



Environment
Agency
Asiantaeth yr
Amgylchedd

water for life and livelihoods

A consultation on the
Draft River Basin Management Plan
Dee River Basin District



December 2008

Corrected

The Environment Agency works with other regulators and co-deliverers to protect the water environment in the Dee river basin district and improve it for the benefit of people and wildlife. Together with a liaison panel of representatives from these various sectors, the Environment Agency has produced this draft plan. Achieving the outcomes of this plan will involve an even wider range of organisations and individuals - everyone has a part to play.

In preparation of the draft plan the liaison panel developed its shared vision.

The liaison panel's vision

The water environment has been transformed beyond all recognition over the last few decades. This has been a catalyst for the rebirth of many industrial towns and cities. The benefits to people have been immense.

But huge challenges still remain, parts of urban rivers are still in a poor condition and the way land is managed has given rise to a host of pervasive and complex pollution issues. This has had an impact on wildlife and many species come under continued pressure. Rivers, lakes and coastal waters are also under increasing pressure from a changing climate and a growing population.

River basin management is an opportunity for a generation to manage the whole water environment and all of its subtle, interrelated problems holistically. It is an opportunity for people and organisations to work together to improve the quality of every aspect of the water environment under the ambitious and wide-ranging Water Framework Directive.

We all want to have healthy water environments as soon before 2027 as possible.

Urban and rural waters will be more natural and will provide a full range of services for people, the environment and the economy. This will be done when these waters meet good status and will be achieved by;

- Improving rural land management
- Reducing the impact of transport and built environments
- Securing sustainable amounts of water
- Improving wildlife habitats
- Addressing point and diffuse source pollution.

This plan will ensure no deterioration in status across the water environment, bring protected areas up to the right standards, and make sure that action in urban water environments helps make cities, towns and villages better places.

We all stand to gain a clean, healthy environment, fit for the twenty first century. An environment we all can take pride in and enjoy to the full. An environment for life and livelihoods.

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Your views count – how to respond

The proposals in this draft plan may affect you, your business or your environmental interests, and we want to know what you think. **This consultation runs from 22 December 2008 until 22 June 2009.**

Q Questions throughout this document are marked by this sign. Turn to the inside back cover to see how to respond.

This document describes the main issues for the Dee river basin district and highlight some key actions propose for dealing with them. The annexes to the document give much more detail on the conditions in the river basin district, the actions proposed and the mechanisms can be used to take forward these actions.

You can help in creating an effective and achievable River Basin Management Plan by responding to this consultation, and giving any other suggestions or comments you have.

We will use your comments to help revise the proposals, and will publish a response document on our website by 22 September 2009 to show how we will take your comments into account.

Our main questions concern the following:

- Q1** This plan sets out objectives for the water environment for the next six years and beyond. To what extent do you agree with what the plan aims to achieve?
- Q2** This plan sets out the actions required to meet the objectives. To what extent do you agree that the right actions have been identified, (ones that are proportionate and feasible)?
- Q3** There are some extra actions that could be put in place if there were more certainty that they would be effective. These are listed under Scenario C and we would like to know if you could help make these actions happen.
- Q4** Any other comments you may have on this plan?

You will be able to get a good understanding of what is proposed for the river basin district simply by reading this main document. You may also want to look at the more detailed information in the annexes before you send your comments.

This sign indicates where you can find further information.

- » The annexes to the plan can be downloaded from our website at [Environment Agency - The Water Framework Directive](#)

It would be extremely helpful if you could provide comments as soon as possible within the consultation period.

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Corrections

11/02/09	Correction to Figure 12 Predicted chemical status for groundwater bodies in 2015
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Introduction

The Environment Agency works with other regulators and co-deliverers to protect the water environment in the Dee river basin district, and improve their quality for the benefit of people and wildlife. Together we are using an approach called 'river basin management planning' to involve others in this work.

The Dee liaison panel has been central to helping us manage this process. The panel includes representatives of businesses, planning authorities, environmental organisations, agriculture, consumers, fishing, recreation bodies, ports and regional and local government, all with key roles to play in implementing the plan.

This Draft River Basin Management Plan sets out detailed proposals for the next six years and beyond. It has been prepared with the panel and its members support its publication for consultation.

We want to know what you think, so that we can improve the proposals, and publish an effective River Basin Management Plan for this river basin district. This plan will be published in December 2009. It will review the condition of the water environment and set the actions that we all need to take.

We have previously produced a report on the risks of human activities on the water environment and have consulted on how we should work together with others. We have also consulted on the most significant issues that need to be dealt with in the river basin district.

» [A record of consultation and participation that has helped to develop this plan and the river basin management planning process, and a description of the Dee District Liaison Panel is given in annex L](#)

In this latest consultation we are now seeking your views on the proposed actions.

River basin management

The water environment is a precious and vital resource that must be protected. The Draft River Basin Management Plan focuses on achieving the protection, improvement and sustainable use of the water environment - surface freshwaters (including lakes, streams and rivers), groundwater, ecosystems such as some wetlands that depend on groundwater, estuaries and coastal waters out to one nautical mile.

We have prepared the Draft River Basin Management Plan under the Water Framework Directive, which requires all countries throughout the European Union to manage the water environment to consistent standards. All countries have to:

- prevent deterioration in the classification status of aquatic ecosystems, protect them and improve the ecological condition of waters;
- aim to achieve at least good status for all waters by 2015. Where this is not possible, good status should be achieved by 2021 or 2027¹;
- promote sustainable use of water as a natural resource;
- conserve habitats and species that depend directly on water;
- progressively reduce or phase out releases of individual pollutants or groups of pollutants that present a significant threat to the aquatic environment
- progressively reduce the pollution of groundwater and prevent or limit the entry of pollutants;

¹ Annex B explains the objective setting process. Annex E contains the appraisal of measures including justifications for extended deadlines

- contribute to mitigating the effects of floods and droughts.

It is very important to recognise that a wide range of organisations will need to be involved in achieving these objectives. As well as regulation, voluntary initiatives and organisations and people working together are needed to deliver protection and improvement of the water environment. Everyone has a part to play.

The River Basin Management Plan will be reviewed and revised every six years.

- » Further information on the Water Framework Directive can be found on the European Union website http://ec.europa.eu/environment/water/water-framework/index_en.html.
- » Further information on river basin management planning can be found on our website [Environment Agency - The Water Framework Directive](#).
- » Government Ministerial guidance on river basin management planning and management can be found at www.defra.gov.uk/environment/water/wfd/

To prepare this plan, the water environment has been divided into units called ‘water bodies’ and designated as rivers, lakes, estuaries, the coast or groundwater. Some water bodies have been designated as artificial or heavily modified if they are substantially modified or created for water supply, urban purposes, flood protection and navigation. This designation is important because it recognises their uses, whilst making sure that ecology is protected as far as possible.

The Water Framework Directive sets a target of aiming to achieve at least ‘good status’ in all waters by 2015 or, where justified, by 2021 or 2027. For surface waters, good status has an ecological and a chemical component. Good ecological status is measured on the scale high, good, moderate, poor and bad; and good chemical status as pass or fail. For groundwater, good status has a quantitative and a chemical component, which together provide a single final classification: good or poor status.

Good ecological status is defined as a slight variation from undisturbed natural conditions, but artificial and heavily modified waters are not able to achieve natural conditions. Instead the target for these waters is good ecological potential. This is also measured on the scale high, good, moderate, poor and bad. The chemical status of these water bodies is measured in the same way as natural water bodies.

Protected areas have been established under European legislation and include in the Dee RBD Drinking Water, Freshwater Fisheries, Shellfish Waters, Bathing Water, Nitrate Vulnerable Zones, water dependent Special Area of Conservation (SAC) and Special Protected Areas (SPA). For many years action has been taken progressively to make sure the objectives set for them are achieved. Achieving the protected area objectives is also a key part of the Water Framework Directive and one of the priorities for the first cycle of river basin management. Many of the actions in this plan are directed towards these objectives and most also help in aiming to achieve the good status or good potential objective.

River basin management planning is a key mechanism in helping Wales realise its vision for a high quality environment. A clean, healthy environment fit for the twenty first century, an environment people can take pride in and enjoy to the full. An environment for life. River Basin Management Planning is a tool which can support implementation of both the Wales Spatial Plan and the Welsh Assembly Government’s Environment Strategy.

About the Dee River Basin District

The Dee River Basin District is home to over 500,000 people and covers an area of 2,251 km² of North East Wales, Cheshire, Shropshire and the Wirral. The district consists of a single river basin that of the River Dee, its tributaries and estuary. The district is characterised by a varied landscape. It ranges from the mountains and lakes of the Snowdonia National Park in the upper part of the basin, through the Vale of Llangollen in the middle reaches, to the open plains of Cheshire and the mudflats of the Dee Estuary in the lower basin (Figure 1).

The Dee and its tributaries are renowned for their excellent fishing. Game fish, including Salmon, brown trout and grayling, are found throughout the catchment, including the lakes and reservoirs in the upper reaches. Coarse fish, for which the River Dee is well-known, are present in the middle and lower reaches, and in the Shropshire Union Canal, which is located in part in the south-east of the basin. Some salmon net-fishing takes place in the estuary under licence. The estuary is also home to important cockle beds, which provide an important local industry. As a result of intensive harvesting in past years the cockle populations have decreased significantly, hence a new regulating order was passed this year to protect the cockles and ensure sustainable populations are maintained.

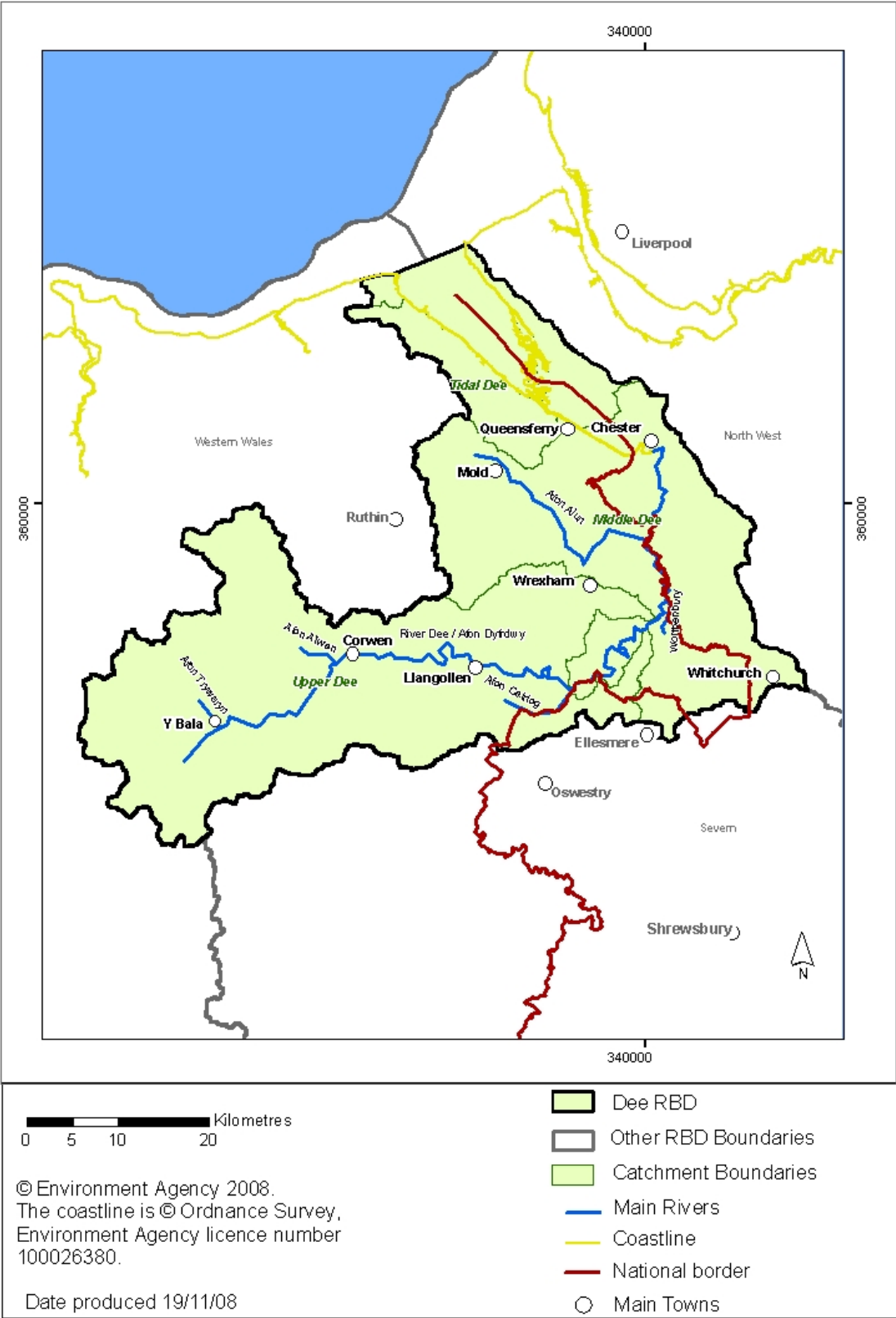
Chester and Wrexham are the two major urban centres, but the dominant land uses are agriculture and forestry, particularly in the upper part of the basin. The population in the Dee has been increasing moderately, and continued steady growth is expected in the future. A stronger rise in the number of households is expected (with the average household size predicted to fall). Key economic sectors in the region include business services, retailing, health, banking and insurance.

Several major lakes and storage reservoirs are situated in the upper part of the basin, including Llyn Tegid the largest natural lake in Wales. The storage reservoirs are used to regulate river flows in drier periods to sustain abstractions for public supply and industry. This makes the River Dee one of the most regulated rivers in Western Europe; providing water for almost 3 million people in North West England as well as within the River Dee catchment. The control over river flows provided by the reservoirs is also used to control flood risk in the low-lying parts of the catchment adjacent to the Dee and to aid navigational water requirements of the Shropshire Union Canal. It also provides water for hydropower generation, recreation and fisheries interests in the Dee. The strategic importance of the Dee as a potable water source and the risk posed to it from pollution have led to the Dee becoming one of the most protected rivers in Europe. In 1999, the lower part of the Dee was designated as the UK's first, and to date only, Water Protection Zone.

The main water abstractions in the Dee River Basin District are by the water industry, manufacturing and agriculture sectors. Abstractions by water companies supply water for industrial and commercial uses, as well as consumption by schools, hospitals, etc, which amount to some 98 per cent of the overall total abstractions. The total volume of abstracted is in excess of 700 million litres per day. Much of this is transferred outside the catchment.

Physical alterations to transitional or coastal waters can cause habitat damage or loss, resulting in a loss of, or decline in species. Such alterations include land reclamation, shoreline reinforcement and physical barriers such as flood defences. Activities such as navigation, some types of commercial fishing and dredging can also damage physical habitats. In the Dee River Basin District, land reclamation and commercial fishing are significant morphological alterations in transitional waters.

Figure 1: Map of the Dee river basin district



The environmental outcomes for the Dee River Basin District

A large number of organisations work hard to improve the water environment. Major investment in the water and sewage infrastructure, action by local government, environmental organisations and communities, improvements in farming practice and other land management – all of these contribute to making the river basin district a better place.

We expect that by working in partnership with others on a range of actions that are currently underway or agreed, or planned for the near future, there will be many positive outcomes. These are described in the following five sections:

- Improving impacts from rural land management
- Reducing the impact of transport and built environments
- Securing sustainable amounts of water
- Improving wildlife habitats
- Addressing point sources of pollution

Across the river basin district, the outcomes will mean that:

Waters do not deteriorate in status

This is a top priority for all waters. For groundwater for example, pollution will be prevented or limited, which will also benefit associated wetlands and rivers.

Quality improves and the worst waters are prioritised

There will be improvements to water quality and flow that in turn will lead to improved ecology. Almost forty one kilometres of rivers will benefit from reduced phosphate. An improved fish population will be seen in almost sixty five kilometres of rivers. Improvements in other indicators of ecological health will be seen, for instance almost nine kilometres will see improved invertebrate communities and there will be reduced levels of ammonia in almost forty five kilometres of rivers.

Improvements in six groundwater bodies to good quantitative status by 2015 represents over two thousand one hundred square kilometres of aquifer outcrop together with an associated one hundred square kilometres of wetlands. Groundwater pollution will be prevented or limited so that where possible, good status will be achieved in all groundwater by 2015.

Major investments are planned by Water Companies to improve intermittent discharges resulting in over five km of river and three km² of coastal waters potentially improved in Dee river basin district. In addition, continuous discharges from sewage treatment works have improved in recent years, resulting in just over thirty five km river potentially improved, of which nineteen km was as a result of direct improvements to meet GQA or Freshwater Fish directive requirements. There is a large amount of work still to be done on the Dee specifically for the Habitats Directive, which will result in the reduction of phosphorus from the catchment

Not all of these improvements will result in a change in overall status of the waterbodies, because of the way waterbodies are classified under the Water Framework Directive. However, as a result of these improvements and work to ensure no deterioration in status, it is expected that by 2015 the implementation of the measures planned will achieve good status in nearly forty six percent of all surface water bodies. This represents one hundred and seventy seven kilometres of river length. Just under thirty per cent of surface water bodies have yet to be assessed.

Although these actions will improve many aspects of the water environment, the amount of improvement to good status achievable in the first planning cycle is limited because:

- all elements of a water body's ecology and chemistry have to be at good status before it reaches good status overall;

- more research is needed in many areas, particularly hydromorphology, before it is known how, or how best, to reach good status;
- there are situations where at present it is not known what is causing the failure or how technically to improve things; in these situations investigations will be undertaken to ensure the effectiveness of future actions and full achievement of objectives in successive cycles;
- there are situations where the water environment takes a long time to benefit from improvements (for example groundwater), or the most cost-effective way to make improvements is to spread them over a longer timescale.

The environmental outcomes expected to be achieved as a result of the planned actions are grouped under the headings below, and discussed in more detail in the following sections. The summary sector action plan includes a number of additional actions that could happen if there was more certainty about them. We would welcome your comments on these, as delivering them may achieve better outcomes.

Improving rural land management

Better management of rural landscapes will encourage the restoration of natural habitats, species and natural sediment transport processes. This will ensure that drinking water sources are protected. It is necessary to prevent and reduce nutrient enrichment, where the excessive growth of algae and other plants reduces overall biodiversity. Toxic pollutants in runoff should also be prevented and reduced, as these reduce diversity in plants and animals. Reducing sediment loss from land will protect fish spawning grounds, encouraging healthy, sustainable fish stocks.

The main problems have been linked to use of fertiliser, pesticides and sewage sludge, such as using them in areas sensitive to groundwater pollution or run off;

- management of clean and dirty water on farms and manure from livestock;
- spillage of fertiliser, pesticide and liquid wastes with high organic content;
- discharging water from industrial waste that contains organic matter.

The agricultural sector has the main responsibility for implementing actions that will improve rural land management, but forestry, conservation, fisheries and other organisations will contribute. The types of actions include for example extending Nitrate Vulnerable Zone designation and action programmes, revising the Code of Good Agricultural Practice, creating new Water Protection Zones, Catchment Sensitive Farming activity and other partnerships or agri-environmental schemes offering land management advice.

What this means for the Dee river basin district

- Improved land management will help reduce rural run-off, making sure waters are protected. Target areas include the river Dee and Ceiriog to improve the conservation status of the Special Area of Conservation.
- In England, where appropriate, and subject to local consultation, from 2009 Water Protection Zones will be designated and high risk activities within them controlled. The need for new WPZ arrangements in Wales is under consideration.
- Less pollution will enter groundwater. Lower concentrations of nitrate, pesticide and other pollutants will benefit water quality across the District. Drinking water will get more protection where necessary.
- There will be a better understanding of the sources of pressures, through local investigation and education programmes at four Natura 2000 sites within the river basin district.

Reducing the impact of transport and built environments

The way urban land is used should protect and restore habitats, species and natural processes. It should also protect drinking water supplies and bathing areas. To help achieve this, spatial planning and design for urban development and infrastructure will reduce surface water run off, protect and restore water habitats, protect drinking water supplies and bathing areas. Where possible, toxic pollutants should be reduced and prevented from entering the water environment

Waters should be valued features of cities, towns and villages.

The main problems have been linked to flood defences that impact on natural habitats – for example with artificial river embankments;

- housing growth, leading to pressures on water quality and water resources;
- leaks and storm water discharges from sewage systems and private sewage treatment works;
- industrial waste - containing organic matter and pollutants such as oils and chemicals
- open space management - use of fertilisers and pesticides
- river maintenance and dredging - releasing contaminants from stirred up sediment
- surface run-off - from roads, driveways, car parks and contaminated land.

A number of sectors have responsibility for implementing measures that will contribute to lowering the impact of transport and the built environment including urban and transport, the water industry and the construction industry. They include Local Government, particularly planning authorities will take a significant lead, along with the water industry and construction industry.

What this means for the Dee river basin district

We expect the measures proposed in Annex C will lead to long term improvements to drinking water supplies and the wider water environment. These measures include:

- Sustainable Drainage Systems for all new developments
- Better understanding of where urban and green space management puts pressure on groundwater, rivers, coasts and estuaries, to target improvements to pesticide management practice and urban drainage.
- In England, where appropriate, and subject to local consultation, from 2009 Water Protection Zones will be designated and high risk activities within them controlled. The need for new WPZ arrangements in Wales is under consideration.
- Planning policies that take account of pressures on water bodies
- A reduction in contaminants released to groundwater from industrial estates and petrol stations through a programme of pollution prevention advice.

Spatial planning will take River Basin Management Plans into account through Sustainability Appraisals (including Strategic Environmental Assessment). These appraisals should take into account evidence from the studies that River Basin Management Plans indicate are needed (eg Water Cycle Strategies). Regional Spatial Strategy and Local Development Frameworks and Plans should include policies that address the potential impacts of proposed levels of development to water resources, water quality, biodiversity, river restoration, green infrastructure, contaminated land and managing surface water and flood risk.

Some of the actions set out in the River Basin Management Plan may be being delivered through initiatives that are already underway, or policies that are already informing planning decisions. Where mechanisms already exist, these opportunities should be maximised. However, where new opportunities exist we are looking for your help and expertise to identify them.

Securing sustainable amounts of water

Water should be affordable, yet supplies need to be managed in a sustainable way. There should also be sufficient flow for wildlife to flourish.

The main problems have been linked to:

- providing public water supply
- irrigation for agriculture, horticulture and recreational use
- industrial abstractions
- modified channels and structures such as weirs that change river flow;
- climate change.

The main responsibility for implementing actions that secure sustainable use and availability of water falls on a number of different sectors, including the Environment Agency, water industry, agriculture and consumers. Planning authorities have a key role in managing water resources, such as permitting new development and promoting water efficiency. Examples of actions proposed in this plan include demand management and the review of abstraction consents under the Habitats Directive.

The main partners will be water companies, working with the Environment Agency, central and local government. Other sectors such as farming, land management, business and industry also have an important role to play.

What this means for the Dee river basin district

- Making sure there is no deterioration of the water environment as a result of the increases in population that will take place in growth areas such as Chester and Wrexham.
- We will address the problems identified through Catchment Abstraction Management Strategies, such as water bodies that are unsustainably abstracted or over-licensed at low flows.
- We will take a range of actions through the Restoring Sustainable Abstraction Programme to investigate the impact of abstractions in identified water bodies, to understand what measures may be required in the future to safeguard and improve their ecology
- We will promote water efficiency with those who rely on water supplies from the Dee to ensure that water is used sustainably
- River flows will be protected in Habitats Directive sites through the modification of relevant abstraction licences by 2015

Improving wildlife habitats

Wildlife need habitats to be protected to provide a well managed network of green spaces and water to thrive. This 'green infrastructure' will provide a range of social, economic and environmental services, as well as protect biodiversity. This plan gives special consideration to the most important wildlife sites – those designated under the Birds and Habitats Directives. And it is desirable to bring improvements close to where people live, to increase the opportunities for recreation and enjoyment of the natural world.

The main causes of loss of wildlife habitats have been linked to:

- river re-sectioning, straightening, and realignment; creating artificially straight channels and river beds;
- covering rivers and streams, and creating artificial channels or 'culverts' to allow development;
- land drainage for agricultural improvement, reclamation for agriculture and urban development, historical structures;
- physical modifications for flood risk management and water supply;
- navigation impacts such as weirs, bank protection, dredging, bank erosion, river traffic;
- the impact of a number of invasive non-native species.

We want to use the draft river basin management plan to help prioritise habitat creation and enhancement programmes across the district in discussion with other partners. Key organisations include the Environment Agency, Countryside Council for Wales, Natural England, farming, conservation bodies and riparian owners – as well as the navigation sector and local authorities.

What this means for the Dee river basin district

- Removal and/or modification of barriers to migratory fish and eels on the estuary and rivers.
- Creation of improved habitat along coasts, lakes, rivers and estuary as a result of local improvement, restoration and managed realignment projects, leading to overall ecological improvement and greater flood resilience in these areas.
- Maintain and improve facilities supporting recreational activities on the river and lakes
- Improved understanding of the relationship between ecology, physical shape and water flow in the environment, in order to target work more effectively in the second river basin management plan.
- A programme of work on non-native species will be established, including clearance work at priority sites, and campaigns to prevent introductions.
- Through the establishment of marine protected areas and a code of conduct coastal waters will be investigated to improve understanding of their ecology.
- Implement further controls on commercial fisheries in the Dee estuary to ensure sustainable populations are maintained.
- Modification or revocation of all abstraction licences adversely affecting the conservation objectives of *Natura 2000* sites (by 2015)
- Investigations as to the need for measures required to modify abstraction licences for those surface and groundwater bodies where there is a high risk that abstraction maybe limiting the achievement of good ecological or good quantitative status (by 2015)
- Modification of abstraction licences to ensure no adverse effect on conservation objectives of Sites of Special Scientific Interest, by 2021

Addressing point sources of pollution

Point sources of pollution are those arising from an identifiable and localised area, structure or facility, such as a discharge pipe or landfill.

High levels of nutrients can lead to excessive plant growth of a few dominant species. In turn, this may reduce the diversity of other wildlife, including fish. The aim is that all water bodies should have diverse and healthy wildlife, therefore pollution must be addressed from point sources, as well as diffuse ones. Addressing point sources of pollution should also further protect existing water supplies. Tackling these sources will also protect the quality of groundwater that feeds in to the rivers and important ecosystems in the river basin district.

The main causes of the problem have been identified as:

- effluent from sewage systems, private sewage treatment works, industrial works;
- diffuse source pollution (for example rural) which can enter the sewage systems and thus become point source;
- industrial point sources, for example from industrial estates;
- commercial fisheries
- spillages from domestic as well as industrial oil tanks.

The main responsibility for implementing measures to address point sources of pollution will fall on water companies, agriculture and industry as well as householders and local government. There will need to be provision for tighter control on discharges. This draft plan includes the actions proposed in the Water Companies Price Review 2009 to improve treatment standards at sewage works discharging to vulnerable sites.

What this means for the Dee river basin district

The Environment Agency, Dŵr Cymru Welsh Water and United Utilities will work with others to address sewage discharges at a number of locations. Between 2009 and 2014 the following is expected:

- To maintain or improve water bodies suffering from organic pollution;
- To maintain or improve water bodies suffering from excess phosphate, which contributes to overgrowth of algae and reduces biodiversity
- To improve the quality of bathing waters and complete investigations to understand any failures
- To improve shellfish waters and conduct investigations to understand any issues
- A substantial number of new dwellings are being planned for the river basin district. The implications of this growth for managing point sources of pollution will be examined.

The water environment now

Pressures on the water environment

A great deal is already being done to protect and improve the water environment. However, it will take more time, effort and resources to deal with the pressures of society and industry that have significantly altered and damaged the environment.

In the *Summary of Significant Water Management Issues* consultation document we set out the Liaison Panel's view of the most important issues across the river basin district. This work will help to prioritise and target resources through the programme of actions proposed in this Draft River Basin Management Plan.

We have revised the significant issues following your comments, and grouped them under the following headings:

- **Alien Species** (Invasive non-native) – particularly the widespread invasion of Himalayan balsam and Japanese knotweed
- **Commercial fisheries (shellfish)** – all cockle beds in the Dee river basin district have previously been found to have insufficient numbers of mature cockles for harvesting
- **Diffuse pollution – rural** - the Afon Tryweryn, Mynach and Alyn brooks experience high levels of the sheep dip pesticide Cypermethrin and the lower Dee is periodically affected by high levels of nitrate and phosphate
- **Diffuse pollution – urban and transport** - tributaries of the Clywedog experience sediment impact during flood events and around Minera and along the Dee estuary, there are Environmental Quality Standard failures for zinc attributed to abandoned mines.
- **Point source pollution** - lower catchments around Afon Alyn, Clywedog, Worthenbury Brook, the lower River Dee and the Dee Estuary are all affected by nutrients and ammonia.

A great deal is already being done to protect and improve the water environment, but it will take more time and effort to get it back to a 'good' status. We have been working with the liaison panel and partner organisations in the river basin district to identify ways of addressing these issues. The result of this work is the programme of actions proposed in this draft river basin management plan.

Q1 Do you agree with the assessment of problems in water bodies? What would you change?

- » [River basin characterisation reports can be found at Defra, UK - Environmental Protection - Water - Water Framework Directive](#)
- » [More information about pressures on the environment in the river basin district is given in annex G and H.](#)

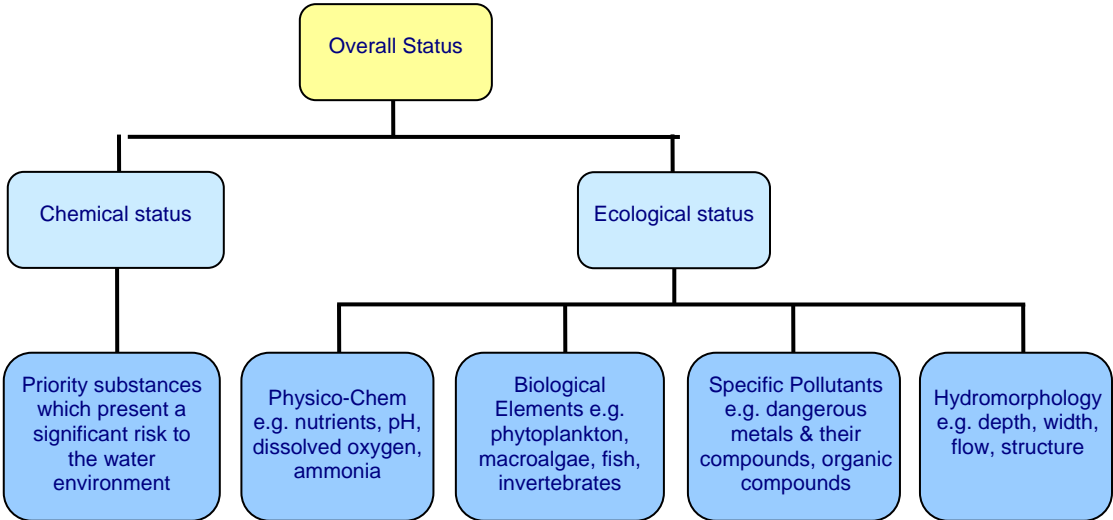
The state of the water environment

Our monitoring programme for river basin management concentrates on where there is likely to be a problem. The Water Framework Directive introduces a classification system that is based on a far wider range of assessments than before, which uses a principle of 'one out, all out' - the poorest individual result sets the overall classification.

This new monitoring and classification system raises the bar. It provides a more sophisticated assessment of the whole water environment to help us all understand it better, and take action where it is most needed.

Each of the components of classification (ecological and chemical for surface waters, and quantitative and chemical for groundwater) in turn comprise several different elements, as shown in Figure 2. For example the ecological and biological elements such as fish and invertebrates and a series of non-biological elements; and the chemical component includes a range of substances that are harmful to human health and the environment. The elements are measured against a series of specific standards and targets that have been developed by the Department for Environment Food and Rural Affairs (Defra) and Welsh Assembly Government (WAG), supported by the Water Framework Directive UK Technical Advisory Group. The spread of non-native invasive species and how well established they have become are also taken into account.

Figure 2 The components of overall status



- » The UK Technical Advisory Group website gives these standards and targets. [http://www.wfduk.org/UK Environmental Standards](http://www.wfduk.org/UK_Environmental_Standards)
- » Defra and Welsh Assembly Government completed their consultation on these standards on 19 December 2008. Details can be found at [Defra, UK - Environmental Protection - Water - Water Framework Directive](#)

There are some key issues for the river basin district, such as the impacts of climate change and to accommodate growth in housing and other development. There is pollution from a range of diffuse sources including urban environments and agriculture, and a need to mitigate the ecological impacts of the physical modification of waters.

At the moment forty one per cent of river water bodies assessed and eighty three per cent of groundwater bodies are achieving good status overall. The current status classification is the baseline from which the 'no deterioration in status' objective of the Water Framework Directive is measured. Figures 3 to 6 summarise the state of the water environment, based on those waters assessed. Not enough information is available yet to assess twenty seven per cent of river length, eighteen lakes and one estuary.

Figure 3 Current ecological status and ecological potential of rivers by length assessed (km)

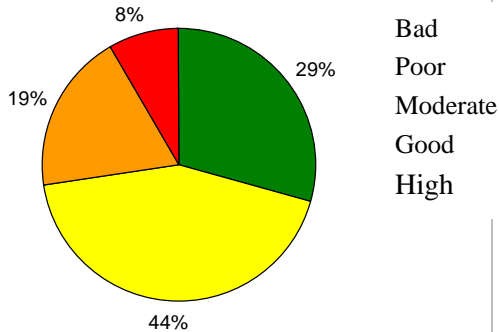


Figure 4 Current biological status of rivers, by length assessed (km)

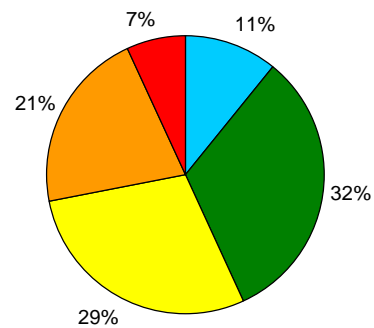


Figure 5 Current quantitative status of groundwater bodies in the Dee river basin district

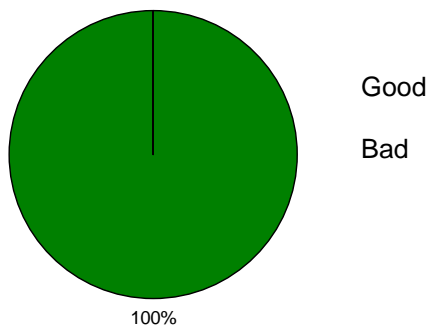
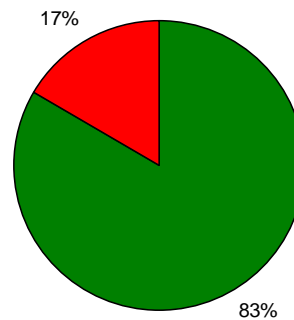


Figure 6 Current chemical status of groundwater bodies in the Dee river basin district



Poor groundwater quantitative status occurs if there is potential for adverse impacts on wetlands or where more groundwater is taken, for example for drinking water supply, and it is not certain that this will be replaced each year by rainfall.

Few surface waters are in poor or bad status – the majority are at moderate status. In most cases, a single pressure causes this. For the Dee river basin district the most commonly failing elements are fish, followed by phosphates and invertebrates.

At its heart the Water Framework Directive is concerned with protecting and improving the natural health of the water environment. The “one out all out” principle of the classification system can sometimes mask the picture of the underlying biological health of the water environment. Figures 3 and 4 focus on the current classification of the ecological status and the status if based solely on the biological elements of ecological status. The natural life of watercourses can sometimes be healthy even when the supporting physico-chemical elements suggest a problem. This emphasises the importance of having confidence that there is a real problem before taking action to solve it.

- » [Monitoring and classification maps, which describe current status are in annex A.](#)
[More detailed classification results are in annex B](#)

We are proposing that none of one hundred and six surface water bodies in the river basin district are designated as artificial, and thirty six (thirty four per cent of all surface waters) are designated as heavily modified. We reached this view using a detailed screening process, which involved consulting interested groups and carrying out a technical review. Table 1 breaks down these numbers.

- » [The reasons for designation of artificial and heavily modified water bodies are given in annex I.](#)

Table 1 Water body numbers in Dee river basin district

	River	Canal	Lake and reservoir	Estuary (transitional)	Coastal	Groundwater	Total
Natural water bodies	58	n/a	2	0	0	6	66
Candidate artificial water bodies	0	2	0	0	0	n/a	2
Candidate heavily modified water bodies	26	n/a	9	1	0	n/a	36
Water bodies not assessed	0	n/a	10	0	0	n/a	10
Total	84	2	21	1	0	6	114

It is proposed to extend the water body network in England to include areas of biodiversity significance. It is also proposed to split the larger water bodies

- » [Details of water bodies we are now including are in annex J.](#)

The objectives for waters in the Dee River Basin District

How we set objectives

The draft plan sets out where the aim is to meet good status and good potential by 2015. Where these targets cannot be met by 2015, reasons are given.

In some cases for example, actions may not be technically feasible in the short term but can be successfully implemented over a longer period of time, Or using the available resources in this way means that it is no longer disproportionately costly. Investigations may be needed to understand the source of the problems and how to solve these. In these cases, an objective is proposed for 2021 or 2027. The proposals in relation to these alternative objectives will be reviewed before the next plan in 2015. This will be informed by investigations and the intention is to set an overall challenge target for 2021.

Targets for subsequent cycles

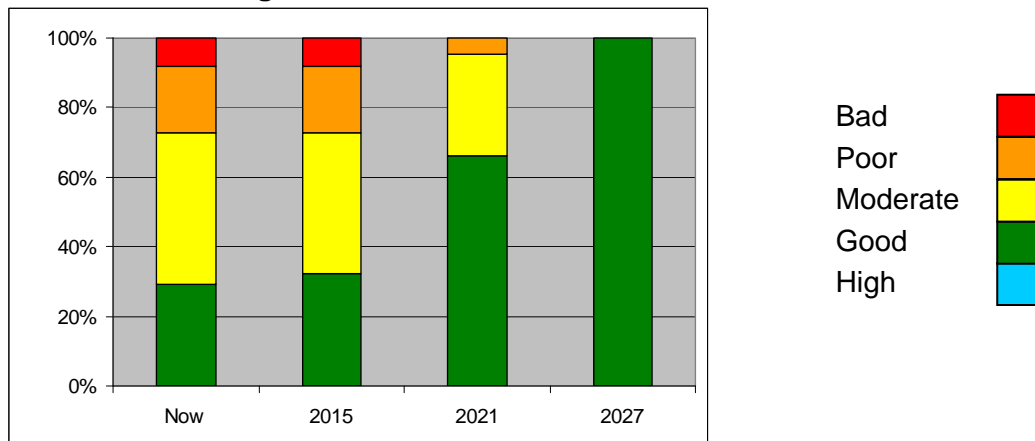
This draft plan sets out proposals for improving the water environment in the first river basin management cycle up to 2015. The objective of the Water Framework Directive is, wherever practical, to bring all water bodies up to Good Ecological Status or Good Ecological Potential (GES/GEP). Investigations to be carried out during the first cycle will help in understanding what can be achieved in later cycles.

Even with all the improvements described in this draft plan, there will still be a big gap to bridge between 2015 and 2027. To make sure that good progress is made in each cycle, targets are proposed for what should be achieved by 2021 and 2027. At this stage it is thought that the target for 2021 should halve the gap between the predicted status 2015 and the target for 2027. The targets should also make clear that those water bodies most in need of improvement are priorities for action with no bad status water bodies left by 2027.

These proposed targets are illustrated below. Because in England these targets are, in effect, the nation's targets for water and wetlands, we would like to see them feature in the Government's future Public Service Agreements.

One of the benefits of setting interim targets is that it will encourage all those with a role in achieving the objectives of the Water Framework Directive to work together to identify effective future measures. The targets will be a challenge shared by all with this role.

Figure 7 Targets for subsequent cycles based on assessed river length



Note: The aspirational target of achieving good environmental status or potential in all water bodies reflects the fact that no justification for less stringent objectives in any water body has been identified. Investigations planned during the first plan cycle may identify water bodies where less stringent objectives are the realistic approach, and the 2027 target will be firmed up accordingly.

- » Objectives for each water body are set out in annex B. More details about alternative objectives are included in annexes C and E
- » Information about current status and objectives for protected areas, and actions proposed, is in annexes B, C and D.

In assessing the actions that contribute to this plan, we have been through a consistent process to assess the costs and benefits, their effectiveness and their impact. Some of the actions considered for this plan may not be suitable because it is not technically feasible to implement them, or it is not possible to be certain of the benefits they would bring and the cost would significantly exceed the benefits. In some cases it has not been possible to identify a partner to take the lead in investing in and managing the action.

- » Information about the planning assumption we used when assessing actions is in annex E.

Objectives across the river basin district

The aim is to achieve good status in all waters by 2027. No less stringent objective has been set in this plan. Figures 8 to 12 show what is expected for the status of waters in 2015 once the proposed actions are implemented.

Across the river basin district, the target is to:

- **Improve rivers to 32 percent at good status or good potential by 2015, from 29 per cent now.** Within this, there will be great improvements to water quality and ecology across the river basin district, as described in the ‘Environmental outcomes’ section, and ‘The Dee River Basin District catchments in 2015’. However, not all of these will be reflected in a change in overall status. For example, investing at sewage treatment works to reduce the phosphorus concentrations may not deal with other elements limiting the status of the water body.

- **Ensure no deterioration in groundwater and maintain 100% of groundwater at good quantitative and 83% at good chemical status to 2015, and prevent and limit pollution.** It can take a long time for improvements to be shown in groundwater quality. However, the aim is to improve all groundwaters to good status by 2027.

More information will be available about the state of waters in time for the final plan. This will improve the classifications. This, together with your consultation comments, will allow improved judgement on which objectives should be set. It will also be possible to add new actions, including those planned through the shoreline and catchment flood management plans. This may allow more waters to get to good by 2015.

Q2 Do you agree with the proposed objectives? What would you change?

Q3 For some water bodies we have proposed objectives with deadlines after 2015 or a lower overall target. Do you agree with these changes? What would you change?

» Detailed information on the proposed objectives, together with information on current compliance is in annex B

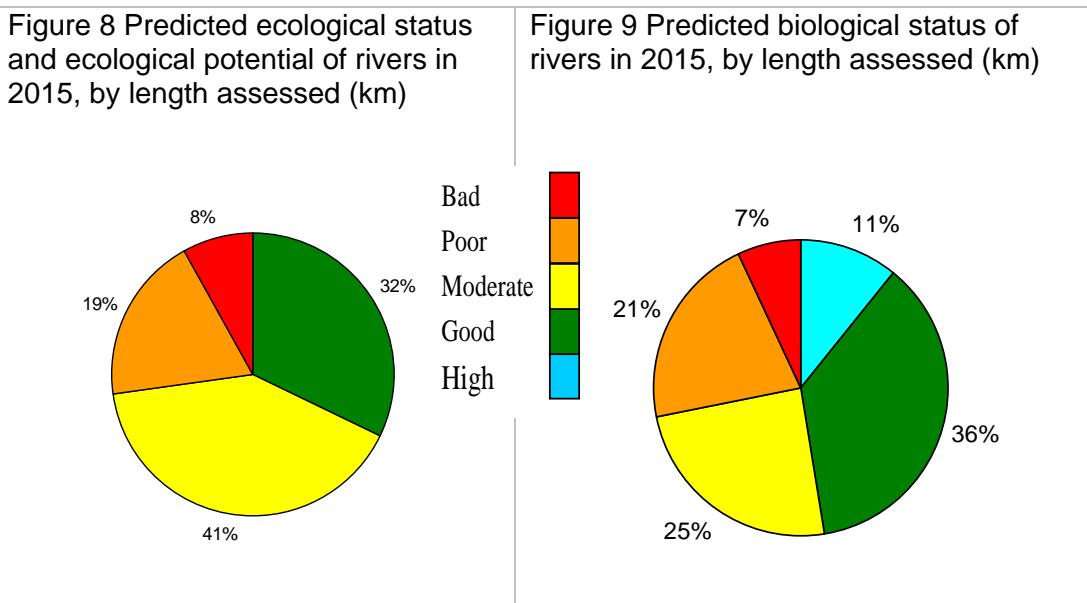


Figure 10: Predicted status and potential for surface water bodies in 2015

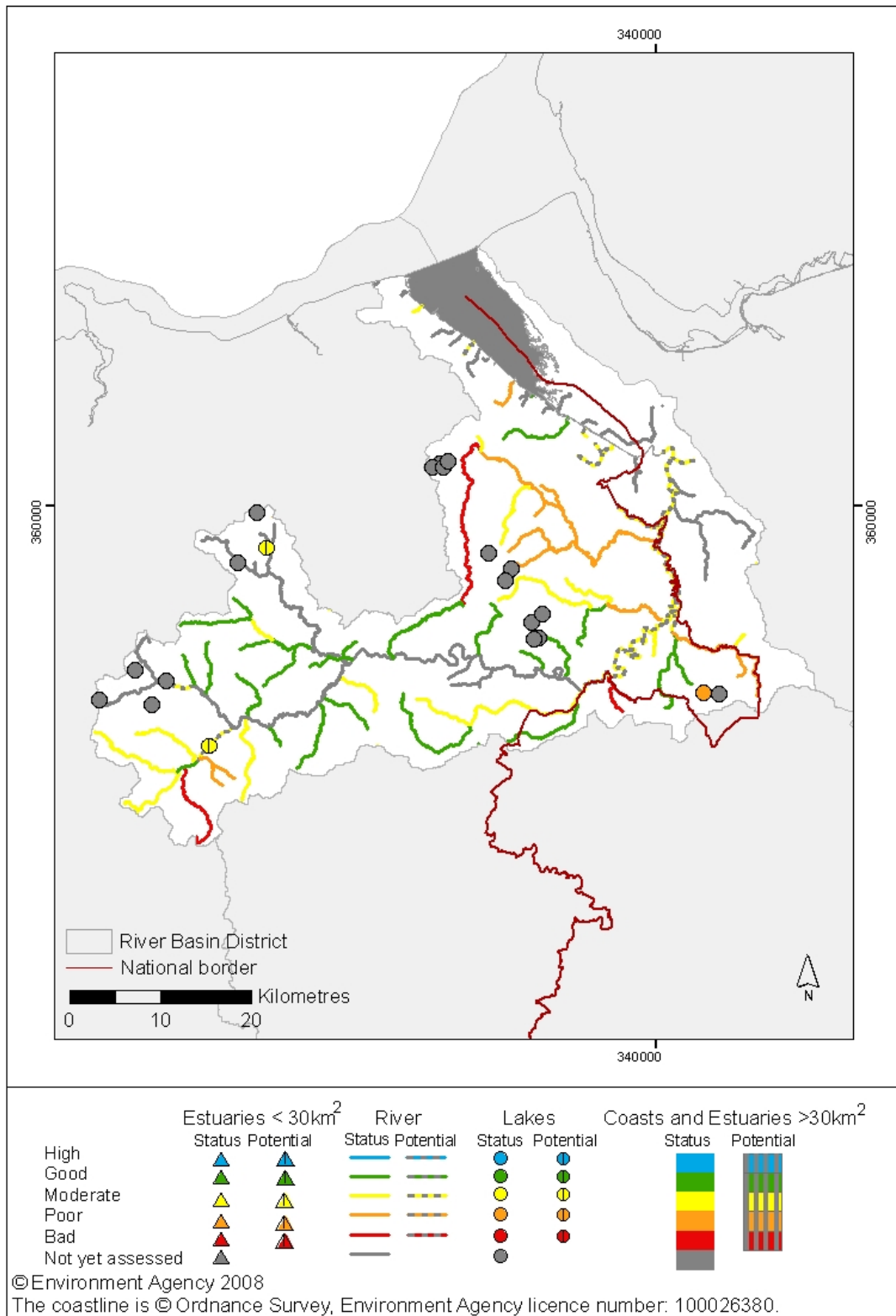


Figure 11: Predicted quantitative status for groundwater bodies in 2015

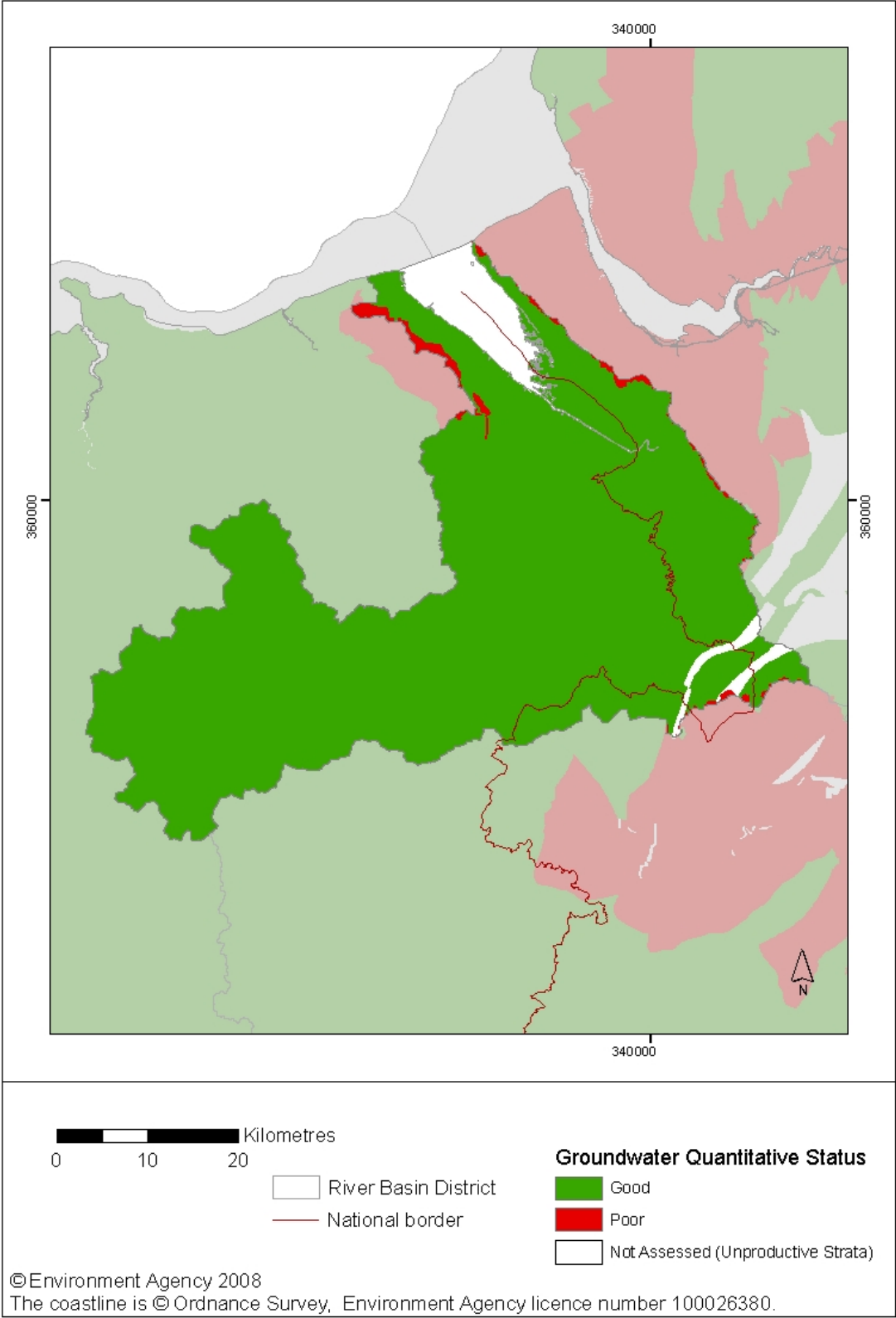
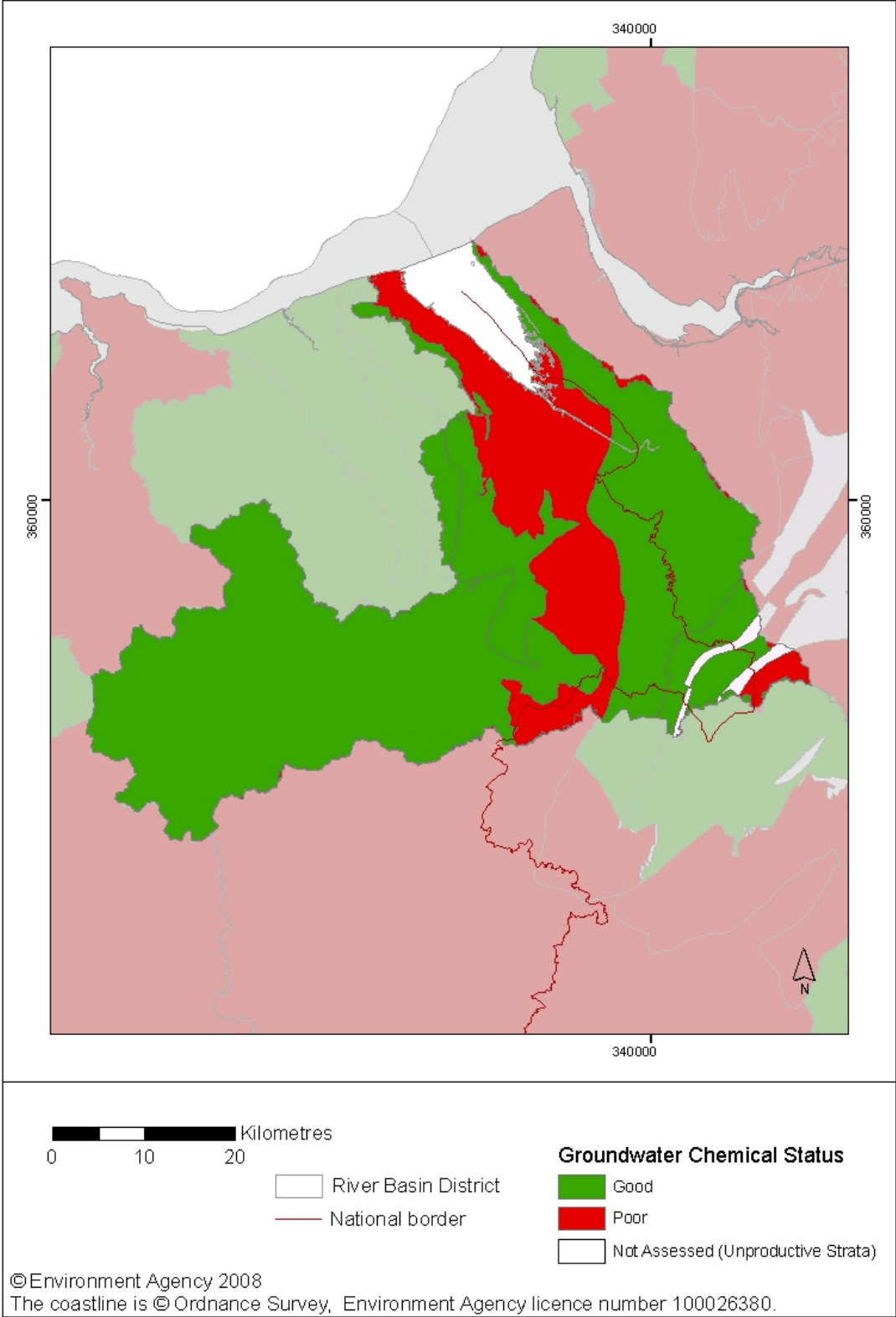


Figure 12: Predicted chemical status for groundwater bodies in 2015



Dee River Basin District catchments in 2015

This section summarises information about the status of waters in the Dee River Basin District catchments, their objectives and some of the actions proposed for them.

Rivers and lakes are grouped by catchment. There are three catchments, presented here from west to east. Separate sections follow for estuaries and coastal waters, and groundwater.

- Upper Dee
- Middle Dee
- Tidal Dee
- Estuaries and coastal water bodies
- Groundwater

Progress towards achieving good ecological status and good ecological potential in rivers water bodies

Upper Dee

This catchment covers the main River Dee from its source near Bala in Snowdonia National Park down to where the River Clywedog joins from Wrexham. Other tributaries include the Tryweryn, Alwen and Ceiriog. Llyn Tegid and the reservoirs Celyn, Brenig and Alwen are in the upper part of the catchment. Celyn and Brenig are used to store water to regulate flows in the Dee for public water supply for flood alleviation, hydropower generation, and recreation and environmental benefits. Alwen is a direct supply reservoir.

Agriculture is the main industry, with much of the catchment covered by sheep and beef farming. There are some forestry plantations in the uplands and the major urban development is at Wrexham. Tourism is an important part of the local economy. Water based recreation is popular on some lakes and reservoirs, particularly Llyn Tegid at Bala and on the Llangollen canal. The River Dee is an internationally recognised game fishing river with populations of salmon, brown trout and grayling. The area includes a large number of designated sites, including the River Dee Special Area of Conservation (SAC). The Afon Treweryn, downstream of Llyn Celyn, is the home of the National Whitewater centre.

Currently forty four percent of assessed river length and thirty three percent of lake water bodies in this catchment are achieving either good status or good potential. We are proposing that by 2015, forty nine percent compliance in river length will be achieved and thirty three percent achieved in lake water bodies.

Some tributaries in the upper catchment are impacted by acidification such as the Afon Gelyn above Llyn Celyn, while others have ecological impacts from pesticides. There are pressures from metal contamination in upland water bodies and in the river Clywedog with Minera mine in the headwaters.

Proposed actions to improve the water bodies in this catchment include alleviating barriers to fish migration, planned improvements to sewage treatment works and initiatives to provide advice to farmers, including reducing pesticide pollution. It is also proposed to reduce pollution from metal mines through the metal mine strategy for Wales work.

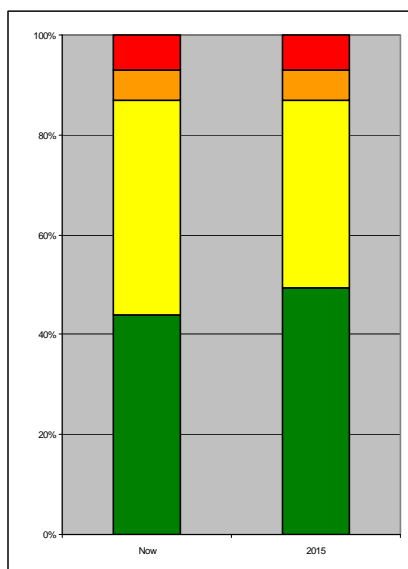


Figure 13 - Progress towards achieving good status and potential in surface water bodies in the Upper Dee (percentage of assessed river length)



Planned progress towards achieving good ecological status and good ecological potential in rivers water bodies

Middle Dee

This catchment includes the lower main River Dee to the canalised section below Chester, and tributaries such as the river Alyn and Worthenbury and Aldford brooks. The largest proportion of the middle Dee lies in Cheshire County Council, though there are parts in each of Wrexham, Flintshire and Denbighshire (County Councils). The main centres of population are at Chester, Mold and Whitchurch.

The Cheshire Plains are dominated by dairy and arable farming. Mixed sheep and beef remain in the upper parts of the River Alyn on the edge of the Clwydian Hills. Larger manufacturing industries and the retail sector also play a key role in the economy of this area.

The major drinking water abstractions are taken from this section of the Dee. Coarse fishing is popular in the main river and some of its tributaries and brown trout fishing is enjoyed particularly on the River Alyn.

Currently seven percent of assessed river length in this catchment is achieving either good status or good potential. We are proposing that by 2015, seven percent compliance in river length will be maintained.

Proposed actions to tackle the issues in this area include alleviation of barriers to fish migration, upgrades to major sewage treatment works including removal of phosphate and initiatives to provide advice to farmers. Improvements to diatom and fish and phosphate elements of the classification may take a number of years and it is anticipated it may be after 2015 before some of these improvements are seen.

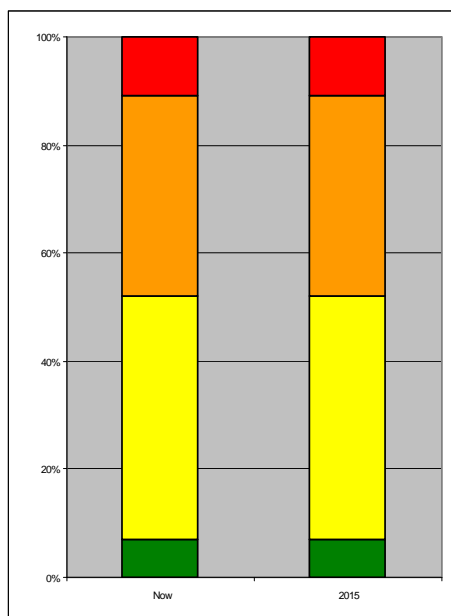


Figure 14 - Planned progress towards achieving good status and potential in surface water bodies in the Middle Dee (percentage of assessed river length)



Progress towards achieving good ecological status and good ecological potential in rivers water bodies

Tidal Dee

The Tidal Dee catchment covers the tributaries that flow directly to the Dee estuary on the both the English and Welsh sides. These include the Afon Y Garth, Swinchiard, Wepre and Shotton brooks. Major industries including paper processing, aircraft, steel and chemicals manufacturing and power generation are found alongside the Dee estuary.

Issues in the catchment include zinc contamination in the Afon-Y-Garth and nutrient pressures in other tributaries.

Currently fifty seven percent of assessed river length in this catchment is achieving either good status or good potential. We are proposing that by 2015, fifty seven percent compliance will continue to be achieved.

Proposals to address these issues include pollution prevention visits to bathing waters to identify and resolve issues that may threaten bathing water compliance, investigating site drainage and misconnections as part of pollution prevention work on industrial estates and improvements to sewage treatment assets in the Tidal Dee.

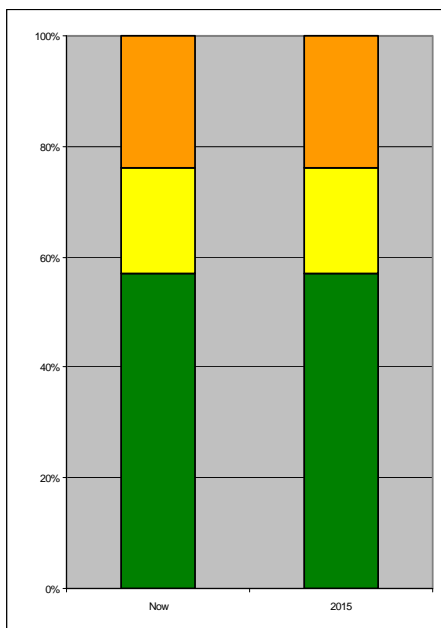


Figure 15 - Progress towards achieving good status and potential in rivers in the Middle Dee (as a proportion of river length)



Progress towards achieving good ecological status and good ecological potential in estuaries and coastal waters

The Dee River Basin District has one large funnel shaped estuary that totals some 14000 hectares and is the sixth largest in the UK. The estuary has numerous European designations, it is a RAMSAR site, candidate Special Area of Conservation, Special Protection Area, Sensitive Marine Area and SSSI site.

It is recognised as one of the most important estuaries in Britain for its populations of waders and wildfowl attracting internationally important species such as the Oystercatcher, Redshank, Black-tailed Godwit and Grey Plover. It is also an important staging post for migrating birds during spring and autumn.

The estuary supports commercial fishing including a nationally important cockle fishery . There is an EC bathing beach at West Kirby and two designated shellfish waters. There is one major port, the Port of Mostyn which is privately owned and operated. The Port of Mostyn is a Statutory Harbour Authority and is also the Pilotage Authority for the Dee Estuary.

The main pressures on the Dee estuary are morphological alterations, nutrients from sewage and potential over-exploitation of fisheries.

Proposals to address these issues include sustainable management of the cockle fishery through the Dee Cockle Regulating Order and managed realignment schemes to create more saltmarsh habitat.

NB There is one estuary in the Dee River Basin District which has not yet been assessed

Progress towards achieving good status in groundwaters

Groundwaters are an important resource in the Dee river basin district. Much of the groundwater resource in the Dee River Basin District predominantly comes from sandstone aquifers. The main pressures on groundwaters are abstraction and contamination with nitrates. In the Dee, contaminants from historic mining activity also have an influence on compliance.

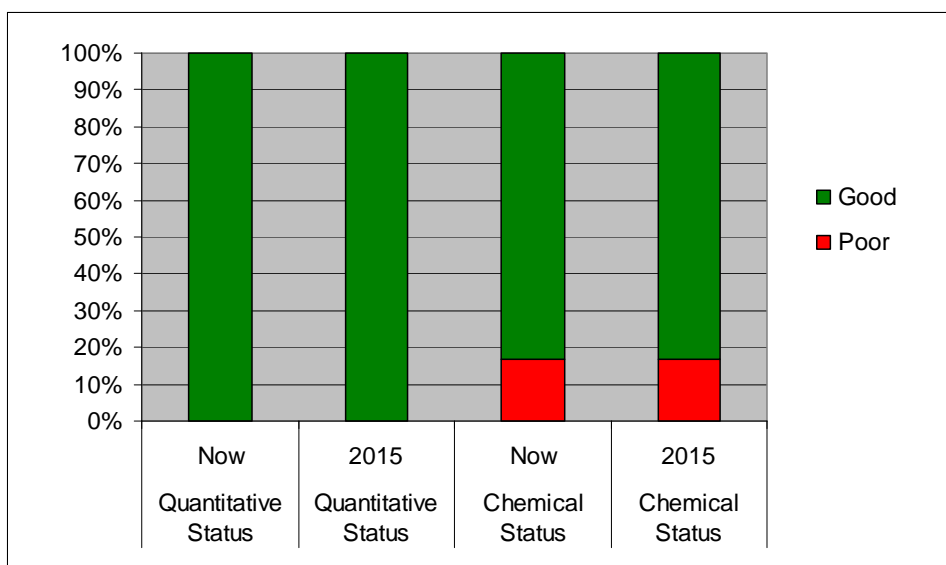
It takes time for surface water to make its way into major aquifers. Because of this, some groundwaters often take many years to recharge and therefore recover from the effects of pollution. Similarly concentrations of pollutants can continue to rise for years after source pollution has been brought under control. The latest assessment shows that 3 groundwater bodies within the Dee RBD are at risk of failing their environmental objectives as a result of nitrate.

Unsustainable abstraction from groundwater can lower groundwater levels and affect dependent river flows or wetlands. They can also induce the intrusion of poorer quality water from the sea or from adjacent aquifers. Investigations are ongoing to better understand the impact of the major groundwater abstractions in the Dee river basin district but it is thought that at least one groundwater unit may be at risk of saline intrusion.

Currently one hundred percent of groundwater bodies in the Dee river basin district are achieving good quantitative status and eighty three percent are achieving good chemical status. We are proposing that by 2015, one hundred percent compliance will be achieved for quantitative and eighty three percent compliance achieved for chemical status, the target is to have improved to one hundred percent for both quantitative and chemical status in 2027.

Proposals to address these issues include pollution prevention work to reduce the risk of groundwater pollution.

Figure 16 - Progress towards achieving good status in groundwaters



Summary sector action plan

This section, with the following tables, highlights the key contributions from those who we will work with to deliver the actions in this plan.

Impact assessment

A separate draft impact assessment shows the costs and benefits of implementing this plan. It sets out the impacts of different actions, as well as an analysis of the impacts on different sectors. It examines scenario A and the preferred scenario B as laid out in this draft plan, along with scenario C, which is more ambitious but more costly. The results of the impact assessment are briefly noted in this section.

The impact assessment is limited by both the conservative assumptions on improvements in class, and the availability of data, both environmental and economic. However, they are a good basis for discussion during the consultation period.

We will produce a final impact assessment and this will accompany the river basin management plan when we submit this to Ministers for their approval. Ministers will use the impact assessment to help them decide whether or not to approve the river basin management plan, or whether to request us to modify it.

» We have published a draft impact assessment for consultation at the same time as the consultation on this Draft River Basin Management Plan . Copies are available through our website at [Environment Agency - The Water Framework Directive](#) or from the contact given at the end of this document.

Scenarios and what they mean in the Draft River Basin Management Plan

What is already happening and what will happen - Scenario A

Some of the actions in the plan are already happening or will happen. Scenario A reflects the actions required by other EU water directives, for example the Nitrates Directive, that the Water Framework Directive describes as basic measures. It also includes some additional measures already put in place to implement the Water Framework Directive, for example the Catchment Sensitive Farming Delivery Initiative, which is currently operating in 40 catchments across England. These actions are a significant programme of work which provides the foundation to the Draft River Basin Management Plan. We have already consulted on these measures when they were introduced and so are listing them here for information only.

The Scenario A costs presented below are an estimate. Whilst costs were not easily available for all Scenario A measures, we do have data for the most costly measures. In the Dee River Basin District almost all of the Scenario A costs are met by the water industry, with approximately 70% of these costs arising from the Water Companies Periodic Review 2004 and 30% from the Periodic Review 2009. A small percentage of costs are also met by the agricultural and rural land management sectors, as a result of complying with the NVZ action plan.

This expenditure is also delivering significant benefits. Our best estimate puts this at £1.0 million per year. These monetised benefits only value the public's willingness to pay for surface water improvements. There are many other benefits which have not been monetised, some of which are listed below.

The main reason why the Scenario A costs are greater than the benefits is because these other non-monetised benefits have not been included.

Costs

Average Annual Undiscounted Costs (£m)	Total Present Value (£m)	% of Present Value
3.1	337.7	<ul style="list-style-type: none"> ○ Water Industry (98.8%) ○ Agricultural and Rural Land Management (0.6%) ○ Environment Agency (0.6%)

Benefits

Average Annual Undiscounted Benefits (£m)	Total Present Value (£m)	Other benefits not expressed in monetary terms include:
1.0	19.4	<ol style="list-style-type: none"> 1. Reduced operation costs to water companies due to improved water quality, in particular reduced concentrations of nitrate and pesticides; 2. Protection and enhancement of material assets due to reduced alien species pressures, for example zebra mussels which attach to infrastructure in large numbers; 3. Human health benefits due to improvements in water quality of recreational water bodies; 4. Reduced quantities of waste sent to landfill due to revised dredging techniques; and 5. Reduced long-term costs of coastal defence due to measures which encourage natural coastal erosion.

Additional actions that will happen if this plan is approved - Scenario B

In addition to the actions in scenario A, scenario B includes actions that we believe should happen and which we believe will bring about important environmental improvements. They actions fall into two categories: new actions that rely on national decisions and legislation but can be implemented according to priorities identified at the river basin district level, and new actions that are local and rely on initiatives that have been proposed in the Dee River Basin District. Scenario B sets out the actions proposed in this plan.

The scope of the new actions that rely on national decisions and legislation was determined through a series of public consultations on new measures and mechanisms, and the preliminary cost effective analysis exercise undertaken by the Department for Environment Food and Rural Affairs (Defra) and the Welsh Assembly Government. These new actions were identified in statutory guidance to the Environment Agency, and included in Defra's overall impact assessment for the Water Framework Directive. The way in which these new actions are applied is described in Annex E.

Delivering Scenario B implies additional costs, over Scenario A, for a variety of sectors. The three main sectors bearing these additional costs are the water industry, the Environment Agency, and industry, manufacturing and other business. This expenditure is also delivering benefits. Our best estimate puts this at £1.2 million per year, of which 89% relates to cost savings from investigations and 11% relates to the public's willingness to pay for surface water improvements

The monetised benefits for Scenario B are also less than the costs. Again, this is because we have not been able to monetise all of the benefits that Scenario B provides.

Costs

Average Annual Undiscounted Costs (£m)	Total Present Value (£m)	% of Present Value
1.4	15.5	<ul style="list-style-type: none"> ○ Water Industry (55.2%) ○ Environment Agency (27.2%) ○ Industry, Manufacturing and other Business (16.0%)

Benefits

Average Annual Undiscounted Benefits (£m)	Total Present Value (£m)	Other benefits not expressed in monetary terms include:
1.2	8.8	The other benefits will include all of the benefits expressed under Scenario A. These benefits will be greater in magnitude and will occur in more places.

Actions that could happen if we had more certainty they would be proportionate and feasible - Scenario C

There are further actions which if implemented, could lead to even greater environmental protection and improvement. However, a better understanding of how to implement these actions, or how effective they will be, is needed so to be sure that they are feasible and not disproportionately costly. Implementing these actions may have wider impacts on the environment or society. We would like to know if there is any additional information you can supply that will help justify including scenario C actions in the River Basin Management Plan.

Delivering Scenario C implies additional costs over Scenarios A and B. These additional costs mainly fall on the Environment Agency. This expenditure is also delivering benefits. These benefits are through cost savings from investigations.

Costs

Average Annual Undiscounted Costs (£m)	Total Present Value (£m)	% of Present Value
0.2	1.5	<ul style="list-style-type: none"> ○ Environment Agency (99.0%) ○ Central Government (0.9%) ○ Water Industry (0.1%)

Benefits

Average Annual Undiscounted Benefits (£m)	Total Present Value (£m)	Other benefits not expressed in monetary terms include:
0.0	0.2	The other benefits will include all of the benefits expressed in

		Scenario A above. Compared to Scenario B, these benefits will be greater in magnitude and will occur in more places.
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In addition to the specific scenario C measures mentioned in this plan further work will take place during the consultation period to identify additional actions that are worthwhile, including water protection zones, and actions to: improve morphological condition (specifically barriers to fish movements); control the spread of invasive non-native species; investigate ways to deal with pollution from non-coal mines; address pollution from forestry activities; and manage diffuse pollution.

Q4 We have followed a process to assess (appraise) the actions. This process is described in detail in annex E. Do you agree with how we have done this?

- » Information about the principles for each scenario can be found in annex E.
- » Information about the actions under each of the scenarios, grouped according to the sectors that will be responsible for delivering them is in annex C and annex D for Natura 2000.
- » Information about the actions under scenario A and B, grouped by catchments, is included in annex B.
- » Information about the actions associated with hydromorphology can be found in Annex C

SUMMARY OF KEY CONTRIBUTIONS FROM DIFFERENT SECTORS

Key actions for relevant sectors are summarised in the following tables. The sectors are: Agriculture and rural land management; Angling, fisheries and conservation; Central government; Environment Agency, Industry manufacturing and other business; Local and regional government; Mining and quarrying, Navigation; Urban and transport; Water industry

- » This is a summary of the actions that will be taken. Full tables of actions are in annex C and D (for Natura 2000 actions).
- » Local actions acting on a particular water body can be found through What's In Your Backyard (WIYBY) at [Environment Agency - What's in your backyard?](#)

Q5 What comments do you have on these actions? Are there any actions that have been missed, or any changes you would propose?

Q6 What comments on Scenario C actions do you have, including any additional information you can supply about specific actions?

Q7 What support can you offer, such as undertaking any actions or providing resources, to help deliver more for your environment?

Agriculture and rural land management

Action	What this does	where	when
What is already happening and what will happen - scenario A			
Implement Rural Development Programmes agri-environment schemes for England & Wales	Provide incentives for resource protection through environmentally sensitive farming practices Helps to achieve WFD priorities by reducing pollution from agriculture	Basic entry schemes - nationally; higher tiers - targeted areas	Ongoing
Implement and enforce cross-compliance (inc. Sludge Directive, SSAFO, and Nitrates Directive requirements)	Helps to achieve WFD priorities by reducing pollution from agriculture, at farms receiving subsidies	Nationally	2015
Promote efficient and responsible use of water	Awareness campaign		
Temporary suspension of use of sheep dip containing cypermethrin	Helps to prevent and limit inputs of pollutants to groundwater	Nationally	Ongoing
Enforcement of Nitrate Vulnerable Zone Action Plans	Helps to achieve WFD priorities by reducing pollution from agriculture and complies with protected area objectives	In Nitrate Vulnerable Zones	Ongoing
Catchment Sensitive Farming, including advice to farmers on best practice and small grants for capital investment	Helps to achieve WFD priorities by reducing pollution from agriculture		Ongoing
Additional actions that will happen if this plan is approved – scenario B			
Improve compliance with code of practice on protection of groundwater from pesticides including sheep dip	Helps to prevent and limit inputs of pollutants to groundwater	Nationally	2015
Focus existing statutory and voluntary pollution prevention actions in safeguard zones	Provide additional protection to drinking water sources	existing groundwater source protection zones)	2015
Implement the action plan to support the "Invasive non-native	Helps to achieve WFD priorities of no deterioration and provides	Nationally	2015

Action	What this does	where	when
species framework strategy for Great Britain” (see Annex F) prioritising the achievement of “no deterioration”.	opportunities for indigenous species		
Actions that could happen if we had more certainty that they would be proportionate & feasible - scenario C			
Promote best practice for use and disposal, including treatment, of spent pesticides, including sheep dip	Helps to prevent and limit inputs of pollutants to groundwater and surface water <ul style="list-style-type: none"> Uncertain if cost of measure is proportionate - further work needed to improve confidence in expected benefits 	Nationally	2015
WAG is proposing a Catchment Sensitive Farming Programme to assist farmers to minimise diffuse pollution from agriculture and enhance biodiversity.	Help to reduce the amount of nutrients, organic pollutants, sediments, faecal indicator organisms, and pesticides in surface and groundwaters. <ul style="list-style-type: none"> Uncertain if cost of measure is proportionate – further work needed to improve confidence in expected benefits. 	Wales	2010
Where appropriate, and subject to local consultation, designate a limited number of Water Protection Zones from 2009 and apply appropriate measures within them to control high risk activities. Further WPZs may be designated, subject to evidence and local consultation, from 2012	Regulatory tool to control diffuse pollution in high risk areas where other mechanisms are not working or unlikely to work <ul style="list-style-type: none"> Uncertain if cost of measure is proportionate - further work needed to improve confidence in expected benefits Subject to consultation on each Zone proposed. 	Initially around 8 WPZs in locations to be decided across England. In Wales the need for new WPZ arrangements is under consideration.	from 2009 with possibility of further WPZs from 2012

Angling, fisheries and Conservation

Action	What this does	where	when
What is already happening and what will happen - scenario A			
Enforcement of rod fishing byelaws, including illegal fishing and buyer beware campaigns including restaurant visits	Regulatory tool to control the illegal fishing practices	Dee RBD	2015
Extend eel populations survey	Helps to enhance our understanding of this species	Dee RBD	2015
Bring Natura 2000 sites into Favourable Conservation Status (FCS) by delivering measures identified by Natural England and/or Countryside Council for Wales as being necessary to prevent deterioration and secure the Conservation Objectives of the site.	Ensures that protected sites are given the required level of protection	Natura 2000 sites in the Dee RBD	2012
Monitor glass eel migration at 2 sites in RBD	Helps to enhance our understanding of this species	Dee RBD	2012
Dee Regulating Order in force on 01 July 2008 and will ensure sustainable cockle fishery	Dee Estuary	Dee RBD	2008
Additional actions that will happen if this plan is approved - scenario B			
Investigate eel fishery and enforce controls if needed	Regulatory tool to control the illegal fishing practices	Dee RBD	2015
Improve habitat for fish spawning and juvenile production	Helps to maintain viable populations	Dee RBD	2014

Action	What this does	where	when
Actions that could happen if we had more certainty that they would be proportionate and feasible - scenario C			
Reduce illegal Fishing on Coast, rivers and still waters	Helps to control the illegal fishing practices <ul style="list-style-type: none"> Uncertain if cost of measure is proportionate - further work needed to improve confidence in expected benefits 	High risk locations	2013

Central Government

Action	What this does	where	when
What is already happening and what will happen - scenario A			
Include strong water efficiency policies in Spatial Strategies and Local Development Plans / Frameworks	Helps promote sustainable use of water	Dee RBD	2008 onwards
Implementation of best practice controls and remediation at Abandoned Metal Mines	Helps to prevent and limit inputs of pollutants to groundwater and surface water	Dee RBD	Methodology with pilot and full scale remediation of priority sites by 2015, extended programme to 2027.
Dee Regulating Order in force on 01 July 2008 and will ensure sustainable cockle fishery	Helps to ensure sustainable cockle numbers to protect wildlife and dependent livelihoods	Dee Estuary	2008 onwards
Environment Agency project to investigate and remediate metal mine sites in Wales	Helps to prevent and limit inputs of pollutants to groundwater and surface water	Dee RBD	Methodology with pilot and full scale remediation of priority sites by 2015, extended programme to 2027".
Additional actions that will happen if this plan is approved - scenario B			
Water quality monitoring at non designated beaches	Helps to improve our understanding of the presence of Faecal indicator organisms	Dee RBD	2015
Where necessary carry out targeted local investigations into the origins, causes of and solutions to pollution to protect private drinking water supplies	Helps to improve our understanding of the causes and impacts of pollution on private drinking water supplies.	Dee RBD	By 2015
A statutory code of practice to provide guidance on the use and management of septic tanks is under preparation for use in conjunction with the forthcoming amended groundwater regulations and Environmental Permitting Regulations	Helps to prevent and limit inputs of pollutants to surface waters and groundwaters	Nationally	2015
Implement the action plan to support the "Invasive non-native species framework strategy for Great Britain" prioritising the achievement of "no deterioration".	Helps to ensure that Water Framework Directive objectives are met.	Dee RBD	By 2015

Actions that could happen if we had more certainty that they would be proportionate and feasible - scenario C			
Defra and WAG currently considering whether to adopt a code for sustainable homes	Helps to ensure that water is used efficiently and sustainably <ul style="list-style-type: none"> Uncertain if cost of measure is proportionate - further work needed to improve confidence in expected benefits 	Nationally	2009 onwards
Defra and WAG are considering the need to take action on phosphates in the water environment and the contribution that controls or limitations on domestic laundry cleaning products might make to that process.	Would help to control the amount of phosphorus in waste waters and in sewage effluent, and help to reduce the risk of eutrophication <ul style="list-style-type: none"> Uncertain if cost of measure is proportionate – further work needed to improve confidence in expected benefits 	Nationally	2015
Defra is considering a range of options to reduce the impacts from sewer misconnections. These include voluntary (public awareness raising and training for plumbers) and regulatory (transfer of powers – power currently with local authorities but could be passed to sewerage undertakers) options.	Helps to prevent and limit inputs of pollutants to surface waters <ul style="list-style-type: none"> Uncertain if cost of measure is proportionate – further work needed to improve confidence in expected benefits 	Nationally (England only)	2015
Defra is considering regulation based on best practice, which will cover the abuse of the drainage system, commercial washing activities, surface water control plans on construction sites and site management for industrial, institutional and commercial sites.	Reduces emissions of priority substances, priority hazardous substances or specific pollutants as well as organic pollution from urban and industrial activity <ul style="list-style-type: none"> Uncertain if cost of measure is proportionate – further work needed to improve confidence in expected benefits 	Nationally (England only)	2015

Environment Agency

Action	What this does	where	when
What is already happening and what will happen - scenario A			
Investigations on Groundwater Dependent Terrestrial Ecosystems to assess if they have been significantly damaged	Helps to improve our understanding of the impact of nitrates	Dee RBD	2008
R&D on the fate and transport of Phosphate in groundwater to determine impact on surface water	Helps to improve our understanding of the impact of phosphate in groundwater and surface waters	Dee RBD	2012
Bring Natura 2000 sites into Favourable Conservation Status (FCS) by delivering measures identified by Natural England and/or Countryside Council for Wales as being necessary to prevent deterioration and secure the Conservation Objectives of the site.	Ensures that protected sites are given the required level of protection	Dee RBD	2012
Carry out cost benefit analysis of weir removal	Helps maintain salmonid species numbers	Dee RBD	2009
Additional actions that will happen if this plan is approved - scenario B			
Improve access for salmonid migration	Helps maintain salmonid species numbers	Dee RBD	2012
Implement the action plan to support the “Invasive non-native species framework strategy for Great Britain” prioritising the achievement of ‘no deterioration in status’.	Helps to ensure that Water Framework Directive objectives are met.	Dee RBD	2009

Action	What this does	where	when
Investigate groundwater as potential cause of failure for Zinc	Helps to identify causes for zinc failure in surface waters.	Upper, Middle and Lower Dee	2015
Implement riverfly monitoring scheme where angling clubs and members of the public are encouraged to attend training by Environment Agency to help them identify impacted invertebrate life and report to Environment Agency.	Helps identify species under threat	Dee RBD	2015
Actions that could happen if we had more certainty that they would be proportionate and feasible - scenario C			
Local pollution prevention campaign (including, where appropriate, campaigns to raise awareness of existing Marketing and Use Restrictions)	Helps to prevent and limit inputs of pollutants to groundwater and surface water <ul style="list-style-type: none"> Uncertain if cost of measure is proportionate - further work needed to improve confidence in expected benefits 	Middle Dee	2015
Physical modification	We will implement a programme to deal with barriers to fish passage at priority sites, by either removing barriers or installing fish passes <ul style="list-style-type: none"> Uncertain if cost of measure is proportionate - further work needed to improve confidence in expected benefits 	Will aim to meet the top 5 priorities across the RBD	By 2015

The Environment Agency also has a major role in promoting and overseeing many of the actions listed for other sectors.

Industry, Manufacturing and other Business

Action	What this does	where	when
What is already happening and what will happen - scenario A			
Remediation of contaminated land and groundwater	Helps to achieve WFD (and GWD) priorities by preventing and limiting inputs of pollutants to groundwater and surface water	Urban and industrial areas	2015
Follow Petrol Stations statutory Code of Practice Published advice for operators	Helps to achieve WFD (and GWD) priorities by preventing and limiting inputs of pollutants to groundwater and surface water	Dee RBD	2015
Marketing and Use restrictions for specific substances e.g. trichloroethylene, PAHs, some mercury uses	Restricts use of priority substances, priority hazardous substances or specific pollutants within industry, manufacturing and other business	Across EU	Ongoing
Additional actions that will happen if this plan is approved - scenario B			
Investigate emissions from various installations e.g. formulators, distributors, manufacturers and waste disposal operators and appraise options for action	Reduces emissions of priority substances, priority hazardous substances or specific pollutants from industry, manufacturing and other business	Dee RBD	2015
Reducing disposal of fat, oil and grease to sewers – Awareness campaign to influence behaviour with leaflets, information packs	Helps to raise awareness about the effects of these substances on water transportation	Flintshire and across River Basin District	2008 onwards
Actions that could happen if we had more certainty that they would be proportionate and feasible - scenario C			
Where appropriate, and subject to local consultation, designate a limited number of Water Protection Zones from 2009 and apply appropriate actions within them to control high risk activities. Further	Regulatory tool to control diffuse pollution in high risk areas where other mechanisms are not working or unlikely to work <ul style="list-style-type: none"> Uncertain if cost of measure is proportionate - further work 	Initially around 8 WPZs in locations to be decided across England. In Wales the need for	from 2009 with possibility of further WPZs from 2012

Action	What this does	where	when
WPZs may be designated, subject to evidence and local consultation, from 2012	needed to improve confidence in expected benefits	new WPZ arrangements is under consideration.	
Disincentives / Incentives to encourage purchase of water efficient appliances.	Helps to ensure that water is used sustainably <ul style="list-style-type: none"> Uncertain if cost of measure is proportionate - further work needed to improve confidence in expected benefits 	Dee RBD	2010

Local and Regional Government

Action	What this does	where	when
What is already happening and what will happen - scenario A			
Inclusion of water efficiency and groundwater protection policies in Regional Spatial Strategies and Local Development Plans	Helps to achieve WFD (and GWD) priorities by promoting sustainable water use and preventing and limiting inputs of pollutants to groundwater and surface water	High risk areas	2015
Inclusion of policies that require waste water treatment infrastructure capacity	Reduce risk of deterioration caused by growth		2008 onwards
Promote the wide scale use of sustainable drainage schemes for flood risk and improved water quality	Reduce risks of flooding and of impact on surface water quality at times of high rainfall	Nationally	2010
Additional actions that will happen if this plan is approved - scenario B			
Promote the wide scale use of sustainable drainage schemes	Reduce risks of flooding and pollution of surface waters during periods of high rainfall	Nationally	2010
Promote national guidance for spatial planners on integrating development planning and water planning	Reduce the risk of pollution in water bodies from new development	Nationally	2010
Actions that could happen if we had more certainty that they would be proportionate and feasible - scenario C			
Improved management of surface water drainage by use of sustainable urban drainage systems (SuDS) and development and implementation of Surface Water Management Plans where appropriate	Reduce risk of diffuse pollution <ul style="list-style-type: none"> Uncertain if cost of measure is proportionate – further work needed to improve confidence in expected benefits 	RBD	2015
Promote inclusion of water environment quality targets in Local Area Agreements	Increase local authority accountability for the quality of the water environment <ul style="list-style-type: none"> Uncertain if cost of measure is proportionate - further work needed to improve confidence in expected benefits 	Nationally	2015

Mining and Quarrying

Action	What this does	where	when
What is already happening and what will happen - scenario A			
Maintenance of low groundwater levels in disused mines	Prevents flooding of mines and overflow of contaminated waters to rivers		Ongoing
Implementation of best practice controls and remediation at abandoned metal mines included in the Welsh metal mine strategy and specific coal mines throughout	Reduces emissions of priority substances, priority hazardous substances or specific pollutants from mining and quarrying: <ul style="list-style-type: none"> pilot & full scale remediation of 	Various priority catchments	2015

Action	What this does	where	when
England and Wales	<ul style="list-style-type: none"> priority metal mine sites extended programme for metal mine sites high priority coal mine sites other problems at coal mine sites 		
Environment Agency programme for investigating impact of metal mines	Confirm nature and extent of problem and what action needs to be taken to achieve WFD priorities by reducing pollution	Areas in Wales with history of metal mining	Ongoing
Coal Authority minewater management programme	Helps to achieve WFD (and GWD) priorities by preventing and limiting inputs of pollutants to groundwater and surface water	Areas with historical mining legacy	2015
Additional actions that will happen if this plan is approved - scenario B			
Plan for addressing discharges from metal mines - Defra to prepare plan	Will lead to actions that reduce the amount of polluting substances discharged into waters	England	2015
Investigate emissions from abandoned and working sites and appraise options for action	Identifies sources of priority substances, priority hazardous substances or specific pollutants to allow development of effective programmes of measures	Sites contributing to potential EQS failures	2015
Actions that could happen if we had more certainty that they would be proportionate and feasible - scenario C			
Extended programme to implement best practice and remediation at abandoned metal mines	<ul style="list-style-type: none"> Reduces emissions of priority substances, priority hazardous substances or specific pollutants from mining and quarrying Uncertain if cost of measure is proportionate - further work needed to improve confidence in expected benefits 	High risk areas	2015

Navigation and ports

Action	What this does	where	when
What is already happening and what will happen - scenario A			
Non-application of TBT to boat hulls by July 2003. From January 2008 TBT should not be used on ship hulls or there should be a coating to prevent leaching of underlying TBT anti-foulants.	Prevent and limit pollution of marine waters	Across EU	2008
Marketing and Use restrictions for specific substances e.g. TBT within biocides	Reduces emissions of priority substances, priority hazardous substances or specific pollutants	Across EU	Ongoing
Additional actions that will happen if this plan is approved - scenario B			
Investigate the reason for failure: to assess the contribution from dredging or disposal activities on EQS compliance as appropriate.	Identifies sources of priority substances, priority hazardous substances or specific pollutants to allow development of effective programmes of measures	Sites failing EQS or where there is evidence of deterioration	2012
Develop national guidance framework on dredging to inform Programme of Measures to meet WFD objectives.	Helps to achieve WFD (and GWD) priorities by preventing and limiting inputs of pollutants to groundwater and surface water	Nationally	2009
Apply national guidance framework on dredging to refine local measures as appropriate (where not disproportionately costly or technically infeasible)	Helps to achieve WFD (and GWD) priorities by preventing and limiting inputs of pollutants to groundwater and surface water	Applies locally as necessary	2012

Develop national guidance framework on disposal of dredgings to inform Programme of Measures to meet WFD objectives.	Helps to achieve WFD (and GWD) priorities by preventing and limiting inputs of pollutants to groundwater and surface water	Nationally	2009
Apply national guidance framework on disposal of dredgings to refine local measures as appropriate (where not disproportionately costly or technically infeasible)	Helps to achieve WFD (and GWD) priorities by preventing and limiting inputs of pollutants to groundwater and surface water	Nationally	2012
Review existing controls for disposal of dredgings inside and outside harbour limits as appropriate.	Helps to achieve WFD (and GWD) priorities by preventing and limiting inputs of pollutants to groundwater and surface water	Nationally	2012
Actions that could happen if we had more certainty that they would be proportionate and feasible – scenario C			
Awareness raising/information boards. Appropriate boat/vessel management. Reduce impact from hard bank reinforcement and structures, protect, enhance, restore & retain marginal and in channel habitats, increase habitat morphological diversity. Improve and maintain fish movement.	Helps to ensure that WFD objectives are met <ul style="list-style-type: none"> Uncertain if cost of measure is proportionate - further work needed to improve confidence in expected benefits Technical feasibility uncertain – further work needed to demonstrate that the measure is technically feasible 	Across RDB	2012

Urban and Transport

Action	What this does	where	when
What is already happening and what will happen - scenario A			
Highways Agency and Transport Wales programme to investigate impact of soakaways	Helps to achieve WFD (and GWD) priorities by preventing and limiting inputs of pollutants to groundwater and surface water	Road transport network	2015
Network Rail Pesticide protocol	Helps to achieve WFD (and GWD) priorities by preventing and limiting inputs of pollutants to groundwater and surface water	Rail transport network	2015
Additional actions that will happen if this plan is approved - scenario B			
Wider use of Sustainable Drainage Systems	Reduce risks of flooding and of impact on surface water quality at times of high rainfall	Dee RBD	2015
Implement guidelines in the Memorandum of Understanding on herbicide use between Network Rail, Water UK and the Environment Agency	Reduces emissions of priority substances, priority hazardous substances or specific pollutants from urban and transport uses	Sites contributing to potential EQS failures	Ongoing
Identify hot spots for sediment and other pollutants from highway runoff	Identifies sources of priority substances, priority hazardous substances or specific pollutants to allow development of effective programmes of measures	Sites contributing to potential EQS failures	2015
Actions that could happen if we had more certainty that they would be proportionate and feasible - scenario C			
Encourage enhanced use of Sustainable Drainage Systems and improved design and codes of practice for runoff, e.g. from highways and other transport partnership with Highways Agency, Transport Wales and Local Authorities	Reduces emissions of priority substances, priority hazardous substances or specific pollutants from urban and transport uses <ul style="list-style-type: none"> Uncertain if cost of measure is proportionate - further work needed to improve confidence in expected benefits 	Dee RBD	2015

Action	What this does	where	when
Improved street and green space cleaning	Reduces emissions of priority substances, priority hazardous substances or specific pollutants from urban and transport uses <ul style="list-style-type: none"> Uncertain if cost of measure is proportionate - further work needed to improve confidence in expected benefits 	Dee RBD	2015
Where appropriate, and subject to local consultation, designate a limited number of Water Protection Zones from 2009 and apply appropriate actions within them to control high risk activities. Further WPZs may be designated, subject to evidence and local consultation, from 2012	Regulatory tool to control diffuse pollution in high risk areas where other mechanisms are not working or unlikely to work <ul style="list-style-type: none"> Uncertain if cost of measure is proportionate - further work needed to improve confidence in expected benefits Subject to consultation on each Zone proposed. 	Initially around 8 WPZs in locations to be decided across England. In Wales the need for new WPZ arrangements is under consideration.	from 2009 with possibility of further WPZs from 2012
Promote best practice on use of household and garden chemicals, including non-chemical weed control	Reduces emissions of priority substances, priority hazardous substances or specific pollutants from urban and transport uses <ul style="list-style-type: none"> Uncertain if cost of measure is proportionate - further work needed to improve confidence in expected benefits 	Sites contributing to potential EQS failures	2015

Water Industry

Action	What this does	where	when
What is already happening and what will happen - scenario A			
PR09 - Improvements to water company assets at 10 locations in the Middle Dee Catchment, Improvements include <ul style="list-style-type: none"> Habitat Directive schemes to improve discharges, to remove more phosphorus than required by the UWWTD at Lavister STW, Five Fords STW, Malpas STW and Mold STW Schemes to comply with prohibition of direct discharges of pollutants to groundwater at Eryrys STW 	Help to deliver benefits against the pressures identified	Middle Dee	By 2015
PR09 - Improvements to water company assets at 4 locations in the Upper Dee Catchment, Improvements include <ul style="list-style-type: none"> Habitat Directive schemes to improve discharges, to remove more phosphorus than required by the UWWTD at Llangollen WTW and Cefn Mawr STW Schemes identified to ensure no deterioration in the current classification as a result of increased volumes of discharge at Llanuwchllyn STW 	Helps to deliver benefits against the pressures identified	Upper Dee	By 2015
Environment Agency modification of abstraction licences in regard to Natura 2000 sites and Sites of Special Scientific Interest	Ensures no adverse impact on Natura 2000 site integrity and on conservation objectives of Sites of Special Scientific Interest	4 potential sites within Dee RBD	2021

Action	What this does	where	when
Investigation of discharge impacts and appraisal of options for action - coordinated under PR04 by Defra/WAG/Ofwat/EA	Confirms the nature of the problem and the action we need to take to deal with this to prevent and limit inputs of pollutants to groundwater and surface water		
Environment Agency extension of abstraction control to previously unlicensed areas	Limits unsustainable abstraction, protects river flows and groundwater dependent conservation sites	Dee RBD	2013
Additional actions that will happen if this plan is approved - scenario B			
Investigate discharge impacts and appraise options for action, to meet WFD specific requirements, coordinated under PR09 by Defra/WAG/Ofwat/EA	Confirms the nature of the problem and the action we need to take to deal with this to prevent and limit inputs of pollutants to groundwater and surface water	Dee RBD	2015
Manage demand for and use of water of water through leakage reduction, provision of household meters, seasonal tariffs and education programmes	Ensures more efficient use of water; helps prevent unsustainable abstraction; protects river flows and groundwater levels; protects water dependent ecology and conservation sites		2015
Investigate discharges to sewer from various sources e.g. formulators, distributors and manufacturers and appraise options for action, to meet WFD specific requirements, coordinated under PR09 by Defra/WAG/Ofwat/EA	Identifies sources of priority substances, priority hazardous substances or specific pollutants to allow development of effective programmes of actions	Dee RBD	2015
Investigate emissions from STWs and appraise options for action, to meet WFD specific requirements, coordinated under PR09 by Defra/WAG/Ofwat/EA	Identifies sources of priority substances, priority hazardous substances or specific pollutants to allow development of effective programmes of actions	Dee RBD	2015
Actions that could happen if we had more certainty that they would be proportionate and feasible - scenario C			
Actions to prevent unacceptable impact on local water environment caused by licensed abstraction	Limits unsustainable abstraction, protects river flows and groundwater dependent conservation sites <ul style="list-style-type: none"> Uncertain if cost of measure is proportionate - further work needed to improve confidence in expected benefits 	Dee RBD	2015
Additional actions under PR09 for phosphate discharges when biological evidence is available and provides corroboration of need.	Could protect more water bodies from phosphorus <ul style="list-style-type: none"> Uncertain if cost of measure is proportionate - further work needed to improve confidence in expected benefits 	Dee RBD	2015

Planning for changing conditions

River basin management gives an opportunity to work on a long-term programme of environmental improvement. Through this, we will all be able to adapt to changing conditions caused by climate change and development, and extremes such as drought and floods.

Climate change

Climate change is likely to have a significant effect on underlying environmental conditions, the impact of human activity on the water environment and the effectiveness of the actions that are put in place to manage these impacts. Actions that are implemented need to be as effective in a future climate as they are now and not add to the climate change burden.

The UK Climate Impacts Programme predicts hotter drier summers, warmer wetter winters and rising sea levels. These changes need to be taken into account in assessing the scale of the pressures on the water environment. This will help ensure that the actions proposed in this Draft River Basin Management Plan will continue to meet their objectives and that investment decisions are effective.

Table 2 Qualitative description of how climate change may change the risk of pressures (UK Climate Impacts Programme)

Pressure	Increased risk
Abstraction and other artificial flow pressures	Very high
Biological pressures (fisheries management and invasive non-native species)	Medium/low
Biological pressures (invasive non-native species)	Medium
Microbiological pressures (including faecal indicator organisms)	Medium
Organic pollution (sanitary determinands) pressure	Medium
Nutrients pressure (nitrogen and phosphorus)	High
Hazardous substances pressure	Low
Acidification pressure	Low
Salinity pressure	Medium
Temperature pressure	Low
Physical modification pressure	Medium
Sediment pressure	High

Our screening analysis of the proposed actions shows what would be effective under a range of climatic conditions to help tackle pressures both now and under the future climate. Most actions can also be adapted so climate change should not rule out implementing them now.

No single body is responsible for ensuring climate change adaptation in the water environment. Delivery will best be achieved through partnerships and integration of activities. Working together on river basin management is a great opportunity to achieve this.

Q8 Do you agree with our assessment of how climate change will affect pressures on the water environment? What would you change?

» Further information about our assessment of the impact of climate change is in annex H.

Development

The Wales Spatial Plan outlines a twenty year vision for the development of Wales. More detailed land use planning is undertaken by Local Planning Authorities via their Local Development Plan processes. Decisions taken in respect of how natural resources and land are utilised in Wales will be fundamental to achieving the requirements of the Water Framework Directive.

River basin management planning is a key mechanism in helping Wales realise its vision for a high quality environment. A clean, healthy environment fit for the twenty first century, an environment people can take pride in and enjoy to the full. An environment for life. River Basin Management Planning is a tool which can support implementation of both the Wales Spatial Plan and the Welsh Assembly Government's Environment Strategy.

The latest housing growth estimates for Wales are 200,000-240,000 across Wales up to 2026. The catchment profiles acknowledge the key centres where growth will take place. In turn the spatial plans are an opportunity to improve the water environment by influencing the planning policy framework, and planning decisions, to direct resources that can assist in achieving appropriate environmental outcomes.

Flooding and coastal erosion

Flooding and coastal erosion are very important issues, and have a separate planning process alongside the new European Floods Directive. Because defences and control structures impact on ecology, the River Basin Management Plan and all actions proposed need to take account of the need for and the impact of flood and coastal erosion risk management. Catchment Flood Management Plans and Shoreline Management Plans will take into account the objectives of the Water Framework Directive.

The Environment Agency plans its flood and coastal risk management capital investment through the Medium Term Plan, which is a rolling 5 Year investment plan that lists proposed projects. Using this, we will identify flood and coastal risk management activities that are relevant to the water body specific objectives in the River Basin Management Plan. These activities will be implemented with the goal of enhancing the ecology of water bodies where possible and so as not to cause deterioration of Ecological Status, nor impede the delivery of water body objectives unless fully justified under Article 4.7 of the Directive.

Further information

Strategic environmental assessment

Strategic environmental assessment reviews the effects of the actions proposed in this consultation on the environment, including any impacts on climate change. Through this assessment, as well as the impact assessment, it will be certain that the final plan represents the most sustainable way of managing the water environment.

- » We will publish an environmental report at the same time as this consultation. Copies are available through our website at [Environment Agency - The Water Framework Directive](#) or from the contact given at the end of this document.

Habitats Directive assessments

River Basin Management Plans also fall within the scope of the Habitats Directive. This means that each River Basin Management Plan will require an assessment of its likely effects on any Natura 2000 sites within, or hydrologically linked to, the river basin district. Whilst it is unlikely that any parts of the plan will have a significant adverse effect, an initial assessment will determine if the objectives and actions contained within the River Basin Management Plans pass a number of tests.

These tests will look at whether the River Basin Management Plans contain actions to support the achievement of objectives for Natura 2000 sites in the time required; that the objectives within the River Basin Management Plan are not less stringent than those already used to determine consents and licences as part of previous Habitats Directive assessments; and that the plans contain no exemptions, derogations or less stringent objectives for Natura 2000 sites other than those that are compatible with the Habitats and Birds Directives.

If the River Basin Management Plans do not pass these tests and do not appear to be meeting their obligations for Natura 2000 sites, then a fuller assessment may be required.

Give us your views

We encourage you to respond by using our online consultation on our website at [Environment Agency - The Water Framework Directive](#). From here, you will be able to see other people's responses, download the dRBMP consultation document and annexes and find out more information about river basin management planning and the Water Framework Directive.

Alternatively you can return a copy of the question form, and request further information or contact us in any of these ways:

- email at **deerbd@environment-agency.gov.uk**
- phone on **08708 506 506**
- post to Ceri Jones, River Basin Programme Manager, Environment Agency Wales, Cambria House, 29 Newport Road, CARDIFF CF24 0TP

This consultation closes on 22 June 2009.

We will use your comments to help us revise the proposals, and will publish a response document to show how we will do this on our website by 22 September 2009. We will then publish the first River Basin Management Plan for the Dee river basin district in December 2009.

Data Protection Notice

The Environment Agency will use the information you provide to produce the first Dee River Basin Management Plan in 2009. We may need to use your personal information to contact you during this consultation period to clarify any comments. We may make your information available to members of the Dee river basin district liaison panel, or our agents/representatives to do these things on our behalf. If you do not want us to contact you, please let us know.

Under the Freedom of Information Act 2000 and Environmental Information Regulations 2004 we have to disclose information that we hold if people ask for it. This is subject to the exemptions/exceptions and the 'public interest test' set out in the legislation.

Compliance with the Government's Code of Practice on Consultation

This consultation is being run in accordance with the criteria set out in the [Government's Code of Practice on Consultation](#). If you have any queries or complaints about how the consultation has been carried out, please contact:

- Cath Beaver, Consultation Co-ordinator, Environment Agency, Rio House, Aztec West, Bristol BS32 4UD.

email: cath.beaver@environment-agency.gov.uk

Consultation questions

This plan sets out objectives for the water environment for the next six years and beyond. To what extent do you agree with what the plans aim to achieve?

- 1** Do you agree with the assessment of problems in water bodies? What would you change?
 - 2** Do you agree with the proposed objectives? What would you change?
 - 3** For some water bodies we have proposed objectives with deadlines after 2015 or a lower overall target. Do you agree with these changes we have proposed? What would you change?
-

This plan sets out the actions required to meet the objectives. To what extent do you agree that the right actions have been identified (ones that are proportionate and feasible)?

- 4** We have followed a process to assess (appraise) the actions. This process is described in detail in annex E. Do you agree with how we have done this?
 - 5** What comments do you have on these actions? Are there any actions that have been missed, or any changes you would propose?
-

There are some extra actions that could be put in place if there were more certainty that they would be effective. These are listed under scenario C, and we would like to know if you can help to make these actions happen.

- 6** What comments on scenario C actions do you have, including any additional information you can supply about specific actions?
 - 7** What support can you offer, such as undertaking any actions or providing resources, to help deliver more for your environment?
-

Any other comments you may have on this plan

- 8** Do you agree with our assessment of how climate change will affect pressures on the water environment? What would you change?
 - 9** Do you have any other comments on this draft plan that you haven't already given?
-

Would you like to find out more about us, or about your environment?

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floodline 0845 988 1188 (24 hour)