant whilst reducing the impact of pollution. Natural Resources Wales and the Environment Agency support voluntary initiatives by the farming industry, the catchment based approach to planning and implementing solutions, and promote initiatives to help farmers benefit from relevant advice, capital grants and payments for improving the way they manage the land. All this activity is supported by targeted and proportionate regulatory activity where appropriate.

Farmers, their representative bodies, and voluntary organisations are all working with us to reduce the impact of agriculture on the water environment and improve farm profitability. Current programmes and possible approaches include:

- fencing riverside zones to exclude livestock from rivers and capture diffuse sediment and nutrient pollution
- adjusting numbers of livestock to reduce field erosion
- promoting the use of cover crops to reduce erosion and retain soil nutrients; identifying and improving farmyard infrastructure (improving slurry storage, separating 'clean' and 'dirty' water
- improving track design
- developing nutrient management plans that save money and protect the environment
- reducing reliance on chemical fertilisers, pesticides and herbicides

Forestry is being improved to minimise the negative effects and maximise the benefits woodlands have on the water environment and society. For example, woodlands can reduce flood risk by increasing water retention in catchments; reduce erosion by improving bank stability; provide a natural filtering mechanism for rain and surface water abstracted for drinking supplies; provide habitat for fish and wildlife; and reduce water temperature by providing shade to streams. Natural Resources Wales is committed to achieving these outcomes for all forestry within its control by 2027.

Pollution from mines

The Dee River Basin District has a legacy of mining for coal and metals. Pollution from abandoned mines mainly comes from underground workings and the waste materials left on the surface of the mine (spoil).

The most obvious form of pollution is the orange staining of rivers downstream of coal or metal mines, which occurs when iron ochre forms a thick sludge on the river bed. This smothers the gravels, affecting invertebrate life and spawning fish. Not all mine water is rich in iron and because of this some rivers may look clean. However, the presence of other dissolved metals such as lead, copper, zinc and cadmium and, in some cases, acidic water make the impact just as serious, significantly affecting the local ecology.

Four water bodies are affected by pollution from two mines in the Dee River Basin, including ground water failures which are associated with the surface conditions Since 1999, owners of working mines have had to produce a closure plan, which states how the closed mine will be managed to prevent the water environment becoming polluted. For mines that were closed before this date no person can be held liable for the discharges.

The Coal Authority work with us across the UK to manage pollution from abandoned coal mines. http://coal.decc.gov.uk/en/coal/cms/environment/environment.aspx. In the Dee catchment the Coal Authority is investigating the feasibility of treating the pollution from a coal mine near Hawarden to clean up two kilometres of the Broughton Brook. Through the Metal Mine Strategy for Wales we are seeking to tackle metal mine pollution. We have investigated the Minera lead mine near Wrexham to better understand its impact and recommend solutions.

River basin planning gives us the opportunity to review progress and set future priorities for a remediation programme for both metal and coal mine waters in Wales. There is no simple solution. Commitment will be needed to fund sustainable and long-term treatment for the most polluting mine waters.

Mine water discharging from Minera lead mine

Invasive non- native species

Invasive non-native species (INNS) are plants and animals that have been accidentally or deliberately introduced from outside the UK that threaten our native fauna or flora. Although they are not considered to be a significant issue in the Dee RBD, they do have a natural ability to thrive in new areas and pose a serious risk to achieving a healthy water environment by ousting or predating on native species, spreading disease or causing physical damage such as unstable river banks for example. INNS represent a significant challenge in terms of preventing water body deterioration which is a key requirement of the Water Framework Directive. Although there aren't any water bodies currently identified as failing because of INNS, they could potentially be a significant issue for the Dee because of species such as the North American signal crayfish and Chinese mitten crab, which are present in the catchment along with bank side plants such as Japanese Knotweed and Himalayan Balsam which are widespread.

Managing INNS remains a huge challenge with many groups including Rivers trusts, angling clubs, conservation bodies and others involved in helping to tackle the issue. Key INNS management priorities for the Dee include slowing or preventing the spread of existing species or eradicating those where it is possible to do so, minimising the risk of new introductions and improving local data and information on INNS distribution and impact. We have developed the plant tracker website and application in partnership with the Nature Locator team at the University of Bristol and the Centre for Ecology and Hydrology to help anyone recognise and report 14 different invasive plant species.

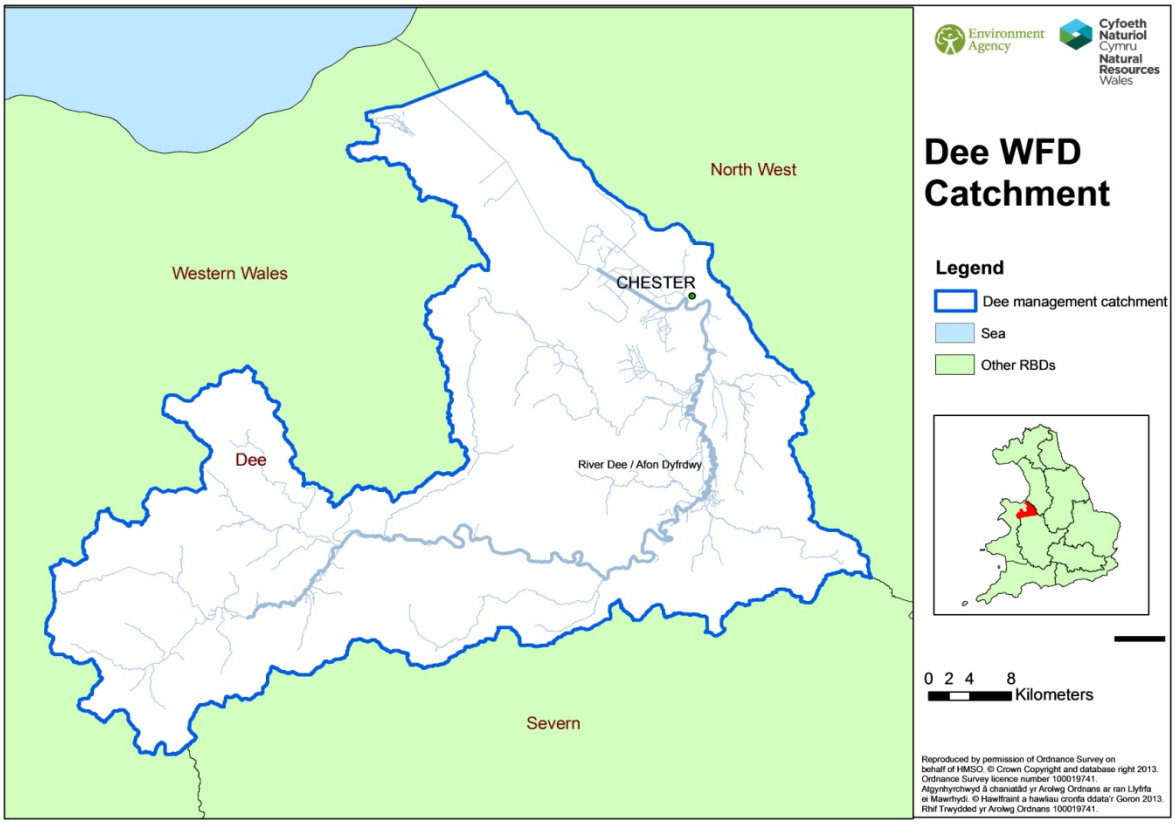
While control / eradication actions can take time to achieve successful results and potentially be resource intensive this needs to be balanced against the overall INNS impact risk and annual cost of dealing with species once they become established.

8 The Dee River Basin District catchment

The Dee River Basin District is unique in that it consists of a single catchment made up of 115 water bodies. To make sure that river basin management aligns to other plans, it has been decided that the Dee should not be split into three separate catchments (as in the first river basin management plan), but be kept as single catchment; from its source to the estuary and coastal waters including associated ground waters (Fig 2).

Working at the catchment scale will enable us to act on the feedback from the *Working Together* consultation and allow people to get involved at a local level to bring about improvements.

Figure 2. Dee River Basin District catchment



Responding to the consultation at catchment level

We would like you to answer the following questions on the Dee catchment:

Consultation questions

5 How are the significant issues in the Dee catchment affecting the water environment and the local community? *Please provide relevant information to help explain your answer*.

6 How do you think the challenges affecting the catchment should be tackled and what would you choose to do first? *Please consider any resource limitations.*

The Dee catchment

Over the last two years, we have undertaken a comprehensive programme of investigations on our failing water bodies and those thought to be at risk of deterioration. The investigations include taking samples, analysing data and (most importantly) spending time in the field walking rivers, investigating failures and understanding what's impacting our water bodies. Some of our failing water bodies have complex issues with multiple reasons for failure; others may be failing due to a single reason.

We are taking actions to address these issues and to maintain and enhance the ecological status of the water bodies. We prioritise the work so we can deliver the most environmental improvement in the most efficient way and will repeat surveys and monitor the water bodies until we see improvements. We still have a long way to go and a lot more work to do, so success in meeting the objectives of the Water Framework Directive will rely on partnership working and cooperation

This section details some of the issues and actions we are taking to deal with them.

The Dee catchment although largely rural, has undergone considerable **physical modifications** (such as impoundments, weirs and sluices) have been made to help regulate the river in the upper catchment. Further modifications for flood defence and land drainage (such as bank protection, embankments and channel realignment) are present throughout the river basin district.

There are 45 significant barriers such as weirs which prevent fish from moving freely and cause 16 water bodies to fail to achieve good status. Flood protection structures affect eight water bodies, the Pulford Brook, for example, is canalised with embankments for 2.4km.Three water bodies fail because of impoundments. Water companies are working with us on a range of improvement measures associated with water abstraction infrastructure in the catchment. Where harm to the ecology is identified they will identify cost-effective solutions.

The Dee has benefited from significant Welsh Government and European funding for projects, including over £300,000 of the £2.1 million Salmon for Tomorrow project. These have restored 33km of in-stream and riverside habitats by removing barriers to fish migration. On the Alyn and Dee good progress has been made, with fish passes completed on Rossett, Caergwrle and Pont Y Capel weirs. Local authorities are working with us through the development planning process to ensure culverts are removed where possible to help restore a more natural river environment. The Bala Sluices are due to be rebuilt in the next five years, and including design improvements to help fish pass through easily will be a priority.

The River Dee Restoration Project, has assessed the current condition of the Dee and proposes improvements to enhance river habitat to meet its SSSI targets. It has recommended that modifications are removed where possible or their impact reduced to restore the water body to its near natural state.

Private **wastewater treatment plants**, septic tanks, and industry are responsible for 18 water bodies failing to meet water quality standards. Discharges from the water industry are causing a further eleven water bodies to fail to meet the required standards. Ongoing improvements at several large wastewater treatment works, for example Mold and Five Fords, will reduce nutrients entering the Dee in the next few years. An ongoing programme of investigations by Welsh Water is also

Five Fords waste water treatment plant

reviewing discharges in several failing water bodies across the catchment, to make sure treatment works are operating correctly and complying with their permits

Pollution from rural areas affects 19 water bodies. Due to a combination of agricultural land practices associated with cattle farming and waste water discharges, excessive nutrients (especially phosphate) are a particular problem in the lower tributaries, such as the Pulford, Worthenbury and Dolfechlas brooks. Following river walks, Natural Resources Wales and the Environment Agency are continuing to work with landowners and permit holders on issues that have been identified. This includes, for example, best practice agricultural visits, landspreading reviews and soil testing, as well as making sure private and water company sewage discharges are treated appropriately.

There are non-native **invasive species** of plants and animals in certain parts of the River Dee. The North American signal crayfish and mitten crab are known locally abundant and Japanese Knotweed and Himalayan Balsam are widespread bank side plants. This is a significant environmental issue and managing it is a huge challenge with limited funding. Rivers trusts, angling clubs and conservation bodies are helping to tackle the issue.

Four water bodies are affected by **pollution from abandoned mines** in the Dee River Basin, including ground water failures which are associated with the surface conditions. The Coal Authority is investigating the feasibility of treating the pollution from a coal mine near Hawarden to clean up two kilometres of the Broughton Brook. Through the Metal Mine Strategy for Wales we are seeking to tackle metal mine pollution. We have investigated the Minera lead mine near Wrexham to better understand its impact and recommend solutions

Ground water is used for public and private water supplies in many areas, including some public and private water supplies from the Sherwood Sandstone. In the Upper, Middle and Lower Dee there are many thousands of sources of private (i.e. non water company) water supplies in rural and urban areas. Ground water can be affected by pollution from waste water or rural areas. Over-abstraction of ground water can deplete river or wetland water levels, but, following investigations, it is not thought that current levels of abstraction in the Dee are unsustainable.

River Dee at Cysylltau

9 Further information on the significant issues

This consultation provides an overview of what we, Natural Resources Wales and the Environment Agency, believe the significant issues in the Dee River Basin District are. We have used many different sources of information and evidence to create this document. Where possible, we have made this available to the public and provided links in the appropriate sections.

- **Dee River Basin District facts and statistics** – Further information on the statistics for the Dee River Basin District. This contains information such as water body classification results and reasons for being classified at lower than good ecological condition. It contains details on the protected areas that fall under special legal protection. To access the document, visit our information page.
- **Dee River Basin District Strategic Environmental Assessment** –To ensure the river basin management plans properly consider all aspects of the environment (for example how the plan affects the historic environment or landscape), Natural Resources Wales and the Environment Agency is carrying out a Strategic Environmental Assessment of each plan. There is a consultation on how we propose to approach this task in the Dee River Basin District, which is published alongside the Dee River Basin District Challenges and choices consultation and closes on 22 December 2013.

- **' England's Waters' Challenges and Choices consultation** – There is a consultation on the significant water management issues (covering the whole of England). This consultation also starts on 22 June. It is open for three months, closing on 22 September 2013.

- **'Living Waters for Wales' - is a supporting document that sets out** the top 10 issues across Wales. To view this, please visit our information page.
- **Significant Water Management Planning evidence summaries** – containing more technical detail on the significant issues in England and Wales. These summaries do not necessarily match the headings used to describe these issues in this document; rather they look at the pressures that create these issues, such as 'Abstraction and flow' or 'Chemicals and metals'.

- **Risk assessments** – As well as considering the current state of the water environment it is also important to look at the future risks (potential impacts). Natural resources Wales and the Environment Agency have produced risk assessments for each pressure affecting the water environment.

- **Water Framework Directive: DataShare** – This is a web service from which the public can download datasets that the Environment Agency and Natural Resources Wales uses to inform much of the analysis and work we do. Relevant datasets include detailed classification data and maps of the bodies of water in England and Wales. Note: much of the content on this site is technical and requires special software to view files. To access the DataShare, visit: http://www.geostore.com/environment-agency

10 Consultation information

Summary of consultation questions

Consultation questions

The significant issues (pages 12 – 18)
1 What do **you** consider to be the biggest challenges facing waters in the Dee River Basin District?

2 Do you agree with our description of how the significant issues are affecting the water environment and the local community? *Please specify which issue(s) your response refers to and provide relevant information to help explain your answer.*

3 How do you think these issues should be tackled, and what would you choose to do first? *Please specify which issue(s) your response refers to. Please consider any resource limitations.*

4. Who we should work with to achieve the environmental outcomes?

The catchment (pages 19 – 21)
5 How are the significant issues in the Dee catchment affecting the water environment and the local community? *Please provide relevant information to help explain your answer*

6 How do you think the challenges affecting the catchment should be tackled and what would you do first? *Please consider any resource limitations.*

How to respond

Natural Resources Wales and the Environment Agency would prefer you to respond to this consultation by email at: ardalbasnafondyfrdwy@cyfoethnaturiolcymru.gov.uk / deerbd@naturalresourceswales.gov.uk

Please complete the questions proforma on our information page, this will allow you to make your comments more effectively, while helping us to gather and summarise responses quickly and accurately. However, if you want to respond in another way, please contact your regional contact for the Dee River Basin District, below.

You can view the consultation documents and consultation questions online. But, if you would prefer a printed version of the document, please call 0300 065 3000,

Please return written responses by 22 December 2013 to:

Jill Brown
Natural Resources Wales
Ty Cambria
29 Newport Road
Cardiff
CF24 0TP

What Natural Resources Wales and the Environment Agency will use the responses for

Natural Resources Wales and the Environment Agency will use the responses from this consultation to shape the review and update the Dee River Basin Management Plan. Natural Resources Wales and Environment Agency staff dealing with this consultation will see all responses in full. Other staff may also see the responses to help them plan future consultations.

A full summary of the responses will be published on Natural Resources Wales and the Environment Agency website.

How Natural Resources Wales and the Environment Agency will use your information

We will make all comments (apart from personal information) publicly available on the Natural Resources Wales and the Environment Agency website. This includes comments received online, by email, post and by fax, unless you have specifically requested that your response be kept confidential. Only names of organisations that respond and not individuals will be published.

If you provide an email address, you will receive an acknowledgement of your response. After the consultation has closed, a summary of the responses will be published on the Natural Resources Wales and the Environment Agency website. You will be contacted to let you know when this is available. You will also be notified of any forthcoming river basin consultations unless you request otherwise.

Under the Freedom of Information Act 2000, Natural Resources Wales and the Environment Agency may be required to publish your response to this consultation, but will not include any personal information. If you have requested your response be kept confidential, it may still be required to provide a summary.

If you have any questions or complaints about the way this consultation has been carried out, please contact:

Jill Brown
Natural Resources Wales
Ty Cambria
29 Newport Road
Cardiff
CF24 0TP