

Water for life and livelihoods

River Basin Management Plan South East River Basin District



Contact us

The Environment Agency wants organisations and individuals to get involved in river basin management, and help take this plan forward.

You can contact us in any of these ways:

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- phone on 08708 506506
- post to Environment Agency (Southern Region), Regional Strategy Unit, Guildbourne House, Chatsworth Road, Worthing, West Sussex, BN11 1LD.

The Environment Agency website holds the river basin management plans for England and Wales, and a range of other information about the environment, river basin management planning and the Water Framework Directive www.environment-agency.gov.uk/wfd.

These materials can also be viewed at Guildbourne House, or any of the local Environment Agency offices in Southern Region.

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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This plan at a glance

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

By 2015, 18 per cent of surface waters (rivers, lakes, estuaries and coastal waters) 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 710 kilometres of the river network in the river basin district, in relation to fish, phosphate, specific pollutants and other elements.

23 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 23 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 47 per cent of assessed surface waters will be at good or better biological status by 2015.**

There has been considerable progress in protecting the natural assets of the South East River Basin District and cleaning up many of the problems for the water environment. The North and South Downs, the White Cliffs, the Solent and the New Forest are well-known landscapes. Their wildlife is supported by water, which is vital for the livelihoods of those who live and work here.

However, a range of challenges remain, which will need to be addressed to secure the predicted improvements. They include:

- point source pollution from sewage treatment works;
- the physical modification of water bodies;
- diffuse pollution from agricultural activities;
- diffuse pollution from urban sources;
- water abstraction.

At present, because of these pressures and the higher environmental standards required by the Water Framework Directive, only 19 per cent of surface waters are currently classified as good or better ecological status/potential. 40 per cent of assessed surface water bodies are at good or better biological status now, although we expect this to change to 35 per cent when we have assessed all surface 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 South East 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 South East 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 plan has been prepared with the support and contributions of the panel members, and the sectors that they represent. They have also helped the Environment Agency work 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, 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 catchments, estuaries, the coast and 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.

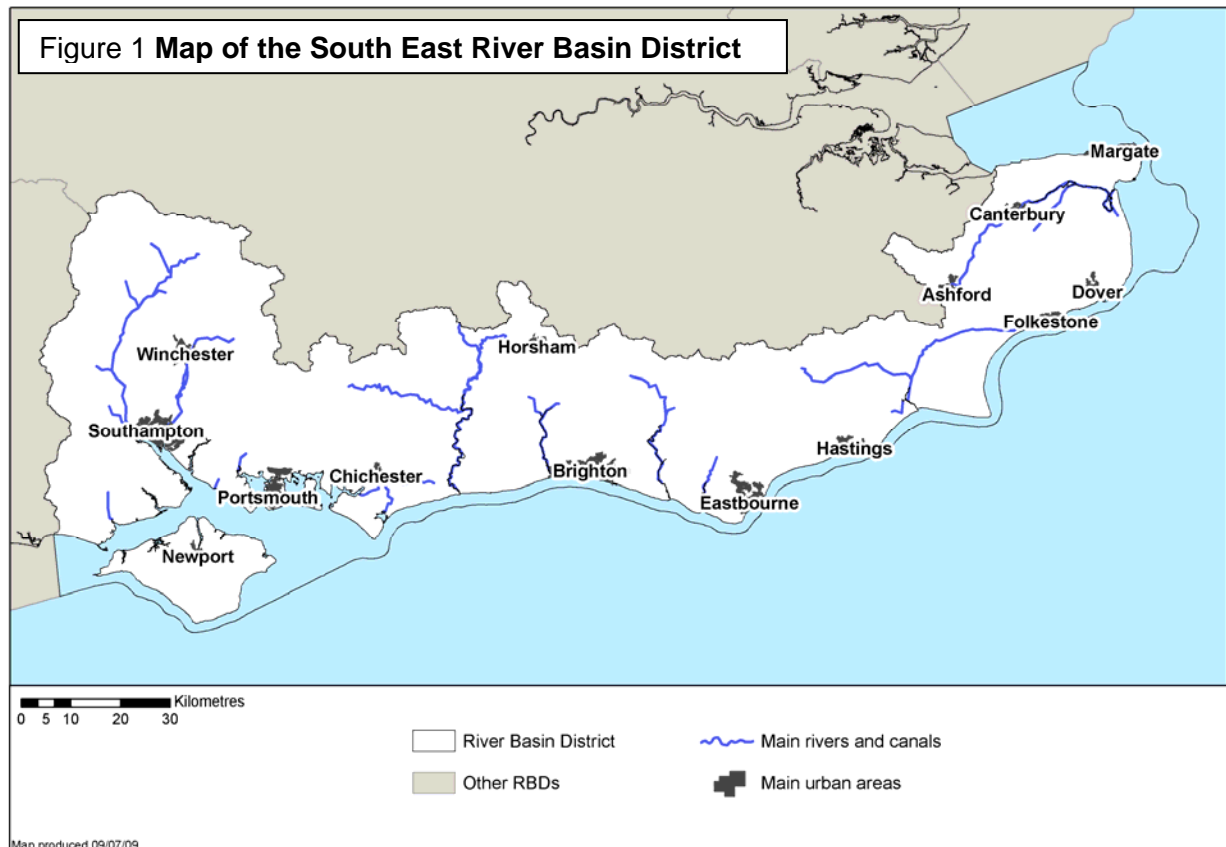
Impact Assessment

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 the 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 2017).

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

2 About the South East River Basin District

The environment of the South East River Basin District is very special. The North and South Downs, the White Cliffs, the Solent and the New Forest draw visitors from all over the world. More than 3.1 million people live here, and there are major urban centres at Brighton and Hove, Southampton, Portsmouth and Ashford. Figure 1 shows the river basin district.



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The natural environment is essential to livelihoods in the South East and helps attract visitors and businesses. The retail, health and business services sectors are the largest employers in the river basin district. Nearly two thirds of the land is used for farming, which employs over 25,000 people in livestock, arable and horticultural enterprises. The environment also provides services to society – it helps to manage floods, recycles water and nutrients and can remove pollution in the process.

The landscape supports a wealth of wildlife, some of it within protected areas. For example Special Areas of Conservation or Special Protection Areas with wetland features cover some nine per cent of the river basin district and there are 297 water dependent Sites of Special Scientific Interest. In recent years otter populations have begun to increase and rivers such as the Test and the Itchen have wild salmon populations.

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 the last few hundred years.

There are a number of major challenges.

High population densities and transport networks put pressure on the water environment. **Discharges from sewage works can impact on water quality** or the enjoyment of it, and water companies will implement a major programme of work to address this issue.

Government has identified a need for 2 million new homes in England by 2016 as the result of a changing population. In response to this, the South East Plan and South West Plan together envisage 270,000 new dwellings and associated infrastructure to be built in the river basin district by 2026. These Regional Spatial Strategies identify three Growth Points where the largest and most rapid changes to urban areas are expected. Managed well, this **growth and regeneration will be an opportunity** to make improvements to the water environment in a way that enhances people's quality of life.

The way land is managed has given rise to complex pollution issues. This **diffuse pollution is a major pressure** on the water environment, and can come from urban areas as well as rural areas. Further improvements are needed to farming practices to protect water quality and allow wildlife to thrive.

Water bodies have been highly modified physically, to facilitate development, flood and coastal risk management or navigation. **Physical modifications need to be addressed** in almost 60 per cent of rivers and 85 per cent of lakes, in order to achieve more natural functioning of wetland ecosystems, and protect fish and their habitats into the future.

There are also **concerns over maintaining the water resources** available for people and the environment in this part of England. This river basin district has some of the highest levels of personal water use in the country, whilst, on average, the amount of water available per person is less than for Morocco or Egypt. This river basin district relies on groundwater for 72 per cent of its public water supply – more than any other – yet the aquifers also provide flow for rivers and wetlands. It is therefore essential to safeguard supplies and the environment by protecting groundwater from pollution, and managing the water resource.

Natural forces such as sea level rise, coupled with climate change, can pose a threat to people, property and coastal habitats.

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

- **abstraction and other artificial flow regulation** – problems related to taking water from rivers, lakes and aquifers;
- **nitrate** – an essential plant nutrient composed of nitrogen and oxygen that is found in fertiliser and sewage effluent. It can cause environmental problems in excessive quantities;
- **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 control pests;
- **phosphate** – a plant nutrient found in sewage and fertiliser, which can cause too much algae to grow in rivers when in excess quantities;
- **physical modification** – changes to the structure of water bodies, such as for flood defence;
- **sediment** – undissolved particles floating on top of or suspended within water, for example 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;
- **urban and transport pollution** – a range of pollutants related to urban areas and the transport network.

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 South East River Basin District**

	Water body types					Total
	Rivers and canals*	Lakes and reservoirs**	Estuaries (transitional)	Coastal	Groundwater	
Natural water bodies	207	2	1	2	30	242
Artificial water bodies	13	21	4	2	-	40
Heavily modified water bodies	120	11	15	13	-	159
Total	340	34	20	17	30	441

* The total length of river covered by the Directive in this river basin district is 2508 kilometres.

** The lake and reservoir category includes four ditches that are in Sites of Special Scientific Interest.

The Water Framework Directive sets a target of aiming to achieve at least 'good status' in all water bodies by 2015. Provided that certain conditions are satisfied, this can 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.

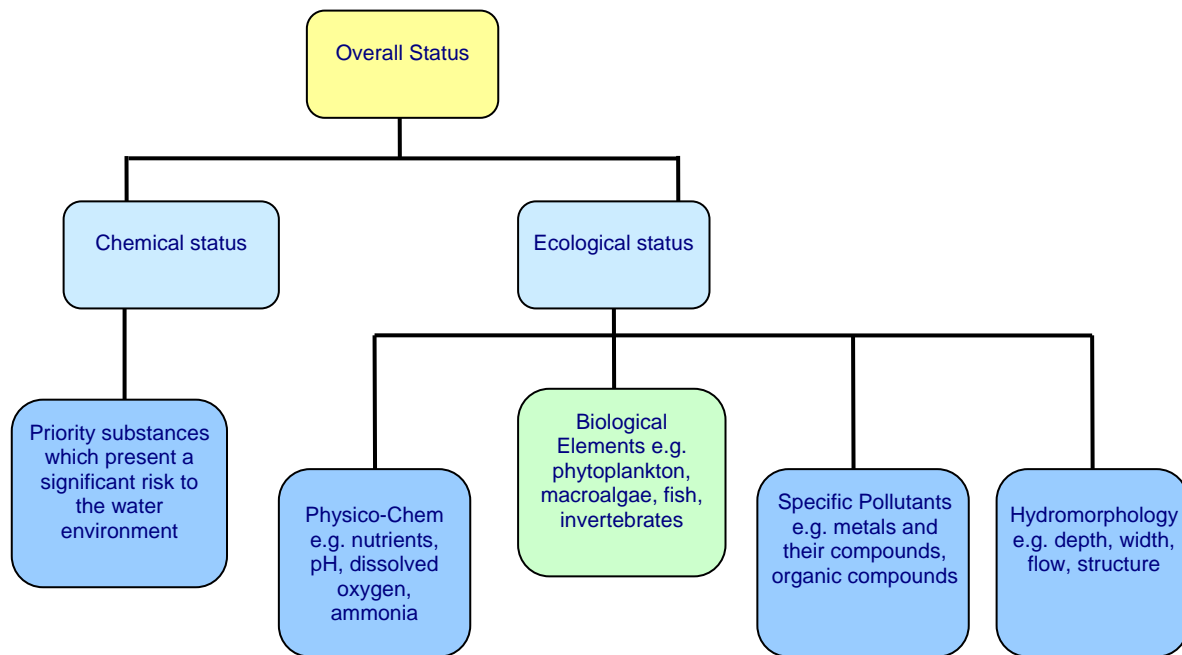
Good ecological status applies to natural water bodies, and is defined as a slight variation from undisturbed natural conditions. Figure 2 below shows how status is determined for surface waters. Each component has several different elements. These are measured against specific standards and targets 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.

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 surface 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 the biology must be essential for its valid use. All other such modifications must have been altered or managed to reduce or remove their adverse impact, so there is the potential for the biology to be as close as possible to that of a similar natural water body. However, the biology will often still be impacted and the 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 groundwater body will be classified as having poor quantitative status in the following circumstances: where low groundwater levels are responsible for an adverse impact on rivers and wetlands normally reliant on groundwater; where abstraction of groundwater has led to saline intrusion; or 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 the Water Framework Directive protected areas**

Directive	Protected area	Number of protected areas
Bathing Waters	Recreational waters	81
Birds	Natura 2000 sites (water dependent special protection areas)	8
Drinking Water	Drinking water protected areas	46
Environmental Impact Assessment	-	-
Freshwater Fish	Waters for the protection of economically significant aquatic species	222
Shellfish Waters	-	26
Groundwater	-	-
Habitats	Natura 2000 sites (water dependent special areas of conservation)	13
Integrated Pollution Prevention and Control	-	-
Major Accidents	-	-
Nitrates	Nitrate Vulnerable Zones	70% land area
Plant Protection Products	-	-
Sewage Sludge	-	-
Urban Waste Water Treatment	Sensitive areas	20

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 been factored in;
- an additional 78 rivers and 28 lakes have been classified that were previously unassessed.

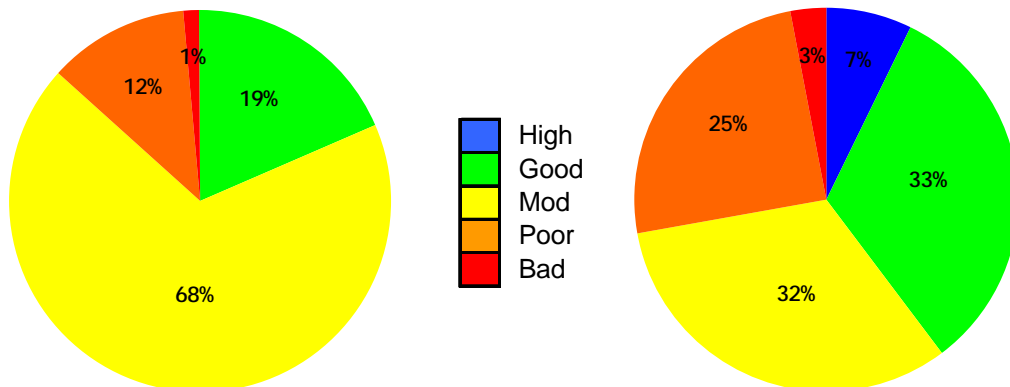
19 per cent of surface waters are at good or better ecological status or potential. 40 per cent of assessed surface waters are at good or better biological status now. This is shown in figure 3. 88 per cent of assessed surface waters are at good chemical status, and 19 per cent of surface waters are at good overall status or potential.

All 411 surface waters have an assessment of their ecological status or potential. 266 surface waters (65 per cent) have a biological assessment. 52 surface waters (13 per cent) have a chemical status assessment.

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

19% of surface water bodies are at least good ecological status or potential now

40% of surface water bodies assessed are at least good biological status now



NB likely to change to 35 per cent of assessed water bodies when all biological assessments completed.

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 South East River Basin District, 10 per cent of 199 artificial and heavily modified water bodies are currently classified as at good or better ecological potential, compared to 27 per cent of 212 natural surface water bodies having 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 or 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 40 to 35 per cent. This is explained further on in the section on biological status and monitoring.

For groundwater bodies, currently 43 per cent are at good quantitative status. 63 per cent are at good chemical status. Overall, 33 per cent are at good 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 developed. 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 main 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, 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 also lead to improvements to the key elements impacted. The case study below describes a case like this for fish.

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

Reason for failure	Key elements impacted
Point source water industry sewage works	ammonia, phosphate, dissolved oxygen
Physical modification flood protection and coastal erosion	fish, invertebrates, mitigation measures
Diffuse source agricultural	fish, invertebrates, phosphate, dissolved oxygen
Physical modification urbanisation	fish, invertebrates, mitigation measures
Physical modification wider environment	fish, invertebrates, mitigation measures
Abstraction	hydrology
Physical modification land drainage	dissolved oxygen, fish, mitigation measures
Physical modification barriers to fish migration	fish
Diffuse source unknown	fish, invertebrates, phosphate, dissolved oxygen
Diffuse source mixed urban runoff	dissolved oxygen, invertebrates, phosphate

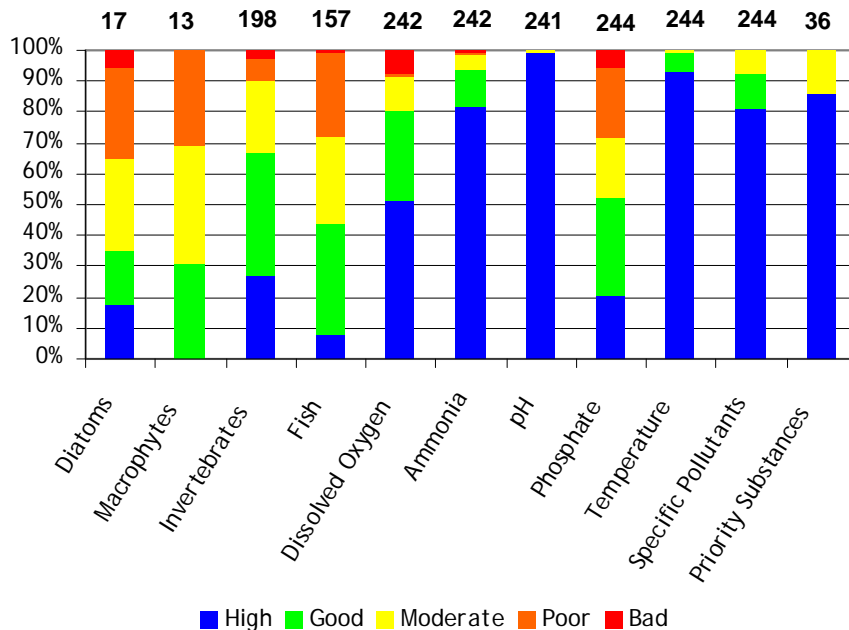
It is important to note that because classification involves a wider range of elements than previous monitoring schemes, and as many of the key pressures are complex and occur in combination, we often do not know the reason for a failure. For many water bodies, the reasons for failure are unknown, or 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 'Investigations – improving outcomes for 2015' in Section 5.

For groundwater quality, the main reasons for poor status are high or rising nitrate concentrations, with some failures for pesticides and other chemicals. The main reason for poor quantitative status is that abstraction levels – mainly for drinking water – exceed 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 good ecological status is not being achieved are fish, phosphate and invertebrates. This is shown in figure 4.

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)



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.

Excessive sediment is a possible cause for biology not being good in a number of water bodies. At present however, standards are not 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.



Case study 1 Making room for fish

Barriers to fish passage are one of the big issues affecting the ecology of rivers. This plan's fish pass programme will make more room for fish, by addressing 25 priority obstructions. These include gauging stations and flood gates as well as privately owned structures like mills. Together they will contribute to the ecological health of over 450 kilometres of river in the South East River Basin District.

A recent success has been the creation of the Botley Mill Fish Pass (pictured), which will enable sea trout and eels to migrate freely up the Hamble, in Hampshire, for the first time in hundreds of years. In total, the pass will open up some 15 kilometres of river.

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, 65 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 we 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 40 to 35 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 gain a better understanding of the main ways in which phosphate from land enters water bodies and is transported. 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. For example, piloting Water Protection Zones 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 these zones. They will only be effective if the means of control have been clearly identified.

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 and conservation](#)

[Central government](#)

[Environment Agency](#)

[Industry, manufacturing and other business](#)

[Local and regional government](#)

[Mining and quarrying](#)

[Navigation](#)

[Urban and 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 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 Delivery Initiative and pollution prevention campaigns are not sufficient by themselves to achieve the required environmental objectives. The candidate Water Protection Zones 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 approximately two thirds of the land area in the South East River Basin District, and employs over 25,000 people.

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 management 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).

- 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)

- 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 priority areas.

- Test and Itchen, Stour including Isle of Thanet, Rother, Cuckmere and Pevensy Levels, Arun and Western 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.

- 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, Portsmouth Water) to provide further funding to reduce diffuse water pollution from agriculture.

- Isle of Wight, Arun and Western Streams, East Hampshire

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.

- Priority water bodies as specified in Annex C

Where appropriate, subject to the Environment Agency carrying out a 12 week public consultation and Impact Assessment, making an appropriate case to the Secretary of State, designate a limited number of **Water Protection Zones** (Environment Agency)

- Candidate pilot in Thanet. Initially around eight Zones in locations to be decided across England

Run **pollution prevention advice and local campaigns** to provide targeted advice and enforcement on farm and land management, domestic oil storage, septic tanks (Environment Agency).

- Across the river basin district, but focused in high risk areas such as safeguard zones

Encourage all rural businesses to adopt **water efficiency measures**, such as rainwater harvesting and recycling and use of storage reservoirs to support summer irrigation (Regional Development Agency) to help ensure there is enough water for people, their businesses and the environment.

- Rother (Romney Marsh, Rother), Arun and Western Streams (Upper Western Rother, Chichester Plain), Stour, Isle of Wight

Promote **land management best practice within parks, golf courses, highways and railways** (Environment Agency, land managers and owners) to improve water quality impacted by diffuse pollution, including the uptake of the Voluntary Initiative on pesticides guidance.

- Across the river basin district

Work with riparian owners to identify and **manage areas of bankside erosion** from livestock to reduce diffuse pollution in rural areas (Environment Agency).

- Across the river basin district

Promote and encourage appropriate **sediment, vegetation and channel maintenance** that enhances wildlife habitat and enables land drainage (Environment Agency).

- Across the river basin district

Act to **reduce the physical impacts of land drainage** activities in artificial or heavily modified water bodies (Environment Agency).

- Water bodies specified in Annex B

Identify high risk locations for promoting good land management practice where there are a high number of **horse related waste and pollution** incidents (Environment Agency).

- Across the river basin district

Angling, fisheries and 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 120,000 rod licences are sold each year in Hampshire, Sussex and Kent.

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

Establish a '**better rivers**' programme to improve habitat and ecology in a first round of 35 water bodies (Environment Agency). More information is provided in Annex F of this plan.

- Water bodies specified in Annex C

Implement a **regional fish passage programme** to remove 25 priority physical obstructions to fish (Environment Agency). More information is provided in Annex F of this plan.

- Water bodies specified in Annex C

Investigate then implement actions in the **sea trout and salmon technical documents**, to contribute to good status waters (Environment Agency).

- Across the river basin district

Promote the '**River Fly Partnership**' monitoring programme to assess the status of river health (Salmon and Trout Association).

- Across the river basin district

Contain and control invasive non-native species at priority sites, guided by the South East England Non-Native Invasive Species Action Group (Natural England, Environment Agency).

- New Forest, Arun and Western Streams, Test and Itchen, Cuckmere and Pevensy Levels

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 plan and machinery to businesses that pay income or corporation tax. See www.eca-water.gov.uk (Defra/Government).

- National

Adopt the **Maintenance Dredging Protocol** (Defra, Ports and Harbours Authorities) to ensure all conservation aspects are considered in relation to the Natura 2000 network for maintenance dredging and, where possible, ensure good status/ ecological potential is included in Baseline Documents.

- Relevant Natura 2000 sites across the river basin district

Provide local guidance and information to ensure **marine licensing and consents** take into account diffuse pollution pressures and physical measures and therefore contribute to the delivery of objectives (Marine and Fisheries Agency).

- Water bodies specified in Annex C

Pilot a project to **target Environmental Stewardship** using water body information for the South Downs (Natural England, Environment Agency).

- East Hampshire, Arun and Western Stream, Adur and Ouse, Cuckmere and Pevensey Levels

Implement the water-related actions of the **Invasive Non-native Species Framework** Action Plan for Great Britain (Defra, Environment Agency).

- Nationally

Contain and control invasive non-native species at priority sites, guided by the South East England Non-Native Invasive Species Action Group (Natural England, Environment Agency).

- New Forest, Arun and Western Streams, Test and Itchen, Cuckmere and Pevensey Levels

Increase the amount of **floodplain woodland** by better targeting of the England Woodland Grant Scheme and through partnership projects (Forestry Commission), which will help manage flood water and address diffuse pollution and water temperature.

- Across the river basin district

Environment Agency

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

- 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.

- Specified water bodies identified at risk, such as safeguard zones

Act to **reduce the physical impacts of flood risk management** activities in artificial or heavily modified water bodies (Environment Agency).

- Water bodies specified in Annex B

Carry out a **desk study** into the origins, causes of and solutions to pollution where we need to improve certainty (Environment Agency).

- Water bodies specified in Annex C

Carry out **investigative monitoring and field work** into the origins, causes of and solutions to pollution and sediment where we need to improve certainty (Environment Agency).

- Water bodies specified in Annex C

Review the effectiveness of **measures on catchments at risk of flow problems**, particularly where climate change could make problems worse (Environment Agency).

- Across the river basin district

Take appropriate action to progress the implementation of schemes in the **Restoring Sustainable Abstraction programme** (Environment Agency).

- Across the river basin district

Promote good practice and regulate where necessary to ensure **sensitive management of fish and water cress farms**, where evidence of point or diffuse pollution (Environment Agency).

- Across the river basin district

Industry, manufacturing and other business

The South East is home to more than 300,000 businesses. Thriving marine and oil industries are critical economic activities, along with defence establishments, construction, and the commercial fisheries fleet. 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 reduce nutrients such as phosphate and will help meet tighter standards on ammonia and 40 other priority substances and pollutants in the river basin district. 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.

- Nationally

Voluntary **pollution prevention and remediation** of existing land contamination, to bring land back into beneficial use and remove potential sources of groundwater contamination.

- 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.

- High risk areas such as safeguard zones

Develop and implement a **demand management campaign** including targeting specific non-household sectors (Environment Agency).

- Across the river basin district

Investigate the need to **screen intakes and discharges** to prevent loss or damage to fish populations. Ensure screening on priority sites (Environment Agency).

- Across the river basin district

Investigate and where appropriate **manage physical impacts of commercial inshore fisheries** to improve marine biodiversity and fisheries productivity, through the Sensitive Area Management Plan for the Sussex coast; and produce a **code of conduct for commercial fisheries and sea anglers** to protect marine sites of nature conservation importance (Sussex Inshore Fisheries and Conservation Authority).

- Sussex, Sussex East, Isle of Wight East coastal water bodies

Promote the relationship between healthy marine ecosystems and productive sustainable fish stocks and complete the UK Inshore Fisheries Sustainability Project (Sussex Sea Fisheries Committee, Relevant Inshore Fisheries and Conservation Authority, Marine Stewardship Council and Shellfish Association of Great Britain).

- Across the river basin district

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. The four county councils, thirty five districts, cities and boroughs and four unitary authorities also 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 act at a local level across the river basin district.

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

Example actions

Promote **sustainable water management best practice** through pre-application discussions with developers (Environment Agency and local authorities) to ensure it is adopted by builders and developers.

- Across the river basin district

Ensure the requirement for **Water Cycle Studies** are set out in spatial planning documents and policies (Environment Agency, local authorities) so they are undertaken for all growth areas by 2012 and recommendations included in Local Development Documents.

- Across the river basin district, in particular Ashford, Dover and Urban South Hampshire (PUSH)

Ensure **Green Infrastructure Strategies** are in place in all adopted Local Development Documents by 2010 (Environment Agency, local authorities) to maximise potential benefits for water resources, water quality, drainage and flood risk management.

- Across the river basin district

Ensure that **planning policies and spatial planning documents** take into account the objectives of the South East River Basin Management Plan, including Local Development Documents and Sustainable Community Strategies (local authorities).

- Across the river basin district

Ensure that local spatial planning policies for new development set out strong requirements for water efficiency measures (local authorities), seeking to achieve **Code for Sustainable Homes levels 3 and 4**: 105 litres per person per day consumption.

- 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.

- Across the river basin district

Act to **reduce the physical impacts of urban development** in artificial or heavily modified waters, to help waters reach good ecological potential (local authorities).

- Waters specified in Annex B

Implement **surface water management plans**, increasing resilience to surface water flooding and ensuring water quality is considered on a catchment basis (local authorities, Environment Agency).

- 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).

- Across the river basin district

Targeted advice and regulation to ensure appropriate management of **surface water systems** (Environment Agency, local authorities). This will reduce contaminants in discharges and include consideration of gully cleaning, trapping fats, oils and grease.

- Across the river basin district

Work with local authorities to establish a cost effective way of **recycling green domestic waste on agricultural land** to increase soil organic content (Environment Agency, local authorities).

- Across the river basin district

Mining and quarrying

This sector has relatively few operations that are currently active in this river basin district. Gypsum is mined for plasterboard near Battle in East Sussex. Historic coal mines continue to impact groundwater in East Kent.

Example actions

Comply with regulations such as Contaminated Land and Groundwater (Operators) to prevent or limit pollution of groundwater.

- Nationally

Investigate emissions from working sites and **appraise options of best practice controls** at mines and quarries to ensure environmental quality standards are met (Operators).

- Sites contributing to potential environmental quality standard failure

Assess the impact of historic coal mining on chalk groundwater, streams and marshes in East Kent, and identify future work required (Environment Agency).

- Water bodies in East Kent

Produce a scoping report on all potential impacts of British Gypsum's present day mining activity, waste disposal and discharges (Environment Agency).

- Kent Weald Eastern – Rother groundwater body

Navigation

Ports, harbours and marinas are essential for economic prosperity. Many navigation and port authorities – and the Environment Agency as competent harbour authority for Rye – have already done a great deal to help improve ecology and water quality. 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.

The South East coast is also popular with tourists and recreational boaters. We want to encourage recreation in the river basin district, whilst taking action to minimise any environmental impacts.

Example actions

Ban 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).

- Nationally

Adopt the **Maintenance Dredging Protocol** (Defra, Ports and Harbours Authorities) to ensure all conservation aspects are considered in relation to the Natura 2000 network for maintenance dredging and, where possible, ensure good status/ ecological potential is included in Baseline Documents.

- Relevant Natura 2000 sites across the river basin district

Develop a **dredging and disposal framework** (Environment Agency) 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).

- Nationally (England)

Run **campaign to educate boat users** regarding disposal of toilet waste, oil, solvent, paint and cleaning products in waters at risk from diffuse pollution (British Marine Federation, Royal Yachting Association). This will supplement other actions and help ensure no deterioration in relevant water bodies.

- Water bodies specified in Annex C

Urban and 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 runoff; 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 needs 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).

- Across the river basin district

Act to **reduce the physical impacts of urban development** in artificial or heavily modified water bodies, to help waters reach good ecological potential (local authorities).

- Waters specified in Annex B

Run **pollution prevention advice and local campaigns** to provide targeted advice and enforcement on farm and land management, domestic oil storage, septic tanks (Environment Agency).

- Across the river basin district

Where appropriate, subject to the Environment Agency carrying out a 12 week public consultation and making an appropriate case to the Secretary of State, designate a limited number of **Water Protection Zones** (Environment Agency).

- Candidate pilot in Thanet. Initially around eight Zones in locations to be decided across England.

Identify hot spots for sediment and other pollutants from highway runoff and prepare management plans to reduce the risks (Highways Agency and Highways Authorities).

- Test and Itchen

Research into locations of non-agricultural pesticide problem areas and their solutions (Environment Agency).

- Across the river basin district

Promote **good practice to avoid pollution from construction sites** (local authorities).

- Across the river basin district

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 systematic replacement of customer supply pipes to help ensure sufficient water for people and wildlife (water companies).

- Across the river basin district

Complete the **current round of water company asset investment** to deliver water quality improvements and also reduce the impact of abstraction (water companies).

- Rivers, coasts, estuaries and groundwater bodies 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).

- Rivers, coasts, estuaries and groundwater bodies across the river basin district

Investigations under the next round of company investment (AMP5) to **quantify the risk from chemicals** at a number of sewage treatment works (water companies).

- Water bodies specified in Annex C

Work with the water companies in the South East to **encourage sharing of existing and future resources** including consideration of transfers and interconnectivity of supply systems (Environment Agency, water companies).

- Across the river basin district

Influence reduction in per capita consumption towards meeting the Regional Economic Strategy target of 135 l/p/d by 2016 by **implementing water efficiency measures** and promoting them through spatial planning policies (Environment Agency, Water Companies, local authorities).

- Across the river basin district

Encourage more water companies to achieve **universal water metering** more rapidly and to implement **variable tariffs** (Ofwat, Defra and Environment Agency).

- Across the river basin district

Public water supply demand will be reduced by **educating and raising awareness** of the importance of water conservation (Isle of Wight Footprint Trust).

- Isle of Wight

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.
- Ensure that any off-road parking or patio around the house use permeable materials so rain can soak into the soil.
- 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 than 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 – additional objectives apply and where necessary, additional action is put in place to protect the quality of the raw water abstracted.

Where we are reasonably confident that the Drinking Water Protected Area 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 Drinking Water Protected Areas 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 South East River Basin Management Plan will be £119 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 actions in the plan which we estimate to cost £52 million with a benefit of £9 million. In addition investigations will be carried out that will help to identify the additional actions 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 affect on environmental conditions and will increase the impact of human activity on the water environment. Table 4 shows the likely effects of climate change on known pressures and the risks 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.

It is important to assess the carbon implications of the plans to avoid, adding unnecessary to carbon dioxide burdens that would increase the problem of climate change. The carbon costs associated with actions in the water industry Periodic Review 2009 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.

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

Pressure	Increased risk
Abstraction and other artificial flow regulation	Very high
Nutrients (nitrate and phosphate)	High
Physical modification	High
Sediment	High
Biological (invasive non-native species)	Medium
Microbiology (including faecal indicator organisms)	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, such as pesticides	Low
Temperature of point source discharges	Low

The approximate operational carbon implications of Periodic Review 2009 measures in England and Wales comes to 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 is estimated, at this time, to be 0.11 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. The river basin management process provides a 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. Where appropriate, this will restore the natural characteristics of catchments to protect water quality, maintain water resources and reduce the risks of floods and droughts and thus build 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;
- Local Development Documents;
- local guidance (e.g. Supplementary Planning Documents).

In the South East River Basin District, there are already spatial plans which set out proposed levels of growth and development up to 2026. The proposed Strategic Development Areas include major mixed-use schemes at Fareham, North of Hedge End and Shoreham. Case study 2 describes some work with local authorities to align spatial planning and river basin management planning.

In the South East and Thames River Basin Districts, the Environment Agency is already working 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. To date, it indicates that forecast growth must pay special attention to phosphate.

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.

Case study 2 **Aligning development planning**



New development, growth and changes to land use can have a major impact on the water environment. This may threaten the achievement of the Water Framework Directive goals.

If new development and redevelopment include well designed surface water handling systems such as balancing ponds, they can help improve water quality by filtering out pollutants before it flows into our rivers. These features can also slow the rate storm waters reach our rivers, reducing the risk of flooding.

Officers from councils in Hampshire, the Isle of Wight, Sussex and Kent participated in a series of workshops. The workshops provided an overview of the objectives of the Directive and the work being carried out across the South East River Basin District. They allowed us to share practical suggestions about how to incorporate water management objectives into day to day planning work and spatial planning policy.

These workshops have helped the development of water-related policies in local spatial plans. The work has also made sure that the River Basin Management Plan contains the right actions for the local government sector.

We will be keeping local planning authorities up-to-date with progress on the South East River Basin Management Plan, and will continue to provide advice on appropriate spatial planning policies and planning applications.

Flood risk and 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 as 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 overlap 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

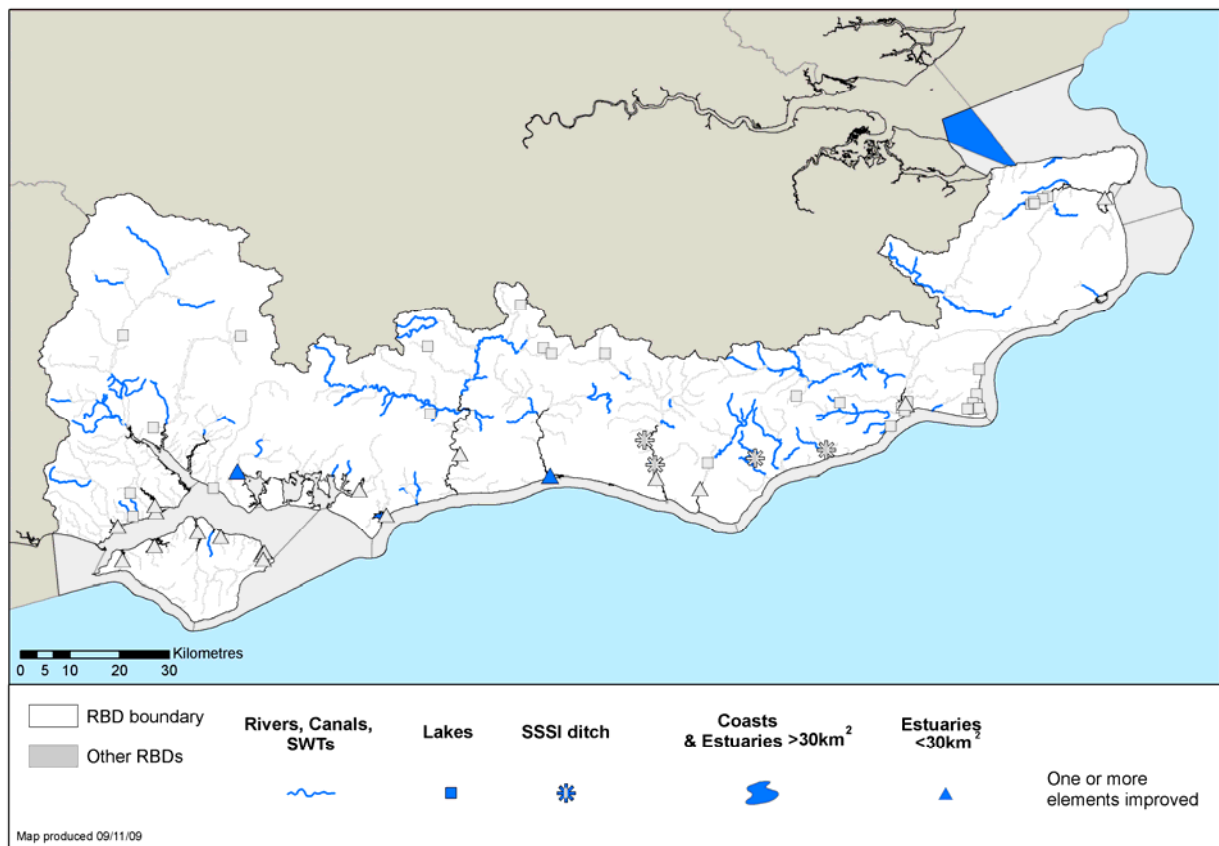
The Environment Agency is also working to align planning processes in other areas. These include water resources and water quality, agriculture and rural development and natural heritage. Annex J provides further information about other planning processes.

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 77 per cent of 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, 18 per cent of surface waters – 74 water bodies – will show an improvement by 2015 for one or more of the elements measured. This translates to 710 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 investment 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 265 kilometres of river, and improved the levels of dissolved oxygen vital for fish and other wildlife in an additional 47 kilometres of river. As a result of action in this plan, ammonia – a chemical that can kill fish and other river life – will have been largely eliminated as a problem for rivers.

In addition, investment from water companies will benefit six shellfish waters and one bathing water. Six major sewage treatment works improvements, and projects to reduce diffuse pollution from agriculture, will help reduce green seaweed problems at internationally important wildlife sites in the Solent.

Figures 6 and 7 show what ecological and biological status will be in 2015 compared to now. By 2015, 23 per cent will be in at least good ecological status/potential and 47 per cent of assessed surface waters will be in at least good biological status. 88 per cent of assessed surface waters will be at good chemical status, and 23 per cent of surface waters will be at good overall status or potential.

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

19% of surface water bodies are at least ecological status or potential now

23% of surface water bodies will be at least good ecological status or potential by 2015

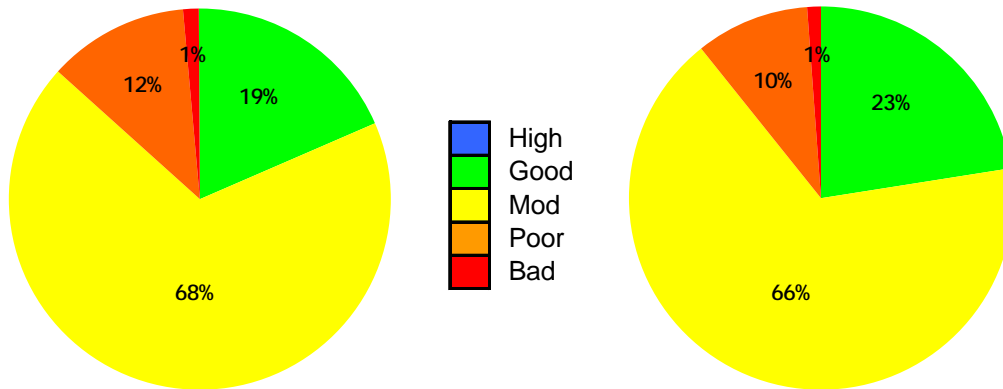
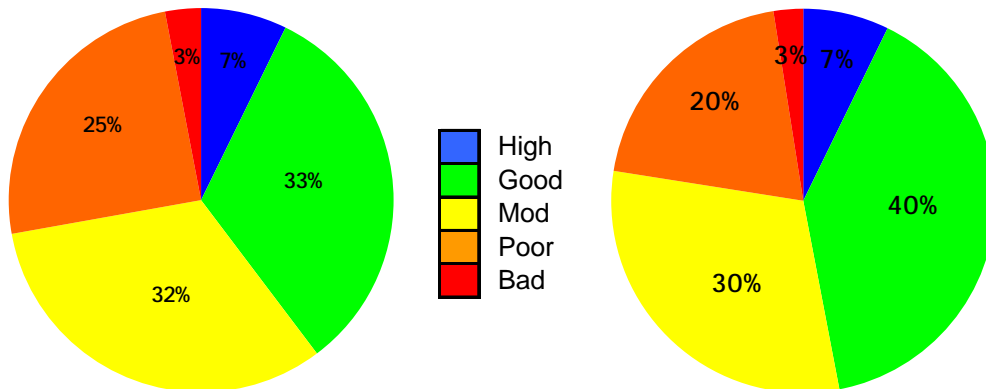


Figure 7 Biological status of surface water bodies now and in 2015

40% of surface water bodies assessed are at least good biological status now

47% of surface water bodies assessed will be at least good biological status by 2015

NB likely to change to 35 per cent of assessed water bodies when all biological assessments completed.

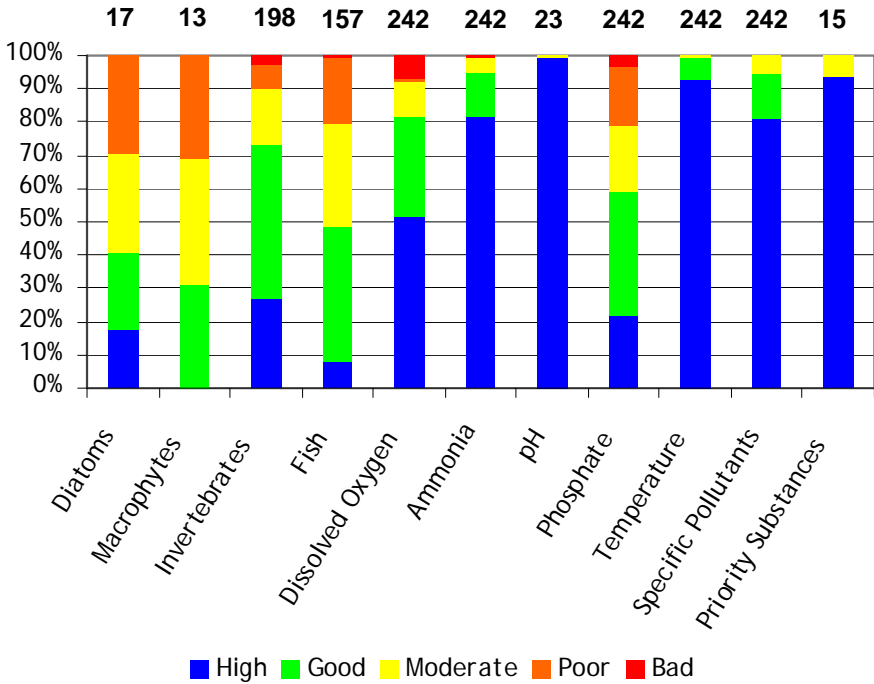


NB likely to change to 42 per cent of assessed water bodies when all biological assessments completed.

For the 199 artificial and heavily modified water bodies, 11 per cent will be in at least good ecological potential in 2015, compared to 34 per cent of 212 natural surface water bodies being at good ecological status.

Figure 8 shows the predicted proportion of river waters in each status class by element, for 2015. A map showing predicted status and potential for surface water bodies in 2015 is provided in figure 9. Figures 10 and 11 show the predicted quantitative status and chemical status for groundwater in 2015.

Figure 8 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 water bodies have only recently been developed. There is limited knowledge about the pressures that affect many of these water bodies 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 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, 23 per cent of surface water bodies are expected to meet good overall status by 2015.

The case study in this section describes how objectives have been set, illustrated by an example from the River Blackwater.

Investigations – improving outcomes for 2015

In many cases we are not able to identify appropriate 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 gathering evidence of biological impacts, to justify expenditure where there is low confidence of failure of chemical standards. In other cases the most appropriate solution to the problem will need to be researched. Investigations into these types of issues are an important part of

the programme of actions in this plan. 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.

Across England and Wales there is 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. The Environment Agency is already confident in this river basin district that 18 per cent of surface waters will be improved for at least one element by 2015. We are also confident that a proportion of investigations will lead to action that can be put in place before 2015. To ensure these additional opportunities are captured, we will ensure that the South East 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 status or potential by 2015.



Case study 3 **Setting objectives for the River Blackwater**

The River Blackwater drains from the borders of the Test and Itchen and New Forest catchments, and flows into Southampton Water near Testwood.

The river is split into three water bodies, designated under the Freshwater Fish and Nitrates Directives. The upper stretch is currently at moderate status, failing on phosphate levels. Monitoring shows that the biology is not suffering as a result of this failure, so this is a lower priority for action. The middle section of the river is at good status.

The lower stretch of the river is currently at poor status for fish, having been degraded by land drainage schemes, including forestry. There are concerns about sediment runoff from surrounding fields. It would be disproportionately expensive to improve this water to good status by 2015.

The Environment Agency will investigate the origins, causes and solutions to sedimentation in this area. We will work with landowners and Natural England to target future England Catchment Sensitive Farming Delivery type activities and agri-environment schemes and ensure the adoption of best farming practices. We will also work through the 'better rivers' programme to improve the river habitat.

Figure 9 Predicted ecological status and potential for surface water bodies in 2015

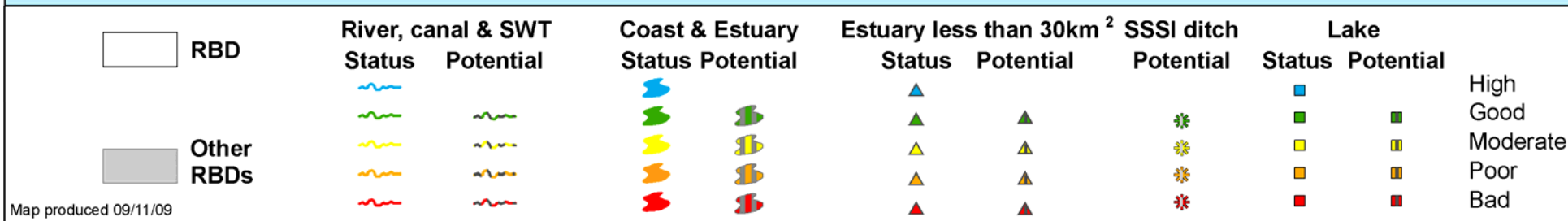
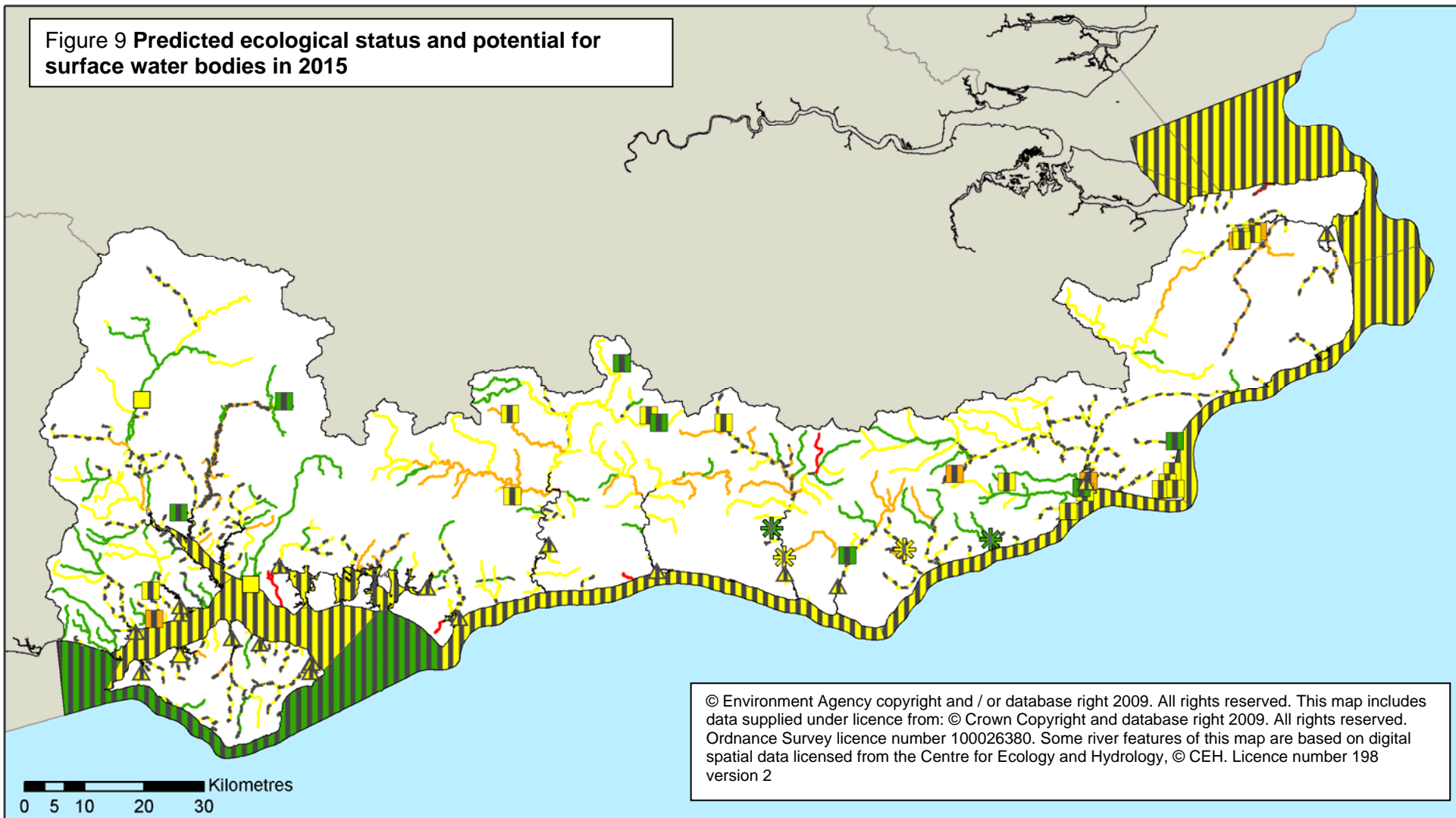
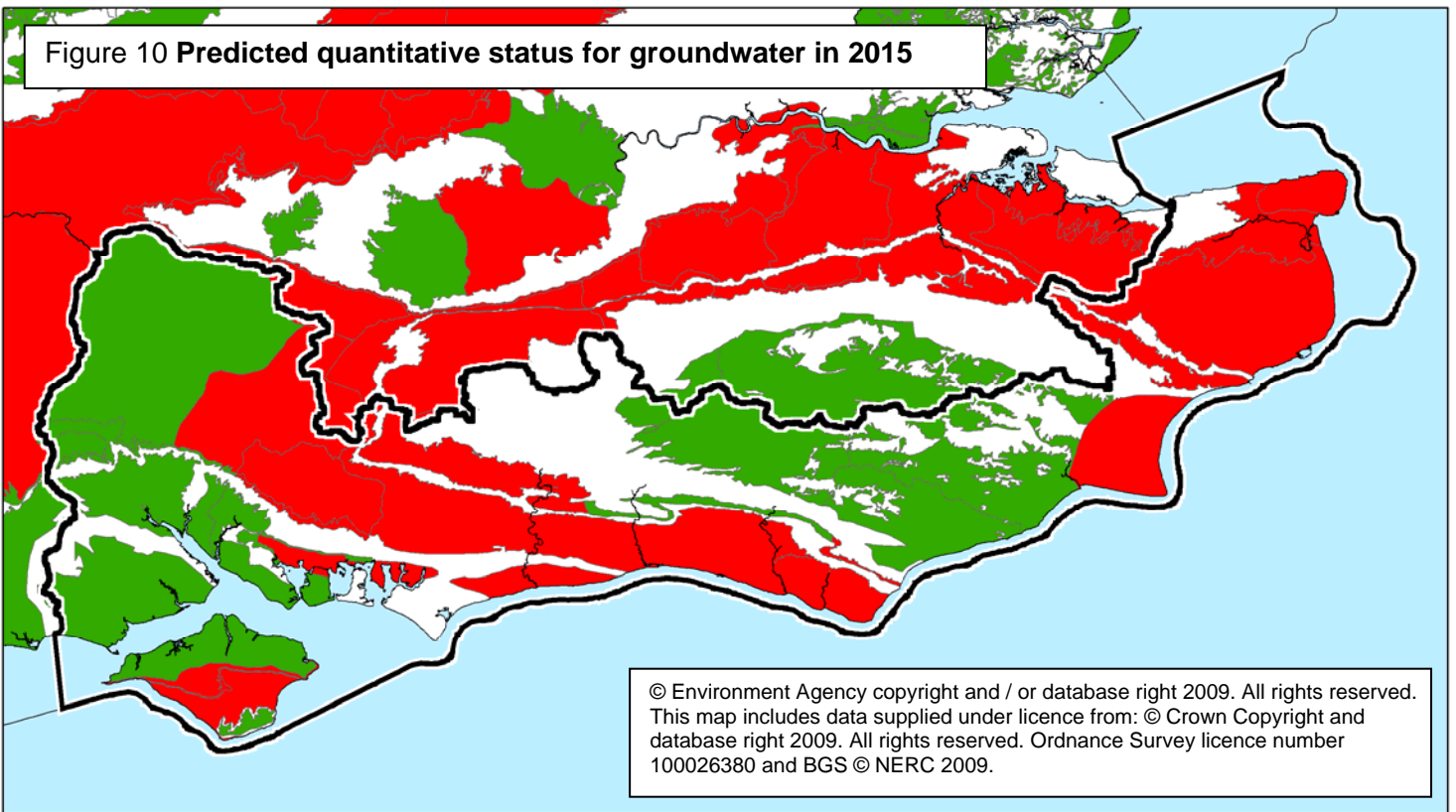







Figure 10 Predicted quantitative status for groundwater in 2015



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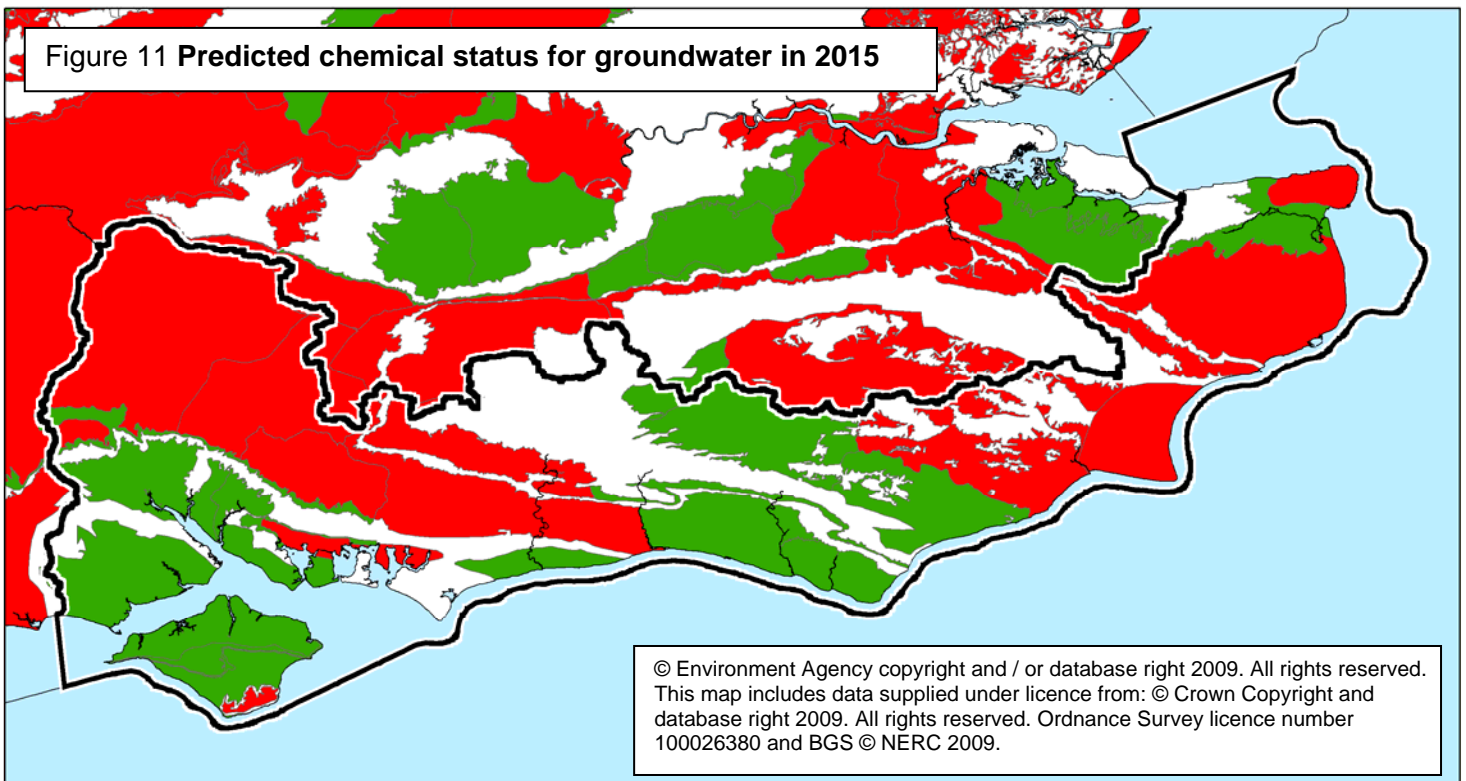
0 5 10 20 30 Kilometres

 RBD boundary
 Other RBD boundaries

Groundwater Quantitative Status
 Good
 Poor
 Not assessed (unproductive strata)



Map produced 11/08/09




Figure 11 Predicted chemical status for groundwater in 2015



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0 5 10 20 30 Kilometres

 RBD boundary
 Other RBD boundaries

Groundwater Chemical Status
 Good
 Poor
 Not assessed (unproductive strata)

Map produced 11/08/09

7 Targets for subsequent plans

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 76 per cent of rivers, 74 per cent of lakes, 100 per cent of estuaries, 82 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 changing 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 disproportionately costly or not technically feasible.

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 '[South East River Basin District catchments in 2015](#)'. A summary of the key statistics for the South East River Basin District is provided in the table on page 60.

8 South East River Basin District catchments

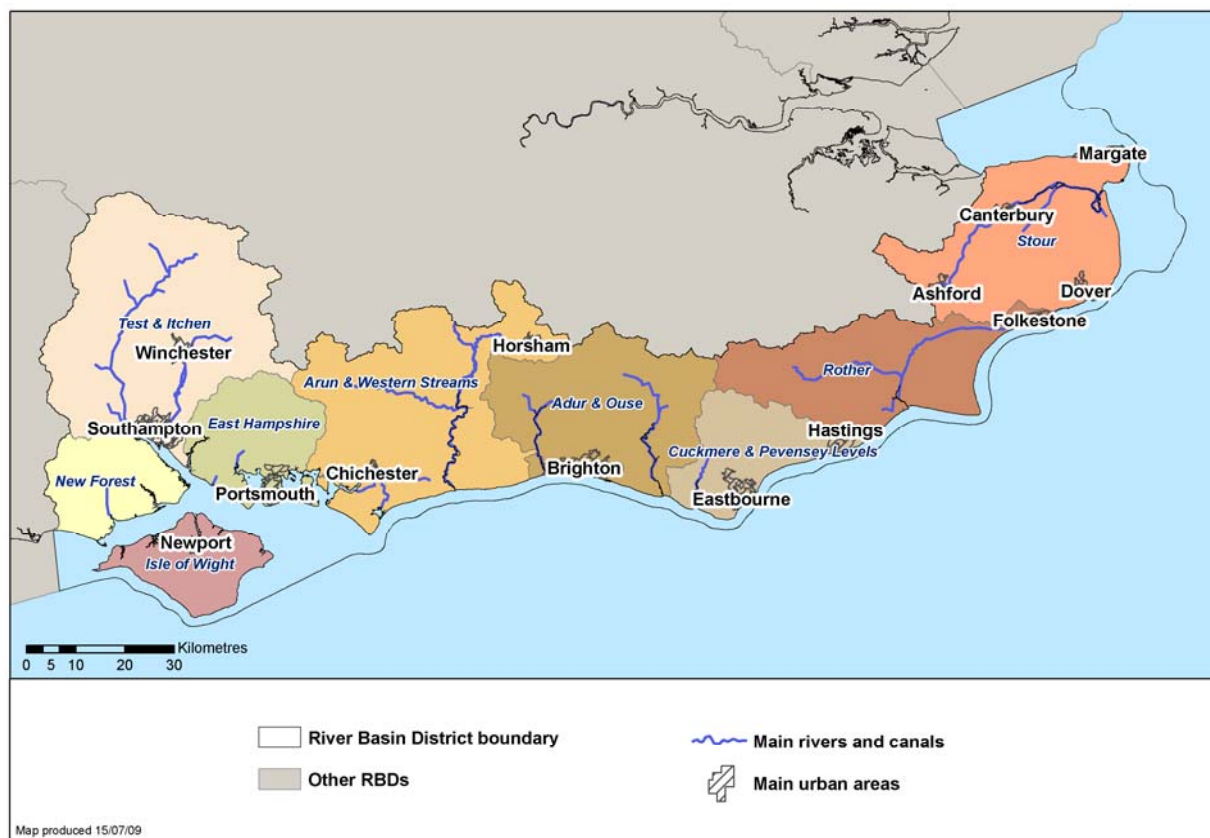
This section summarises information about the status of waters in the different parts of the South East River Basin District, their objectives and some of the actions for them.

Rivers and lakes are grouped by catchment. There are nine catchments, presented here from west to east. These are shown in figure 12, below.

- [New Forest](#)
- [Test and Itchen](#)
- [East Hampshire](#)
- [Isle of Wight](#)
- [Arun and Western Streams](#)
- [Adur and Ouse](#)
- [Cuckmere and Pevensey Levels](#)
- [Rother](#)
- [Stour](#)

There are also separate sections for [estuaries and coastal waters](#), and [groundwater](#).

Figure 12 South East River Basin District catchments



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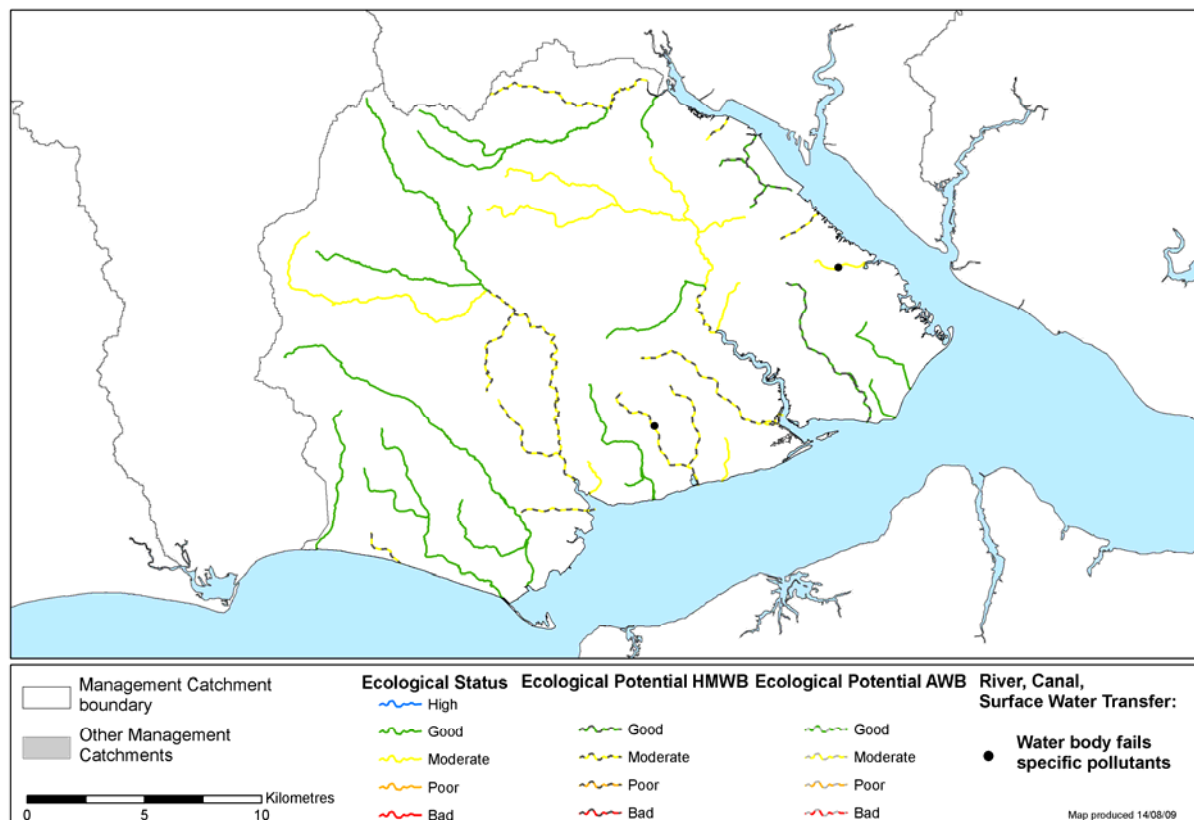
New Forest



This catchment's importance for wildlife is recognised by its status as a National Park, Special Protection Area and Special Area of Conservation. The coastal stretch includes the urban and industrial areas of Southampton, Hythe and Fawley along Southampton Water, and towns along the Solent and the Dorset/Hampshire coastal water.

The rivers and streams are particularly sensitive to nutrient inputs. If high levels of these nutrients enter the water, this can lead to excessive plant growth. This in turn may affect fish and other wildlife. As many rivers and streams are fed by groundwater, it is also critical that the two aquifers which underlie the area remain low in nutrients.

Figure 13 **Current ecological status/potential of river water bodies in this catchment**



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Sources of nutrients in rivers and groundwater include effluent from sewage treatment works, and runoff from urban as well as rural parts of the catchment. There is also local pollution caused by chemicals released from horticulture sites, old, poorly managed landfills and

historic industrial use. In some parts of the catchment, invasive species are causing problems for the ecological quality of the protected areas in the catchment.

Physical modifications are a key issue for the ecology, especially in relation to flood protection, urbanisation and water storage and supply. There are also obstructions that make it difficult for fish to move along rivers.

Table 5 Key statistics for the New Forest catchment at a glance

River and lake water bodies	Now	2015
% at good ecological status or potential	44	44
% assessed at good or high biological status (26 water bodies assessed)	69	73
% assessed at good chemical status (0 water bodies assessed)	0	0
% at good status overall (chemical and ecological)	44	44
% improving for one or more element in rivers		7

There are 30 river water bodies and two lakes in the catchment. 14 are artificial or heavily modified.

Seven per cent of rivers in the New Forest will improve for at least one element by 2015. For example the fish classification in the Ober Water will improve from moderate to good.

Local actions will address the key pressures in the catchment, and those waters in the worst state will be prioritised. However, these improvements will not be enough to change the ecological status of any water bodies by 2015.

44 per cent of rivers and lakes (124km or 53 per cent of river length) currently achieve good or better ecological status/potential, including the Avon Water, Bartley Water and Danes Stream. 69 per cent of rivers assessed for biology are at good or high biological status now, with only 8 per cent at poor biological status, and no assessed waters at bad status.

Some key actions for this catchment

- Southern Water will improve sewage works at five locations, including Ashlett Creek, Pennington and Slowhill Copse to reduce inputs of nutrients including phosphate and improve shellfish waters.
- The Environment Agency will quantify and reduce the impact of private sewage discharges from septic tanks and cess pits. We will raise awareness of the impact that small discharges to ground and surface water have on water quality, with a view to advising residents of the need to connect to the mains sewer system.
- The Environment Agency will investigate the reasons for low ecological quality, for example looking into suspected sewerage misconnections at Langdown Stream and Beckton Bunny.
- The Forestry Commission and partners will deliver the New Forest Wetland Management Plan and a major programme to address the impact of invasive non-native species on protected sites.
- Through the fish pass programme, the Environment Agency and landowners will address barriers at sites including Efford and Gordleton Mills on Avon Water
- The Environment Agency will be replacing the tidal flap on the Lymington River. This will allow fish to pass more freely, while providing the same level of flood protection for Lymington.

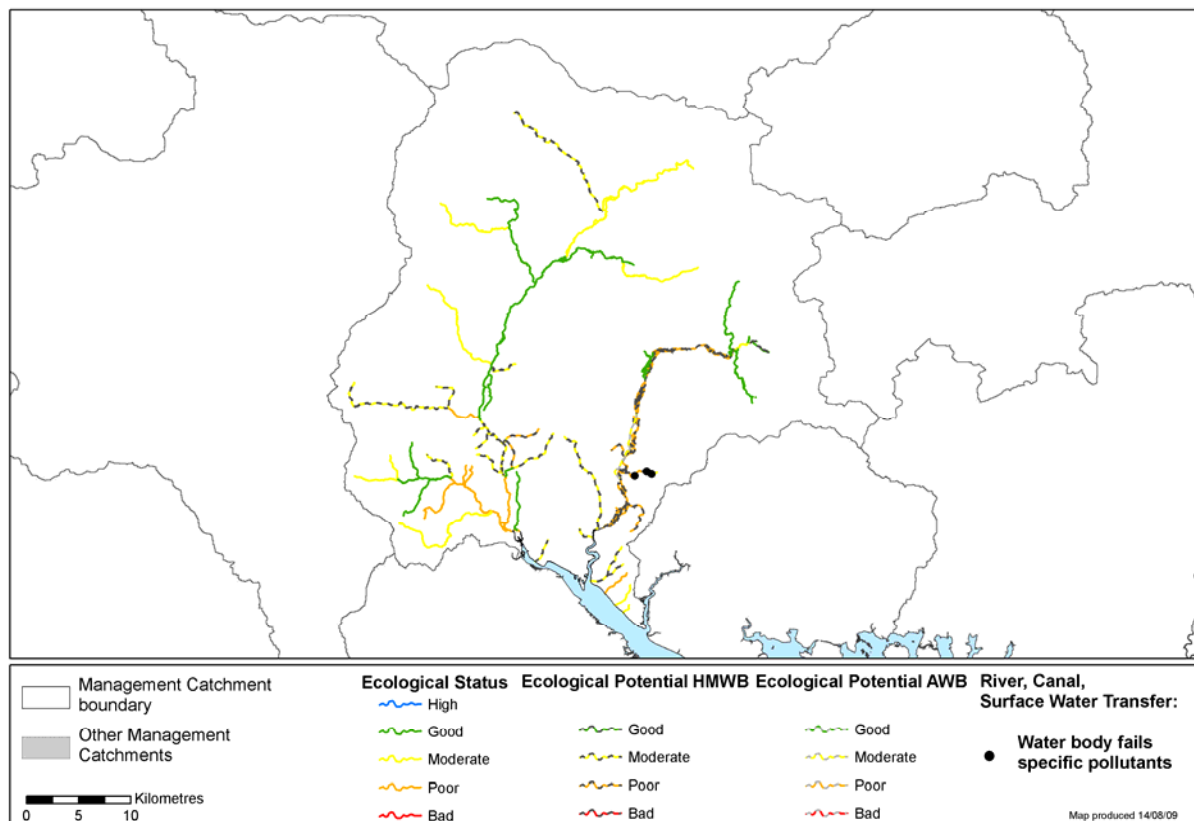
Test and Itchen



The rivers Test and Itchen are the birthplace of fly fishing, and are among the finest chalk streams in the world. Fed by groundwater, they support a rich diversity of mammals, birds, fish, invertebrates and plants. The Itchen is designated a Special Area of Conservation for its internationally important wildlife.

The catchment covers six groundwater bodies, which are the source of much of the area's water supplies. Aquifers are under pressure from oil and chemical pollution in the more urbanised parts of the catchment. In some places, water abstraction creates extra problems for wildlife when river levels run low. It will be more difficult to manage this balance in future as the climate becomes drier. Major abstractions such as the Otterbourne public water supply near Winchester have been investigated and changes to abstraction licences will be made to improve protection of the environment during droughts.

Figure 14 **Current ecological status/potential of river water bodies in this catchment**



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The rivers, their tributaries and coastal waters are under pressure from physical modification for flood protection and urbanisation, and diffuse pollution from agriculture and housing. They can suffer from growth of algae caused by excessive levels of phosphate and nitrates in sewage works effluent, discharges from other industries and farming.

Table 6 Key statistics for the Test and Itchen catchment at a glance

River and lake water bodies	Now	2015
% at good ecological status or potential	38	40
% assessed at good or high biological status (39 water bodies assessed)	46	54
% assessed at good chemical status (6 water bodies assessed)	67	67
% at good status overall (chemical and ecological)	38	40
% improving for one or more element in rivers		19

There are 52 river water bodies in the catchment and three lakes. 18 rivers and two lakes are heavily modified.

19 per cent of rivers in the Test and Itchen will improve for at least one element by 2015. For example, the River Blackwater will improve for fish and the Cadnam river for dissolved oxygen. The Rivers Test, Blackwater and the Fairbourne stream will also improve from poor biological status by 2015.

Action will lead to improvements in water quality and fish movement in the catchment. One water body – Pillhill Brook – will improve in status by 2015 (from moderate to good). Those waters in the worst state will be prioritised, so that the proportion of assessed waters at poor biological status will reduce from 21 per cent to 13 per cent by 2015.

38 per cent of rivers and lakes (106 kilometres or 26 per cent of river length) currently achieve good or better ecological status/potential. 46 per cent of waters assessed for biology are at good or high biological status now. This includes the River Test (Middle), River Blackwater and Old Alresford Pond.

Some key actions for this catchment

- The Environment Agency will modify abstraction licences and discharge consents to ensure no adverse impact on the River Itchen Special Area of Conservation.
- Southern Water will improve sewage works at three locations including Eastleigh and Millbrook to reduce levels of phosphate and organic pollutants.
- Natural England, the Environment Agency and others will work to reduce diffuse pollution from agriculture, partly through the England Catchment Sensitive Farming Delivery Initiative. This will also address rising trends in nitrate at sources in the Test and Itchen chalk aquifers.
- The Environment Agency will work with landowners on a fish passage programme which aims to address barriers at sites on the rivers Test and Itchen including Bishopstoke Mill, Durngate and Otterbourne Lock. Through the ‘better rivers’ programme we will enhance habitat in 18 priority river water bodies including the Test, Alre and Itchen Navigation.
- The Environment Agency will monitor salmon and control invasive non-native fish.
- The Environment Agency will work with industry to minimise the impact of fish farms and cress farms on water quality.
- The Highways Agency, local authorities and the Environment Agency will develop targeted pollution prevention initiatives to prevent and limit the introduction of pollutants to groundwater from road drainage, private sewage disposals, oil and chemical use and storage, and pesticide use in urban areas.
- WWF will work with the Environment Agency and partners in the Rivers on the Edge project that includes the Itchen.

East Hampshire

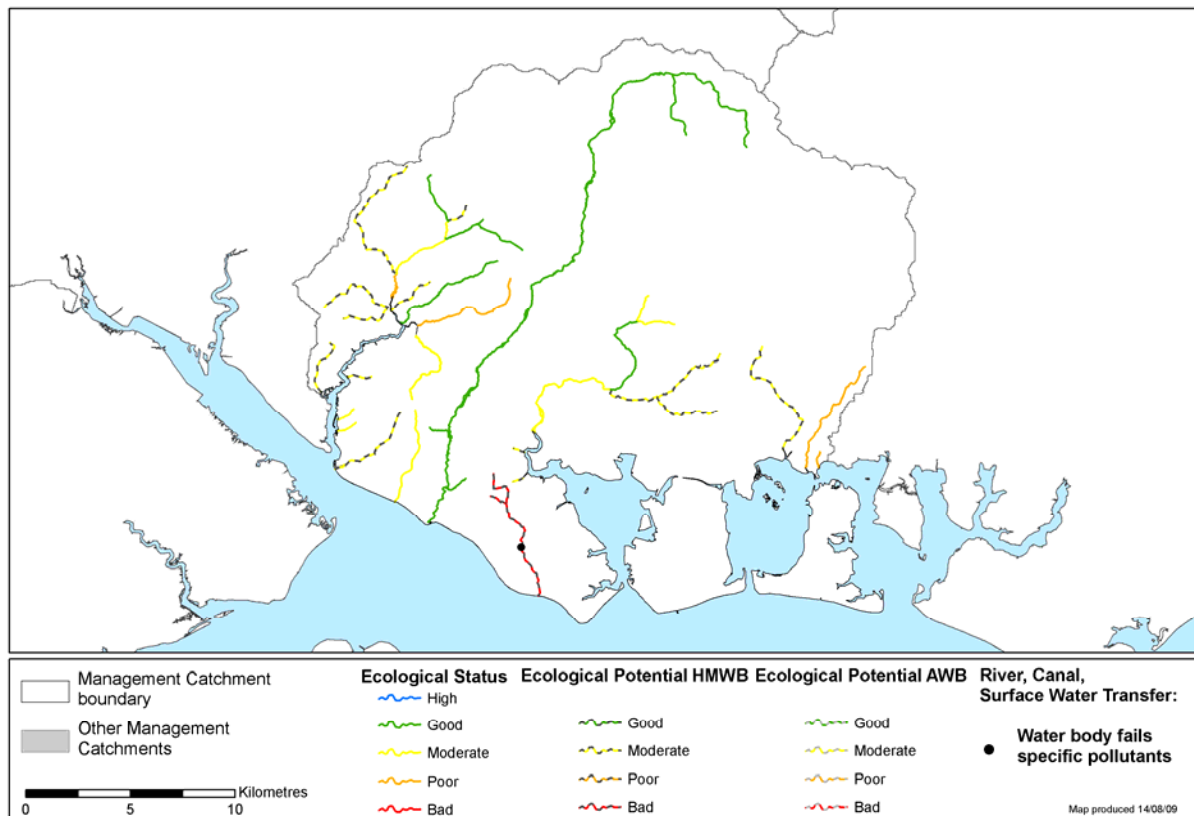


The East Hampshire catchment includes an urbanised coastal plain along the Solent, and rolling chalk downland to the north. There are internationally important wildlife sites including Portsmouth and Langstone Harbours.

The major pressures come from the built environment, and Partnership for Urban South Hampshire is a development growth point. Reasons why many water bodies are not at good status are related to urban issues. They include the impacts of physical modification for flood protection and urbanisation, abstraction and diffuse pollution from roads and towns.

Biodiversity in the estuaries suffers from an excessive growth of green algae caused by too much nitrogen. This comes from treated sewage effluent and agricultural runoff. Too much silt, partly due to intensive agriculture, can impact fish populations. The catchment is also vulnerable to pollution incidents from the extensive sewerage and drainage infrastructure and the many industrial estates, particularly in the Hermitage Stream, River Hamble, and Gosport area.

Figure 15 **Current ecological status/potential of river water bodies in this catchment**



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Low flows, for example in the Rivers Hamble and Meon, can put ecology at risk and bird life may be affected by insufficient freshwater flows into Langstone Harbour. Licence changes to the Havant and Bedhampton Springs abstraction will be made to protect these flows.

Five groundwater bodies lie under the catchment. The principal public water supply, Bedhampton and Havant Springs, is at risk of pollution due to the presence of 'swallow holes' – places where the chalk aquifer is naturally open to the surface.

Table 7 Key statistics for the East Hampshire catchment at a glance

River and lake water bodies	Now	2015
% at good ecological status or potential	17	21
% assessed at good or high biological status (19 water bodies assessed)	42	47
% assessed at good chemical status (1 water body assessed)	100	100
% at good status overall (chemical and ecological)	17	21
% improving for one or more element in rivers		14

There are 28 river water bodies in the catchment and one lake. Ten rivers are heavily modified.

14 per cent of rivers in East Hampshire will improve for at least one element by 2015. For example the status of fish in one of the River Hamble water bodies is predicted to improve from poor to moderate. The proportion of waters assessed at poor biological status will reduce, from 26 per cent now to 21 per cent in 2015. The Alver and Hook Lake are at bad status, and are unlikely to improve by 2015 due to a range of diffuse pollution and physical modification issues.

Action will address urban and rural diffuse pollution in East Hampshire. One water body, Brownwich Stream, should improve by 2015 (from moderate to good).

17 per cent of rivers and lakes (68 kilometres or 41 per cent of river length) currently achieve good or better ecological status/potential. 42 per cent of waters assessed are at good or high biological status now. This includes the River Meon, River Wallington and Warnford Lake.

Some key actions for this catchment

- The Environment Agency will modify abstraction licences to ensure no adverse impact on internationally important wildlife sites.
- Southern Water will improve sewage works at four locations including Peel Common, Bishops Waltham and Budds Farm, these will reduce levels of nutrients such as phosphate and benefit shellfish and bathing waters.
- The Environment Agency and others will improve the potential for river wildlife and aim to address barriers to fish passage.
- The Downs and Harbours Clean Water Partnership will target land management advice particularly in the Wallington.
- A range of initiatives will improve river flow for example by reducing abstraction and other measures, particularly in the summer months.
- The Environment Agency will work to investigate and address sewerage misconnections in urban areas, and target pollution prevention around industrial areas.
- The Environment Agency will collate information on swallow holes and raise awareness of landowners to prevent groundwater pollution.
- The Environment Agency will investigate landfill sites to assess their impact on the River Alver and groundwater bodies in the area.

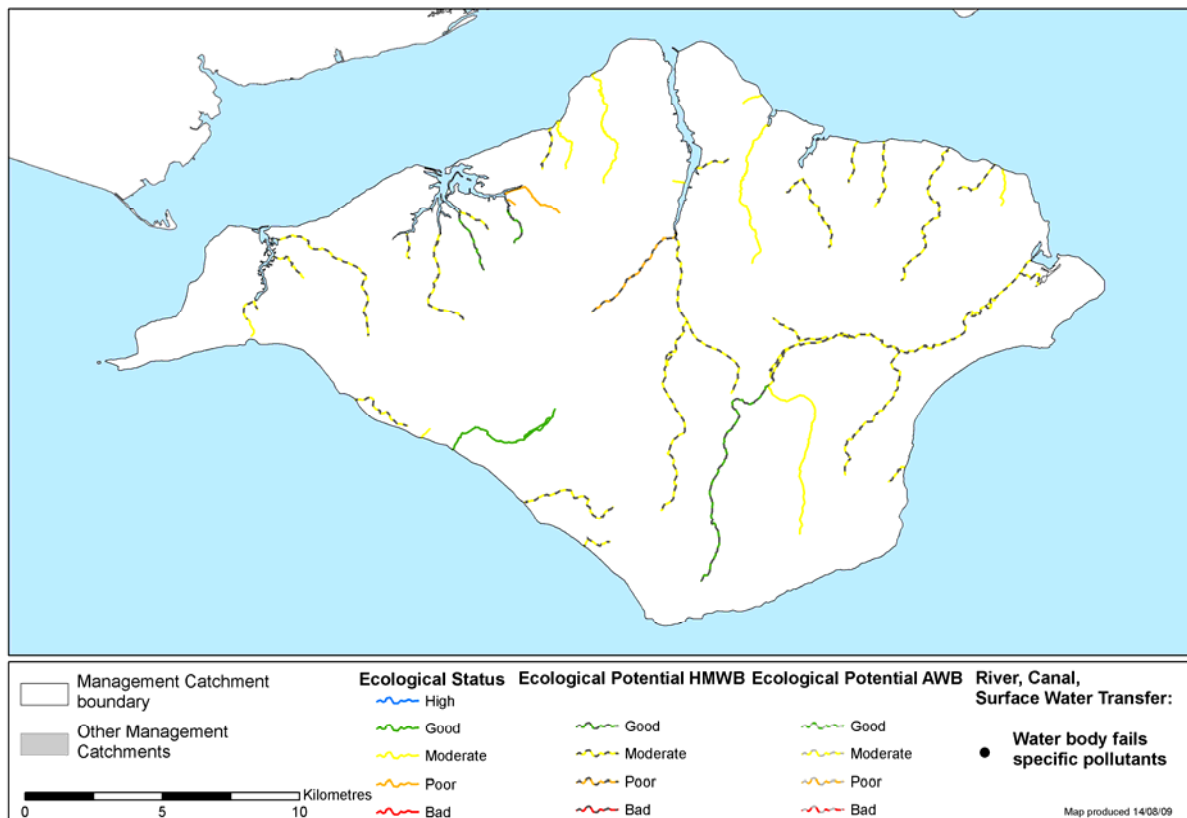
Isle of Wight



The Isle of Wight's landscapes and coast help draw one million people on holiday each year. About half of the catchment is designated as an Area of Outstanding Natural Beauty and Heritage Coast and there is considerable intensive horticulture which is important for the economy. A range of coastal wetlands are designated as Special Protection Areas or Special Areas of Conservation.

However, there are issues that are preventing more of the island's waters from achieving good status now. Most streams and rivers have been dredged and straightened for flood protection and urbanisation, and suffer from sedimentation and diffuse pollution. The lack of mains drainage for many small communities is a concern, as septic tanks can discharge sewage effluent which can find its way into streams and groundwater. This has increased the levels of nutrients in many waters, limiting the ecological quality of the water environment.

Figure 16 Current ecological status/potential of river water bodies in this catchment



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The catchment covers five groundwater bodies. Three major units (Central Chalk, Southern Downs Chalk and the Lower Greensand) supply water for agriculture and industry and are heavily abstracted for public water supply. Although all homes have been metered since the 1980s, water is transferred from the mainland to supplement the Isle of Wight's supplies. For the island to become more self-sufficient in water resources, it is critical to improve water efficiency and protect the groundwater from pollution.

Table 8 Key statistics for the Isle of Wight catchment at a glance

River and lake water bodies	Now	2015
% at good ecological status or potential	11	14
% assessed at good or high biological status (11 water bodies assessed)	27	36
% assessed at good chemical status (0 water bodies assessed)	0	0
% at good status overall (chemical and ecological)	11	14
% improving for one or more element in rivers		3

There are 35 river water bodies in the catchment and no lakes. 24 waters are heavily modified.

A range of actions will target the key pressures on the Isle of Wight, and investigate water bodies where there is uncertainty about what pressures are present, or their effect. Three water bodies, including the Palmers Brook, will improve in status by 2015). In considering future action, those waters in the worst state will be prioritised.

11 per cent of rivers (20 kilometres or 14 per cent of river length) currently achieve good or better ecological status/potential. 27 per cent of rivers assessed for biology are at good biological status now. These waters include the Brightstone Streams and the Eastern Yar.

Some key actions for this catchment

- The Environment Agency will modify abstraction licences and discharge consents to ensure no adverse impact on internationally important wildlife sites.
- The Environment Agency and Southern Water will improve six sewage works including Newtown and Chillerton, to reduce inputs of nutrients and organic pollutants and benefit shellfish waters.
- The Landcare Project and Strategic Partnership for the England Catchment Sensitive Farming Delivery Initiative will tackle diffuse pollution across the whole island. This will help address rising trends in pesticide and nitrate in groundwater at Niton.
- The Environment Agency will work with others to improve habitats and ecology particularly in rivers, chimes and estuaries. We seek to improve habitat and fish passes on the Medina and Bembridge Sluice, as well as remove invasive non-native fish such as pumpkinseed.
- The Environment Agency will lead a range of initiatives to improve river flow for example by reducing abstraction, particularly in the summer months.
- The Footprint Trust will raise awareness of water saving, seeking to assist households, businesses and schools in reducing per capita water use to a sustainable level.
- The Environment Agency will put a Water Level Management Plan in place for Brading Marshes. This will improve the condition of this important wildlife site, aid fish passage and provide an improved wetland habitat for birds without increasing flood risk.
- The Environment Agency and local authority will quantify and reduce the impact of private sewage discharges from septic tanks and cess pits.

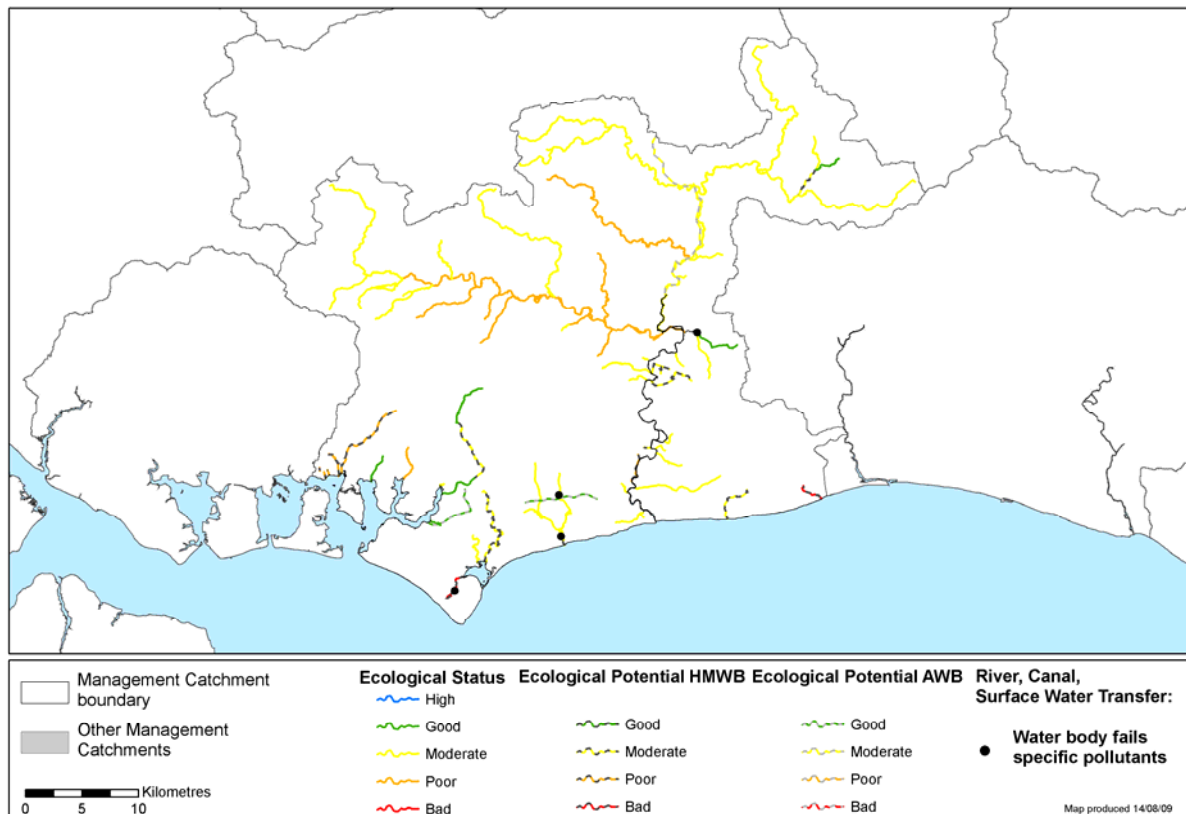
Arun and Western Streams



This catchment incorporates the River Arun, including its main tributary the River Rother, and the West Sussex coastal streams including the Ems and Lavant. Worthing, Bognor Regis, Chichester, Arundel, Midhurst and Horsham are key towns.

The Habitats Directive Review of Consents has identified a number of localised impacts on nutrient levels from sewage treatment works, and point source pollution is a major reason why more water bodies are not currently achieving good status. Diffuse agricultural pollution is also an issue, contributing to increasing trends in nitrate in the Lower Greensand aquifer and the Worthing and Chichester Chalk and sedimentation problems on the Western Rother which impact on fish and other wildlife. Fish populations are also being affected by physical modifications, which obstruct movement along the rivers.

Figure 17 **Current ecological status/potential of river water bodies in this catchment**



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Increasing development in the coastal plain will put public water supplies under pressure. There are six groundwater bodies covering the catchment, and the Chalk and Lower

Greensand aquifers support freshwater inputs to a number of internationally important wildlife sites such as the Arun Valley, Pagham Harbour, and Chichester Harbour. Changes will be made to licensed abstractions from the Chichester Chalk Block, particularly at Fishbourne. This will maintain the flow of freshwater into the harbour that the wildlife depends on.

Table 9 Key statistics for the Arun and Western streams catchment at a glance

River and lake water bodies	Now	2015
% at good ecological status or potential	13	19
% assessed at good or high biological status (38 water bodies assessed)	26	29
% assessed at good chemical status (9 water bodies assessed)	78	78
% at good status overall (chemical and ecological)	13	19
% improving for one or more element in rivers		32

There are 57 river water bodies in the catchment and five lakes. Nine rivers and four lakes are heavily modified, and one lake is artificial.

32 per cent of rivers in the Arun and Western Streams will improve for at least one element by 2015. Phosphate class will improve in almost 153 kilometres of river waters including the Western Rother and River Arun. Action in the catchment should lead to improvement in water quality and fish movement. As a result, the ecological status of four water bodies will improve by 2015, including Loxwood/Chiddingfold Tributary and Elsted Stream. Waters in the worst state will be prioritised. The proportion of waters assessed at poor biological status will reduce from 24 to 21 per cent. Teville Stream and Broad Rife are at bad status and investigations are needed. It will be after 2015 before we see significant improvement in these waters.

13 per cent of rivers and lakes (including 20 kilometres or five per cent of river length) currently achieve good or better ecological status/potential. The lakes are at moderate ecological status now. 26 per cent of waters assessed for biology are at good or high biological status now, including the River Lavant and the River Stor.

Some key actions for this catchment

- The Environment Agency will work with Southern Water to modify abstraction licences within the Arun Valley catchment and achieve more sustainable levels of abstraction.
- The Environment Agency will work with landowners to realign some embankments on the River Arun, providing new wetland habitats and improving ecological status. We will also work in partnership through the 'better rivers' programme to enhance habitat on the River Ems. The fish pass programme will aim to address barriers to fish passage at Lording Lock, North Mill and Stedham Mill on the rivers Rother and Arun.
- The Downs and Harbours Clean Water Partnership will target land management advice in the areas feeding into the Portsmouth, Langstone & Chichester Harbours. The England Catchment Sensitive Farming Delivery Initiative will focus its land management advice on the Western Rother and River Arun to address rising trends of nitrate.
- Southern Water will improve sewage works at 17 locations such as Horsham, Petersfield and Chichester, to reduce levels of phosphate, nitrate and organic pollutants.
- The Environment Agency will target pollution prevention campaigns around industrial areas, and investigate reasons for low ecological quality.
- The Highways Agency, local authorities and the Environment Agency will develop targeted pollution prevention initiatives to prevent and limit the introduction of pollutants to groundwater from road drainage, private sewage disposals, oil and chemical use and storage, and pesticide use in urban areas.

Adur and Ouse

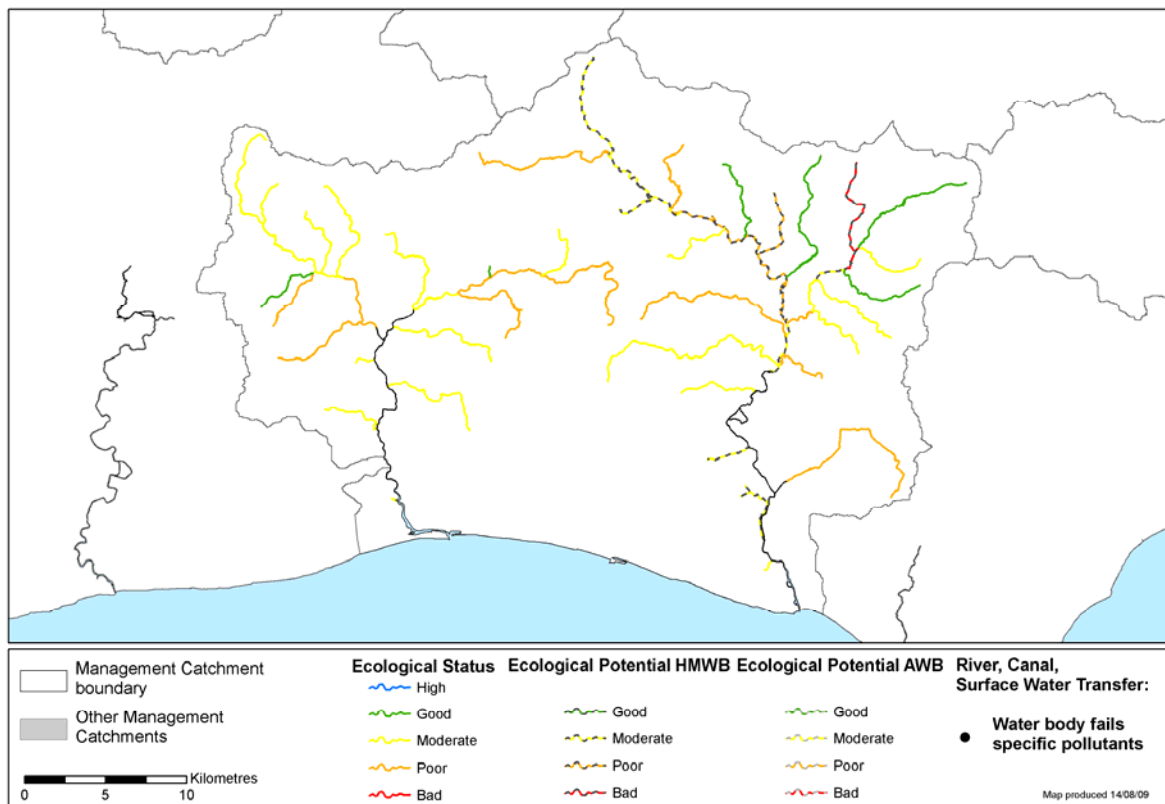


The Adur and Ouse catchment is well known for both its urbanised coast and the South Downs. It includes the city of Brighton and Hove and the port areas of Newhaven and Shoreham – the latter a development growth point. Main inland towns include Lewes, Haywards Heath and Burgess Hill.

There are issues with the quality of effluent from the Goddards Green, Barnes Green and Coolham sewage treatment works, and problems with diffuse pollution from agriculture. Obstruction to fish passage in the Ouse is a major problem, especially when there are prolonged periods of low river flow, and ecology would benefit from more naturalised river channels in many places. These are key reasons why more waters are not at good status now.

The catchment covers five groundwater bodies. Groundwater quality in the Brighton Chalk is at risk of deterioration from nitrates and pesticides, relating to rural as well as urban inputs.

Figure 18 **Current ecological status/potential of river water bodies in this catchment**



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There are groundwater quality risks in the Hastings aquifer. These relate to localised use of nitrates and pesticides in agriculture and horticulture, as well as nitrogen levels associated with effluent discharges. Another concern is the impact of abstraction on streams fed from the Brighton Chalk aquifer. This pressure can combine with lower river flows in summer, and lead to a concentration of sewage effluent which can be harmful to wildlife.

Table 10 Key statistics for the Adur and Ouse catchment at a glance

River and lake water bodies	Now	2015
% at good ecological status or potential	12	18
% assessed at good or high biological status (41 water bodies assessed)	24	29
% assessed at good chemical status (4 water bodies assessed)	75	75
% at good status overall (chemical and ecological)	12	18
% improving for one or more element in rivers		18

There are 50 river water bodies in the catchment and one lake. Ten rivers and the lake – Ardingly Reservoir – are heavily modified.

18 per cent of rivers in the Adur and Ouse will improve for at least one element by 2015. For example the status of fish in the Honeybridge Stream will improve from poor to moderate. Phosphate class will improve in almost 32 kilometres of river water bodies, including the River Adur and Honeybridge Stream.

Action in the catchment will lead to improvements in water quality and sedimentation in the Adur and Ouse. As a result, the ecological status of five water bodies will improve by 2015, including the Black Sewer and Copyhold Stream. Those waters in the worst state will be prioritised, so that the proportion of waters at poor status will decrease from 41 to 34 per cent. The River Uck north of Uckfield is in bad biological status, and is unlikely to improve by 2015 due to an impoundment.

12 per cent of rivers and lakes (including 40 kilometres or 12 per cent of river length) currently achieve good or better ecological status/potential, such as the Bolney Sewer. 24 per cent of waters assessed for biology are at good biological status now, including the River Adur (Hammer Pond).

Some key actions for this catchment

- Southern Water will improve sewage works at seven locations to reduce levels of nutrients including phosphate and organic pollutants.
- The Environment Agency will, subject to funding, modify abstraction licences to ensure no adverse impact on Sites of Special Scientific Interest.
- The Environment Agency's 'better rivers' programme will improve habitat at nine priority water bodies including River Ouse, Uck and the Adur at Knepp Castle. A fish passage programme will address priority barriers to fish passage, including Wineham Bridge and Barcombe Mills. Some schemes will be lead by partner organisations including the River Adur Conservation Society and the Sussex Ouse Conservation Society.
- The Environment Agency will survey the Lewes Winterbourne and four other Chalk Streams in East Sussex to inform Restoring Sustainable Abstraction investigations.
- The Highways Agency, local authorities and the Environment Agency will develop targeted pollution prevention initiatives to prevent and limit the introduction of pollutants to groundwater from road drainage, private sewage disposals, oil and chemical use and storage, and pesticide use in urban areas.
- The Environment Agency will investigate sources of poor water quality in several waters, including bathing waters, and the risks of further saline intrusion in the chalk aquifer connected with sea level rise.

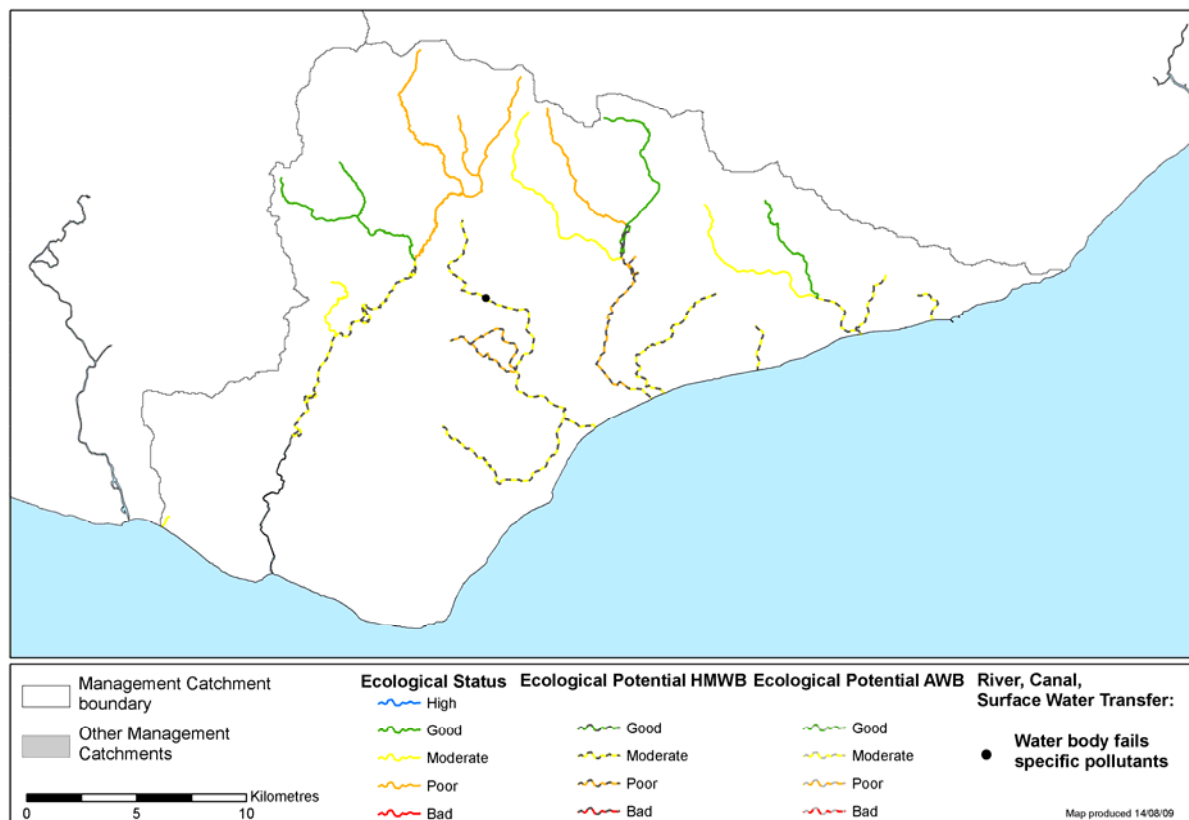
Cuckmere and Pevensy Levels



The Sussex Downs and the chalk cliffs between Seaford and Eastbourne lie to the west of this catchment. This contrasts with the High Weald in the north east, where an ancient landscape of copses, hedgerows and small fields extends into Kent.

The central part of the area is on the lower land of the Low Weald, with the Pevensy Levels to the south. A range of designated wildlife sites here depend on water level management and the maintenance of Pevensy Bay sea defences for their existence. However, the physical modifications required for agricultural land drainage, and associated diffuse pollution, are preventing some river water bodies reaching good status now.

Figure 19 **Current ecological status/potential of river water bodies in this catchment**



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The main sources of public water supply in this catchment are the River Cuckmere at Arlington, the Chalk and Lower Greensand aquifers and Wallers Haven at Hazards Green. These sources principally serve the towns and surrounding areas of Heathfield, Seaford,

Eastbourne and Hailsham. Some of the sewage works that service the catchment's population are putting pressures on the water environment.

The need for water in this catchment is increasing as a result of new development, and rising household demands in the coastal plain and commuter towns in the north of the area. Groundwater quality in the catchment's four aquifers is at risk of deterioration, predominantly from the use of nitrates and pesticides in agriculture and horticulture, and nitrogen levels associated with sewage effluent discharges.

Table 11 **Key statistics for Cuckmere and Pevensey levels catchment at a glance**

River and lake water bodies	Now	2015
% at good ecological status or potential	20	28
% assessed at good or high biological status (17 water bodies assessed)	35	47
% assessed at good chemical status (6 water bodies assessed)	100	100
% at good status overall (chemical and ecological)	20	28
% improving for one or more elements in rivers	-	38

There are 24 river water bodies in the catchment and one lake. 15 rivers are heavily modified, the lake, Arlington Reservoir is an artificial water body.

38 per cent of rivers in the catchment will improve for at least one element by 2015. For example the River Cuckmere will improve for invertebrates and the Hurst Haven for fish and both will improve from poor to moderate biological status. Phosphate class will improve in almost 34 kilometres of river waters, including the River Cuckmere and Nunningham Stream.

Action in the catchment is predicted to improve the ecological status of the Watermill Stream, Waller Haven and Nunningham Stream by 2015. Those waters in the worst state will be prioritised, and the proportion of poor status rivers will decrease from 47 per cent now, to 24 per cent in 2015.

20 per cent of rivers and lakes (including 30 kilometres of river water body length) currently achieve good or better status/potential, including the Ashbourne Stream and the Bull River. 35 per cent of waters assessed for biology are at good or high biological status now.

Some key actions for this catchment

- Southern Water will improve sewage works at locations including Vines Cross, to reduce inputs of phosphate and organic pollutants. There will be investigations into the need for further reductions in phosphate at Hailsham North, and into predicted poor quality bathing water in Hastings.
- Natural England and the Environment Agency will review water level management to ensure ecological needs are met, and manage floating pennywort – an invasive non-native species that can harm ecology and increase the local risk of flooding. Problem species will be removed at Bull River, Glynde Reach and other locations where they are at risk of spreading.
- The Environment Agency will investigate waters with low ecological quality, including the Knockhatch Stream.
- Working with a range of other partners, the Environment Agency will enhance the freshwater habitats of the Cuckmere through a 'better rivers' programme. Obstructions to fish passage will be addressed at Sessingham Weir and Tumblers Bay.
- The Environment Agency will follow the current strategy for the Cuckmere estuary, which is to withdraw maintenance in April 2011. This may return the estuary to a tidal floodplain over time and allow this popular landmark to adapt to the impacts of climate change and provide great benefits to both visitors and wildlife.

Rother

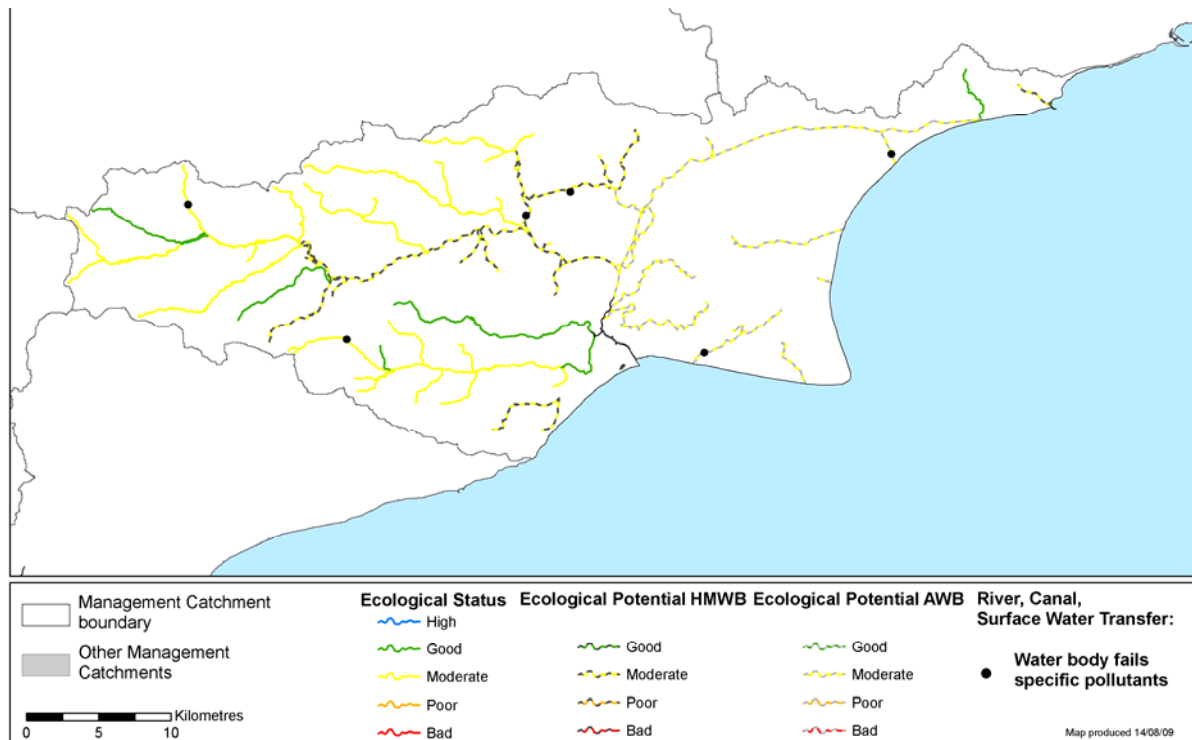


The catchment is characterised by the steep river valleys and woodland of the High Weald in the north and the marshes of the south east. Water level control is crucial in the low-lying areas, to provide for wildlife and prevent flooding.

Two other major features are the Royal Military Canal – a scheduled ancient monument that enables the drainage and irrigation of valuable agricultural land; and Dungeness – an internationally important wildlife site, valuable aquifer, and site of a nuclear power station.

Point source pollution from sewage works is a major challenge in the catchment, which is currently limiting the number of rivers at good status. A high proportion of rivers and lakes in the catchment are heavily modified or artificial. The activities in these waters can hinder the movement of fish and increase the challenge for providing good ecology.

Figure 20 **Current ecological status/potential of river water bodies in this catchment**



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The catchment's four groundwater bodies suffer from high nitrate concentrations caused by urban and agricultural activities. There is oil and chemical contamination beneath an industrial site near Rye Harbour, which impacts on the ecology of the adjacent wetland, lakes and streams.

In general, water resources are fully committed. Investigations have concluded that a groundwater abstraction from the Denge Gravels has the potential to conflict with water level requirements at Dungeness. Actions will be put in place to eliminate this risk. In addition, sea level rise will result in increasingly saline water in coastal aquifers. This may be prohibitively expensive to treat for public water supply in future.

Table 12 Key statistics for the Rother catchment at a glance

River and lake water bodies	Now	2015
% at good ecological status or potential	17	23
% assessed at good or high biological status (36 water bodies assessed)	58	69
% assessed at good chemical status (4 water bodies assessed)	100	100
% at good status overall (chemical and ecological)	17	23
% improving for one or more elements in rivers	-	25

There are 36 river water bodies in the catchment and 12 lakes. Nine rivers and one lake are heavily modified; seven river water bodies and 11 lakes are artificial.

25 per cent of rivers in the catchment will improve for at least one element by 2015. For example, the Doleham Ditch will improve for fish. Phosphate class will improve in almost 47 kilometres of river waters, including the River Brede and the Marsham and Pannel Sewers.

Actions in the Rother will lead to improvement in the ecological status of three water bodies by 2015: Doleham Ditch, the Brede between Battle and Winchelsea and the Rother between Witherenden Hill and Etchingham. Those waters in the worst state will be prioritised.

17 per cent of these rivers and lakes (including 52 kilometres of river water body length) currently achieve good or better ecological status/potential. Such waters include the River Tillingham. 58 per cent of waters assessed for biology are at good or high biological status now.

Some key actions for this catchment

- Natural England and the Environment Agency will continue to tackle diffuse pollution through the England Catchment Sensitive Farming Delivery Initiative, with particular emphasis on the use of pesticides in the top of the catchment.
- Southern Water will improve sewage works at seven locations including Battle, Hawkhurst North and Iden Green to reduce the input of nutrients such as phosphate, and organic pollutants dissolved oxygen and ammonia.
- The Environment Agency will investigate hydrocarbon and solvent contamination, targeting pollution prevention visits at industrial sites in Rye continuing to oversee the clean-up of the chemical contamination at Rye Harbour Road.
- The Environment Agency will aim to address barriers to fish passage at priority sites Tillingham, Udiam Gauging Station and Scots Float tilting weir.
- A range of partners will work together through the 'better rivers' programme to enhance wildlife habitat on the River Brede between Battle and Winchelsea, and the Romney Marsh Countryside Project will enhance biodiversity in the Romney Marshes.
- The Environment Agency will work with Veolia Water South East to modify the abstraction regime within the Denge Gravel aquifer. This will ensure that the consented activity poses no risk to the internationally important biodiversity at Dungeness Special Area of Conservation that is vulnerable to a lowered groundwater table.
- The Environment Agency will work with others to remove invasive non-native species from the Glottenham Stream where they are at risk of spreading.

Stour

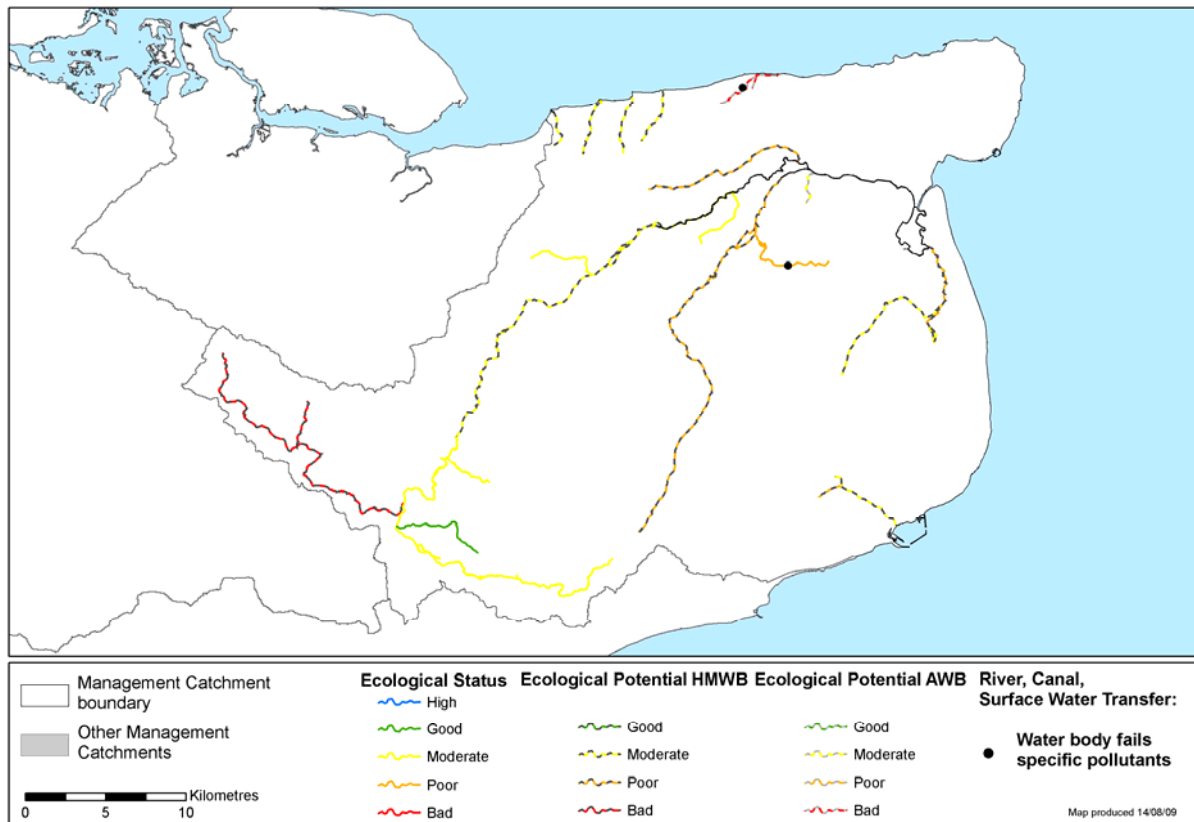


From the White Cliffs to the Isle of Thanet, the water environment has a great influence on this catchment. As a result, there is an extensive range of international nature conservation designations in the area. Dover is a new growth point and Ashford is a growth area.

Point source pollution from sewage works is a major reason why more river water bodies are not at good status now, along with diffuse pollution from agriculture. The stretches of river between Ashford and Canterbury have high phosphate concentrations and are designated sensitive areas under the Urban Waste Water Treatment Directive. Although their chemical status is currently good, considerable work will be needed to drive improvements to ecology.

Many of the surface waters in this catchment are artificial or heavily modified, reflecting the importance of flood risk management and the presence of high value agricultural land. Maintaining these channels is important to the ecology of the catchment, and in some places barriers to fish migration will need to be addressed.

Figure 21 **Current ecological status/potential of river water bodies in this catchment**



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The catchment covers four groundwater bodies. In addition to high levels of nitrates and pesticides, the Thanet Chalk is also impacted by solvent contamination. The impacts of the former coal mine discharges on the chalk groundwater are still evident and the potential future impact on the wetlands and surface water needs to be investigated.

Table 13 **Key statistics for the Stour catchment at a glance**

River and lake water bodies	Now	2015
% at good ecological status or potential	3	3
% assessed at good or high biological status (19 water bodies assessed)	11	21
% assessed at good chemical status (6 water bodies assessed)	100	100
% at good status overall (chemical and ecological)	3	3
% improving for one or more element in rivers	-	29

There are 24 river water bodies in the catchment and five lakes. 13 rivers are heavily modified and two rivers and the lakes are artificial. 29 per cent of rivers will improve for at least one element by 2015. For example, the status of fish in the Great Stour between the A2 and West Stourmouth will improve from moderate to good. Phosphate class will improve in almost 80 kilometres of river waters including the Great Stour.

The Upper Great Stour will improve from bad to moderate ecological status as a result of phosphate removal from sewage works and the England Catchment Sensitive Farming Delivery Initiative. Sarre Penn will improve from poor to moderate potential. Those waters in the worst state will be prioritised, so that the proportion of waters assessed at poor biological status will decrease from 43 per cent to 36 per cent. The North Chislet Marsh, a bad biological status water body, is unlikely to improve by 2015 because it is impounded and suffers from point source pollution.

Three per cent of waters in the catchment (seven kilometres of river water body length - the Aylesford Stream) currently achieve good or better ecological status/potential. 11 per cent of rivers assessed are at good biological status now.

Some key actions for this catchment

- Natural England and the Environment Agency will provide advice to farmers on the Stour and Isle of Thanet through the England Catchment Sensitive Farming Delivery Initiative.
- The Environment Agency will, subject to funding, modify abstraction licences to ensure no adverse impact on Sites of Special Scientific Interest.
- Southern Water will improve sewage works at nine locations including Ashford, Canterbury and Lenham, to reduce inputs of nutrients such as phosphate, and organic pollutants and benefit bathing and shellfish waters.
- The Environment Agency will work with Southern Water Services, Ashford's Future, Ashford Borough Council, Veolia Water Southeast and Kent County Council on a project to identify and tackle urban diffuse pollution in Ashford. We will also work in partnership to ensure that the impacts of Ashford's growth are minimised.
- The Environment Agency will work with partners to improve fish passage and flow.
- The Stour Internal Drainage Board will help to protect and enhance biodiversity.
- There will be partnership work through the 'better rivers' programme to enhance the River Great Stour, North/South Streams (Lydden Valley Project) and other priority waters.
- The Environment Agency will work with others through the fish passage programme, aiming to address obstructions at Halfords Weir, Pledges Mill, Stourmouth and Wye.
- The Environment Agency will work with the River Dour Steering Group and residents in Dover to improve river habitat at Temple Ewell, in the Buckland area and downstream to Pencester Gardens.

Estuaries and coastal water bodies



People in the South East River Basin District benefit from a long coastline, but many environmental pressures are concentrated in estuaries and the sea. Building towns and flood defences, and making space for boats, has left very few natural coastal and estuarine waters. Runoff and discharges cause pollution which can impact wildlife, bathing and economically important fisheries. There is also a legacy of chemicals in sediments.

Physical modification for flood and coastal erosion risk management is a major reason why more of these waters are not at good status, followed to a lesser extent by the physical impacts of commercial fishing, ports and harbours. Some actions have been identified to mitigate the ecological impact of these uses for water bodies. More will be incorporated into planned activities when shoreline management plans have been adopted.

Point source pollution from sewage works and diffuse pollution from agriculture are also issues. They can result in too much nitrogen entering waters, a nutrient that causes an overgrowth of green seaweeds in the Solent in particular. This harms biodiversity, and can cause problems for recreation and navigation. Treating the problem is slow and expensive, and requires efforts to control runoff as well as improve sewage works. It is not technically feasible to solve the problem by 2015, because of the range of nitrogen sources. However, work is already underway to improve the sewage discharges that affect biodiversity in the Natura 2000 sites around the Solent.

Table 14 **Key statistics at a glance – estuaries and coastal waters**

	Estuaries		Coastal waters	
	Now	2015	Now	2015
% at good ecological status or potential	0	0	12	18
% assessed at good or high biological status (20 water bodies assessed)	14	29	69	77
% assessed at good chemical status (16 water bodies assessed)	100	100	90	90
% at good status overall (chemical and ecological)	0	0	12	18
% improving for one or more elements	-	10	-	18

There are 17 coastal and 20 estuarine (also called ‘transitional’) water bodies in the river basin district. There are 13 heavily modified coastal waters, and two that are artificial. 15 estuarine waters are heavily modified, and four are artificial. The natural waters are the Newtown River on the Isle of Wight, Ternery Pool near Rye and Great Deep by Thorney Island.

Ten per cent of estuaries and 18 per cent of coastal waters will improve for at least one element by 2015.

One water body, the Great Deep, will improve in status by 2015 and Pagham Harbour will improve from moderate to good biological status. Macroalgae in the Wallington should improve from moderate to good. 53 per cent of coastal waters and 30 per cent of estuaries will be at good chemical status. In some places, such as the Adur, an industrial legacy of

contamination with the biocide tributyltin (TBT) may prove disproportionately expensive to address, even by 2027.

Currently there are two coastal waters – Dorset/Hampshire and Isle of Wight East – at good ecological potential. 14 per cent of estuaries and 69 per cent of coasts assessed for biology are currently at good or better biological status.

Some key actions

- Investment from Southern Water will improve sewage effluent discharges and urban diffuse pollution. This will benefit eight bathing waters that are at risk of failing new Bathing Water Directive standards, and water bodies with green seaweed problems. There is major investment planned to increase the treatment of discharges that might otherwise affect the importance of six Shellfish Waters.
- Natural England, the Environment Agency, the Downs and Harbours Clean Water Partnership and others will deliver the England Catchment Sensitive Farming Delivery Initiative and local advice led partnerships to reduce rural diffuse pollution entering marine waters.
- Ports and harbours will apply national guidance frameworks on dredging and disposal of dredgings where appropriate locally, and sign up to Defra's maintenance dredging protocol.
- Sussex Inshore Fisheries and Conservation Authority will produce a code of conduct for commercial fisheries and sea anglers and help to establish marine protected areas.
- The Environment Agency will monitor a broader range of elements in coastal waters and estuaries. Over time, this will provide a more comprehensive picture of these waters, and help relevant organisations to direct action.
- The Environment Agency will provide local guidance and information that helps to reduce the risk from physical pressures, diffuse and point sources.

Case study 4 Langstone Harbour



Langstone Harbour opens into the Eastern Solent and is connected to Portsmouth and Chichester Harbours by narrow channels. It is a heavily modified water body, due to coastal and flood protection.

An excess of nutrients in the harbour, especially nitrogen, results in the growth of large amounts of green seaweeds. This harms biodiversity, and causes problems for navigation and recreation.

Following the Urban Waste Water Treatment Directive and Nitrate Directive designations of the harbour as a sensitive area, water companies have made improvements that reduced nutrient inputs. Further improvements came on line at Budds Farm sewage works in 2008. The Downs and

Harbours Clean Water project sponsored by Portsmouth Water, Natural England and the Environment Agency will deliver land care advice to encourage good practice and reduce diffuse pollution.

These improvements will reduce nitrogen concentrations in the water column by 2015. However it is likely to take substantially longer for the amount of green algae to reduce and therefore the ecological potential is likely to remain as moderate in 2015. Changes will be made to Portsmouth Water abstraction licences to ensure adequate flows of freshwater into the harbour for birds at low tide.

Groundwater



Groundwater is vital to life and livelihoods in the river basin district. It provides 72 per cent of drinking water and supports many of the rivers and wetland habitats. Groundwater quality must be protected and improved, and abstraction should be balanced with the needs of the environment.

The Environment Agency will work with a wide range of organisations to prevent deterioration, and aim to achieve good overall status in as many groundwater bodies as possible by 2027.

It may not be possible to achieve good status in all groundwater by 2027 as the result of some major challenges. It will take time to address the legacy of pollution in groundwater. In the Chalk, it can take pollutants such as nitrate 50 years or more to move from the surface to groundwater. Also, rising sea levels will increase the risk of saline water entering coastal groundwater bodies. Limiting pumping rates in supply boreholes can control this 'saline intrusion', but this may mean less water is available for abstraction from these aquifers.

It is necessary to prevent or limit the input of pollutants into groundwater and take action to reverse any significant trends in pollutants. The 'prevent or limit' objective 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.

All groundwater must be protected from deterioration in quantity or quality, and the Environment Agency will ensure the monitoring network is kept under continuous review so that there is the best possible understanding of pressures and trends.

Table 15 Key statistics at a glance - groundwater

Groundwater	Now	2015
% at good quantitative status	43	43
% assessed at good chemical status (30 water bodies assessed)	63	63
% at good status overall	33	33

Currently, 10 of 30 groundwater bodies in the river basin district are at good status overall, and have an objective of good status for 2015. Overall status is determined by chemical status and quantitative status. 19 water bodies have been classified at good chemical status, and 13 at good quantitative status.

Groundwaters at poor quantitative status include the Brighton and Worthing Chalk blocks and the Lower Greensand of Arun and Western Streams. There are two main reasons for this. Long-term abstraction, mainly for drinking water supply, can exceed long term recharge to the aquifer. Also, the amount of abstraction can impact on surface water bodies fed from groundwater, particularly at times of low flow.

Eight groundwater bodies are at poor chemical status due to rising trends of nitrate: the Chichester and Worthing Chalk, the Brighton Chalk, the Test Chalk, the Itchen Chalk, the East Kent Stour Chalk, the Lower Greensand Arun and Western Streams, the Seaford and

Eastbourne Chalk and the Isle of Wight Southern Chalk. The Isle of Wight Southern Chalk is also at poor status because of pesticides. The Isle of Thanet Chalk has widespread nitrates, pesticides and solvent issues. Romney Marsh is at poor status because of saline intrusion.

Some key actions

- Natural England, the Environment Agency and others will use the England Catchment Sensitive Farming Delivery Initiative and other advice led partnerships to address rural diffuse pollution.
- The Environment Agency will work with local authorities and site owners to ensure adequate investigation and remediation of land affected by contamination.
- The Highways Agency, local authorities and the Environment Agency will develop targeted pollution prevention initiatives to prevent and limit the introduction of pollutants to groundwater from road drainage, private sewage disposals oil and chemical use and storage, and pesticide use in urban areas.
- The Environment Agency will work with water companies and others to manage groundwater abstraction and progress the Restoring Sustainable Abstraction programme.
- Water companies will work to safeguard groundwater quality. This will include improving the treatment of major discharges of sewage effluent into the ground. New legislation requires all sewage discharges of this type to be consented or removed by 2012 to protect water quality.
- The Environment Agency will protect the Isle of Thanet chalk aquifer through awareness raising, working with the local planning authority and pollution prevention campaigns at a range of sites. On-going clean-up of sites found to be contaminating the groundwater will continue using current techniques and following the polluter pays principle, using enforcement powers where necessary. The water company will continue to test and treat the groundwater to ensure that the concentrations of nitrates, pesticides and other chemicals remain safe for drinking water supply purposes.
- The Environment Agency will consider, with Government, the potential for a Thanet Water Protection Zone (see case study 5).

Case study 5 **Protecting the Lord of the Manor**



Groundwater under Thanet in Kent is subject to considerable pressures from both urban and rural environments. The Lord of the Manor borehole is a major source of drinking water, but in 2000 it was so badly impacted by a rapid rise in pesticides that significant additional treatment had to be installed. Whilst the very high levels of pesticide have dropped, treatment is still necessary to protect drinking water quality.

To supplement the range of actions underway to address the situation – including Nitrate Vulnerable Zones, pollution prevention campaigns and enforcement and England Catchment Sensitive Farming Delivery Initiative – the Lord of the Manor will be considered as a candidate Water Protection Zone, along with other Thanet abstractions.

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 misconnections 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;
- 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 river basin management plan objectives during the planning cycles. The River Kennet in Thames 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 22 River basin management planning milestones



10 Summary statistics

Table 16 Summary statistics for the South East River Basin District	Rivers and Canals	Lakes and SSSI ditches	Estuaries	Coastal	Surface Waters combined	Groundwater
% of water bodies with improvement in any status of any element by 2015	20	0	10	18	18	0
% of water bodies at good ecological status/potential or better now For groundwater: % of water bodies at good or better quantitative status now	19	26	0	12	19	43
% of natural water bodies at good ecological status or better now	28	0	0	0	27	43
% of artificial and heavily modified water bodies at good ecological potential or better now	7	28	0	13	10	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	24	26	0	18	23	43
% of natural water bodies at good ecological status or better by 2015	34	0	0	50	34	43
% of artificial and heavily modified water bodies at good ecological potential or better by 2015	8	28	0	13	10	N/A
% of water bodies at good chemical status now	86	0	100	90	88	63
% of water bodies at good chemical status 2015	86	0	100	90	88	63
% of water bodies at good biological status or better now	40	32	14	69	40	N/A
% of water bodies at good biological status or better by 2015	47	32	29	77	47	N/A
% of water bodies with alternative objectives (good status 2021 or 2027)	76	74	100	88	78	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 18
 % of all water bodies (surface waters and groundwaters) at good status by 2015 23

11 Further information – the annexes

- Annex A** **Current state of waters in the South East 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 South East 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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