

Water for life and livelihoods



North West River Basin District: Challenges and choices

Summary of significant water management
issues

A consultation

We are the Environment Agency. We protect and improve the environment and make it **a better place** for people and wildlife.

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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Front cover photograph:
Torrs hydro power scheme on River Goyt at New Mills

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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".

Foreword

The North West has some of the most beautiful and diverse water environments in England, including the Lake District, Liverpool's world famous waterfront and popular coastal resorts of Blackpool, Southport and Morecambe.

Working with our partners, great progress has already been made in protecting and improving the water environment in the last few years. Since 2009, 355 kilometres of river have improved significantly and 19 hectares of lake are in a better ecological condition.

We have seen how much we can achieve by working together and I am confident we will be able to build on the great partnerships we already have in the North West.

The next few years will see growing challenges from increasing population demands, economic uncertainty and a changing climate, all of which provide their own unique pressures on the water environment.

We, the Environment Agency, need your help to achieve the best for the water environment. Communities are at the heart of the journey we are on to make the North West the best it can possibly be. To do this, we need to know your views on what you consider to be the biggest challenges facing the water environment. We would like to work with you to develop actions to tackle challenges and agree where we should be focussing our efforts to get the most benefit for the environment, the economy and communities.

Over the next six months we will be consulting a wide range of groups and organisations with an interest in the water environment.

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

- The significant issues that are affecting your water environment.
- What issues we should tackle first.

Your contribution will help us find out which actions are most effective in improving the water environment.

I look forward to working with you all to create a water environment we can all be proud of and create a lasting legacy for generations to come.



Steve Moore
Director, North West

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1 Your views count

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

This is a public consultation and we, the Environment Agency, welcome everyone's views.

We'd like to find out your views on:

- The significant issues that are limiting the benefits society gets from the water environment (the challenges).
- The best way to solve these issues and what should be done first (the choices).

This consultation describes the significant water issues in the North West River Basin District and then focuses on these issues in each of the catchments. This offers you the opportunity to respond to this consultation at the level most appropriate to your expertise or interest.

If you want to respond to this consultation on a specific issue, then you may wish to just answer the questions for that particular section. If your focus is more on your local area, you may prefer to respond to the questions at the beginning of the catchment section and apply them to the area of your interest and expertise. You are, of course, welcome to do both.

We would like you to respond to the following consultation questions:

The significant issues (pages 13-22)

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

2 Do you agree with our description of how the significant issues are affecting the water environment and society? *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 implications.*

The catchments (pages 22-36)

4 How are the significant issues in a catchment affecting the water environment and society? *Please specify which catchment(s) your response refers to and provide relevant information to help explain your answer.*

5 How do you think the issues affecting each catchment should be tackled and what would you choose to do first? *Please specify which catchment(s) your response refers to. Please consider any resource implications.*



Figure 1 Angling taster day (Meadow View, Lymm, Cheshire)

There are many ways to respond to this consultation (see page 37 for more details), if you require the document in a different format or require assistance with responding to the consultation please call Jim Ratcliffe on 01768 215730, or email NorthwestRBD@environment-agency.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 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 *North West River Basin District: Facts and Statistics* document. To view this, please visit: <http://www.environment-agency.gov.uk/research/planning/140084.aspx>

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

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. To view this consultation, please visit: <https://consult.environment-agency.gov.uk/portal/ho/wfd/water/choices>. Please note the consultation on this national 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 water under the ground 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 England, fewer than a quarter 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.

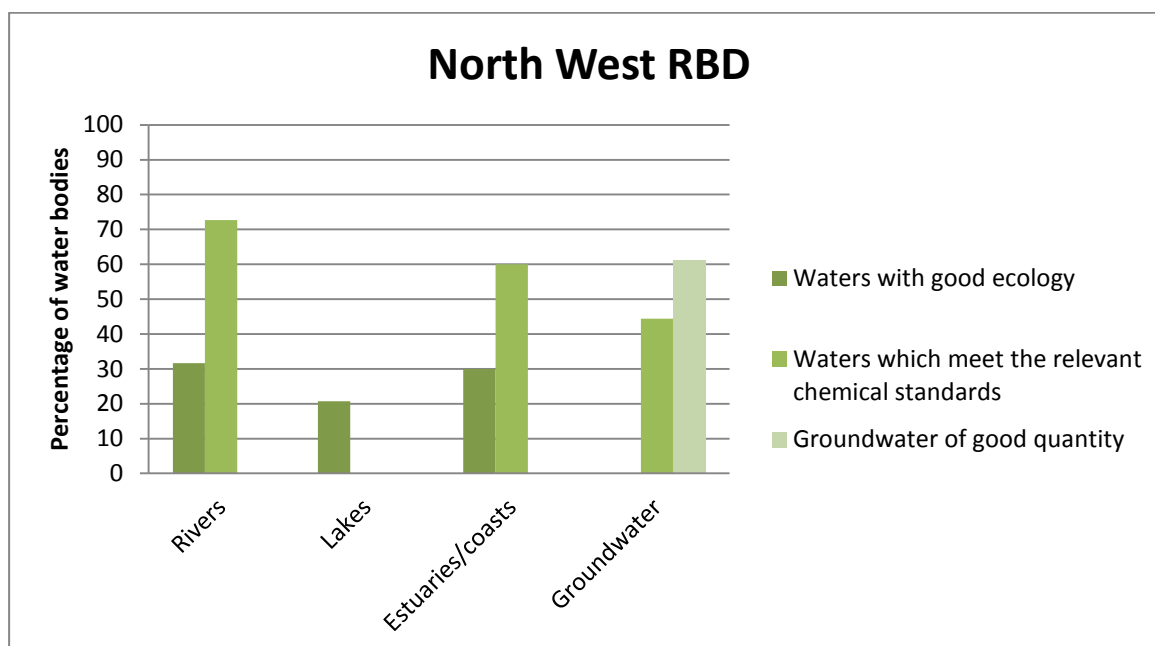


Figure 2 The proportion of waters in the North West RBD in good condition in 2012 (based on assessments of the ecology, chemicals and for groundwater, the amount of water).

4 River basin management planning – the benefits

In December 2009 we, the Environment Agency, published the current North West River Basin Management Plan. With our partners, we are now working to review and update it. We will publish the revised plan in December 2015, following Government approval and sign off by the Secretary of State.

Understanding the benefits society obtains from protecting and improving the water environment is at the heart of river basin management planning. Understanding and capturing information on these benefits will help determine the quality of the water environment society wants and can afford to achieve.

The updated plan will explain how decisions affecting the water environment are made. The plan is important because it will show businesses and other water users what they need to do. It will not be a full, detailed list of actions. Instead, it will provide the basis for agreeing detailed work plans.

The updated plan will take into account the wider water issues such as flooding, a changing climate and drought, which are, in some cases, managed with the help of other, more detailed plans.

Getting value for money is crucial to ensuring the best possible environmental benefits for each pound spent. Improvements to rivers, canals, lakes and coastal waters can give benefits, such as stimulating economic growth, opening up tourism and leisure opportunities and regenerating neglected areas. This will allow communities to have real pride in their local areas, allowing both people and places to fulfil their full potential. In challenging economic times, there will be some tough choices to be made when deciding where to focus effort and use valuable resources to best effect.

Significant water management issue	Sector responsible for the significant water management issue								
	Agriculture & rural land management	Angling & conservation	Forestry	Industry	Mining & quarrying	Navigation	Urban & transport	Water industry	No Relevant Sector
Pollution from rural areas	160		3						
Pollution from towns, cities & transport				10			119		1
Changes to level and flows	17			6	1	1	1	18	11
Invasive non-native species									9
Pollution from Mines					21				
Physical modification	45	1	1	28	2	9	108	84	133
Pollution from waste water	29			25	8		31	163	22

Table 1 Summary of the sectors identified as contributing to the issues preventing England's waters reaching good condition (based on 2013 information on reasons for failure collected during investigations carried out by the Environment Agency; numbers in table are the numbers of affected waters).

5 The catchment based approach

The Environment Agency is constantly exploring better ways of involving people, communities, organisations and businesses to make a difference to the health of all waters and habitats.

The Environment Agency depends on communities to help improve the water environment and there are already great examples of local people providing invaluable knowledge and creative solutions. Organisations, such as Rivers Trusts and fishery groups, are bringing about real and effective changes that reduce pollution and bring people closer to their local environment. This approach needs to be at the heart of improving the North West water environment.

Following your feedback that involving people at a 'catchment' level is often the most effective way of working together, we have included information on each catchment within the North West River Basin District.

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

By working together across catchments 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 people, communities, organisations and businesses in making decisions by sharing evidence.
- Work out what issues to tackle as a priority.
- Build towards a 'catchment plan', a simple statement of options to protect and improve the catchment.

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

6 The North West River Basin District

Overview

The North West River Basin District (Figure 3) has some of the most stunning landscapes and water environments in the world. Many of the waters are also internationally important because they are home to vulnerable or rare wildlife or habitats.

The North West has a population of nearly seven million people, the third largest among the regions of England. Water is central to the life of the North West, with iconic places such as Blackpool, the Lake District, Salford Quays and the Liverpool waterfront all contributing to the economy. Estuaries, such as the Mersey, are important trade routes to the rest of the world. Our coastal and inland bathing waters are an important element of the North West's tourism industry and our region's shellfish industry relies directly on the quality of our coastal waters.

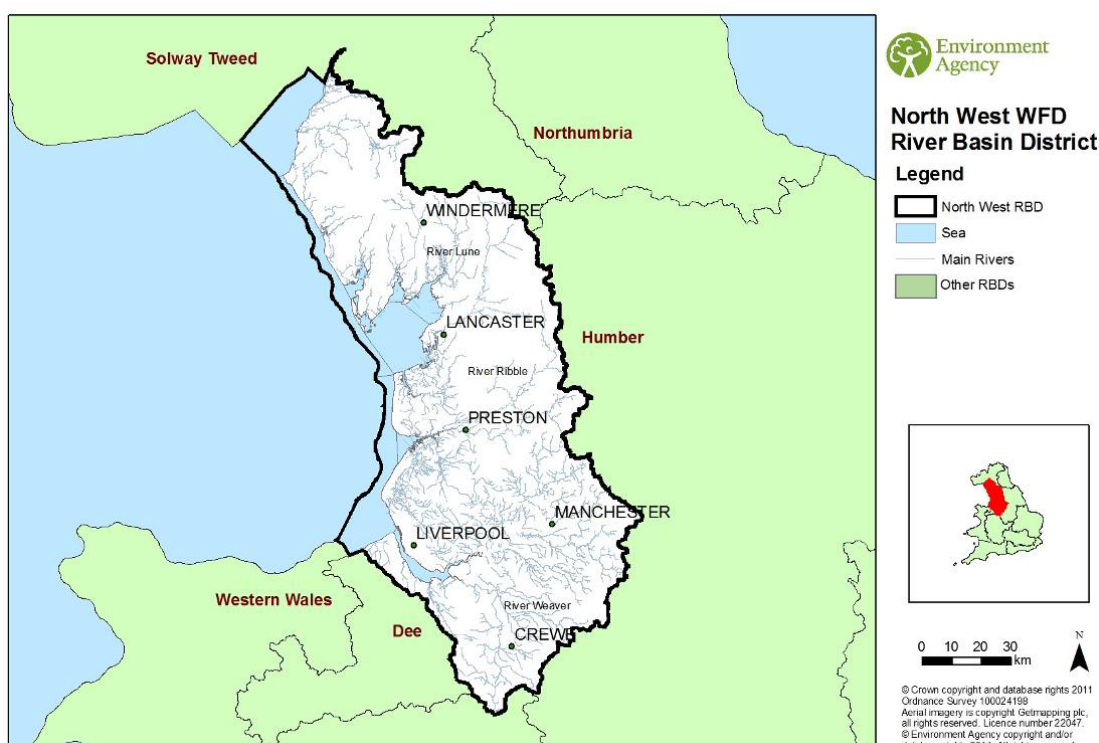


Figure 3 Map of the North West River Basin District

The North West has many excellent salmon rivers. In the south of the region, the coarse fisheries attract numerous anglers. In fact, angling supports over three thousand jobs in the region. The extensive network of canals also provides recreation, transport, tourism opportunities, and coarse fishing throughout the area.

Around 80% of the North West Region is rural, with the majority being managed for agriculture. Livestock farming is the most common rural land use, which helps shape much of the landscape. The region faces many environmental challenges and opportunities; it includes a quarter of England's derelict land and major cosmopolitan cities such as Liverpool, Manchester and Preston. The Industrial Revolution has impacted upon most of the region as seen by its very large number of water related structures. The North West has high rainfall, and reservoirs in the Pennine Fells and Lake District supply water for the densely populated areas towards the south. About 85% of the freshwater used in the North West comes from reservoirs, lakes and rivers. The rest comes from groundwater, abstracted from boreholes and springs.

Current condition

The Environment Agency uses 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, canal, coastal and transitional (estuarine) water or surface water transfer. 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, chemical and physical condition of the water body and assesses how close it is to its natural state.

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 is the first priority of river basin management planning. This helps ensure that the benefits society gets from our water bodies are maintained.

The number and latest (2012) status of the North West's river, lake and underground waters are discussed for each of the North West's catchments in Section 8. In addition to these, 18 (66%) of the 27 canals are classified as good quality, with the remainder classified as moderate. Of the 20 coastal and transitional waters, six (30%) are classified as good quality, with the majority of the rest classified as moderate, and three classified as bad. Of the 35 surface water transfer waters, 31 (89%) are classified as good quality, with the remainder classified as moderate.

The North West has both some of the best and poorest quality waters in the country with the counties of Cumbria, Lancashire and Cheshire containing internationally important aquatic habitats. Though many of the region's rural areas have relatively good natural water quality, there are large urban areas, such as Merseyside and Greater Manchester, where water quality is poorer due to large population pressure and pollution from industry. The diverse nature of the North West means that most of the problems affecting UK waters apply to some part or other of the region. Poor bathing water quality is a major concern for many key locations including Southport, Lytham St Annes, Blackpool and Morecambe. Shellfish water quality is also an issue at several coastal locations. A third of the poorest quality rivers in England and Wales are currently found in the North West. Much of the region's poor river water quality can be put down to the impact of sewage and pollution from both urban and rural areas.

Flooding is an ever present risk particularly in the high rainfall and rapidly responding catchments draining the Pennines and in the towns of Cumbria. Although the North West is the wettest region in England the availability of water, particularly in supplying the cities and manufacturing industries, is an important issue. The water industry Asset Management Plan investment programme has by far the biggest impact in making sure water continues to be supplied to households and industry in a way that does not damage our rivers and habitats.

For information on the latest classification results and other key statistics see the *North West River Basin District: Facts and statistics* supporting document. To view, please visit: <http://www.environment-agency.gov.uk/research/planning/140084.aspx>

Protected areas

The North West has some of the most beautiful landscapes in the UK. These are important for wildlife, farming and tourism. Some of these, such as rare wildlife habitats, bathing waters, shellfish waters and areas where drinking water is abstracted, are designated to protect them. These areas are known as 'protected areas' and 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.

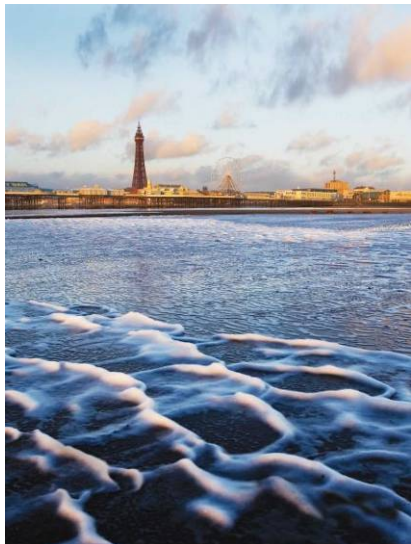
The following shows the percentage of the North West taken up by these important landscapes:

National Park land – 18%

Areas of Outstanding Natural Beauty – 11%

Green Belt land – 19% (compared to 13% for England as a whole)

Sites of Special Scientific Interest (SSSIs) – 18%



There are 31 designated bathing waters, from Allonby in the North to Meols in the South, and 11 protected shellfish waters.

There are also 28 protected areas designated under the Habitats and Wild Birds Directives (Special Areas of Conservation (SACs) and Special Protection Areas (SPAs)). These sites need to be restored because of the habitats and species they support. Through working together significant progress has been made in identifying the activities impacting on these sites and the actions that are needed to resolve them. There is still much to do, especially river restoration work, tackling diffuse pollution, controlling invasive species and managing water levels.

Figure 4 Blackpool bathing water

All abstractions where water is intended for human consumption are designated as Drinking Water Protected Areas (DWPAs). We are required to monitor DWPAs, report compliance against Water Framework Directive targets and co-ordinate measures to prevent deterioration in raw water quality. Where raw water quality is shown to be deteriorating due to man-made causes (for example, colour, nitrate, pesticides, algae), Safeguard Zones are established and action plans drawn up, listing measures to prevent further deterioration. There are 18 surface water and nine groundwater Safeguard Zones in the North West River Basin District.

In total, surface and groundwater Nitrate Vulnerable Zones (NVZs) cover 27% of the land area of the North West. Groundwater NVZs have been established in places where groundwater nitrate levels were predicted to exceed the drinking water standard if no action was taken. Within NVZs regulations limit the usage of nitrate fertilisers and manures in agriculture.

More information about the protected areas, see the *North West River Basin District: Facts and statistics* supporting document. To view, please visit: <http://www.environment-agency.gov.uk/research/planning/140084.aspx>

7 The significant water issues

Working together with members of the North West River Basin District liaison panel (a group of key partners), we have developed a list of the most important issues we believe threaten the current and potential future uses of the water environment.

To do this, we assessed the pressures or potential issues caused by people **now** (for example, rivers polluted by urban or farming activities); **in the past** (rivers contaminated by mining); or **in the future** (abstracting more water to meet rising demand). We have only focused on those issues where most action is needed.

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](#) – changes to the natural habitat by people, for example poorly designed or redundant flood defences and weirs, and changes to the natural river channels for land drainage and navigation. 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 waste water](#) – waste water can contain large amounts of nutrients (such as phosphorus and nitrates), ammonia and other damaging substances, including bacteria and viruses.
- [Pollution from rural areas](#) – the effects of poor rural land management and agriculture on the water environment (also known as ‘diffuse rural pollution’).
- [Pollution from towns, cities and transport](#) – rain water running over hard surfaces and carrying pollutants into waters, chemicals from contaminated land, and sewage from houses ‘mis-connected’ to surface water drains rather than sewers.
- [Changes to the natural flow and level of water](#) – taking too much water from rivers, canals, lakes and underground sources means that there is not enough water flowing.
- [Pollution from mines](#) – contaminated water draining from mines, most of which are now abandoned.
- [Invasive non-native species](#) – the effect on the health of the natural environment of plants and animals from outside the UK introduced to UK waters.

The next section looks at each of the significant issues in turn; explaining what it is, what's causing it and how it is limiting the benefits society gets from the water environment. We share what is currently being done, what more could be done and what the priorities for action might be.

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 summer 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. Ministers will ultimately decide what the long-term objectives should be, by considering how affordable the actions are.

As well as considering the current state of the water environment it is also important to look at the future risks (potential impacts). The Environment Agency has 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 North West River Basin District:

Consultation questions

- 1** What do **you** consider to be the biggest challenges facing waters in the North West River Basin District?
- 2** Do you agree with our description of how the significant issues are affecting the water environment and society? *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 implications.*

Physical modifications

Many of the region's waters have been altered for uses such as flood protection, urbanisation, navigation, land drainage and recreation. The modifications include:

Weirs	Used to hold back water, for example to supply power to industry. They can obstruct the movement of fish and prevent them from reaching spawning grounds.
Reservoirs	For water storage and supply.
Canals	Used for transportation and navigation.
Culverts	To allow development. Restricts light, reduces habitat diversity and isolates rivers from their floodplains.
Channel modifications	Changing the natural flow of watercourses to prevent flooding. Can reduce habitat diversity and prevent natural sediment movement.
Drains	Drainage of low-lying areas for agriculture.

Waters have legitimate uses for the benefits of society and it will not always be possible to restore these waters to an entirely natural state, and maintain these benefits. However there are many ways to improve the ecology of waters affected by the above including river restoration schemes and sensitive maintenance programmes. Examples can be seen at <http://evidence.environment-agency.gov.uk/FCERM/en/SC060065.aspx>.

Recent work in the North West includes:

- Weir removal and fish passes which have helped salmon recolonise the River Bollin.
- Joint working with the Irwell Rivers Trust to remove 15 weirs.
- Culvert removal schemes with the local authorities in Darwen and Rochdale.
- Woody debris use in the River Goyt to encourage better habitat and flow.
- A dredging plan developed by the Mersey Docks and Harbour Authority to better manage sediment in navigation channels around the ecologically important estuary.



Figure 5 Managed use of woody debris to improve river habitat and flow

New flood risk schemes can help restore modified rivers. For example, £32 million will be spent in 2013/14 to protect an additional 6,000 North West homes. This offers opportunities such as replacing hard bank reinforcement with 'softer' geotextiles. Investigations on 150 waters identified many such improvements. However the large number of modified waters, and the work required, means it would be too costly to restore all of them compared to the expected benefits. Partnership working will therefore be critical. The Irwell Pilot project has explored this and a group of committed partners is developing a joint plan of action to help return its rivers to a more natural state. Learning from the pilot project and extending the geographical scope of the catchment based approach will be a priority. We suggest continuing to look for opportunities to reduce the effects of physical modifications, where this can be done without impacting upon the functions of our waters (for example in carrying away flood waters). In particular, we believe removing barriers that prevent fish from moving freely and the restoring good river habitat are the top priorities for the North West.

Pollution from waste water



Figure 6 Algal bloom, River Weaver

Waste water can contain nutrients such as phosphorus, ammonia, nitrates and other harmful substances, including viruses and bacteria. Nutrients can disturb the natural ecological balance of a watercourse and cause excessive growth of vegetation and algae, which may starve the water of oxygen. Other pollutants in waste water may be directly toxic to plants or animals. Humans can also be affected, for example through bacteria and viruses in waste water affecting bathing or shellfish waters.

The North West needs an extensive sewerage system to collect, treat and dispose of its waste water. Every day, three million homes and a quarter of a million businesses produce enough waste water to fill around 400 Olympic size swimming pools. In wet weather, many sewer systems cannot cope with the influx of rainwater. Storm water overflows on sewers act as a safety valve, reducing the risk of properties flooding. However, these storm overflows discharge untreated sewage and can have a significant impact upon the receiving water course, such as bathing waters. These sewers are coming under increasing pressure from the effects of population growth and climate change. Leaking sewers in some areas, such as Liverpool, are probably impacting on groundwater.

Around one fifth of rivers, lakes and estuaries are currently not meeting the standards for healthy water because of the effect of treated sewage and untreated sewage from storm overflows. Coastal and inland bathing waters are an important tourist resource but a significant number are predicted to fail the stricter standards that come into force from 2015. Pollution from waste water is contributing to this.

Through a combination of regulation and investment, the quality of rivers, estuaries and protected areas has significantly improved in recent decades. Between 2010 and 2015 United Utilities will complete a £3.6 billion programme of improvements; this includes £1.2 billion on sewage treatment works and refurbishing sewer networks, £122 million dealing with growth and £1 billion on maintenance work.

Current investment in storm sewage treatment in Preston will help address problems with bathing waters along the Fylde coast. The Turning Tides partnership, between United Utilities, Blackpool Council, the Environment Agency and other organisations has been set up to work together to improve the quality of bathing waters.

The impact of phosphorus from waste water is the largest water quality issue in the North West and a key challenge for the future. Whilst most of the North West's sewage is treated by United Utilities, everyone has a part to play, from the products they choose to use, to what they allow to be discharged to streams and rivers.

In most urban catchments sewage is the greatest source of phosphorus to waters. In order to meet the required phosphorus standards, further phosphorus removal at many sewage treatment works will be necessary. However, current technologies may not allow these standards to be achieved in all waters. An industry ban on the use of phosphate in detergents will start from June 2013 and in dishwasher detergents from June 2017. This will begin to reduce the amount of phosphorous entering our water environment. In the North West, we consider the top priority for action is to reduce the impact of nutrients and bacterial contaminants that come from our sewers and sewage treatment works to protect our beaches, shellfish beds and wildlife areas.

Pollution from rural areas

The North West is over 80% rural with thriving farming, horticulture and tourism. Lowland areas support good quality land used for intensive arable cropping and livestock rearing. Upland areas support more extensive farming, or may be managed for grouse or forestry. Pollution in rural areas can come from many sources, including septic tanks, forestry, roads and agriculture and affects about one fifth of the waters in the region

Soils and sediment washed off the land can carry phosphorus which can also enter water



Figure 7 Sediment in field runoff

from waste water or agricultural activity. Too many nutrients may cause excessive algae growth. Nitrate from fertilisers has built up in groundwater over decades and despite a reduction in agricultural application rates, concentrations in groundwater will take a long time to reduce. In Cheshire, the nitrate levels are reducing the amount of groundwater used for drinking water and potentially affecting some wetlands. Sedimentation from erosion of upland areas, forest clearances, saturated and compacted fields, and livestock trampling of river banks, can affect river ecology by smothering fish spawning grounds. Other pollutants include bacteriological contaminants from animal faeces, and pesticides from farming, forestry, golf courses, the railway network and parks. These contaminants pose a particular threat to some of our bathing waters, shellfish waters and drinking water sources.

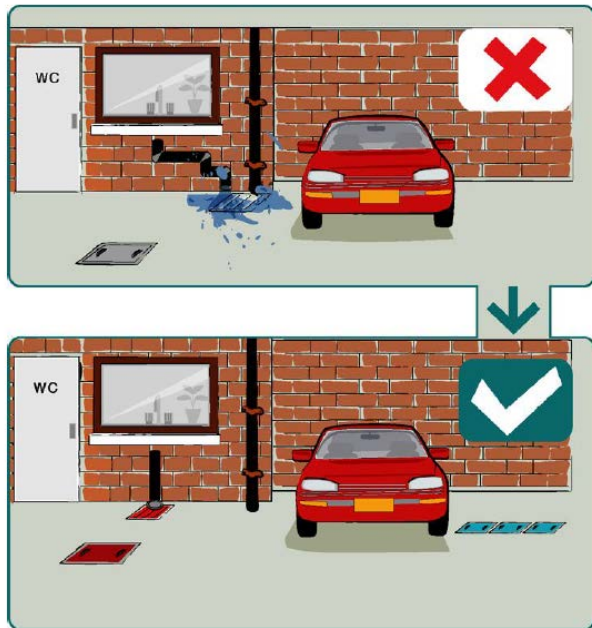
Farming over the last two decades has been going through an evolution, with society better recognising the links between the food we eat and a healthy environment. This has resulted in UK policies moving away from maximising production to a more balanced approach between production and environmental stewardship. Many farmers and landowners have positively responded to this and actively contribute to nature conservation, following codes of good practice and participating in Environmental Stewardship Schemes.

Catchment Sensitive Farming tackles diffuse pollution by encouraging good manure, nutrient and soil management and offers advice and grant funding to farmers. Similarly, the Livestock Programme funds schemes to make farms more competitive while improving the environment. Regulations minimise pollution and targeted farm inspections help farmers comply with legislation. A number of large-scale collaborative landscape scale projects are also being run in the North West including Moors for the Future, Cloud to Coast and SCAMP. These involve work between a variety of partners and land owners aiming to improve the rural environment. Different sectors will need to work together to maximise the benefits for the catchment. Due to the number of businesses involved and the wide geographical coverage of rural pollution issues, it is clear that efforts to reduce the effects on the water environment need to be prioritised. Evidence suggests that agriculture is the largest contributor to rural pollution. Other sources of pollution must not be ignored but the priority should be to target those catchments where agriculture is affecting protected areas, such as recreational waters, drinking water supplies, shellfish waters and important wildlife habitats. Secondly, advice and tools should continue to be given to farmers to help them understand what is needed in order to comply with the relevant regulations. In particular, we need to consider:

1. What balance of effort should be applied to these two approaches? (*for example 20% of effort on 'basic compliance' and 80% on focused delivery in protected areas*).
2. What types of activity could achieve the two approaches? (*for example, industry assurance schemes and Codes of Good Practice bringing baseline controls with more focused activity in protected areas*).

Pollution from towns, cities and transport

About one tenth of the waters in the North West suffer from poor water quality due to pollution from towns, cities and transport. Rainwater draining from roofs, roads and pavements carries pollutants including grit, bacteria, oils, detergent and road salt. This polluted water drains either to the sewer or surface water drainage networks. Many homes and workplaces have wrongly connected drains, meaning dirty water often enters surface water rather than foul sewer drains. Pollutants also leach out of land that has been contaminated. Preventing pollutants getting into water is usually cheaper than cleaning up contaminated water. So, to help prevent pollution, we have run national campaigns to raise public awareness about not using surface water drains to dispose of waste.



The Environment Agency works with local authorities to encourage planners and developers to incorporate “sustainable urban drainage systems” in new developments. As well as helping to reduce pollution of watercourses, these can also reduce the amount and speed of rainwater run-off and therefore reduce the risk of flooding. United Utilities, local authorities and the Environment Agency work together to tackle problems with wrong connections, and we have run campaigns to make sure that the drainage from homes and businesses are connected to the right drains.

Figure 8 Wrongly and correctly connected drainage

In Greater Manchester, research has been carried out into roadside gully pots and the impact of natural surfaces in reducing pollution from urban environments and the highway network. In Preston and Wigan a project between the Environment Agency, Defra, Highways Agency and local authorities has identified pollution from highway outfalls and is helping to develop new, more cost-effective treatment technologies.

We consider that the priorities for future work are to:

- Continue to influence planners and local authorities to incorporate “sustainable urban drainage systems” into new developments and help deal with contaminated land issues.
- To work with Highways Agency and local authorities to research methods of reducing pollution from the road network, and to implement these in high-risk areas.

Changes to natural level and flow of water

Reduced water levels in rivers caused by low flows may mean that some wildlife might not be able to survive. Changes in flow often trigger the migration of fish, and reduced flows in some rivers can exaggerate the impacts of barriers such as weirs.



Figure 9 Haweswater in drought

A tenth of the North West's waters are adversely affected by flow pressures. In parts of the region there are aquifers that don't have enough water as a result of over abstraction for public water supply and industry. The impact on rivers from groundwater abstraction is limited, although there is still a potential issue with saline water polluting aquifers. In Lancashire and Cumbria, a number of rivers and lakes, used to supply drinking water, sometimes suffer from a lack of water.

You can see how much water is available in your area by looking at the

Environment Agency's catchment abstraction management strategies at <http://www.environment-agency.gov.uk/business/topics/water/119935.aspx>.

Reducing abstraction can be difficult and costly, as often new sources of water need to be found. United Utilities and the Environment Agency are currently investigating a number of sites where water abstraction is causing harm. For example, in the Brennand and Whitendale catchment near Dunsop Bridge, a scheme has recently been agreed for reducing the amount of water abstracted while still maintaining sufficient water supply for Blackburn. This has been developed as a result of a local community focus group. Where over abstraction of water for agriculture is causing problems, using winter storage in small farm reservoirs more may help to ensure a more reliable supply during dry spells.

Increased interest in hydropower provides both opportunities and pressures for many rivers. Such proposals need very careful consideration to ensure that they do not adversely impact upon the environment or prevent fish passage and sediment movement.

Restoring large areas of upland wetlands can help slow water running off the land and allow aquifer water levels to rise and river flows to be more constant. Recent work by the Ribble Rivers Trust in the headwaters of the Ribble catchment involved blocking moorland drains and tree planting. As well as improving the habitat of the area this has resulted in more natural river flow. Sustainable Drainage Systems (SuDS) can help to return clean water into the ground to replenish aquifers.

In some parts of the North West, reservoirs can be used to store flood waters. This not only helps to protect communities from flooding but also prevents the damaging effects of flood waters on habitats and the physical state of the watercourses.

We think that the priority is to fix old licensing decisions affecting protected areas in the Derwent, Ehen and Kent catchments. Work is also needed to implement cost-effective and technically feasible mitigation measures to address physical modifications due to water use across the North West. There are challenges and choices here about speed of delivery, cost and impact on water supply.

Pollution from mines

About 3% of the region's watercourses suffer from poor quality due to minewater pollution from former coal and metal mines.

Pollution from mines comes from two main sources:

- underground workings
- waste materials spread on the surface (spoil)

Minewater is the groundwater that has naturally entered the mine workings. When the mines were operating the minewater was drained or pumped to keep it away from working areas. After the mines close the mine workings flood and the water level recovers until it reaches a point where it reaches the surface. This can also result in both surface and groundwater being contaminated.



The most obvious sign of pollution is the orange staining of rivers downstream of coal or metal mines, which occurs when iron oxidises. The resulting 'ochre' separates out to form a sludge on the riverbed. The metals are toxic and the sludge can smother wildlife.

The minewaters of the Lake District do not contain relatively high iron concentrations and can appear visibly unpolluted. However, the presence of other dissolved metals, such as lead, copper, zinc or cadmium, makes the pollution just as serious. Diffuse pollution from the leaching of metals due to ore crushing, smelting and settlement lagoons is a real concern because the spoil heaps are often large and close to the water. It should also be noted that the larger dams, lagoons and spoil heaps may not be stable and some suffer from erosion, which adds sediment to river channels. Minewater related pollution can have a serious impact on ecology. However, in some places with a very long history of contamination, wildlife has adapted to it.

Figure 10 Smithy Brook mine water treatment scheme

The Coal Authority's minewater preventative and remediation programme has prioritised work according to costs and benefits. In recent years, this has led to improvement schemes in the Derwent, Douglas, Irwell, Mersey Estuary and Ribble Catchments. There is also ongoing research with universities to develop innovative solutions to tackle the historic metal mine legacy. We believe the priority is to work closely with the Coal Authority to develop schemes that will improve the 30 water bodies that have been identified as suffering from pollution from mines.

Invasive non-native species

Non-native species are plants and animals from outside the UK that establish themselves, and pose a major risk to our native wildlife. They may also have significant economic impacts. Climate change is thought to be driving certain species northwards, so we may see a greater number and variety of non-native species in the future.



Particular species of concern in the North West include Japanese Knotweed, Himalayan Balsam (see left), Signal Crayfish (see cover page), mink and Giant Hogweed. Himalayan Balsam and Japanese Knotweed quickly establish dense growths along riversides. Access to riverbanks can be limited by huge swathes of Japanese Knotweed and Himalayan Balsam; Giant Hogweed can cause burns and skin irritation to humans.

Figure 11 Himalayan Balsam

In the North West, Signal Crayfish are becoming widespread and affect animals such as fish and invertebrates. They are larger, more competitive and carry a plague to which the native White-Clawed Crayfish is susceptible. This means that the native species is becoming less common. Other species such as mitten crabs destroy habitats like reed beds and can cause banks to collapse by burrowing into them. There are likely to be increased problems with aquatic plants in the future, because a particular herbicide which can be used to control them will no longer be produced. It is difficult to estimate accurately the economic effect of non-native species but, at the start of the decade, it was estimated to be £2 billion nationally. In 2011-12, the Environment Agency and its partners spent £657,000 on controlling introduced species to ensure flood defences and the natural environment were not compromised.

Targeting efforts to tackle non-native species problems must be based on the high impact species and the methods described in the Invasive Non Native Species Framework Strategy for Great Britain (<https://secure.fera.defra.gov.uk/nonnativespecies>). This can be done both regionally between catchments and locally. A major challenge will be to co-ordinate agreed actions. As budgets for this work are limited, any action must be carried out at least at a catchment level rather than on a site-by-site basis to achieve lasting results.

Challenging questions will need to be answered to make sure resources are not wasted and to get the best results, for example:

1. Are there species that we stop trying to contain as eradication is impractical?
2. Should 'biocontrol', that is releasing other non-native species to control invasive species, be used?
3. If biocontrols will shortly become available, should we spend money on other controls between now and the release date?
4. How should this work be resourced?

There are a number of current initiatives in the North West. For example, there is the Cumbrian non-natives group and the Bollin Catchment local action group, which are made up of landowners, land managers and water users. They aim to take a co-ordinated approach to controlling and eradicating non-native species. As each species and catchment is different there is no right answer or single solution to the problem.

Summary of possible actions by issue

The table below summarises the possible actions (and owners) for each of the significant issues within the North West River Basin District. These actions have been identified through an assessment of the issues and the Environment Agency's engagement with partners to date.

<p><u>Physical modifications</u></p> <ul style="list-style-type: none"> • Remove the barriers to fish migration (Landowners, Rivers Trusts, Environment Agency and other partners). • Restore good river habitat (Landowners, Rivers Trusts, and other partners).
<p><u>Pollution from waste water</u></p> <ul style="list-style-type: none"> • Reduce impact of wastewater from continuous and intermittent sources (United Utilities, owners of private wastewater treatment plants and septic tanks).
<p><u>Pollution from rural areas</u></p> <ul style="list-style-type: none"> • Develop a targeted strategy to tackling diffuse pollution focussed on <ol style="list-style-type: none"> 1) Catchments where activities are impacting upon protected areas 2) Delivering baseline advice and regulation for other areas (Environment Agency, Natural England and other partners)
<p><u>Pollution from mines</u></p> <ul style="list-style-type: none"> • Develop schemes to improve the 30 water bodies that have been identified as suffering from pollution from mines (Coal Authority, Environment Agency)
<p><u>Pollution from towns, cities and transport</u></p> <ul style="list-style-type: none"> • Promote and adopt the use of “sustainable drainage systems” (Planning Authorities, Developers) • Tackle the problem of wrongly connected drainage systems (United Utilities, Local Authorities, Environment Agency and property owners) • Remediate contaminated land where this is impacting upon rivers and groundwater (Local Authorities, Developers) • Reduce pollution from the road network focussing on high risk waterbodies (Highways Agency, County Councils and Local Authorities).
<p><u>Changes to the natural flow and level of water</u></p> <ul style="list-style-type: none"> • Address historic licensing decisions affecting protected areas (Environment Agency, licence holders). • Restore upland wetlands to create a more natural flow regime (Land Owners, Rivers Trusts and other partners).
<p><u>Invasive non-native species</u></p> <ul style="list-style-type: none"> • Develop catchment scale strategies to co-ordinate efforts to tackle non-native species (Land owners and managers, other water users)

8 The catchments in the North West River Basin District



Figure 12 North West River Basin District catchments

Responding to the consultation at catchment level

We would like you to answer the following questions on the catchment, or catchments, you are interested in from the section below:

Consultation questions

4 How are the significant issues in a catchment affecting the water environment and society? *Please specify which catchment(s) your response refers to and provide relevant information to help explain your answer.*

5 How do you think the issues affecting each catchment should be tackled and what would you choose to do first? *Please specify which catchment(s) your response refers to. Please consider any resource implications.*

Derwent Catchment

The Derwent lies in the Lake District National Park. It is predominantly rural, with the population centred in the market towns of Keswick and Cockermouth and the coastal town of Workington. The Derwent's many tributaries drain some of Lakeland's highest fells including Blencathra and Skiddaw. The catchment includes the main River Derwent, the River Cocker, River Marron and the River Greta, together with a number of lakes including Bassenthwaite Lake, Derwent Water, Buttermere and Crummock Water.



Facts:

51 water bodies within the Derwent Catchment
16 are at good quality (32%).
32 are moderate (62%).
2 are classed as poor (4%).
1 is classed as bad (2%).
There are 2 designated bathing waters at Allonby.
One is predicted to fail the minimum standards required for bathing.

Figure 13 Thirlmere water works (Pete Birkinshaw)

Issues

- 40% of the catchment has physical modifications including river and reservoir abstractions for public water supply, agricultural and industrial use.
- Pollution from waste water affects 20% of the water bodies.
- Pollution from rural areas affects 20% of the water bodies.
- Pollution from minewaters affects 10% of the water bodies.

Reservoirs such as Thirlmere play an important role in supplying water locally and to other more populated parts of the North West. This demand must be carefully balanced with the needs of the local environment, as it is likely to come under increasing pressure in the future due to planned growth in the North West. A river restoration project is in place looking to demonstrate physical restoration opportunities. Examples include re-meandering straightened rivers and removing embankments to reconnect rivers and floodplains. The aim of these projects is to demonstrate that a naturally functioning river causes less damage to the land when it floods, and requires less active intervention to manage its sediment. Test sites are at an early stage and are being worked on in partnership with Natural England and West Cumbria River Trust.

The main towns in this area have been identified as locations that can contribute to future housing growth. This will result in an economic stimulus but also increase the demand for water and produce greater quantities of sewage that will need treating. Approximately a tenth of the water bodies are failing good status for phosphorus. For the River Ellen, waste water inputs would need to be halved in order to tackle this problem - six water company sewage treatment works and three storm sewage outfalls have been identified for potential improvement. Planned work at Allonby sewage treatment works should improve the bacteriological quality at the nearby bathing waters. Phosphorus can remain in lakes and cause problems such as excessive growth of algae. Over half of the phosphorus inputs come from a combination of rural sources. Projects and partnerships such as the Bassenthwaite Lake restoration programme and Lake District Stillwaters Partnership work with farmers and owners of septic tanks to prevent polluting discharges into the catchment. Minewater discharges affect both river and groundwater quality. Force Crag and Gategill are being investigated and treatment options will reduce pollution to Coledale Beck and Glenderamakin. A healthy water environment in this catchment is essential to sustain recreation, tourism and the local economy.

South West Lakes Catchment

The catchment has short rivers that rise from the Lake District National Park fells. It contains eight lakes including England's deepest one, Wast Water. The rivers and lakes support diverse and sometimes rare wildlife. Although largely rural there are large towns at Whitehaven and Barrow in Furness. The area also has significant industrial development including nuclear installations at Sellafield and Drigg, submarine construction and more recently Europe's largest off-shore wind farm. The catchment includes the principal aquifer in the Barrow area, which is exploited for public water supply, and also in West Cumbria where public water supplies are being developed.



Facts:

49 water bodies within the SW Lakes Catchment

1 is at high status (2%)

19 are at good quality (39%)

22 are moderate (45%)

5 classed as poor (10%)

2 are currently not assessed (4%)

There are 9 designated bathing waters in this catchment. 7 are predicted to fail the minimum standards required for bathing.

There are two designated shellfish waters in this catchment, both of which fail the bacteriological standards for shellfish waters.

Figure 14 Wast Water, West Cumbria

Issues

- 66% of the catchment has physical modifications relating to domestic and industrial water abstraction.
- Pollution from rural areas affects 10% of the water bodies.

Water is a vital resource but we must carefully consider the impact of taking water out of the environment. In 2012 a large proportion of a protected mussel population was adversely affected by water abstraction taken for domestic and industrial use. This highlights why water supply is such a challenge here, due to the competing needs of ecology and water supply.

United Utilities will be consulting on a draft water resources management plan in spring / summer 2013 and choices for West Cumbria are central to this. In 2011 work was done to remove Baystone Bank reservoir and restore the original watercourse. This resulted in the opening up of an additional 3 km of river to migratory fish and the establishment of new spawning grounds.

Rural pollution from slurry and manure is a significant contributor to nutrient concentrations. Improving the management of organic farm waste is therefore crucial to improving water quality. The Catchment Sensitive Farming capital grant and advice scheme has recently received 50 applications from farms within the River Duddon area to help reduce the risk of pollution from their businesses.

Septic tank discharges are also damaging. Further work will need to be carried out with rural domestic property owners to raise awareness of this pollution and to reduce the contribution it makes to the amount of phosphorous within watercourses. Managed forestry covers extensive parts of the upland areas, resulting in further diffuse pollution that has led to acidification and sediment impacts in a number of watercourses, particularly in the upper reaches of the River Duddon.

Kent Leven Catchment

The catchment has short rivers with waters rising in the Lake District fells and flowing to Morecambe Bay. It has England's largest lake, Windermere and migratory salmonid rivers with native white clawed crayfish. It also has the largest continuous intertidal area in the UK with high value shellfish beds. Two thirds of the catchment is within the Lake District National Park and there are many designated conservation areas reflecting high environmental, landscape and amenity value. The rivers and lakes support a diverse range of fish; sea trout and Atlantic salmon run in both the main Leven and Kent rivers, and the rare Arctic char is found within both Windermere and Coniston Water. With key population centres at Windermere and Kendal, tourism and agriculture dominate a vibrant rural economy.



Figure 15 River Leven, Newby Bridge Weir

Facts:

64 water bodies within the Kent Leven Catchment.

23 are at good quality (36%).

36 are moderate (56%).

4 classed as poor (6%).

1 is currently not assessed (2%).

There are three designated bathing waters in this catchment. All three are predicted to achieve the standards required for bathing.

There are three designated shellfish waters in this catchment. Two of these fail the bacteriological standards for shellfish waters.

Issues

- Physical barriers and modifications from power and paper milling industries.
- Pollution from waste water affects 20% of the water bodies.
- Pollution from rural areas affects 10% of the water bodies.
- Pollution from mines - copper levels remain high in some rivers and Coniston Water.

The recent resurgence of hydropower has provided both opportunities and pressures in the catchment. Ten schemes built in the last three years and at least as many again at the planning stage can provide economic stimulus and opportunities for improving access for fish on existing weirs. They can also disrupt aquatic life. Pilot river restoration sites are being targeted in the catchment to deal with historic man made changes resulting from industry needs. The greatest contribution to phosphorus originates from water company discharges, although with high numbers of rural communities reliant on septic tanks, private sewage discharges also make a significant contribution. Tourism is a major contributor to the local economy, with Windermere alone attracting over one million visitors a year. The resulting pressure on the sewerage system in tourist hot spots, combined with high yearly rainfall and sewer pipes that struggle to cope with the high volumes of water, represent particular challenges. Improvements are proposed for Kendal and Ulverston sewage treatment works, which will improve the bacteriological quality at Morecambe Bay Leven shellfish water.

The catchment is mainly rural and this is reflected by the high proportion of livestock, with sheep and beef farms dominating the upland fells and small to medium size dairy farms lower down. Slurry and manure can be a big contributor to nutrient concentrations within watercourses. The ongoing Catchment Sensitive Farming capital grant and advice scheme has provided welcome assistance in helping to reduce the pollution risk from many farms in the catchment. The Windermere Catchment Restoration Programme is bringing a particular focus to lake management based on partnership working with good results. The major water supply abstraction from Windermere continues to be a significant stress on the lake.

Lune Catchment

The Lune Valley is a picturesque area where tourism is increasingly important. The Lune rises in the Howgill Fells, flows west to Tebay and southwest into Morecambe Bay. The Forest of Bowland is known because of its unspoiled and richly diverse landscapes. Lancaster takes its name from the River Lune and is famous for its medieval architecture. Morecambe Bay is the largest expanse of intertidal mudflats in the UK and is an important wildlife area.



Figure 16 The Lune Valley and Morecambe Bay

Facts:

55 water bodies within the Lune Catchment.
34 are at good quality (62%).
17 are moderate (31%).
3 classed as poor (5%).
1 is currently not assessed (2%).
There are three designated bathing waters in this catchment. All are predicted to fail the minimum standards required for bathing.
There are two designated shellfish waters in this catchment, both of which fail the bacteriological standards for shellfish waters.

Issues

- Pollution from rural areas affects 11% of the water bodies and includes slurries, manures, silage liquor and sheep dip.
- 7% of the catchment has physical modifications including reservoirs, moorland drainage, culverts, flood defences and weirs.
- Pollution from waste water affects 7% of the water bodies.

The upper and middle reaches of the catchment are predominantly rural. Sheep and beef farming are common to the uplands, with dairy farming being the major land use in the valleys. Farmers have reduced environmental impacts by adopting management practices and engaging with voluntary schemes such as Environmental Stewardship and Catchment Sensitive Farming. The aim of the Catchment Sensitive Farming initiative in this catchment is to reduce pollution, particularly that which impacts upon bathing and shellfish waters. There have been issues with toxic sheep dip and runoff from slurry spreading during heavy rainfall. It is therefore important that we continue to work in partnership with farmers to reduce this type of pollution. Poorly maintained septic tanks are also a problem.

The lower catchment is more urbanised and industrial, particularly around Lancaster and Heysham. The river and coast in this area are important to the local economy attracting tourists, particularly at Morecambe. The rivers here are impacted by waste water and pollution from urban runoff. United Utilities has recently made considerable investments in improving discharges in this area. Further work is planned on the sewerage network in order to improve bathing water quality. Polluted runoff due to wrongly connected domestic foul drains has also been specifically highlighted as an issue for the area. Everyone can help to prevent this sort of pollution by making sure their drains are correctly connected. Road runoff can also be an issue from urban areas. Oil and fuel deposits can be washed from the road into the surface water drainage system and local streams. Salt and grit spread in the winter also causes problems in streams.

Wyre Catchment

The River Wyre leaves the Bowland Fells, flows through market towns such as Garstang and seaside resorts such as Cleveleys, before entering the Irish Sea in Morecambe Bay. The catchment is mainly rural with urban pockets concentrated around the seaside towns. The River Wyre supports both coarse and game fisheries. Water related recreation is important, especially in places such as Blackpool's "Golden Mile" beachfront, Lancaster Canal and numerous foot paths and bridleways. Yachting and other water-sports are also popular in the Wyre Estuary. Both the Fylde aquifer and surface waters supply drinking water.



Figure 17 River Wyre (Michael Shepherd)

Facts:

26 water bodies within the Wyre Catchment.

7 are at good quality (27%).

19 are moderate (73%).

There are six designated bathing waters in this catchment. Five are predicted to fail the minimum standards required for bathing.

There is one designated shellfish water in this catchment which fails the bacteriological standards for shellfish waters.

Issues

- Pollution from rural areas affects 11% of the water bodies and includes slurries, manures, silage liquor and sheep dip.
- Pollution from waste water affects 7% of the water bodies.
- 7% of catchment has physical modifications including reservoirs, moorland drainage, culverts, flood defences and weirs

Improving the quality of bathing waters is one of the most important issues in the catchment. Rural pollution affects the upper and mid reaches of the River Wyre where the land is mainly used for dairy farming. The Wyre was part of a Catchment Sensitive Farming project aimed at reducing pollution at bathing and shellfish waters and offered advice and guidance on pollution prevention and available grants. Septic tanks also contribute to rural pollution in the area. United Utilities has recently installed ultra violet disinfection to destroy bacteria in the discharge from Garstang sewage treatment works. Related work is planned for the future to further improve both bathing and shellfish waters. Numerous sources of pollution were also located during a catchment walkover in the winter of 2011. These sources included discharges from private sewage treatment systems at a number of coastal caravan parks. A number of surface water outfalls were also found to be discharging foul sewage due to wrong connections from households. Both these types of pollution could impact on river and coastal waters. Everyone can help to prevent this sort of pollution by checking whether their household drains are connected correctly.

In terms of physical modifications and changes to natural river flows, the Wyre is affected differently along its length. In the higher reaches there are water abstraction points for drinking water supply and numerous weirs, including several on the River Brock, a tributary of the Wyre. Lower down in the tidal zone there are man-made flood embankments to protect the area from flooding. Both these modifications can reduce wildlife movement along the river corridor. Technology exists to reduce these restrictions but it is expensive. Installing a fish pass on a weir typically costs £300,000. Additionally permission must be sought from landowners.

Ribble Catchment

The Ribble rises in the Yorkshire Dales and is one of the longest rivers in the North West. Its two main tributaries reflect the contrasts in the catchment. The River Hodder drains much of the Forest of Bowland Area of Outstanding Natural Beauty, while the River Calder flows through industrial east Lancashire towns. The Ribble Valley is known for its countryside dominated by farming landscapes, natural watercourses and historic villages that attract tourists, anglers and canoeists.



Figure 18 Fencing along the River Loud

Facts:

102 water bodies within the Ribble Catchment.

29 are at good quality (28%).

64 are moderate (63%).

7 classed as poor (7%).

2 are currently not assessed (2%).

There are two designated bathing waters at St. Annes. Both are predicted to fail the minimum standards required for bathing.

There is one designated shellfish water in this catchment which fails the bacteriological standards for shellfish waters.

Issues

- 36% of the catchment has physical modifications including reservoirs, moorland drainage, culverts, flood defences and weirs.
- Pollution from towns, cities and transport affects 13% of the water bodies.
- Pollution from waste water affects 19% of the water bodies.
- Pollution from rural areas affects 19% of the water bodies and includes slurry, manure, silage liquor and sheep dip.

Technology exists to tackle the problem of physical barriers but getting funding and permission from landowners can be difficult. In 2010 a Defra funded £750,000 project led by the Ribble Rivers Trust ensured fish and wildlife passage for three weirs in the Calder Catchment. Due to its industrial past there are many more man-made modifications to rectify. A priority is to identify where the most cost effective environmental improvements to these can be made. Other physical modifications include the Savick navigation and Preston docks, which both affect the estuary area. Urban areas, such as Preston, Blackburn, Burnley and Clitheroe have been identified for housing growth and renewal. As urban areas grow it is vital to make sure that they can cope with increased flows and that surface water drainage is uncontaminated. United Utilities is investing in sewage infrastructure, for example on seven storm overflows in Preston. Further work is planned between 2015 and 2020 at Chorley, Blackburn, Hesketh Bank and Preston sewage treatment works together with further improvements to storm overflows along the Blackpool waterfront.

Most of the Ribble Catchment is rural. The majority of agricultural land is used for dairy farming and sheep. Farmers have been working with various organisations to reduce pollution for a number of years and there have been significant improvements in water quality. For example the River Loud has improved following a Catchment Sensitive Farming initiative and work by the Ribble Rivers Trust. The Ribble Catchment Sensitive Farming project is continuing and will focus on land draining directly to the Estuary.

Douglas Catchment

The River Douglas rises in the hills of South Lancashire and is fed by the Rivington reservoirs. The catchment includes the rivers Lostock and Yarrow, and Rufford aquifer. The Douglas and its tributaries flow through the historic industrial towns of Wigan, Chorley and Leyland before joining the Ribble Estuary. The upper and lower parts of the catchment are largely agricultural. Much of the area is popular with walkers and anglers.



Figure 19 Sustainable drainage at Buckshaw Village

Facts:

26 water bodies within the Douglas Catchment.

1 is at good quality (4%).

19 are moderate (73%).

6 are poor (23%).

Issues

77% of catchment has physical modifications including reservoirs, flood defences and weirs.

Pollution from rural areas affects 54% of the water bodies and includes slurries, manures, silage liquor and sheep dip.

Pollution from waste water affects 42% of the water bodies but accounts for 88% of the phosphorus load to the catchment. Pollution from towns, cities and transport affects 42% of the water bodies.

There are local minewater impacts.

There are numerous weirs and barriers that prevent fish and wildlife moving freely in and around the urban areas. Over the past 10 years most weirs on the River Yarrow and its tributaries have been either removed or had fish passes installed. Sea trout have since been seen moving up the river at Birkacre. Unfortunately, due to the history of factories and mills, there are many more obstructions that are still to be removed. The priority is to deal with those that prevent rivers from flowing naturally. Flood defences can be altered to reduce the impact of modification. Hesketh Out Marsh, once an area of farmland, was flooded in 2008 to return it to wildlife-friendly saltmarshes. The project improved the local sea defences and created 150 hectares of new saltmarsh, creeks and lagoons. A project to extend this saltmarsh between the Ribble Estuary and the Douglas Estuary has recently received a grant of nearly £50,000 from the Landfill Communities Fund.

United Utilities has recently improved Wigan, Skelmersdale and Horwich sewage treatment works. However, pollution from waste water is still a major issue.

The expansion of urban areas in the Douglas Catchment has led to an increase in run-off of pollutants. Recent developments such as Buckshaw Village, on the site of a former munitions factory, have installed sustainable drainage systems such as ponds and grassed channels to reduce the impact of the pollutants on the rivers by providing natural treatment and reduced flow rates. Pollution can also be caused by foul water entering the surface water system and therefore the rivers. By making sure the drainage from homes and businesses is connected to the right drainage system we can all prevent this unnecessary pollution.

Several minewater discharges in the Wigan area have been resolved by working together with the Coal Authority. This will lead to improved water quality in Yellow Brook, Smithy Brook and Poolstock Brook. There are also several industrial sites within the catchment, where hazardous substances could potentially contaminate both land and water.

Alt Crossens Catchment

The catchment drains low-lying land between the Ribble and Mersey estuaries. The River Alt's path has been altered significantly. This area is extensively pumped to drain the land for agriculture, and to provide flood protection for urban areas such as Southport. In recent years, pumping for agricultural drainage has been reduced. Urban development has led to increased runoff into the catchment, which may impact drainage systems and agriculture, particularly in times of flood. Historical contamination with heavy metals and chemicals from past industry and contaminated land still affects water quality in the Alt. The Crossens Catchment is a series of man-made drainage channels through what was originally peat mossland. Agriculture is very important within the area, and two thirds of the highest quality agricultural land in the North West is found here. The land is used in particular for horticulture. Coarse fish angling is important in parts of the catchment. The coastline and estuaries are internationally designated for their conservation importance as wetland wildlife habitat. Beneath the southern part of the catchment is a Sandstone aquifer that is heavily exploited for public water supply, as well as providing baseflow to the river Alt.



Figure 20 Agriculture in the Alt Crossens catchment

Facts:

14 water bodies

1 is at good quality (7%).

12 are moderate (86%).

1 is poor (7%).

Three designated bathing waters in this catchment. Two are predicted to fail the minimum standards required for bathing.

Issues

- 100% of the waterbodies are affected by physical modifications.
- Pollution from waste water affects 71% of the water bodies.
- Pollution from rural areas affects 64% of the water bodies.

Pollution from towns, cities and transport affects 57% of water bodies.

The physical modifications include culverting and channel straightening. Most of the waterbodies are designated as Heavily Modified due to modification for drainage. However, through good management these could still attain good ecological potential.

Silt can build up in the water bodies, which can lead to reduced oxygen concentrations in the water and can also increase the risk of flooding. The annual cost to the Environment Agency of maintaining and pumping these watercourses for both flood risk management and drainage is £3 million. The farming community also undertake a significant amount of their own drainage maintenance work. As government funding is reduced the Environment Agency contribution will decline and alternative sources of funding may need to be found. Recent projects at Sefton and Lunt Meadows have provided a more natural habitat and flood storage. There is further potential for improvements in water quality and biodiversity elsewhere in the catchments, but this must be balanced with the requirements of the local farming industry and flood risk. Pollution from rural areas is a significant issue in the Crossens Catchment. The rivers are affected by water from vegetable washing and processing. The area is part of an associate Catchment Sensitive Farming project. The source and upper part of the river Alt is within a culvert under a major 1960's housing development on the outskirts of Liverpool. Historically, many of the houses within these estates have had their waste water wrongly connected into the surface water drainage. This means waste water flows directly into the river. United Utilities, Knowsley Council and the Forestry Commission, have identified sewerage wrong connections, failing septic tanks and landfill leachate, to be resolved in the future.

Irwell Catchment

To the north of the catchment there is rough grazing, improved pastures, quarries and mill lodges. Land use here includes heather moorland dissected by narrow, steep sided valleys. Further south, much of the flatter, low lying land is urbanised and includes industrial towns such as Bolton, Rochdale and Salford. The catchment includes the rivers Irwell, Croal, Roch, Irk and Medlock and their tributaries. Beneath some of the catchment is a principal sandstone aquifer that has been exploited for industrial use and impacted by historic mining. The canals, once used for trade and now for recreation, are a key feature of the landscape, with the Rochdale Canal being designated for the rare plant species it supports.



Facts:

60 water bodies within the Irwell Catchment.
6 are at good quality (10%).
43 are moderate (72%).
9 are poor (15%).
2 are bad (3%).

Figure 21 Kirklees Brook (left, before weir removal and right, afterwards)

Issues

- 82% of the catchment has physical modifications including reservoirs, moorland drainage, culverts, flood defences and weirs.
- Pollution from waste water affects 33% of the water bodies.
- Pollution from towns, cities and transport affects 25% of the water bodies. Innovative solutions are needed to help deal with this problem.

Work recently completed includes removing 15 weirs, which was carried out together with the Irwell Rivers Trust. Sometimes culverts increase the risk of flooding, and solutions to flood risk issues may also result in improvements to river ecology. For example, work with Rochdale Council to open up the River Roch as part of the Town Centre Regeneration will help deliver a range of environmental and social benefits. In many cases, no one particular sector is responsible for changing or removing the modifications and therefore a coordinated approach is needed to tackle the problem.

With a population of over one and quarter million, large sewage works and storm overflows impact on the area. Infrastructure investment needs to account for both current shortfalls in capacity and capacity in areas of Greater Manchester targeted for future growth. Across the catchment, 11 sewage treatment works are currently being considered for further improvements to reduce phosphorous in the watercourses.

The Irwell pilot project has provided an opportunity to liaise with people and organisations that have influence or an interest in the Irwell Catchment. This has led to a steering group being set up and a joint plan of action to tackle some of the challenges. Pollution from towns, cities and transport has been a focus of the Irwell pilot, with further research being conducted into roadside gully pots for protecting downstream drainage, treatment plants and receiving waters from high sediment loads.

Upper Mersey Catchment

The catchment is one of contrasts. The east is dominated by the Peak District National Park, a sparsely populated moorland area of great importance for wildlife and public water supply reservoirs. The more urbanised west includes parts of Greater Manchester. Major rivers include the Mersey, Goyt, Tame, Etherow and Bollin, and the Manchester Ship Canal. The catchment includes a large part of the Manchester and East Cheshire sandstone aquifer that is exploited for both industrial and public water supply. The aquifer in Trafford Park has historically been overexploited causing salty water, deep down in the earth, to pollute the groundwater.



Figure 22 Northenden weir fish pass

Facts:

85 water bodies within the Upper Mersey Catchment.

12 are at good quality (14%).

60 are moderate (71%).

13 are poor (15%).

Issues

58% of catchment has physical modifications including reservoirs, moorland drainage, culverts, flood defences and weirs.

Pollution from waste water affects 36% of the water bodies.

Pollution from towns, cities and transport affects 19% of the water bodies.

Pollution from rural areas affects 15% of the water bodies and includes slurry, manure and silage liquor.

The Manchester Ship Canal is a physically modified water body. Barriers within the canal affect young salmon migrating from the upper catchment. If they do not make the correct turn into the Mersey they will become trapped in the canal and cannot get to sea at the right time. This will prevent the restoration of a truly sustainable salmon population. Many of the urban rivers are either enclosed by culverts, such as Chorlton Brook near Sale, or barriers such as weirs have meant fish have not been able to pass through. One of the aims of the Mersey Life project was to reduce barriers preventing fish from migrating freely. A number of projects have been carried out, such as constructing fish passes on weirs at Ashton, Disley and Northenden, which have helped salmon to become established on the River Goyt. Salmon are also returning to the River Bollin after fish passes were installed at Heatley and Little Bollington weirs. A fish easement at Stannylands gauging weir has also helped fish migration in the River Dean. Working with various partners and external organisations to make sure that hydropower designs allow fish to move freely is an important priority for the Upper Mersey Catchment. A fish pass will be built at Quarry Bank Mill as part of a partnership project with the National Trust who is installing a new hydropower scheme at the historic mill.

Investment will be needed in the catchment to target waste water infrastructure. For example, across the catchment, 28 sewage treatment works are being considered for further improvements to reduce the impact of phosphorous and ammonia on river water quality. With an extensive transport network and large urban areas, pollution from towns, cities and transport is widespread. Residential and trade developments in South Manchester, Stockport, Macclesfield and the M60 motorway are significant sources of pollution in the form of discharges from storm water overflows and urban run-off. Releases from industrial discharges and historical landfills have also caused localised water quality problems. These issues need to be addressed through the planning process and through the cooperation of local authorities, developers, the Highways Agency and environmental organisations.

Mersey Estuary Catchment

The catchment includes the Mersey Estuary and tributaries to the tidal limit at Howley Weir. Beneath most of the catchment lies the Lower Mersey sandstone aquifer that is used for both public and industrial water supply. The northern part has been impacted by the Lancashire coalfield. Around a third of the North West population lives in the catchment. Historically, the area has been associated with shipping, manufacturing, the chemical industry, mining and agriculture. These industries left a legacy of environmental issues and by the 1980s the Mersey and its tributaries were some of the most polluted watercourses in Europe. The area still has clusters of pharmaceutical and chemical industries. Although outputs from these are regulated, discharges can adversely impact on water quality. Accumulated pollution in the sediment of the estuary remains a problem. However, through successful campaigns and investment, the River Mersey's water quality has greatly improved as shown by the return of salmon to the river. Its intertidal mudflats and estuarine landscapes are recognised as being internationally important winter breeding and feeding sites for protected bird species.



Facts:

32 water bodies within the Mersey Estuary Catchment.

21 are at moderate quality (66%).

8 are poor (25%).

3 are bad (9%).

There are three designated bathing waters in this catchment. All are predicted to achieve the standards required for bathing.

There are two designated shellfish waters. Both fail the bacteriological standards.

Figure 23 Seaforth docks, Liverpool

Issues

Pollution from waste water affects 94% of the water bodies.

88% of catchment has physical modifications including culverts, flood defences and weirs.

- Pollution from towns, cities and transport affects 72% of the water bodies.
- Pollution from rural areas affects 34% of the water bodies.

Most houses and businesses in the catchment are connected to the sewer network, but sometimes the sewerage systems do not discharge as they should or household waste water is wrongly connected. Similarly, ageing sewage treatment infrastructure can also cause problems. Investment needs to account for current treatment capacity issues, in areas such as South Liverpool and St Helens, and in areas targeted for future growth, such as Warrington. The growth of towns and cities during the industrial revolution led to the modifying of rivers; for example Liverpool's rivers were culverted as the city grew. A number of projects have either removed obstructions or constructed fish passes to allow fish to move more freely. For example, a fish pass at Woolston Weir, just upstream of the Mersey Estuary Catchment encourages the migration of salmon along the River Mersey. Some of the fish in the estuary's tributaries are isolated due to structures such as tidal flaps.

The Merseyside Diffuse Pollution Project has focused on tackling pollution from towns, cities and transport in the area. By 2027, the population is expected to grow by 65,000 people. Without appropriate action, this growth will lead to increased run-off and pollution. It is increasingly important that developments include Sustainable Urban Drainage Systems (SUDS) to control both run off and pollutants washed into watercourses. It will become even more important to use these types of measures as climate change could lead to more frequent and extreme rainfall. Without SUDS, or similar, this could increase the risk of pollution to local waters and localised flooding. Continuing close work with developers and local authorities will be needed to understand and manage these risks.

Weaver Gowy Catchment

The catchment's two main rivers are the Weaver and Gowy and their major tributaries include the Dane and Wheelock. Beneath the western part of the catchment is the West Cheshire sandstone aquifer. This is heavily exploited for public water supply. Elsewhere permeable sands and gravels provide groundwater to some of the meres and mosses, many of which are important protected habitats. Water is also important for agriculture, in the low-lying countryside.



Figure 24 Jodrell Bank (taken by Starbuck Powersurge)

Facts:

85 water bodies within the Weaver Gowy Catchment.
9 are at good quality (11%).
40 are at moderate quality (47%).
27 are classed as poor (31%).
4 are classed as bad (5%).
5 are currently not assessed (6%).

Issues

Pollution from waste water is a significant issue in 72% of the water bodies.

Pollution from rural areas is a significant issue in 71% of water bodies.

Physical modification is a significant issue in 32% of water bodies.

Agriculture is a very important use of land in the catchment. Cattle farming dominates, although arable farming is also important. Pollution from rural areas is therefore a significant issue affecting both surface and groundwater. Groundwater drinking water supplies are affected by nitrate and, for this reason, parts of the sandstone aquifer in the west have been designated as a Safeguard Zone. Farm campaigns and promoting good agricultural practice are important tools for improving water quality. The Environment Agency has worked with a number of partners, including Reaseheath College, a business advisory company and the now disbanded Farming and Wildlife Advisory Group on campaigns to reduce the potential for pollution from farms. Many farmers now follow nutrient management plans. Catchment Sensitive Farming also operates around the Cheshire Meres and Mosses and the Dane Valley.

Pollution from wastewater is a significant issue, as the greatest contribution to phosphorus in the watercourses is from sewage treatment works. Future investment needs to take account of both the current capacity of the wastewater infrastructure and the capacity that will be needed in areas targeted for growth, such as Crewe, Warrington and Runcorn.

An extensive network of canals was built in the catchment to support the salt trade and several rivers have been modified for navigation. To alleviate some of the problems caused by in-stream barriers, structures such as eel passes have been built to allow fish to move more freely; for example on the River Gowy.

9 Further information on the significant issues

This consultation provides an overview of what we, the Environment Agency, believe the significant issues in the North West 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.

- **North West River Basin District Facts and Statistics** – Further information on the statistics for the North West 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: <http://www.environment-agency.gov.uk/research/planning/140084.aspx>
- **North West 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), 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 North West River Basin District asking if you agree with the focus of the assessment and if you have any additional information we should be taking in to account. This consultation is published alongside the North West River Basin District Challenges and Choices consultation and closes on 22 December 2013. To view this consultation, please visit: <https://consult.environment-agency.gov.uk/portal/ho/wfd/water/choices>
- **England's Waters: Challenges and Choices consultation** – There is a consultation on the nationally 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. To view this consultation, please visit: <https://consult.environment-agency.gov.uk/portal/ho/wfd/water/choices>
- **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'. To access these packs visit: <http://www.environment-agency.gov.uk/research/library/data/145758.aspx>
- **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). The Environment Agency has produced risk assessments for each pressure affecting the water environment. To access these packs visit: <http://www.environment-agency.gov.uk/research/planning/33268.aspx>
- **Water Framework Directive: DataShare** – This is a web service from which the public can download datasets that the Environment Agency 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 13-22)

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

2 Do you agree with our description of how the significant issues are affecting the water environment and society? *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 implications.*

The catchments (pages 23-36)

4 How are the significant issues in a catchment affecting the water environment and society? *Please specify which catchment(s) your response refers to and provide relevant information to help explain your answer*

5 How do you think the issues affecting each catchment should be tackled and what would you choose to do first? *Please specify which catchment(s) your response refers to. Please consider any resource implications.*

How to respond

The Environment Agency would prefer you to respond online at: <https://consult.environment-agency.gov.uk/portal/ho/wfd/water/choices>. This will allow you to manage your comments more effectively, while helping us to gather and summarise responses quickly and accurately. Alternatively, there is a Word response form available for each River Basin District which you can download and use to write your response before you submit it online, or you can email it to NorthwestRBD@environment-agency.gov.uk.

You can view the consultation documents and consultation questions online. But, if you would prefer a printed version of the document, please call 01768 215730 and/or use NCCC number - 08708 506506, or email NorthwestRBD@environment-agency.gov.uk.

Please return written responses by 22 December 2013 to:

Jim Ratcliffe,
Ghyll Mount,
Gillan Way,
Penrith 40 Business Park,
Cumbria CA11 9BP

What the Environment Agency will use the responses for

The Environment Agency will use the responses from this consultation to shape the review and update of the North West RBMP. Environment Agency staff dealing with this consultation will see all responses in full. Other Environment Agency staff may also see the responses to help them plan future consultations.

A full summary of the responses will be published on the Environment Agency website.

How the Environment Agency will use your information

The Environment Agency will make all comments (apart from personal information) publicly available on 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 respond online or 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 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, 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:

Emma Hammonds, Consultation Co-ordinator

Environment Agency, Horizon House, Deanery Road, Bristol, BS1 5AH.

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