

Water for life and livelihoods

River Basin Management Plan Northumbria River Basin District



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You can search maps for information related to this plan by using 'What's In Your Backyard'. <http://www.environment-agency.gov.uk/maps>.

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Northumberland County Council - Berwickshire and North Northumberland Coast AONB

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This plan at a glance

This plan is about the pressures facing the water environment in the Northumbria River Basin District, and the actions that will address them. It has been prepared under the Water Framework Directive, and is the first of a series of six-year planning cycles.

By 2015, 15 per cent of surface waters (rivers, lakes, estuaries and coastal waters) in this river basin district are going to improve for at least one biological, chemical or physical element, measured as part of an assessment of good status according to the Water Framework Directive. This includes an improvement of **878 km** of the river network in the river basin district, in relation to fish, phosphate, specific pollutants and other elements.

49 per cent of surface waters will be at good or better ecological status/potential and 33 per cent of groundwater bodies will be at good status by 2015. In combination 48 per cent of all water bodies will be at good status by 2015. The Environment Agency wants to go further and achieve an additional two per cent improvement to surface waters across England and Wales by 2015.

The biological parts of how the water environment is assessed – the plant and animal communities – are key indicators. **At least 42 per cent of assessed surface waters will be at good or better biological status by 2015.**

The Northumbria River Basin District has a very special environment with extreme variation, from highly industrialised urban areas to the moors, hills and valleys of Northumberland National park, the Heritage Coast and the Pennine Area of Outstanding Natural Beauty. Water supports these landscapes, their wildlife and it is vital to the livelihoods of those who live and work here.

There has been great progress in protecting these natural assets and cleaning up many of the water environment problems that people have created in the past. However, a range of challenges still remain, which will need to be addressed to secure the predicted outcomes. They include:

- point source pollution from water industry sewage works;
- physical modification of water bodies;
- disused mines, point and /or diffuse pollution source;
- diffuse pollution from agricultural activities;
- diffuse pollution from urban sources.

At present, because of these pressures, and the higher environmental standards required by the Water Framework Directive, only 43 per cent of surface waters are currently classified as good or better ecological status/potential. 37 per cent of assessed water bodies are at good or better biological status now, although we expect this to change to 36 per cent when we have assessed all water bodies.

In order to meet these targets, it is important for everyone to play their part now and in the future. River basin management is an opportunity for this generation – for people and organisations to work together to improve the quality of every aspect of the water environment – to create an environment we are all proud of and can enjoy.

1. About this plan

This plan focuses on the protection, improvement and sustainable use of the water environment. Many organisations and individuals help to protect and improve the water environment for the benefit of people and wildlife. River basin management is the approach the Environment Agency is using to ensure our combined efforts achieve the improvement needed in the Northumbria River Basin District.

River basin management is a continuous process of planning and delivery. The Water Framework Directive introduces a formal series of 6 year cycles. The first cycle will end in 2015 when, following further planning and consultation, this plan will be updated and reissued.

The Northumbria River Basin District Liaison Panel has been central to helping us manage this process. The panel includes representatives of businesses, planning authorities, environmental organisations, consumers, navigation, fishing and recreation bodies and central, regional and local government, all with key roles to play in implementing this plan. The Environment Agency has also worked extensively with local stakeholders to identify the actions needed to address the main pressures on the water environment.

This plan has been prepared under the Water Framework Directive (WFD), which requires all countries throughout the European Union to manage the water environment to consistent standards. Each country has to:

- prevent deterioration in the status of aquatic ecosystems, protect them and improve the ecological condition of waters;
- aim to achieve at least good status for all water bodies by 2015. Where this is not possible and subject to the criteria set out in the Directive, aim to achieve good status by 2021 or 2027;
- meet the requirements of Water Framework Directive Protected Areas;
- promote sustainable use of water as a natural resource;
- conserve habitats and species that depend directly on water;
- progressively reduce or phase out the release 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;
- contribute to mitigating the effects of floods and droughts.

The plan describes the river basin district, and the pressures that the water environment faces. It shows what this means for the current state of the water environment, and what actions will be taken to address the pressures. It sets out what improvements are possible by 2015 and how the actions will make a difference to the local environment – the rivers, the lakes, the estuaries and coasts, and the groundwater.

Looking towards implementation, the plan highlights the programme of investigations to be undertaken. This will identify more actions, particularly those associated with diffuse pollution, for delivery during the first cycle. New national measures, made available by government, will also lead to additional improvements. At local level, the Environment Agency will be working closely with a wide variety of organisations and individuals, not only to deliver the commitments contained in the plan, but wherever possible to expand upon them for the benefit of the water environment.

Strategic Environmental Assessment

A Strategic Environmental Assessment of the draft plan was completed to review the effects of the proposals on the wider environment. The assessment enabled us to make sure that this plan represents the most sustainable way of managing the water environment.

The Post Adoption Statement and accompanying Statement of Environmental Particulars is available at www.environment-agency.gov.uk/wfd

Habitats Regulations Assessment

A Habitats Regulations Assessment of this plan has been carried out to consider whether it is likely to have a significant effect on any Natura 2000 sites. The assessment was undertaken by the Environment Agency, in consultation with Natural England.

The assessment concluded that the River Basin Management Plan is unlikely to have any significant negative effects on any Natura 2000 sites. The Plan itself does not require further assessment under the Habitats Regulations. This conclusion is reliant on the fact that before any measures in the plan are implemented they must be subject to the requirements of the Habitats Regulations. Any plans, project or permissions required to implement the measures must undergo an appropriate assessment if they are likely to have a significant effect.

A copy of the Habitats Regulations Assessment of this plan is available at www.environment-agency.gov.uk/wfd

Impact Assessment

An impact assessment of this plan has been completed. It looks at the costs of a reference case, which includes existing actions and new actions required by existing obligations, and the incremental costs and benefits of implementing the additional new actions required by this plan. The impact assessment also provides a forward look to the costs and benefits of potential action in future cycles (2015 to 2021 and 2021 to 2027).

A copy of the impact assessment is available at www.environment-agency.gov.uk/wfd

2. About the Northumbria River Basin District

The Northumbria River Basin District covers an area of 9,029 km² from the Scottish Border to just south of Guisborough, and from the Pennines east to the North Sea. It includes Northumberland and County Durham, with small areas of North Yorkshire and Cumbria. The Rivers Tweed and Till are not included in the Northumbria River Basin District as they are part of the Solway Tweed River Basin District. Northumbria's landscape is one of extreme variation, from highly industrial urban areas to the moors, hills and valleys of Northumberland National Park, the Heritage coast and the Pennine Area of Outstanding Natural Beauty. Figure 1 shows the river basin district.

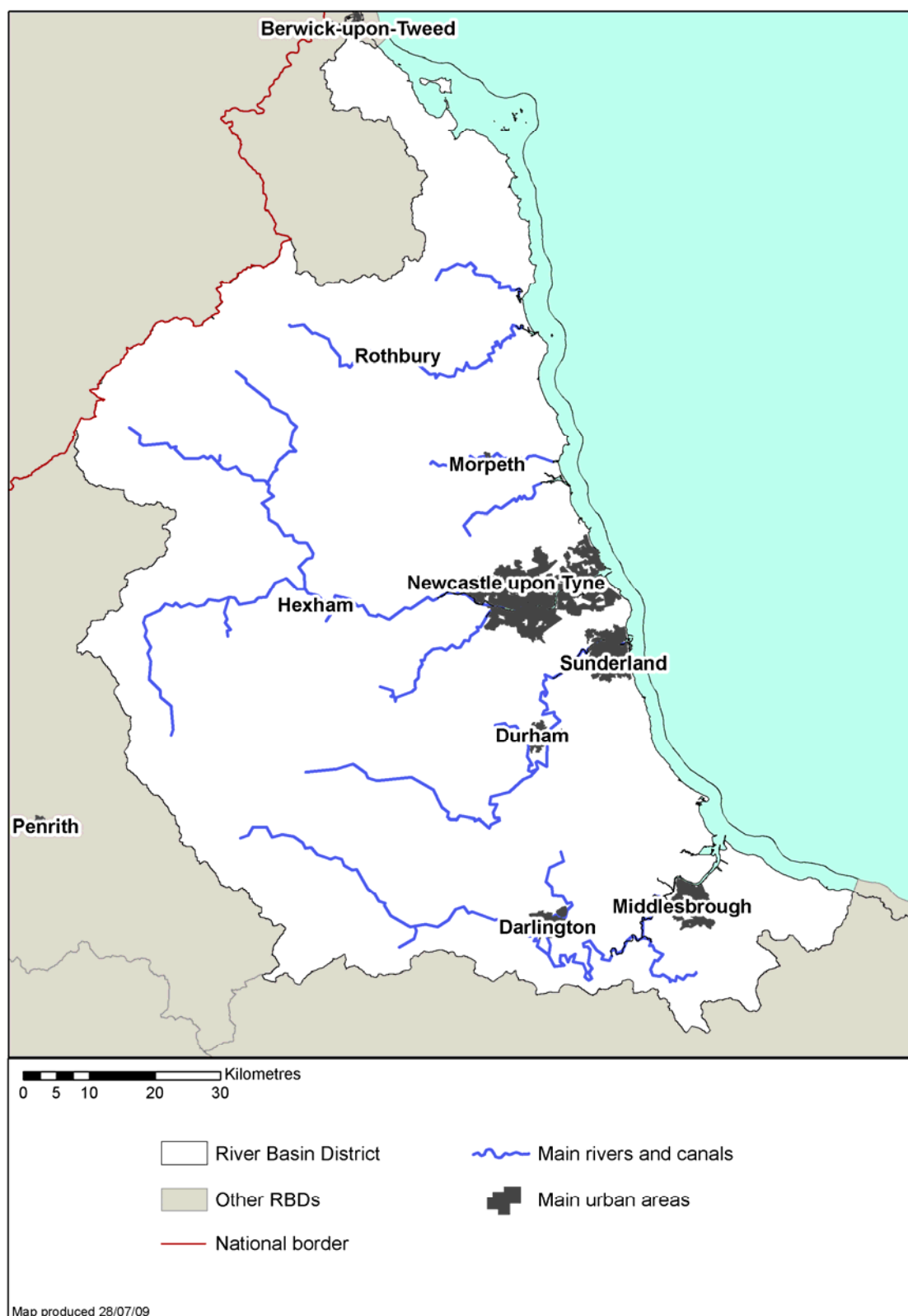
Approximately 2.5 million people live in the region, primarily in two locations: Tyne and Wear, and the Tees Valley. Many Local Authorities within the district are proposing New Growth Points, where growth will be accelerated up to 2016. Before 2021 the Regional Spatial Strategy proposes an additional 98,540 homes (an average annual net additions to the stock of 7,580 2009-2021) along with jobs and services for the people occupying them. The Environment Agency will continue to work with the planners, developers and communities affected by growth to maintain and improve the environment.

The river basin district's principal urban centres are former industrial towns, associated with the coal, steel and shipbuilding industries. The most significant cities and towns include Sunderland, Newcastle, Durham, Stockton and Middlesbrough. Approximately 30% of the river basin district population live within these cities. Several of these former industrial centres have high levels of urban deprivation.

To the west of the urban centres, a diverse rural landscape supports a range of agricultural activities from livestock and dairy farming to cereal and vegetable production. Forestry is also a significant industry. Around 67% of the total land area is farmed, managed for moorland grouse or used for forestry. Coal and lead mining and quarrying were once more widespread. Past activities have helped shape the rural landscapes that we all enjoy today. The blanket peat bogs in the North Pennines and Cheviots form the headwaters of the rivers which flow east to the coast.

The largest contributing economic sectors in the region include tourism, business services, wholesale and distribution, and health. Manufacturing industries are important to the region, with the largest contribution to output from the chemicals, petrochemicals, food, drink, transport equipment and the metals sectors. Although agriculture only makes up a small part of the regional economy, it is a critical element of the rural economy. Tourism is also an important element of the rural economy, based on some of the most valuable natural resources and cultural assets in England, including spectacular coastal areas and a number of World Heritage Sites.

Figure 1 **Map of Northumbria River Basin District**



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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 that have significantly altered and damaged the environment over hundreds of years.

The way in which urban land is used should protect and restore habitats, species and natural processes. Drinking water supplies and bathing areas need to be protected. The regional planning bodies and Leader Boards have important roles to play in ensuring that the Regional Spatial Strategies and emerging Integrated Regional Strategies actively seek to endorse the requirements of the WFD and promote sustainable development across the river basin district. Growth and regeneration in the Northumbria River Basin District is mainly concentrated in existing towns and much of this development is expected to be on previously developed land, for example in the regeneration of former industrial sites, often close to water bodies. Clear and effectively implemented development control policies, both regionally and locally, with effective regulation, will reduce the risk to water quality from pollution incidents.

Case Study 1 Newcastle Great Park

Newcastle Great Park (NGP) is an impressive sustainable urban development. Uniquely positioned in a rural setting, the park will encompass 2500 high quality residential dwellings, commercial premises and community facilities offering universal appeal. Just three miles from Newcastle city centre, the development has more than 550 homes built and occupied by residents who desire a great new way of living.



The NGP is being built on a greenfield site and this has presented the opportunity to explore and implement a range of *sustainable drainage systems*, designed to cope with surface water runoff in a more environmentally friendly manner than is currently the norm in the UK. The developers have investigated a range of techniques and are implementing a system of wetlands and surrounding dry storage areas instead of more conventional methods of surface water storage. These 'ponds' retain water as required for flood control purposes, create wildlife habitats and treat 'diffuse' pollution (such as road salt and oil from highways). The use of sediment forbays has proven to prevent sediment transfer into the main river system, the River Ouseburn. The NGP development will be completed in 2012.

Controlling diffuse pollution and making wise use of water are priorities if the water environment is going to improve. Farmers can increase profits and minimise risk to the environment by integrating the best traditional methods with advanced technologies e.g. through soil sampling and nutrient planning farmers can establish exactly what each crop needs, reducing the risk of nutrients leaching from farmland. Upland management is also important in the Northumbria River Basin District. Through protecting peatlands, sediment input into the river system and water colour in drinking water can be reduced. The peatlands provide continued carbon storage, which could help to address some impacts of climate change.

Water is valuable. To ensure there is sufficient for future needs and for wildlife to flourish, supplies need to be provided in a sustainable way. There should also be sufficient flow levels for wildlife to flourish. Public water supply is the dominant water use within the Northumbria basin. The main demands on our water resources are: public water

supply; irrigation for agriculture, horticulture and recreational use; and industrial abstractions. Climate change is also seen as a pressure on water resources. Following publication of the Environment Agency's water resources strategy for England and Wales, we have developed a Regional Action Plan for the North East. We will promote water efficiency and will contribute to enhancement of the water environment by implementing our Restoring Sustainable Abstraction programme. The Environment Agency is working with Northumbrian Water and Durham University to devise and implement ecologically sensitive and sustainable release regimes for regulated rivers in the basin.

The **benefits to the environment, wildlife and society in general of improved, well connected habitats need to be clearly explained**, understood and maximised. Modern activities have introduced invasive non-native species which affect native species, sometimes to the point of extinction. River basin management planning provides the opportunity to take measures to reduce the impact of modifications and invasive non-native species on wildlife. Building on and expanding the work of the Tyne River Trust across the river basin district will ensure a co-ordinated and prioritised approach to the management of invasive non-native species. Only by working in partnership across a range of organisations, land owners and farmers will improvements to the identification, control and disposal of these species be made. This will ensure that future trends are monitored to enable a rapid response to new incidents.

Investment in waste water treatment schemes in recent decades has led to substantial improvements to continuous discharges and few remain to be addressed in the Northumbria River Basin District. Further benefits will come from improvements to intermittent sewage discharges, such as those from combined sewer outfalls. This includes improvements at three bathing waters and studies to identify the factors which compromise quality at two others.

Our current priority with the Coal Authority is prevention of pollution of the magnesian limestone aquifer under eastern County Durham. Other schemes to protect surface waters are addressed according to a prioritised list.

All these challenges relate to a range of specific pressures that need to be dealt with in this river basin district. These are:

- **Non-native species** – invasive non-native species are plants and animals that have deliberately or accidentally been introduced outside their natural range, and by spreading quickly threaten native wildlife and can cause economic damage.
- **Urban and transport pollution** – a range of pollutants related to urban areas and the transport network.
- **Nitrate** – a nutrient found in fertilisers used in agriculture, and in sewage effluent.
- **Organic pollution** – an excess of organic matter such as manure or sewage which depletes the oxygen available for wildlife.
- **Pesticides** – chemical and biological products used to kill or control pests.
- **Abstraction and other artificial flow regulation** – problems related to taking water from rivers, lakes and groundwater.
- **Mines and minewaters** – minewaters are usually acidic and contain metal contaminants such as copper, iron, manganese and zinc which can have significant ecological impacts.
- **Metals** – metals, in large quantities, can be toxic to freshwater fish, invertebrates and marine organisms.
- **Physical modification** – changes to the structure of water bodies, such as for flood defence.
- **Phosphate** – a plant nutrient found in sewage and fertiliser that can cause too much algae to grow in rivers when in excess quantities.

- **Sediment** – undissolved particles floating on top or suspended within water, for example those caused by increased rates of soil erosion from land based activities. Sedimentation can smother river life and spread pollutants from the land into the water environment.
- **Faecal indicator organisms** – pathogenic (infection causing) organisms, such as bacteria or viruses from sewage or animal excrement.

3. Water bodies and how they are classified

In the context of the Water Framework Directive, the water environment includes rivers, lakes, estuaries, groundwater and coastal waters out to one nautical mile. For the purposes of river basin management, these waters are divided into units called water bodies, as summarised in Table 1. In addition, this plan aims to protect wetlands that depend on groundwater.

Table 1 **Water body numbers in the Northumbria River Basin District**

	River and Canal*	Lake and reservoir	Estuary (transitional)	Coastal	Groundwater	Total
Natural water bodies	265	14	1	5	9	294
Artificial water bodies	18	33	0	1	n/a	52
Heavily modified water bodies	97	26	6	1	n/a	130
Total	380	73	7	7	9	476

* The river and canal category also includes surface water transfers (SWTs). The total length of river covered by the Directive in this river basin district is 3,494 kilometres.

The Water Framework Directive sets a target of aiming to achieve at least 'good status' in all water bodies by 2015. However, provided that certain conditions are satisfied, in some cases the achievement of good status may be delayed until 2021 or 2027.

Surface waters

For surface waters, good status is a statement of 'overall status', and has an ecological and a chemical component. Good ecological status is measured on the scale high, good, moderate, poor and bad. Chemical status is measured as good or fail.

Good ecological status applies to natural water bodies, and is defined as a slight variation from undisturbed natural conditions.

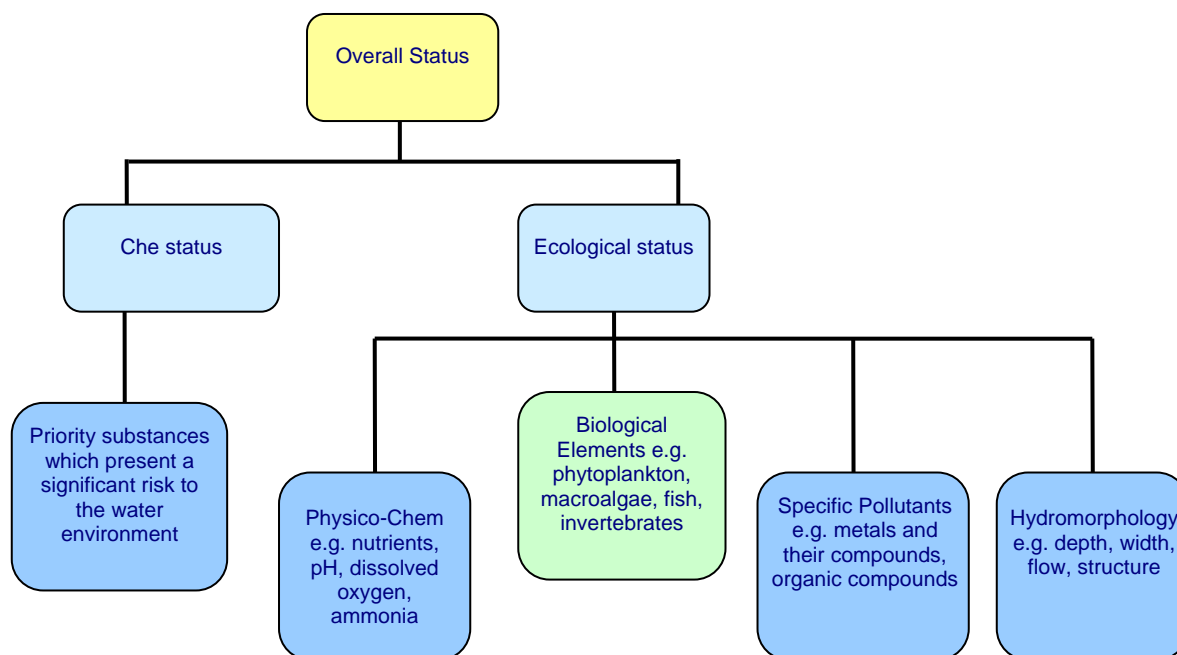
Figure 2 below shows how status is determined for surface waters. Each component has several different elements. These are measured against specific standards and targets developed by the Water Framework Directive UK Technical Advisory Group (UKTAG) and the European Union.

To understand the underlying reasons for water body status it is helpful to break down the results. Ecological status could be driven by the presence of a single chemical substance slightly exceeding the required standard. As well as ecological status, this plan highlights the results of biological assessments (referred to as biological status) as these are the main indicators of the health of the environment for surface waters.

Monitoring and components of overall status

The monitoring programme for river basin management is based on a far wider range of assessments than were carried out in the past. A range of elements are measured in each water body, and a classification is produced based on a 'one out, all out' principle. This uses the poorest individual element result to set the overall classification.

Figure 2 **The components of overall status for surface water bodies**



The classification of water bodies will improve as new monitoring data are collected and better methods of assessment are developed. Future monitoring will help show where environmental objectives are already being met and where more needs to be done to improve the water environment. Monitoring will also give us some information on the spread of invasive non-native species.

The Water Framework Directive recognises the key role that water resources and habitats play in supporting healthy aquatic ecosystems. It requires that water bodies are managed to protect or improve hydromorphological conditions. Hydromorphology is a term that covers the flow of water in a water body and its physical form. The term encompasses both hydrological and geomorphological characteristics that help support a healthy ecology in rivers, lakes, estuaries and coastal waters.

Artificial and heavily modified waters

Some water bodies are designated as 'artificial' or 'heavily modified'. This is because they may have been created or modified for a particular use such as water supply, flood protection, navigation or urban infrastructure.

By definition, artificial and heavily modified water bodies are not able to achieve natural conditions. Instead the classification and objectives for these water bodies, and the biology they represent, are measured against 'ecological potential' rather than status.

For an artificial or heavily modified water body to achieve good ecological potential, its chemistry must be good. In addition, any modifications to the structural or physical nature of the water body that harm biology must only be those essential for its valid use. All other such modifications must have been altered or managed to reduce or remove their adverse impact, so that there is the potential for biology to be as close as possible to that of a similar natural water body. Often though, the biology will still be impacted and biological status of the water body may be less than good

Groundwater

For groundwater, good status has a quantitative and a chemical component. Together these provide a single final classification: good or poor status.

A ground water body will be classified as having poor quantitative status in the following circumstances; where low ground water levels are responsible for an adverse impact on rivers and wetlands normally reliant on ground water; where abstraction of ground water has lead to saline intrusion; where it is possible that the amount of groundwater abstracted will not be replaced each year by rainfall.

Poor chemical status occurs if there is widespread diffuse pollution within the groundwater body, the quality of the groundwater is having an adverse impact on wetlands or surface waters, there is saline intrusion due to over abstraction, or the quality of water used for potable supply is deteriorating significantly. There are other objectives for groundwater quality in addition to meeting good status. These are the requirements to prevent or limit the input of pollutants to groundwater and to implement measures to reverse significant and sustained rising trends in pollutants in groundwater.

Protected areas

Some areas require special protection under European legislation. The Water Framework Directive brings together the planning processes of a range of other European Directives. These Directives, listed in Table 2, establish protected areas to manage water, nutrients, chemicals, economically significant species, and wildlife – and have been brought in line with the planning timescales of the Water Framework Directive. Meeting their requirements will also help achieve Water Framework Directive objectives.

Table 2 Other Directives and their Water Framework Directive protected areas

Directive	Protected area	Number of protected areas
Bathing Waters	Recreational waters	33
Birds	Natura 2000 sites (water dependent special protection areas)	6
Drinking Water	Drinking water protected areas	34
Freshwater Fish	Waters for the protection of economically significant aquatic species	312
Shellfish Waters	Waters for the protection of economically significant aquatic species	1
Habitats	Natura 2000 sites (water dependent special areas of conservation)	9
Nitrates	Nitrate Vulnerable Zones	20% of river basin district area
Urban Waste Water Treatment	Sensitive areas	6

Achieving the objectives of these protected areas is a priority for action in this plan. Annex D sets out their objectives and the actions required for Natura 2000 sites and the new Drinking Water Protected Areas required under the Directive. Annex C describes the actions required for all protected areas. In addition, there are two new daughter Directives (Groundwater and Environmental Quality Standards) that will be used to implement specific parts of the Water Framework Directive.

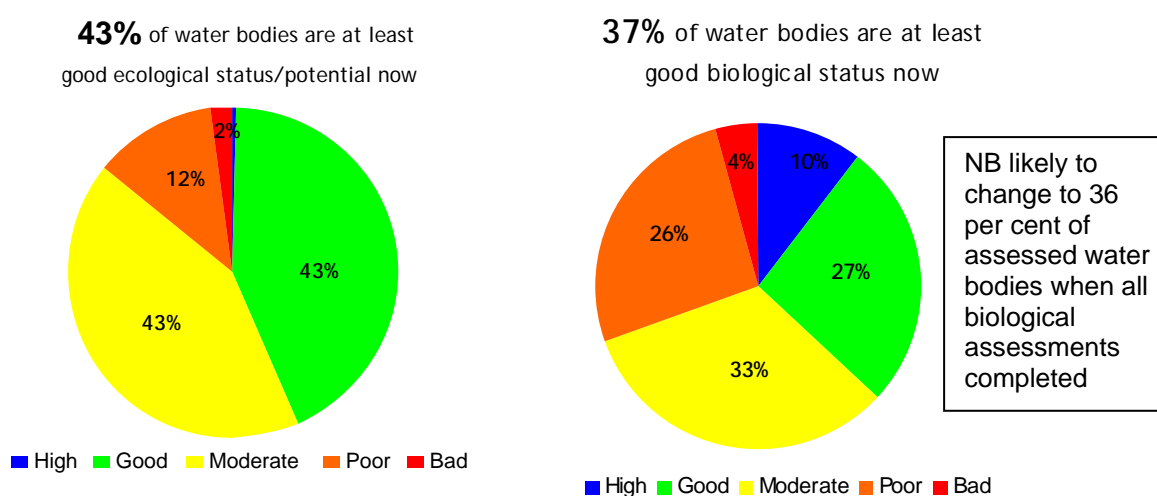
4. The state of the water environment now

The current status classification is the baseline from which improvements and the 'no deterioration in status' objective of the Water Framework Directive is measured. The current status classification has been updated since the draft plan. It is different to that presented in the draft plan because:

- the quality of assessments has been improved by refining classification methods;
- the accuracy of individual assessment tools has improved, especially for fish;
- a number of water bodies that were identified as potentially being heavily modified have not been designated as such in this plan because monitoring shows that they currently achieve good status;
- improvements from the Water Companies' Periodic Review 2004 have now been factored in;
- an additional 48 lakes and one coastal water body have been classified that were previously unassessed.

43 per cent of surface waters are at good or better ecological status/potential. 37 per cent of assessed surface waters are at good or better biological status now; this is shown in Figure 3. 61 per cent of surface water bodies have been assessed for biological status, all water bodies have been assessed for ecological status/potential.

Figure 3 **Ecological status/potential and biological status of surface water bodies now**



Statistics for both good ecological status or potential and biological status are influenced by the relative number of artificial and heavily modified waters and their classification. In the Northumbria River Basin District, 52 per cent of 182 artificial and heavily modified water bodies are currently classified as at good ecological potential, compared to 37 per cent of 285 natural surface water bodies being at good or better ecological status. As discussed in the previous section, the higher percentage of poor and bad water bodies assessed for biological status compared to ecological status/potential reflects the fact that even where all mitigation measures are in place to allow an artificial/heavily modified water body to be classified as good, the use of the water body may mean that biology is still impacted.

As biological monitoring continues it is likely that the percentage of water bodies at good or better biological status will change from 37 to 36 per cent. This is explained further in the section on Biological status and monitoring.

For groundwater bodies, currently 89 per cent are at good quantitative status. 33 per cent are at good chemical status.

Reasons for not achieving good status or potential

This section takes a closer look at rivers. The majority of management actions in the first river basin management cycle will be applied to rivers. Reasons for not achieving good status or potential in other surface waters are being investigated. The first course of action for lakes, coasts and estuaries is to develop a better understanding of the issues.

To identify what needs to be done to improve the environment, the reasons for not achieving good status need to be understood. The reasons most frequently identified by Environment Agency staff using monitoring data and their knowledge and experience of individual water bodies are shown in table 3. Each relates to one or more pressures, which in turn impact on elements of the classification.

The reasons for failure include point source discharges from water industry sewage works, diffuse source pollution from agriculture, minewaters, abstraction and a range of reasons due to physical modifications. The actions in this plan will increase the number of waters achieving good status or potential, for example through significant investment in improving discharges from sewage works and changes to land management practices. Even if good status is not completely achieved, they will lead to improvements to the key elements impacted.

Table 3 Main reasons (where known) for not achieving good ecological status or potential in rivers

Reason for Failure	Key elements impacted
Point source water industry sewage works	ammonia, dissolved oxygen, fish, invertebrates, phosphate, phytobenthos
Physical modification barriers to fish migration	fish
Physical modification urbanisation	fish, invertebrates, mitigation measures assessment
Physical modification flood protection	mitigation measures assessment
Point source water industry storm discharge (including Combined Sewer Outfalls)	ammonia, dissolved oxygen, fish, invertebrates, phosphate, phytobenthos
Physical modification water storage and supply (including for power generation)	hydrology, fish, mitigation measures assessment
Disused mines point and/or diffuse source	fish, invertebrates, macrophytes
Abstraction	fish, hydrology
Diffuse source agricultural	ammonia, dissolved oxygen, fish, invertebrates, phosphate, phytobenthos
Physical modification land drainage	fish, invertebrates, macrophytes, mitigation measures assessment, phytobenthos

It is important to note that because classification involves a wider range of elements than previous monitoring schemes, and many of the key pressures are complex and occur in combination, the Environment Agency often does not know the reason for a failure. For many water bodies either, the reasons for failure are unknown, or it is uncertain whether there is a failure or whether pressures really are causing an impact. In these cases we will need to investigate, as discussed in the following section [Investigations – improving outcomes for 2015](#).

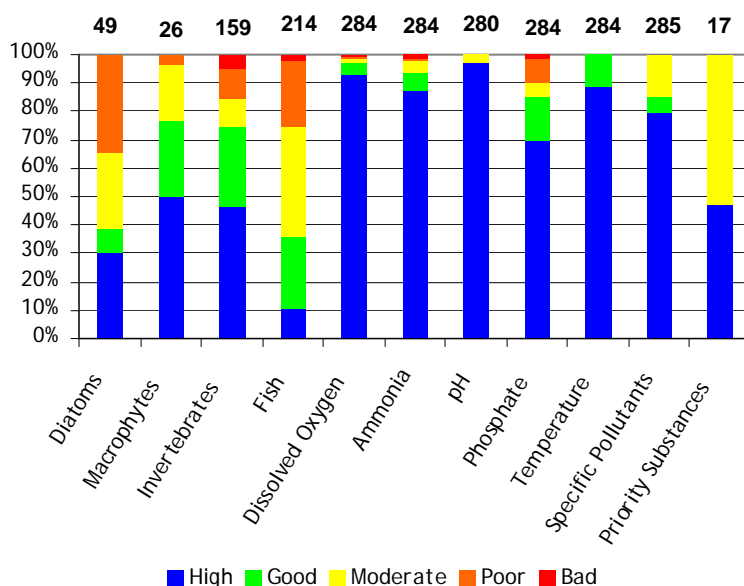
For groundwater quality, the main reasons for poor status are due to impacts from coal and non-coal mining activities, high or rising nitrate, sulphate and chloride concentrations, with some failures for other chemicals. The reasons for poor quantitative status varies from abstraction impacting groundwater quality, surface water flows and exceeding the rate at which aquifers recharge. The plan identifies a range of actions to prevent deterioration and improve groundwater elements, as well as investigations to improve the confidence in groundwater classification.

Classification of individual elements

For rivers, which comprise the majority of water bodies in the river basin district, the main elements indicating that the standards for good ecological status are not being achieved are fish, invertebrates and phosphate. In a small number of water bodies, priority substances are also an issue in this river basin district. This is shown in Figure 4.

The results for macrophytes (aquatic plants) and diatoms (microscopic algae) are from relatively fewer water body assessments based on a new (2007) risk based monitoring programme. However, as would be expected, the results for these elements confirm the presence of pressures on biology in many of the assessed water bodies.

Figure 4 Proportion of assessed river water bodies in each status class, by element
(numbers above bars indicate total number of water bodies assessed for each element)



Excessive sediment is a possible cause for biology not being good in a number of water bodies. At present however standards aren't available to identify clearly where sedimentation is excessive. The Environment Agency will be developing techniques to assess the impact of sedimentation as one of the actions in this plan.

Biological status and monitoring

New monitoring programmes for the Water Framework Directive since 2007 focus on locations where the Environment Agency suspects there may be a problem caused by pressures on the water environment. The Environment Agency does not yet have biological assessments for all relevant water bodies. In this river basin district, 61 per cent of water bodies have an assessment for at least one biological element. The number of water bodies covered by biological monitoring is set to increase over the next three years. As new information becomes available it is likely that some water bodies currently labelled as good biological status will be shown to have a lower quality.

For instance, from the chemical monitoring the Environment Agency is now clear that there is a link between high levels of phosphate in surface waters and biological failures in the main river type (lowland alkaline rivers). The assessment of reasons for failure that the Environment Agency have started to undertake shows that across England and Wales 22 per cent of river water bodies are failing to achieve good status/potential because of excessive levels of phosphate. In this river basin district phosphate results show that it is likely that the percentage of water bodies at good or better biological status will change from 37 to 36 per cent when additional water bodies are assessed for diatoms and/or macrophytes. This same analysis points to discharges from sewage treatment works and releases from agriculture being responsible for the majority of this. Rather than wait for the results of more biological assessments, we need to ensure corrective action is started in the first plan cycle.

Through the Water Services Regulation Authority's (Ofwat's) determination of the water industry periodic review of investment, the water industry will continue their investment programme targeted at addressing their contribution to phosphate pollution. It is important that agriculture also makes a contribution in the first cycle improvements.

The Environment Agency is now working with the main farming groups to better understand the main ways in which phosphate from land enters, and is transported in, water bodies. Farming groups have agreed to use this information to encourage individual farmers to take action to reduce their contribution to water pollution. We will trial this new approach in the Anglian River Basin District and through the Campaign for Farmed Environment. We will also look at what the advice and incentives available through agri-environment schemes and the England Catchment Sensitive Farming Delivery Initiative can do to reduce phosphate pollution of water and wetlands.

In parallel with this approach, the Environment Agency will continue to develop work on regulatory measures, such as piloting Water Protection Zones (WPZs) so that if voluntary approaches are shown not to work in a particular area, or where higher environmental standards are needed in for example protected areas, we are ready and able to ensure progress is made before 2015. The work to identify the ways in which phosphate enters water bodies and the means of reducing this will inform the measures that might be applied in WPZs. WPZs will only be effective if the means of control have been clearly identified. At this time no pilots are proposed within the Northumbria River basin District.

5. Actions to improve the water environment by 2015

The following gives an overview of the key contributions from sectors and organisations that the Environment Agency will work with to implement this plan.

[All sectors](#)

[Agriculture and rural land management](#)

[Angling, fisheries & conservation](#)

[Central government](#)

[Environment Agency](#)

[Industry, manufacturing & other business](#)

[Local and regional government](#)

[Mining and quarrying](#)

[Navigation](#)

[Urban & transport](#)

[Water industry](#)

[Individuals and communities.](#)

These actions are summarised versions of the full programme of actions that can be found in Annex C.

The lead organisation for each action is given in brackets. Note that many actions will involve more than one sector and need to be implemented in partnership. Actions in Annex C are therefore duplicated across the relevant sectors. Sectors are encouraged to put further actions forward during the implementation of this plan.

After the action tables there are sections on:

[Actions to protect drinking water](#)

[The costs of action in this plan](#)

[Taking action in a changing climate](#)

[Working with other plans and programmes](#)

All sectors

All sectors must comply with the range of existing regulations, codes of practice and controls on the use of certain substances.

Investigations will be carried out by the Environment Agency and partner organisations where appropriate, to establish the extent and source of pressures and to identify any further actions that are technically feasible and not disproportionately costly. These actions will be carried out during this or future management cycles.

Investigations and actions will also be carried out in drinking water protected areas (where necessary focused in safeguard zones) to reduce the risk of deterioration in raw water quality and therefore reduce the need for additional treatment to meet drinking water standards.

A small number of candidate Water Protection Zones (WPZ) will be promoted nationally early in the first plan cycle, where there is clear evidence that voluntary mechanisms such as the England Catchment Sensitive Farming Initiative and pollution prevention campaigns are not sufficient by themselves to achieve the required environmental objectives. The candidate WPZs will be used to establish the usefulness of the concept, but as we have said earlier in describing the results of the biological monitoring, this in turn relies on a clear understanding of the practices causing problems and the techniques to avoid them.

Agriculture and rural land management

This sector has a big role in looking after and improving the quality of the rural environment. Agriculture accounts for around 67% of the land area in the Northumbria River Basin District and is a major employer in rural communities. A diverse rural landscape supports a range of agricultural activities from livestock and dairy farming to cereal and vegetable production. Forestry is also a significant industry. The sector has a significant role in looking after and improving the countryside.

A combination of incentive, advisory and regulatory measures have been in place for a number of years to help farmers and other land managers protect the environment. For instance the Code of Good Agricultural Practice and agri-environment schemes, such as Entry Level Stewardship and Higher Level Stewardship. Wise stewardship of resources such as soil, nutrients, water and energy helps to cut costs while maintaining or improving the productivity of land and livestock.

Nevertheless, the way in which land is managed is still having a negative impact on natural resources and further action is needed to address diffuse pollution and other key pressures in rural areas. Government will consider the introduction of further restrictions of activities and restrictions on chemicals where there is evidence that voluntary actions failed to deliver.

Example actions
Continue Cross-Compliance – to help farmers comply with a range of Directives to reduce pollution from agriculture at farms receiving subsidies (all land managers). <ul style="list-style-type: none">• Across the river basin district
Encourage uptake of Voluntary Initiative best practice on pesticide use by land managers within the agricultural and amenity sectors (Voluntary Initiative, Environment Agency). <ul style="list-style-type: none">• Across the river basin district
Maintain a nationally funded advice-led partnership under the England Catchment Sensitive Farming Delivery Initiative (Natural England, Environment Agency) to reduce diffuse water pollution from agriculture in the priority area of Tweed, Aln, Coquet and Coastal Streams.
Establish and enforce Nitrate Vulnerable Zones in catchments at high risk from nitrate pollution (Environment Agency) to reduce the amount of nitrate and other pollutants entering water from farmland. <ul style="list-style-type: none">• Across the river basin district
Form Strategic Partnerships with the England Catchment Sensitive Farming Delivery Initiative and other advice led partnership work (Natural England, Environment Agency, Water Companies) to provide further funding to reduce diffuse water pollution from agriculture.
Work with Natural England to target Catchment Sensitive Farming type activities and agri-environment schemes (Natural England, Environment Agency) to ensure adoption of best farming practice and reduce diffuse pollution from agriculture. <ul style="list-style-type: none">• Priority water bodies as specified in Annex C
Designate (Defra) and enforce (Environment Agency) Water Protection Zones and apply appropriate measures to control high risk activities. The Zones will provide a regulatory tool to control diffuse pollution to water in high risk areas where other mechanisms are not working or are unlikely to work. <ul style="list-style-type: none">• Pilots are taking place outside the river basin district
Targeted work with key abstracting groups to promote water efficiency.
Large scale restoration of peat moorlands to benefit biodiversity, water resources, water quality and potentially help manage peak flows. For example the Peatscapes Initiative in the North Pennines.
Joint working across the river basin to identify opportunities for ecological enhancement through restoration of a more natural inundation regime in washlands and / or wider river restoration projects resulting in a more natural flow regime and ecological improvements.

Angling, fisheries & conservation

The angling and conservation sector has a large role to play in delivering local 'on the ground' improvements to the water environment as well as working to establish new mechanisms. It engages communities and individuals, building on their skills and experience

and actively involves them in making these improvements. Angling is a popular past time that can provide local intelligence on environmental quality – over 51,000 rod licences are sold each year in Northumbria River Basin District.

Many environmental organisations can influence environmental quality through the land they own or manage. Riparian owners have specific responsibility for the management of their watercourses so their support, involvement and investment in implementing the actions is crucial.

Example actions
Work in partnership to develop species management plans for prioritised known invasive non-native species to improve identification, control and disposal. For example the Tyne Rivers Trust is working with partners and community groups to tackle Himalayan Balsam.
Restoration of plantations on ancient woodland sites and plantations on semi-natural habitat in upland headwaters to improve water quality and habitat.
The Environment Agency will conduct a feasibility and design study for development of fish passage facilities at Broken Scar Weir on the River Tees.
Installation of eel passes at sites identified within the Northumbria Eel Management Plan.
River Watch groups (facilitated by Tyne Rivers Trust) adopt waterbodies for participation, assessment, monitoring and habitat improvements (siltation, non native species etc).
Creation of new wetland habitats through partnership working to deliver benefits for biodiversity, water quality, water resources and help manage peak flows. For example, the Preston Farm Habitat Creation project, in collaboration with Tees Valley Wildlife.

Central government

Government will continue to influence the development of European legislation to help bring forward initiatives that protect and improve the water environment, and that are technically feasible and not disproportionately costly. Defra are considering further policy options to help improve ambition in achieving objectives in this first plan cycle. These include controls on phosphate in detergents, tackling mis-connections, general binding rules, code of practice on septic tanks and options to increase the use of sustainable drainage systems to reduce risks of flooding and pollution of surface waters during periods of high rainfall.

The Environment Agency, Forestry Commission, Natural England and the Marine and Fisheries Agency (to become the Marine Management Organisation) are the key government agencies for this plan. The agencies will work together on relevant actions.

Example actions
Enhanced capital allowance scheme is a government incentive giving tax relief for the purchase of water efficient plant and machinery to business who pay income or corporation tax. See www.eca-water.gov.uk (Defra/Government).
<ul style="list-style-type: none"> National
Disseminate and develop species identification guides and train key groups, to improve early detection of invasive non-native species (Natural England).
<ul style="list-style-type: none"> Nationally
Undertake education campaigns to targeted audiences to raise awareness of sustainable water use, including conservation and re-use.
Implement the water related actions of the Invasive Non-native Species Framework Action Plan for Great Britain (Defra, Environment Agency).
<ul style="list-style-type: none"> Nationally

Environment Agency

The Environment Agency is the Government's lead agency for implementing the Water Framework Directive. We will continue to monitor, provide advice on and manage

improvements to the water environment. We regulate discharges to and abstraction from the water environment by issuing and enforcing environmental permits and licences. Where necessary we take enforcement action against those who act illegally and damage or put at risk the water environment. We also have responsibility to make sure there is enough water to meet the needs of industry, agriculture and wider society in the future.

We will work closely with all sectors to learn from them, build on existing knowledge and to develop a shared commitment to implementing environmental improvements.

Example actions
Continue and develop a monitoring programme , to maintain our understanding of the state of the water environment (Environment Agency). <ul style="list-style-type: none"> Across the river basin district
Run local pollution prevention campaigns (Environment Agency) to raise awareness of the need for responsible handling and disposal of chemicals, oil and other pollutants. <ul style="list-style-type: none"> Specified water bodies identified at risk, such as safeguard zones
Action to reduce the physical impacts of flood risk management activities in artificial or heavily modified water bodies (Environment Agency). <ul style="list-style-type: none"> Waters specified in Annex C
The Environment Agency has identified priority artificial obstructions on the Rivers Tyne, Wear, Tees and Wansbeck. The Environment Agency will seek to improve passage either through provision of fish passes or removal of obstructions.
The North East Bathing Water Action Plan will identify and cost options to improve bathing waters, this is an Environment Agency led project, working with Aberystwyth University.
Consider removing or amending the operation of barrages, where appropriate to improve ecology and amenity value.
Work to increase awareness of the implications of WFD and promote sustainable drainage systems in new and existing developments, re-use of grey and storm water and the value of green infrastructure in urban developments.
Undertake investigations to better understand problems in water bodies where extended deadlines have been put in place and identify actions to resolve them where possible.

Industry, manufacturing & other business

The largest contributing economic sectors in the region include tourism, business services, wholesale and distribution, and health. Manufacturing industries are important to the region, with the largest contribution to output from the chemicals, petrochemicals, food, drink, transport equipment and the metals sectors. Coal and lead mining and quarrying were once more wide-spread. Although agriculture only makes up a small part of the regional economy, it is a critical element of the rural economy. The activities of these businesses can directly or indirectly affect the water environment.

Most relevant actions in this plan are already underway or are part of the existing regulatory system. However, some actions are new, and will help the reduce nutrients such as phosphate and will help meet tighter standards on ammonia and 40 other priority substances and pollutants. Where appropriate, industry will participate in pollution prevention campaigns and in investigations to establish the extent and source of pressures to define any further actions required for this and future plan cycles.

Example actions
Comply with regulations such as Environmental Permitting, Environmental Damage and Groundwater, to limit environmental damage and help prevent land contamination, pollution and deterioration of waters. <ul style="list-style-type: none"> Nationally

Example actions
Voluntary pollution prevention and remediation of existing land contamination, to bring land back into beneficial use and remove potential sources of groundwater contamination.
<ul style="list-style-type: none"> Sites contributing to potential environmental quality standard failure
Run pollution prevention advice and campaigns to provide targeted advice and enforcement (Environment Agency) to reduce contaminants being released to groundwater from industrial estates, petrol stations and other sources.
<ul style="list-style-type: none"> High risk areas such as safeguard zones
Education and awareness raising with home owners, Small and Medium Enterprises (SME's) and Traders regarding wrong drainage connections (when toilets, washing machines, dishwashers, baths etc are connected by mistake to the surface water drain instead of the foul sewer).

Local and regional government

Local and regional government have a major role in implementing this plan. The sector has a far reaching influence on businesses, local communities and leisure and tourism sectors. There are 18 Local Authorities either entirely or partial within the Northumbria River Basin District. They have duties and powers in relation to planning, waste and minerals, regeneration, highways, transportation, emergency planning, countryside management and other activities. Town and Parish councils exist at the local level across the whole of the river basin district.

Many of the actions identified in the plan form part of this sector's normal work. The Environment Agency and others will work with Local Authorities to ensure that all relevant actions are identified, prioritised, resourced and implemented.

Example actions
Produce guidance for planning authorities in partnership with Royal Town Planning Institute (Environment Agency), to support this plan.
<ul style="list-style-type: none"> Across the river basin district
Promote the wide scale use of sustainable drainage schemes to reduce the risks of flooding and of impact on surface water quality at times of high rainfall.
<ul style="list-style-type: none"> Across the river basin district
Promote water efficiency in new development through regional strategies and local development frameworks. A Water Cycle Study may be used to identify policy advice on water efficiency measures.
Ensure that planning policies and spatial planning documents take into account the objectives of the Northumbria River Basin Management Plan, including Local Development Documents and Sustainable Community Strategies (Local Authorities).
<ul style="list-style-type: none"> Across the river basin district
Develop and provide sustainable water management planning guidance (Environment Agency), to ensure that the impacts of development on the water environment are fully understood.
<ul style="list-style-type: none"> Across the river basin district
Action to reduce the physical impacts of urban development in artificial or heavily modified waters, to help waters reach good ecological potential (Local Authorities).
<ul style="list-style-type: none"> Waters specified in Annex C
Implement surface water management plans , increasing resilience to surface water flooding and ensuring water quality is considered on a catchment basis (Environment Agency, Local Authorities).
<ul style="list-style-type: none"> Across the river basin district
Promote the use of sustainable drainage systems in new urban and rural development where appropriate, and retrofit in priority areas including highways where possible (Environment Agency, Local Authorities).
<ul style="list-style-type: none"> Across the river basin district

Mining and quarrying

This sector has some current operations in this river basin district, and a legacy from historic mining throughout the river basin district. Water quality can be undermined by the silting of watercourses from mining and quarrying operations, by discharges of mine water and by workings below the water table.

Examples of work needed to reduce pollution includes identifying sustainable treatment methods for metal mines, cleaning up pollution from abandoned mines and introducing new technologies to recover energy and other resources from mine water and treatment residues.

Example actions
Investigate emissions from working sites and appraise options of best practice controls at mines and quarries to ensure environmental quality standards are met (Operators).
<ul style="list-style-type: none">• Sites contributing to potential environmental quality standard failure
Improve awareness of the issues associated with non-coal mines for example metalliferous mines and get involvement on solutions to resolve them. For example, North Pennines AONB project in the South Tyne catchment to identify non-coal diffuse pollution.
Establish a non coal mine strategy for the river basin district to address environmental risk. Support pilot remediation works for example Welsh Metal Mine Strategy. Highlight benefits and promote development into a national programme over future cycles.

Navigation

Ports, harbours and marinas are essential for economic prosperity. Many navigation and port authorities have already done a great deal to help improve ecology and water quality and some harbours are home to internationally important wildlife. Careful planning will be needed to ensure that waters remain navigable whilst at the same time water quality is protected and improved.

Proposals to build new ports or expand existing ones need to take sustainable water management goals into account. Physical changes are permitted to waters for navigation but only if certain conditions are met.

Example actions
Ban on TBT use on ship hulls unless there is a coating to prevent leaching of underlying TBT anti-foulants, to prevent or limit pollution in marine waters (Marine and Fisheries Agency, others).
<ul style="list-style-type: none">• Nationally
Develop a dredging and disposal framework (Ports sector), which will provide guidance to all those undertaking or permitting navigation dredging and dredged material disposal activities to assist in achieving the statutory objectives of the Water Framework Directive and related Environmental Quality Standards Directive (2008/105/EEC).
<ul style="list-style-type: none">• Nationally (England)
Ports, harbours and navigation authorities to prepare a dredging and disposal strategy, such as the baseline document recommended under the Maintenance Dredging Protocol.

Urban & transport

Development and regeneration is a major opportunity to improve the water environment. However, when poorly planned or designed, urban and transport infrastructure can adversely impact on water quality or water resources. The Environment Agency and others want to work with the urban and transport sector to achieve an urban water environment rich in wildlife that local communities can benefit from and enjoy.

A good quality water environment has the potential to help economic regeneration and to enhance the economic and social amenity value of developments, and improve the quality of life in cities, towns and villages.

Spatial planning and design for urban development and infrastructure should aim to reduce surface water run off; protect and restore habitats; improve the quality of rivers, coastal waters and groundwater, and thus protect drinking water supplies and bathing areas. The release of toxic pollutants that harm the water environment also need to be reduced.

Example actions
Encourage uptake of Voluntary Initiative best practice on pesticide use by land managers within the agricultural and amenity sectors (Voluntary Initiative, Environment Agency). <ul style="list-style-type: none"> Across the river basin district
Support to investigate emissions from sites and pollution from contaminated land to reduce uncertainty and provide additional information (Industry). <ul style="list-style-type: none"> Sites contributing to potential environmental quality standard failure
Action to reduce the physical impacts of urban development in artificial or heavily modified water bodies, to help waters reach good ecological potential. <ul style="list-style-type: none"> Waters specified in Annex C
Designate and enforce Water Protection Zones and apply appropriate measures to control high risk activities (Environment Agency, Defra). The Zones will provide a regulatory tool to control diffuse pollution in water or physical pressures in high risk areas where existing mechanisms will not meet Water Framework Directive objectives. <ul style="list-style-type: none"> Pilots are taking place outside the river basin district
Establish invasive non-native species forum for the river basin district to: improve communications, identify existing work, share information and best practice, identify key people, coordinate projects, and prioritise key species.

Water industry

Water companies are major partners in the management and protection of the water environment. The Environment Agency works with companies, consumers and government to ensure that the sector's environmental work is planned and implemented in a way that is affordable for the public.

Improvement of continuous and intermittent sewage effluent discharges and of water resources management will be carried out as part of the ongoing water industry asset management programme.

The companies' programme of work under the periodic review of water industry investment in 2009 will make a large contribution to meeting the objectives in this plan. This includes carrying out investigations, and specific improvement schemes to address water quality or water resources.

In addition, specific actions will be carried out in drinking water protected areas to help safeguard drinking water supplies.

Example actions
Reduce leakage through active leakage control and customer supply pipe repair policies to help ensure sufficient water for people and wildlife (Water companies). <ul style="list-style-type: none"> Across the river basin district
Complete the current round of water company asset investment to deliver water quality improvements and reduce the impact of abstraction (Water companies). <ul style="list-style-type: none"> Rivers, coasts, estuaries and groundwaters across the river basin district
Improvements to water company assets under the next round of company investment (Asset Management Programme – AMP5), to deliver water quality improvements and continue to reduce the impact of abstraction under a range of environmental Directives (water companies). <ul style="list-style-type: none"> Rivers, coasts, estuaries and groundwater bodies across the river basin district
Reduction of demand through installation of household meters on change of occupier.

Individuals and communities

Everyone can help protect and improve the water environment. Actions people can take include the following.

To save water

in houses or offices

- Turn off the tap when brushing teeth, and take short showers rather than baths.
- Wash fruit and vegetables in a bowl rather than under the running tap - and use the remainder on plants.
- Install a 'hippo' or 'save-a-flush' in toilet cisterns.
- Run dishwashers or washing machines with a full load on an economy setting, and boil the minimum amount of water needed in kettles or saucepans.
- Purchase low energy and low water use appliances.
- Hand wash cars.
- Ask water companies to fit a meter. This can reduce household water consumption.
- Install a low-flush toilet, put flow regulators on taps and showers, and install waterless urinals at work.
- Consider installing grey-water recycling systems in homes or workplaces. This can save one third of domestic mains water usage.

in gardens

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

To prevent pollution

- Use kitchen, bathroom and car cleaning products that don't harm the environment, such as phosphate-free laundry detergents, and use as little as possible. This helps prevent pollution.
- Take waste oil and chemicals such as white spirit to a municipal recycling facility: don't pour them down the sink or outside drains.
- Check that household appliances are connected to the foul sewer, not the surface water drain.
- Ensure septic tanks or private sewage treatment plants are well maintained and working effectively.
- Ensure household oil storage is in good condition, with an up-to-date inspection record.
- Report pollution or fly-tipping to the Environment Agency on 0800 807060.

To protect water dependent wildlife

- Put cotton buds and other litter in the bin, not down the toilet. It may end up in the sea where it can harm wildlife.
- Eat fish from sustainable sources, caught using fishing methods that don't cause damage to marine wildlife and habitats.
- Eliminate invasive non-native species from gardens, disposing of them responsibly.
- Adopt-a-beach to help keep beaches clean of litter that can harm wildlife and cause pollution.
- Join a river group to spot pollution, invasive non-native species, and take part in practical tasks.

Actions to protect drinking water

Drinking water supplied to households by water companies is of high quality and complies with strict standards enforced by the Drinking Water Inspectorate. Where water is abstracted from a water body for human consumption, the water body is designated as a Drinking Water Protected Area (DrWPA) – additional objectives apply and where necessary, additional action is put in place to protect the quality of the raw water abstracted.

Where the Environment Agency are reasonably confident that the DrWPA objective is at high risk of not being complied with, a Safeguard Zone has been identified. In the Safeguard Zone additional actions will take place. These may include voluntary agreements, pollution prevention campaigns and targeted enforcement action of existing legislation. Additional monitoring is taking place to assess whether those DrWPAs currently not assessed at high risk, need a Safeguard Zone and additional action taken.

In parallel with this approach, the Environment Agency will continue to develop work on regulatory measures, such as piloting Water Protection Zones in England. If voluntary approaches are shown not to work in a Safeguard Zone, we are ready and able to ensure progress is made before 2015.

The costs of action in this plan

Overall the Environment Agency estimate that the cost for implementing the actions in the Northumbria River Basin Management Plan will be £25 million annually. A significant proportion of this cost relates to existing measures. The existing measures are mainly required to fulfil the requirements of earlier EC Directives and are defined as the Reference Case in the Impact Assessment.

There are new measures in the plan which the Environment Agency estimate to cost £3 million with a benefit of £13 million. In addition, investigations will be carried out that will help to identify the additional measures necessary in future planning cycles. The new measures are defined as the Policy Option in the Impact Assessment.

Further information on the approach used to assess the costs and benefits is contained in the Impact Assessment.

Taking action in a changing climate

The UK's Climate Projections (UKCP09) show that this region is likely to experience hotter drier summers, warmer wetter winters and rising sea levels. This is likely to have a significant effect on environmental conditions and will increase the impact of human activity on the water environment. Table 3 shows the likely effects of climate change on known pressures and the risk they pose on the water environment in the river basin district.

It is essential that the actions in this plan take account of the likely effects of climate change. What is done now must not make it harder to deal with problems in the future.

Most actions in this plan will remain valid as the climate changes. Others can be adapted to accommodate climate change.

Table 4 Qualitative assessment of increased risk from climate change by 2050 and beyond

Pressure	Increased risk
Abstraction and other artificial flows	Very high
Nutrients (nitrogen and phosphate)	High
Sediment	High
Physical modification	Medium
Biological (invasive non-native species)	Medium
Microbiology (including organisms indicating presence of faeces)	Medium
Organic pollution (sanitary determinands)	Medium
Salinity	Medium
Biological (fisheries management)	Low/Medium
Acidification	Low for freshwater Medium/High for marine waters
Priority hazardous substances, priority substance and specific pollutants	Low
Temperature	Low

It is important to assess the carbon implications of the plans to avoid adding unnecessary carbon dioxide burdens that could increase the problem of climate change.

The carbon costs associated with actions in the water industry Periodic Review 2009 (PR09) have been quantified. This is where the most significant carbon impacts will occur as the actions will require additional water treatment, construction of new works or upgrades to existing sites.

The approximate operational carbon implications of PR09 measures in England and Wales is approximately 4,722,000 tonnes per year at the start of the PR09 cycle (2009-10) and 4,564,200 tonnes per year at the end of the PR09 cycle (2014-2015). This does not include the carbon implications of constructing the schemes. These figures are from the water company plans and result from schemes to satisfy a number of existing drivers such as Urban Waste Water Directive and Bathing Waters Directive as well as the Water Framework Directive.

In this river basin district, the operational carbon component driven by the additional requirement to meet good status under the Water Framework Directive is estimated, at this time, to be 17 tonnes per year. In the majority of cases this will be balanced by reductions elsewhere as part of the CRC Energy Efficiency Scheme (formally known as the Carbon Reduction Commitment).

The CRC Energy Efficiency Scheme is a legally binding scheme, which covers large business and public sector organisations, and is intended to promote energy efficiency and help reduce carbon emissions. See www.decc.gov.uk for further information.

The majority of other actions are likely to have low impact as they are investigations, partnerships or encouraging best practice management. The potential impact of these can be assessed as the work is progressed.

No organisation has sole responsibility for ensuring that society adapts successfully to the effects of climate change on the water environment. Most will be achieved by working together and in partnership. This river basin management process provides an excellent framework to help focus and co-ordinate activities. In particular it will allow action to be taken on existing pressures at sites that are at risk and where appropriate, restore the natural characteristics of catchments to protect water quality, maintain water resources and reduce the risks of floods and droughts thus building resilience to the further impacts of climate change.

Working with other plans and programmes

A wide range of planning processes help ensure more sustainable management of the water environment. They are briefly described here.

Development planning

Development planning plays a key role in sustainable development and the Environment Agency will continue to work closely with planning authorities. We aim to ensure that planners understand the objectives of the Water Framework Directive and are able to translate them into planning policy.

There are many planning processes and provisions involved. They include:

- national guidance
- Regional Spatial Strategies
- Integrated Regional Strategies
- Local Development Documents
- local guidance (e.g. Supplementary Planning Documents).

In the Northumbria River Basin District, there are already spatial plans which set out proposed levels of growth and development up to 2026. The Environment Agency aims to work with water companies and local government to assess the implications of housing growth on sewage treatment works discharges and consequently on receiving river water quality.

Good development planning needs to consider a number of issues relevant to this plan, including housing locations, sewage treatment options, initiatives to reduce flow to sewage works, water efficiency measures and the reduction of nutrients from diffuse pollution. The Environment Agency and others will continue to work to help clarify the way forwards.

Flood risk, coastal erosion planning

There is a separate planning process for flood and coastal erosion risk management introduced by the new European Floods Directive (Directive 2007/60/EC on the assessment and management of flood risks). This requires that the environmental objectives of the Water Framework Directive are taken into account in flood and coastal erosion plans.

Implementation of the Floods Directive in England and Wales will be co-ordinated with the Water Framework Directive. The delivery plans and timescales for the two directives will be closely aligned.

Catchment Flood Management Plans (prepared by the Environment Agency) and Shoreline Management Plans (prepared by local coastal authorities and the Environment Agency) set out long term policies for flood risk management. The delivery of the policies from these long term plans will help to achieve the objectives of this and subsequent River Basin Management Plans.

The Environment Agency plans its flood and coastal risk management capital investment through the 'Medium Term Plan', which is a rolling five-year investment plan. Using this, we have identified flood and coastal risk management activities that will deliver one or more restoration or mitigation measures included in this plan. Although these activities will be carried out for flood risk management purposes they will be carried out in such a way to ensure any impacts are minimised and that the ecology is protected. Activities will not lower water body status unless fully justified under Article 4.7 of the Water Framework Directive.

Marine Planning

The Marine Strategy Framework Directive is closely linked with the Water Framework Directive and their application overlaps in estuaries and coasts. The Environment Agency is working with Defra, Welsh Assembly Government and others to ensure that the implementation of both Directives is fully integrated.

Managing new physical modifications

In specific circumstances the Water Framework Directive provides a defence for when, as a result of a new physical modification, good ecological status or potential cannot be achieved or where deterioration in status occurs. This is covered under Article 4.7 of the Directive.

Although protecting the water environment is a priority, some new modifications may provide important benefits to human health, human safety and/or sustainable development.

Such benefits can include:

- • public water supply
- • flood defence/alleviation
- • hydropower generation
- • navigation.

It is often impossible to undertake such activities without causing deterioration of status to the water body. The benefits that such developments can bring need to be balanced against the social and economic benefits gained by maintaining the status of the water environment in England and Wales.

The Environment Agency has developed a process for applying the tests and justifications required for such new modifications (Article 4.7) and will work with stakeholders to ensure these provisions are met during the first cycle of river basin management.

Other planning processes

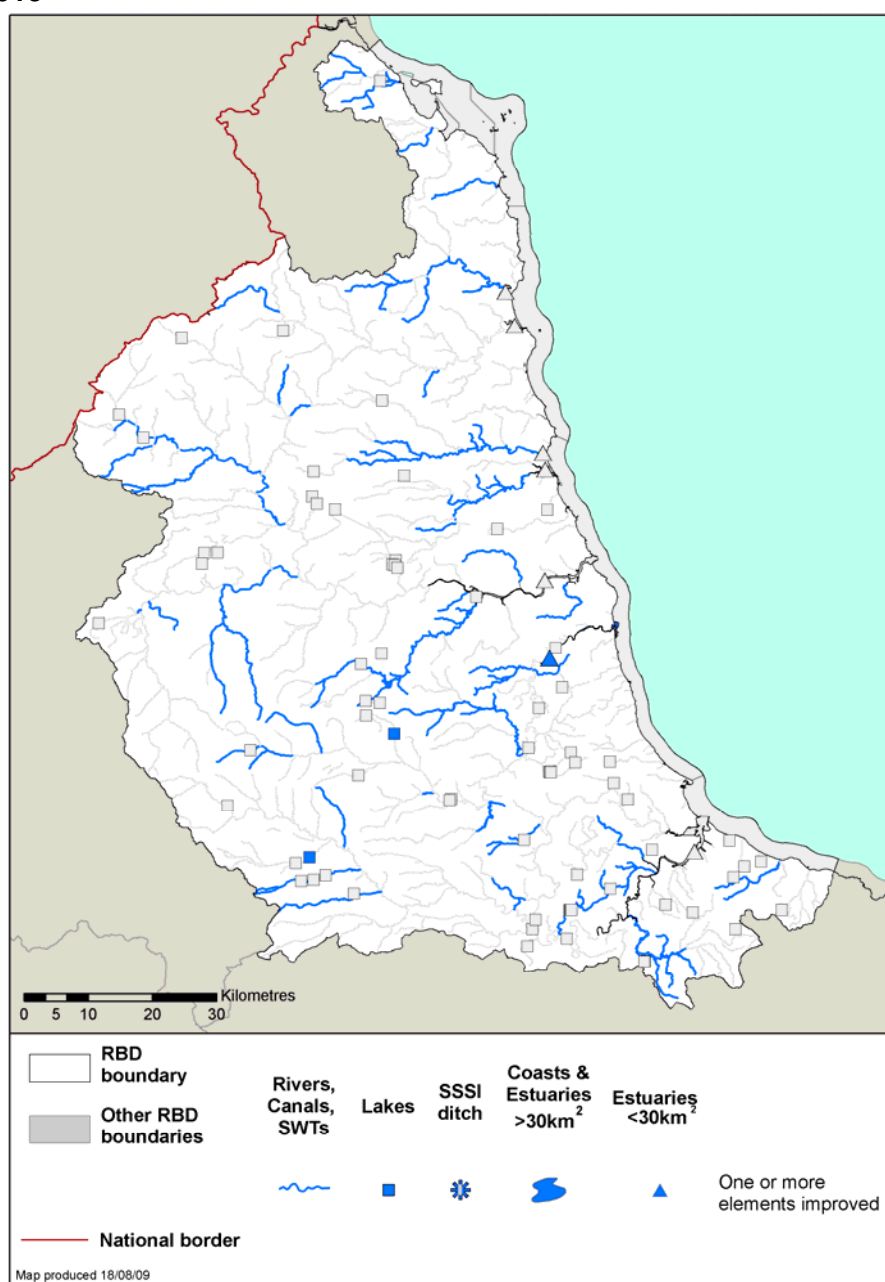
The Environment Agency is also working to align planning processes in other areas. These include water resources and water quality, agriculture and rural development and natural heritage. Annex J provides further information about other planning processes.

6. The state of the water environment in 2015

One of the objectives of the Water Framework Directive is to aim to achieve good status in water bodies by 2015. However, for 52 per cent of surface water bodies this target cannot be met by this date. Greater improvement in status is limited by the current understanding of pressures on the water environment, their sources, and the action required to tackle them.

By 2015, 15 per cent of surface waters – 70 water bodies – will show an improvement for one or more of the elements measured. This translates to 878 kilometres of river or canal improved, and is illustrated in Figure 5.

Figure 5 **Surface water bodies showing an improvement for one or more elements by 2015**



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There will be tangible benefits from meeting these objectives. For example, major investments in the water industry will continue to address problems such as the high levels of nutrients in sewage effluent. By 2015, these actions will have reduced phosphate in some surface water bodies, and improved the levels of dissolved oxygen vital for fish and other wildlife. As a result of the actions in this plan, ammonia – a chemical that can kill fish and other river life – will have been largely eliminated as a problem for rivers.

Figure 6 and Figure 7 show what ecological and biological status will be for surface water bodies in 2015 compared to now. By 2015, 49 per cent will be in at least good ecological status/potential and 43 per cent of assessed surface waters will be in at least good biological status. A map showing predicted status for surface water bodies in 2015 is provided in Figure 8. Figures 10 and 11 show the predicted quantitative status and chemical status for groundwater in 2015.

Figure 6 Ecological status/potential of surface water bodies now and in 2015

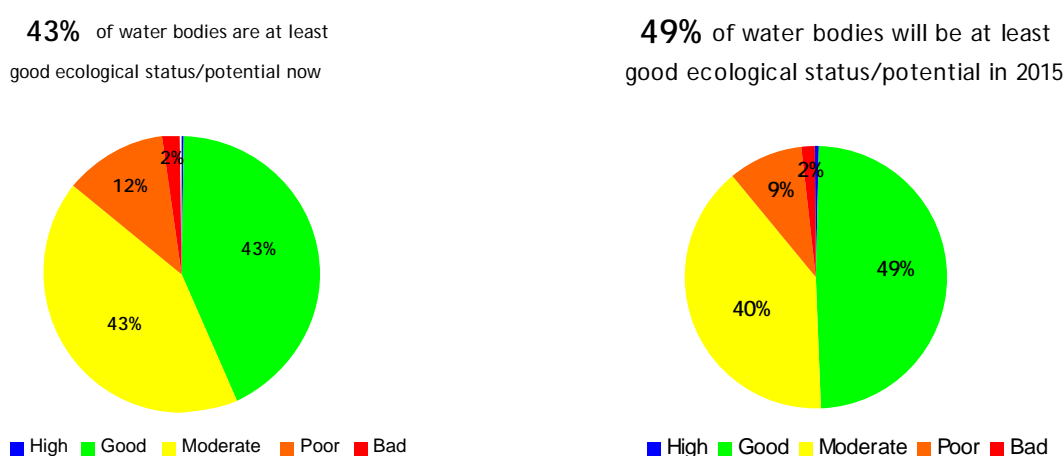
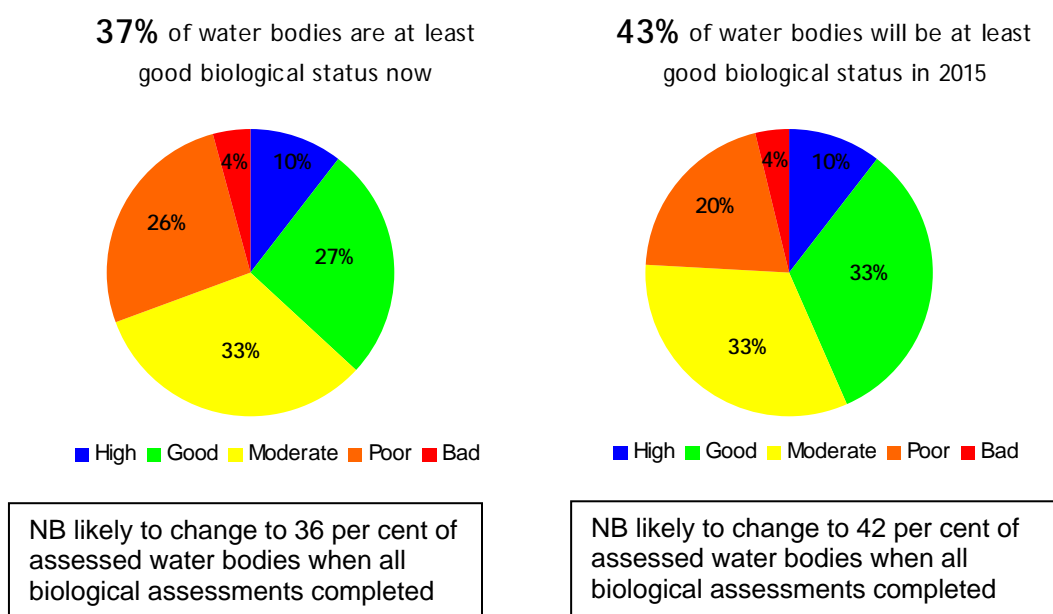
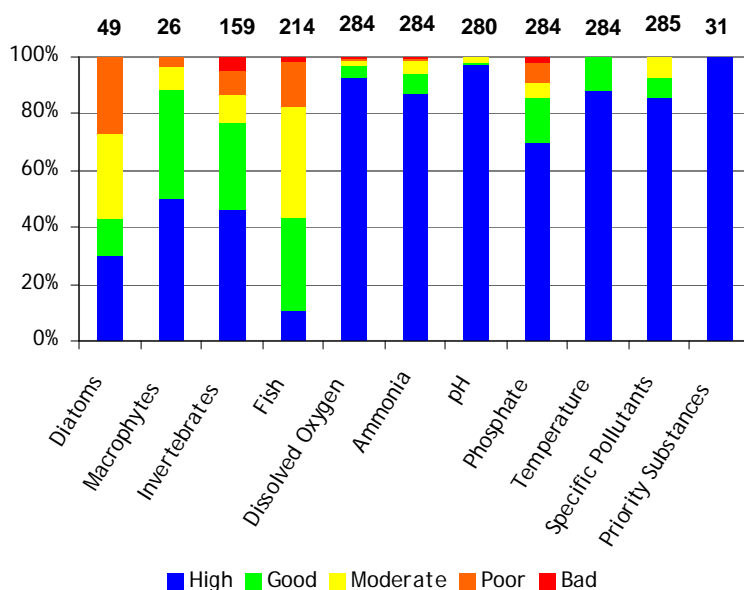


Figure 6 Biological status of surface water bodies now and in 2015



For the 182 artificial and heavily modified water bodies, 57 per cent will be in at least good ecological potential in 2015, compared to 44 per cent of 285 natural surface water bodies at good or better ecological status.

Figure 7 **Predicted proportion of river water bodies in each status class, by element, for 2015** (numbers above bars indicate total number of water bodies assessed for each element)



For many estuaries, coasts and lakes it is unlikely that an improvement in the number of water bodies at 'good' status/potential can be achieved by 2015. The biological tools and monitoring data needed to classify these types of waterbodies have only recently been developed. There is limited knowledge about the pressures that affect many of these waterbodies and how their biology responds to changes in these pressures. It has therefore not been possible to identify many additional cost effective and proportionate measures. In many cases though there will be improvements to some key elements as the result of actions in this plan and there will be investigations to help find technically feasible actions that are not disproportionately costly. The Environment Agency wants these waters to achieve good overall status or potential by 2021 or 2027.

There will be no deterioration in groundwater status in by 2015, but improvement will take place over longer timescales. Figures 10 and 11 show the predicted quantitative and chemical status of groundwater in 2015.

Looking at overall status, the combination of ecological status and chemical status, 48 per cent of surface water bodies are expected to meet good overall status by 2015.

Investigations – improving outcomes for 2015

In many cases the Environment Agency are not able to identify appropriate status actions for water bodies that are currently not achieving good ecological status or potential. Sometimes this is because the cause of the problem and its sources are not yet known. Sometimes this will involve gaining corroborative evidence of biological problems to justify expenditure where there is low confidence of failure of chemical standards. In other cases the most appropriate solution to the problem needs to be researched. Investigations into these types of issues will be an important measure during the first cycle.

Case Study 2 **Peatscapes**

Peatscapes is a collaborative project that aims to conserve and enhance the internationally important peatland resource within the North Pennines Area of Outstanding Natural Beauty (AONB) and to promote peatland conservation at the local, national and international level. Initial and core funding for the project came from the Local Levy through the Northumbria Regional Flood Defence Committee.



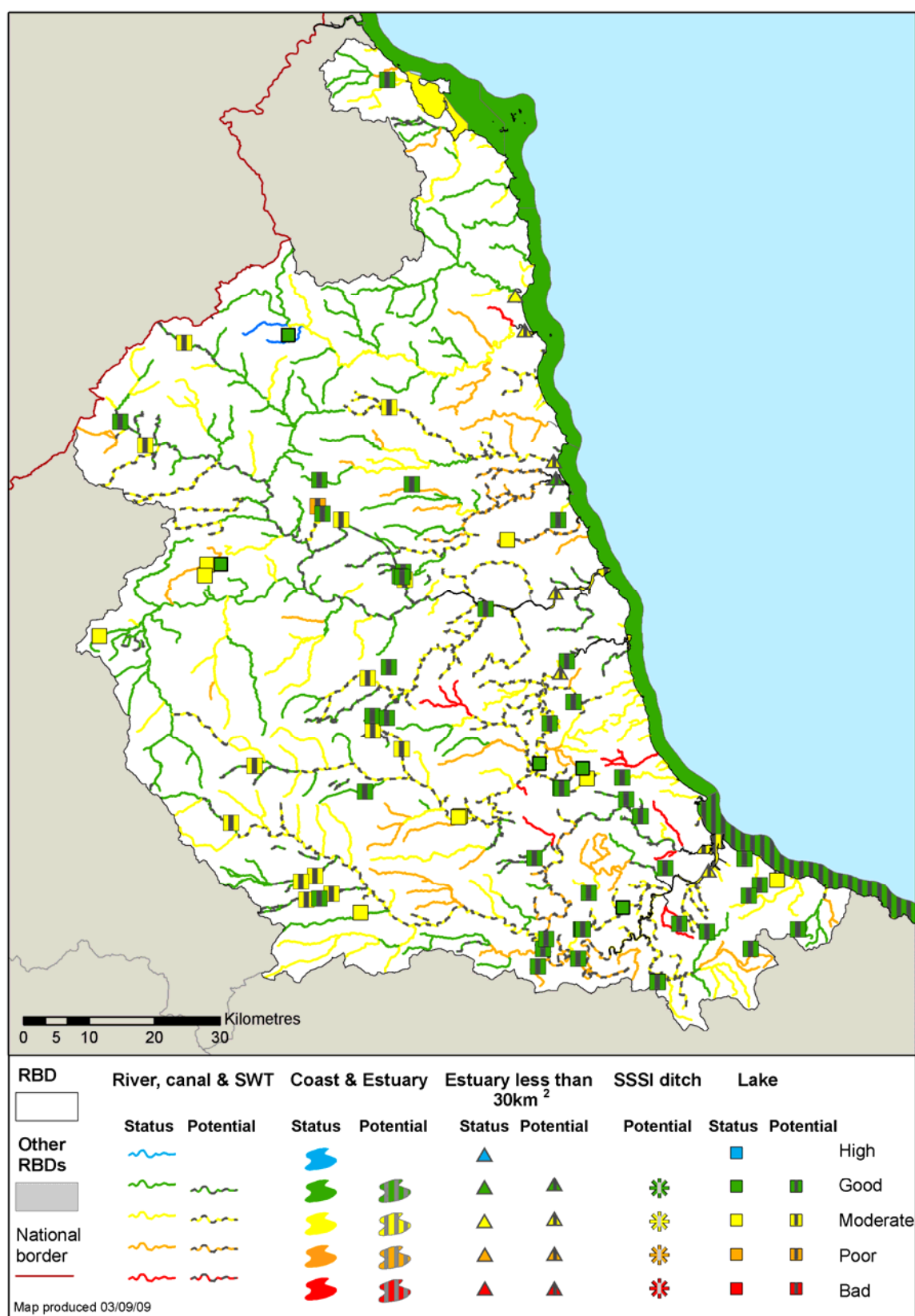
The project objectives include: peatland restoration, research into peatland processes, ecology and management, promotion of best practice and celebration of the area. Peatscapes has set a target to block 1000 km of moorland grips by 2012. At an estimated cost of £1 million, this will hydrologically restore over 4000 hectares of blanket bog. Compared to many other ecosystems our understanding of peatlands is in its infancy.

Towns and cities across the Northumbria River Basin District were at the forefront of the industrial revolution. The industrial revolution reshaped the water environment of Northumbria River Basin District with many channel modifications being made. Subsequently, these areas have seen continued modifications to accommodate urban growth. It is going to take time to mitigate the impact that these modifications have had on the water environment, and that limits the amount of improvement that can be achieved in the first cycle. However, any improvements that we make are important steps towards achieving good status in the future.

Where possible, investigations will take place before 2013 so that the results are known in time for the formal review of this plan by 2015. The Environment Agency has identified a significant number of surface water bodies that require investigations in this plan. A proportion of these will lead to actions that should be straightforward to put in place before 2015. The outcome of our detailed planning work is that the Environment Agency have confidence that 49 per cent of surface waters will be in good ecological status or potential by 2015. This is our formal target for this plan.

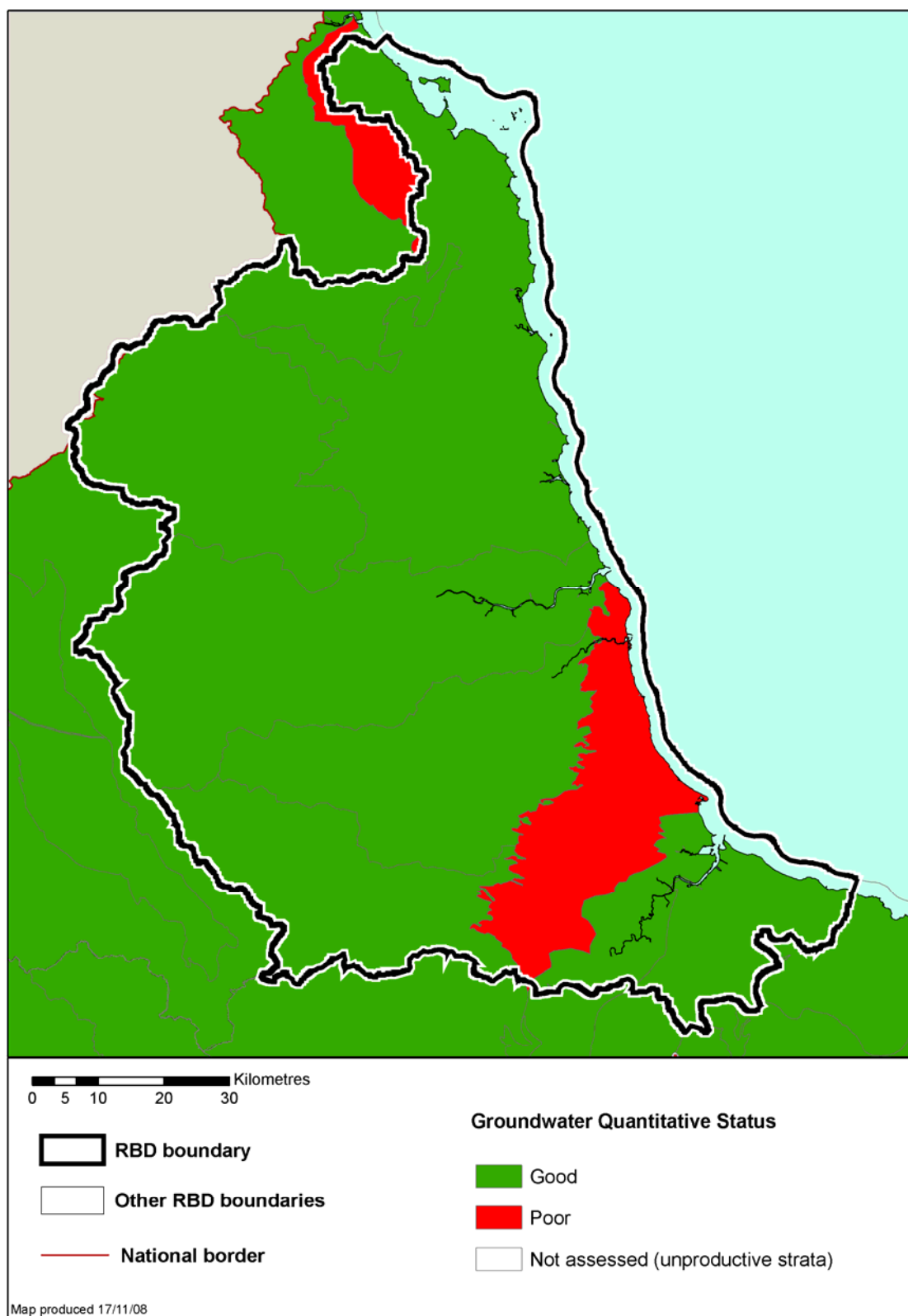
Across England and Wales we have a formal target of achieving 31 per cent of surface waters in good ecological status or potential by 2015. Improvement to the water environment has to be managed as a continuum, not in isolated six year cycles. We are already confident in this river basin district that 15 per cent of surface waters will be improved by at least one element by 2015. We are also confident that a proportion of investigations will lead to action that we can put in place before 2015. To ensure we capture these additional opportunities, we will be ensuring that the Northumbria River Basin District makes its contribution to a goal of achieving up to 33 per cent of surface waters across England and Wales at good ecological status or potential by 2015.

Figure 8 Predicted ecological status and potential for surface water bodies in 2015



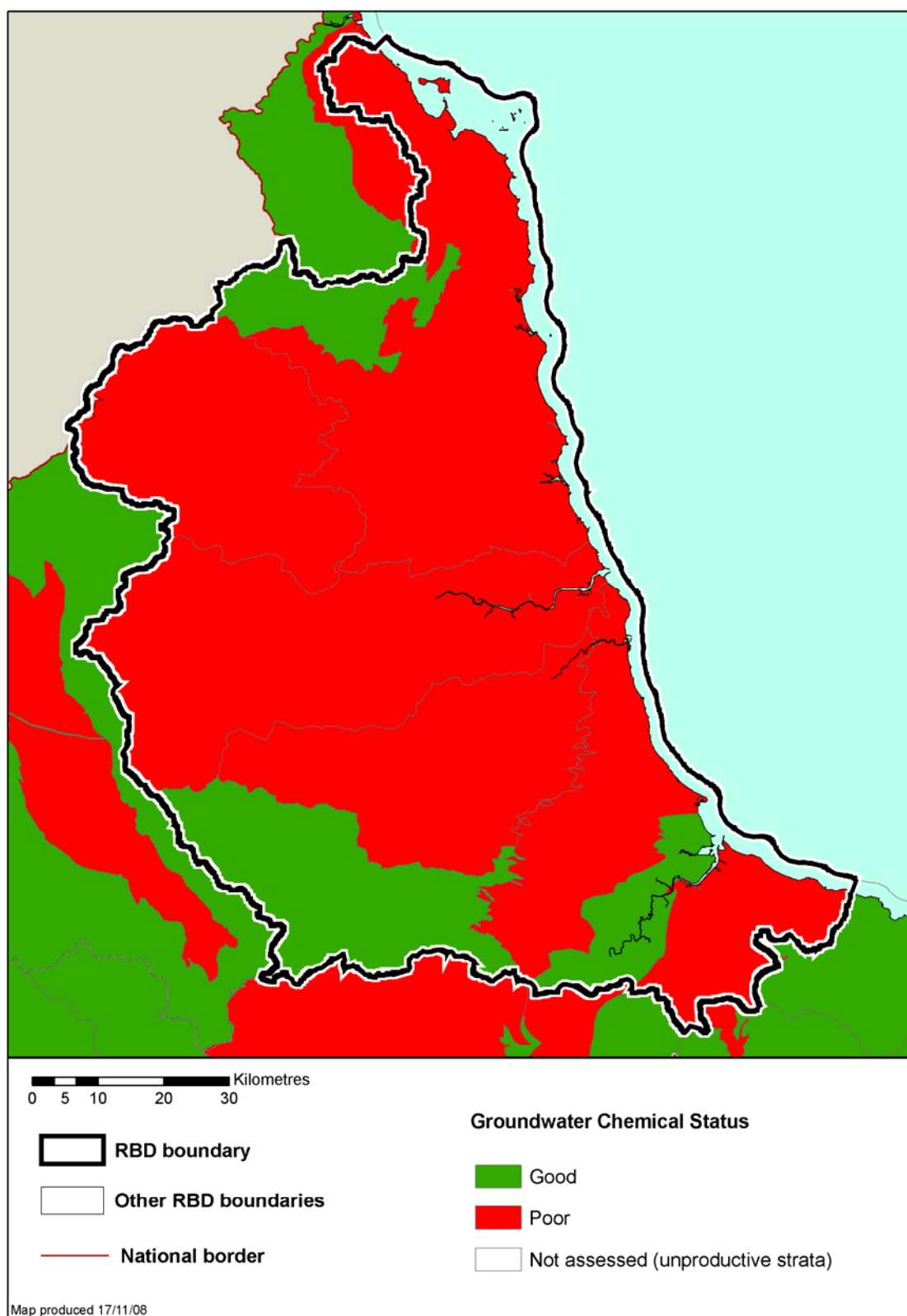
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Figure 9 Predicted quantitative status for groundwater in 2015



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Figure 10 Predicted chemical status for groundwater in 2015



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7. Targets for subsequent cycles

There are three river basin management cycles: 2009-2015, 2015-2021 and 2021-2027. Achieving good status in all water bodies by 2027 is a significant challenge.

The information gained from investigations during the first cycle will help to accelerate improvement to known issues using both traditional and novel techniques in both second and third cycles. New issues will arise though.

This plan sets out where good status cannot be achieved by 2015. This relates to 55 per cent of rivers, 33 per cent of lakes, 86 per cent of estuaries, 14 per cent of coastal waters and 67 per cent of groundwater.

In these cases an alternative objective of good status or potential by 2021 or 2027 is set (see Annex E).

Over the period to 2027, the pressures on the water environment will change, particularly because of climate change. It is not known in detail how the water environment will respond to this.

The population in the river basin district will continue to increase, with further urbanisation. Agriculture will respond to the changed climate both here and abroad, market conditions, financial incentives and regulatory pressures. Technology and other solutions to address the pressures will improve, but the rate at which some new solutions can be introduced will depend on the economic climate.

The Environment Agency believes that achieving good status in all water bodies by 2027 will not be possible using only current technologies. Even achieving 75 per cent good status will require marked changes in land use and water infrastructure, such as a major programme to separate foul and surface water sewers across most of the river basin district. By current standards, such changes are extremely unlikely to be economically or socially acceptable.

For some waters therefore, achieving good status by 2027 could be not technically feasible or disproportionately costly.

The Environment Agency wants to work with others to find and implement additional actions to improve the environment, with the aspiration of achieving good status in at least 60 per cent of waters by 2021 and in as many waters as possible by 2027.

The water environment now and objectives for 2015 are described further in the section [Northumbria River Basin District catchments](#). A summary of the key statistics for the Northumbria River Basin District is provided in Table 11.

8. Northumbria River Basin District catchments

This section summarises information about the status of waters in the different parts of the Northumbria River Basin District, their objectives and some of the actions for them.

Rivers and lakes are grouped by catchment. There are four catchments, presented here from north to south. These are shown in Figure 11.

[Northumberland](#)

[Tyne](#)

[Wear](#)

[Tees](#)

There are separate sections for [Estuaries and coastal water bodies](#) and [Groundwater](#)

Figure 11 **Catchments in the Northumbria River Basin District**



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Northumberland



The Northumberland Rivers catchment extends southwards from Berwick-upon-Tweed down to the Blyth Valley, with the Cheviot Hills to the west and the North Sea to the east. It includes Holy Island and the Farne Islands, both internationally recognised for their native wildlife. This largely rural catchment has great tourist appeal, attracted by the Northumberland National Park, the coastal Area of Outstanding Natural Beauty, the fine historical heritage and the pristine condition of the natural surroundings.

Population distribution is uneven, with over half living in the urbanised south east. There is proposed development to address the growing demand for housing, a large proportion of which will be located in the Blyth Valley District. The significant number of ports and marinas along the coast generate considerable marine traffic important to the area's economy.

The area is rich in rivers and coastal streams which support an abundance of ecology, including species of high conservation value such as otters, river jelly lichen and native crayfish. Salmon, sea trout and wild brown trout are also found across the catchment.

The character of the landscape has mainly resulted from agricultural practices and is a mix of upland moor, forest, arable land and pasture. Urban and industrial influences have also affected the landscape and today open cast mining still dominates large tracts of land to the south and east of the area. The water environment continues to feel the impact from the historical mining industry; groundwater, although of good quantitative status, has been classified as being of poor chemical status. Water abstracted in the catchment, mostly from surface waters, is predominately for public water supply with approximately 63% of the water licensed for abstraction taken in an average year.

The Northumberland Rivers catchment contains two groundwater bodies. The Northumberland Devonian and Lower Carboniferous groundwater body has been classified as being at good chemical and quantitative status. The Northumberland Carboniferous Limestone and Coal Measures groundwater body has been classified as being at poor chemical status (due to impact on surface waters from discharges from abandoned mine workings e.g. at Chirm and Netherwitton) and good quantitative status.

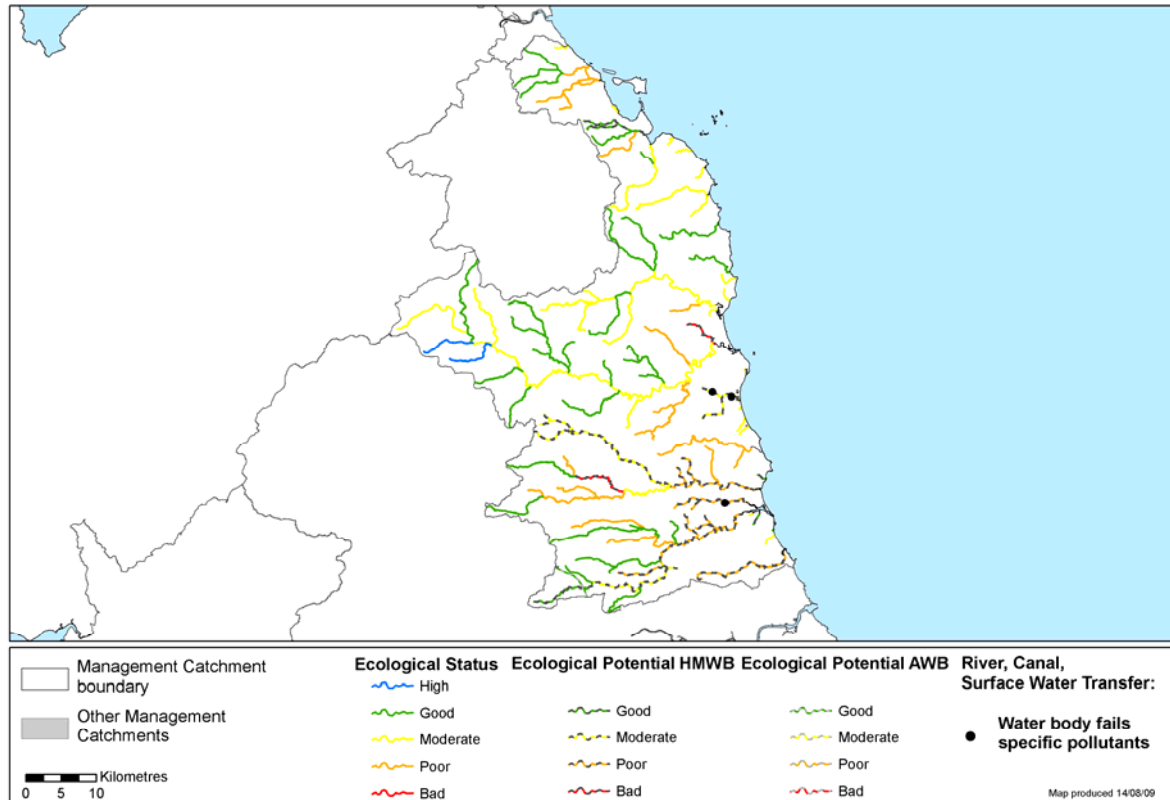
Table 5 Key statistics at a glance – Northumberland catchment

River and lake water bodies	Now	2015
% at good ecological status or potential	44	54
% assessed at good or high biological status (66 water bodies assessed)	41	55
% assessed at good chemical status (3 water bodies assessed)	0	0
% at good status overall (chemical and ecological)	44	54
% improving for one or more element in rivers		20

There are 95 river water bodies and seven lakes in the catchment. 22 are artificial or heavily modified. 42 per cent of rivers (326 km or 36 per cent of river length) currently achieve good or better ecological status/potential. 41 per cent of rivers assessed for biology are at good or better biological status now, with 30 per cent at poor biological status, and three per cent at bad status.

Physical modifications are a key issue for the ecology, especially in relation to land drainage, flood protection, urbanisation and water storage and supply.

Figure 12 **Current ecological status/potential for rivers in Northumberland catchment**



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Proposed actions to tackle failing water bodies will include:

- addressing land management e.g. Belford Catchment Solution Project
- focusing on water usage and efficiency
- reducing diffuse pollution from agriculture via the England Catchment Sensitive Farming Delivery Initiative
- tackling mine water pollution
- tackling barriers to fish migration e.g. removal of artificial obstructions on the River Wansbeck.

Tyne



The rivers North and South Tyne rise in the rural Cheviot and North Pennine hills respectively, and converge at Warden. From Warden the Tyne flows through Hexham and Corbridge and on towards the large Tyneside conurbation. The Northern Tyne area is mostly covered by the Northumberland National Park. The catchment includes areas of recognised national importance for nature conservation such as upland bogs and river shingle sites. Tourists are attracted both by the natural beauty of the area and also its heritage, which includes Hadrian's Wall.

Many of the rivers have a high conservation and ecological value, supporting salmon, sea and brown trout, as well as coarse fish. The Tyne is one of the best salmon rivers in England and populations of otters and pearl mussels are also recorded in the catchment.

Agriculture has shaped the landscape and continues to be a major pressure in this catchment. Business is focused mainly to the east of the Tyne area, around the population centres of Tyneside. The Port of Tyne is a major handling facility, one of the largest in the UK. Former traditional, heavy industries such as coal mining have declined dramatically in recent years, but their environmental legacy remains.

In recent years there has been a marked improvement in the water quality of the Tyne Estuary. Urban pressures, such as road run off, old industrial sites, mine waters and contaminated land are impacting on some rivers, leading to poor water quality, ecology and fish stocks.

The Tyne catchment contains two groundwater bodies. The Tyne Carboniferous Limestone groundwater body and the Tyne Carboniferous Limestone and Coal Measures groundwater body have both been classified as being at poor chemical but good quantitative status. The failure to meet good status is predominantly due to historic mining, both coal and metal.

Kielder Water, to the northwest of the area, is one of Northern Europe's largest man-made lakes and maintains flows and supports major water abstractions.

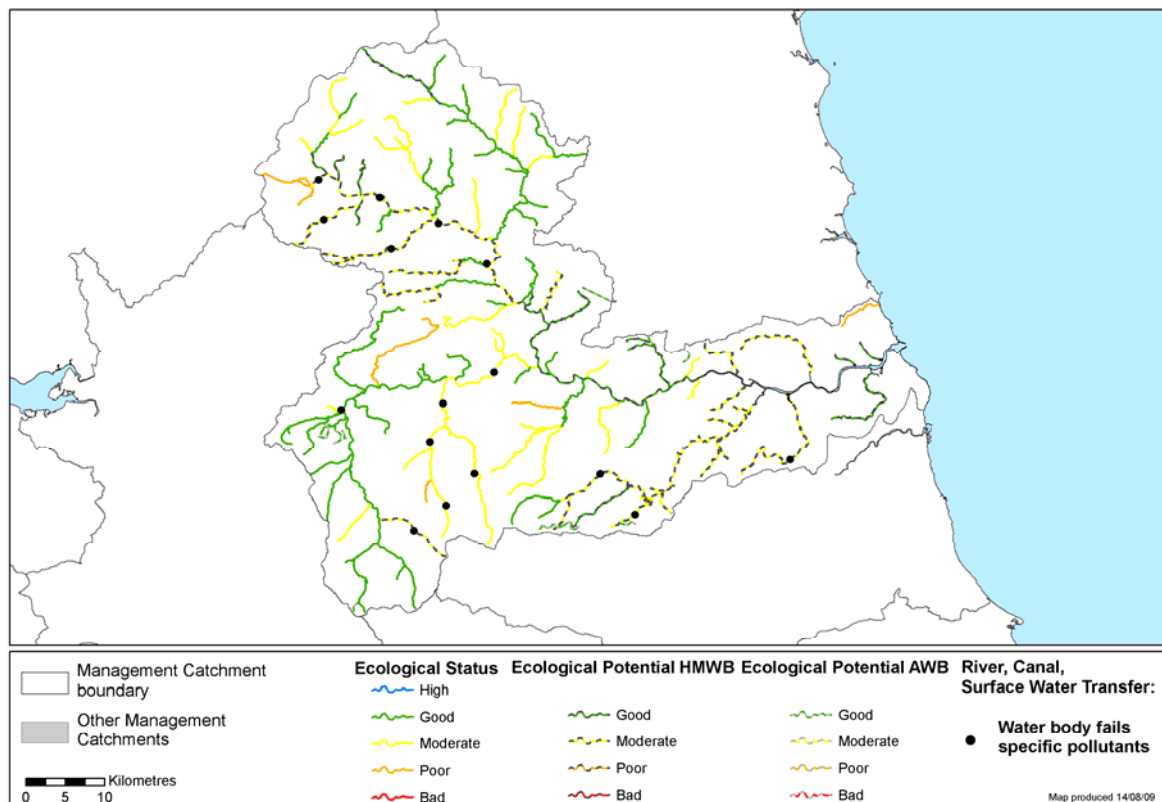
Table 6 Key statistics at a glance – Tyne catchment

River and lake water bodies	Now	2015
% at good ecological status or potential	50	57
% assessed at good or high biological status (92 water bodies assessed)	52	55
% assessed at good chemical status (5 water bodies assessed)	40	40
% at good status overall (chemical and ecological)	50	56
% improving for one or more element in rivers		17

There are 116 river water bodies and 19 lakes in the catchment. 49 are artificial or heavily modified. 50 per cent of rivers (456 km or 45 per cent of river length) currently achieve good or better ecological status/potential. 51 per cent of rivers assessed for biology are at good or better biological status now, with 12 per cent at poor biological status, and there are no rivers assessed for biology at bad status.

Physical modifications are a key issue for the ecology, especially in relation to the passage of fish, urbanisation and water storage and supply. Disused mines are also a key pressure within the Tyne catchment.

Figure 13 **Current ecological status/potential for rivers in Tyne catchment**



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Proposed actions to tackle failing water bodies will include:

- addressing land management issues
- identifying diffuse pollution from urban, agricultural, coal and metal mining sources.
e.g. identifying possible solutions from metal mine pollution affecting the River South Tyne catchment
- targeted pollution prevention campaigns
- tackling barriers to fish migration e.g. removing artificial obstruction of the River Tyne
- encouraging the use of sustainable drainage systems.

Wear



This catchment covers the River Wear, which runs from the Pennines in the east then flows west to the estuary through Sunderland, and also includes southern coastal streams. The fish populations of the River Wear and its tributaries are generally of a high quality, with a good distribution of salmon and trout, and coarse fish in the lower and middle reaches. Visitors to the area enjoy outdoor activities such as fishing, and visiting sites of historical interest, including the World Heritage Site in Durham.

To the west of the catchment the environment is largely rural and dominated by agricultural industry such as sheep farming. This catchment forms part of the North Pennines Area of Outstanding Natural Beauty and has many features of high conservation value. In contrast, the coal seam in the eastern area led to a strong mining industry and the landscape is characterised by the resulting scattered small settlements. Recently there has been a change from deep mining activities to opencast mining.

The coast was also dominated by the coal mining industry, with several deep mines extending far out under the seabed. All these mines have since closed, and the area is being developed as a recreational and tourist resource. The two sea ports, Sunderland and Seaham, deal with both commercial and recreational traffic.

The legacy of the mining industry is still impacting on the quality of the groundwater, which has high concentrations of sulphate, sodium and nitrate and saline intrusion as well as failing quantitative status in some areas. Water abstracted is predominately for public water supply with approximately 59 per cent of the water licensed for abstraction taken in an average year.

The Wear catchment contains two groundwater bodies. The Wear Magnesian Limestone groundwater body has been classified as being at poor chemical and quantitative status. The Wear Carboniferous limestone and Coal Measures groundwater body has been classified as being at poor chemical but good quantitative status. Pressures are having an impact on the quality of the principal aquifer in this catchment, namely the Magnesian Limestone. This aquifer is the sole supply of potable water for Hartlepool and it fails the specific test due to rising trends in sulphate.

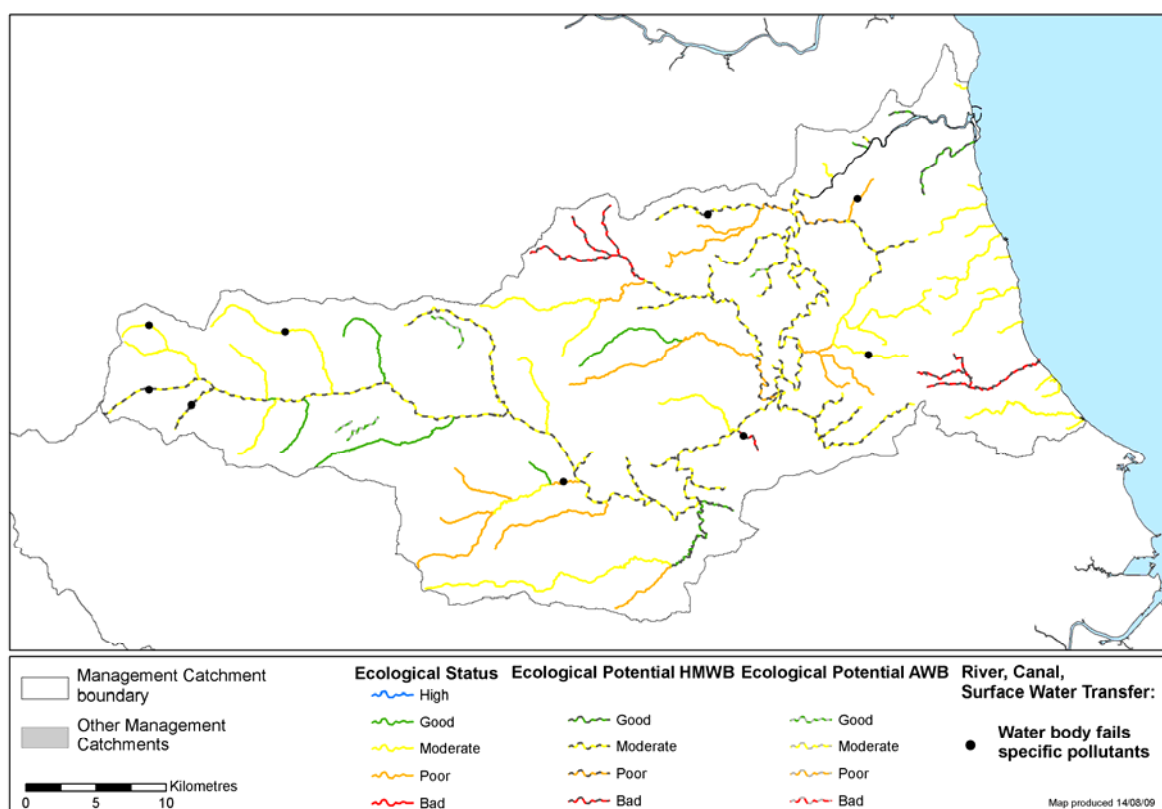
Table 7 Key statistics at a glance – Wear catchment

River and lake water bodies	Now	2015
% at good ecological status or potential	24	29
% assessed at good or high biological status (49 water bodies assessed)	22	31
% assessed at good chemical status (3 water bodies assessed)	75	75
% at good status overall (chemical and ecological)	24	29
% improving for one or more element in rivers		22

There are 68 river water bodies and 16 lakes in the catchment. 32 are artificial or heavily modified. 15 per cent of rivers (60 km or 10 per cent of river length) currently achieve good or better ecological status/potential. 22 per cent of rivers assessed for biology are at good or better biological status now, with 35 per cent at poor biological status, and 10 per cent at bad status.

Point source releases from sewage works and combined sewage outfalls are key reasons for failures in the Wear catchment. Physical modifications that impede fish passage and water storage and abstraction also play a key role in determining the status of rivers and lakes in this catchment.

Figure 14 **Current ecological status/potential for rivers in Wear catchment**



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Proposed actions to tackle failing water bodies will include:

- tackling barriers to fish migration e.g. removing artificial obstructions on the River Wear
- targeted pollution prevention campaigns e.g. looking at pollution pressures on the Lumley Park and Herrington Burns
- identifying diffuse pollution from urban, agricultural and mining sources
- addressing misconnections to surface waters
- producing a groundwater conceptual study.

Tees



The River Tees rises in the Pennines and flows eastwards to the North Sea. The river's initial journey starts from the high moors of the Pennines and continues over open and unpopulated moorland to Cow Green Reservoir. From the reservoir it flows through the farms and pastures of Teesdale towards Darlington. At this point the river widens and heads towards the heavily industrialised River Tees Estuary, with its large areas of land reclaimed from salt marshes and mudflats.

This catchment has a high conservation value, with 42 Sites of Special Scientific Interest and many other officially recognised areas, such as the North Pennine Moors. There are two major waterfalls on the River Tees, at High Force and Cauldron Snout. No migratory fish can pass High Force.

The River Tees is a high quality and nationally renowned coarse fishery with a wide diversity of fish species, including pike, bream, roach and chub, grayling and wild brown trout. Salmon and sea trout are now returning to the River Tees and although their numbers are currently low, they are increasing.

The lower section of the River Tees and its estuary are predominantly urban and industrial in character, dominated by chemical and steel making which both produce comparatively large quantities of industrial waste.

Teesside's industry is notably one of the biggest sources of hazardous waste in the country and the area has the greatest concentration of authorised installations under the Environmental Permitting Regulations in England.

The Tees catchment contains three groundwater bodies. The Tees Carboniferous Limestone and Millstone Grit and the Tees Sherwood Sandstone groundwater bodies have been classified as being at good chemical and quantitative status. The Tees Mercia Mudstone and Redcar Mudstone groundwater body has been classified as being at poor chemical but good quantitative status. Discharges from old workings in the Saltburn Gill causes this groundwater body to fail to meet good status.

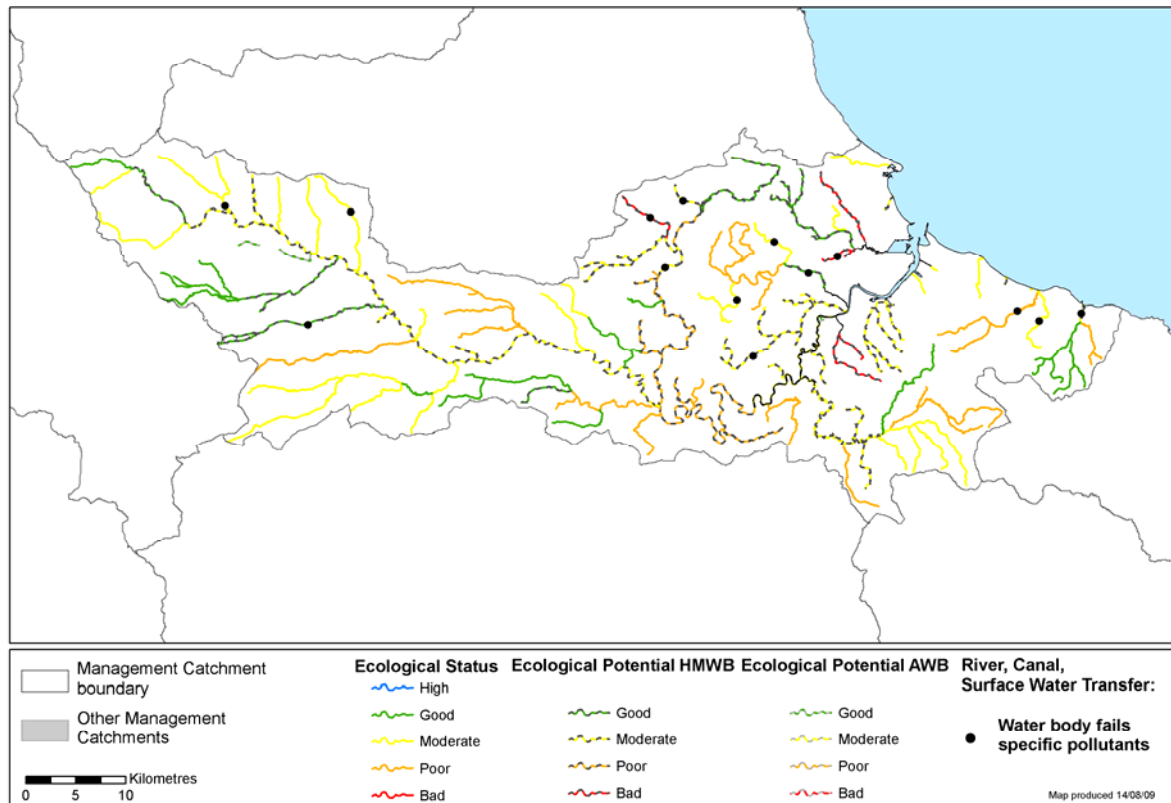
Table 8 Key statistics at a glance – Tees catchment

River and lake water bodies	Now	2015
% at good ecological status or potential	37	41
% assessed at good or high biological status (58 water bodies assessed)	18	21
% assessed at good chemical status (6 water bodies assessed)	71	71
% at good status overall (chemical and ecological)	37	41
% improving for one or more element in rivers		16

There are 83 river water bodies and 31 lakes in the catchment. 53 are artificial or heavily modified. 25 per cent of rivers (222 km or 22 per cent of river length) currently achieve good or better ecological status/potential. 14 per cent of rivers assessed for biology are at good or better biological status now, with 41 per cent at poor biological status, and nine per cent at bad status.

Discharges from sewage work and diffuse pollution from agriculture, along with physical modification for flood protection and water storage and supply are the key pressures that affect the status of water bodies in the Tees catchment.

Figure 15 **Current ecological status/potential for rivers in Tees catchment**



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Proposed actions to tackle failing water bodies will include:

- tackling barriers to fish migration e.g. a feasibility study to develop fish passage at Broken Scar Weir on the River Tees
- identifying diffuse pollution from urban, agricultural and mining sources
- targeted pollution prevention campaigns e.g. looking at pollution pressures in the Stockton Beck's
- review of abstraction licences
- improving habitats.

Estuaries and coastal water bodies



The Northumbria River Basin District has 170 kilometres of coastline, much of which is designated as Special Protected Area, 25 square kilometres of estuaries and 34 designated bathing waters as well as many important marine species and habitats. The transitional and coastal area in the Northumbria River Basin District is subject to a wide range of human pressures that may have an adverse impact on nature conservation interests. The extent and quality of notable coastal sand dunes, coastal mudflats, *Sabellaria* reefs, supralittoral rock and saltmarsh must be maintained. This plan provides a means of improving the current quality and extending the area of these habitats and species.

The Environment Agency has a wide-ranging remit for the protection of coastal waters and habitats. It recognises the wealth of biodiversity found around the North East region and the importance of the River Basin Management Plan in assessing and improving the wealth and diversity of the area.

The Northumbria River Basin District has three main estuaries, the Tyne, Wear and Tees which are vital to the region's economy, particularly the ports, harbours, shipping and associated industries they support including their contribution to the tourism and leisure industry. The main pressures on Northumbria River Basin District estuaries are pollution from industrial discharges, nutrient and microbiological contamination from run-off, sewage, non-native species and encroachment.

Draft classifications show that the main Northumbria River Basin District estuaries are falling short of good potential mainly because of the hydromorphological conditions which need further investigation to determine the capability of achieving good ecological status. In contrast the majority of the minor estuaries and coastal waterbodies meet good status, with the Farne Islands to Newton Haven achieving high status. The exceptions are the Tyne and Wear and the Holy Island and Budle Bay coastal waterbodies which have been classified as moderate and poor respectively.

Tourism is a vital industry along the Northumbria River Basin District coast. Bathing water quality dropped slightly in 2008 due to a very wet summer. The high summer rainfall caused an increase in storm overflows from sewers, resulting in a rise in diffuse pollution and run-off from farmland. Delivering compliance with the revised bathing waters directive is a high priority for this plan.

By 2015, significant progress in resolving these issues will be made as a result of the measures laid out in this plan. The Environment Agency is also working with partners to develop and deliver a habitat creation programme to safeguard the diverse estuarine and coastal habitats.

Table 9 Key statistics at a glance – Coastal waters and estuaries

	Estuaries		Coastal	
	Now	2015	Now	2015
% at good ecological status or potential	14	14	86	86
% assessed at good or high biological status (11 water bodies assessed)	0	0	83	83
% assessed at good chemical status (5 water bodies assessed)	0	33	100	100
% at good status overall (chemical and ecological)	14	14	86	86
% improving for one or more element		14		0

Case Study 3 **Berwickshire and North Northumberland Coast AONB/EMS Management Plan**

A management plan has been developed for the Berwickshire and North Northumberland Coast European Marine Site and the Northumberland Coast Area of Outstanding Natural Beauty. Both designated areas have wide ranging partnerships in place to implement the policies in the plan and officers to ensure compliance.



The Management Plan has policies on using an integrated coastal zone management approach to: stakeholder engagement, sustainable development, climate change adaptation and mitigation, habitat protection and restoration, biodiversity protection and enhancement, invasive species control, catchment sensitive farming, ecological and bathing water quality, litter control, pollution control, visitor management, recreational activity management, sustainable tourism development, countryside and marine environment management, sustainable business development, low carbon living and coastal defence.

Continued delivery of the plan will help the area meet the objectives of the WFD.

Proposed actions to tackle failing water bodies will include:

- continuing work on projects such as Fourshores and Druridge Bay to improve coastal habitats
- investigating the removal of modifications on the River Wansbeck

Groundwater



Groundwater is vital to life and livelihoods in the river basin district. It provides approximately 10% of the district's drinking water and 100% of Hartlepool's drinking water and supports many of the rivers and wetland habitats. Groundwater must be protected from pollution and its quality improved, and groundwater abstraction should be managed appropriately, balancing the needs of the abstractor and the environment.

The Northumbria River Basin District is subdivided into four catchments and nine groundwater bodies. The pressures and significant risks identified within the district are abstraction, mining and mine waters, and chemicals.

Currently three out of nine groundwater bodies have been classified as being at good chemical status and good quantitative status and have an objective of good status for 2015. In the district, eight groundwater bodies have been classified at good quantitative status.

The Wear Magnesian Limestone groundwater body has been classified as poor quantitative status due to abstraction pressures and reduced base flow to surface waters.

Table 10 Key statistics at a glance – Groundwater

Groundwater	Now	2015
% at good quantitative status	89	89
% assessed at good chemical status (9 water bodies assessed)	33	33
% at good status overall	33	33

The district has been extensively mined for coal and metals. Six groundwater bodies are at poor chemical status due to impacts of mine water. Mine water is the groundwater which has entered mine workings since dewatering the mines to protect the miners ceased. Mine water is often acidic in nature due to contamination with either one or a combination of the following metals: iron, zinc, lead, cadmium, manganese, sulphate and copper which leach from the residual minerals within the mine and surrounding ground. Mine water related pollution can have significant ecological impacts. One of these six groundwater bodies, namely the Wear Magnesian Limestone, has rising sulphate trends which results in the groundwater body failing the drinking water protected area test. This groundwater body is also at poor chemical status due to saline intrusions caused by historic coastal abstractions and also due to rising trends in nitrate.

It is necessary to prevent or limit the input of pollutants into groundwater and implement measures to reverse any significant trends in pollutants. To prevent and limit is the first line of defence for groundwater and will drive action on point source pollution as well as the widespread pollutants such as nitrate that are causing deteriorating trends.

The Environment Agency will work with a range of organisations in order to prevent deterioration and to aim to achieve good status by 2027.

Some key actions

- The Environment Agency will continue to work with the Coal Authority; supporting the Coal Authority with work relating to sites on the Coal Authority preventative list and prioritising the sites on the Coal Authority's remediation list.
- Improve awareness of the issues associated with non-coal mines for example metalliferous mines and get involvement on solutions to resolve them.
- The Environment Agency will work with water companies and others to manage groundwater abstraction through the Catchment Abstraction Management Strategy (CAMS) process.
- The Environment Agency will work with Local Authorities and site owners and developers to prevent further land contamination and groundwater pollution.
- All groundwater must be protected from deterioration in quality and quantity. The Environment Agency will continue to monitoring the groundwater so that there is the best possible understanding of pressures and trends and evidence of any improvements.

9. Next steps – implementing this plan

Diffuse pollution investigation and action

In developing the River Basin Management Plans approximately 8,500 investigations have been identified for England and Wales, including further monitoring. The vast majority of these will be undertaken by the Environment Agency and all of these will be completed by the end of 2012. The investigations will focus on resolving what is causing the problem and what the best method to tackle it is. As a result of the evidence they will provide, we will be able to take further action in the first cycle where practicable.

The remainder of the investigations – including over 100 water company catchment management investigations – will be carried out by co-deliverers across England and Wales during the course of the first delivery cycle. Working with the river basin district liaison panels, the Environment Agency will welcome the input of local data and knowledge from other parties to help drive action at catchment level.

We are confident the investigation programme will lead to actions enabling a further reduction in diffuse pollution and more environmental improvement before 2015. As we have said earlier, the Environment Agency is already committed to delivering, through its own work or through working with others, an additional two per cent improvement towards good status or potential by 2015 across England and Wales.

Additional national measures

In addition to commitments already provided, the UK Government and Welsh Assembly Government will continue to demonstrate their commitment and bring forward significant work starting with;

- banning phosphates in household laundry detergents;
- a new requirement contained within the Flood and Water Management Bill making the right to connect to surface water sewers contingent on Sustainable Drainage Systems (SuDS) being included in new developments. Local authorities will be responsible for adopting and maintaining SuDS that serve multiple properties and the highways authorities will maintain them in all adopted roads;
- general binding rules to tackle diffuse water pollution by targeting abuse of drainage systems, potentially including industrial estates, car washes and construction by 2012;
- transferring the responsibility for misconceptions to water companies by 2012;
- the Water Protection Zones Statutory Instrument which will enter into force on 22 December 2009 and will be used to tackle diffuse pollution where voluntary measures are not sufficient;
- more funding for the Catchment Sensitive Farming Delivery Initiative in England from 2010 – a 50% increase in capital grant spend, and evaluation of the initiative to ensure it is achieving maximum effectiveness;
- better targeting of agri-environment schemes for water protection. In Wales, this includes aligning the forthcoming “Glastir” agri-environment scheme to contribute towards meeting Water Framework Directive requirements;
- supporting the farming industry in the Campaign for the Farmed Environment, which has reducing impacts on water quality as one of its priorities;
- encouraging farmers to use buffer strips to reduce diffuse pollution through guidance and advice provided under cross compliance;
- better understanding of the impact of sediment and measures to tackle it as a result of the additional funding announced in June 2009;
- further consideration of the impact of cross compliance and good agricultural and environmental conditions (GAEC) on water quality;

- implementation of the Sustainable Use of Pesticides Directive;
- Environmental Permitting Regulations guidance setting essential standards of location, operation and maintenance for septic tanks.

These and the other actions in the plans will lead towards a greater achievement of good status and improvement within class, with more than a quarter of the length of all rivers improving.

Implementing the plans at catchment level

The Environment Agency has found river basin liaison panels extremely valuable, and will continue to work with them throughout the plan delivery period. The panels will help to encourage river basin district-wide action through their sectors, monitor overall progress and prepare for the second cycle of River Basin Management Planning.

Given that implementation requires activity 'on the ground', it is essential that there is the maximum involvement and action from locally based organisations and people. Innovative ways of working together need to be identified that will deliver more for the environment than has been captured in this plan.

The Environment Agency will adopt a catchment-based approach to implementation that is efficient and cost-effective. This will support the liaison panels, complement existing networks and relationships, and enable better dialogue and more joined up approaches to action.

In some places there will be added value from adopting more detailed catchment plans to help deliver the River Basin Management Plan objectives during the planning cycles. The River Kennet is a case in point where we have set up a pilot group with a range of stakeholders. We will share the knowledge gained with the liaison panels, to help identify other catchments that could benefit from a similar approach.

Working with co-deliverers

This plan sets out in detail the actions required to improve the water environment. All organisations involved must play their part, record their progress and make the information available.

Where the work of a public body affects a river basin district, that body has a general duty to have regard to the River Basin Management Plan. Ministerial guidance states that the Environment Agency should:

- work with other public bodies to develop good links between river basin management planning and other relevant plans and strategies, especially those plans that have a statutory basis such as the Local Development Plans and Wales Spatial Plan;
- encourage public bodies to include Water Framework Directive considerations in their plans, policies, guidance, appraisal systems and casework decisions.

For some, the actions in this plan may be voluntary and for others they will be required under existing legislation. We want to work with you to make these actions happen, and identify new action to create a better place.

Reporting on progress

The Environment Agency will use its environmental monitoring programme and, where appropriate, information from other monitoring programmes, to review whether work on the ground is achieving the environmental objectives. We will update the classification status of water bodies accordingly and review progress annually. At the end of 2012 a formal interim report will be published. This will:

- describe progress in implementing the actions set out in this plan;

- set out any additional actions established since the publication of this plan;
- assess the progress made towards the achievement of the environmental objectives.

Preparations have already begun for the next cycle period 2015 to 2021 and for the subsequent cycle to 2027. If you have proposals for actions that can be included in these future cycles please contact us.

River basin management milestones

The plan builds on a number of other documents and milestones required by the Water Framework Directive. The work to date has ensured a strong evidence base, and a framework for dialogue with interested organisations and individuals. In terms of taking this plan forwards, it helps to understand the major milestones remaining. These future milestones are summarised in the figure below.

Figure 16 River basin management planning milestones to date and to 2015



10. Summary statistics for the Northumbria River Basin District

Table 11 **Summary statistics**

	Rivers, Canals and SWT's	Lakes and SSSI ditches	Estuaries	Coastal	Surface Waters Combined	Groundwater
% of water bodies with improvement in any status of any element by 2015	18	3	14	0	15	0
% of water bodies at good ecological status/potential or better now For groundwater: % of water bodies at good or better quantitative status now	38	67	14	86	43	89
% of natural water bodies at good ecological status or better now	36	36	0	80	37	89
% of artificial and heavily modified water bodies at good ecological potential or better now	42	75	17	100	52	N/A
% of water bodies at good ecological status/potential or better by 2015. For groundwater: % of water bodies at good or better quantitative status 2015	45	67	14	86	49	89
% of natural water bodies at good ecological status or better by 2015	44	36	0	80	44	89
% of artificial and heavily modified water bodies at good ecological potential or better by 2015	49	75	17	100	57	N/A
% of water bodies at good chemical status now	47	100	0	100	50	33
% of water bodies at good chemical status 2015	47	100	33	100	54	33
% of water bodies at good biological status or better now	35	73	0	83	37	N/A
% of water bodies at good biological status or better by 2015	42	73	0	83	43	N/A
% of water bodies with alternative objectives (good status 2021 or 2027)	55	33	86	14	52	67
% of water bodies deteriorated under Article 4.7	0	0	0	0	0	0
% of all water bodies (surface waters and groundwaters) at good status now		42				
% of all water bodies (surface waters and groundwaters) at good status by 2015		48				

11. Further information – the annexes

- Annex A** **Current state of waters in the Northumbria River Basin District**
What the waters are like now. Information on our network of monitoring stations, the classification status of water bodies and the reference conditions for each of the water body types in the river basin district.
- Annex B** **Water body status objectives for the Northumbria River Basin District**
Information on water body status and objectives
- Annex C** **Actions to deliver objectives**
Details of the actions planned (programmes of measures) for each sector to manage the pressures on the water environment and achieve the objectives of this plan.
- Annex D** **Protected area objectives**
Details of the location of protected areas, the monitoring network, environmental objectives and the actions required to meet Natura 2000 sites and Drinking Water Protected Area objectives.
- Annex E** **Actions appraisal and justifying objectives**
Information about how we have set the water body objectives for this plan and how we selected the actions. It also includes justifications for alternative objectives that have been set.
- Annex F** **Mechanisms for action**
More detail about the mechanisms (i.e. policy, legal, financial tools) that are used to drive actions.
- Annex G** **Pressures and risks**
Information about the significant pressures and risks resulting from human activities on the status of surface water and groundwater.
- Annex H** **Adapting to climate change**
Information on how climate change may affect the pressures on the water environment and the ability to meet the objectives.
- Annex I** **Designating artificial and heavily modified water bodies**
Information about the criteria used to designate waters as artificial or heavily modified water bodies.
- Annex J** **Aligning other key processes to river basin management**
Aligning planning processes to deliver multiple benefits and sustainable outcomes
- Annex K** **Economic analysis of water use**
Information about the costs of water services within the river basin district
- Annex L** **Record of consultation and engagement**
Details of how we have worked with interested parties to develop this plan
- Annex M** **Competent authorities**
List of the competent authorities responsible for river basin management planning.
- Annex N** **Glossary**
Explanation of technical terms and abbreviations.

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